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of the

UNITED STATES PATENT AND TRADEMARK OFFICE

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OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

March 4, 1986 Volume 1064 Number 1

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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.
THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.
GENERAL INFORMATION concerning PATENTS.
GENERAL INFORMATION concerning TRADEMARKS.

COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.50 each; PLANT PATENTS in color, $6.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1052 O.G. 52 on Mar. 26, 1985.

For use of the European Patent Office as Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Certain domestic fees for international applications have been changed effective Oct. 5, 1985 in the rule change notice titled "Revision of Patent Fees" published at 1057 O.G. 24 on Aug. 20, 1985.

The Search fee of the European Patent Office has been changed as of Feb. 9, 1986 and is announced in the *Official Gazette* at 1061 O.G. 30 on Dec. 31, 1985.

International PCT fees have been changed effective Jan. 1, 1986 and were announced in the *PCT Gazette* on Oct. 24, 1985 and in the *Official Gazette* at 1061 O.G. 30 on Dec. 31, 1985.

The current schedule of PCT fees is as follows:

Transmittal fee:	170.00
Search Fee	
U.S. Patent and Trademark Office as Searching Authority	
—No corresponding prior U.S. national application filed	420.00
—Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
if paid before Feb. 9, 1986	750.00
if paid on or after Feb. 9, 1986	830.00
International fees	
Basic fee (first 30 pages):	
if paid before Jan. 1, 1986	280.00
if paid on or after Jan. 1, 1986	325.00
Basic Supplemental fee (for each page over 30):	
if paid before Jan. 1, 1986	6.00
if paid on or after Jan. 1, 1986	6.00
Designation fee for the first 10 national or regional offices:	
if paid before Jan. 1, 1986	70.00
if paid on or after Jan. 1, 1986	80.00
Designation fee for 11th and subsequent designations	No charge

DONALD J. QUIGG,
Dec. 17, 1985. *Assistant Secretary and Commissioner of Patents and Trademarks.*

Board of Appeals Decisions Rendered in the Month of Jan. 1986

Affirmed	141
Affirmed in Part	20
Reversed	65
Total	226

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), as amended effective Oct. 5, 1985. If the maintenance fee is not paid in a patent requiring such payment, the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on Mar. 1, 1983, for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,375,107 through 4,375,701
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), as amended effective Oct. 5, 1985, which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 225.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:
By a small entity (§1.9(f)) . . . . . $ 225.00
By other than a small entity . . . . . $ 450.00"

The amounts of the surcharges, as amended effective Oct. 5, 1985, are set forth in 37 CFR 1.20 (k) and (l) which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . . $ 110.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:
By a small entity (§1.9(f)) . . . . . $ 55.00
By other than a small entity . . . . . $ 110.00"

Section 1.20 paragraph (m) as amended as a result of enactment of Public Law 98-622 effective Nov. 8, 1984, is reproduced below:

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . . . $ 500.00"

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED DECEMBER 15, 1985, DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
4,305,243	06/216,825	12/15/81
4,305,878	06/225,289	12/15/81
4,305,954	06/233,653	12/15/81

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

3,854,664, Re. S.N. 800,794, Filed Nov. 22, 1985, Cl. 239/206, SPRINKLER SYSTEMS, Vernon A. Johnson, Owner of Record: *Toro Co., Riverside, Calif.*, Attorney or Agent: Robert V. Jambor, Ex. Gp.: 313

4,217,852, Re. S.N. 806,798, Filed Dec. 9, 1985, Cl. 118/405, APPARATUS FOR THE MANUFACTURE OF A COMPOSITE METAL WIRE, Masahiro Nagai, et al., Owner of Record: *Hitachi Cable, Ltd., Tokyo, Japan,* Attorney or Agent: V. M. Creedon, et al., Ex. Gp.: 152

4,242,368, Re. S.N. 806,799, Filed Dec. 9, 1985, Cl. 427/11, METHOD FOR THE MANUFACTURE OF A COMPOSITE METAL WIRE, Masahiro Nagai, et al., Owner of Record: *Hitachi Cable, Ltd., Tokyo, Japan,* Attorney or Agent: V. M. Creedon, et al., Ex. Gp.: 152

4,411,270, Re. S.N. 791,227, Filed Oct. 25, 1985, Cl. 128/653, APPARATUS AND METHOD FOR NUCLEAR MAGNETIC RESONANCE SCANNING AND MAPPING, Raymond V. Damadian, Owner of Record: *Inventor,* Attorney or Agent: Richard C. Conover, Ex. Gp.: 335

4,420,942, Re. S.N. 810,196, Filed Dec. 18, 1985, Cl. 62/53, NITROGEN LIQUID TO GAS CONVERTER EMPLOYING WATER HEAT EXCHANGERS, Warren E. Davis, et al., Owner of Record: *Inventors,* Attorney or Agent: B. R. Pravel, et al., Ex. Gp.: 344

4,421,119, Re. S.N. 811,864, Filed Dec. 20, 1985, Cl. 128/660, APPARATUS FOR ESTABLISHING IN VIVO BONE STRENGTH, George W. Pratt, Jr., Owner of Record: *Massachusetts Institute of Technology, Cambridge, Mass.*, Attorney or Agent: Henry D. Pahl, Jr., et al., Ex. Gp.: 335

4,421,120, Re. S.N. 810,574, g06 Dec. 18, 1985, Cl. 128/725, PEAK RESPIRATORY FLOW MONITOR, Rodney Edwards, Jr., et al., Owner of Record: *Biotrine Corp., Woburn, Mass.*, Attorney or Agent: Bruce D. Sunstein, Ex. Gp.: 335

4,424,250, Re. S.N. 800,180, Filed Nov. 20, 1985, Cl. 428/198, CARPET FACED TEXTILE PANEL, Ronald W. Adams, et al., Owner of Record: *Gates Formed-Fibre Products, Inc., Auburn, Me.,* Attorney or Agent: Frank P. Grassler, et al., Ex. Gp.: 154

4,424,426, Re. S.N. 815,819, Filed Jan. 2, 1986, Cl. 200/61.6, BATTERY POWERED DRAWER OPENING DEVICE, Shiro Ishii, Owner of Record: *M. S. Corp., Stanton, Calif.*, Attorney or Agent: V. M. Creedon, Ex. Gp.: 214

4,428,759, Re. S.N. 816,000, Filed Jan. 3, 1986, Cl. 133/62, DISTILLATIVE SEPARATION EMPLOYING BOTTOM ADDITIVES, James M. Ryan, et al., Owner of Record: *Koch Process Systems, Inc., Westboro, Mass.*, Attorney or Agent: Richard P. Crowley, Ex. Gp.: 133

4,435,855, Re. S.N. 797,656, Filed Nov. 13, 1985, Cl. 623/6, UNIVERSAL INTRAOCULAR LENS AND A METHOD OF MEASURING AN EYE CHAMBER SIZE, Jaswant S. Pannu, Owner of Record: *Inventor,* Attorney or Agent: Donald W. Banner, Ex. Gp.: 332

4,452,020, Re. S.N. 792,913, Filed Oct. 30, 1985, Cl. 52/202, INSULATING STORM WINDOW ATTACHMENT, David G. Werner, Owner of Record: *Mr. Seal Tite, Inc., Oshkosh, Wis.*, Attorney or Agent: Thomas D. Wilhelm, Ex. Gp.: 354

4,462,346, Re. S.N. 816,404, Filed Jan. 2, 1986, Cl. 123/73A, DUAL FUEL SYSTEM FOR INTERNAL COMBUSTION ENGINE, David F. Haman, et al., Owner of Record: *Outboard Marine Corp., Waukegan, Ill.*, Attorney or Agent: Robert E. Clemency, Ex. Gp.: 342

4,464,652, Re. S.N. 811,635, Filed Dec. 20, 1985, Cl. 340/710, CURSOR CONTROL DEVICE FOR USE WITH DISPLAY SYSTEMS, Dean Hovey, et al., Owner of Record: *Apple Computer, Inc., Cupertino, Calif.*, Attorney or Agent: Roger W. Blakely, et al., Ex. Gp.: 264

4,476,641, Re. S.N. 815,228, Filed Dec. 31, 1985, Cl. 337/118, STARATA ROCK BUCKET, Paul V. Ballinger, Owner of Record: *Inventor,* Attorney or Agent: David D. Murray, Ex. Gp.: 337

4,481,616, Re. S.N. 811,152, Filed Dec. 19, 1985, Cl. 369/58, SCANNING CAPACITANCE MICROSCOPE, James R. Matey, Owner of Record: *RCA Corp., Princeton, N.J.*, Attorney or Agent: Birgit E. Morris, et al., Ex. Gp.: 235

4,489,829, Re. S.N. 816,499, Filed Dec. 27, 1985, Cl. 206/287, HANGING BAG WITH DETACHABLE COWL, Jay E. Myers, et al., Owner of Record: *Andiamo, Inc., Fountain Valley, Calif.*, Attorney or Agent: Richard F. Can, et al., Ex. Gp.: 241

4,492,313, Re. S.N. 808,635, Filed Dec. 13, 1985, Cl. 215/1.C, COLLAPSIBLE BOTTLE, William Touzani, Owner of Record: *Inventor,* Attorney or Agent: James M. Deimen, Ex. Gp.: 241

4,500,177, Re. S.N. 810,346, Filed Dec. 19, 1985, Cl. 350/357, ELECTROCHROMIC IMAGING APPARATUS, Bruce E. Conner, Owner of Record: *Inventor,* Attorney or Agent: William M. Hanlon, Jr., Ex. Gp.: 257

4,505,926, Re. S.N. 808,955, Filed Dec. 16, 1985, Cl. 514/398, QUARTERNARY AMINO IMIDAZOLIDINES, COMPOSITIONS AND USE, Peter M. Newsome, et al., Owner of Record: *Beecham Group p.l.c., Middlesex, England,* Attorney or Agent: Paul T. Meiklejohn, Ex. Gp.: 125

4,517,184, Re. S.N. 816,071, Filed Jan. 3, 1986, Cl. 514/6, PEPTIDES PROCESS FOR PREPARING THE SAME AND PSYCHODEPRESSANT COMPOSITIONS CONTAINING THE SAME, Noboru Yanaihara, et al., Owner of Record: *Amano Pharmaceutical Co., Ltd., Aichi, Japan and Otsuka Pharmaceutical Co., Ltd., Tokyo, Japan,* Attorney or Agent: James E. Armstrong, III, et al., Ex. Gp.: 125

4,522,966, Re. S.N. 809,525, Filed Dec. 16, 1985, Cl. 524/114, NON-FOGGING COATING COMPOSITION AND A SHAPED ARTICLE COATED THEREWITH, Masaaki Funaki, et al., Owner of Record: *Nippon Sheet Glass Co., Ltd., Osaka, Japan and Sumitomo Chemical Co., Ltd., Osaka, Japan,* Attorney or Agent: Gordon W. Hueschen, Ex. Gp.: 153

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

No Publications This Issue.

Service by Publication

A petition to cancel each of the registrations identified below having been filed, and the notice of such proceedings sent by registered mail to each registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days from the date of this publication, the cancellation will be proceeded with as in the case of default.

Lastreto, Inc., by merger of assignment and change of name from Nursery Metal Pots, Inc., San Francisco, Calif., Reg. No. 546,725, for the mark "PLANTAINER", Canc. 14,597.

Union Camp Corp., assignee by merger and change of name, of The Union Bag & Paper Co., New York, N.Y., Reg. No. 57,188, for the mark "COMMODORE", Canc. No. 14,780.

Rennert International Corp., New York, N.Y., Reg. No. 847,783, for the mark "SHURLOCK", Canc. No. 14,595.

Futurama, Ltd., assignee, by mesne assignement, of Mifflin Chemical Corp., British Virgin Islands, Reg. No. 280,104, for the mark "MYLIN", Canc. No. 14,836.

Sentry Drug Centers, Inc., Washington, D.C., Reg. No. 970,993, for the mark "SENTRY DRUG CENTERS", Canc. No. 14,919.

Louis Marx & Co., Inc., assignee by merger and mesne assignment of Louis Marx & Co. Inc., Glen Dale, W. Va., Reg. No. 797,471, for the mark "PLAY-LINE", Canc. No. 14,857.

Gene W. Goble & Associates, Inc., assignee by mesne assignment of Genrus Engineering Specialties, Chatsworth, Calif., Reg. No. 803,321, for the mark "LIFESAVER", Canc. No. 14,714.

Dynabulk Corp., Bellevue, Wash., Reg. No. 893,582, for the mark "DYNABULK", Canc. No. 14,797.

James K. Andrews, assignee by mesne assignement of The "Linda" Co., Santa Ana, Calif., Reg. No. 502,861, for the mark "LINDA", Canc. No. 14,847.

A. C. Hynd Corp., Dayton, Ohio, Reg. No. 510,224, for the mark "HAIR SHEEN", Canc. No. 14,718.

ERMA S. BROWN,
Administrator
of the Trademark Trial
and Appeal Board.
For MARGARET M. LAURENCE,
Assistant Commissioner
for Trademarks.

Service by Publication

A petition to cancel the registration identified below having been filed, and the notice of such proceedings sent by registered mail to registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrant listed herein, its assigns or legal representatives shall enter an appearance within thirty days from the date of this publication, the cancellation will be proceeded with as in the case of default.

Cullpepers Navajo, Inc., San Diego, Calif., Reg. No. 1,168,773, for the mark "CULLPEPPERS AND DESIGN", Canc. No. 14,818.

ERMA S. BROWN,
Administrator
of the Trademark Trial
and Appeal Board.
For MARGARET M. LAURENCE,
Assistant Commissioner
for Trademarks.

Service by Publication

A petition to cancel the registration identified below having been filed, and the notice of such proceeding sent by registered mail to registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrant listed herein, its assign or legal representative, shall enter an appearance within thirty days of this publication, the cancellation will be proceeded with as in the case of default.

Harkness Energy Products, Inc., Panama City, Fla., Reg. No. 1,138,126, for the mark "GAS PLUS", Canc. No. 15,622.

ERMA S. BROWN,
Administrator
of the Trademark Trial
and Appeal Board.
For MARGARET M. LAURENCE,
Assistant Commissioner
for Trademarks.

Errata

The following registration numbers were inadvertently listed as canceled in the "Trademark Registrations Canceled, Section 8" section of the Trademark Official Gazettes:

997,747	TM 290	Apr. 14, 1981
1,076,409	TM 227	Sept. 24, 1985
1,080,605	TM 205	Sept. 10, 1985
1,103,578	TM 220	May 28, 1985
1,114,863	TM 215	Oct. 29, 1985

Consequently, the above-identified registrations are still active.

Jan. 15, 1986.

PATRICIA M. DAVIS,
Administrator for
Trademark Operations.

PATENT NOTICES

Certificates of Correction for the Week of Mar. 4, 1986

Re. 32,041	4,511,626	4,540,789	4,552,166
D. 280,733	4,511,778	4,541,210	4,552,255
4,226,633	4,511,790	4,542,271	4,552,536
4,311,650	4,511,867	4,542,438	4,552,687
4,366,149	4,517,238	4,542,650	4,553,065
4,386,749	4,518,244	4,543,376	4,553,109
4,400,281	4,518,610	4,544,053	4,553,375
4,414,566	4,521,787	4,544,395	4,553,900
4,415,682	4,523,101	4,544,547	4,554,690
4,421,572	4,525,148	4,544,964	4,554,713
4,427,013	4,525,155	4,545,160	4,554,779
4,440,358	4,525,806	4,545,200	4,555,235
4,448,979	4,526,112	4,546,031	4,555,938
4,452,920	4,528,472	4,546,283	4,556,573
4,461,819	4,531,306	4,546,448	4,557,422
4,462,000	4,532,036	4,547,320	4,557,441
4,464,209	4,533,370	4,547,631	4,557,506
4,468,668	4,533,952	4,547,719	4,557,864
4,471,963	4,534,815	4,547,789	4,557,921
4,472,135	4,537,048	4,548,439	4,558,050
4,477,442	4,537,384	4,548,523	4,558,085
4,477,638	4,537,532	4,548,931	4,558,153
4,478,039	4,537,641	4,549,759	4,558,318
4,484,055	4,537,698	4,549,792	4,558,336
4,485,272	4,537,892	4,550,066	4,558,346
4,498,463	4,538,102	4,550,277	4,558,949
4,501,775	4,538,228	4,550,551	4,559,721
4,503,621	4,538,531	4,551,100	4,559,919
4,505,569	4,540,053	4,551,161	4,560,003
4,506,429	4,540,118	4,551,191	4,561,313
4,507,731	4,540,506	4,551,416	4,562,149
4,510,056	4,540,562	4,551,954	4,562,430

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

These patent collections are open to public use and each of the Patent Depository Libraries, in addition, offers the publications of the U.S. Patent Classification System (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the Patent Depository Libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 826-4500 Ext.21
	Birmingham Public Library	(205) 226-3680
Alaska	Anchorage Municipal Libraries	(907) 264-4481
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
Arkansas	Little Rock: Arkansas State Library	(501) 371-2090
California	Los Angeles Public Library	(213) 612-3273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale: Patent Information Clearinghouse*	(408) 730-7290
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware Library	(302) 451-2238
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami–Dade Public Library	(305) 375-2665
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 269-2865
	Springfield: Illinois State Library	(217) 782-5430
Indiana	Indianapolis–Marion County Public Library	(317) 269-1706
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 454-3037
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Transportation Library, University of Michigan	(313) 764-7494
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6570
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4283
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7815
New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 714-8529
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Oregon	Salem: Oregon State Library	(503) 378-4239
Pennsylvania	Cambridge Springs: Alliance College Library	(814) 398-2098
	Philadelphia: Franklin Institute Library	(215) 448-1227
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-8726
South Carolina	Charleston: Medical University of South Carolina Library	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8876
	Nashville: Vanderbilt University Library	(615) 322-2775
Texas	Austin: McKinney Engineering Library, University of Texas	(512) 471-1610
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-2551
	Dallas Public Library	(214) 749-4176
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*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF February 1, 1986

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	6-15-84
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	2-15-84
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	4-12-84
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	3-01-85
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG, Director	3-02-84
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	8-11-83
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	11-21-83
PACKAGES, CLEANING, TEXTILES, AND GEOMETRICAL INSTRUMENTS, GROUP 240—E. E. KUBASIEWICZ, Director	6-15-84
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	3-28-83
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	8-30-83
DESIGN, GROUP 290—K. L. CAGE, Director	4-15-83
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	7-12-83
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	7-26-84
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	3-30-83
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	10-19-83
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	1-07-85

Expiration of patents: The patents within the range of numbers indicated below expire during February 1986, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents . . . . . Numbers 3,425,060 to 3,426,359, inclusive

Plant Patents . . . . . Numbers 2,861 to 2,869 inclusive

STATUTORY INVENTION REGISTRATIONS

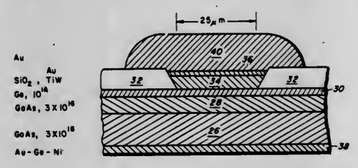
PUBLISHED MARCH 4, 1986

A statutory invention registration is not a patent. It has the defensive attributes of a patent but does not have the enforceable attributes of a patent. No article or advertisement or the like may use the term patent, or any term suggestive of a patent, when referring to a statutory invention registration. For more specific information on the rights associated with a statutory invention registration see 35 U.S.C. 157.

H29
TUNNETT DIODE AND METHOD OF MAKING

Aristos Christou, Springfield, and John E. Davey, Alexandria, both of Va., assignors to The Government of the United States, Washington, D.C.

Filed Jan. 4, 1983, Ser. No. 437,915
Int. Cl.[4] H01L *29/26, 29/88, 29/90, 29/48*
U.S. Cl. 357—13 **8 Claims**

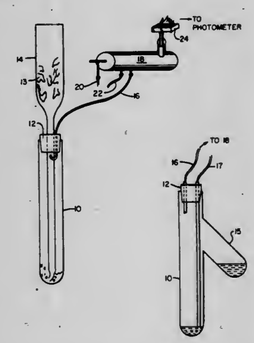


1. A TUNNETT diode comprising:
a substrate of a semiconductor material;
a drift region less than 1 micrometer in thickness adjacent to said substrate comprising a semiconductor of the same type as and of dopant concentration at least ten times less than said substrate;
an epitaxial layered injection region of different semiconductor material compared to said drift region less than 50 nm in thickness adjacent to said drift region comprising a semiconductor of the same conductivity type as and of dopant concentration at least ten times greater than said drift region; and
a metallic electrode adjacent to said injection region forming a Schottky barrier therewith.

H30
METHOD AND APPARATUS FOR THE PREPARATION OF LIQUID SAMPLES FOR DETERMINATION OF BORON

Darryl D. Siemer, Idaho Falls, Id., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Dec. 8, 1982, Ser. No. 447,846
Int. Cl.[4] G01N *31/12, 31/00*
U.S. Cl. 436—171 **14 Claims**



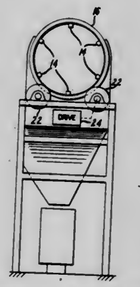
1. A method for the preparation of a liquid sample for the quantitative determination of boron by flame photometry comprising:
a. combining the sample with an excess of sulfuric acid in a vessel to dehydrate the sample,
b. adding sufficient methanol to said vessel to react with the boron present in the dehydrated sample to form trimethyl borate and to react exothermically with the excess of sulfuric acid to generate sufficient heat in the vessel to volatilize said trimethyl borate,
c. rapidly transferring said volatilized trimethyl borate from said vessel to a flame photometer, whereby boron is determined by flame photometric analysis of the trimethyl borate.

8. An apparatus for analyzing a liquid sample for boron comprising:
a vessel having a small heat capacity and an open top for containing the liquid sample and sulfuric acid,
stopper means in the open top for sealing the vessel,
methanol adding means in the vessel for adding methanol to the sample and sulfuric acid whereby the methanol will react with the boron in the sample to form a trimethyl borate ester and react with the sulfuric acid to produce heat to vaporize the borate ester to a gas,
a sample tube penetrating the stopper for directing the gaseous boron ester from the vessel,
excitation means connected to the sample tube for exciting the boron to emit a characteristic spectrum, and
detection means for detecting the characteristic spectrum and determining the spectral intensity, the intensity being directly proportional to the amount of boron in the sample.

H31
METHOD AND APPARATUS FOR DETERMINING THE SIZE DISTRIBUTION OF TOBACCO

John R. Wagner, 5102 Field-Horney Rd., Greensboro, N.C. 27406; Werner P. Kirschstein, 325 E. Montrose Dr., Greensboro, N.C. 27407, and Floyd S. Cowan, Rte. 1, Box 314A, Sutherland, Va. 24594

Filed Jan. 10, 1983, Ser. No. 456,737
Int. Cl.[4] B07B *1/00*
U.S. Cl. 209—237 **11 Claims**



1. A method of determining the size distribution of tobacco comprising the steps of introducing a sample of tobacco into the upper end of a rotating inclined cylindrical drum, the cylindrical wall of which has a series of longitudinally separated screens, each screen of the series having uniform-sized and shaped openings and the sizes of the openings of the screens increasing substantially regularly from the upper end to the lower end of the drum, separately collecting the fraction of the tobacco pieces that fall through each screen of the drum, weighing each such fraction, calculating the percentage by weight of each fraction, and characterizing the tobacco by the

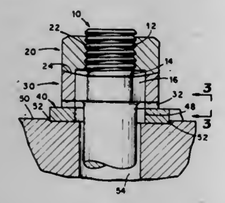
respective slopes of logarithmic plots of the percent by weight of a finer portion and a coarser portion.

6. Apparatus for determining the size distribution of tobacco pieces comprising an open circular cylindrical drum, the cylindrical wall of which is defined by a series of longitudinally spaced-apart screens, each of which has openings of uniform size and shape, and the openings of each successive screen being larger than the openings of the next preceding screen moving from one end of the drum to the other, means mounting the drum for rotation about an axis that slopes downwardly from said one end to the other end and is coincident with the longitudinal axis of the drum, a multiplicity of longitudinally extending equally circumferentially spaced-apart flights affixed to the inside of the drum and adapted to lift successive masses of the pieces upon rotation of the drum, whereupon they fall back to the lower portion of the drum upon further rotation thereof, means for rotating the drum about said axis, and means for separately collecting that fraction of a sample of tobacco fed into the upper end of the drum that falls through the openings of each screen.

H32
STUD HARDWARE WITH SELF-CONTAINED STUD ANTI-ROTATION FEATURE AND METHOD OF INSTALLING STUDS

John S. Kartik, and William M. Richardson, both of Pittsburgh, Pa., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 14, 1984, Ser. No. 589,279
Int. Cl.⁴ F42B *39/10*
U.S. Cl. 411—120 **21 Claims**



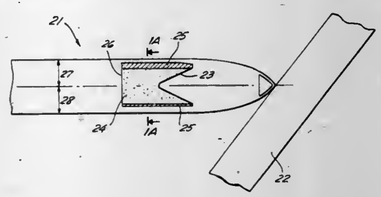
1. An apparatus to prevent rotation of a stud comprising:
a stud member having a first portion adapted to engage a nut, a second portion adapted to receive a second locking member and a shaft portion adapted to engage a member to be clamped;
a first locking member adapted to be positioned on said member to be clamped;
a second locking member which cooperates with said second portion of said stud and said first locking member;
a nut which engages said first portion of said stud.

14. A method of preloading a stud and preventing the rotation thereof comprising:
positioning a first locking member over a bore in a member to be clamped;
inserting a stud member having a first portion to engage a nut member and a second portion to engage a second locking member in register with said bore in said member to be clamped;
arranging said second locking member having a means for engaging said first locking member on said second portion of said stud;
threading said nut member onto said first portion of said stud;
preloading said stud by applying a torque to said nut member.

H33
SHAPED-CHARGE

Robert L. Jameson, Aberdeen, Md., and Steven Segletes, Pittsburgh, Pa., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 16, 1984, Ser. No. 600,877
Int. Cl.⁴ F42B *11/22*
U.S. Cl. 102—476 **10 Claims**

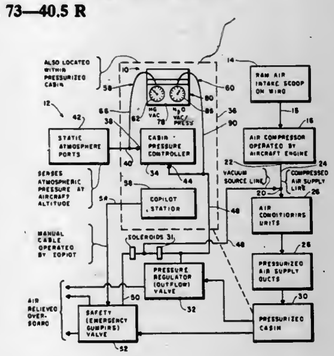


1. In a improved anti-tank warhead for an elongated cylindrical non-rotating projectile symmetrical about a center axis:
a shaped-charge comprising a generally conical hollow deformable thin-walled metallic liner,
a generally cylindrical mass of explosive co-axially surrounding said liner, and
a rigid elongate generally cylindrical wall co-axially surrounding said explosive mass,
the improvement comprising:
radial asymmetries selected from the group consisting of in said liner, in said explosive mass and in said wall adapted to produce cumulative non-symmetrical force to non-uniformly collapse said deformable liner upon detonation of said explosive mass, to form a jet train of amorphous metal masses from said liner and to accelerate said jet train along a path angularly displaced from said center axis against a target tank defensive armor system.

H34
AIRCRAFT CABIN PRESSURIZATION CONTROL SYSTEM TESTER

Kevin J. Werling, New Haven, Ind., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 19, 1984, Ser. No. 622,047
Int. Cl.⁴ C05B *1/00*
U.S. Cl. 73—40.5 R **1 Claim**



1. A portable tester for an aircraft cabin pressure control system including a cabin pressure controller having an inlet operatively connected to a port open to the atmosphere and an outlet operatively connected to a pressure regulator valve for regulating pressure within said cabin, said tester comprising:
a. a first pressure-indicating gage, a first coupler for interconnection in flow communication with said inlet of said controller of said control system and a first flexible hose means for connecting said first gage in flow communication with said first coupler for measuring air pressure at said inlet;
b. a second pressure differential-indicating gage, a second coupler for interconnection in flow communication with said outlet of said controller of said control system and a second flexible hose means for connecting said second gage in flow communication with said second coupler for measuring air pressure at said outlet; and
c. a tool box having a lid and a top shelf within which said first and second gages are mounted in side-by-side relationship and readable from outside said box when said lid is open, said first and second flexible hose means being operatively connected to said respective gages from inside said box such that said couplers and flexible hose means can be stored in said box when said tester is not being used.

H35
FREEZE DRIED COOKED MEATS

Daniel Berkowitz, Wellesley, Mass., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

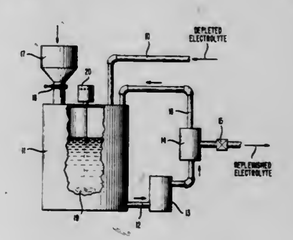
Filed Oct. 29, 1984, Ser. No. 665,899
Int. Cl.⁴ A23L *1/317*
U.S. Cl. 426—135 **3 Claims**

1. A method for producing freeze dried cooked meats which are more easily and completely rehydratable, comprising the steps of:
a. trimming a quantity of raw solid meat of heavy connective tissue and excess fat;
b. grinding or emulsifying a first portion of said trimmed meat and flaking or chunking a second portion of said trimmed meat into flakes or chunks which are 2.5–6.0 cubic inches in volume;
c. mixing said ground or emulsified first portion and said flaked or chunked second portion with about 2.0% to about 6.0% of the formula weight water, about 0.5% to about 2.0% of the formula weight salt, about 0.1% to about 0.5% of the formula weight phosphates and about 0.5% to about 5.0% of the formula weight an adjunctive hydrophilic ingredient until sufficient myofibrillar proteins are extracted to render the mixture moderately tacky and continuing said mixing until the water, salt, phosphates and adjunctive hydrophilic ingredients equilibrate throughout said mixture;
d. preparing a meat log by tightly stuffing said mixture into a moisture and gas impermeable container, wherein said container is a casing comprising a fibrous cellulose exterior laminated onto a saran film interior, said casing fitting tightly to the surface of said meat so as to keep moisture in equilibrium within said meat product during cooking;
e. cooking said meat log at a predetermined temperature for sufficient time to achieve a predetermined product center temperature;
f. freezing said meat log;
g. slicing or dicing said meat log into portions suitable for freeze dehydration;
h. freeze vacuum dehydrating said portions to a predetermined moisture level; and
i. packaging said dehydrated meat in an airtight container in the absence of oxygen.

H36
ELECTROPLATING PROCESS WITH INERT ANODES

Craig G. Smith, North Plainfield, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 646,500, Sep. 4, 1984, abandoned, which is a continuation of Ser. No. 602,098, Apr. 20, 1984, abandoned, which is a continuation of Ser. No. 521,976, Aug. 11, 1983, abandoned, which is a continuation of Ser. No. 310,611, Oct. 13, 1981, abandoned. This application Apr. 1, 1985, Ser. No. 717,601
Int. Cl.⁴ C25D *3/38*; C25B *15/00*
U.S. Cl. 204—52 R **9 Claims**

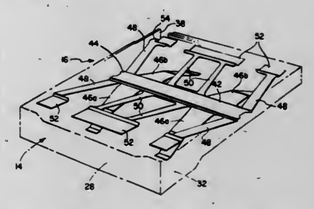


1. Electrochemical copper deposition process comprising passing current between an anode and a cathode, both anode and cathode being maintained in contact with an aqueous electrolyte in a plating tank, the electrolyte comprising Cu ions, the electrolyte contained in the plating tank to be referred to as the plating bath, the process also comprising adding Cu ions to the plating bath,
CHARACTERIZED IN THAT
the anode is an anode of the nonconsumable type and the Cu ions are added to the plating bath by a procedure comprising contacting CuO powder with electrolyte.

H37
FILM PACK HAVING IMPROVED PACK SPRING

Anthony J. Schettino, Arlington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jun. 3, 1985, Ser. No. 740,724
Int. Cl.⁴ B65D *85/38*
U.S. Cl. 206—316 **4 Claims**



1. A pack spring for use in a film pack of the type for use in photographic apparatus of the self-developing type wherein the pack includes a film cassette assembly having a space which stores a stack of film units, an aperture in operative relationship with each topmost film unit in the stack so that successive topmost units can be exposed, and an exit slot in adjoining cooperative relationship with each topmost film unit so as to allow exiting of exposed topmost units; and
a stack of film units of the self-developing kind, wherein each of said units includes an image forming area bordered by a frame having a rupturable pod of procesing fluid along one marginal edge of the unit and a trap for receiving processing fluid which has been spread over the image area along a second opposite marginal edge; said pack spring comprises:
means for yieldably supporting the stack upwardly so that

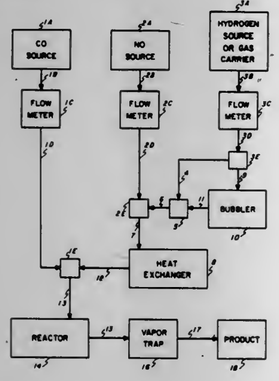
successive topmost units are urged into operative relationship with the aperture in a generally flat condition, said supporting means including a central supporting bar which supports centrally the image areas of the stacked units; yieldable arm assemblies extending in opposite directions from said bar wherein said assemblies support evenly the image forming area of the film adjacent the pod and the trap as well as the pod and the trap so that respective ones of said marginal edges are in the same general plane as the image area when the nut is at least the topmost; and a pair of yieldable leg assemblies each extending in opposite directions from said bar which contact the cassette assembly so as to support the load of stacked units in a manner which avoids lateral twisting of said bar about its longitudinal axis, whereby the image area, the pod and the trap are generally flat and can be advanced through said exit slot.

H38

PROCESS FOR THE PREPARATION OF UREA AND ITS DERIVATIVES FROM CO, NO, AND A HYDROGEN SOURCE

Robert J. Radel, and Yong K. Kim, both of Florence, Ala., assignors to Tennessee Valley Authority, Muscle Shoals, Ala.

Filed Jul. 15, 1985, Ser. No. 754,555
Int. Cl.[4] C07C *126/00, 127/01*
U.S. Cl. 564—63 **9 Claims**



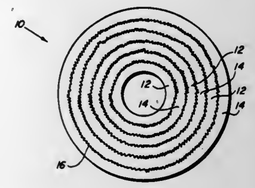
1. A process for the production of urea and its derivatives by reacting CO, NO, and a hydrogen source in the vapor phase, at temperatures of about 75° C. to 225° C. and at pressures of about 1 atmosphere in contact with a catalyst comprising a noble metal selected from the group consisting of palladium, rhodium, and mixtures thereof on an inert support.

H39

MULTILAYER SUPER-CONDUCTING SHIELD AND METHOD OF MANUFACTURING SAME

Donald U. Gubser, Fairfax, Va., and Stuart A. Wolf, Greenbelt, Md., assignors to The Government of the United States, Washington, D.C.

Filed Aug. 5, 1985, Ser. No. 762,365
Int. Cl.[4] H05K *9/00*; C23C *14/24*; H01L *39/12, 39/24*
U.S. Cl. 204—192 S **16 Claims**



1. A multilayer superconductor shield which comprises:
alternating concentric layers of a transition metal having a high transition temperature and a metal alloy formed from copper and a non-transition metal, said transition metal and metal alloy forming an interface; and
a layer of A_3B-compound structure metal at the interface of said metals, said A_3B-compound structure metal being a high transition temperature superconductor.

10. A method of manufacturing superconducting shields of transition metals having high transition temperatures for use in magnetic shielding applications by the process of reactive rf sputtering, comprising the steps of:
providing a clean conventional vacuum sputtering chamber, said chamber prepumped to a pressure of approximately 3×10^{-9} torr;
backfilling said vacuum chamber with high purity argon to a pressure of approximately 50×10^{-3} torr;
providing a sputtering target of niobium;
suspending a rotatable substrate within said vacuum chamber; and
igniting the aron to start the reacting process;
injecting nitrogen into the vacuum sputtering chamber thereby depositing niobium nitride onto said rotating substrate, said niobium nitride deposited at a power density of about 15 watts$-cm^{-3}$ to a thickness of approximately 1 micron.

DEFENSIVE PUBLICATIONS

PUBLISHED MARCH 4, 1986

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

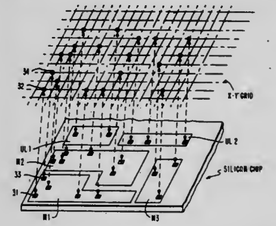
Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent and Trademark Office makes no assertion as to the novelty of the disclosed subject matter.

T106,201

MASTER IMAGE CHIP ORGANIZATION TECHNIQUE OR METHOD

John Balyoz, Deerwood Dr., Box 247, R.D. #3, Hopewell Junction, N.Y. 12533; Chi S. Chang, 14 Shale Dr., Wappingers Falls, N.Y. 12590; Barry C. Fox, 26 Miron Dr., Poughkeepsie, N.Y. 12603; John A. Palmieri, 10 Montfort Woods Rd., Wappingers Falls, N.Y. 12590; Majid Ghafghaichi, 352 Vassar Rd., Poughkeepsie, N.Y. 12603; Teh-Sen Jen, 66 Star Mill Rd., Fishkill, N.Y. 12524, and Donald B. Mooney, 26 Hagan Dr., Poughkeepsie, N.Y. 12603

Continuation of Ser. No. 224,240, Jan. 12, 1981, abandoned, which is a division of Ser. No. 974,576, Dec. 29, 1978, Pat. No. 4,295,149. This application Jan. 13, 1983, Ser. No. 457,786
Int. Cl.[4] H01L *21/88*
U.S. Cl. 29—577 C
15 Sheets Drawing. 82 Pages Specification



A method for forming an improved integrated circuit chip structure having a surface from which regions of different conductivity type are arranged in a plurality of electrically isolated macro circuits, each macro circuit including interconnected components, a first X pattern of equally spaced parallel conductors overlying and electrically insulated from said chip structure surface, said first X pattern of conductors being selectively connected to at least certain ones of said plurality of macro circuits, a second Y pattern of equally spaced parallel conductors overlying and electrically insulated from said first pattern of parallel conductors, said second Y pattern of conductors being selectively connected to at least selected certain ones of said first pattern of electrical conductors, said spacing one from another of said first X pattern of conductors being equal to said spacing one from another of said second Y pattern of conductors, said first pattern of conductors being orthogonal of said second pattern of conductors, and each of said connections occurring exclusively at points in space corresponding to X-Y intersections of an X-Y coordinate system, where said X-Y coordinate system geometrically corresponds identically to said X-Y pattern of conductors.

T106,202

HIGH CONCENTRATION METERED AEROSOL ANTIPERSPIRANT PRODUCT

Leonard Mackles, 311 E. 23rd St., New York, N.Y. 10010

Continuation of Ser. No. 23,808, Mar. 26, 1979, abandoned. This application Sep. 30, 1983, Ser. No. 537,541
Int. Cl.[4] A61K *9/14*
U.S. Cl. 424—46
No Drawing. 26 Pages Specification

An article of manufacture comprising a metered aerosol container having incorporated therein an antiperspirant material, in high concentration suspended in an oily vehicle and containing relatively low levels of propellant.

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 32,089

BLOOD FRACTIONATING PROCESS AND APPARATUS FOR CARRYING OUT SAME

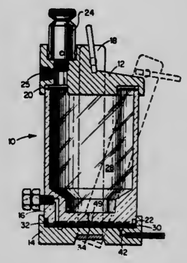
William F. Blatt, Framingham; Edward A. Agranat, Weston, and Peter N. Rigopulos, Melrose, all of Mass., assignors to Amicon Corporation, Lexington, Mass.

Original No. 3,705,100, dated Dec. 5, 1972, Ser. No. 66,675, Aug. 25, 1970. Application for reissue Feb. 17, 1981, Ser. No. 235,093

Int. Cl.[4] B01D *13/00*

U.S. Cl. 210—651

4 Claims



5. A process for separating blood plasma from the other components of blood *without substantial hemolysis* comprising the steps of

(1) conducting whole blood in a flow path which is substantially parallel to the upstream side of a filtration membrane and has a maximum depth of 20 mils measured vertically from the face of the membrane, said membrane having a pore size from about 0.1 to about 0.8 micron in diameter,

(2) applying sufficient pressure to said whole blood to cause *a* pressure differential from 1 to 15 p.s.i. between upstream and downstream sides of said membrane and to provide a flow velocity across the face of the membrane from 2 to 50 feet per minute,

(3) recovering plasma ultrafiltrate from the downstream side of said membrane, and

(4) recovering the retained blood components from the upstream side of the membrane,

said plasma ultrafiltrate being substantially free of evidence of hemolysis.

Re. 32,090

SILICON INTEGRATED CIRCUITS

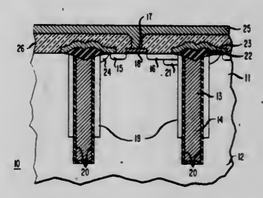
Ralph J. Jaccodine, Allentown, Pa., and John A. Michejda, Berkeley Heights, N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Original No. 4,353,086, dated Oct. 5, 1982, Ser. No. 147,466, May 7, 1980. Application for reissue Oct. 5, 1984, Ser. No. 658,189

Int. Cl.[4] H01L *27/02*

U.S. Cl. 357—51

11 Claims



1. A memory comprising a plurality of memory cells arranged in an array of rows and columns, each memory cell including an access transistor and a storage capacitor serially connected, comprising a monocrystalline silicon chip which is grooved to form a plurality of individual mesas (**11**) arranged in columns and rows

characterized in that

polycrystalline doped silicon (**14**) fills the grooves (**13**) and is isolated from the mesas by a dielectric layer (**20**), a separate access transistor is formed on the surface of each mesa, and a separate storage capacitor is associated with each mesa, one plate of the capacitor being formed by a *surface* layer (**19**) on the sidewall of the mesa and the other plate by the polycrystalline silicon fill (**14**), and the sidewall layer including a low resistance connection to a source/drain region of the surface access transistor.

PLANT PATENTS

GRANTED MARCH 4, 1986

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,676

MINIATURE ROSE PLANT/VAR: MORWHY

Ralph S. Moore, Visalia, Calif., assignor to Sequoia Nursery, Visalia, Calif.

Filed Aug. 10, 1984, Ser. No. 640,083
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—7 **1 Claim**

1. A new and distinct variety of miniature rose plant of hardy, dwarf, bushy, rounded, much branched habit substantially as illustrated and described, characterized by open (7–9 petals) flowers which are bright red in color, with a large yellow "eye", the reverse side of petals being yellow or yellow blend, the buds and flowers resembling the shrub rose Cocktail in form and color but smaller in size; and further characterized by a plant which is vigorous and compact, easy to propagate from soft wood cuttings or by budding, with an abundance of flowers borne singly or several to the stem in loose clusters.

5,677

MINIATURE ROSE PLANT *MINJCO'*

Ernest D. Williams, 1510 Lebanon Ave., Dallas, Tex. 75208

Filed May 2, 1984, Ser. No. 606,397
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—9 **1 Claim**

1. A new and distinct variety of miniature rose plant of hardy, dwarf, bushy, rounded, much branched habit, substantially as illustrated and described, characterized by buds and flowers which are of light pink (to coral pink) coloring, the buds and flowers resembling Over the Rainbow (miniature — U.S. Plant Pat. No. 3,472) in form and size, produced on a plant of compact growth habit; and further characterized by (1) a plant which is easy to propagate from soft wood cuttings and (2) a plant with deep green, glossy, disease resistant foliage, with an abundance of flowers usually borne singly on slender wirey stems.

5,678

ROSE PLANT KORPERKI

Reimer Kordes; Werner Kordes, and Hermann Kordes, all of Klein Offenseth-Sparrieshoop, Fed. Rep. of Germany, assignors to Jackson & Perkins Company, Medford, Oreg.

Filed Sep. 17, 1984, Ser. No. 651,520
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—21 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its vigorous spreading, medium height plant, dark red buds and blooms with pointed petals, little fragrance, curled leaflets.

5,679

ROSE PLANT KORENLO

Reimer Kordes; Werner Kordes, and Hermann Kordes, all of Klein Offenseth Sharrieshoop, Fed. Rep. of Germany, assignors to Jackson & Perkins Company, Medford, Oreg.

Filed Sep. 17, 1984, Ser. No. 651,680
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—26 **1 Claim**

1. A new and distinct variety of rose plant of the floribunda class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its ability to produce large quantities of cut blooms of mottled pink and white color, heavy petals, little fragrance on long rigid stems.

5,680

GRAPEVINE—MARS CULTIVAR

James N. Moore, Fayetteville, Ark., assignor to University of Arkansas Agricultural Experiment Station, Fayetteville, Ark.

Filed Jul. 5, 1984, Ser. No. 628,142
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—47 **1 Claim**

1. A new and distinct variety of grapevine, substantially as illustrated and described, characterized by its early ripening, large seedless fruit, and outstanding resistance to common grape fungus pathogens.

5,681

HIBISCUS PLANT

Joseph E. Ludick, 13095 NE. 2nd Ave., North Miami, Fla. 33161

Filed Feb. 9, 1984, Ser. No. 578,478
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—54 **1 Claim**

1. A new and distinct variety of hibiscus plant, of Rosa-sinensis species, substantially as herein described and illustrated, and characterized particularly as to novelty by its vigorous, upright habit of growth, its crisp green foliage, and its brilliant flowers.

5,682

CAMELLIA CHRYSANTHA OLYMPIC GOLD

Meyer Piet, 15430 Proctor Ave., City of Industry, Calif. 91747

Filed May 24, 1984, Ser. No. 613,725
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—60 **1 Claim**

1. A new and distinct species of camellia plant as shown and described, characterized particularly by its unique flower which has a true yellow color.

PATENTS

GRANTED MAR. 4, 1986

ERRATA

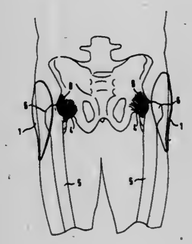
For CLASS	See PATENT NO.
241–169	4,573,244
425–040	4,574,098

PATENTS

GRANTED MARCH 4, 1986

GENERAL AND MECHANICAL

4,573,216
IMPACT DISSIPATOR
Walter Wortberg, Buschhauser Weg 13b, 5880 Ludescheid, Fed. Rep. of Germany
Filed Jul. 8, 1983, Ser. No. 512,020
Claims priority, application Fed. Rep. of Germany, Jul. 10, 1982, 8219790[U]; Feb. 17, 1983, 3305408
Int. Cl.⁴ A41D *13/00*
U.S. Cl. 2—2 **7 Claims**

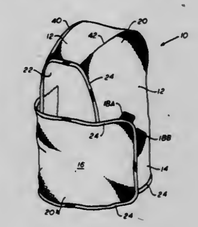




1. An impact dissipator for protection of the human body, comprising:
(a) an outer layer consisting of cross-linked silicone rubber;
(b) an inner viscous-like fluid layer consisting of partially cross-linked silicone rubber integrally bonded to said outer layer at the interface thereof, said inner layer having an adhesive skin-friendly surface adapted to tightly contact the skin of the wearer and conform to the external shape of the body in the region to be protected, and wherein
(c) said outer and integrally bonded inner layers are generally oval in shape and bell-shaped in cross-section, with the maximum thickness of the bonded layers being in the area contacting the region of the body to be protected.

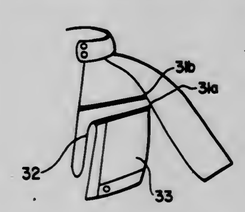
4,573,217
PROTECTIVE HOOD FOR FIREFIGHTERS
Clifford C. Reed, Rte. 6, Box 522, Arcadia, Tex. 77517
Filed Jul. 30, 1984, Ser. No. 635,810
Int. Cl.⁴ A42B *1/04*
U.S. Cl. 2—7 **16 Claims**

1. A protective hood adapted for use with a face mask by a firefighter, comprising:
a fire resistant head portion adapted to cover the forehead and ears of the firefighter,
a fire resistant lower marginal portion extending sufficiently below said head portion to cover the lower neck of the firefighter,
a fire resistant flap permanently attached to said head portion and said lower marginal portion on one end of said flap, said flap extending sufficiently below said head portion to cover the chin and the neck of the firefighter, and
non-metallic and fire resistant means for adjustably and releasably fastening the other end of said flap to said head



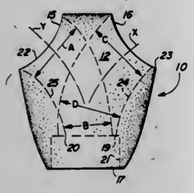
portion and said lower marginal portion, whereby said flap can be adjusted to securely overlap the face mask, and whereby the protective hood in cooperation with the face mask aids in the protection of the chin, head, face and neck of the firefighter.

4,573,218
CONVERTIBLE LENGTH GARMENT
Gordon J. Saggs, 115 E. 9th St., New York, N.Y. 10023
Filed Jul. 30, 1984, Ser. No. 635,891
Int. Cl.⁴ A41D *1/02, 1/00, 27/10*
U.S. Cl. 2—93 **10 Claims**



1. A garment which is a combined jacket and raincoat of flexible and attached panels which may be readily repeatedly and rapidly lengthened to form the raincoat or shortened to form the jacket by the user, the garment including:
a top garment portion having a lower edge with a circumference and including front and back panels and sleeves attached thereto;
a bottom garment portion having an upper edge with the same circumference as the circumference of the said lower edge, including front and back panels;
a lengthening panel attached to and between said top and bottom portions and which is foldable and unseen when the garment is shortened and which is unfolded, seen and adds to its length when the garment is unfolded, said lengthening panel extending circumferentially about the garment; and
a zipper extending continuously and circumferentially about the garment and having one side attached to the lower edge of the top portion and its other side attached to the upper edge of the bottom portion so that when the zipper is closed the lengthening panel is folded unseen behind the bottom portion and the zipper is viewable on the exterior of the jacket.

4,573,219
NECKTIE KNOT SIMULATOR
Howard G. Hooten, Indian Hill Dr., P.O. Box 288, Dewey, Ariz. 86327
Filed Jun. 3, 1985, Ser. No. 740,812
Int. Cl.⁴ A41D *25/08, 25/04*
U.S. Cl. 2—152 R **1 Claim**



1. A knot simulator for a four-in-hand necktie, which necktie comprises an elongate strip of fabric which is normally worm by wrapping a portion of the necktie intermediate the free ends thereof around the wearer's neck under the collar of his shirt, forming a knot in the general shape of an inverted, truncated triangle in the portions of the free ends of said necktie extending just past the wearer's collar, allowing said free ends to extend downwardly therefrom in overlapped relationship, said knot simulator comprising

(a) a body in the general shape of an inverted, truncated triangle and having
  (i) an upper portion,
  (ii) a lower portion,
  (iii) front, side and rear surfaces generally shaped, contoured and dimensioned such that said surfaces corresond to and simulate the front, side and rear surfaces of a four-in-hand necktie knot,
  (iv) first and second spaced apart generally opposed sloped shoulder surfaces on said upper portion of said body contiguous to said front, side and rear surfaces,
  (v) first and second apertures formed through said first and second shoulder surfaces, respectively, and
  (vi) a third aperture formed in said bottom portion of said body;

(b) a first arcuate channel extending through said body from said first aperture to said third aperture and shaped, contoured and dimensioned to permit one of said free ends to pass therethrough such that said body can be slidably moved up and down along a first intermediate portion of said tie; and,

(c) a second arcuate channel extending through said body from said second aperture to said third aperture and shaped, contoured and dimensioned to permit the other of said free ends to pass therethrough such that said body can be slidably moved up and down along a second intermediate portion of said tie, said second arcuate channel passing through said body in overlapping relationship with said first arcuate channel.

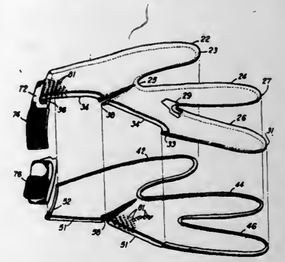
4,573,220
BILLIARD GLOVE
Terry L. Baker, P.O. Box 206, Armuchee, Ga. 30105
Filed Aug. 17, 1984, Ser. No. 641,867
Int. Cl.⁴ A41D *19/00*
U.S. Cl. 2—161 A **5 Claims**

1. Glove means for use in billiards comprising:

a first member having edges defining a thumb portion, an index finger portion, a middle finger portion, and hand portion,

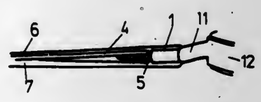
a second member with edges in mirror symmetry to said first member and having corresponding thumb, index finger, middle finger, and hand portion,

said hand portions having straight edge portions and wherein each of said hand portions is formed with a slit opening at about the middle of at least one of the straight edge portions, said slit opening extending at right angles thereto in close proximity to the junction between the thumb and index finger portions, each of said slit openings being stitched separately to close said openings,



said first and second members being stitched together by straight stitches along the edges extending between the thumb and middle finger portions but remaining unstitched in the straight edge portions of said hand portions so that a smoothly fitted glove is made for right and left hand use of a billiard player.

4,573,221
STRAP WITH CONNECTING PART
Hermann Hirsch, Hirschstrasse 5, 9021 Klagenfurt, Karnten, Austria
Filed Jul. 23, 1984, Ser. No. 633,394
Claims priority, application Austria, Jul. 21, 1983, 2676/83
Int. Cl.⁴ A41F *3/02*
U.S. Cl. 2—338 **7 Claims**

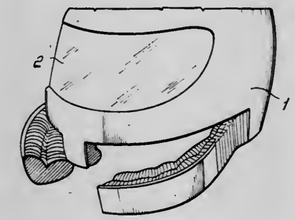


1. In a strap consisting of face material and lining wherein the face material and the lining are separate pieces of leather or simulated leather and are joined together, and wherein a connecting part of a rigid material, such as a metal or synthetic resin, is joined to the strap at at least one end thereof; the improvement comprising a flexible tension-relief member (4) affixed between the face material (6) and the lining (7) of the strap and connected with a section of the connecting part (1) extending between the face material (6) and the lining (7).

4,573,222
CRASH HELMET
Giovanni Zago, via N. Aprilis, 41, 33080 San Quirino, Italy
Filed Mar. 19, 1984, Ser. No. 591,085
Claims priority, application Italy, Mar. 30, 1983, 41544 A/83
Int. Cl.⁴ A42B *1/08*
U.S. Cl. 2—424 **6 Claims**

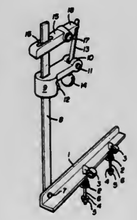
1. A crash helmet having a helmet shell with a front base portion, a nape base portion and between the front base portion and the nape base portion a pair of opposite side base portions, said front base portion, said pair of side base portions and said nape base portion defining a base opening of the helmet shell, said opposite side base portions and part of said front base portion being upwardly recessed with respect to said nape base portion, to define opposite side wall recesses in said helmet shell, a resiliently flexible split ring member arranged below and coextensive with said opposite side portions, said nape base portion and part of said front base portion, and having a split

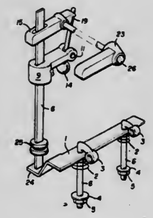
adjacent said front base portion, said split ring member having a nape facing section coextensive with said nape base portion and opposite jaw facing sections extending from said nape facing section and ending at said split and coextensive with said opposite side base portions and part of said front base portion, said split ring member having a width dimension in a direction substantially perpendicular to said base opening, said width dimension being greater at said nape facing section thereof as



compared to the width dimension thereof at said opposite jaw facing sections, said split ring member having a core in the form of a lamina of resilient material coextensive with said jaw facing sections and said nape facing section thereof, said split ring member having said nape facing section thereof retained in the nape base portion of said helmet shell and wherein said split ring member has at least internal paddings and being resiliently flexible from a closed configuration thereof into an open configuration thereof and viceversa.

4,573,223
AUTOMATIC TOILET TANK RELEASE
Richard B. Schmidt, Sky Harbour E. Apt. 2K, Fort Lauderdale, Fla. 33316
Filed Jun. 19, 1985, Ser. No. 746,507
Int. Cl.⁴ E03D *5/04, 11/10, 1/18*
U.S. Cl. 4—408 **5 Claims**





1. A toilet seat activated automatic flushing linkage functioning to automatically flush a reservoir type toilet when the user lifts his weight from said toilet seat comprising:

a toilet seat holder having springs mounted on said toilet wherein said springs exert upward pressure on said holder after a user removes his weight from said toilet seat;

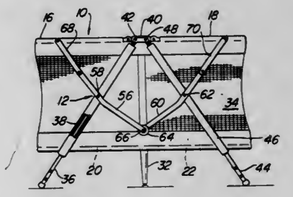
a primary vertical rod affixed to said holder;

a vertical guide means for said primary vertical rod;

an actuating assembly affixed to said primary vertical rod further comprising a pivoting secondary vertical rod which has a counterweight at its lower tip;

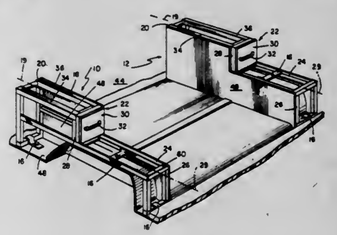
a flushing lever working in cooperation with said actuating assembly.

4,573,224
FOLDING PLAYPEN
David Saint, Elverson, Pa., assignor to Graco Metal Products Inc., Elverson, Pa.
Filed Jun. 1, 1984, Ser. No. 616,107
Int. Cl.⁴ A47D *13/06*
U.S. Cl. 5—99 C **9 Claims**



1. A folding playpen comprising two pairs of leg frames movable between extended and collapse positions, upper and lower U-shaped frame portions pivoted together, a flexible fence extending between said frame portions, a platform having pivotable sections, means for causing said frame portions and platform sections to pivot in opposite directions as said leg frames move between their associated positions, said means including meshed gear means on at least one of said pairs of leg frames.

4,573,225
CONVERTIBLE SEAT-BED AND STORAGE UNIT
Robert Wolf, 48461 Bayshore Dr., Belleville, Mich. 48111
Filed May 9, 1984, Ser. No. 608,357
Int. Cl.⁴ A47C *17/12*; B60N *1/10*
U.S. Cl. 5—118 **22 Claims**



1. A convertible seat-bed and storage unit comprising:

a. a pair of spaced apart and opposed frame elements, each of said frame elements having means for supporting a panel at a first level of support extending in a generally horizontal plane from a first end of said element to a transition region, and having means for supporting a panel at a second level of support, extending from a second end of said element to said transition region, and having means on said frame elements for extending said first level of support from said transition region to said second end;

b. a primary storage area located between said frame elements and below said first level of support and extending from said first end toward said transition region;

c. a first panel supported by said frame elements and extending between said transition regions of said frame elements in a generally vertical plane, said first panel being movable from said vertical plane to a generally horizontal plane at said first level of support when said seat-bed is converted to a bed configuration; and

d. a second panel extending between and supported by said frame elements at said second level of support when said seat-bed is in said seat configuration, said second panel being movable to said first level of support when said seat-bed is converted to said bed configuration.

4,573,226

INSERT FOR A PIECE OF LOUNGING FURNITURE

Franz Wittmann, No. 205 Kellergasse, and Karl Wittmann, No. 227 Kellergasse, both of A-3492 Etsdorf am Kamp, Austria

Filed Jan. 16, 1984, Ser. No. 570,894

Claims priority, application Austria, Feb. 2, 1983, 352/83

Int. Cl.⁴ A47C *23/06*

U.S. Cl. 5—236 R **23 Claims**



1. An insert for a piece of lounging furniture having a frame comprising longitudinal parts and slats, the slats being arranged transversely in relation to the longitudinal parts and spatially measured in a horizontal direction for forming a slat grate extending over an entire reclining surface, said slats being connected to said longitudinal parts and being arranged in at least two superposed rows vertically spaced from one another with the slats of superposed rows being staggered in relation to one another in horizontal and vertical direction in such manner that in plan view the slats of the different superposed rows are also disposed spatially apart in a horizontal direction, with all the slats being resilient and the slats of each upper row having greater resilience than the slats of each lower row, said longitudinal parts being provided with bearings of elastic material in which the ends of the slats are supported, with the ends of the slats of the various rows also being spaced from one another measured in vertical direction within the range of the supporting bearing.

4,573,227

BLANKET ASSEMBLY COMPOSED OF AT LEAST TWO INTERCONNECTABLE BLANKETS, FOR SINGLE AND DOUBLE BEDS

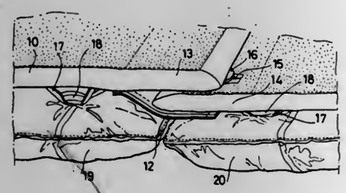
Aldo F. Prandina, Busto Arsizio, Italy, assignor to Ing. Loro Piana & C. S.p.A., Quarona Sesia, Italy

Filed May 7, 1984, Ser. No. 607,447

Claims priority, application Italy, May 5, 1983, 53285/83[U]

Int. Cl.⁴ A47G *9/02, 9/04*

U.S. Cl. 5—486 **3 Claims**



1. A blanket assembly composed of interconnectible blankets for single and double beds comprising at least two rectangular elongated single bed blankets, each having on one of its longer edges a flap attached thereto at a distance from the end of that edge, so as to constitute together with the end portion of that edge an open pocket, said flap having buttons along the side facing said edge, and the opposite longer edge of each blanket having buttonholes disposed at spaced locations corresponding to the locations of said buttons on said flap so as to allow joining together two such blankets in such a way that the edge provided with buttonholes of a blanket is inserted between the flap and the edge provided with said flap of another blanket, said buttonholes being formed in and extending entirely through the same material as the material of the blanket between said edges, whereby two full thicknesses of said material overlap with said buttons between them.

4,573,228

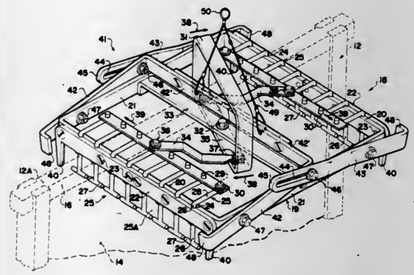
LIFTING DEVICE FOR REMOVING HONEY COMB ASSEMBLIES FROM SUPERS

Larry E. Bachalo, R.R. #1, Box 71, Portage La Prairie, Manitoba, Canada R1N 3A1

Filed Nov. 19, 1984, Ser. No. 672,687

Int. Cl.⁴ A01K *59/00*

U.S. Cl. 6—12 R **20 Claims**



1. A lifting device for lifting a plurality of honey-filled combs from a super at the same time, each said combs including top bars, said super including an upper perimetrical wall edge; comprising in combination a substantially rectangular frame assembly capable of spanning the upper perimetrical wall of the super, said frame assembly including a pair of spaced and parallel transverse side bars, a plurality of double sided hook elements pivoted, in side by side relationship, for partial rotation within said side bars and extending below said side bars, means mounted in said frame assembly and being operatively connected to said hook elements, for moving each of said hook elements simultaneously and selectively between adjacent comb top bars and from between a comb top bar engaging position and a comb top bar disengaging position, and means on the ends of said side bars to locate and align said lifting device upon said top bars of the outermost combs.

4,573,229

SIDE AND HEEL LASTING MACHINE

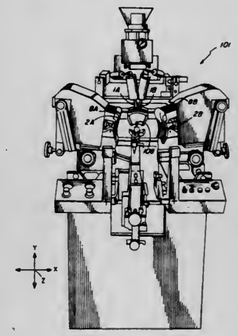
Anthony F. Moreira, Nashua, N.H., assignor to International Shoe Machine Corporation, Nashua, N.H.

Filed Jul. 30, 1984, Ser. No. 635,987

Int. Cl.⁴ A43D *21/12, 21/00*

U.S. Cl. 12—8.1 **3 Claims**

1. For use in a footwear forming machine, operable on a footwear assembly having a last with an upper mounted thereon and an insole upwardly oriented thereon with the toe portion of the upper margin wiped against and secured to the insole and unwiped margin portions of the upper extending heelwardly of the wiped margin portions, which unwiped margin portions extend upwardly at an open angle to the insole, said machine including means for applying adhesive in the region between said upwiped margin portions and the corresponding portions of the insole at said region, a lasting mechanism operable to clamp the upper tightly against the last and to apply backup pressure for the unwiped margin to support the same, but nevertheless maintaining the open angle between the unwiped margin portions and the insole to permit application of adhesive into said region, said lasting mechanism comprising a lasting pad at each side of the footwear assembly, each lasting pad being made of an elastic, flexible and deformable material, the top end of each lasting pad being formed into a plurality of relatively rigid segments, said lasting mechanism further including actuator means to press the lasting pad at each side of the footwear assembly against the side of the footwear assembly in order to press the upper against the last towards the insole edge line and to apply said backup pressure while maintaining said open angle, said actuator means including a plurality of actuator elements, each being associated with a corresponding relatively rigid segment, to apply linear inward-directed forces upon the associated relatively rigid segment to apply said backup pressure during the application of adhesive into the region and to apply high wiping forces on the associated relatively rigid segment, subsequent to the application of the adhesive, to fold the margin onto the insole to press the adhesive between the margin and the insole to adhere the margin onto the insole, wherein each actuator element comprises a rod having a clevis at its free end with an aperture in each leg of the clevis and said associated relatively rigid segment having an apertured shoulder rigidly secured as an integral part thereof, said shoulder being received between the legs of the clevis, the aperture of the shoulder being registered with the aperture of each leg of the clevis to receive a pin to pivotally retain the shoulder therein during lasting and to permit inwardly directed forces to be transmitted to the lasting pad, said shoulder, in the course of wiping, pivoting about the pin to provide downwardly-directed forces on the margin being wiped.



4,573,230

VERTICALLY MOVING MECHANISM FOR ROTOR BRUSH IN MANUAL CLEANER

Kimihiro Saeki, Kashiwa, and Kiyoshi Kobayashi, Noda, both of Japan, assignors to Hukuba Kogyo Kabushiki Kaisha, Japan

Filed May 4, 1984, Ser. No. 607,221

Claims priority, application Japan, May 30, 1983, 58-81670[U]

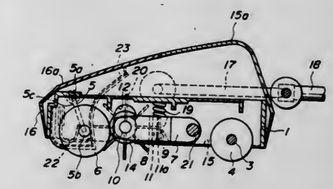
Int. Cl.⁴ A47L *11/33*

U.S. Cl. 15—41 R **2 Claims**

1. A mechanical cleaner comprising

a main casing having driving wheels and an open bottom, said wheels projecting downward from said open bottom and being rotatable, a rotatable brush driven by said wheels and adapted to brush dust from a carpet or floor into a dust box on said main casing.

vertically movable means for releasably mounting said brush comprising a pair of swinging frames one end of each of which is rotatably journaled on said casing at a point spaced apart from the other frame, said brush being rotatably mounted between the other ends of said frames, said frames being urged downwardly by at least one urging means, at least one engaging means on said casing and adapted to releasably engage said frames, whereby releasing said engaging means permits said frames carrying said brush to rotate downwardly to allow said brush to be detached from said frames.



4,573,231

PIPE CLEANING DEVICE

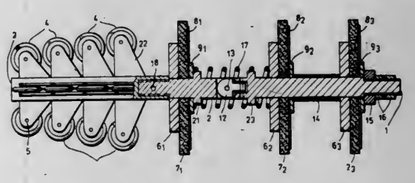
Peter Stocksiefen, Asbach, and Alfons Grüber, Linz, both of Fed. Rep. of Germany, assignors to Industrietechnik Kalenborn GmbH, Kalenborn bei Linz, Fed. Rep. of Germany

Filed Apr. 11, 1984, Ser. No. 599,078

Claims priority, application Fed. Rep. of Germany, Apr. 11, 1983, 3312958

Int. Cl.⁴ B08B *9/04*

U.S. Cl. 15—104.06 R **10 Claims**



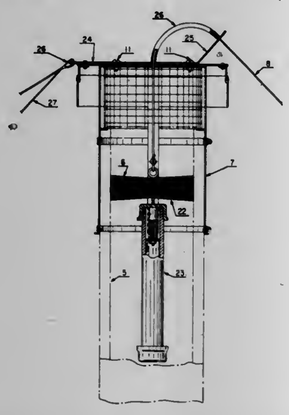
1. A pipe cleaning device for removing encrustations from pipelines, more particularly pipelines conducting water, foul water or water for mining purposes, comprising a propulsion element which can be moved by hydraulic pressure through the pipeline, said propulsion element comprising spaced outer, central and inner collars, an impact shaft, said central and outer collars being slidably mounted on said impact shaft, a guide shaft, said inner collar being secured on said guide shaft, means for pivotally coupling one end portion of said guide shaft to one end portion of said impact shaft, a cutting head which is fitted with a plurality of spaced cutting wheels and supported on the other end portion of said guide shaft, said collars substantially spanning the cross-sectional area of the pipeline, characterized in that, between the central and inner collars, there is slidably positioned on the coupled end portions of said shafts, a preloaded spring, each of said three collars being provided with spaced radial incisions for accommodating the passage of fluid applied under pressure to said outer collar, whereby initial application of the hydraulic pressure to said outer collar will transmit an impact to said central collar to further compress said preloaded spring, which in turn applies an impact to said inner collar to drive said cutting head further into said pipeline.

4,573,232

MECHANICAL CHIMNEY SWEEP CONTROL

Clement F. Marley, R.R. 2 Box 165, Nokomis, Ill. 62075

Filed Sep. 17, 1984, Ser. No. 651,169
Int. Cl.[4] F23J *3/00*
U.S. Cl. 15—163 **3 Claims**



1. A device for controlling a brush in a remotely controlled flue cleaner comprising a support means adapted to be secured to the upper outlet of the flue and to extend above the flue for supporting and retaining said brush in alignment therewith and generally centered thereover, a flange member including a pair of upstanding walls connected together at their bottom portions, said portions being connected to the top surface of said support means by bolt means, said two-walled flange member being spaced close together with only enough width between them to allow easy passage of an appropriate sized cable, a series of pairs of bolts extending through the walls of the flange member so as to permit easy passage of said cable, said series of bolts being arranged in a semi-circular pattern on one end of said flange member so as to form a race for passage of said cable and to transfer a downward pull on said cable to an upward pull on the brush, said support means having a bonnet means to keep out the weather, said bonnet means being connected to the bottom surface of said support means such that said bonnet means is located below said two-walled flange member, and means for anchoring the flange from the opposite end of the flange member so that the upper sections of the flue are not pulled over or not out of alignment when an operator is applying pressure to clean the flue.

4,573,233

PAINT ROLLER ASSEMBLY FOR PAINTING CHAIN LINK FENCES AND SIMILAR STRUCTURES

Charles W. Stoop, 1598 NE. 172 St., North Miami Beach, Fla. 33162

Filed Dec. 31, 1984, Ser. No. 687,721
Int. Cl.[4] B05C *1/08*
U.S. Cl. 15—230.11 **14 Claims**



1. A paint roller assembly of the type primarily designed to paint a chain link structure formed of interengaging wire strands, said roller assembly comprising:

(a) a base having a substantially cylindrical configuration and rotatably mounted on a handle means extending outwardly from said base in supporting relation thereto for positioning said base during painting,

(b) a roller cover assembly mounted on an outer surface of said base in covering relation thereto and secured to said base so as to rotate therewith,

(c) said roller cover assembly comprising a base cover having an elongated, tubular configuration and mounted on said base in surrounding relation thereto and extending the length thereof,

(d) said roller cover assembly further comprising a plurality of roller segments each having an annular configuration of continuous length and being disposed in successively adjacent, spaced relation to one another and in surrounding, outwardly extending relation to said base cover,

(e) a plurality of seams each disposed between two adjacently positioned segments and at least partially defined by correspondingly disposed peripheral edges of said adjacently positioned segments,

(f) each of said seams having an annular configuration and each being further defined by an undercut portion integrally formed on at least one of said peripheral edges defining each seam, and

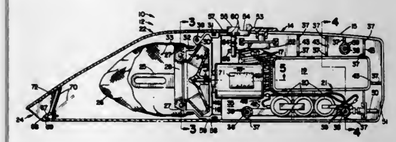
(g) each of said seams comprising an interior surface dimensioned and configured for disposition in substantially surrounding and engageable relation to wire strands entering said seams.

4,573,234

HAND-HELD VACUUM CLEANER

Werner W. Kochte, Ravenna, and Paul K. Meeker, Kent, both of Ohio, assignors to The Scott & Fetzer Company, Twinsburg, Ohio

Filed Jan. 30, 1984, Ser. No. 575,028
Int. Cl.[4] A47L *5/24*
U.S. Cl. 15—323 **28 Claims**



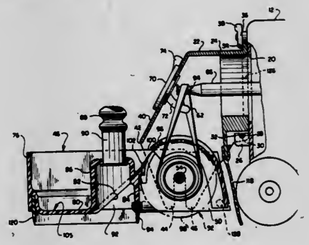
1. A battery powered hand-held vacuum cleaner comprising a first unit including a housing enclosing motor, fan and batteries and having power switch means for controlling the motor and vent means for exhausting air, and a second unit partially covering and projecting in front of the first unit and including a hollow dustreceiving cup upstream of the fan, an intake mouth at the front end of the cup, the spatial relationship and geometry of the elements of the sweeper units being defined in reference to the operational orientation of the sweeper when a front to rear axis of the sweeper is generally horizontal and the intake mouth is arranged to effectively sweep a horizontal surface, said units being connected by releasable latch means, a stationary fan intake throat at the front end of said housing and communicating with the interior of the dust cup, a stationary fan cover extending outwardly and rearwardly from the fan intake throat to the remainder of said housing, sealing means between respectively the outer and inner peripheries adjacent respectively the front and rear ends of the first and second units for sealing against air by-pass or leakage between said units or from the exterior to either of said units, said releasable latch means being located in the first unit rearwardly of said sealing means whereby the interengaging and moving parts of said releasable latch means are protected from dust caught within said second unit, storage bracket means mountable on a wall for engaging and storing the cleaner in upright position with said intake mouth pointed upward, said bracket means including a base and a pair of re-entrant flanges spaced outwardly from said base, said first unit tapering rearwardly for a majority of its length but with two grooves formed therein, said flanges keying into said grooves when said rearwardly tapered length of the first unit is lowered over said bracket means, power connector socket means at the rear end of said first unit, upwardly facing plug means mountable in fixed position on the bracket means at the bottom end thereof and adapted to engage in said socket means when the first unit is lowered over the bracket means to be engaged thereby, a wall-mountable charger connected to said plug means by a power line, said plug means being liftable from its mounting when said first unit is raised from said interengagement to allow said plug means, power line and charger to be removed from association with said bracket and used with said cleaner independently of said bracket means, a dust bag hanger extending from one or more sides of the fan intake throat into the interior of the dust cup, a dust bag mounted to extend from the front end of the housing into the interior of the dust cup in covering relationship with the hanger and having an open bag mouth presented toward the fan intake, and means for holding the bag in mounted position, a re-entrant lip extending across said intake mouth at its bottom side, said lip being faired to slant upwardly and inwardly, to an inner shoulder, a valving flap pinned to said inner shoulder and itself slanting upwardly and inwardly toward the top side of the dust cup, the housing of the first unit being formed of two halves divided generally along a vertical plane extending along the length of the housing, said power switch means including a switch body and a sliding thumbpiece, said switch means being retained by interlocking engagement with said two halves of said housing when said halves are assembled together, said thumbpiece being in sliding overlying position relative to said latch means when the parts are assembled, said latch means being retained by interlocking engagement with said two halves of said housing and the underside of the latch means when the parts are assembled, pairs of posts extending transversely from the outer side walls of the two housing halves into mating and end-abutting relationship with each other, fastener means within the mating ends of each said pair to hold them in such relationship, the edges of the walls of said housing halves abutting at the region of said plane to close off the interior of the first unit, each housing half having interior stiffening ribs integrally formed with its walls and projecting beyond its said wall edges into supporting contact with the inside of a wall of the other housing half.

4,573,235

RUG CLEANING ATTACHMENT

Thomas E. Baird, Sr., Springfield, Ill., and John J. Jailor, N. Ridgeville, Ohio, assignors to The Scott & Fetzer Company, Cleveland, Ohio

Filed Oct. 26, 1984, Ser. No. 665,438
Int. Cl.[4] A47L *11/34*
U.S. Cl. 15—328 **6 Claims**



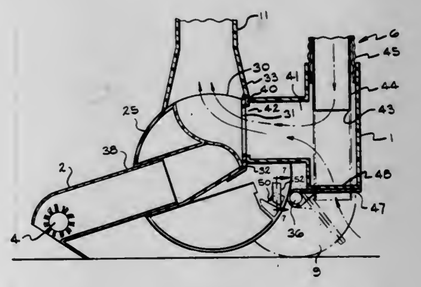
1. A rug cleaning device comprising: a power driven brush roll mounted for rotation in a forward-downward and rearward-upward direction around a horizontal axis, said brush roll comprising a cylinder having a multiplicity of radially extending bristle tufts which upon rotation define a cylindrical envelope, a suds confining and distributing chamber mounted ahead of said brush, said chamber including means for leveling and spreading suds confined therein so that an even layer of suds is laid on the rug ahead of the brush, means for generating suds and for delivering the generated suds to the suds confining and distributing chamber, a receptacle for dirty suds mounted ahead of said brush, doctoring means between said brush and said receptacle for removing from the brush the suds that it has picked up, said doctoring means comprising a blade projecting into and invading the cylindrical envelope defined by the path of travel of said tufts, said blade having a scalloped edge providing a multiplicity of cusp forming arches engaged by said tufts so that the adjacent bristles of each tuft are drawn together as they are forced along the intrados of each arch toward the point of maximum rise thereof to squeeze spent suds from the brush and so that the cusps comb filaments from said brush, whereby as said rug cleaning device is advanced, suds that had been laid down by said suds confining and distributing chamber are used by the brush to clean the rug, and each increment of suds that is picked up by the brush in the course of such cleaning is carried partially around the brush and removed by the doctoring means prior to completion of a single turn of the brush.

4,573,236

VACUUM CLEANING APPLIANCES

James Dyson, Bathford, England, assignor to Prototypes, Ltd., Bath, England

Continuation-in-part of Ser. No. 452,917, Dec. 27, 1982, abandoned, which is a continuation of Ser. No. 274,252, Jun. 16, 1981, abandoned. This application Jul. 2, 1984, Ser. No. 627,292
Claims priority, application United Kingdom, Jul. 8, 1983, 8318528
Int. Cl.[4] A47L *5/32*
U.S. Cl. 15—333 **17 Claims**



1. In a vacuum cleaning apparatus comprising a main casing having a dirt laden air conveying passageway leading thereto and containing a motor-driven fan unit, and including means for dirt retention in the apparatus, a hose section communicating with the passageway and providing an inlet for dirt laden air, a cleaning head as part of a floor engaging section of the apparatus mounted adjacent the main casing so as to be rotatably moveable relative to the casing to engage the floor and including a rotary brush unit in the casing, the cleaning head communicating separately in relation to the hose section with the air passageway, the improvement which comprises:

an air control valve means selectively positionable with the air passageway and mounted on the cleaning head for selectively directing dirt laden air into the main casing from either the cleaning head or the hose section through the air passageway depending upon the position of the valve; wherein, when the cleaning head is rotated to one first position relative to the main casing, the cleaning head is connected to the passageway in the casing by the air control valve means; and when the cleaning head is rotated to a second position, the cleaning head is discon-

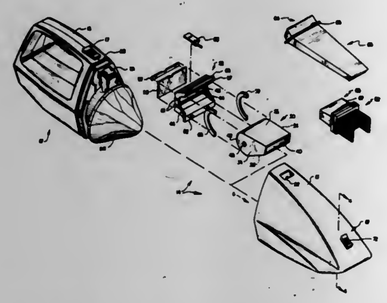
nected from the air passageway and the passageway is connected to the hose section by the air control valve means.

4,573,237

HAND VACUUM WITH TILTING INTAKE

Werner W. Kochte, Ravenna, and Susan K. Nimon, Cuyahoga Falls, both of Ohio, assignors to The Scott & Fetzer Company, Westlake, Ohio

Filed Apr. 10, 1984, Ser. No. 598,838
Int. Cl.⁴ A47L *5/24*
U.S. Cl. 15—344 **22 Claims**



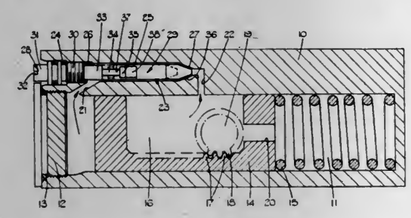
1. A hand held vacuum cleaner comprising a first unit including motor, fan and handle and a second unit projecting in front of the first unit and including a hollow dust-receiving cup having a cup mouth at its front end, a nozzle body projecting from the cup mouth and rotatably carried by means within the cup for rotation between different angular positions, said nozzle body substantially filling said cup mouth in all said angular positions, said nozzle body having side, top and bottom walls and defining a nozzle intake mouth at its forward end, said cup having a bottom wall which extends straightly in the forward direction and a top wall tapering toward said bottom wall in the forward direction and terminating forwardly of said bottom wall whereby said cup mouth leans forwardly, said nozzle mouth also leaning forwardly at a leaning angle similar to that of said forwardly leaning cup mouth when said nozzle body is at a position where a major portion of its bottom is parallel to the straight bottom of the dust cup.

4,573,238

DOOR CLOSER INCORPORATING SELF-CLEANING AND TEMPERATURE COMPENSATING FLOW CONTROL VALVE

Douglas C. Phillips, Wylde Green, England, assignor to Newman-Tonks Engineering Limited, Birmingham, England

Filed Jul. 6, 1984, Ser. No. 628,384
Claims priority, application United Kingdom, Apr. 4, 1984, 8408636
Int. Cl.⁴ E05F *1/08*
U.S. Cl. 16—79 **6 Claims**



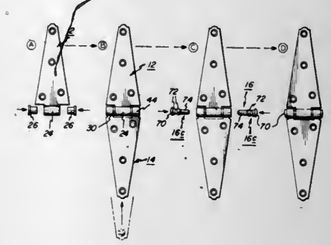
1. A door closer including a body, a chamber defined within said body, said chamber being intended to receive hydraulic fluid, in use, a piston slidably received within said chamber, a passage in said body through which said hydraulic fluid is intended to flow in both directions between opposite sides of at least part of the piston, a valve fitted in said passage to control the flow and comprising a first valve member and a second valve member, two abutment surfaces on the first valve member, means on the first valve member engaging it with the body and permitting the first valve member to be axially moved in the passage to a selected position, the second valve member being connected to the first valve member, one end of the second valve member being tapered, one end of the passage having a taper complementary to the taper of said one end of the second valve member, the second valve member being freely axially movable in the passage relative to the first valve member, solely by flow of fluid through the passage, between extreme positions where it engages said two abutment surfaces respectively, one of said extreme positions allowing unrestricted flow in one direction through said passage from said tapered end of the passage and the other extreme position allowing restricted flow in the opposite direction, at least one of the first and second valve members being made of plastics material having a greater coefficient of thermal expansion than the material of the body containing the passage in which the valve is fitted so that changes in the ambient temperature affect the clearance between the second valve member and the tapered end of the passage.

4,573,239

THREE KNUCKLE HINGE WITH BUSHING INSERTS IN CENTER KNUCKLE AND METHOD OF MAKING SAME

Richard L. Valenti, New Britain, and Daniel J. McCormick, Cheshire, both of Conn., assignors to The Stanley Works, New Britain, Conn.

Filed Aug. 17, 1984, Ser. No. 642,033
Int. Cl.⁴ E05D *11/00*
U.S. Cl. 16—273 **10 Claims**



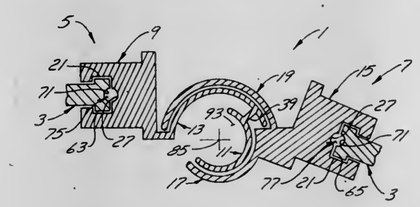
1. A three knuckle hinge comprising:
(a) a first leaf including an attachment portion and an elongated knuckle portion centrally located on one edge of said attachment portion, said knuckle portion being axially continuous and one-piece and having a passage extending axially therethrough;
(b) a pair of bearing inserts located at the opposite ends of said knuckle portion and extending into said axial passage, each of said inserts being one-piece and integrally formed with a tubular body portion of generally circular cross section and a radially outwardly extending flange portion at one end of said tubular body portion abutting the adjacent end of said knuckle portion, said tubular body portion having ribs on the outer surface therein deformed to provide frictional engagement with said knuckle portion to inhibit relative rotation, wherein the body portions of said bearing inserts have ribs on the inner surface thereof spaced along the inner walls
(c) a second leaf including an attachment portion and a pair of spaced apart knuckle portions along one edge of said attachment portion with said knuckle portion of said first leaf disposed therebetween and the adjacent surface of the flange portions of said inserts directly abutting said knuckle portions of said second leaf, said knuckle portions of said second hinge leaf having an axially extending passage therein coaxial with said passage of said knuckle portion of said first leaf; and
(d) hinge pin means extending through said passages of said knuckle portions of said first and second leaves and in said inserts, said hinge pin means being engaged with said knuckle portions of said second leaf to prevent relative movement therebetween and being rotatable in said bearing inserts to provide a pivotal connection between said first and second leaves, said hinge pin means comprising two pin elements extending into said passages defined in said knuckle portions from opposite ends of said second leaf, said inner surface thereby providing the bearing surfaces for said hinge pin elements.

4,573,240

VERTICAL CLOSURE HINGE WITH AN ANTI-BINDING FEATURE

Henri M. R. Labelle, 50 Westmooreland Ave., Cornwall, Ont., Canada

Continuation of Ser. No. 331,385, Dec. 16, 1981, Pat. No. 4,475,268. This application Sep. 10, 1984, Ser. No. 648,502
Int. Cl.⁴ E05D *1/04*
U.S. Cl. 16—355 **2 Claims**



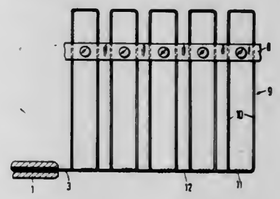
1. An assembly for rotatably joining together first and second panels about a vertical axis in a folding closure comprising: a vertical hinge having; a first elongated hinge member having two long sides, means on one of said long sides for connecting said first hinge member to said first panel, first and third curved hinge sections on the other of said long sides; a second elongated hinge member having two elongated sides, means on one of said second hinge member long sides for connecting said second hinge member to said second panel, second and fourth curved hinge sections on the other of said second hinge member long sides; said curved hinge sections on said first and second hinge members being interconnected to rotatably connect said hinge members together with the first hinge section lying within the second hinge section, the second section lying within the third hinge section, and the third hinge section lying within the fourth hinge section; a fastener having a head and a shank at at least the bottom end of said hinge for preventing longitudinal separation of said interconnected hinge members; said fastener being fastened by its said shank to the bottom end of the first curved hinge sections, the said head of the said fastener underlying the bottom end of the fourth hinge section, and spacer means completely encircling and carried by said fastener shank and located between said fastener head and the bottom ends of said curved hinge sections, the spacer means lying within the second hinge section for preventing said fastener head from contacting said bottom end of the second hinge section it underlies; and a link at said bottom end of said hinge for connecting said hinge members together, said fastener connecting said link to one of said hinge members by passing through an opening in one end of the said link, said spacer means positioned in the opening and having a thickness slightly greater than the thickness of said link.

4,573,241

HANGER LOOP ASSEMBLY

Herbert Niedecker, Am Ellerhang 8, 6240 Königstein, Fed. Rep. of Germany

Filed Dec. 4, 1984, Ser. No. 677,719
Claims priority, application Fed. Rep. of Germany, Dec. 6, 1983, 3343968
Int. Cl.⁴ A22C *11/00*
U.S. Cl. 17—44.2 **3 Claims**



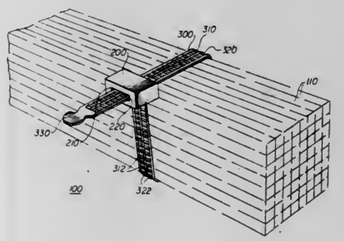
1. An assembly of closed hanger loops provided on a carrying strap and adapted to be mechanically fed to machines for closing tubular films and bags, particularly sausages, characterized in that the loops (10) are connected on the carrying strap (8) by the thread (3) from which the loops have been formed and said thread (3) is a continuous thread, from which the loops (10) have been made in that the thread (3) overlaps itself in a portion (11) thereof and the overlapping thread portions (11) are joined to each other at least in part.

4,573,242

CLOSE PITCH HARNESSING DEVICE

Gordon B. Lankton, West Boylston, and Joseph R. Paradis, Holden, both of Mass., assignors to Nypro Inc., Clinton, Mass.

Filed Sep. 19, 1983, Ser. No. 533,353
Int. Cl.⁴ B65D *63/00*
U.S. Cl. 24—16 PB **12 Claims**



1. A harnessing device comprising
a head having a plurality of interconnected guide channels extending longitudinally therethrough;
a multi-section strap attached to said head with a separate section for each channel thereof;
a locking tang within said head, including a mid-section width which is thicker than opposed end portions, for each section of said strap; and
an anchor included in said head and being lockingly engaged by the free end of said tang when said strap is under load and said tang forms an arch extending from said anchor position to the root position where said tang is integral with said head.

4,573,243

SLIDING HOOK DEVICE FOR CLASPING PEARL OR GLASS BEAD NECKLACES THAT HAVE A FREE HANGING END

Jaime P. Plaza, Barcelona, Spain, assignor to Majorica, S.A., Barcelona, Spain

Filed May 25, 1984, Ser. No. 614,731
Claims priority, application Spain, Dec. 28, 1983, 276.594
Int. Cl.⁴ F16G *15/00*
U.S. Cl. 24—116 A **7 Claims**



1. A sliding hook for clasping jewelry necklaces that have both a free and a fixed end and include a plurality of pearls or similar individual members, comprising:

a body having a rear side provided with emerging lugs;

a ring of a substantially open turn shape disposed on said rear side of said body so as to allow for slightly oblique passing of the free end of the necklace;

a joining point disposed on said rear side of said body for affixing the fixed end of the necklace; and

an articulated annular blade having legs provided with points and being disposed on said rear side of said body, said blade having a shape corresponding to that of said pearls or similar individual members, said emerging lugs of said rear side of said body cooperating with said points of said legs of said annular blade so as to provide said legs with spring action, said blade being movable relative to said ring between an unclamped position in which a part of the necklace can be passed between said ring and said blade, and a clamped position in which the spring action of said legs applies toward said ring and retains between said ring and said annular blade the pearl or similar individual member at an end of the part of the necklace so as to selectively determine the length of the free end of the necklace being passed through and hanging out of said ring, said spring action of said legs further tending to maintain said annular blade in said clamped position.

4,573,244

COMBINATION CONDIMENT GRINDER AND DISPENSER

David A. Holcomb, and James A. Tryon, both of Seattle, Wash., assignors to F. Bartow Fite, Seattle, Wash.

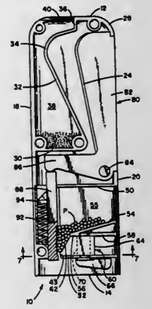
Filed May 29, 1985, Ser. No. 738,827
Int. Cl.⁴ A47J *42/34*
U.S. Cl. 241—169 **20 Claims**

1. A combination condiment grinder and dispenser device, comprising:

(a) a housing adapted to be held and operated by one hand of the user, said housing having a top end and a bottom end on which said housing is supported and including generally in the upper portion thereof a lever recess portion defining a reduced housing area in said upper portion for being conveniently gripped by the user's hand, said recess portion including a lever opening therein for receiving an operating lever,

(b) an operating lever disposed in said lever recess portion such that said operating lever has an outward first nonoperating position and an inward second operating position in which said operating lever is moved by squeezing action of the user's hand into said lever opening within said reduced housing area,

(c) a first condiment compartment located in the lower portion of said housing generally below said upper recess portion for containing condiment to be ground and including an adjustable grinding block means with a shearing surface thereon, and further including a generally reciprocally moving slide member having grinding serrations thereon which coact with said grinding block for comminuting said condiment, said reciprocally moving slide member including a means for biasing the slide member to a rest position, said grinding block means and said slide



member having a grind opening therebetween through which ground condiment is dispensed from said housing,

(d) actuating lever means connected to said operating lever and included within said housing and extending from said operating lever below said lever recess portion and above said lower portion which contains said condiment compartment and into contact with said slide member for forcing said reciprocally moving slide member into operative movement when said operating lever is squeezed by said user's hand, and

(e) adjustment means for said grinding block which provides movement of said block for adjusting the grinding action from fine to coarse.

4,573,245

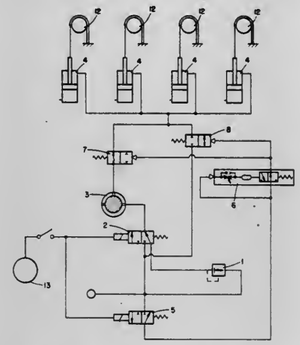
BRAKING SYSTEM FOR YARN BEAMING ASSEMBLIES

Jörg Pfister, and Arnold Kuzmenko, both of Freiburg, Fed. Rep. of Germany, assignors to Rhodia AG, Freiburg, Fed. Rep. of Germany

Filed Jun. 13, 1983, Ser. No. 503,864
Claims priority, application Fed. Rep. of Germany, Jul. 1, 1982, 3224507
Int. Cl.⁴ D02H *13/08, 13/26*
U.S. Cl. 28—187 **3 Claims**

3. An apparatus for assembling warps of spun fibers and/or filament yarns present on yarn beams to form a textile warp present on a warp beam, said apparatus having sensing means for responding to a sensed condition of the warp or components thereof and first control means for controlling the braking of said yarn beams upon occurrence of a sensed condition of the warp or components thereof, said first control means including a pneumatic pressure regulator (**1**), for providing compressed air at higher pressure, an electromagnetically operable first pneumatic valve (**2**) downstream of said pressure regulator, a three-position rotary disk valve (**3**) downstream of said pneumatic valve, and pneumatically operable yarn beam brake cylinders (**4**) downstream of said three-position rotary disk valve and connected in parallel, said rotary disk valve having an inlet side connected to said pneumatic valve and being sometimes temporarily closed at its inlet side whereby compressed air at higher pressure from said pneumatic pressure regulator reaches said brake cylinders of said yarn beams

with a delay, the improvement which comprises second control means having bypass means connected to said first control means and to said yarn beam brake cylinders for bridging the switching time of said rotary disk valve of said first control means thereby preventing asynchronous pneumatic braking of said yarn beams relative to said warp beam by avoiding delay in braking of said yarn beams caused by said rotary disk valve being closed at its inlet side, upon occurrence of a sensed condition of the warp or components thereof and the ensuring rapid braking, said second control means comprising a second pneumatic valve (**7,10**) arranged downstream of said three-



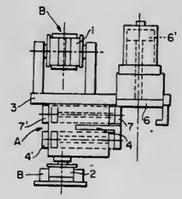
position rotary disk valve (**3**) and upstream of said brake cylinders (**4**), a third pneumatic valve (**8,11**) connected in parallel with said second pneumatic valve (**7,10**) and upstream of said brake cylinders (**4**), and a delay element (**6,9**) connected upstream of said second and third pneumatic valves; actuation of said second pneumatic valve cutting off the fluid flow between the rotary disc valve (**3**) and the brake cylinders (**4**) and actuation of said third pneumatic valve permitting air pressure to effect braking of the yarn beams, the flow to said second and third pneumatic valves at the end of the delay period being switched off as the rotary disc valve (**3**) reaches the open position.

4,573,246

PINCERS FOR THE EXTRACTION OF METAL RODS FROM BUNDLES

Marcello Del Fabro, Udine, and Giorgio Del Fabro, Montegnacco, both of Italy, assignors to SAE-Societa Automatismi Elettonici s.r.l., Tavagnacco, Italy

Filed May 16, 1984, Ser. No. 536,981
Claims priority, application Italy, Sep. 27, 1982, 83451 A/82
Int. Cl.⁴ B23P *19/04*
U.S. Cl. 29—252 **3 Claims**



1. Pincers for the extraction of metal rods from bundles, of the type that can be moved in a longitudinal direction to grip one or more rods and extract and/or feed the latter by drawing them along in a longitudinal direction, and comprising a supporting frame having a fixed flange disposed laterally thereof;

a flat support base having one side upon which the individual rods making up the bundle rest flat and movable relative to said supporting frame from a retracted position to an overhanging position adjacent said flange, hydraulic means on said supporting frame, for moving said flat support base between its retracted and overhanging positions;

a flat guide cheek opposing the flat support base and movable against the latter so as to be brought close to the row of rods lying on said flat support base without gripping them but sufficiently close to hold them in a position in which they are lying in the same plane;

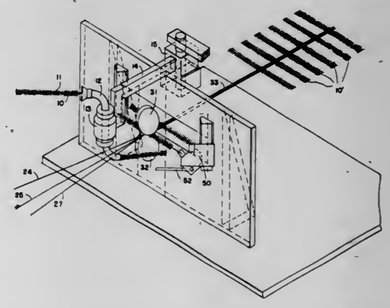
a side clamp movable transversely in relation to the longitudinal direction of the rods and in the plane in which the rods are lying so as to move from an open position to a position in which said rods are gripped against the said fixed flange, said side clamp sliding in the free space between said flat support base and said opposite guide cheek so as to firmly grip the rods there enclosed pushing one against the other and against said flange.

4,573,247

ARTIFICIAL TREE LIMB MAKER MACHINE

Enrico Spinelli, Larciano, Italy, assignor to Mr. Christmas Incorporated, New York, N.Y.

Filed Mar. 16, 1984, Ser. No. 590,382
Int. Cl.⁴ B23D *17/00;* D02G *3/42;* B21F *7/00*
U.S. Cl. 29—417 **11 Claims**



8. A method of making an artificial tree limb comprising the steps of

feeding twisted wires with simulated needles therein to a pair of spaced cutters by a reciprocating motion transverse to the machine,

feeding wires and decorative material to a pair of pulleys,

cutting the twisted wires with simulated needles to lengths determined by the distance between said spaced cutters,

twisting said wires and decorative material and catching said lengths of wires with simulated needles therein in a position substantially perpendicular to said wires with decorative material.

4,573,248

METHOD AND MEANS FOR IN SITU REPAIR OF HEAT EXCHANGER TUBES IN NUCLEAR INSTALLATIONS OR THE LIKE

Steven B. Hackett, 17822 Arbor La., Irvine, Calif. 92715

Filed Jun. 4, 1981, Ser. No. 270,574
Int. Cl.⁴ B23P *17/00, 11/02, 15/26*
U.S. Cl. 29—423 **5 Claims**

1. A method of sealing leaky heat exchanger tubes in situ in nuclear installations, comprising the steps of:

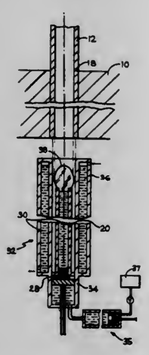
(a) providing a sleeve having an outer diameter slightly larger than the inner diameter of the tube whose leak is to be sealed and having a length shorter than the length of said tube yet sufficient to overlap said leak and having a

flange at one end thereof, said flange being dimensioned larger than the inner diameter of said tube for limiting insertion of said sleeve into the tube;

(b) cooling said sleeve to a temperature at which its outer diameter is sufficiently reduced to allow insertion of said sleeve into said tube;

(c) inserting said cooled sleeve into said tube to be sealed through one end of the tube to overlap said leaky portion while said sleeve is so cooled until said insertion is limited by said flange;

(d) allowing said sleeve to warm up to the temperature of said tube,



(e) said sleeve being open at both ends such that fluids flowing through said heat exchanger tube flow through said sleeve also; and

(f) guiding said sleeve into position for insertion by means of a guide fabricated of material which is solid at insertion temperatures but becomes fluid at room temperature, and allowing said guide to become fluid when the insertion of said sleeve is complete,

whereby said sleeve forms with the inside of said tube in the region of said leak a leak-proof sealing bond with a generally uniform hoop stress thereby repairing said leak.

4,573,249

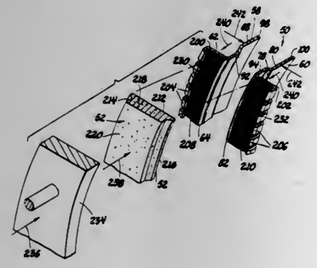
METHOD OF MANUFACTURING BRAKE SHOE ASSEMBLY

Ronald L. Shellhause, Vandalia, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 539,107, Oct. 5, 1983. This application Nov. 19, 1984, Ser. No. 672,667

Int. Cl.⁴ B23P *11/00*

U.S. Cl. 29—432 **4 Claims**



1. A method of making a brake shoe and lining assembly comprising the step of:

(a) providing a formed lining segment having opposite edges;

(b) providing a pair of brake shoe sections, each having a rim portion and a web portion, serrations transversely formed on the rim portion surface which is to be supportive of the lining segment, and reversely bent tab means on the outer edge of the rim portion;

(c) mounting the pair of brake shoe sections in laterally spaced and aligned relation;

(d) placing the lining segment on the laterally spaced supportive rim portion surfaces so that the lining segment is engaged with the rim portion transverse serrations only adjacent the lining segment edges;

(e) forcing the lining segment into the rim portion surfaces to initiate formation of transversely extending complementary mating serrations in the surface of the lining segment engaging the rim portion, and holding the lining segment in place;

(f) moving the shoe sections laterally together, causing the rim portion serrations to form the transversely extending complementary mating serrations through the lining segment surface engaging the rim portions and further causing the lining segment edges to be engaged by the tab means on the outer edges of the rim portions in holding and retaining relation; and

(g) securing the shoe sections together in the web portions to form the brake shoe and hold the lining segment in position thereon by the tab means and the mating serrations.

4,573,250

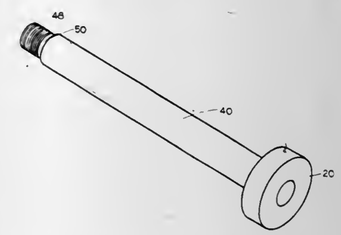
METHOD OF REPAIRING A PISTON SHAFT ASSEMBLY OF A RAILWAY CAR END-OF-CAR CUSHIONING UNIT

Dennis Miller, 6267 Curtis Ave., Omaha, Nebr. 68104, and Scott R. Koch, 6803 Minne Lusa Blvd., Omaha, Nebr. 68112

Filed Oct. 13, 1983, Ser. No. 541,711

Int. Cl.⁴ B23P *11/02*

U.S. Cl. 29—447 **11 Claims**



1. A method of repairing a piston shaft assembly of a railway car cushioning unit, said piston shaft assembly including a piston fixedly mounted on a piston shaft, comprising,

providing an elongated bar stock for a new shaft,

sawing said bar stock to length for a new shaft,

finishing an end portion of said new shaft to a first diameter,

providing a piston shaft assembly for a railway car cushioning unit,

sawing said piston shaft adjacent the piston, thereby to separate said piston from said piston shaft,

axially boring said piston to provide a bore of a diameter slightly less than said first diameter,

heating said piston to a temperature sufficient to expand the bore diameter to at least said first diameter,

placing the heated piston onto said end portion of said new shaft, and

cooling said piston whereby said piston is shrink-fit onto said new piston shaft end portion.

4,573,251

APPLYING AN ELASTIC SLEEVE OVER AN ELONGATE BODY

Colin D. Hillyard, Southampton, England, assignor to Pirelli General plc, London, England

Filed Feb. 5, 1985, Ser. No. 698,311

Claims priority, application United Kingdom, Feb. 24, 1984, 8404869; Jul. 12, 1984, 8417786

Int. Cl.⁴ B23P *11/02*

U.S. Cl. 29—450 **9 Claims**



1. A method of applying a tubular sleeve of elastic material over an elongate body which has a diameter or cross-sectional size greater than the inner diameter of the sleeve, comprising turning each end portion of the sleeve back on itself, engaging one turned back end portion of the sleeve over an end portion of the elongate body to form a partial fluid-tight seal between said turned back sleeve end portion and said elongate body, temporarily closing the opposite end of the sleeve and introducing fluid under pressure to the interior of the sleeve through a relatively flat valve in its side wall to inflate the sleeve sufficiently to enable it to be floated along the elongate body, displacing the sleeve along the elongate body such that the other turned back end portion engages over said end portion of the elongate body to form a partial fluid tight seal between said other turned back sleeve end portion and said elongate body, and thereafter floating said sleeve along said elongate body to a desired position thereon.

4,573,252

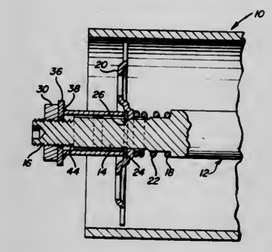
METHOD OF INSTALLING STEERING WHEEL LOCK PLATE ON A STEERING WHEEL SHAFT

Robert W. Shay, 501 SW. 2nd St., Hallandale, Fla. 33009

Filed Nov. 19, 1984, Ser. No. 673,050

Int. Cl.⁴ B23P *11/02*

U.S. Cl. 29—453 **2 Claims**



1. The method of installing a steering wheel lock plate on a steering wheel shaft of the type including: (1) a splined upper end portion spaced above an upwardly facing annular shoulder on said shaft, (2) a circumferential groove formed in said splined upper end portion, (3) a cylindrical coiled compression spring disposed on said shaft above and downwardly abutted against said shoulder and extending upwardly along said shaft in a static condition to a point spaced above said groove, (4) an internally splined steering wheel locking plate slidingly disposed and meshed with said splines on said upper end portion above said spring and downwardly abutted thereagainst, (5) a snap ring disposed on said upper end portion above said plate and downwardly abutted against the inner periphery thereof, and (6) a diametrically reduced externally threaded upper terminal end, said method comprising the step of telescoping an open ended sleeve downwardly over and along said splined upper end portion with said sleeve having an inside diameter less than the outside diameter of said ring and being downwardly abutted against said ring, and downwardly displacing said sleeve further along said upper end portion so as to downwardly displace said lock ring and plate along said upper end portion while compressing said spring against said shoulder to a position with said lock ring registered with and snapped into said groove.

4,573,253

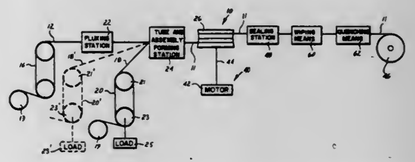
OPTICAL FIBER CABLE FABRICATION TECHNIQUE

Warren F. Smith, Branford; Eugene Shapiro, Hamden, and Joseph Winter, New Haven, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Jun. 29, 1984, Ser. No. 626,509

Int. Cl.⁴ B23P *19/04*; G02B *6/44*

U.S. Cl. 29—460 **21 Claims**



1. A process for fabricating an optical fiber cable assembly, said process comprising:

applying a pull force to a metal or metal alloy tape and pulling said tape through means for forming said tape into a hollow armor tube having a desired outer diameter and a desired inner diameter; and

inserting at least one optical fiber into said forming tube, said inserting step including applying a back tension force to said at least one optical fiber, said back tension force having a magnitude substantially equal to that defined by the following equation:

$$P_F = E_F \left[\frac{P_T}{\frac{\pi}{4}(D_{OD}^2 - D_{ID}^2) E_A} \right] \left(\frac{\pi D_F^2}{4} \right)$$

where

P_F=a desired back tension force magnitude;

E_F=elastic modulus of said at least one optical fiber;

P_T=said pull force;

D_{OD}=said desired outer tube diameter;

D_{ID}=said desired inner tube diameter;

E_A=elastic modulus of said metal or metal alloy; and

D_F=outer diameter of each said optical fiber.

4,573,254

APPARATUS FOR MAINTAINING ELECTRONIC COMPONENT PIN ALIGNMENT

Kenneth H. Kirk, Harleysville, and Robert R. Tarbuck, Ardmore, both of Pa., assignors to Sperry Corporation, New York, N.Y.

Filed Dec. 24, 1984, Ser. No. 686,121

Int. Cl.⁴ H05K *3/30*

U.S. Cl. 29—564.8 **11 Claims**

1. An apparatus for maintaining electronic component pin alignment comprising:

a support member;

a lead shear mounted adjacent said support member;

a stationary nest mounted adjacent said support member;

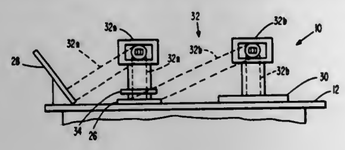
a printed circuit board mounted adjacent said support member;

a component feeder mounted adjacent said support member;

a component in said component feeder, said component being a chip including a plurality of leads having a first

end connected to said chip and a second free end, and having a movable lead guide engaging said first end of said leads; and

robotic means mounted adjacent said support member for picking up said component from said component feeder, inserting said component in said stationary nest, moving said component relative to said stationary nest for moving



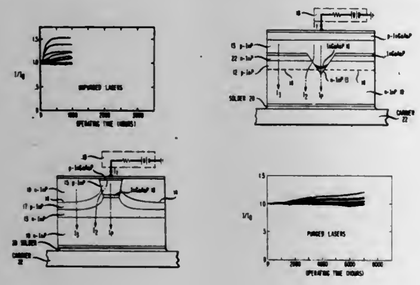
said lead guide from said first end of said leads toward said second free end of said leads, moving said component from said stationary nest to said shear for shearing said second free end of said leads, and moving said component from said shear to said printed circuit board and urging said leads into corresponding holes formed in said printed circuit board.

4,573,255

PURGING: A RELIABILITY ASSURANCE TECHNIQUE FOR SEMICONDUCTOR LASERS UTILIZING A PURGING PROCESS

Eugene I. Gordon, Convent Station; Robert L. Hartman, Warren, and Franklin R. Nash, Princeton, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 22, 1984, Ser. No. 592,285
Int. Cl.[4] H01L *21/66*
U.S. Cl. 29—574 **17 Claims**



1. A method of manufacturing semiconductor lasers, which includes screening lasers relative to predetermined performance criteria, comprising the steps of:

(a) subjecting each of said lasers to a first temperature T_1,

(b) applying terminal current I_1 to each of said lasers such that the combination of said current I_1 and temperature T_1 is sufficiently high that said lasers emit virtually no stimulated emission,

(c) continuing steps (a) and (b) concurrently for a time period t_1,

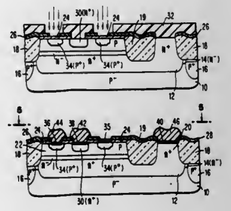
(d) measuring an electrical and/or optical characteristic of said lasers so as to separate those which meet predetermined performance criteria from those which do not.

4,573,256

METHOD FOR MAKING A HIGH PERFORMANCE TRANSISTOR INTEGRATED CIRCUIT

John S. Lechaton, Wappingers Falls, N.Y.; Philip M. Pitner, Palo Alto, Calif., and Gurumakonda R. Srinivasan, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 26, 1983, Ser. No. 526,849
Int. Cl.[4] H01L *21/265, 21/203, 27/02*
U.S. Cl. 29—576 B **12 Claims**



1. A method for making a high performance NPN bipolar transistor functioning in a current switch logic circuit comprising:

forming a bipolar transistor within an isolated region of a monocrystalline silicon body wherein said transistor includes an N+ subcollector, a N collector reach-through which connects said subcollector to a major surface of said body, a P base region above said subcollector and adjacent to said reach-through, an N+ emitter region within said base region and extending from said major surface, and wherein said base region includes an intrinsic base region located below said emitter region and an extrinsic base region located extending from said major surface and adjacent to said emitter region;

forming a mask above said major surface which has openings therein only in the areas above major portions of said extrinsic base regions;

forming a P+ region in said extrinsic base region by ion implanting with a P type dopant and to a depth of less than the depth of said N emitter region;

annealing the structure to activate the P type dopant in the P+ region; and

making electrical ohmic contact to the elements of said transistor and connecting them in said current switch logic circuit.

4,573,257

METHOD OF FORMING SELF-ALIGNED IMPLANTED CHANNEL-STOP AND BURIED LAYER UTILIZING NON-SINGLE CRYSTAL ALIGNMENT KEY

Terry S. Hulseweh, Mesa, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 14, 1984, Ser. No. 650,931
Int. Cl.[4] H01L *21/20, 21/74, 21/76*
U.S. Cl. 29—576 E **20 Claims**

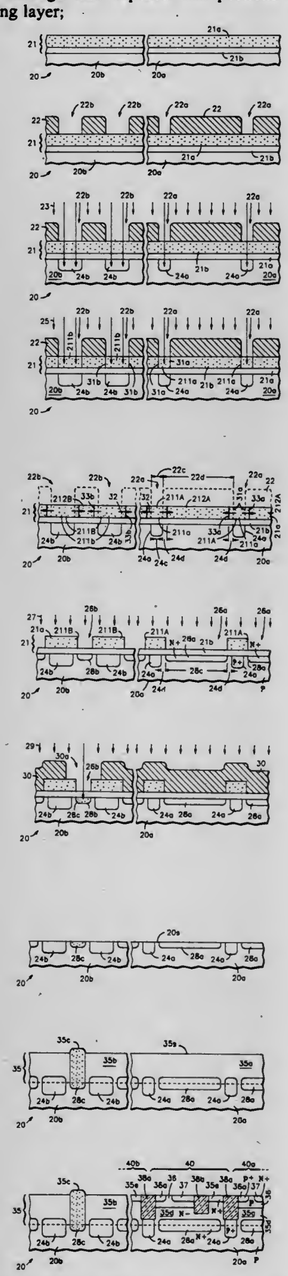
1. A method for fabricating self-aligned buried doped regions in a semiconductor device, comprising:

providing a semiconductor substrate having a device portion and an alignment key portion;

covering a surface of said substrate with a first masking layer having a modifiable etch rate;

covering said first layer with a second masking layer having first open portions exposing first portions of said first masking layer above first regions of said device portion of said substrate, and second open portions exposing second portions of said first masking layer located above first regions of said alignment key portion of said substrate;

doping said first regions of said device portion of said substrate through said exposed first portions of said first masking layer;



modifying said etch rate of said first and second portions of said first masking layer exposed in said first and second open portions of said second masking layer;

creating holes in said first masking layer by removing those portions of said first masking layer whose etch rate has not been modified in the preceding steps, said holes in said first masking layer lying above second regions of said device portion and a key region of said alignment key portion of said substrate;

doping said second regions of said device portion of said substrate through said holes in said first masking layer;

rendering said key region of said alignment key portion of said substrate non-single crystal;

exposing said surface of said substrate;

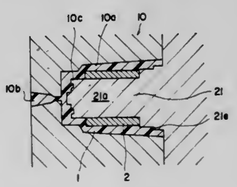
forming a semiconductor layer on said surface of said substrate which is non-single crystal above said non-single crystal key region of said substrate and single crystal adjacent said non-single crystal key region and above said first and second regions of said device portion of said substrate.

4,573,258

METHOD OF MANUFACTURING MOTOR

Shinichi Io, Hatano, and Funio Saeki, Atsugi, both of Japan, assignors to Atsugi Motor Parts Co., Ltd., Kanagawa, Japan

Filed Jan. 9, 1985, Ser. No. 689,996
Claims priority, application Japan, Jan. 18, 1984, 59-6724
Int. Cl.[4] H02K *15/02;* **B28B** *7/22*
U.S. Cl. 29—596 **6 Claims**



1. A method of manufacturing a motor body including a motor magnet, which comprises the following steps of:

(a) injecting a magnetic material into a space formed between a magnet forming mold and a magnet molding core in accordance with an injection molding method, while applying a magnetizing force to the injected magnetic material, to mold a motor magnet;

(b) extracting the molded magnetized magnet together with the magnet molding core from the magnet forming mold;

(c) injecting a resin material into a space formed between a motor body forming mold and the magnet molding core having the molded and magnetized magnet in accordance with an injection molding method to mold a motor body including the motor magnet (2);

(d) extracting the molded motor body including the molded and magnetized magnet together with the magnet molding core from the motor body forming mold; and

(e) extracting the magnet molding core from the extracted motor body including the magnetized motor magnet.

4,573,259

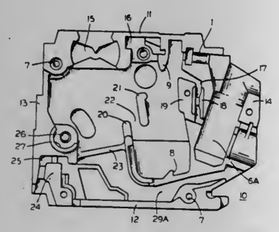
METHOD OF MAKING AN AUTOMATED Q-LINE CIRCUIT BREAKER

Raymond K. Seymour, Plainville; Joseph M. Palmieri, Southington; William J. Ashline, Bristol, and Dennis J. Doughty, Plainville, all of Conn., assignors to General Electric Company, New York, N.Y.

Division of Ser. No. 561,259, Dec. 14, 1983, Pat. No. 4,513,268.
This application Dec. 5, 1984, Ser. No. 678,208
Int. Cl.[4] H01H *11/00*
U.S. Cl. 29—602 R **1 Claim**

1. A method for automatically assembling a circuit breaker assembly within a molded plastic circuit breaker case having a plurality of retaining slots and guide channels integrally formed within the case comprising the steps of:

inserting an armature containing a latch opening within a first one of said retaining slots within said case;
positioning a contact blade and trip unit assembly over said armature within said case;
inserting a magnetic core over said trip unit and said armature and positioning a hook extension on said magnetic core over a shelf portion on said armature;
positioning a handle member within a second one of said retaining slots within said case;
inserting a two legged U-shaped cradle member having a circular end member at an end of one of the legs and a latch portion at an end of the other of the legs and positioning the circular end member over a pivot formed within said case and positioning said latch portion in operative relation to said armature latch opening;



arranging a mechanism spring, having a closed loop eye at both ends, between said cradle and said contact blade by engaging one of said spring eyes over a spring tab on said contact blade and engaging the other of said spring eyes over a spring tab on said cradle;
inserting a latch spring within a third one of said retaining slots within said case proximate a top end of said armature;
positioning an arc chute and fixed contact within a fourth recess formed in said case in operational relationship with said contact blade; and
fastening a molded plastic cover having a corresponding plurality of slots formed therein over said case whereby said slots formed in said cover cooperate with said slots formed in said case to provide operational clearance for said circuit breaker assembly.

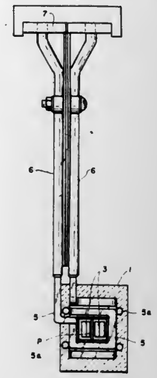
4,573,260

INDUCTION HEATED INTERCELL FUSION FOR LEAD/ACID STORAGE BATTERY

William E. Mullane, Warren, Ohio, and David Lund, Minneapolis, Minn., assignors to The Taylor-Winfield Corporation, Warren, Ohio

Filed Jun. 28, 1985, Ser. No. 749,629
Int. Cl.[4] H01M *6/00*
U.S. Cl. 29—623.1 **9 Claims**

1. A method of making an intercell connection in a storage battery with "over-the-partion" type riser construction, having vertical partition walls, comprising suspending a mold on the top of a partition wall with half of the mold on each side of said wall, projecting a pair of lead risers of intercell elements through said mold, one on each side of said mold, surrounding said mold and the upper end portion of said partition wall and the upper end portions of said lead risers with a coil, energizing said coil with sufficiently high frequency alternating electric current as to induction heat and melt the tops of said upper end portions of said lead risers to the top of said partition so as to bridge said lead risers over said partition and make an intercell connection, cooling said melted portions to solidification, and



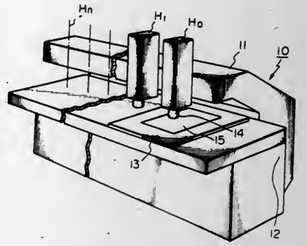
finally separating said coil and mold from said risers and partition wall.

4,573,261

AUTOMATIC ASSEMBLING MACHINE

Yasuhiro Honda; Katumi Ueno; Genichi Nishizaki; Harumi Kitahara, and Hiroshi Kamioka, all of Tokorozawa, Japan, assignors to Citizen Watch Company Limited, Tokyo, Japan

Division of Ser. No. 333,496, Dec. 22, 1981, Pat. No. 4,503,606.
This application Oct. 2, 1984, Ser. No. 657,106
Claims priority, application Japan, Dec. 26, 1980, 55-184078; Dec. 29, 1980, 55-186851; Dec. 29, 1980, 55-189330[U]; Dec. 29, 1980, 55-189331[U]; Jan. 27, 1981, 56-10445
Int. Cl.[4] H01R *43/04*
U.S. Cl. 29—701 **1 Claim**



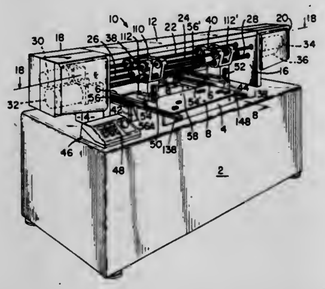
1. An automatic printed circuit board assembly machine in which a plurality of electronic parts are assembled on a printed circuit board at a plurality of predetermined assembling positions thereof, comprising:
a base;
a frame secured to said base;
assembling heads mounted on said frame;
a movable table provided on said base and carrying thereon said printed circuit board, said table being movable in an operating area to a selected one of a plurality of predetermined assembling head position coordinates, respectively, in dependence on the kinds of electronic parts to be assembled on said circuit board such that an origin of said printed circuit board is positioned at said selected one of said plurality of predetermined assembling head position coordinates to align said plurality of predetermined assembling positions to another plurality of predetermined assembling positions determined by said selected one of said plurality of predetermined assembling head position coordinates;
assembling position coordinates memory means for storing assembling position coordinates corresponding to said plurality of predetermined assembling positions, respectively, of said printed circuit board;
head position coordinates memory means for storing said predetermined assembling head position coordinates;
head selection command memory means for storing data of which one of said assembling heads is to be selected;
head selection command selector means for selecting said one of said assembling heads in response to an output signal from said head selection command memory means;
an arithmetic unit responsive to output signals from said assembling position coordinates memory means and said head position coordinates memory means for producing an output data in dependence on said assembling position coordinates and said selected one of said predetermined assembling head position coordinates; and
means for operating said movable table in response to the output data of said arithmetic unit.

4,573,262

APPARATUS FOR FORCE FITTING COMPONENTS INTO A WORKPIECE

Bryan J. Dornes, Hershey; Edward J. Paukovits, Jr., Hummelstown; Richard V. Spong, Etters, and Robert J. Talarico, Mechanicsburg, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed May 11, 1984, Ser. No. 609,387
Int. Cl.[4] B23P *21/00*
U.S. Cl. 29—739 **13 Claims**



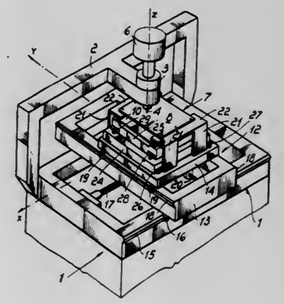
1. Apparatus for force fitting components into a workpiece, comprising means for supporting the workpiece in a given plane, first and second insertion heads, means for supporting the insertion heads for translatory movement along a predetermined path parallel to the given plane and on one side thereof, first drive means for intermittently translating the insertion heads along said path, component pick-up and insertion means moveably mounted on each insertion head, second drive means for moving the pick-up and insertion means towards and away from the given plane, a first component pick-up station on the one side of the workpiece supporting means and at one end of the predetermined path, and being associated with the first insertion head, a second component pick-up station on the opposite side of the workpiece supporting means and at the other end of the predetermined path, and being associated with the second insertion head, means for moving the workpiece at right angles to said predetermined path and in said plane, and control means for cyclically operating said drive means, so that each insertion head in turn is translated to a first position opposite to its associated component pick-up station and its component pick-up and insertion means is moved towards and away from such pick-up station to pick-up a component therefrom, and the insertion head is then translated to a second position opposite to the workpiece when such is supported by the workpiece supporting means and the component pick-up and insertion means of the insertion head is moved towards the workpiece to force fit the picked-up component thereinto, in which apparatus the drive means are so controlled that whilst one insertion head is in its first position the other insertion head is in its second position.

4,573,263

AUTOMATIC CONTACT-PIN SETTING APPARATUS FOR TESTING AN "OFF-GRID" PRINTED CIRCUIT

Ivo De Rossi, Via Carducci, 3, Arbizzano Di Negrar (Province of Verona), Italy

Filed Oct. 3, 1984, Ser. No. 657,426
Claims priority, application Italy, Oct. 7, 1983, 84964 A/83
Int. Cl.[4] B23P *19/00*
U.S. Cl. 29—741 **5 Claims**



1. An automatic contact-pin setting apparatus for testing an off-grid printed circuit, the apparatus having a contact-pin feeding head, a scanning unit, and an adaptor including a bed of plugs which are accommodated in respective holes formed in a basic plate according to a standard grid configuration and electrically connected to the circuit scanning unit, a reference plate which has a plurality of through holes arranged in the same "off-grid" configuration as the "off-grid" printed circuit to be tested and is located facing the basic plate, characterized in that the said adaptor comprises a first frame bearing the said basic plate and a second frame supporting the said reference plate movably mounted one with respect to the other so as to shift the said basic and reference plates one with respect to the other and to the said contact-pin feeding head across parallel planes spaced from one another, drive means for actuating the said first and second frames, and a processing unit arranged to control the said contact-pin feeding head and the said drive means to sequentially move holes in the reference plate to an operative position with respect to the said contact-pin feeding head and to shift the plug hole nearest to it in the basic plate in alignment with it to receive a contact-pin from the said contact-pin feeding head.

4,573,264

METHOD AND APPARATUS FOR FEEDING SLIDERS TO SLIDER POCKET FOR ASSEMBLING SLIDERS ON AN UNCUT FASTENER CHAIN

Shingo Hatagishi, Toyama, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

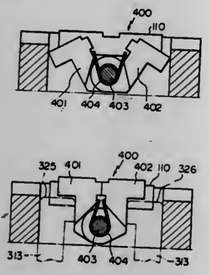
Division of Ser. No. 430,960, Sep. 30, 1982, Pat. No. 4,466,168.
This application May 25, 1984, Ser. No. 614,383
Claims priority, application Japan, Dec. 28, 1981, 56-214947
Int. Cl.[4] B21D *53/50*; A41H *37/06*
U.S. Cl. 29—766 **1 Claim**

1. An uncut fastener chain converging mechanism characterized by comprising:
a support shaft implanted in the end face of a support block

for uncut fastener chain transfer directly below an element guide channel of said support block;

a pair of L-shaped pieces the ends of the longer legs whereof are loosely fitted on said support shaft, the shorter legs whereof are directed away from each other; and

a coil spring wound around said support shaft, an elastic force due to straight end portions of the coil spring acting in a direction to urge said pair of L-shaped pieces away from each other;



opposing corner portions of each of the shorter legs of said pair of L-shaped pieces being provided with L-shaped cut-outs;

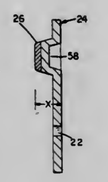
the opposing side faces of each of the longer legs being brought into mutual contact owing to the outer side faces of each of the longer legs of said pair of L-shaped pieces being engaged by the upper end faces of a holder case when the holder case is raised, a fastening element section of the uncut fastener chain being clamped by said cut-outs of the opposing corner portions of each of the shorter legs of the L-shaped pieces.

4,573,265

METHOD OF MAKING ELECTRICAL CONTACTS

Donald E. Conaway, Jr., Attleboro, and Ernest M. Jost, Plainville, both of Mass., assignors to Checon Corporation, Attleboro, Mass.

Filed Mar. 19, 1984, Ser. No. 590,631
Int. Cl.[4] H01R *43/02*
U.S. Cl. 29—879 **6 Claims**



1. The method of making an electrical contact which comprises providing a clad strip comprising a base metal contact blade in continuous strip form having bonded thereto a layer of contact material in continuous strip form coextensive in length with said base metal strip and spaced inwardly from the longitudinal margins thereof,

removing said contact material from said clad strip at spaced intervals along said strip, and

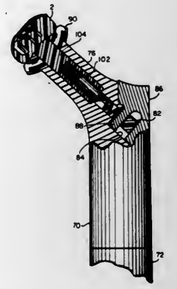
severing said base metal strip in said intervals to form individual contacts each having lateral margins in addition to said longitudinal margins and having an element of contact material bonded to said base metal and spaced inwardly from all of the margins thereof.

4,573,266

RAZOR BLADE ASSEMBLY

Chester F. Jacobson, Southboro, Mass., assignor to The Gillette Company, Boston, Mass.

Continuation-in-part of Ser. No. 419,202, Sep. 17, 1982, Pat. No. 4,492,024. This application Oct. 15, 1984, Ser. No. 660,953
The portion of the term of this patent subsequent to Feb. 12, 2002, has been disclaimed.
Int. Cl.[4] B26B *21/22, 21/44*
U.S. Cl. 30—41 **3 Claims**



1. A razor blade assembly comprising a leading blade member having a first cutting edge and a following blade member having a second cutting edge, said cutting edges being parallel with each other and facing a same direction to act in tandem upon a surface being shaved, said leading and following blade members being disposed between guard and cap portions adapted in operation to engage said surface being shaved ahead of and behind, respectively, said first and second cutting edges, said leading and following blade members and said guard portion being movable independently of the remainder of said blade assembly and independently of each other in response to forces encountered during a shaving operation, a shaving aid fixed to one of said guard and cap portions, said shaving aid being formed of a hydrophobic material and a water leachable hydrophilic polymeric material, the blade assembly having pivot mounting means thereon for pivotal attachment to a razor handle assembly, the blade assembly, as a whole, being pivotally movable on said handle assembly in response to forces encountered during the shaving operation, and a cam means on said assembly adapted to receive a biasing means disposed in said handle assembly and adapted to exert a yieldable biasing force on said pivotally movable blade assembly, whereby to maintain maximum contact between said surface being shaved and said leading and following independently movable blades, said independently movable guard portion, and said shaving aid.

4,573,267

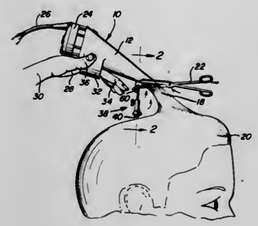
HAIRCUTTING DEVICE

Jane L. Grohoski, P.O. Box 325, Swamp Picnic Rd., and Diane L. Marinari, 458 Kleman Rd., both of Gilbertsville, Pa. 19525

Filed Mar. 15, 1984, Ser. No. 590,024
Int. Cl.[4] B26B *19/44*
U.S. Cl. 30—133 **8 Claims**

1. A haircutting device comprising an elongated hollow vacuum nozzle having an intake at one end thereof and means at the other end for reducing the pressure inside of the nozzle so that hair on a person's head will be drawn into the intake of the nozzle with the intake end of the nozzle forming a guide by which the hair can be cut by using a cutting implement, means on said nozzle for supporting engagement with a hand of the person using the device to enable the device to be manipulated in relation to the hair of a person receiving a haircut, and means adjustably supporting the intake end of the nozzle from

the surface of the head in order to accurately position the intake end of the nozzle in spaced relation to the head, said supporting means including a ball rollingly engaging the surface of the head for movement of the nozzle in any direction while the intake end is supported in predetermined relation to the surface of the head, said means supporting the intake end of the nozzle including a depending boss on the nozzle, a right angular support rod having a horizontal portion extending through the boss and a depending vertical portion, a lock



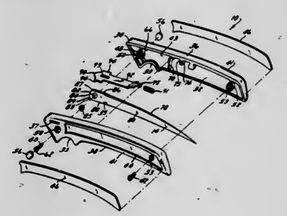
screw threaded into the boss for locking the support rod in adjusted position slidably and rotatably therein, a socket receiving said ball rotatably in the lower end thereof and including a tubular stem telescopically receiving the vertical portion of the support rod, and a lock screw threaded into the stem and locking the stem adjustably on the rod, and a graduated scale on the vertical portion of the support rod with the scale being associated with the top edge of the stem to indicate the height of the intake of the nozzle from the surface of the head.

4,573,268

FOLDING FILLET KNIFE WITH BLADE LATCHING MEANS

Daniel D. Call, Athens, Wis., assignor to Oy Fiskars AB, Helsinki, Finland

Continuation of Ser. No. 464,678, Feb. 7, 1983, abandoned. This application Jun. 11, 1985, Ser. No. 743,594
Int. Cl.[4] B26B *1/04*
U.S. Cl. 30—161 **4 Claims**



1. A folding knife comprising:

a handle;

a blade including a base end;

means for pivotably connecting said base end of said blade to one end of said handle to enable said blade to be swung between open and closed positions; and

blade latching means for releasably securing said blade in closed position and for releasably and positively locking said blade in open position, said blade latching means comprising:

a latch member on said handle which is shiftably movable lengthwise relative to said handle between latching and unlatching positions and having a slot cooperable with and for accommodating portions of said base end of said knife blade;

biasing means for moving said latch means lengthwise relative to said handle and for biasing said latch member into latching position when said blade is in open position;

said slot on said latch member being engageable with said base end of said knife blade to effect lengthwise shifting of said latch member from latching to unlatching position in response to movement of said knife blade; and

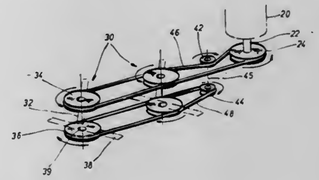
means on said latch member extending from said handle for manually shifting said latch member from latching to unlatching position.

4,573,269

HEDGE TRIMMER

Paul C. Hernandez, 4709 Dahlia La., Victoria, Tex. 77901

Filed Aug. 8, 1984, Ser. No. 638,768
Int. Cl.[4] A01G *3/06*
U.S. Cl. 30—240 **6 Claims**



1. A trimmer comprising:

an elongated support member;

a plurality of cutting assemblies supported by and spaced along said support member;

each said cutting assembly including

a shaft substantially normal to said support member,

first and second blades respectively fixed to first and second pulleys, said first and second pulleys being concentrically mounted for independent rotation about said shaft;

first and second offset pulleys mounted for codirectional rotation with respect to the support member;

an endless first belt trained about the first offset pulley and the first pulley of each cutting assembly,

an endless second belt trained about the second offset pulley and the second pulley of each cutting assembly,

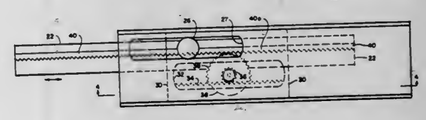
said first and second belts being configured to rotate the first pulley of each cutting assembly and its respective second pulley in opposite rotational directions.

4,573,270

MEASURING DEVICE FOR USE IN REMOTE LOCATIONS

Dennis D'Amico, 2073 - 64th Ave. S., St. Petersburg, Fla. 33712

Filed Jan. 9, 1984, Ser. No. 690,041
Int. Cl.[4] G01B *5/02*
U.S. Cl. 33—143 K **6 Claims**



1. A device that measures distances while the device is being held in a remote location where the measurement cannot be accurately read in a convenient manner, and which stores the measurement until the device can be moved to a location more suitable for accurate reading of the measurement taken, comprising,

an elongate, substantially hollow housing configured and dimensioned to be easily grasped by a human hand,

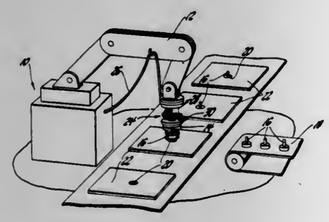
said housing having a leading edge and a trailing edge longitudinally spaced therefrom,
an elongate ruler member slideably received within said housing, said ruler member having a leading edge,
a flat plate member slideably disposed interiorly of said housing,
means for enabling linear reciprocation of said flat plate within said housing including a slot means formed in a wall of said housing through which slot means extends a knob member that is fixedly secured to said plate and which knob member is configured and dimensioned to be manipulated by a human digit to effect its travel within said slot means and hence to effect simultaneous and corresponding travel of said flat plate,
means for transmitting the reciprocation of said flat plate to said ruler member so that said ruler member is extended from and retracted into said housing attendant such plate reciprocation,
a ledge-detecting means useful for aligning the leading edge of said housing with a ledge that is spaced from an object by a distance to be measured by said device,
whereby displacement of said ruler member so that it extends longitudinally outward of said housing until its leading edge abuts said object produces an alignment of the leading edge of said housing and said ruler member which alignment provides a reading of the distance between said leading edge and said object, which reading can be made when said device is removed from said remote location.

4,573,271

MACHINE PERFORMANCE SENSOR

Kent R. Hamilton, West Alexandria, and John H. Kramer, Miamisburg, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 14, 1984, Ser. No. 589,659
Int. Cl.⁴ G01B *5/00*
U.S. Cl. 33—169 C **2 Claims**



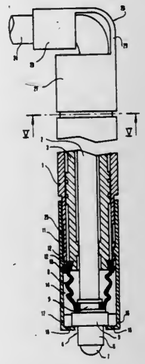
2. A sensor for monitoring operations performed by a manipulator which drives an end effector through at least two degrees of freedom, the sensor comprising;
input and output sections between and mounted to the manipulator and the end effector respectively for transmitting forces to the end effector and for allowing axial and rotational motion,
spring means acting between the input and output sections for maintaining the output section in a normal axial position unless overcome by a predetermined axial load, and in a normal rotary position unless overcome by a predetermined torque,
first, second, and third switches mounted on one of the sections, and cam means carried by the other of the sections for movement therewith and operatively connected to the switches including a first cam for operating the first switch whenever the output section moves from a normal position in either axial or rotary sense to yield an indication of an abnormal position, a second cam for operating the second switch when the output section moves from the normal position in the rotary sense to yield information on the mode of any abnormal position, and a third cam for operating the third switch when the output section rotates in a given direction from the normal rotary position to yield information on the direction of any abnormal rotation.

4,573,272

AXIAL MOVEMENT GAUGING HEAD

Guido Golinelli, and Mario Possati, both of Bologna, Italy, assignors to Finike Italiana Marposs S.p.A., S. Marino di Bentivoglio (BO), Italy

Filed Sep. 27, 1984, Ser. No. 655,169
Claims priority, application Italy, Oct. 14, 1983, 3584 A/83
Int. Cl.⁴ G01B *7/02*
U.S. Cl. 33—172 E **19 Claims**



1. An axial movement gauging head for checking linear dimensions of mechanical parts, comprising a casing having substantially an elongated shape which defines the measurement axis, a shaft partially housed within said casing for performing a translational axial displacement with regard to the casing, a feeler coupled to an end of the shaft for touching the part, transducer means for providing a signal depending on the amount of said displacement, and limiting means for limiting said displacement and defining a rest position for the feeler, wherein the limiting means comprise a limiting element externally arranged and axially adjustable with respect to the casing through a resilient coupling, the limiting element being adapted to cooperate with said end of the shaft for defining the rest position of the feeler.

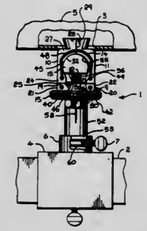
13. A gauging head for checking linear dimensions of mechanical parts, comprising a casing having substantially an elongated shape which defines a measurement axis, a shaft partially housed within said casing for performing a translational axial displacement with regard to the casing, a feeler coupled to an end of the shaft for touching the part, transducer means nfor providing a signal depending on the amount of said displacement, an electric cable for connecting the transducer means to an external electric unit, an additional element externally and removably coupled to the casing for cooperating with the cable and defining the direction of exit of the cable from the head, and locking means for defining and locking the position of the additional element with respect to the casing, wherein said additional element essentially comprises a first tubular portion defining a first direction, a second tubular portion defining a second direction and a third connecting portion having substantially an arcuate shape and defining a convex external surface and a concave internal surface, the first portion being adapted to cooperate with the casing and with the locking means for securing the additional element to the casing, the second portion housing the cable, the cable facing said concave internal surface of the third connecting portion.

4,573,273

CONNECTOR FOR A VEHICLE MEASURING SYSTEM

Leonard F. Eck, McPherson, Kans., assignor to Hein-Werner Corporation, Waukesha, Wis.

Filed Feb. 7, 1985, Ser. No. 699,321
Int. Cl.⁴ G01B *11/27*
U.S. Cl. 33—180 AT **10 Claims**



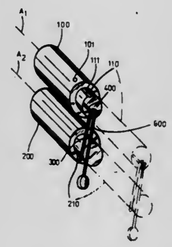
1. A connector for mounting an object to a fixture hole and comprising:
(a) a block member having a through bore;
(b) confronting arms swingably mounted to said block member and having ends means for engaging said fixture hole, said arms having spaced inner surfaces providing an opening therebetween and converging toward said block member;
(c) a threaded shaft extending through said bore in said block member and having a first end for connection to said object and a second end extending into said opening between said arms;
(d) wedge means mounted on said shaft and positioned in said opening, said wedge means engaging said arms inner surfaces;
(e) biasing means urging said arms into contact with said wedge means; and
(f) a wheel means for rotating said threaded shaft, said wheel means being positioned adjacent said block member and affixed to said threaded shaft, whereby when said shaft rotates, said wedge means moves thereon and urges said arms outwardly to engage said ends means with said fixture hole.

4,573,274

METHOD APPARATUS OF MEASURING AXIAL PARALLELISM OF ROLLER PAIRS

Hans Albert, Kunigundbergasse 626, A-2380 Perchtoldsdorf, Austria

Filed Sep. 29, 1983, Ser. No. 537,274
Int. Cl.⁴ G01C *9/12*
U.S. Cl. 33—182 **2 Claims**



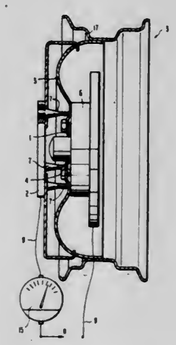
1. A method of determining the deviation of two respectively upper and lower cylindrical rollers from parallelism of their axes, wherein said rollers at corresponding first ends thereof have each an axial telescoped extension rod which has a free end face and is axially displaceable relative to the associated one of said rollers, the upper extension rod carrying at its free end face adjacent the perimeter thereof on a horizontal radius a pivot pin extending parallel to the axis of said upper roller and vertically swingably supporting a gauging rod and a pendulum, with said pendulum being disposed farther from said free end face of said upper extension rod than said gauging rod, comprising the steps of:
(a) locating said extension rods in respective first telescoped positions, with the upper extension rod having its free end face spaced farther from said first end of said upper roller in the axial direction than said lower extension rod to a degree permitting free swinging of said pendulum past said free end face of said lower extension rod but dictating tangential engagement of said gauging rod with the peripheral surface of said lower extension rod, and measuring the angle included between said gauging rod when the same is in engagement with said lower extension rod and said pendulum when the same is in a vertical rest position substantially perpendicular to said axes of said rollers;
(b) displacing both said extension rods to respective second telescoped positions spaced a predetermined distance from said first telescoped positions, and repeating the measurement of step (a); and
(c) calculating from the angles measured in steps (a) and (b) and from said predetermined distance the angular deviation, if any, of said roller axes from parallelism with each other.

4,573,275

ARRANGEMENT FOR THE MOUNTING OF MEASURING DEVICES OF AXLE MEASUREMENT EQUIPMENTS

Güenter Bremer, Bondorf, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

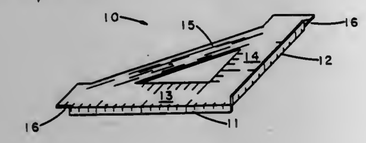
Filed May 7, 1984, Ser. No. 607,598
Claims priority, application Fed. Rep. of Germany, May 7, 1983, 3316869
Int. Cl.⁴ G01B *7/315, 11/275*
U.S. Cl. 33—288 **5 Claims**



2. An installation for the mounting of measuring devices of axle-measurement equipment, comprising a fastening plate means adapted to be secured at a vehicle wheel having a wheel disk, said fastening plate means including electrically conducting abutment pin means operable to extend through the wheel disk and abutting against a plane reference surface of the vehicle axle, the abutment pin means being electrically insulated with respect to one another and longitudinally displaceable within limits against the force of abutment spring means, an electric circuit means with a signal generator means, said abutment pin means being included in said electric circuit means, and said signal generator means being operable to produce a

clearance signal only with satisfactory mechanical abutment of all abutment pin means at the reference surface.

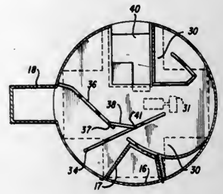
4,573,276
TOOL GUIDE
David J. Torczon, 714 N. 49th St., Omaha, Nebr. 68132
Continuation-in-part of Ser. No. 281,948, Jul. 10, 1981, abandoned. This application Dec. 20, 1982, Ser. No. 447,780
Int. Cl.⁴ B43L *13/00*
U.S. Cl. 33—481 **1 Claim**



1. A tool guide for directing hand tools over a workpiece comprising:
(a) integrally formed right angle base plate means comprising an integeral generally rigid "L" shaped carpenter's square having first and second legs;
(b) first guide means operably attached to said first leg for aligning said base plate means with a workpiece; and
(c) second guide means operably attached to said second leg for guiding a hand tool over said workpiece,
said right angle base plate means comprising upper and lower surfaces, a first elongate scribe edge along said first leg and a second elongate scribe edge along said second leg positioned in perpendicular relation to said first scribe edge,
said first guide means comprising a first elongate strip operably protruding from the lower surface of said base plate means in longitudinal alignment with said first elongate scribe edge,
said second guide means comprising a second elongate strip operably protruding from the upper surface of said base plate means in longitudinal alignment with said second scribe edge,
said first and second elongate strips being of shorter length than said first and second scribe edges respectively thereby to provide cutouts to facilitate clamping of said tool guide to a workpiece which is thinner than the width of said first and second elongate strips, and
a cross brace connected to and extending between said first and second legs, said cross brace being substantially coplanar with said first and second legs,
said tool guide being free of elements situated above and below said base plate means other than said first and second elongate strips whereby said tool guide is adapted for use with either the upper or lower surface of the base frame means facing upwardly.

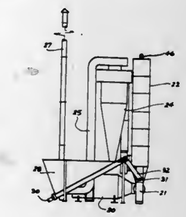
4,573,277
ULTRAVIOLET LIGHT CURING APPARATUS
Donald L. Sudduth, 181 N. Harbor Dr., Redondo Beach, Calif. 90277
Filed Dec. 26, 1984, Ser. No. 686,441
Int. Cl.⁴ F26B *15/04*
U.S. Cl. 34—4 **7 Claims**

1. Apparatus for curing ultraviolet curable inks on articles, such as bottles, and the like, comprising: a housing having a loading port and an unloading port; a common rotatable disc mounted in the housing having a horizontal top surface for carrying a plurality of the articles each in an upright position from the loading port to the unloading port; a source of ultraviolet radiation mounted adjacent to the housing for directing ultraviolet radiation into the housing so that each of the articles is carried by the common disc into the radiation; and a guide member mounted in said housing and extending at least partially across the disc in position to engage the articles carried by the disc to cause each of the articles to turn about its vertical



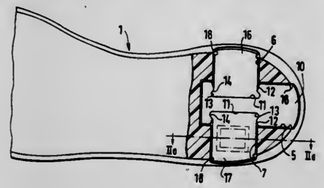
axis to expose its entire peripheral surface to the ultraviolet radiation.

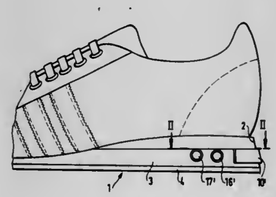
4,573,278
APPARATUS FOR THE DEHYDRATION OF ORGANIC MATERIAL
Jose L. Ruiz-Avila, Palmwoods, Australia, assignor to AKT Consultants Pty, Limited, Queensland, Australia
PCT No. PCT/AU83/00004, § 371 Date Sep. 19, 1983, § 102(e) Date Sep. 19, 1983, PCT Pub. No. WO83/02495, PCT Pub. Date Jul. 21, 1983
Continuation of Ser. No. 537,414, Sep. 19, 1983, abandoned. This PCT application Jan. 14, 1983, Ser. No. 737,904
Claims priority, application Australia, Jan. 19, 1982, PF2335
Int. Cl.⁴ F26B *17/12*
U.S. Cl. 34—168 **16 Claims**



1. Apparatus for the dehydration of organic material in which the material is passed from an agitating chamber and through a dehydrating tower by means of a stream of heated air, said apparatus characterized in that:
(a) said tower includes therein substantially upright baffle means defining on respective opposite sides thereof first and second paths for the material, the arrangement being such that substantially all of the material introduced into said tower is passed by the stream of heated air upwardly along said first path and downwardly along said second path;
(b) said substantially upright baffle means comprises a series of vertically disposed baffles mounted one above the other;
(c) said vertically disposed baffles may be aligned in a common plane such that the stream of heated air passes upwardly along said first path on one side of said plane, above the highest baffle in said series of vertically disposed baffles, and downwardly along said second path on the other side of said plane;
(d) at least some of said vertically disposed baffles are mounted so as to be individually movable out of said plane to vary the effective height of said substantially upright baffle means such as to allow the passage of the stream of heated air from said one side to said other side of said plane at selected locations below the upper edge of said highest baffle;
(e) driving means associated with said movable, vertically disposed baffles, said driving means being actuable to a first extent to move said highest baffle out of said plane to an inoperative position so that the effective height of said substantially upright baffle means and the height of said path of the material is determined by the second highest baffle in said series of movable, vertically disposed baffles; and
(f) said driving means is actuable to a second extent to cause movement of said second highest baffle out of said plane to an inoperative position so that the effective height of said substantially upright baffle means and the height of said path of the material is determined by the third highest baffle in said series of movable, vertically disposed baffles.

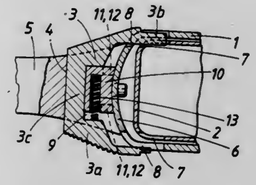
4,573,279
RUNNING SOLE FOR SHOES, ESPECIALLY SPORTS SHOES, WITH ADJUSTABLE HEEL CUSHIONING
Rudolf Feurer-Zogel, Fürth, and Rudolf Vogler, Herzogenaurach, both of Fed. Rep. of Germany, assignors to Adidas Sportschuhfabriken Adi Dassler Stiftung & Co. KG, Fed. Rep. of Germany
Filed Nov. 1, 1984, Ser. No. 667,351
Claims priority, application Fed. Rep. of Germany, Dec. 9, 1983, 3344535; Aug. 22, 1984, 3430845
Int. Cl.⁴ A43B *21/26*
U.S. Cl. 36—35 R **13 Claims**





1. A running sole for a shoe, said sole comprising a sole body of softly resilient material in the heel region, said body having a longitudinal axis, an upper surface of said body located below the heel of the wearer and a lower surface of the body, a rear edge and two side edges of the body joined by said rear edge, a first generally longitudinally extending recess formed in the body, below the upper surface and above the lower surface and opening at one edge thereof, at least one generally transversely extending second recess in the body below the upper surface and above the lower surface and opening into at least one of said two side edges, said at least one second recess intersecting said first recess, a first springably compressible and flexible supporting body exchangeably insertable into said first recess and having a cross-section largely filling the cross-section of said first recess, a second springably compressible and flexible supporting body exchangeably insertable into said at least one second recess, and having a cross-section largely filling the cross-section of said second recess, at least one opening in one of said first and second supporting bodies and a portion of the other of said first and second supporting bodies being engageable in said at least one opening in said one supporting body.

4,573,280
PISTOL AND GRIP-AND-TRIGGER GUARD ASSEMBLY
Satish K. Malhotra, Steyr, Austria, assignor to Steyr-Daimler-Puch Aktiengesellschaft, Vienna, Austria
Filed Apr. 30, 1984, Ser. No. 605,680
Claims priority, application Austria, May 4, 1983, 1637/83
Int. Cl.⁴ F41C *3/00, 25/06*
U.S. Cl. 42—7 **3 Claims**



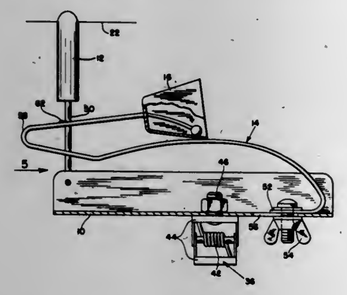
1. In a pistol comprising
a grip adapted to contain a magazine that is slidable along said grip and has lateral slots on opposite sides,
a trigger guard detachably secured to said grip and having a surface adjoining said grip,
a track extending transversely to the longitudinal direction of said grip,
a substantially U-shaped magazine catch comprising a crosspiece, which extends in said track transversely to the longitudinal direction of said grip and is slidable along said track, and first and second legs extending from said crosspiece, said first leg constituting a pushpiece, said second leg constituting a locking member adapted to extend into said grip and into one of said lateral slots of said magazine in said grip, and
a compression spring, which extends along said track and biases said magazine catch to urge said second leg into said lateral slot, whereby said first leg is operable against the force of said spring to move said second leg out of said one lateral slot so as to release said magazine for movement out of said grip,
the improvement residing in that said track is provided in said trigger guard and open toward said surface of said trigger guard,
said crosspiece is formed with a recess, which is open toward said surface of said trigger guard,
said trigger guard is formed with retaining recesses, which open into said track,
an abutment member is accommodated in said recess in said crosspiece and extends from said crosspiece as far as to said surface of said trigger guard and carries locking noses received by said retaining recesses so that said abutment member is held against movement along said track,
said compression spring bears at one end on said first leg and at another end on said abutment member, and
said grip is formed adjacent to said trigger guard with two slots, each of which receives one of said legs of said magazine catch.

4,573,281
AUDIBLE AND VISUAL INDICATOR
Louis E. Moisan, 1920 N. Main St., Lancaster, Mass. 01523
Filed Jan. 14, 1985, Ser. No. 691,115
Int. Cl.⁴ A01K *97/12*
U.S. Cl. 43—17 **9 Claims**

1. A fishing strike indicator comprising a channel including a bottom and sides, an elongated spring wire having a free end and a connection to the bottom of the channel at the opposite end, the wire being resilient and normally standing generally upright, an audible and visual signal at the free end of the wire, said connection being located adjacent one end of the channel, a trip comprising a member located transversely of the

channel adjacent the other end thereof and rotably mounted in the sides of the channel, an extension on the trip extending across the sides of the channel in spaced relation thereto and being swingable with the rotary member and having two positions, said extension in one position being effective to constrain the elongated wire in a loaded condition generally parallel to the channel, and in the other position releasing the wire to spring upright generally at right angles to the channel,

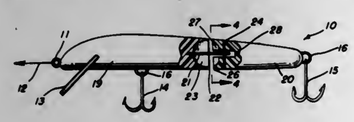
a releasable spring clip attached to the bottom of the channel exteriorly thereof to releasably connect the indicator as a whole to a fishing rod,



the elongated wire being doubled on itself so that the terminal end and audible signal lie between the trip and the connection of the elongated wire to the bottom of the channel, and the doubled area of the elongated wire extends past the trip in wire loading condition thereof, the trip extension engaging the doubled part of the elongated wire in set condition; and

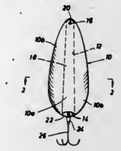
a fishing line, a repository therefor, and resilient releasable fishing line catch means on the extension, whereby the latter is rotated away from the elongated wire upon a pull on the line and clears the doubled part of the elongated resilient wire.

4,573,282
FISHING LURE
Lacy A. Rowe, 1851 Skycoe Dr., Salem, Va. 24153
Filed Apr. 3, 1984, Ser. No. 596,381
Int. Cl.⁴ A01K *85/00*
U.S. Cl. 43—42.15 **11 Claims**



1. An articulated fishing lure for simulating an injured minnow when pulled through water comprising at least a leading body section of substantially equal mating diameter and a trailing body section articulated to said leading body section, said leading body section having a front end and a rear end, a first cupped cavity of circular shape extending axially inwardly from the rear end of said leading body section into said leading body section, said trailing body section having a front end and a rear end, a second cupped cavity of circular shape extending axially inwardly from the front end of said trailing section into said trailing body section, a drawbar axially fixed in said leading body section adjacent the bottom of said first cupped cavity and extending rearwardly from said leading body section beyond the rear end thereof and into said second cavity and pivot means within said second cavity for pivotally connecting said drawbar to said trailing body section, said pivot means having a pivot point located between the front end of the trailing section and the centroid of said trailing section, said pivot point being located substantially to the rear of said front end of said trailing section and sufficiently forward of said centroid to prevent said lure from mechanically locking in a jack-knife position when pulled through the water, said first and second cupped cavities being of a size and shape to permit the front end of said trailing section to swing freely to either side within said first cupped cavity.

4,573,283
FISHING LURE
Aaron J. Pippert, Houston, Tex., assignor to Utex Industries, Inc., Houston, Tex.
Continuation-in-part of Ser. No. 186,411, Sep. 12, 1980, abandoned. This application Jan. 28, 1983, Ser. No. 462,057
Int. Cl.⁴ A01K *85/00*
U.S. Cl. 43—42.09 **13 Claims**



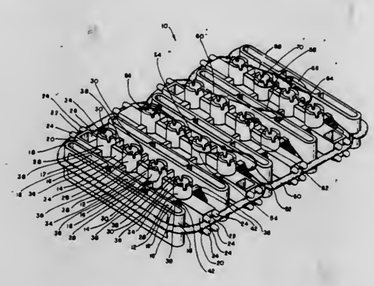


1. A fishing lure comprising:

an integrally formed flexible lure body having a major lengthwise dimension and outer surfaces defining the general overall external size and configuration of said lure, said lure body comprising a central portion defining a preformed cavity extending generally lengthwise through said body, said cavity being substantially smaller than said overall external size and having a leading end and a trailing end, and said lure body having an insert opening through the exterior thereof into said cavity, said body further comprising peripheral portions adjoining said central portion and extending substantially away from said cavity in directions transverse to the lengthwise direction; and

an insert slidably mounted in said cavity but selectively removable from said cavity through said insert opening, said insert having a leading end disposed adjacent the leading end of said cavity and a trailing end disposed adjacent the trailing end of said cavity, said insert having a configuration which is asymmetrical about a longitudinally and laterally extending plane through said leading and trailing ends of said insert and which differs from that assumed by said cavity in a relaxed condition without said insert therein, such that insertion of said insert into said cavity will cause deflection of said lure body in a direction from said leading end to said trailing end and alter the external configuration of said lure body.

4,573,284
LEADER WINDING DEVICE
Richard A. Hanson, 21220 NE. 156th Ave., Woodinville, Wash. 98072
Filed Apr. 24, 1984, Ser. No. 603,448
Int. Cl.⁴ A01K *97/06*
U.S. Cl. 43—57.2 **35 Claims**



1. A leader winding device adapted to have securely wound about it at least one wound leader of any given length comprising a length of wound leader line having attachment means at each end thereof, wherein each said attachment means comprises one of a hook, swivel and loop, wherein said device comprises:

a body having at least one face surface, and at least one edge surface, wherein said body defines at least one leader winding recess between at least two at least generally planar wall surfaces comprising at least one leader winding face recess within said face surface and at least one leader winding edge recess within said edge surface; wherein said leader winding recess is adapted to receive within it and protect at least a portion of said wound leader;

a plurality of spaced apart body anchor means adapted to anchor said attachment means; wherein said body anchor means are located exterior to and adjacent said leader winding recess; wherein the selection of a particular body anchor means for each of said attachment means helps to enable said wound leader of any given length to be wound on said device;

wherein said at least one wound leader is adapted to be wound alternately among at least one adjacent pair of said body anchor means; and

wherein the length of a particular route followed by said wound leader on said device varies substantially depending on said particular route followed by said wound leader with respect to said body anchor means to help to enable said wound leader of any given length to be wound on said device.

4,573,285
WINDOW INTRUSION BARRIER
Isidore Jokel, 4201 Newport H, Deerfield Beach, Fla. 33441
Continuation-in-part of Ser. No. 573,855, Jan. 25, 1984, Pat. No. 4,532,734. This application Jul. 30, 1984, Ser. No. 636,094
Int. Cl.⁴ E06B *3/68*
U.S. Cl. 49—55 **5 Claims**

1. A safeguard system for a vertically adjustable window comprising:

(a) a barrier apparatus of adjustable horizontal length adapted for insertion into a window casement below a framed rectangular window slideably positionable within said casement, said barrier apparatus comprising:

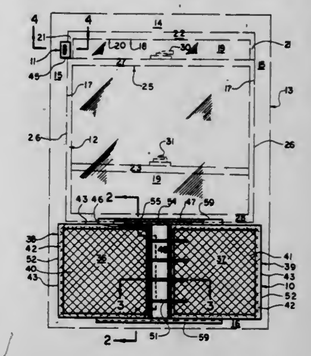
(1) two vertically disposed gridwork panels in horizontally spaced coplanar juxtaposition,

(2) first and second rigid rectangular frames adapted to border and support said panels, each frame comprising horizontally disposed upper and lower straight borders and facing and outer vertically oriented straight side borders, the facing side border of said first frame having vertically spaced guide apertures, said upper and lower borders being aligned on straight paths,

(3) horizontally directed mating posts affixed to the facing side border of said second frame and adapted to slideably penetrate said guide apertures,

(4) a first series of positioning apertures of uniform size located in at least one horizontal border,

(5) an extension arm associated with the corresponding



upper or lower horizontal border of the frame alternate to the frame having said first series of positioning apertures,

(6) a second series of positioning apertures located in said extension arm substantially matching the size of the apertures of said first series, and

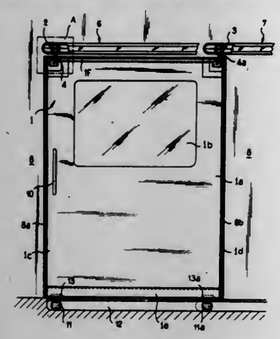
(7) a coupling pin adapted to vertically interengage aligned positioning apertures of said first and second series, thereby fixing the horizontal length of said barrier apparatus, and

(b) locking means for immobilizing said slideably positionable window with respect to said casement.

4,573,286
DEVICE FOR SUSPENDING AND GUIDING A MOVABLE PANEL, IN PARTICULAR FOR AN OBLIQUE-DISPLACEMENT SLIDING DOOR
Michel Favrel, Le Perreux, and Jean-Francois Penanhoat, Herblay, both of France, assignors to Faiveley Entreprises, Saint-Ouen, France
Filed Dec. 5, 1984, Ser. No. 678,502
Claims priority, application France, Jan. 4, 1984, 8400062
Int. Cl.⁴ E05D *15/06*
U.S. Cl. 49—214 **10 Claims**

1. A device for suspending and guiding a movable panel (1*a*) or a similar load, especially for an oblique-displacement sliding door (1) comprising at least one rolling element (2, 3) attached to the movable panel by means of a connecting member (4, 4*a*), the rolling element comprising two rollers (Gs, Gi) in cooperating relation with rolling surfaces (6*a*, 6*b*, 6*c*, 6*d*) of a tubular guide track (6, 7) which can have rectilinear portions and curved portions, wherein the rolling surfaces (6*a*, 6*b*, 6*c*, 6*d*) of the guide track (6, 7) are located in oppositely-facing relation on each side of the connecting member (4, 4*a*) at an oblique angle with respect to said member, the profiles of the two

rolling surfaces and of the two rollers (Gs, Gi) being adapted to each other in order to prevent a movement of translation of



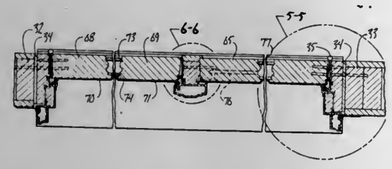
the rolling element in a plane transverse to said tubular guide track.

4,573,287

DOUBLE OPENING EXTERIOR FRENCH DOOR AND DOOR IMPROVEMENTS

Bruce A. Hagemeyer, Pella, and Mearl J. Minter, Oskalossa, both of Iowa, assignors to Rolscreen Company, Pella, Iowa

Filed Jan. 19, 1984, Ser. No. 572,226
Int. Cl.[4] E06B *3/34*
U.S. Cl. 49—381 **7 Claims**



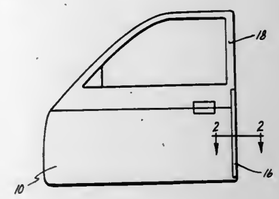
1. An exterior door assembly comprising:
a door frame including a sill, head and jambs;
a door panel including stiles, rails, and aluminum cladding on the stiles and rails, the door panel being hingedly mounted to a jamb of the door frame;
interior, air seal weatherstripping on the jambs and head of the door frame located to contact the aluminum cladding on the door panel; and
exterior, water seal weatherstriping on the jambs and head of the door frame to the exterior of the interior, air seal weatherstriping and also located to contact the aluminum cladding on the panel;
the exterior, water seal and interior, air seal weatherstripping together providing therebetween an insulating, weatherstriping air space about the jambs and head of the door frame;
the door panel further including double glazing panels defining an insulating, glazing panel air space therebetween, the double glazing panels being mounted on the stiles and rails;
the aluminum cladding on the stiles being pierced with lances between the interior, air seal weatherstripping and the exterior, water seal weatherstripping; and the stile defining air passages from the glazing panel air space to the lances.

4,573,288

MAGNETIC DOOR EDGE GUARD

Robert Adell, Sunnyvale, Tex., assignor to U.S. Product Development Company, Sunnyvale, Tex.

Filed Sep. 7, 1984, Ser. No. 648,426
Int. Cl.[4] E05F *7/00*
U.S. Cl. 49—462 **7 Claims**



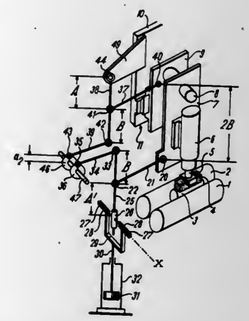
1. A door edge guard for the trailing edge of a swinging metal closure comprising an elongate non-metallic one-piece unitary body of generally U-shaped cross section having a generally semi-circular base with inner and outer legs extending from opposite ends of the base and containing a plurality of permanently magnetized elements for attaching the edge guard magnetically to the trailing edge of the swinging metal closure in which said plurality of permanently magnetized elements comprise wires running lengthwise of the non-metallic body and distributed around the U-shaped cross section at spaced apart intervals, each of said legs and base containing at least one of said wires and in which said wires and non-metallic body are so organized and arranged in the cross section that the wires occupy a substantial portion of the thickness of said non-metallic body, being just slightly less than the non-metallic body's thickness, but are fully encapsulated so that the interior and exterior surfaces of the cross section are non-metallic.

4,573,289

APPARATUS FOR SUPERFINISHING BEARING ROLLERS

Karl Wieck, Stuttgart, Fed. Rep. of Germany, assignor to Supfina Maschinenfabrik Hentzen GmbH & Co KG, Fed. Rep. of Germany

Filed Jun. 6, 1983, Ser. No. 501,341
Claims priority, application Fed. Rep. of Germany, Jul. 10, 1982, 3225977
Int. Cl.[4] B24B *7/00, 19/06*
U.S. Cl. 51—57 **5 Claims**



1. An apparatus for superfinishing a cylindrical workpiece, the cylindrical surface of which is rotationally symmetrical and convex defining thereby a cylindrical axis, said apparatus comprising:
a machine frame;

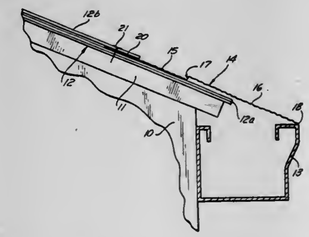
two rotatable rollers for imparting rotation to the workpiece about its cylindrical axis;
an oscillating honing stone;
a first plate to which the oscillating honing stone is mounted;
a second plate to which the first plate is pivotably mounted; and
first drive means and second drive means connected to the first plate and the second plate, respectively, and rotatable with respect to a common axis to impart a synchronous oscillatory motion to the first plate and the second plate, respectively, and to thereby superimpose on the oscillating honing stone a further oscillatory motion along a circular path.

4,573,290

DRAIN SHIELD FOR EAVE GUTTERS

John H. Fleming, 53 Wildwood Ter., Glen Ridge, N.J. 07028

Filed Aug. 23, 1984, Ser. No. 643,682
Int. Cl.[4] E04D *13/06*
U.S. Cl. 52—12 **8 Claims**



1. A drain shield for eave gutters in the form of screen sections adapted to be assembled in end-to-end relation along an eave gutter, each such section being of a front to rear dimension to overlie the gutter and first course of shingles and to extend under the second course of shingles for mounting purposes, such screen section being of open screen-like structure suitably having aligned square openings measuring approximately ¼-inch on the side, each screen section being upwardly deformed intermediate its front and rear edges and at a location to align with approximately the middle one third of the first course of shingles to divide said section into a mounting portion and a gutter overlying portion, and to dispose one line of said square openings perpendicular to the plane of the screen section, the portion of the screen section overlying the gutter thereby being raised approximately ¼-inch above the mounting portion, and the perpendicularly disposed line of openings providing means for diverting water into the gutter while causing leaves and other debris to be carried over and discharged beyond the edge of the gutter.

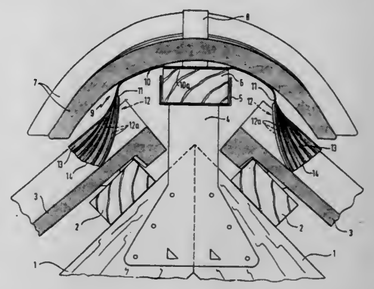
4,573,291

RIDGE OR HIP COVERING FOR TILED ROOFS

Karl-Heinz Hofmann, Mucke, Fed. Rep. of Germany, assignor to Braas & Co. GmbH, Frankfurt, Fed. Rep. of Germany

Filed Feb. 24, 1984, Ser. No. 583,184
Claims priority, application Fed. Rep. of Germany, Feb. 26, 1983, 3306837
Int. Cl.[4] B61D *17/14*
U.S. Cl. 52—43 **14 Claims**

1. A covering strip for the edge of a tiled roof having a ridge board, a plurality of covering caps fastened to said ridge board and forming an uppermost covering of said ridge board, said covering strip being located between said caps and said ridge board and comprising:
a flexible, substantially continuous support portion extending longitudinally of the strip, said strip including a pair of lateral edge portions at least one of said edge portions being subdivided into a multiplicity of transversely extending comblike teeth projecting away from said support portion of the strip,
and a longitudinally extending edge strip of flexible material secured to said one edge portion and connecting said



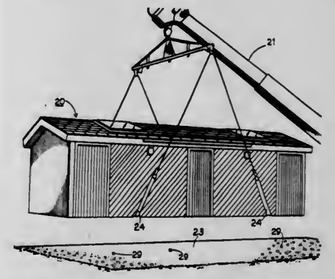
comblike teeth together, said edge strip is movable with said teeth
whereby engagement of said at least one edge portion of the strip with a contoured surface of a tiled roof forms a seal with said contoured surface.

4,573,292

PREFABRICATED, SELF-CONTAINED BUILDING

Charles E. Kaufman, Old Greenwich, Conn.; Marvin R. Shetler, Scotts Mills, Oreg., and William M. Sharp, Stamford, Conn., assignors to Restroom Facilities Corporation, Reno, Nev.

Division of Ser. No. 397,919, Jul. 13, 1982, Pat. No. 4,485,608.
This application Aug. 31, 1984, Ser. No. 646,141
Int. Cl.[4] E04G *21/14*; E04B *1/348*
U.S. Cl. 52—79.1 **14 Claims**



1. A floorless, factory pre-assembled, relocatable building constructed for mounting on a substantially level, monolithic, concrete foundation slab, the building comprising:
A. at least two pairs of interconnected, rigidized, self-supporting wall members, each having a length substantially equal to the entire, overall, outside dimension of one side of the building and incorporating
1. a top frame portion formed by two rows of elongated plank members in stacked abutting engagement, with said abutting plank members being securely engaged to each other by both nailing and gluing along their entire length,
2. a bottom frame formed by three rows of elongated plank members in stacked, abutting engagement with said abutting plank members being securely engaged to each other by both nailing and gluing along their entire length,
3. a plurality of intermediate, substantially vertically disposed stud members interconnecting said top frame portion to said bottom frame portion, with each of said

stud members being nailed and glued on its terminating ends to said frame portions, and

4. interior, wall surface-forming sheathing securely mounted to the plank members of the wall member by nailing and gluing said sheathing to said plank members;

B. the first of said pairs of wall members incorporating mortise zones formed in each corner of each wall member by one of the rows of plank members in the top frame portion and one of the rows of plank members in the bottom frame portion having an overall length less than the length of the rows of plank members in stacked abutting engagement therewith; and

C. the second of said pairs of wall members incorporating tenon portions extending from each corner of each wall member, with said tenon portions being positioned for mating engagement with the mortise zones of said first pair of wall members and secured therein by fastening means and said tenon portions being formed by one of the rows of elongated plank members of the top frame portion and one of the rows of elongated plank members of the bottom frame portion having an overall length greater than the length of the row of plank members in stacked, abutting engagement therewith,

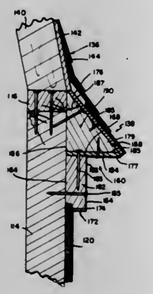
whereby a self-supporting, integrated, substantially unitized, rigidized assembly of wall members is attained in mating, interconnected, interengagement with each other to form a structurally rigid, reinforced building capable of being lifted in its entirety without any degradation thereof.

4,573,293

BUILDING STRUCTURE

Owen H. Park, Carmel, Ind., assignor to Heartland Industries, Inc., Carmel, Ind.

Continuation-in-part of Ser. No. 354,511, Mar. 3, 1982, Pat. No. 4,481,744. This application Jan. 23, 1984, Ser. No. 573,117
Int. Cl.[4] E04D *11/02*
U.S. Cl. 52—92 **13 Claims**



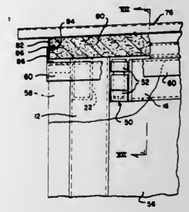
1. A building structure, comprising outer walls, a roof including a lower border that overhangs at least one of the out walls, a frame for supporting the outer walls and roof, the frame including a frame member forming part of an upper portion of the one outer wall, the frame member having a top edge adjacent the roof and a bottom edge, a wall panel secured to the frame adjacent the bottom edge of the frame member, the wall panel forming the lower portion of the one outer wall, at least one spacer member supported on the top edge of the frame member for providing a lower border rafter extending substantially beyond and substantially below the top edge of said frame, the spacer member having a side surface forming an upper portion of the frame and a top surface at an acute angle with respect to the side surface, and roof member transverse to said spacer member and supported on the top surface of the spacer member to provide the lower border of the roof.

4,573,294

FRAMEWORK FOR BUILDING CONSTRUCTION

Robert W. Lienhard, Pittsburgh, Pa., assignor to Swiss Fabricating, Inc., Pittsburgh, Pa.

Filed Feb. 3, 1983, Ser. No. 463,522
Int. Cl.[4] E04B *7/02*
U.S. Cl. 52—93 **1 Claim**



1. A framework capable of rapid erection and disassembly for use in constructing a building comprising:

a plurality of spaced column members;

at least one socket member attached at the upper end on each side of each of said column members facing an adjacent column member, said socket member defining an axial opening;

beam members extending between adjacent column members, each of said beam members having attached at each end a socket member defining an axial opening and proportioned to releasably register with said socket member on said facing column member in alignment therewith so that said openings of such registered socket members define a pin receiving means;

a pin member releasably extendable through said pin receiving means to releasably interlock said beam member and said facing column member;

channel members so mounted at the top and bottom of each pair of column members intended to be spanned by a wall that such top and bottom mounted channel members project exteriorly from said pair of column members in vertical alignment with each other, said channel members having opposing recesses for snugly and releasably receiving vertically arranged wall panel members along the outboard side of said pair of column members; and

inwardly facing channel members mounted on said channel members at the top of each pair of column members intended to form the perimeter of said building, each said inwardly facing channel member having a free leg; and

clip means for releasably engaging said free leg for connecting roof panel members to said framework.

4,573,295

SET OF BUILDING ARTICLES AND METHOD OF MAKING AND USING THE SET TO CONSTRUCT A PREDESIGNED, PRE-ENGINEERED STRUCTURE

Rudolph P. Wilkinson, 1021 Osage St., Ardmore, Okla. 73401

Filed Jun. 13, 1984, Ser. No. 620,397
Int. Cl.[4] E04B *2/100*
U.S. Cl. 52—105 **19 Claims**

1. A set of a plurality of types of building materials for constructing a predesigned, pre-engineered structure on a foundation, comprising:

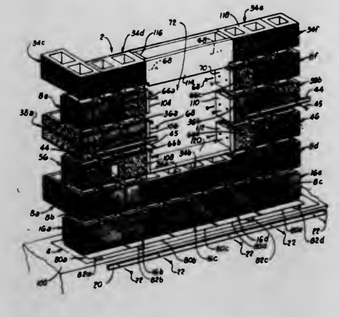
a diagram including a plurality of indicia defining the location of each of the building materials in the structure and further defining the type of building material to be used at the defined location;

a baseboard block having a first indicium identical to a first one of the plurality of indicia included on said diagram;

a standard block, connectible with said baseboard block, having a second indicium identical to a second one of the plurality of indicia included on said diagram;

a top block, connectible with said standard block, having a third indicium identical to a third one of the plurality of indicia included on said diagram; and

a full-scale pattern, separate from said baseboard block and the foundation upon which the structure is to be constructed, for receiving said baseboard block after said pattern has been placed on the foundation where the structure is to be constructed, said pattern including a substratum having indicia thereon defining the location at which said baseboard block is to be received.

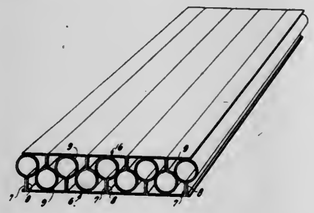


4,573,296

CONSTRUCTION PANEL AND METHOD OF PROVIDING THE SAME

John G. Wrigley, 6900 Almond Ave., No. 87, Orangevale, Calif. 95662

Filed Nov. 26, 1984, Ser. No. 675,031
Int. Cl.[4] E04H *12/18*
U.S. Cl. 52—108 **2 Claims**



1. A construction panel comprising:

a. a deformable sheet having a plurality of identical, uniformly spaced apart, parallel forms,

(1) each form including flat portions lying in a common plane,

(2) each form including a nearly complete circular cylinder, the axis of which is parallel to said common plane and is spaced from said common plane a predetermined distance, said nearly complete circular cylinder having adjacent edges, and

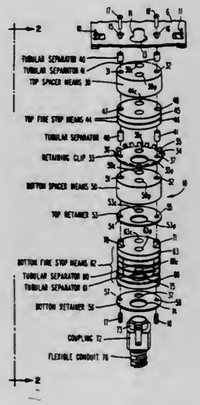
(3) each form including a pair of parallel flat fins each connected to an adjacent one of said flat portions and to an adjacent one of said edges of said cylinder, and upstanding in virtual abutment in a direction substantially normal to said plane and approximately radial to said cylinder, said fins being yieldable to the insertion of a planar portion of said deformable sheet between them.

4,573,297

ECONOMY POKE-THRU

Richard D. Benscoter, Vienna; Robert W. Hadfield, and Timothy S. Bowman, both of Parkersburg, all of W. Va., assignors to Butler Manufacturing Company, Kansas City, Mo.

Filed Sep. 26, 1983, Ser. No. 535,620
Int. Cl.[4] E04B *5/48*
U.S. Cl. 52—221 **7 Claims**



1. An improved poke-thru assembly having: a service fitting to be mounted on a building floor and a thru floor unit to be mounted in a bore in the building floor, the floor fitting to provide power and/or communication service at a work station on the floor surface and the thru floor unit to carry power and/or communication conductors from underneath the floor to the service fitting and having fire stop means for sealing the bore against passage of fire and smoke, the assembly comprising:

said service fitting including:

a flat base plate, having a top side and underside, a power opening for power conductors, a communications opening for communication conductors; a a pair of screw receiving apertures; and a gasket on the bottom of the base plate;

said thru floor unit including:

a pair of elongated mounting screws respectively disposed in said screw receiving apertures, the heads of which tightly engage said base plate;

a first pair of tubular separators respectively mounted on said mounting screws, one end of each being tightly engaged with said base plate;

a cylindrically-shaped retaining clip made of resilient material and having a seat section and a plurality of fingers around the periphery thereof, the seat section being formed to provide clearance means receiving said mounting screws and the fingers being for use in engaging the side of said bore to retain the thru floor unit therein;

each opposite end of said tubular separators being in tight engagement with said seat section;

said tubular separators separating and maintaining said base plate and said retaining clip a fixed distance apart;

top spacer means disposed in the space between said base plate and said clip and being formed to provide clearance means receiving said first pair of tubular separators;

top fire stop means made of intumescent material and disposed in the space between said base plate and said clip and being formed to provide clearance means receiving said first pair of tubular separators;

the combined thickness of said top spacer means and said

top fire stop means in a direction between said base plate and said seat section being less than the distance between the base plate and the seat section whereby neither the top spacer means nor the top fire stop means functions as a structural component of the thru floor unit;

bottom spacer means being formed to provide clearance means receiving said mounting screws, the bottom spacer means being in tight engagement with said seat section;

a cylindrically-shaped top retainer being formed to provide clearance means receiving said mounting screws, the top retainer being in tight engagement with said bottom spacer means;

a cylindrically-shaped bottom retainer having a pair of threaded apertures each comprising a nut respectively receiving the threaded portions of said mounting screws and mounting the bottom retainer thereon;

a second pair of tubular spacers respectively mounted on said mounting screws, one end of each being in tight engagement with said top retainer and each opposite end being in tight engagement with said bottom retainer, the second separators separating and maintaining the top and bottom retainers a fixed distance apart;

bottom fire stop means made of intumescent material disposed in the space between said top and said bottom retainers and being formed to provide clearance means receiving said second pair of tubular separators and the thickness of the bottom fire stop means in a direction between the top and bottom retainers being less than the distance between the top and bottom retainers whereby the bottom fire stop means does not function as a structural component of the thru floor unit;

said mounting screws being turned in said nuts to cause said plurality of tight engagements; and

said top spacer means, said top fire stop means, said retaining clip, said bottom spacer means, said top retainer, said bottom fire stop means, and said bottom retainer, each respectively having a pair of openings, one opening aligned with said power opening in said base plate and the other opening aligned with said communication opening in said base plate, the respective aligned openings providing a passageway for power conductors from underneath the floor to said service fitting and a passageway for communication conductors from underneath the floor to said service fitting.

4,573,298

BUILDING INSULATION SYSTEM

Daniel J. Harkins, Norfolk, Nebr., assignor to Thermal Design, Inc., Norfolk, Nebr.

Continuation-in-part of Ser. No. 246,209, Mar. 23, 1981, Pat. No. 4,446,664. This application May 4, 1984, Ser. No. 607,297
Int. Cl.⁴ E04B *1/74*
U.S. Cl. 52—404 **23 Claims**

1. In a building including opposite end walls interconnecting opposite side walls and a ceiling covering the space between said end walls and side walls, a system for insulating said ceiling, including

a plurality of longitudinal support bands,

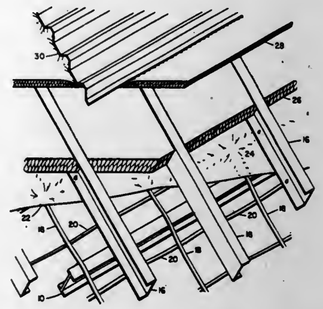
means for suspending said longitudinal support bands from said ceiling in spaced-apart relation between said end walls and in vertically spaced relation from said ceiling,

an independent suspension sheet, said sheet overlying said bands and being supported thereon,

said suspension sheet extending substantially from end wall to end wall and substantially from side wall to side wall to thereby separate said ceiling from the space below said suspension sheet,

band fastener means for connecting said bands to said ceiling at spaced apart positions along said bands,

said suspension sheet means being continuous but for the passage of said band fastener means therethrough, and



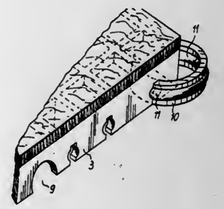
thermal insulation material disposed between said suspension sheet and ceiling and supported on said suspension sheet.

4,573,299

FLOOR COVERING ARTICLE

Rico Meroni, Altendorf, Switzerland, assignor to Forbo-Teppichwerk AG, Lachen, Switzerland

Filed Nov. 3, 1983, Ser. No. 548,292
Claims priority, application Switzerland, Nov. 4, 1982, 6422/82; Dec. 10, 1982, 6422/82
Int. Cl.⁴ E04C *2/10*
U.S. Cl. 52—513 **18 Claims**



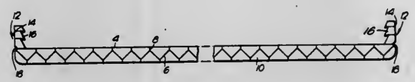
1. A platelike article intended as floor covering having an upper surface and a lower surface, and comprising a plurality of integral base elements each in the form of a latticework extending from the lower surface toward the upper surface and a rim laterally surrounding said latticework, and a textile covering material forming the upper surface and extending over and interconnecting said base elements, the rims of adjacent said base elements within said platelike article are spaced apart and form a gap traversing said platelike article, said latticework comprises first latticed bars extending from the lower surface to the side of said textile covering material closer to the lower surface, said rim having the same dimension between the lower surface and said textile covering material as said first latticed bars, and second latticed bars intersecting said first latticed bars and having a dimension extending from the side of said textile covering material closer toward the lower surface which is smaller than the comparable dimension of said first latticed bars and rim, and wherein said gaps are shaped as slits between said rims and are intended to receive guide members, said latticework and rims of said base elements are bonded by injection molding to said textile covering material, and said rims are provided with slots therethrough.

4,573,300

LIGHT TRANSMITTING WALL PANELS

Baruch J. Bezner, Tel Aviv, Israel, assignor to Dan-Pal, Upper Galilee, Israel

Filed Oct. 9, 1981, Ser. No. 310,422
Claims priority, application Israel, Oct. 20, 1980, 61314
Int. Cl.⁴ E04B *1/02*
U.S. Cl. 52—563 **14 Claims**



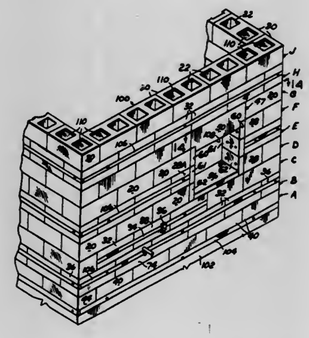
1. An extruded, modular panel unit for the construction of wall-surface portions, including light-transmitting wall-surface portions, comprising at least two sheet-like major surfaces interconnected and spaced apart by a plurality of ribs dividing the space delimited by said major surfaces into a plurality of subspaces, wherein a joining flange, extending in the direction of extrusion, projects at an angle from, and beyond, an outside face of one of said major surfaces, at each extruded edge of said panel unit, wherein, in cross section, said sheet-like major surfaces and said ribs form a truss-like structure of which said major surfaces constitute the chords and said ribs constitute the webs, and wherein each of said joining flanges has an outside and an inside face, each face being adapted to contact a corresponding face of a flange of an adjacent panel unit.

4,573,301

INTERLOCKING BUILDING BLOCKS

Rudolph P. Wilkinson, P.O. Box 1202, Ardmore, Okla. 73401

Filed Feb. 18, 1983, Ser. No. 467,709
Int. Cl.⁴ E04B *5/04*
U.S. Cl. 52—607 **6 Claims**



1. A wall, comprising:

a first course of building blocks including a first block having a first block surface in which a first groove is defined for receiving a baseboard;

a second course of building blocks, disposed above said first course, including a second block having a second block surface extending between a top surface and a bottom surface, said second block surface having a second groove defined therein in spaced relation to the boundaries at which said second block surface intersects said top and bottom surfaces; and

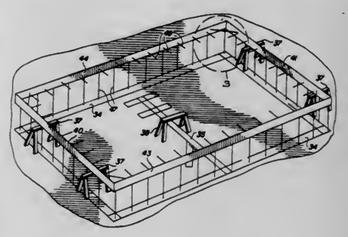
a third course of building blocks, disposed above said second course, including a third building block having a cavity defined therein and further having a third block surface in which an opening is defined, said opening communicating with said cavity and said opening being defined for receiving a pin extending from a jamb member into said cavity when said jamb member is disposed adjacent said third block surface to define part of an opening through said wall.

4,573,302

METHOD OF CONSTRUCTING HOUSES

Robert J. Caretto, 1906 E. Vinedo, Tempe, Ariz. 85284

Filed Mar. 11, 1985, Ser. No. 710,311
Int. Cl.⁴ E04B *1/00*
U.S. Cl. 52—742 **24 Claims**



1. A method of constructing houses including in combination the steps of:

providing a construction surface having a size greater than the exterior dimensions of a house to be constructed;

using a first full-scale template in the form of a flexible, dimensionally-stable sheet to mark footing and plumbing trenching lines on the lot where a house is to be erected;

excavating foundation footings and plumbing trenches in the locations marked by use of said first template;

constructing a first metal frame having external dimensions of the house to be constructed;

temporarily supporting said first metal frame above said construction surface and attaching assembled below-floor plumbing components for said house to said first frame;

moving said first frame with the attached plumbing components to said lot;

placing said first frame and attached plumbing components in position over said footing and plumbing trenches;

pouring footings for said house with said first frame in place;

marking indicia on said construction surface, showing the location of various construction items for said house, said indicia being encoded to represent and distinguish different ones of said various construction items from one another;

constructing at least a portion of said house, including the exterior walls, on a second metal frame on said building surface and including other structural components in accordance with said indicia marked on said construction surface, said second metal frame being dimensioned at least in part to fit onto said first metal frame;

moving the portion of said house on said second metal frame to said lot;

placing said second metal frame on said first metal frame; and

attaching said first and second metal frames together.

4,573,303

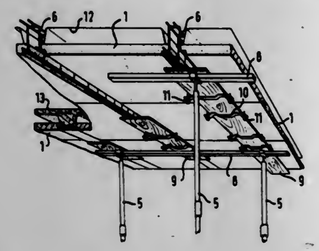
METHOD OF CASTING FLOORS AND CEILINGS OF BUILDINGS AND A PANEL FOR USE THEREIN

Andres G. Figari, Calle 77-801 Apt. 302, Bogota, Colombia

Filed Jan. 31, 1983, Ser. No. 462,434
Int. Cl.⁴ E04B *1/16, 5/32*
U.S. Cl. 52—743 **7 Claims**

1. A method of casting floors and ceilings of buildings, comprising the steps of (a) forming a frame or ribbing of parallel beams extending across the whole length or width of the floor, said beams being of an open framework construction to allow concrete to pass therethrough, (b) supporting panels

between adjacent beams by means of shoulders extending along two opposed edges of each panel engaging the beams, the bottom of the shoulders being at a height above the base of the panel, (c) temporarily securing flat bridging means against the bases of the panels to form continuous bridges spanning the gaps containing the beams between adjacent panels, (d) pouring concrete over the structure comprising the beams and panels to form, when set, a composite cast floor/ceiling having a substantially smooth and continuous lower surface, and (e)



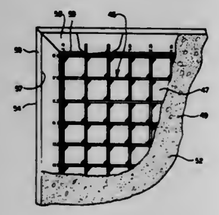
removing the bridging means, wherein each bridging means is pressed against the bases of the panels on opposed sides of the gap bridged by the bridging means partly by fixing means secured to the panels, wherein the said fixing means comprises one or more clamps anchored to the panels on opposed sides of the gap bridged by the bridging means, and wherein each clamp is anchored by means of a bolt co-operating with a nut embedded within the respective panel and accessible through a communicating bore in the base of the panel.

4,573,304

HONEYCOMB FLOOR PANEL AND THE LIKE

David F. Mieyal, Stroongsville, Ohio, assignor to Donn Incorporated, Westlake, Ohio

Filed Nov. 25, 1983, Ser. No. 555,142
Int. Cl.⁴ E04C *2/08*
U.S. Cl. 52—807 **13 Claims**



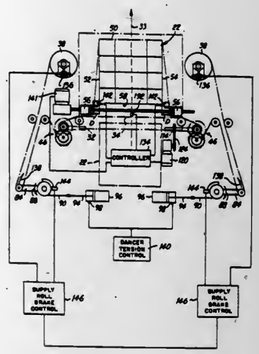
1. A honeycomb structure comprising first and second arrays of similar strips of elongated, thin metal interfitting the other array to provide a honeycomb assembly defining a multitude of cells of rectangular cross section, said strips of said first array extending substantially perpendicular to said strips of said second array, said strips of each array providing a plurality of laterally extending slots extending from one edge thereof and spaced at intervals along the length thereof, each slot providing a tab along one side thereof formed of the material of said strip and inclined from the plane thereof in the same direction to a free edge, the other side of each slot being provided by an opposed edge of said material of said strip, said opposed edge and associated tab defining an angulated throat inclined with respect to said strip having a width substantially greater than the thickness of the material of said strip, said free edge of said tab and the associated opposed edge being spaced in the direction of the length of said strips by a distance at least as small as the thickness of said strips, said arrays being assembled while the strips in each array are angulated with respect to the strips in the other array in the direction of said angulated throat and after assembly being moved to a position in which the strips in said arrays extend perpendicularly to each other and tightly engage the sides of the slots of the other array, said arrays being permanently secured to a cover sheet along at least one edge thereof to maintain the strips in each array substantially perpendicular to the strips in the other array.

4,573,305

UNIT LOAD WRAPPING WITH UNIFORM WRAP TENSION ALONG THE PERIPHERY OF THE WRAPPED LOAD

Martin M. Wildmoser, Staten Island, N.Y., assignor to Bemis Company, Inc., Minneapolis, Minn.

Filed Jul. 30, 1984, Ser. No. 635,924
Int. Cl.⁴ B65B *11/00*
U.S. Cl. 53—466 **16 Claims**



1. In an apparatus of the type which wraps a unit load, at a wrapping station, with a resiliently stretchable film wrap advanced along a feed path from a supply of such film wrap to the wrapping station, with the film wrap tensioned to a desired tension, by advancing the unit load along a path of travel into a curtain of said film wrap extending laterally across the path of travel from one side to the other side thereof and closing said film wrap behind the unit load to complete a sleeve of said film wrap around the unit load, the unit load having a given lateral width between longitudinal sides, an improvement for attaining essentially uniform tension in the completed sleeve, said improvement comprising:

opposed jaws located at the sides of the path of travel and juxtaposed with the curtain, the jaws being spaced apart a distance greater than the width of the unit load;

jaw-moving means for moving at least one of the opposed jaws toward the other of the opposed jaws at a rate of movement to close the film wrap behind the unit load, the movement of said one jaw being from an initial position spaced away from the corresponding side of the unit load to an intermediate position juxtaposed in generally longitudinal alignment with said corresponding side of the unit load and thence into engagement with the other of the jaws at a closed position behind the unit load;

Position detecting means for detecting the position of at least said one of the opposed jaws relative to the unit load during said movement of said one jaw for determining the location of the one jaw at said intermediate position; and

feed means for advancing the film wrap at a first rate of advancement relative to the rate of movement of the one jaw during movement of said one jaw from the initial position to the intermediate position and responsive to the position detecting means for advancing the film wrap at a second rate of advancement in response to the location of said one jaw at the intermediate position, as determined by the position detecting means, which second rate of advancement, relative to the rate of movement of the one jaw, is greater than the first rate of advancement during movement of said one jaw from the intermediate position to the closed position.

9. In the method of wrapping a unit load, at a wrapping station, with a resiliently stretchable film wrap advanced along a feed path from a supply of such film wrap to the wrapping station, with the film wrap tensioned to a desired tension, by advancing the unit load along a path of travel into a curtain of said film wrap extending laterally across the path of travel from one side to the other side thereof and closing said film wrap behind the unit load, between opposed jaws, to complete a sleeve of said film wrap around the unit load, the unit load having a given lateral width between longitudinal sides, the improvement for attaining essentially uniform tension in the completed sleeve, said improvement comprising the steps of:

locating the opposed jaws at the sides of the path of travel and juxtaposed with the curtain, with the jaws being spaced apart a distance greater than the width of the unit load;

moving at least one of the opposed jaws toward the other of the opposed jaws at a rate of movement to close the film wrap behind the unit load, the movement of said one jaw being from an initial position spaced away from the corresponding side of the unit load to an intermediate position juxtaposed in generally longitudinal alignmne with said corresponding side of the unit load and thence into engagement with the other of the jaws at a closed position behind the unit load;

detecting the position of at least said one of the opposed jaws relative to the unit load during said movement of said one jaw for determining the location of the one jaw at said intermediate position; and

advancing the film wrap at a first rate of advancement relative to the rate of movement of the one jaw during movement of said one jaw from the initial position to the intermediate position and advancing the film wrap at a second rate of advancement in response to the location of said one jaw at the intermediate position, as determined by said detection of the position of said one jaw, which second rate of advancement, relative to the rate of movement of the one jaw, is greater than the first rate of advancement during movement of said one jaw from the intermediate position to the closed position.

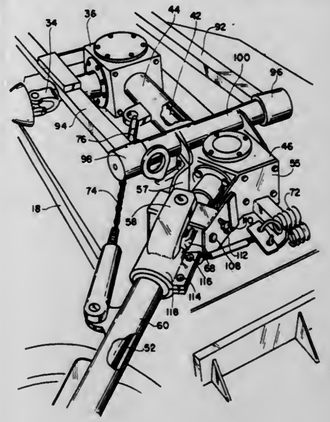
4,573,306

BELTLESS SWINGARM MOWER

Alexander Smith, and Burton D. Baggs, both of Sanford, Fla., assignors to E. E. White, Miami, Fla.

Filed Jul. 1, 1980, Ser. No. 165,220
Int. Cl.⁴ A01D *75/18, 55/18*
U.S. Cl. 56—10.4 **4 Claims**

1. A multiple mower arrangement for use on a tractor, comprising a principal mower having at least one rotary blade, a power shaft running substantially the length of said principal mower and delivering rotary power to the blade or blades of said mower, a swingarm mower equipped with a rotary blade and being hingedly supported by means of a hollow arm on the outboard end of said principal mower, said arm being supported by a hollow hinge, shaft means extending through said arm and hinge, such that rotary power can be effectively transmitted without the use of belts from said power shaft to the blades of said swingarm mower, and adjustment means provided in the support for said arm, such that the angle the swingarm mower bears to the principal mower may be readily and selectively adjusted, said adjustment means permitting the



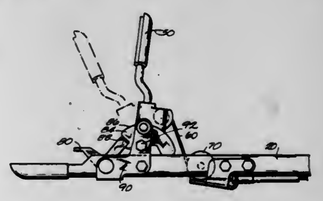
position of the swingarm mower to be adjusted heightwise as well as rotationally.

4,573,307

LAWN MOWER DEAD MAN CONTROL

Gerald H. Wick, Galesburg, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Continuation-in-part of Ser. No. 429,060, Sep. 30, 1982. This application Jan. 31, 1983, Ser. No. 462,624
The portion of the term of this patent subsequent to Jan. 15, 2002, has been disclaimed.
Int. Cl.⁴ A01D *75/20*
U.S. Cl. 56—11.8 **23 Claims**



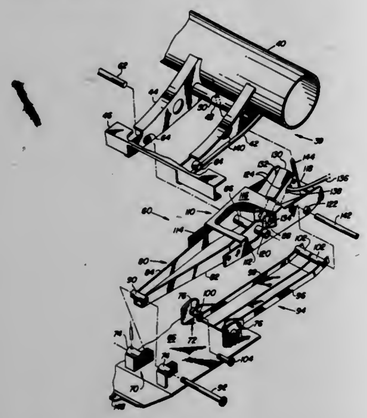
1. A lawn mower comprising a housing, a cutter blade rotatably mounted on said housing, means for selectively rotatably driving said cutter blade, a handle connected to said housing, a pivotable member connected to said handle about an axis, a control movably connected to said pivotable member, an elongated flexible member connecting said control to said means for selectively rotatably driving said cutter blade so as to selectively rotatably drive said cutter blade in response to movement of said flexible member in the direction of the elongation thereof, and means for restricting a substantial portion of said flexible member to a predetermined path along said handle and comprising a pulley rotatably attached to said handle and having a periphery located adjacent said axis and with said flexible member guided around said periphery of said pulley, whereby to afford pivotal movement of said pivotable member without effecting substantial movement of said flexible member.

4,573,308

HARVESTING PLATFORM WITH A FLOATING CUTTERBAR

Kevin L. Ehrecke, Davenport, Iowa; Jerome A. Braet, East Moline, Ill., and James H. Bassett, Davenport, Iowa, assignors to Deere & Company, Moline, Ill.

Filed Apr. 2, 1984, Ser. No. 595,869
Int. Cl.⁴ A01D *67/00*
U.S. Cl. 56—14.4 **23 Claims**



22. In a harvesting platform for a mobile harvesting machine including a transversely elongated platform frame having opposite sides, a platform floor extending between the opposite sides, and a transverse flexible floating cutterbar assembly extending between the opposite sides forwardly of the floor and operative to flex vertically to a limited degree to follow the contour of the ground, a plurality of skid plate subassemblies, each subassembly comprising:

a tilt frame for connecting to and being carried by the platform frame so as to be pivotably adjustable about a transverse pivot axis with respect to the platform frame;

a ground-engaging skid plate having a forward portion connectible to a rearward portion of the cutterbar;

a lift link having rearward and forward ends pivotally connected respectively to the tilt frame and to the skid plate;

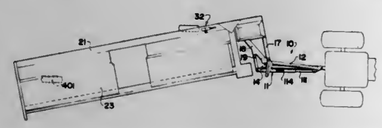
a push link spaced rearwardly from the lift link having forward and rearward ends pivotably connected respectively to the skid plate and the tilt frame, the lift link and the push link being substantially parallel to each other and forming a parallel linkage with the tilt frame and the skid plate so that, when the subassembly is connected to and carried by the platform frame, the skid plate may swing in a vertical arc without substantial change in attitude.

4,573,309

PULL-TYPE WINDROWER

Roger L. Patterson, Selkirk, Canada, assignor to Macdon Industries Ltd., Winnipeg, Canada

Filed Jul. 13, 1984, Ser. No. 630,635
Int. Cl.⁴ A01B *73/00*
U.S. Cl. 56—228 **7 Claims**



1. A pull-type swather comprising a hitch for attachment to a pulling vehicle, a frame attached to said hitch, cutting means supported upon and extending across the width of the frame for cutting a standing crop, conveying means supported upon the frame for collecting the cut crop from the cutting means into a swath for ejection from the swather, a pair of ground wheels for supporting the frame for movement across the ground, means for raising and lowering said cutting means and said conveying means relative to said ground wheels to adjust the working height thereof relative to the ground, the hitch being adjustable from a working position in which it pulls the frame in a working direction transverse to the width of the frame to a transport position in which is pulls the frame substantially at right angles to the working direction, and strut means mounting one of said ground wheels, said strut means being rotatable about an axis offset to one side of said one ground wheel, said raising and lowering means being arranged to raise said conveying means to a sufficient height and said strut means being arranged such that said one ground wheel can pivot about said offset axis to a transport position directly underlying said conveying means.

4,573,310

HORTICULTURAL AID

Bernard G. Friedel, P.O. Box 487, Hardin, Ill. 62047

Filed Nov. 13, 1984, Ser. No. 670,209
Int. Cl.⁴ A01D *46/24*
U.S. Cl. 56—329 **5 Claims**



1. A horticultural aid comprising a handle, a laterally extending support bar connected to said handle, a pair of frame members having open sides facing one another, pivot means for mounting said frame members on said support bar for limited relative swinging movement of said frame members toward and away from one another, spring means continuously biasing said frame members toward one another, hand manipulable frame operating means for moving said frames relative to one another against the bias of said spring means, and elastic netting mounted in said frame members, arranged to embrace a small trunk of limb of a plant to be trimmed when said operating means is manipulated against the bias of said spring means for moving said frame members away from one another to receive said trunk or limb and released to permit the said spring means to bias the frames toward one another around said trunk or limb.

4,573,311

LAWN RAKE

Neal J. Ipema, Simpsonville, and William E. Portz, Anderson, both of S.C., assignors to True Temper Corporation, Shiremanstown, Pa.

Filed Sep. 14, 1984, Ser. No. 650,968
Int. Cl.⁴ A01D *7/06*
U.S. Cl. 56—400.17 **6 Claims**

1. A lawn rake comprising:

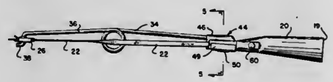
an elongated member having a hand gripping portion at one end thereof,

a rake head assembly including a socket, one end of said socket receiving and retaining the other end of said elongated member,

said rake head assembly further including a plurality of tines, one end of said tines being located in the other end of said socket,

each of said tines having a notch at said socket end for engaging a detent located in said socket at the tine receiving end,

a spreader bar disposed intermediate the tine receiving end of said socket and the opposed working ends of said tines for maintaining said tines in spaced relationship,



means for fixedly securing said tines within said spreader bar,

crimping means for anchoring said tines within the socket,

a spring clip substantially enveloping and further crimping the tine receiving end of said socket enclosing the ends of said tines therewithin, and

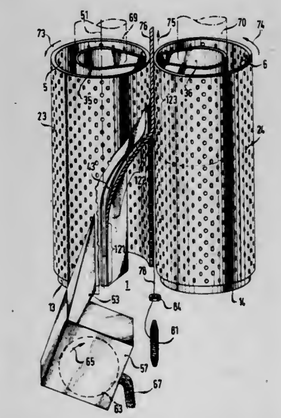
a stiffener spring having a pair of arms engaging said spreader bar and a base forming a loop, said spring base being interposed between said clip and the outer surface of said socket and secured thereto by said clip.

4,573,312

FRICTION SPINNING APPARATUS

Karl-Josef Brockmanns, Anrath, and Joachim Lünenschloss, Aachen, both of Fed. Rep. of Germany, assignors to W. Schlafhorst & Co., Monchen-Gladbach, Fed. Rep. of Germany

Filed Aug. 23, 1984, Ser. No. 644,220
Int. Cl.⁴ D01H *7/882;* D02G *3/36*
U.S. Cl. 57—5 **19 Claims**



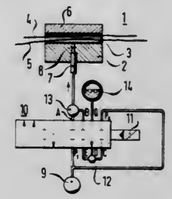
1. Friction spinning apparatus, comprising oppositely-disposed, rotationally-symmetrical friction elements rotating in the same direction, said friction elements having perforated casings defining a line of closest mutual approach between said casings and two wedge-shaped regions adjacent said line of closest mutual approach, stationary suction devices disposed in said casings, said suction devices having suction apertures directed toward said perforated casings, a fiber feeding device for feeding spinning fibers along a yarn withdrawing direction, and a yarn withdrawing device for withdrawing yarn, each of said casings including a yarn formation zone receiving the spinning fibers at substantially the furthest upstream portion of said casings in said yarn withdrawing direction for continuously forming yarn, a curved transition zone downstream of said yarn formation zone, and a yarn consolidation zone downstream of said transition zone, said yarn consolidation zone being separate from and having a longitudinal axis disposed outside of said yarn formation zone, said yarn consolidation zone being disposed substantially at the furthest downstream portion of said casings.

4,573,313

METHOD AND APPARATUS FOR FEEDING A DOSED MIXTURE OF SPLICING AIR AND LIQUID INTO THE SPLICING CHAMBER OF A COMPRESSED-AIR YARN SPLICING DEVICE

Josef Bertrams, Wegberg, Fed. Rep. of Germany, assignor to W. Schlafhorst & Co., Monchen-Gladbach, Fed. Rep. of Germany

Filed Oct. 19, 1984, Ser. No. 662,964
Claims priority, application Fed. Rep. of Germany, Oct. 19, 1983, 3337895
Int. Cl.⁴ B65H *69/02, 69/06;* D01H *15/00*
U.S. Cl. 57—22 **5 Claims**



1. Method for feeding a dosed mixture of splicing air and liquid into a splicing chamber of a compressed-air splicing device, including a valve movable from a receiving to an operating position upon receiving a splicing signal, the valve having a dosing chamber determining the quantity of splicing liquid by the volume thereof, and a mixing chamber, and an element containing a liquid supply, which comprises connecting the dosing chamber to the element containing the liquid supply prior to splicing for injecting a dosed quantity of liquid into the splicing chamber, disconnecting the dosing chamber from the element containing the liquid supply by moving the valve from the receiving to the operating position with the splicing signal, connecting the dosing chamber to the mixing chamber, and simultaneously opening the mixing chamber for the passage of splicing air to the splicing chamber.

4,573,314

YARN WETTING DEVICE PARTICULARLY FOR USE IN A TWO-FOR-ONE TWISTER

Rainer Lorenz, Nettetal-Breyell, Fed. Rep. of Germany, assignor to Palitex Project-Company GmbH, Krefeld, Fed. Rep. of Germany

Filed Mar. 12, 1985, Ser. No. 710,867
Claims priority, application Fed. Rep. of Germany, Mar. 14, 1984, 3409233
Int. Cl.⁴ D01H *1/10, 13/30;* B05C *1/06*
U.S. Cl. 57—296 **24 Claims**

1. A device for applying a wetting agent to traveling yarn and characterized by the conveyance of a uniform quantity of wetting agent to the yarn even when the amount of wetting agent in said device is reducing; said device comprising:

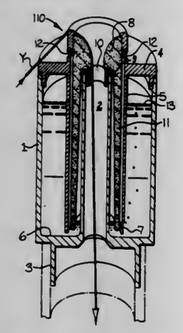
a reservoir carrying a supply of wetting agent at varying levels therein;

a yarn wetting means including a porous member having absorbent and capillary qualities and over which the yarn travels for removing wetting agent, and suction means positioned in said reservoir below the wetting agent level

for feeding the wetting agent by suction from said reservoir to said wetting member;

line system means leading into said reservoir and having an upper opening which opens into the atmosphere above said reservoir and a bottom opening located at a predetermined distance above the bottom of said reservoir which opens into the wetting agent; and

said reservoir, said line system and the wetting agent cooperating to provide means for sealing said reservoir relative to atmospheric pressure when the level of the wetting agent in said reservoir is above said bottom opening of said line system means and for transferring constant atmospheric pressure from the surface of the wetting agent to a location below the surface of the wetting agent to ensure that a uniform quantity of wetting agent is fed by said suction means from said reservoir to said wetting member as the traveling yarn removes the wetting agent.

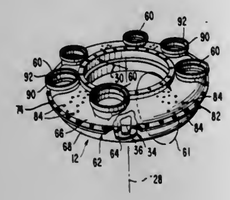


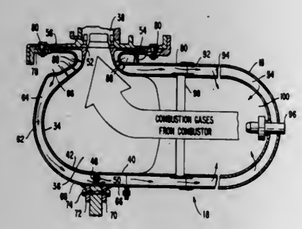
4,573,315

LOW PRESSURE LOSS, CONVECTIVELY GAS-COOLED INLET MANIFOLD FOR HIGH TEMPERATURE RADIAL TURBINE

Sigmunn Stroem, Kongsberg, Norway, assignor to A/S Kongsberg Vapenfabrikk, Norway

Filed May 15, 1984, Ser. No. 610,584
Int. Cl.⁴ F02C *3/00*
U.S. Cl. 60—39.37 **14 Claims**





1. A gas-cooled inlet manifold for a radial in-flow turbine, the manifold receiving combustion gases from at least one can-type combustor, the manifold comprising:

a first wall in the shape of a hollow torus having an axis, the interior space within said first toroidal wall defining in part the flow path for combustion gas from the combustor to the turbine;

a second wall in the shape of a hollow torus and surrounding said first wall, the space between said first and second walls defining in part the flow path of the coolant gas;

an annular duct positioned at the inner circle of said first and second toroidal wall and being in flow communication with said interior space, and passing through said second wall, for delivering combustion gases to the turbine, said annular duct being essentially sealed against flow communication with said coolant gas space;

a duct positioned in an axial side of said first toroidal wall for receiving combustion gases from the combustor, said duct also passing through said second wall and being in flow communication with said interior space;

coolant gas inlet means including

(i) a plurality of first coolant gas entry ports, said first ports being positioned in said second wall in an array spaced circumferentially from said combustion gas inlet duct and distributed about the circumference of the generating circle of said second toroidal wall,

(ii) a plurality of second coolant gas entry ports, said second ports being elongated slot-shaped and positioned in an axial side of said second wall, said second ports being distributed circumferentially around said second toroidal wall proximate said annular duct with the respective axes of elongation extending circumferentially and

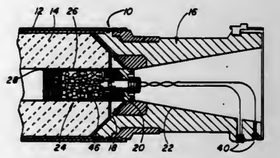
(iii) a plurality of orifice means positioned in said second wall proximate said annular duct and evenly distributed circumferentially around said second wall on both axial second wall sides of said annular duct, each of said orifice means for directing a stream of coolant gas to impinge upon a preselected portion of said first wall.

4,573,316

INTEGRATED WEATHERSEAL/IGNITER FOR SOLID ROCKET MOTOR

Christian J. L. Carrier, and Charles J. Shea, both of Ste-Foy, Canada, assignors to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence of Her Majesty's Canadian Government, Ottawa, Canada

Filed Feb. 10, 1984, Ser. No. 579,205
Claims priority, application Canada, Mar. 16, 1983, 423718
Int. Cl.⁴ F02K *9/95*
U.S. Cl. 60—39.823 **7 Claims**



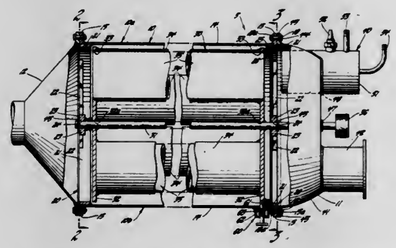
1. A rocket motor including a nozzle having a throat, a first conical surface converging toward said throat and a second conical surface diverging away from the throat toward the rear or exit end of the motor, and an igniter comprising a tube having a closed end, the tube located in the nozzle throat with said closed end facing toward the exit end, an electrically activated igniter squib located in said tube at the closed end thereof, an ignition charge in the tube and means associated with the opposing end of said tube to hold the charge in place, first retaining means secured to said tube at a location spaced from said closed end and extending outwardly therefrom and engaging said first conical surface of the nozzle, second retaining means including means defining an annular groove on said tube adjacent said closed end and a resilient annular gasket located in said annular groove and projecting outwardly therefrom and firmly and sealingly engaging said second conical surface of the nozzle such that said gasket is under radial compression to provide the sealing effect, and said engagement with said second conical surface creating force components in the axial direction of the nozzle which bring said first retaining means into close abutting relation to said first conical surface thereby to securely position and retain the igniter in the nozzle throat.

4,573,317

DIESEL EXHAUST CLEANER AND REGENERATION BURNER SYSTEM WITH INDEXING PARTICULATE TRAP

Otto A. Ludecke, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 11, 1985, Ser. No. 710,445
Int. Cl.⁴ F01N *3/02*
U.S. Cl. 60—303 **2 Claims**



1. An indexing particulate filter trap and regeneration system for use with a diesel engine as on a city bus, said system including a housing means having a cylindrical intermediate housing, an exhaust inlet means at one end and an exhaust outlet at its opposite end; a shaft operatively journaled in said intermediate housing for rotation about the axis thereof and having one end thereof extending outboard of said exhaust inlet means to permit exterior rotation thereof; a cylindrical trap housing means fixed to said shaft whereby said trap housing means is sealingly and rotatably supported in said intermediate housing, said trap housing means including a plurality of circumferentially spaced apart filter supports located concentrically around said shaft; a particulate filter operatively supported in each of said filter supports; a fuel burner means operatively fixed to said exhaust inlet means with the burner outlet end thereof in operative axial alignment with one of said filter supports; and releasable detent means operatively associated with said intermediate housing and with said trap housing means to permit rotative indexing of said particulate filters sequentially into operative alignment with said fuel burner means upon rotative movement of said shaft.

4,573,318

EXHAUST ELBOW FOR MARINE PROPULSION SYSTEM

David C. Entringer; David J. Gruenwald, and Dale K. Felix, all of Oshkosh, Wis., assignors to Brunswick Corporation, Skokie, Ill.

Filed Jan. 25, 1985, Ser. No. 694,948
Int. Cl.⁴ F01N *3/04*
U.S. Cl. 60—310 **21 Claims**

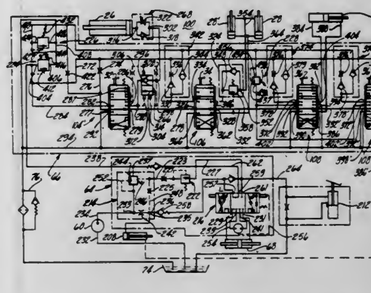
1. In a marine propulsion system having an internal combustion engine exhausted through a water jacketed exhaust elbow, an improved exhaust elbow comprising:

an intake exhaust passage communicating through a bend with a discharge exhaust passage;

water jacket means around said exhaust passages;

central channel means extending longitudinally along the exterior of said discharge exhaust passage to guide water therealong in said water jacket means to the end of said discharge exhaust passage to mix with exhaust thereat; and

means for maintaining the end tip of said discharge exhaust passage dry to prevent water ingestion and creeping back into said discharge exhaust passage due to pulsations of said engine, said last mentioned means comprising transition means at the end of said central channel means creating an outward draw from said central channel means to minimize break-up of outward water flow from said central channel means at said end tip of said discharge exhaust passage which may otherwise deposit water on said end tip of said discharge exhaust passage.



4,573,319

VEHICLE HYDRAULIC SYSTEM WITH SINGLE PUMP

Willard L. Chichester, Battle Creek, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

Continuation of Ser. No. 291,653, Aug. 10, 1981, abandoned.
This application Jul. 22, 1982, Ser. No. 400,769
Int. Cl.⁴ F16D *31/02*
U.S. Cl. 60—422 **24 Claims**

1. In a work vehicle of the type having at least first and second hydraulic load circuits,

first and second manually actuable selector means operatively coupled with said first and second load circuits respectively for selecting operation of circuits individually or together, said second circuit having a greater hydraulic flow requirement than said first circuit,

a positive displacement hydraulic pump,

a changeable speed prime mover connected with the pump and adapted to operate in a speed range between a low speed and a high speed,

manually actuable speed control means operatively coupled with said prime mover for changing the speed thereof to change the flow from the pump in accordance with the requirements of the load circuits,

said pump being adapted to supply the flow required by the first load circuit when the prime mover is operated at said low speed and to supply the flow required by the second load circuit when the prime mover is operated at said high speed,

the improvement comprising:

a priority demand valve having an inlet port connected with the pump, a primary outlet port connected with the first load circuit, a secondary outlet port connected with the second load circuit, and normally closed valve means between the inlet port and the secondary outlet port,

said priority demand valve including means for supplying to the primary outlet port all of the flow required by the first load circuit when the selector means are actuated individually or together with the pump running at any speed in said speed range,

said priority demand valve including means for opening said valve means when the inlet flow exceeds that required by the first load circuit with said first and second selector means actuated together and with said pump running at any speed within said speed range,

and means for diverting the excess flow from the primary outlet port to the secondary outlet port,

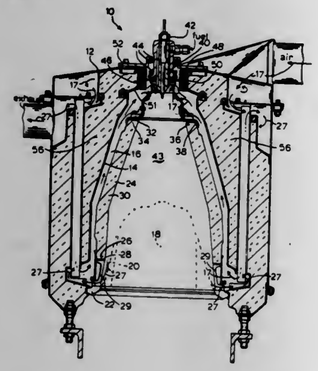
whereby the inlet flow in excess of that required by the first load circuit is supplied to the secondary outlet and thence to the second load circuit.

4,573,320

COMBUSTION SYSTEM

James Kralick, Ballston Spa, N.Y., assignor to Mechanical Technology Incorporated, Latham, N.Y.

Filed May 3, 1985, Ser. No. 730,296
Int. Cl.[4] F02G *1/04*
U.S. Cl. 60—517 **12 Claims**



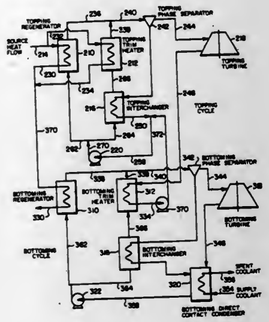
1. In an external combustion engine such as a Stirling engine and the like, having an external heat system housing in which is defined a heater space, a hollow liner formed of a ceramic material disposed in said heater space and defining a combustion chamber, and biasing means coupled to a first end of said liner and coupled with the housing so as to maintain said liner in the heater space while dampening transmission of vibrations in the housing to the liner.

4,573,321

POWER GENERATING CYCLE

Kent S. Knaebel, Dublin, Ohio, assignor to EcoEnergy I, Ltd., Columbus, Ohio

Filed Nov. 6, 1984, Ser. No. 668,755
Int. Cl.[4] F01K *25/06*
U.S. Cl. 60—649 **17 Claims**



1. A method for generating energy from a source heat flow which comprises:

(a) passing heated media comprising a solution bearing absorbed working fluid into a phase separator, said media being at a temperature and pressure adequate for said fluid to be volatilized and separated from said in said phase separator, said working fluid characterized by boiling from said solution over a range of temperatures and by direct contact condensing in said solution over a range of temperatures, the vapor pressure of said solution over said boiling point range being negligible;

(b) withdrawing said vaporous working fluid from said separator and passing same into a work zone wherein said fluid is expanded to a lower pressure and temperature to release energy;

(c) withdrawing said expanded vaporous working fluid from said work zone and passing same into a direct contact condenser;

(d) withdrawing a weak solution from said phase separator and passing same into counter-current heat-exchange relationship in an interchanger with a portion of pressurized media from said direct contact condenser;

(e) passing said heat-exchanged weak solution from step (d) into said direct contact condenser and contacting same with said expanded vaporous working fluid for absorbing said working fluid into said weak solution for re-forming said media;

(f) passing a coolant flow into said direct contact condenser for absorbing heat from the contents therein;

(g) passing said re-formed media withdrawn from said direct contact condenser into a flow transport apparatus;

(h) passing a portion of said media from said flow transport apparatus into counter-current heat-exchange relationship in said interchanger with said separated weak solution in step (d);

(i) passing said portion of said heat-exchanged media from step (h) into counter-current heat-exchange relationship in a trim heater with a portion of said source heat flow;

(j) passing said remaining portion of said media from step (g) into counter-current heat-exchange relationship in a regenerator with the remaining portion of said source heat flow; and

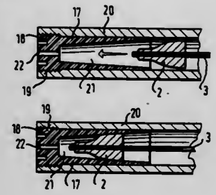
(k) combining said heated media flows from said regenerator and from said trim heater to form said heated media for step (a).

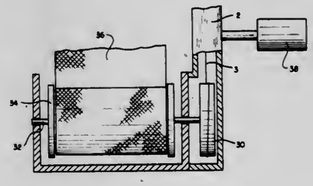
4,573,322

DRIVING DEVICE ESPECIALLY FOR RETURN STIFFENING OF A SAFETY BELT IN AN AUTOMATIC SAFETY BELT WIND-UP DEVICE

Artur Föhl, Schorndorf, Fed. Rep. of Germany, assignor to Repa Feinstanswerk GmbH, Aldorf, Fed. Rep. of Germany

Continuation of Ser. No. 543,086, Oct. 18, 1983, abandoned. This application Jun. 28, 1985, Ser. No. 750,237
Claims priority, application Fed. Rep. of Germany, Oct. 19, 1982, 3238710
Int. Cl.[4] F02N *13/00*; B60R *22/28*
U.S. Cl. 60—638 **6 Claims**





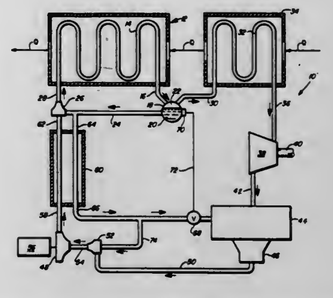
1. An apparatus comprising a reel to tighten a safety belt in response to detonation of an explosive charge, an elongated tubular member to be connected in fluid communication with the explosive charge, a piston disposed in said elongated tubular member, said piston being movable along said elongated tubular member toward one end portion of said tubular member under the influence of high pressure gas conducted from the explosive charge upon detonation of the explosive charge, flexible connector means connected with said piston and safety belt reel for rotating the safety belt reel to wind up the safety belt and for stopping movement of said piston along said tubular member with said piston spaced from the one end portion of said tubular member in the absence of breaking of said flexible connector means under the influence of force applied against said flexible connector means by said piston, and stop means disposed in the one end portion of said tubular member for stopping said piston upon breaking of said flexible connector means under the influence of force applied against said flexible connector means by said piston, said stop means including a body of resiliently deformable material having surface means for defining a cavity with an axial extent which is greater than the axial extent of said piston to enable leading and trailing end portions of said piston to enter the cavity during movement of said piston after breaking of said flexible connector means, said cavity having a side surface which tapers inwardly from an entrance to an end portion having a cross sectional size which is substantially less than a maximum cross sectional size of said piston to enable said piston to radially compress the material of said stop means as said piston moves in the cavity after breaking of said flexible connector means.

4,573,323

STEAM GENERATING APPARATUS AND METHODS

Edward A. Mock, Phoenix, Ariz., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Jul. 13, 1982, Ser. No. 397,749
Int. Cl.[4] F01K *13/02*
U.S. Cl. 60—665 **50 Claims**



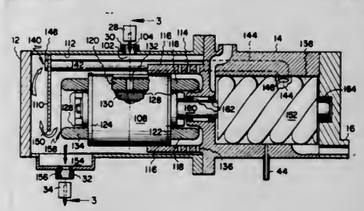
1. Apparatus comprising heat exchange means for placing a liquid in heat exchange relation with a source of heat to promote boiling of said liquid, collecting means in association with said heat exchange means for receiving heated liquid from the latter and collecting the vapor resulting from boiling of said liquid, liquid feed means for pressurizing liquid from a low pressure source thereof and for delivering a flow of said pressurized liquid to said heat exchange means, and means for recirculating liquid from said collecting means to said heat exchange means in response to said flow of pressurized liquid, said apparatus further includes a sensor responsive to a liquid level in said collecting means to produce a signal, means defining a liquid flow path from said collecting means to said low pressure liquid source, and valve means opening and closing said liquid flow path in response to said signal thereby to limit the liquid level in said collecting means, wherein said liquid feed means draws liquid from said low pressure liquid source via a jet pump for delivery to said heat exchange means, said liquid flow path including a branch upstream of said valve means which communicates with a high pressure inlet of said jet pump, whereby pressurized liquid flow from said collecting means to said liquid feed means via said jet pump entrains liquid from said low pressure liquid source and flows therewith to said liquid feed means.

4,573,324

COMPRESSOR MOTOR HOUSING AS AN ECONOMIZER AND MOTOR COOLER IN A REFRIGERATION SYSTEM

James C. Tischer, La Crescent, Minn., and James W. Larson, La Crosse, Wis., assignors to American Standard Inc., New York, N.Y.

Filed Mar. 4, 1985, Ser. No. 708,301
Int. Cl.[4] F25B *1/00*
U.S. Cl. 62—115 **19 Claims**



1. A screw compressor assembly internal of which the pro-

duction of flash gas for economizer coupling a refrigeration system is integrally accomplished in conjunction with the cooling of the compressor drive motor by liquid refrigerant subcooled within the assembly, for a refrigeration system having an expansion device to which the liquid refrigerant output of a condenser is directed, comprising:

a motor housing section having an opening, said opening being in the upper portion of said motor housing section and in flow communication with said expansion device;

a compressor section defining a compression chamber and an economizer port opening into said compression chamber at a predetermined location;

a first screw rotor mounted for rotation in said compression chamber;

a second screw rotor mounted for rotation in said compression chamber, said second screw rotor being meshingly engaged with said first screw rotor;

an electric motor having a rotor and a stator penetrated by at least one passage, said motor disposed within said motor housing section and said rotor and said stator cooperating to define a gap in flow communication with the interior of said motor housing section;

means, drivingly connected to one of said first and second screw rotors, for rotatably supporting said motor rotor so that energization of said motor causes the rotation of said motor rotor, said motor rotor support means and the one of said first and second screw rotors to which said rotor support means is drivingly connected;

passage forming means opening into the interior of said motor housing section, for providing a flow path between the interior of said motor housing and said economizer port opening into said compression chamber in said compressor section; and

jacketing means defining an opening, said jacketing means for at least partially enclosing said motor stator and cooperating therewith to define a cavity in flow communication with said rotor-stator gap through said at least one passage penetrating said stator, said opening defined by said jacketing means being positioned vertically below said opening in the upper portion of said motor housing.

4,573,325

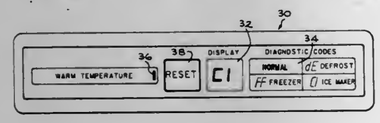
SELF-DIAGNOSTIC SYSTEM FOR AN APPLIANCE INCORPORATING AN AUTOMATIC ICEMAKER

Norman H. Chiu, and David A. Schneider, both of Louisville, Ky., assignors to General Electric, Louisville, Ky.

Filed Jan. 17, 1985, Ser. No. 692,075

Int. Cl.[4] F25B *49/00*

U.S. Cl. 62—129 **10 Claims**



1. In an appliance having a freezer compartment containing an icemaker of the type having an ice forming mold and an electric motor and mold heater which are energized by an external power supply during ice cube ejection cycles initiated upon detection of frozen cubes in the mold and de-energized upon completion of the ejection cycle, an icemaker diagnostic arrangement comprising:

current sensing means operative to generate an "on" signal whenever the icemaker motor and mold heater are energized; and

logic circuit means including timing means for measuring the elapsed time between successive "on" signals and signal means operative to generate a user discernible signal signifying a malfunction of the icemaker when an elapsed time less than that normally required to freeze cubes in the mold is detected.

4,573,326

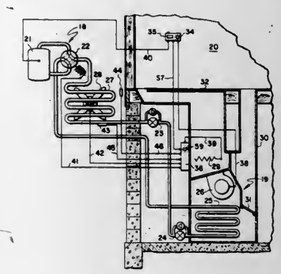
ADAPTIVE DEFROST CONTROL FOR HEAT PUMP SYSTEM

Louis E. Sulfstede; Carl Bergt, and Robert W. Helt, all of Tyler, Tex., assignors to American Standard Inc., New York, N.Y.

Filed Feb. 4, 1985, Ser. No. 698,057

Int. Cl.[4] F25D *21/06*

U.S. Cl. 62—156 **28 Claims**



1. A defrost control for a temperature conditioning system that includes an outdoor heat exchanger, said control comprising:

a. an outdoor heat exchanger temperature sensor;

b. an outdoor ambient air temperature sensor; and

c. means connected to both the outdoor heat exchanger temperature sensor and the outdoor ambient air temperature sensor and responsive thereto, for controlling the system to effect a defrost cycle to melt ice and frost that have collected on the outdoor heat exchanger when the heat exchanger was used as an evaporator, if the current differential temperature between the outdoor ambient air and the outdoor heat exchanger exceeds a defrost initiate value calculated after each defrost cycle as a function of:

i. a post defrost cycle differential temperature between the outdoor ambient air and the outdoor heat exchanger determined by the control means following the last defrost cycle, generally before new frost and ice formed on the outdoor heat exchanger; and

ii. a minimum such post-defrost cycle differential temperature from differential temperatures determined following previous defrost cycles as in (i), at substantially the same outdoor ambient air temperature; whereby said defrost cycle initiate value reiteratively determined by said control means, in time approaches an optimum value that changes as the temperature conditioning system changes and thus adapts to maintain an optimum defrost cycle.

4,573,327

FLUID FLOW CONTROL SYSTEM

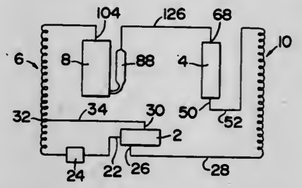
Robert Cochran, 5404 Sunset Way N., Lakeland, Fla. 33805

Filed Sep. 21, 1984, Ser. No. 652,849

Int. Cl.[4] F25B *27/00*

U.S. Cl. 62—238.6 **31 Claims**

1. A fluid flow control system for use with a heat exchange apparatus including a first heat exchange having a conduit disposed in heat exchange relationship relative to a fluid medium to extract heat from the heat exchange apparatus and a second heat exchange to provide heat to the heat exchange apparatus, said fluid flow control system comprising a liquid flow control device operatively coupled between the first and second heat exchange, said liquid flow control device including a liquid metering means operatively disposed within an enclosed liquid/vapor reservoir, said enclosed liquid/vapor reservoir having a liquid port to receive liquid from the first heat exchange and a liquid metering orifice to feed liquid through said enclosed liquid/vapor reservoir formed therein, said liquid metering means comprising a movable flow restrictor disposed relative to said liquid metering orifice such that movement of said movable flow restrictor relative to said liquid metering orifice controls the flow rate of liquid through said liquid metering orifice in response to the liquid level within said enclosed liquid/vapor reservoir to regulate the rate of flow of liquid from the first exchange, separate vapor from the liquid fed from the first exchange and maintain a predetermined level of liquid in the exit portion of the conduit.



4,573,328

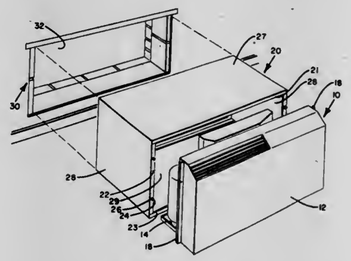
APPARATUS FOR MOUNTING A PACKAGED TERMINAL AIR CONTROLLER TO A PLASTIC WELL SLEEVE

Theodore S. Bolton, Liverpool, and John H. Michaels, Clay, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Feb. 4, 1985, Ser. No. 698,203

Int. Cl.[4] F25D *23/12*

U.S. Cl. 62—263 **4 Claims**



1. A non-metallic sleeve for removably mounting therein a packaged terminal air conditioning unit having an L-shaped sealing flange extending outwardly therefrom, comprising:

a box means formed by a top, a bottom, two sides, an open back, and an open front;

a pair of flanges carried by opposite sides of said box means, said flanges extending inwardly in the plane of said open front, said flanges having aperture means therethrough for receiving fastener means extending through the L-shaped sealing flange for securing the packaged terminal air conditioning unit in the sleeve,

standoff means in axial alignment with said aperture means adapted to keep said flanges in spaced relation to the L-shaped sealing flange, said standoff means has a height substantially equal to the short leg of the L-shaped sealing flange to keep said two flanges in compression when said fastener means is tightened, and

nut means for securing said fastener means, said nut means having a flange means extending from opposite sides of said box means in parallel spaced relation to each of said pair of flanges.

4,573,329

MACHINE FOR MAKING ICE-CREAM AND SIMILAR COLD PRODUCTS, WITH A REMOVABLE FREEZING CONTAINER

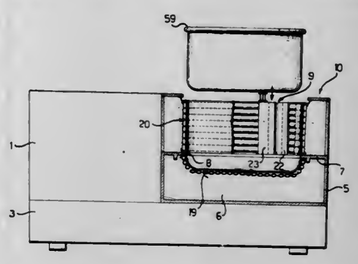
Alfredo Cavalli, Via Galileo Galilei, 9, Pessano Con Bornago (Milan), Italy

Filed Nov. 26, 1984, Ser. No. 674,754

Claims priority, application Italy, Nov. 30, 1983, 23950 A/83

Int. Cl.[4] A23G *9/00*

U.S. Cl. 62—342 **4 Claims**



1. A machine for making ice-cream and similar cold products, comprising:

a cooling chamber formed by a substantially cylindrical cooling coil, said coil being formed by a plurality of lengths of tubing connected together in series by means of two manifold bodies which are spaced apart in a circumferential direction and define an axially extending passage therebetween, a substantially cylindrical elastic sheath, with an axially extending discontinuity facing said axially extending passage, externally surrounding said cooling coil,

a freezing container insertable in and removable from said cooling chamber,

two plate-like shields each secured to a respective manifold body and circumferentially projecting towards one another in said axially extending passage,

a layer of elastically yielding and thermally insulating material interposed between said cooling coil and said elastic sheath, said layer including a bellows portion extending inside said passage between said plate-like shields and said sheath.

4,573,330

ABSORPTION HEAT PUMP COMPRISING AN INTEGRATED GENERATOR AND RECTIFIER

Willem L. N. van der Sluys; Jacobus Pastoor, and Johannus C. M. Roelofs, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 29, 1985, Ser. No. 728,436

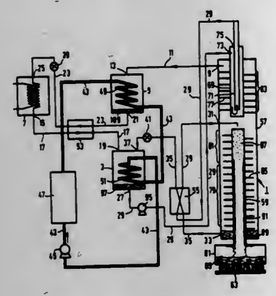
Claims priority, application Netherlands, Oct. 30, 1984, 8403281

Int. Cl.[4] F25B *15/00*

U.S. Cl. 62—476 **4 Claims**

1. An absorption heat pump comprising a generator and absorber arranged in a first circuit for a solution of work medium and solvent and a condenser and evaporator arranged in a second circuit for the work medium, an outlet of the generator being connected to the condenser and an outlet of the evaporator being connected to the absorber, which is connected via an outlet to an inlet of the generator, while a vertically arranged first metal pipe passed into a holder of the generator and closed at its upper end is connected at its lower end to a vessel arranged outside the holder and forming part of the generator, which vessel contains an evaporation and condensation medium, respectively, the space between the holder and the said first pipe being connected to a supply for the solution and to an outlet for gaseous work medium, characterized in that the first pipe is filled in an upper rectifying section

with a thermally insulating gas and is wetted in a lower generating section adjoining the upper section on its inner wall with condensing work medium, while the pipe is provided both in



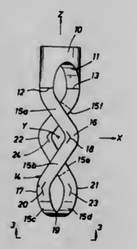
the upper and in the lower section with at least one fin which is secured to the outer wall of the pipe and is arranged so as to be clear of the inner wall of the holder.

4,573,331

THUMB RING

Merle L. Wideman, P.O. Box 5644, Dhahran, Saudi Arabia

Filed Oct. 20, 1983, Ser. No. 543,928
Int. Cl.[4] A44C *9/00*
U.S. Cl. 63—15 **5 Claims**



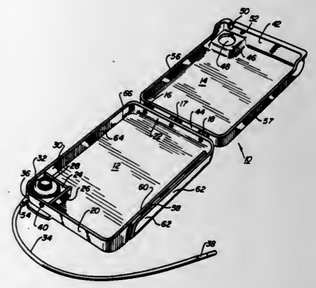
1. A ring for use on a thumb member comprising:
a base member, said base member having a vertical longitudinal plane such that when the base member is disposed on the back of a thumb member on which the ring is worn there is a general coincidence of said base member vertical longitudinal plane with a vertical longitudinal plane which extends through and bisects the thumb member;
shank means attached to said base member on opposite sides of said vertical longitudinal plane, said shank means and said base member having a generally flat interior surface defining an opening for receiving a thumb member where said opening has a central axis;
said shank means having its flat interior surface tapered with respect to the central axis for the opening,
said shank means having curvatures with respect to a vertical, transverse plane for defining four successive undulation angles where each angle is reversed with respect to an adjacent angle, said undulation angles and said tapered flat interior surface making up means whereby an interior contact surface is provided which conforms to the surface inclinations of the thumb and tends to maintain a non-rotatable relation between the ring and thumb.

4,573,332

PORTABLE SECURITY BOX

Hansan Ma, Hoffman Estates, Ill., assignor to Idesign, Inc., San Francisco, Calif.

Filed May 10, 1984, Ser. No. 608,702
Int. Cl.[4] E05B *65/52*
U.S. Cl. 70—30 **6 Claims**



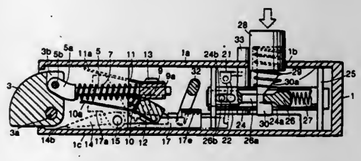
1. A portable security box which comprises:
a container that can be moved from place to place comprising a separate, unattached unit formed from a pair of hinged mating sections, each section comprising a portion of the box which, when mated with the other section, form a closed box having an inaccessible interior;
a lock carried by one of the sections and having an elongated high strength member extending therefrom;
said one section including means for receiving the lock and said other section defining an opening which overlies the lock that is received by said one section, with said lock being located interior of said box when both sections are in a closed position but being accessible from exterior of the box;
said other section also defining a member opening for receiving said member whereby said member can extend from the lock carried by said one section, through the member opening defined by the other section and back to the lock, to secure the sections in the closed position.

4,573,333

ELECTRICAL DOOR LOCK

Yoon H. Choi, 46-3, Changchun-Dong, Sudaemoon-ku, Seoul, Rep. of Korea

Filed Aug. 19, 1983, Ser. No. 524,602
Int. Cl.[4] E05B *47/06*
U.S. Cl. 70—279 **6 Claims**



1. An electrically actuated door lock comprising:
a lock housing having opposed side walls;
a locking member pivotally mounted between the opposed side walls whereby said locking member is operable to pivot out of and retract into said lock housing;
a return member pivotally mounted in said housing whereby said return member is operable to pivot out of and retract into said lock housing;
a first connecting rod having one end connected to said locking member;

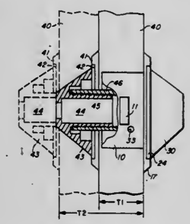
a second connecting rod having one end connected to the return member;
a first rod guide pivotally connected between the opposite side walls and having means for slidably receiving another end of said first connecting rod;
a second rod guide pivotally connected between said opposed side walls and having means for slidably receiving another end of said second connecting rod;
a first biasing means, cooperating with said first connecting rod, for applying a bias force against said locking member;
a second biasing means, cooperating with said second connecting rod, for applying a biasing force against said return member;
a first spring, fixed at one end thereof to the first rod guide and at another end thereof contactable with a surface of said return member;
a second spring fixed at one end thereof to the second rod guide and at another end thereof contactable with a surface of said locking member;
a locking lever disposed adjacent to said locking member and operable for engaging an engaging surface of said locking member to maintain said locking member in a locked position; an actuating lever operable for disengaging said locking lever from the engaging surface, said actuating lever having a shoulder at its rear end, said locking lever and said actuating lever being pivotally mounted in said housing;
means for applying a biasing force in one direction to said locking lever and for applying a biasing force in a reversed direction to said actuating lever;
an electrically operable plate for engaging the shoulder of the actuating lever;
a manually operable means, disposed adjacent to and operable for moving the electrically operable plate; and
a longitudinally movable releasing lever disposed adjacent said locking lever.

4,573,334

DEADBOLT LOCK ADJUSTABLE FOR MOUNTING IN DOORS OF VARIOUS THICKNESSES

Alois Crepinsek, 97 N. Arizona Pl., Chandler, Ariz. 85224

Filed Jan. 24, 1983, Ser. No. 460,158
The portion of the term of this patent subsequent to Dec. 25, 2001, has been disclaimed.
Int. Cl.[4] E05B *9/08*
U.S. Cl. 70—451 **3 Claims**



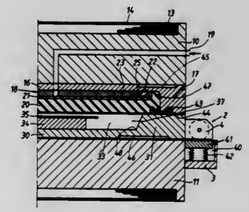
1. An improved lock comprising:
a lock body having therein a keyway and lock mechanism bore and a recessed annular segment diametrically displaced beyond a portion of the outer periphery of keyway and lock mechanism bore;
first and second slide latch recess means coupled to said lock body, one of each intercepting the extremes of said recessed annular segment;
raised element means for further defining said keyway and lock mechanism bore and providing secure access thereto;
first and second latch pins coupled to said raised element means said first latch pin being further lockingly engaged in said first slide latch recess means and said second latch pin being further lockingly engaged in said second slide latch recess means;
an annular segment slidingly coupled to said recessed annular segment in said lock body for coupling said first latch pin to said second latch pin for inhibiting rotation of said second latch pin about said first latch pin; and
latch pin locking means for inhibiting the disengagement of said first latch pin from said first slide latch recess means and, in cooperation with said annular segment, for inhibiting the disengagement of said second latch pin from said second slide latch recess means.

4,573,335

HYDRAULIC PRESS WITH PRESSURE CELL

Hans Persson, Helsingborg, Sweden, assignor to ASEA Aktiebolag, Västeras, Sweden

Filed Jan. 18, 1985, Ser. No. 692,716
Claims priority, application Sweden, Jan. 20, 1984, 8400271
Int. Cl.[4] B21D *22/12*
U.S. Cl. 72—63 **4 Claims**



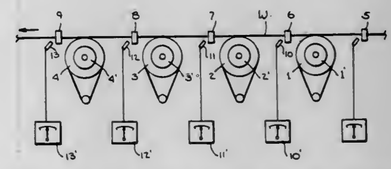
1. A press of pressure cell type which includes:
a press frame having opposed force-absorbing members defining a cavity therebetween,
a press tray movable into the said cavity and having a base on which a form block having a forming surface and a workpiece to be shaped to the forming surface are located,
a press plate supporting an expansible pressure cell within the said cavity, means to expand the pressure cell when a press tray is within the cavity to force the workpiece against the said forming surface,
the press plate and the base of the press tray, each having at least one zone of thickness transition,
wherein play is provided between at least one of the said press plate and the said base of the press tray and its confronting force-absorbing member in the vicinity of a said zone of thickness transition.

4,573,336

METHOD AND APPARATUS FOR WIRE DRAWING

Erik Hagglund, 1277 Smith Ridge Rd., New Canaan, Conn. 06840

Filed May 30, 1984, Ser. No. 615,344
Int. Cl.[4] B21C *1/04*; G01L *5/04*
U.S. Cl. 72—278 **9 Claims**



1. A continuous wire-drawing method comprising lubricating the wire with a wire drawing lubricant; drawing the wire continuously through a succession of wire drawing dies having

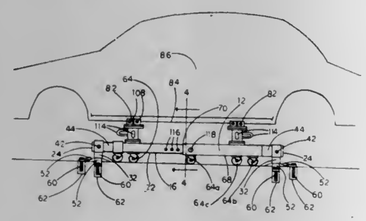
successively smaller bearing zones in which at an overheated temperature of the wire the wire or the die is damaged, while the wire is drawing continuously through the succession of wire drawing dies and at each and every die continuously individually measuring the wire temperature of the wire as close as possible to the die's bearing zone, and adjusting the drawing speed of the wire so that the highest temperature measured by any one of the dies is just below said overheated temperature.

4,573,337

FRAME TO HOLD AUTO BODIES FOR STRAIGHTENING

Thomas S. Papesh, 1915 N. Broadway, Crest Hill, Ill. 60435

Filed Oct. 15, 1984, Ser. No. 660,820
Int. Cl.[4] B21D *1/12*
U.S. Cl. 72—305 **9 Claims**



1. A frame for holding an auto body for straightening, comprising a first telescoping bar assembly for one side of said auto body, a second telescoping bar assembly for the opposite side of said auto body, a third telescoping bar assembly for the front portion of said frame connected between said first and second telescoping bar assemblies, a fourth telescoping bar assembly for the rear portion of said frame connected between said first and second telescoping assemblies, support means extending upwardly from said frame to support an auto body thereon, jaw means on said support means to grip and hold said auto body rigidly on said frame, and anchor means to anchor said frame against movement relative to the floor, said anchor means including base means to rest on said floor, upwardly extending support means extending upwardly from said base means to support said frame above said floor whereby an auto body received thereon is supported entirely above said floor, tubular frame receiving means to receive portions of said telescoping bar assemblies therethrough for sliding movement therein, and releasable securing means movable between a securing position and a releasing position to hold said portions of said telescoping bar assemblies against said sliding movement in said tubular frame receiving means when said releasable securing means is in said securing position.

4,573,338

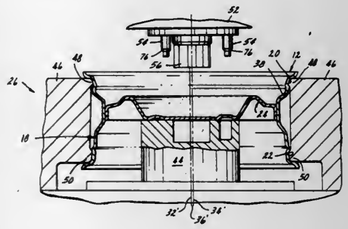
METHOD OF WHEEL MANUFACTURE FOR CORRECTING ROTATIONAL NON-UNIFORMITY OF A PNEUMATIC TIRE AND WHEEL ASSEMBLY, APPARATUS FOR PERFORMING SUCH METHOD AND RESULTING WHEEL

Anwar R. Daudi, E. Lansing, Mich., assignor to Motor Wheel Corporation, Lansing, Mich.

Filed May 29, 1984, Ser. No. 615,074
Int. Cl.[4] B21D *53/26, 28/00*
U.S. Cl. 72—333 **6 Claims**

1. In a method of manufacturing a vehicle disc wheel having a rim with tire bead seats defining an average bead seat axis and a disc with a center hub opening and an array of bolt openings surrounding said center opening, said center and array of bolt openings being centered on axes which are eccentrically offset with respect to said bead seat axis by an amount and in a direction to locate a peak of the first harmonic of bead seat radial runout of said wheel within a predetermined angular range about a preselected location on said rim,

said method including the steps of locating said wheel by means of said bead seats and then forming said center and bolt openings in said disc with said array of bolt openings being centered on an axis which is offset with respect to the axis of said center opening,



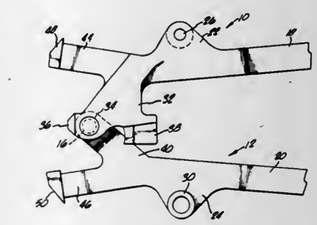
the improvement for locating said peak within said range and maintaining the amplitude of said peak within predetermined limits with respect to both said center and bolt opening array axes, said improvement comprising the step of forming said openings such that said average bead seat axis is located within a zone on said disc bounded by said angular range and by radii from said center and bolt opening array axes equal to said predetermined limits.

4,573,339

MANUAL TOOL FOR SHAPING HORSESHOES

Leslie M. Emery, 330-B 5th Ave., Venice, Calif. 90291

Filed Dec. 17, 1984, Ser. No. 682,421
Int. Cl.[4] B21D *17/02*
U.S. Cl. 72—384 **4 Claims**



4. A manual tool for shaping horseshoes, the tool having a left hand elongate member having opposite ends, and a right hand elongate member having opposite ends, said members journaled together by means of a journal pin at a central journal point; said right elongate member having:

(i) an elongate handle portion to be gripped at a first end thereof;

(ii) a nib extending laterally and outwardly (relative to said central journal point) from said elongate handle portion near the second end thereof, but below said central journal point, said nib having a plug protruding from one side thereof;

(iii) an armature extending angularly and inwardly (relative to said central journal point) from said elongate handle portion near the second end thereof, the distal end of said armature having an aperture through which said journal pin extends, and said armature having upper and lower flanges, said upper flange being located immediately above said journal pin, said lower flange being located directly but a slight distance below said journal pin, both said flanges extending in a direction opposite to that of said plug on said nib of said elongate handle portion; and

(iv) a head section extending substantially axially above said elongate handle portion, such that said handle portion, said armature and said head section have generally a Y-shape, with said head section terminating at a point above (relative to said handle portion) said central journal pin;

and said left hand elongate member having:

(i) an elongate handle portion to be gripped at a first end thereof;

(ii) a nib which is generally the mirror image of said nib on said right hand handle portion, said nib on said left hand handle portion having plugs protruding from either side thereof;

(iii) an armature which extends angularly, inwardly and upwardly from said handle portion and having in the distal end thereof an aperture through which said journal pin extends; and

(iv) a head section which is generally the mirror image of said head section on said right hand elongate member;

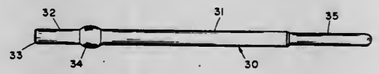
such that upon pulling said handle portions together causes said plugs on said right hand and said left hand elongate members to be brought together, and said head sections to be forced apart.

4,573,340

VALVE GUIDE LINER BROACHING TOOL

James A. Kammeraad, Holland, Mich., assignor to K-Line Industries, Inc., Holland, Mich.

Filed Feb. 28, 1983, Ser. No. 470,614
Int. Cl.[4] B21J *13/02*
U.S. Cl. 72—479 **11 Claims**



6. A broaching tool-driver socket combination for sizing the inside diameter of a valve guide insert for an internal combustion engine cylinder head valve guide,

(a) a broaching tool comprising:

(i) a shank for forcing the tool through said valve guide insert;

(ii) a pilot having the same longitudinal axis as said shank; and

(iii) a nonspherical broaching surface between and integral with said pilot and shank having a working diameter greater than the diameter of said shank and pilot and approximately the same as the desired inside diameter of said valve guide insert, said surface being arcuate in longitudinal cross section having a radius greater than one-half of said working diameter, said radius intersecting the longitudinal axis of said tool, said radius being measured along a first line which is perpendicular to and intersects with the longitudinal axis of said tool and which forms a right angle to and intersects with a second line tangent to said broaching surface;

(b) a driver socket comprising:

(i) a bore adapted to receive the free extremity of said shank; and

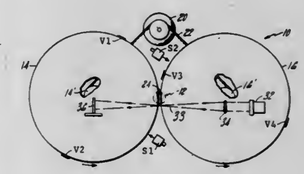
(ii) means within said bore for retaining said shank therein.

4,573,341

METHOD AND APPARATUS FOR MEASURING HYSTERESIS OF A POSITION SENSOR

Ronald C. Nonnenmacher, Woodhaven, and David V. Tinder, Dearborn, both of Mich., assignors to United Technologies Automotive, Inc., Dearborn, Mich.

Filed May 23, 1985, Ser. No. 737,140
Int. Cl.[4] G01M *15/00*
U.S. Cl. 73—1 D **7 Claims**



1. A method for measuring the hysteresis error of a position sensor for a reciprocating element, the sensor having a sensing region by which a vane relatively passes, event timing signals being provided by voltage transitions occasioned by the leading and trailing edges respectively of a respective vane passing relatively by said sensing region, and a position determination requiring two relative passes of a said vane and being determined to be the midpoint between symmetrical said timing signals, the method comprising the steps of:

moving one or more test vanes by said sensing region in a manner to simulate two passes thereby of a reciprocating vane, thereby to generate said event timing signals from said sensor;

generating, independently of the sensor, reference timing signals which are accurately indicative of the positioning of the leading and trailing edges of said one or more test vanes;

comparing a said event timing signal with a respective corresponding said reference timing signal for each of two said reference timing signals symmetrically disposed with respect to the position to be determined and determining a difference value for each of said two comparisons; and

comparing said two difference values to determine a further difference value, said further difference value being a measure of the hysteresis error.

4,573,342

APPARATUS AND METHOD FOR THE AUTOMATIC POROSITY AND PERMEABILITY TESTING OF MULTIPLE CORE SAMPLES

Stanley C. Jones, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Filed Sep. 14, 1984, Ser. No. 651,558
Int. Cl.[4] G01N *15/08*
U.S. Cl. 73—38 **36 Claims**

14. An apparatus for automatically determining the permeability and porosity for a plurality of core samples, said apparatus comprising:

means containing a predetermined number of containers for releasably carrying said plurality of core samples, wherein each container carries only one core sample,

means located under one of said containers for raising the core sample in said one container upwardly and out of said one container,

means connected to said raising means and further connected to said carrying means and located directly above said one container and said raising means for holding said raised core sample, said raising means being capable of maintaining said raised core sample in sealed engagement with said holding means and being further capable of applying an axial overburden stress on the ends of said raised core sample, said holding means being further capa-

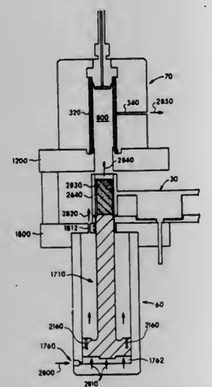
ble of applying, simultaneously with the application of said axial overburden stress, a radial overburden stress around the cylindrical sides of said raised core sample,

means in said holding means for delivering a pressurized gas to the top end of said raised core sample in order to conduct said permeability and porosity tests while said radial and axial overburden stresses are applied,

means connected to said carrying means for moving said carrying means to position the next successive holder over said raising means upon the lowering of said raised core sample back into said one container, said moving means being capable of moving said carrying means until all of said plurality of core samples have been tested,

a first formed passageway in said raising means for delivering pressurized gas,

a first piston operatively responsive to said pressurized gas in



said first passageway for upwardly lifting said core sample into said holding means, said first piston being capable of sealing said core sample in said holding means to form a test chamber for said raised core sample and for applying said axial overburden stress,

a second formed passageway in said raising means for conveying pressurized gas,

a second piston internal to said first piston and operatively responsive to the pressurized gas in said second formed passageway for selectively sealing the upper end of said first piston when said porosity test is being conducted and for opening the upper end of said first piston when said permeability test is being conducted, and

means in fluid communication with said open end of said first piston for delivering gas from said permeability test from the bottom end of said core sample outwardly from said raising means.

4,573,343

VALVE LEAK DETECTOR

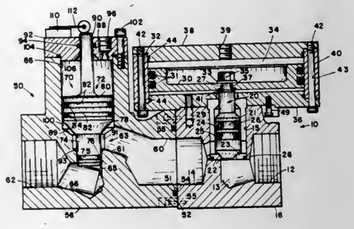
Otto A. Huiber, Kentwood, Mich., assignor to Hi-Tech Engineering, Inc., Grand Rapids, Mich.

Filed Apr. 30, 1984, Ser. No. 605,203
Int. Cl.[4] G01M *3/04*
U.S. Cl. 73—40 **14 Claims**

1. A leak detector for a valve used in a high pressure chemical injection system comprising:

a housing including conduit means for coupling to an outlet of a valve such that fluid passing through the valve will enter said conduit, said housing including a chamber communicating with said conduit;

piston means movably positioned in said chamber and movable in a first direction in said chamber in response to the entry of a non-compressible fluid in said condut; and



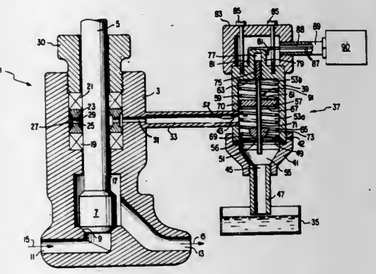
sensor means coupled to said housing and positioned to respond to movement of said piston for providing an alarm output signal.

4,573,344

VALVE PACKING LEAKAGE MONITORING DEVICE

Levi I. Ezekoye, Wilkinsburg, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 19, 1984, Ser. No. 622,295
Int. Cl.[4] G01M *3/28*
U.S. Cl. 73—46 **10 Claims**



1. A device for detecting leakage of fluid across a seal in a component connected to a pressurized fluid system, comprising:

a housing defining a chamber having a longitudinal axis, said housing including an inlet for receiving fluid leaking across the seal and an outlet;

a plate having an orifice disposed in said chamber transverse to said longitudinal axis and between said inlet and said outlet for dividing said chamber into a first chamber volume for receiving fluid through said inlet and a second chamber volume for receiving fluid from said first chamber volume through said orifice and for discharging the fluid through said outlet;

a plug movably mounted for adjusting the open area in the plane of the orifice in said plate;

positioning means connected to said plug for positioning said plug to create a predetermined open area in the plane of the orifice for permitting the fluid to exit said first chamber volume through the orifice at the same rate at which it enters said first chamber volume when the rate of fluid entering said first chamber volume is at or below a given rate, said positioning means being responsive to fluid entering said first chamber volume at a rate greater than the given rate for moving the plug away from the orifice so that the fluid exiting said first chamber volume will continue to equal the rate at which the fluid enters said first chamber volume; and

detecting means for detecting the movement of said plug,

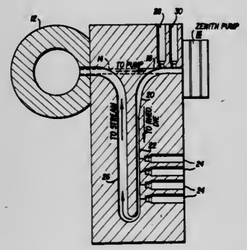
said detecting means producing an output signal corresponding to the distance moved by said plug.

4,573,345

MELT RHEOMETER CONTROL

Charles M. Krutchen, Pittsford; Raj Ranjan, Fairport, and Jan-Chin Yang, Pittsford, all of N.Y., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jul. 12, 1984, Ser. No. 630,155
Int. Cl.[4] G01N *11/04*
U.S. Cl. 73—56 **3 Claims**



1. A method of measuring the viscosity of a foamable plastics melt comprising:

diverting a test sample of said plastic melt from the supply feed to an extrusion die;

elevating the pressure of said melt sample to a level higher than that said supply pressure and sufficiently high to prevent foaming of said melt;

continuously passing said pressurized melt sample through an elongated test section of a rheometer with a minimum residence time;

maintaining the pressure on said melt sample while continuously passing through said test section at a known shear rate and at a pressure level sufficiently high to prevent foaming of the melt sample;

measuring the pressure on said melt sample while passing through said test section at at least two separate locations which are spaced apart along the length thereof;

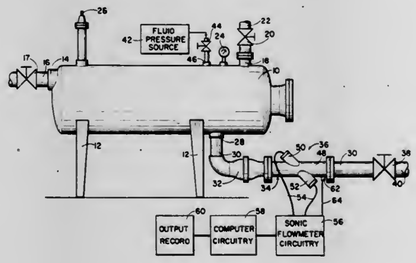
computing the viscosity of said melt by comparison of said measured pressures.

4,573,346

METHOD OF MEASURING THE COMPOSITION OF AN OIL AND WATER MIXTURE

Ellis M. Zacharias, Jr., Tulsa, Okla., assignor to Nusonics, Inc., Tulsa, Okla.

Filed Jul. 18, 1983, Ser. No. 514,576
Int. Cl.[4] G01N *29/02*; G01F *15/08*
U.S. Cl. 73—61.1 R **6 Claims**



1. A method of measuring the composition of an oil and water mixture having gas entrained therewith flowing in a pressurized stream, comprising:

(1) collecting a quantity of the mixture from the pressurized stream in a vessel having a quiescent zone;

(2) closing off flow from the pressurized stream to the vessel;

(3) venting pressure from the vessel while the mixture therein is in a quiescent state to permit at least a portion of entrained gas to separate from the mixture;

(4) repressuring the mixture within the vessel to a superatmospheric pressure;

(5) passing the mixture from the vessel while subjected to a superatmospheric pressure through a sonic apparatus;

(6) measuring the speed of sound transmission of the mixture within the sonic apparatus, which speed of sound transmission is indicative of the composition of the mixture; and

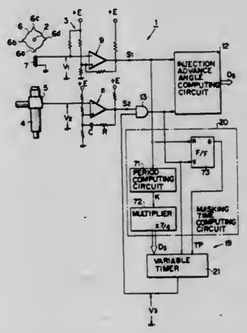
(7) calculating the water and oil composition utilizing the detected speed of sound transmission measurement.

4,573,347

APPARATUS FOR MEASURING FUEL INJECTION ADVANCE ANGLE IN DIESEL ENGINE

Akira Sekiguchi; Takeo Ichikawa; Kazuo Inoue; Kyoichi Fujimori; Yutaka Hirano, all of c/o Diesel Kiki Co., Ltd., Higashimatsuyama Plant, 13-26, Yakyu-cho 3-chome, Higashimatsuyama-shi, Saitama 355, and Seishi Yasuhara, c/o Nissan Motor Company, Limited, Tsurumi-area, 6-1, Daiko-ku-cho, Tsurumi-ku, Yokohama-shi, Kanagawa 230, all of Japan

Filed Apr. 9, 1984, Ser. No. 598,011
Claims priority, application Japan, Apr. 8, 1983, 58-61022
Int. Cl.[4] G01M *15/00*
U.S. Cl. 73—119 A **8 Claims**



1. An apparatus for measuring fuel injection advance angle of a diesel engine, comprising:

a first pulse generator for generating first detection pulses in response to the lift movement of a needle valve of a fuel injection valve;

a second pulse generator for generating second detection pulses each time the crankshaft of the engine reaches a predetermined reference angular position;

a signal generating means responsive to the first and the second detection pulses for producing an electric signal showing a desired angle range of the crankshaft;

a masking means for masking undesired signal components produced from said first pulse generator in accordance with the electric signal; and

means for detecting an injection advance angle value in accordance with the first detection pulses obtained through said masking means and the second detection pulses;

wherein said signal generating means includes a computing section for computing said desired angle range of the

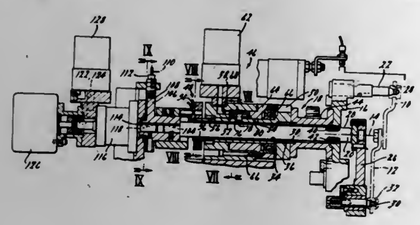
crankshaft on the basis of the generating period of the second detection pulses.

4,573,348

ANGULAR POSITIONING ACTUATOR

Robert D. Abramson, Livonia; David A. Donovan, Chelsea, and Nathaniel L. Field, Northville, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed May 14, 1984, Ser. No. 610,217
Int. Cl.⁴ G01M *15/00*
U.S. Cl. 73—118 **7 Claims**



1. A device for actuating the shift mechanism and throttle mechanism of an automatic transmission comprising:
- a first and second shafts having a common axis along at least a portion of their lengths mounted for rotation about their axes, the second shaft being fitted within the first shaft;
- first and second levers carried by and extending outwardly from the axes of the first and second shafts, respectively, for connecting the shafts to the shift mechanism and throttle mechanism, respectively;
- a source of pressurized fluid;
- first means communicating with the fluid source and driveably connected to the first shaft for rotating said shaft about its axis;
- first angular position sensing means driveably connected to the first shaft for producing a signal representative of the angular displacement of the first lever from a first reference position;
- second means communicating with the fluid source and driveably connected to the second shaft for rotating said shaft about its axis; and
- second angular position sensing means driveably connected to the first shaft for producing a signal representative of the angular displacement of the second lever from a second reference position.

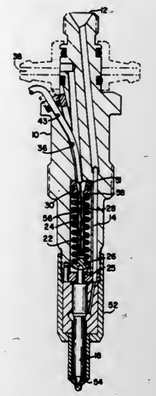
4,573,349

NEEDLE POSITION INDICATOR FOR A FUEL INJECTION NOZZLE HOLDER

Edward A. Slindee, Elmhurst, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed Jun. 28, 1984, Ser. No. 625,489
Int. Cl.⁴ G01M *15/00*
U.S. Cl. 73—119 A **11 Claims**

1. A needle position indicator for a fuel injector nozzle holder comprising:
- a nozzle holder body, said body having an internal chamber and a valve seat;
- a needle mounted within said chamber adapted to make sealing contact with said valve seat;
- spring biasing means for biasing said needle to a predetermined position in relation with said valve seat;
- means for sensing the dislocation of said needle from said valve seat;
- sensing means mounting bracket, mounted within said chamber surrounded by said spring; and



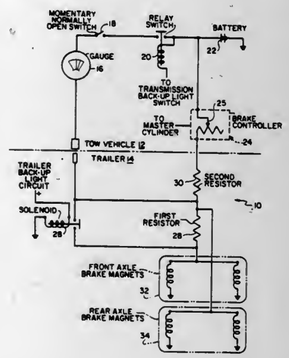
- a resilient ring, surrounding said mounting bracket, radially centering said bracket within said chamber.

4,573,350

TEST SYSTEM FOR ELECTROMAGNETIC TRAILER BRAKE SYSTEM

Warren Anderson, Sturgis, Mich., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Dec. 24, 1984, Ser. No. 685,765
Int. Cl.⁴ G01L *5/28*
U.S. Cl. 73—129 **15 Claims**



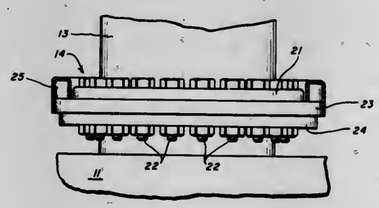
1. A test system for an electromagnetic trailer brake system, comprising:
- a power source;
- a plurality of brake electromagnets connected to said power source;
- means for regulating current flow from said power source to said plurality of brake electromagnets;
- means for proportioning current flow among said plurality of brake electromagnets to control the braking effect;
- means for dropping said proportioning current flow means from the electromagnetic trailer brake system;
- means for actuating said dropping means;
- means for monitoring the actual amount of current flow to said plurality of brake electromagnets; and
- means for actuating said monitoring means, said monitoring means being inserted into the electromagnetic trailer brake system and said proportioning current flow means being dropped from the electromagnetic trailer brake system when said means for actuating said dropping means is actuated so that when said means for actuating said monitoring means is actuated said monitoring means registers the current flow in the electromagnetic trailer brake system which is dependent upon only the condition of said plurality of brake electromagnets since said proportioning current flow means have been dropped from the electromagnetic trailer brake system and therefore the ability for said plurality of electromagnets to successfully stop the trailer when under tow can be determined.

4,573,351

HUB MOMENT SENSOR FOR A HORIZONTAL ROTOR AIRCRAFT

Robert P. Wiener, White Plains, N.Y., assignor to Litton Systems, Inc., Mount Vernon, N.Y.

Filed Feb. 13, 1984, Ser. No. 579,863
Int. Cl.⁴ G01C *21/00*
U.S. Cl. 73—178 H **7 Claims**



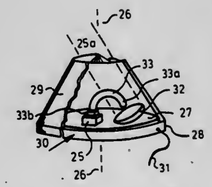
1. A hub moment sensor for an aircraft having a horizontal rotor, a rotor fixed mast for supporting the rotor above the aircraft body, and a support ring formed on the aircraft body for attachment to the rotor fixed mast, the sensor comprising;
- an annular flange formed on the end of the rotor fixed mast remote from the rotor,
- a plurality of bolts securing said flange to said support ring;
- an annular sensing module clampled by said bolts between said flange and said support ring, and
- a plurality of strain gauges positioned in said annular sensing module, said strain gauges being responsive to the elongation of said bolts whereby the moments acting on said aircraft may be sensed.

4,573,352

APPARATUS FOR MEASURING WIND-SPEED AND/OR DIRECTION

Mats E. Hurtig, Vendelsö Skolväg 282, 136 71 Handen, and Gösta K. Karlsson, Middagsvägen 12, 146 00 Tullinge, both of Sweden

Filed Jun. 8, 1984, Ser. No. 618,548
Int. Cl.⁴ G01W *1/02*; G01P *5/00*
U.S. Cl. 73—189 **19 Claims**



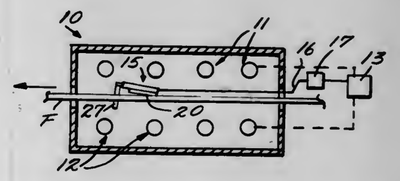
1. Apparatus for measuring windspeed and/or direction with the aid of a sound-wave transmitter and a receiver for receiving reflected sound waves, in which apparatus the sound waves are transmitted in a plurality of directions, and in which a compilation of the measuring result obtained for each measuring operation gives a measure of the speed and direction of the wind, characterized in that the transmitter and/or the receiver is, or are, arranged to rotate, so as to enable the evaluation of measuring results obtained from a multiplicity of measuring locations during revolution; and in that the transmission lobe is inclined in relation to the axis of rotation of said transmitter and/or receiver.

4,573,353

METHOD AND APPARATUS FOR OBTAINING A NOZZLE VELOCITY PROFILE OF A TENTER OVEN

Vernon T. Daniel, Oak Ridge; James R. Johnson, and Edward J. Robbins, both of Greensboro, all of N.C., assignors to Burlington Industries, Inc., Geeensboro, N.C.

Filed May 6, 1983, Ser. No. 492,219
Int. Cl.⁴ G01F *13/00*
U.S. Cl. 73—198 **20 Claims**



1. A method of obtaining a nozzle velocity profile of a textile treating assembly having a fabric web moving therethrough, and having a plurality of nozzles providing air flow therein, and utilizing a velocity sensing probe interconnected by a reeled wire to a monitor, comprising the steps of:
- (a) without arresting the movement of the fabric web through the textile treating assembly, placing the velocity probe—with wire attached—in operative engagement with a specific point of the fabric web as the web moves through the textile treating assembly;
- (b) effecting unreeling of the wire as the probe moves with the fabric web through the textile treating assembly;
- (c) continuously monitoring the air velocity from the nozzles at specific points within the textile treating assembly as the fabric web moves through the textile treating assembly by monitoring the velocity data supplied by the probe;
- (d) without arresting the fabric web movement, removing the probe from the web after it exits the textile-treating assembly; and
- (e) reeling up the wire.

4,573,354

APPARATUS AND METHOD FOR GEOCHEMICAL PROSPECTING

Kent J. Voorhees, Golden, and Ronald W. Klusman, Evergreen, both of Colo., assignors to Colorado School of Mines, Golden, Colo.

Continuation-in-part of Ser. No. 420,362, Sep. 20, 1982, abandoned. This application Aug. 13, 1984, Ser. No. 640,671
Int. Cl.⁴ G01V *9/00*
U.S. Cl. 73—432 R **7 Claims**

1. A method of geochemical prospecting for volatile substances associated with or produced by underground deposits wherein said volatile substances normally migrate to the earth's surface, said method comprising:
- preparing a plurality of shallow holes in the surface of the earth;
- placing an integrative sample collector in each shallow hole,

each integrative sample collector comprising an adsorbent to adsorb said volatile substances;

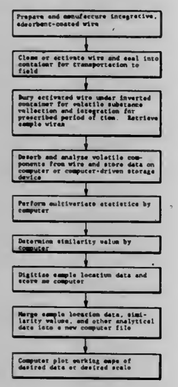
inverting a container over each integrative sample collector;

backfilling each shallow hole;

retaining the integrative sample collectors in the holes for a predetermibned time period to enable at least a portion of said volatile substances associated with underground deposit to be collected by said adsorbent;

removing said integrative sample collectors after said predetermined time period has elapsed;

analyzing a plurality of said volatile substances adsorbed on said adsorbent to obtain analytical data;



storing said analytical data on a computer;

objectively processing said analytical data by multivariate statistics so as to determine with some degree of confidence the nature of the underground deposit and calculating a similarity value based on the emanation of volatile substances from a known source comprising a known fingerprint; and

mapping the distribution of similarity values to the known fingerprint so as to guide the exploration for the desired underground deposits.

4,573,355

DEVICE FOR THE DETERMINATION OF THE UNBALANCE OF PROPELLERS

Wolf-Dieter Reutlinger, Novalisstrasse 5, D-6100 Darmstadt, Fed. Rep. of Germany

Filed Dec. 12, 1983, Ser. No. 560,138

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1982, 3247503

Int. Cl.⁴ G01M *1/02*

U.S. Cl. 73—455 **17 Claims**

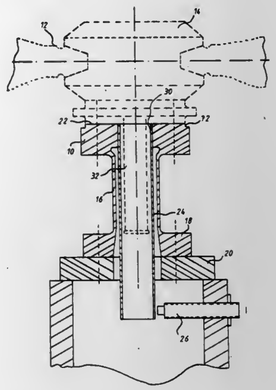
1. Device for the determination of the unbalance of propellers, comprising

(a) a propeller accommodation (**10**) permitting mounting of a propeller (**12**) with substantially vertical axis,

(b) a device for universally pivotable supporting of the propeller accommodation and

(c) sensors (**26,28**) for measuring the inclination of the propeller accommodation,

characterized in that



(d) the device for supporting the propeller accommodation (**10**) is a tubular hollow bending spring (**16**).

4,573,356

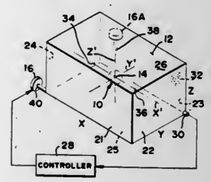
SINGLE TRANSDUCER LEVITATOR

Martin B. Barmatz, Glendale; James L. Allen, LaCrescenta, and Mark S. Gaspar, Glendale, all of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Jul. 3, 1984, Ser. No. 627,537

Int. Cl.⁴ G10K *15/00*

U.S. Cl. 73—505 **32 Claims**



1. A method for levitating an object within a fluid-filled chamber formed by walls that form a chamber of rectangular cross-sections having lengths X, Y, and Z, where the object is to be levitated substantially along an axis X' that extends along the center of the chamber in the X direction, and where the object is denser than the fluid and occupies less than 20% of the volume of the chamber, comprising:

applying acoustic energy to said chamber of a wavelength L_{n21} given by the following equation:

$$L_{n21} = \frac{2X}{[n^2 + 4(X/Y)^2 + (X/Z)^2]^{\frac{1}{2}}}\left(1 + 1.29\frac{V_s}{V_c}\right)$$

where n is a positive integer that is between 2 and 8, and V_s/V_c is the ratio of the volume V_s of the object and the volume V_c of the chamber.

4,573,357

ELASTIC SURFACE WAVE FORCE SENSOR

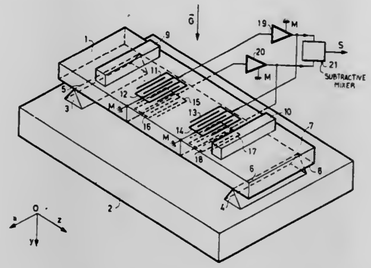
Paul L. Meunier, Paris, France, assignor to Thomson-CSF, Paris, France

Filed May 16, 1984, Ser. No. 610,859

Claims priority, application France, May 20, 1983, 83 08428

Int. Cl.⁴ G01P *15/08*

U.S. Cl. 73—517 R **14 Claims**



1. An elastic surface wave force sensor comprising a plate having first and second parallel faces, means for applying bending forces to be measured to the first face of the plate, elastic surface wave oscillator measuring means disposed on said parallel faces and detecting bending stresses created in the parallel faces by the forces to be measured, said plate resting its second face on two simple pivot bearing supports, said applying means being situated between said two supports so as to define an iso-stress zone in which said oscillator means are placed, and said supports providing uniform stress to said plate between said two supports when a force is applied.

4,573,358

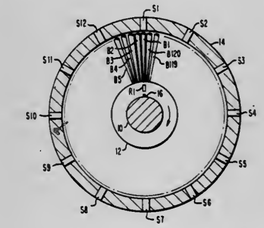
TURBINE BLADE VIBRATION DETECTION APPARATUS

Michael C. Luongo, Brookhaven, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 22, 1984, Ser. No. 663,528

Int. Cl.⁴ G01H *11/00;* **G01M** *1/22, 13/00*

U.S. Cl. 73—660 **20 Claims**



1. Blade vibration detection apparatus for detecting vibration of a blade in a rotating blade row of a machine, comprising:

(A) a plurality of sensors disposed about said blade row with each sensor being operable to provide an output signal upon relative passage of a blade;

(B) signal conditioning means responsive to said sensor output signals and operable to provide respective corresponding sensor pulse signals;

(C) means for selecting a particular blade to be monitored;

(D) means for sequentially combining all of the sensor pulse signals caused by said selected blade as it passes the respective sensors, to derive a pulse train signal modulated as a function of any vibration of said selected blade; and

(E) detection circuitry including FM detection means operable to demodulate said pulse train signal to derive a blade vibration indicative signal.

4,573,359

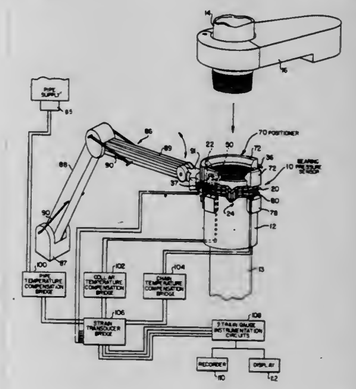
SYSTEM AND METHOD FOR ASSURING INTEGRITY OF TUBULAR SECTIONS

Kenneth J. Carstensen, 2901 Laurel, Odessa, Tex. 79762

Filed Jul. 2, 1980, Ser. No. 165,246

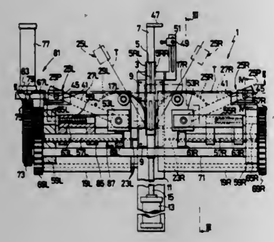
Int. Cl.⁴ G01L *1/22*

U.S. Cl. 73—761 **31 Claims**



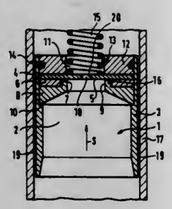
1. A mechanism for sensing the necessary and sufficient engagement of one threaded cylindrical member within another comprising encircling means including a high tensile strength section having a predetermined high resistance to elongation disposed about the outer periphery of the outer cylindrical member for sensing the outward deformation thereof in the threaded region in response to threading of the inner cylindrical member, said encircling means including a short span longitudinally deformable member operable within its elastic limits and having a smaller cross section and a lower resistance to elongation than the high tensile strength section, such that outward deformation of the cylindrical member provides a corresponding total extension of the deformable member within its yield limits and comprising chain link means for conforming to the periphery of the outer cylindrical member, said chain link means having only a plurality of point contact surfaces in contact with said outer cylindrical member, and including separable means for readily attaching and detaching the encircling means relative to the outer cylindrical member, and means for adjustably controlling the initial tension of the encircling means about said cylindrical member, said encircling means being disposed symmetrical with a central plane that intersects with and is normal to the cylindrical member at a mid-region of the threaded portion thereof, the encircling means spanning a longitudinal band of the cylindrical member and the central plane being disposed such that the ratio of the average wall thicknes of the inner and outer cylindrical members is substantially unity in the region directly opposite the encircling means, and means comprising strain sensing means disposed in substantially symmetrical relation to said plane and coupled to said deformable member for sensing the elongation in said deformable member.

4,573,360
BENDING TEST APPARATUS
Akiyoshi Yoneda, Akashi, Japan, assignor to Amada Company, Limited, Japan
Filed Mar. 5, 1984, Ser. No. 586,038
Claims priority, application Japan, Mar. 4, 1983, 58-30401[U]
Int. Cl.⁴ G01N *3/20*
U.S. Cl. 73—850 **15 Claims**



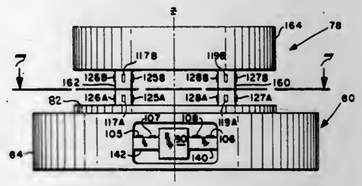
1. A bending test apparatus comprising:
first guide means mounted on the apparatus and extending in a first direction;
first bending means movable on the first guide means in the first direction to bend a test piece to a degree;
second guide means mounted on the apparatus and extending in a second direction;
and a pair of second bending means is movable on the second guide means in the second direction to further bend the test piece which has been bent by the first bending means.

4,573,361
FLOAT-TYPE FLOWMETER
Klaus Kobold, Sodener Strasse 120, 6233 Kelkheim, Fed. Rep. of Germany
Filed Oct. 5, 1984, Ser. No. 657,964
Claims priority, application Fed. Rep. of Germany, Oct. 5, 1983, 3336161; Jul. 6, 1984, 3424870
Int. Cl.⁴ G01F *1/28*
U.S. Cl. 73—861.71 **52 Claims**



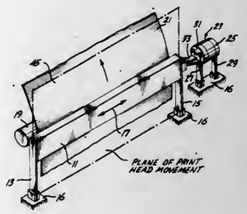
1. A float-type flowmeter comprising:
a tubular housing adapted to have flow therethrough a fluid medium the flow of which is to be measured; and
a spring-loaded float positioned within said housing and adapted to be lifted axially therein by the flow of the medium, with a ring-shaped gap being defined between said float and the inner surface of said housing, said float comprising a hollow cylinder defining axially therethrough an inner flow channel, and an orifice plate extending across said flow channel, said orifice plate having therethrough an orifice defining the narrowest part of said flow channel, said orifice remaining open during axial movement of said float within said housing, and the ratio of the thickness of said orifice, measured axially of said cylinder, to the diameter of said orifice, measured transversely of said cylinder, for flow rates of the fluid medium of approximately 0.1 to 5.0 l/min, not exceeding 0.5.

4,573,362
MULTI-AXIS LOAD TRANSDUCER
Kishan D. Amlani, Troy, Mich., assignor to Eaton Corporation, Cleveland, Ohio
Filed Jul. 9, 1984, Ser. No. 629,299
Int. Cl.⁴ G01L *5/16, 1/22*
U.S. Cl. 73—862.04 **6 Claims**



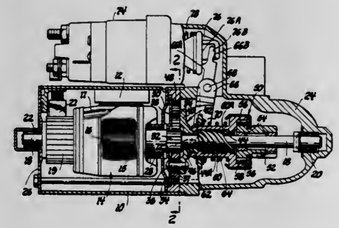
1. A multi-directional load transducer comprising:
(a) an integrally formed member having,
(i) an outer annular reaction portion for transmitting force,
(ii) an inner disc portion disposed within said annular portion, said disc portion having a plurality of radially outwardly extending spokes each having a plurality of elongated generally thin webs extending outwardly therefrom oppositely in a direction normal to the radius of said disc portion, said webs having the outward ends thereof joined with said annular portion such that said inner disc is suspended from said annular portion by said webs,
(iii) a plurality of upstanding generally elongated posts extended from said disc portion in a direction axially of said annular portion,
(iv) a common force receiving block member having the outward ends of said posts joined thereto for supporting said block member upon said disc portion;
(b) first strain gage means disposed on the surfaces of said posts for sensing bending strains in said posts; and
(c) second strain gage means disposed on the surfaces of said webs for sensing bending strains in said webs.

4,573,363
VIBRATION ISOLATING COUPLING
Warren J. Shin, Kent, Wash., assignor to Mannesmann Tally Corporation, Kent, Wash.
Filed Oct. 17, 1983, Ser. No. 542,523
Int. Cl.⁴ F16H *37/00*
U.S. Cl. 74—1 SS **20 Claims**



1. In a system wherein the movable element of a linear actuator is coupled to a carriage supported by flexures for shuttling the carriage back and forth in a plane of movement, said plane of movement defined by the flexures that support the carriage, the improvement comprising:
a vibration isolating coupling for coupling said movable element of said linear actuator to said carriage at an interface plane, said vibration isolating coupling comprising a plurality of protrusions whose outer ends define said interface plane, said plurality of protrusions lying on opposite sides of said plane of movement; and,
attachment means for joining said carriage to said movable element of said linear actuator at said interface plane via said protrusions such that the only areas of physical contact between said movable element of said linear actuator and said carriage occur at the ends of said protrusions that define said interface plane.

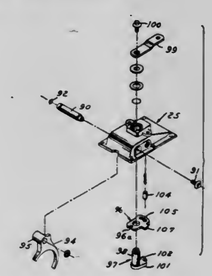
4,573,364
GEAR REDUCTION STARTER DRIVE
David E. Givan, Anderson, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed Aug. 15, 1984, Ser. No. 640,939
Int. Cl.⁴ F02N *15/06*
U.S. Cl. 74—7 E **5 Claims**



1. An electric cranking motor drive comprising, an electric cranking motor having housing means, an armature and a shaft fixed to the armature, said shaft rotatably supported by said housing means and having a first portion extending in one direction from said armature and a second portion extending in an opposite direction from said armature, said first and second portions rigidly connected to each other and to said armature, a driven member having a tubular portion disposed about and rotatably supported by said second portion of said shaft, said second portion of said shaft extending entirely through said driven member, reduction gearing connecting said shaft and said driven member comprising a gear connected to said second portion of said shaft for driving said driven member from said second portion of said shaft through said gearing, a pinion slidably and rotatably supported by said second portion of said shaft, a sleeve connected to said pinion disposed about at least a portion of said driven member, said sleeve being slidable axially relative to said driven member and being rotatably driven thereby, whereby said pinion can be shifted axially relative to said shaft and can be rotatably driven by said sleeve and driven member, and means coupled to said sleeve for shifting said sleeve axially relative to said driven member and shaft.

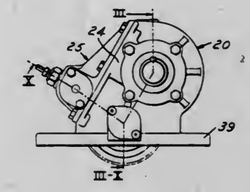
4,573,365
POWER TRANSMISSION
Reed H. Kennard, Bixby, and Lewis R. Miller, Tulsa, both of Okla., assignors to Vickers, Incorporated, Troy, Mich.
Filed Feb. 23, 1984, Ser. No. 582,528
Int. Cl.⁴ F16H *37/00*
U.S. Cl. 74—15.8 **5 Claims**

1. A shifter mechanism for a power take-off device comprising a housing member which includes an opening between spaced walls closed,
said shifter mechanism comprising a cover housing adapted to close the opening of the housing member power take-off of a power take-off device,
a trigger member,
said trigger member having an integral axial portion,
said cover housing having an opening through which said axial portion extends,
lever means engaged with the portion of said axial portion which is external of the housing for rotating the trigger member,
said trigger member including an integral transverse trigger plate,
a yoke plate rotatably mounted on the axial portion of said trigger member,
said yoke plate extending transversely of the axis of said axial portion of the trigger member,
a yoke,
means for mounting said yoke for movement along an axis transverse to the axis of said axial portion of said trigger member,
said yoke plate including a peripheral notch into which a portion of the yoke extends,



said yoke plate including spaced openings connected by a slot,
a spring loaded detent mounted in said cover housing and selectively engaging one of said openings,
said trigger plate of said trigger member having an cam extending into said slot in said yoke plate such that when the trigger member is rotated, said detent is moved so that the yoke plate can be moved to, in turn, cause movement of the yoke by engagement with the notch so that the yoke translates axially between a position wherein only one of a pair of gears is engaged and a position wherein both gears are engaged.

4,573,366
POWER TRANSMISSION
Reed H. Kennard, Bixby, Okla., assignor to Vickers, Incorporated, Troy, Mich.
Filed Feb. 23, 1984, Ser. No. 582,921
Int. Cl.⁴ F16H *37/00*
U.S. Cl. 74—15.8 **34 Claims**



22. A power take-off device comprising
a die cast housing,
a plurality of shafts rotatably mounted in parallel spaced relation in openings in said housing,
gears on said shafts adapted to intermesh,
said walls of said housing have tapered surfaces extending inwardly toward one another,
a washer interposed between the first gear and one of said walls,

a second washer interposed between the second gear and the other of said walls,

said washers having openings through which the input shaft extends,

each said washer having spaced wall surfaces which taper such that the washers provide parallel surfaces for engagement with the first and second gears, respectively.

4,573,367

CLOSED ROLLING NUT FOR TRANSFORMING A ROTARY MOVEMENT OF A SHAFT INTO A THRUST MOVEMENT OF THE ROLLING NUT

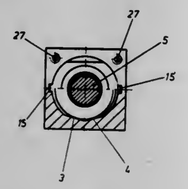
Joachim Uhing, Dorfstede 34, D-2301 Molfsee, Fed. Rep. of Germany

Filed Jan. 27, 1984, Ser. No. 574,563

Claims priority, application Fed. Rep. of Germany, Jan. 27, 1983, 3302633

Int. Cl.⁴ F16H *21/16*

U.S. Cl. 74—89 **12 Claims**



1. A rolling nut in combination with a smooth shaft for transforming a rotary movement of the shaft into a thrust movement of the nut, comprising a tubular housing; a plurality of annular roller cages, arranged in said housing and surrounding said shaft, said roller cages being arranged in said housing at an angle to each other and to an axis of the shaft, each roller cage having an inner annular surface engageable with an outer surface portion of said shaft, each roller cage also having an outer annular surface and two side surfaces; and a plurality of distance rings arranged in said housing and respectively interpositioned between the neighboring roller cates so that they abut only against the side surfaces of the neighboring roller cages but do not surround the outer annular surfaces of the latter, said distance rings comprising means for maintaining the axial relationship of the roller cages relative to each other and to the shaft axis, a position of each of said distance rings in said housing being changeable so that the direction of inclination of each of said roller cages to the axis of the shaft can be changed and a respective roller cage can be adjusted to a desired direction of the thrust movement.

4,573,368

CARRIAGE DRIVING APPARATUS

Kazuo Kobayashi, Furukawa, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

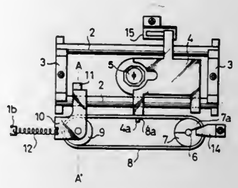
Filed Apr. 27, 1984, Ser. No. 604,960

Claims priority, application Japan, Apr. 27, 1983, 58-62136[U]

Int. Cl.⁴ F16C *1/10*; F16H *21/44, 21/54, 25/18*

U.S. Cl. 74—108 **6 Claims**

1. A carriage driving apparatus comprising guide shafts extended linearly, a carriage slidably supported on said guide shafts, a pulley holder slidably and rotatably supported around one of said guide shafts at one end thereof, a driven pulley rotatably journaled at one side of said pulley holder, a drive pulley disposed at a predetermined distance from said driven pulley and connected to a rotational shaft of a driving motor, a pulling belt laid around said drive pulley and said driven pulley and connected at an intermediate portion thereof to said carriage, a base for supporting said guide shafts, and a pulley holder rotation inhibitive portion disposed on the opposite side of a mounting portion for said driven pulley with respect to the



guide shaft support portion of said pulley holder closely opposing to said base.

4,573,369

LINEAR DRIVE

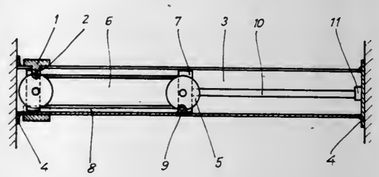
Hans Horn, Postgasse 46, 3011 Bern, Switzerland

Filed Sep. 20, 1983, Ser. No. 534,131

Claims priority, application Switzerland, Sep. 20, 1982, 5522/82; Fed. Rep. of Germany, Mar. 22, 1983, 3310304

Int. Cl.⁴ F16H *21/44*

U.S. Cl. 74—110 **19 Claims**



1. A linear drive comprising:

a housing;

a linear actuator having a fixed driven rod and a liner guided for movement in a path with respect to said housing on said driven rod, said driven rod having at least one end outside to said liner fixedly connected to said housing;

a stroke ratio change transmission connected to said liner and movable with said liner along said path; and

an output member connected to said transmission and moveably mounted with respect to said housing for movement along said housing with movement of said liner along said path.

4,573,370

GEAR REVERSING MECHANISM FOR POWER TOOLS

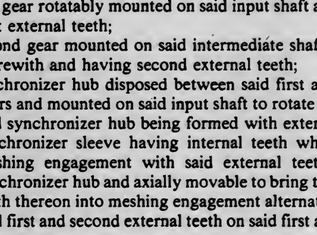
Donald W. Clemens, Painesville, Ohio, assignor to The Rotor Tool Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 512,164, Jul. 8, 1983, abandoned. This application Dec. 30, 1983, Ser. No. 567,418

Int. Cl.⁴ F16H *5/06, 3/22*; E21B *3/00*

U.S. Cl. 74—337.5 **22 Claims**

1. A gear reversal mechanism for a hand held power tool or the like, comprising a housing, a motor in said housing having a rotor pinion rotating in one direction upon motor actuation, idler gear means in mesh with and driven by said rotor pinion, transfer gear means in mesh with and driven by said idler gear means, a primary drive gear having a splined bore therein, an output drive shaft having output splines thereon, and cam means selectively to shift the primary drive gear between two alternate positions, said cam means including a shift body having ramp means thereon and the primary drive gear rotatably mounted therein for axial movement therewith, the first primary drive gear position coupling the rotor pinion to the output splines by the splined bore of the drive gear being in mesh with both to directly drive the output drive shaft in the forward rotation mode and the second alternative drive gear position coupling the rotor pinion to the output splines via the



idler gear means, transfer gear means, primary drive gear and splined bore thereof to drive the output drive shaft in a reverse rotation mode.

4,573,371

AUXILIARY POWER TRANSMISSION HAVING SYNCHRONIZING MECHANISM

Hitoshi Akutagawa, Hiroshima, Japan, assignor to Mazda Motor Corporation, Hiroshima, Japan

Filed Jan. 25, 1982, Ser. No. 342,587

Claims priority, application Japan, Jan. 26, 1981, 56-10597

Int. Cl.⁴ F16H *3/38*; F16D *11/00*

U.S. Cl. 74—339 **8 Claims**

1. An auxiliary power transmission comprising:

axially aligned input and intermediate shafts which are rotatable with respect to each other, said intermediate shaft being connected to a main power transmission;

a first gear rotatably mounted on said input shaft and having first external teeth;

a second gear mounted on said intermediate shaft to rotate therewith and having second external teeth;

a synchronizer hub disposed between said first and second gears and mounted on said input shaft to rotate therewith, said synchronizer hub being formed with external teeth;

a synchronizer sleeve having internal teeth which are in meshing engagement with said external teeth on said synchronizer hub and axially movable to bring the internal teeth thereon into meshing engagement alternatively with said first and second external teeth on said first and second gears;

first and second synchronizer rings respectively provided between said synchronizer hub and said first and second gears, said first and second synchronizer rings being formed with external teeth adapted to mesh with said internal teeth of the synchronizer sleeve;

first friction clutch means provided between said first gear and said first synchronizer ring for synchronizing said first gear in rotation with said synchronizer sleeve when the sleeve is moved axially toward the first gear, said first friction clutch means including an external frustoconical surface coaxially formed on said first gear and an internal frustoconical surface coaxially formed on said first synchronizer ring and adapted for frictional engagement with said external frustoconical surface when said first synchronizer ring is moved toward the first gear;

second friction clutch means provided between said second gear and said second synchronizer ring for synchronizing said second gear in rotation with said synchronizer sleeve when the sleeve is moved axially toward the second gear, said second friction clutch means including an external frustoconical surface coaxially formed on said second gear and an internal frustoconical surface coaxially formed on said second synchronizer ring and adapted for frictional engagement with said external frustoconical surface of said second gear when said second synchronizer ring is axially moved toward the second gear;

said synchronizer sleeve having an axial length so that the internal teeth therein engage both the external teeth on the first and second synchronizer rings when the sleeve is out of engagement with said first and second gears;

forcing means provided between the synchronizer sleeve and the synchronizer hub for alternately forcing one of the first and second synchronizer rings toward the gear cooperating with said one synchronizer ring when the synchronizer sleeve is axially moved toward the gear cooperating with said one synchronizer ring to thereby engage the friction clutch means between said one synchronizer ring and said cooperating gear;

said forcing means including at least one key disposed between the synchronizer sleeve and the synchronizer hub, engagement means being provided between the synchronizer sleeve and the key so that the key is forced against one of the synchronizer rings by the sleeve as soon as the sleeve is disengaged from the gear cooperating with the other synchronizer ring; said key being formed at an intermediate portion with radially outward projection means, the synchronizer sleeve being formed with radially inward projection means adapted for engagement with said radially outward projection means on the key.

4,573,372

RACK-PINION STEERING GEAR AND METHOD FOR CUTTING RACK TEETH

Michio Abe, Aichi, Japan, assignor to Tokai TRW & Co., Ltd., Kasugai, Japan

Continuation of Ser. No. 459,124, Jan. 19, 1983, abandoned, which is a continuation of Ser. No. 106,930, Dec. 26, 1979, abandoned. This application Aug. 7, 1985, Ser. No. 763,872

Claims priority, application Japan, Dec. 27, 1978, 53-162363

Int. Cl.⁴ F16H *19/04, 55/26*

U.S. Cl. 74—422 **5 Claims**



1. A rack for use in a variable ratio rack and pinion steering gear, said variable ratio rack including a longitudinally extending rack member having a straight central axis, a longitudinally extending array of rack teeth wrapped at least part way around the rack member for engaging a pinion during rotation of the

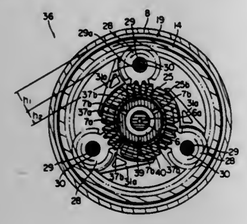
pinion and axial movement of the rack member, said array of rack teeth curving around the rack member in a first longitudinal direction from a central portion of the array of teeth to a first end portion of the array of teeth and curving around the rack member in a second longitudinal direction from the central portion of the array of teeth to a second end portion of the array of teeth, said array of rack teeth having a pitch line which curves around the rack member in the first longitudinal direction from the central portion of the array of teeth to the first end portion of the array of teeth and which curves around the rack member in the second direction from the central portion of the array of rack teeth, said array of rack teeth including teeth disposed in the central portion of the array of teeth and having a first distance between similar points on successive teeth when measured in perpendicular projection along an axis parallel to and offset from the central axis of said rack member, teeth disposed in the first end portion of the array of teeth and having a second distance between similar points on successive teeth when measured in perpendicular projection along said axis which is parallel to and offset from the central axis of said rack member, and teeth disposed in the second end portion of the array of teeth having the second distance between similar points on successive teeth when measured in perpendicular projection along said axis which is parallel to and offset from the central axis of said rack member, said second distance being different from said first distance, at least some of said rack teeth including flank surface means for interacting with the pinion to rotate the rack member and vary the amount of movement of said rack member in an axial direction under the influence of forces applied against said rack member by the pinion during equal increments of rotation of the pinion.

4,573,373

LUBRICATION SYSTEM FOR AUXILIARY EQUIPMENT TRANSMISSION

Yasuo Shimizu, and Masami Ogura, both of Tochigi, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 1, 1984, Ser. No. 585,007
Claims priority, application Japan, Mar. 1, 1983, 58-33554; Mar. 4, 1983, 58-35556
Int. Cl.⁴ F16H *57/04, 57/02;* **F01M** *9/00*
U.S. Cl. 74—468 **6 Claims**



1. A lubrication system for a planetary gear speed change mechanism having a center of rotation for aligning with an engine crankshaft and a bolt with a head for connecting to the engine crankshaft, a rotary housing with a boss portion having an inner surface and bearing and seal means, an output member including the rotary housing and having a centrifugal clutch, a clutch drum, a wrap spring, a stationary arm with a hollow shaft having bearing and seal means, an output drum, a sun gear having external teeth and a body splined to the stationary arm with bearing and seal means, a ring gear with internal teeth fitted within the rotary housing, a plurality of pinion gears with support shafts and bearing means on a pinion carrier, said pinion gears meshing between the sun gear and the ring gear, a rear cover having bearing and seal means, a one-way clutch, a lubricant reservoir at the speed change mechanism center of rotation, an input flange with bearing and seal means, and a slide plate with a boss portion fitted within the sun gear, comprising,

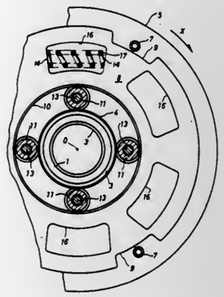
an annular passage providing communication between the lubricant reservoir and the head of the bolt, a notch formed in the head of the bolt providing communication between said annular passage and the rotary housing bearing, a second lubricant passage formed through the rotary housing boss providing communication between said notch and the clutch drum, passageway means providing communication between said second lubricant passage and the inner surface of the rotary housing, passageway means providing communication from the reservoir to the stationary arm bearings and lubricant seal means, passageway means along the sun gear spline providing communication from the stationary arm bearings and lubricant seal means to the pinion carrier bearing and the rear cover bearing and lubricant seal means, a lubricant passage formed through the pinion gear support shafts providing communication from the rear cover bearing and lubricant seal means to the pinion bearings and then to the one-way clutch and the inner wall of the rotary housing, lubricant guide walls formed on the pinion carrier, said guide walls being disposed substantially about the sun gear and each pinion gear, and lubricant return passages including lubricant ports in the side plate boss, an annular lubricant passage between the input member and the sun gear lubricating the sun gear bearing and seal means, a lubricant passage formed through said input member providing communication between said annular passage and the lubricant reservoir.

4,573,374

VIBRATION DAMPER ASSEMBLY

Masahiko Koshimo, Higashi-osaka, and Kiyoharu Murakami, Neyagawa, both of Japan, assignors to Kabushiki Kaisha Daikin Seisakusho, Osaka, Japan

Filed Jun. 20, 1984, Ser. No. 622,517
Claims priority, application Japan, Jun. 23, 1983, 58-114076
Int. Cl.⁴ F16F *15/10;* **F16D** *47/02*
U.S. Cl. 74—574 **3 Claims**



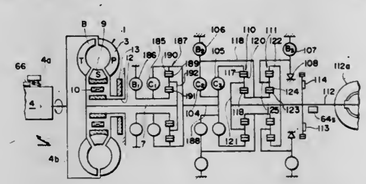
1. A vibration damper assembly including side plates fitted onto an outer periphery of a hub freely rotatably, a sun gear formed on an outer peripheral surface of the hub, a flange plate disposed outwardly from the sun gear with a space left therebetween, a ring gear facing at the sun gear being formed on an inner peripheral surface of the flange plate, and a planetary gear supported by the side plates being made mesh between the sun gear and the ring gear, the side plates and the flange plate being elastically interconnected through a torsion spring.

4,573,375

CONTROL SYSTEM AND METHOD FOR AUTOMATIC TRANSMISSION FOR AUTOMOTIVE VEHICLE

Hideo Hamada; Yoshiro Morimoto, both of Yokosuka; Masaaki Suga; Takashi Murasugi, both of Yokohama, and Tadashi Suzuki, Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Japan

Filed Jan. 31, 1983, Ser. No. 462,337
Claims priority, application Japan, Feb. 10, 1982, 57-18905
Int. Cl.⁴ B60K *41/06*
U.S. Cl. 74—863 **9 Claims**



1. A control system for an automatic transmission for an automotive vehicle engine having an accelerator that actuates a throttle which opens in degrees and which is mounted within an induction pipe wherein an intake manifold vacuum develops, the transmission including a high gear ratio and a lower gear ratio, the control system comprising:

means for generating a throttle fluid pressure variable with the intake manifold vacuum;

means for generating a governor fluid pressure variable with a vehicle speed of the automotive vehicle;

means responsive to said throttle fluid pressure and said governor fluid pressure for changing the automatic transmission between the high gear ratio and the lower gear ratio;

means for generating a vehicle speed signal indicating that the vehicle speed of the automotive vehicle is lower than a predetermined vehicle speed value;

means for generating a throttle opening signal indicating that the throttle opening degree is larger than a predetermined opening degree value; and

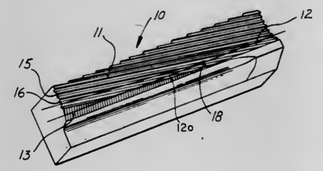
means responsive to said vehicle speed signal and said throttle opening signal for forcing the automatic transmission to downshift from the high gear ratio to the lower gear ratio.

4,573,376

METHOD OF PRODUCING THREAD ROLLING DIE

Richard H. Corrette, North Ridgeville, Ohio, assignor to Colt Industries Operating Corp., Cleveland, Ohio

Continuation-in-part of Ser. No. 366,979, Apr. 9, 1982, abandoned. This application Dec. 7, 1983, Ser. No. 558,946
Int. Cl.⁴ B21K *5/20*
U.S. Cl. 76—107 R **13 Claims**



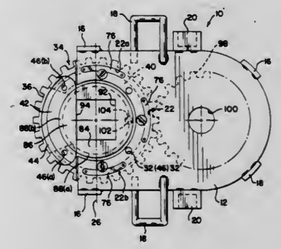
1. A method of forming a thread rolling die for fasteners and the like having cylindrical bodies and pointed ends, comprising the steps of forming a die block with a generally planar first surface corresponding to the cylindrical main body of the fastener and a second surface generally corresponding to the point of the fastener, and cutting threads across both of said surfaces, the threads on at least said second surface being cut during a plurality of separate machine passes of cutter means over said surface, the cutter means being arranged to remove sufficient material from the die block to form substantially the entire profile of the threads on said second surface whereby inaccuracies in the form of such threads on the second surface related to the original contour of the die block preform are substantially avoided.

4,573,377

LIGHTWEIGHT POWER WRENCH

John S. Sroka, 1305 Washington Ave., Parma, Ohio 44113

Filed Mar. 18, 1985, Ser. No. 712,749
Int. Cl.⁴ B25B *17/00*
U.S. Cl. 81—57.2 **13 Claims**



1. A wrench for fastening, loosening, or adjusting a work piece, particularly one having both of its ends affixed, comprising a housing, a circular gear having an internal transverse opening disposed within said housing for rotation relative to said housing, gear teeth provided on the outer periphery of said gear, gear supporting means cooperating with said housing and at least one face of said gear for positioning said gear within said housing for rotation, said gear is composed of a major gear section having an arcuate extent greater than 180° and a minor gear section having on arcuate extent of less than 180°, said gear sections defining a closed circular structure in operating condition, means for removably securing said gear sections together, a removable collet means disposed within said internal opening of said gear and being supported thereby, said collet means having an interior passage of a geometric shape with an open side, means for removably securing said collet means to said gear for rotation therewith, said minor gear section being in alignment with the open side of said collet means to provide unimpeded entry of a work piece into the passage within said collet means when said minor gear section is disengaged from said major gear section, and drive means in cooperation with said gear for transmitting rotary motion to said gear.

4,573,378

MAINTENANCE TOOL FOR INACCESSIBLE WHEEL VALVES

Gerald R. McDonald, 2629 View Mount Ave., Springfield, Oreg. 97477

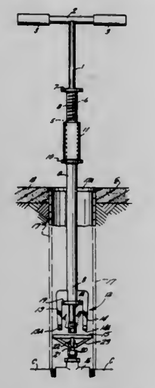
Filed Jun. 8, 1984, Ser. No. 618,920
Int. Cl.⁴ B25B *19/00*
U.S. Cl. 81—463 **11 Claims**

1. A tool for servicing remotely disposed handle equipped valves having a packing nut, said tool comprising,

an elongate wrench member including a shaft adapted at its lower end for engagement with a valve nut securing the valve handle, and

a tubular member movably mounted on said wrench member and including valve handle engagement and retention

means at one end for inserted engagement with the valve handle, said tubular member including an impact surface



against which upwardly directed forces may be imparted during handle removal from the valve.

4,573,379

APPARATUS FOR PRODUCING AN ADJUSTING TORQUE

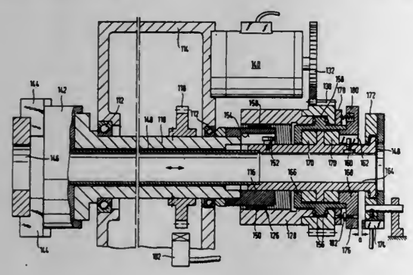
Hübert Bald, Schutzenstrasse 1, D-5920 Bad Berleburg, Fed. Rep. of Germany

Filed May 11, 1983, Ser. No. 493,697

Claims priority, application Fed. Rep. of Germany, May 13, 1982, 3218083

Int. Cl.⁴ B23B *19/00*

U.S. Cl. 82—28 R **10 Claims**



1. The combination comprising a machine having a rotatable spindle for carrying a tool or workpiece, and apparatus having a roller worm gear mechanism coaxially supported on the spindle and including a threaded input member supported for coaxial rotation with and relative to said spindle and a threaded output member supported for axial displacement along the spindle and relative to said input member and a plurality of threaded rollers disposed between and threadably engaged with said input member and said output member for axially displacing said output member along said spindle in response to rotation of said input member relative to said output member, drive means for rotating said input member relative to said output member and said spindle and including an adjusting motor having a stator mounted in fixed position on the machine and a rotor for driving said input member, clamping force storage means supported to rotate with said spindle for receiving force transmitted thereto by axial displacement of said output member relative to said input member and including an element axially displacable in response to the force received by said force storage means, means for transmitting to the tool or workpiece said force stored by said force storage means, first pick-up means for detecting the axial displacement of said element and generating an output signal relative thereto, second pick-up means for detecting the speed of rotation of said spindle relative to said rotor and generating an output signal related thereto, and a motor control circuit responsive to output signals from said pick-up means for controlling the speed of said adjusting motor.

4,573,380

APPARATUS FOR PRODUCING AN ADJUSTING ROTARY MOVEMENT

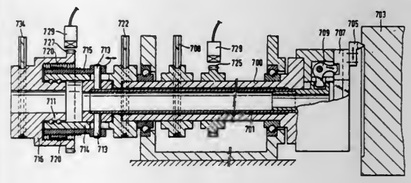
Hubert Bald, Schutzenstrasse 1, D-5920 Bad Berleburg, Fed. Rep. of Germany

Filed May 11, 1983, Ser. No. 493,745

Claims priority, application Fed. Rep. of Germany, May 13, 1982, 3218084

Int. Cl.⁴ B23B *19/00*

U.S. Cl. 82—28 R **22 Claims**



1. The combination comprising a machine having a continuously rotating spindle for carrying a tool or workpiece, and an apparatus for producing an adjusting rotary movement relative to said continuously rotating spindle, said apparatus having roller worm gear movement conversion means for converting rotary movement to axial displacement and including a supporting member carried by said spindle and coaxially rotatable therewith, a threaded input member supported by said supporting member for coaxial rotation with and relative to the supporting member, a threaded output member supported on said spindle for rotation with said spindle and axial movement along said spindle, and a plurality of threaded rollers disposed between and threadably engaged with said input member and said output member for axially displacing said output member along said spindle in response to rotation of said input member relative to said threaded output member to transmit force to a tool or workpiece carried by said spindle, a spindle drive motor, means for coupling said drive motor to said spindle to rotate said spindle, and means for adjusting the rotary movement of said movement conversion means including a superimposition drive mechanism having a synchronizing input coupled to said supporting member, a superimposition input coupled to said threaded input member, an additional output operatively connected to said superimposition input and coupled to said threaded input member, and an adjusting energy converter stationary relative to at least one of the members and operatively connected to the superimposition input.

4,573,381

BORING DEVICE

James R. Hyatt, Kinnelon, and Douglas K. Hyatt, Stratford, both of N.J., assignors to Top Tech, Inc., Butler, N.J.

Filed Feb. 24, 1984, Ser. No. 583,443

Int. Cl.⁴ B23B *29/00, 41/02*

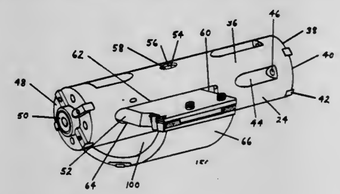
U.S. Cl. 82—36 R **19 Claims**

1. A boring device for use with a machine for drilling a large diametered, deep hole in a metal billet, said boring machine having a boring head with a blade slot therethrough, said device comprising in combination:

cutting insert holder means for holding a plurality of cutting inserts along the leading edge thereof, said insert holder means being of substantially rectangular shape and dimensioned for insertion thereof through said blade slot and extending across the hole to be drilled;

blade clamp means in said boring head adapted to hold said insert holder means in the blade slot;

stabilizer means for supporting said insert holder means and for attachment to the outermost sides of said insert holder means, said stabilizer means dimensioned to conform to the wall of said hole to provide support therefor and to preclude restricting fluid flow about said insert holder means, said stabilizer means and said insert holder means together forming a D-shaped, semicylindrical body;



attachment means for attaching said stabilizer to said insert holder means; and,

a plurality of cutting inserts attached to the leading edge of said insert holder means for cutting the metal billet with overlapping cutting patterns and with at least one said cutting insert disposed on each side of said blade slot;

whereby an annular space for transportating a mixture of cooling fluid and metal chips is provided between said boring head, said insert holder means and the wall of the bore and between said boring head, said insert holder means and said stabilizer means.

4,573,382

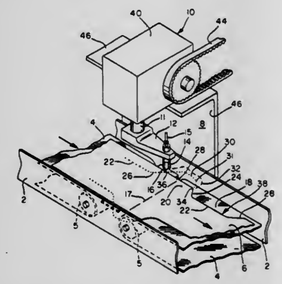
APPARATUS AND METHOD FOR CUTTING A WEB

Kurt J. Kloehn, Outagamie County; Gregory J. Rajala, Winnebago County, and Kent W. Abel, Outagamie County, all of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed May 7, 1984, Ser. No. 607,496

Int. Cl.⁴ B26F *3/00*

U.S. Cl. 83—53 **6 Claims**



5. In a method for cutting a continuously moving web of material with a fluid jet ejected from a nozzle comprising the steps of:

moving the fluid jet in an oscillating manner from a position over a portion of the web and across a first edge location of the web to a position laterally outside the web;

moving the nozzle from said position laterally outside the web across a second edge location of the web and over the web, the movement of the fluid jet over the web cutting a section from web and the movement of the fluid jet over a plane coplanar and moving with the web laterally outside the the web defining a continuous line connecting the two edge locations of the web; and

controlling the oscillating movement of the fluid jet to follow a path substantially paralle to a cutting line located laterally outward of the web and having an angular orientation between the angular orientation of first and second straight lines following the highest pitch slope of said continuous line adjacent the first and second edges, respectively, of the web.

4,573,383

APPARATUS FOR FORMING GAPS IN A SLIDE FASTENER CHAIN

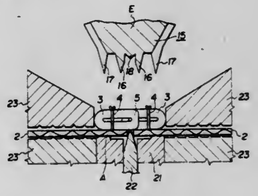
Masao Matsumoto, Toyama, Japan, assignor to Yoshida Kogyo K.K., Japan

Filed Dec. 21, 1983, Ser. No. 564,026

Claims priority, application Japan, Dec. 23, 1982, 57-229233

Int. Cl.⁴ B26D *1/11;* **B21D** *53/50;* **A41H** *37/06*

U.S. Cl. 83—11 **6 Claims**



1. A punch for making spaced sections having a predetermined design into a pair of stringers in which a pair of elongated coupling elements in the form of continuous coils of synthetic resin monofilament are sewn to a pair of fastener tapes with sewing threads; said punch comprising:

a center projecting rib extending along a center line of the lower surface of a punch body and having substantially the same length as that of the spaced section to be formed;

a pair of parallel left and right inner cutting blades formed on the lower surface of the punch body, said inner cutting blades being spaced from the center projecting rib at a distance less than half off the length between the pair of sewing threads to cut the upper leg portions of the coupling elements, said inner cutting blades having a short length in a longitudinal direction to cut at least one wind of the coupling elements adjacent to one end of the spaced section; and

a pair of parallel left and right outer cutting blades formed on the lower surface of the punch body, said outer blades being spaced from the center projecting rib at a distance longer than half of the length between the pair of sewing threads to cut the connecting reversed portions of the coupling elements, said outer cutting elements having a long length in a longitudinal direction to cut the remaining winds of the coupling elements adjacent to the other end of the spaced section to be formed.

4,573,384

DICING DEVICE FOR SLICED FOOD ARTICLES

Frank W. Jones, P.O. Box 4074, Greenville, Del. 19807

Filed Aug. 1, 1984, Ser. No. 636,696

Int. Cl.⁴ B26D *3/26*

U.S. Cl. 83—404.3 **7 Claims**

1. A device for dicing a sliced food article comprising:

a base;

a slide guide means connected to the base;

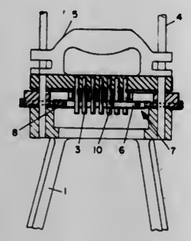
a removable rectangular shaped blade assembly with four sides, said blade assembly contains slide guide ways in which said slide guide means pass through; said blade assembly rests on said base

an upper rack of parallel spaced tensioned blades mounted

within said blade assembly and fastened to two opposing sides of said blade assembly;

a lower rack of parallel spaced tensioned blades mounted within said blade assembly in a plane parallel with the upper rack of blades and rotated ninety degrees such that said upper rack and said lower rack form a substantially rectangular shaped grid;

a plunger having slide guide ways located at the outer perimeter of the plunger in which the slide guides engage, the plunger transversing towards the base and returning along the slide guide means;



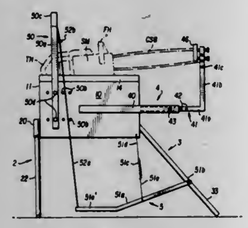
a rectangular array of fingers depending from the plunger which freely engage within the rectangular spaces between the upper and lower racks of blades when the plunger is moved towards the blades, the fingers each comprising a linear element having two ends, one end of each finger being attached to the plunger and the other end being free, the fingers being long enough to substantially pass through the lower rack of blades when the movement of the plunger into engagement with the base is terminated.

4,573,385

CHAIN SAW CUTTING TABLE

Berland M. Funkhouser, P.O. Box 2395, Winchester, Va. 22601

Filed Aug. 2, 1983, Ser. No. 519,671
Int. Cl.⁴ B27B *27/02*
U.S. Cl. 83—788 **5 Claims**



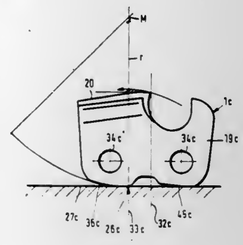
1. A chain saw cutting table comprising a chain saw support table assembly with means to hold a saw motor portion of a chain saw immobile thereon; removable front and rear leg assemblies for said support table assembly; a chain saw bar support assembly positioned on said support table assembly said bar support assembly comprising a hollow horizontal member secured to a front panel of said table assembly and extending beyond the right side of said front panel and an L-shaped member slidably positioned within the outer portion of said horizontal member, the horizontal arm of said L-shaped member and said outer portion of said secured horizontal member each having matching means to secure them together after said L-shaped member has been properly positioned to accommodate the length of the chain saw bar of the saw secured to a top panel of said support table assembly, the vertical arm of said L-shaped member having adjustable means on its upper end to accommodate the angle the saw bar makes with the motor portion and to grip the nose end of said bar; and a cable means to activate said immobile chain saw mounted on said support table assembly and having a pivotal connection to said front leg assembly.

4,573,386

SAW CHAIN FOR A POWER-DRIVEN CHAIN SAW

Bernd Lindemann, Schwaikheim; Götz Landwehr, Berglen-Rettersburg, and Hans-Georg Kaiser, Köngen, all of Fed. Rep. of Germany, assignors to Andreas Stihl, Waiblingen, Fed. Rep. of Germany

Filed Jul. 1, 1983, Ser. No. 510,352
Claims priority, application Fed. Rep. of Germany, Jul. 7, 1982, 3235317
Int. Cl.⁴ B27B *33/14*
U.S. Cl. 83—833 **22 Claims**



1. A saw chain for a power-driven chain saw having a cutter bar defining a track for accommodating and guiding the saw chain, the saw chain comprising:

a plurality of cutting links, a plurality of connecting links, and a plurality of driving links, the links being pivotally interconnected by rivets or the like to define the saw chain, each of the cutting links including:

a plate-like body having a rearward wall defining a rearward opening for accomodating one of the rivets and a forward wall defining a forward opening for accommodating an other one of the rivets, said openings defining respective linkage axes about which the cutting link pivots relative to the respective links to which it is directly connected; said linkage axes defining a plane transverse to said plate-like body;

the rearward wall having an upwardly extending bent-over top portion defining the cutting tooth of the cutting link and a downwardly extending portion defining the rearward foot of the cutting link, the cutting tooth being elongated and having a forward end defining the cutting edge thereof;

the forward wall having an unwardly extending portion defining the depth limiter of the cutting link and having a downwardly extending portion defining the forward foot of the cutting link; said cutting edge being at a first elevation with respect to the cutter bar when both of said feet are in sliding contact with the base of the track of the cutter bar;

said rearward foot having a peripheral edge extending downwardly beneath said transverse plane so as to define a single point whereat said rearward foot slidingly engages the track as the saw chain moves therealong, said point being a tilt point about which the cutting link tilts to displace said cutting edge to a second elevation above said first elevation when said cutting tooth penetrates the wood to be cut, the difference between said elevations being the tilt displacement (h) of said cutting edge,

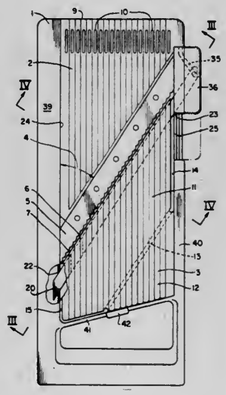
said tilt point being formed on said rearward foot at a location thereon such that said tilt point lies between a first vertical plane passing through said rearward opening and a second vertical plane passing through said cutting edge thereby reducing said tilt displacement to a predetermined magnitude, said first and second vertical planes being approximately perpendicular to said transverse plane.

4,573,387

KITCHEN UTENSIL FOR CUTTING OF FOOD

Ulrich Denter, Hambach, and Rolf-Gunter Schülein, Singhofen, both of Fed. Rep. of Germany, assignors to Leifheit AG, Nassau, Fed. Rep. of Germany

Continuation of Ser. No. 536,115, Sep. 26, 1983, abandoned. This application Jun. 10, 1985, Ser. No. 742,656
Claims priority, application European Pat. Off., Sep. 27, 1982, 82108918.2
Int. Cl.⁴ B26D *1/02*
U.S. Cl. 83—856 **9 Claims**



1. A kitchen appliance for cutting food comprising:

a frame having two oppositely situated side portions and an end portion interconnecting said side portions;

a first guide plate joined to said side portions and having an edge facing said end portion of said frame, said edge being directed at an angle of up to and including 45 degrees with one of said side portions of said frame;

cutting means extending along said edge;

a second guide plate having a first substantially rigid portion which is fixedly attached to said frame and a second substantially rigid portion positioned ajacent and spaced from said frame, said second portion having an edge region facing said edge of said first guide plate, said first portion and said second portion being hingedly joined together by hinge means, said hinge means extending substantially parallel to said cutting means; and

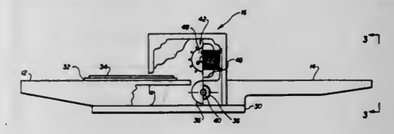
adjusting means connected to said edge region of said second portion and mounted on said frame for displacement relative to said frame between a plurality of positions in which it supports said edge region along the length of said edge region at different transverse offsets from said cutting means to correspondingly vary the dimension of the food being cut by said cutting means, said adjusting means being coupled to said edge region of said second portion to maintain a substantially parallel relationship of said edge region relative to said cutting means over the complete length of said edge region.

4,573,388

PIZZA DOCKER

Norman D. Sullivan, and Forrest E. Baker, both of Hollister, Calif., assignors to Automated Portion Control Technology, Inc., Hollister, Calif.

Filed Mar. 19, 1984, Ser. No. 590,645
Int. Cl.⁴ B26F *1/24*
U.S. Cl. 83—867 **2 Claims**



1. Apparatus for perforating dough prior to baking, which comprises:

a tray having an upper surface thereof for supporting said dough to be perforated;

a front shelf adapted to support said tray in a horizontal condition prior to perforation of said dough;

a rear shelf adapted to support said tray in a horizontal condition and in the same horizontal plane as said front shelf, subsequent to perforation of said dough;

docker wheel means interposed between said front and rear shelves, said docker wheel means having a plurality of radially extending perforator spines which are of sufficient length to pass completely through the dough and touch said upper surface of said tray so that both tray and dough may be moved together, adjacent ones of said perforator spines being circumferentially displaced one from the other so as to form a plurality of spirals about the transverse axis of said docker wheel means, said docker wheel means including:

drive shaft means including a drive shaft which has a guide slot in the periphery thereof, said guide slot extending along the length of and in parallel with the central axis thereof;

a first docker wheel having a central aperture providing an inner surface with a diameter which is slightly larger than the outer diameter of said drive shaft, said docker wheel having an outer surface, a plurality of equally spaced perforator spines extending radially outward from said outer surface, and a key for matching engagement with said guide slot, said key being formed on said inner surface so as to be in alignment with one of said perforator spines, and

a second docker wheel having a central aperture providing an inner surface with a diameter which is slightly larger than the outer diameter of said drive shaft, said docker wheel having an outer surface, a like plurality of equally spaced perforator spines extending radially outward from said outer surface, and a key for matching engagement with said guide slot, said key being formed on said inner surface so as to be intermediate a pair of adjacent perforator spines, a number of said first and second docker wheels being alternately placed adjacent one another along the axial length of said drive shaft whereby adjacent ones of said perforator spines are circumferentially displaced one from the other;

rotatable means for supporting said tray in the horizontal plane of said front and rear shelves and disposed in the space therebetween said rotatable means including:

an idler roller having its axis transverse to the direction of motion of the tray and positioned so as to hold said upper surface of said tray firmly against the spines; and

bearing means for rotatably supporting said idler roller;

means for rotating said docker wheel means, whereby the dough is simultaneously perforated and driven passed said docker wheel means; and

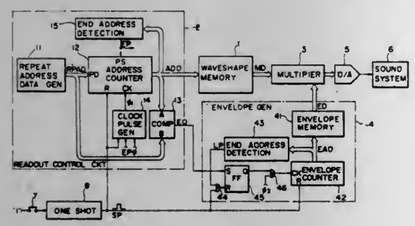
means for separating said perforated dough from said perforator spines and including a housing covering said docker

wheel means, and comb means attached to said housing, said comb means having fingers extending downwardly toward the upper surface of said back shelf so as to intersect the dough if it is lifted above said upper surface of said tray.

4,573,389
MUSICAL TONE GENERATION DEVICE OF WAVESHAPE MEMORY TYPE

Norio Suzuki, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Feb. 29, 1984, Ser. No. 584,552
Claims priority, application Japan, Mar. 4, 1983, 58-36198
Int. Cl.⁴ G10H *1/02, 7/00*
U.S. Cl. 84—1.26 **6 Claims**



1. A musical tone generation device of waveshape memory type for generating a musical tone waveshape which comprises rising portion correspoding to a rise-up of the waveshape and a portion succeeding to the rising portion, said device comprising:

memory means for storing first waveshape data which represent an entire part of the rising portion of a musical tone waveshape and second waveshape data which represent only a part of the portion of the waveshape succeeding to the rising portion;

readout means for reading out said first waveshape data to form the rising portion of a waveshape to be generated and for repetitively reading out said second data to form said succeeding portion of the waveshape to be generated; and

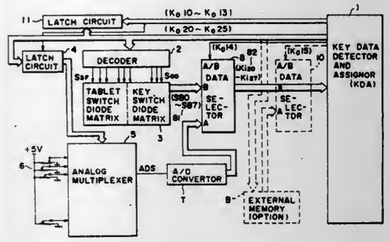
rate control means, associated with said readout means, for controlling the rate for reading out said second data from said memory means so as to establish a pitch of the generated tone waveshape at the portion succeeding to the rising portion, which pitch corresponds generally to one musical tone name, and for varying said readout rate with the lapse of time so as to to cause a corresponding variation of said pitch with passage of time.

4,573,390
PLAY DATA DETECTING SYSTEM FOR ELECTRONIC MUSICAL INSTRUMENTS

Tsutomu Saito, Shizuoka, Japan, assignor to Kabushiki Kaisha Kawai Gakki Seisakusho, Japan

Continuation of Ser. No. 465,056, Feb. 9, 1983, abandoned. This application Jan. 24, 1985, Ser. No. 694,203
Claims priority, application Japan, Feb. 15, 1982, 57-22244
Int. Cl.⁴ G10H *1/18*
U.S. Cl. 84—115 **2 Claims**

1. A key detect and assignor system for an electronic musical instrument which is provided with: means for sending a scan address to a key switch diode matrix or tablet switch diode matrix to obtain switch information; means for multiplexing a plurality of analog volumes; means for A/D converting the output of the multiplexing means to obtain A/D converted information; means for producing a scanning main routine housing repeating cycles; and means for selecting either one of the switch information and the A/D converted information; wherein during one cycle of the main routine, key switches of

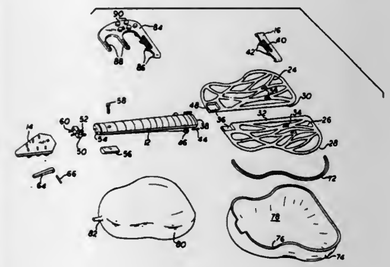


all addresses, tablet switches of only some addresses, and only one analog volume are scanned.

4,573,391
INFLATABLE KNOCK-DOWN GUITAR

Timothy P. White, 11000 Seymour Rd., Grass Lake, Mich. 49240

Filed Apr. 2, 1984, Ser. No. 595,718
Int. Cl.⁴ G10D *1/08*
U.S. Cl. 84—291 **16 Claims**



1. An inflatable guitar comprising, in combination, a face panel having a periphery, an outer side and an inner side, a bridge attached to said face panel outer side, an elongated neck attached to said face panel, strings extending between said bridge and neck, a flexible bladder envelope attached to the periphery of said face panel disposed adjacent said panel inner side, and an inflatable flexible bladder within said envelope in a vibration transmitting relationship to said face panel.

4,573,392
IN-LINE BULLET FEEDER

Robert W. Mantel, Sussex, Wis., assignor to Mantel Machine Products, Inc., Menomonee Falls, Wis.

Filed Sep. 10, 1984, Ser. No. 648,719
Int. Cl.⁴ F42B *11/02*
U.S. Cl. 86—43 **14 Claims**

1. In an in-line bullet feeder of the type used for seating a bullet in the open end of a shell case, said feeder including

a housing,

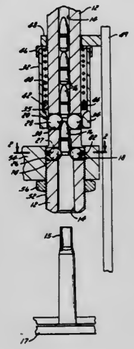
a passage through the housing, and

a gravity feed bullet reservoir connected to one end of the passage, the improvement comprising

a first ball assembly mounted in the housing in a position to prevent bullets from dropping through the passage,

a second ball assembly mounted in the housing spaced upwardly from the first ball assembly in a position to prevent bullets from moving up or down in the passage, and

cup means mounted on the housing for holding the second ball assembly in the blocking position in the passage, and means for moving said cup means away from said second

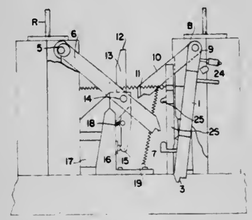


ball assembly whereby a bullet resting on said second ball assembly will cam the second ball assembly outwardly from the passage to allow the bullet to move downward to a position resting on the first ball assembly in the passage.

4,573,393
BOX DISTRIBUTOR FOR SEQUENTIALLY DISCHARGING OBJECTS FROM AIRCRAFT AND LANDCRAFT MEANS

Ludovico Fontana, Bari, Italy, assignor to Tecnovar Italiana S.p.A., Bari, Italy

Filed Jan. 31, 1984, Ser. No. 575,540
Int. Cl.⁴ F41F *5/02*; B65D *7/26*
U.S. Cl. 89—1.59 **9 Claims**

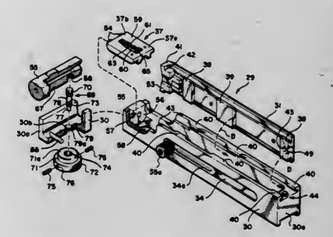


1. In a distributor for sequentially discharging objects from landcraft or aircraft means, of the type comprising a box-shaped framework with a plurality of vertical compartments, closed at the base by shutters, and control means for selectively opening said shutters; the improvement in which said distributor is a stiff box-shaped base, in which are housed said shutters and control means, two sidewalls hinged on the two longitudinal opposite edges of the base, a top wall detachably secured to the top of said sidewalls, and for transport, means for releasably retaining said top wall beneath the box-shaped base when the top wall is detached from the side walls, while the sidewalls are turned one over the other, above the upper face of said base.

4,573,394
MACHINE GUN

Charles W. Goff, 1267 West 1875 North, Farmington, Utah 84025, and Charles W. Goff, Jr., 479 Laurelwood Dr., Kaysville, Utah 84037

Filed Feb. 15, 1984, Ser. No. 580,366
Int. Cl.⁴ F41D *10/24*
U.S. Cl. 89—33.01 **18 Claims**



1. A machine gun comprising, with a receiver group that includes a rectangular box shaped receiver that is stepped at a rearward top end as relating to a stock for connection to said receiver group and is open across its top and a forward end as relating to a connection to a barrel group and contains a spring biased bolt whose reciprocating travel within the receiver is initiated and stopped by operation of a trigger group fitted through a receiver undersurface, and includes a receiver top strap arranged for coupling in a covering attitude over a stepped end of said receiver open top, said top strap including means for releasably coupling said top strap in covering engagement over said receiver stepped top that consists of flange sections that extend horizontal outwardly, at spaced intervals, from opposite longitudinal sides of the top strap undersurface, and spaced apart horizontal inwardly projecting rail sections formed at intervals in longitudinal sides of the receiver stepped top to accomodate said flange sections for fitting therebetween to slide along said rail section undersurfaces as the top strap is moved longitudinally to a covering attitude, including a means for releasably maintaining the top strap in its receiver covering attitude; cartridge feed block means maintained in said receiver group adjacent to said barrel group, a throat thereof parallel to and in alignment with a juxtapositioned cartridge discharge of a magazine wherethrough cartridges are serially exhausted, the feed block means receiving each cartridge in turn through said throat for positioning it for pick-up and insertion into a barrel breech of the barrel group by reciprocating travel of said bolt that picks up each cartridge, in turn, installs and fires it in the barrel breech, and extracts the empty casing to eject it through an exhaust of said receiver; means for maintaining said cartridge feed block means to said receiver group, in exact alignment with said throat thereof juxtapositioned and opposite said magazine cartridge discharge and relative to said barrel breech for said cartridges to be cammed therefrom into said barrel breech by said bolt travel; and means, including a single screw, for aligning and securing said barrel group to said receiver group.

4,573,395
LINKLESS AMMUNITION MAGAZINE WITH SHELL BUFFER

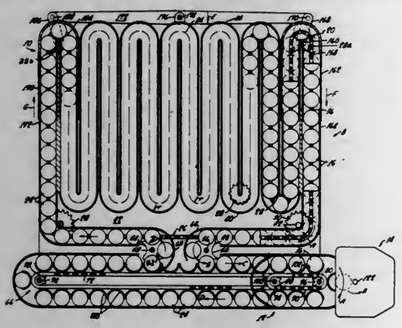
Eugene M. Stoner, Palm City, Fla., assignor to Ares, Inc., Port Clinton, Ohio

Filed Dec. 19, 1983, Ser. No. 563,152
Int. Cl.⁴ F41D *10/22*
U.S. Cl. 89—33.16 **12 Claims**

1. Linkless shell magazine apparatus for storing unfired shells to be fed to an associated gun and for storing casings of shells fired by said associated gun, said magazine comprising:

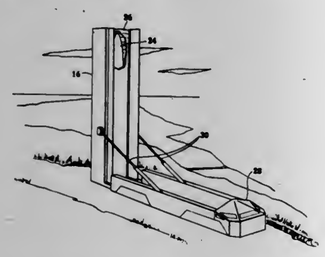
(a) a shell magazine housing having an unfired shell out-feed port and a fired shell casing in-feed port;

(b) an endless-loop, magazine shell and casing conveyor having means for holding a number of shells or casings in a serial, side-by-side relationship;
(c) conveyor guiding means mounted in said housing, said conveyor being entrained over said guiding means,
said guiding means causing the conveyor entrained thereover to follow a serpentine path through the magazine which passes by, in shell and casing transferring relationship, the shell out-feed port and the casing in-feed port;
(d) driving means connected for moving the conveyor along the conveyor path in a direction transporting shells held in the conveyor towards the shell out-feed port and transporting casings transferred into vacancies in the conveyor



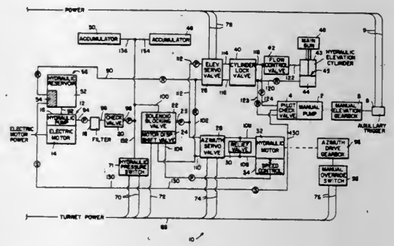
through the casing in-feed port away from said in-feed port; and,
(e) shell accumulating means, responsive to a fast start up of the driving means at the initiation of firing of the associated gun, for enabling a first, short portion, relative to the entire length, of the conveyor just upstream of the shell out-feed port and a second, short portion, relative to the entire length, of the conveyor just downstream of the casing in-feed port to move in unison before other, major portions of the conveyor start moving so as to enable, upon conveyor start up, at the initiating of firing of said associated gun, temporary decoupling of said first and second short conveyor portions from said major conveyor portion.

4,573,396
NUCLEAR BLAST HARDENED MOBILE VEHICLE
Joe W. Streetman, San Diego, and Anton K. Simson, Poway, both of Calif., assignors to General Dynamics Corporation/-Convair Div., San Diego, Calif.
Filed Jun. 17, 1983, Ser. No. 505,554
Int. Cl.⁴ F41H *7/02*
U.S. Cl. 89—36.08 **11 Claims**



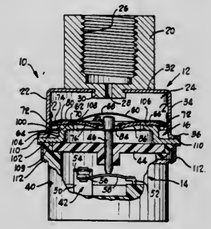
1. A nuclear blast hardened mobile vehicle comprising;
a chassis having a blast-resistant shell thereover;
a plurality of earth-engaging motive members on said chassis adapted to move said vehicle over the earth's surface;
drive means for causing said motive members to move said vehicle;
retraction means to retract said motive members;
skirt means extending downwardly around said shell, adapted to ride above the earth during vehicle movement and contact the earth when said motive members are retracted to substantially seal the air volume within said shell from the outside air; and
means for actively pumping air out of the chamber formed by said skirt in ground contact, the ground under the vehicle and the underside of said vehicle.

4,573,397
TURRET CONTROL SYSTEM
James C. LeBlanc, and Richard S. LeBlanc, both of Mt. Clemens, Mich., assignors to General Motors Corporation, Detroit, Mich.
Continuation of Ser. No. 437,856, Oct. 29, 1982, abandoned.
This application Sep. 26, 1984, Ser. No. 654,712
Int. Cl.⁴ F41F *21/08*
U.S. Cl. 89—41.12 **4 Claims**



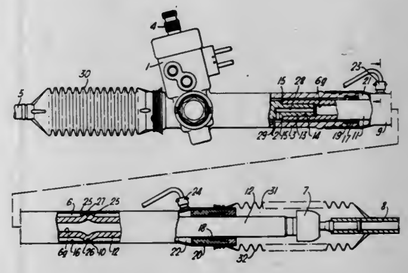
1. A system for controlling the elevation of a gun on a turret comprising:
a. pressure means for providing hydraulic fluid under pressure to said system;
b. a piston-cylinder means for elevating and lowering said gun, said piston-cylinder means having a rear chamber and a front chamber;
c. said piston-cylinder means including a cylinder having a piston arranged for reciprocal movement therein, one side of said piston being connected to a piston rod which is in turn connected to said gun for elevating and lowering said gun, and the other side exposed to said rear chamber;
d. said cylinder including a first inlet for communicating fluid to said rear chamber and a second inlet for communicating fluid to said front chamber;
e. a lock valve for locking said piston in position within said cylinder;
f. said lock valve having means for permitting fluid to flow into and from said cylinder while pressurized fluid is being delivered to said lock valve by said pressure means and preventing fluid flow to and from said cylinder when said pressure means ceases to deliver fluid under pressure to said lock valve for locking the piston in place;
g. said pressure means including a hydraulic reservoir having a main reservoir at atmospheric pressure for containing fluid for use in the system and pump means for drawing fluid from said main reservoir, pressurizing said fluid, and delivering said fluid under pressure to said piston-cylinder means;
h. manual pump means for delivering fluid under pressure to said piston-cylinder means, said manual pump means requiring makeup fluid in delivering fluid under pressure to at least one chamber of said piston-cylinder means; and
i. a supercharger reservoir chamber located in said hydraulic reservoir adjacent said main reservoir for maintaining makeup fluid under pressure greater than atmosphere for delivery to said manual pump means so as to avoid cavitation when said manual pump means is placed in operation.

4,573,398
PRESSURE CONTROL DEVICE AND METHOD OF MAKING THE SAME
Carl N. Johnson; Hemant Phadke, both of Worthington, and Roger L. Sieling, Columbus, all of Ohio, assignors to Ranco Incorporated, Dublin, Ohio
Filed Nov. 5, 1984, Ser. No. 668,001
Int. Cl.⁴ F16J *3/02*; F01B *19/00*
U.S. Cl. 92—101 **12 Claims**



1. A calibrated pressure responsive module constructed for hermetic connection to a pressure control device casing, the module comprising a diaphragm supported along a diaphragm center plane, a diaphragm control plate supporting said diaphragm, and a base member for connecting said plate and diaphragm to said control device casing, the pressure responsive module characterized in that:
(a) the diaphragm includes an outer marginal section hermetically joined to said plate and a central dome section snap movable from a first position on one side of said center plane to a second position on the opposite side of said center plane in response to application of a first predetermined differential pressure force to said diaphragm and snap movable from said second position to said first position in response to application of a second predetermined differential pressure force to said diaphragm;
(b) the diaphragm control plate comprises:
(i) a supporting region rigidly supporting a portion of said diaphragm surrounding said dome section along said center plane;
(ii) a first diaphragm control region hermetically bonded to said diaphragm marginal section and surrounding said supporting region, said control plate yielded and deformed between said supporting region and said control region to yieldably shift said control region relative to said supporting region and stress said diaphragm so that said dome section moves from said first position at said first predetermined pressure;
(iii) a second diaphragm control region surrounded by said supporting region and defining a diaphragm engaging face for engaging said diaphragm dome section in said second position, said control plate yieldably deformed between said supporting region and said second control region with said second control region yieldably shifted relative to said supporting region to position said dome engaging face for enabling said dome section to snap from said second position at said second predetermined differential pressure; and
(c) said base member comprises a first body portion hermetically bonded to said supporting region for rigidly positioning said supporting region with respect to said diaphragm center plane, a second body portion remote from said first body portion constructed for hermetic attachment to said control device casing, and an imperforate body wall between said first and second body portions.

4,573,399
PISTON AND CYLINDER ASSEMBLY, A POWER ASSISTED STEERING GEAR WHICH INCLUDES SUCH AN ASSEMBLY AND A METHOD OF FORMING A PISTON FOR SUCH AN ASSEMBLY
Alan G. Wilson, Bristol, United Kingdom, assignor to Cam Gears Limited, Hertfordshire, United Kingdom
Continuation of Ser. No. 504,470, Jun. 15, 1983, abandoned.
This application May 9, 1985, Ser. No. 732,895
Claims priority, application United Kingdom, Jul. 21, 1982, 8221106
Int. Cl.⁴ F01B *31/00*
U.S. Cl. 92—110 **10 Claims**

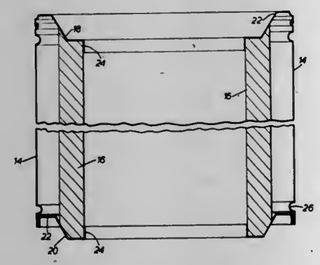


1. A power-assisted steering gear assembly for steering dirigible wheels comprising:
a pinion rotatable in response to a steering input;
rack means engaging said pinion and axially displaceable in response to rotation thereof;
a servomotor for assisting in displacement of said rack means, said servomotor including a cylinder and a piston member axially slidable in said cylinder;
means defining two fluid chambers located at opposite ends of said cylinder, said fluid chambers expanding and contracting upon axial displacement of said rack means;
said piston member comprising passage means therethrough for conducting fluid between said fluid chambers; and
said piston member comprising a one-piece homogeneous tubular structure, said one-piece homogeneous tubular structure including
a piston portion,
two rod portions projecting from axially opposed sides of said piston portion, said piston portion having an outside diameter greater than the outside diameter of said rod portions, the wall thickness of said piston portion being less than the wall thickness of said rod portions,
transitional surfaces extending between said piston portion and said rod portions, the diameter of said transitional surfaces progressively decreasing from said outside diameter of said piston portion to said outside diameter of said rod portions, and
surface means extending internally of said piston portion and said rod portions defining said passage means through said piston member.

4,573,400
INSULATED CHIMNEY PIPES
Martin Foy, Cridwell, England, assignor to Morganite Ceramic Fibres Limited, Merseyside, England and Insulated Chimneys (Trim) Limited, Dublin, Ireland, a part interest
Continuation of Ser. No. 215,656, Dec. 12, 1980, abandoned.
This application Jul. 19, 1983, Ser. No. 514,859
Claims priority, application United Kingdom, Apr. 16, 1980, 8012578
Int. Cl.⁴ E04F *17/02*
U.S. Cl. 98—60 **8 Claims**

1. A domestic insulated chimney pipe section for use with domestic boilers, open fires or the like, said chimney pipe

section comprising an inner one-piece tubular refractory liner consisting of vacuum formed inorganically bonded aluminosilicate fibers having a density of between 100 and 600 kg/m^3, and zero effective coefficient of thermal expansion, said inner liner being exposed in use to hot and corrosive gases passing through said pipe, an outer structural metallic wall member spaced from said inner liner, and two end caps one at each end of said inner liner and outer wall member, the said two end



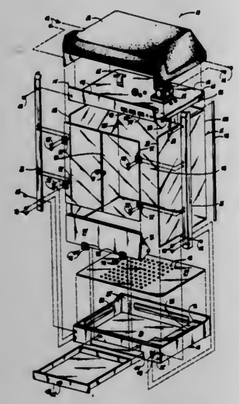
caps supporting and maintaining the said inner liner in a spaced relationship to said outer wall member so as to define therebetween an annular insulating dead air space, whereby the said inner liner and outer wall member and two end caps provide a rigid and lightweight insulated chimney pipe section, the outer wall member being protected from the heat and corrosive effects of the said gases by means of the said inner liner and its spaced relationship therefrom.

4,573,401

CORN POPPING MACHINE AND METHOD OF ASSEMBLING THE SAME

James M. Goodlaxson, 705 E. 20th St. South, Newton, Iowa 50208

Filed Apr. 18, 1983, Ser. No. 486,263
Int. Cl.^{4} A23L *1/18*
U.S. Cl. 99—323.5 **11 Claims**



1. A corn popping machine comprising:

(a) a transparent plastic one-piece panel member having first, second and third sides forming a U-shape with first and third sides integrally forming corners with opposite edges of said second side and having outer ends extending generally perpendicularly therefrom, so that said panel member is a contiguous U-shaped sheet having top and bottom edges;

(b) a top chassis plate attached to said top edge of said panel member by securing means which grasp and retentively hold said top chassis plate to said top edge of said panel member, said securing means comprising sheet metal clips of a general S-shape having a downward facing channel and an upward facing channel, said downward facing channel receiving a side of said panel member, said upward facing channel receiving a downward extending rim of said top chassis plate outwardly of and below the top edge of said panel member, said channels of said sheet metal clips containing barb means which secure said panel member and said top chassis plate in said channels upon insertion;

(c) a base member having channel members for the insertion and securing of each of said first, second and third sides along said bottom edge of said panel member, said panel providing the entire structural connection along said second side between said top chassis and said base member;

(d) each said channel member having two parallel and spaced apart walls positioned on said base so that each said side of said bottom edge of said panel member matingly fits into a said channel member;

(e) means to retentively hold each said side of said panel member into a said channel member comprising glue inserted between said panel member and said base member;

(f) door means extending across the space between said outer ends of said first and third sides in a closed position and being adjustably openable from said closed position to provide access to the interior of the enclosed chamber formed by said panel, said top chassis plate, said base member and said door means;

(g) means for making popcorn mounted to said top chassis plate inside of said chamber; and

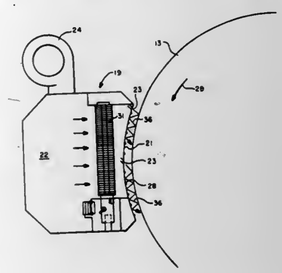
(h) each of said channels being centrally positioned on each side of said base member with the channel holding said second side of said panel member having ends terminating in spaced apart relationship to the adjacent panel sidewalls such that said glue is positioned between said second side of said panel member and said base at opposite ends of said channel holding the second side of said panel member.

4,573,402

CALIPER CONTROL SYSTEM AND METHOD

Rajeeva Sharma, 4627 Clarendon Dr., San Jose, Calif. 95129, and C. Eric Kan, 1435 Bobwhite Pl., San Jose, Calif. 95131

Continuation-in-part of Ser. No. 638,737, Aug. 8, 1984. This application Mar. 5, 1985, Ser. No. 708,345
Int. Cl.^{4} B30B *15/34, 3/04*
U.S. Cl. 100—38 **17 Claims**



1. In a system for treating a web of material: a rotating calender roll which presses against the web and varies in diameter with changes in temperature, an axially elongated cylindrical curved faceplate positioned coaxially of the roll with the front surface of the faceplate in close facing proxmity to the outer surface of the roll, a plurality of discharge openings

spaced axially along the faceplate, plenum means in fluid communication with the discharge openings, and including said faceplate as a portion thereof, blower means for delivering room temperature air under pressure to said plenum means, a sensor for monitoring the caliper of the web after it is pressed by the roll, and means responsive to the sensor for selectively controlling along a plurality of axial zones the temperature of the air passing through the discharge openings to selectively heat or cool portions of the roll to control the caliper of the web including a plurality of individually controlled electrical heating elements associated with respective zones positioned behind the faceplate for selectively heating the air passing throgh proximate discharge openings to provide air in adjacent zones having a significant temperature differential.

10. In a method of treating a web of material with a rotating calender pressure roll which varies in diameter with changes in temperature where such diameter is varied by directing air at said roll through a plurality of axially spaced openings, arranged along a plurality of zones in the axial direction in an axially elongated cylindrically curved face plate in close facing proximity to the surface of the roll and where electrical heating elements are positioned behind said faceplate in each of said zones the steps of:

providing from a single source at room temperature a continuous flow of air through said openings into the region between said faceplate and the roll; and

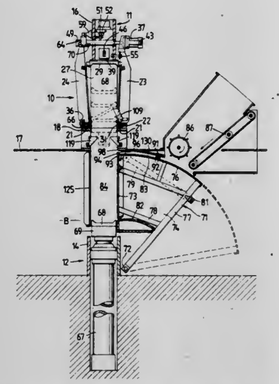
selectively heating in a region proximate to said faceplate by activation of said heating elements said room temperature air before it exits through the proximate opening to provide air in adjacent zones having a significant temperature differential, said continuous flow of air exiting from adjacent zones preventing spreading to confine said heated air to one said zone.

4,573,403

SWINGING CHARGE DOOR FOR BALER

Donald W. Van Doorn; James B. Hawkins; Francis W. Carpenter, III; Robert E. Lange, and Tommy W. Webb, all of Columbus, Ga., assignors to Lummus Industries, Inc., Columbus, Ga.

Filed Oct. 18, 1984, Ser. No. 662,272
Int. Cl.^{4} B30B *9/30*
U.S. Cl. 100—43 **23 Claims**



1. In a baler having a supporting frame and a charging box for accumulating fibrous material to be compressed into a bale by a ram mounted platen:

(a) a charge door mounted on said supporting frame to provide a closure for said charging box in a first position and to expose said charging box in a second position;

(b) means for introducing fibrous material into said charging box cooperatively positioned adjacent said charge door; and

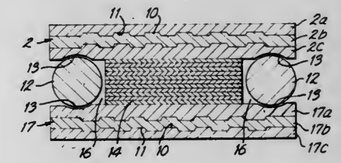
(c) means for separating said fibrous material intermediate said charge door and said introducing means as said charge door moves from said second position to said first position wherein said separating means includes a row of spaced teeth extending outwardly and upwardly of said charge door and a plurality of spaced staggered teeth on said supporting frame in spaced relation to said charging box to mesh with said teeth on said charge door when said charge door moves between said second and first positions, with said charging door and said supporting frame having a minimum, uniform, predetermined clearance therebetween.

4,573,404

CONTINUOUS-ACTING PRESS WITH MULTI-LAYERED PRESS BANDS

Kurt Held, Alte Str. 1, D-7218 Trossingen 2, Fed. Rep. of Germany

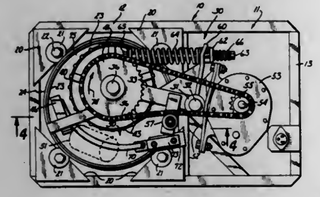
Filed Apr. 26, 1984, Ser. No. 604,127
Claims priority, application Fed. Rep. of Germany, Apr. 28, 1983, 3315367
Int. Cl.^{4} B30B *5/06*
U.S. Cl. 100—151 **8 Claims**



1. Continous-acting press comprising an upper and a lower multi-layered band set, a pair of return rollers for each said band set with each said band set guided over the corresponding pair of rollers, each said band set comprises a plurality of mutually contacting press bands in superposed arrangement, said upper and lower band sets being spaced apart and having mutually facing surfaces forming a space for receiving a material web therebetween such as laminate, chipboard, fiberboard, plywood, electrical laminate and the like arranged to be pressed as it passes between said mutually facing surfaces means for interengaging said materially contacting press bands, and means for sealing the laterally spaced edges of the space between the mutually facing surfaces of the upper and lower band sets which edges extend in the direction of travel of said bands over the corresponding said pair of rollers, wherein the improvement comprises that each of said press bands in each said band set has at least one first surface disposed generally parallel relative to said mutually facing surfaces and disposed in contact with another said first surface on another said press band, said means for interengaging comprises that each said first surface has alternating first grooves and lands therein extending continuously in the direction of travel of said band sets over said return rollers for the full length of said press bands, and said first grooves and lands of said contacting first surfaces being in meshed interengagement, said means for sealing comprises that each mutually facing surface of each said band set having said pair of laterally spaced edges has a second groove spaced inwardly from and extending in the same direction as each said edge so that each said groove in said mutually facing surface of said upper band set is positioned opposite one of said second grooves in said mutually facing surface of said lower band set, a wire seated within and extending between each of the oppositely disposed said second grooves in said mutually facing surfaces forming the space between said upper and lower band sets, and each said wire has a diameter equal approximately to the sum of the depths of said oppositely spaced second grooves inwardly from said mutually facing surface in which the second groove is formed and the

space between said mutually facing surfaces of said upper and lower band sets.

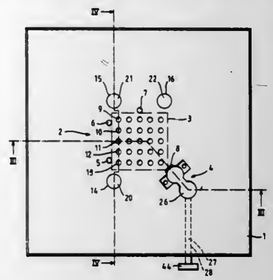
4,573,405
CAN CRUSHING MACHINE
Ruben D. Morlock, Western Park Village, Jamestown, N. Dak. 58401
Filed Jul. 19, 1984, Ser. No. 632,598
Int. Cl.[4] B30B *9/32*
U.S. Cl. 100—157 **11 Claims**

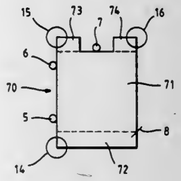


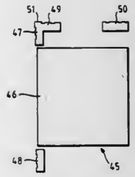
1. A machine for crushing cans comprising:
a support;
tubular drum means having an inner wall surface and being rotatably mounted on the support;
roller means having an outer surface;
means to mount the roller means on the interior of the tubular drum means with its outer surface in engagement with the inner wall surface of the drum means;
said means to mount including a support arm pivotally mounted on said support at a first end and the roller being rotatably mounted on the second end of said arm about an axis parallel to the axis of the tubular drum;
means for resiliently urging the outer surface of the roller means into engagement with the inner wall surface of the drum means without causing excessive wear on the outer surface of the roller means or the inner wall surface of the drum means and at an increased spring rate after the roller has moved away from the drum wall a selected distance; and
a drive motor mounted to be movable with the support arm about the axis for driving said roller to crush cans introduced into the drum between the roller and inner wall surface of the drum.

4,573,406
SCREEN PRINTING DEVICE
Camiel D. E. Cleemput, Wondelgem-Gent, and Hedwig L. Z. Coussement, Nevele, both of Belgium, assignors to International Standard Electric Corporation, New York, N.Y.
Filed Oct. 4, 1984, Ser. No. 657,847
Claims priority, application Belgium, Oct. 6, 1983, 60222
Int. Cl.[4] B41L *13/02, 13/12;* B41F *15/36*
U.S. Cl. 101—127.1 **17 Claims**

1. Screen printing device including a work table having a printing position, means on said work table for holding a substrate in said printing position, a holder for a screen provided with a mask, said mask having reference portions, a microscope, and means for adjusting the relative positions of said table, said screen holder and said microscope, wherein it further includes a template with reference portions corresponding to said reference portions of said mask (**45**), said work table (**1**) having at least one hole with associated illumination means to simultaneously illuminate said corresponding reference portions of said mask and of said template held in said printing position by said holding means in order to be able to adjust, with the help of said adjustment means, the relative position of





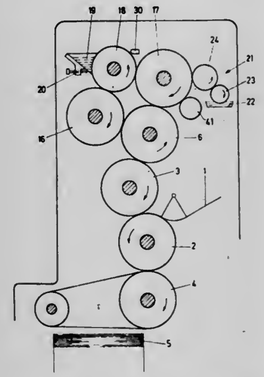


said reference portions of said template and said reference portions of said mask when viewed through said microscope.

4,573,407
INKING MECHANISM FOR OFFSET PRINTING MACHINES
Willi Jeschke, Heidelberg, Fed. Rep. of Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany
Filed Oct. 29, 1982, Ser. No. 437,741
Claims priority, application Fed. Rep. of Germany, Oct. 31, 1981, 3143314; Sep. 3, 1982, 3232780
Int. Cl.[4] B41F *7/26, 31/00;* B41L *25/14*
U.S. Cl. 101—148 **5 Claims**

1. Inking unit for an offset printing machine with a plate cylinder comprising at most two ink applicator rolls with an elastic surface cooperatively engaging the plate cylinder for delivering ink to the plate cylinder, an ink feeding system and an inking cylinder cooperating with said ink feeding system for receiving ink therefrom and cooperatively engaging said ink applicator rolls so as to feed the ink in a continuous film thereto, said ink applicator rolls having a diameter approximately equal to the diameter of the plate cylinder and being located downstream from said inking cylinder in ink feeding direction, said ink applicator rolls being rotatable in a given direction, the sum of an arc length on the periphery of the plate cylinder, as seen in direction of rotation of the plate cylinder, from a location at which the plate cylinder is in engagement

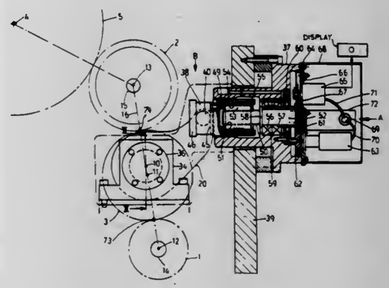
with a first one of said ink applicator rolls to a location at which the plate cylinder is in engagement with the second one of said ink applicator rolls, an arc length on the periphery of said second ink applicator roll, as seen in direction of rotation of said second ink applicator roll, from said last-mentioned location to a location at which said second ink applicator roll is in engagement with said inking cylinder, and an arc length on the periphery of said inking cylinder, as seen in direction of rotation of said inking cylinder, from said engagement location of said second ink applicator roll and said inking cylinder to the mutual engagement location of said inking cylinder and said first ink applicator roll being equal to an arc length on the



periphery of said first ink applicator roll, as seen in direction of rotation of said first ink applicator roll, from said location at which the plate cylinder is in engagement with said first ink applicator roll to said location at which said first ink applicator roll is in engagement with said inking cylinder, plus the circumferential length of one of said first and said second ink applicator rolls, and means for transfering dampening medium to said first ink applicator roll in said direction of rotation of said first ink applicator roll at a location downstream of said location at which said first applicator roll is in engagement with said inking cylinder and upstream of said location at which said first ink applicator roll is in engagement with the plate cylinder.

4,573,408
ADJUSTMENT ARRANGEMENT FOR CIRCUMFERENTIAL REGISTER IN ROTARY PRINTING MACHINES
Wilhelm Bezler, Augsburg, and Ewald Stark, Fischach, both of Fed. Rep. of Germany, assignors to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Offenbach am Main, Fed. Rep. of Germany
Filed Feb. 19, 1985, Ser. No. 702,825
Claims priority, application Fed. Rep. of Germany, Feb. 16, 1984, 3405455
Int. Cl.[4] B41F *13/14*
U.S. Cl. 101—248 **10 Claims**

1. In a rotary printing machine having a cylinder;
a plurality of meshing gears (**1, 2, 3, 5**) forming a gear train (**1–3, 5**) driving said cylinder, said meshing gears including a first driven gear (**1**) and a second gear (**2**) coupled in angularly fixed relation to said cylinder;
register adjustment apparatus for circumferential adjustment of the angular relation of the cylinder with respect to said first driven gear (**1**) by shifting the angular relationship between the first gear (**1**) and the second gear (**2**)
comprising, in accordance with the invention
a third gear (**3**) drivingly connected between the first gear (**1**) and the second gear (**2**);
a shaft element (**9, 6**) having a central axis (**10**), said shaft element having an eccentric portion (**6**) which has an eccentric axis (**11**), eccentrically positioned with respect to said central axis, said third gear being journalled on said eccentric portion (**6**);
the central axis and the centers of rotation (**12, 13**) of the first and second gears (**1, 2**) being positioned on a theoretical plane (**16**),
and wherein, when the eccentric axis (**11**) defining the center of the eccentric portion (**6**) is also on said plane, the eccentric portion is defined to be in a normal position;
and operating means (**20; 38, 40–48, 50–63**) coupled to the shaft element (**9, 6**) for effecting an adjusting movement



by rocking the shaft element about the central axis (**10**) and thereby shifting the eccentric axis (**11**) out of said normal position, while maintaining meshing engagement between the first and third gears (**1, 3**) and the second and third gears (**2, 3**), respectively, and thereby rotation transmission between the first and second gears (**1, 2**) while shifting the engagement point (**73**) of the third gear (**3**) with the pitch circle of the first gear (**1**) away from said central axis (**10**) and further shifting the engagement point (**74**) of the third gear (**3**) with the pitch circle of the second gear (**2**) closer to said central axis (**10**), thereby causing an angular shift of the second gear (**2**) with respect to the first gear.

4,573,409
METHOD OF TREATING PRINTED COMPUTER PAPER
Milton Clar, Bethesda, and Barclay Booth, Potomac, both of Md., assignors to Paper, Inc., Gaithersburg, Md.
Filed Dec. 2, 1982, Ser. No. 446,336
Int. Cl.[4] B42D *15/00*
U.S. Cl. 101—426 **3 Claims**



1. A method of reusing a web of computer paper having a series of interconnected sheets, eah computer-printed on only one surface with character-based information and having the opposite surface free of printing, comprising drawing the web continuously past a rotary printing cylinder having a printing plate formed over substantially its entire printing suirface with a character-based interferenice printing pattern, characters of the interference printing pattern being the same as or similar to characters of the information, and using said plate to print said pattern over substantially the entire printing area of said one surface of each sheet without reference to the location thereon of the information, the composition and density of the pattern being surfficient to obliterate the information, whereby the opposite surface of each sheet may be used for subsequent printing without permitting access to said information, and

thereafter computer-printing on said opposite surface of the sheet.

4,573,410

PRINTING PRESS WITH REGISTER MOTORS

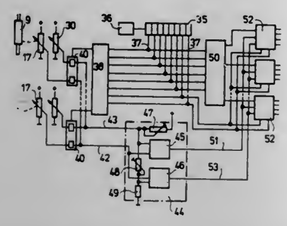
Udo Blasius, Leimen; Karl-Heinz May, Viernheim, and Anton Rodi, Leimen, all of Fed. Rep. of Germany, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Continuation of Ser. No. 604,408, Apr. 27, 1984, abandoned, which is a continuation of Ser. No. 362,442, Mar. 26, 1982, abandoned. This application Nov. 27, 1984, Ser. No. 675,457

Claims priority, application Fed. Rep. of Germany, Mar. 27, 1981, 3112189

Int. Cl.⁴ B41F *31/04*; B41L *27/06*

U.S. Cl. 101—365 **16 Claims**



1. A printing press comprising a plurality of individually and simultaneously operable setting motors, each setting motor being connected to a pick-up generating electric signals characteristic of an actual position of the respective setting motor at any given moment and representing a given actual value, comprising an electronic comparator device having means for receiving respective actual values supplied thereto and means for receiving desired values for the position of the respective setting motors, said electronic comparator device having means for repeatedly scanning the actual values in a cyclical time sequence for comparing the actual values with the respective desired values to form setting signals for simultaneously operating the respective setting motors in the forward and reverse direction when a given positive and negative minimum deviation, respectively, is exceeded, as well as setting signals for stopping said setting motors, and a switching arrangement having means for receiving said setting signals, respectively, and , in response thereto, for driving the respective setting motors simultaneously, at a predetermined speed, in said forward and reverse direction, respectively, determined by a last preceding setting signal until a next succeeding setting signal relating to the respective motors is received, and for stopping the respective setting motors, respectively.

4,573,411

SAFETY DEVICE FOR A WEAPON DETONATOR OR FUSE

Josef Liebhardt, Schrobenhausen, and Rudolf Fuhrer, Baar, both of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

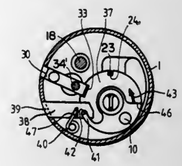
Filed May 29, 1984, Ser. No. 614,833

Claims priority, application Fed. Rep. of Germany, Jun. 11, 1983, 3321191

Int. Cl.⁴ F42C *15/34*

U.S. Cl. 102—256 **5 Claims**

1. A safety device for a fuse or detonator for a weapon, comprising housing means, a detonator chain including a plurality of detonator elements arranged in series, means for rotating one detonator element (**10**) out of and into said detonator chain for respectively disarming or arming the fuse or detonator, said means for tilting comprising a rotor member (**3**) operatively supported in said housing means and carrying said one detonator element for rotation between a disarmed position and an armed position, rotor arresting means cooperating with said rotor member for arresting said rotor member in the disarmed position, said rotor member comprising a first locking recess (**24**) and a second locking recess (**33**), said rotor arresting means comprising a first arresting member (**23**), a spring biased lever (**22**) journalled in said housing means and operatively connected to said first arresting member (**23**) for arresting said rotor in said disarmed position when said first arresting member (**23**) is engaged in said first locking recess (**24**), whereby said spring biased lever is held in a locking position by its spring bias, said rotor arresting means further comprising a second arresting member (**30**) operatively engaging said second locking recess (**33**) also for arresting said rotor in said disarmed position, a push rod (**34**) operatively arranged for cooperation with said second arresting member (**30**), and electrically operable tripping means (**29**) operatively arranged for operating said push rod for removing said second arresting member out of its rotor arresting position, said rotor member



(**3**) having a stop shoulder (**46**), said safety device further comprising a spring biased stop element (**38**) operatively mounted in said housing means for providing a stop for said stop shoulder (**46**) when said rotor is in said arming position, an opening (**39**) in said housing means for passing said spring biased stop element (**38**), when said fuse or detonator is outside a weapon, at least partially out of said housing means and out of the way of said stop shoulder (**46**), whereby said rotor can move past the armed position back into the disarmed position while said fuse or detonator is outside a weapon, said spring biased stop element (**38**) comprising means for blocking said stop element (**38**) against movement back into said housing once the stop element sticks out of said housing means, said device further comprising interengaging means (**41, 42**) between said stop element (**38**) and said rotor member (**3**) for holding said stop element inside said housing means against its spring bias as long as said one detonator element (**10**) is in its disarmed position, whereby said fuse or detonator can be effectively armed only inside a weapon.

4,573,412

PLUG NOZZLE KINETIC ENERGY PENETRATOR ROCKET

Donald E. Lovelace; Michael C. Schexnayder, and George W. Snyder, all of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 27, 1984, Ser. No. 604,772

Int. Cl.⁴ F42B *15/10, 11/00*

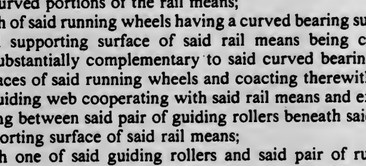
U.S. Cl. 102—374 **4 Claims**

1. A plug nozzle kinetic penetrator rocket comprising:

a. a rocket motor casing having a forward closure member secured thereto;

b. a kinetic energy penetrator rod having a forward end supported by and extending through said closure member;

c. a plurality of struts secured in spaced relation to an aft end of said penetrator rod for supporting said penetrator rod along the longitudinal axis of acid rod; and



d. insulating means disposed around the aft end of said penetrator rod to prevent erosion thereof said insulating means forming a plug nozzle with said motor casing. pg,7

4,573,413

MONORAIL TRANSPORT SYSTEM

Jürg Eberle, Hinwil, Switzerland, assignor to Feramatic AG, Hinwil, Switzerland

Filed May 18, 1983, Ser. No. 495,773

Claims priority, application Switzerland, May 25, 1982, 3202/82

Int. Cl.⁴ B61B *13/06*

U.S. Cl. 104—120 **6 Claims**

1. A transport system comprising:

rail means including curved portions and containing a supporting surface;

at least one drivable undercarriage provided with two running wheels arranged substantially along a lonitudinal axis of said undercarriage;

a pair of guiding rollers provided for said undercarriage and arranged in a central region of and intermediate said running wheels;

said pair of running wheels and said pair of guiding rollers being rigidly interconnected by means of said undercarriage in order to permit said drivable undercarriage to assume an inclined position during travel through said curved portions of the rail means;

each of said running wheels having a curved bearing surface;

said supporting surface of said rail means being curved substantially complementary to said curved bearing surfaces of said running wheels and coacting therewith;

a guiding web cooperating with said rail means and extending between said pair of guiding rollers beneath said supporting surface of said rail means;

each one of said guiding rollers and said pair of running wheels are rigidly arranged in a predetermined substantially triangular configuration;

a support for receiving material to be transported;

said support being secured to said undercarriage;

each one of said guiding rollers being arranged sufficiently close to said pair of running wheels in said predetermined substantially triangular configuration to ensure for an adequately inclined position of said drivable undercarriage during travel through said curved portions of the rail means so that any material received and transported on said support is not moved away from said support during travel of said drivable undercarriage through said curved portions of the rail means.

4,573,414

DEVICE FOR FIXING A TELPHER CHAIR TO A CABLE PROVIDED WITH A TRAVELLING SURFACE FOR ROLLERS

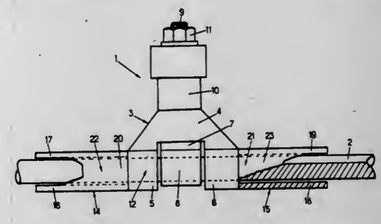
Michel Cantin, Pariset; Pierre Jaussaud, Biviers, and Roger Olivella, Saint Egreve, all of France, assignors to Institut National Polytechnique de Grenoble, Grenoble, France

Filed Jul. 20, 1984, Ser. No. 632,751

Claims priority, application France, Jul. 21, 1983, 83 12098

Int. Cl.⁴ B61B *12/12*

U.S. Cl. 104—202 **10 Claims**



1. A device for fixing a telpher chair or a telpher car to a cable, on which grooved rollers have to pass, comprising:

a clamp connecting the telpher chair or car to the cable and defining a first travelling surface for the rollers and a U-shaped recess for receiving the cable,

opposing extensions, being connected to the opposing ends of the clamp, for defining second travelling surfaces on either side of the first travelling surface, each of said opposing extensions including at least one arm extending laterally relative to the cable and along the same side of the cable, said second travelling surfaces each having a ramp portion defined by said arms, whereby the rollers, rolling over the cable and passing over the clamp, tangentially contact one of said second travelling surfaces at one of said ramps, and thereby leave the cable tangentially, the roller travelling on said second travelling surface away from the cable and contacting the first travelling surface, the roller reaching the end of the first travelling surface and said opposing second travelling surface, then travelling on said opposing second travelling surface toward the cable and tangentially leaving said opposing second travelling surface and returning to tangential contact with the cable at said ramp corresponding to said opposing second travelling surface wherein said ramps are concave.

4,573,415

STAND WITH SPRING LOCK LEGS

Edwin O. Ramey, Fort Lauderdale, Fla., assignor to Atlas Metal Industries, Inc., Miami, Fla.

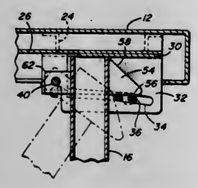
Filed Jul. 6, 1984, Ser. No. 629,187

Int. Cl.⁴ A47B *3/00*

U.S. Cl. 108—129 **11 Claims**

1. A supporting structure comprising a support panel, at least one support leg assembly, and means connecting said leg assembly to said panel in perpendicular depending relation thereto to support the support panel in elevated relation to a support surface, said connecting means including a bracket fixedly attached to said support panel, said bracket including a downwardly opening socket, said leg assembly including an upper end received in said socket and including a latch structure at one edge portion thereof and means at the opposite edge portion engaged with said bracket, said bracket including a spring-biased member slidably mounted thereon for permitting the latch structure to pass upwardly into the socket by out-

ward movement of the spring-biased member, said spring-biased member snapping back into underlying relation to the latch structure to retain the leg assembly in perpendicular relation to the support panel, said latch structure including an inclined cam surface on the upper end thereof for camming said spring-biased member outwardly when the latch structure



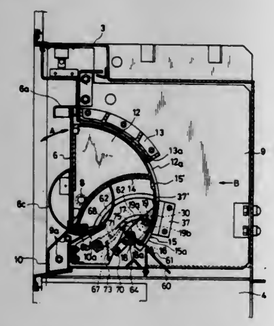
moves into the socket, said bracket including spaced parallel plates forming a portion of the socket, each of said plates including an upwardly and inwardly inclined slot, said spring-biased member including a rod having end portions slidable in the slots, and tension coil springs interconnecting the rod and plates to bias the rod inwardly in the slots to continuously bias the latch structure upwardly in relation to the socket.

4,573,416

AFTER HOUR DEPOSITORY

Hiroshi Masachika, Hiroshima, Japan, assignor to Kumihara Safe Co., Inc., Japan

Filed Feb. 24, 1983, Ser. No. 469,311
Claims priority, application Japan, Oct. 2, 1982, 57-172538
The portion of the term of this patent subsequent to Dec. 25, 2001, has been disclaimed.
Int. Cl.⁴ E05G *1/026*
U.S. Cl. 109—66 **25 Claims**



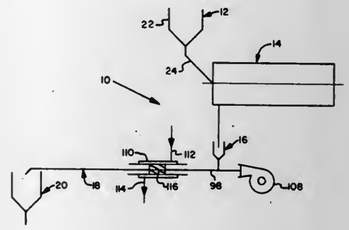
1. An after hour depository comprising a door casing having inside walls and adapted to be fitted into a framework in a building so as to be pivotal between open and closed positions about a shaft horizontally extending across both side walls of the framework, movable wall means disposed in operative association with the door casing for developing a pocket into which a bag or an envelope containing money to be deposited is placed, a rotary stopper fixedly secured to the lower part of the door casing to define said closed position, a sleeve roller disposed rotatably about a roller shaft horizontally extending across both the side walls of the door casing and displaceable together with the movable wall, ratch means for guiding and defining the movement of the sleeve roller, said ratch means being pivotally secured to the side wall of the framework, a sliding member fixedly secured to the side wall of the framework so as to allow the movable wall to be pivoted in such a direction to eliminate the pocket in cooperation with the sleeve roller, and protection means for protecting against criminal activity, said protection means including means defining at least one arcuate groove on the inside walls of the door casing, said arcuate groove having a center of curvature coincident with the pivotal axis of the movable wall and pins projecting from side faces of the movable wall and operatively fitted into the arcuate grooves.

4,573,417

SAND RECLAMATION SYSTEM EMBODYING A COMBINATION THERMAL RECLAIMER AND SAND-TO-SAND HEAT EXCHANGER APPARATUS

Vagn Deve, East Washington, Pa., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Apr. 30, 1984, Ser. No. 605,086
Int. Cl.⁴ F23D *14/00*; F23G *5/00, 5/12*
U.S. Cl. 110—236 **11 Claims**



1. A system for treating solid, granular and aggregate material thermally comprising:

a. material supply means containing a supply of material to be thermally treated;

b. combination thermal reclaimer and heat exchanger means connected in fluid flow relation to said material supply means for receiving material therefrom, said combination thermal reclaimer and heat exchanger means including a multi-chamber rotating unit having inlet means operative as an entrance into said multi-chamber rotating unit for material received from said material supply means, a preheat chamber connected in fluid flow relation with said inlet means for receiving material therefrom and operative to cause material passing therethrough in a first direction to be preheated from a first temperature to a second temperature, an inner tube connected in fluid flow relation with said preheat chamber for receiving preheated material therefrom, said inner tube having burner means cooperatively associated therewith operative for heating material passing through said inner tube in a second direction to a third temperature to thermally treat the material, chamber means connected in fluid flow relation to said inner tube for receiving thermally treated material therefrom and operative for further treating material passing therethrough, and outlet means operative for discharging therethrough treated material from said multi-chamber rotating unit;

c. feeder means connected in fluid flow relation with said combination thermal reclaimer and heat exchanger means for receiving thermally treated material therefrom, said feeder means being operative for effectuating the feeding of material in a dispersed manner;

d. cooling and transporting means cooperatively associated with said feeder means for receiving material being fed therefrom, said cooling and transporting means being operative to cool the material received thereby to a predetermined temperature as the material is being transported therethrough; and

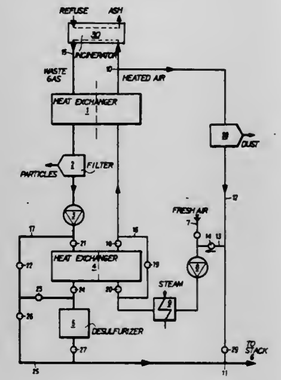
e. material receiving means connected in fluid flow relation with said cooling and transporting means for receiving material at said predetermined temperature therefrom.

4,573,418

METHOD OF AND APPARATUS FOR REHEATING DESULFURIZED WASTE GAS

Hans Märzendorfer, Graz, and Werner Schaller, Autal, both of Austria, assignors to Steirische Wasserkraft- und Elektrizitaets-AG, Graz, Austria

PCT No. PCT/AT83/00015, § 371 Date Aug. 1, 1984, § 102(e) Date Aug. 1, 1984, PCT Pub. No. WO84/02174, PCT Pub. Date Jun. 7, 1984
PCT Filed May 30, 1983, Ser. No. 642,661
Claims priority, application Austria, Dec. 1, 1982, 4368/82; Mar. 4, 1983, 767/83; Mar. 17, 1983, 948/83
Int. Cl.⁴ F23J *11/00*
U.S. Cl. 110—345 **14 Claims**



1. In an incineration process where refuse is burned in an incinerator in the presence of air to produce a hot sulfur- and particle-containing waste gas, the treatment method comprising the steps of:

preheating air with the hot waste gas;

passing the hot waste gas through one side of a heat exchanger;

passing air through the other side of the heat exchanger and thereby heating the air and cooling the waste gas;

desulfurizing the cooled waste gas;

feeding at most a portion of the heated air to the incinerator and there using it to combust the refuse;

mixing another portion of the heated air with the cool desulfurized gas; and

releasing the mixture of cool desulfurized gas and the other portion of the heated air to the atmosphere.

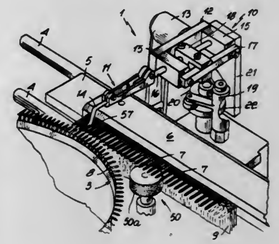
4,573,419

DEVICE FOR THREADING KNIT ARTICLES ONTO THE PIN HOLDER RING OF A LINKING MACHINE

Alessandro Peloggio, Brignano Gera D'Adda, Italy, assignor to Exacta S.p.A., Brignano Gera D'Adda, Italy

Filed Jan. 13, 1984, Ser. No. 570,554
Claims priority, application Italy, Jan. 27, 1983, 19305 A/83
Int. Cl.⁴ D05B *7/00*
U.S. Cl. 112—27 **8 Claims**

1. A device for threading knit articles onto the pin holder ring of a linking machine, comprising, in a supporting frame associated with said linking machine, a carriage sliding along a runway rigid with said frame and extending in a substantially tangential direction to said pin holder ring, a comb-like element being motion-wise rigid with said carriage and having a plurality of coplanar dents facing said pins, a transfer assembly cooperating with said dents, a means for kinematically and selectively connecting said carriage to said pin holder ring or to an auxiliary drive means, thereby said carriage, when kinematically connected to said pin holder ring, has a translation speed substantially equal to the peripheral speed of rotation of said pin holder ring during a knit article threading stroke, and a means for picking up one of said knit articles threaded onto



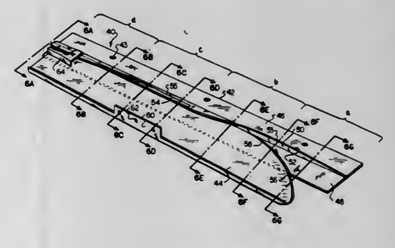
said comb-like element to pre-arrange it into an advanced position on said dents.

4,573,420

APPARATUS FOR PRODUCING SIMULATED FELLED SEAM

Charles F. Carson, 2503 Lakeshore Dr., Greensboro, N.C. 27407

Filed Mar. 18, 1985, Ser. No. 713,181
Int. Cl.⁴ D05B *35/02*
U.S. Cl. 112—142 **6 Claims**



1. Apparatus for folding and seaming a pair of fabric members into a finished three-ply construction in which said fabric members have proximate abutting margins, the adjacent edges of which are united by a row of basting stitches, and in which one of the fabric members is folded along a first imaginary line on one side of said row of basting stitches to underlie the united margins and the other of the fabric members is reverse folded along a second imaginary line on the other side of said row of basting stitches to overlie the united margins, and further in which the three-ply seam is subsequently stitched together, said apparatus comprising:

(a) a folding station having an upstream end and a downstream end;

(b) a first joining means adjacent the upstream end of said folding station for initially joining the abutting edges of said pair of fabric members to preliminarily hold them in abutting relationship during the folding operation;

(c) a second seaming means adjacent the downstream end of said folding station for permanently joining all three plies;

(d) feed means for transporting said basted pair of fabric members from said first seaming means to said second seaming means through said folding station along a feed path substantially parallel with the line formed by said abutting edges;

(e) said folding station comprising:

(i) a base plate having a guide rib or scroll extending upwardly therefrom and a guide plate spaced above said base plate a distance at least as great as the thickness of the fabric member being processed;

(ii) said guide plate including a longitudinal edge thereof extending lengthwise of said folding station and forming

the aforesaid first imaginary line around which said underlying fabric member is folded;

(iii) said guide rib being positioned adjacent said longitudinal edge of said guide plate and having a first upstanding curved edge means that is so constructed as to extend in a convolute path as to lift the united margins and the overlying fabric member up and around the longitudinal edge of said guide plate, and a second guide rib having a second upstanding curved edge downstream of said first curved edge that extends in a convolute path and forms said second imaginary line around which said overlying fabric member is reverse folded to overlie the united margins.

4. A device for folding a pair of abutting fabric members having proximately abutting margins, the adjacent edges of which are united, into a folded, three-ply construction in preparation for a finished seaming operation in which one of the fabric members is folded along a first imaginary line on one side of the abutting edges to underlie the abutting margins and the other of the fabric members is reverse folded along a second imaginary line on the other side of said row of said basting stitches to overlie the abutting margins, said device comprising:

(a) a base plate having a guide rib extending generally upwardly therefrom and a generally horizontal guide plate spaced above the surface of said base plate a distance at least as great as the thickness of one of said fabric members;

(b) said guide plate including one longitudinal edge extending lengthwise of said base plate along a feed path generally parallel with a line formed by the abutting edges of said fabric members, said guide plate edge forming the aforesaid first imaginary line about which said underlying fabric member is folded;

(c) said guide rib being positioned adjacent said longitudinal edge of said guide plate and having a first upstanding curved edge that is so constructed in a convolute path as to lift the united margins and the overlying fabric member up and around the longitudinal edge of said guide plate and a second guide rib having a second upstanding curved edge downstream of said first curved edge that is also constructed in a convolute path that forms said second imaginary line around which said overlying fabric member is reverse folded to overlie the united margins.

4,573,421

SEWING MACHINE DEVICE FOR MAKING GARMENTS WITH PLEATS

Günther Mall; Herbert Dietrich, and Willi Stephan, all of Kaiserslautern, Fed. Rep. of Germany, assignors to Pfaff Industriemaschinen GmbH, Fed. Rep. of Germany

Filed Jun. 14, 1985, Ser. No. 745,009

Claims priority, application Fed. Rep. of Germany, Oct. 18, 1984, 8436996

Int. Cl.⁴ D05B *35/08*

U.S. Cl. 112—146 **12 Claims**

8. A device for use with a sewing machine for making garments with pleats using a folded over workpiece material between the folds of which the device is insertable, comprising a support member, a pleating bar assembly carried by said support member being insertable with a portion of said support member between the folds of the material and including at least two movable plate members, actuator means carried by said support member to move said plate member from an expanded position for receiving a pleat to a collapsed position and drive means for moving said support for positioning it in respect to the workpiece.

4,573,422

SHIP WITHOUT TRANSVERSE REINFORCING MEMBERS BETWEEN THE INNER AND OUTER HULL PLATING

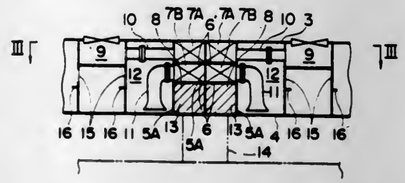
Seiichiro Murata; Masaru Tateishi, both of Sakai; Kohji Hayakawa, Nishinomiya; Takeshi Sakamoto, Suita; Shin Takeuchi, and Kohsuke Mukasa, both of Arao, all of Japan, assignors to Hitachi Zosen Corporation, Osaka, Japan

Filed Jul. 6, 1984, Ser. No. 628,467

Claims priority, application Japan, Jul. 11, 1983, 58-107853[U]

Int. Cl.⁴ B63B *3/62*

U.S. Cl. 114—65 R **4 Claims**



4,573,423

DEVICE FOR ADJUSTING THE STEP OF THE MAST OF A SAILBOARD OR SIMILAR

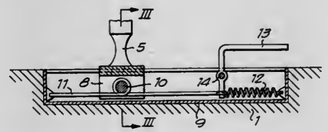
Thierry M. Dumortier, Hermee, Belgium, assignor to Fabrique Nationale Herstal, en abrege FN, Societe Anonyme, Herstal, Belgium

Filed Mar. 13, 1984, Ser. No. 588,984

Claims priority, application Belgium, Mar. 28, 1983, 2/60063

Int. Cl.⁴ B63B *15/00*

U.S. Cl. 114—91 **2 Claims**



1. Device for adjusting the step of a mast of a sailboard comprising: a slider receiving the foot of the mast, said slider being associated with a slide adapted to be secured to the hull of the board; a friction locking means acting on the said slider for securing it relative to said slide and a control member provided for varying the friction of said locking means on the slider, thereby allowing the shifting of the latter relative to said slide; said locking means comprising a member secured through one of its ends to one end of said slide and forming at least one dead turn on an axle provided therefor on said slider and secured, at its other end, through a traction spring, to the other end of said slide.

4,573,424

SAIL SHORTENING ROLLER FOR SAILING BOATS

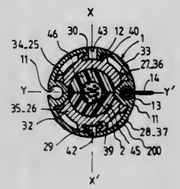
Pierre Clausin, Ville d'Avray, France, assignor to Proengin S.A., France

Filed Jan. 10, 1984, Ser. No. 569,636

Claims priority, application France, Jan. 13, 1983, 83 00593; Jun. 9, 1983, 83 09717; Nov. 25, 1983, 83 18985

Int. Cl.⁴ B63H *9/10*

U.S. Cl. 114—106 **22 Claims**



1. A sail shortening device for rolling up a sail with a bolt-[illegible] mounted for rotation about a rigging

at least equal to the section of the bolt-rope and an outer longitudianl opening whose width is at least equal to the diameter of the bolt-rope in the lower zone of the tubular element and less than the diameter of the bolt-rope in the remaining part of the tubular element, so as to be able to introduce the bolt-rope into the longitudinal groove through the opening provided in the lower zone,

a device for axially holding the tubular element in position comprising an inner tubular sleeve fixedly mounted to the lower part of the tubular element and an outer sleeve, mounted for rotation on the inner tubular sleeve, and fixing means connecting the outer sleeve to a fixed part of the boat,

means for rotating said tubular element, coupled to said inner sleeve,

a swivel slidably mounted on the tubular element comprising an inner sleeve locked in rotation with the tubular element and comprising means for fixing the sail, an outer sleeve mounted for rotation on the inner sleeve and comprising means for fixing to a halyard for hoisting and tensioning the sail,

means for guiding the bolt-rope mounted in the lower zone of the tubular element for facilitating introduction of the bolt-rope inside the longitudinal groove.

4,573,425

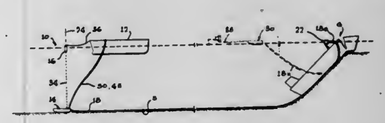
RAPIDLY INSTALLABLE MOORING AND CARGO TRANSFER SYSTEM

George M. Pomonik, Van Nuys, and Martin B. Jansen, Agoura, both of Calif., assignors to Amtel, Inc., Providence, R.I.

Filed Sep. 4, 1979, Ser. No. 72,353

Int. Cl.⁴ B63B *21/00*

U.S. Cl. 114—230 **3 Claims**



1. A rapidly deployable mooring and hydrocarbon transfer system for transferring hydrocarbons between a seabed pipeline and a floating offloading vessel at the sea surface, comprising:

a barge having a hull which is buoyant and seaworthy but which can be flooded and sunk and which has a lower surface formed to rest stably on the sea floor, and which has means for anchoring it to the seabed;

a fluid swivel assembly including a stationary swivel portion which is mounted on said barge and which has a first coupling positioned to connect to a largely horizontal seabed pipeline, and including a rotatable swivel portion

the aforesaid first imaginary line around which said underlying fabric member is folded;

(iii) said guide rib being positioned adjacent said longitudinal edge of said guide plate and having a first upstanding curved edge means that is so constructed as to extend in a convolute path as to lift the united margins and the overlying fabric member up and around the longitudinal edge of said guide plate, and a second guide rib having a second upstanding curved edge downstream of said first curved edge that extends in a convolute path and forms said second imaginary line around which said overlying fabric member is reverse folded to overlie the united margins.

4. A device for folding a pair of abutting fabric members having proximately abutting margins, the adjacent edges of which are united, into a folded, three-ply construction in preparation for a finished seaming operation in which one of the fabric members is folded along a first imaginary line on one side of the abutting edges to underlie the abutting margins and the other of the fabric members is reverse folded along a second imaginary line on the other side of said row of said basting stitches to overlie the abutting margins, said device comprising:

(a) a base plate having a guide rib extending generally upwardly therefrom and a generally horizontal guide plate spaced above the surface of said base plate a distance at least as great as the thickness of one of said fabric members;

(b) said guide plate including one longitudinal edge extending lengthwise of said base plate along a feed path generally parallel with a line formed by the abutting edges of said fabric members, said guide plate edge forming the aforesaid first imaginary line about which said underlying fabric member is folded;

(c) said guide rib being positioned adjacent said longitudinal edge of said guide plate and having a first upstanding curved edge that is so constructed in a convolute path as to lift the united margins and the overlying fabric member up and around the longitudinal edge of said guide plate and a second guide rib having a second upstanding curved edge downstream of said first curved edge that is also constructed in a convolute path that forms said second imaginary line around which said overlying fabric member is reverse folded to overlie the united margins.

4,573,421

SEWING MACHINE DEVICE FOR MAKING GARMENTS WITH PLEATS

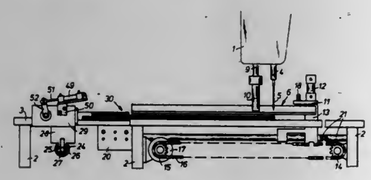
Günther Mall; Herbert Dietrich, and Willi Stephan, all of Kaiserslautern, Fed. Rep. of Germany, assignors to Pfaff Industriemaschinen GmbH, Fed. Rep. of Germany

Filed Jun. 14, 1985, Ser. No. 745,009

Claims priority, application Fed. Rep. of Germany, Oct. 18, 1984, 8430596

Int. Cl.⁴ D05B *35/08*

U.S. Cl. 112—146 **12 Claims**



1. In an apparatus including a sewing machine having a stitch forming point for making garments with preformed pleats which comprise two oppositely directed fold parts lying under a continuous center part with respective crease edges and the juncture of the center and fold parts and having fold edges at the ends of the fold parts, and which have continguous fold edges which are sewn together over a predetermined length to form inverted pleats, and in which after a pleat has been correctly positioned on a pleating bar movable between a charging position and a transfer position which determines the position of a seam and which also includes a feed presser strip engageable with the garment in the area to be sewn and which is movable to transport to garment through the stitch forming point of the sewing machine, comprising a pleating bar having a width equal to substantially the half width of the center portion of said inverted pleat and having a contact edge for the inverted pleat in the direct field of vision of an operator, said bar having fixing pin cutouts, a needle bar having a plurality of needle bar fixing pins movable relative to said pleating bar for the aligned inverted pleat, and having fixing pins engageable in respective cutouts, the displacement paths of said pleating bar and said needle bar between a charging and a transfer position being predetermined.

8. A device for use with a sewing machine for making garments with pleats using a folded over workpiece material between the folds of which the device is insertable, comprising a support member, a pleating bar assembly carried by said support member being insertable with a portion of said support member between the folds of the material and including at least two movable plate members, actuator means carried by said support member to move said plate member from an expanded position for receiving a pleat to a collapsed position and drive means for moving said support for positioning it in respect to the workpiece.

4,573,422

SHIP WITHOUT TRANSVERSE REINFORCING MEMBERS BETWEEN THE INNER AND OUTER HULL PLATING

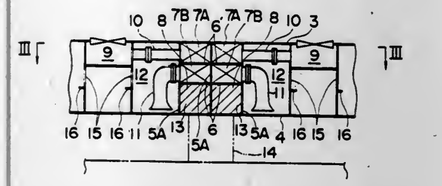
Seiichiro Murata; Masaru Tateishi, both of Sakai; Kohji Hayakawa, Nishinomiya; Takeshi Sakamoto, Suita; Shin Takeuchi, and Kohsuke Mukasa, both of Arao, all of Japan, assignors to Hitachi Zosen Corporation, Osaka, Japan

Filed Jul. 6, 1984, Ser. No. 628,467

Claims priority, application Japan, Jul. 11, 1983, 58-107853[U]

Int. Cl.⁴ B63B *3/62*

U.S. Cl. 114—65 R **4 Claims**



1. A ship having at least its side portions and bottom portion comprised of a double hull construction comprising an inner hull plating and an outer hull plating connected together by transverse bulkheads and a plurality of connecting longitudinal members fixed to the transverse bulkheads, the bottom portion of the ship having a space defined by at least two adjacent connecting longitudinal members, characterized in that

(a) there are no reinforcing transverse members, other than said transverse bulkheads, intersecting said connecting longitudinal members, and

(b) said space is divided by a horizontal partition into upper chamber means and a lower chamber, said upper chamber means being adapted in its entirety to pass at least one fluid therethrough, said lower chamber being provided with docking brackets each conforming to the sectional shape thereof.

4,573,423

DEVICE FOR ADJUSTING THE STEP OF THE MAST OF A SAILBOARD OR SIMILAR

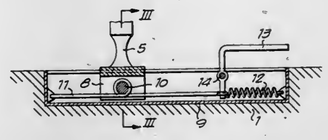
Thierry M. Dumortier, Hermee, Belgium, assignor to Fabrique Nationale Herstal, en abrege FN, Societe Anonyme, Herstal, Belgium

Filed Mar. 13, 1984, Ser. No. 588,984

Claims priority, application Belgium, Mar. 28, 1983, 2/60063

Int. Cl.⁴ B63B *15/00*

U.S. Cl. 114—91 **2 Claims**



1. Device for adjusting the step of a mast of a sailboard comprising: a slider receiving the foot of the mast, said slider being associated with a slide adapted to be secured to the hull of the board; a friction locking means acting on the said slider for securing it relative to said slide and a control member provided for varying the friction of said locking means on the slider, thereby allowing the shifting of the latter relative to said slide; said locking means comprising a member secured through one of its ends to one end of said slide and forming at least one dead turn on an axle provided therefor on said slider and secured, at its other end, through a traction spring, to the other end of said slide.

4,573,424

SAIL SHORTENING ROLLER FOR SAILING BOATS

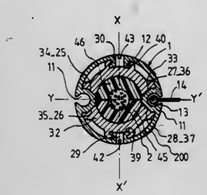
Pierre Clausin, Ville d'Avray, France, assignor to Proengin S.A., France

Filed Jan. 10, 1984, Ser. No. 569,636

Claims priority, application France, Jan. 13, 1983, 83 00593; Jun. 9, 1983, 83 09717; Nov. 25, 1983, 83 18985

Int. Cl.⁴ B63H *9/10*

U.S. Cl. 114—106 **22 Claims**



1. A sail shortening device for rolling up a sail with a boltrope on a tubular element mounted for rotation about a rigging cable of a sailing boat and having a longitudinal axis and a lower zone, this device comprising:

at least two tubular sections connected end to end through a junction plane for forming said tubular element,

connecting means comprising at least one shaped connecting element engaging in said tubular sections, on each side of said junction plane and having an inner surface and two extreme edges extending parallel to said longitudinal axis,

two shaped end elements similar to the connecting element and mounted at both ends of the tubular element,

bearings, each comprising two semi-cylindrical parts, said bearings being housed respectively between said cable, said shaped connecting element and the two shaped end elements, so as to allow free rotation of the tubular element about the cable,

at least one longitudinal groove formed in the tubular element which comprises a longitudinal cavity with a section at least equal to the section of the bolt-rope and an outer longitudianl opening whose width is at least equal to the diameter of the bolt-rope in the lower zone of the tubular element and less than the diameter of the bolt-rope in the remaining part of the tubular element, so as to be able to introduce the bolt-rope into the longitudinal groove through the opening provided in the lower zone,

a device for axially holding the tubular element in position comprising an inner tubular sleeve fixedly mounted to the lower part of the tubular element and an outer sleeve, mounted for rotation on the inner tubular sleeve, and fixing means connecting the outer sleeve to a fixed part of the boat,

means for rotating said tubular element, coupled to said inner sleeve,

a swivel slidably mounted on the tubular element comprising an inner sleeve locked in rotation with the tubular element and comprising means for fixing the sail, an outer sleeve mounted for rotation on the inner sleeve and comprising means for fixing to a halyard for hoisting and tensioning the sail,

means for guiding the bolt-rope mounted in the lower zone of the tubular element for facilitating introduction of the bolt-rope inside the longitudinal groove.

4,573,425

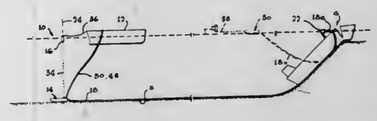
RAPIDLY INSTALLABLE MOORING AND CARGO TRANSFER SYSTEM

George M. Pomonik, Van Nuys, and Martin B. Jansen, Agoura, both of Calif., assignors to Amtel, Inc., Providence, R.I.

Filed Sep. 4, 1979, Ser. No. 72,353

Int. Cl.⁴ B63B *21/00*

U.S. Cl. 114—230 **3 Claims**



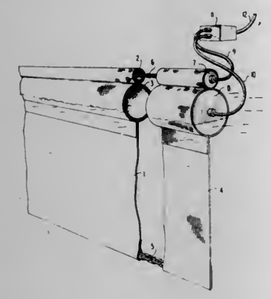
1. A rapidly deployable mooring and hydrocarbon transfer system for transferring hydrocarbons between a seabed pipeline and a floating offloading vessel at the sea surface, comprising:

a barge having a hull which is buoyant and seaworthy but which can be flooded and sunk and which has a lower surface formed to rest stably on the sea floor, and which has means for anchoring it to the seabed;

a fluid swivel assembly including a stationary swivel portion which is mounted on said barge and which has a first coupling positioned to connect to a largely horizontal seabed pipeline, and including a rotatable swivel portion which has a second coupling positioned to connected to a largely upwardly-extending hose structure that can connect to the offloading vessel, to maintain such connection during unlimited rotation of the vessel, all of said fluid swivel assembly lying at about the same level as the hull of said barge so that the barge with the fluid swivel assemly thereon is seaworthy;

said barge including a buoy with hawser connecting means for connecting to one end of a hawser whose opposite end moors a ship said buoy releasably mounted on said barge, a mooring line chamber, and a mooring line having a majority of its length stored in said chamber and a first line end connected to said barge along the axis of said swivel assembly and a second end connected to said buoy, whereby to enable automatic deployment of a connected buoy upon sinking of the barge.

4,573,426
FLOATING BOOM
Erik J. Larsson, Gamleby, Sweden, assignor to Safe Bridge AB, Vastervik, Sweden
PCT No. PCT/SE83/00145, § 371 Date Dec. 15, 1983, § 102(e) Date Dec. 15, 1983, PCT Pub. No. WO83/03628, PCT Pub. Date Oct. 27, 1983
PCT Filed Apr. 18, 1983, Ser. No. 576,281
Claims priority, application Sweden, Apr. 19, 1982, 8202444
Int. Cl.⁴ E02B *15/02*
U.S. Cl. 114—267 **6 Claims**



1. In a floating boom for confining or preventing the spread of floating impurities, especially oil, which boom is arranged to be brought from a passive state, in which it may rest on the sea bed, to an active blocking state by being caused to float to the surface, said boom comprising:

an inflatable boom-raising hose for causing said boom to float to the surface, characterized in that said boom-raising hose is constituted by a high-pressure hose of a size such that the hose upon inflation gives a raising force sufficient to raise the boom from the sea bed and to keep it floating,

and wherein said boom-raising hose carries internally a chain 6 which acts as a weight to drive the hose and boom to the sea bed, which takes up tensile forces, which prevents folds being formed as the boom-raising hose sinks to the sea bed and which insures air passage therethrough, full evacuation of air therefrom, and complete collapse of the boom-raising hose during evacuation of air therefrom at one or both ends thereof when the hose is deflated.

4,573,427
BIRD SCARING DEVICE
Peter Konzak, Box 547, Devils Lake, N. Dak. 58301
Continuation-in-part of Ser. No. 388,040, Jun. 14, 1982, abandoned. This application May 31, 1983, Ser. No. 499,696
Int. Cl.⁴ G08B *7/00*
U.S. Cl. 116—22 A **17 Claims**

1. A bird scaring device comprising:

a frame;

visual means having active and inactive positions attached to said frame for scaring birds;

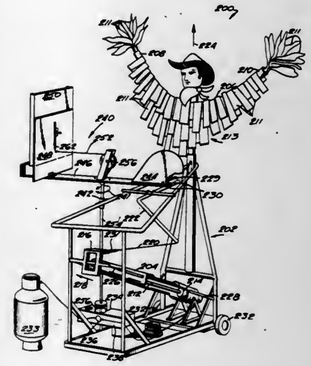
actuator means operatively connected to said visual means for moving said visual means between said inactive and said active positions; and

control means operatively connected to said actuator means for disabling said actuator means and thus said visual means in dependence upon predetermined ambient conditions, wherein said control means includes (a) light detector means for sensing daylight and night hours and for disabling said actuator means during said night hours, and (b) wind sensor means operatively connected to said actuator means for sensing wind velocity and for disabling said actuator in dependence upon sensing a wind velocity greater than a preestablished wind velocity, said wind sensor means including;

(a) means defining a predetermined surface area and being hingedly moveable between first and second positions;

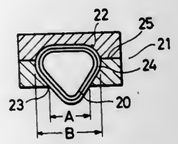
(b) vane means for directing said surface area defining means into a wind velocity sensing position; and

(c) cover means operatively connected to said surface area defining means and displaceable therewith in response to movement thereof between said first and second positions



wherein said cover means is in a covering relationship with respect to said light detector means when said surface defining means is in said second position to prevent light from being sensed by said light detector means thereby disabling said actuator means and wherein said cover means in an uncovering relationship with respect to said light detector means when said surface defining means is in said first position to permit light to be sensed by said light detector means thereby permitting operation of said actuator means.

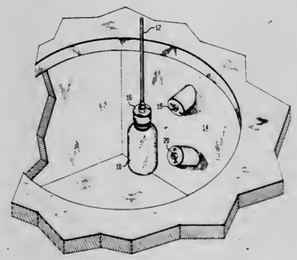
4,573,428
RELEASE AGENT APPLICATOR FOR USE WITH COPYING MACHINE
Takao Ogino; Hiroo Katsuya; Chiaki Kato; Itsuro Kato, and Tsutomu Kato, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd. and Sharp Kabushiki Kaisha, both of Osaka, Japan
Filed May 16, 1984, Ser. No. 610,747
Claims priority, application Japan, May 19, 1983, 58-88942
Int. Cl.⁴ B05C *11/105*
U.S. Cl. 118—60 **13 Claims**



1. In a release agent applicator for use with a copying machine having a heated fixing roller and compression roller assembly for fixing a toner image to a toner image bearing material, a porous polyethylene tetrafluoride resin tube installed in a support in such a manner that a part of the tube which forms an outlet for a release agent contained in the tube projects from an opening in the support to the heated fixing and compression roller assembly, said porous tube having both ends sealed, wherein the improvement comprises: a tubular

form of a polymer film temporarily sealingly covering at least the entire outer surface of said release agent outlet of said porous tube to prevent leakage of the release agent contained in said porous tube through said outlet and having a melting point of less than 200° C. for removal of said polymer film covering at least said outlet after installation of said porous tube in said support.

4,573,429
PROCESS FOR COATING SUBSTRATES WITH AQUEOUS POLYMER DISPERSIONS
Walter H. Cobbs, Jr., Amherst, and William R. Rehman, Vermilion, both of Ohio, assignors to Nordson Corporation, Amherst, Ohio
Division of Ser. No. 500,877, Jun. 3, 1983, Pat. No. 4,515,836, which is a continuation-in-part of Ser. No. 399,047, Jul. 16, 1982, abandoned. This application Aug. 6, 1984, Ser. No. 638,222
Int. Cl.⁴ B05B *13/02*
U.S. Cl. 118—322 **12 Claims**



1. A system for coating a substrate with a polymer coating comprising, in combination,

spray nozzle means for dispensing a stream of a stabilized dispersion of polymer in water,

means for actuating said nozzle means to dispense said stream,

means for locating said substrate in proximity to said nozzle means such that on actuation of said nozzle means said stream impacts on said surface initially forming a gel coating layer bonded to said surface and caused by destabilization of said dispersion upon said impact, said nozzle means adapted to continuously expose said gelled coating layer to said stream of stabilized polymer dispersion to produce a wet integral coating including a covering layer of polymer dispersion completely covering said gel layer, said gel layer serving as an interfacial layer to adhere said covering layer of polymer dispersion to said substrate, and

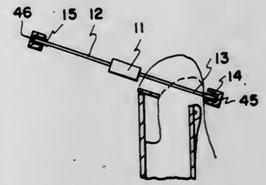
means for drying said wet integral coating to form a substantially completely gelled coating and to coalesce said polymer into a substantially uniform coating onto said substrate.

4,573,430
AUTOMATIC LEAD WIRE TINNING OF TAPE-PACKAGED COMPONENTS
Florence Benson, Big Lake, and Mark J. Shireman, St. Louis Park, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.
Filed Nov. 7, 1984, Ser. No. 669,165
Int. Cl.⁴ B05C *3/02*
U.S. Cl. 118—411 **3 Claims**

1. In combination:

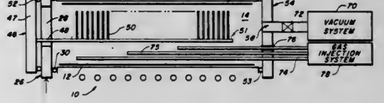
a wave station establishing a wave of liquid solder having a convex configuration, transverse to an axis, which decreases in cross-sectional area with distance in a first direction along said axis;

and means transporting along said axis in said direction an electrical component having at least one linear conductor



extending transverse to said axis to pass through said wave.

4,573,431
MODULAR V-CVD DIFFUSION FURNACE
Robert F. Sarkozy, Westford, Mass., assignor to BTU Engineering Corporation, North Billerica, Mass.
Continuation of Ser. No. 552,454, Nov. 16, 1983, abandoned. This application Jul. 22, 1985, Ser. No. 757,920
Int. Cl.⁴ C23C *11/00*
U.S. Cl. 118—725 **4 Claims**



1. A modular vacuum chemical vapor deposition CVD diffusion furnace, comprising:

a cylindrical diffusion tube having open ends and defining a cylindrical reaction chamber having an operative region along which CVD takes place;

a boat loader;

means for removably fastening said boat loader in air-tight sealing engagement with one of said open ends;

means coupled to said diffusion tube for controllably heating said reaction chamber;

a vacuum source;

a first metallic door having an aperture and a plurality of precisely aligned gas injection tube receiving openings provided through the door spaced from each other and from said aperture;

means for connecting said vacuum source to said aperture;

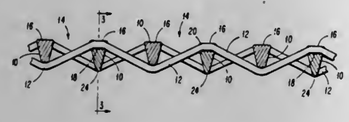
a plurality of gas injection tubes slidably received in a corresponding one of said plurality of precisely aligned gas injection tube receiving openings and each having an end terminating at longitudinally spaced points along said operative region of and within said reaction chamber;

a like plurality of vacuum couplings intermediate each of said gas injection tube receiving openings and a corresponding one of said gas injection tubes;

a gas control system operatively connected to said plurality of gas injection tubes; and

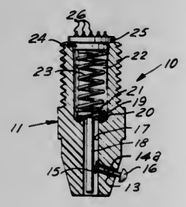
means for removably fastening said first metallic door to the other one of said ends of said cylindrical diffusion tube in air-tight sealing relationship.

4,573,432
WIRE MESH FLOORING
John F. Boxhorn, and George R. Boxhorn, both of Brookfield, Wis., assignors to C. I. Banker Wire & Iron Works, Inc., Milwaukee, Wis.
Filed Nov. 5, 1984, Ser. No. 668,514
Int. Cl.[4] A01K *1/015*
U.S. Cl. 119—28 6 Claims



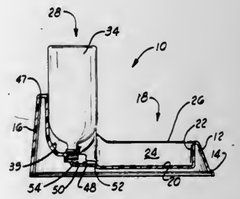
1. A wire mesh flooring comprising a plurality of substantially staight, parallel, spaced-apart warp wires each having the same cross-sectional area and a flat surface along its entire length, the widest portion of each warp wire being at or very near the top surface, and a plurality of parallel, spaced-apart cross wires extending alternately over and under adjacent warp wires, the top surface of each warp wire having a depression formed in it at each juncture with a cross wire to receive the cross wire so that the cross wire will not extend above the top surface of the warp wire, thereby providing a flooring that has a flat top surface with a plurality of openings therethrough which openings increase in size from the top to the bottom of the flooring.

4,573,433
SIDE ACTIVATED ANIMAL WATERING VALVE
Earl C. Thompson, 448 First St., Hewitt, Tex. 76632
Filed Aug. 3, 1984, Ser. No. 637,612
Int. Cl.[4] A01K *7/06*
U.S. Cl. 119—72.5 1 Claim



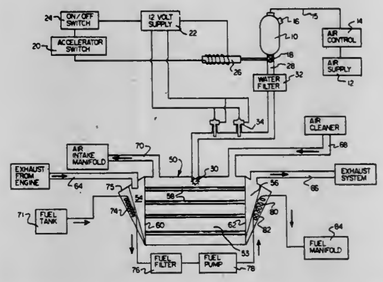
1. A side activated animal watering valve, comprising, in combination, a cylindrical main body, means on one end of said main body for attachment to a water supply source, an opposite end of said main body being conically tapered, a wide first central opening in said one end communicating with a narrower second central opening in said tapered end, a shoulder between said openings, a rubber "O"-ring rested against said shoulder, a shaft having an enlarged head at one end being inserted inside said main body, said shaft extending inside said second opening and said head resting against said "O"-ring, said shaft being thinner than said second opening to permit sidewardly tilting, a compression coil spring retained in said first opening bearing at one end against said stem head, and a transverse opening between an outer side of said tapered end and said second opening, and a rivet being slidable in said transverse opening, a button head on the outer end of said rivet, and a flat head on the inner end of said rivet, said flat head being configured larger than said transverse opening to retain said rivet in said transverse opening and being configured to selectively abut said shaft to effect the tilting thereof, said transverse opening being diagonally inclined respective to a longitudinal central axis of said cylindrical main body, and being generally perpendicular to said outer side of said tapered end, whereby when the watering valve is in an operative position the rivet tends to fall away from contact with said shaft.

4,573,434
PET WATERING APPARATUS
Robert P. Gardner, Tulsa, Okla., assignor to Fred C. Clark, Oklahoma City, Okla.
Filed Jul. 11, 1984, Ser. No. 629,775
Int. Cl.[4] A01K *7/00*
U.S. Cl. 119—77 14 Claims



1. A pet watering apparatus comprising:
an outer wall portion;
an inner, upwardly opening water reservoir section comprising:
a lower surface; and
a plurality of walls extending upwardly from said lower surface and forming a first portion of a water-retaining boundary for said reservoir section;
a first upper surface connecting said first portion of said water-retaining boundary to said outer wall;
at least a first and second bottle holder forming a second portion of said water-retaining boundary, each of said bottle holders comprising:
a longitudinally truncated first substantially cylindrical upper portion dimensionally conforming to an outer surface of a bottle to frictionally hold said bottle in an inverted position;
an inwardly extending lower shoulder portion having a second cylindrical surface coaxial with said cylindrical upper portion and dimensionally conforming to an outer surface of a neck of said bottle to frictionally hold said neck, said second cylindrical surface defining a recess arranged to be in communication with an opening of said bottle adjacent said neck; and
a curvilinearly tapered intermediate section interconnecting said cylindrical upper portion and said lower shoulder portion;
a second upper surface connecting said bottle holders to said outer wall; and
a plurality of substantially horizontal upwardly opening water conduits, each conduit having a first end in communication with a bottle holder adjacent said recess thereof and a second end in communication with said water reservoir section adjacent said lower surface thereof;
wherein said outer wall portion, said water reservoir section, said bottle holders, said first and second upper surfaces and said water conduits are integrally molded on one-piece construction.

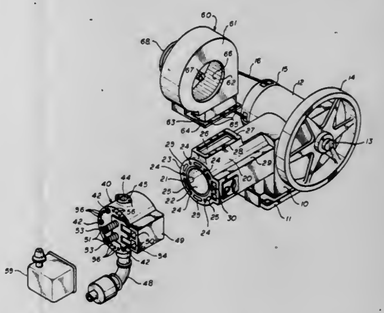
4,573,435
APPARATUS AND METHOD FOR GENERATING HYDROGEN GAS FOR USE AS A FUEL ADDITIVE IN DIESEL ENGINES
Glenn F. Shelton, Rte. 1, Box 333, Lawsonville, N.C. 27022
Continuation-in-part of Ser. No. 710,718, Mar. 12, 1985. This application Jun. 28, 1985, Ser. No. 749,733
Int. Cl.[4] F02B *43/10*
U.S. Cl. 123—3 15 Claims



1. Method for improving the fuel economy and emission quality of a diesel engine comprising the steps of:
(a) delivering water from a pressurized water source to the water inlet of a heat exchanger at a controlled rate determined responsive to the delivery of diesel fuel to said diesel engine;
(b) collecting the hot exhaust gases from said diesel engine and delivering them to the exhaust gas inlet of said heat exchanger;
(c) separating said exhaust gases into a plurality of tubes or pipes extending through said heat exchanger and having heat conducting walls;
(d) spraying water through said water inlet onto the surface of the heat conducting walls at such a rate as to reform the atomized water droplets into hydrogen gas, oxygen gas, and water vapor;
(e) the ratio of water delivered to the heat exchanger relative to diesel fuel delivered to the combustion chamber of said diesel engine being substantially in the range of 1:10 to 1:20;
(f) delivering said hydrogen gas, oxygen gas, and water vapor to the air intake of said diesel engine where it is mixed with air, introduced into the combustion chamber, and compressed prior to the introduction of said diesel fuel for combustion.

8. Apparatus for generating and delivering a mixture of hydrogen gas, oxygen gas, and steam for mixture with diesel fuel in the combustion chamber of a diesel engine comprising:
(a) a pressurized source of water;
(b) a heat exchanger having means associated therewith for receiving water from said water source and exhaust gases from said diesel engine in non-contacting, heat exchange relation to each other;
(c) means for controlling the flow of water to said heat exchanger responsive to the delivery rate of diesel fuel to the combustion chamber of said diesel engine;
(d) said heat exchanger comprising:
(i) an exhaust gas receiving manifold for receiving said exhaust gases from the combustion chambers of said diesel engine and a heat exchange compartment separated therefrom by a wall;
(ii) a bank of heat exchange tubes formed of a heat conducting material extending through said heat exchange compartment, said tubes being arranged in a bank including a plurality of rows and columns with spaces therebetween;
(iii) a spray nozzle mounted on the top wall of said heat exchange compartment above said bank of heat exchange tubes and connected to said pressurized source of water;
(e) means connecting the interior of said heat exchange compartment with said combustion chamber for circulating air through said heat exchange compartment and on to said combustion chamber whereby hydrogen gas, oxygen gas, and steam are delivered thereto.

4,573,436
AIR COOLED HORIZONTAL POWER PISTON ENGINE
Charles A. Owens, P.O. Box 474, Warren, Tex. 77664
Filed Nov. 22, 1983, Ser. No. 554,211
Int. Cl.[4] F01P *9/00*
U.S. Cl. 123—41.18 15 Claims



1. In a stationary horizontal power piston internal combustion engine having a design power output at maximum rpm of from about 11 to about 35 horsepower and having a cylinder head and engine block formed with internal water jackets designed to communicate through a radiator attached to said engine block to form a circulation loop closed to the atmosphere into which a liquid is received and circulated for liquid cooling of said engine, an improvement which adapts said engine to cooling by ambient air flow comprising:
a high volume air blower, said air blower taking in atmospheric air having a temperature as high as about 140° F., the air discharge end of which is mounted in close proximity to and in airtight sealing engagement to that mating surface on said engine block designed to receive a radiator unit for communication with the internal water jacket of said engine block, thereby minimizing resistance to air flow therebetween;
means for transmitting rotational motion of the crankshaft of said engine to said blower to operate said blower while said engine is in operation; and
a cylinder head provided with openings therein which communicate the internal water jacket of said cylinder head directly to the external atmosphere by which ambient air supplied by said blower to the internal water jacket of said engine block for circulation to the internal water jacket of said cylinder head is exhausted directly to the atmosphere through said openings after traversing once through the water jacket of said engine block and cylinder head.

4,573,437
SELF-PROPELLED VEHICLE
Ronald D. Morrison, 7836 Jasper Ave., Edmonton, Alberta T5H 3R9, Canada T5H 3R9
Continuation-in-part of Ser. No. 558,831, Dec. 7, 1983, Pat. No. 4,478,179. This application Sep. 26, 1984, Ser. No. 654,397
Int. Cl.[4] F02R *57/08*
U.S. Cl. 123—44 B 12 Claims

1. A self-propelled vehicle which includes a body and a set

of four internal-force generating devices, each said device having a central axis about which internal portions thereof rotate, the four devices being configured as two opposed pairs, the two devices of one pair having parallel axes but turning in opposite directions, the two devices of the other pair also having parallel axes but turning in opposite directions, the axes of said one pair being at right angles to the axes of said other pair, each device comprising:

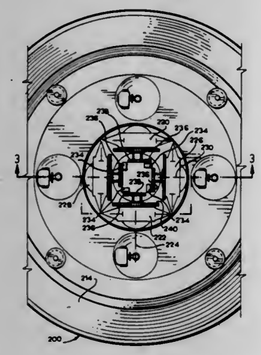
stationary frame means,

a stationary sun gear on the frame means, the sun gear being coaxial with the central axis of its respective device,

a rotor pivoted about the axis of the sun gear,

three crankshafts carried by the rotor at substantially 120° intervals, each having an eccentric portion,

for each crankshaft a cylinder in the rotor, a piston mounted



for reciprocation in each cylinder, and a connecting rod from the piston to the eccentric portion of the crankshaft,

each crankshaft being fixed to rotate with a respective planetary gear, all planetary gears meshing with the sun gear and having the same pitch diameter as the sun gear, whereby any point on the pitch circle of a planetary gear describes a cardioid as the planetary gear rotates around the sun gear once,

the crankshaft eccentricity being substantially ⅓ of the pitch radius of a planetary gear,

fuel metering means for providing a combustible mixture for the cylinder,

ignition means to ignite the combustible mixture in each cylinder,

and valve means for admitting the combustible mixture to, and exhausting combustion gases from, each cylinder.

4,573,438

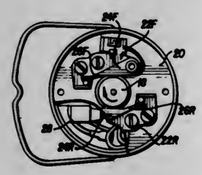
IGNITION SYSTEM

Daniel Whitfield, 320 E. Wythe St., Petersburg, Va. 23803

Filed Mar. 8, 1983, Ser. No. 473,828

Int. Cl.⁴ F02P *7/10*

U.S. Cl. 123—146.5 A **1 Claim**



1. In an ignition system for an internal combustion engine having at least one cylinder with an associated spark plug and at least power and exhaust strokes associated with such engine, ignition coil means and circuit breaker switch means in association with a cam shaft driven in timed relation to an engine crankshaft causing said spark plug to fire in advance of a power stroke, the improvement comprising:

means for insuring rapid opening and closing of a displaceable point assembly including:

cam lobe means on said cam shaft;

a point base assembly for supporting dual point assemblies in operative relation to said cam lobe means of said cam shaft;

said point base assembly comprising a pair of upper and lower superimposed plates, each of said plates respectively supporting a point assembly;

said upper plate having a portion removed for permitting the point assembly mounted on said lower plate to be operatively and independently adjusted with respect to said cam lobe means; and,

means for independently adjusting the respective point assemblies with respect to each other;

said plates including overlying, arcuate slots for accommodating lock means projecting therethrough and permitting rotation of said plates relative to the axis of rotation of the cam shaft, the uppermost plate having at least one slot of larger dimensions than the slot of the lower plate for accommodating therethrough a lock means to permit independent locking of the lower plate after it has been adjusted.

4,573,439

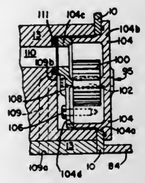
OIL PUMP ARRANGEMENT FOR SUPPLYING OIL UNDER PRESSURE IN AN INTERNAL COMBUSTION ENGINE

Edward W. Kasting, Seymour, Ind., assignor to Cummins Engine Company, Inc., Columbus, Ind.

Division of Ser. No. 331,799, Dec. 17, 1981, Pat. No. 4,459,950, which is a division of Ser. No. 104,914, Dec. 18, 1979, Pat. No. 4,321,896. This application Jul. 17, 1984, Ser. No. 631,695

Int. Cl.⁴ F02B *77/14*

U.S. Cl. 123—195 A **2 Claims**



1. An oil pump arrangement for supplying oil under pressure in an internal combustion engine, which comprises in combination:

an internal combustion engine, one side of a portion of which is provided with a recess in a planar end wall thereof;

an oil pump having a two part housing comprised of an open-sided housing part and a closure means for closing off the open side of said housing part, and wherein said pump housing is of a size, relative to the size of said recess, for enabling said oil pump to be received within said recess with sufficient clearance to form a clearance space between said oil pump housing and walls of the engine defining said recess, said clearance space forming a suction space for said oil pump;

impeller gears which are provided in said pump housing and which mesh with one another;

driving means operatively connected to said internal combustion engine for driving at least one of said impeller gears;

a suction passage formed in the body of said internal combustion engine for providing communication between said suction space and a source of oil, said pump housing including an opening for providing communication between said suction space and the interior thereof; and

a pressure passage means for communicating the interior of said pump housing with said internal combustion engine comprising a pressure passage formed in the body of said internal combustion engine and opening into said recess, a passage formed through said pump housing and means for interconnecting the pressure passage of the housing and the pressure passage of the engine body in a manner sealing-off said pressure passage means relative to said suction space.

4,573,440

METHOD FOR LIMITING THE SPEED OF AN INTERNAL COMBUSTION ENGINE IN A VEHICLE AND DEVICE FOR SAME

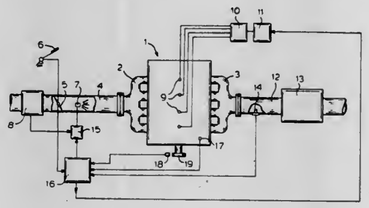
Reiner Pischke, Bad Friedrichshall, and Karl-Heinz Köhler, Ingolstadt, both of Fed. Rep. of Germany, assignors to Audi NSU Auto Union Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 543,417, Oct. 19, 1983, abandoned. This application Jun. 11, 1985, Ser. No. 743,280

Claims priority, application Fed. Rep. of Germany, Oct. 22, 1982, 3239052

Int. Cl.⁴ F02M *51/00*

U.S. Cl. 123—333 **6 Claims**



1. A method for limiting the speed of an externally ignited fuel-injected internal combustion engine having a control device for generating a first optimized signal for controlling the fuel/air mixture fed into said engine and for generating a second optimized signal for setting the injection timing in accordance with the operational parameters of the engine, comprising:

monitoring the speed of rotation of said engine; and

simultaneously modifying said first and second optimized signals to reduce the amount of fuel in said fuel mixture and to advance said injection timing when said speed of rotation exceeds a first predetermined speed to reduce the power of the engine.

4,573,441

VALVE ARRANGEMENT

Stephan Wietschorke, Usingen; Gerhard Ruschek, Hattersheim, and Andreas Sausner, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

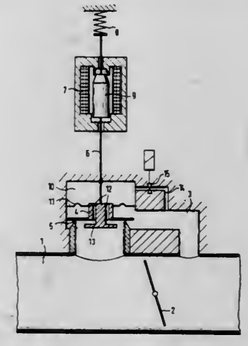
Filed Aug. 1, 1984, Ser. No. 636,530

Claims priority, application Fed. Rep. of Germany, Aug. 11, 1983, 3328950

Int. Cl.⁴ F02D *31/00*

U.S. Cl. 123—339 **14 Claims**

1. In a valve arrangement for adjusting the idling speed of an internal combustion engine having an intake manifold and a throttle valve in the manifold, by controlling the quantity of air at an intake side of the intake manifold leading to the internal combustion engine, including a bypass of the throttle valve, an electromechanical setting element having a solenoid connected to a closure member for the bypass via a setting member, a return spring biasing the setting member in a closing direction, said solenoid being adapted to urge said setting member in an opening direction against the force of the return spring, the closure member being urged in the opening direction by pressure at an admission side of the manifold, and the admission side being connected to a chamber including a movable wall



connected to a rear portion of the closure member, the improvement comprising:

means comprising another valve for connecting said chamber to the intake side of the manifold and for closing during a control operation of the closure member via said solenoid.

4,573,442

FUEL INJECTION PUMP HAVING A COMPACT SPILL-PORT TIMING CONTROL UNIT

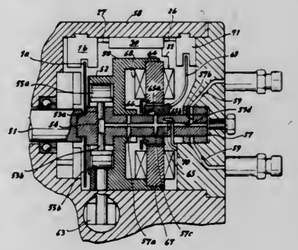
Toshimi Matsumura, Aichi; Masahiko Miyaki, Oobu, and Akira Masuda, Aichi, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jun. 7, 1983, Ser. No. 501,789

Claims priority, application Japan, Jun. 10, 1982, 57-101178; Jul. 21, 1982, 57-127128; Aug. 25, 1982, 57-147175

Int. Cl.⁴ F02M *59/20*

U.S. Cl. 123—450 **23 Claims**



1. A fuel injection pump, comprising:

a compression chamber adapted to be coupled to a source of fuel;

a plurality of fuel injection nozzles;

a rotary plunger rotatably driven by an internal combustion engine, the plunger including means for defining a common passageway connected at one end to said compression chamber, said plunger further including means for defining a plurality of angularly spaced apart spill ports branching off said common passageway to an outside surface thereof and a fuel delivery port branching off said common passageway, the fuel delivery port being selectively movable into and out of alignment with each one of said nozzles by rotation of the plunger;

a magnetized rotary ring including means for defining a spill groove extending along the inner wall thereof, said ring being mounted on said plunger and rotatable, with respect to said plunger, between at least a first angular position whereat said spill groove is out of alignment with said spill ports to establish a pressure tight relationship between the inner wall of said ring and the outer wall of said plunger and a second angular position whereat said groove is in alignment with at least one of said spill ports to provide a pressure relief action, said ring comprising a cylindrical structure having differently magnetized equally divided arcuate sections, said groove being formed on the inner wall of the cylindrical structure and substantially axially extending from one end of the structure;

spring means for biasing said ring toward one of said first and second angular positions;

a stationary core surrounding said ring; and

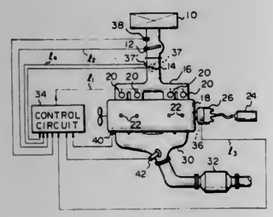
a coil wound on said core for generating a rotative thrust on said ring for selectively moving said ring between said first and second angular positions in response to a control signal.

4,573,443

NON-SYNCHRONOUS INJECTION ACCELERATION CONTROL FOR A MULTICYLINDER INTERNAL COMBUSTION ENGINE

Haruo Watanabe; Kazuo Nakano, both of Okazaki, and Akito Ohnishi, Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Continuation of Ser. No. 504,946, Jun. 16, 1983, abandoned.
This application May 16, 1985, Ser. No. 734,816
Claims priority, application Japan, Sep. 16, 1982, 57-159446
Int. Cl.⁴ R02B *3/10*
U.S. Cl. 123—492 **6 Claims**



1. A fuel-injection controlled internal combustion engine, comprising:

an engine body having a plurality of cylinders;

an intake line for introducing intake air into said engine body;

an exhaust line for removing exhaust gas from said engine body;

injector means for controllably injecting fuel into said intake line;

air flow detecting means for detecting an amount of air flowing through said intake line into said engine body and providing signals representative of said detected amount;

synchronous means for controlling said injector means synchronously with predetermined crank angles to cause fuel to be injected;

means for detecting the occurrence of a wide open throttle acceleration condition of said engine;

acceleration start time determining means for determining the start time of acceleration relative to the time occurrence of two prior and post consecutive synchronous fuel injections, in accordance with one of a detected wide open throttle acceleration condition and a throttle-position indicated acceleration condition; and

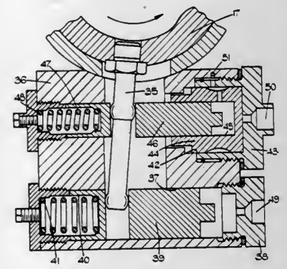
acceleration pulse means, responsive to said detected acceleration conditions, for operating said injector means to commence acceleration pulse fuel injections with said detected acceleration conditions, the width of said acceleration pulse fuel injections being determined in accordance with said start time occurrence of acceleration determined by said acceleration start time determining means.

4,573,444

FUEL INJECTION PUMPING APPARATUS

Peter Howes, Gerrards Cross, England, assignor to Lucas Industries Public Limited Company, Birmingham, England

Filed Nov. 9, 1984, Ser. No. 670,023
Claims priority, application United Kingdom, Dec. 1, 1983, 8332110
Int. Cl.⁴ F02M *39/00*
U.S. Cl. 123—502 **7 Claims**



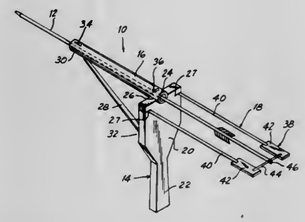
1. A fuel injection nozzle pumping apparatus for supplying fuel to an internal combustion engine, the apparatus comprising a body, a rotary distributor member mounted in the body, a high pressure pump including a plunger mounted in a bore in the distributor member and a cam ring mounted in the body, the cam ring defining a cam lobe which as the distributor member is rotated imparts inward movement to the plunger to displace fuel from said bore, the displaced fuel being directed by the distributor member to an outlet, a low pressure fuel supply pump for delivering fuel at a pressure which varies in accordance with the speed at which the apparatus is driven, control means for controlling the fuel flow from the low pressure to the high pressure pump thereby to determine the quantity of fuel supplied through said outlet, means for adjusting the angular setting of the cam ring to vary the timing of fuel delivery by the apparatus, said means including first and second pistons disposed in parallel side-by-side relationship, means coupling the pistons to the cam ring, resilient means biasing the pistons to urge the cam ring in one angular direction to retard the delivery of fuel, means for varying the fluid pressure applied to the pistons, the fluid pressure acting on said pistons in the direction to advance the timing of fuel delivery, a first cylinder housing the first of said pistons and passage means connecting one end of said cylinder to an outlet of the low pressure fuel supply pump, whereby the position of the piston is responsive to the speed at which the apparatus is driven, and a second cylinder housing the second of said pistons, a valve for admitting fuel under pressure to said second cylinder, a first switch responsive in use to the temperature of the associated engine and a second switch responsive to the setting of said control means, said switches controlling said valve, whereby fuel under pressure is supplied to said second cylinder only when the engine temperature is below a predetermined value and the quantity of fuel supplied by the apparatus is less than a predetermined value.

4,573,445

ARROW SLINGSHOT

Ted H. Webb, and George Spector, both of 233 Broadway RM 3615, New York, N.Y. 10007

Filed Mar. 27, 1984, Ser. No. 594,031
Int. Cl.⁴ F41B *3/00*
U.S. Cl. 124—22 **5 Claims**



1. A slingshot for an arrow which comprises:

(a) a handgrip having a wide top portion and a narrow handle portion;

(b) a long barrel open at both ends and secured to said top portion of said handgrip; and

(c) means for propelling said arrow through said barrel, said means secured to said top portion of said handgrip, further comprising a brace member secured at an oblique angle between front portion of said barrel and forward middle area of said top portion of said handgrip; wherein said barrel further comprises a front sight and an open rear sight so that said arrow can be accurately aimed, wherein said means for propelling said arrow through said barrel comprises:

(d) an arrow receiving nocking member; and

(e) a pair of parallel elastic bands connecting said nocking member to said top portion of said handgrip, wherein said arrow receiving nocking member comprises:

(f) a pair of straps, each of said strap affixed at one end to one said elastic band; and

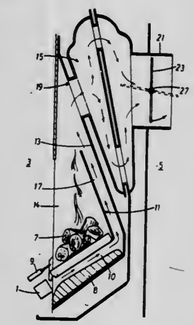
(g) a wire affixed transversely between said pair of straps to engage nock of said arrow.

4,573,446

GAS FIRES

Jozef Rosiek, Rainhill; Frank Spruce, Warrington, and Brian Atkinson, Wigan, all of England, assignors to Valor Newhome Limited, London, England

Filed Jan. 6, 1984, Ser. No. 568,633
Claims priority, application United Kingdom, Jan. 8, 1983, 8300463
Int. Cl.⁴ F24C *3/04*
U.S. Cl. 126—92 R **13 Claims**



1. An open front, open flued, solid fuel effect gas fire assembly comprising a main gas burner and a subsidiary gas burner adapted to produce combustion products, means for directing the combustion products of said burners to a heat exchanger, said heat exchanger being configured to feed said combustion products to a flue means, an adjustable baffle being linked by a mechanical linkage, to a gas control tap which controls both the main and subsidiary burners, so that adjustment of the gas control tap can vary the flow through cross-section of the path of the combustion products of at least one burner to the flue means.

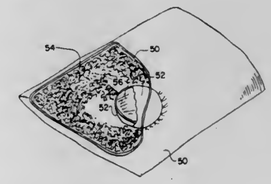
13. An open gas fire apparatus comprising a heat exchanger connected with a flue means, said heat exchanger defining at least one entry aperture for receiving combustion products from the front of a fire area, said at least one aperture incorporating a baffle arrangement for reducing the possibility of spillage of combustion products from the front of the fire area due to the effect of vortices, wherein such baffle arrangement comprises a generally horizontal plate projecting towards the front of the fire area and also partially inside the associated aperture, and a curved plate extending downwards from the generally horizontal plate and towards the adjacent side of the fire area.

4,573,447

CHEMICAL HEATER

Tommy K. Thrash, Littlefield; Richard W. Tock; Lyle V. Cox, both of Lubbock, and W. Gregg Quattlebaum, Slaton, all of Tex., assignors to Sunbelt America Corporation, Littlefield, Tex.

Filed Feb. 19, 1985, Ser. No. 703,685
Int. Cl.⁴ F24J *1/02*
U.S. Cl. 126—263 **11 Claims**



1. A heat pack comprising:

a. a flexible, substantially rupture and puncture resistant, fluid-tight envelope,

b. at least one rupturable fluid-tight container within the envelope,

c. cellulosic material within the envelope and without the container,

d. water within the container, and

e. a hypochlorite salt within the envelope, with

f. the hypochlorite salt being selected from the group consisting of sodium hypochlorite and calcium hypochlorite.

4,573,448

METHOD FOR DECOMPRESSING HERNIATED INTERVERTEBRAL DISCS

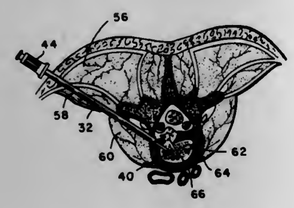
Parviz Kambin, Devon, Pa., assignor to Pilling Co., Fort Washington, Pa.

Filed Oct. 5, 1983, Ser. No. 539,256
Int. Cl.⁴ A61F *17/32, 5/04;* A61B *17/16*
U.S. Cl. 128—1 R **11 Claims**

1. A method for decompressing a herniated intervertebral disc in the lumbar region of a human patient comprising the steps of:

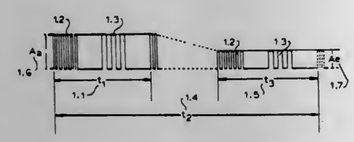
inserting a hollow needle with a stylet through the skin of the patient's back at a location spaced from the midline of the back and advancing the needle in an oblique direction with respect to a line perpendicular to the patient's back

until it reaches the outside of the annulus fibrosis of the herniated disc;
withdrawing the stylet;
introducing a guide wire through the needle to the disc;
withdrawing the needle;
passing a cannulated, blunt-tipped trocar with an opening in its tip slightly greater in diameter than the diameter of the guide wire, over the guide wire until the tip reaches the outside of the annulus fibrosis of the herniated disc;
withdrawing the guide wire;



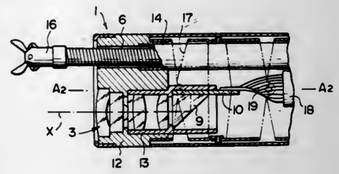
passing a thin-walled cannula which closely fits the trocar, over the trocar until the distal end of the cannula reaches outside of said annulus;
withdrawing the trocar;
introducing through the cannula a cutting instrument comprising a hollow circular cylindrical tube having cutting teeth formed in a circle on its distal end;
with the cannula still in place, forming a window in the herniated disc by rotary manipulation of the cutting instrument; and
with the cannula still in place, evacuating fragments of the herniated disc through the cannula.

4,573,449
METHOD FOR STIMULATING THE FALLING ASLEEP AND/OR RELAXING BEHAVIOR OF A PERSON AND AN ARRANGEMENT THEREFOR
Egon F. Warnke, Im Tannengrund 28, D-3002 Wedemark, Fed. Rep. of Germany
Filed Mar. 8, 1983, Ser. No. 473,353
Int. Cl.⁴ A61N *1/34*
U.S. Cl. 128—1 C **2 Claims**



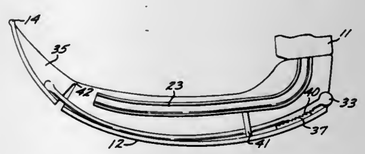
1. A method for inducing relaxed behavior in a person comprising the steps:
generating an oscillating signal;
converting said signal to an audible pulse train sequence having a pulse repetition rate substantially equal to the breathing rate of a person on the verge of falling asleep;
said audible pulse train sequence comprising two sounds of alternating frequency having a pause between them;
gradually reducing the pulse repetition rate and alternating frequencies over time;
instructing the person to inhale and exhale in time with the two sounds of alternating frequency; and
terminating said pulse train after a predetermined time interval.

4,573,450
ENDOSCOPE
Satoshi Arakawa, Omiya, Japan, assignor to Fuji Photo Optical Co., Ltd., Saitama, Japan
Filed Nov. 2, 1984, Ser. No. 667,770
Claims priority, application Japan, Nov. 11, 1983, 58-212947
Int. Cl.⁴ A61B *1/06*
U.S. Cl. 128—6 **6 Claims**



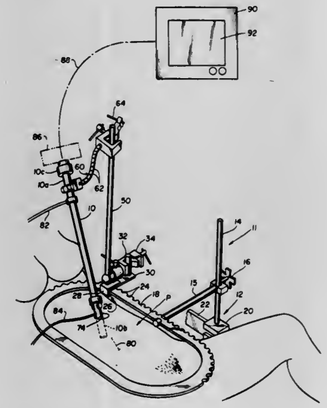
1. An endoscope capable of outputting an optical image obtained through an objective optical system as electric image signals by means of a face plate-like image sensor provided on the forward end of an insertion portion, comprising:
said objective optical system provided on the forward end of the insertion portion;
a light path changing member for changing the light path of an image pick-up light from said objective optical system into a direction perpendicular to the longitudinal direction of said insertion portion; and
a face plate-shaped image sensor opposed to a light emitting surface of said light path changing member and disposed on a plane incorporating therein the center axis in the longitudinal direction of said insertion portion.

4,573,451
LARYNGOSCOPE BLADE WITH A BENDABLE TIP
Jack Bauman, 1677 San Onofre Dr., Pacific Palisades, Calif. 90272
Filed Nov. 8, 1984, Ser. No. 669,475
Int. Cl.⁴ A61B *1/26*
U.S. Cl. 128—11 **13 Claims**



1. An elongated laryngoscope blade comprising:
(a) a main body;
(b) a separate, flexible tip adjacent the distal end of the main body;
(c) a continuous flange extending along a substantial length of the blade and interconnecting the main body and flexible tip, the portion of the flange between the main body and flexible tip having a pivot means; and
(d) means to urge the flexible tip about the pivot means.

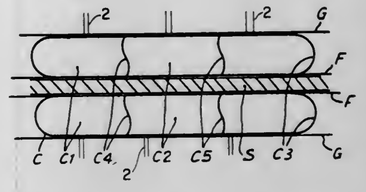
4,573,452
SURGICAL HOLDER FOR A LAPAROSCOPE OR THE LIKE
I. Melvin Greenberg, 62 The Hemlocks, Roslyn Heights, N.Y. 11576
Filed Jul. 12, 1984, Ser. No. 630,372
Int. Cl.⁴ A61B *17/02*
U.S. Cl. 128—20 **4 Claims**



1. For surgical manipulation of a laparoscope engaged adjacent its exposed distal end and requiring its inserted proximal end to be positioned in proper viewing relation to anatomy to be observed therethrough, an assembly comprising, in combination, an open ring and means for supporting same in a fixed horizontal orientation over a patient having an incision for the insertion of said laparoscope proximal end, a generally vertically oriented support rod mounted adjacent its lower end at a selected location on said open ring, a selectively tensionable member extending from an end thereof engaged to said laparoscope to engagement of its opposite end to the upper end of said support rod such that prior to the tensioning of said tensionable member said laparoscope proximal end is manipulatable into a position that is proximate to that for proper viewing of said anatomy, and a ball and socket joint at said lower end of said support rod for permitting said rod to be urged through conical movement, whereby said laparoscope proximal end partakes of corresponding conical movement incident to assuming a more precise anatomy-viewing position while the weight of said assembly and laparoscope remains supported on said open ring.

4,573,453
PRESSURE THERAPY APPARATUS
Jean Tissot, 26, Avenue Carnot, 91310 Verrieres Le Bousson, France
Filed Jun. 18, 1984, Ser. No. 621,432
Claims priority, application France, Jun. 16, 1983, 83 09957
Int. Cl.⁴ A61H *7/00*
U.S. Cl. 128—64 **5 Claims**

1. A pneumatic massage apparatus adapted for pressotherapy, which comprises:
an inflatable sleeve, the sleeve including first and second longitudinal walls, and lateral partition walls extending between the first and second longitudinal walls and joined thereto, the first and second longitudinal walls being formed of a gas impermeable, non-elastic material, the partition walls being formed of a flexible, gas impermeable, non-elastic material, the partition walls and first and second longitudinal walls defining therebetween separate inflatable chambers, inflation means on said sleeve for individually inflating each of said chambers, adjacent chambers being separated by a respective one of the partition walls, the length of each of the partition walls being greater than the distance between the first and second longitudinal walls wherein the inflation of one of the chambers at a gas pressure P causes the partition walls to



extend laterally and upon inflation of the next chamber at the same gas pressure P, the previously laterally extended partition wall laterally contracts due to the increased pressure in said next chamber thereby increasing the gas pressure in the previously inflated chamber.

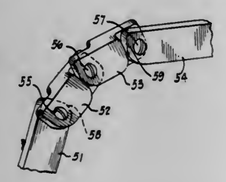
4,573,454
SPINAL FIXATION APPARATUS
Gregory A. Hoffman, 4167 Woodstock Dr., Fort Wayne, Ind. 46815
Filed May 17, 1984, Ser. No. 611,475
Int. Cl.⁴ A61F *5/01*
U.S. Cl. 128—69 **13 Claims**



4. An implantable device for fixing the spinal column comprising:
a generally U-shaped first fixation element comprising two rigid, spaced apart, generally parallel elongate legs rigidly connected together by a cross portion located at one end of the first fixation element and each leg having a free end portion opposite said cross portion, said legs adapted to be located at each side of the spinous processes between the spinous and respective transverse processes, said first fixation element adapted to extend generally in a plane including the spinal column and extending perpendicular to the posterior to anterior direction, and
a second generally U-shaped fixation element comprising two generally parallel, elongate spaced apart legs rigidly connected together by a cross member at one end of the second element legs, each of said second fixation element legs being of sufficient length to extend along and be located at one side of a plurality of spinous processes between the spinous and respective transverse processes,

the free end portions of said first fixation element legs being slidably connected to said second fixation element legs for relative contraction and extension of the overall length of the connected first and second element assembly in the longitudinal direction lying in said plane, but restrained against relative movement in directions within the plane transverse to the longitudinal direction.

4,573,455
KNEE ORTHOTIC HINGE JOINT
David J. Hoy, 1095 County Rd. 2256, Perrysville, Ohio 44864
Filed Dec. 22, 1983, Ser. No. 564,507
Int. Cl.[4] A61F *5/04*
U.S. Cl. 128—80 C **4 Claims**



1. A hinge mechanism for following the motion of the human knee, said hinge mechanism comprising first, second, third and fourth hinge members,

said first hinge member being rotatably connected to aid second hinge member by a first hinge pin member at a first axis of rotation, said second hinge pin member being rotatably connected to said third hinge pin member by a second hinge pin member at a second axis of rotation, said third hinge member being rotatably connected to said fourth hinge member by a third hinge pin member at a third axis of rotation;

each said rotatable connection permitting rotation about its said axis of rotation independently of any other said rotatable connection;

said first, second and third axes of rotation being substantially mutually parallel lines so that the directions of rotation of each said hinge member, with respect to any other said hinge member rotatably connected to it, all are substantially parallel to the same plane of rotation;

means for restricting the angle of rotation between each two said rotatably connected hinge members to lie within 0° to 180°, as viewed from one side of said plane of rotation; said means comprising opposing sidewalls on each two said rotatably connected hinge members, which said opposing sidewalls contact each other when a predetermined angle of rotation is reached, thereby preventing rotation beyond said predetermined angle of rotation; and

said hinge mechanism further comprising a length of flexible tubing extending over and encasing the rotatable connections of said mechanism in the regions of said rotatable connections.

4,573,456
FOAM BODY SUPPORT
Donald C. Spann, Taylors, S.C., assignor to Span-America Medical Systems, Inc., Greenville, S.C.
Continuation of Ser. No. 491,249, May 3, 1983, abandoned. This application May 28, 1985, Ser. No. 738,501
Int. Cl.[4] A61F *13/00*
U.S. Cl. 128—80 R **1 Claim**

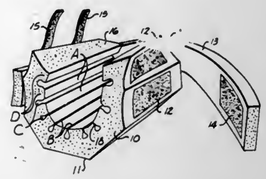
1. A support for receiving a limb of an orthopedic patient constructed essentially of a synthetic foam block comprising:

an arcuate body supporting surface in said synthetic foam block extending across a supported body portion of a human body;

a plurality of spaced, aligned cuts having been formed in said foam block by sawing in a predetermined continuous motion opening in said arcuate body supporting surfaces extending into said foam block;

an enlarged air channel having been formed in said foam block by sawing in the same motion of the saw forming said cuts in said foam block aligned with and forming a terminus for each of said cuts;

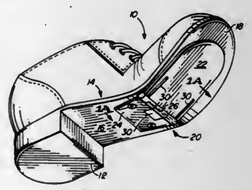
a segmented discrete support member formed between adjacent cuts and their respective channels; and



a foam strap with Velcro attachment means for receiving same to said block;

whereby body heat and moisture may be dissipated in air permeable enlarged air channels forming a ring of air about the limb and a yieldable support offered by said discrete support members.

4,573,457
TOE LIFTING SHOE
Thomas J. Parks, 1826 E. Evergreen, Mesa, Ariz. 85203
Filed Dec. 29, 1983, Ser. No. 566,781
Int. Cl.[4] A61F *5/00*
U.S. Cl. 128—80 E **2 Claims**



1. A toe-lifting show comprising a heel and a sole deflectable about a linear, flexible strip extending transversely across the sole and dividing the sole into a toe section having an upwardly sloping rear surface and an adjacent instep section comprising:

a. a flat, rigid toe plate coupled by securing means to the lower surface of the toe section of the sole and inclduing a linear rear surface extending transversely across the sole in proximity to the flexible strip;

b. a flat, rigid instep plate coupled by securing means to the lower surface of the instep section of the sole and including a linear front surface extending transversely across the sole in proximity to the flexible strip with a gap disposed between the linear front surface of the instep plate and the linear rear surface of the toe plate;

c. a hinge having a cylindrical body positioned within said gap and oriented parallel to the adjacent linear surface of the toe plate and instep plate for pivotally interconnecting the toe and instep plates, the cylindrical body of the hinge further including a cylindrical aperture for receiving a hinge pin; and

d. a spring coupled to the hinge, surrounding the hinge pin, and including a first spring element extending outward from the hinge to engage the toe plate and a second spring element extending outward from the hinge to engage the instep plate for upwardly biasing the toe plate with respect to the instep plate and for angularly deflecting the toe section of the shoe with respect to the instep section of the shoe along the flexible strip, whereby the spring acting on the toe and instep plates upwardly pivots the toe section with respect to the instep section without angularly deflecting the instep section when the shoe is in an unweighted state and permits the toe section to be downwardly pivoted with respect to the instep section when the shoe is in a weighted state, wherein the cylindrical body of the hinge and the flexible strip are positioned within the upwardly sloping rear surface of the toe section to avoid transferring substantial forces between a flat walking surface and the sole.

4,573,458
BONE FIXATION PLATE
Jerry L. Lower, Bourbon, Ind., assignor to Zimmer, Inc., Warsaw, Ind.
Continuation of Ser. No. 408,585, Aug. 17, 1982, abandoned. This application Feb. 5, 1985, Ser. No. 698,263
Int. Cl.[4] A61F *1/00*
U.S. Cl. 128—92 D **23 Claims**



1. An implantable bone plate comprising:

(a) a solid, elongated rod, void of any holes throughout its length; and

(b) a plurality of integral tab members protruding laterally from said solid rod, said tab members having an aperture therein for receiving a bone screw or the like, and wherein said tab members have a thickness less than the thickness of the rod and wherein said rod includes a bottom bearing surface and wherein said tab members have a bottom surface extending in substantially the same plane as the bearing surface of the rod.

4,573,459
THUMB AND FINGER EXTENSION DEVICE
Bruce W. Litton, 9533 Shiloh Wood Ct., Indianapolis, Ind. 46234
Filed Aug. 25, 1983, Ser. No. 526,475
Int. Cl.[4] A61F *5/04*
U.S. Cl. 128—92 A **9 Claims**

1. An extension device for extension of a digit, such as a thumb or finger, comprising:

a plurality of proximal bone pins adapted to extend laterally through a first one of two separated bone segments in a digit to be extended longitudinally;

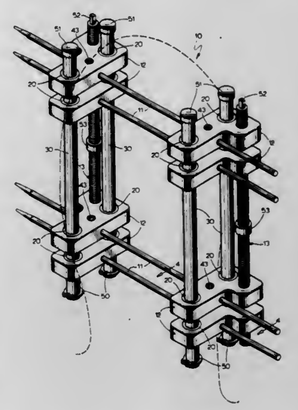
a plurality of distal bone pins adapted to extend laterally through the other one of said two separated bone segements;

means for progressively extending the distance between said proximal and distal bone pins;

means for maintaining said proximal and distal bone pins in relative alignment as said digit is progressively extended by operation of said extending means, said maintaining means including

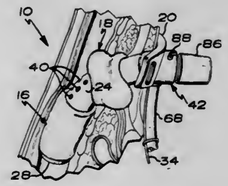
a pin retaining member corresponding to each of said bone pins, each said pin retaining member receiving a different one of said bone pins, and

a pair of guide posts slidably received through each of said pin retaining members, said guide being positioned on opposite sides of said bone pins; and generally aligned with the direction of extension of said digit; and said



extending means being laterally offset from said guide posts.

4,573,460
TALKING TRACHEOSTOMY TUBE
Edward H. Szachowicz, St. Louis Park, and John Walsh, LaCrescent, both of Minn., assignors to Implant Technologies, Minneapolis, Minn.
Division of Ser. No. 417,727, Sep. 13, 1982, Pat. No. 4,449,523. This application May 15, 1984, Ser. No. 610,417
Int. Cl.[4] A61M *25/00*
U.S. Cl. 128—200.26 **11 Claims**



1. In a tube for insertion into the trachea of a patient to support breathing through a tube passageway having a first end for placement within the trachea below the larynx for directing air or oxygen towards the lungs of the patient and a second end located outside of the trachea and the patient for receiving air or oxygen, and first means for sealing between the tube and the trachea below the larynx for substantially preventing air or oxygen from escaping from the first end of the tube upward in the trachea towards the larynx, with the tube including a wall having an outside surface, and an inside surface, a cannula having said tube passageway located within the tube, with the improvement comprising means for allowing the patient to phonate comprising, in combination: a secondary passageway located within the tube; second means adjacent the second end of said tube for introducing air or oxygen to the secondary passageway; and at least one port formed through the wall of the tube above the first sealing means in fluid communication with the secondary passageway for introducing air or oxygen above the first sealing means into the trachea for movement towards the larynx of the patient, wherein the secondary passageway is defined by said cannula having a

cross section that is generally circular in shape but having a flat surface along a chord of the circular cross section that extends the length of said cannula, whereby the secondary passageway is formed between the inside surface of the tube and the flat surface of the cannula, and wherein the tube includes means adjacent the first end thereof for preventing air or oxygen from escaping the secondary passageway below the first sealing means.

4,573,461
NASAL SEALER AND FILTER
Norman M. Lake, 1705 Newport Dr., Lancaster, Pa. 17602
Continuation-in-part of Ser. No. 288,056, Jul. 29, 1981, abandoned. This application Oct. 17, 1983, Ser. No. 542,715
Int. Cl.[4] A61M *16/00*
U.S. Cl. 128—201.18 **2 Claims**



1. A new process of employing a particular seal and filter for helping the human nose maintain its mucous membranes in good condition, the seal comprising an oblong ellipsoid shaped solid of soft pliable impervious material, the filter differing therefrom only by being porous, the steps of:

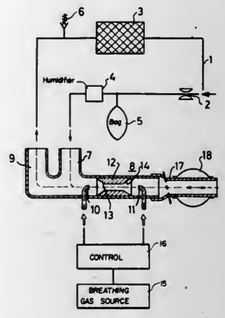
(a) inserting into each nasal cavity a solid seal to close off the nasal passages promptly when the nose is threatened by harmful material breathed therein as evidenced by sneezing, dripping nose and often a slight scratchy feeling in the throat, this being done for a period of 30 minutes or more for the purpose of invisibility, and preventing cool air, infectious and allergenic agents from entering the nose, while simultaneously increasing the temperature within the nose, thereby creating an environment therein that inhibits growth of the common cold virus and establishing in the nose a condition "having certain characteristics similiar to inflammation", but without the pain and suffering of inflamed and swollen membranes;

(b) then immediately following the 30 minutes or more time period, the solid seal in each nasal cavity is replaced by a filter of soft pliable, but porous, material of precisely the same size and shape as the nasal seal for trapping and minimizing harmful material entering the nose, this porous filter can be worn as long as desired with a minimum of discomfort; and,

(c) when the nose again is threatened by harmful material, the porous filter can be replaced with the solid seal in each nasal cavity for the time period as set forth above.

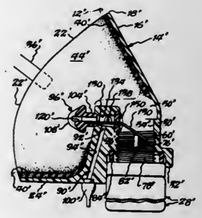
4,573,462
RESPIRATORY SYSTEM
Marcel Baum, Vienna, Austria, assignor to Drägerwerk Aktiengesellschaft, Fed. Rep. of Germany
Filed Apr. 4, 1984, Ser. No. 596,620
Claims priority, application Fed. Rep. of Germany, Apr. 16, 1983, 3313855
Int. Cl.[4] A61M *16/00*
U.S. Cl. 128—204.25 **7 Claims**

1. A respiratory gas system, comprising a ventilating gas source, a closed circuit respiratory gas ventilating circuit connected to said ventilating gas source and having pressure relief means therein and a gas feed part connected into said gas ventilating circuit, said feed part having one end with an inlet portion and an outlet portion connected into said closed circuit respiratory gas ventilating circuit such that gas flows through said inlet portion and outlet portion, said gas feed part having a tubular intermediate portion communicating with said inlet and outlet portion, a breathing gas source first and second jet nozzles connected to said breathing gas source and extending into said tubular opposite end portion at spaced locations therein dischargeable in respective opposite axial directions to supply breathing gas into said tubular opposite end portion



through said first and second jet nozzles, a patient connection means connected to said feed part at the opposite end thereof, and control means between said breathing gas source and said jet nozzles for alternately directing said breathing gas source to said jet nozzles so as to form suction areas in said feed part thereby inducing alternating, oppositely directed flows of the ventilation gas through said feed part between said closed circuit respiratory gas ventilation circuit and said patient connection means.

4,573,463
BREATHING MASK
Lester B. Hall, 249 Kinsey Ave., Kenmore, N.Y. 14217
Filed Aug. 2, 1982, Ser. No. 404,059
Int. Cl.[4] A62B *9/00, 18/02*
U.S. Cl. 128—205.24 **8 Claims**



1. Breathing apparatus comprising:

(a) a body in the form of a mask shaped to be worn over a portion of a user's face;

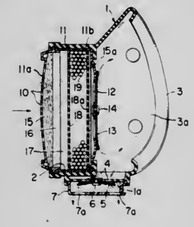
(b) a breathing passage formed in said body having an outlet at one end adapted to be in fluid communication with only the nose of the wearer and having an inlet at the other end thereof;

(c) a container holding a quantity of gas for breathing and having an outlet, said body having means for connection to said container with said container adjacent to and supported exclusively by said body and said container outlet being in fluid communication with said breathing passage inlet, said container releasing a flow of gas to said breathing passage and thereby to only the nose of the wearer;

(d) an exhalation passage defined by said body separate from said breathing passage having an inlet at one end adapted to be in fluid communication with only the mouth of the user so that the user does not inhale from and exhale to the same passage in said body, said exhalation passage having an outlet open to the atmosphere; and

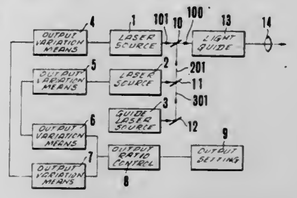
(e) holding means on said body connected to said exhalation passage inlet and adapted to be received between the teeth of the wearer in gripping engagement for holding said apparatus in place on the head of the user and adapted for sealing engagement with the mouth of the user for allowing the user to exhale exclusively therethrough from the mouth to the exhalation passage.

4,573,464
FILTER RESPIRATOR FOR PROTECTION AGAINST SMOKE AND TOXIC GASES
Bynyo Yo, 25-9, Kitamagome 2-Chome, Ota-Ku, Tokyo-To, Japan
Filed Aug. 4, 1982, Ser. No. 405,161
Claims priority, application Japan, Aug. 7, 1981, 56-123614
Int. Cl.[3] A62B *7/10*
U.S. Cl. 128—206.15 **7 Claims**



1. A respirator for protection against smoke and toxic gases, comprising a respirator body having means to cover the breathing passages of a user, means for attachment of said body to the head of a user, said body defining with the head of a user a breathing cavity, said body being provided with an inlet opening communicating the breathing cavity to a source of smoke and toxic gases, said opening shaped to detachably receive a cylindrical filter vessel, said body also having discharge ports, a discharge valve means attached over said discharge ports so as to open the discharge ports only when the user wearing the respirator exhales, a cylindrical filter vessel, said filter vessel being detachably received in said opening and further comprising an outer end wall with intake holes adjacent said source of gases and an inner end wall with intake ports adjacent said breathing cavity, an intake valve means attached over the intake ports of the inner end wall so as to open said intake ports only when the user wearing the respirator inhales, a noble-metal oxidizing catalyst disposed within said filter vessel adjacent to said inner end wall, an electrostatic smoke-filtering material comprising an unwoven fiberous material which has been subjected to electrostatic charging treatment, and an activated carbon fiber material, said smoke-filtering material and activated carbon fiber material being disposed within said filter vessel upstream from said noble-metal catalyst with respect to the flow of smoke and toxic gases from said intake holes to said intake ports, whereby smoke is prevented from arriving at the noble-metal catalyst.

4,573,465
LASER IRRADIATION APPARATUS
Seiji Sugiyama, Kanagawa; Norihiro Suenaga; Nobuyuki Suenaga, and Michihiro Kaneda, both of Kanagawa, all of Japan, assignors to Nippon Infrared Industries Co., Ltd., Tokyo, Japan
Filed Nov. 16, 1982, Ser. No. 442,082
Claims priority, application Japan, Nov. 19, 1981, 56-186165
Int. Cl.[4] A61B *17/36*
U.S. Cl. 128—303.1 **3 Claims**



1. A laser irradiating apparatus adapted for simultaneously or selectively irradiating laser beams on an object, comprising:

a plurality of laser sources each outputting laser beams of different wave-length;

optical means for co-axially overlapping the laser beams;

light guide means for transmitting the overlapped laser beams respectively to a desired portion of the object to be irradiated;

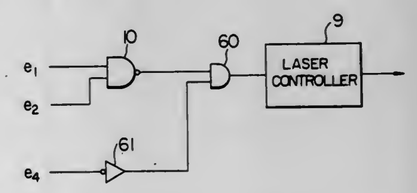
a plurality of laser output variation means, connected individually and respectively to each of the laser sources, for introducing a high voltage to each of the laser sources;

a plurality of laser output variation signal means, responsive to input signals, for controlling respective of the laser output variation means;

mixing ratio setting means for providing input signals to the laser output variation signal means to vary the output ratio of the plurality of laser sources; and

laser output setting means, connected to the mixing ratio setting means, for controlling said mixing ratio setting means to thereby set the outputs of the laser sources.

4,573,466
SURGICAL EQUIPMENT
Tamotu Simada, Akishima; Chiaki Shimbo, Mitaka; Hideyuki Horiuchi, Kokubunji, and Masamoto Takatsuji, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed May 28, 1982, Ser. No. 383,184
Claims priority, application Japan, May 29, 1981, 56-77241[U]; Apr. 7, 1982, 57-56609
Int. Cl.[4] A61B *17/36*
U.S. Cl. 128—303.1 **44 Claims**



1. A surgical equipment for producing a surgical output power from a hand piece, comprising

a hand piece connected to a source of surgical output power for applying said surgical output power to an object under operation;

sensing means provided on said hand piece for sensing an

operator holding said hand piece and providing an output in response to said holding;

control means responsive to the output of said sensing means for enabling said surgical output power to be produced; and

switch means for controlling the transmission of the surgical output power, said switch means providing an output signal when said switch means is activated, and wherein said control means includes logic means for receiving the output from said sensing means and the output signal from said switch means and allowing the output signal of said switch means to control the transmission of the surgical output power while said sensing means senses the holding of said hand piece.

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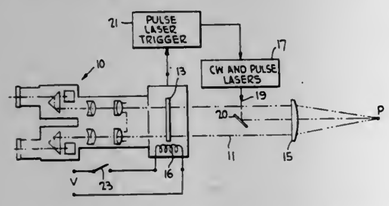
OPTICAL COUPLING DEVICE FOR BIOMICROSCOPE

Alan H. Rich, Ft. Washington; Douglas E. Gaasterland, Potomac, and Thomas E. Tedder, Silver Spring, all of Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed May 13, 1983, Ser. No. 494,378

Int. Cl.[4] A61B *17/36*; A61N *5/00*

U.S. Cl. 128—303.1 **15 Claims**



1. Apparatus for use in conjunction with a biomicroscope and a pulsed laser for delivering high power laser pulses to a living tissue site to effect medical treatment of that tissue, the apparatus comprising:

a housing;

mounting means for securing said biomicroscope to said housing to establish an observation path for said biomicroscope through said housing;

an objective lens secured to said housing in said observation path for focusing said observation path at said living tissue site;

means for delivering said high power laser pulses into said housing along a first laser beam delivery path;

a mirror assembly disposed in said housing and having a reflective surface disposed along said first laser beam delivery path for reflecting said high power laser pulses along a second laser beam delivery path extending through said objective lens, said mirror assembly further comprising means for selectively positionally controlling said reflective surface in each of three different directions to direct said high power pulses to be focused by said objective lens at said tissue site;

wherein said mirror assembly includes:

a shaft having: a longitudinal axis, a generally cylindrical portion at a first end, a pivot bearing at a second end, said pivot bearing having a generally convex configuration, and a mirror mounting section disposed intermediate said first and second ends and mounting said reflective surface;

shaft receiving means in said housing for receiving said generally cylindrical portion of said shaft in a journal-type engagement to permit rotation of said shaft about said longitudinal axis; and

a bearing pad secured to said housing and urged axially against said pivot bearing at said second end of said shaft.

4,573,468

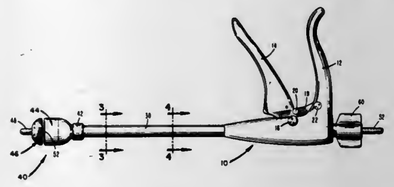
HOLLOW BODY ORGAN STAPLING INSTRUMENT AND DISPOSABLE CARTRIDGE EMPLOYING RELIEF VENTS

Robert L. Conta, and Harvey N. Wallach, both of Trumbull, Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Continuation of Ser. No. 967,421, Dec. 7, 1978, abandoned, which is a continuation-in-part of Ser. No. 800,965, May 26, 1977, abandoned. This application Aug. 26, 1981, Ser. No. 296,525

Int. Cl.[4] A61B *17/11, 17/32*

U.S. Cl. 128—305 **4 Claims**



4. Apparatus for joining the ends of two hollow tubular organ sections with an annular array of surgical staples extending through abutting, inwardly turned end portions of the organ sections, the operating portion of said apparatus being inserted longitudinally through a first of the organ sections and being withdrawn from the organ sections immediately after joining by pulling the apparatus longitudinally out through the first organ section, said apparatus comprising:

a longitudinal shaft assembly having a cylindrical outer surface characterized by a relatively small circumference;

actuator means mounted on the proximal end of the shaft assembly, said actuator means remaining outside the organ sections at all times;

a staple-holding assembly mounted on the distal end of the shaft assembly, the staple-holding assembly having a cylindrical outer surface characterized by a relatively large circumference selected to fit snugly within said first organ section, the staple-holding assembly containing an annular array of distally directed surgical staples which are driven in response to operation of the actuator means and having at least one vent hole extending from the interior of the staple-holding assembly to the exterior of the apparatus proximally of the cylindrical outer surface of the staple-holding assembly; and

an anvil assembly mounted for longitudinal reciprocal motion relative to the distal end of the staple-holding assembly in response to operation of the actuator means, the anvil assembly having a cylindrical outer surface characterized by said relatively large circumference, the anvil assembly being adapted to fit within the second organ section and to clamp the abutting, inwardly turned end portions of the organ sections against the distal end of the staple-holding assembly so that the anvil assembly clinches the ends of the surgical staples when they are driven from the staple-holding assembly through the clamped end portions of the organ sections, the anvil assembly having at least one vent hole extending from the interior of the anvil assembly to the exterior of the apparatus distally of the cylindrical outer surface of the anvil assembly, the anvil assembly vent hole communicating with the staple-holding assembly vent hole through the space between the interiors of the anvil assembly and the staple-holding assembly to facilitate insertion and withdrawal of the apparatus by allowing gases and liquids in the organ sections to flow around the portions of the apparatus having the cylindrical surfaces of relatively large circumference via the interior of those portions of the apparatus.

4,573,469

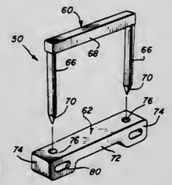
TWO-PIECE TISSUE FASTENER WITH COINABLE LEG STAPLE AND RETAINING RECEIVER AND METHOD AND INSTRUMENT FOR APPLYING SAME

Donald M. Golden, Cherry Hill, N.J., and William P. McVay, Clearwater, Fla., assignors to Ethicon, Inc., Somerville, N.J.

Filed Jun. 20, 1983, Ser. No. 506,151

Int. Cl.[4] A61B *17/04*

U.S. Cl. 128—334 C **8 Claims**



5. A fastener adapted to hold together separated portions of mammalian tissue, such as are defined by a wound or incision, to facilitate healing of the wound or incision, said fastener comprising:

an open loop fastening member, said fastening member comprising a pair of legs adapted to penetrate said tissue portions and a link connecting said legs that is adapted to lie substantially against one of said tissue portions;

a receiver adapted to be disposed against the other of said tissue portions opposite said fastening member, said receiver having means for receiving said fastening member legs after said legs have been inserted through said tissue portions, said receiver means including at least one passage in said receiver for receiving one of said fastening member legs, said receiver including a first aperture communicating from the exterior of the receiver with the interior of said passage and a second aperture opposite the first aperture communicating from the exterior of the receiver with the interior of said passage,

at least a portion of said legs consisting of a material that is initially deformable under the application of a predetermined amount of pressure to effect engagement of the fastening member legs and receiver after the tissue portions have been penetrated by said fastening member legs and after said legs have been received in said receiver.

4,573,470

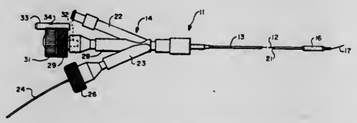
LOW-PROFILE STEERABLE INTRAOPERATIVE BALLOON DILITATION CATHETER

Wilfred J. Samson, Saratoga, and Jeffrey S. Frisbie, San Jose, both of Calif., assignors to Advanced Cardiovascular Systems, Inc., Mountain View, Calif.

Filed May 30, 1984, Ser. No. 615,141

Int. Cl.[4] A61M *29/02*

U.S. Cl. 128—344 **4 Claims**



1. In a low-profile steerable intraoperative balloon dilatation catheter, a flexible core wire having proximal and distal extremities, a flexible tubular member extending over the core wire and having proximal and distal extremities with the distal extremity being bonded to the distal extremity of the core wire to form a liquid-tight seal, a balloon carried by the distal extremity of the flexible tubular member, the flexible tubular member providing a lumen extending from the proximal end of the flexible tubular member and extending into the balloon, and an adapter secured to the proximal ends of the core wire and the flexible tubular member, the adapter having at least first and second arms with the core wire extending through the first arm and the lumen being in communication with the second arm, means carried by the first arm and secured to the core wire for permitting rotation of the core wire while limiting movement longitudinally of the axis of the core wire, the catheter having a length so that there is approximately a one-to-one correspondence jn rotation of the tip of the core wire with the rotation of the core wire at the proximal extremity.

4,573,471

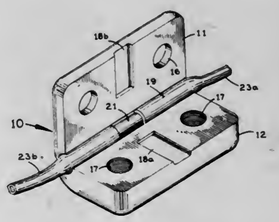
PROSTHETIC APPARATUS FOR SURGICAL ANASTOMOSIS

Merritt A. Rudner, 4191 NW. 41st St., Apt. #418, Lauderdale Lakes, Fla. 33319

Filed Jul. 9, 1984, Ser. No. 629,007

Int. Cl.[4] A61B *17/11*

U.S. Cl. 128—346 **15 Claims**



1. A joining system for the ends of organic tubular vessels to be anastomosed, the system comprising:

a tubule having an inside diameter substantially equal to the inside diameter of the ends of the vessels to be joined by being drawn over the ends of the tubule;

a clamp having an open and a closed position, consisting of two substantially planar clamp parts having between them a cylindrical channel for receiving and clamping walls of the ends of the vessel to the outside of the tubule;

means for drawing together said clamp parts into their closed position; and

means for monitoring the clamping pressure exerted against the walls of the vessel.

4,573,472

AUTOGENIC TRAINING AND TREATING APPARATUS

Yoshihiro Ito, 7-1 and 8 Gacchi, Imachi, Hanazono, Ukyo-ku, Kyoto, Japan

Filed Sep. 22, 1982, Ser. No. 421,643

Claims priority, application Japan, Sep. 25, 1981, 56-152417; Mar. 15, 1982, 57-41413

Int. Cl.[4] A61F *7/00*

U.S. Cl. 128—399 **20 Claims**

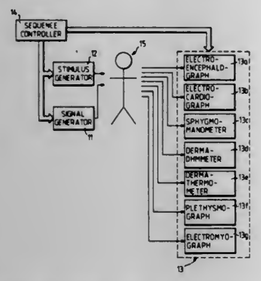
1. An autogenic training and treating apparatus comprising:

signal generating means for giving a subject a notification signal,

stimulus generating means for applying a stimulus to the subject's body, and

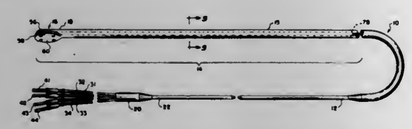
sequence control means for driving said signal generating means and said stimulus generating means in a sequence in accordance with a sequence program, wherein said sequence program causes (a) said notification signal to be generated periodically throughout the sequence, (b) said stimulus to be generated during a first stage of the se-

quence in regular correspondence with said periodically generated signal, and (c) said stimulus to be generated



during a second stage of said sequence only in intermittent correspondence with said periodically generated signal.

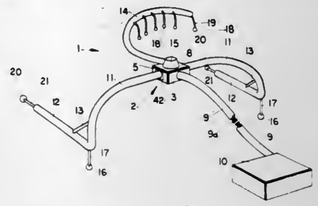
4,573,473
CARDIAC MAPPING PROBE
Stanley R. Hess, Miami, Fla., assignor to Cordis Corporation, Miami, Fla.
Filed Apr. 13, 1984, Ser. No. 599,950
Int. Cl.⁴ A61B *5/04*
U.S. Cl. 128—642 **15 Claims**



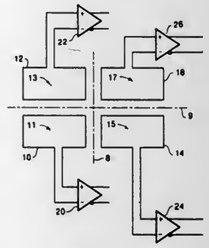
1. A cardiac mapping probe comprising: a lead body having a distal end, a distal end portion and a proximal end and comprising a tubular sheath, a head with a pad having a flat surface mounted at said distal end of said lead body, said pad being located on a side of said tubular sheath such that said flat surface of said pad faces radially outwardly from an elongate axis of said lead body, at least two electrodes on said flat surface of said pad, at least two wire conductors within said tubular sheath and extending the length thereof and being connected to said electrodes, and pliable, moldable means in the form of a ductile metal rod which has a coating thereon to prevent contamination of blood or body tissue with the metal of the rod, which is stiff but bendable, which is rounded at each end to provide said rod without sharp edges and which is mounted within said distal end portion of said lead body for providing said distal end portion with the capability of being formed into various shapes whereby it can be molded and formed into any desired configuration for facilitating holding of said distal end portion and placement of said at least two electrodes against a heart wall and can hold such configuration until remolded and reformed into another configuration.

4,573,474
CABLE HARNESS FOR AN ELECTROCARDIOGRAM DEVICE
James S. Scibetta, 255 Hosea Ave., #1, Cincinnati, Ohio 45220
Filed Jul. 27, 1984, Ser. No. 635,254
Int. Cl.⁴ A61B *5/04*
U.S. Cl. 128—644 **21 Claims**

1. A cable harness device for use with an EKG machine or the like comprising:
a central support unit;
at least one pair of laterally extending elongated arms mounted to said central unit, each of said arms supporting an EKG electrode for engagement with a patient's upper torso;
an elongated boom mounted to said central unit and supporting an EKG electrode for engagement with a patient's chest area; and
means for electrically connecting said electrodes to an EKG machine.



4,573,475
RECEIVING RADIATION FROM LOOPS IN A COMMON PLANE FOR MONITORING HOSPITAL PATIENTS LEADLESSLY
John N. Dukes, Los Altos Hills, Calif., and Edwin B. Merrick, Stow, Mass., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Filed Nov. 15, 1984, Ser. No. 671,399
Int. Cl.⁴ A61N *5/00*
U.S. Cl. 128—653 **8 Claims**

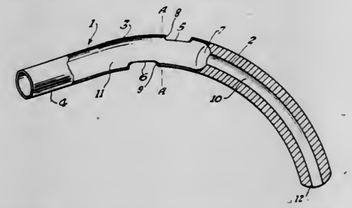


1. A system for receiving electromagnetic radiation comprising:
a plurality of electrically conductive wire loops in a substantially common plane, each of said plurality of electrically conductive wire loops producing a respective first signal in response to said electromagnetic radiation;
a plurality of receiving means for receiving said respective first signals, each of said plurality of receiving means being connected respectively to one of said plurality of electrically conductive wire loops; and
a plurality of combining means, each of said combining means being connected to said plurality of receiving means for selectively combining a plurality of said first signals to form an equivalent received signal from an equivalent antenna.

4,573,476
ANGIOGRAPHIC CATHETER
Oscar F. Ruiz, 3655 Bay Homes Dr., Coconut Grove, Fla. 33133
Filed Nov. 14, 1983, Ser. No. 551,561
Int. Cl.⁴ A61M *25/00*
U.S. Cl. 128—658 **5 Claims**

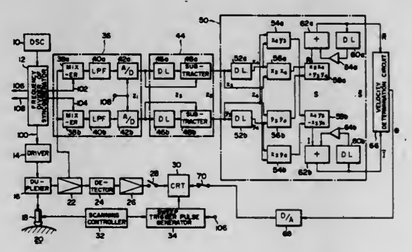
1. An improved angiographic catheter for injection of radio opaque contrast material intra vascularly comprising:
an elongated horizontal member;
an intermediate member said elongated horizontal member and said intermediate member including a lumen portion;

a tip zone member, including a smaller lumen portion, said smaller lumen having a constant diameter and opening out through the tip end, said members being functionally integral;
said intermediate member positioned between said elongated horizontal member and said tip zone member;
said intermediate member including at least a first and a second aperture;
said first aperture positioned between said tip zone member and said intermediate member;
said second aperture positioned between said first aperture and said elongated horizontal member;



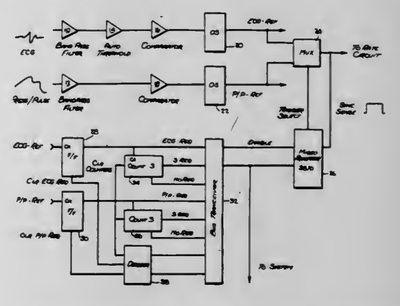
said aperture being of a size to permit approximately 70% of the contrast material to flow therethrough while the remaining 30% exits through the small lumen tip end, said side flow reducing shock to the blood vessel wall during angiographic procedures,
said intermediate member being curved from said elongated horizontal member at an angle of less than 90° and
said intermediate member being curved from said elongated horizontal member at an angle of less than 90° and having its free end space a short distance from the longitudinal axis of said elongated horizontal member.

4,573,477
ULTRASONIC DIAGNOSTIC APPARATUS
Koroku Namekawa; Akira Koyano, and Chihiro Kasai, all of Tokyo, Japan, assignors to Aloka Co., Ltd., Tokyo, Japan
Filed Apr. 21, 1983, Ser. No. 487,147
Claims priority, application Japan, Apr. 28, 1982, 57-70479
Int. Cl.⁴ A61B *10/00*
U.S. Cl. 128—663 **2 Claims**



1. An improved ultrasonic diagnostic apparatus including an ultrasonic probe means adapted to repeatedly transmit ultrasonic pulse beams into a living organism at a fixed pulse rate and means adapted to provide for reflected echoes to be received, amplified and displayed as the velocity of movement within the organism, the improvement comprising a complex signal converter means for converting a received high frequency signal into complex signals by mixing the received high frequency signal with a pair of complex reference signals which have frequencies that are integer multiples of the pulse rate and which are complexly related to one another, an autocorrelator means for determining the autocorrelation of said complex signal, said autocorrelator means having a time delay equal to an integer multiple of the period of the pulse rate, and a velocity determination circuit for determining the velocity utilizing said autocorrelation, whereby the velocity distribution of a moving member in the living organism is measured and displayed.

4,573,478
AUTOMATIC PULSE RATE TRIGGER-SOURCE SELECT CIRCUIT
Jeffrey M. Arnold, Ridgewood; James R. Brosnahan, River Edge; Terrence H. Koong, Teaneck; Thomas A. Mans, Harrington Park, and Theodore A. Milo, Teaneck, all of N.J., assignors to Datascope Corporation, New York, N.Y.
Filed Jul. 22, 1983, Ser. No. 516,266
Int. Cl.⁴ A61B *5/00*
U.S. Cl. 128—670 **4 Claims**



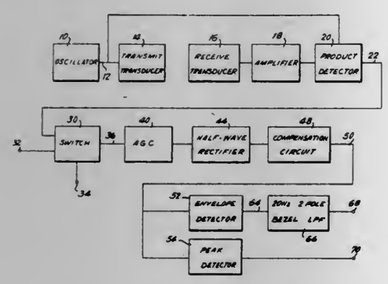
1. An automatic pulse rate trigger-source select circuit, for selecting between trigger pulses corresponding to an ECG heart rate signal source and trigger pulses corresponding to a pressure/pulse heart rate signal source, and for providing the selected trigger pulses as an output signal, comprising:
input means having inputs for being coupled to said original sources for generating said respective trigger pulses;
comparison circuit means, coupled to receive said trigger pulses from said input means, for comparing successive periods between trigger pulses for both of said sources to determine which of said sources is most accurately periodic, wherein said comparison circuit means provides an output instruction signal in correspondence with the said most periodic source, and wherein said comparison circuit means comprises a microprocessor programmed to provide a pair of timer functions for respectively counting up during a first of two successive heart beat periods for each of said sources, and for counting down during the second of said successive periods, and programmed to compare the final counts of said timer functions at the completion of said respective second periods; and
selecting circuit means, coupled to receive said trigger pulses from said input means, and coupled to receive said instruction signal from said comparison circuit means for selecting the trigger pulse corresponding to one of said sources of heart beat signals in response to said output instruction signal, and for providing the selected trigger pulses as an output signal corresponding to the selected source;
wherein said trigger pulses provided as an output signal are selected automatically in correspondence with the most periodic of said sources.

4,573,479

SYSTEMS AND METHODS FOR MONITORING THE FETAL HEART

Mark J. Tuccillo, Southington, Conn., assignor to American Home Products Corporation, New York, N.Y.

Filed Jun. 22, 1984, Ser. No. 623,735
Int. Cl.⁴ A61B *5/04*
U.S. Cl. 128—698 **13 Claims**



1. A method of producing an event signal representative of the recurrence of a fetal heart cycle event comprising the steps of:

supplying an input signal representative of fetal heart motions and corresponding to at least one fetal heart cycle;

sampling portions of the input signal;

deriving a comparison signal from the sampled portions of the input signal;

providing a correlation signal which has peaks and which represents a correlation function in time between sampled portions of the input signal and the comparison signal;

determining whether a fetal heart cycle is represented by one or two successive peaks of the correlation signal; and

producing said event signal in response to said determination.

4,573,480

IMPLANTABLE ELECTRODE LEAD WITH MICROPOROUS INSULATION

Jakub Hirschberg, Täby, Sweden, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Dec. 19, 1983, Ser. No. 562,756
Claims priority, application Fed. Rep. of Germany, Feb. 16, 1983, 3305271
Int. Cl.⁴ A61N *1/04*
U.S. Cl. 128—784 **14 Claims**



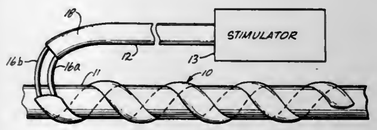
1. An implantable electrode lead of the type having an electrode tip for coupling an electrical stimulator with body tissue to be stimulated through the electrode tip, the implantable electrode lead comprising: a generally helically wound electrical conductor; at least one flexible, cylindrical insulating sleeve for coaxially encapsulating the electrical conductor to provide an insulator; and the insulating sleeve comprises a porous synthetic material that is polytetrafluoroethylene having a predetermined pore size that makes the insulating sleeve highly flexible and bendable while being essentially impervious to body fluids to prevent tissue growth thereon.

4,573,481

IMPLANTABLE ELECTRODE ARRAY

Leo A. Bullara, Glendora, Calif., assignor to Huntington Institute of Applied Research, Pasadena, Calif.

Filed Jun. 25, 1984, Ser. No. 623,981
Int. Cl.⁴ A61N *1/04*
U.S. Cl. 128—784 **19 Claims**



1. An electrode assembly for surgical implantation on a nerve of the peripheral nerve system, comprising:

a flexible helically formed supporting matrix of dielectric material;

a flexible conductive electrode secured to the surface of the matrix, the electrode having front and rear surfaces and side edges, the front surface being exposed and not covered by the matrix, the electrode occupying only a portion of the cross-sectional periphery of the matrix; and

flexible connection means connected to the electrode and extending from the matrix;

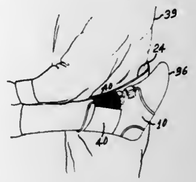
the matrix and electrode generally forming a multiturn hollow helix wibh a free end and without a supporting core, the turns being resiliently movable with respect to each other to enable the helix to be wrapped around an unsevered nerve, the helix having a central passage therethrough of size and configuration generally conforming to the external size and configuration of the nerve.

4,573,482

ARTHROSCOPIC SURGERY METHOD

J. Webster Williams, Jr., Jacksonville, Fla., assignor to Arthro-Medic, Inc., Jacksonville, Fla.

Continuation of Ser. No. 394,709, Jul. 2, 1982, abandoned. This application Apr. 16, 1984, Ser. No. 600,444
Int. Cl.⁴ A61F *3/00*
U.S. Cl. 128—804 **5 Claims**



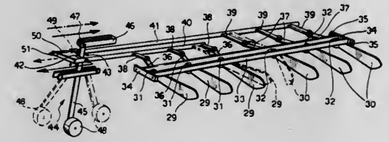
1. In a process in which a surgeon performs arthroscopic surgery on the knee of a patient the improvement which comprises placing around the foot of said patient a boot having means for releasably applying and snugly fastening said boot around the foot and lower leg of the patient whereby rotative movement of said boot will cause twisting of the leg and knee, said boot having a releasable fastener portion on its outside surface, placing around the waist of said surgeon a belt having a waistband with releasable fastening means at the two ends thereof to provide an adjustable snug fit around the surgeon's waist and having connecting means extending laterally of said belt and positioned generally midway between an end of the belt and a point halfway between said two ends, which include a releasable fastener portion adapted to releasably engage said fastener portion on said boot placing the patient's foot encased in said boot in a selected orientation against said belt adjacent one of said connecting means, wrapping said connecting means around said boot to engage said releasable fastener portions thereof whereby movement of said surgeons waist produces flexure or twisting of said knee.

4,573,483

COMBINE HARVESTERS

Giuseppe Raineri, Bassano del Grappa, Italy, assignor to Pietro Laverda S.p.A., Breganze, Italy

Filed Jun. 27, 1984, Ser. No. 625,165
Claims priority, application Italy, Nov. 30, 1983, 68257 A/83
Int. Cl.⁴ A01F *12/30*
U.S. Cl. 130—27 AE **3 Claims**



1. A combine harvester comprising:

a threshing unit;

a pair of contra-rotating transverse distributor screws for discharging downwardly produce received from the threshing unit and distributing it over the entire width of the harvester;

a transverse accelerator roller disposed below the two distributor screws to accelerate the fall of the produce;

a substantially vertical, fixed transverse wall located adjacent the accelerator roller and adapted to cooperate with the later to enable the acceleration of the produce;

a cleaning unit disposed below the accelerator roller and including a shaking box with at least two cleaning screens lying one above the other;

means for directing a current of air at the produce accelerated by the accelerator roller and the produce which falls onto the cleaning screens; and

means for deflecting the flow of produce accelerated by the accelerator roller toward the higher side of the harvester when the harvester is tilted sideways;

said deflector means including two series of deflector blades pivoted on a fixed structure of the harvester and extending below said accelerator roller for lateral pivotal movement about substantially vertical axes, each series of blades being disposed on opposite sides of the center of the harvester with each series of blades being moveable independently of the other series of blades, a single pendulum sensor device adapted to detect any lateral tilting of the combine harvester and a mechanical drive interposed between the single pendulum sensor device and each series of deflector blades to effect rotation of the lower series of blades toward the higher sides of the combine harvester while preventing rotation of the higher series of blades when the harvester is tilted sideways.

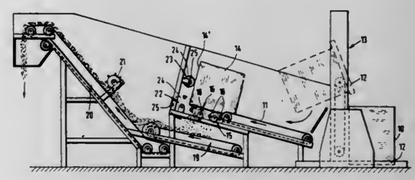
4,573,484

CHARGING DEVICE FOR OPENING AND DELIVERING LEAF-TYPE MATERIAL

Alfred Rüffer, Cologne; Peter Maubach, Brühl; Johannes Haas, and Horst Quester, both of Cologne, all of Fed. Rep. of Germany, assignors to Wilh. Quester Maschinenfabrik GmbH, Hürth, Fed. Rep. of Germany

Filed Aug. 20, 1984, Ser. No. 642,445
Claims priority, application Fed. Rep. of Germany, Jun. 14, 1984, 8418005[U]
Int. Cl.⁴ A24B *3/06*
U.S. Cl. 131—327 **18 Claims**

1. A charging device for opening and delivering leaf-type material comprising a conveyor, said conveyor having a discharge end, means for imparting movement to said conveyor to convey leaf-type material in a downstream direction of travel toward said discharge end, at least one means adjacent said discharge end and underneath the leaf-type material for establishing an arcuate path of travel along which a plurality of members move for intermittently successively underengagingly contacting and opening the leaf-type material during the movement thereof beyond said discharge end, and at least one means downstream of said opening means for establishing an arcuate path of travel along which a plurality of elements move for intermittently successively contacting and stripping, in opposition to the downstream direction of travel, the leaf-type material.

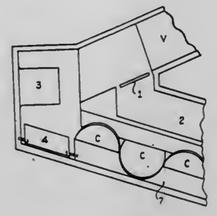


4,573,485

COIN RUNWAY WITH COIN SEQUENCING FACILITY

Charles L. Nye, St. Helens, England, assignor to The Plessey Company plc, Ilford, England

Filed Feb. 14, 1983, Ser. No. 466,026
Claims priority, application United Kingdom, Feb. 15, 1982, 8204381
Int. Cl.⁴ G07D *3/00*
U.S. Cl. 133—3 D **7 Claims**



1. A coin runway arrangement for accepting a sequence of coins of varying dimensions, said coin runway arrangement comprising:

coin validating means for allowing passage of select validated coins;

a coin storage section for receiving validated coins from the coin validating means, the coin storage section comprising two separate coin runways extending longitudinally in the same direction at an inclined angle to the horizontal and diagonally oriented at an angle with respect to each other about the centre of the longitudinal axis of each diagonal runway in the form of a cross; and

coin separating means located preceding the coin storage section in the path of the coins for separating validated coins into two distinct groups in accordance with their dimensions, each group including coins of different dimensions from the other group, and each group including coins of different dimensions from each other.

4,573,486

DEVICE FOR CLEANING CONTAINER FILLING MACHINES

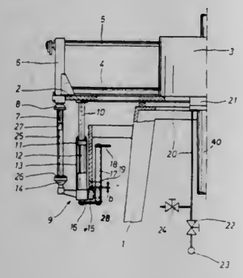
Wilhelm Weiss, Regensburg, Fed. Rep. of Germany, assignor to Krones AG Hermann Kronseder Maschinenfabrik, Neutraubling, Fed. Rep. of Germany

Filed Mar. 26, 1984, Ser. No. 593,233

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1983, 3311800

Int. Cl.⁴ B08B *9/00*

U.S. Cl. 134—104 **5 Claims**



5. A canister means adapted to substitute for a bottle in a bottle filling machine during circulation of cleaning fluid through the machine, said machine including filler valves and platform means aligned therewith, means for exerting a continuous upward force on said platform and means for periodically reciprocating said platform means vertically to raise a bottle and lower the bottle to a first lower limit to correspondingly couple and uncouple the bottle and said filler, said reciprocating means being operative when said platform is free to move between lower and upper limits,

said canister means comprising a pipe element having an axial length greater than the height of said bottle for being interposed between said platform and filler valve when said force is temporarily removed so that said platform means is at a second lower limit and lower than said first lower limit, restoration of said force causing said canister on the platform to couple in pressure relation with said filler valve and said platform to move to a position between said second and first lower limits at which position said reciprocating means becomes disabled.

4,573,487

UMBRELLA FRAME WITH SLIDER RELEASE MECHANISM

Tilmann Schultes, Solingen, and Klaus Stiller, Langenfeld, both of Fed. Rep. of Germany, assignors to Kortenbach & Rauh Kommanditgesellshaft, Solingen, Fed. Rep. of Germany

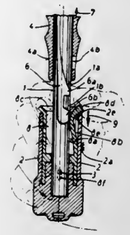
Filed Nov. 23, 1984, Ser. No. 674,323

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1983, 3345725

Int. Cl.⁴ A45B *25/14, 25/08*

U.S. Cl. 135—24 **6 Claims**

1. In an umbrella frame comprising a stick, a handle fixed to said stick, a slider slidable along said stick, a locking member arranged to lock said slider relative to said stick, and a trigger sleeve carried by said handle and arranged to have an operative axial movement relative to said stick from a first position to a second position, said trigger sleeve cooperating with said locking member whereby said operative axial movement of said trigger sleeve operates said locking member and thereby releases said slider for sliding movement on said stick; the improvement comprising: a pair of manually operated, integrated trigger means consisting of said axially movable trigger sleeve comprising a primary trigger and a radially, inwardly-operated spring element on said primary trigger which comprises a secondary trigger, said primary and secondary triggers projecting from said umbrella handle in a position adjacent said locking member, said secondary trigger being manually-displacable to engage and operate said locking member independently of said primary trigger being located to move radially to engage and operate said locking member, said radial movement resulting from said secondary trigger operative axial movement of said primary trigger.



4,573,488

ADDITIVES FOR NONAQUEOUS LIQUIDS

Donna B. Carville, Plaquemine; Edwin R. Feig, Baton Rouge; Gene D. Rose, Midland, and Mary H. Pulliam, Baton Rouge, all of La., assignors to The Dow Chemical Company, Midland, Mich.

Filed Apr. 12, 1984, Ser. No. 599,317

Int. Cl.⁴ C09K *3/00*; F17D *1/16, 1/18*

U.S. Cl. 137—13 **24 Claims**

1. A process for reducing the friction loss in nonaqueous liquids flowing through conduits comprising adding to the nonaqueous liquid an amount effective to reduce friction of a homopolymer of butylene oxide or a copolymer comprising butylene oxide and a $C_{2\text{-}25}$ vicinal epoxide wherein the homopolymer or copolymer has a molecular weight from about 1 million to about 10 million amu.

4,573,489

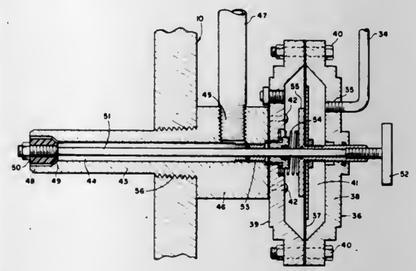
DUMP VALVE

Lewis M. Carlton, Tulsa; Bob L. O'Mary, Claremore, and Teddy H. Cruse, Broken Arrow, all of Okla., assignors to Murphy Management, Inc., Tulsa, Okla.

Continuation-in-part of Ser. No. 586,838, Mar. 6, 1984, Pat. No. 4,505,288. This application Dec. 12, 1984, Ser. No. 680,896

Int. Cl.⁴ E03B *7/12*; F16K *31/145, 33/00*

U.S. Cl. 137—59 **4 Claims**



1. A dump valve for dumping liquid from the bottom of a tank comprising an elongated valve body insertble into the lower end of said tank so that said valve body extends deeply into said tank to prevent freezing of the liquid within the valve, the innermost portion of said valve body having an inner port communicating with the interior of said tank, said valve body having a portion extending exterior of said tank when said body is inserted into said tank, said valve body having a central axial bore extending therethrough and communicating with the inner port for directing liquid away from said tank, a drain passage connected to the exterior portion of said valve body and communicating with the axial bore for draining liquid from the tank, a pair of head plates connected to the exterior portion of said valve body, said head plates being connected to each other and forming a diaphragm chamber therebetween, a diaphragm held in sealed clamping engagement between the head plates and dividing the chamber into two separate compartments sealed from each other, an elongated valve stem extending within said axial bore from an inner end adjacent said inner port to an outer end which extends through one of said plates and is connected to said diaphragm, a valve closure element mounted on the inner end of said valve stem and adapted to seat in said inner port to close the same, and a pressure conduit connected to one of said compartments for exerting pressure against said diaphragm to move said stem axially to open said inner port to drain liquid from said tank in response to a liquid level condition.

4,573,490

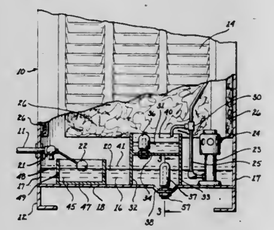
APPARATUS FOR THE AUTOMATIC PURGING OF THE RESERVOIR IN A WATER RECIRCULATION SYSTEM

Robert B. Kaletsky, 2009 N. 46th St., Phoenix, Ariz. 85008

Filed Mar. 19, 1984, Ser. No. 591,042

Int. Cl.⁴ F04F *10/00*

U.S. Cl. 137—124 **7 Claims**



1. Automatic purge apparatus for a fluid recirculation system containing fluid utilization means which comprises:

(a) a primary reservoir having input and output ports;

(b) fluid regulating means for controlling entry of fluid through said input port;

(c) pump means located in fluid communication with the primary reservoir, the actuation of the pump means initiating the circulation of fluid through the system;

(d) a secondary reservoir for receiving a portion of the fluid circulating through said system;

(e) diversion means in fluid communication with said pump means for diverting a portion of the fluid therefrom to the secondary reservoir;

(f) primary relief means located at the output port of the primary reservoir, said primary relief means purging the primary reservoir when the fluid therein reaches a first level; and

(g) secondary relief means mounted in the secondary reservoir for removing fluid therefrom when said fluid reaches a predetermined level, said relief means directing at least a portion of the contents of the secondary reservoir into said primary reservoir.

4,573,491

TUBE SEPARATOR

Hans Arens, Wertingen; Hans Kern, Vachendorf, and Richard Haslberger, Hufschlag, all of Fed. Rep. of Germany, assignors to Grunbeck Wasseraufbereitung GmbH, Hochstadt, Fed. Rep. of Germany

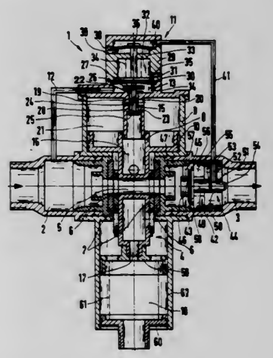
PCT No. PCT/EP83/00338, § 371 Date Aug. 14, 1984, § 102(e) Date Aug. 14, 1984, PCT Pub. No. WO84/02544, PCT Pub. Date Jul. 5, 1984

PCT Filed Dec. 15, 1983, Ser. No. 640,765

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1982, 3247325

Int. Cl.⁴ E03C *1/10*

U.S. Cl. 137—218 **11 Claims**



1. A tube separator comprising

a housing having an inlet side and an outlet side,

shut-off means connecting said inlet side with said outlet side in a first position and separating said inlet side from said outlet side in a second position,

pilot valve means having a first inlet connected with said inlet side and a second inlet connected with said outlet side and connecting said shut-off means with said inlet side in a first switching position and with a chamber having a pressure which is smaller than a predetermined pressure of the medium at the inlet side in a second switching position as a function of the difference of the pressure at said first and second inlet,

and valve means provided between said second inlet and said outlet side for releasing the connection between said second inlet and said outlet side only if the flow pressure of the medium passing through said tube separator in said first position of said shut-off means falls below a predetermined pressure.

4,573,492

DISCHARGE CONTROL VALVE

Yoshiharu Tadokoro, Sakai, Japan, assignor to Kurimoto, Ltd., Osaka, Japan

Filed Jul. 20, 1984, Ser. No. 632,773

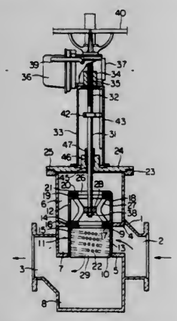
Claims priority, application Japan, Aug. 12, 1983, 58-125110

Int. Cl.⁴ F16K *1/44, 11/07*

U.S. Cl. 137—239 **5 Claims**

1. A discharge control valve, comprising: a valve casing which has an inlet port on one side and an outlet port on the other side and has means defining a chamber therein, said casing having upper and lower partition walls which extend horizontally across said chamber with a fixed vertical distance therebetween and divide said chamber into an upper chamber located above said upper partition wall, an inlet chamber located between said partition walls and in fluid communication with said inlet port, and an outlet chamber located below said lower partition wall and in fluid communication with said

outlet port; and a cylindrical valve body having upper and lower ends and having a passageway which extends between and opens through said upper and lower ends, said valve body being axially slidable in first and second passage holes which are respectively provided in said upper and lower partition walls and which each have an annular surface adapted to slidably engage a cylindrical peripheral surface of said valve body, said valve body having an elongate, axially extending valve shaft which extends slidably and sealingly through an opening provided in a top wall portion of said valve casing at an upper end of said upper chamber, a lower portion of said valve body being a discharge control portion having a plurality of small holes in its peripheral surface which communicate with said passageway therethrough, and an upper portion of said valve body being a shutter portion having a peripheral



wall which is free of openings therethrough; wherein when a lower end of said discharge control portion is axially aligned with said second passage hole a middle portion of said valve body between said shutter portion and said discharge control portion is axially aligned with said first passage hole; wherein when an upper end of said shutter portion is axially aligned with said first passage hole said middle portion is axially aligned with said second passage hole; wherein when said lower end of said valve body is engaging a bottom wall portion of said casing at a lower end of said outlet chamber said upper end thereof is within said inlet chamber at a location spaced below said upper partition wall; and wherein when said upper end of said valve body is engaging said top wall portion of said casing said lower end of said valve body is within said inlet chamber at a location spaced above said lower partition wall.

4,573,493

SEQUENTIALLY CONTROLLED WATER MIXER

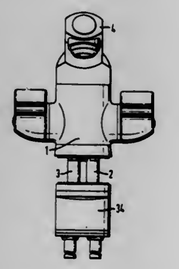
Gösta Hammarstedt, Alstermo, Sweden, assignor to Arcu Armaturindustri AB, Alstermo, Sweden

Filed Mar. 13, 1984, Ser. No. 589,016

Claims priority, application Switzerland, Mar. 17, 1983, 1470/83

Int. Cl.⁴ F16K *43/00, 37/00, 19/00*

U.S. Cl. 137—315 **7 Claims**



1. A sequentially controlled water mixer comprising a valve housing with a cold water inlet connection on one side of the mixer, a hot water inlet connection on another side of the mixer, and a common outlet, said housing defining a mixing chamber between the inlet connections and said outlet and a regulating chamber located on the inlet side of the mixing chamber, and a rotationally adjustable regulating switching valve housed in the regulating chamber and having regulating apertures, said valve being manually adjustable by at least one operating member which can be set relative to said switching valve to control flow through the connections via said apertures, the inlet connections defining recessed holes which are of larger dimension than respective cold and hot inlet pipes to be connected therewith, a compression spring and a seal in each hole, a sealing surface of the seal being pressed by the spring into contact with said switching valve, said sealing surface following the contour of said switching valve, said seal defining a through hole for said inlet connection and peripheral holes for retaining a lubricant inserted therein, and a connecting device into which the inlet connections, in the form of short lengths of pipe, can be inserted, sealing means being provided for sealing the inlet connections with the connecting device, the valve housing defining an aperture which accommodates a respective axial pin, and further comprising a gland provided with an external O-ring and external position indicators corresponding to internal position indicators in said aperture, stops are provided on the inner surface of the gland, one for an open position and one for a closed position, said stops comprising stop projections in the bore of said at least one operating member, and a means projecting from the bore for coacting with an indicator tab projecting from the inner surface of said gland between the stops to indicate valve positions.

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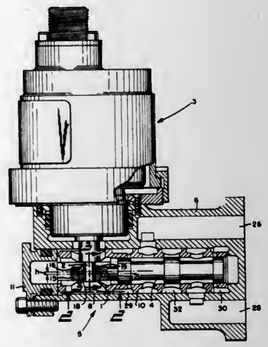
SPHERICAL BALL DRIVE MECHANISM FOR A DIRECT DRIVE VALVE

Kenneth C. Spurbeck, Kalamazoo, Mich., assignor to Pneumo Corporation, Boston, Mass.

Filed Jan. 28, 1985, Ser. No. 695,700

Int. Cl.⁴ F16K *31/52*

U.S. Cl. 137—331 **11 Claims**



1. In combination, a linear valve member and a rotary force motor, and a spherical ball drive mechanism for directly coupling said rotary force motor to said valve member, said spherical ball drive mechanism comprising a spherical bearing assembly attached to said valve member, said spherical bearing assembly comprising an outer race member having a concave spherical inner bearing surface, said outer race member having a longitudinal axis substantially perpendicular to the longitudinal axis of said valve member and a transverse center axis radially offset from the longitudinal axis of said valve member, and a spherical bearing member received in said outer race member, said spherical bearing member having a convex spherical outer bearing surface complementary to the concave spherical inner bearing surface of said outer race member, and said rotary force motor having an eccentric output shaft extending substantially perpendicular to the longitudinal axis of said valve member for connection to said spherical bearing member.

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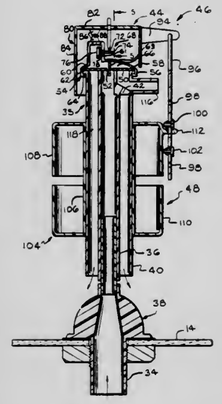
HYDROSTATIC BALLCOCK ASSEMBLY

Charles T. Rothe, Locust St., Providence, Ky. 42450, and Larry D. Gish, Rte. 2, Box 150A, Robards, Ky. 42452

Filed Nov. 21, 1984, Ser. No. 673,980

Int. Cl.⁴ F16K *31/34, 33/00*

U.S. Cl. 137—414 **10 Claims**



1. In a ballcock assembly having an upright standpipe for delivering flush water, said standpipe having an upper discharge end, a control valve assembly for controlling the flow of water from the standpipe, said control valve assembly comprising a housing having an annular bottom wall which extends about said standpipe upper end and a top wall having a water discharge opening, a diaphragm valve member supported at its radially outer edge on said housing bottom wall, said valve member cooperating with said housing top wall to form a vent valve chamber therebetween in said housing, said valve member having an opening therein enabling water to flow into said vent valve chamber from said standpipe, a vent valve member in said chamber movable between a closed position closing said top wall water discharge opening and an open position enabling flow of water out of said chamber through said discharge opening, said vent valve member comprising a seat located in said valve chamber and a stem extending outwardly through said opening in said housing top wall, actuator means movably mounted on said housing in a spaced relation with said vent valve member and engageable with said stem, a portion of said actuator means being adjustable at various points along the length of said stem to vary the magnitude of the valve opening force applied to said stem when said vent valve member is moved to an open position, and float means operatively associated with said vent valve member and operable to provide for movement of said actuator means on said housing into engagement with said stem to move said vent valve member from closed to open position, said vent valve member operating in the closed position to provide for movement of said diaphragm member to a position closing the discharge end of said standpipe and in the open position to provide for movement of said diaphragm member to a position opening the discharge end of said standpipe.

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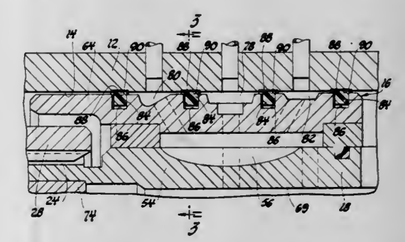
HYDRAULIC POWER STEERING GEAR AND ROTARY VALVE THEREFOR

Dennis J. Richard, Linwood, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 18, 1984, Ser. No. 601,499

Int. Cl.⁴ F16K *11/12, 11/085;* **F16J** *9/24*

U.S. Cl. 137—625.21 **6 Claims**



1. A power steering gear for a vehicle comprising a metallic housing having a smooth wall cylindrical bore formed therein, said housing having hydraulic inlet and outlet ports for operative connection to a hydraulic pump and to a sump for the hydraulic pump, said housing having a plurality of fluid passages extending through the wall of said housing to the bore therein, a rotary valve assembly rotatably mounted in said bore for supplying fluid pressure to said fluid passages, a rotatable steering gear input, said rotary valve assembly comprising a valve spool operatively connected to said steering gear input and a cylindrical valve body operatively mounted on said valve spool and within said valve bore, said valve body having a plurality of laterally spaced annular seals rotatably mounted on the outer periphery of said valve body and discrete texturized gripping surface means on the wall of said bore for directly contacting the outer periphery of said seals to inhibit said seals from rotating relative to said bore and so that said seals will rotate relative to said valve body to thereby reduce wear of cylindrical wall of said bore by said seals as said input is rotated.

4,573,497

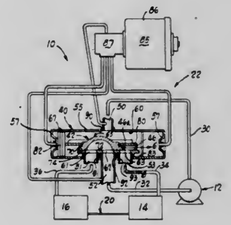
REFRIGERANT REVERSING VALVE

Lee A. White, Marysville, Ohio, assignor to Ranco Incorporated, Dublin, Ohio

Filed Aug. 23, 1984, Ser. No. 643,475

Int. Cl.⁴ F16K *31/122*

U.S. Cl. 137—625.29 **19 Claims**



1. A refrigerant flow reversing valve comprising:

(a) a tubular valve body defining a first port for communicating with the discharge of a refrigerant compressor, a second port for communicating with the compressor inlet and third and fourth ports for communicating with heat exchangers in the refrigeration system;

(b) a valving member supported by said body for movement

with respect to said ports so that in a first position of said valving member refrigerant flows through said valve from said first port to said third port and from said fourth port to second port and in a second valve member position refrigerant flows from said first port through said fourth port and from said third port through said second port;

(c) refrigerant flow tubes hermetically fixed to said reversing valve body and respectively associated with said ports for directing refrigerant flows through said valve from the refrigeration system said flow directing tubes; and,

(d) heat transfer blocking means immediately adjacent said valve body for minimizing heat flow between said valve body and refrigerant in the flow tubes associated with said second, third and fourth flow tubes adjacent said valve body.

4,573,498

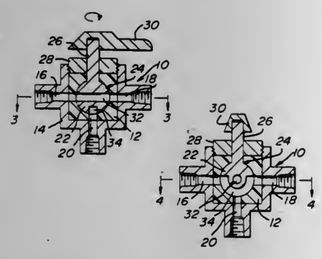
BALL VALVE

Albert R. Ludwig, Holiday, Fla., assignor to General Signal Corporation, Stamford, Conn.

Filed Mar. 29, 1984, Ser. No. 594,646

Int. Cl.⁴ F16K *11/087, 5/20*

U.S. Cl. 137—625.47 **3 Claims**



2. A ball valve comprising:

a valve body having an inlet port and outlet port of the same diameter and aligned along the same axis and a drain port aligned along an axis normal to that of said inlet and outlet ports; and

a ball stem having a ball end and a stem end, said ball stem being mounted in said valve body for rotation therein about its axis, said stem axis being aligned with the axis of said drain port with the stem extending from the valve body 180° from the drain port, and the ball end of said stem having

a through hole of the same diameter as said inlet and outlet ports and aligned with said ports when said stem is in a first rotational position to provide unrestricted flow between said inlet and outlet ports,

a slot extending over 180° of the periphery of said ball end in a plane normal to the axis of said through hole, said slot providing drainage from both the inlet and outlet ports through the drain port when said stem is in a second rotational position 90° from said first rotational position.

4,573,499

WEFT DETECTION STOPPER FOR LOOMS

Katsuhiko Sugita, Kanazawa, Japan, and Makoto Uehara, Charlotte, N.C., assignors to Tsudakoma Kogyo Kabushiki Kaisha, Japan

Filed Mar. 27, 1984, Ser. No. 593,817

Claims priority, application Japan, Apr. 1, 1983, 58-058297

Int. Cl.⁴ D03D *51/34*

U.S. Cl. 139—370.2 **9 Claims**

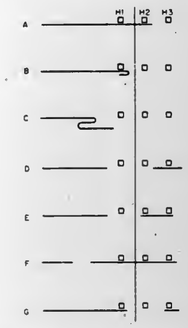
7. An apparatus for controlling the operation of a loom in response to the detection of weft defects, comprising:

a plurality of weft detection units arranged side-by-side on a loom along the path of weft travel for producing a plurality of defect signals each representative of a weft defect in a cloth being woven;

means for generating a plurality of mend signals each representative of the correction of a weft defect in the cloth being woven;

a reversible counter having an up-terminal connected to said weft detection units for accumulation of said defect signals, and a down-terminal connected to said means for generating a plurality of mend signals for subtracting said mend signals from said accumulation, said counter generating a stop signal when said accumulation exceeds a threshold value; and

a loom stop circuit responsive to said reversible counter for controlling the operation of the loom.



4,573,500

FLAME-RESISTANT FABRICS

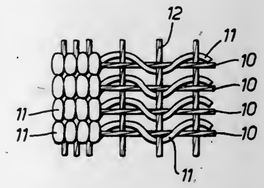
Allan B. Douglas, Hawick, Scotland, assignor to British Replin Limited, Ayr, Scotland

Filed Jun. 12, 1984, Ser. No. 619,912

Claims priority, application United Kingdom, Jun. 14, 1983, 8316172

Int. Cl.⁴ D03D *15/12, 23/00*

U.S. Cl. 139—426 R **2 Claims**



1. A single-layer woven fire-resistant furnishing fabric comprising:

standing warps of a fire-resistant yarn,

a covering warp of a wear-resistant yarn cross-woven on each standing warp,

wefts of a fire-resistant yarn binding the covering warps on one side only of the standing warps,

a ribbed wear-resistant outer surface to the fabric formed by the beating-up to the fell of the covering warps and the wefts, after each pick, and

a fire-resistant grid formed by the standing warps and the wefts, after said beating-up, said fire-resistant grid not being exposed on said ribbed wear-resistant outer surface until said covering warps are removed by fire.

4,573,501

APPARATUS FOR CUTTING AND FORMING LEADS

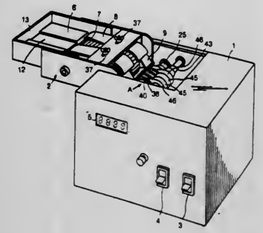
Harumi Furuya, Tokyo, Japan, assignor to Henry Mann, Inc., Huntingdon Valley, Pa.

Continuation-in-part of Ser. No. 522,064, Aug. 10, 1983, abandoned. This application Aug. 30, 1984, Ser. No. 645,944

Claims priority, application Japan, Oct. 30, 1982, 57-191178

Int. Cl.⁴ B21F *1/02*

U.S. Cl. 140—147 **10 Claims**



1. An apparatus for cutting and forming part leads comprising a feeder, a cutter, a former, and a hopper,

said hopper including a receiver, a belt conveyor arranged adjacent to said receiver and operated by a driven belt wheel, a pair of covers each of which has a guide portion and a straight portion, said covers being disposed above the belt conveyor in such a manner that the distance between said covers can be adjusted according to the length of the part body of the parts to be handled, and a pair of guides located in the proximity of said belt conveyor and spaced wider apart than the width of said belt conveyor

said feeder including a pair of feed wheels having peripheral teeth at a predetermined pitch and spaced apart the same distance as said straight portions of said covers and mounted on a shaft, so as to be shifted in position relative to each other, and a similar pair of outer feed wheels shiftably mounted on the same shaft on the outer sides of said feed wheels and at distances where the leads connected to each part body are to be cut,

said cutter including a pair of guide holders shiftably mounted on a shaft generally in alignment with, and close to, said outer feed wheels, and cutting blades installed on the inner sides of said guide holders, with their edges extended beyond the dedendum circles of said outer feed wheels, and

said former including a pair of bender holders shiftably mounted on said cutter shaft generally in alignment with, and close to, said feed wheels, and a pair of benders mounted on said same shaft on the outer sides of said bender holders, each said bender being provided with a leaf spring which is wide enough to cover at least the periphery of the associated feed wheel, from the dedendum circle to the tooth tops thereof, so as to bend and form each lead in each tooth space of said feed wheel with the revolution of said wheel.

4,573,502

CONTAINER FILLING APPARATUS AND METHOD

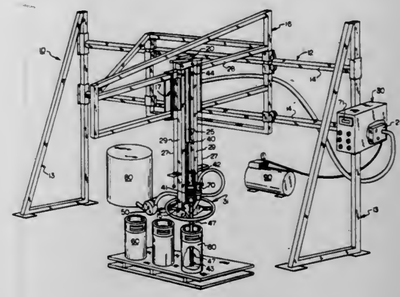
Byron H. Hurley, Julian, and Walter G. Ricks, Pleasant Garden, both of N.C., assignors to Byron H. Hurley, Pleasant Garden, N.C.

Filed Oct. 9, 1984, Ser. No. 658,669

Int. Cl.⁴ B65B *3/04*

U.S. Cl. 141—1 **11 Claims**

7. A method of filling a container with liquid comprising: positioning filling means over a container, manually activating a switch, setting brake means while lowering said filling means into the container, directing liquid into the container from the filling means, sending a pulse to a counter while directing the liquid into the container and raising said filling means while directing the liquid into the container.



4,573,503

INK DROPPER CLOSURE

Bernhard Bruhn, Halstenbek, Fed. Rep. of Germany, assignor to Koh-I-Noor Rapidograph, Inc., Bloomsbury, N.J.

Filed Sep. 28, 1984, Ser. No. 655,604

Claims priority, application Fed. Rep. of Germany, Oct. 10, 1983, 8329184[U]

Int. Cl.⁴ B65B *3/12*

U.S. Cl. 141—24 **7 Claims**

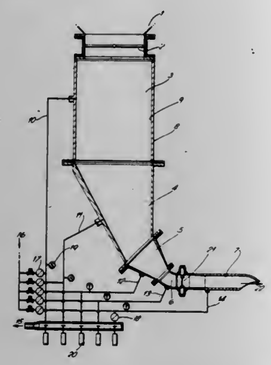
1. In a container having a closure element further comprising an axially extending dropper, characterized by a suction element joined to the closure element and comprised of an elastically deformable material, accessible from outside of the closure element proximate its posterior region, and communicating to a suction tube at its anterior end, the improvement which comprises a sealing element means extending transversely from the suction element at an axial location that is anterior to a location where the suction element is joined to the closure element, and adapted to seal against the upper rim of said container opening, wherein said suction element further comprises a section adapted elastically to be deformed and shortened from its normal length in the axial direction thereby to define a volume decrease within said suction element, wherein further said deformable section (8) extends between said sealing means (7) and a connecting means (6) for said joining of the suction element to the closure element (3) and preventing axial motion therebetween, whereby, when the closure element (3) is axially moved into a sealing position upon the container (1), the axial length of said section is made shorter, and the suction element volume decreases in order to create a reproducible suction effect at the anterior end of the suction tube as the closure element (3) axially is removed out of contact with the container (1).

4,573,504

EQUIPMENT FOR THE REMOVAL OF AIR OUT OF PULVERULENT MATERIALS

Pertti Rosenström, Kyminlinna, Finland, assignor to Erkomat Oy, Kotka, Finland

Filed May 11, 1984. Ser. No. 609,130
Claims priority, application Finland, May 11, 1983, 831654
Int. Cl.⁴ B65B *1/04*
U.S. Cl. 141—59 **4 Claims**



1. Equipment for the removal of air from pulverulent materials before the product is packaged or transferred, said equipment comprising a storage container out of which the pulverulent material to be packaged flows readily into a packaging vessel placed underneath, a porous face of lining material being provided at a distance from a gas tight exterior wall of the packaging vessel substantially over the entire length of the packaging vessel, said lining material, permitting either removal of air from the packaging vessel or feeding pressurized air into the packaging vessel through the space between the exterior wall of the packaging vessel and said porous face of the lining material the space between the exterior wall of the packaging vessel and the face of the lining material being divided air-tightly, in the direction of progress of the pulverulent material, by partition walls into at least two compartments separate from each other, means for individually, selectively connecting a suction or a pressure of a desired magnitude to each of said compartments independently from each other.

4,573,505

CONTAINER WASHING AND FILLING MACHINE

Graham L. Lee; Jeffrey R. Shuttlewood, both of Kent, and John W. Ambrose, Rainham, all of United Kingdom, assignors to APV Burnett & Rolfe Ltd., Rochester, England

Filed Apr. 13, 1984, Ser. No. 600,285
Claims priority, application United Kingdom, Apr. 20, 1983, 8310665
Int. Cl.⁴ B65B *3/04*; B67C *3/26*
U.S. Cl. 141—92 **20 Claims**

15. A container washing and filling machine for washing and filling blow moulded containers having an open-ended neck surrounded by a collar, said machine including: only a single head through which both washing and filling liquids are introduced into said container through its said open-ended neck;

means to supply a washing liquid to said single head;

means to supply filling liquid to said single head;

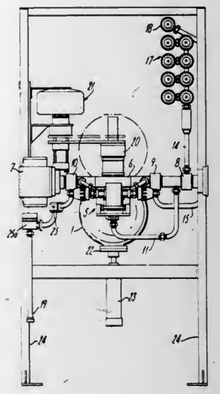
a clamping device arranged to engage and hold said open-ended neck of said container in fluid-tight sealing engagement with said single head; and,

moving means to move said single head and said clamping device together with said container being treated between a washing position wherein said container is inverted and a filling position wherein said container is erect, said fluid-tight sealing engagement between said single head and said open-ended neck of said container being maintained during said movement;

said clamping device comprising a movable body;

a fluid pressure operated ram, said fluid pressure operated ram acting between said body and said single head to move said body with respect to said head;

at least two claws, said claws being pivotally connected to said movable body;



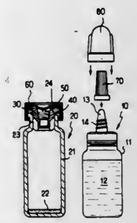
and fulcrum means, said fulcrum means engaging said claws whereby downwards movement of said body caused by said ram carries said claws downwards and reaction from said fulcrum means closes said claws behind said collar on said neck of said container, further downwards movement of said body caused by said ram causing engagement of said claws with said collar and urging said container downwards to move said open ended neck of said container into fluid-tight sealing engagement with said single head.

4,573,506

TWO-BOTTLE ASSEMBLY FOR PREPARING AND DISPENSING A SOLUTION

Jean-Claude Paoletti, Volvic, France, assignor to Laboratories Merck Sharp & Dohme - Chibret, Paris, France

Filed Sep. 17, 1984, Ser. No. 651,019
Claims priority, application France, Sep. 26, 1983, 83 15249
Int. Cl.⁴ B65B *3/04*
U.S. Cl. 141—98 **10 Claims**



1. An assembly for preparing and dispensing a solution obtained from two components of which at least one is liquid, wherein it comprises:

a first bottle containing the first liquid component, of which the neck terminates in an elongated head traversed by a longitudinal conduit placing the interior of the bottle in communication with the outside,

a second bottle containing the second component, liquid or solid,

a stopper for this second bottle, presenting on its outer face a recess whose shape is homologous of that of the head of the first bottle, and of which the bottom is separated from the interior of the second bottle only by a thin membrane of elastically deformable material,

this membrane further having an axial orifice passing therethrough, which is hermetically closed, in the absence of deformation of the membrane, by the natural radial constriction of the material constituting the membrane,

the penetration of the head of the first bottle into the recess of the stopper producing an axial deformation of the membrane and a radial distension of the orifice opening a passage for a liquid through the membrane, so that this passage allows a transfer of liquid from one bottle into the other after these two bottles have been joined together,

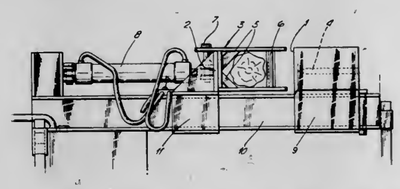
means further being provided to produce a differential pressure between the atmospheres of the two bottles to force the transfer, into the second bottle, of the liquid contained in the first bottle.

4,573,507

DEVICE FOR SPLITTING AND CUTTING OF FIREWOOD

Jahn Harboe, Tistedal, Norway, assignor to Saugbruksforeningen, Halden, Norway

Filed Sep. 17, 1984, Ser. No. 651,137
Claims priority, application Norway, Sep. 16, 1983, 833345
Int. Cl.⁴ B27L *7/00*
U.S. Cl. 144—193 A **1 Claim**



1. A device for splitting and cutting firewood, comprising:

(a) an elongate horizontal frame member (10),

(b) a vertical knife (1) fixed in relation to the frame member and upstanding therefrom,

(c) at least one horizontal knife (4) fixed to a side of the vertical knife and outstanding therefrom,

(d) an abutment plate (2) slidably disposed on the frame member and extending transversely thereto,

(e) a hydraulic piston and cylinder unit (8) coupled to the abutment plate for displacing said plate toward and away from the vertical and horizontal knives, and

(f) a clamping member (3) removably mounted to the abutment plate for displacement therewith and including:

(1) a pair of vertically oriented knives (5) arranged one above the other and having edges defining a V-shaped recess, and

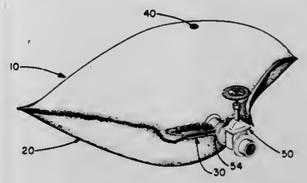
(2) a vertically oriented guide plate (6) spaced from the recess and defining therewith a log receiving opening, whereby logs may be split by displacing the abutment plate towards the vertical and horizontal knives with the clamping member removed, or simultaneously cut and split by inserting a log to a desired length through the receiving opening of the clamping member and displacing the abutment plate and clamping member towards the vertical and horizontal knives.

4,573,508

COLLAPSIBLE STORAGE TANK

Ernest Knaus, Akron, Ohio, assignor to Goodyear Aerospace Corporation, Akron, Ohio

Filed Apr. 4, 1985, Ser. No. 719,842
Int. Cl.⁴ B65D *88/16, 90/02, 90/08*
U.S. Cl. 150—55 **8 Claims**



1. A flexible and collapsible storage tank for holding large volumes of material comprising in combination:

a substantially homogeneous rectangular tank body comprised of integrally vulcanized inner and outer envelope structures of rubberized square-woven fabric, the inner envelope structure formed by a plurality of long lengths of fabric having overlapping adjacent edges and oriented longitudinally while the outer envelope structure is formed by a plurality of edge plies of fabric folded about the peripheral edges of inner envelope structure and a plurality of lengths of fabric having overlapping adjacent edges and oriented orthogonally on either side of the inner envelope structure;

a vent valve mounted in the top of the tank body to communicate air into and out of the interior thereof when filling and emptying the tank body; and

closure means mounted at one end and across a corner exposure of the tank body to seal the corner exposure and provide a connection for communication into the tank body.

4,573,509

RUN FLAT DEVICE

William T. Smith; Timothy M. Rooney, both of Uniontown, and George T. Watts, North Canton, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 507,836, Jun. 23, 1983, abandoned.
This application Aug. 31, 1984, Ser. No. 646,475
Int. Cl.⁴ B60C *17/06*
U.S. Cl. 152—158 **5 Claims**

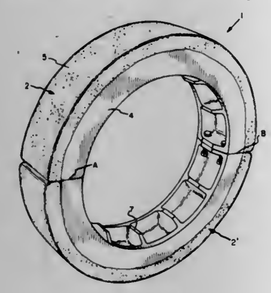
1. An assembly of a multi-piece rim, a tire, and a run flat device comprising:

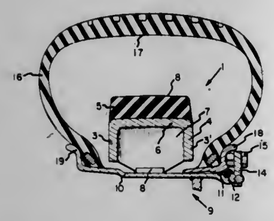
(a) a multi-piece rim comprising an annular rim base having a flange extending radially outwardly from one axial end and a pair of circumferentially extending grooves in said rim base near its other axial end, a movable flange slideably mounted around said rim base, an O-ring having a portion of its mass disposed within the axially innermost groove of said pair of circumferentially extending grooves in said rim base, said O-ring being compressedly secured in place between the rim base and the movable flange, and a lock ring having a portion of its mass disposed in the axially outermost groove of said pair of circumferentially extending grooves in said rim base, said lock ring having at least one surface that is contiguous with said movable flange;

(b) a tubeless pneumatic tire mounted upon said rim, said tire having a pair of bead portions with one bead portion disposed adjacent to the flange of said rim base and the other bead portion adjacent to said movable flange; and

(c) an annular ring-shaped run flat device comprising a rigid radially inner ring and a resilient radially outer ring, said rings comprising a plurality of arcuate sections, each section comprising a radially inner rigid portion having a squared horseshoe-shaped cross section and containing radial rein-

forcements that are adjacent to the rim base with the open side of said horseshoe-shape facing radially inwardly, the radially inner extremities of each rigid portion being positioned near said rim base but axially spaced apart from the bead portions of said tire, each arcuate section further comprising a radially outer resilient portion having a radially





inner surface fastened to a radially outer surface of said rigid portion, the radially inner surface of said resilient portion having the same width as the radially outer surface of said rigid portion, and said run flat device having a height that is 25 to 55 percent of the tire section height while the height of the rigid inner ring is 20 to 80 percent of the height of the run flat device.

4,573,510

TIRE FOR HEAVY LOADS

Jakob Ippen, Leverkusen, and Friedel Stüttgen, Pulheim, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

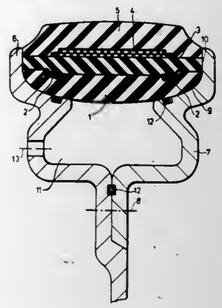
Continuation of Ser. No. 97,534, Nov. 26, 1979, abandoned. This application Jul. 13, 1981, Ser. No. 282,498

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1978, 2851765

Int. Cl.⁴ B60C *7/12*

U.S. Cl. 152—159 **2 Claims**

1. A tire for heavy loads, the tire comprising a metal felloe having a pair of sides opposing each other across an air space, a ring member having a plurality of rubber layers, a breaker strip and wire cores, the ring being a generally flat ring having a width and a maximum height of which the width is at least twice the maximum height, the flat ring having outer edges held by the opposing sides of the metal felloe, and wherein the ring member is supported intermediate said outer edges by air contained in the air space enclosed by the ring member and the



metal felloe, and the breaker strip and wire cores at least partially overlapping in radial projection.

4,573,511

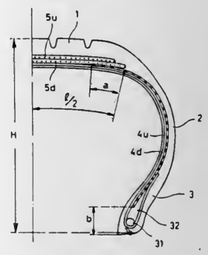
PNEUMATIC TIRE

Kazuyuki Kabe, and Tuneo Morikawa, both of Hiratsuka, Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan

Filed Nov. 8, 1983, Ser. No. 549,821

Int. Cl.⁴ B60C *9/06*

U.S. Cl. 152—548 **4 Claims**



1. In a pneumatic tire having right and left bead wires, right and left side wall portions and a tread portion between the side wall portions and in which two belt reinforcing layers each containing reinforcing cords are laid over each other so that the cords cross each other at an angle of 15° to 30° with respect to the circumferential direction of the tire and in which the belt reinforcing layers are laid over a carcass cord layer in the tread portion of the tire, the improvement wherein said carcass cord layer consists of upper and lower layers; said lower carcass cord layer being a continuous layer that extends in the widthways direction of the tire so that each of its ends is turned up around one of the pair of right and left bead wires, respectively; said upper carcass cord layer being separated into two parts; the edge portions of said upper carcass cord layer parts nearer said tread portion overlaping said belt reinforcing layer to a width of at least 10 mm but less than 0.4 of the width of the belt reinforcing layers, while the edge portions thereof nearer said bead portions are separated from said bead wires but not by more than a height of 0.3 of the cross-sectional height of the tire measured from the bead portion; and in which the reinforcing cords forming said upper and lower carcass cord layers are arranged so that the mean value $[\frac{1}{2}(\alpha_1+\alpha_2)]$ of the angle α_2 of the reinforcing cords in the upper carcass cord layer and the angle α_1 of the reinforcing cords in the lower carcass cord layer is between 95° to 120°, and the difference $(\alpha_2-\alpha_1)$ is between 10° to 60°, the angles α_1,α_2 being measured with

respect to the circumferential direction of the tire and from the side of the tire at which the angle of the reinforcing cords in the belt reinforcing layer adjacent to the upper carcass cord layer is at an acute angle with respect to the circumferential direction of the tire.

4,573,512

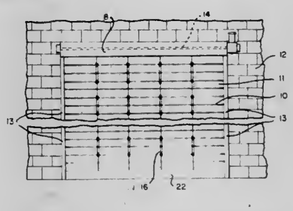
LOCKS FOR ARTICULATED ROLLING GRILLES

Dale Lichy, 4651 Sylvan Dr., Allison Park, Pa. 15101

Filed Jul. 27, 1984, Ser. No. 635,286

Int. Cl.⁴ E05C *3/02;* **E06B** *9/08*

U.S. Cl. 160—133 **12 Claims**



1. An automatic lock structure for articulated rolling grilles and like structures to be rolled up at one end for unbarring an opening comprising an articulated rolling closure for said opening, a shaft at one end of said opening connected to one end of said rolling closure for rolling the same around said shaft for opening the closure, a guide slot structure on opposite sides of said opening transverse to said shaft, said guide slot structure receiving and concealing opposite side edges of said rolling closure, at least one lock abutment means on at least one guide slot structure, at least two generally parallel spaced rods extending across the opening between said opposite guide slots, at least one first lift link connecting said at least two parallel rods at each end within the guide slots, a second lift link at each end of a parallel rod an elongate hole in one end of one of said lift links receiving the parallel rod more remote from said shaft, a guide member intermediate the ends of said at least one first lift link and parallel to said at least two parallel rods, a locking link means parallel to said at least one lift link and movable relative to the parallel rod more remote from said shaft whereby when the rod more remote from said shaft and a rod less remote from the shaft are moved relatively closer together the locking link means is urged outwardly by the guide member into locking engagement with the lock abutment means.

4,573,513

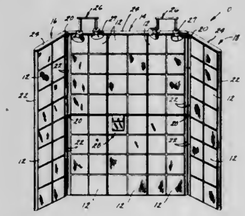
MODULAR PANEL CONSTRUCTION

Marc J. Small, Perrysburg, and David E. Powers, Toledo, both of Ohio, assignors to Good Displays, Inc., Toledo, Ohio

Filed May 2, 1983, Ser. No. 490,784

Int. Cl.⁴ A47G *5/00*

U.S. Cl. 160—135 **1 Claim**



1. A modular panel construction comprising:

a plurality of rectangular modular panel sections each having upper, side, and lower marginal edges, each of said panel sections provided with at least two individual, substantially identically shaped rectangular panels securely and rigidly attached thereto and having parallel adjacent marginal edges spaced apart from one another by a predetermined distance defining a significant gap therebetween;

said plurality of panel sections including a first panel section having a side marginal edge connected to a side marginal edge of an adjacent second panel section, means for releasably interconnecting the adjacent side marginal edges of said first and second sections, said interconnecting means including means for maintaining the side marginal edge of the rectangular panels of said first panel section spaced from the side marginal edge of the adjacent rectangular panels of said adjacent second panel section by said predetermined distance; and

said plurality of panel sections further including a third panel section having a lower marginal edge coupled to an upper marginal edge of said first panel section, means for releasably coupling the lower marginal edge of said third panel section with the upper marginal edge of said first panel section, said coupling means including means for maintaining the lower marginal edge of a rectangular panel of said third section spaced from the upper marginal edge of an adjacent rectangular panel of said lower first section by said predetermined distance, said plurality of sections cooperating to form a grid-like wall member defined by a plurality of spaced apart individual rectangular panels.

4,573,514

ELECTRICALLY HEATABLE MOLD AND METHOD OF CASTING METAL STRAPS

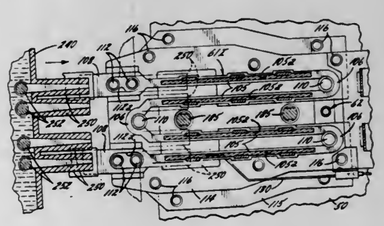
Alby H. Wolf, Minneapolis, and Thomas L. Oswald, Roseville, both of Minn., assignors to GNB Batteries Inc., Mendota Heights, Minn.

Filed May 21, 1982, Ser. No. 380,826

The portion of the term of this patent subsequent to Aug. 13, 2002, has been disclaimed.

Int. Cl.⁴ B22D *27/04, 5/02, 19/00*

U.S. Cl. 164—4.1 **20 Claims**



1. A method of casting metal straps on rows of lugs of battery cell elements, comprising:

providing a mold body made of electroconductive material and formed with a plurality of of parallel electrically interconnected sections each formed with an elongated strap cavity, conducting electrical current in series through the material of said mold cavity sections for heating said sections to a predetermined temperature in excess of the melting temperature of the metal to be cast, introducing metal in an amount adequate for forming a strap into each said cavity, immersing a row of element lugs into each said cavity, cooling said mold body to a temperature below the solidification temperature of said metal, and removing said element lugs from said cavities with straps cast thereon.

4,573,515

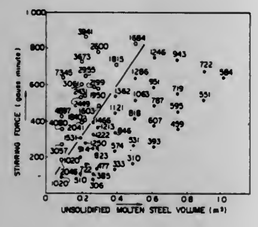
METHOD FOR ELECTROMAGNETICALLY STIRRING MOLTEN STEEL IN CONTINUOUS CASTING

Minoru Kitamura, Nishinomiya; Kenta Yoshii, Kakogawa; Shozo Kawasaki, Kobe; Katsuyoshi Matsuo, Kakogawa, and Mitsuo Tomonaga, Himeji, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Mar. 15, 1983, Ser. No. 475,692

Int. Cl.⁴ B22D *27/02*

U.S. Cl. 164—468 **2 Claims**



1. A method for electromagnetically stirring molten steel in continuous casting wherein in producing cast slab and bloom, an electromagnetic stirring force is applied to the unsolidified molten steel in the cast slab and bloom being drawn, said method comprising stirring the unsolidified molten steel in the casting direction with an electromagnetic stirrer, which is located between drawing positions where the unsolidified thickness is 45% and 15%, respectively, of the thickness as viewed in the direction of the thickness of the cast slab and bloom, in such a manner that the product of the magnetic flux density, B, in gauss units, at the interface between the unsolidified and solidified portions, and the stirring time, T, which is defined as the ratio of the stirring effective length (mm) of the electromagnetic stirrer to the casting speed (m/min.), in minute units, is 1,600 gauss-min. or more per m^3 of the total volume, of unsolidified molten steel present in a region extending to the drawing side from the position where the electromagnetic stirrer is located.

4,573,516

METHOD OF AND APPARATUS FOR CASTING DIRECTIONALLY SOLIDIFIED ARTICLES

Peter N. Quested, Hampton, and James E. Northwood, Hampshire, both of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Continuation of Ser. No. 214,660, Dec. 9, 1980, abandoned. This application Nov. 2, 1983, Ser. No. 548,023

Claims priority, application United Kingdom, Dec. 14, 1979, 7943193

Int. Cl.⁴ B22D *23/06, 27/04*

U.S. Cl. 164—61 **32 Claims**

1. A method of controlling the formation of a crystalline structure comprising the steps of:

(a) progressively melting a crystalline material by effecting relative axial movement of the crystalline material with respect to a heat source; and

(b) subsequently extracting heat from the molten material to directionally solidify the molten material in step with the melting of step (a) to form an aligned crystalline microstructure wherein the extraction of heat from the molten material is accomplished by means of a fluidized bed of a fine chemically inert powder fluidized by an inert gas.

19. Apparatus for metal casting comprising:

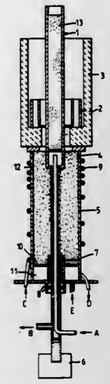
an open-ended mould,

a hollow metal platform through which water can be circulated for carrying said mould,

a heating chamber to heat the mould,

a fluidizable bed for cooling the mould, and

means for first moving the platform, and thus said mould, axially through said heating chamber and then on through



said fluidizable bed to thereby progressively heat a portion of said mould in said heating chamber prior to cooling of the mould portion in said fluidizable bed.

4,573,517

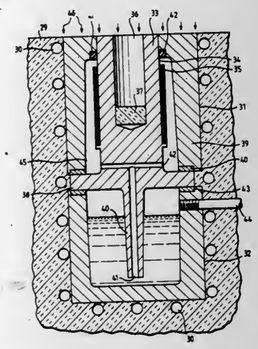
FIBER-REINFORCED METALS

Stuart E. Booth, Wantage; Andrew W. Clifford, Weymouth, and Noel J. Parratt, Loughton, all of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Oct. 11, 1983, Ser. No. 541,319

Int. Cl.⁴ B22D *17/00, 19/00*

U.S. Cl. 164—61 **4 Claims**



1. A process for forming a composite material comprising a metal matrix incorporating a non-metallic fibrous reinforcement material including the steps of providing in a mould chamber at least one layer of the fibrous reinforcement material; connecting the mould chamber via a liquid metal conduit to an air-tight furnace substantially at the base of the mould chamber; evacuating the furnace to thereby evacuate the mould chamber via the metal conduit; heating the mould chamber and fibrous material to a temperature above the solidus temperature of the metal; connecting the furnace to a source of gas at a relatively low pressure to thereby force molten metal immersing the end of the conduit in the furnace to substantially fill the mould chamber under the combined action of the partial pressure in the mould chamber and the relatively low pressure of the gas applied to the molten metal; and finally pressurizing the gas to thereby pressurize the molten metal in the mould chamber so as to force molten metal to surround substantially all of the fibers of the layer.

4,573,518

CASTING METHOD AND APPARATUS

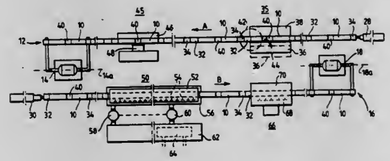
Richard Ward, Worsley, and Kenneth Cooper, Wigan, both of England, assignors to Dobson Park Industries Plc., Nottingham, England

Filed May 8, 1984, Ser. No. 608,278

Claims priority, application United Kingdom, May 19, 1983, 8313862

Int. Cl.⁴ B22D *29/00, 33/04*

U.S. Cl. 164—69.1 **14 Claims**



1. A method of making T-shaped products comprising providing a central mould part having a top, a bottom, ends and sides, and a mould cavity therein extending from one side to the other, the mould cavity being of a generally cross configuration having a central part and two arms extending therefrom, with the central part of the cavity being of substantially greater volume than either of the arms of the cavity, sandwiching the sides of the central mould part between two mating outer mould parts to form a cavity closed except for a filling opening at the top of the central mould part leading to the arm of the cavity nearest the top of the part, casting molten metal into the cavity through the filling opening with the molten metal first filling the lower arm of the mould cavity, cooling the metal to at least partial solidification, removing the central mould part from between the outer mould parts and removing the casting from the central mould part out of a side thereof, shearing the casting in half to produce two similar T-shaped products, and quenching and drying the central mould part prior to reuse in the production of a further casting.

4,573,519

METHOD FOR FORMING METAL BASE COMPOSITE

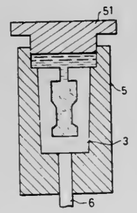
Tadashi Donomoto; Atsuo Tanaka, and Shinji Katou, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Jun. 8, 1984, Ser. No. 618,680

Claims priority, application Japan, Jun. 27, 1983, 58-115597

Int. Cl.⁴ B22D *19/14*

U.S. Cl. 164—97 **7 Claims**



1. A method for forming a metal-base composite, comprising the following steps:

a first step in which a mass of fibrous reinforcing material is taken into a retaining tool having a concavity for receiving the said fibrous reinforcing material and at least one opening, said retaining tool being composed of a water-soluble salt having a high melting point, and said concavity having the same shape as the metal-base composite to be formed;

a second step in which the said retaining tool containing the said fibrous reinforcing material is heated above a certain temperature and then set into a die having a means for receiving the said retaining tool;

a third step in which, through the said opening, a molten matrix metal is made to contact and infiltrate the said fibrous reinforcing material in the said die, and allowing solidification of the said matrix metal to form a composite incorporating the fibrous reinforcing material;

a fourth step in which the said retaining tool containing the said composite is removed from the said die; and

a fifth step in which said retaining tool is dissolved away with water.

4,573,520

APPARATUS FOR RAPID TEMPERING A METAL OR ALLOY ON A MOVING BELT

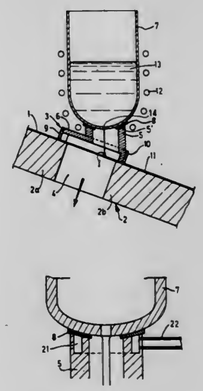
Pascal Fournier, Nancy, and Jean-Claude Peraud, Perigny sur Yerres, both of France, assignors to Pont A Mousson S.A., Nancy, France

Filed Jan. 14, 1983, Ser. No. 458,080

Claims priority, application France, Jan. 21, 1982, 82 00896

Int. Cl.⁴ B22D *11/06, 27/15*

U.S. Cl. 164—253 **3 Claims**



1. An apparatus for rapidly quenching a metal or an alloy in a molten state, comprising:

(a) a cooled belt (**1**) driven at a high speed,

(b) a vacuum chamber (**3**) disposed around a portion of the belt, said vacuum chamber comtains a casting chamber (**32**), and upstream thereof, a lock-chamber (**31**) for maintainingthe transition between the atmosphere pressure and the reduced pressure in which casting is carried out,

(c) an opening in an upper cover (**6**) of the chamber terminating in a seating rim (**5'**), wherein said opening is provided at the end of a tubular support (**5**) projecting from the upper cover of the chamber,

(d) a crucible (**7**) disposed outside of the chamber and having a bottom portion resting on the seating rim and wherein said seating rim has a configuration complementary to that of the bottom of the crucible, and

(e) a casting orifice (**14**) in said bottom portion of the crucible, whereby a jet of liquid metal or alloy projected through the orifice and onto the moving belt is formed into a rapidly quenched ribbon,

(f) a gas-permeable sealing washer (8) interposed between said rim and said bottom portion of said crucible,

(g) means for sweeping the area between the crucible bottom and the seating rim with an antioxidation purge gas, said sweeping means comprises an annular groove (21) in the rim connected to a source of purge gas.

4,573,521

TESTING APPARATUS FOR DETECTING DAMAGE OF THE CASTING BELTS OF A CONTINUOUS CASTING MOLD

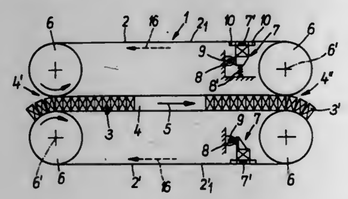
Gerd Artz, Ratingen, and Dieter Figge, Essen, both of Fed. Rep. of Germany, assignors to Haftung Fried. Krupp Gesellschaft mit beschränkter, Essen, Fed. Rep. of Germany

Filed Nov. 23, 1984, Ser. No. 674,402

Claims priority, application Fed. Rep. of Germany, Nov. 26, 1983, 3342941

Int. Cl.⁴ B22D *11/06*

U.S. Cl. 164—451 **18 Claims**



1. In a continuous metal caster of the type having mold walls formed by a pair of vertically opposed co-rotating endless casting belts and a pair of co-rotating lateral dam blocks; the improvement comprising testing means disposed adjacent said casting belts during operation of said caster for detecting damage to said casting belts, said testing means including a respective plurality of ultrasonic testing units disposed adjacent a surface of each said casting belt, with each said testing unit having an ultrasonic transmitter-receiver sonically coupled to the adjacent said casting belt; and means for mounting each said testing unit so that it is stationary with respect to the direction of movement of the adjacent said casting belt.

16. A method of continuously monitoring the casting belts of a continuous metal caster, which is of the type having co-rotating mold walls formed by a pair of vertically opposed endless casting belts and a pair of lateral dam blocks, for the detection of damage to the casting belts during operation of the caster comprising:

positioning a respective plurality of ultrasonic transmitter-receiver testing units adjacent each of the casting belts so that they are stationary with respect to the direction of movement of the adjacent casting belt, and sonically coupled to the surface of the associated casting belt;

transmitting ultrasonic energy from each of the testing units into the adjacent casting belt;

receiving reflected ultrasonic energy from the adjacent casting belt at each of said testing units; and

detecting damage to a casting belt from any difference between the received signals at a testing unit resulting from reflection from a fault in the casting belt.

4,573,522

PROCESS AND APPARATUS FOR AUTOMATING A BAKING CYCLE UNDER HOT AIR OF SAND MOLDS

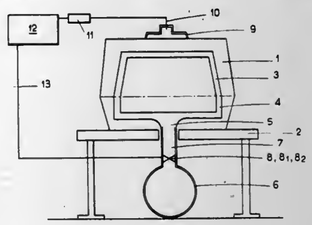
Pierre L. Merrien, Billere, and Pierre A. Merrien, Sceaux, both of France, assignors to Etude et Development en Metallurgie, Billere, France

Continuation of Ser. No. 210,623, Nov. 26, 1980, abandoned. This application Jul. 18, 1984, Ser. No. 631,521

Claims priority, application France, Nov. 28, 1979, 79 29227

Int. Cl.⁴ B22D *46/00*

U.S. Cl. 164—456 **17 Claims**



1. An automation process for a hot air baking cycle of a sand mold, said process comprising the steps of:

(a) determining at least one optimal baking parameter associated with drying said mold by hot air baking of said sand mold during a calibration stage by:

(i) recording at least one parameter associated with drying said sand mold;

(ii) casting a sample in said mold;

(iii) examining the surface of said sample for microporosities by means of fluorescent sweating; and

(iv) establishing correlations between the at least one recorded parameter and said microporosities on the surface of said sample to obtain at least one optimal drying parameter; and

(b) regulating a hot air inlet for baking said sand mold before casting an element in a sand mold during a casting stage in a manner so as to assure correspondence between the at least one optimal parameter determined in step (a) and those actually obtained during step (b).

4,573,523

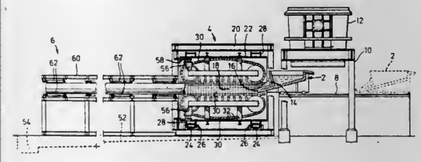
METHOD OF AND APPARATUS FOR CONTINUOUS CENTRIFUGAL CASTING

Felim McCaffrey, Toronto, Canada, assignor to Hatch Associates Ltd., Totonto, Canada

Filed Nov. 5, 1984, Ser. No. 668,990

Int. Cl.⁴ B22D *11/06, 11/126, 13/02*

U.S. Cl. 164—460 **11 Claims**



1. Apparatus for the continuous casting of metal comprising a tubular mould having an inner wall formed by cooperation of pallets in adjacent runs of a plurality of endless belts each formed of plural pallets and disposed around and extending longitudinally of the mould, a common frame supporting said belts, means to drive said belts so that the inner wall formed by said pallets of said belts moves continuously through the tubular mould formed thereby from one end to the other, means for rotating said common frame and said belts about a longitudinal axis of said mould, means to supply molten metal to said inner wall at said one end of the tubular mould, means to cool said mould whereby to solidify said molten metal on said inner wall, and means to withdraw a tube formed by said solidified metal from the other end of said tubular mould.

9. A method for the continuous casting of metal, comprising pouring molten metal onto the inner wall of a tubular mould at one end thereof, the mould being formed by pallets of cooperating inward facing runs of a plurality of continuously moving conveyor belts, so that the inner wall of said tubular mould advances continuously from said one end to the other end of the mould, conjointly rotating said plurality of belts about the longitudinal axis of said tubular mould so as centrifugally to distribute said molten metal over said inner wall to form a tubular layer, cooling said mould pallets to solidify the metal, and withdrawing the cast tube so formed from the other end of said mould.

4,573,524

HEAT EXCHANGER

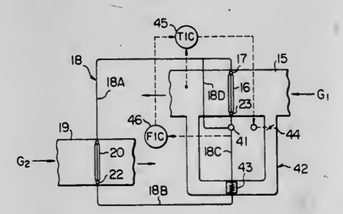
Ikuo Kotaka, Hiroshima, Japan, assignor to Babcock-Hitachi Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 622,725, Jun. 20, 1984. This application Apr. 30, 1985, Ser. No. 728,867

Claims priority, application Japan, Jun. 21, 1983, 58/110233; Jun. 21, 1983, 58/110235; Jun. 22, 1983, 58/94949[U].

Int. Cl.⁴ F28D *15/00*; F28F *27/00*

U.S. Cl. 165—96 **2 Claims**



1. A heat exchanger incorporating a heat pipe apparatus, said heat pipe apparatus comprising:

evaporative pipe group disposed within a flow of a heating fluid;

first condenser pipe group located away from and lower from said evaporative pipe group and disposed within a flow of a fluid to be heated; and

first passage means for connecting said evaporative pipe group with said condenser pipe group and through which a working medium passes between said both pipe groups;

characterized in that said heat pipe apparatus further comprises bubble generator disposed within a bypass passage through which a portion of said heating fluid branched off from said heating fluid flows so as to generate bubbles, whereby said working medium is forcedly circulated throughout said first passage means.

4,573,525

THERMALLY ACTUATED HEAT EXCHANGE METHOD AND SYSTEM

Hermon Boyd, Rte. 3, Box 73JJ, Red Oak, Tex. 75154

Filed Mar. 28, 1985, Ser. No. 716,992

Int. Cl.⁴ F28D *15/00*

U.S. Cl. 165—104.22 **6 Claims**

1. A heat actuated self pumping heat exchange system comprising:

a heat absorbing means for receiving radiant heat energy of a generally uniform distribution;

said heat absorbing means operatively divided into a primary heating zone, a boiler zone, and an accumulator heating zone, all in thermal communication;

riser tube operatively affixed to said primary heating zone for thermal communication;

flash boiling means operatively affixed to said boiler zone for thermal communication;

accumulator operatively affixed to said accumulator heating zone for thermal communication;

said riser tube operatively affixed to said flash boiling means for fluid communication;

vapor piston tube in fluid communication with said flash boiler and a condensing means;

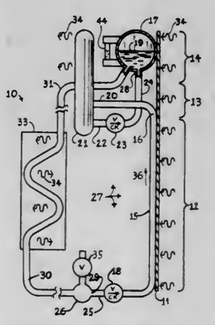
said condensing means in thermal communication with heat rejecting means;

said vapor piston tube of a diameter smaller than the maximum possible vapor bubble diameter;

said condensing means in fluid communication with an upper means for preventing reverse flow of coolant in said condensing means and for providing a pressure separation;

said upper means for preventing reverse flow in fluid communication with said accumulator;

conduit means for conveying heated said coolant from said accumulator to a coolant cooling zone;



said cooling zone removing heat absorbed by said coolant in said riser tube and in said flash boiling means and in said accumulator;

a second conduit means in fluid communication with said cooling zone and with a lower coolant distribution means for conveying said coolant;

a servicing means for evacuating the said system and charging with said coolant;

said coolant with condensible fluid properties;

a lower means for preventing said coolant reverse flow of said coolant in said riser tube in said lower coolant distribution means;

said riser tube is in fluid communication with said lower means for preventing said coolant reverse flow;

said heat absorbing means with optical coating means for enhancing absorptivity of said radiant heat;

a singular vapor pulse pumping means comprises of said liquid discharge conduit means, said lower means for preventing reverse flow, said riser tube, said flash boiling means, said vapor piston tube, said condensing means, and said upper means for preventing reverse flow.

4,573,526

STEAM GENERATOR FLOW CONTROL DEVICE

Ingvar K. E. Jung, Nacka, Sweden, assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 15, 1983, Ser. No. 475,587

Claims priority, application Sweden, Apr. 28, 1982, 8202676

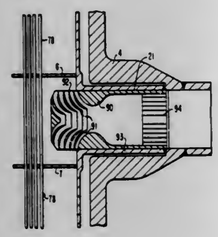
Int. Cl.⁴ F28F *9/22*

U.S. Cl. 165—134.1 **11 Claims**

1. A flow distributor for a shell and tube heat exchanger having a shell side inlet nozzle so disposed in said shell that a

central axis of said inlet nozzle is generally perpendicularly oriented with respect to said tubes;

said flow distributor being disposed within said shell on the shell side end of said inlet nozzle and having a plurality of vanes which generally direct the flow of fluid from said inlet nozzle into said shell in a generally radial direction with respect to said central axis of said inlet nozzle and



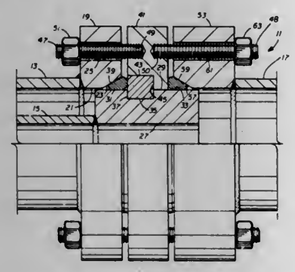
said vanes being symmetrically disposed about perpendicular planes passing through said central axis, a first plane generally parallel to the tubes and a second plane generally perpendicular to the tubes, said vanes being formed to distribute a substantially greater portion of the inlet flow from said inlet nozzle in a general direction away from said first plane than from said second plane.

4,573,527

HEAT EXCHANGER CLOSURE CONNECTION

M. J. McDonough, P.O. Box 40082, Houston, Tex. 77240

Filed Jul. 29, 1983, Ser. No. 518,547
Int. Cl.⁴ F28F *9/26*
U.S. Cl. 165—154 **16 Claims**



1. A heat exchanger closure connection, which comprises:

a tubular shell including an outwardly extending shell closure flange having a shell closure flange sealing surface;

an inner tube positioned within said shell and including an outwardly extending tube closure flange, said tube closure flange including a first sealing surface and an axially spaced apart second sealing surface;

a locking flange positioned about said tube closure flange between said first and second sealing surfaces of said tube closure flange;

a first seal ring positioned between said first seal surface of said tube closure flange and said shell closure flange sealing surface;

means for interconnecting said locking flange with said tube closure flange and transmitting axial forces on said locking flange toward said shell closure flange;

first means for urging said locking flange toward said shell closure flange, thereby to interconnect said tube closure flange and said shell closure flange and to urge said shell closure flange sealing surface and first sealing surface of said tube closure flange into sealing engagement with said first seal ring;

a tube end extension tube extending axially from said inner tube and including an outwardly extending tube end closure flange having a tube end closure flange sealing surface positioned adjacent said second sealing surface of said tube closure flange;

a second seal ring positioned between said tube end closure flange sealing surface and said tube closure flange sealing surface;

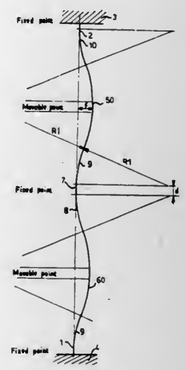
and a second means for urging said tube end closure flange toward said locking flange, thereby to interconnect said tube closure flange and tube end closure flange and to urge said second seal surface of said tube closure flange and said tube end closure sealing surface into sealing engagement with said second seal ring.

4,573,528

HEAT EXCHANGERS WITH CLUSTERS OF STRAIGHT OR CORRUGATED TUBES, ESPECIALLY TO SYSTEMS FOR SUPPORTING THE TUBES AT FIXED AND MOVABLE AXIAL LEVELS

Georges Trepaud, 1, Rond Point Bugeaud, 75016 Paris, France

Filed Dec. 29, 1981, Ser. No. 335,537
Claims priority, application France, Jan. 8, 1981, 81 00212; Feb. 16, 1981, 81 02993
Int. Cl.⁴ F28D *7/08;* F28F *9/00, 9/22*
U.S. Cl. 165—162 **8 Claims**



1. An improved heat exchanger, expecially for a steam generator, capable of accomodating differential thermal expansion of its components, having

a plurality of linear heat exchange tubes (5) arranged in an array of concentric circular rows with their axes vertical and parallel;

a cylindrical casing (11) surrounding said linear heat exchange tubes;

a plurality of concentric supporting systems, each maintaining the arrangement of a circular row of the heat exchange tubes by permitting lateral deflecting movement of the tubes at certain movable axial levels while securely maintaining the tubes in vertical alignment at a plurality of certain axial fixed levels,

a plurality of radial arms (14, 14' . . . 14*n*) secured in fixed axial relation to said cylindrical casing (11),

each of said tube supporting systems at the movable axial levels including

a zig-zag strip (21, 21' . . . 21*n*), bent in a circle and having alternately facing trapezoidal cells,

a surrounding circular support strip (20, 20' . . . 20*n*) welded to engaging portions of said zig-zag strip, and

a closing strip (22, 22' . . . 22*n*) having one face positioned at and contacting the side of a zig-zag strip remote from the supporting strip and its other face movably contacting the support strip of the concentrically adjacent tube supporting system, said supporting systems being supported at one of said axial levels, after installation of the tubes, by at least one of said radial arms;

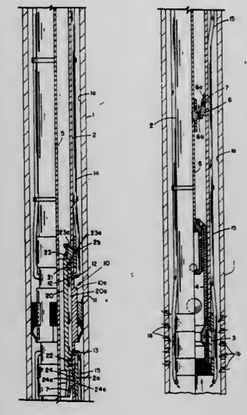
wherein at least some of the tube supporting systems at said movable axial levels (20, 21, 22; 20', 21', 22'; . . . 20*n*, 21*n*, 22*n*) are independent of the tube supporting system concentrically adjacent, in radial direction, in order to permit certain of said circular rows of the heat exchange tubes (5) to undergo thermal expansion differing from the thermal expansion of the tubes of others of said circular rows without exerting damaging mechanical stresses on the tube supporting systems, and to form groups of tube supporting systems.

4,573,529

HIGH FLOW INJECTION ANCHOR

Paul A. Reinhardt, Houston, Tex., assignor to Aker Oil Tools, Inc., Orange, Calif.

Filed Mar. 12, 1984, Ser. No. 588,451
Int. Cl.⁴ E21B *43/12*
U.S. Cl. 166—68 **12 Claims**



1. Apparatus for anchoring a tubing string in a subterranean well casing and concurrently providing an axially extending fluid passage through the anchor which is isolated from both the tubing bore and the casing annulus comprising, in combination, an anchor having a tubular body sealingly connectable in the tubing string; slip means on the exterior of said tubular body engagable with the casing bore, a pair of axially spaced radially extending port means in said tubular body or body extensions, the upper one of said radial port means being connectable to first conduit means extending to the surface, the lower one of said radial port means being connectable to second conduit means extending therebelow; a sucker rod string insertable through the tubing string to support a rod-type pump adjacent the production zone; a sleeve surrounding and attached to said string and carrying two external seals respectively positionable above said upper radially extending port and below said lower radially extending port; said sleeve having an axially extending recess on its outer surface intermediate said two external seals, thereby providing a fluid connection between said radial ports; and releasable latch means on said sleeve for releasably positioning said sleeve in sealing, straddling relationship to said radial ports.

4,573,530

IN-SITU GASIFICATION OF TAR SANDS UTILIZING A COMBUSTIBLE GAS

Costandi A. Audeh, Princeton, N.J., and Robert D. Offenhauer, Bradenton, Fla., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 7, 1983, Ser. No. 549,140
Int. Cl.⁴ E21B *43/243;* C10J *5/00*
U.S. Cl. 166—260 **12 Claims**

1. A method for the in-situ recovery of a combustible product gas consisting essentially of carbon monoxide and hydrogen from a subterranean, viscous oil-containing formation including tar sand deposits traversed by at least one injection well and one production well and wherein said oil-containing formation has previously been subjected to an in-situ combustion operation for a period of time sufficient to recover the maximum amount of oil therefrom and leaving a solid, coke like residue on the formation mineral matrix, comprising the steps of:

(a) introducing a combustible gas selected from the group consisting of methane, ethane, propane, natural gas or mixtures thereof into the formation via said injection well in an amount to substantially saturate the formation with said gas;

(b) introducing an oxygen-containing gas into the formation via said injection well to reinitiate in-situ combustion therein;

(c) thereafter introducing a mixture of an oxygen-containing gas and steam into the formation via said injection well causing conversion of the coke-like material to a combustible product gas consisting essentially of carbon monoxide and hydrogen in the formation; and

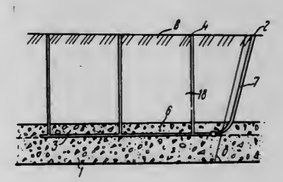
(d) recovering the combustible product gas from the subterranean formation via said production well.

4,573,531

METHOD OF UNDERGROUND GASIFICATION OF COAL SEAM

Ivan S. Garkusha; Vadim N. Kazak, and Valery K. Kapralov, all of Moscow, U.S.S.R., assignors to Vsesojuznoe Nauchno-Proizvod-Stvennoe Obiedinenie "Sojuzpromgaz", U.S.S.R.

Filed Feb. 9, 1984, Ser. No. 578,527
Claims priority, application U.S.S.R., Feb. 21, 1980, 2887369
Int. Cl.⁴ E21B *33/138, 43/247*
U.S. Cl. 166—259 **4 Claims**



1. A method of underground gasification of a coal seam, comprising the steps of:

determining the depth of occurrence and the thickness of a coal seam;

opening said coal seam by drilling operating injection and production wells therein;

interconnecting said wells within said coal seam;

forming gasification passages within said coal seam; and

igniting said coal and gasifying the same by supplying a gaseous medium through said injection wells and removing the produced gas from said production wells,

said coal seam being gasified successively layer by layer from the roof of said coal seam to the bottom thereof,

the drilling of said operating wells, their interconnection, the igniting of the coal and formation of said gasification passages being effected successively within each layer

from top to bottom with gasification of each under-layer being started after the overlying layer is gasified and no shifting occurs in the rock overlying the gasified layer, shifting thereof resulting from the gasification of the layer supporting the rock,

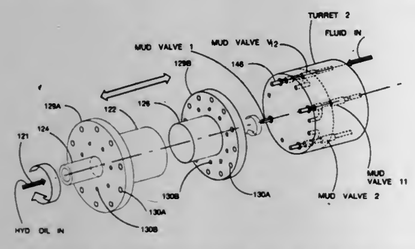
the thickness of each gasified layer being chosen so that the height of a zone containing cracks formed as a result of the shift of the overlying rock does not exceed the depth of said gasified layer.

4,573,532

JACQUARD FLUID CONTROLLER FOR A FLUID SAMPLER AND TESTER

William R. Blake, Tulsa, Okla., assignor to Amoco Corporation, Chicago, Ill.

Filed Sep. 14, 1984, Ser. No. 650,959
Int. Cl.[4] E21B *49/08, 47/06*
U.S. Cl. 166—264 **30 Claims**



1. A system for controlling fluid flow in a device, comprising:

at least one control member having a plurality of holes therein, the holes being arranged in a plurality of patterns associated with desired functions of the device, the at least one control member cooperable with means for permitting fluid flow within the device to carry out the desired functions; and

means to selectively adjust the relative position of the at least one control member to the means for permitting fluid flow to carry out the desired functions.

4,573,533

METHOD FOR USING THERMALLY STABLE MOBILITY CONTROL AGENTS FOR HARSH ENVIRONMENTAL RESERVOIRS

Roderick G. Ryles, Stamford, and Albert G. Robustelli, Darien, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jun. 21, 1984, Ser. No. 622,899
Int. Cl.[4] E21B *43/22*
U.S. Cl. 166—275 **11 Claims**

1. In a method for recovering petroleum from a sub-terranean petroleum-bearing deposit which comprises injecting an aqueous polymer solution into the area of said deposit through at least one input well to cause said petroleum to flow from said area for collection through at least one output well, the improvement which comprises maintaining and controlling the viscosity of said solution by utilizing, in the substantial absence of oxygen, a water-soluble copolymer containing from about 30–70 mole percent of 2-acrylamido-2-methylpropanesulfonic acid or a salt thereof and from about 70–30 mole percent of an acrylic monomer, the temperature at the petroleum-bearing deposit being at least 60° C.

4,573,534

CEMENT COMPOSITIONS AND METHOD OF CEMENTING CASING IN A WELL

Wilford S. Baker, Thibodaux, La., and James J. Harrison, Glenshaw, Pa., assignors to Gulf Oil Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 466,550, Feb. 15, 1983, Pat. No. 4,462,836, and a continuation-in-part of Ser. No. 466,551, Feb. 15, 1983, Pat. No. 4,462,837, and a continuation-in-part of Ser. No. 518,091, Jul. 28, 1983, abandoned. This application Jun. 12, 1984, Ser. No. 650,071
Int. Cl.[4] C04B *24/04, 24/38;* E21B *33/14*
U.S. Cl. 166—293 **75 Claims**

1. A cement composition for the preparation of a novel aqueous slurry useful in cementing casing in the borehole of a well comprising (1) a cement selected from Class A through H, (2) at least one polysaccharide, and (3) a 1,2-dicarbonyl wherein the amount of said 1,2-dicarbonyl is sufficient to obtain a viscosity of an aqueous slurry prepared from the composition at 140° F. and atmospheric pressure which is greater than the viscosity of such slurry at 70°-F. and atmospheric pressure.

44. A method of cementing casing in the borehole of a well comprising suspending the casing in the borehole of a well, whether vertical or slanted, pumping an aqueous cement slurry comprising (1) a cement selected from Class A through Class H, (2) at least one polysaccharide, (3) water, and (4) a 1,2-dicarbonyl wherein the amount of said 1,2-dicarbonyl is sufficient to obtain a viscosity of such aqueous slurry at 140° F. and atmospheric pressure which is greater than the viscosity of said slurry at 70° F. and atmospheric pressure into the well until said slurry fills that portion of the space desired to be sealed and then maintaining said slurry in place until the cement sets.

4,573,535

SLEEVE-TYPE LOW PRESSURE RESPONSIVE APR TESTER VALVE

Kevin R. Manke, Marlow, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Nov. 2, 1984, Ser. No. 667,651
Int. Cl.[4] E21B *34/10*
U.S. Cl. 166—321 **18 Claims**

1. A valve for use in a well testing string located in a wellbore and having a packer arranged for selectively sealing the wellbore isolating that portion of the wellbore above the packer from that portion of the wellbore below the packer to allow the production of fluids from that portion of the wellbore below the packer through said valve in the testing string as well as the introduction of fluids into that portion of the wellbore below the packer through said valve in the testing string, said valve being responsive to changes in the pressure of the fluid in the annulus between the wellbore and the well testing string in that portion of the wellbore above the packer when the packer sealingly engages the wellbore, said valve comprising:

a housing;

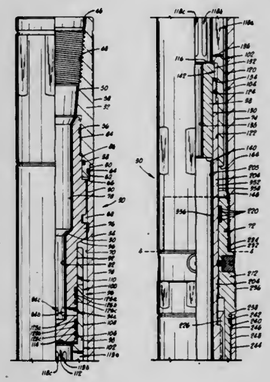
mandrel means, slidably disposed within said housing, for providing a fluid conduit within said housing;

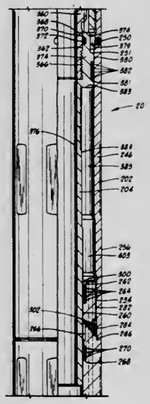
means, responsive to changes in the pressure of the fluid in the annulus, for moving said mandrel means to a valve open position when the pressure of the fluid in the annulus changes from a hydrostatic pressure to a greater than hydrostatic pressure and for moving said mandrel means to a valve closed position when the pressure of the fluid in the annulus changes from the greater than hydrostatic pressure to a lesser pressure; and

sleeve valve means, connected to said housing, for providing a controllable fluid passageway in communication with said fluid conduit provided by said mandrel means, said sleeve valve means including:

an outer cylindrical sleeve member having a central web portion from which extend a ported end portion, having a first radial opening defined therethrough intermediate said web portion and a terminating edge of said ported end portion, and an interface end portion, having an internally threaded surface disposed intermediate said web portion and a terminating edge of said interface end portion, said internally threaded surface engaging with a complemental threaded surface of said mandrel means so that at least a portion of said interface end portion is concentrically disposed about a portion of said mandrel means, and said web portion having a cavity defined therein in fluid communication with said fluid conduit provided by said mandrel means;

ported plug means for providing a fluid channel communicating with the outside of said housing, said ported plug means including a body having a closed end disposed





adjacent said web portion concentrically within said ported end portion of said outer cylindrical sleeve member when said mandrel means is at said valve closed position, said body also having a second radial port defined therein for communicating with said first radial opening of said sleeve member when said mandrel means is at said valve open position;

first seal means for providing a seal between said first and second radial openings when said mandrel means is at said valve closed position; and

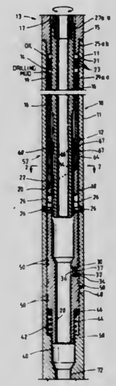
second seal means for providing a seal between said closed end of said ported plug means body and said ported end portion of said sleeve member.

4,573,536

METHOD AND APPARATUS FOR FLUSHING A WELL

James D. Lawrence, Conroe, Tex., assignor to Dailey Petroleum Services Corporation, Conroe, Tex.

Filed Nov. 7, 1984, Ser. No. 654,770
Int. Cl.[4] E21B *34/14, 21/10*
U.S. Cl. 166—373 **12 Claims**



1. A flushing apparatus for a drill string with an elongate central bore, said apparatus comprising:

a remotely operable tubular mechanism, said mechanism having a central bore and being arranged to maintain fluid communication through said drill string bore, said mechanism including a hollow barrel, a hollow stem concentrically contained within said barrel, a hollow stem concentrically contained within said sleeve and connectable on its upper end to a source of rotary motion, and a rachet device adapted to transfer rotary motion in one direction between said sleeve and said stem and to free-wheel in response to rotary motion in the opposite direction; and

a tubular flush valve operatively connected to said mechanism, said valve including a central bore and being arranged to maintain fluid communication through said drill string bore.

9. A method of flushing a well comprising the steps of:

jarring the string;

converting the jarring motion into a motion suitable for operating a flush valve, wherein said converting involves converting rotary jarring motion in either of two directions into rotary motion in only one direction; and

connecting said flush valve operating motion to a flush valve to cause automatic flushing of the well in concert with said jarring.

4,573,537

CASING PACKER

Alan R. Hirasuna, Newport Beach, and Gordon R. Veal, Mission Viejo, both of Calif., assignors to L'Garde, Inc., Newport Beach, Calif.

Continuation-in-part of Ser. No. 261,468, May 7, 1981, abandoned. This application Aug. 24, 1984, Ser. No. 644,495
Int. Cl.[4] E21B *33/128*
U.S. Cl. 166—387 **59 Claims**

1. A casing packer for sealing the annulus between a well casing and a tube extending therein by direct application of radial force to a seal element, said casing packer comprising:

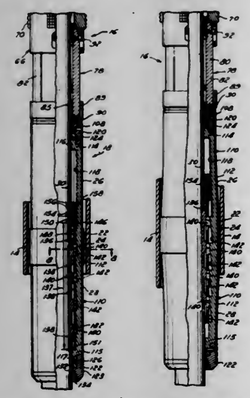
a tubular mandrel;

means, mounted on said mandrel, for engaging said casing to lock said mandrel in place at said location; and

means, mounted on said mandrel, for sealing the annulus between said mandrel and said casing, comprising:

a seal element formed of permanently deformable, non-elastomeric material;
first and second wedges;
means for driving said first wedge axially to drive said second wedge radially outward and thereby drive said seal element radially outward beyond the elastic limit of said seal element, to permanently deform said seal element against said casing by direct application of radial force to said seal element; and
means for withdrawing said first wedge radially inward to permit said seal element to deform inwardly in response to interference between said seal element and said well casing during removal of said casing packer from said well casing.

26. A method for recovering oil, using high temperature fluids in excess of 575° F., in which the annulus between a well casing and a tube extending therein is sealed to prevent passage of said high temperature fluids through said annulus, said tube having a concentric, non-elastomeric seal element mounted thereon, said method comprising:



driving said non-elastomeric seal element radially outward against said well casing by direct application of radial force thereto, to provide an interface with said casing which seals said annulus to prevent the passage of said high temperature fluid therethrough, said radial force sufficient to permanently deform said seal element;
conducting said high temperature fluid in excess of 575° F. through said tube, said fluid heating the geologic formation surrounding the well to free oil in said formation, said non-elastomeric material capable of withstanding said temperature in excess of 575° F.;
creating a void behind said seal element throughout the entire length of said interface to permit radially inward deflection of said permanently deformed seal element throughout the entire length of said interface; and
removing said seal element from said well casing by applying a pulling force to said metal seal element at a location above said interface.

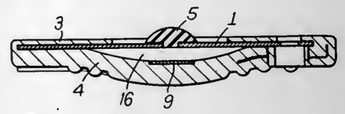
4,573,538

HORSE HOOF-SHOEING SOLE PLATE

Michel Figueras, Les Fuziers, 38540 Saint Just Chaleyssin, France

Filed Nov. 9, 1984, Ser. No. 669,953
Claims priority, application France, Nov. 14, 1983, 83 18250
Int. Cl.[4] A01L *5/00, 7/02*
U.S. Cl. 168—14 **11 Claims**

1. A sole plate for attachment to the hoof of a horse by means of plural screws, which plate comprises:
(a) a reinforcement frame in the configuration of a plate;
(b) a casing integrally formed of a material having a Shore hardness in the range of 45 to 100, the casing enclosing the frame and being defined by a top layer extending at least partially across and being adhered to the top surface of the frame, and a bottom layer including an outer wear surface and an inner surface, the inner surface being partially adhered to the bottom surface of the frame, with the unadhered portions of the inner and bottom surfaces collectively defining a central zone, the bottom layer being provided with a plurality of openings through which the bottom surface of the frame may be observed and screws may be engaged;



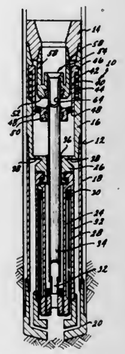
(c) a hole formed in the frame for permitting access to the central zone; and
(d) a valve closing the hole and formed of a resilient and self-sealing material having a Shore hardness in the range of 25 to 55, the valve being configured to permit the insertion of a needle therethrough for injecting compressed fluid into the central zone and inflating the portion of the bottom layer corresponding to the adhered portion of its inner surface.

4,573,539

HYDRAULICALLY PULSED INDEXING SYSTEM FOR SLEEVE-TYPE CORE BARRELS

Jimmy L. Carroll, Bountiful, and James T. Aumann, Salt Lake City, both of Utah, assignors to Norton Christensen, Inc., Salt Lake City, Utah

Filed Oct. 7, 1983, Ser. No. 539,924
Int. Cl.[4] E21B *25/06*
U.S. Cl. 175—58 **16 Claims**



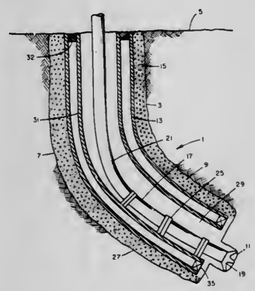
1. An apparatus for use in a coring tool in a drill string in which hydraulic pressure is selectively applied, said drill string including a core barrel, and a flexible sleeve for receiving a core into said core barrel, said sleeve radially contracting upon application of longitudinal tension thereto, said apparatus comprising:
a stripper tube coupled to said flexible sleeve and concentrically disposed within said core barrel;
piston means slidingly disposed within said coring tool between a first upper and second lower longitudinal position, said stripper tube being disposed through said piston means and generally longitudinally displaceable with respect thereto, said piston means selectively seizing said stripper tube when said piston means is urged longitudinally upward; and
resilient means for selectively applying and continuously maintaining an upward tensile force to said stripper tube independent of hydraulic pressure in said coring tool and thence applying said tensile force to said flexible sleeve and core disposed therein,
whereby a core may be cut from a highly fractured rock formation and retentively disposed within said flexible sleeve while said sleeve is continuously maintained under tension by combined operation of said stripper tube and piston means.

4,573,540

METHOD FOR DRILLING DEVIATED WELLBORES

Thomas B. Dellinger, Duncanville; Eugene A. Hoppe, Kingwood, and Charles E. Jones, Houston, all of Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 19, 1984, Ser. No. 672,757
Int. Cl.[4] E21B *7/04, 47/022*
U.S. Cl. 175—61 **10 Claims**



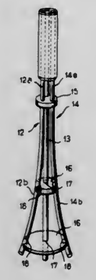
1. A method of drilling a deviated wellbore into the earth by a rotary drilling technique wherein a drill string is used to advance a drill bit through the earth and a drilling fluid is circulated down the drill string and returned from the wellbore in the annulus formed about the drill string, comprising the steps of:
(a) drilling a vertical first portion of said wellbore into the earth from a surface location to a kick-off point at about the lower end of said first portion by rotating and advancing a drill string and drill bit into the earth,
(b) initiating a deviated second portion of said wellbore at said kick-off point,
(c) withdrawing said drill string and drill bit from said wellbore,
(d) lowering a casing into said borehole and cementing said casing in place from the earth's surface to a point below said kick-off point,
(e) lowering a casing liner within said casing, said liner having an outside diameter less than the inside diameter of said casing and extending coextensively with said casing at least from above said kick-off point to the lower end of said casing below said kick-off point,
(f) spacing said liner from said casing,
(g) affixing said liner so that it is not free to rotate within said casing,
(h) running said drill string and drill bit through said liner until said drill string lies along the lower side of said liner below said kick-off point and said drill bit is located below the lower end of said liner, whereby said liner protects said casing from damage by the rotation of said drill string during the drilling of said second deviated portion of said wellbore,
(i) drilling said deviated second portion of said wellbore by rotation of said drill string as it lies along the lower side of said liner,
(j) pulling said drill string and drill bit from said wellbore after excessive wear has been imparted to said liner by the rotation of said drill string as it lies on the lower side, or is pulled into the upper side, of said liner,
(k) withdrawing said liner from said wellbore,
(l) lowering a replacement liner within said casing, said replacement liner also extending coextensively with said casing at least from above said kick-off point to the lower end of said casing below said kick-off point, and
(m) rerunning said drill string and drill bit into said wellbore and continuing the drilling of said deviated second portion of said wellbore, and
(n) repeating steps (k) through (m) for a plurality of drilling intervals and a plurality of replacement liners until the drilling of the deviated second portion of said wellbore has been completed.

4,573,541

MULTI-DRAIN DRILLING AND PETROLEUM PRODUCTION START-UP DEVICE

Jean-Jacques Josse, Toulouse; Guy Pujols, La Serre de Cazaux, and Serge Di Vincenzo, Cassagne, all of France, assignors to Societe Nationale Elf Aquitaine, Courbevoie, France

Filed Aug. 9, 1984, Ser. No. 638,992
Claims priority, application France, Aug. 31, 1983, 83 13981
Int. Cl.[4] E21B *7/08, 43/28, 29/06*
U.S. Cl. 175—78 **11 Claims**



1. A drilling and petroleum production start-up device of a drilling well comprising a master well and at least one branched well opening into said master well, said device comprising an outer tube having an inner wall, and at least one take-off assembly fastened in situ in said outer tube and incorporating several take-off tubes, at least one of which has a lower end which communicates with a branched well, a space located between said take-off tubes and the inner wall of the outer tube being filled with cement, in order to produce a take-off assembly in the form of a compact and rigid block, said device incorporating a receptacle fastened to the take-off assembly and possessing bores in which upper ends of the take-off tubes are received, a movable connection assembly being interposed between the take-off assembly and surface means necessary for the working of the drilling well, wherein the connection assembly incorporates at least three hollow lengthening pieces having opposing ends, one of said lengthening pieces being capable of being received by one of its ends in one of the take-off tubes, its other end communicating with the surface of the drilling well, and means of blocking the other take-off tube or tubes.

4,573,542

LOAD-WEIGHING APPARATUS FOR AN ELEVATOR CAR

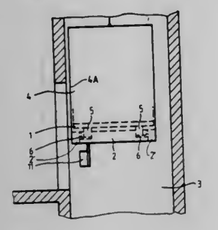
Urs Schlegel, Emmenbrücke; Ljudevit Tomse, Dierikon, and Urs Wenger, Lucerne, all of Switzerland, assignors to Inventio AG, Hergiswil, Switzerland

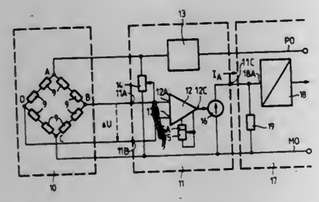
Filed Feb. 4, 1985, Ser. No. 698,131

Claims priority, application Switzerland, Feb. 14, 1984, 707/84

Int. Cl.[4] G01G *19/52, 3/14;* G01L *1/22*

U.S. Cl. 177—132 9 Claims





1. A load-weighing apparatus for an elevator car, comprising:

a predetermined number of wire stain gauges;

a predetermined number of load-subjected components provided at said elevator car and subjected to the a load to be weighed;

said predetermined number of wire strain gauges being directly mounted at said elevator car at said load-subjected components;

a bridge circuit having an output side and formed by said predetermined number of wire strain gauges;

an amplifier circuit having an input side and an output side;

said input side of said amplifier circuit being connected to said output side of said bridge circuit;

said amplifier circuit including means for imparting a higher gain to the amplifier circuit in the presence of small loads than in the presence of high loads of the elevator car;

said amplifier circuit including a voltage-controlled current source at said output side of said amplifier circuit; and

an elevator control connected to said output side of said amplifier circuit.

4,573,543

DOUBLE-SAFETY ARRANGEMENT FOR A SELF-PROPELLED HAND-GUIDED MACHINE

Jean M. Bataille, Saint-Valery-en-Caux, France, assignor to Dynapac AB, Solna, Sweden

Filed Jan. 25, 1985, Ser. No. 694,934

Claims priority, application Fed. Rep. of Germany, Jan. 25, 1984, 8402033[U]

Int. Cl.[4] B60K *29/02*

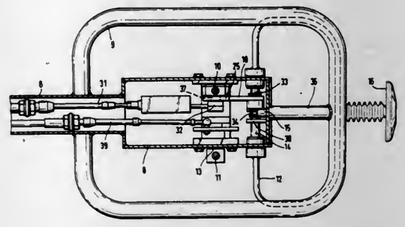
U.S. Cl. 180—19.1 14 Claims

1. A double-safety arrangement for a self-propelled, hand-guided machine such as a duplex-vibratory roller equipped with a control column for facilitating control of the machine by an operator, the machine being further equipped with switching linkage means actuable for engaging the machine for forward and rearward travel and having a neutral position to which said linkage means returns when no longer actuated for said travel and whereat the machine is disengaged and comes to a halt, the double-safety arrangement comprising:

an operating lever having a center neutral position and at least first and second travel positions for forward and rearward travel, respectively; and,

a latching assembly movable into a latched condition for transmitting the movements of said lever to said linkage means thereby actuating the latter and into an unlatched condition whereat said linkage means is no longer actuable by said lever;

said latching assembly including:



connecting means movable between a first position for mechanically connecting said operating lever to said linkage means for transmitting said lever movements thereto and a second position whereat said lever movements are no longer transmittable to said linkage means;

deadman's handle means movable to an actuating position for holding said connecting means in said first position so long as said handle means is held in the actuated position thereof by the operator; and,

override shutoff means for acting on said connecting means while the same is in said first position thereof to cause the latter to move into said second position thereby interrupting the connection between said lever and said linkage means and causing the latter to return to its neutral position whereat the machine is disengaged and comes to a halt.

4,573,544

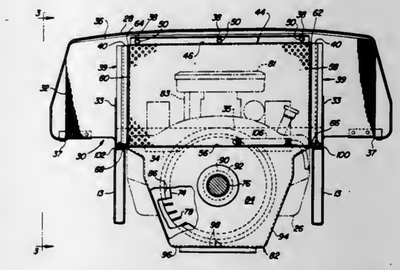
COOLING AIR DUCT AND SCREEN ARRANGEMENT FOR AN AIR COOLED ENGINE

John J. Hoch, Beaver Dam, and David K. Stricker, Juneau, both of Wis., assignors to Deere & Company, Moline, Ill.

Filed Jan. 25, 1984, Ser. No. 573,774

Int. Cl.[4] B60K *11/06*

U.S. Cl. 180—68.1 7 Claims



1. In combination with a vehicle including a fore-and-aft extending main frame, an operator's station located about midway between opposite ends of the frame, and air cooled engine mounted to the frame at a location behind the station and including a cooling shroud having a forwardly disposed inlet located at a level below said station, and a hood extending over said engine and having an inverted U-shaped forward end terminating at a location forwardly of said cooling shroud, an improved cooling air system for ensuring a supply of relatively clean air for ingestion by the shroud, comprising: a vertical transverse baffle mounted to the frame and fitting closely against a forward top portion of the shroud and having an edge shaped complementary to and disposed at least closely adjacent the hood; an air duct mounted to the frame and having an upright rear wall seated against the front of the shroud in an area surrounding said inlet; said air duct further having an upright front wall and a connecting wall joining respective side and bottom edges of the front and rear walls and cooperating therewith to define an upwardly facing opening; a screen located forwardly of the baffle and having a top and front joined by opposite sides with the top and opposite sides having rear edges mounted against said baffle and with the opposite sides and front having bottom edges engaged with said air duct about said upwardly facing opening wherein said screen is mounted solely to said baffle by connection means including a vertical guide means provided on the forward side of said baffle and flange means formed on said screen and being vertically slidably received in said guide means, whereby said screen may be slid vertically away from said baffle for being cleaned.

4,573,545

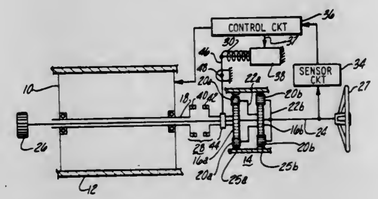
FAIL-SAFE DEVICE FOR AN ELECTRICAL POWER ASSISTED STEERING SYSTEM INCLUDING AN IN-LINE CLUTCH MECHANISM

Ilmars Kalns, Northville, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Aug. 30, 1984, Ser. No. 646,372

Int. Cl.[4] B62D *5/04*

U.S. Cl. 180—79.1 7 Claims



1. A power assisted steering system for a vehicle, the vehicle having an operator controlled steering mechanism, at least one steered wheel and a steering shaft directly connecting the steering mechanism to the wheel, the system comprising:

a bidirectional electric motor;

control means for energizing the motor to turn in a first direction when the steering mechanism is moved in one direction by the operator, for energizing the motor to turn in a direction opposite said first direction when the steering mechanism is moved in a direction opposite said one direction by the operator, for monitoring the operational condition of the system to detect malfunctions, and for generating a signal indicative of the operational condition system;

a gear reduction means connected between the motor and the steering shaft for increasing the torque delivered to the steering shaft by the motor;

clutch means, responsive to the control means, for coupling the motor to the ratio reduction means when the system is operating properly and for isolating the motor from the ratio reduction means when the system is not operating properly, and

the clutch means including a first clutch half and a coaxial second clutch half, the first clutch half being axially mounted on the motor armature for rotation therewith, second clutch half being axially mounted on the gear reduction means for rotation therewith, and further including means, responsive to the control means, for moving one of said first or second clutch halves into frictional contact with the other of said first or second halves when the system is operating properly.

4,573,546

THREE-WHEELED MOTOR VEHICLE

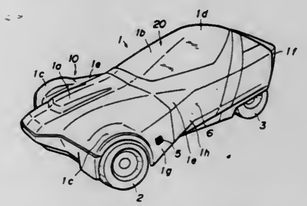
Shoichiro Irimajiri, Mie; Katsusuke Komuro, and Kunihiko Aikawa, both of Tokyo, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 30, 1984, Ser. No. 605,403

Claims priority, application Japan, Apr. 28, 1983, 58-73741; Apr. 28, 1983, 58-73742; Apr. 28, 1983, 58-73743; Apr. 28, 1983, 58-73744; Apr. 28, 1983, 58-63056[U]; Apr. 28, 1983, 58-63057[U]; Apr. 28, 1983, 58-63060[U]

Int. Cl.[4] B62D *21/00, 61/06*

U.S. Cl. 180—89.1 7 Claims



1. A three-wheeled motor vehicle comprising:

(a) a vehicle body;

(b) two front wheels rotatably mounted on said vehicle body;

(c) a single rear wheel rotatably mounted on said vehicle body;

(d) an engine disposed on said vehicle body between said front wheels;

(e) a driver's compartment defined in said vehicle body;

(f) said vehicle body including a front portion covering said engine and said front wheels and a rear portion disposed behind said front portion and covering said compartment and said rear wheel, said front portion having a relatively wide and flat shape and said rear portion being narrower than said front portion and progressively higher in a rearward direction for a substantial proportion of said rear portion; and

(g) said vehicle body also including lateral wing portions on each side extending longitudinally rearwardly from behind the front wheels and tapering into said rear portion for causing the said vehicle body to have a substantially constant cross-sectional area throughout a substantial proportion of both said front and rear portions and the transition between said front and rear portions for producing an aerodynamically improved vehicle body shape.

4,573,547

AUTOMATIC RUNNING WORK VEHICLE

Shingo Yoshimura; Katsumi Ito, and Shigeru Tanaka, all of Osaka, Japan, assignors to Kubota, Ltd., Japan

Filed Dec. 13, 1983, Ser. No. 560,834

Claims priority, application Japan, Jun. 28, 1983, 58-118744; Jun. 28, 1983, 58-118745; Jul. 18, 1983, 58-130428

Int. Cl.[4] B62D *1/26;* G06K *11/02*

U.S. Cl. 180—168 12 Claims

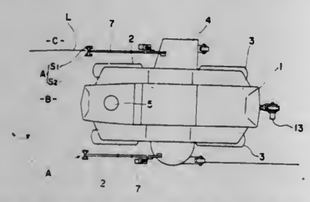
1. An automatic running work vehicle having a vehicle body

provided with front and rear steerable wheels for treating areas along a boundary between treated and untreated areas on a surface, said work vehicle comprising:

foller sensor means for detecting said boundary;

orientation sensor means for detecting a running orientation of said vehicle;

signal generating means for determining a deviation of said running orientation from a preset reference orientation and for generating a first signal when said deviation is



within a permissible angle and a second signal when said deviation is beyond said angle;

steering control means for causing said front and rear wheels to steer said vehicle body toward said boundary by steering all said wheels in the same direction in response to said first signal, and by steering respective wheels in different directions to each other until said deviation falls within said permissible angle in response to said second signal, and by returning said wheels to neutral positions when said follwer sensor means detects said boundary.

4,573,548

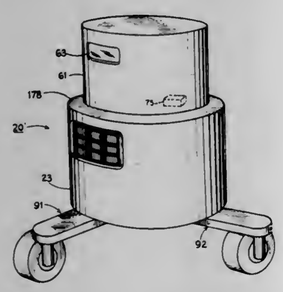
MOBILE BASE FOR ROBOTS AND THE LIKE

John M. Holland, Shawsville, Va., assignor to Cybermation, Inc., Roanoke, Va.

Filed Sep. 23, 1983, Ser. No. 535,168

Int. Cl.⁴ B62D *57/00*; B60B *39/00*

U.S. Cl. 180—211 **23 Claims**



1. A carriage system for movement on a surface comprising:

(A) a base;

(B) a plurality of wheel assemblies, each including an axle, a wheel connected to the axle at one end, the wheel having a radius (r), a first bevel gear connected to the axle at a second end thereof so as to rotate the axle and wheel, the first bevel gear having a plurality of teeth, N1, facing toward the wheel connected to the axle, where N1 is an integer, a second belve gear, having a plurality of teeth N2, where N2 is an integer, the second bevel gear perpendicularly engaged with the first bevel gear so as to impart rotation to the first bevel gear and so as to define a wheel pivot radius (r') for the wheel as the distance between the center of the second bevel gear and the wheel perimeter that contacts the surface upon which the carriage system moves, wherein the ratio of the teeth of the second bevel gear to the teeth of the first bevel gear (i.e., N2/N1) is substantially the same as the ratio of the wheel pivot radius to the wheel radius (i.e , N2/N1=r'/r), a shaft connected at one end to the second bevel gear for rotation thereof, and a cylinder positioned about the shaft and the first and second bevel gears so that rotation of the cylinder causes steering of the axle, a steering sprocket connected to the upper end of the cylinder, and a drive sprocket connected at the second end of the shaft connected to the second bevel gear so as to impart rotation of the shaft;

(C) means connected about the steering sprocket of each cylinder so as to simultaneously turn each steering sprocket;

(D) means connected about the drive sprockets so as to simultaneous axially rotate each drive sprocket;

(E) first means for powering said turning means; and

(F) second means for powering said axial rotation means;

whereby simultaneous steering and axial rotation of the wheels associated with each of the wheel assemblies is effected and further wherein steering of the wheel assemblies can be achieved without translation of the wheel assemblies while allowing the wheels to rotate about their axes without slippage.

4,573,549

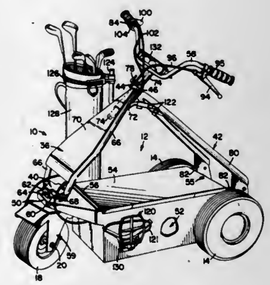
PORTABLE GOLF CAR

Arnold A. Pankow, 1201 Westmore, Wahpeton, N. Dak. 58075

Filed Sep. 7, 1983, Ser. No. 529,974

Int. Cl.⁴ B62D *61/06*

U.S. Cl. 180—216 **24 Claims**



1. A golf car apparatus, comprising:

(a) a frame supported off the surface of the ground by at least three wheels, two of said wheels being positioned near the back end of the frame and being interconnected by an axle;

(b) a DC battery power source interconnected to an electrical motor, said DC battery power source and said electrical motor being supported by said frame;

(c) a drive mechanism interconnected to said electrical motor, said drive mechanism including a differential mechanism positioned near the center of said axle interconnecting said two back wheels;

(d) foot support means defined by said frame on either side of said differential mechanism and extending under said axle for positioning of said user's feet, said user's feet extending at least partially under said axle and positioned in said foot support means;

(e) a collapsible steering column assembly including handlebars interconnected to a front wheel by universal joint means, said universal joint means including movement limiting means limiting the angle the front wheels can be turned to the left or right; and

(f) a collapsible support structure for supporting said steering column in an upright position, said support structure being releasably interconnected to said steering column assembly to enable said steering column assembly and said support structure to be collapsed on to said frame.

4,573,550

EXHAUST PIPE APPARATUS FOR VEHICLE

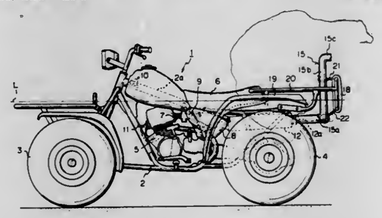
Fumio Inomata, Saitama, and Kazuharu Wakusaka, Tokyo, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 6, 1985, Ser. No. 698,636

Claims priority, application Japan, Feb. 8, 1984, 59-16543[U]

Int. Cl.⁴ B60K *13/04*

U.S. Cl. 180—296 **3 Claims**



1. An exhaust pipe apparatus for a vehicle in which an exhaust pipe for an engine is disposed below an occupant's seat, comprising:

an auxiliary exhaust pipe having a bent portion which is bent at a substantially right angle with respect to an axis of said exhaust pipe, said auxiliary exhaust pipe being water-tightly connected to a rear end portion of said exhaust pipe in such a manner that said auxiliary exhaust pipe is pivotable between a reclining position where the pipe is reclined below said seat and an erect position where the pipe is erected above said seat.

4,573,551

EXHAUST GAS DUCT FOR GAS TURBINES

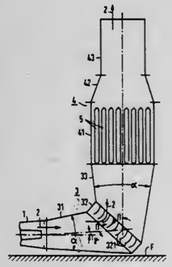
Otto v. Schwerdtner, and Klaus Dinstuhl, both of Mülheim, Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mulheim an der Ruhr, Fed. Rep. of Germany

Filed Feb. 22, 1983, Ser. No. 468,556

Claims priority, application Fed. Rep. of Germany, Feb. 24, 1982, 3206626

Int. Cl.⁴ B64F *1/26*

U.S. Cl. 181—218 **2 Claims**



1. Exhaust gas duct for gas turbines, comprising an axial discharge housing, a deflection piece connected to and downstream of said axial discharge housing in exhaust gas flow direction having a steadily increasing cross section in exhaust gas flow direction for reducing the flow velocity of the exhaust gas and the outlet losses of the gas turbine, said deflection piece having a substantially flow-horizontal first conical diffusor section and a substantially vertical second conical diffusor section for reducing the overall horizontal extent of the exhaust gas duct, said first and second diffusor sections being formed from a single circular conical diffusor having a single inclined cut formed therein, said first conical diffusor section having a downstream and with a first inclined edge, said second conical diffusor section having an upstream end with a second inclined edge facing said first inclined edge, a grid in the form of an intermediate piece with an elliptical cross section disposed in said deflection piece for reducing the flow velocity of the exhaust gas and the outlet losses of the gas turbine, said grid being disposed between said first and second conical diffusor sections and being welded to said first and second inclined edges for redirecting exhaust gas flow into the vertical direction and into said second conical diffusor section, a substantially vertical exhaust gas chimney disposed downstream of and connected to said second conical diffusor section in exhaust gas flow direction, and a noise suppressor disposed in said exhaust gas chimney being protected by the reduced flow velocity.

4,573,552

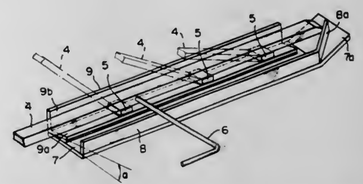
SAFETY DEVICE FOR PROTECTING FALL OF A LIFT

Hiroyasu Aoki, Shizuoka, Japan, assignor to Yasui Sangyo Co., Ltd., Shizuoka, Japan

Filed Jul. 25, 1984, Ser. No. 634,167

Int. Cl.⁴ B60S *13/00*

U.S. Cl. 187—8.5 **7 Claims**



1. A safety device for protecting fall of a lift for vehicles, which comprises an elevating mechanism being provided at its upper end with cradles for supporting a vehicle under its lower part, said safety device including a stopper shaft being pivoted at one end to the upper end of the elevating mechanism and adapted for at another free end in engagement with a horizontal extending rack when the cradles is raised up to a desired operative position, characterized by that:

a passage for the free end of the stopper shaft to move along the rack when the lift is let down is formed beside the rack,

a first guide means is provided to said passage to lead said free end of the stopper shaft to a resting position on an extension of the rack where the cradles is at the lowermost position, and

said stopper shaft is pivoted to said upper end part of the elevating mechanism with sufficient flexibility to be allowed for lateral movements, and is also provided in the middle with a lever which projects laterally from the shaft, so as to bring said free end into said passage.

4,573,553

DISC BRAKE

Julius Nadas, Eching, Fed. Rep. of Germany, assignor to Knorr-Bremse GmbH, Munich, Fed. Rep. of Germany

Filed Jul. 20, 1984, Ser. No. 632,928

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1983, 3326372

Int. Cl.⁴ B61H *5/00*

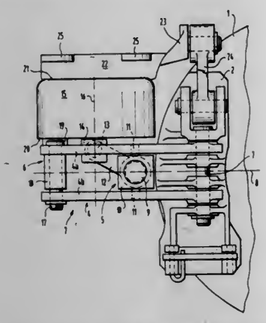
U.S. Cl. 188—59 **8 Claims**

1. Disc brake for rail vehicles, with a brake clamp (7) arranged in a plane (8) and clampable by means of a brake cylinder (15) having a piston rod (14) and comprising two brake levers (4) carrying brake shoes (2) at their ends facing the brake disc, said brake levers being articulated to one another in their central regions by means of a pull rod (5) adjustable for longitudinal play and actuated by said brake cylinder, wherein

(a) said brake cylinder (15) is arranged in at least substan-

tially perpendicular axial direction (16) with respect to the plane (8) of said brake clamp (7) adjacent a central region of the latter;

(b) said piston rod (14) is coupled by way of a power ratio drive to a longitudinal adjustment element (9) of said pull rod (5), in such manner that actuation of said brake cylinder (15) causes shortening of said pull rod (5);



(c) means being provided for flexibly bracing the two ends of said brake levers; and

(d) said brake cylinder (15) held fast to the rail vehicle is provided with support means (22) on said brake cylinder (15) for pendulum suspension of said brake shoes (2) and rotatable mounting of the ends of said brake levers (4) remote from said brake disc.

4,573,554

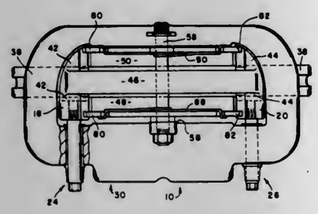
DISC BRAKE WITH CALIPER STABILIZING TIE-BAR

Irving R. Ritsema, South Bend, Ind., assignor to Allied Corporation, Morristown, N.J.

Continuation of Ser. No. 538,605, Oct. 3, 1983, abandoned. This application Jun. 19, 1985, Ser. No. 746,923

Int. Cl.[4] F16D *55/224, 65/02*

U.S. Cl. 188—73.38 **2 Claims**



1. A disc brake comprising a torque member fixedly secured to a vehicle or the like adjacent a rotor to be braked, a caliper movably carried by the torque member and forming an inner leg on one side of the rotor, an outer leg on the other side of the rotor and a bridge extending axially between the inner and outer legs over an outer edge of the rotor, the caliper cooperating with a pair of friction elements to bias the latter into engagement with the rotor during braking, and a connecting member extending between the inner and outer legs to oppose deflection between the inner and outer legs, characterized in that said torque member includes a tie-bar extending circumferentially over a portion of the outer edge of said rotor and disposed axially between said pair of friction elements, said tie-bar cooperating by direct engagement with said connecting member to define an interface therebetween opposing static droop and dynamic lift when the inner leg of said caliper tends to move radially inwardly and the outer leg of the caliper tends to move radially outwardly, respectively, the tie-bar defining a radial spacing with the portion of the outer edge of said rotor and said connecting member extending through said radial spacing, the interface being formed by sliding engagement between only said connecting member and tie-bar and including an open arcuate recess in an open underside of said tie-bar forming a smooth, machined surface extending circumferentially over only a radially outer portion of the connecting member and facing radially inward, said connecting member extending into said recess so that the radially outer portion of said connecting member slidably engages directly said surface.

4,573,555

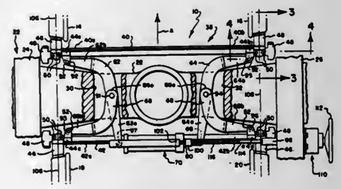
BRAKE RIGGING FOR A RAILWAY VEHICLE TRUCK

Jerome A. Malachowski, Hamburg, and James F. Horvatis, West Seneca, both of N.Y., assignors to Buffalo Brake Beam, Buffalo, N.Y.

Filed Sep. 20, 1984, Ser. No. 652,957

Int. Cl.[4] B61H *13/20*

U.S. Cl. 188—52 **23 Claims**



1. A brake rigging for a four-wheel type of railway vehicle truck having a frame with a longitudinal axis and a transverse axis, said rigging comprising:

two brake beams extending transversely of and movably supported by the truck frame, each of said brake beams defining two opposite end portions;

a brake cylinder assembly including a cylinder and a piston, said piston being slidably disposed in said cylinder;

two primary levers each having an effort arm portion and a response arm portion, the response arm portion of each primary lever being pivotally connected to a corresponding end portion of one of said two brake beams, the effort arm portion of each primary lever being pivotally connected to a corresponding one of said cylinder and said piston of said brake cylinder assembly; and

two secondary levers each having two end portions, one end portion of each secondary lever being pivotally connected to a corresponding end portion of the other of said two brake beams, the other end portion of each secondary lever being pivotally connected to a corresponding one of the primary levers intermediate the effort and response arm portions thereof so that when said brake cylinder assembly is actuated, said effort arm portions of said primary levers move relative to one another to move said two brake beams away from one another.

4,573,556

ACTUATOR FOR THE RELEASE OF AN AUTOMATIC EMERGENCY BRAKE OF A HAND-OPERATED POWERED TOOL

Bo C. Andreasson, Gothenburg, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden

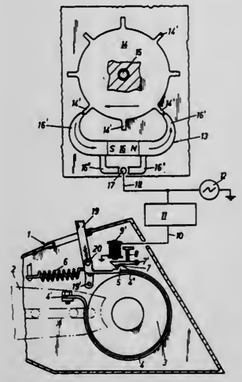
Filed Apr. 12, 1984, Ser. No. 599,730

Claims priority, application Sweden, May 20, 1983, 8302885

Int. Cl.[4] F16D *59/02;* B27B *17/02*

U.S. Cl. 188—137 **5 Claims**

1. An actuator for the release of an automatic emergency brake for hand-operated, powered tools, having a driving shaft for the tool in which the emergency brake is constituted of a brake mechanism at the driving shaft that is releasable by means of stored energy, comprising: a magnet, a sensor, an actuator that is a rotatable balanced body with a small amount of friction on a shaft situated essentially parallel to said driving shaft and made of a permeable material having a mass presenting an essential inertia against rotation around the shaft, and wherein the actuator cooperates with said magnet retaining the



actuator with a predetermined magnetic force against rotation in an angular position of the actuator, and then with said sensor which is so adapted that an impulse for releasing the brake mechanism is given as soon as the actuator moves from said angular position.

4,573,557

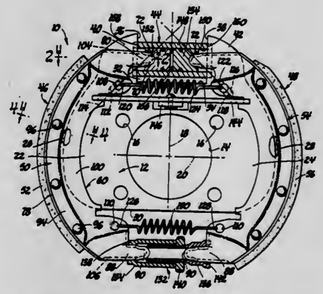
DRUM BRAKE

Ronald L. Shellhause, Vandalia, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 539,273, Oct. 5, 1983, Pat. No. 4,546,862. This application Jul. 18, 1985, Ser. No. 756,442

Int. Cl.[4] F16D *65/14, 51/24*

U.S. Cl. 188—216 **1 Claim**



1. In a drum brake assembly having a backing plate, an opposed-piston wheel cylinder located in the plane of the backing plate, an adjuster mechanism located in the plane of said backing plate, said wheel cylinder and said adjuster mechanism being on a backing plate first diameter and diametrically opposite each other, a pair of brake shoe assemblies located in the plane of and on said backing plate and on a backing plate second diameter and diametrically opposite each other, the backing plate first and second diameters being perpendicular to each other, said brake shoe assemblies having adjacent first ends normally engaging the pistons of the wheel cylinder and having adjacent second ends normally engaging opposite ends of the adjuster mechanism, brake lining segments on the brake shoe assemblies adapted to engage a brake drum in friction braking relation when the wheel cylinder is energized, and spring means holding said shoe assemblies in operating position on said backing plate and relative to said wheel cylinder and said adjuster mechanism;

the improvement comprising;

said brake shoe assemblies being identical and substantially symmetrically formed about said second diameter, each of said brake shoe assemblies being formed of two identical sections each having a web portion and a rim portion, said sections having means securing said identical sections together,

a pair of oblong openings in said backing plate having their extended major axes forming acute angles with and intersecting said first diameter and intersecting each other radially outward of said wheel cylinder,

a first pair and a second pair of other openings in said web portions, said first pair of other openings being respectively aligned with said pair of oblong openings in overlying relation,

one of said spring means having opposed end hooks extending through said second pair of other openings and located adjacent said adjuster mechanism and another of said spring means having opposed end hooks extending through said first pair of other openings and said pair of oblong openings, said oblong openings acting as cam guides for said another spring means opposed end hooks and giving a return registry for said brake shoe assemblies.

4,573,558

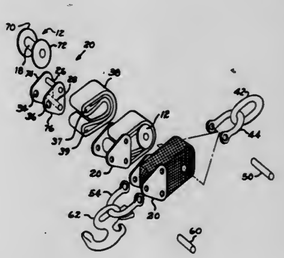
COMPACT SHOCK-ABSORBER FOR TIE-DOWN DEVICES

Der-Shi Wang, Mississauga, Canada, assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Jun. 6, 1984, Ser. No. 618,008

Int. Cl.[4] F16F *7/12*

U.S. Cl. 188—268 **20 Claims**



1. A shock absorber comprising:

a guide spool having two side plates connected by a spool shaft having an axial bore;

a guide bracket displaced from said guide spool having two side plates connected by a pair of spatially separated web shafts, each of said side plates having an anchor pin aperture axially aligned with each other; and

a continuous loop of webbing having its opposite end captivated by said spatially separated web shafts and its central portion looped over said spool shaft.

4,573,559

SUBWAY ELECTRIC MOTOR AND FAN CONSTRUCTION

Michael Shepherd, Carmel, Ind., assignor to Wallace Murray Corporation, New York, N.Y.

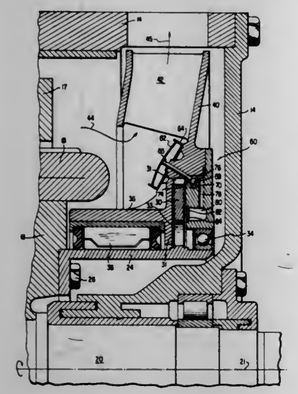
Filed Jan. 12, 1983, Ser. No. 457,462

Int. Cl.[4] F16D *31/00;* H02K *9/06*

U.S. Cl. 192—58 B **4 Claims**

1. A temperature controlled fan fluid coupling for connec-

tion between an adjustable speed electric motor and a fan coupled to the motor armature interiorily of the motor, the motor having an armature, field and armature windings, and openings in the motor housing for the passage of air along and through the interior of the motor, wherein the motor is cooled by the fan whenever the motor ambient temperature exceeds a predetermined value, the coupling including a drive disc rigidly coupled to the motor armature for rotation therewith, the fan rigidly carried by a hub element, the latter having a drive chamber at least partially filled with a viscous shear fluid, the drive chamber receiving the drive disc, the fan rotating upon rotation of the drive disc by virtue of the shear liquid transmitting from the drive disc to the hub element, a reservoir chamber hydraulically coupled to the drive chamber, a fluid return path between a radially outermost part of the driving chamber and the reservoir chamber, a temperature responsive valve arrangement for blocking and for unblocking the fluid return path to thereby vary the amount of viscous shear liquid in the driving chamber and hence vary the amount of torque transmitted from the drive disc to the fan, a valve ball movable into and out of the fluid return path to thereby block and to unblock it, the valve ball held in one of its positions by centrifugal force upon rotation of the fan, the ball moved to its other position by the action of a temperature responsive device carried by the hub element.

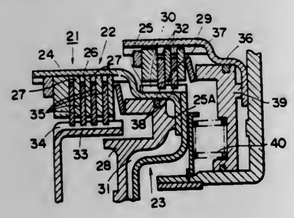


4,573,560

CLUTCH DRUM FOR MULTIPLE PLATE CLUTCH ASSEMBLY

Shinsuke Eguchi, Zama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Aug. 22, 1983, Ser. No. 525,379
Claims priority, application Japan, Aug. 23, 1982, 57-144757
Int. Cl.⁴ F16D *25/10*
U.S. Cl. 192—87.1 **11 Claims**



1. A clutch drum for a multiple plate clutch assembly having a first clutch including first clutch plates and a clutch piston, and a second clutch including second clutch plates, said clutch drum comprising:

a tubular body including a large diameter tubular section adapted to mount therein the first clutch plates, and a small diameter tubular section contiguous to said large diameter tubular section and adapted to slidably receive therein the clutch piston;

means, on said large diameter tubular section, for mounting the first clutch plates to said large diameter tubular section; and,

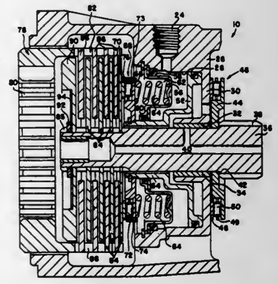
an end plug secured to said small diameter tubular section to sealably close one end of said small diameter tubular section, said end plug having a tubular flange, wherein said tubular flange is fit on the outer surface of said small diameter tubular section, and said tubular flange is formed with a plurality of axially extending slots serving as means for mounting the second clutch plates to said small diameter tubular section.

4,573,561

DRIVE MECHANISM

Brian C. Deem, Avon Lake, and John L. Hall, Middleburg Hts., both of Ohio, assignors to Allied Corporation, Morristown, N.J.

Filed Jun. 23, 1983, Ser. No. 507,263
Int. Cl.⁰ F16D *13/22*
U.S. Cl. 192—91 A **12 Claims**



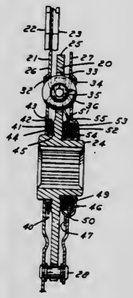
1. Drive mechanism comprising a housing defining a bore therewithin, output drive means rotatably supported by said housing for providing an output driving connection, input drive means for providing an input driving connection, clutch means for providing a driving connection between the input drive means and the output drive means when the clutch means is engaged and for breaking said driving connection when the clutch means is disengaged, resilient means yieldably engaging said clutch means, means for operating said clutch means, and means for communicating fluid pressure to said clutch operating means, said clutch means including clutch discs slidably mounted on said input and output drive means, abutment means carried by one of said drive means for engagement by said clutch discs, said resilient means forcing said clutch discs into driving engagement with each other and said abutment means to provide a driving connection between said input and output drive members, said clutch operating means including piston means slidably mounted in said bore and movable in response to fluid pressure to engage and disengage said clutch discs by controlling said resilient means, first bearing means for providing a rotary connection between the piston means and said clutch discs to permit rotation of the clutch discs while the piston means is restricted from rotation, and second bearing means between said one drive means and said housing for transmitting to said housing the load generated by said resilient means on said one drive means through said clutch discs.

4,573,562

CLUTCH DISC ASSEMBLY

Daniel L. DeLand, Alma, Mich., assignor to Alma Products Company, Alma, Mich.

Filed Aug. 1, 1983, Ser. No. 519,263
Int. Cl.⁴ F16D *3/14*
U.S. Cl. 192—106.2 **13 Claims**



1. A clutch disc assembly comprising

a drive clutch hub having a radial disc,

a driven plate on one side of said disc,

a retainer plate on the opposite side of said disc and interconnected for movement with said driven plate,

said disc, driven plate and retainer plate having generally aligned openings,

first spring means in some of said openings,

second spring means in others of said aligned openings,

first stage friction means between said disc and said driven plate, and

second stage friction means comprising a thrust plate attached to said retainer plate and friction means interposed between said retainer plate and said thrust plate,

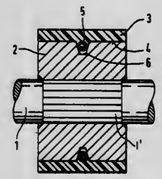
said second stage friction means comprising a fork, a lock washer on said hub and friction material interposed between said fork and said lock washer.

4,573,563

TRANSPORT ROLLER, ESPECIALLY FOR TRANSPORTING PAPER

Johannes C. Delhaes, Heerlen, Netherlands, assignor to Rubberen Kunststoffabriek ENBI, B. V., Nuth, Netherlands

Filed Jun. 19, 1985, Ser. No. 746,368
Claims priority, application Fed. Rep. of Germany, Jul. 3, 1984, 3424396
Int. Cl.⁴ B65G *39/07*
U.S. Cl. 193—37 **6 Claims**



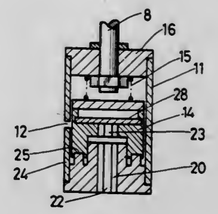
1. In a transport roller having a rotational axis and including a solid roller core and an elastic roller jacket surrounding said roller core with a radially inwardly directed biasing force, the improvement comprising radially outwardly open ring groove means in said rigid roller core, and helical endless spring means partially embedded in said elastic roller jacket, said endless spring means having a portion projecting radially inwardly from said elastic roller jacket and reaching into said ring groove means for anchoring said elastic roller jacket against displacement in the direction of said rotational axis.

4,573,564

TROLLEY LOCKING DEVICE

Frederik R. L. Rheeder, and Deon Dixon, both of Randburg, South Africa, assignors to Trailmor [Proprietary] Limited, Johannesburg, South Africa

Filed Apr. 19, 1984, Ser. No. 602,181
Claims priority, application South Africa, May 10, 1983, 83/3322
Int. Cl.⁴ G07F *17/10*
U.S. Cl. 194—250 **9 Claims**



1. A trolley locking device comprising a lock unit (4) and a key member (6) releasably connectable thereto, the lock unit having a tubular body provided with rotation-inhibiting formations (24) therein and housing an axially movable and rotatable plug (14) in the interior thereof, the plug being biased towards engagement with the rotation inhibiting formations which in use retain the plug in one of at least a first and a second selected angular position in the absence of axial movement of the plug, the plug has a key-way (20), the key member being co-operable with said key-way whereby a rotational force is applied from the key member to the plug, the plug having a transverse coin receiving slot (13) and a recess (17) opposite the key on the side of the slot remote from the key-way in the plug, an access slot (12) in the tubular body positioned for alignment with the coin receiving slot in the plug in said first angular position of the plug relative to the tubular body to allow introduction or removal of a coin (28) in and from the slot, the access slot (12) being at least partially misaligned with the coin receiving slot in said second angular position of the plug, relative to the tubular body, the plug being movable axially by engagement of the key member to free the plug for rotation only when a coin is located in the coin receiving slot whereby axial movement of the key member is transmitted to the plug and said plug becomes rotatable by disengagement thereof from the rotation inhibiting formations, the key member being removable from the said lock unit with the plug in said second angular position with a coin in the coin receiving slot but being non-removable with the plug in the said first angular position of the plug, the recess opposite the key member serving to receive part of the key member in the absence of a coin being present in the coin or token receiving slot.

4,573,565

CHAIN CONVEYOR DRIVER CONSTRUCTION

Ernst Braun, and Gert Braun, both of Essen-Heisingen, Fed. Rep. of Germany, assignors to Halbach & Braun, Fed. Rep. of Germany

Filed Mar. 6, 1980, Ser. No. 127,841
Claims priority, application Fed. Rep. of Germany, Mar. 6, 1979, 2908683
Int. Cl.⁴ B65G *19/10*
U.S. Cl. 198—719 **2 Claims**

1. A driver for a chain conveyor adapted to run in a substan-

tially horizontal driven direction in a conveyor trough having opposite side guide walls extending in the driven direction, comprising:

a driver arm having an outer side portion;

a guide shoe horizontally pivotally mounted about a substantially vertical axis to said outer side portion and having an inner side face with a recess into which said outer side portion extends;

a substantially vertically connecting element detachably and pivotally extending through said outer side portion and detachably connected to said guide shoe for pivotally connecting said guide shoe to said driver arm;

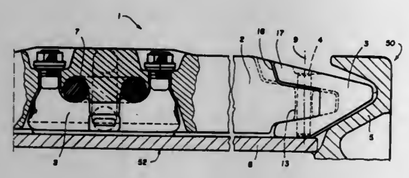
said guide shoe guided for motion in one of said side guide walls;

said driver arm and connected guide shoe being axially symmetrical about a vertical plane which is normal to said driven direction;

said guide shoe and said outer side portion having opposing surfaces therebetween for limiting pivotal movement of said guide shoes relative to said driver arm to a selected range;

said guide shoe having outer end surfaces defining forwardly facing and rearwardly facing cutting surfaces in said driven direction;

said guide shoe pivoting within said selected range and with movement in said driven direction to a predetermined scrape angle between the forwardly facing cutting surface



and a transverse line to said driven direction and a predetermined guide clearance angle between the rearwardly facing cutting surface and said driven direction;

said driver arm outer side portion being tapered outwardly and said guide shoe recess being tapered inwardly and substantially conforming in shape to said outer side portion, said recess being larger in cross-section than said outer side portion for establishing a predetermined clearance of motion between said guide shoe and said driver arm;

an outer surface of said outer side portion and a facing inner surface of said recess being circular, said vertical connecting element extending through said outer side portion and being connected to said guide shoe for permitting relative horizontal pivotal motion of said outer side portion and said guide shoe;

a pair of stop surfaces defined on said guide shoe and an opposing pair of stop surfaces defined on said outer side portion of said driver arm for limiting the pivotal movement of said guide shoe to said selected range; and

a projection extending from an upper surface of said guide shoe toward said driver arm, said driver arm having a U-shaped recess for receiving said projection of a size large enough to permit pivotal motion of said guide shoe through said selected range, said U-shaped recess of said driver arm having side walls which extend transversely to said driven direction, said stop surfaces of said driver arm formed adjacent said U-shaped recess.

4,573,566

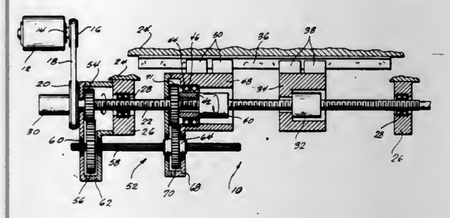
DUAL STROKE TRANSFER DRIVE

Horst L. Roman, Sterling Heights, Mich., assignor to The Cross Company, Fraser, Mich.

Filed Jan. 13, 1984, Ser. No. 570,666

Int. Cl.[4] B65G *47/31*

U.S. Cl. 198—461 **11 Claims**



7. In a machine tool a transfer drive moving a first workpiece transfer bar over a first distance and simultaneously moving a second workpiece transfer bar over a second distance which is different from the first distance, the transfer drive of a type-having: a frame; a motor; a first carriage; means for mounting the first carriage for reciprocating movement relative to the frame; means for fixably joining the first carriage to the first transfer bar; a second carriage; means for mounting the second carriage for reciprocating movement relative to the frame; means for fixably joining the second carriage to the second transfer bar; and means for reciprocating the first carriage at a first rate related to the first distance and simultaneously reciprocating the second carriage at a second rate related to the second distance, wherein said means for reciprocating the first and second carriages comprises;

a first nut fixed to said first carriage;

a second nut;

means for rotatably mounting said second nut to said second carriage;

a driving screw engaging said first nut and said second nut;

means for rotatably mounting said driving screw relative to said frame;

means for controlling said motor to said driving screw to rotate said driving screw at a rate functionally related to said first rate of reciprocation; and

means for rotating said second nut comprising a first driving gear mounted for rotation with said driving screw; a rotatable first driven gear in meshed relationship with said first driving gear; a rotatable second driving gear; means connecting said first driven gear and said second driving gear for rotation in unison; and a second driven gear in meshed relationship with said second driving gear and joined for rotation in unison with said second ball nut, the ratio between said first driving gear and said first driven gear and the ratio between said second driving gear and said second driven gear being respectively selected to establish said second rotational rate of said second nut.

4,573,567

CONVEYOR HOUSING ACCESS PORT

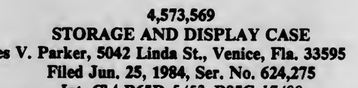
Robert T. Swinderman, Kewanee, Ill., assignor to Martin Engineering Company, Neponset, Ill.

Filed Feb. 28, 1983, Ser. No. 470,238

Int. Cl.[4] B65G *21/00*

U.S. Cl. 198—860.4 **5 Claims**

1. A conveyor housing access port including an aperture defined in a conveyor housing wall, an upstanding flange disposed around the perimeter of said aperture, an elastomeric closure member defining a groove in the underside thereof around the entire periphery of said closure member, said groove adapted to receive said upstanding flange so as to effect a seal about the entire periphery of said aperture whereby said closure member is peelably removable, either partially or totally, from any point on the periphery thereof and acts to cover and seal said aperture around substantially its entire periphery to thereby prevent the flow of material into or out of



said housing while, at the same time affording a partial exposure of the aperture for inspection without necessitating removal of the entire cover.

4,573,568

CHAIN FOR A FLIGHT CONVEYOR

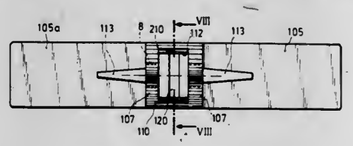
Wilhelm Maag, and Paul Straub, both of Oberuzwil, Switzerland, assignors to Gebruder Buhler AG, Uzwil, Switzerland

Filed Jun. 22, 1983, Ser. No. 506,723

Claims priority, application Switzerland, Jul. 22, 1982, 4480/82

Int. Cl.[4] B65G *19/24*

U.S. Cl. 198—731 **6 Claims**



1. A removable flight attachment for a flight conveyor for feeding a load of material through a trough of predetermined width, a series of chain links each interconnected by a hinge bolt, said links having a stem and a wider body portion, said body portion having two sidewalls and an opening for receiving the next succeeding stem with said body portion and succeeding stem being joined by said hinge bolt passing through aligned apertures therein, said removable attachment comprising:

a frame having an opening sized to receive said wider body portion and a front face having an opening sized to receive said stem but not said wider body portion, including

a rest surface at least on the bottom portion of said frame in slideable engagement with said trough,

bearing walls attached to said frame and located on each side of said body portion, said bearing walls including apertures aligned to receive said hinge bolt,

a pair of lateral arms extending outwardly from said frame, and

a pair of cross pieces bridging said bearing walls to form together the enclosed frame.

4,573,569

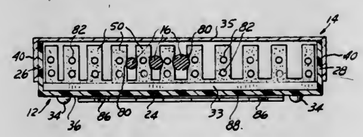
STORAGE AND DISPLAY CASE

Dolores V. Parker, 5042 Linda St., Venice, Fla. 33595

Filed Jun. 25, 1984, Ser. No. 624,275

Int. Cl.[4] B65D *5/52*; B05C *17/00*

U.S. Cl. 206—1.7 **4 Claims**



1. A storage and display case comprising a substantially rectangular open top enclosure, a substantially rectangular cover for said enclosure, said cover having a peripheral wall formed by a pair of parallel spaced-apart longitudinal sidewalls and a pair of parallel spaced-apart endwalls, and means for holding a plurality of elongated objects in said enclosure, said enclosure comprising a pair of hingedly connected portions each having a bottom wall and a pair of spaced-apart sidewalls connected by an endwall, wherein said means for holding a plurality of elongated objects comprises a slotted frame affixed between the sidewalls of one of said enclosure portions, said slotted frame having two substantially parallel spread-apart rail portions and a plurality of slats integrally interconnecting said rail portions at spaced-apart intervals, and a row of grippers disposed substantially parallel to said slotted frame and formed of a single piece of compressible, deformable and resilient material having spaced-apart projecting portions, at least one bore extending transversely through each of a pair of adjoining projecting portions for locally increasing the compressible deformation of said adjoining projecting portions when laterally elastically gripping an elongated object placed therebetween, whereby said enclosure is adapted for placement within the upturned cover in a hinged position with the endwalls of said enclosure portions abutting the longitudinal sidewalls of the cover and at least one of said elongated objects gripped between a pair of adjoining gripper projecting portion, an end of said elongated object being held between a pair of adjacent slats on said slotted frame.

4,573,570

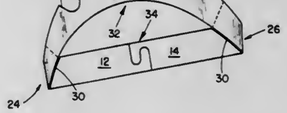
TACO SUPPORT

Jeffery J. Cortopassi, Santa Anna, Calif., assignor to Taco Bell, Irvine, Calif.

Filed Jun. 22, 1984, Ser. No. 623,477

Int. Cl.[4] B65D *65/16*

U.S. Cl. 206—45.33 **8 Claims**



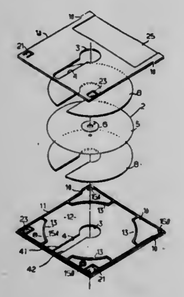
1. A structural support for a taco, for protecting the taco when packaged in a wrap, and also serving as a taco stand to maintain an unwrapped taco in an upright position, comprising an elongated support member formed into a closed structural support having a relatively flat base and a forwardly projecting bowed front, said elongated support member being folded upwardly through approximately 90° from said flat base along a first pair of angled fold lines and then being folded through approximately 180°, along a second pair of angled fold lines at each of two rear corner locations, into the forwardly projecting front, with the forwardly projecting bowed front being in the general shape of, but slightly larger than, a side profile of a taco, such that a taco can be placed on its side on said flat base and within the forwardly projecting bowed front, with the taco being protected thereby for wrapping, and said elongated support member also having a top edge defining a pair of opposed upwardly facing cutouts therein positioned on opposite sides of said projecting bowed front, whereby a taco can be placed in and supported upright by the opposed cutouts such that the structural support also serves as a taco stand.

4,573,571
PENCIL CASE
Tae Y. Leem, Flat 52-204, Walker Hill Apt., Kwangjang-dong, Sungdong-ku, Seoul, Rep. of Korea
Filed Oct. 5, 1984, Ser. No. 658,031
Int. Cl.[4] A45C *11/34*; B65D *69/00*
U.S. Cl. 206—214 **5 Claims**



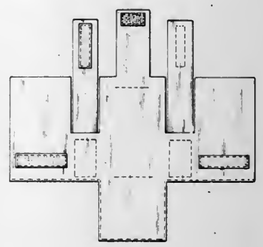
1. A pencil case comprising a cylindrical body member having upper and lower ends, a removable first cap for the upper end of the body member, the lower end of the body member being formed with an internal circumferential thread and the case further including a second cap for the lower end of the body member, the second cap having an outer circumferential thread complimentary to the internal thread of the body member for threading the cap into and out of the lower end of the body member, the second cap having a central internal protrusion defining an internal annular base wall portion around the protrusion for the receipt of on-end pencils and a central wall portion above the base wall portion for the receipt of further on-end pencils at a higher level than the pencils received on the annular portion, the second cap further being provided with engagement means for manually threading the second cap into and out of said body member to raise and lower the pencils in the case.

4,573,572
RECORDING DISC CARTRIDGE
Yoshitake Kato, Ibaragi, and Mitsuaki Naoi, Tokyo, both of Japan, assignors to Hitachi Maxell, Ltd. and Matsumi Electric Co., both of Tokyo, Japan
Filed Aug. 22, 1984, Ser. No. 643,355
Claims priority, application Japan, Aug. 24, 1983, 58-155233
Int. Cl.[4] G11B *23/02*
U.S. Cl. 206—303 **6 Claims**



1. A recording disc cartridge which comprises a disc case composed of a top case half and a bottom case half each half being provided with peripheral walls, a drive shaft insertion hole defined at the central portion of said disc case and a head insertion hole defined on a portion apart from said drive shaft insertion hole in a frontward direction at the central portion of the disc case relative to the left and right direction, each of said top half and bottom half of said disc case being provided with at least one pair of connecting bosses in such a manner that the connecting bosses of one half are engageable with the corresponding are disposed in symmetrical positions relative to a phantom line passing through the center of the head insertion hole and the center of the drive shaft insertion hole said head insertion hole communicating with said drive shaft insertion hole.

4,573,573
PROTECTIVE COVERING FOR PORTABLE AUDIO DEVICES
Lori Favaro, 56 Briarcliffe La., Bourbonnais, Ill. 60914
Filed Jan. 2, 1985, Ser. No. 688,180
Int. Cl.[4] A45C *11/00*; B65D *65/06*
U.S. Cl. 206—305 **11 Claims**

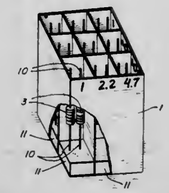


1. A one-piece flexible cover for a personal audio unit, said cover comprising adjustably dimensioned panels having an inner and an outer layer of material with one layer of shock-absorbing material located thereinbetween, said adjustable panels including: a rectangular back panel, lower left and lower right side panels flexibly attached to opposite sides thereof, rectangular front panels flexibly attached to each of said lower left and lower right side panels, elongated edge panels attached to each of said lower left and lower right side panels and an elongated closure member attached to the top of said back panel whereby the flexible cover allows for flexible attachment hinges which may be located as best required to fit said audio unit, the cover further including:
first fastening means on said back panel which releasably attach said back panel to one of said front panels;
second fastening means on said front panels which releasably attach each said front panel to each other;
third fastening means on said edge panels which releasably attach each said edge panel to each other; and
fourth fastening means on said closure member and on one of said front panels which releasably attach said closure member and such front panel to each other wherein each said fastening means provides dimensional variability in that a plurality of sizes of audio units may be effectively contained by said cover.

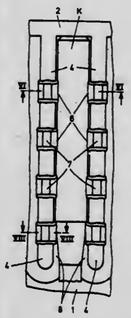
4,573,574
AXIAL LEAD COMPONENT PACKAGE WITH WAX RETAINING MECHANISM
Colin A. Connery, c/o SALSA, P.O. Box 1296, New York, N.Y. 10009
Filed Jun. 25, 1984, Ser. No. 624,286
Int. Cl.[4] B65D *73/02*
U.S. Cl. 206—328 **2 Claims**

1. An array of axial lead components stored in a container from which individual components can be removed as desired, which comprises:

(a) a plurality of axial lead components including at least two portions, each of said portions including only components having a selected parameter, such as resistance, of a particular predetermined value, said value being different from the predetermined value of said selected parameter for the components in each of the other portions of said plurality of components, said components, including the axial leads at both ends of each component, all being elongated in over-all shape and having substantially the same length; and
(b) a container including a rectangular box, open on one face and partitioned into a plurality of elongated cells at least equal in number to the number of said portions of said plurality of components, said elongated cells being parallel to each other and at a right angle to the open face of the box, said cells being open at their top ends adjacent to the open face of the box, the depth of each cell being approximately equal to said length of the stored components, each of said cells being filled to a predetermined depth at its closed, bottom end with a wax or wax-like substance previously melted to accept a component lead therein, said wax or wax-like substance having thereafter been solidified around said lead in contact therewith throughout the entire portion thereof previously inserted within said melted material to provide means for retaining said component in said cell, said component being removable manually from said solidified material by gripping the upper lead of the component with a suitable tool held in the user's hand.

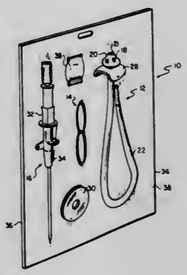


4,573,575
NEEDLE PACKAGING
Siegmar Bergrath, and Fritz Kappertz, both of Wurselen, Fed. Rep. of Germany, assignors to Singer Spezialnadelfabrik GmbH, Wurselen, Fed. Rep. of Germany
Filed Nov. 19, 1984, Ser. No. 672,649
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1983, 8336978[U]
Int. Cl.[4] B65D *85/24*
U.S. Cl. 206—380 **4 Claims**



1. A package for sewing machine needles or the like comprising a block of synthetic thermoplastic material formed by a first molding process with a plurality of elongated parallel sewing needle accommodating compartments opening on the same side of the block, each said compartments being bounded on both sides by a partition composed of thermoplastic material integral with that of said block, said compartments each being formed in the block deeper than the maximum diameter of the needles to be accommodated, and needle retaining lugs formed on said partitions so as to project into said needle accommodating compartments by a second molding process which deforms the thermoplastic material at the top of the partitions creating in each partition a localized recess of which the thermoplastic material is displaced into an adjoining compartment to form one of said lugs.

4,573,576
PERCUTANEOUS GASTROSTOMY KIT
Thomas C. Krol, 3344 Ironwood Dr., Oceanside, Calif. 92056
Filed Oct. 27, 1983, Ser. No. 545,827
Int. Cl.[4] B65D *85/54*; A61M *21/00*
U.S. Cl. 206—471 **14 Claims**

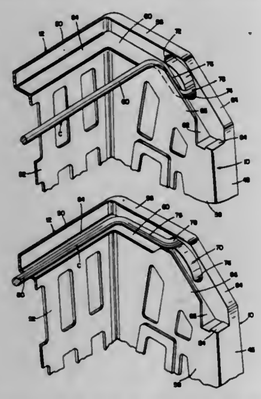


13. A percutaneous gastrostomy kit comprising:
a sealable container;
a mushroom catheter of a unitary construction comprising an elongated elastic tube having a mushroom shaped head on one end thereof with a plurality of ports in said head, including one port aligned with the bore of said tube, said tube having a closed other end and a suture receiving transverse bore through said closed other end;
a quantity of about five feet of elongated No. 2 suture thread;
an inner sealing elastic washer for inserting on said tube adjacent said head;
an outer sealing elastic washer for extending over said tube;
a Medicut catheter of about 16 gauge; and
a packet of surgical lube;

4,573,577
STACKABLE CONTAINER
Daniel R. Miller, Cincinnati, Ohio, assignor to Buckhorn Material Handling Group Inc., Milford, Ohio
Filed Feb. 8, 1980, Ser. No. 119,799
Int. Cl.[4] B65D *21/06*
U.S. Cl. 206—506 **5 Claims**

1. An open-top container having a bottom wall, side walls extending upwardly from opposite sides of said bottom wall, end walls extending upwardly from said bottom wall between said side walls, said side walls being constructed such that said container may receive an upper container of identical construction in nested relation therewith at a low level, and stacking means associated with said container for supporting an upper container of identical construction in stacked relation thereon selectively at a high level and at an intermediate level between the high and low levels, said stacking means comprising a pair of bales, and means mounting said bales on said container for movement from a first position adapted to support an upper container of identical construction at said high

level, to a second position adapted to support an upper container of identical construction at said intermediate level, and to a third position adapted to clear an upper container of identical construction for nesting at said low level, said mounting means comprising means on said end walls providing elongated slots near each end of each side wall, pins on the ends of



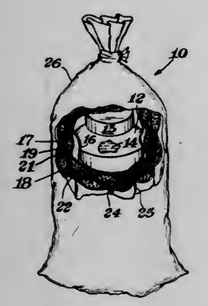
the said bales engaging said slots, means on said end walls for supporting said bales in said first position when said pins are engaged in one end of said slots, means on said end walls for supporting said bales in said second position when said pins are engaged in said one end of said slots, and means on said side walls for supporting said bales in said third position when said pins are engaged in the opposite ends of said slots.

4,573,578

METHOD AND MATERIAL FOR THE RESTRAINT OF POLAR ORGANIC LIQUIDS

George K. Greminger, Jr.; Richard H. Hall, and Mary K. Dehnke, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 19, 1983, Ser. No. 562,924
Int. Cl.⁴ B65D *85/84*
U.S. Cl. 206—524.4 **12 Claims**



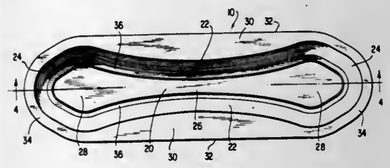
1. A device for restraining polar organic liquids comprising a means defining a first space containing a polar organic liquid, a second space from which polar organic liquid is to be excluded, and having at least one body of substituted cellulose disposed between the first and second spaces with the further limitation that in the event the polar organic liquid contacts the substituted cellulose, a liquid immobilizing gel is formed which thereby prevents the polar organic liquid from entering the second space.

4,573,579

TACO TRAY

Brian K. Murdick, Columbus, and William H. Haase, Dublin, both of Ohio, assignors to International Paper Company, New York, N.Y.

Continuation of Ser. No. 525,751, Aug. 23, 1983, Pat. No. 4,535,891. This application May 24, 1985, Ser. No. 737,615
Int. Cl.⁴ B65D *1/34, 85/36*
U.S. Cl. 206—525 **1 Claim**



1. A tray adapted for holding a taco in an upright position, said tray comprising a base, integral side and end walls extending upwardly from said base and in combination with said base defining an elongated cavity adapted to receive a taco, and a reinforcing flange extending around one top of said cavity and integrally connected to said top and end walls, the side walls being inwardly bowed so that longitudinally central portions thereof are narrowed with respect to the opposite longitudinal ends of said cavity to thereby form a support for a taco, the side walls diverging upwardly from said base for wedgingly receiving therebetween a taco, the side walls at the ends of the cavity being wider than the side walls at the longitudinally central part of the cavity, wherein said base is enlarged at ends thereof to provide a stable support against overturning of the tray when a taco is positioned in it, the end walls being rounded in outline, the reinforcing flange being generally rectangular in peripheral outline, the base being reinforced by a downwardly offset peripheral rib, said rib also defining the supporting surface for said base, the ratio of the length of the cavity to the narrowest distance between the inwardly bowed side walls being greater than a factor of three, the ratio of the width of the widest part of the base ends of the cavity to the width of the narrowest part of the cavity being at least a factor of two, whereby a taco in the cavity is wedgingly engaged along a portion of its sides by at least the narrowest cavity portions defined by the inwardly bowed side walls of the cavity and a portion of the taco adapted to extend above the top of the cavity, and wherein the widest portions of the downwardly offset peripheral base rib, considered transversely of the longitudinal axis of the cavity, are wider than the widest portion of a taco adapted to be placed in the cavity, to thereby inhibit tipping over of the tray when a taco is placed in the cavity.

4,573,580

UNIT DOSE MEDICATION DISPENSER

Michelle Messer, 103 Archibald St., Kansas City, Mo. 64111

Filed Apr. 2, 1984, Ser. No. 596,110
Int. Cl.⁴ B65D *83/04*
U.S. Cl. 206—534 **2 Claims**

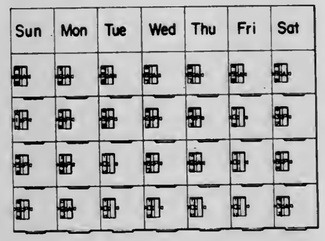
1. A unit dose medication dispenser to provide pills to a patient at preselected times of day, said dispenser comprising:

a rigid, rectilinear container comprised of rectangular receptacles arranged in rows of seven receptacles each, thereby presenting a matrix of rows and seven columns;

each receptacle being further comprised of a bottom, four upwardly extending sidewalls, and a liftable flat lid hingedly attached to the top of one of the sidewalls, each lid being provided with a tab to facilitate lifting of the lid;

means for designating each column with a different day of the week and each lid selectively with a time of the day before noon and after noon, wherein said means for designating each lid with the time of the day is comprised of a

subcompartment within each receptacle, first and second substantially parallel and vertically oriented wheels disposed within said subcompartment, and a substantially horizontally oriented spindle fixed within said subcompartment on which said wheels are rotatably mounted for independent rotation, the arcuate wall of said first wheel



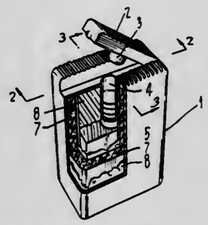
further being imprinted with numbers representing the hours of the day, the arcuate wall of said second wheel being imprinted with letters representing a.m. and p.m., each lid being provided with a cut-away portion through which a single number in its entirety and a single letter in its entirety may be seen when said wheels are set to a desired time of day at which medication is to dispensed.

4,573,581

ENVIRONMENTALLY CONTROLLED MEDICATION CONTAINER

Howard R. Galloway, Adelaide, and Gary Shanks, Hawthorn, both of Australia, assignors to Network Medical Containers Pty, Ltd., Wayville, Australia

Filed Jul. 10, 1984, Ser. No. 629,454
Claims priority, application Australia, Jul. 18, 1983, PG0319
Int. Cl.⁴ B65D *81/38, 85/56;* F25D *3/08;* A45C *11/00*
U.S. Cl. 206—570 **7 Claims**



1. A container having an outer case and an inner chamber, and thermal insulating means in a cavity therebetween characterized in that the casing is of opaque rigid material, and the thermal insulating means includes a heat sink and a reflective and conductive shield surrounding the heat sink, whereby rise in temperature of the contents of the inner chamber following exposure of the outer casing to an increased temperature is delayed for a period sufficient to avoid deterioration of the contents of the chamber, under normal conditions of use.

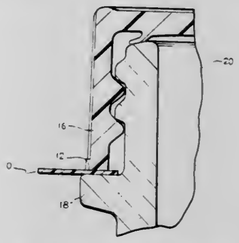
4,573,582

RING SEAL TAMPER INDICATING DEVICE

Maximillian Kusz, Waterville, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Apr. 23, 1984, Ser. No. 602,790
Int. Cl.⁴ B65D *41/32*
U.S. Cl. 206—807 **14 Claims**

1. A ring seal for sealing the space between a container having a neck portion and a top opening and a closure therefor, the ring seal having a portion located externally of the neck of the container and the closure, the ring seal being away from the top opening, said ring seal having an adhesive on at least



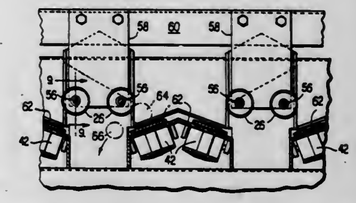
one of its top and bottom surfaces whereby removal of the closure causes the ring seal to fracture or distort externally of the container to warn the user of prior tampering.

4,573,583

FRUIT SIZER

Gary O. Niemann, 3204 E. Lake Hartridge Dr., NW., Winter Haven, Fla. 33880

Continuation-in-part of Ser. No. 435,545, Oct. 21, 1982. This application Jan. 10, 1984, Ser. No. 570,074
Int. Cl.⁴ B07B *13/04*
U.S. Cl. 209—663 **3 Claims**

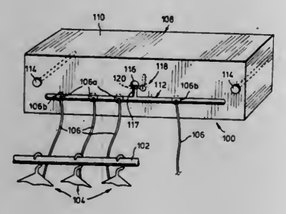


1. Apparatus for driving two objects in rotation about respective adjacent first and second parallel axes comprising a flexible drive belt, means for moving said flexible drive belt along its length, a first idler pulley mounted for rotation about a third axis of rotation parallel to and spaced from said first and second parallel axes, and a twisted idler pulley mounted for rotation about a fourth axis which is angled with respect to said first and second axes and parallel to a plane containing said first and second axes, wherein said flexible belt extends sequentially from said first idler pulley to (1) a first of said objects, (2) said twisted idler pulley, (3) a second of said objects, (4) to said first idler pulley.

2. Apparatus according to claim 1 wherein a centerline of the part of said drive belt extending from a first of said objects to said twisted idler lies in a plane parallel to a plane containing a centerline of the part of said drive belt extending from said twisted idler to said second of said objects.

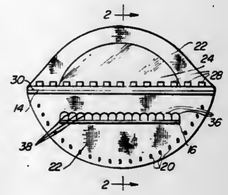
3. The apparatus of claim 2 wherein each of said objects is a sizing roller in a fruit sizing machine.

4,573,584
SECURITY DEVICE
Martin Otema, 51 Pine Ridge Dr., Scarborough, Ontario, Canada M1M 2X6
Continuation-in-part of Ser. No. 179,797, Aug. 20, 1980, abandoned. This application Aug. 11, 1981, Ser. No. 291,877
Int. Cl.[4] A47F 7/24
U.S. Cl. 211—4 12 Claims



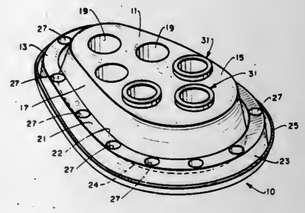
1. A security device comprising:
a plurality of flexible elongate elements each adapted to retain at least one article to be secured;
an anchor member for said flexible elements, said anchor member being of relatively small dimensions so as to be capable of being secured in a fixed position and including an elongate undercut slot extending longitudinally of the anchor member;
said flexible elements having first end portions serially disposed in said slot, with the remainder of each element extending outwardly from said member and being of a length sufficient to permit the articles to be individually manipulated with respect to said member while remaining secured thereto by said elements, each said flexible element having an enlargement at its first end and said slot being dimensioned to permit free sliding movement of the flexible elements along the slot while preventing movement of the enlargements through the slot, said anchor member further including a release opening which is disposed intermediate the ends of the slot and communicates with said slot and which is of a size sufficient to permit movement of any of said enlargements therethrough so that the elongate elements in said slot can be moved serially past said opening until a predetermined element to be released from said anchor member reaches the position of the opening, whereby that element can be released without the need to first release preceding elements in said slot;
a plurality of article retaining members, each of which is attached to a second end portion of a respective elongate flexible element, is adapted for manipulation independently of the first end portion thereof and for retaining an article of clothing on that flexible element, and is independent of the respective first end portion when that first end portion is retained by the anchor member;
lock means coupled to said anchor member and including a lock member moveable between a locking position in which the member prevents movement of said elements from said slot to said release opening, and a release position permitting such movement of the elongate elements, said lock means being releaseable to permit movement of said lock member to said release position when authorized removal of articles to be permitted; and
mounting means attached to the anchor member, for mounting and securing the anchor member in a fixed position, thereby to secure the flexible elements when their enlargements are locked in the anchor member.

4,573,585
JEWELRY DISPLAY
Linae Frei, 1343 Church St., Northbrook, Ill. 60062
Filed Dec. 3, 1984, Ser. No. 677,554
Int. Cl.[4] A47F 5/08
U.S. Cl. 211—13 5 Claims



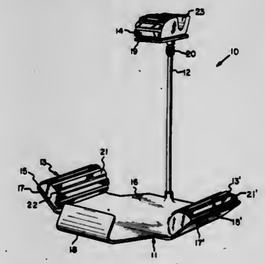
1. A jewelry display comprising:
a planar member having front and rear surfaces;
means on said rear surface for mounting said planar member to a vertical supporting surface;
shelf defining means attached to the front surface of said planar member, said shelf defining means having a plurality of spaced apart pegs attached to and extending upwardly from the upper surface thereof and a plurality of adjacent pillows attached to the upper surface thereof and defining jewelry receiving slots therebetween;
a plurality of spaced apart hooks attached to and extending outwardly from the front surface of said planar member; and
padding attached to and covering substantially the entire front surface of said planar member.

4,573,586
EASTER EGG DYEING AND DRYING DEVICE
Michael T. Helmer, 7517 Blackthorne Way, Citrus Heights, Calif. 95610
Filed May 2, 1983, Ser. No. 490,324
Int. Cl.[4] A47F 7/00
U.S. Cl. 211—14 11 Claims



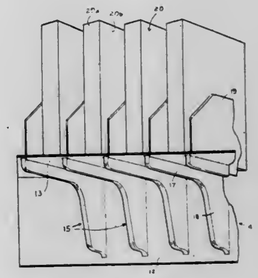
1. An Easter egg dyeing and drying device comprising a one piece rack having an upper portion and a lower portion,
the upper portion including a top surface and a circumferentially continuous downwardly depending side wall, a single file of uniformly spaced apart dye wells spaced around the perimeter of the top surface each being directed downwardly from the plurality of locations along the top surface thereof,
the lower portion including a top surface, a downwardly depending lower inside wall, and a downwardly depending lower outside wall each of said downwardly depending walls being circumferentially continuous,
the bottom edge of the lower inside wall adjoining the bottom of the side wall of the upper portion to form a dye trap, a continuous flange extending upwardly from a bottom edge of said downwardly depending lower outside wall defining an edge trap between the upper portion and the lower portion,
the top surface of said lower portion being of a lower elevation than the top surface of the upper portion,
a plurality of egg receiving recesses at space intervals in single file, along the top surface of the lower portion,
said recesses being of smaller diameter than said wells.

4,573,587
TIRE DISPLAY STAND
John S. Matthews, Jr., Dearborn, Mich., assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Jun. 4, 1984, Ser. No. 616,629
Int. Cl.[4] A47F 7/04
U.S. Cl. 211—24 1 Claim



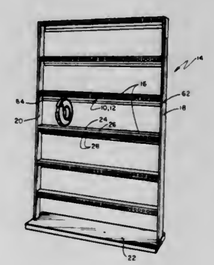
1. A tire display stand comprising:
(a) a base member comprising a single sheet of material having a pair of parallel edges, said single sheet being formed to define a flat horizontal central portion and a pair of end portions which each include one of said parallel edges, said end portions being inclined upwardly at acute angles in the range of 35° to 45° from a horizontal plane, a hook shaped projection extending along one edge of the base member substantially perpendicular to said parallel edges;
(b) an adjustable height vertical support member having a lower end that is attached by means for attachment to the central portion of said base member equidistant from said end portions, an upper end of said vertical support member having a generally horizontally extending platform attached thereto first means for attachment;
(c) an elongated elastomeric tread supporting member attached by second means for attachment to an upper surface of each end portion of the base member, each said tread supporting member having a longitudinal axis that is parallel to the parallel edge of said base member that is included in the end portion of the base member to which the tread supporting member is attached, each treat supporting member presenting an arcuate surface having an axis that is parallel to the longitudinal axis of the tread supporting member, said arcuate surfaces having a series of parallel grooves therein, said parallel grooves being oriented parallel to the longitudinal axis of the tread supporting member; and
(d) an elastomeric bead supporting member attached by third means for attachment to a top surface of said platform, said bead supporting member having an upper surface with a goove therein, said groove extending generally horizontally and being oriented perpendicular to vertical planes containing the longitudinal axes of said tread supporting members.

4,573,588
VIDEO SHELVING
Michael A. Cohen, 122 Canborough Cres., Pickering, Ontario, Canada
Filed May 26, 1983, Ser. No. 498,505
Int. Cl.[4] A47F 5/08
U.S. Cl. 211—41 15 Claims



1. A display rack, comprising:
a vertical back wall portion;
a horizontal platform portion; and ribs;
where the ribs are arranged to stiffen and reinforce the said two portions and the junction between them;
where the back wall portion, the platform portion, the junction between them, and the ribs, are all formed integrally in and from one unitary piece of material;
where the ribs each have two respective side walls, arranged so as to create a hollow slot between the two side walls;
where the said side walls lie each in a respective substantially vertical plane;
where each of the said planes lies at an angle to the plane of the back wall portion of between 30 degrees and 45 degrees;
and where each of the said slots is provided with a respective divider which is dimensioned to fit tightly between, and be gripped by, the said side walls of the slot.

4,573,589
REEL STABILIZER AND EJECTION DEVICE
Walter E. Atkinson, Golden, Colo., assignor to Engineered Data Products, Inc., Denver, Colo.
Filed May 25, 1983, Ser. No. 497,910
Int. Cl.[4] A47G 19/08
U.S. Cl. 211—41 3 Claims



1. A reel stabilizer and ejection system for magnetic tape reel storage devices supported in side-by-side closely spaced relationship in a storage rack device having an access opening along a front side thereof comprising:
at least one longitudinally mounted elongated one-piece rigid shelf member fixedly mounted in a horizontal attitude be-

tween a pair of laterally spaced vertically extending support members of the storage rack device;

said elongated rigid shelf member having an uppermost horizontal flat rigid elongated flange portion and a forwardmost vertical flat portion and a forwardmost vertical flat elongated rigid flange portion;

a plurality of closely spaced apertures in said forwardmost vertical flat elongated rigid flange portion for support of the reel storage devices by insertion and removal of a reel hanger hook portions therefrom;

pivotal support means associated with each of said longitudinally spaced horizontally aligned aperture means for supporting engagement with the reel hook portions to hold the reel storage devices in a horizontal row in extending closely spaced adjacent vertical attitude beneath said shelf member and for enabling pivotal forward and rearward swinging movement of each reel device relative thereto;

a one-piece elongated reel abutment member made of relative thin resilient flexible sheet material having a horizontally extending attachment uppermost flange portion fixedly inflexibly mounted on the bottom surface of said uppermost flat horizontal rigid elongated flange portion of said shelf member, a vertically downwardly extending flat intermediate flange portion resiliently pivotally connected along an upper edge portion to one side edge portion of said horizontally extending fixedly mounted attachment uppermost flange portion and being resiliently deflectably movable relative thereto between a normal vertically downwardly extending stationary position and a rearwardly displaced vertically rearwardly inclined position, and a downwardly rearwardly inclined lowermost flange portion having an upper edge portion resiliently deflectably connected along a horizontally extending connecting bend portion to said intermediate flange portion and being resiliently deflectably movable relative thereto between a first normal vertically downwardly rearwardly inclined position and a second rearwardly displaced vertically further rearwardly inclined position;

the construction and arrangement of said reel abutment member being such as to locate said inclined flat lowermost flange portion at an angle which is tangent to the periphery of said reel device and to establish substantially line contact abutting engagement between only a central flat surface portion of said lowermost flat flange portion and a peripheral portion of each of said reel devices supported by said pivotal support means and whereby in said normal position said reel devices hang downwardly in said normal stored position and whereby rearward swinging movement of any selected one of said reel devices by force selectively applied to the selected one of said reel storage devices causes resilient rearward displacement of said lowermost abutment flange portion by force applied at substantially a right angle to said surface of said lowermost flange portion without transfer of force to any other adjacent storage reel device and upon removal of said selectively applied force said lowermost abutment flange portion is moved forwardly from the deflected position to the normal position by only resilient compressive forces in said abutment member which are transferred to said selected storage reel device to cause outward swinging movement of said selected reel storage device about said pivotal support means a sufficient distance outwardly beyond adjacent reel storage devices to enable the side surfaces of selected reel storage device to be grasped for removal from said storage rack without corresponding engagement with and outward movement of the adjacent storage reel devices.

4,573,590

CLIP STRIP DISPLAY UNIT

Jeffrey Ellis, Spring Valley, N.Y., assignor to Bristol-Myers Company, New York, N.Y.

Filed Dec. 26, 1984, Ser. No. 686,325
Int. Cl.[4] A47F 5/00
U.S. Cl. 211—86 6 Claims



1. A clip strip display unit adapted to be mounted for displaying items in a multiplicity of fashions and to accommodate a variety of vertical spaces comprising:

(a) at least one vertical extender element; said vertical extender element being adapted to be removably secured to similar extender elements so as to be capable of varying the vertical dimension of the display unit; said vertical extender elements being provided with clip means for retaining items on the display unit;

(b) a hanger element removably secured to said extender element; said hanger element being adapted to be hung from a support to support said display unit; and

(c) an indicia element removably secured to said hanger element; said indicia element having a surface on which a written message may be applied; said indicia element also being provided with means for securing said clip display unit to a support.

4,573,591

MOLDED SHOWER SHELF

John P. Chap, Lemont, Ill., assignor to Selfix, Inc., Chicago, Ill.

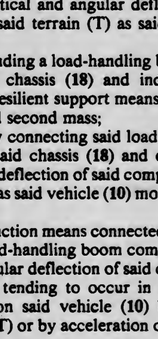
Filed Jan. 15, 1985, Ser. No. 691,644
Int. Cl.[4] A47F 5/00
U.S. Cl. 211—113 9 Claims

1. A one-piece shower shelf construction adapted to be suspended from an associated shower pipe extending from a wall, comprising:

a frame including a pair of spaced-apart generally vertical leg portions, and generally inverted U-shaped gripping means adapted to receive said shower pipe therein, the upper ends of said leg portions extending toward each other and being integrally joined to said inverted U-shaped gripping means,

said gripping means being configured to resiliently grip said shower pipe for arresting movement of said shelf construction relative to said shower pipe, said gripping means having an I-beam cross-sectional configuration including a central web and a pair of inner and outer flanges respectively joined to said web whereby said inner flange is adapted to engage said shower pipe for resisting movement of said shelf construction toward and away from said wall, said upper ends of said pair of vertical leg portions having a generally U-shaped cross-sectional configuration merged into said I-beam cross-sectional configuration of said inverted U-shaped gripping means,

said gripping means being offset forwardly with respect to the substantial vertical extent of said vertical leg portions



to facilitate positioning of said shelf construction substantially adjacent to said wall; and

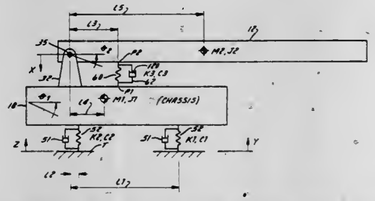
at least one shelf extending integrally between said leg portions of said frame for receiving and supporting articles thereon.

4,573,592

MEANS TO REDUCE OSCILLATORY DEFLECTION OF VEHICLE

Larry J. Oliphant, Swisher, Iowa, assignor to Harnischfeger Corporation, West Milwaukee, Wis.

Continuation of Ser. No. 476,112, Mar. 17, 1983, abandoned.
This application May 8, 1985, Ser. No. 732,891
Int. Cl.[4] B66C 23/26
U.S. Cl. 212—182 7 Claims



1. A vehicle (10) movable across terrain (T) and comprising:

a first mass including a vehicle chassis (18);

resilient support means including terrain-engaging wheel assemblies (20) connected to said chassis (18) and enabling reciprocable vertical and angular deflection of said chassis (18) relative to said terrain (T) as said vehicle (10) moves thereacross;

a second mass including a load-handling boom component (12) carried by said chassis (18) and independently movable relative to said resilient support means, said first mass being greater than said second mass;

means for movably connecting said load-handling boom component (12) to said chassis (18) and enabling reciprocable vertical angular deflection of said component (12) relative to said chassis (18) as said vehicle (10) moves across said terrain (T);

and deflection reduction means connected between said chassis (18) and said load-handling boom component (12) to reduce vertical and angular deflection of said chassis (18) relative to said terrain (T) tending to occur in response to dynamic loads imposed on said vehicle (10) by movement across uneven terrain (T) or by acceleration or deceleration of said vehicle (10);

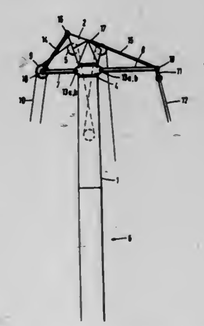
said deflection reduction means including resiliently compressible and expandable load-bearing spring means (60) connnected between said chassis (18) and said load-handling boom component (12) and responsive to and tending to enable limited vertical angular deflection of said load-handling boom component (12) relative to said chassis (18) which would cause spring motion at a predetermined rate of speed in response to said dynamic loads, and said deflection reduction means further comprising damping means (62) connected between said chassis (18) and said load-handling boom component (12) and to said spring means (60) to reduce the rate of speed of spring motion as rapidly as possible to thereby dissipate said dynamic loads.

4,573,593

TOWER CRANE WITH HAMMER HEAD ADAPTATION

Joachim Lietzau, Duesseldorf, Fed. Rep. of Germany, assignor to Mannesmann AG, Duesseldorf, Fed. Rep. of Germany

Filed Oct. 6, 1984, Ser. No. 668,734
Claims priority, application Fed. Rep. of Germany, Nov. 11, 1983, 3340845
Int. Cl.[4] B66C 23/64
U.S. Cl. 212—239 6 Claims



1. In a lattice tower crane having a main boom, the boom having a tip element, there being a removable head for a deflection pulley, for the main boom, the combination comprising:

a flat boxlike intermediate element of high stiffness and matching in cross section a cross section of said tip element;

fastening means on the flat element respectively corresponding to fastening elements on the head and on the tip element by means of which the head and the tip element can be interconnected directly, for respective connection to the head and to the tip element to thereby being interposed between them;

a first traverse hinged on said flat intermediate element for pivoting about an axis transversely to the axis of said main boom;

a deflection pulley or sheave journalled on the unhinged end of said first traverse;

a second traverse hinged to said flat intermediate element about an axis transversely to the axis of said main boom and for extending in about a direction opposite a direction of extension of the first traverse;

means at the unhinged end of said second traverse for connection to holding a cable for the main boom; and

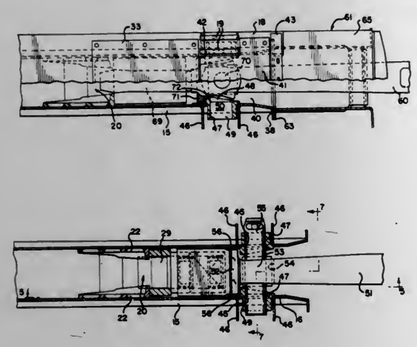
releasable tensioning means for connecting the respective unhinged ends of said first and second traverse to said head for holding the traverses in a deployed position, release of the tensioning means permitting holding of the traverses against the boom.

4,573,594

RAILWAY CAR UNDERFRAME ADAPTED FOR USE WITH COUPLE OR DRAWBAR CONSTRUCTION

Robert J. Kunst, Crown Point, Ind.; Gerald F. Lahey, Kenilworth, Ill., and Herbert S. Wille, Schererville, Ind., assignors to Pullman Standard, Inc., Chicago, Ill.

Filed Sep. 15, 1983, Ser. No. 532,448
Int. Cl.⁴ B61G *7/10, 9/24*
U.S. Cl. 213—51 **18 Claims**



18. In a railway car underframe including a center sill having upright spaced sill walls defining a cushion pocket having at one end thereof a cushion stop,

a cushion within said cushion pocket,

a drawbar supported on said underframe and projecting outwardly with respect thereto,

said drawbar having a laterally extending slot,

an impact head at one end of said drawbar engageable with said cushion,

a cheek plate assembly comprising a pair of vertical spaced cheek members respectively supported on said sill walls,

each of said spaced cheek members including a transversely extending slot with said slots being in registry with said drawbar slot,

a key extending through said slots,

said drawbar slot being longer lengthwise than said cheek plate slots,

said cheek members having inwardly projecting boss members having impact receiving surfaces facing the outward end of said cushion pocket,

said impact head having laterally spaced thrust surfaces engageable with said impact receiving surfaces during draft movement of said drawbar,

said pocket having an opening and a removable cover means providing access to the cushion pocket for replacement of the drawbar and the cushion with a coupler and a cushioning means for changing between drawbar and coupler operation.

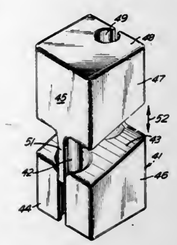
4,573,595

MATED CONTAINER UNITS

Juris M. Mednis, Howell, N.J., assignor to Universal Symetrics Corporation, Howell, N.J.

Filed Dec. 12, 1983, Ser. No. 560,597
Int. Cl.⁴ B65D *21/02*
U.S. Cl. 215—10 **23 Claims**

1. The combination comprising a pair of mated containers wherein (a) each container comprises a hollow body for containing the contents of the container including a polygonal front wall, polygonal rear wall, polygonal lateral side walls, a polygonal bottom wall and an upper shoulder forming at least a substantial portion of the top of the body opposite the bottom wall, a hollow elongated neck integrally connected to the body to permit a flow of the contents of the container from the body through and out of the end of the neck, the body including no more than a single recessed surface for receiving the neck of the other container of the pair of mated containers, said recessed surface extending from the shoulder for a distance at least as long as the neck and having a shape conforming to the shape of the neck, the recessed surface comprising an elongated opening interrupting the surface of the front wall; (b) the neck of each one of the mated containers being disposed within the recess of the recessed surface of the other one of the mated containers, with the end of each neck adjacent to the bottom wall of the other container, and the shoulder of each container being placed in contiguous relationship with the shoulder of the other container; (c) the neck having a length substantially



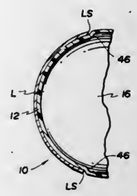
equal to the length of the body as defined by the distance between the bottom wall and the shoulder; (d) the mated containers forming a polyhedron substantially filling and occupying no more than the minimum rectangular polyhedral volume needed to encompass, the neck and body of a single one of the containers; (e) further comprising means for preventing lateral separation of the mated containers in a direction lateral to the axis of the neck; and (f) the neck including a surface conforming to the shape of the recessed surface and the neck further including a rear surface which, when containers are mated extends in alignment with the uninterrupted surface of the front wall of the other container.

4,573,596

PLASTIC CONTAINER WITH VAPOR BARRIER

William A. Slat, Brooklyn, Mich., assignor to Plastipak Packaging, Inc., Plymouth, Mich.

Continuation of Ser. No. 433,536, Oct. 8, 1983, abandoned. This application Jun. 28, 1985, Ser. No. 750,065
Int. Cl.⁴ B65D *23/08*
U.S. Cl. 215—12 R **5 Claims**



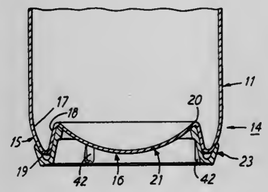
1. A container comprising: a side wall; an upper neck that extends upwardly from the side wall; a bottom that ends downwardly from the side wall to close the container; a label of a uniform thickness on the side wall of the container; said label extending partially around the side wall and having side edges spaced from each other; said label also having an upper edge located below the neck of the container and a lower edge located above the bottom of the container; said container side wall having abruptly curved portions adjacent the edges of the label to provide the container with a generally continuous outer surface at the junctions of the label edges with the side wall; said label including a barrier for resisting the transmission of fluids through the container side wall; and a heat sensitive adhesive that secures the label to the container side wall.

4,573,597

CONTAINERS

John F. E. Adams, Caversham; Philip J. G. Proffit, Wantage; Nicholas R. Oakley, Swindon, and Rickworth Folland, Faringdon, all of England, assignors to Metal Box p.l.c., Reading, England

PCT No. PCT/GB83/00338, § 371 Date Aug. 23, 1984, § 102(e) Date Aug. 23, 1984, PCT Pub. No. WO84/02508, PCT Pub. Date Jul. 5, 1984
PCT Filed Dec. 20, 1983, Ser. No. 645,316
Claims priority, application United Kingdom, Dec. 23, 1982, 8236599
Int. Cl.⁴ B65D *25/24*
U.S. Cl. 215—12 R **12 Claims**



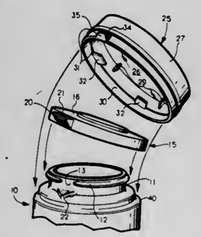
1. A thermoplastics container having a body with a standing base, the base being formed with a central recess and having a standing ring with a crest which defines the periphery of the recess, for controlling distortion of the base against internal pressure of the container, the container further including a ring member which receives the crest of the standing ring in generally nested relation, the ring member being of a thermoplastics material which is mutually weldable with that of the base, and the ring member being welded to the base radially outwardly of the crest but radially inwardly of the crest being free of the base so that the base is movable relative thereto, said ring member and base comprising means whereby, radially inwardly of the crest, the base is spaced from the ring member when the container is unpressurised, but moves into abutment with the ring member and is thereby supported against further distortion when the container is pressurised.

4,573,598

CHILD-RESISTANT PACKAGE WITH TAMPER INDICATING DEVICE

Robert A. Perry, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Apr. 29, 1985, Ser. No. 728,417
Int. Cl.⁴ H61J *1/00;* B65D *55/02, 85/56*
U.S. Cl. 215—204 **16 Claims**



1. A child-resistant package with a snap-on closure comprising

a container having a neck finish including an annular retaining bead having at least one notch therein,

a closure having a top and a peripheral skirt,

the skirt having a lifting tab on the outer surface thereof and a first radially inwardly extending locking lug on the inner surface thereof adjacent the external lifting tab,

a cover cap having a top wall and a peripheral wall placed over the closure,

the peripheral wall of the cover surrounding the peripheral skirt of the closure,

an annular band connected to the lower edge of the peripheral wall of the cover cap by weakened portions,

said band including a plurality of circumferentially spaced radially inwardly extending lugs that project beneath the free edge of the peripheral skirt of the closure so that the cover cap cannot be removed until the band is first removed by severing it from the closure cap,

indicia on the container and said closure that indicates proper alignment of the lug on the closure with the notch on the container,

said band normally obscuring the view of the indicia,

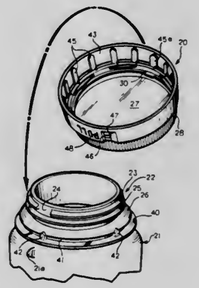
said cover cap normally obscuring viewing of the indicia on the closure.

4,573,599

CHILD RESISTANT PACKAGE WITH TAMPER INDICATING BAND

William E. Fillmore, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Feb. 25, 1985, Ser. No. 704,844
Int. Cl.⁴ B65D *55/02*
U.S. Cl. 215—225 **15 Claims**



1. A tamper resistant child resistant package with a snap-on closure comprising

a container having a neck finish,

said neck finish including a retaining bead having at least one notch therein,

a closure having a top wall and peripheral skirt,

a radially extending lug on the inner surface of said skirt adapted to be aligned with said notch to permit removal of said closure,

an integral tamper indicating band connected to the skirt of said closure by means defining a weakened line,

a plurality of circumferentially spaced vertical ribs on the inner surface of said tamper indicating band,

a plurality of circumferentially spaced vertical ribs on the outer surface of said container below said retaining bead,

said ribs on said closure and said ribs on said container being arranged such that when the closure is snapped onto the container, the ribs interengage to position the closure in such a manner that the locking lug on the container can not be aligned with the notch on the container and prevent rotation of the closure to bring the locking lug into alignment with the notch until the band is removed.

4,573,600

SNAP CLOSURE FOR A CONTAINER

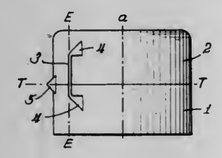
Werner F. Dubach, Maur, Switzerland, assignor to Alfatechnic AG, Dietlikon, Switzerland

Filed Jun. 7, 1984, Ser. No. 618,037

Claims priority, application Switzerland, Jun. 10, 1983, 3191/83

Int. Cl.⁴ B65D *51/04*

U.S. Cl. 215—237 **10 Claims**



1. A molded synthetic material snap-closure for containers, including a lower part shaped to be fixed to a container and a cover swingably joined to said lower part, said lower part having a central axis, the swingable junction of said snap-closure being such that said cover and said lower part contact one another at a first side of said snap-closure during opening and closing thereof, and in which said cover in the closed position of the closure completely covers said lower part, whereby a contacting area between said lower part and said cover forms a separating plane (T) with said axis passing through said separating plane, and including at least one tensioning band integrally connected by lugs (4) to both said cover (2) and to said lower part (1), said lugs being arranged such that, in the closed state of the snap closure, said tensioning band is stretched along a straight line and lies in a plane (E) spaced from said axis, said plane (E) intersecting the separating plane (T) at a location spaced from said axis, said location being adjacent the first side of said snap-closure and said snap-closure being formed of one piece of said synthetic material.

4,573,601

SCREW CAP WITH SECURITY RING

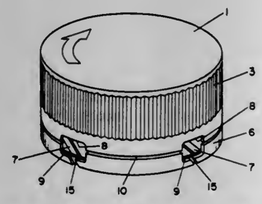
Jan Berglund, Västra Frölunda, Sweden, assignor to Wicanders AB, Sweden

Continuation-in-part of Ser. No. 526,030, Aug. 24, 1980, Pat. No. 4,505,401. This application Oct. 26, 1984, Ser. No. 665,024

Claims priority, application Sweden, Jun. 1, 1983, 8303099; United Kingdom, May 15, 1984, 8412344

Int. Cl.⁴ B65D *41/34*

U.S. Cl. 215—252 **18 Claims**



1. A screw cap for a screw threaded container neck, the cap comprising an internally threaded cap portion having a head and a skirt extending from said head to a skirt edge, and further comprising a security ring adjoining said skirt edge and having an edge opposing said skirt edge, the security ring effectively constituting a continuation of said skirt, away from said head, beyond said skirt edge, at least one of said opposing edges of the skirt and the security ring having a plurality of recesses open towards the other side edge, said recesses being distributed around the circumference of the cap, the cap further including a plurality of bridge portions connecting the cap with the security ring, each said bridge portion being disposed in a said recess and extending from a respective first point on the security ring to a respective second point on the cap skirt which is located in advance of the respective first point in the rotational sence in which, according to the internal threading of the cap, the cap must be turned to screw it onto a container neck, whereby when the cap is screwed onto a container neck having a collar for engagement with said security ring, after the security ring engages said collar, further screwing on of the cap will cause the skirt edge of the cap skirt to press against the opposing edge of the security ring after, at most, relatively slight bending of the bridge portions at said first and second points, to allow the cap portion to force the security ring past said collar, whilst after the cap has been fully screwed onto a container and neck and is subsequently unscrewed therefrom, after the security ring engages said collar to be retained thereby, the bridge portions will be subjected to relatively great bending at said first and second points whilst being tensioned and thereby fractured, said security ring being further provided with weakening points at one or more of the bridge connections.

4,573,602

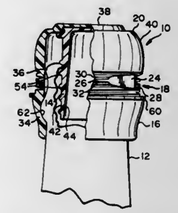
MOLDED SAFETY CLOSURE DEVICE AND METHOD FOR MAKING SAME

James R. Goldberg, 315 Grandview Ave., Novato, Calif. 94947

Filed Jul. 10, 1984, Ser. No. 629,369

Int. Cl.⁴ B65D *41/48*

U.S. Cl. 215—256 **4 Claims**



1. A molded safety closure device comprising, a cylindrical closure element adapted to close the mouth of a bottle or the like by frictional engagement with the interior facing surface of the mouth, a cylindrical retainer collar, and an intercoupling means connecting said collar to said closure element with said closure element and said collar extending substantially coaxially with each other, said intercoupling means comprising a unitary molded structure having a cup-like portion that is shaped to extend over the lip of the container, said intercoupling means further comprising a tether strip, said tether strip being integrally formed extending one or more turns from said cup-like portion to said collar, said tear strip being joined by a pair of frangible webs of a preselected thickness to permit said tether strip to be manually separated from the remainder of said intercoupling means, said closure element comprising a separate unitary molded structure and being secured to said intercoupling means about the periphery of one end of said closure element, said closure element and said cup-like portion having an annular weld securing said closure element to said cup-like portion of said intercoupling means about the periphery of one end of said closure element.

4,573,603

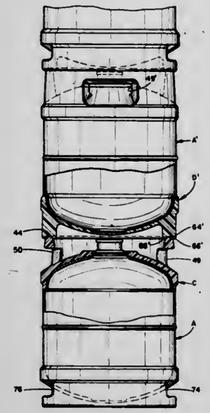
FLUID CONTAINER

Jeffrey T. Starling, Westerville, Ohio, and Bruce D. Jones, Lake Mary, Fla., assignors to Worthington Industries, Inc., Columbus, Ohio

Filed Jun. 3, 1985, Ser. No. 740,548

Int. Cl.⁴ B65D *7/42*

U.S. Cl. 220—5 R **20 Claims**



1. A container for fluid products comprising:
an inner shell of sheet metal which includes a substantially cylindrical body and top and bottom end walls;
a first resilient outer member encasing said inner shell bottom end wall and forming a base portion for the container, said first member including a substantially cylindrical side wall portion and a base portion, said base portion including a ring section, provided on its outer surface with a pair of spaced ribs, and a recessed inner section; and,
a second resilient outer member encasing said inner shell top end wall and forming a top portion for the container, said second member including a substantially cylindrical side wall portion and a top portion including a ring section, having a planar outer surface, and a recessed inner section, said second member ring section having a suitable width so that it is sized to fit between said first portion spaced pair of ribs to permit stacking of the container.

4,573,604

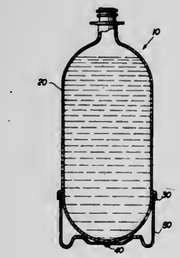
TILT FREE CONTAINER

Raûl Guim, 834 Venetia, Coral Gables, Fla. 33134

Filed Jul. 15, 1985, Ser. No. 755,097

Int. Cl.⁴ B65D *23/00*

U.S. Cl. 220—69 **3 Claims**



1. In a plastic container for liquids having a cylindrical bottle member having a rounded bottom and resting on a cooperating cylindrical base member, the improvement comprising:
a. skirt member peripherally mounted on said bottle member at a uniform predetermined distance from said bottom so that when said bottle member rests on said base member the upper edge of said base member fits snuggly between said skirt member and said bottle member thereby preventing any tilting movement of said bottle member;
b. rivet means mounted on said rounded bottom, downwardly extending; and
c. a hole in said base member cooperatively positioned so as to receive said rivet means, thereby maintaining said bottle member attached to said base member.

4,573,605

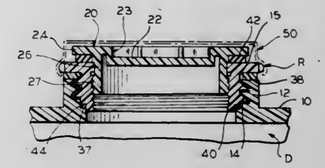
REPLACEABLE CLOSURE ARRANGEMENT

Theodore H. Udell, West Chester, Pa., assignor to Container Corporation of America, Chicago, Ill.

Filed May 6, 1985, Ser. No. 730,724

Int. Cl.⁴ B65D *53/00*

U.S. Cl. 220—304 **9 Claims**



1. A closure arrangement for a container, such as a molded plastic drum, comprising, in combination:
(a) a container having projecting therefrom an integral, cylindrical neck with internal threads for receiving a closure member with external threads;
(b) a closure plug, including:
(i) a cylindrical skirt with external threads;
(ii) an annular flange extending radially outward from an upper portion of said skirt;
(c) a replaceable closure device including:
(i) a cylindrical skirt with external and internal threads for engagement with the threads of said container neck and said closure plug, respectively;
(ii) an annular upper flange extending radially outward from an upper portion of said skirt and being adapted for engagement with the flange of said closure plug;
(d) means for preventing further relative portion between said replaceable closure device and said container neck after the former has been threadably received within the latter.

4,573,606

AUTOMATIC PILL DISPENSER AND METHOD OF ADMINISTERING MEDICAL PILLS

Kermit E. Lewis, R.R. 5, Box 64, Shelbyville, Ind. 46176, and Arthur S. Roberts, Jr., Shelbyville, Ind., assignors to Kermit E. Lewis, Shelbyville, Ind., a part interest

Filed Sep. 12, 1983, Ser. No. 530,893

Int. Cl.⁴ B65H *29/26*

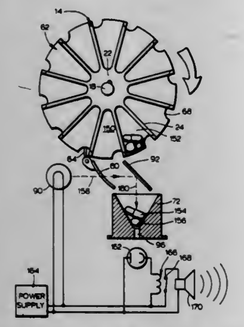
U.S. Cl. 221—2 **9 Claims**

1. An automatic pill dispenser for dispensing medical pills, such as tablets, capsules or suppositories, having different prescribed administration schedules, comprising:
(a) a plurality of pill storage compartments for holding pills having different administration schedules, said compartments each being sized to hold one or more pills;
(b) means for releasing pills from said pill storage compartments at predetermined time intervals corresponding with their respective administration schedules;

(c) a pill receptacle for receiving pills released from said storage compartments; and

(d) means for detecting the delivery of a pill into said receptacle and for producing a sensible signal in response thereto,

in which said detecting means comprises a photoelectric detector having a light source and photodetector arranged such that delivery of a pill of any commercial size from said storage compartments into said receptacle causes interruption of a



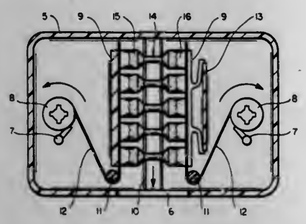
light beam generated by said light source, said receptacle is provided with a vertical through-hole of diameter less than one-eighth of an inch, said receptacle includes means for positioning a first pill received from said storage compartments over said hole, and in which said light source and photodetector are arranged such that said light source generates a light beam which normally passes through said hole whereby a first pill received from said storage compartments interrupts the light beam passing through said hole.

4,573,607

TUBE STORAGE AND DELIVERY DEVICE

John P. Arrington, San Mateo; Kathleen A. Jaraczewski, Mountain View; Marc F. Moisson, Los Altos, and Martin L. Wisecarver, Sonora, all of Calif., assignors to Raychem Corp., Menlo Park, Calif.

Filed Oct. 7, 1983, Ser. No. 539,848
Int. Cl.[4] B65D *83/00*
U.S. Cl. 221—25 **6 Claims**



1. An article for storing and dispensing optical fiber splicing tubes containing adhesive for splicing optical fibers, comprising:

a casing;

a plurality of tubes having first and second open ends and containing an adhesive for splicing optical fibers;

first and second flexible tapes;

means for continuously pressing the first and second flexible tapes against the first and second open ends of the tubes to continuously sealingly engage the first and second ends of the tubes within the casing; and

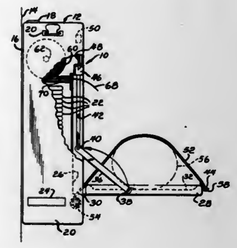
means for moving the first and second tapes relative to the casing to dispense individual ones of the tubes.

4,573,608

BABY CHANGING APPARATUS

Nancy Hansen, Box 57, Hadar, Nebr. 68738

Continuation of Ser. No. 445,022, Nov. 29, 1982, abandoned. This application Dec. 20, 1984, Ser. No. 684,158
Int. Cl.[4] B65G *59/06*
U.S. Cl. 221—92 **4 Claims**



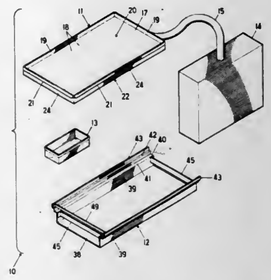
1. Baby changing apparatus comprising a housing having therein packages of disposable diapers and having coin control means for dispensing such packages from said housing, a table hingedly supported from said housing for pivotal movement between vertical storage and horizontal operating positions, means for supporting said table in horizontal operating position, said table having a recessed surface which faces upwardly with said table in horizontal position and on which a baby may be disposed for diaper changing, latch means for holding said table in vertical position, and electrically operable latch release means therefor for permitting said table to move to horizontal position.

4,573,609

SEED PLANTING APPARATUS

Sylvester M. Tesch, Jr., Rte. 1, Highway 12 and PF, Prairie du Sac, Wis. 53578, assignor to Sylvester H. Tesch, Jr.; Marlynn F. Tesch, both of Prairie Du Sac; Harvey J. Rasmussen; Patricia Rasmussen and Harvey E. Rasmussen, all of Lodi, all of, Wis.

Filed May 11, 1984, Ser. No. 609,271
Int. Cl.[4] B65G *59/04*
U.S. Cl. 221—211 **19 Claims**



1. Seed planting apparatus for aiding an operator in depositing seeds in selected spacing in a planting tray, comprising:

(a) a seed distribution tray having a flat top plate with an array of perforations formed therein at the desired spacing of the seeds to be planted, upright side walls extending upwardly from and surrounding the top plate, a bottom wall and side walls defining with the top plate a vacuum chamber, and a fitting on the distribution tray having a bore in communication with the vacuum chamber and adapted for connection to a source of vacuum to thereby place the vacuum chamber under vacuum draw; and

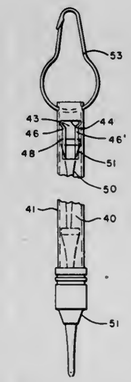
(b) a holding pan having a bottom wall and upright enclosure walls adapted to locate the planting tray laterally and support means on the enclosure walls for supporting the seed distribution tray in inverted position above a planting tray located between the enclosure walls and accurately locating the inverted seed distribution tray with respect to the planting tray so held.

4,573,610

GOLF TEE DISPENSER

Erwin E. Hurner, 2605 S. Rivershore Dr., Moorhead, Minn. 56560

Filed Jun. 28, 1984, Ser. No. 625,661
Int. Cl.[4] B65G *59/06*
U.S. Cl. 221—281 **2 Claims**



1. A container and dispenser for golf tees comprising:

a tube having a cylindrical opening through the center thereof, said cylindrical opening having a diameter larger than the diameter of the head of a golf tee and less than the length of a golf tee;

an elastomeric nipple attached to one end of said tube, said nipple defining an orifice smaller than the head of a golf tee and larger than the pointed end of a tee, said orifice communicating with said cylindrical opening; said tube defining an opening for loading of golf tees into said cylindrical opening;

said opening for loading golf tees being a generally triangular opening through said tube and defined by the sidewalls thereof and having an upper surface and tapering sidewalls to define said opening, said upper surface and said tapering sidewalls of said opening defining a space therethrough which is less than the special relationship defined by the upper surface of a tee and the neck portion thereof whereby a tee is forcefully loaded through said opening.

4,573,611

NON-REFILLABLE VALVE

Robert F. O'Connor, Greenville, R.I., assignor to Amtrol Inc., West Warwick, R.I.

Filed Jun. 11, 1984, Ser. No. 619,503
Int. Cl.[4] B65D *47/02*
U.S. Cl. 222—147 **11 Claims**

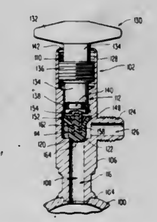
1. Non-refillable valve for a pressure container, comprising:

(a) a housing, having a central bore which has a lower portion that is narrower than the middle portion of said central bore and which has an upper portion that is narrower than middle portion of said central bore, and having a side port which communicates with the lower region of said middle portion of said central bore, the lower end of said housing being adapted to sealingly engage said pressure container in a manner which provides communication between said pressure container and said lower portion of said central bore;

(b) an outlet nozzle, having a bore lengthwise therethrough, said outlet nozzle being positioned on the side of said housing and being in communication with said middle portion of said central bore via said side port in said housing;

(c) valve stem means positioned in said upper portion of said central bore in a rotatable manner which advances the valve stem means back and/or forth in said central bore, a tube being mounted on the internal end of said valve stem means which extends into said middle portion of said central bore; and

(d) a resilient valve sealing member which has a body portion, an upper flange that extends upwardly and outwardly from



said body, a longitudinal passageway being present in the body portion, the bottom portion of the longitudinal passageway not extending through the bottom of the body portion, a vertical post being positioned in the middle of the longitudinal passageway, thereby forming a slot around the vertical post, said post slidingly engaging said tube on the bottom of said valve stem means, said flange portion of said sealing member being compressingly positioned in said upper portion of said central bore when said valve is inactive or being filled, said valve sealing member being pushed into said middle portion by means of said valve stem means when said valve is placed in the active position, said valve sealing member being seated against the interface between said middle and lower portions of said central bore when said valve is closed and said sealing member being positioned in said middle chamber above the seating interface when the valve is used for discharge of said container, and said sealing member sealingly engaging said seating interface when refill of container with pressurized fluid is attempted.

4,573,612

LIQUID SOAP DISPENSER

David Maddison, Worthing, and Christopher Dawson, Hassocks, both of England, assignors to Kimberly-Clark Limited, Kent, England

Filed Nov. 28, 1983, Ser. No. 555,536
Claims priority, application United Kingdom, Mar. 12, 1982, 8234623
Int. Cl.[4] B65D *35/22*
U.S. Cl. 222—94 **14 Claims**

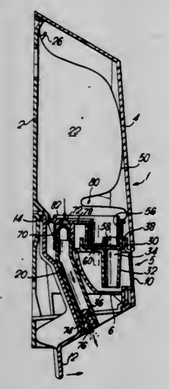
1. A refill container for a liquid dispenser, and comprising:

a dispensing tube through which said liquid is dispensed from said dispenser;

container means for furnishing a primary supply of liquid to said dispensing tube during use and to a reservoir providing an auxiliary supply of liquid for said dispensing tube; and

a fitment means for providing liquid communication between said container means and said reservoir in order to

supply said reservoir from said container means and for providing for said auxillary supply of liquid to said dis-



pensing tube upon substantial depletion of said primary supply.

4,573,613

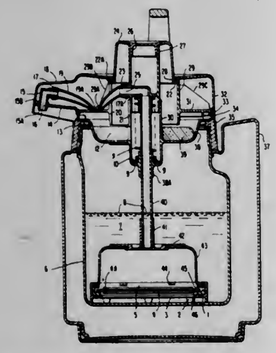
SEALING AND TOP-DRAINAGE IMPROVEMENT IN MECHANICAL DEVICE TO TRANSFER LIQUIDS FROM CONTAINERS

Elias M. de Freitas, Porto Alegre, Brazil, assignor to Termolar S/A, Porto Alegre, Brazil

Continuation-in-part of Ser. No. 342,970, Jan. 26, 1982, Pat. No. 4,506,812, and a continuation-in-part of Ser. No. 342,987, Jan. 26, 1982, Pat. No. 4,440,328, and a continuation-in-part of Ser. No. 339,547, Jan. 15, 1982, Pat. No. 4,429,813. This application Feb. 6, 1984, Ser. No. 577,475

Int. Cl.[4] B65D *37/00*

U.S. Cl. 222—213 **2 Claims**



1. A mechanical device to transfer liquids from containers which, when fitted into a container, does not require its inclination, and does not depend on its air tightness and volume, comprising a pump including a flexible bell shaped member (43), with an upper orifice, and a widened ring-like area in its lower extremity, forming a housing (45) where a rigid veined disc is located forming a disc-valve (4), said housing being provided, in its upper internal edge, with small prominences (44) and the lower edge, which limits the opening of the mouth of the bell shaped member, and ends in a small inner vertical projection forming a continuous rim (46); a liquids transference pipe (40) connected to the upper orifice of the bell shaped member, and when a vertical manual compression effort is made, the bell shaped member is deformed, compressing the liquid inside it, thereby pressing the disc-valve (4) against the continuous rim (46) of the housing (45), thereby sealing of the mouth of the bell shaped member and forcing the liquid to flow out through the transference pipe (40); the prominences (44) of the housing limiting the upward movement of the disc-valve, leaving an empty space for the inflow of the liquid in the bell shaped member (43) when it returns to its original shape, the liquids transference pipe being further connected at its upper end to conveying means which in turn are connected to spout means, said conveying means including a flexible tubing, said mechanical device further having a rotatable cover with an interior space thereof for accommodating said flexible tubing and being provided with squeezing means for closing said flexible tubing, the squeezing of the flexible tubing obtained by vertical displacement of tubing.

4,573,614

TONER VESSEL FOR COPYING MACHINE

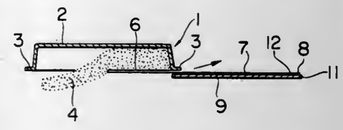
Seiji Ozawa, Numazu, Japan, assignor to Ricoh, Ltd, Tokyo, Japan

Filed Aug. 26, 1983, Ser. No. 527,132

Claims priority, application Japan, Sep. 6, 1982, 57-134963[U]

Int. Cl.[4] B67D *3/00*

U.S. Cl. 222—542 **3 Claims**



1. A toner vessel for use in a copying machine indluding a square dish-shaped vessel body which has an opening at its upper part and is provided with an outwardly projecting flange at the peripheral edge portion of said opening, said vessel body receiving a toner therein, a cover sheet which is folded on itself so as to have an upper part and a lower part, said opening being covered with said lower part of said folded cover sheet, said upper part being superposed on said lower part and having a fore end portion extending beyond of the flange on said vessel body, a cover plate secured slidably to the upper part of the vessel body and having a back surface facing toward said cover sheet and vessel body, the fore end portion of said cover sheet upper part being adhered to the fore end of the back surface of said cover plate.

4,573,615

FASTENING DEVICE FOR POURER PLUGS

Juan P. Marti, No. 89 Avde de Roma, Manlleu (Barcelona), Spain

Filed Jan. 10, 1984, Ser. No. 569,580

Claims priority, application Spain, Jan. 11, 1983, 269664[U]

Int. Cl.[4] B65D *5/72*

U.S. Cl. 222—566 **4 Claims**

1. A pourer plug assembly for a container defining therein a product reservoir, said assembly comprising:

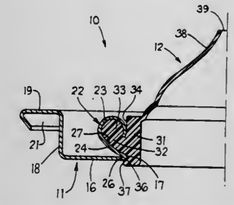
a cover for said container, said cover having means associated with the outer edge thereof for attaching the cover to the container, said cover defining a central opening therethrough;

said cover having a fastening flange fixed thereto in surrounding relationship to said central opening, said fastening flange defining therein an annular groove which opens radially inwardly for communication with said central opening;

said annular groove defined by said fastening flange having a substantially L-shaped cross section and including a first leg which projects radially outwardly from and communicates with the central opening, and a second leg which projects upwardly from the outer end of said first leg;

a pourer plug of a flexible material positioned within said central opening and securely connected to said cover;

said pourer plug having a base ring positioned within said central opening, and a fastening rim integrally fixed to said base ring and projecting radially outward therefrom into said annular groove, said fastening rim having a substantially L-shaped cross section compatible with said groove and including a bottom leg which projects outwardly from the base ring and terminates in an upwardly projecting leg which is spaced radially outwardly from said base ring by means of a ring-shaped slot therebetween which



opens upwardly, said upwardly projecting leg having a rounded outer profile;

said fastening flange having a substantially semi-circular ring part thereon which partially and snugly encircles the upwardly projecting leg of said rim and projects downwardly into said ring-shaped slot for securely connecting said cover and plug together, said semi-circular ring part opening downwardly and defining therein the second leg of said groove, said ring part having a radially inner portion which defines the free edge of the cover and which projects into said ring-shaped slot; and

said plug having a tubular pouring spout integrally connected to said base ring.

4,573,616

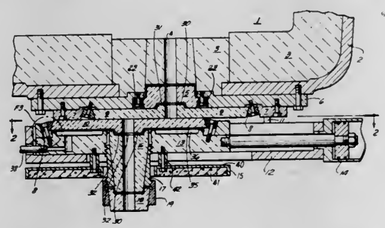
VALVE, CLAMP, REFRACTORY AND METHOD

Earl P. Shapland, Sarasota, Fla., assignor to Flo-Con Systems, Inc., Champaign, Ill.

Continuation-in-part of Ser. No. 381,063, May 24, 1982. This application Jun. 19, 1984, Ser. No. 622,235

Int. Cl.[4] B22D *37/00, 41/08*

U.S. Cl. 222—600 **23 Claims**



1. A refractory plate for use with a sliding gate valve comprising

a refractory slab having opposite faces,

one face being a sliding face and one face being a mounting face,

said slab having edge portions between the opposite faces,

at least two opposed edge portions being tapered,

said slab width and length enlarging progressively from the sliding face towards the mounting face along substantially the entire extent of the tapered edge portions,

said taper permitting central and mounting compressive forces on the edges when engaged by a clamp having a mating tapered face.

4,573,617

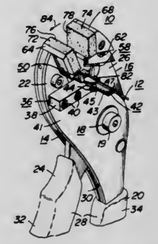
TOOL MEANS FOR SEVERING AN OPTICAL FIBER

Carl J. Durkow, Runnemede, N.J., assignor to TRW Inc., Redondo Beach, Calif.

Filed Dec. 14, 1983, Ser. No. 560,897

Int. Cl.[4] C03B *37/16*

U.S. Cl. 225—96 **27 Claims**



1. Tool means for severing an optical glass fiber comprising first and second members joined by pivotal connecting means for pivotal movement relative to one another, each member having first and second end portions on opposite sides of the connecting means, the first end portions providing opposing jaws and the second end portions providing handle means for moving said jaws toward and away from one another, a resilient element carried by one jaw having a surface for supporting thereon an optical fiber to be severed, blade means secured to the other jaw having a cutting edge spaced from the resilient element when the jaws are separated, said jaws being relatively movable toward one another by said handle means to move said blade means toward the surface of the resilient element for engaging and inflicting a flaw on the surface of an optical fiber supported by the resilient element, and resilient pad units secured to said jaws for receiving therebetween and applying compressive force to a fiber having an inflicted flaw on its surface.

4,573,618

APPARATUS FOR UNROLLING AND SPREADING ROLLED CLOTH

Hidetomo Kikuchi, Nishinomiya, Japan, assignor to N.C.A. Co., Ltd., Oosaka, Japan

Filed Jul. 18, 1984, Ser. No. 631,904

Int. Cl.[4] B65H *23/22*

U.S. Cl. 226—42 **8 Claims**

1. An apparatus for unrolling and spreading a long roll of cloth, said apparatus comprising:

a work table, which is oblong and is positioned horizontally;

a spreader, which has wheels for running on said work table and is positioned such that it runs in the lengthwise direction of said work table;

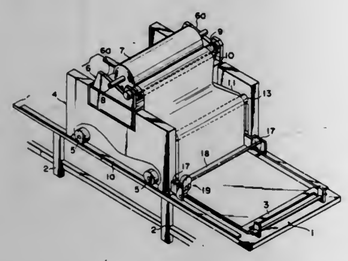
a support table having surfaces for rotatably supporting the long roll of cloth, said support table being positioned on said spreader and being adjustable in a direction transverse to the running direction of said spreader;

a dispensing roller rotatably supported on said support table for sequentially dispensing the long roll of cloth, which is supported by said support table;

a main belt conveyor, which feeds the long roll of cloth dispensed by said dispensing roller in the running direction of said spreader;

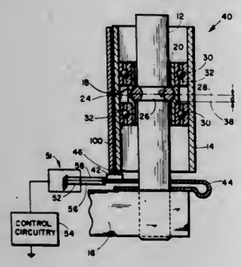
a delivery roller rotatably supported on said spreader for

sequentially delivering the long roll of cloth fed by said main belt conveyor onto said work table;
a running servo motor for driving the wheels of said spreader;
a dispensing servo motor for driving said dispensing roller;
a feed servo motor for driving said main belt conveyor;
a delivery servo motor for driving said delivery roller;
first sensing means for sensing the running distance of said spreader;
second and third sensing means for sensing the rotation speeds of said dispensing servo motor and said delivery servo motor, respectively;



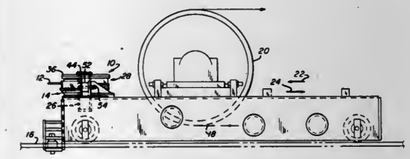
a control circuit for generating a first control output signal to drive and control said running servo motor according to a preset input signal and output signal from said first sensing means; and
an operation comparing circuit in which a given variable factor of multiplication is coupled with the output signal from said first sensing means, said output signal modified by the multiplication factor is individually compared with the output signals from said second and third sensing means, and said first control output is gain-controlled by each of the results of the comparisons, thereby generating second and third control signals for synchronizing said dispensing and delivery servo motors in rotation with said running servo motor.

4,573,619
TAPE GUIDE MECHANISM FOR DYNAMIC TRACKING CONTROL
Frederic F. Grant, Bellflower, Calif., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Mar. 28, 1985, Ser. No. 717,204
Int. Cl.[4] B65H *27/00*
U.S. Cl. 226—190 **8 Claims**



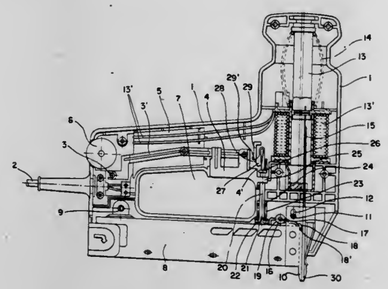
1. In a tape guide mechanism including an edge-guide element extending radially from a central axis of said tape guide mechanism, and a tape guide member, positioned axially from said edge-guide element and responsive to the wrapping of an advancing tape partially around said member, for applying an axial force to the advancing tape to move the tape laterally in the direction of said edge-guide element, to maintain a predetermined edge of the tape in continuous contact with a reference surface of said edge-guide element during tape transport movement, the improvement comprising:
(a) said edge-guide element being mounted for axial movement relative to said tape guide member; and
(b) energizable means having an output, coupled to said edge-guide element and arranged for movement in response to a voltage signal that is functionally related to a tape tracking error, for causing axial movement of said edge-guide element relative to said tape guide member in accordance with the movement of the output of said energizable means, whereby the tape is caused to move laterally in accordance with the movement of said edge-guide element.

4,573,620
APPARATUS FOR ABSORBING A FORCE APPLIED TO A CABLE OR THE LIKE
Michael M. Sinar, Valparaiso, Ind., assignor to United States Steel Corporation, Pittsburgh, Pa.
Filed Oct. 4, 1984, Ser. No. 657,654
Int. Cl.[4] B65H *20/00*
U.S. Cl. 226—190 **6 Claims**



1. Apparatus for absorbing a jerking load applied to a cable used to displace an object in one direction comprising:
a. a spindle affixed at one end thereof to said object;
b. a drum around which said cable may be wrapped, said drum being disposed around said spindle so as to be coaxial with said spindle and rotatable about the axis of said spindle;
c. an arm affixed at a first end thereof to said drum, said arm extending radially from said drum and perpendicular to the axis of said drum, said arm having a face area on the other end of said arm perpendicular to the direction of movement of said arm when said drum is rotated about said spindle, said face area being disposed on the leading side of said arm when said arm is moved by the action of said load on said cable and said cable on said drum respectively, said arm also having a means for retaining said cable;
d. a bracket means affixed to said object and having a surface disposed parallel to and opposite to said face area;
e. a first resilient member disposed between said face area and said surface, said resilient member being affixed to either said face area or said surface or to both said face area and to said surface;
f. a second resilient member coaxial with said first resilient member, said second resilient member being affixed to the opposite side of said surface from said first resilient member;
g. means for operatively connecting said first resilient member and said second resilient member; and
h. a cover plate affixed to the end of said drum furthest from said object and configured so as to retain said drum on said spindle.

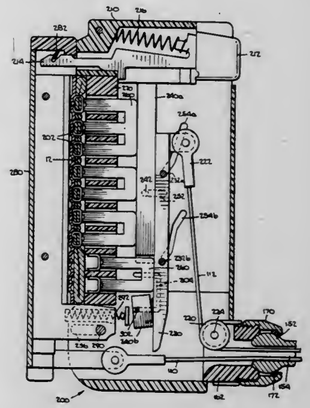
4,573,621
ELECTRO-MAGNETIC TACKER
Manfred Merkator, and Karl Schmid, both of Idstein, Fed. Rep. of Germany, assignors to Black & Decker Inc., Newark, Del.
Filed Apr. 22, 1985, Ser. No. 725,393
Int. Cl.[4] B25C *5/06, 5/15;* B27F *7/26, 7/38*
U.S. Cl. 227—8 **15 Claims**



1. An electro-magnetic tacker, comprising:
a staple magazine mounted on a housing of the tacker and having a staple output end provided with a staple output channel;
said staple magazine being movable between a blocking position, in which said staple output end is pivoted downwardly in relation to said tacker housing, and an operating position in which said output end is pivoted upwardly into a position adjacent said tacker housing;
a coupling element located between said staple magazine and an actuator element of a main operating switch;
said coupling element being connected to said tacker magazine and being provided with an engagement portion, said engagement portion being engaged by said actuator element in an actuated position thereof to hold said staple magazine in said operating position; and
staple blocking means for blocking feeding of a front staple in said staple output end of said staple magazine in said operating position of said staple magazine, and for permitting feeding of such front staple into said staple output channel in said blocking position of said staple magazine.

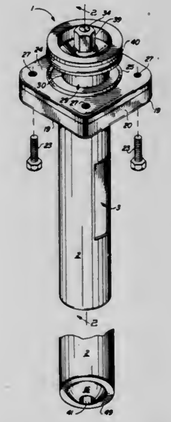
4,573,622
SURGICAL FASTENER APPLYING APPARATUS WITH VARIABLE FASTENER ARRAYS
David T. Green, Norwalk, and Edgar D. Gunning, Danbury, both of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.
Filed Oct. 19, 1984, Ser. No. 662,678
Int. Cl.[4] A61B *17/04;* B25C *5/00*
U.S. Cl. 227—19 **5 Claims**

1. Apparatus for applying an array of surgical fasteners to body tissue comprising:
a plurality of surgical fasteners in a predetermined array, said array being subdivided into first and second subarrays;
first and second pusher means for respectively pushing the fasteners in the first and second subarrays into the tissue;
first means for supplying the work required for pushing the fasteners into the tissue; and



second means for optionally transmitting the work supplied by the first means to either the first and second pusher means together or to the first pusher means only.

4,573,623
DIMPLER APPARATUS FOR NAIL GUNS
Joseph A. Sexton, Jr., 6398 Bocage Cir., Shreveport, La. 71119, and Eric J. Vanwinkle, P.O. Box 28, Bethany, La. 71007
Filed Dec. 3, 1984, Ser. No. 677,398
Int. Cl.[4] B25C *1/04*
U.S. Cl. 227—66 **28 Claims**



1. A dimpler apparatus for driving nails and providing dimples in a drywall panel comprising:
(a) a housing;
(b) bias means provided in one end of said housing;
(c) guide means carried by the opposite end of said housing; a bore extending transversly into said guide means; and a stop opening extending said bore through said guide means and having a cross-section shaped in the configuration of a first polygon;
(d) dimpler means slidably disposed in said housing and said bore in said guide means, with one end of said dimpler

means in contact with said bias means and the opposite end of said dimpler means shaped in the configuration of said first polygon and slidably disposed in said stop opening; stop means in association with said opposite end of said dimpler means, said stop means contacting said guide means when said bias means is not tensioned by said dimpler means; and a dimpler opening extending through said dimpler means;

(e) a traveling stop carried by said opposite end of said dimpler means, said traveling stop normally spaced from said guide means when said bias means is not tensioned by said dimpler means, and a traveling stop opening in said traveling stop, said traveling stop opening communicating with said dimpler opening;

(f) nail access means provided in said housing and said dimpler means, said nail access means communicating with said dimpler opening; and

(g) a driver shaft slidably disposed in said traveling stop opening and said dimpler opening, with one end of said driver shaft adapted to drive nails, and stop means provided on said driver shaft for limiting the travel of said driver shaft, whereby reciprocation of said driver shaft in a first increment of travel effects contact between said one end of said driver shaft and nails sequentially fed into said dimpler opening to drive the nails into the drywall panel, and displacement of said dimpler means against the bias of said bias means in concert with said driver shaft in a second increment of travel creates dimples in the panels.

4,573,624

PORTABLE ELECTRIC STAPLER

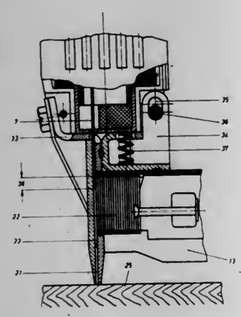
Erwin Müller; Czeslaw Zakrzewski, and Burghard Matzdorf, all of Lingen, Fed. Rep. of Germany, assignors to Erwin Müller GmbH & Co., Lingen, Fed. Rep. of Germany

Division of Ser. No. 527,314, Aug. 29, 1983, abandoned. This application Mar. 4, 1985, Ser. No. 707,667

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1982, 3232137

Int. Cl.⁴ B25C *5/15*

U.S. Cl. 227—121 **18 Claims**



1. Apparatus for driving nails, staples or analogous fasteners into workpieces, comprising a housing defining a path along which successive individual fasteners can be advanced in a predetermined direction to penetrate into a selected workpiece; a magazine arranged to store a series of coherent but separable fasteners and having outlet means communicating with said path; means for urging successive fasteners of the series through said outlet means and into said path; a reciprocable impeller disposed in said path and normally assuming a predetermined starting position behind said outlet means, as considered in said direction; propelling means actuatable to propel the impeller in said direction with reference to said outlet means so that a fastener in said path is advanced toward a workpiece which is disposed in front of the path in response to each actuation of the propelling means, the outlet means of said magazine being movable with reference to said impeller; means for opposing movement of said outlet means from a first position in which the foremost fastener of the series is free to enter said path in the starting position of said impeller to a second position and to thereby move the fastener in said path against the impeller while the impeller assumes its starting position so that the impeller effects separation of the fastener in said path from the neighboring fastener of the series; and means for moving the impeller counter to said direction and back to said starting position through distances such that the impeller blocks the outlet means and thus prevents a fresh fastener from advancing from the magazine into said path prior to expulsion of the preceding fastener from said path.

4,573,625

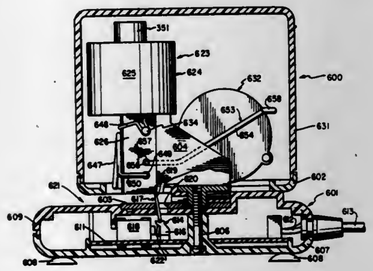
STAPLE FORMING AND DRIVING MACHINE

Paul Olesen, Bellmore; Albert Lensky, Fresh Meadows, and Richard J. Pendzich, Brooklyn, all of N.Y., assignors to Swingline Inc., Long Island City, N.Y.

Division of Ser. No. 432,553, Oct. 4, 1982. This application Oct. 16, 1984, Ser. No. 661,520

Int. Cl.⁴ B25C *5/15*

U.S. Cl. 227—131 **4 Claims**



1. A staple forming and driving tool for forming staple wires fed from a staple belt into staples and driving such staples into a workpiece comprising:

(a) a lower housing unit having power supplied thereto;

(b) an upper housing unit having a block base unit, a vertical front sheath, a belt cartridge, a forming and driving unit and a solenoid for driving the forming and driving unit therein;

(c) electrical connector means for connecting the solenoid to the power source;

(d) insulating means insulating the solenoid and the electrical connector means;

(e) a front sheath mounted on the block base unit;

(f) forming and driving means being configured and the block base unit being configured to form a passageway between the front sheath and the block base to permit reciprocating movement of the forming and driving means between the block and sheath;

(g) the block base unit having an opening therein for receiving a staple belt; and

(h) the cartridge means having a chute portion insertable into said block base opening to restrict the size of the opening and to provide limit means for limiting upper movement of the belt during operation.

4,573,626

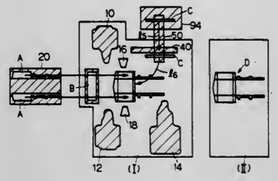
APPARATUS FOR ASSEMBLING FRONT UNDER PORTION OF VEHICLE BODY

Yosuke Nishiyama, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Oct. 5, 1983, Ser. No. 539,171

Int. Cl.⁴ B23K *9/12, 37/04*

U.S. Cl. 228—6.1 **9 Claims**



1. A system for automatically assembling components of a vehicle body, comprising:

a first overhead conveyor including a guide frame and a hanger, said first overhead conveyor extending over a first work station and a first end of a main transfer machine, said hanger extending from and being movable along said guide frame, said main transfer machine adapted to transfer said components in substantially the same direction as the direction of movement of said hanger;

a first swing-type transfer machine including a base member, a first holding plate and a horizontal shaft, said base member of said first swing-type transfer machine being positioned on the ground between said first work station and said first end of said main transfer machine, said horizontal shaft being perpendicular to the direction of movement of the hanger along the guide frame of said first overhead conveyor, said first holding plate being pivotally mounted on the horizontal shaft, first swing-type transfer machine being located under said first overhead conveyor and being adapted to remain under said first overhead conveyor for substantially an entire swing of said swingably mounted plate;

automatic welding equipment;

a second swing-type transfer machine having a vertical shaft and a second holding plate, said second holding plate being pivotally mounted on the vertical shaft;

a second overhead conveyor including a guide frame and a hanger, the guide frame of said second overhead conveyor being perpendicular to the guide frame of said first overhead conveyor, the second overhead conveyor extending over a second work station to said second swing-type transfer machine, the hanger of said second overhead conveyor extending from and being movable along the guide frame of said second overhead conveyor;

said second holding plate adapted to be swingable between a first position at which it is perpendicular to, and at one end of, said second overhead conveyor and a second swing position at which it is perpendicular to and at a second end of said main transfer machine;

said first overhead conveyor, said first swing-type transfer machine, and said second swing-type transfer machine adapted to assemble components on the main transfer machine and said automatic welding equipment being adapted to weld said components on said main transfer machine.

4,573,627

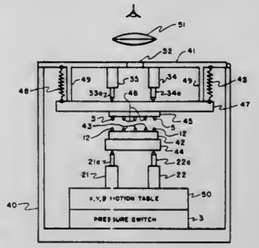
INDIUM BUMP HYBRID BONDING METHOD AND SYSTEM

Brian S. Miller, Stafford, and Aubrey J. Dunn, Springfield, both of Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 20, 1984, Ser. No. 684,223

Int. Cl.⁴ B23K *20/00, 31/02*

U.S. Cl. 228—102 **2 Claims**



1. A method of bonding together two arrays of indium bumps on two circuit boards, wherein corresponding additional indium bumps are formed on each board, outside of said arrays, and wherein means is provided to translate said boards toward each other, said means including an energizible actuator corresponding to each of said additional bumps, the method including the steps of:

placing said boards on said means in approximate parallel conjunction;

aligning said boards such that corresponding bumps of said arrays of bumps and said additional bumps are juxtaposed;

energizing said actuators of said means to cause translation of said boards toward each other;

stopping translation of corresponding actuators as corresponding ones of said additional bumps on said two boards come in contact with each other, until all said actuators are stopped;

reenergizing at least those actuators associated with the additional bumps on one of said boards until a predetermined pressure is reached between said boards;

deenergizing and retracting all actuators when said pressure is reached, and;

removing the boards thus bonded from said means.

4,573,628

METHOD FOR TAPPING INTO TUBING UNDER A CONTROLLED ATMOSPHERE, IN PARTICULAR FOR TUBING IN A NUCLEAR POWER STATION

Gérard Dohlen, Ecuelle; Jean-Claude Le Marquis, Moret, and Claude Oberlin, Avon, all of France, assignors to Electricite de France, Paris, France

Filed Mar. 20, 1984, Ser. No. 591,405

Claims priority, application France, Mar. 24, 1983, 83 04838

Int. Cl.⁴ F16K *43/00*

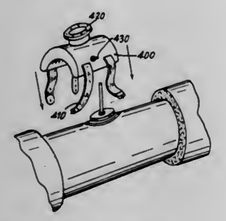
U.S. Cl. 228—170 **5 Claims**

1. A method of making a tapping point into tubing under a controlled atmosphere, in particular into tubing in a nuclear power station, wherein the method comprises the steps of:

digging out a continuous groove in the wall of the tubing at the location of the tapping point to be made, said groove being slightly shallower than the thickness of the wall, thereby leaving a membrane of metal at the bottom of the groove between the inside of the tubing and the outside atmosphere;

placing a sealed isolation unit on the tubing, said unit covering a wide area which is at least equal to the area delimited by the groove;

breaking the metal membrane so as to make an opening in the wall of the tubing;
removing the cut out portion of the wall;



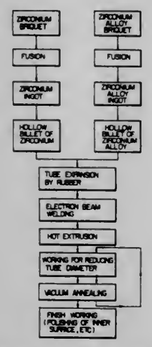
welding on a blind tail-pipe; and
removing the sealed isolation unit.

4,573,629

METHOD OF PRODUCTION OF CLADDING TUBE FOR NUCLEAR FUEL ELEMENT

Hiromichi Imahashi, Hitachi; Akira Kawahara, Ibaraki; Takao Konishi; Yoshihumi Morimoto, both of Nishinomiya; Michio Terui, Tokyo, and Yoshio Yagi, Toda, all of Japan, assignors to Hitachi, Ltd., Tokyo; Sumitomo Metal Industries, Ltd., Osaka and Nippon Mining Co., Ltd., Tokyo, all of, Japan

Filed Aug. 10, 1981, Ser. No. 291,330
Claims priority, application Japan, Aug. 15, 1980, 55-111630
Int. Cl.⁴ B21D *39/00*
U.S. Cl. 228—173.2 **15 Claims**



1. A method of producing a composite type cladding tube for a nuclear fuel element, comprising the steps of:
preparing a hollow outer billet of a nuclear fuel cladding material and a hollow inner billet having an outer diameter smaller than the inner diameter of the hollow outer billet;
inserting the hollow inner billet into the hollow outer billet;
inserting into the hollow inner billet a resilient member longer than the inner billet in length and disposed so that the end portions of said resilient member protrude axially outwardly from both ends of the inner billet;
inserting said outer and inner billets and said resilient member into a die;
applying pressure to the resilient member in the axial direction of the billets to force the inner billet against the outer billet to form a pressure bonding between an inner surface of the outer billet and an outer surface of the inner billet while preventing the resilient member from leaking that might otherwise be caused by a change in the axial length of the inner billet;
joining and hermetically sealing in a vacuum all of the interface portions existing at both ends of the pressure-bonded hollow billet;
working the integrally bonded hollow billet into a composite tube of a small diameter and thin thickness; and
polishing the inner surface of the composite tube by use of both mechanical polishing and chemical polishing, thereby controlling the thickness of the inner tube portion to a desired level while controlling the whole of the composite tube to a uniform thickness.

4,573,630

HOMOGENEOUS LOW MELTING POINT COPPER BASED ALLOYS

Debasis Bose, Randolph; Amitava Datta, Morris Township, Morris County, and Nicholas J. DeCristofaro, Chatham, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Division of Ser. No. 488,851, Apr. 26, 1983, Pat. No. 4,489,136, which is a continuation-in-part of Ser. No. 420,549, Sep. 20, 1982, Pat. No. 4,460,658. This application Aug. 27, 1984, Ser. No. 644,290
The portion of the term of this patent subsequent to Feb. 5, 2002, has been disclaimed.
Int. Cl.⁴ B23K *35/30*
U.S. Cl. 228—263.18 **5 Claims**

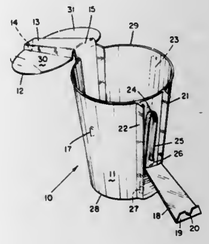
1. A process for joining together two or more metal parts which comprises:
(a) interposing a filler metal between the metal parts to form an assembly, the filler metal having a melting point less than that of any of the parts;
(b) heating the assembly to at least the melting temperature of the filler metal; and
(c) cooling the assembly; wherein the improvement comprises employing, as the filler metal, a homogeneous copper based foil having a composition consisting essentially of 5 to 52 atom percent nickel, 2 to 10 atom percent tin and 10 to 15 atom percent phosphorus, the balance being copper and incidental impurities and the total of copper, nickel and tin ranging from about 85 to 90 atom percent.

4,573,631

DISPOSABLE STRAW, LID AND CUP COMBINATION

Michael Reeves, 2299 Fountain Way East, #D, Costa Mesa, Calif. 92627

Filed Jun. 22, 1984, Ser. No. 623,703
Int. Cl.⁴ B65D *1/00, 25/38*
U.S. Cl. 229—7 S **7 Claims**



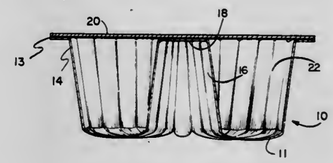
1. An improved cup, lid and straw combination, comprising:
(a) a cup having a generally tapered sidewall with a closed bottom and an open top portion, one portion of said sidewall having an outwardly-radiating trough extending from the top to the bottom of said cup, and an outwardly radiating sanitary enclosure extending from the top of the cup to the bottom, said enclosure having a cover hinged intermediate the enclosure, the exterior shape of said enclosure being substantially the same shape as the cup's trough, with an aperture in the bottom of the sidewall of the cup opening into the sanitary enclosure;
(b) a lid, said lid including a trough section therein, one end of said trough having a manual pull-tab thereon, the opposite end of said trough having a hinge thereon, said hinge being operably secured to the top of said trough in said sidewall of said cup; and
(c) a straw having a flexible portion therein, one end of said straw being mounted in said sidewall through the aperture therein, and the balance of said straw being operably arranged for containment within said sanitary enclosure.

4,573,632

FOOD CONTAINER

Jan-Mathieu Scheeren, Holset 38, 6295 NC Lemiers, Netherlands

Filed May 29, 1984, Ser. No. 615,047
Int. Cl.⁴ B65D *1/34*
U.S. Cl. 229—2.5 R **2 Claims**



1. A food container for receiving moldable foodstuffs conforming to the shape of the container, comprising
a container body made of pliant thermoplastic PVC and having the shape of a pound-cake tin defining an open annular food-receiving channel disposed around a central region;
said container body having a bottom with an inner wall, and having an outer wall extending upwardly from the bottom to an outer edge surrounding said annular channel, said inner and outer walls tapering outwardly from the bottom so as to promote unitary release of a molded foodstuff received therein;
a rim joining said outer edge of the outer wall and extending horizontally out therefrom to surround the outer edge of the container body;
said inner wall defining a central truncated cone extending upwardly from said bottom of the container body;
said truncated cone having a closed top;
said top being horizontal and substantially coplanar with said horizontal rim surrounding the outer edge of the container body, so that the horizontal closed top of the central truncated cone is at the same level as the horizontal rim,
whereby the solidity of the container is enhanced by the horizontal rim outside the container body and by the closed horizontal top of the central truncated cone.

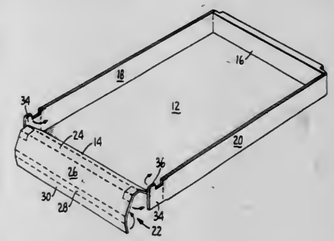
4,573,633

CORNER LOCK ON PAPERBOARD BAKING AND SHIPPING TRAY

James A. Brian, San Antonio, Tex., assignor to Crown Zellerbach Corporation, San Francisco, Calif.

Filed Jun. 25, 1984, Ser. No. 624,153
Int. Cl.⁴ B65D *5/22*
U.S. Cl. 229—32 **2 Claims**

1. A baking and shipping tray formed from a unitary blank of paperboard material having a baking surface, said tray defining an interior and comprising:
a bottom wall;
a first pair of opposed side walls connected to said bottom wall along fold lines;
a second pair of opposed side walls connected to said bottom wall along fold lines;
channel defining members connected to each of said first pair of side walls, the channel defining members each comprising a plurality of channel panels folded relative to one another to define an open-ended channel and including a first channel panel extending outwardly from one of said first pair of side walls, a second channel panel extending downwardly from said first channel panel substantially parallel to said one side wall and spaced therefrom, a third channel panel extending from said second channel panel and inwardly toward said one side panel, and a fourth channel panel extending upwardly from said third channel panel and adjacent to said one side wall; and
locking panels extending from the ends of each said second pair of side walls and positioned in said channels, said locking panels and said channel panels cooperating to



maintain said first and second pairs of side walls substantially perpendicular to said bottom wall with only the baking surface exposed to said tray interior, said locking panels each including a lock tab positioned in a channel and at least some of said channel panels including detent means engageable with said lock tab to lock said locking panels in said channels, said detent means each comprising a first detent section formed in said first channel panel and separated by a first line of cut from a remainder of said first channel panel and a second detent section formed in said second channel panel and separated by a second line of cut from a remainder of said second channel panel and connected to said first detent section along a fold line, said first detent section being connected to said one side wall by a fold line extending from said first line of cut and said second detent section being connected to both said first detent section and said second channel panel by fold lines extending from said second line of cut.

4,573,634

TAMPER-EVIDENT CARTON

Kari A. Kohler, Roselle; and Richard F. House, St. Charles, both of Ill., assignors to Container Corporation of America, Chicago, Ill.

Filed Apr. 18, 1985, Ser. No. 724,824
Int. Cl.⁴ B65D *5/08*
U.S. Cl. 229—38 **3 Claims**

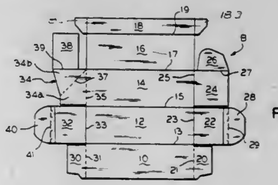


FIG.1

1. An end loading, end opening, tubular, tamper-evident

carton formed from a unitary blank of foldable sheet material such as paperboard, comprising:

(a) a pair of opposed front and rear side wall panels and a second pair of opposed side wall panels foldably joined to each other along parallel, longitudinal fold lines to form a tubular structure open at the ends;

(b) first and second closure means for closing the opposite ends of said structure in such a manner that neither end can be opened without destroying the integrity of the carton;

(c) said first closure means including:

(i) a first inner closure foldably joined to and extending normally from a side wall panel of said second pair;

(ii) a first retaining panel foldably joined to a front edge of said first inner closure flap, extending inwardly therefrom behind said front side wall panel, and having an end portion secured to said front side wall panel;

(iii) a first intermediate closure flap foldably joined to and extending normally from the other side wall of said second pair and being disposed to overlie a portion of said first inner closure flap;

(iv) a first outer closure flap foldably joined at one edge to and extending normally from said rear side wall panel;

(v) said first outer closure flap being adhesively secured to outer surfaces of said first inner and intermediate closure flaps and having foldably joined thereto at an opposite edge thereof a tuck tab which is interposed between said front side wall panel and said first retaining panel and adhesively secured to an outer surface of the latter;

(d) said second closure means including:

(i) a second inner closure flap foldably joined to and extending normally from a side wall panel of said second pair;

(ii) a second retaining panel foldably joined to a front edge of said second inner closure flap and extending inwardly therefrom behind said front side wall panel;

(iii) a second intermediate closure flap foldably joined to and extending normally from the other side wall panel of said second pair and being disposed to overlie a portion of said second inner closure flap;

(iv) a second outer closure flap foldably joined at one edge to and extending normally from said rear side wall panel;

(v) said second outer closure flap being adhesively secured to outer surfaces of said second inner and intermediate closure flaps and having foldably joined thereto at an opposite edge thereof a tuck tab which is interposed between said front side wall panel and said second retaining panel and adhesively secured to the latter.

4,573,635

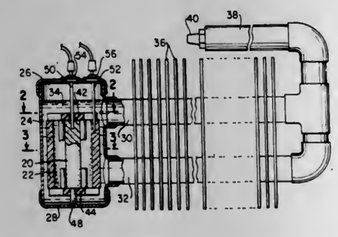
CLOSED CIRCUIT HEATING SYSTEM

Wilbur N. Lamphier, 58 Kingsberry Ave., Westwood, N.J. 07675

Filed Aug. 18, 1983, Ser. No. 524,304

Int. Cl.⁴ F24H *3/00*; H05B *3/60*

U.S. Cl. 237—70 **1 Claim**



1. A closed circuit heating system for use as a baseboard heater or the like, comprising

a sealed tank containing an annular heating element enveloping a heating rod, insulating means for mounting said annular heating element and heating rod in a fixed spatial relationship relative to each other and the tank, said insulating means comprising upper and lower retaining members having vertically extending pins for engaging the inner surface of said annular heating element, and means enabling said heating element and heating rod to be connected to a source of electricity,

an elongated heat conducting outlet tube connected to an elongated heat conducting return tube, said tubes being connected directly to said sealed tank with said outlet tube above said return tube to form a liquid flow path in the form of a loop, said loop being airtight,

a heat conducting liquid in said tank and tubes, said heating element and heating rod being completely submerged in said liquid, and both of said tubes being filled with said liquid, and

an airtight expansion chamber connected to said loop, said closed circuit heating system being evacuated of air at least in part so that the fluids in said system are at a pressure less than atmospheric.

4,573,636

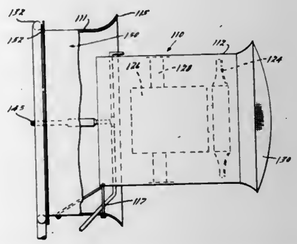
METHOD AND APPARATUS FOR MAKING ARTIFICIAL SNOW

James L. Dilworth, Petoskey, and Robert J. Brinks, Alanson, both of Mich., assignors to Nubs Nob, Inc., Harbor Springs, Mich.

Continuation-in-part of Ser. No. 473,071, Apr. 18, 1983, Pat. No. 4,493,457. This application Apr. 30, 1984, Ser. No. 605,621

Int. Cl.⁴ A01G *15/00*

U.S. Cl. 239—2 S **16 Claims**



16. A method of making artificial snow including the steps of:

generating a substantially unidirectional high-volume primary airflow stream;

generating and controlling a secondary airflow stream surrounding said primary airflow stream;

injecting a high-velocity water spray across said secondary airflow stream and into said primary airflow stream from a location substantially above said primary airflow stream; and

injecting a high-velocity water spray across said secondary airflow stream and into said primary airflow stream from a location substantially below said primary airflow stream; and

injecting into said primary airflow stream a high-velocity spray comprising a mixture of water and compressed air from a location approximately in the center of said primary airflow stream.

4,573,637

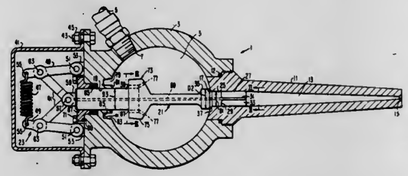
ACCELERATING SLUGS OF LIQUID

Larry L. Pater, Zelienople, and Aubrey C. Briggs, Rosslyn Farms, both of Pa., assignors to Dravo Corporation, Pittsburgh, Pa.

Filed Dec. 6, 1982, Ser. No. 447,000

Int. Cl.⁴ B05B *1/08*

U.S. Cl. 239—11 **7 Claims**



1. A method of accelerating a slug of liquid comprising the steps of:

introducing a volume of liquid under pressure into a closed container already filled with liquid to compress liquid within the container and thereby store energy as said pressure increases to at least 5000 psi; and

rapidly releasing a slug of liquid from said container using predominantly the energy stored in the compressed liquid to drive the slug of liquid from the container at a high velocity.

4,573,638

INJECTION PROBE

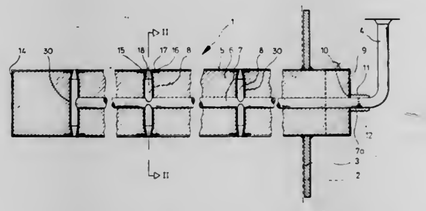
Gerd Junkers, Bad Homburg, Fed. Rep. of Germany, assignor to Wahlco, Inc., Santa Ana, Calif.

Filed Jun. 15, 1984, Ser. No. 621,205

Claims priority, application Fed. Rep. of Germany, Jun. 22, 1983, 3322464

Int. Cl.⁴ B05B *1/14*

U.S. Cl. 239—397.5 **4 Claims**



1. In an injection probe, particularly for the sulfur trioxide conditioning of flue gas of a type which includes a tubular, closed-end outer casing, a manifold connected to an elongated feed conduit provided with elongated injector tubes which, project radially outwardly from the longitudinal axis of such feed conduit through openings in the outer casing, have outer outlet openings adjacent respective openings in such casing and which injector tubes are at least partially surrounded by an insulating material, the improvement comprising: said outlet openings are reduced in cross-sectional area with respect to the inner periphery of said injector tubes axially inwardly therefrom; the outer end of each injector tube is formed with an outlet nozzle of conically convergent shape in the flow direction; and the outer periphery of each nozzle which is adjacent said openings in said casing is spaced therefrom and a refractory adhesive material is disposed therebetween.

4,573,639

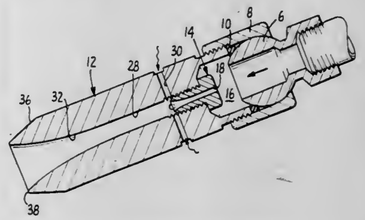
SHOWER HEAD

Murl F. Logue, 29435 Sanches Rd., Newman, Calif. 95360

Continuation of Ser. No. 466,424, Feb. 15, 1983, abandoned, which is a continuation-in-part of Ser. No. 381,190, May 24, 1982, abandoned. This application Jun. 6, 1985, Ser. No. 741,816

Int. Cl.⁴ E03C *1/08*

U.S. Cl. 239—428.5 **5 Claims**



1. A shower head comprising in combination:

a. a first large chamber forming a plenum for receiving water under pressure,

b. a metering orifice providing a single fluid passage leading from said chamber,

c. said metering orifice having a cylindrical entrance section smaller in diameter than said first large chamber leading to a gently flared divergent section terminating in an outlet port having a diameter larger than said entrance section,

d. a nozzle section forming a continuation of said metering orifice, said nozzle section having a cylindrical portion extending to a divergent section forming a circular discharge port whereby water flows straight through the nozzle section with entrained air in a divergent flare,

e. the cylindrical portion of the nozzle section being slightly larger than the outlet port of the metering orifice,

f. said nozzle section having an outer surface defining said circular discharge port,

g. air entrance ports extending from the outer surface of the nozzle section at right angles to the flow of water through the nozzle section into the confluence of the outlet port of the metering orifice and the cylindrical portion of the nozzle section.

4,573,640

IRRIGATION EMITTER UNIT

Raphael Mehoudar, Tel-Aviv, Israel, assignor to Hydro-Plan Engineering Ltd., Tel-Aviv, Israel

Continuation-in-part of Ser. No. 143,098, Apr. 23, 1980, Pat. No. 4,384,680, which is a continuation-in-part of Ser. No. 845,277, Oct. 25, 1977, Pat. No. 4,209,133, and a continuation-in-part of Ser. No. 312,910, Oct. 19, 1981, abandoned, which is a continuation of Ser. No. 164,844, Jun. 30, 1980, abandoned, which is a continuation of Ser. No. 962,688, Nov. 21, 1978, Pat. No. 4,210,287. This application Dec. 1, 1982, Ser. No. 445,998

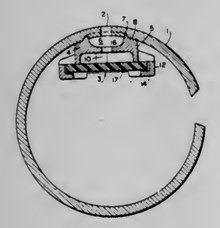
Claims priority, application Israel, Oct. 26, 1976, 50766; Nov. 24, 1977, 53463

Int. Cl.⁴ A01G *25/02*

U.S. Cl. 239—542 **10 Claims**

1. An irrigation emitter unit comprising an elongated body member having formed in a first surface thereof an elongated groove formed with a pair of oppositely directed flow resisting baffles, said groove having an inlet end and an outlet end, there being furthermore formed in said first surface a recessed cavity of elongated shape and being of extended dimensions as compared to the width of said groove, said outlet end of said groove communicating with said cavity so that said groove extends out of said cavity and is located on one side thereof, there being formed in the base of the cavity an outlet aperture extending to a second and opposite surface of the body member and having a rim area substantially less than that of the

recessed cavity, a resiliently flexible membrane of substantially elongated shape juxtaposed with respect to said first surface so as to be pressed towards said first surface under the influence of fluid pressure so as to define with said groove, an elongated flow reducing flowpath; with said groove inlet a flowpath inlet; and with said cavity an outlet control chamber and communication means for effecting communication between an



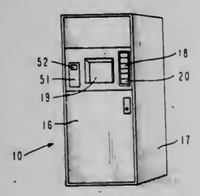
irrigation supply and said flowpath inlet and so as to allow for the exertion of said fluid pressure on said membrane; the arrangement being such that upon the fluid pressure acting on said membrane exceeding the fluid pressure in the outlet chamber by a predetermined amount, the membrane flexes elastically towards the outlet aperture so as to define, with a rim of the outlet aperture a restricted outflow path thereby limiting variations in the outflow rate.

4,573,641

GLASS BOTTLE COLLECTION AND CRUSHING APPARATUS

Bruce H. DeWoolfson, Vienna, Va.; Stanley Flowers, W. Milton, and Robert F. Freund, Centerville, both of Ohio, assignors to Environmental Products Corporation

Filed Nov. 17, 1983, Ser. No. 552,777
Int. Cl.⁴ B02C *25/00*
U.S. Cl. 241—36 **4 Claims**



1. Apparatus for collecting and storing refundable empty glass bottles of two or more individual colors and for issuing predetermined return deposits for the bottles collected, each refundable bottle having a code imprinted thereon to identify the brand and color of the bottle, comprising:

(a) preselection means for determining the brand, color and refundability of a preferred empty glass bottle, the preselection means including a laser scanner for reading the imprinted code on each bottle, a bottle access area configured to accommodate the bottles for exposure to the laser scanner, and a microprocessor capable of receiving and interpreting the read code from the laser scanner;

(b) means for accepting only a bottle identified by the preselection means as being refundable, the accepting means sorting the refundable bottles into two colors, the accepting means including two panels together forming a V-shaped base portion of the bottle access area, each panel being independently tiltable inwardly toward the crushing means, and an opening means attached to each panel responsive to the preselection means to sort refundable bottles into colors by selectively tilting one of the two panels of the V-shaped base portion depending upon the color of the refundable bottle to deposit the bottle by gravity into the crushing means;

(c) means responsive to the accepting means for crushing the refundable bottles into glass cullet, the crushing means including at least one rotating crushing wheel;

(d) dispensing means responsive to the preselection means for dispensing at least one of a coin and a token in return for the refundable bottles; and

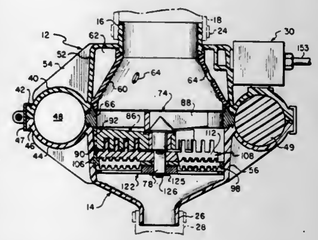
(e) means for storing the glass cullet received from the crushing means.

4,573,642

WATER POWERED WASTE DISPOSER WITH IMPROVED DYNAMIC SEAL

Leonard G. Spelber, San Diego, Calif., assignor to Wastemate Corporation, San Diego, Calif.

Filed May 7, 1984, Ser. No. 607,648
Int. Cl.⁴ B02C *18/40*
U.S. Cl. 241—46 B **10 Claims**



1. A water powered waste disposer comprising:

a housing having an upper waste material receiving neck and a lower drain outlet and defining a waste cutting chamber, said housing being formed of an upper portion and a lower portion;

a plurality of stacked cutters mounted in said waste cutting chamber, certain of said cutters being rotatable, said cutters being mounted in said lower portion:

an annular toroidal chamber mounted to said housing and having an inner periphery;

a stop plug in said chamber and blocking said chamber at one position;

a piston mounted within said toroidal chamber for sliding movement around said chamber;

means to connect said piston to said rotatable cutters;

a pair of water inlets in said toroidal chamber on opposite sides of said stop plug;

valve means coupled to said inlets and having means for connection to a source of water, said valve means controlling the operation of said piston so that it reciprocates around said toroidal chamber to opposite sides of said stop plug;

a drive ring rotatably mounted between said upper and lower housing portions in the inner periphery of said toroidal chamber and being connected between said piston and said rotatable cutters, said drive ring having an outer surface opening into said toroidal chamber, said outer surface defining a portion of the inner periphery thereof;

a band of thin plastic material mounted to and covering said outer surface of said drive ring, said band extending beyond said outer surface over the immediately adjacent upper and lower portions of said inner periphery of said toroidal chamber and providing a normally moving seal between said toroidal chamber and said cutting chamber;

an annular manifold chamber mounted to said upper housing portion, said manifold chamber having circumferentially spaced spray ports directed toward said cutters; and

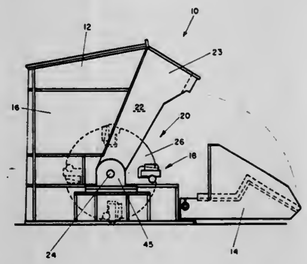
said valve means having exhaust outlets opening into said manifold chamber with means for exhausting water from said toroidal chamber into said manifold chamber.

4,573,643

IMPACT CRUSHERS

Axel W. Orphall, McMurray, and Bernd G. Albers, New Castle, both of Pa., assignors to A & O Engineering, Inc., Bridgeville, Pa.

Filed Apr. 2, 1984, Ser. No. 596,210
Int. Cl.⁴ B02C *13/28*
U.S. Cl. 241—189 R **14 Claims**



1. In an impact crusher for reducing material particulates, such as limestone, grain, ore, and the like comprising:

a housing in which said material to be reduced is introduced, and

a rotor assembly in said housing having several impact assemblies consisting of breaker bar means and back-up bar means and arranged around the outer periphery of said rotor assembly for contacting and impacting said material,

said housing consisting of at least two separate portions one movable relative to the other, said movable portion being constructed and arranged to be in a closed and opened position wherein in said opened position there is provided ready access into said housing at a location where each said impact assembly is successively positionable for replacement of its respective breaker bar means such that the said breaker bar means is supported by its respective back-up bar means or said back-up means is substantially below said breaker bar means and,

extension means located outside said housing in alignment with said impact assembly which is positionable for said replacement of its respective breaker bar means, said extension means arranged to cooperate with said positioned back up bar means to provide a substantial continuous support for said positioned breaker bar means and includes means for engaging said back up bar means of said positioned assembly constructed and arranged such that said shaft is held against rotational movement, and further includes means for receiving and supporting said breaker bar means upon its removal and replacement to and from said positioned impact assembly.

4,573,644

CARPET ROLLING MACHINE

Robert W. Brown, Anoka, Minn., assignor to Production Design Products, Inc., Minneapolis, Minn.

Filed Feb. 27, 1985, Ser. No. 705,995
Int. Cl.⁴ B65H *18/22*
U.S. Cl. 242—67.1 R **16 Claims**

1. A machine for rolling carpet runners which comprises:

(A) a frame,

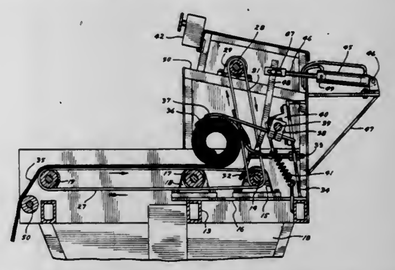
(B) a first set of at least a pair of spaced apart parallel rollers supported within said frame for rotation in a horizontal plane,

(C) drive means connected to one of said rollers,

(D) a further roller supported within said frame parallel to and spaced above the rearwardmost of said first set of rollers,

(E) a first series of a plurality of endless parallel spaced apart belts supported on said first set of rollers for longitudinal movement in response to rotation of the rollers,

(F) a second series of a plurality of endless parallel spaced apart belts supported between the rearwardmost of said first set of rollers and said further roller for generally vertical travel in response to rotation of the rollers, the belts of said second series alternating with the belts of said first series in the spaces between the belts of the first series,



(G) at least one concave forwardly facing arcuate guide plate supported at the juncture between said series of belts, the lower end of the guide plate extending into the space between the travel paths of the belts,

(H) an assembly of a plurality of concave downwardly facing fingers pivotally supported and extending forwardly in the spaces between said second series of belts and spaced above the first series of belts, and

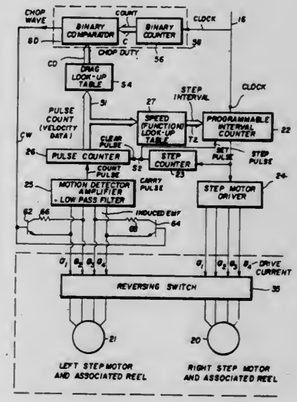
(I) means for controlling operation of said drive means.

4,573,645

RIBBON TENSION CONTROL

Samuel C. Harris, Jr., Waynesboro, Va., assignor to Genicom Corporation, Waynesboro, Va.

Filed Nov. 23, 1983, Ser. No. 554,736
Int. Cl.⁴ B65H *77/00*
U.S. Cl. 242—75.47 **27 Claims**



1. A ribbon tension controller for controlling the tension of a fixed length of ribbon as it is transferred from a rotating supply spool to a rotating take-up spool, said ribbon tension controller comprising:

alternating current generator means coupled to said supply

spool for producing braking torque to resist the rotation of said supply spool;

control means for producing a digital ribbon tension control signal related to the relative lengths of the fixed length ribbon then present on said spools; and

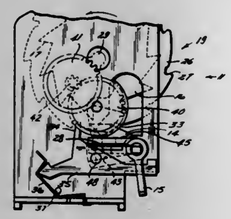
dynamic electrical braking means for dynamically varying the braking torque produced by said generator means, said braking means including switching means, electrically coupled to said generator means and to an electrical load, for selectively coupling said load to said generator means in response to said digital control signal.

4,573,646

MODE SELECTION RETRACTOR

Ronald A. Willey, Port Huron, Mich., assignor to TRW Automotive Products Inc., Cleveland, Ohio

Filed Apr. 23, 1984, Ser. No. 602,921
Int. Cl.[4] A62B *35/02*; B65H *75/48*
U.S. Cl. 242—107.4 A **7 Claims**



1. A seat belt retractor for a vehicle including:

a rotatable drum on which seat belt webbing is wound,

first ratchet means secured to and rotatable with said drum,

first pawl means movable into engagement with said first ratchet means to lock said first ratchet means and thereby said drum against rotation in the direction of withdrawal of said seat belt webbing,

second ratchet means secured to and rotatable with said drum,

second pawl means movable into engagement with said second ratchet means and movable by said second ratchet means upon engagement therewith,

said second pawl means having means cooperating with said first pawl means to effect movement of said first pawl means into engagement with said first ratchet means upon movement of said second pawl means by said second ratchet means, and

means for moving said second pawl means into engagement with said second ratchet means upon withdrawal of said seat belt webbing in excess of a predetermined amount, said means for moving said second pawl means comprising lever means for moving said second pawl means into engagement with said second ratchet means and sensing means for sensing withdrawal of said seat belt webbing and for actuating said lever means upon withdrawal of said seat belt webbing in excess of said predetermined amount.

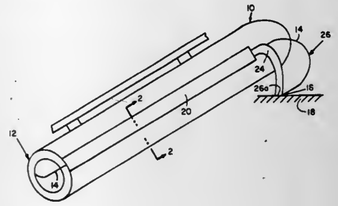
4,573,647

FIBER DEPLOYMENT MECHANISM

Bobby W. Laten, Hazel Green, and Johnny L. Prater, Huntsville, both of Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 30, 1984, Ser. No. 615,428
Int. Cl.[4] F41G *7/32*
U.S. Cl. 244—3.12 **6 Claims**

1. A fiber deployment mechanism comprising a missile having a bobbin with fiber wound thereon, a fixed support mechanism mounted relative to said missile, said fiber being connected in a fixed relationship to said fixed support mechanism, and a deployment mechanism mounted linearly of an outer surface of said missile and also connected to said fixed support mechanism and serving to mount said fiber along said outer



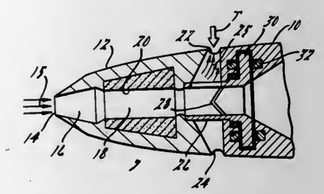
surface and for deployment by said deployment mechanism as said missile is launched away from said fixed support mechanism and preventing said fiber from having to bear undue load during launch and at the same time freeing said fiber for payout from said bobbin as said missile is launched.

4,573,648

RAM AIR COMBUSTION STEERING SYSTEM FOR A GUIDED MISSILE

Richard C. Morenus, Long Beach, and Alson C. Frazer, Santa Ana, both of Calif., assignors to Ford Aerospace and Communications Corp., Newport Beach, Calif.

PCT No. PCT/US83/00086, § 371 Date Jan. 20, 1983, § 102(e) Date Jan. 20, 1983, PCT Pub. No. WO84/02975, PCT Pub. Date Aug. 2, 1984
PCT Filed Jan. 20, 1983, Ser. No. 491,953
Int. Cl.[4] F41G *7/00*
U.S. Cl. 244—3.22 **10 Claims**



1. A directional steering system for a guided missile comprising:

means defining the nose end of said missile;

means within said nose means for receiving ram air therein;

means within said nose means adjacent said ram air receiving means for providing combustible fuel;

means within said nose means defining a combustion chamber wherein ram air ignites said fuel;

means within said nose means and aft of said combustion chamber defining lateral thrust steering ports to provide escape paths for combustion gases from said combustion chambers means to the external environment;

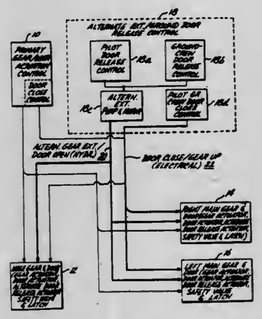
means within said nose means for selectively diverting combustion gases generated within said combustion chamber means to one or more of said lateral thrust steering ports.

4,573,649

INTEGRATED ALTERNATE GEAR EXTENSION AND GROUND-CREW DOOR OPENING/CLOSING SYSTEM FOR AN AIRCRAFT

Frank M. Yourkowski, Enumclaw, and Melvin C. Zoerb, Renton, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Aug. 1, 1983, Ser. No. 519,251
Int. Cl.[4] B64C *25/26*
U.S. Cl. 244—102 R **10 Claims**



1. An integrated system for a pilot operated alternate extension control for a landing gear and associated gear door of an aircraft and a ground-crew operated door opening/closing control, comprising:

hydraulic door actuator means having a door locked closed condition and a door released condition, said hydraulic door actuator means in its released condition being unrestrained to move from a door closed position to a door open position and being adapted to receive door closing hydraulic pressure to force the gear door from its door open position to its door locked closed position;

door actuator lock means associated with said door actuator means and having locked and unlocked conditions that respectively dispose said hydraulic door actuator means in its door locked closed and door released conditions;

an alternate lock release actuator means for moving said door actuator lock means from its locked condition to its unlocked condition in order to dispose said hydraulic door actuator means in its door released condition;

safety valve means having a safe condition and an armed condition, said safety valve means normally assuring its armed condition and being interconnected with said alternate lock release actuator means so as to be disposed in said safe condition when said alternate lock release actuator moves said door actuator lock to its door released condition, said safety valve means in its safe condition blocking the receipt of said door closing hydraulic pressure by said hydraulic door actuator means;

latch means for holding said safety valve means in its safe condition when said alternate lock release actuator means moves said safety valve means from its armed condition to its safe condition;

pilot control means responsive to a pilot alternate release command to operate said alternate lock release actuator means so as to move said door actuator lock means to its unlocked condition thereby releasing said hydraulic door actuator means to release it for movement to said door open position; and

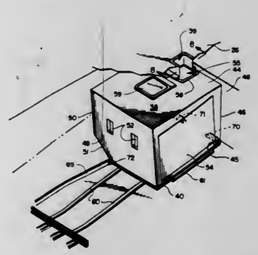
ground-crew control means responsive to a ground-crew door open command to operate said alternate lock release actuator means to move said door actuator lock means between its locked condition and its unlocked condition, and said ground-crew control means responsive to a ground-crew door close command to unlatch said latch means when holding safety valve means in its safe position to enable said safety valve means to return to its armed condition.

4,573,650

FIRE-SAFE AIRCRAFT WASTE DISPOSAL SYSTEM

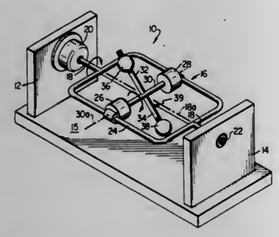
James L. Clayton, Everett, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Sep. 29, 1982, Ser. No. 428,440
Int. Cl.[4] B64D *11/00, 11/04*
U.S. Cl. 244—118.5 **1 Claim**



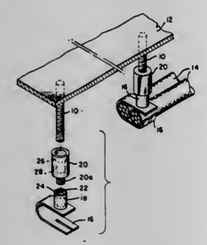
1. A fire-safe multipurpose Class D container suitable for use in receipt and stowage of waste materials inserted therein through a fire-safe waste chute formed in and extending through the deck separating the upper lobe aft galley of an aircraft from the lower lobe bulk cargo hold and adapted to be physically restrained within the bulk cargo hold during in-flight operations and wherein the bulk cargo hold is characterized by an irregular non-rectilinear shape having an upwardly and rearwardly inclined ramp-like floor and partially oblate walls converging towards the aft end of the hold, said container comprising, in combination: a standardized LD2 aircraft cargo container base compatible for use with onboard and ground located cargo handling systems, a floor mounted on said base and parallel thereto, four vertically extending walls defining two opposed pairs of walls secured to one another and to said floor in fire-safe, airtight relation, one wall in a first of said two pairs of walls being normal to said floor and the other of said walls in said first pair of walls defining an included obtuse angle with said floor with said one wall having a vertical height greater than said other wall and with said first pair of walls each having a truncated rectangular configuration adjacent its lower outboard edge, and with one wall in the second of said two pairs of walls having an inwardly and downwardly inclined lower edge adjacent the truncated portions of the walls in said first of said two pairs of walls and conformal to the configuration of the bulk cargo hold, said container being closed by a top wall which is secured to the upper edges of said four walls in airtight fire-safe relation wherein said top wall and said one wall of said first pair of walls define an included acute angle and said top wall and the other of said first pair of walls are normal to one another and wherein said container floor, top and at least one wall in each of said two opposed pairs of walls are generally conformal to and in closely spaced proximity from the ramp-like floor, ceiling and two of the walls defining said irregular non-rectilinearly shaped bulk cargo hold when positioned therein in registration with the waste chute; said top wall having an access opening formed therein for registration with the waste chute in airtight fire-safe relation; and, said container base portion including means enabling said container to be securely clamped to the floor of the bulk cargo hold in the aircraft.

4,573,651
TORQUE ORIENTATION DEVICE
Austin N. Stanton, 3017 Stonehenge La., Carrollton, Tex. 75006
Filed Dec. 19, 1983, Ser. No. 562,737
Int. Cl.[4] B64G *1/20*
U.S. Cl. 244—165 13 Claims



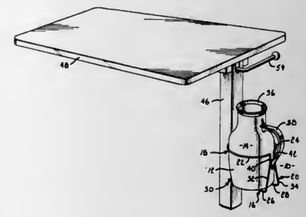
1. A torque orientation device for attitude control of a space craft, comprising:
a frame mounted to said space craft;
a gimbal having the main axle thereof rotatably mounted to said frame and the second axle thereof normal to said main axle;
a mass assembly mounted for rotation about said second axle, said mass assembly having balanced and oppositely opposed mass elements, wherein the moment of inertia about said main axle is a function of the angular position of said mass assembly about said second axle;
means for driving said mass assembly about said second axle, and
means connected to said frame for selectively applying torque about said gimbal main axle to produce a counter torque on said frame for changing the attitude of said space craft.

4,573,652
SUPPORT SYSTEM FOR MARITIME OR OTHER USE
Peter S. Richards, King County, Wash., assignor to Progressive Fastening, Inc., Issaquah, Wash.
Filed Feb. 7, 1983, Ser. No. 464,208
Int. Cl.[4] F16L *3/08*
U.S. Cl. 248—74.1 2 Claims



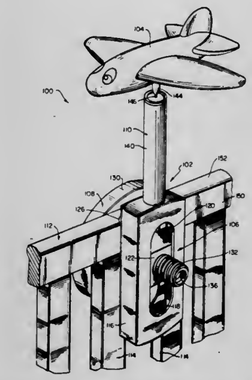
1. A hanger assembly for supporting cabling, piping, or the like, comprising:
a stud securable at one end to a support member, the opposite end of the stud including an externally threaded portion,
an internally threaded socket securable to a clamp, and
a coupling nut having (1) an internally threaded bore mating with the threads on the stud, and (2) an integral stud extension having external reverse threads mating with the internal threads of the internally threaded socket so that when the coupling nut is rotated to thread it onto the stud, the socket is simultaneously threaded onto the stud extension of the coupling nut.

4,573,653
URINAL HOLDER FOR HOSPITAL OVERBED STAND AND THE LIKE
Conrad H. Boettger, P.O. Box 329, Hesston, Kans. 67062
Filed Apr. 9, 1984, Ser. No. 598,262
Int. Cl.[4] A47G *23/02*
U.S. Cl. 248—153 4 Claims



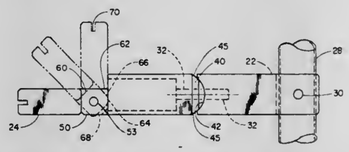
1. In combination with an upright support having at least one transversely extending mounting hole therein and an abutment surface located below said hole, a detachable holder for urinal jugs and the like comprising:
an open framework, wire rack including a jug-supporting base, a jug-retaining top spaced above the base, and a jug-retaining front integral with and interconnecting the base and the top;
a mount spaced rearwardly of the front attaching the top to said upright; and
an abutment on the base spaced below the mount and spaced rearwardly of the front in engagement with said surface,
the top having a pair of opposed, spaced apart, horizontally coplanar, arcuate sections in looped relationship to the jug when the latter is resting on the base,
said base having a pair of straight, spaced apart, elongated, horizontally coplanar pieces converging toward the abutment,
said front having a pair of straight, spaced apart, elongated, vertically coplanar members diverging toward the base,
said jug being provided with a handle, the front having a pair of straight, elongated, vertical elements integral with the top and with a corresponding member, coplanar with the members and horizontally spaced, presenting a clearance therebetween for the handle when the jug is resting on the base retained by the top, the members and the elements,
said mount including at least one hook having a horizontal portion projecting rearwardly from said top into and through said hole and a vertical portion projecting upwardly from said horizontal portion at the rear extremity thereof for releasably retaining the hook engaged with said hole,
said hook cooperating with said hole to hingedly attach said top of the rack to the support for swinging of the rack about a transverse, horizontal axis located adjacent said hole as the rack is attached to and detached from the support,
said abutment bearing against said surface of the support and precluding further swinging of the rack about said axis.

4,573,654
MOUNTING STRUCTURE FOR A CRIB TOY
John Nottingham, Richmond Heights, Ohio, assignor to Meritus Industries, Inc., Florham Park, N.J.
Filed Jun. 29, 1983, Ser. No. 509,199
Int. Cl.[4] A47B *96/06;* A47G *29/00*
U.S. Cl. 248—231.1 7 Claims



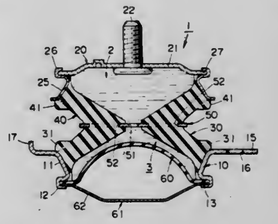
1. A toy assembly for mounting a toy to a crib rail and for supporting said toy on a stand, said assembly comprising a first member, a second member having securing means for securing said first and second members together adjacent said crib rail, and attaching means for attaching said toy to said first member when said first and second members are secured together and to said second member when said second member is arranged as a stand, said securing means comprising a first rod having an internally threaded end and said attaching means comprising a second rod having an externally threaded end, wherein said externally threaded end of said second rod is threadingly received within said internally threaded end of said first rod to provide said stand for supporting a toy.

4,573,655
SWIVEL CLAMP
Sekula Vulic, 319 E. 17th Ave., Columbus, Ohio 43201
Filed Nov. 8, 1984, Ser. No. 669,595
Int. Cl.[4] A47G *29/00*
U.S. Cl. 248—278 11 Claims



9. A support member comprising in combination, two generally flat members normally disposed in generally co-planar end to end abutting relationship; a pin mounted within said members with its longitudinal axis extending at right angles to the ends of said members abutting one another, one end of said pin being fixed to one of said members and the opposing end of said pin including a removable retaining means; a spring means mounted about the axis of said pin and abutting against a seat provided on one of said members and a thrust bearing disposed between the opposite end of said spring and said retaining means; wherein the entire abutting end of one of said members is formed with a groove extending therealong and the entire abutting end of the other member is formed with a tongue extending therealong adapted to mate with the groove; wherein each of said members may be rotated relative to the other of said members about the axis of said pin.

4,573,656
FLUID-SEALED ENGINE MOUNTING
Hiroshi Yoshida; Takefumi Toyoshima, both of Saitama; Tomio Iwabori; Hideaki Ohkura, both of Kanagawa; Yasuo Miyamoto; Izumi Nishimura, both of Saitama; Toshiyuki Oikawa, Kanagawa; Kenji Sekijima, Kanagawa, and Makoto Ohashi, Kanagawa, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo and Hokushin Kogyo Kabushiki Kaisha, Yokohama, both of Japan
Filed Jul. 23, 1984, Ser. No. 633,324
Claims priority, application Japan, Jul. 22, 1983, 58-134826; Feb. 20, 1984, 59-23573[U]
Int. Cl.[4] B60G *11/62*
U.S. Cl. 248—562 10 Claims

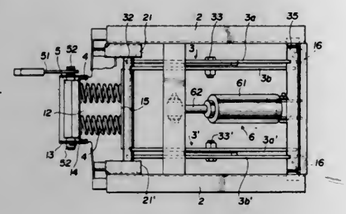


1. A fluid-sealed engine mounting for mounting an engine on a vehicle frame, comprising:
(a) a connector adapted to be connected to the engine;
(b) a base adapted to be connected to the vehicle frame;
(c) an elastic member joined between said connector and said base and elastically deformable in response to vibrations transmitted thereto, said connector, said base and said elastic member jointly defining a fluid chamber in which a fluid is sealed;
(d) a partition being entirely disposed intermediate said connector and said base and dividing said fluid chamber into a first chamber adjacent to said connector and a second chamber adjacent to said base, said partition having an orifice through which said first and said second chambers communicate with each other; and
(e) a diaphragm mounted on one of said connector or said base for varying the volume of one of said first and second chambers when vibrations are transmitted to the engine mounting, said base comprises a frustoconical tubular body mounted on an end of said elastic member and having a radially outwardly projecting flange on the end thereof closer to said connector, said flange including means for attachment to the vehicle frame.

4,573,657
VERTICAL ADJUSTMENT DEVICE FOR A VEHICLE SEAT
Takao Sakamoto, Akishima, Japan, assignor to Tachikawa Spring Co., Ltd., Tokyo, Japan
Filed Sep. 20, 1984, Ser. No. 652,766
Int. Cl.[4] B60N *1/02;* F16F *1/16*
U.S. Cl. 248—575 4 Claims

1. In a vertical adjustment device for use in a vehicle seat including a pair of X-shaped expansion legs provided between a mounting frame and a seat support frame, each of said legs rotatably connected at one end thereof to sliding portions on either said mounting frame or said seat support, and adapted to be free to rotate pivotally at their respective central portions so as to adjust the vertical positions of said seat support frame carrying said seat thereon, the improvement for adjusting cushioning force imparted to said seat comprising an adjustable

cam having a self-stop means and an operation lever cooperatively connected with the sliding portions of said expansion legs by means of springs interposed therebetween to energize



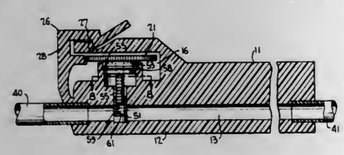
said expansion legs in their sliding direction whereby said cam is rotated to adjust the pre-load elastic forces of said springs and adjust said cushioning force of said seat.

4,573,658

ADJUSTABLE IN-LINE VALVE FOR STERILE FLUIDS

Marvin Gordon, East Windsor, and Joseph Lichtenstein, Colonia, both of N.J., assignors to Whitman Medical Corporation, Clark, N.J.

Continuation-in-part of Ser. No. 168,722, Jul. 14, 1980, Pat. No. 4,332,369. This application May 12, 1982, Ser. No. 377,429
The portion of the term of this patent subsequent to Jun. 1, 1999, has been disclaimed.
Int. Cl.⁴ F16K *35/02*
U.S. Cl. 251—95 **10 Claims**



1. A valve for controlling fluid flow through intravenous supply tubing, comprising:

a body member having a longitudinal passage extending therethrough and means for connecting said passage in series with said intravenous tubing, said body member including a first mating element;

selectively movable valve means, including a valve member disposed in said passage, for adjustably blocking the flow through said passage by moving said member within said passage, said valving means including a movable actuator for said valve member at least partially received within said body member and means securing said actuator to said body member;

locking means formed as an integral part of said body member, separate from said actuator and selectively pivotable independently of said actuator between open and closed positions, said locking means including a bearing surface which, in said closed position, bears against said actuator to prevent inadvertent movement of said valve member, said locking means in said open position being out of contact with said actuator to permit movement of said valve member, said locking means further including a second mating element which engages said first mating element to retain said locking means in said closed position; and

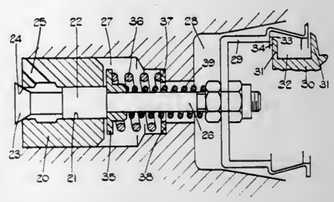
sterile sealing means for preventing exposure of said valve member to ambient air when said valve member is partially or fully disposed outside of said passage.

4,573,659

FLUID CONTROL VALVE

Graham D. Homes, London, England, assignor to Lucas Industries Public Limited Company, Birmingham, England

Filed Mar. 5, 1984, Ser. No. 585,930
Int. Cl.⁴ F16K *31/07*
U.S. Cl. 251—129.02 **4 Claims**



1. An electromagnetically operable fluid control valve comprising:

a valve body having a bore therein and spaced apart first and second shoulders in said bore;

an electromagnetic device including an armature which is movable with respect to said valve body;

a valve means movably located in said bore, said valve means including a head for closing said bore when said valve means is in a first position in said bore and for defining an opening into said bore when said valve means is in a second position in said bore, said valve means including an abutment spaced a predetermined distance from said head, said valve means being fixed to said armature for movement therewith;

a spring seat means positioned on said valve means adjacent to said valve means abutment, said spring seat means being slidably mounted on said valve means so that said valve means is movable with respect to said spring seat means, said spring seat means having a first abutment surface positioned for abutment against said valve means abutment and for abutment against said valve means first shoulder when said valve means is in said second position and to abut said valve means abutment but to be spaced from said valve means first shoulder when said valve means is in said first position, said spring seat means further including a first spring seating surface facing toward said valve body second shoulder;

a first spring means seated at one end thereof against said spring seat means first spring seating surface and at another end against said valve means a second shoulder for biasing said valve means toward said second position via said spring seat means; and

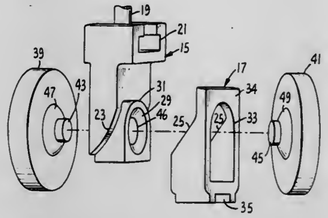
return means for biasing said valve means into said second position with respect to said valve body, said return means including a second spring seating surface on said spring seat means, another spring seating surface on said valve means, and a second spring means seated at one end thereof against said second spring seating surface and at another end against said another spring seating surface for biasing said valve means toward said second position when said valve means is in a third position in said bore with said valve means head being located farther out of said bore in said third position than it is when said valve means is in said second position, said second spring means being biased against said valve body first shoulder via said spring seat means and against said valve means another surface to urge said valve means head toward a bore closing location when said valve means is in said third position yet does not exert any position altering bias on said valve means when said valve means is in said first or second positions.

4,573,660

DOUBLE DISC GATE VALVE

Rodney O. Husted, Montoursville, Pa., assignor to Anchor/Darling Valve Company, Williamsport, Pa.

Filed Nov. 23, 1984, Ser. No. 674,423
Int. Cl.⁴ F16K *3/14, 3/24*
U.S. Cl. 251—195 **5 Claims**



1. In a double disc valve comprising a valve body having a pair of substantially parallel seats, a pair of valve discs operatively associated with said seats, respectively, and means for wedging said discs apart and forcing said discs against said seats; the improvement comprising:

a pair of discs, each disc having a valve seat on one side, a central boss on the other side, a spherical surface portion encircling said boss and a relatively flat surface portion around said spherical surface portion;

an upper wedge having a lateral projection formed with a central passage therethrough, a pair of spaced inclined wedge surfaces formed on opposite sides of said central passage, and a spherical surface formed around at least one end of said central passage, the boss of each disc being received in opposite ends of said central passage;

a lower wedge having an elongate slot that receives the projection formed on said upper wedge, a pair of spaced inclined wedge surfaces formed on opposite sides of said slot and engageable with the inclined wedge surfaces of said upper wedge, and a relatively flat surface engageable with the flat surface portions of one disc;

whereby said pair of discs may be interchanged and actuated by either said upper wedge or lower wedge, spherical surface engagement between said upper wedge and disc allowing adjustment for slight non-parallel alignments of valve seats and valve body distortions while providing a uniform distribution of sealing pressure.

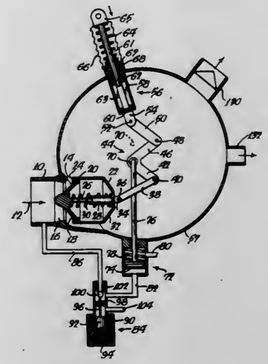
4,573,661

MULTIPLE SCHEDULE VALVE

David N. Chapman, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Oct. 15, 1984, Ser. No. 661,062
Int. Cl.⁴ F16K *31/52*
U.S. Cl. 251—234 **14 Claims**

14. A multiple schedule valve having two different valve schedules for flow control comprising, a first actuator movable through a variable stroke, a valve member having a full stroke of predetermined length in moving between closed and fully open positions, linkage means including a bell crank interconnecting said first actuator and said valve member such that a predetermined length of stroke of the first actuator effects said full stroke of the valve member, said linkage means being pivotally connected to said valve member, a second actuator, and means responsive to operation of the second actuator to modify the action of said linkage means to vary the relation between the first actuator and the valve member to have the valve member move through less that a full stroke in response



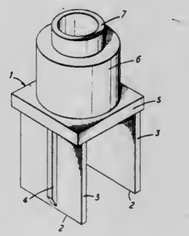
to movement of the first actuator through said predetermined length of stroke.

4,573,662

HYDRAULIC JACK FOR STRESSING ELONGATE ELEMENTS

Javier G. Ripoli, Madrid, Spain, assignor to Stronghold International AG, Liechtenstein, England

Filed Apr. 3, 1984, Ser. No. 596,277
Int. Cl.⁴ E21B *19/00*
U.S. Cl. 254—29 A **11 Claims**



1. A hydraulic jack for use in stressing simultaneously a plurality of elongate elements, the jack comprising:

a body with a front end;

a hydraulically driven tensioning member, including clamping means for the elements and movable away from the said front end to pull the elongate elements so as to stress them;

hydraulic means for driving the tensioning member; and

unclamping means operable to release the said clamping means, the unclamping means being operable in any position of the tensioning member within the range of its said movement and including an unlocking plate located in front of the tensioning member and movable with the tensioning member during its said movement, the unlocking plate being moved towards the tensioning member to provide the said unclamping.

4,573,663

LIFTING DEVICE, ESPECIALLY ELEVATING PLATFORM FOR MOTOR VEHICLES

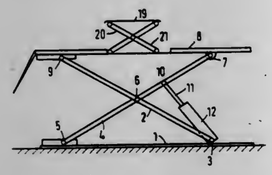
Hans Nussbaum, Bodersweier, Fed. Rep. of Germany, assignor to Hans Nussbaum, Kehl-Bodersweier, Fed. Rep. of Germany

Filed May 18, 1984, Ser. No. 611,813

Claims priority, application Fed. Rep. of Germany, May 20, 1983, 3318550

Int. Cl.⁴ B60P *1/54*

U.S. Cl. 254—89 H **3 Claims**



1. A device for elevating an automobile, comprising:
a base plate means;
two laterally spaced scissors-type hydraulic jacks mounted to said base plate means;
each said hydraulic jack including a platform constructed and arranged to cooperate with the said platform of the other respective hydraulic jack to support an automobile;
each said hydraulic jack further including a scissors mechanism having two pivotally connected scissor elements with two respective lower ends and two respective upper ends;
each said hydraulic jack having said lower end of one of said two pivotally connected scissor elements thereof pivotally but non-slidably connected to said base plate means, and said upper end thereof both pivotally and slidably connected to the respective said platform;
each said hydraulic jack further having said lower end of the other of said two pivotally connected scissor elements thereof both pivotally and slidably connected to said base plate means, and said upper end thereof pivotally but non-slidably connected to the respective said platform;
pivotal connections of said scissors elements to one another, and of each said pivot element to said base plate means and the respective said platform being about respective generally horizontal axes extending laterally of said device, so that as each said platform is raised and lowered, on each said hydraulic jack the respective scissor element lower ends move towards and away from one another, the respective scissor element upper ends move towards and away from one another, and both scissor element upper ends move away from and towards both scissor element lower ends;
a first extensible/retractable hydraulic piston and cylinder arrangement connected with one of said hydraulic jacks for raising and lowering the respective said platform by pivoting and sliding respective of said pivotal connections of that hydraulic jack; a second extensible/retractable hydraulic piston and cylinder arrangement connected with the other of said hydraulic jacks for raising and lowering the respective said platform by pivoting and sliding respective of said pivotal connections of that hydraulic jack;
a hydraulic pump;
valved hydraulic line means interconnecting said first and second hydraulic piston and cylinder arrangements and said pump, said valved hydraulic line means being constructed and arranged to correspondingly extend and retract said first and second extensible/retractable hydraulic piston and cylinder arrangements by substantially equivalent amounts so that said platforms will remain substantially level with one another as both are raised and lowered, without a need for mechanical interconnection of said hydraulic jacks above said base plate means, apart from such automobile as is supported thereon in use;
said device being characterized by a lack of interconnecting framework between said hydraulic jacks above said base plate means.

4,573,664

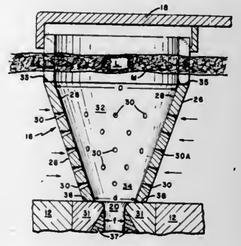
APPARATUS AND METHOD FOR REMOVING INCLUSIONS

Ian D. Prendergast, State College, Pa., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Dec. 28, 1984, Ser. No. 687,043

Int. Cl.⁴ C21B *3/04*

U.S. Cl. 266—44 **11 Claims**



1. An apparatus useful for the removal of inclusions from a molten ferrous-based alloy in a continuous casting process, said apparatus comprising a replaceable barrier to flow, that has a plurality of flow-altering perforations, the individual perforations allowing an inclusions-containing molten alloy to pass therethrough and yet disturbing molten alloy flow sufficiently to enhance inclusion agglomeration, whereby molten alloy exiting from said perforations is agglomerated inclusions-enriched, compared to molten alloy entering said perforations;
said barrier to flow having an upper diameter that is of a dimension relative to a lower diameter thereof, that enables agglomerated inclusions within the barrier to float to the molten alloy surface; said lower diameter being sufficient to provide free access of the molten alloy to an outlet from a tundish in which said barrier is to be placed, said barrier being arranged above said outlet;
wherein the sum of the flow-limiting, cross-sectional areas of said individual perforations is at least equivalent to the outlet cross-sectional flow area.

4,573,665

SELF-CONTAINED EXOTHERMIC CUTTING SYSTEM

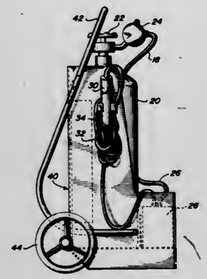
Robert L. Strohl, Lancaster; Paul E. Moore, Glouster, and Alexander Toth, Lancaster, all of Ohio, assignors to Arcair Company, Lancaster, Ohio

Filed Dec. 3, 1984, Ser. No. 677,458

Int. Cl.⁴ B23K *7/00*

U.S. Cl. 266—48 **5 Claims**

1. A self-contained system for exothermic cutting comprising in combination:
a carrying case;
first means disposed within said case to provide current to a welding electrode;
second means removably disposed with said case to provide a source of oxygen;
a holder for gripping an exothermic electrode said holder including means to grip said exothermic electrode and conduct current and oxygen to said electrode; and



a means for providing a completed electrical circuit for striking an arc with said electrode to initiate the exothermic reaction of said electrode.

4,573,666

APPARATUS FOR QUENCHING BUTT-WELDED PORTION OF RAIL

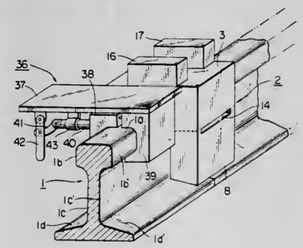
Hirokazu Nomura; Yukihiko Sato, both of Tsu, and Eiji Morishige, Hisai, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 16, 1984, Ser. No. 630,931

Claims priority, application Japan, Aug. 5, 1983, 58-142478

Int. Cl.⁴ C21D *1/62*

U.S. Cl. 266—80 **8 Claims**



1. An apparatus for quenching a butt-welded portion of a rail, comprising:
an inverse U-shaped cooling box (2) for covering from above and throughout a butt-welded portion of a rail (1), and for quenching said butt-welded portion by ejection of cooling air, said cooling box (2) including two partition plates (9, 10) for dividing said cooling box into a head cooling chamber (3), a web left cooling chamber (7) and a web right cooling chamber (8), which chambers are independent of each other, each of said head cooling chamber, said web left cooling chamber and said web right cooling chamber having a plurality of cooling air nozzles (13) arranged to be directed toward said butt-welded portion;
a cooling air supply mechanism for supplying cooling air to said cooling box (2), said cooling air supply mechanism comprising a cooling air source (20), a solenoid valve (22) for selectively opening and closing the flow of cooling air, a cooling air supply pipe arranged with said solenoid valve for introducing cooling air from said cooling air source (20) into each of said head cooling chamber (3), said web left cooling chamber (7) and said web right cooling chamber (8), a head cooling air regulating valve (16) for regulating a flow rate of cooling air to be supplied to said head cooling chamber (3), a web cooling air regulating valve (17) for regulating a flow rate of cooling air to be supplied to said web left cooling chamber (7) and said web right cooling chamber (8), and valve opening controlling means for controlling an opening of each of said head cooling air regulating valve (16) and said web cooling air regulating valve (17); and
a cooling box holding mechanism (36) for releasably holding said cooling box (2) at a prescribed position so as to cover said rail (1) throughout said butt-welded portion, said holding mechanism comprising
a horizontal supporting plate (37) fixed to a side of said cooling box which extends at right angles to the axial line of said rail,
a pair of clamps (38, 39) located on the lower surface of said supporting plate for gripping the head of said rail to hold releasably said cooling box (2) at a prescribed position so as to cover said rail throughout said butt-welded portion, one clamp (38) of said pair of clamps being slidable at right angles to the axial direction of said rail along the lower surface of said supporting plate, and the other clamp (39) being fixed to the lower surface of said supporting plate,
a horizontally arranged rod (40) fixed at one end to said slidable clamp (38) and projecting at right angles to the axial direction of said rail (1), and
a lever (42) and a link (41) for coupling said lever to the other end of said rod, a top end of said lever being pivotally connected to the lower surface of said supporting plate so that said slidable clamp is guided by said rod and urged by said link to grip the head of said rail in clamping relation with said other clamp when said lever is operated, wherein said cooling box is held at said prescribed position so as to cover throughout said butt-welded portion of said rail.

4,573,667

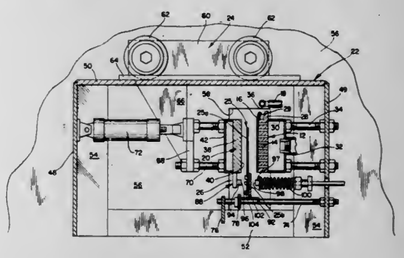
APPARATUS FOR QUENCHING SUBSTANTIALLY FLAT WORKPIECES

Herbert W. Westeren, Barrington; Ronald A. Harrison, Cranston, and Vartan M. Tavitian, Providence, all of R.I., assignors to C. I. Hayes Inc., Cranston, R.I.

Filed Nov. 13, 1984, Ser. No. 670,638

Int. Cl.⁴ C21D *1/62*

U.S. Cl. 266—114 **16 Claims**



1. An apparatus for instantaneously and uniformly quenching a substantially flat metal workpiece after the heating of said workpiece during a heat treatment process comprising:
a. a plate having a substantially flat face thereon, said plate having a plurality of spaced vapor relief apertures therein which extend through said face;
b. an absorbent wick element overlying said face and said apertures therein;
c. means for supplying a liquid coolant to said wick element so that said coolant is absorbed by and dispersed in said wick element, said coolant having a temperature and a vaporization temperature which cause at least a portion thereof to be substantially instantaneously vaporized upon contact thereof with said heated workpiece; and
d. means for urging said heated workpiece into face to face

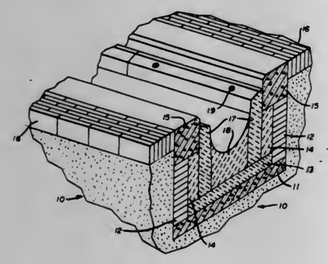
engagement with said wick element to effect intimate contact of said workpiece with the coolant dispersed in said wick element, whereupon at least a portion of said coolant is vaporized to effect the cooling of said workpiece, at least a portion of the vaporized coolant escaping through said plate apertures to prevent nonuniform cooling of said workpiece as a result of the formation of pockets of vaporized coolant between said workpiece and said wick element.

4,573,668

SLAG AND HOT METAL RUNNER SYSTEMS

Micheal D. LaBate, 115 Hazen Ave., Ellwood City, Pa. 16117

Filed Dec. 6, 1982, Ser. No. 447,408
Int. Cl.³ C21B 7/14
U.S. Cl. 266—196 **8 Claims**



1. In a runner system for a hot metal pouring floor, said runner system extending from a source of molten metal and molten slag to a pouring point thereof, said runner system comprising a substantially permanent elongated trough defining structure having fixed side and bottom portions positioned in said pouring floor an improvement in combination therewith comprising: a replaceable means for lining the runner system, said means for lining said runner system consisting of a plurality of monolithic preformed side wall panels extending from the trough bottom portion upwardly for a significant portion of the distance between the trough bottom portion and a top surface of the pouring floor and at least one monolithic bottom section positioned on the trough bottom portion between said side wall panels to be in abutting relationship with said side wall panels whereby said monolithic bottom section extends completely across the trough bottom section between said side wall panels, said side wall panels and bottom section being formed of sinter alumina in a range from 20% to 60%, silicon carbide in a range from 25% to 45%, fire clay in a range from 10% to 35%, a binder selected from a group consisting of sodium silicate and phosphoric acid that reacts with the other materials, and water substantially 10% by weight, said unitary side wall panels being positioned in said trough defining structure against the sides thereof in oppositely disposed relation to one another and said bottom section being positioned in said trough defining structure on the bottom portion thereof and between said side wall panels and in engagement therewith so as to reinforce said elongated trough defining structure and form a replaceable channel for said molten metal and molten slag.

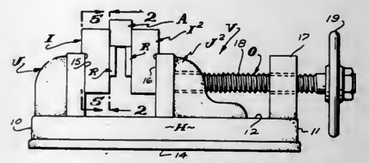
4,573,669

JAW PLATE

Kenneth L. Gerry, Riverside, Calif., assignor to Guy T. Gerry, Akron, Ohio

Filed Apr. 5, 1985, Ser. No. 720,519
Int. Cl.⁴ B25B 1/24
U.S. Cl. 269—271 **5 Claims**

1. A machine vise including an elongate bed with opposite sides and ends, longitudinally spaced jaws projecting upwardly from the bed and having longitudinally inwardly disposed opposing faces, operating means between the bed and one jaw to move that jaw longitudinally of the bed and relative to the other jaw, a jaw plate carried by one jaw and including an elongate laterally extending block-like body with an outer face in bearing engagement with the inner face of the jaw and a flat, vertical, inwardly disposed work-engaging surface, releasable fastener means securing the body on the jaw, said jaw plate includes vertically adjustable steady rest means comprising an elongate laterally extending work-engaging bar adjacent and shiftable vertically relative to said work-engaging surface, an elongate vertical through opening with flat, vertical, laterally spaced opposing sides in the body substantially intermediate



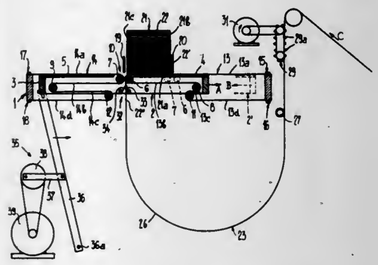
the ends thereof, a pair of laterally spaced vertical plate-like wedges with flat outside surfaces slidably engaged with and supported by the sides of the opening and flat, laterally spaced opposing longitudinally outwardly convergent guide surfaces, a guide block on and projecting outwardly from the bar into said opening and having flat, laterally oppositely disposed longitudinally outwardly convergent bearing surfaces slidably engaged with said guide surfaces, a retaining plate fastened to the guide block and engaging the wedges and the body at the outer surface thereof and retaining the body, wedges and block assembled; and an elongate, vertical jack screw carried by the body for free rotation and against axial movement and threadedly engaged through said block.

4,573,670

APPARATUS FOR FOLDING AND STACKING OF CONTINUOUS WEB IN ZIGZAG ARRANGEMENT

Willi Felix, Strengelbach, Switzerland, assignor to Jos. Hunkeler Ltd., Wikon, Switzerland

Filed Dec. 7, 1984, Ser. No. 679,232
Claims priority, application Fed. Rep. of Germany, Dec. 7, 1983, 3344260
Int. Cl.⁴ B41L 1/32
U.S. Cl. 270—39 **12 Claims**



1. Apparatus for producing a stack of zigzag folded web sections from a continuous web of material having predetermined fold lines at which the web is weakened, comprising:
a rack;
a carriage movable between two end positions in reciprocal fashion in said rack;
an opening through the carriage oriented essentially perpendicular to the reciprocal motion of the carriage for the passage of web through the carriage;

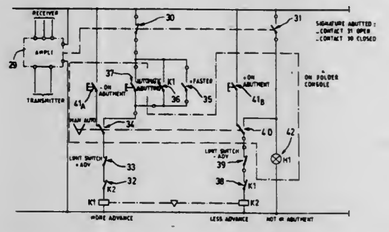
said end positions being located to permit movement of said opening from one side of the produced stack to the other side of the produced stack;
guide elements fixedly mounted in said carriage at the side adjacent said stack to define said opening;
a positioning element of flexible material extending from said rack across the side of the carriage adjacent said stack, in the direction of travel of the carriage, to and around the nearest of said guide elements;
each of said positioning elements bending around its associated guide element to separate progressively from the last web section added to the stack as the carriage moves in a first direction and to add a next web section to the stack as the carriage moves in a second direction opposite to said first direction; and
drive means for driving said carriage between said end positions in reciprocal fashion.

4,573,671

AUTOMATIC SETTING DEVICE FOR SLOWING DOWN A SIGNATURE PRIOR TO FOLDING IN PRINTING PRESS CHOPPER FOLDERS

André Reponty, Gouvieux, France, assignor to Harris-Marinoni S.A., Montataire, France

Filed May 6, 1985, Ser. No. 730,647
Claims priority, application France, May 7, 1984, 84 07024
Int. Cl.⁴ B41F 13/56
U.S. Cl. 270—20.1 **13 Claims**



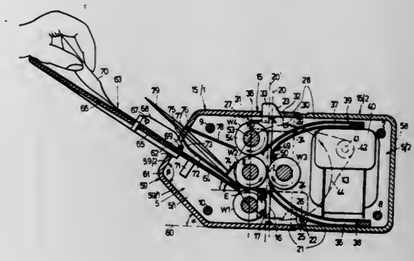
1. A device for automatically setting signature slow down motion before folding thereof in chopper folders used on web fed printing presses, of a type including a sensor to detect the presence of the signature near the folding headstop, and means participating in the folding operation comprising a knife, rollers, vacuum holes, mechanical drive means, an electric motor to set the phase shift, braking brushes, wherein the setting device also comprises a single sensor to detect the presence of the signature to the headstop, a time delay relay linked to said sensor and fitted with a closing switch and an opening switch and two different control circuits for the phase setting motor, a "more advance" circuit with relay means and including the closing switch used to rotate in the "more advance" direction until the sensor opens said closing switch and closes said opening switch, an electric lock contact for relay means in a "less advance" circuit, a "more advance" end of travel contact, a "faster" push button in the press control console and a self-holding relay contact, both of the push button and the relay contact being mounted in parallel to one another, and said "less advance" circuit with relay means comprising said opening contact producing "less advance" until said sensor causes said closing contact to close and said opening contact to open, thereby obtaining precise setting of the signature in abutment.

4,573,672

PAPER FOLDING MACHINE

Werner Lehmann, Gutach; Rainer Fecker, Furtwangen, and Manfred Fuss, St. Georgen, all of Fed. Rep. of Germany, assignors to Mathias Bäuerle GmbH, Fed. Rep. of Germany

Filed Feb. 13, 1985, Ser. No. 701,182
Claims priority, application Fed. Rep. of Germany, Feb. 17, 1984, 3405763; Dec. 24, 1984, 3447301
Int. Cl.⁴ B42C 1/00
U.S. Cl. 270—45 **20 Claims**



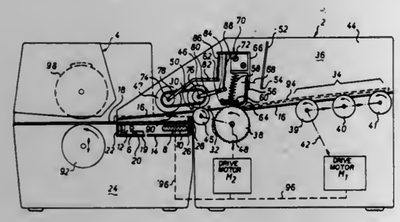
1. A folding machine for sheet material comprising:
a housing defining a space, having a sheet material in-take opening and a sheet material discharge opening;
a frame in said housing;
first, second, third and fourth rollers rotatably mounted to said frame and disposed in said housing, said rollers extending parallel to each other and defining between said first and second rollers a take-in nip, between said second and third rollers a first folding nip and between said second and fourth rollers a second folding nip:
means defining a feed path in said housing from said in-take opening through said take-in nip, said first folding nip and said second folding nip, and to said discharge opening;
a first pocket in said housing disposed on said path upstream of said first folding nip for facilitating folding of sheet material supplied to said pocket from said take-in nip and to said first folding nip from said pocket;
a second pocket in said housing disposed on said path downstream of said first folding nip for facilitating further folding of sheet material supplied to said second pocket from said first folding nip and from said second pocket to said second folding nip:
drive means connected to said first, second, third and fourth rollers for rotating said rollers to move sheet material along said feed path: and
a feed table connected to said housing and extending toward said in-take opening for at least partly supporting sheet material to be supplied into said in-take opening and onto said feed path:
said housing and said frame each being divided into two parts along a dividing plane which is near a tangent plane to said first folding nip, said two parts being connected to each other for movement between a closed position with said housing space closed around said frame and said rollers, and an open position with said rollers and said pockets exposed and said housing space open, at least said second and said fourth rollers mounted on one of said parts of said frame and said third roller mounted on the other of said parts of said frame, said take-in nip and said second folding nip as well as said in-take opening and said discharge opening of said housing disposed on one side of said tangent plane and said third roller disposed on an opposite side of said tangent plane.

4,573,673

FEED MECHANISM FOR INDIVIDUAL FLAT ARTICLES

Werner Haug, Langnau, Switzerland, assignor to Frama AG, Switzerland

Continuation of Ser. No. 342,140, Jan. 25, 1982, abandoned. This application Oct. 2, 1984, Ser. No. 656,961
Claims priority, application Switzerland, Feb. 10, 1981, 883/81
Int. Cl.[4] B65H *3/06, 7/02*
U.S. Cl. 271—111 7 Claims



1. An article feed mechanism for use in association with another device for operating on a flat article as it is fed along an operating path, particularly a franking machine which operates on mail, comprising:

means defining an article feed path adapted to be associated with the operating path of the device;

a stacking area plate in said article feed path adapted to receive flat articles of different size stacked one on top of another;

a lateral wall adjacent said stacking area plate;

a baffle plate having a lower edge spaced from said stacking area plate by a distance to allow at least one article to pass said baffle plate on said article feed path;

first conveyor means disposed along a portion of said article feed path upstream of said baffle plate for feeding articles along said portion of said article feed path, a lowermost flat article being pressed against said first conveyor means by the weight of the articles received on said stacking area plate;

first drive means connected to said first conveyor means to drive said first conveyor means;

second conveyor means disposed along a portion of said feed path downstream of said first conveyor means for feeding an article;

second drive means connected to said second conveyor means to drive said second conveyor means at selected speeds;

a flexible hold-back apron having a part resting on a portion of said second conveyor means;

first sensor means connected to said first drive means and being located along said feed path adjacent said second conveyor means and acting to stop said first drive means when an article is fed along said feed path to said first sensor means;

second sensor means connected to said second drive means and adapted to be connected to the device and acting to stop the second drive means and start the device, said first and second sensor means being located in said article feed path direction downstream of said hold-back apron;

said first sensor means being connected to said first drive means and said second drive means, said first sensor means producing a signal for reducing the conveying speed of said second conveyor means by acting on said second drive means when a trailing edge of the article passes said first sensor means; and

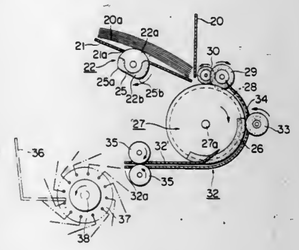
connection means connected to said first and second drive means and connected to the device so that a signal connection is provided between the device and the feed mechanism for restarting said first and second drive means of said first and second conveyor means.

4,573,674

DEVICE FOR DELIVERY OF PAPER SHEETS FOR AN APPARATUS FOR COUNTING THE NUMBER OF PAPER SHEETS

Hiroyoshi Nogi, Tokyo, and Shigeru Tanaka, Kashiwa, both of Japan, assignors to Musashi Engineering Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 28, 1983, Ser. No. 566,200
Claims priority, application Japan, Jan. 10, 1983, 58-749[U]
Int. Cl.[4] B65H *3/06*
U.S. Cl. 271—118 5 Claims



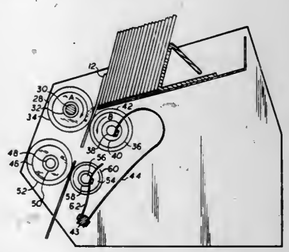
1. In apparatus for counting a number of paper sheets in which the sheets are stacked on a hopper and fed from the hopper to a payout roll adjacent the hopper by a feed-out, auxiliary roll mounted at a bottom of the hopper, said feed-out, auxiliary roll having a first peripheral surface portion and a second peripheral surface portion forming the remainder of the peripheral surface, said second peripheral surface portion having a coefficient of friction greater than a coefficient of friction of said first peripheral surface portion, characterized in that all points on said second surface portion are spaced from an axis of said feed-out, auxiliary roll by a distance not greater than a radius of said first surface portion and a sheet contacting, peripherally extending portion of said second surface portion, which is less in peripheral extent than the peripheral extent of said second surface portion, has all points thereof spaced from said axis by a distance which is less than the radius of said first surface portion.

4,573,675

DOCUMENT FEEDER

Eduard Svyatsky, Chicago; K. George Rabindran, Morton Grove, and Thomas J. Faber, Skokie, all of Ill., assignors to Bell & Howell Company, Chicago, Ill.

Filed May 20, 1985, Ser. No. 736,012
Int. Cl.[4] B65H *3/52*
U.S. Cl. 271—122 8 Claims



1. An improved envelope feeder for feeding envelopes downstream in an envelope feeding direction from a hopper positioned above the feeder comprising:

a driving shaft driven in the envelope feeding direction,

a driving roller mounted for rotation on a driven shaft adjacent the driving roller so that the circumferences of the rollers define a nip therebetween,

brake means connected to the driven roller for applying a brake force to the roller in a direction opposite the envelope feeding direction,

the driving roller in frictional engagement with the envelope during feeding and applying a feeding force to the envelope, the feeding force transmitted to the driven roller being greater than the brake force causing the driven roller to rotate in the envelope feed direction when a single envelope is in the nip, and the brake force being greater than the feeding force transmitted to the driven roller when two or more confronting envelopes are within the nip so that the driven roller remains stationary while the driving roller continues feeding the envelope in contact with it while the driven roller restrains the envelope in contact with it causing one envelope in the nip to be fed at a time,

spring means applying a spring force to the driven roller for maintaining the circumference of the driven roller in contact with the circumference of the drive roller when no envelope is in the nip and allowing the rollers to separate, automatically adjusting the nip for variations in envelope thickness,

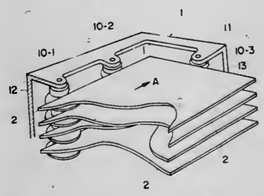
means for causing the driven roller to oscillate between its initial position where it is in contact with the driving roller to a second position where the driven roller is in contact with the driving roller downstream in the envelope feed direction, the oscillation occurring when no envelopes are between and in contact with the rollers and the oscillation stopping when an envelope is between and in contact with the rollers.

4,573,676

SHEET MATERIAL TRANSFER APPARATUS

Hiroshi Miyamoto, Tokyo, and Tadao Omata, Kawasaki, both of Japan, assignors to ORC Manufacturing Co., Ltd., Tokyo, Japan

Filed Feb. 4, 1983, Ser. No. 463,732
Claims priority, application Japan, Feb. 5, 1982, 57-17225
Int. Cl.[4] B65H *29/42*
U.S. Cl. 271—179 3 Claims



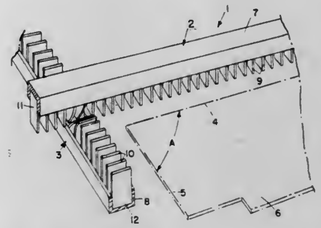
1. A sheet material transfer apparatus comprising at least three externally threaded rods having threads spaced at equal pitches and grooves therebetween, said threaded rods extending parallel to each other and mounted for rotation about respective axes, said threaded rods being driveable for synchronous rotation in a same lead direction to transfer each sheet of material inserted edgewise in the grooves of said threaded rods in said lead direction in synchronism with rotation of said threaded rods, and further comprising means for feeding each said sheet positively and directly into edgewise engagement with a corresponding groove of each of said threaded rods wherein each said sheet is generally polygonal in configuration; means for generally squaring each said sheet, said squaring means comprising at least two of said threaded rods having opposite-handed threading and being rotatable oppositely direction-wise and engageable with separate angularly offset edges of said sheet during said transfer; and means for urging at least one edge of each said sheet against said squaring means during said transfer.

4,573,677

FEED GUIDE STOPS FOR POSITIONING SHEET PRODUCTS

Jean P. Cuir, 36 avenue de Brigode, and Gérard Cuir, 23 Allee des Champs, both of 59650 Villeneuve d'Ascq, France

Filed Jun. 7, 1983, Ser. No. 501,826
Claims priority, application France, Jun. 7, 1982, 82 10273
Int. Cl.[4] B65H *31/36*
U.S. Cl. 271—236 12 Claims



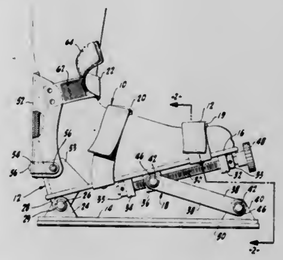
5. A sheet-positioning assembly comprising a pair of guide stops for positioning respective edges of a sheet, which edges define a common angle which is other than a straight angle, and a pair of elongated support means for respectively positioning said guide stops to engage said respective edges which the guide stops position, each of said guide stops including a plurality of spaced thin planar flexible strips extending from a corresponding one of said support means with said strips being arranged with the principal planar surfaces thereof substantially parallel to each other and normal both to a plane of the sheet and to the respective edge of the sheet which said guide stop positions, and the support means being located at different heights and crossing each other by one support means causing the strips of the other support means to bend so that said one support means passes between adjacent bent strips of the other support means.

4,573,678

LOWER EXTREMITY MUSCLE CONDITIONER DEVICE

Steve Lamb, 2772 Sydney Way, Castro Valley, Calif. 94546; Robert R. Moore, 4010 East Ave., Hayward, Calif. 94542, and Frank La Porte, Jr., 3460 Revere Ave., Oakland, Calif. 94605

Filed Jun. 2, 1983, Ser. No. 500,554
Int. Cl.[4] A63B *1/00, 23/04*
U.S. Cl. 272—96 6 Claims



1. Footgear for conditioning the lower extremities of a user's leg comprising a pair of separated, independent platform shoes each shoe comprising:

a base constructed for stable contact with a flat ground surface,

a platform mounted on top of said base said platform having a heel portion and a toe portion, said platform being in-

clined to a selectably fixed position with respect to said base with said toe portion elevated above said heel portion,

an adjustable elevating mechanism interconnecting said platform and base for select adjustment of the angular inclination of said platform with respect to said base, and

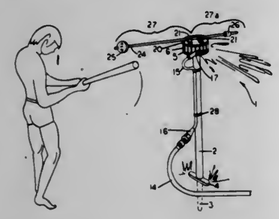
strap means for securing a user's foot to said platform with the user's heel positioned on the heel portion of said platform and the user's toes positioned on the toe portion of said platform, wherein said strap means is adapted to secure said platform shoes to the user's foot when the user lifts his foot from the ground surface during a therapeutic walking regimen; wherein said adjustable elevating mechanism includes a heel pivot and a toe jack, said toe jack comprising a screw with journal blocks and a rotation knob at the end of the screw, a displaceable carriage block threadably engaging said screw, and at least one connecting link connected to said carriage block, said screw and connecting link interconnecting said base and platform wherein upon turning said rotation knob the angular disposition of said platform relative to said base is continuously varied.

4,573,679

WATER POWERED BATTING DEVICE

Jeffrey G. Janszen, 5686 Scarborough Dr., Cincinnati, Ohio 45238

Filed Jun. 25, 1984, Ser. No. 624,021
Int. Cl.⁴ A63B *69/40*
U.S. Cl. 273—26 E **16 Claims**



1. An amusement device for improving physical coordination of a user and to cool a user with a spray of water, said device comprising:

(1) a ball;

(2) means to tether said ball;

(3) means to rotate said tether means by water propulsion in one direction; and

(4) means to support both said means to tether and said means to rotate, said means to rotate including spray means so that when a user strikes said ball in a manner opposed to said one direction, said means to rotate flings water outwardly therefrom in a spray.

4,573,680

FOOTBALL TRAINING APPARATUS AND METHODS OF USING SAME

James C. McNally, 1831 Poplar Dr., Loveland, Ohio 45140

Filed Mar. 14, 1984, Ser. No. 589,654
Int. Cl.⁴ A63B *67/00*
U.S. Cl. 273—55 R **18 Claims**

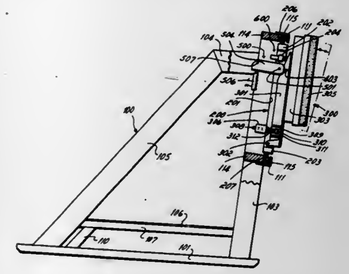
1. An apparatus for training football techniques comprising:

a support frame having a first end and a second end;

a movable frame mounted on said support frame for selective lateral movement between the first and second ends;

an impact member having a padded area, said impact member being mounted on said movable frame for reciprocal movement between an extended and a locked retracted position, the extended position being outwardly and generally toward a player being trained on the apparatus, means on said movable frame for locking said impact member in a retracted position, said impact member being returnable from its extended position to its locked retracted position by the player;

means for selectively releasing said impact member from its



locked retracted position, said movable frame and said releasing means being adapted for selective simultaneous or independent manipulation by an operator of the apparatus; and

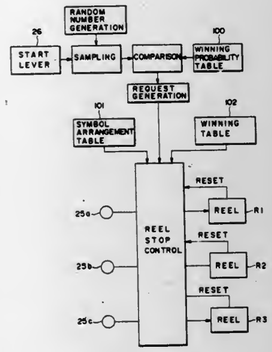
means for advancing said impact member from its released retracted position to its extended position.

4,573,681

SLOT MACHINE WITH RANDOM NUMBER GENERATION

Kazuo Okada, Tokyo, Japan, assignor to Kabushiki Kaisha Universal, Tochigi, Japan

Filed Apr. 3, 1984, Ser. No. 596,303
Claims priority, application Japan, Apr. 8, 1983, 58-61592
Int. Cl.⁴ A63F *5/04*
U.S. Cl. 273—143 R **12 Claims**



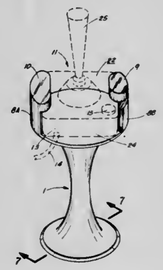
1. A slot machine of the type having plural series of moving symbols juxtaposed to each other, each of said plural series of symbols comprising a plurality of moving symbols arranged in an array and in which a predetermined number of coins is ejected when combinations of symbols on prize-winning lines on said array coincide with predetermined prize-winning combinations, said slot machine comprising: random number generator means for generating a plurality of random numbers within a predetermined range; sampling means for selecting one random number out of said plurality of random numbers generated by said generator means; a winning probability table for storing a relationship between a group and said random numbers, the group being one of a plurality of groups made up by classifying prize-winning combinations; judgment means including means for judging whether the value of said random number corresponds to any of said numerical values representing said groups said judgment means also including means to judge whether a win can be awarded or not and, in the affirmative, further including means for judging to which of said groups said random number belongs, by referring to said winning probability table; hit request signal generator means for generating a hit request signal upon judgment of a win by said judgment means, said signal requesting the machine to stop said moving symbols so as to display one of a particular group of prize-winning combinations in the group judged by said judgment means; and control means responsive to said hit request signal for so stopping said symbols.

4,573,682

JOY STICK HOLDER

Allen J. Mayon, Franklin, La., assignor to Louis J. Conque, Lafayette and Rodney P. Vincent, New Orleans, both of, La.

Filed Feb. 24, 1983, Ser. No. 469,463
Int. Cl.⁴ A63B *71/00*
U.S. Cl. 273—148 B **1 Claim**



1. A stand holder for a computer joy stick, comprising:

a base portion;

a middle portion having a concavo-concave longitudinal section;

a top section provided with a recess to receive a base of the joy stick, wherein the vertical walls of the recess form a square, adaptedly sized to the dimensions of the joystick base, and one of the walls is provided with a notch extending through the walls and through the top section;

a grasping means for securing and retaining the joy stick within the top section; and

wherein the height of the stand and the contour of the middle portion is such so as to facilitate the positioning and gripping of the stand between the thighs.

4,573,683

EDUCATIONAL PUZZLE CUBE

Stewart M. Lamle, 55 W. 86th St., New York, N.Y. 10024, and Mark Setteducati, 218 E. 17th St., New York, N.Y. 10003

Continuation-in-part of Ser. No. 553,494, Nov. 21, 1983, abandoned. This application Nov. 30, 1984, Ser. No. 677,094
Int. Cl.⁴ A63F *9/12*
U.S. Cl. 273—157 R **7 Claims**

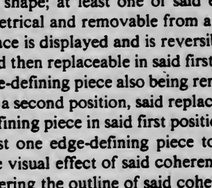
1. An amusement device comprising a solid cube which may be disassembled into a plurality of blocks,

a plurality of differing geometric shapes selected from the group consisting of only isosceles right triangular prisms, cubes, rhomboid prisms, and rectangular prisms comprising said blocks;

a modular unit comprising an isosceles right triangular prism havng a triangular face formed by two legs each of which has a length A and which meet at a right angle, and a hypoteneuse which has a length B, said modular unit having a depth which is equal to A, and a volume which is equal to C, wherein each of said differing geometric shapes is formed from one or more modular units and has a volume equal to an integral number times C; and

wherein said plurality of differing geometric shapes comprise,

(a) four isosceles right triangular prisms each having a volume C;



(b) two cubes each having a volume 2C;

(c) two isosceles right triangular prisms each having a volume 2C; and

(d) two rhomboids each having a volume 2C, whereby the total volumie of said solid cube is equal to 16C.

4,573,684

PUZZLES

Alfred T. Riley, 1 Sunfield Dr., Royton, Oldham, and Barry Lord, 93 Helmshore Rd., Holcombe Village, Bury, Lancashire, both of United Kingdom

Continuation of Ser. No. 495,210, May 16, 1983, abandoned. This application Nov. 20, 1984, Ser. No. 673,224
Claims priority, application United Kingdom, May 18, 1982, 8214494
Int. Cl.⁴ A63F *9/10*
U.S. Cl. 273—157 R **7 Claims**

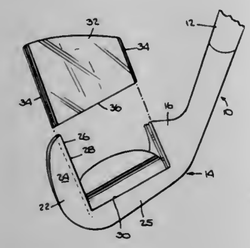


1. A jigsaw toy comprising a plurality of central pieces and edge-defining pieces having first and second faces, at least some of the pieces having cooperating narrow mouthed sockets and enlarged heads for enabling the pieces to be interlocked to form a coherent shape; at least one of said edge-defining pieces being asymmetrical and removable from a first position in which said first face is displayed and is reversible to display said second face, and then replaceable in said first position, has said at least one edge-defining piece also being removable from said first position to a second position, said replacement of said at least one edge-defining piece in said first position and movement of said at least one edge-defining piece to said second position altering the visual effect of said coherent shape without substantially altering the outline of said coherent shape, at least some of said pieces having indicia on at least their first faces such that intelligible composite designs are formed when said first piece displays both its first and second faces in said first position and when said first piece is disposed in said second position.

4,573,685
GOLF CLUB HEAD WITH TRANSPARENT STRIKING FACE

Henry N. Young, IV, and Richard C. Smith, both of Pittsburgh, Pa., assignors to Banff Golf Company, Inc., Pittsburgh, Pa.

Filed Sep. 19, 1984, Ser. No. 651,926
Int. Cl.⁴ A63B *53/04, 53/08*
U.S. Cl. 273—173 **6 Claims**

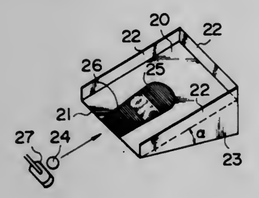


1. A golf club head comprising:
a. a heel portion;
b. a sole portion;
c. a toe portion, said heel, sole and toe portions defining a substantially U-shaped recess; and
d. a transparent insert, said transparent insert being removably insertable into said U-shaped recess whereby, when inserted, the front of said insert, sole, heel and toe, define the face of said head and a golfer using a golf club including said head can view the playing surface rearward of said sole portion through the front of said transparent insert.

4,573,686
PUTTING TRAINING DEVICE FOR GOLFERS

Yoshiro Nakamats, 1-10-1105, Minami Aoyama 5-chome, Minato-ku, Tokyo, Japan

Filed Oct. 26, 1983, Ser. No. 545,622
Claims priority, application Japan, Oct. 28, 1982, 57-188182
Int. Cl.⁴ A63B *69/36*
U.S. Cl. 273—184 A **7 Claims**

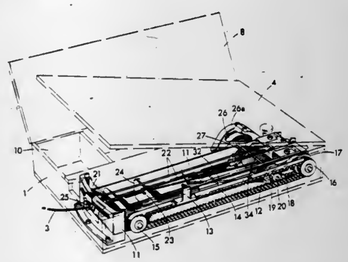


1. A training device for golf games comprising, in combination:
(a) an imperforate member providing a generally rectangular sloping surface (**20**) having a forward edge (**21**) adapted to be disposed flush with a supporting surface (**3**) for the device,
(b) upstanding golf ball-confining wall means (**22**) extending upwardly from said sloping surface (**20**),
(c) first visually-observable indicia disposed on said sloping surface (**20**) and forming an inverted generally U-shaped discrete ball-rolling zone (**25**) extending rearwardly from said forward edge (**21**),
(d) said generally U-shaped zone having side portions spaced inwardly from adjacent said ball confining wall means (**22**) and disposed angularly thereto and converging to spaced terminus portions at said forward edge (**21**),
(e) and second visually observable indicia (**26**) positioned on said U-shaped zone adjacent said forward edge (**21**) and extending between and of the same width as the distance between said spaced terminus portions of said generally U-shaped zone (**25**),
(f) said second indicia (**26**) defining at least a portion of a simulated target hole for a golf ball (**24**).

4,573,687
GOLF TRAINING DEVICE

Karl-Ivar Nilsson, Linkoping, Sweden, assignor to Klintland, Linkoping, Sweden

Filed Jun. 16, 1983, Ser. No. 504,831
Claims priority, application Sweden, Jun. 29, 1982, 8204011
Int. Cl.⁴ A63B *69/36*
U.S. Cl. 273—184 B **4 Claims**



1. A golf training device comprising each of the following elements in combination: a frame (**1**), a golf ball (**2**) which before a shot is placed on a specific place relative to the frame (**1**) and which is also joined to one end of a cord (**3**), while the other end of said cord (**3**) is joined to a cylindrical drum (**12**) which is mounted in bearings in the frame (**1**) to allow it to rotate and around which most of said cord (**3**) is wound and a device operatively connected to the drum (**12**) arranged to take up the kinetic energy which the golf ball (**2**) obtains at the shot, to indicate a corresponding distance and to lock the drum (**12**) the same moment as the ball (**2**) stops after the shot, and characterized in that, said device consists of a wind up spring which is a radially wound up leaf type spring with an approximately constant wind up force arranged to be tightened when the cord (**3**) is wound off the drum (**12**) at the shot and that the drum (**12**), which is arranged to have a low moment of inertia, has a track (**33**) designed for the cord (**3**) which like a thread with a specific pitch runs along said drum, said track including a groove in the drum extending continuously around the drum and from one end of the drum to the other.

4,573,688
GAMEBOARD APPARATUS WITH SEPARATING DIE

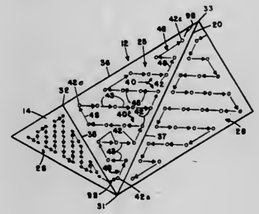
John T. Grimes, 412 Brooks #D, Venice, Calif. 90291

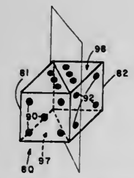
Filed Jul. 29, 1983, Ser. No. 518,471
Int. Cl.⁴ A63F *3/00, 9/04*
U.S. Cl. 273—241 **21 Claims**

1. A game apparatus comprising
a gameboard having a plurality of playing fields each bounded within a triangular configuration having apices and sides,
a plurality of plateaus mounted in each of said playing fields,
a series of stations spaced from one another on each of said plateaus,
means operatively connecting together said spaced stations and for indicating direction of movement for a marker applied during play to said stations mounted between said stations,
means for climbing from one of said plateaus to the next adjacent plateau mounted at corresponding ends for said one of said plateaus and next adjacent plateau,

said series of stations including nadir and zenith stations in their own respective plateaus for corresponding entry and exit of play on the corresponding playing field, they being mounted immediately adjacent their associated and corresponding apices,
at least one plateau having a maximum width and two plateaus having minimum widths in said plurality of plateaus, the plateaus having minimum widths occurring at said nadir and zenith stations, and
means for directing a marker to a next playing field mounted across the sides of two adjacent playing fields and extending from the zenith station on each playing field, to thereby provide for play on all playing fields by the same marker.

21. A gamepiece comprising





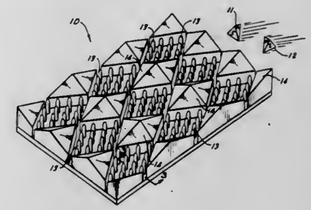
a pair of cooperating and identical but completely separate members,
each member being in the form of one-half of a rectangular parallelpiped solid throughout, having a diagonal base, the bases of the respective members being mated so as to form a cube having six sides,
indicia mounted on said diagonal base and on each of the other four sides forming such one half,
the solidity of each member comprising an art eraser compound substance and a polyurethane base, thereby providing the qualities of resiliency and adherency,
whereby the cube is not separated into its members when thrown and retains a springiness from the force with which it strikes a surface.

4,573,689
GAME

S. Ray Sultzbaugh, 3900 Parkview La., #11-A, Irvine, Calif. 92715

Filed Aug. 13, 1984, Ser. No. 639,841
Int. Cl.⁴ F41J *1/00;* **A63F** *5/04*
U.S. Cl. 273—348 **9 Claims**

1. In a game board and throwing piece combination of the type wherein the throwing piece may land with any of its surfaces facing upwardly depending only on chance, the improvement comprising:
at least one regular tetrahedron which comprises the throwing piece;
a game board having at least three pegs positioned to form a triangular pattern, said pegs being held in a generally upright manner and said pegs being positioned sufficiently close together and having sufficient height so that the regular

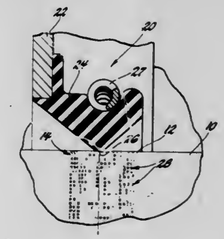


tetrahedron will be about parallel to the upper surface of the pegs.

4,573,690
SEALING SURFACE AND METHOD

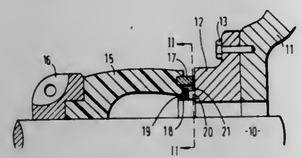
Arnold O. DeHart, Rochester, and James D. Symons, Southfield, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 13, 1984, Ser. No. 681,380
Int. Cl.⁴ F16J *15/32*
U.S. Cl. 277—1 **4 Claims**



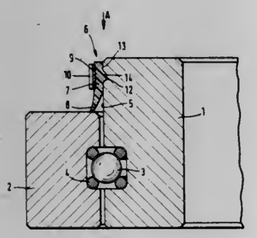
1. An improved configuration for the sealing surface of a body movable relative to the lip of a seal along a path in one direction and in close proximity to said lip so as to be capable of shearing a lubricant between said lip and said sealing surface, comprising;
a multiplicity of substantially identical indentations formed into said sealing surface as said configuration, each indentation having a sloped wall converging relative to said path in said one direction and merging smoothly with said sealing surface, each indentation having a predetermined uniform spacing along said path from each adjacent indentation so as to create a multiplicity of uniformly spaced seal support pads between the indentations,
whereby the shearing action caused by said seal lip moving relative to said sealing surface pumps lubricant from said indentations at a low pressure at said sloped walls to a higher pressure at said seal support pads due to the smooth merging of said sloped walls with said sealing surface, the predetermined uniform spacing between the indentations serving to maintain substantially the same higher pressure over each seal support pad to thereby provide load support to said moving seal lip.

4,573,691
MECHANICAL FACE SEALS
Samuel C. W. Wilkinson, Chidham, England, assignor to Crane Packing Limited, Slough, England
Filed Nov. 9, 1984, Ser. No. 669,950
Claims priority, application United Kingdom, Nov. 12, 1983, 8330256
Int. Cl.⁴ F16J 15/34
U.S. Cl. 277—96.1 10 Claims



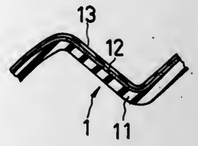
1. A mechanical face seal for producing a fluid tight seal between a pair of relatively rotatable components comprising a first sealing element associated with one of said components and fixed axially with respect to the component, a second sealing element associated with the other component and movable axially with respect to the component, means for sealing the second sealing element with respect to its associated component and loading it axially into sealing engagement with the first sealing element, and a thrust bearing arranged in parallel with the first and second sealing elements to partially reduce the load applied to the sealing elements.

4,573,692
LIP SEAL WITH ELASTIC ATTACHING BAND
Hubertus Frank, Höchstadt, and Rainer Gebauer, Bamberg, both of Fed. Rep. of Germany, assignors to INA Walzlager Schaeffler KG, Fed. Rep. of Germany
Filed Jul. 15, 1985, Ser. No. 755,295
Claims priority, application Fed. Rep. of Germany, Jul. 20, 1984, 3426805
Int. Cl.⁴ F16J 15/32
U.S. Cl. 277—152 10 Claims



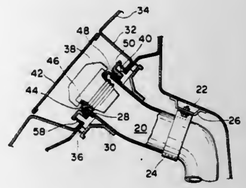
1. A seal assembly for sealing between two elements, at least one of the elements having a cylindrical surface supporting a seal made of an elastic material provided with a sealing lip bearing against the second element, the improvement comprising that the seal consists of a hollow-cylindrical body from which a sealing lip projects from at least one face and the body bears against the cylindrical surface of the one element and is encircled by an elastic band of polymeric material to hold the body in place.

4,573,693
DUST BOOT WITH MULTIPLE LAYER CONSTRUCTION OF BELLOWS
Rikizo Nakata, Nakashima; Tadaoki Okumoto, Inazawa; Mikio Ukai, Nagoya; Takamasa Suzuki, Konan, and Tomoyoshi Yamada, Inazawa, all of Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai, Japan
Filed Apr. 24, 1985, Ser. No. 726,465
Claims priority, application Japan, Apr. 26, 1984, 59-84679
Int. Cl.⁴ F16J 15/52
U.S. Cl. 277—212 FB 5 Claims



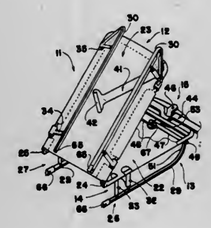
1. A dust boot for covering a joint portion of a constant velocity universal joint, comprising:
a bellows-shaped main body made of chloroprene-rubber substantially excluding wax and having one opening end fit on one joint member and the other opening end fit on the other joint member;
a primer layer made of a mixture of chloroprene-rubber and isocyanate compound and formed on the surface of said main body; and
a covering layer made of polyamide resin and formed on the surface of said primer layer.

4,573,694
FUEL FILLER SYSTEM FOR AN AUTOMOTIVE VEHICLE
Shinji Goto, Chigasaki; Takao Kingo, Hadano; Akira Ochi, and Yoshiro Yoshikawa, both of Hiratsuka, all of Japan, assignors to Nissan Shatai Company, Limited, Hiratsuka, Japan
Filed Mar. 15, 1984, Ser. No. 590,078
Claims priority, application Japan, Mar. 30, 1983, 58-52778
Int. Cl.⁴ B65D 25/40
U.S. Cl. 280—5 A 6 Claims



1. A fuel filler system for an automotive vehicle comprising:
a fuel tank;
a filler well defined as a recess in the body of the vehicle and having an opening in an outer vehicle body panel;
a fuel filler tube leading from the fuel tank, passing through said opening and opening outside the vehicle body within the filler well, the open end of the filler tube being sealed by a removable filler cap, said fuel filler tube being provided with a threaded section adjacent said opening end within said filler well;
a flange having an internal threaded section engageable to said threaded section of said filler tube and extending parallel to the outer vehicle body panel between said opening and said filler cap, the diameter of said flange being greater than that of said opening, said flange being attachable to and detachable from said filler tube independently of other elements of the fuel filler system and having an annular section facing a peripheral edge of said opening in spaced apart relationship; and
a seal, interpositioned between said annular section and said peripheral edge of said opening, for closing a clearance between said annular section and said peripheral edge of said opening and for preventing said flange from contacting said body panel.

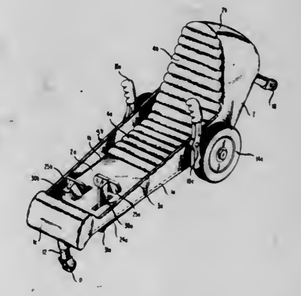
4,573,695
SLED APPARATUS
Gordon H. Kennel, Box 1794, Havre, Mont. 59501
Filed Apr. 30, 1984, Ser. No. 605,114
Int. Cl.⁴ B62B 13/16, 13/18
U.S. Cl. 280—20 14 Claims



1. Sled apparatus including a body supporting portion, a runner portion, a runner supporting portion and a steering portion; said body supporting portion including an elongated frame section with longitudinal edges and front and rear ends, said frame section including rigid peripheral edges, said frame section including two generally quadrangular members, said quadrangular members being disposed in an end to end relationship and pivotally connected to one another; said runner portion including a runner disposed below and spaced from each longitudinal edge of said frame section, said runners extending substantially the full length of said frame section, each runner including forward and rear runner sections selectively connectable in an end to end relationship when said quadrangular members are disposed in a single plane; said runner supporting portion including a plurality of spacer sections extending between said runner sections and said longitudinal edges of said frame section, each of said spacer sections having one end pivotally connected to a longitudinal edge and an opposite end rigidily affixed to a runner section, the spacer sections affixed to each forward runner section being disposed remote from said front end to said frame section, cross members joining spacer sections that extend from opposite longitudinal edges of said frame section, each cross member being pivotally connected to one of the joined spacer sections and being selectively engageable with the other of the joined spacer sections; said steering portion including a transverse bar member disposed adjacent said front end of said frame section symmetrically with respect to said longitudinal edges of said frame section, said transverse bar member being pivotally connected to said front end of said frame section at the center thereof, connector bars each having one end pivotally connected to a free end of each forward runner section adjacent said front end of said frame section, said connector bars extending to one another with adjacent ends being pivotally connected to a central rearward extension of said transverse bar member.

4,573,696
SELF-PROPELLED RECREATIONAL VEHICLE
Arthur N. Buroff, 1500 St. Georges Ave., Rahway, N.J. 07065
Filed Mar. 28, 1984, Ser. No. 594,279
Int. Cl.⁴ B62M 1/04, 1/14
U.S. Cl. 280—247 7 Claims

1. A self-propelled vehicle comprising in combination a substantially rigid frame in the form of a seat portion having an elongated leg rest, and a backrest secured to said seat portion and forming therewith in a vertical plane an internal angle between about 90 and 120 degrees;
an axle having a pair of drive wheels rotatably mounted at opposite ends of said axle;
means for supporting said frame on said axle at the rear of said seat portion in a position adjacent the junction between said leg rest and said backrest comprising at least one supporting member projecting from said frame, and including bearing means journaled on said axle;
in normal operating position, means for supporting the leg rest above the ground comprising a supporting post projecting downwardly in a substantially vertical direction from said leg rest and terminating in a first auxiliary wheel substantially smaller than said drive wheels, said first auxiliary wheel resting on the ground in said normal operating position;

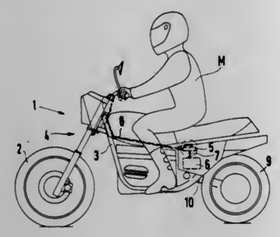


a second supporting post substantially centered on and projecting outwardly and downwardly from the upper rear surface of said backrest, said second supporting post terminating at its outer end in a second auxiliary wheel similar in size to said first auxiliary wheel, said second auxiliary wheel being maintained above the ground in said normal operating position; and
means for simultaneously rotating said drive wheels for propelling said vehicle in a forward linear direction;
whereby when said entire frame including said seat portion and said backrest is rotated rearward through a small angle not exceeding about 30 degrees to an upended position, said first auxiliary wheel is lifted off of the ground and said backrest is supported substantially parallel to the ground on said second auxiliary wheel and the rotation of said drive wheels continues to propel said vehicle in a forward linear direction.

4,573,697
MOTORCYCLE
Günther Schier, Munich, Fed. Rep. of Germany, assignor to Bayerische Motoren Werke A.G., Munich, Fed. Rep. of Germany
Filed Mar. 29, 1985, Ser. No. 717,648
Claims priority, application Fed. Rep. of Germany, Mar. 29, 1984, 3411561
Int. Cl.⁴ B62K 25/08
U.S. Cl. 280—276 9 Claims

1. A motorcycle comprising a front wheel, a motorcycle frame means, a spring-damping means operatively connecting the front wheel with the motorcycle frame means, a gas pressure space means acted upon by the spring-damping means, a pressure reservoir, and closure means operatively connecting the gas pressure space means with the pressure reservoir during braking of the motorcycle, the closure means being constructed as control valve means having a vent channel for the gas pressure space means and a closure slide valve member

displaceable by the deceleration of the motorcycle and operatively connected with the gas pressure space means, said closure slide valve member being operable in its normal position



to close the connection from the pressure reservoir to the gas pressure space means and opening up the venting of the gas pressure space means.

4,573,698

MOTORCYCLE STEERING MECHANISM

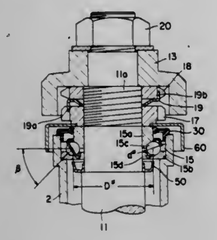
Hirotake Takahashi, Sayama, and Kenji Nishikawa, Tokorazawa, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 14, 1983, Ser. No. 541,938

Claims priority, application Japan, Oct. 14, 1982, 57-180502; Dec. 10, 1982, 57-215378

Int. Cl.⁴ B62K *21/06*

U.S. Cl. 280—279 **8 Claims**



1. A handle bar steering device for a motorcycle having a steering column with angular bearings to permit swing steering, wherein said bearings comprise angular ball bearings having a swing angle of at least 50°, and being retained out of contact with one another by a retainer element, said device comprising a head pipe and friction means between said head pipe and steering column to provide turning friction resistance for the latter, said device further comprising upper and lower angular ball bearings, said upper ball bearings being affixed to a threaded upper portion of said steering column by means of a first nut, tightening of said first nut producing a substantially equal pressure on both said upper and said lower ball bearings, a second nut being threaded upon said threaded upper portion of said steering column, a lock washer being provided between said first and second nuts, each of said first and second nuts having a plurality of stop tabs projecting around its circumference and forming a plurality of stop notches, and said lock washer having a larger and a smaller pair of opposite stop tabs located at 90° intervals around its circumference, said respective pairs being bent at substantially 90° angles in respectively opposite directions so as to engage the respective stop notches of said first and second nuts.

4,573,699

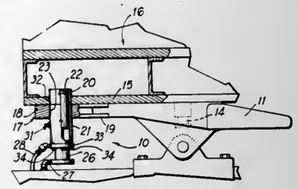
TRAILER BACK-UP COUPLING

Ronald F. Smith, Monroe, Wash., assignor to Safety Equipment Corporation, Monroe, Wash.

Filed Jul. 27, 1984, Ser. No. 635,167

Int. Cl.⁴ B62D *53/08*

U.S. Cl. 280—432 **5 Claims**



1. A coupling for articulated vehicles having a fifth wheel to enable straight line backing up of the vehicle, said coupling comprising a prefabricated power-operated locking plunger assembly including a narrow crescent-shaped mounting plate segment fixedly attached to a curved frontal edge of a fifth wheel, said assembly further including a locking plunger, and a cooperative locking bushing fixedly attached to a trailer king pin plate and being adapted for coaxial alignment with said locking plunger of said assembly.

4,573,700

SKI BRAKE

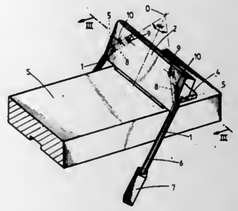
Jean Beyl; Jean Bernard, both of Nevers; Daniel le Faou, Coulanges-les-Nevers, and Henri Peyre, Nevers, all of France, assignors to STE Look, Nevers, France

Filed Feb. 28, 1984, Ser. No. 584,391

Claims priority, application France, Mar. 17, 1983, 83 04362

Int. Cl.⁴ A63C *7/10*

U.S. Cl. 280—605 **5 Claims**



1. A ski brake comprising two movable braking arms which are intended to be placed on each side of a ski and the active ends of which are inwardly withdrawn above the ski in their raised position whilst the opposite control ends of said braking arms are associated by means of an operating pedal which can be actuated by the corresponding ski boot, wherein the braking arms are carried solely by the operating pedal which is pivotally mounted on the ski and capable of pivotal displacement about a transverse axis, the corresponding control ends of said arms being elbowed in order to form a V whose point is directed away from the active ends of said arms and/or away from the ski, said control ends being rotatably mounted within bores having the same angular orientation and formed in the operating pedal, means being provided for causing said control ends of the braking arms to rotate about their own axes within said bores after completion of the upward displacement of said braking arms in order to bring the active ends of said arms to their inwardly withdrawn position above the ski in the standby position of said ski brake.

4,573,701

RELEASE SKI BINDING

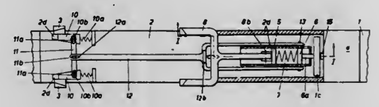
Gerhard Nowak, Biedermannsdorf; Alfred Winter; Hans P. Morbitzer, both of Vienna; Klaus Kruschik, Gumpoldskirchen, and Robert Taucher, Podersdorf, all of Austria, assignors to TMC Corporation, Baar, Switzerland

Filed Jan. 19, 1984, Ser. No. 572,100

Claims priority, application Austria, Jan. 21, 1983, 190/83

Int. Cl.⁴ A63C *9/08*

U.S. Cl. 280—616 **10 Claims**



1. In a release ski binding comprising a sole plate which can in its central region be pivoted about an approximately vertical axis and about a transverse axis arranged in front of said vertical axis, said sole plate being held on a ski in a skiing position by a resilient holding mechanism, said holding mechanism being responsive to a pivotal movement of said sole plate relative to the ski and, upon reaching a predetermined angle of traverse effecting both an upwardly and also a side opening of a locking mechanism, the improvement comprising wherein said locking mechanism has two clamping jaws which laterally engage the ski shoe and which are constructed as two-arm levers, mounting means for mounting said clamping jaws pivotally on the sole plate and for movement about axes which extend in the longitudinal direction of the ski, wherein a heel holder is provided on said sole plate and which is pivotal about a transverse axle between a ski shoe holding position a ski shoe releasing position, and wherein said transverse axle of said heel holder is supported for movement in the longitudinal direction of the ski and is under the influence of a resilient means for urging said heel holder toward the tip of the ski, and wherein control means are provided for operatively controlling the operation of said clamping jaws and said heel holder.

4,573,702

ANTI-PITCH SUSPENSION

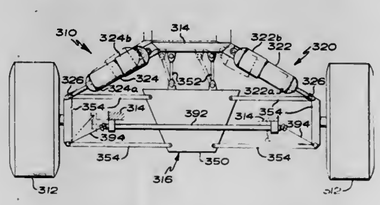
Richard H. Klem, 35 N. Highland St., Arlington, Va. 22201

Continuation-in-part of Ser. No. 361,534, Mar. 23, 1982, Pat. No. 4,484,767. This application Sep. 30, 1982, Ser. No. 428,922

The portion of the term of this patent subsequent to Nov. 27, 2001, has been disclaimed.

Int. Cl.⁴ B60G *3/00*

U.S. Cl. 280—697 **7 Claims**



6. An anti-roll suspension for suspending at least one wheel from a vehicle body, said suspension comprising:

a wheel supporting means, at least one of said wheels being mounted to said supporting means;

a torsional bar mounted to said vehicle, said bar having at least a first actuating arm; and

means suspending said body from said wheel supporting means, said suspending means comprising means for translating the lateral inertia of said vehicle body during cornering into lateral translational movement of said vehicle body relative to said supporting means, said translating means comprising at least a first link and said supporting means comprising at least a first attachment point, said first actuating arm being above and toward the center of said vehicle relative to said attachment point, said link connecting said attachment point and said first actuating arm, said link angling upwardly and inwardly from said point to said arm.

4,573,703

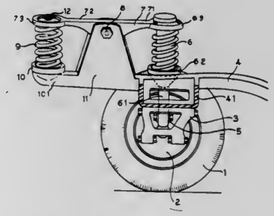
VEHICLE SUSPENSIONS

Virgil S. Linger, 3555 Bradley Brownlee Rd., Cortland, Ohio 44410

Filed Jan. 16, 1984, Ser. No. 571,104

Int. Cl.⁴ B60G *3/00*

U.S. Cl. 280—701 **6 Claims**



1. A vehicle having a frame and a generally vertically-disposed MacPherson strut suspension carried by the frame and connected to a vehicle wheel, said MacPherson strut comprising

a shock absorber including relatively movable parts in the form of a cylinder and a piston within said cylinder, said piston having a rod connected to it and extending outwardly of said cylinder, and said MacPherson strut also including a coil spring surrounding a portion of said shock absorber,

a walking beam disposed longitudinally of said frame and pivoted intermediate to its ends on said frame,

one of said relatively movable parts of said shock absorber being movable vertically with the wheel axle and the other of said movable parts being connected to one arm of said walking beam,

said shock absorber having a spring platform connected to it and facing upwardly and said one arm having a spring platform connected to it and facing downwardly, said coil spring being compressed between said spring platforms, and

the other arm of said walking beam having a spring platform facing downwardly, and a cushioning device compressed between this spring platform and a portion of said vehicle frame.

4,573,704

INTERNAL LIFT AXLE SUSPENSION SYSTEM

Ervin K. VanDenberg, Massillon, and Jim Eckelberry, Canton, both of Ohio, assignors to Turner Quick-Lift Corporation, Canton, Ohio

Filed Jan. 20, 1982, Ser. No. 340,940

Int. Cl.⁴ B60G *11/26*

U.S. Cl. 280—704 **14 Claims**

1. In a lift axle suspension system for a frame-membered wheeled vehicle comprising an extendible air chamber, means for stabilizing said air chamber, a lift mechanism for raising the system out of road engagement and means for extending said air chamber thereby to lower said system into road engagement, the improvement comprising as said lift mechanism, a mechanism located completely within the internal confines of said air chamber, said mechanism being of a size sufficient to

raise the system to the desired height above the road and to effectively lower the system into full engagement with the road, wherein said air chamber comprises an upper and a lower

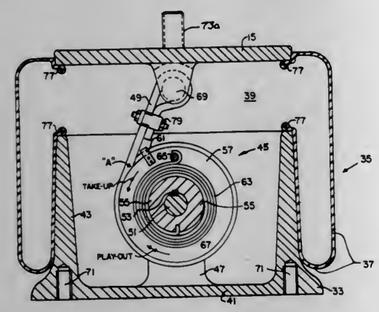


plate member and a flexible sleeve located within said plate members; and wherein one of said plate members includes a circumferential wall extending inwardly into said chamber and which substantially surrounds said lift mechanism.

4,573,705

SUSPENSION AND STEERING CONTROL OF MOTOR VEHICLES

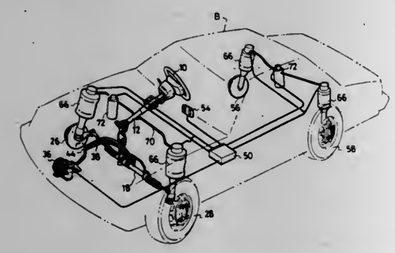
Seita Kanai, and Hirotaka Kanazawa, both of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Nov. 18, 1983, Ser. No. 553,390

Claims priority, application Japan, Nov. 22, 1982, 57-204795; Nov. 22, 1982, 57-204796; Nov. 22, 1982, 57-204797

Int. Cl.⁴ B60G *17/08*

U.S. Cl. 280—708 **16 Claims**



1. A motor vehicle comprising: a body, wheels for supporting said body and including steerable wheels, first suspension means between said body and at least one of said wheels, second suspension means between said body and another of said wheels, manually operated steering means for steering said steerable wheels, said first suspension means including first resistance means for providing a first resistance level to vertical movements of said body with respect to said wheels, said second suspension means including second resistance means for providing a second resistance level to vertical movements of said body with respect to said wheels, one of said first and said second resistance means being a variable resistance means, first adjusting means for adjusting the resistance of said variable resistance means of at least one of said first and said second suspension means to change the ratio of said first resistance level to said second resistance level, second adjusting means for adjusting the operating force necessary to operate said steering means, control means for providing a control signal to said first adjusting means for adjusting the ratio of the first resistance level to the second resistance level of said first and second suspension means and for providing a control signal to the second adjusting means to adjust the operating force necessary to operate said steering means in predetermined relationship to the adjustment of said ratio of the first to the second, resistance levels of the first and second suspension means, and switch means operatively connected to said control means for selectively providing desired adjustment of said variable resistance means and desired adjustment of the force necessary to operate said steering means.

4,573,706

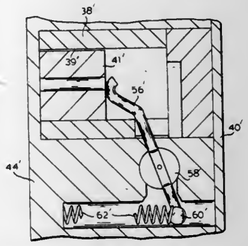
PASSENGER COMPARTMENT SENSOR REQUIRING SUBSTANTIAL VELOCITY CHANGE

David S. Breed, Boonton Township, Morris County, N.J., assignor to Breed Corporation, Lincoln Park, N.J.

Filed Feb. 15, 1984, Ser. No. 580,337

Int. Cl.⁴ B60R *21/32*

U.S. Cl. 280—734 **15 Claims**



1. A mechanical sensor with a low bias for mounting within a vehicle passenger compartment operable without electrical power for igniting the pyrotechnic element of an air bag safety restraint system for the vehicle, said sensor comprising a sensor train which includes:

a primer;

a spring biased firing pin;

a means responsive to sustained acceleration above the bias for releasing the firing pin to strike the primer.

4,573,707

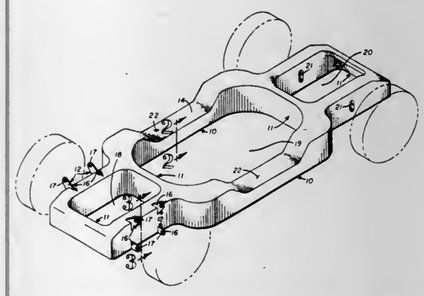
COMPOSITE LIGHTWEIGHT NON-METALLIC VEHICLE FRAME

Rudolf D. Pabst, N. 7511 Panorama Dr., Spokane, Wash. 99208

Filed Jan. 30, 1984, Ser. No. 575,289

Int. Cl.⁴ B62D *29/04*

U.S. Cl. 280—792 **7 Claims**



7. A non-metallic ladder type automotive frame having beam elements formed of composite plastic materials, comprising in combination:

paired opposed elongate lateral beams interconnected by plural cross beams, each of said beams and cross beams having,

a rigid lower density core formed by foaming plastic material in a peripheral mold to create a structure having closed cells and a graduated density that is greatest at the periphery of the core, and

a higher density peripheral skin formed of polymeric matrix material adhered to the core and embedding reinforcing fiber in the form of woven cloth, plural layers of said cloth, covering the peripheral surfaces of the beams and additional layers of said cloth covering top and bottom portions of the beams, and

means of releasably fastening automotive components to at least some of the beams.

4,573,708

ARRANGEMENT IN VEHICLE SAFETY BELTS OF THE THREE-POINT TYPE

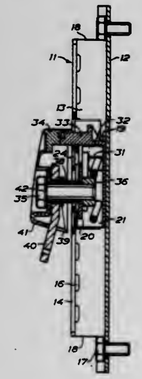
Tommy K. L. Brorsson, Örkelljunga, Sweden, assignor to Safety Transport Inter Development AB, Anderstrop, Sweden

Filed Jan. 17, 1984, Ser. No. 571,469

Claims priority, application Sweden, Jan. 17, 1983, 8300192

Int. Cl.⁴ B60R *22/00*

U.S. Cl. 280—808 **8 Claims**



1. An arrangement in vehicle safety belts of the three-point type for adjusting stepwise the height of the anchoring fitting located at shoulder level at one side of the seat, comprising a fixedly mounted guide rail having U-shaped cross-sectional form and edge flanges projecting towards each other, which define a longitudinal slot and form a plurality of recesses distributed along the slot, and a slide supporting the anchoring fitting, which is displaceable along the guide rail and has an engagement element displaceable in the transverse direction of the web of the guide rail for releasable engagement with the recesses in a desired longitudinally displaced position with the engagement element spanning the slot between the edge flanges, the engagement element being engaged with the recesses under spring bias and being disengageable from the recesses against the spring bias by means of an operation member arranged outside the guide rail to be operated manually, characterized in that the anchoring fitting is arranged on the engagement element and that the slide comprises a lock element connected with the operation member and displaceable in relation to the engagement element in the longitudinal direction of the guide rail, said lock element being guided for longitudinal displacement in the guide rail in engagement with the web and edge flanges thereof, the engagement element being guided on the lock element to be displaced transversally of the web of the guide rail by relative displacement in the longitudinal direction of the guide rail, said engagement element and the lock element being guided for relative displacement by at least one guide slot in one element and a guide pin engaging said slot on the other element, and said at least one guide slot having a straight portion to receive therein the guide pin under the spring bias with the teeth of the engagement element engaging the apertures in the edge flanges of the guide rail, and another portion angled in relation to said straight portion, for guiding the engagement element towards the web of the guide rail at relative displacement of the engagement element and the lock element against the spring bias.

4,573,709

LATCH DEVICE FOR A WEBBING ANCHOR

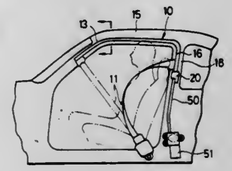
Osamu Kawai, Fujisawa; Kazuo Yamamoto, Sagamihara, and Yoshihiro Yokote, Yokohama, all of Japan, assignors to NSK-Warner K.K., Tokyo, Japan

Filed Jun. 7, 1984, Ser. No. 618,135

Claims priority, application Japan, Jun. 21, 1983, 58-94217[U]

Int. Cl.⁴ B60R *21/00*

U.S. Cl. 280—804 **7 Claims**



1. A latch device for a webbing anchor used in the seat belt system of a vehicle, said device comprising:

a guide rail disposed in the vehicle with a predetermined locus;

an anchor to which the end of webbing is fixed and which has an engaging pawl, said anchor being engaged with said guide rail for movement along the track of said guide rail;

a driving member slidable along said guide rail and engaged with said anchor so as to be relatively displaced by a predetermined amount in the direction of sliding movement, said driving member having a hole, said driving member being adapted to drive said anchor on said guide rail to bring the same to a seat occupant restraining position and a seat occupant non-restraining position; and

a latch member fixedly disposed adjacent to said driving member and having an engaging portion engageable with the engaging pawl of said anchor and a cam portion forming cam means with said driving member,

said cam portion being formed so that it fits into the hole of said driving member as said anchor is driven to said seat occupant restraining position by said driving member, and is further displaced in said hole relative to the driving member of a predetermined length, and that it is pushed out of said hole thereafter as said anchor is driven away from said seat occupant restraining position by said driving member;

said engaging portion coming to a position in which it is engageable with the engaging pawl of said anchor by said fitting and said displacement of said cam portion and coming to a position in which it is unengageable with the engaging pawl of said anchor by said displacement and said push-out of said cam portion, said engaging portion being adapted to be engaged with the engaging pawl of said anchor by a load of a predetermined value or more applied to said anchor through the webbing, and

wherein said latch member is an arm held on a shaft and swingable between a position close to said driving member and a position spaced apart from said driving member, said latch member is normally biased toward said driving member, said arm has said engaging portion at the fore end thereof and a cam portion at a portion thereof op-

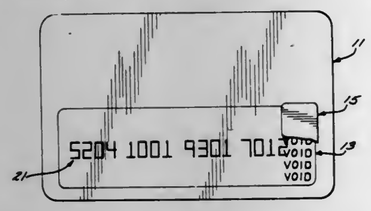
posed to said driving member, said guide rail has an internal path extending in the lengthwise direction thereof and parallel to the track for said anchor, said driving member is a tape having one end thereof inserted into the internal path of said guide rail and the other end thereof coupled to a motor and is slid in said guide rail by the drive of said motor, said anchor has its webbing fixing portion protruding from the track for said anchor through a hole provided near said one end of said tape, and the engaging pawl thereof is projectedly provided on the side on which said latch member is disposed.

4,573,710
SNOW SCRAPER FOR SKI BOOTS
Ronald R. Ford, 312 Laurent St., Santa Cruz, Calif. 95060
Filed Nov. 10, 1980, Ser. No. 205,101
Int. Cl.[4] A63C *11/22*
U.S. Cl. 280—813 **3 Claims**



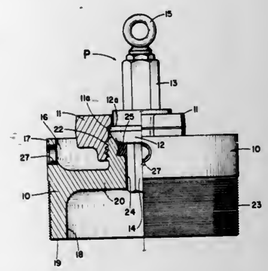
1. A scraper adapted to be mounted on a ski pole comprising a body portion having a central passage therethrough adapted to receive the pole, and a plurality of blades projecting outwardly from said body portion, each blade extending longitudinally along and about said body portion in a spiral configuration.

4,573,711
SECURE CREDIT CARD AND METHOD OF MANUFACTURING SAME
Kirk R. Hyde, Palos Verdes Estates, Calif., assignor to Kirkplastic Company Incorporated, Los Angeles, Calif.
Filed Feb. 21, 1984, Ser. No. 581,725
Int. Cl.[4] B42D *15/00*
U.S. Cl. 283—98 **5 Claims**



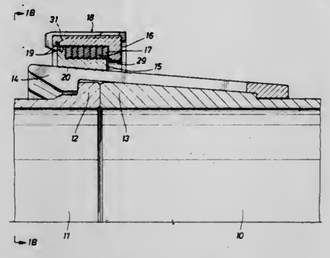
1. A secure credit card comprising: a preformed card blank including a face having an operative space formed with coded information indicative of the person or persons authorized to make transactions on the account identified by said card, and a security area of a predetermined configuration;
discernable security indicia preprinted within the confines of said security area indicating that use of said card blank is unauthorized;
a preformed security cover of holographic material formed to said predetermined configuration and overlying said security area for totally obscuring said security indicia; and
an adhesive sandwiched between said cover and card for securing said cover to said card whereby said card blank may be fabricated separate from said cover and said cover adhered thereto to cover said indicia as a last step of manufacture to cover said indicia.

4,573,712
REDUCER COUPLING AND POSITIONER TOOL FOR THE COUPLING
Donald C. Cameron, Tulsa, Okla., assignor to The Dow Chemical Company, Midland, Mich.
Filed Jan. 7, 1983, Ser. No. 456,632
Int. Cl.[4] F16L *55/00*
U.S. Cl. 285—12 **2 Claims**



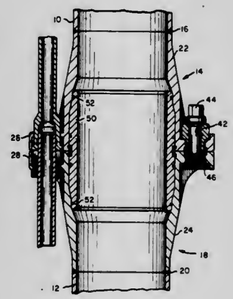
1. In combination, a reducer coupling for connecting a conduit section of one size to a conduit section of a different size, a positioner tool, and means for securing the positioner tool to the reducer coupling, the combination comprises:
the reducer coupling is generally defined by a one-piece coupler body;
a first cavity is defined in one end of the coupler body, and a second cavity is defined in the opposite end of the coupler body;
a bridge portion is defined within the coupler body between the first and second cavities;
the coupler body includes an upstanding hub, the hub is integral with the bridge portion, the hub extends into the first cavity, and the hub includes fastener means on the outside of the hub;
the coupler body includes a central opening therein; the opening extends lengthwise through the bridge portion and the hub;
the coupler body includes a first upstanding rim, which defines the periphery of the first cavity, and a second upstanding rim, which defines the periphery of the second cavity;
the coupler body includes fastener means on the outside of the coupler body adjacent to the second cavity; and
the positioner tool is generally defined by an elongate pin having a shoulder thereon;
the shoulder generally divides the pin into a hanger section, and a spindle section;
the central opening of the coupler body is adapted to receive the spindle section;
the securing means engages the fastener means on the hub and seats against the shoulder on the positioner tool, to thereby secure the positioner tool to the reducer coupling.
the hanger section of the positioner tool is adapted for hooking into a means for moving the reducer coupling into a desired position; and
the hanger section of the positioner tool is adapted for engagement with a tool capable of rotating the reducer coupling.

4,573,713
BELLE-LOCK GRIP DEVICE
Robert M. Kipp, and Ray R. Ayers, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.
Filed Nov. 22, 1982, Ser. No. 443,367
Int. Cl.[4] F16L *37/12*
U.S. Cl. 285—319 **10 Claims**



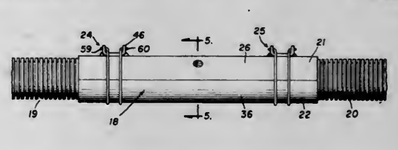
1. A gripping mechanism comprising:
multiple conical rings encircling an inner barrel, each ring having a parallelogram cross-section;
an outer barrel encircling the multiple conical rings;
a tip extending outwardly from an edge of the parallelogram cross-section of each conical ring, the tip being adjacent to the inner barrel and being on the same respective edge of each conical ring;
a series of spaced-apart ridges within the outer barrel, each ridge engaging an edge of a conical ring which is diagonally across from the tip of the conical ring; and
means to axially and oppositely slide the inner and outer barrels relative to each other, which movement is functionable to twist the multiple conical rings which in turn are functionable to press the tips of the rings against the inner barrel.

4,573,714
MARINE RISER COUPLING ASSEMBLY
Thomas F. Sweeney, Ventura, Calif., assignor to Vetco Offshore, Inc., Ventura, Calif.
Filed Apr. 26, 1983, Ser. No. 488,835
Int. Cl.[4] F16L *23/02*
U.S. Cl. 285—363 **1 Claim**



1. A marine riser coupling assembly, adopted to withstand high tension and cyclical bending loads comprising:
a first coupling having a tubular portion welded to a riser pipe section, and a flange portion integral with the tubular portion;
a second coupling having a tubular portion welded to a riser pipe section, and a flange portion integral with the tubular portion;
each of the flanged portions having on the face thereof, a raised face around the entire inner circumference, a raised face around substantially the entire outer circumference, and a recess around the entire circumference between the raised faces;
each flanged portion having a plurality of bolt holes through the area of the recess and alignable with each other;
a plurality of bolts through said bolt holes securing the flange portions to one another with both the inner and outer faces in highly loaded contact;
an external fillet connecting the inboard side of the flanged portion and the outer surface of the tubular portion, the fillet extending from the location outboard of the center line of the bolt holes with the dimension along the tubular portion being significantly greater than the dimension across the flange; and flat surfaces machined through said fillet at the location of said bolt holes.

4,573,715
TEMPORARY DUCT LINER INTERCONNECT DEVICE
George E. Armbruster, Park Ridge, Ill., assignor to Illinois Bell Telephone Company, Chicago, Ill.
Filed Nov. 9, 1984, Ser. No. 669,759
Int. Cl.[4] F16L *17/00*
U.S. Cl. 285—94 **9 Claims**



7. A duct liner interconnect device for temporarily interconnecting axially aligned ends of two duct liner sections in a spaced apart relation while cables are being pulled into and through the duct liner, said duct liner interconnect device comprising a first semi-cylindrical element, a second semi-cylindrical element, hinge means, and latching means, said first and second elements being complementary in shape and each having a convex outer surface and a concave inner surface, said hinge means interconnecting said first and second elements along first longitudinal edges thereof, said first and second elements being foldable about said hinge means from an open position in which said first and second elements are disposed side by side toward a closed position in which said first and second elements form a short tubular member with said concave inner surfaces defining a longitudinal channel to receive the ends of the duct liner sections, said latching means including first and second latch assemblies each including a spring clip and a mounting member, each spring clip having a fixed end, a free end, and an arcuate generally semicircular portion interconnecting said fixed and free ends, said semicircular portion including first and second parallel extending rod members joined together at one end, defining said free end of said spring clip, and having respective first and second rod ends bent over to define first and second pivot pins at said fixed end of said spring clip, each mounting member being U-shaped having a base portion and first and second apertured ear portions, said base portion being attached to said outer surface of said first element with said apertured ear portions projecting outwardly therefrom with said first and second pivot pins being received thereby, defining a pivot axis for said spring clip, enabling said spring clip to be pivoted to a latch position, in which the arcuate portion of said spring clip is flexed causing its free end to be maintained in frictional engagement with said curved outer surface of said second element at a location substantially diametrically opposed to the pivot axis thereby maintaining said spring clip in its latch position releasably latching said first and second elements together in their closed position, said first and second elements each having a circumferentially extending shoulder portion on its concave inner surface which defines first and second stop surfaces which are

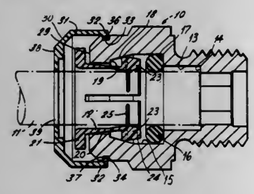
engaged by the ends of the duct liner sections to maintain them in a spaced relationship defining a space therebetween, and said first element having first and second tapped apertures extending through said first element from its outer surface to its inner surface and said shoulder portion thereof communicating the space with the exterior, said first aperture being adapted to receive a lubrication fitting to permit the introduction of lubricant into the space between the ends of the duct liner sections for lubricating the cables as they are pulled through the duct liner, and said second aperture providing an air outlet for exhausting air from the space as lubricant is introduced into the space through said first aperture.

4,573,716

TUBE COUPLINGS

John D. Guest, "Iona", Cannon Hill Way, Bray, Maidenhead, Berkshire, United Kingdom

Filed Dec. 8, 1983, Ser. No. 559,507
Claims priority, application United Kingdom, Dec. 13, 1982, 8235475
Int. Cl.⁴ F16L *21/06*
U.S. Cl. 285—323 **10 Claims**



1. A tube coupling comprising a collet to receive a tube to be held therein;
a body part having an end from which a bore extends through the body part, the bore having an axially tapered portion to cooperate with arms of said collet extending into the bore, the tapered portion of the bore being such that movement of the collet arms engaging the tapered portion axially outwardly of the bore causes the collet arms to be pressed inwardly to grip a tube in the collet;
a resilient end cover enclosing said end of the body and part of the collet projecting from said end of the bore and adapted to engage resiliently a part of the coupling body;
an apertured portion in the end cover through which a tube can extend into the collet;
abutment means on the body part facing towards said end of the body part into which the bore extends and with which the end cover is engageable to hold said apertured portion of the end cover spaced apart from the axially outer end of the collet such that accidental impact on the cover is absorbed by the cover and is not transmitted to the collet to avoid accidental relase of the tube;
wherein the end cover and coupling body are shaped so that the end cover can be disengaged from the body by an axially outward pull to reveal the end of the collet when it is required to release the collet.

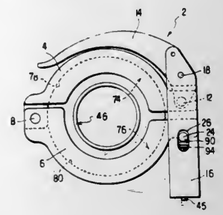
4,573,717

TOGGLE CLAMP

Roy N. Peacock, Lafayette, Colo., assignor to HPS Corporation, Boulder, Colo.

Filed Jul. 9, 1984, Ser. No. 628,849
Int. Cl.⁴ F16L *23/00*
U.S. Cl. 285—365 **11 Claims**

1. A toggle clamp comprising:
first and second clamping means pivotally connected together for receiving objects to be clamped therebetween;
a handle pivotally mounted with respect to one of said clamping means;
a bail including a force generating means where the bail is so mounted with respect to the handle that upon movement of the handle from a first position to a second position, the force generating means is moved to a first position to generate a force for clamping the objects together with a first clamping force; and



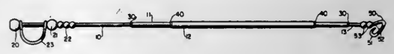
means, upon weakening or failure of the force generating means, for permitting movement of the force generating means to a second position where the objects remain clamped together with a force less than that of the first clamping force
whereby a fail-safe operation is provided.

4,573,718

FLY TYING COMBINATION TOOL

Robert N. G. Stiver, Box 166, R.D. 2, Mill Hall, Pa. 17751

Filed Jun. 12, 1984, Ser. No. 619,927
Int. Cl.⁴ D03J *3/00*
U.S. Cl. 289—17 **10 Claims**



1. A tool for tying a fly comprising, in combination, an elongated member comprising a plurality of telescoping parts which can be extended and collapsed; said plurality of telescoping parts comprising: (a) a first member having a clasp means at one end and terminating in a point extending away from said clasp means; (b) a second member suitable for tying knots and slidingly engaged over said first member; (c) a third member suitable for tying knots and slidingly engaged over said second member; (d) a fourth member terminating in a needle-like point at one end and a hook means extending away from said point, said hook means adapted for fur and hair spinning, whereby said telescoping parts may be used in combination or separately.

4,573,719

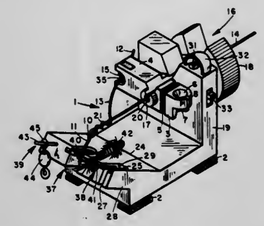
KNOT TYING APPARATUS

Donald J. Aldridge, Rte. #1, Box 172L, Peshtigo, Wis. 54157

Filed Feb. 4, 1985, Ser. No. 698,120
Int. Cl.⁴ D03J *3/00*
U.S. Cl. 289—17 **10 Claims**

1. A portable apparatus for wrapping a free end of a line about a source line for the purpose of forming a knot and comprising;
(a) a base having a top and bottom surface and the bottom surface is detachably securable to a stable surface by a securement means,
(b) an attachment holding member projecting upward from the top surface of the base and having as a part thereof at least one attachment holding means,
(c) a shaft support member projecting upward from the top surface of the base and spaced apart from the attachment holding member,
(d) a shaft having an axial bore directed towards the attachment holding member and rotatably mounted in the shaft

support member and the shaft has a winding arm projecting radial from and mounted to the shaft at a location near the end of the shaft and positioned between the attachment holding member and the shaft support member and a turning knob is secured to the shaft, and the shaft, the knob, and the arm define a longitudinal slot which communicates from the axial bore of the shaft to the outside of the shaft, knob, and arm so that when the slot is aligned with a mating slot in the shaft support a line may be passed through the slots into the axial bore of the shaft, and
(e) a line holding means attached to the winding arm at a location near the end of the arm most distant from the shaft.

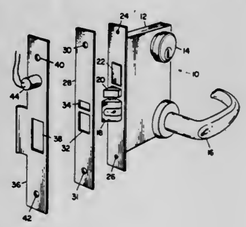


4,573,720

FAILSAFE SECURITY LOCK

J. Steven Nicolai, 8754 Oak Park Ave., Northridge, Calif. 91325

Filed Sep. 1, 1983, Ser. No. 528,457
Int. Cl.⁴ E05C *13/10*
U.S. Cl. 292—144 **15 Claims**



1. A safety door lock for a door comprising an electromagnetic lock, a magnetic switch located opposite an internal magnet mounted in a lock housing, the magnetic switch and internal magnet forming a closed circuit with the electromagnetic lock, means located in the lock housing to retract the internal magnet from the magnetic switch in order to break the close circuit.

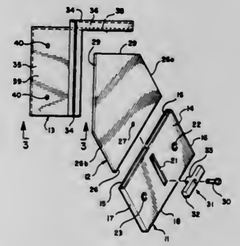
4,573,721

SECURITY LOCK

Melvin C. Orchard, and Michael Rogers, both of Salt Lake City, Utah, assignors to The Joint Lock Corporation, Salt Lake City, Utah

Filed Apr. 16, 1984, Ser. No. 600,889
Int. Cl.⁴ E05C *1/04*
U.S. Cl. 292—145 **4 Claims**

1. A security locking mechanism for securing the upper swinging edge corner of a door to the adjacent door jamb corner comprising in combination:
(a) a generally rectangular housing adapted to be attached to the inside surface of said door corner and having parallel upper and lower flat surfaces, said surfaces being separated by interconnecting parallel sidewalls and a rear endwall and having an open front end, said upper surface containing an open elongated slot parallel to said sidewalls through which a latch handle may be inserted;
(b) a flat latch slidably engaged in said housing through said open front end between said upper and lower surfaces, said flat latch having a trailing edge, parallel side edges at right angles to said trailing edge and converging leading edges depending forwardly and inwardly from said side edges and joining at right angles at a forward apex;
(c) a latch handle inserted through the open elongated slot in said upper surface of said housing and secured to said flat latch to allow said latch to be slid within said housing along the length of said open elongated slot; and
(d) a receiver mountable to said door jamb corner consisting of contiguous flat flange sections depending from each other at right angles which, when mounted in said door jamb corner will have surfaces normal to the inner surface of said door, said flange sections containing apertures through which attachment means may be inserted to secure said flanges to the door jamb, said flange sections containing a forward edge and a rear edge, an elongated channel contiguous with and extending around the forward edge of said flange sections, said elongated channel extending backwardly from said flange sections so as to be toward said door jamb corner when mounted and opening forwardly at right angles so as to be toward said door corner when mounted, said elongated channel being adapted to receive said converging leading edges of said flat latch when said flat latch is moved forwardly through said housing by means of said latch handle.

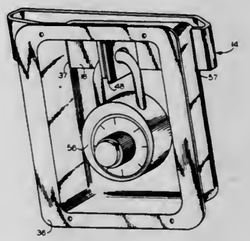


4,573,722

LOCKER HANDLE ASSEMBLY

William E. Lyng, Main St., Truthville, N.Y. 12854

Continuation of Ser. No. 542,001, Oct. 14, 1983, abandoned.
This application Oct. 25, 1984, Ser. No. 664,615
Int. Cl.⁴ E05C *1/04*
U.S. Cl. 292—148 **10 Claims**



1. A locker handle assembly comprising:
a recessed mounting receptacle having a rear wall, outwardly extending side walls, an open front portion, and a flange extending from said side walls at the open front portion;

two longitudinally extending slots, one each located along each of two opposite sides of the receptacle; and

a slide bolt having front and back bars held together at opposite ends and in a spaced-apart relationship such that the front bar passes through the longitudinally extending slots in front of the rear wall and the back bar passes behind the rear wall, the slide bolt being horizontally reciprocally operable between a latched and unlatched position such that a predetermined portion of the slide bolt moves in a reciprocal fashion behind a locker door frame.

4,573,723

SYSTEM INCLUDING BI-DIRECTIONAL DRIVE MECHANISM

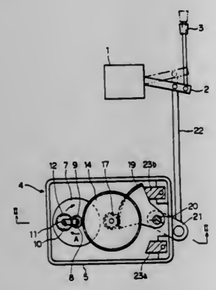
Yoshiyuki Morita, Kariya, and Hiroshi Nakamura, Nishio, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Aug. 10, 1984, Ser. No. 639,430

Claims priority, application Japan, Nov. 26, 1983, 58-222854

Int. Cl.⁴ E05B *3/00, 47/00;* F16H *3/34*

U.S. Cl. 292—336.3 **7 Claims**



7. A driving apparatus for an automotive equipment comprising:

a housing (**4, 5**);

a reversible electric motor (**7**) housed in and supported by said housing;

sun gear means (**9**) fixed to an output shaft (**8**) of said electric motor;

swing lever means (**10**) rotatably supported by said output shaft at its one end;

planetary gear means (**12**) rotatably supported by said swing lever means at its other end, said planetary gear means being rotatable around its own axis and engaged with said sun gear means;

resistive element means (**13**) provided between said swing lever means and one of said sun gear means and said planetary gear means for applying a frictional force to said one of said sun gear means and said planetary gear means, so that when said output shaft is rotated, said planetary gear means rotates around said output shaft;

driven gear means (**14, 80**) rotatably supported by said housing and arranged on the same plane as said planetary gear means at such a position where said driven gear means is out of engagement with said sun gear means but can be brought into and out of engagement with said planetary gear means when said planetary gear means is rotated around said output shaft by said electric motor;

a driven shaft (**16, 81**) rotatably supported by said housing and coaxially arranged with said driven gear means; and

elastic element means (**15, 84**) provided between said driven gear means and said driven shaft for storing a restoring energy, so that a rotational force is transmitted to said driven shaft when a predetermined amount of said restoring energy is stored in said elastic element means,

whereby when said electric motor is rotated in one of directions, said planetary gear means is rotated around said output shaft until said planetary gear means is brought into engagement with said driven gear means, when said planetary gear means and driven gear means are engaged with each other, said driven gear means is rotated in one direction to at first store said restoring energy and then rotate said driven shaft, and when the rotation of said electric motor is stopped, said driven gear means is rotated in the opposite direction by said restoring energy to bring said planetary gear means out of engagement with said driven gear means.

4,573,724

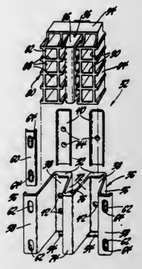
HARDBAR ENERGY ABSORBING AND VIBRATION DAMPING BUMPER SYSTEM DAMPING FEATURE

Lawrence E. Campen, Anderson, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 28, 1983, Ser. No. 555,502

Int. Cl.⁴ B60R *19/30;* F16F *7/00*

U.S. Cl. 293—136 **5 Claims**



3. A resilient one-piece energy absorbing grid of plastic material for use in dissipating energy in a vehicle bumper system, said grid comprising first, second and third grid sections disposed adjacent to each other, each of said grid sections having a plurality of longitudinally extending cells extending in a first axial direction and having common walls therebetween, first live hinge means interconnecting said first and second grid sections at a predetermined spacing from each other and forming a connection therebetween, a third of said grid sections being connected intermediate of said first and second sections and to said first live hinge means by second live hinge means so that said third section can be turned on a vertical axis to orient the cells of said third section in a direction generally transverse to said first axial direction and whereby the first live hinge means permits said first and second sections to be subsequently positioned to the sides of said third section.

4,573,725

REMOTE CONTROLLED CRANE HOOK COUPLER

Edward E. Griffiths, 3200 Folaris St. #23, Las Vegas, Nev. 89102

Filed Apr. 2, 1984, Ser. No. 595,712

Int. Cl.⁴ B66C *1/34, 1/66*

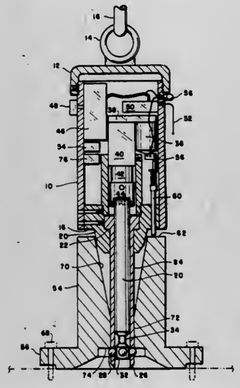
U.S. Cl. 294—82.28 **9 Claims**

1. A coupler controllable from a remote position for interconnecting a first member of said coupler that is attachable to a lifting device to a second member of said coupler that is attachable to a load to be lifted, said coupler comprising:

the second member, said second member having a funnel shaped aperture on a substantially vertical axis, the broad end of said funnel shaped aperture being directable toward the first member of said coupler, the apex end of said funnel shaped aperture terminating in a base portion having an aperture coaxial with said funnel shaped aperture and connected therewith, said base portion having a substantially horizontal shoulder adjacent said base portion coaxial aperture and coaxial therewith;

the first member, said first member having an elongated tubular member extending from one end thereof upon a substantially vertical axis and directable toward said funnel shaped aperture in said second member, the distal first end of said tubular member having an outer diameter adapted to pass through said funnel shaped aperture and through the aperture in the base portion of said second member, said tubular member having near said distal first end a ring of radial holes of predetermined diameter through the wall of said tubular member;

a cam shaft extending from said first member and slideably extending within the bore of said elongated tubular member to a first shaft end at the distal first end of said tubular member, said cam shaft having at said first shaft end an annular ring having a diameter substantially equal to the inside diameter of said tubular member and an annular groove adjacent said annular ring and at a position corresponding to said ring of radial holes through the wall of said tubular member;



a plurality of balls each having a diameter slightly greater than the predetermined diameter of said radial holes through the wall of said tubular member, one ball of said plurality being positioned in a corresponding one of said radial holes and in said annular groove in said cam shaft; and

engaging means including an electrically operated linear actuator in said first member for sliding said cam shaft in a first direction in the bore of said tubular member whereby said annular ring at said first shaft end will force said plurality of balls from said annular groove and partially through the radial holes through said tubular member to a position that will engage the shoulder in the base portion of said second member, said engaging means further including a switch actuated by the seating of said first member into said second member, said switch in circuit with said linear actuator for actuating said linear actuator to slide said tubular member in said first direction.

4,573,726

HOISTING APPARATUS FOR ELECTRIC SUBMERSIBLE PUMP UNITS

Albert Blum, Schelderhöhe, 5204 Lohmar 1, Fed. Rep. of Germany

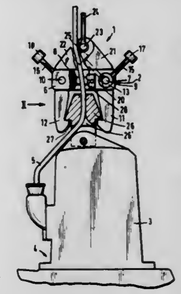
Filed Apr. 5, 1984, Ser. No. 596,946

Claims priority, application Fed. Rep. of Germany, Apr. 19, 1983, 3314051

Int. Cl.⁴ B66C *23/60*

U.S. Cl. 294—86.33 **12 Claims**

1. Hoisting apparatus for electric submersible pump units, particularly for use in deep shafts, comprising a flexible traction element, a drive means for hoisting and lowering the traction element and a coupling part arranged at the lower end of the traction element, which is automatically connectable to and releasable from a corresponding connecting element provided on the submersible pump unit, characterised in that the coupling part (**1; 33**) arranged on the traction element exhibits



an eye (**2; 37**) which encloses with play the electric cable (**5**) passed down to the electric motor (**3**) of the submersible pump unit (**4**), and that the connecting element (**26**) on the submersible pump unit (**4**) is arranged in immediate proximity to the electric cable (**5**).

4,573,727

ROBOT HAND

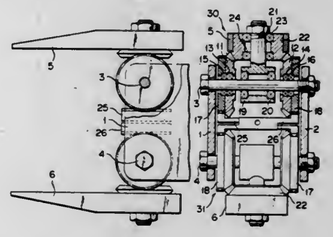
Shoichi Iikura, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 20, 1984, Ser. No. 652,591

Claims priority, application Japan, Mar. 31, 1984, 59-63508

Int. Cl.⁴ B25J *15/08*

U.S. Cl. 294—115 **4 Claims**



1. A robot hand comprising:

a robot hand body;

first and second parallel main shafts fixed to said robot hand body;

first and second finger member-driving mechanisms respectively provided on said first and second main shafts to face each other, each finger member-driving mechanism including first and second bevel gears separately set and rotatably supported on the main shaft, an auxiliary shaft rotatably supported on the main shaft, and a third bevel gear supported on said auxiliary shaft to be rotated about an axis perpendicularly intersecting the main shaft and meshed with both first and second bevel gears;

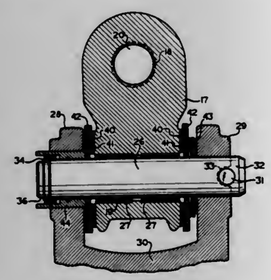
a finger member fixed to said third bevel gear; and

drive means for rotating said first and second bevel gears.

4,573,728
SNUBBING APPARATUS FOR GRAPPLES AND THE LIKE

Thomas E. Johnson, Woodstock, Canada, assignor to Timberjack Inc., Woodstock, Canada

Filed Jul. 19, 1984, Ser. No. 632,503
Int. Cl.⁴ B66C *1/00*; F16F *7/04*
U.S. Cl. 294—119.4 8 Claims

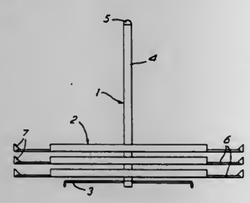


1. A snubber for a bidirectional pivot apparatus for suspending a load comprising a bidirectional pivot member for supporting a pair of pins at right angles to each other, a pin extending through said bidirectional pivot member, a yoke having spaced arms mounted on said pin, snubber brake means positioned between said member and each of said arms and means for preventing said pin from moving axially relatively to said arms, the improvement comprising an elongated cylindrical snubber piston slidably mounted on said pin to actuate said snubber brake means, bearing means mounted on said pin supporting said cylindrical piston, said piston and bearing means forming a chamber with said pin and means to pressurize said chamber with a fluid.

4,573,729
TRAYS

Leonard A. Cookson, The Continental Hotel, Jerbourg St. Martin's, Channel Islands

Filed Oct. 18, 1983, Ser. No. 546,027
Claims priority, application United Kingdom, Oct. 19, 1982, 8230523
Int. Cl.⁴ B65D *71/00*
U.S. Cl. 294—158 4 Claims

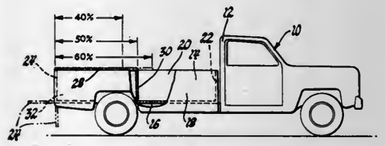


1. A demountable tray assembly comprising:
a plurality of superimposed trays, each tray having a centrally disposed non-circular aperture in the shape of a slot extending transversely part way across the tray; and
a base including upstanding supporting means and a carrying handle, said upstanding supporting means terminating in said carrying handle, the supporting means and said carrying handle being shaped and dimensioned to pass through each tray aperture to prevent any substantial movement of the trays other than at right angles to their planes, the trays being placed on the supporting means and removed therefrom over the carrying handle.

4,573,730
DRAG REDUCING PARTIAL TONNEAU FOR PICKUP TRUCK

Theodore R. Gondert, Romeo, and Richard A. MacDonald, Brighton, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 16, 1984, Ser. No. 610,692
Int. Cl.⁴ B62D *35/00*
U.S. Cl. 296—1 S 1 Claim

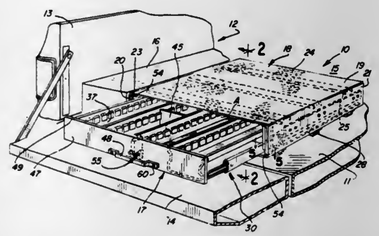


1. In an aerodynamic drag reducing device for a pickup truck having a pickup box defined by a bed, a front wall adjacent the passenger cab, spaced apart side walls, and a tailgate, said drag reducing device comprising: a tonneau cover extending between the side walls and forwardly from the tailgate to a distance short of the passenger cab, said tonneau cover cooperating with the side walls and the bed to define an open front storage compartment accessible through either the tailgate or the open front thereof, and said tonneau cover having a length to cover only the rearmost 40–60% of the total length of the pickup box, whereby the aerodynamic drag of the pickup truck is reduced to an extent greater than the drag reduction obtained by a partial tonneau cover of length greater or lesser than the rearmost 40–60% of the total length of the pickup box.

4,573,731
VEHICLE STORAGE DRAWER UNIT

Howard L. Knaack, and Kenneth F. Weger, Jr., both of Cary, Ill., assignors to Knaack Manufacturing Company, Crystal Lake, Ill.

Filed Oct. 28, 1982, Ser. No. 437,444
Int. Cl.⁴ B60R *11/06*; A47B *88/04*, *88/20*
U.S. Cl. 296—376 25 Claims

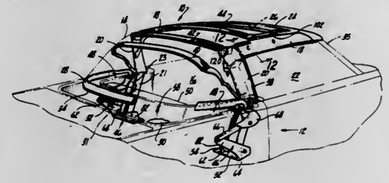


1. For use in a vehicle having a conventional bed with the space immediately above the bed being horizontally accessible at an access position, a selectively accessible self-contained storage unit providing a raised floor on said bed, said storage unit comprising:
a housing having sidewalls, a bottom wall, a top wall and a rear wall cooperatively defining a front opening drawer space, said housing being constructed to be installed on said bed to open to the access position;
a drawer complementary to and received in said drawer space; and
means for movably mounting said drawer to said sidewalls for selective movement between a closed position within said drawer space and an open position wherein the drawer extends outwardly from the housing through said access position, said drawer comprising a plurality of U-channels having facially joined upstanding legs defining front-to-rear drawer dividers and bights defining the bottom wall of the drawer.

4,573,732
CONVERTIBLE TOP FRAME

Peter P. Muscat, 441 Highview St., Dearborn, Mich. 48128

Filed Apr. 30, 1984, Ser. No. 605,070
Int. Cl.⁴ B60J *7/12*
U.S. Cl. 296—108 13 Claims

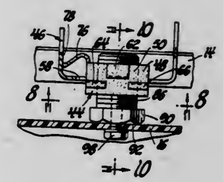


1. A convertible top for the body of a motor vehicle having a passenger compartment, said top adapted to be raised to cover the passenger compartment and lowered by folding into a body space region extending behind and beside said passenger compartment, comprising:
a pair of spaced elongated pillar members, means pivotally anchoring each one of said pillar members to said body in said body space on a respective side of said passenger compartment so as to be swingable between a raised, substantially vertical position and a lowered, substantially horizontal position, said pillar members in said lowered position extending from said pivotal anchoring means towards the rear of said body;
a pair of elongate unitary side rails;
means connecting each side rail at one end to the upper end of a respective pillar member so as to extend leading ends thereof fowardly from said pillar member in said raised position;
said connecting means allowing pivoting forward of each of said side rails into said body space regions alongside said passenger compartment and over said respective attached pillar member, with each of said pillar members in said lowered position;
said connecting means establishing a pivot axis skewed with respect to the length of said body so that each of said side rails move outwardly of said body in being pivoted to extend forwardly and over said respective lowered pillar member;
a plurality of elongate bow members extending between said pair of pillar members and connected side rails, said bow members spaced apart to define a top support, and bow mounting means mounting each of said bow members to a respective one of said pillar members and connected side rails, said bow mounting means causing positioning of said plurality of bow members in said body spaced region to the rear of said passenger compartment upon movement of said pair of pillar members and connected side rails to said positions whereat said pillar members are in said lowered, horizontal position and said side rails are in said forward position in said body space regions on either side of said passenger compartment; and,
a flexible top mounted to extend across the space between said pair of pillar members and connected side rails and above said plurality of bow members, with said frame in said raised position, and folded into said body space with said frame in said lowered position.

4,573,733
APPARATUS FOR MOUNTING PLASTIC BODY PANEL

Wieslaw S. Zaydel, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 442,861, Nov. 19, 1982, Pat. No. 4,529,244.
This application Sep. 20, 1984, Ser. No. 652,225
Int. Cl.⁴ B62D *27/04*, *29/04*; F16B *37/04*
U.S. Cl. 296—191 1 Claim



1. Apparatus for movably mounting the second end of a plastic panel having a first fixed end fixed to a vehicle body metal substructure to permit the second end of the plastic panel to move longitudinally toward and away from the fixed first end upon thermal or hydroscopic dimensional change of the plastic panel comprising:
a molded plastic first mounting member having associated means slidably interengaging with the metal substructure at a point thereon underlying the plastic panel to permit longitudinal movement of the first mounting member toward and away from the fixed first end, a plastic flexure spring integral with the first mounting member and engageable with the substructure to urge the plastic first mounting member to a certain desired longitudinal sliding position relative the fixed first end of the plastic panel, a second mounting member having a mounting face adapted for abutment by the plastic panel and providing a field for the drilling of a fastener hole for attachment of the plastic panel upon the second mounting member, helical thread means acting between the second mounting member and the first mounting member to enable rotation of the second mounting member to effect adjustment of the position of the mounting face transversely relative to the metal understructure so that the plastic panel is mounted at a desired position to obtain precise surface alignment of the plastic panel whereby the first and second mounting members cooperate to support the plastic panel on the metal substructure and slide longitudinally toward and away from the fixed end of the plastic panel upon thermal and hygroscopic dimensional change of the plastic panel.

4,573,734
UNISOCKET CONSTRUCTION FOR FRONT COMPARTMENT OF A UNITIZED AUTOMOBILE BODY

Gene C. Gass, 315 N. Masterson, Virden, Ill. 62690

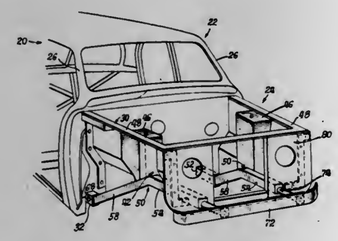
Filed Dec. 10, 1984, Ser. No. 679,698
Int. Cl.⁴ B62D *25/08*
U.S. Cl. 296—189 5 Claims

1. A unitized automobile body having a driver compartment and a front compartment, a pair of front side pillars at the forward end of the driver compartment and a transverse dash panel between the pillars separating said compartments;
a pair of removable inner side panel assemblies extending forwardly from the dash panel defining the inner side walls of the front compartment and providing front wheel housings;
a lower socket member with a forwardly open socket fastened to the bottom of the driver compartment along each side thereof;
an upper socket member with a forwardly open socket fastened to the front pillar at each side of the driver compartment;

each inner side panel assembly including a panel formed with pockets for front wheel supporting means and headlamp means;

means for supporting and removably connecting each inner side panel assembly to the driver compartment with controlled rigidity providing sacrificial collapsibility of the front compartment in event of a head-on collision including upper and lower horizontal rails and flange means;

each lower rail being connected along the lower margin of the inner side panel assembly and having a horizontal rearwardly extending portion telescopically connectible with the respective lower socket member, a horizontal front portion being disposed at a higher level than said rearwardly extending portion and having a forwardly open socket, and a diagonal intermediate, connecting portion capable of bending under backward, collision-magnitude force transmitted through said horizontal front portion;



each upper rail being connected along the rear portion of the upper margin of the inner side panel assembly and having a horizontal rearwardly extending portion telescopically connectible with the respective upper socket member;

said flange means extending along the rear margin of the inner side panel assembly and being connectible by first fastener means to the forward face of the dash panel;

second fastener means holding said rearwardly extending portions of the lower and upper rails removably mounted within the respective socket members;

shoulder means acting between the rails and respective socket members to relieve said second fastener means of stress caused by backward thrust through the rails; a front cross panel and radiator support member connected between the front ends of the inner side panel assemblies and defining the inner front wall of the front compartment; and

energy absorbing means fitted within each of the forwardly open sockets in the front portions of the lower rails and connected to front bumper means.

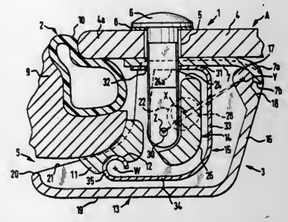
4,573,735

HINGE ASSEMBLY

Jeffery A. Frampton, Begnins, Switzerland, and Nicholas Bartman, Aylesbury, England, assignors to Idex (Jersey) Limited, Channel Islands

Filed Feb. 7, 1984, Ser. No. 577,865
Int. Cl.[4] B60J *7/18*
U.S. Cl. 296—218 **7 Claims**

1. In a motor vehicle sunroof having a panel member and a peripheral elastomeric seal upon which the edge of said panel member seats and the improvement comprising a hinge structure attached at the forward edge of said panel member, said hinge structure comprising a channel lying in a horizontal plane below said panel member and having an upper wall and a lower wall substantially parallel to said upper wall and spaced from said upper wall to define therebetween a U-shaped opening facing forwardly of said panel member, attachment means attaching said upper wall of said channel to said panel member with said lower wall of said channel extending forwardly beneath the forward portion of said elastomeric seal, a horizontally extending location strip attached to the sunroof beneath the forward portion of said elastomeric seal, said location strip having a downwardly opening groove with a substantially arcuate cross-section extending along its lower surface, and a rounded formation formed on the forward edge



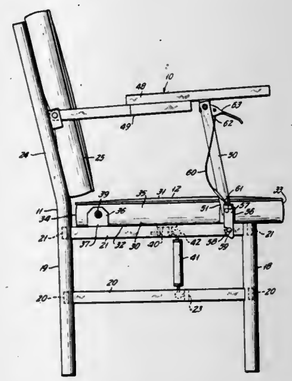
of said lower wall of said channel for location in said groove to form a pivot axis for said channel located beneath the forward edge of said elastomeric seal and forwardly of said attachment means between said upper wall of said channel and said panel member.

4,573,736

CHAIR FOR HANDICAPPED PERSONS

Nat Levenberg, 2 Windsor Pl., Lynbrook, N.Y. 11563

Continuation-in-part of Ser. No. 564,555, Dec. 22, 1983, Pat. No. 4,538,853. This application Sep. 4, 1984, Ser. No. 646,811
Int. Cl.[4] A47C *1/02*
U.S. Cl. 297—339 **2 Claims**



1. A chair construction for use by handicapped persons comprising: a relatively rigid frame element and a movable seat element; said frame element including a plurality of frame members providing a fixed horizontal platform at normal seat height and a fixed back cushion disposed in generally vertical orientation at one side of said platform; a seat bottom cushion mounted on said platform for pivotal movement on an axis parallel to an adjacent rear transverse edge thereof; a plurality of resiliently compressible members interconnecting said frame element and an under surface of said bottom cushion forwardly of said axis; a pair of arm rests each including a pivotally interconnected horizontal and vertical strut; said horizontal strut being pivotally connected at the rear end thereof to said back cushion, said vertical strut being connected at a lower end to said seat cushion forwardly of said resiliently compressible members; and such chair construction further characterized in the provision of adjustable means for shifting the points of interconnection of said resiliently compressible members along

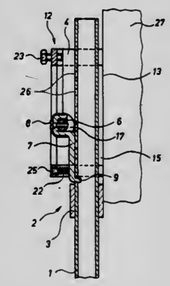
a forward-rearward axis to vary the distance of said points relative to said first mentioned axis, and thereby vary the effective force on said bottom cushion necessary to move said bottom cushion to horizontal condition; whereby upward movement of said seat cushion results in corresponding movement of said arm rests; and locking means manually controllable from said arm rests for fixing the position against the compressive force of said resiliently comrpessible elements.

4,573,737

CHAIR WITH A HEIGHT-ADJUSTABLE BACK REST

Heinrich Korn, Hindemithstrasse 23, Maintal 4, Fed. Rep. of Germany (8906)

Filed Sep. 7, 1983, Ser. No. 530,109
Claims priority, application Fed. Rep. of Germany, Sep. 7, 1982, 3233104
Int. Cl.[4] B60N *1/06*
U.S. Cl. 297—353 **9 Claims**



1. A chair with a height adjustable back rest, comprising:

a back rest support;

an adjusting member mounted on the back rest support and vertically movable relative thereto for supporting the back rest;

detent means for retaining the adjusting member on the back rest support, said detent means including detent holes in the back rest support, a detent pin adapted for insertion into one of the detent holes, and a compression spring against which the detent pin can be released, said detent means being arranged between the back rest support and the adjusting member;

said detent means further comprising at least one activating member;

bar means for pivotably mounting the activating member to the adjusting member; said bar means arranged horizontally through said adjusting member and formed with an upwardly bent end;

said detent means further comprising a detent member connected with the bar means so as to rotate therewith, said detent pin arranged on the detent member so as to cooperate with one of the detent holes in the back rest support;

wherein the back rest is mounted so as to be pivotable about the bar means and in that the compression spring is tensed between the detent member and one of a mounting body and a chair element which is rigidly connected with one of the adjusting member and the back rest, respectively.

4,573,738

MANUAL SEAT RECLINER

Max O. Heesch, Ypsilanti, Mich., assignor to ITT Corporation, New York, N.Y.

Filed Dec. 14, 1984, Ser. No. 681,957
Int. Cl.[4] B60N *1/02*
U.S. Cl. 297—362 **12 Claims**

1. A seat recliner comprising

a seat back support,

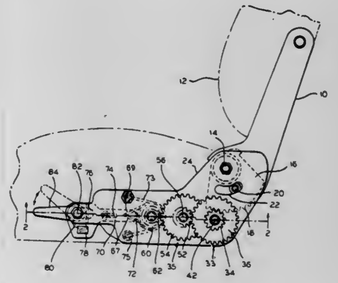
a sector gear affixed to said seat back support,

a base frame including an inner plate and an outer plate joined by spacer elements located between said inner plate and said outer plate to form a space therebetween,

a pivot means at which said seat back support and said sector gear are pivotally joined to said base frame,

a first gear set mounted on a pin set between said inner plate and said outer plate of said base frame, said first gear set having a first toothed wheel meshed with teeth on said sector gear and a second toothed wheel,

a second gear set mounted on a pin set between said inner plate and said outer plate of said base frame, said second gear set having a first toothed wheel meshed with the second toothed wheel of said first gear set and a second toothed wheel,



a clutch spool mounted on a pin set between said inner plate and said outer plate of said base frame, said clutch spool having a toothed wheel meshed with the second toothed wheel of said second gear set, a spring coil means around said clutch spool such that when tensioned, said spring coil means prevents said clutch spool from rotating and thusly locks the seat back support in a selected position,

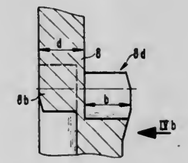
and a clutch release plate mounted on a shaft set between said inner plate and said outer plate of said base frame, said clutch release plate contacts said spring coil means in a manner such that upon a selected movement of said clutch release plate, the tension of said spring coil means is decreased to permit rotation of said clutch spool to thereby permit the movement of said seat back support.

4,573,739

HINGE STRUCTURE FOR SEAT WITH ADJUSTABLE BACKREST

Willi Schöttker, Nordsehl, Fed. Rep. of Germany, assignor to P. A. Rentrop, Hubbert & Wagner Fahrzeugausstatungen GmbH & Co. KG, Stadthagen, Fed. Rep. of Germany

Filed Nov. 16, 1983, Ser. No. 552,560
Claims priority, application Fed. Rep. of Germany, Dec. 1, 1982, 3244399
Int. Cl.[4] A47C *1/024*; B21K *1/30*
U.S. Cl. 297—362 **2 Claims**



1. An improved hinge structure for use with seats having a

stationary seat portion and a pivotable backrest, said hinge structure comprising:

a first hinge piece made from a starting material of a given initial thickness, said first hinge piece having a first outwardly projecting spur gear tooth system protruding from one side thereof and a first inwardly projecting tooth system indented on the other side thereof, said first tooth systems being concentric and the diameter of said protruding tooth system being smaller than that of said indented tooth system, and tooth contour of said protruding tooth being smaller over a portion thereof than that of a corresponding portion of said indented tooth system, wherein the effective width of the teeth of said protruding system is greater than said initial thickness; said first hinge piece also having a first central hole concentric with said first tooth systems;

a second hinge piece made from a starting material of a given initial thickness, said second hinge piece having a second outwardly projecting spur gear tooth system protruding from one side thereof and a second inwardly projecting tooth system indented on the other side thereof said second tooth systems being concentric and the diameter of said protruding tooth system being smaller than that of said second indented tooth system and tooth contour of said protruding tooth being smaller over a portion thereof than that of a corresponding portion of said second indented tooth system, wherein the effective width of the tooth of said indented system is greater than said initial thickness; said second hinge piece also having a second central hole concentric with said second tooth systems; and

a pivot axle having an eccentric portion, said axle pivotably joining said hinge pieces with said first protruding tooth system extending into said second indented tooth system and with said eccentric portion rotatably extending into one of said first and second holes, whereby rotation of said pivot axle causes relative movement between said first protruding tooth system and said second indented tooth system.

4,573,740

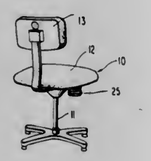
UPHOLSTERED SEAT FOR CLEAN ROOM

James W. Frobose, Haskins, Ohio, assignor to The Jasper Corporation, Easton, Md.

Continuation-in-part of Ser. No. 551,914, Nov. 15, 1983, and Ser. No. 551,913, Nov. 15, 1983. This application Jun. 18, 1984, Ser. No. 621,714

Int. Cl.⁴ A47C *7/18*

U.S. Cl. 297—452 **5 Claims**



1. In upholstered furniture for industrial clean rooms, a body support portion comprising a substantially rigid panel member, a yielding cushion on and substantially covering a top face of said panel member, an air impermeable sheet material cover for said body support portion surrounding and enclosing said panel member and cushion and being in hermetically sealed relationship to said panel member, said panel member and cover having substantially registering openings formed therethrough, and an expandable and collapsible air impermeable vessel located on the bottom face of said panel member and secured to the body support portion on the exterior of said cover, said vessel having its interior in communication with the body support portion through said registering openings and being in hermetically sealed relationship with the panel member and said cover, whereby air can enter and leave said body support portion by passing into and out of said vessel to thereby prevent the escape of air and particles internal of the body support portion into the air external of the body support portion.

4,573,741

FURNITURE STRUCTURAL COMPONENT

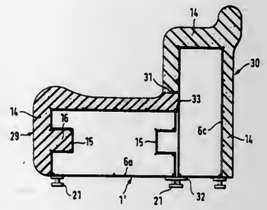
Angelika Kirchner-Carl, Waldstrasse 16, D-8644 Pressig, Fed. Rep. of Germany

Filed Nov. 2, 1983, Ser. No. 547,969

Claims priority, application Fed. Rep. of Germany, Nov. 4, 1982, 3240783

Int. Cl.⁴ A97C *7/02*

U.S. Cl. 297—452 **28 Claims**



1. A structural component forming an interior part of a piece of upholstered furniture comprising a plurality of longitudinal and transverse metal rods interconnected at essentially right angles to form a self-supporting grid-like envelope having a hollow interior and a shrunken plastic foil covering and adhered to at least the outer surfaces of the grid envelope.

4,573,742

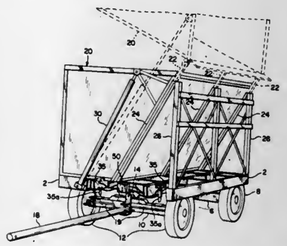
HYDRAULIC STABILIZING MECHANISM FOR USE WITH HYDRAULIC ELEVATING SYSTEM

Sheldon D. Tegtmeier, West Fargo, N. Dak., assignor to Tegtmeier & Sons, Inc., West Fargo, N. Dak.

Filed Nov. 7, 1983, Ser. No. 549,275

Int. Cl.⁴ B65G *67/32*

U.S. Cl. 298—11 **4 Claims**



1. A stabilizing hydraulic system for use in a farm wagon box dumping mechanism in conjunction with a main hydraulic box dumping system of the type having at least a pair of main hydraulic dumping cylinders responsive for actuation in two directions to a valve-controlled hydraulic pump and reservoir system which produces a normal operating pressure during extension and retraction of the main hydraulic cylinders, but which produces substantially increased pressure after the main dumping cylinders reach fully retracted position, said stabilizing system comprising,

a wheeled wagon,

a dump box pivotally mounted on one side thereof and including a rigid frame mounted on said wheels with a front axle underlying the front of said frame and mounted for transverse pivotal action substantially on the longitudinal center line of said frame,

a pair of hydraulic stabilizing cylinders interposed between the end portions of the axle and the overlying front portions of said frame, each cylinder having an extensible piston rod working therein and respectively interposed between the frame of the wagon and the outer underlying portions of the front axle whereby the piston rods when extended, will provide a pair of rigid compression struts between the frame and the underlying portions of the front axle for stabilizing the wagon during the dumping operation of the box,

a hydraulic pump supplying fluid under pressure to the main dumping cylinder and the stabilizing cylinders,

hydraulic fluid conduits carrying fluid to and from said pump and said main hydraulic cylinders and said hydraulic stabilizing cylinders,

a control valve connected to said conduits for controlling the direction of flow from said pump to said main cylinders and said stabilizing cylinders,

a pair of releaseable stabilizing check valve elements respectively interposed in the supply conduits to said hydraulic stabilizing cylinders with means for holding the same in closed position during normal retracting pressures in said hydraulic system but individually and separately responsive for release to increased pressures produced by said pump when the main cylinder has been returned to fully retracted position to permit the stabilizing cylinders to be individually and separately extended and retracted.

4,573,743

BUCKETWHEEL EXCAVATOR WITH OSCILLATING NOZZLES

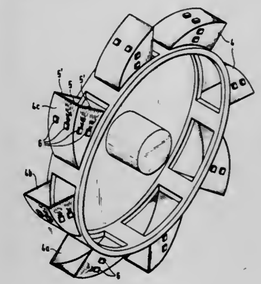
Hartmut Grathoff, Wendelstein, Fed. Rep. of Germany, assignor to M.A.N. Maschinenfabrik Augsburg-Nurnberg, Nuremberg, Fed. Rep. of Germany

Filed Dec. 14, 1984, Ser. No. 681,543

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1983, 3346306

Int. Cl.⁴ E21C *25/60*

U.S. Cl. 299—39 **11 Claims**



1. A bucketwheel excavator for use in open-pit mining for the loosening and removal of material of great hardness and great strength or of highly abrasive material, e.g. sandstone, bituminous coal, tar sand, oil shale and the like, comprising:

a bucketwheel rotatable about a horizontal axis, having buckets provided with bucket backs and outer side walls and transverse and lateral cutting edges; and

a nozzle system, liquid being dischargeable under high pressure from orifices of nozzles for cutting seams into the material to be mined, said nozzle system including oscillating nozzles which can be oscillated back and forth each in a plane about an axis disposed at right angles to a particular bucket cutting edge, said oscillating nozzles being disposed on the outside of said bucket backs and on said side walls of said buckets, said oscillating nozzles being disposed in a clearance angle space, the clearance angle space in the case of oscillating nozzles provided on the side of said transverse cutting edges being the space between the bucketwheel cutting circle and said bucket backs, and in the case of oscillating nozzles provided on the side of said lateral cutting edges, the clearance angle space being between said outer side walls and the surface that is engaged by a lateral cutting edge and is formed from the vectors resulting from the bucketwheel circumferential speed and the bucketwheel boom slewing speed, and said oscillating nozzles being set back from the associated cutting edge to such an extent that the liquid jets emerging from their orifices sweep the entire length of the associated cutting edge a short distance in front of it.

4,573,744

PICK AND THE COMBINATION OF A PICK AND HOLDER

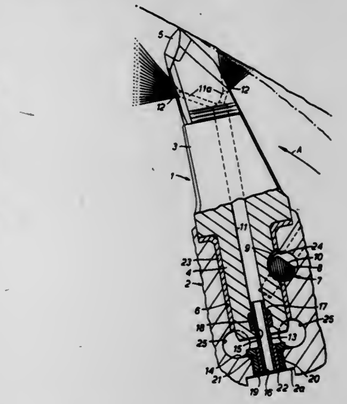
Raymond J. Clemmow, Dronfield Woodhouse; Leonard Radford, Meersbrook, and John D. Thorpe, Sheffield, all of England, assignors to Padley & Venables Limited, Dronfield, England

Continuation of Ser. No. 322,451, Nov. 18, 1981, Pat. No. 4,488,758. This application Dec. 7, 1984, Ser. No. 679,249

Claims priority, application United Kingdom, Nov. 24, 1980, 8037567

Int. Cl.⁴ E21B *10/18*; E21C *7/08*; E21F *5/02*

U.S. Cl. 299—81 **14 Claims**



1. A mineral mining pick for removable placement in a socket of a holder, said holder including a tubular spigot in communication with a fluid source and axially projecting in said socket, said pick comprising:

(a) an elongated body having a head at one end thereof for receiving a cutting element and a shank having a base at the other end thereof, said body including a fluid passage extending between an outlet port in said head and an inlet port in said base, said fluid passage and said inlet port being coaxial and disposed for telescopically receiving said spigot;

(b) a flexible, annular seal having a cylindrical bore coaxially located in said fluid passage for sealingly engaging said spigot between the telescopically-received projecting end thereof and said base, said bore being sized to permit axial and radial movement of said spigot while substantially preventing axial passage of fluid between said seal and said spigot; and

(c) recess means communicating with said fluid passage

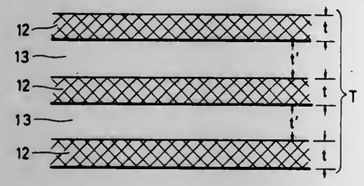
proximate said base for receiving said seal and for substantially preventing axial movement of said seal.

4,573,745

CARBON FIBER REINFORCED PLASTIC SPOKE PLATE

Masaru Fujisaki, Tokyo; Tetsuo Tsuchida, Saitama; Yoichi Sasajima, Osaka; Hiroshisa Ito, Osaka, and Masahiro Morita, Osaka, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha and Sumitomo Electric Industries, Ltd., both of, Japan

Filed Dec. 28, 1982, Ser. No. 453,864
Claims priority, application Japan, Jan. 7, 1982, 57-1658
Int. Cl.⁴ B60B *5/02*; B32B *5/12*
U.S. Cl. 301—63 PW **2 Claims**



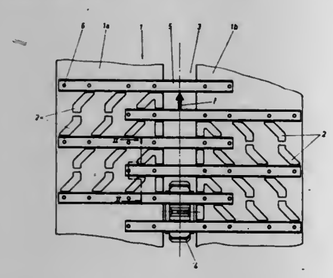
1. A spoke plate for a vehicle, said spoke plate being of the type for connecting a hub with a surrounding rim and having a first plate portion for connection to said hub, at least one second plate portion for connection to said rim and a third portion extending in a longitudinal direction between said first and second portions and integrally formed with said first and second plate portions, said spoke plate being made of a carbon fiber reinforced plastic material comprising an odd number of first carbon fiber layers each including fibers extending in said longitudinal direction as well as fibers extending in a second direction, and an even number of second carbon fiber layers arranged alternatively with said first layers and each having fibers extending only in said longitudinal direction, whereby the strength and modulus of elasticity in the longitudinal direction of said spoke plate is larger than the strength and modulus of elasticity in a lateral direction of said spoke plate.

4,573,746

TRACK FOR MOTOR VEHICLE HAVING TWO PARALLEL HALF-TRACKS

Erich Prinoth, Via Purger 181, 39046 Ortisei, Italy

Filed Jul. 1, 1983, Ser. No. 510,232
Claims priority, application Italy, Sep. 16, 1982, 23311 A/82
Int. Cl.⁴ B62D *55/24*
U.S. Cl. 305—35 EB **10 Claims**



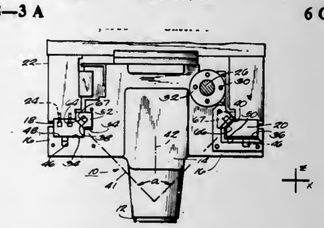
1. An elongated track for a motor vehicle, comprising:
first and second spaced track segments, said segments being comprised of an elastic material, said segments forming two elongated parallel bands extending longitudinally of the track, each of said segments having inner and outer edges;
ribs projecting outwardly from each of said track segments, said ribs being formed of an elastic material, said ribs being aligned in rows transverse to the longitudinal direction of the track; and
first and second connecting sections extending between and connected to said first and second track segments, said connecting sections having a continuous U-shaped cross-section, heights of said ribs exceeding heights of said connecting sections, said first connecting sections extending from the outer edge of said first track segment to and terminating at locations on the second track segment between said inner and outer edges thereof, said second connecting sections extending from the outer edge of said second track segment and terminating at locations on said first track segment between said inner and outer edges thereof, said first connecting sections alternating with said second connecting sections longitudinally along said track segments, one row of said ribs extending between adjacent ones of said connecting sections.

4,573,747

APPARATUS FOR ALIGNING A MACHINE TOOL SADDLE

Rivan F. Frazee, Mt. Clemens, Mich., assignor to The Cross Company, Fraser, Mich.

Filed Oct. 1, 1984, Ser. No. 656,319
Int. Cl.⁴ F16C *29/00*
U.S. Cl. 308—3 A **6 Claims**



1. Apparatus for aligning a machine tool saddle (16) for movement along an axis of travel, said apparatus comprising:
a pair of parallel ways (18, 20) mounted to a support structure (22) in parallel relation with said axis of travel, said ways (18, 20) having faces (38, 40) which are selectively angled to lie in planes which form a "V"-shaped configuration (41) positioned to be bisected by a plane (42) located midway between said ways (18, 20), said ways being formed to slidably engage slots (34, 36) formed in said saddle (16) having bases which are parallel to a first axis and sides which are parallel to a second axis, said first and second axes being orthogonal to each other and to said axis of travel, said ways having surfaces in opposing relationship with said bases and said sides of said slots (34, 36), said angled way faces (38, 40) lying outside of said slots and at acute angles to said first and second axes;
a number of keeper blocks (52, 58), each of said keeper blocks having an angled keeper face (66) in opposing parallel relation with one of said way faces (38, 40) and first (68) and second (70) faces abutting said saddle, each of said first faces (68) being parallel to said first axis and each of said second faces (70) being parallel to said second axis; and
means (67) positioned relative to said keeper blocks (52, 58) for solidly transmitting forces between said ways (18, 20) and said saddle (16) through said angled way faces (38, 40) and said angled keeper faces (66) to maintain said saddle (16) in alignment along said axis of travel as said saddle (16) is selectively moved and positioned along said axis of travel.

4,573,748

CONTAINER FOR A ROTATING TRANSPARENCY PROJECTOR FIXABLE AT A SELECTED HEIGHT ON A VERTICAL GUIDE

Giuseppe Biraghi, V.le Ghisallo 16; Amedeo Clavarino, Via Brera 17; Ferdinando Roth, P.za Coriolano 9, and Michele Tarquini, V.Zamagna 19, all of Milan, Italy

Filed Aug. 8, 1983, Ser. No. 521,416
Int. Cl.⁴ A47B *81/06*
U.S. Cl. 312—7.2 **10 Claims**



1. A container system for a projector comprising:
a vertical guide having a vertically extending track;
at least one lug connected to said guide for securing said guide to a vertical wall;
a slide slidably engaged to said track for vertical displacement with respect to said guide;
a bracket connected to said slide;
a container for containing a projector having a central vertical axis and having a first portion fixed to said bracket and including a lower hemispherical part and an upper cylindrical part, said container including a hemispherical top part disengageably connected to said cylindrical part for opening a top of said container, said hemispherical and cylindrical parts defining an interior space, a platform connected in said first portion of said container for supporting a projector, said cylindrical part having a plurality of horizontally extending openings therethrough, one of which is provided on the side of said cylindrical part opposite said vertical guide for permitting projecting therethrough and at least one other of said openings provided for establishing access with the interior of said container, said vertical guide and said central vertical axis lying in a common central vertical plane, said horizontally extending openings through said cylindrical part being spaced away from said central vertical plane; and
securing means connected between said slide and said track for securing said slide, and said container, and at a selected vertical position with respect to said guide.

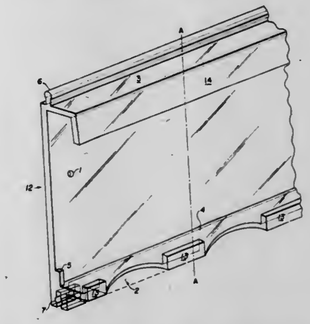
4,573,749

MODULAR STORAGE RACK FOR TAPES

Vito Massaro, 200 Seahorse Ct., Marco Island, Fla. 33937

Filed Oct. 21, 1983, Ser. No. 544,133
Int. Cl.⁴ A47B *81/06*
U.S. Cl. 312—12 **13 Claims**

1. A modular rack unit for holding a plurality of tapes in tape covers, comprising:
a back;
an upper ledge projecting substantially forwardly from a top portion of the back;
a lower ledge projecting substantially forwardly from a bottom portion of the back and having a plurality of portions thereof cut away, each cut-away portion being sized so that a finger can be inserted therethrough;
a runner projecting substantially upwardly from the upper portion of the back;
jaw means projecting substantially downwardly from the bottom portion of the back capable of engaging a runner of an adjacent substantially identical modular rack unit, said jaw means and said runner being sized so as to space the modular rack unit from any adjacent substantially identical modular rack unit when the jaw means of said unit engage the runner of the adjacent unit such that a finger can be inserted between said lower ledge of said unit and the upper ledge of the adjacent unit and into said cut-away portions;
an upper retainer projecting substantially downwardly from the upper ledge and spaced apart from the back by slightly more than the thickness of a tape cover;



a lower retainer projecting substantially upwardly from the lower ledge and spaced apart from the back by slightly more than the thickness of a tape cover;
said upper and lower ledges being spaced apart and said upper and lower retainers being of sizes such that a top of a tape cover may be inserted into a space between the back, the upper ledge and the upper retainer far enough to allow a bottom of the tape cover to pass over a top of the lower retainer, and such that when a tape cover so inserted then is lowered so that the bottom thereof rests on the lower ledge between the back and the lower retainer, the top thereof cannot pass under the upper retainer; and
wherein the modular unit is of a length to hold a plurality of tape covers and at least one said cut-away portion is provided for each portion of said length corresponding to the length of a tape cover.

4,573,750

DISPENSING APPARATUS

John B. Golby, Swannington Leics, Great Britain, assignor to Glynwed Screws & Fastenings Limited, Birmingham, England

Filed Jan. 6, 1984, Ser. No. 568,601
Claims priority, application United Kingdom, Jan. 8, 1983, 8300477
Int. Cl.⁴ B65H *19/00*
U.S. Cl. 312—38 **4 Claims**

1. Manually powered towelling dispensing apparatus of the kind in which a user by manually pulling on towelling removes clean towelling from a supply, the apparatus having:
a. a housing to accommodate a roll of clean towelling to be dispensed and to accommodate said dispensed towelling in a roll after it becomes soiled by use;
b. towelling control means including a dispensed towelling take-up, said towelling control means being drivably coupled to said clean towelling to be dispensed and drivably interconnecting said clean towelling being dispensed with said dispensed towelling being rewound for driving said dispensed towelling take-up in response to withdrawal of said clean towelling from the supply;

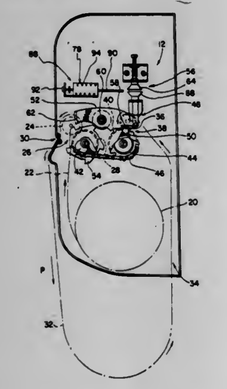
c. said towelling control means further including means for limiting the length of clean towelling dispensed in each manual dispensing operation, said limiting means having a pair of mutually engagable suction cups for holding said limiting means in a limiting condition when said suction cups are in vacuum engagement to inhibit the dispensing of clean towelling;

characterized by

d. towelling end wind-up means operable in the absence of manual intervention for winding into said housing an end of a roll of clean towelling after the remainder of said roll of clean towelling has been dispensed manually, said wind-up means comprising:

(1) electrically responsive towelling end detection means for generating an electrical signal upon detection of an end of a length of clean towelling;

(2) an electrical control circuit for controlling said towelling end wind-up means;



(3) electrically operated disabling means, including a disabling element, said disabling means being electrically connected to said electrical control circuit and responsive to said signal from said towelling end detection means for displacing said disabling element to a disabling position between said suction cups upon detection of said towelling end to maintain said limiting mechanism in a non-limiting condition in which vacuum engagement of said suction cups is prevented and dispensing of clean towelling is not inhibited; and

(4) an electrically actuated motor for towelling winding and electrically connected to said electrical control circuit and mechanically connected to the towelling control means to drive said towelling control means in a direction for dispensed towelling take-up while said limiting means is maintained in its nonlimiting condition to permit continuous winding of said towelling end.

4,573,751

COMBINATION MULTIPLE COMPARTMENT STORAGE BIN AND SORTING TRAY

Robert P. Swank, Mansfield, Ohio, assignor to Leiter Swank Industries, Inc., Lexington, Ohio

Filed May 7, 1984, Ser. No. 607,507
Int. Cl.⁴ B65B *67/02*; B65D *91/00*
U.S. Cl. 312—211 **16 Claims**

1. Apparatus for sorting comprising:

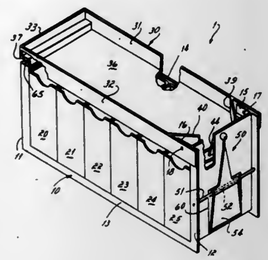
a frame having first and second oppositely disposed generally horizontal end walls;

said frame including tray means for receiving articles;

said tray means being pivotally mounted about the top of said first end wall of said frame to pivot between a first horizontal position and a second angled position;

said frame end walls defining a receiving area therebetween for articles;

said tray means including egress means near said first end wall and overlying a portion of said receiving area for facilitating egress of said articles from said tray means into said receiving area as said tray means is pivoted from said first position to said second position;



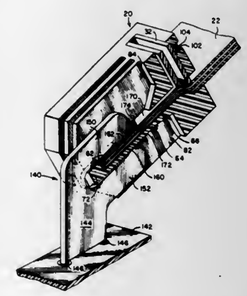
chute means mounted transversely across said first end wall of said frame and positioned adjacent said tray egress means and cooperating therewith for blocking egress of said articles from said tray means through said egress means when said tray means is in said first position and for guiding said articles into said receiving area as said tray means is pivoted from said first position to said second position.

4,573,752

FLAT CABLE CONNECTION SYSTEM

Donald S. Rich, Long Valley, N.J., assignor to Parlex Corporation, Methuen, Mass.

Filed Apr. 4, 1984, Ser. No. 596,543
Int. Cl.⁴ H01R *9/07*
U.S. Cl. 339—17 F **12 Claims**



1. A connection system for use with a flat cable having conductors located on a narrow pitch comprising:

a substrate having offset apertures therein;

female contacts having leads extending into associated apertures in said substrate and electrically and mechanically coupled thereto, each of said female contacts having a U-shaped forward portion having two spaced apart contact arms, said contacts being located on a pitch corresponding to the pitch of the conductors in said cable; and

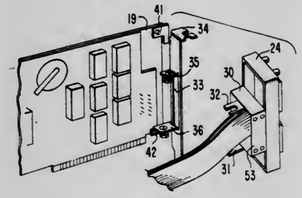
a monolithic connector housing having opposed ends, and opposed upper and lower outer surfaces, said monolithic connector housing having an integral generally planar flat cable insertion channel disposed along a first plane centrally therein, in open communication with one end thereof that extends internally of and terminates within said housing at an abutment that limits placement of said flat cable, said cable insertion channel adapted to receive by movement through said one end of said housing an end of said flat cable that is inserted into said monolithic connector housing the end of which cable terminates generally internally thereof proximate said abutment, said housing having integral walls defining plural vertically displaced opposing pairs of contact-receiving slots in open communication with the other end thereof, with each of said vertically displaced pairs of contact-receiving slots disposed along a second common plane generally transverse said first plane and such that respective ones of said slots of said opposing pairs of slots are disposed to either side of said first plane, said walls defining said contact-receiving slots of said pairs of slots being integrally formed in said monolithic connector housing in such a way that they are laterally spaced in a direction defined by the normal to each of said second planes and along said other end with respective ones of said vertically displaced pairs being in open communication with a corresponding one of said upper and lower outer surfaces, said contact-receiving slots of said plural opposing pairs of slots are located on a pitch corresponding to the pitch of the conductors in said cable, one contact-receiving slot of each of said pairs in open communication with said cable insertion channel internally of said monolithic connector housing, with the opposing contact-receiving slot of each of said pairs stopping short of communication with said channel defining a corresponding shelf portion between said opposing one of each of said pairs and an inserted cable, said shelf providing a predetermined thickness to the cable, the contact arms of each of said female contacts adapted to be inserted into associated vertically displaced and directly opposed contact-receiving slot pairs, such that one arm contacts an exposed conductor on one side of said cable, whereas the opposing arm of an associated female contact is positioned to directly contact the side of an associated one of said shelves away from said conductor.

4,573,753

CONNECTOR ADAPTER FOR PRINTED CIRCUIT BOARD OF COMPUTER

Allen W. Vogl, 642 Tulane Ave., Melbourne, Fla. 32901

Filed Nov. 2, 1984, Ser. No. 667,754
Int. Cl.⁴ H01R *23/68*
U.S. Cl. 339—17 LM **14 Claims**



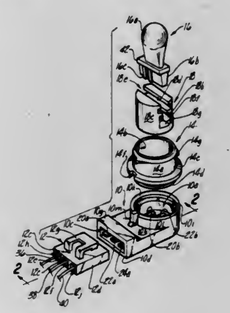
1. In a cabinet containing at least one printed circuit board mounted therein and comprising an outer panel having at least one expansion opening therein to permit devices external to the cabinet to be electrically connected to the printed circuit board, the improvement comprising a connector adapter adapted to be added onto said cabinet for making a plurality of electrical connections with the printed circuit board from said external devices, said adapter comprising a housing with a plurality of multiple pin electrical connectors, said housing being adapted to be applied to the outside of said cabinet with a portion of said housing being inserted into said expansion opening of the cabinet, means for electrically connecting said plurality of multiple pin connectors to said printed circuit board, a mounting bracket adapted to be located inside said cabinet, means for releasably mechanically connecting said bracket directly to said printed circuit board and means for releasably mechanically connecting said mounting bracket to said portion of the housing inserted into said expansion opening.

4,573,754

LAMP ASSEMBLY

Clinton W. Hill, Romeo, Mich., assignor to U.S. Plastics Corp., Mt. Clemens, Mich.

Filed Mar. 14, 1984, Ser. No. 589,365
Int. Cl.⁴ H01R *11/00*
U.S. Cl. 339—60 M **23 Claims**



1. A lamp assembly comprising:

(A) a base having a peripheral wall defining a socket cavity having an opening in one face of said base;

(B) a socket assembly defining a bulb cavity and including a plurality of contact elements having their one ends positioned in said bulb cavity to electrically connect with a bulb inserted into said bulb cavity and having their other ends positioned at one end of said socket assembly;

(C) a plurality of elongated conductors passing sealingly through said wall of said base to position their one ends in said socket cavity;

(D) coacting means on said socket assembly adjacent said one end thereof and on said wall resiliently yieldable in response to insertion of said one end of said socket assembly into said socket cavity through said opening to sealingly mount said one socket assembly end in said socket cavity by effecting sealing engagement between said coacting means entirely around said socket cavity and also to connect said other ends of said contact elements in respective electrical contact with said one ends of said conductors.

4,573,755

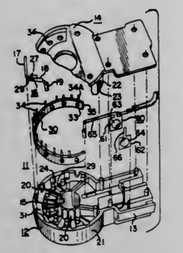
SPARK GAP DEVICE FOR A CATHODE RAY TUBE SOCKET

Stephen S. Simovits, Jr., Downers Grove, Ill., assignor to American Plasticraft Co., Chicago, Ill.

Continuation of Ser. No. 391,576, Jun. 24, 1982, abandoned.
This application Aug. 22, 1984, Ser. No. 643,471
Int. Cl.⁴ H01R *13/53*
U.S. Cl. 339—111 **2 Claims**

1. A tube socket comprising a dielectric body, spark gap portions each having at least a pair of conductive electrodes disposed in spaced relation to one another, a flexible conductive link for coupling to one electrode of said pairs, conductive fingers extending from the other electrode of said pairs for connection to associated electronic circuitry, a unitary flexible elongated plastic band substantially completely encapsulating said flexible conductive link and encapsulating portions of said conductive fingers, spaced sections along said band being recessed to expose a portion of the associated finger, said band

being bendable in the arc of a circle for mounting in said dielectric body, and said band having apertures formed at said spark gap portion location for forming an air dielectric chamber,



spaced apertures along the length of said band to enhance the flexibility of said band and reduce the bending stresses, and said band being receivable in said dielectric body.

4,573,756

ELECTRICAL INTERFACE ARRANGEMENTS

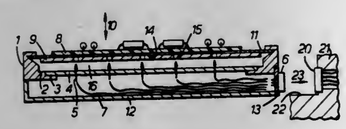
John L. Smith, and Frank H. Jenner, both of St. Albans, England, assignors to Marconi Instruments Limited, St. Albans, England

Filed Oct. 20, 1982, Ser. No. 435,362

Claims priority, application United Kingdom, Oct. 21, 1981, 8131775

Int. Cl.⁴ H01R *11/18*

U.S. Cl. 339—117 P **5 Claims**



1. An electrical interface arrangement for establishing a plurality of electrical connections between a circuit board to be tested and electrical test equipment having a first electrical connector, said arrangement including:

a bed plate having opposite sides;

a plurality of electrical contacts mounted by said bed plate and projecting from one side of said bed plate for contacting selected areas of a circuit board, each said contact having an electrical terminal projecting from the other side of said bed plate, said electrical terminals collectively defining a plane;

a second electrical connector including a plurality of electrical terminals and being pivotably mounted relative to said bed plate for movement between first and second positions, in the first position said second electrical connector being disposed for engaging the first electrical connector of the electrical test equipment and in the second position said second electrical connector being disposed so that said plurality of electrical terminals are held in a plane which is substantially coplanar with the plane defined by the terminals projecting from the other side of said bed plate; and

electrical wire connections connecting the terminals projecting from the other side of said bed plate and said plurality of terminals of said second connector, said wire connections being formed by an automated wire wrapping machine while said second connector is disposed in the second position.

4,573,757

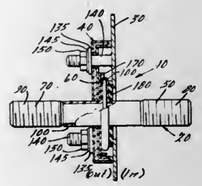
TRANSFORMER BUSHING

John P. Cochran, Charlotte, N.C., and Herbert J. Macemon, Versailles, Ky., assignors to Kuhlman Corporation, Troy, Mich.

Continuation of Ser. No. 561,990, Dec. 14, 1983, abandoned, which is a continuation of Ser. No. 182,232, Aug. 28, 1980, abandoned. This application Mar. 1, 1985, Ser. No. 707,178

Int. Cl.⁴ H02B *1/02*

U.S. Cl. 339—126 RS **18 Claims**



1. A bushing assembly for use with a tank-type electrical transformer adapted to be inserted through an opening in the outer casing of the electrical transformer, said bushing assembly being comprised of a bushing stud and means for securing said stud to the transformer, said bushing stud comprising:

a first connector portion made of a conductive material and adapted for connection to an electrical lead within the transformer,

a securing portion integral with and made of the same conductive material as said first connector portion, but of a larger diameter, said securing portion adapted to be mounted adjacent the outer casing of the electrical transformer,

a second connector portion integral with and made of the same conductive material as said first connector portion and said securing portion, but of a smaller diameter than said securing portion, said second connector portion adapted for connection to an electrical lead outside the transformer,

said securing portion having a relatively thin layer of insulating material thereon, and

said means for securing said stud to the transformer comprising an externally mating clamp assembly having a central alignment hole for passing around said second connector portion, and a plurality of mounting holes therein adapted for alignment with studs on the outside of the transformer tank, and having insulating properties and being adapted for locating said securing portion on the outside of the tank adjacent the outer casing of the electrical transformer.

4,573,758

BEAM DEFLECTION MECHANISM

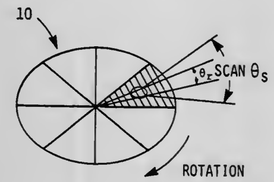
Joel Hecker, Port Jefferson Station; Howard Stern, Greenlawn, and Thomas Heydenburg, East Setauket, all of N.Y., assignors to Robotic Vision Systems, Inc., Hauppauge, N.Y.

Filed May 31, 1984, Ser. No. 615,817

Int. Cl.⁴ G02B *5/32*

U.S. Cl. 350—3.71 **8 Claims**

1. An arrangement for deflecting a beam of monochromatic light substantially rapidly and accurately, comprising: a rotatable disk having Fresnel zone plate segments and an axis of rotation; said zone plate segments having axes of symmetry placed substantially co-linear with the axis of rotation of said rotatable disk for reducing sensitivity to angular rate of rotation of said disk; means for driving said disk; a source of monochromatic light for directing a beam of monochromatic light through said disk and said segments for deflecting said beam by a predetermined angle, said beam remaining stationary and focused on a point of the axis of rotation while said beam resides in any one segment, said beam being stably positioned by being switched sufficiently rapidly from one location to



another as lens segments with differing focal distances pass through the light beam.

4,573,759

OPTICAL DISPLAY APPARATUS

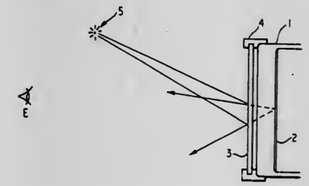
David W. Swift, Prestatyn, Wales, assignor to Pilkington P.E. Limited, United Kingdom

Filed Jun. 21, 1982, Ser. No. 390,520

Claims priority, application United Kingdom, Jul. 7, 1981, 8120875

Int. Cl.⁴ G03H *1/22*

U.S. Cl. 350—3.85 **12 Claims**



1. Optical display apparatus comprising a display source having a display surface on which first visual information can be displayed, a holographic element providing a reflection hologram of second visual information recorded so as to define a holographic image surface of a configuration corresponding to the configuration of the display surface and located at a distance behind the holographic element, means mounting the holographic element at a corresponding distance in front of the display surface, and means located in front of the holographic element for illuminating the element so that the holographic image surface coincides with the display surface.

4,573,760

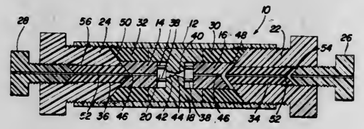
CONNECTOR SYSTEM FOR A SINGLE OPTICAL FIBER

Robert J. Fan, 18951 Kettridge St., Apt. #84, Reseda, Calif. 91355, and Teunis Visser, 3412 Orange Grove Ave., Chino, Calif. 91710

Continuation-in-part of Ser. No. 340,822, Jan. 19, 1982. This application Mar. 2, 1984, Ser. No. 585,784

Int. Cl.⁴ G02B *6/38*

U.S. Cl. 350—96.21 **14 Claims**



1. A fiber optic connector system comprising:

a pair of single optical fibers;

a connector tube;

a lens spacer internally placed substantially in the center of said connector tube;

a pair of positioning sleeves having a bore abutting said lens spacer, said positioning sleeves having a center bore slightly larger than said optical fiber;

a hole in said lens spacer that is optically aligned with the center bore of said positioning sleeves and said clamping screws;

means for securing and sealing said positioning sleeves in said connector tube;

means for aligning said optical fibers;

means for clamping said optical fibers:

a cutter for cutting said optical fibers whrein the cut end is substantially perpendicular to the axis of said optical fiber;

means for melting each cut end of said optical fibers whrein said melted ends will form sustantially hemispherical beads;

means for securing said optical fibers with said hemispherical beads in each end of said connector tube wherein said hemispherical beads are seperated by said lens spacer a distance of $1\frac{1}{2}$ and $2\frac{1}{2}$ times the diameter of said optical fibers;

coupling means between said hemispherical beads inside connector tube wherein said coupling means is a viscous fluid whose index of refraction is between 1.38 and 1.58;

adjusting means for maximizing light transmission through said optical fibers and,

locking means for securing said adjusting means to said connector tube.

4,573,761

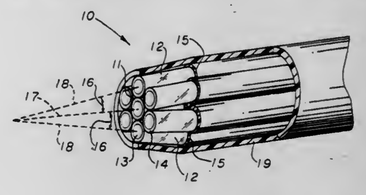
FIBER-OPTIC PROBE FOR SENSITIVE RAMAN ANALYSIS

Richard D. McLachlan; Gary L. Jewett, and John C. Evans, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Sep. 14, 1983, Ser. No. 531,877

Int. Cl.⁴ G02B *5/16*

U.S. Cl. 350—96.24 **14 Claims**



1. A fiber-optic probe for sensitive Raman analysis and useful for light scattering or luminescence measurements, generally, the probe beneficially not requiring a focusing lens and comprising:

(a) at least one optical fiber for transmitting light into a sample; and

(b) at least two optical fibers for collecting light from the sample which are in closely spaced relationship with the transmitting fiber for purposes of sensitive Raman analysis; wherein the collecting fibers converge with the axis of the transmitting fiber at an angle less than 45 degrees and which produces substantially greater sensitivity for Raman analysis than if arranged parallel.

4,573,762
GERMANIUM-FREE OPTICAL FIBERS HAVING LARGE NUMERICAL APERTURES

Hendrik J. M. Joormann, and Gijsbertus A. C. M. Spierings, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 27, 1983, Ser. No. 508,429
Int. Cl.[4] G02B *6/00, 6/18*
U.S. Cl. 350—96.34 11 Claims

1. A germanium-free optical fiber comprising a core and a cladding surrounding the core, characterized in that:

the core consists essentially of a glass having a refractive index and a viscosity, and having the molecular composition:

57.5–65% SiO_2;

0–5% of at least one of the group consisting of ZrO_2 and $\frac{1}{2}Y_2O_3$;

10–25% of at least one of the group consisting of Li_2O, Na_2O, and K_2O; and

12.5–27.5% of at least one of the group consisting of MgO, CaO, SrO, BaO, and ZnO, but with no more than 5% MgO, 10% CaO, 7.5% SrO, 15% BaO, and 20% ZnO, and provided that if there is no BaO, then not less than 12.5% ZnO, and if there is no ZnO, then not less than 5% BaO; and

the cladding consists essentially of a silicate glass having a refractive index which is at least 2% lower than the refractive index of the core glass, said cladding glass having a viscosity which is 0.5–2.0 times the viscosity of the core glass at a temperature at which the optical fiber is processed, said cladding glass having the composition:

60–67.5% SiO_2;

10–25% of at least one of the group consisting of ZnO, CaO, and MgO, but with no more than 10% ZnO, 5% CaO, and 10% MgO, and

10–25% of at least one of the group consisting of Li_2O, Na_2O, and K_2O.

4,573,763
THREE-DIMENSIONAL FLEXIBLE REFLECTORS

Robert J. Thomas, Anchorage, Ak., assignor to Eagle Industries, Inc., Anchorage, Ak.

Filed Dec. 18, 1984, Ser. No. 682,836
Int. Cl.[4] E01F *9/00;* G02B *5/132*
U.S. Cl. 350—105 24 Claims



1. A reflective marker comprising:

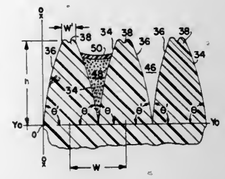
a base member of elastomeric material forming a support body for said marker; and

a plurality of individual resilient members of elastomeric material integrally formed with said base member and projecting therefrom, each of said resilient members having embedded therein and throughout a plurality of retroreflective glass beads, at least the distal ends of said resilient members having a surface portion of the elastomeric material forming said resilient members removed to expose a portion of the glass beads thereat.

4,573,764
REAR PROJECTION SCREEN

Ralph H. Bradley, Kingsport, Tenn., assignor to North American Philips Consumer Electronics Corp., New York, N.Y.

Filed Dec. 30, 1983, Ser. No. 567,101
Int. Cl.[4] G03B *21/60*
U.S. Cl. 350—128 25 Claims



1. A lenticular lens comprising a base portion, a first side portion, a second side portion, and a tip portion opposite said base portion;

said first side portion having an average slope of between approximately 70° and 85° with respect to said base portion;

said second side portion having an average slope of between approximately 70° and 85° with respect to said base portion;

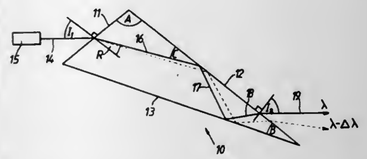
said first average slope and said second average slope being selected so that said first side portion and said second side portion are substantially internally reflective;

said tip portion being contiguous with both said first side portion and second side portion, said tip portion comprising two convex cylindrical portions of equal radii and a central concave cylindrical portion and said tip portion being substantially refractive, wherein the ratio of the height of said lens to the width of said base portion is greater than 3:2 and the ratio of the width of said base portion to the width of said tip portion is greater than 2:1.

4,573,765
DISPERSIVE PRISM ARRANGEMENT

Clive L. M. Ireland, Rugby, England, assignor to J. K. Lasers Limited, Warwickshire, England

Filed Aug. 8, 1984, Ser. No. 638,711
Claims priority, application United Kingdom, Aug. 20, 1983, 8322478
Int. Cl.[4] G02B *5/04*
U.S. Cl. 350—286 6 Claims

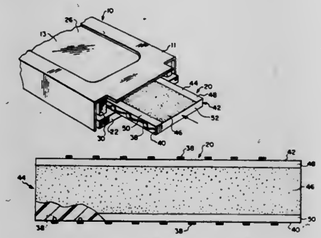


1. A dispersive prism arrangement comprising a rotatably mounted prism having three faces which are inclined to each other so that when an input beam of a particular wavelength is incident on the first face the prism may be rotated to a position where the incident beam is refracted at the first face, the refracted beam from the first face is incident on the second face where it is reflected, the reflected beam from the second face is incident on the third face where it is reflected, the reflected beam from the third face is incident on the second face where it is refracted to form an output beam, and the output beam is at zero deviation from the input beam.

4,573,766
LED STAGGERED BACK LIGHTING PANEL FOR LCD MODULE

Frederick M. Bournay, Jr., and Joel F. Giurtino, both of Miami, Fla., assignors to Cordis Corporation, Miami, Fla.

Filed Dec. 19, 1983, Ser. No. 562,855
Int. Cl.[4] G02F *1/133;* G09F *9/00, 9/30;* F21V *7/04*
U.S. Cl. 350—345 12 Claims

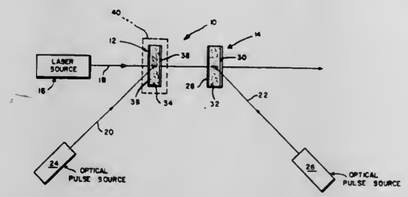


9. A method for providing backlighting in a visual display device including: providing a liquid crystal display unit, providing a flat rectangular panel of light transmitting material having a flat front surface, a flat back surface, and opposite elongate edges; providing a light diffusing surface area on said front surface of said panel; directing light into said elongate edges of said panel of light transmitting material to cause said light transmitting material to transmit diffused light therefrom through said front flat surface thereby backlighting said liquid crystal unit; forming said light emitting means from a plurality of light emitting diodes; and positioning a plurality of the light emitting diodes on one edge to be staggered or offset from a plurality of the light emitting diodes along the opposite edge.

4,573,767
OPTICAL FLIP-FLOP SYSTEM

Jack L. Jewell, Tucson, Ariz., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 31, 1984, Ser. No. 615,612
Int. Cl.[4] G02F *1/21*
U.S. Cl. 350—354 10 Claims



1. An optical flip-flop system comprising:

first means in the form of a nonlinear Fabry-Perot etalon for receiving a beam of electromagnetic radiation at a preselected wavelength and for transmitting said beam therethrough when said first means is in a transmissive state and for preventing said beam from passing therethrough upon the application of a first signal thereto which changes said first means to a nontransmissive state; and

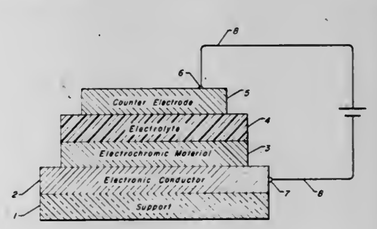
second means in the form of a nonlinear Fabry-Perot etalon being initially in a nontransmissive state and optically aligned with said first means for receiving said beam of electromagnetic radiation from said first means and for transmitting said beam therethrough upon the application of a second signal thereto which causes said second means to be in a transmissive state, and for preventing said beam from passing therethrough when said first means is in the nontransmissive state, said nontransmissive state of said first means causing said second means to change back to said nontransmissive state; and

whereby said transmissive or nontransmissive states of said flip-flop system are controlled by said signals applied to said first and second means.

4,573,768
ELECTROCHROMIC DEVICES

Anthony J. Polak, Lake Zurich; James A. Wrezel, Buffalo Grove, and Allyson J. Beuhler, Indian Head Park, all of Ill., assignors to The Signal Companies, Inc., La Jolla, Calif.

Filed Dec. 5, 1983, Ser. No. 558,231
Int. Cl.[4] G02F *1/01*
U.S. Cl. 350—357 37 Claims

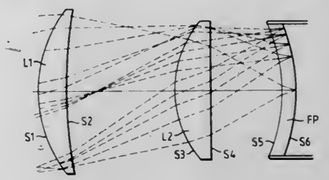


1. An electrochromic device comprising in combination an electronic conductor, an electrochromic material in contact with said conductor, a solid electrolyte formed as a solution phase blend in a mutually miscible solvent of an organic polymer and a heteropoly acid or salt thereof disposed on said electrochromic material and a counter-electrode in contact with said solid electrolyte.

4,573,769
PROJECTION LENS SYSTEM

John A. Clarke, Carshalton, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 5, 1984, Ser. No. 628,376
Claims priority, application United Kingdom, Jul. 25, 1983, 8319938
Int. Cl.[4] G02B *9/06, 17/08*
U.S. Cl. 350—432 7 Claims



1. A lens system for projecting an image of a concave object surface onto a planar display screen, characterized in that the lens system comprises two elements, each of positive power and each having one aspheric surface, the powers of the elements being chosen so that

$$0.4K < K_1 < 0.60K \text{ and}$$

$$0.75K < K_2 < 1.05K$$

where K_1 is the power of the element remote from the object surface, K_2 is the power of the element adjacent the object

surface and K is the total power of the lens system, each aspheric surface being defined by the following relationship:

$$Z = \frac{Cs^2}{1 + \sqrt{1 - \epsilon C^2 s^2}} + a_4 s^4 + a_6 s^6 + a_8 s^8 + a_{10} s^{10}$$

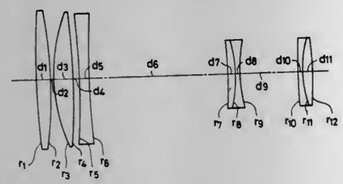
where Z is a deviation, in the axial direction, of the surface from a plane normal to the optical axis and tangent to the surface at its pole for a zone of the surface which is at a distance s from the axis, C is a curvature of the surface on the axis, ϵ is a conic constant, and a_4, a_6, a_8 and a_{10} are constants for the surface.

4,573,770

TELEPHOTO LENS SYSTEM

Shinichi Mizuno, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jun. 12, 1984, Ser. No. 620,329
Claims priority, application Japan, Jun. 17, 1983, 58-107863
Int. Cl.⁴ G02B *9/60, 9/62, 13/02*
U.S. Cl. 350—454 **8 Claims**



1. A telephoto lens system comprising a front lens group, and a rear lens group comprising a first subgroup and a second subgroup, said front lens group comprising a first positive lens component, a second positive lens component and a negative lens component, and having positive refractive power as a whole, said first subgroup comprising a negative cemented lens component and having negative refractive power as a whole, said second subgroup comprising a positive cemented lens component and having positive refractive power as a whole, and said lens system being so designed as to satisfy the following conditions (1) through (3):

$$0.2 < \frac{\phi_1}{\phi_2} < 0.8 \quad (1)$$

$$-1 < \frac{r_3 + r_4}{r_3 - r_4} < 0 \quad (2)$$

$$1 < \left| \frac{\phi_3}{\phi_1} \right| < 2 \quad (3)$$

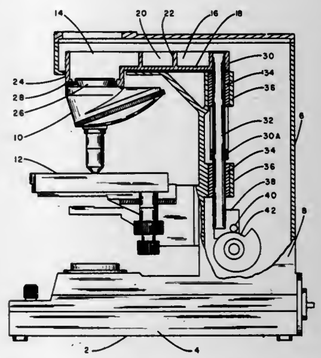
wherein the reference symbols ϕ_1, ϕ_2, and ϕ_3 represent refractive powers of the first positive lens component, second positive lens component and negative lens component respectively arranged in said front lens group, and the reference symbols r_3 and r_4 designate radii of curvature on the object side surface and image side surface respectively of the second positive lens component arranged in said front lens group.

4,573,771

MICROSCOPE ADJUSTMENT APPARATUS

Arthur T. Hill, Williamsville, N.Y., assignor to Warner-Lambert Technologies, Inc., Morris Plains, N.J.

Filed Jul. 2, 1984, Ser. No. 627,318
Int. Cl.⁴ G05G *11/00*; F16H *37/06*
U.S. Cl. 350—521 **20 Claims**



1. A microscope having a frame comprising a base and an arm assembly extending upwardly therefrom, a nosepiece, and an adjustment system for moving said nosepiece relative to said arm assembly, said adjustment system including:

a nosepiece support mounted on said arm assembly for movement relative thereto,

a cam shaft rotatably mounted on said frame, a cam fixed to said cam shaft for rotation therewith, said cam being operatively engaged with said nosepiece support for movement thereof to effect adjustment of said nosepiece, said cam shaft having a free drive end remote from said cam,

a reduction gear train system releasably engaged with the free drive end of said cam shaft for rotation thereof and selective direct removal therefrom, said gear train system comprising multiple drivingly engaged gears,

a gear box mounting said reduction gear train system,

a coarse adjustment handwheel mounted to said gear box whereby rotation of said coarse adjustment handwheel is effective to rotate said gear box, gear train system, cam shaft and cam as a unit, said coarse adjustment handwheel, gear box and gear train system being removable as a unit from the drive end of said cam shaft,

a gear train drive shaft operatively engaged with the gears of said gear train system, and

a vernier handwheel mounted to said gear train drive shaft whereby rotation of said vernier handwheel is effective to rotate the gears of said gear train system with a resultant rotation of the cam shaft and cam.

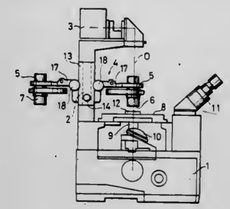
4,573,772

INVERTED-DESIGN MICROSCOPE

Itaru Endo, and Yasuo Inoue, both of Hachiouji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Aug. 31, 1984, Ser. No. 646,513
Claims priority, application Japan, Sep. 5, 1983, 58-137657; Sep. 5, 1983, 58-137658
Int. Cl.⁴ G02B *21/14, 21/22*
U.S. Cl. 350—526 **9 Claims**

1. An inverted-design microscope comprising a microscope body, a pillar erected on said microscope body and supporting a light source means on the top, and a rotary pillar mounted



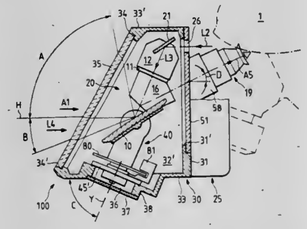
rotatably around said pillar and provided with at least one arm capable of holding an accessory device above a stage.

4,573,773

PERISCOPE-LIKE SIGHTING DEVICE

Klaus Arndt, Mägenwil, and Saverio Sanvido, Glattbrugg, both of Switzerland, assignors to Contraves AG, Zürich, Switzerland

Filed May 2, 1984, Ser. No. 606,398
Claims priority, application Switzerland, May 17, 1983, 2671/83
Int. Cl.⁴ G02B *23/04, 23/08, 23/16*
U.S. Cl. 350—541 **11 Claims**



1. A periscope-like sighting device comprising:

a housing;

a multiple-element optical system arranged in said housing and intended for the localization and tracking of a target, said optical system comprising:

a first deflecting prism;

objective lens means;

a first beam splitter;

a second beam splitter;

a second deflecting prism;

a main mirror operatively associated with said first deflecting prism;

said main mirror and the optical system being arranged in the housing to slope backward from bottom to top in relation to a substantially vertical rear wall of the housing in a direction of incident radiation;

the main mirror being mounted in a mirror head arranged sloping backward in the housing to perform a pivoting motion about a first axis; and

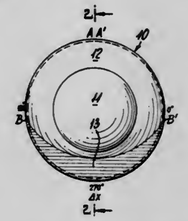
the main mirror being mounted to perform a rotating motion about a second axis conjointly with said mirror head.

4,573,774

SOFT TORIC CONTACT LENS

George Sitterle, Jacksonville, Fla., assignor to Vistakon, Inc., Jacksonville, Fla.

Continuation-in-part of Ser. No. 306,438, Sep. 28, 1981, Pat. No. 4,508,436. This application Feb. 19, 1985, Ser. No. 703,010
The portion of the term of this patent subsequent to Apr. 2, 2002, has been disclaimed.
Int. Cl.⁴ G02C *7/04*
U.S. Cl. 351—160 H **8 Claims**



1. A soft toric contact lens of spherocylindrical power having a concave inner surface, a convex outer surface, a horizontal axis and a vertical axis;

said outer surface having a central optical zone and a peripheral lenticular zone;

said lens including a prism ballast in the vertical axis, the degree of prism being from about 0.5 to 1.0 diopter;

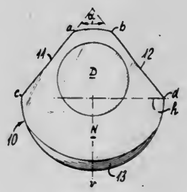
the outer surface of said lens having a smoothly beveled tapered-off region in the lenticular zone in the area of maximum ballast, the edge of said lens having a substantially uniform thickness in said tapered-off region.

4,573,775

BIFOCAL CONTACT LENS

Charles A. Bayshore, Orlando, Fla., assignor to Vistakon, Inc., Jacksonville, Fla.

Filed Aug. 19, 1982, Ser. No. 409,467
Int. Cl.⁴ G02C *7/04, 7/06*
U.S. Cl. 351—161 **27 Claims**



1. A multifocal contact lens comprising a lens body with a generally spherical, concave inner surface adapted to fit the cornea of a human eye, and a generally convex outer surface;

said lens body having a central, horizontal axis defining a superior portion of the lens and an inferior portion;

said lens body having a central vertical axis which, at the point of intersection with said horizontal axis, defines the geometric center of the lens;

the superior portion of said lens body being substantially equiangularly truncated from points on either side of the vertical axis at the apex of the lens to points on each respective side proximal the horizontal axis;

the inferior portion of said lens body being defined by an arc of substantially uniform radius from the geometric center of the lens over a major portion of the perimeter thereof;

said lens including a first optical zone having at lease a major portion thereof in the superior portion of the lens;

said lens including a second optical zone having at least a major portion thereof in the inferior portion of the lens;

the focal length of said second optical zone being shorter than that of said first optical zone.

4,573,776
BICONVEX APHAKIC PROSTHETIC LENS
Philip M. Frieder, Miami, and Edward deRojas, Lauderhill, both of Fla., assignors to Optical Systems International Inc., Hialeah, Fla.
Filed Dec. 12, 1983, Ser. No. 560,165
Int. Cl.[4] G02B *3/04*; G02C *7/02*
U.S. Cl. 351—167 **4 Claims**

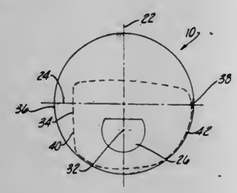


1. An aphakic lens having a front surface, an ocular surface, and a central zone of a predetermined convex correction in an amount from 8 to 24 diopters characterized by:
a convex correction on the ocular surface in the range of +0.25 to 6.00 diopters to add to the front base curve corrections,
and a flattening rate in the asphericity from the central zone based upon a 60 millimeter lens in accordance with the following formula:

Front Base Curve	Power at Edge of 60 mm Lens
+8.00 D.	+5.00 D.
+10.00 D.	+4.50 D.
+12.00 D.	+4.00 D.
+14.00 D.	+5.00 D.

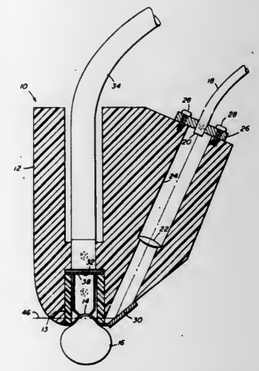
whereby the front base curve of a 60 mm lense is flattened to about +5.00 diopters at the edge and when added to the ocular correction the diopter drop per millimeter is between about 0.4 and 0.9.

4,573,777
ASPHERIC SPECTACLE LENS BLANK
Alexander C. Bristol, 5480 SW. 85 St., Miami, Fla. 33143
Filed Mar. 8, 1984, Ser. No. 587,678
Int. Cl.[4] G02C *7/02, 7/06*
U.S. Cl. 351—167 **4 Claims**



1. A lens for either a left or right aphakic eye comprising:
a lens body having a posterior surface and an aspheric anterior surface, said lens body having a vertical centerline and a horizontal centerline which intersect at an optical center of the lens body,
a bifocal segment having a flat top and an optical center, said bifocal segment optical center being substantially aligned with said vertical centerline but spaced downwardly from said horizontal centerline so that said flat top is substantially parallel to but spaced downwardly from said horizontal centerline by a predetermined distance, and
wherein the lens for either the left or right eye is formed by trimming said lens body so that said bifocal segment is nasally decentered.

4,573,778
AQUEOUS FLUOROPHOTOMETER
Jerrold M. Shapiro, Framingham, Mass., assignor to Boston University, Boston, Mass.
Filed Mar. 16, 1983, Ser. No. 475,854
Int. Cl.[4] A61B *3/00*
U.S. Cl. 351—219 **14 Claims**

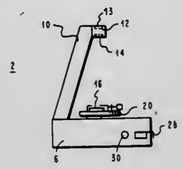


1. A device suitable for detecting the fluorescence of the aqueous humor in the anterior chamber of an eye comprising:
a flexible water impermeable contact lens membrane for placement against the cornea of the eye;
a fluid enclosed in a fluid chamber by the contact lens membrane;
means for changing the pressure of the fluid in the chamber to change the curvature of the flexible contact lens membrane;
a light source;
a mirror mounted to one side of the contact lens membrane for reflecting light from the light source through the contact lens membrane across the anterior chamber of the eye; and
means for detecting light which passes outwardly from the anterior chamber through the contact lens membrane and the fluid chamber.

4,573,779
VARIABLE SIZE CIRCULAR APERTURE CAMERA
Guy A. Deighton, Delray Beach, Fla., and Gerry W. Moore, Leander, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 30, 1983, Ser. No. 567,298
Int. Cl.[4] G03B *41/00*
U.S. Cl. 354—4 **10 Claims**

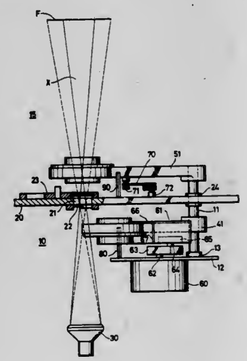
1. A method of exposing variably sized circular apertures on a photo sensitive surface including the steps of:
providing a variable length linear light source spaced away from the photosensitive surface; and

simultaneously causing relative rotation about an axis of rotation passing through the center of the photosensitive



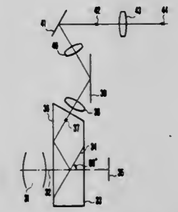
surface and through the light source between the photosensitive surface and the light source.

4,573,780
PHOTOGRAPHIC RECORDING DEVICE FOR VIDEO IMAGE
Susumu Sato, and Hideharu Oshima, both of Saitama, Japan, assignors to Fuji Photo Optical Co., Ltd., Saitama, Japan
Filed Dec. 19, 1984, Ser. No. 683,525
Claims priority, application Japan, Dec. 28, 1983, 58-245092
Int. Cl.[4] G03B *3/00, 29/00*
U.S. Cl. 354—195.12 **6 Claims**



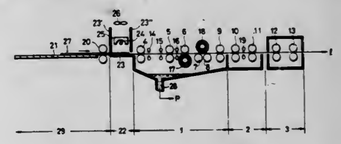
1. A photographic recording device of a type having first and second lenses of different focal lengths and alternatively insertable into an optical path of said device for recording, on a photosensitive recording medium, video images displayed on a CRT device, comprising: first and second lens arms supporting at first ends thereof said first and second lenses, respectively; a rotatable shaft, second ends of said first and second lens arms being fixedly secured to said rotatable shaft with a vertical clearance therebetween and with a predetermined angle therebetween; rotary drive means; means for converting rotary movement of said rotary drive means into reciprocal swinging movement of said first and second lens arms; a snap spring for biasing said first and second lens arms in either direction selectively; first stop means for limiting swinging movement of said first lens arm in one direction to stably hold against a biasing force of said snap spring in said one direction said first lens in a position where an optical axis of said first lens aligns with an optical path of said recording device; and second stop means for limiting swinging movement of said second lens arm in the opposite direction to stably hold against a biasing force of said snap spring in said opposite direction said second lens arm in a position where an optical axis of said second lens aligns with said optical path of said recording device.

4,573,781
VIEWFINDER HAVING TWO IMAGE PLANES
Masatake Kato, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 24, 1984, Ser. No. 653,968
Claims priority, application Japan, Sep. 29, 1983, 58-150805
Int. Cl.[4] G03B *3/00, 13/06*
U.S. Cl. 354—201 **5 Claims**



1. A viewfinder for observation through a photographic lens of a camera comprising:
optical path splitting means for splitting an optical path of the photographic lens on the image side of said photographic lens;
light conducting means for conducting light through an even number of reflections of at least four, including reflections by said optical path splitting means;
lens units arranged to sandwich a reflective surface at which at least one of said reflections occur and to cooperate with each other to relay an image formed by the photographic lens; and
an eyepiece for observing the relayed image.

4,573,782
DEVELOPING APPARATUS FOR FORMING AN IMAGE IN LIGHT-SENSITIVE MATERIAL USING PHOTOPOLYMERIZABLE COMPOSITION
Kesanao Kobayashi; Tadao Toyama, and Susumu Yoshida, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Nov. 24, 1982, Ser. No. 444,142
Claims priority, application Japan, Nov. 24, 1981, 56-188246
Int. Cl.[4] G03D *3/08*
U.S. Cl. 354—299 **15 Claims**



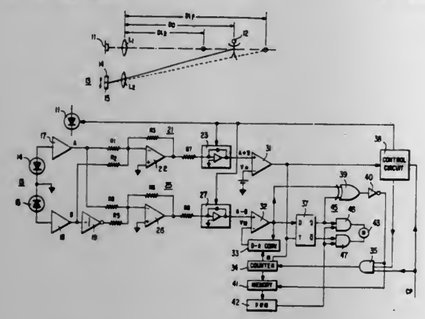
1. An apparatus for developing light-sensitive material carrying a light-sensitive layer composed of a photopolymerizable composition, comprising:
a roller convey type developing unit and a heating unit;
said heating unit comprising a means for carrying out a first step of developing;
said heating unit, after said light-sensitive material carrying a light-sensitive layer composed of a photopolymerizable composition has been exposed imagewise to light, provides means to heat said light-sensitive material to further sensitize said light-sensitive material;
wherein after said light-sensitive material is heated to further sensitize said light-sensitive material in said heating unit said light-sensitive material is sent to said roller convey type developing unit in a predetermined period of time.

4,573,783

FOCUSING CONTROLLING DEVICE

Takashi Maruyama, Nagano, Japan, assignor to Chinon Kabushiki Kaisha, Nagano, Japan

Filed Nov. 18, 1983, Ser. No. 553,043
Claims priority, application Japan, Dec. 1, 1982, 57-210889
Int. Cl.[4] G03B 3/10
U.S. Cl. 354—403 6 Claims



5. A focusing controlling system for a camera which comprises:

a. a stationary light emitting element which sends a beam of light to an object in the field of view of the camera to be reflected thereby;

b. a movable light receiving element for receiving the reflected beam of light with said receiving element being ganged together with the camera lens for movement therewith, so that said light receiving element moves on a line perpendicular to the optical axis of the camera when the camera lens is extended along the optical axis;

c. said light receiving element comprising two aligned, adjacent photodetectors A and B;

d. said light receiving element and the camera lens are so adjusted that when the camera is in focus the light beam reflected from said object will impinge equally on the photo detectors A and B, and when the focal point is in front of the object, A will receive more light than B, and vice versa when the focal point is behind the object;

e. a processing circuit for the reflected light signals which comprises:

1. an adder for signals received by A and B providing the sum signal A+B;

2. a subtractor for signals received by A and B providing the difference signal A−B;

3. first and second pulsed integrators which provide integrated sum signals and integrated difference signals, respectively;

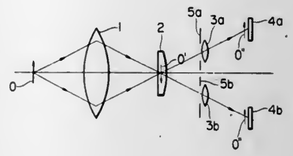
4. said integrated sum and difference signals providing inputs to a control circuit which controls the direction and amount of movement of a motor which moves the camera lens and the light receiving element, said movement continuing until the received signals A and B are equal, at which time the camera will be in focus, said control circuit comprising a first comparator which compares the integrated A+B signal with a predetermined value; a second comparator which compares the integrated A−B signal with a variable threshold; a counter with pulses applied thereto for counting, a reset signal which is provided by the output of the first comparator, and an output which represents the variable threshold for the second comparator; said counter continuing to count pulses until the variable threshold equals the integrated A−B signal, the count at this time representing the amount of extension of the camera lens.

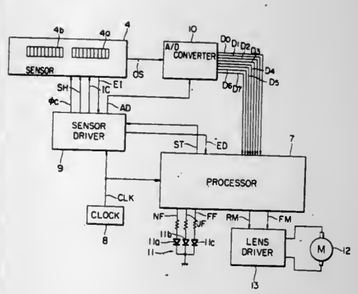
4,573,784

FOCUS DETECTING APPARATUS

Kenji Suzuki, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 558,005, Dec. 5, 1983, abandoned. This application May 30, 1985, Ser. No. 739,496
Claims priority, application Japan, Dec. 11, 1982, 57-217467; Dec. 11, 1982, 57-217469
Int. Cl.[4] G03B 3/00
U.S. Cl. 354—406 10 Claims





1. A focus detecting apparatus including:

(a) optical means;

(b) sensing means for sensing radiation distribution for forming an image formed by said optical means, said radiation distribution being formed from two image rays separated through different exit pupils of said optical means, and said sensing means comprising a first photosensitive array which forms electric signals corresponding to a radiation distribution formed by one of said image rays, and a second photo-sensitive array which forms electric signals corresponding to a radiation distribution formed by the other image ray; and

(c) discriminating means for effecting a detection operation of the focus state of said optical means, said discriminating means having:

(i) a first mode in which said discriminating means selects a smaller number of signals than the number of elements forming said first and second arrays, to detect the focus state on the basis of the selected signals from each array when the amount of defocus is over a predetermined value, said selected signals being output from elements from each of said first and second arrays; and

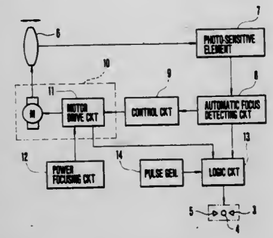
(ii) a second mode in which said discriminating means detects the focus state on the basis of the signals output from all the elements in said first and second arrays.

4,573,785

DISPLAY DEVICE FOR FOCUS DETECTING CAMERA

Kazuhiko Arakawa, Ohmorini, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 3, 1984, Ser. No. 606,706
Claims priority, application Japan, May 9, 1983, 58-69034
Int. Cl.[4] G03B 13/18
U.S. Cl. 354—409 27 Claims



1. A focus detecting device for a camera comprising:

(a) focal point detecting means arranged to be in a focal point detectable state in which said detecting means is capable of detecting whether an object to be photographed is located in a near-focus, in-focus or far-focus position relative to the focal point of a photo-taking lens and to be in a focal point undetectable state in which said focus position is undetectable;

(b) focal point display means for displaying a focal point on the basis of a detection signal produced by said focal point detecting means representing a near-focus, in-focus or far-focus position when said focal point detecting means is in said focal point detectable state;

(c) photo-taking lens drive direction detecting means for detecting a lens drawing-in or drawing-out direction in which the photo-taking lens is being driven; and

(d) photo-taking lens driving direction display means for producing a display which varies with the photo-taking lens drawing-out or drawing-in driving direction according to the direction output of said photo-taking lens driving direction detecting means and which also differs from the manner of display of said focal point display means at least when said focal point detecting means is incapable of performing focal point detection.

4,573,786

FLASH PHOTOGRAPHING SYSTEM

Nobuyuki Taniguchi, Tondabayashi; Hiroshi Hosomizu, Nara; Kenji Tsuji, Kashiwara; Takanobu Omaki, Sennan, and Masaaki Nakai, Nara, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed May 25, 1984, Ser. No. 614,031
Claims priority, application Japan, May 27, 1983, 58-94605; Jun. 1, 1983, 58-98227; Jun. 4, 1983, 58-100050; Jun. 7, 1983, 58-102407; Jun. 10, 1983, 58-104650; Jun. 13, 1983, 58-106424; Jun. 15, 1983, 58-108484; Jun. 17, 1983, 58-109921; Jun. 18, 1983, 58-109854; Jun. 21, 1983, 58-112326; Jun. 23, 1983, 58-113920; Jun. 23, 1983, 58-113921; Mar. 13, 1984, 59-48435
Int. Cl.[4] G03B 15/05
U.S. Cl. 354—416 60 Claims

1. In a flash photographing system including a combination of a camera, a controlling device connectable to the camera, a first electronic flash device connectable to the controlling device and a second electronic flash device directly connectable to the camera, the combination comprising:

first to third terminals included in the first electronic flash device;

first to third terminals included in the second electronic flash device;

fourth to sixth terminals included in the controlling device connectable with said first to third terminals of the first electronic flash device, respectively;

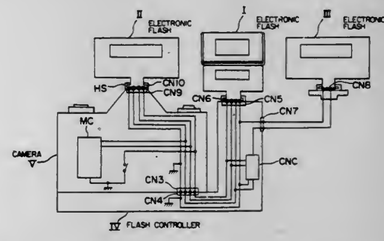
seventh to ninth terminals included in the controlling device;

tenth to twelfth terminals included in the camera connectable with said seventh to ninth terminals of the controlling device, respectively;

thirteenth to fifteenth terminals included in the camera connected to said tenth to twelfth terminals, respectively, and connectable with said first to third terminals of the second electronic flash device, respectively;

wherein, each of the first and second electronic flash devices includes means for initiating flash light emission in response to a flash initiating signal received through said first terminal, means for providing a light measurement controlling signal through said second terminal, means for serially forwarding data descriptive of electronic flash device conditions through said second terminal in response to a train of clock pulses received from said third terminal, means for serialiy receiving information from said second terminal in response to the train of clock pulses for operation of the electronic flash device, means for governing the mutual communication through said second terminal with a device connected thereto in response to a communication controlling signal received from said third terminal, and means for terminating flash light emission in response to a flash terminating signal received through said third terminal;

wherein the controlling device includes first means for transmitting the flash initiating signal from said seventh terminal to said fourth terminal, second means for transmitting the



light measurement controlling signal from said fifth terminal to said eighth terminal, third means for transmitting information from said eighth terminal to said fifth terminal, fourth means for transmitting the clock pulses, the communication controlling signal and the flash terminating signal from said ninth terminal to said sixth terminal, means for serially receiving the data of the first electronic flash device through said fifth terminal and the data of the second electronic flash device through said eighth terminal in response to the clock pulses received through said ninth terminal, means for determining the manner of flash light emission of the first and second electronic flash devices in accordance with said data receiving means, means for serially forwarding information representative of the manner of flash light emission to the first electronic flash device through said fifth terminal and to the second electronic flash device through said eighth terminal, respectively, in response to the clock pulses received through said ninth terminal, means for appreciating the total conditions of the first and second electronic flash devices in accordance with said data receiving means, means for serially informing the camera of the appreciated total conditions of the first and second electronic flash devices through said eighth terminal in response to the clock pulses received through said ninth terminal, and means for governing the mutual communication with the first electronic flash device through said fifth terminal and with the camera through said eighth terminal in response to the communication controlling signal received from said ninth terminal; and

wherein the camera includes first means connected to said

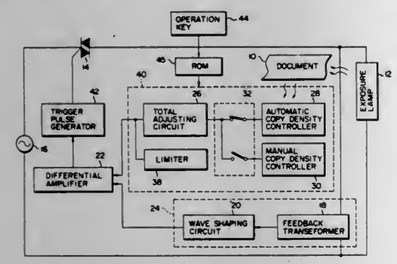
tenth terminal for producing the flash initiating signal, second means connected to said twelfth terminal for producing the train of clock pulses, third means connected to said twelfth terminal for producing the communication controlling signal, means for measuring light in response to the light measurement controlling signal received through said eleventh terminal to produce the flash terminating signal through said twelfth terminal, fourth means connected to said eleventh terminal for producing information to be transmitted to the first and second electronic flash devices, and means connected to said eleventh terminal for receiving the appreciated total conditions of the first and second electronic flash devices.

4,573,787

EXPOSURE LAMP CONTROL FOR IMAGE FORMING APPARATUS

Takeshi Sanbayashi, Tokyo, and Hideshi Oushiden, Kawasaki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 9, 1984, Ser. No. 628,983
Claims priority, application Japan, Jul. 11, 1983, 58-125945
Int. Cl.⁴ G03G *15/00*
U.S. Cl. 355—14 E **8 Claims**



1. An image forming apparatus comprising:
lamp means for exposing a document;
magnification setting means for generating a magnification signal;
means, connected to said magnification setting means, for forming an image of the document on a recording medium based on a light from the exposed document, a size of the image being determined by the magnification signal;
memory means, connected to said magnification setting means, which stores digital data corresponding to various magnifications and produces the digital data in response to the magnification signal; and
lamp control means, connected to said lamp means and memory means, for applying a power voltage to said lamp means in accordance with the digital data generated from said memory means.

4,573,788

IMAGE FORMING DEVICE

Nao Nagashima, Tokyo; Koji Suzuki, Yokohama; Jyoji Nagahira, Tokyo; Kouki Kuroda, Yokohama, and Yoshiaki Takayanagi, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 284,138, Jul. 16, 1981, abandoned. This application Oct. 15, 1984, Ser. No. 661,117
Claims priority, application Japan, Jul. 22, 1980, 55-100087; Jul. 23, 1980, 55-101657; Jul. 24, 1980, 55-101504
Int. Cl.⁴ G03G *15/00*
U.S. Cl. 355—14 R **41 Claims**

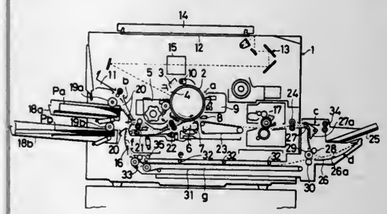
1. An image forming device, comprising:
image forming means for forming an image on a recording member;
detecting means for detecting a value corresponding to an operating condition of said image formation;
memory means storing instructions for the control of said image forming means so as to regulate image quality, said instructions defining a plurality of control programs providing different modes of control over said condition of the image forming means in accordance with the detected value; and
means for selecting between said plurality of programs and for causing the selected program to be executed.

4,573,789

DUPLEX COPYING SYSTEM

Kenichi Wada, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Apr. 13, 1983, Ser. No. 484,577
Claims priority, application Japan, Apr. 13, 1982, 57-62085; Apr. 16, 1982, 57-64442; Apr. 16, 1982, 57-64443; Apr. 19, 1982, 57-65628; Apr. 21, 1982, 57-67924
Int. Cl.⁴ G03G *15/00*
U.S. Cl. 355—14 SH **12 Claims**



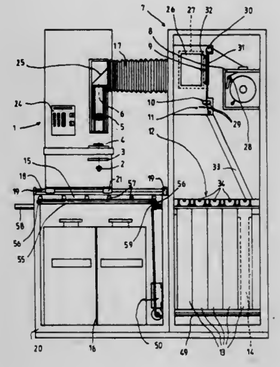
1. A duplex copying mechanism comprising:
a copying means having a sheet feed station, an image formation station for forming an image of an original on one side of a copy sheet feed from said sheet feed station, and a sheet discharge station from which a copied sheet passed through said image formation station is discharged; and
a duplex copying auxiliary means for returning said copied sheet to said image formation station with the sheet thereof in a turned over state, said auxiliary means including a changeover gate station for effecting changeover of the transfer direction of sheet to said sheet discharge station as well as said auxiliary means itself, a switchback station for changing the feeding end for the trailing end of the sheet received therein, a return feed station for feeding the copied sheet from the switchback station toward the image formation side, a reversing station for feeding the copied sheet to the image formation station with the copied sheet being reversed, and means for driving said auxiliary means at a speed which is set lower than that of said sheet feed station of the copying means and at which the upside copied sheet is returned by the auxiliary means, whereby the upside copied sheets copied continuously by the copying means are returned to said image formation station with the sheets overlapping each other in staggered relation due to said speed difference during their return to said image station, and the underside copied sheets retained on said return feed station are successively fed to the image formation station through said reversing station for continuous underside copying operation when the foremost one of the underside copied sheets has reached the specified position in the return feed station.

4,573,790

AUTOMATIC DEVELOPER/PRINTER APPARATUS FOR OBTAINING PHOTOGRAPHIC PRINTS FROM A NEGATIVE

Michel Ducos, Ramonville St Agne, France, assignor to Sarl Photosysteme, Escalquens, France

Filed Mar. 20, 1984, Ser. No. 591,452
Claims priority, application France, Mar. 24, 1983, 83 05014
Int. Cl.⁴ G03B *29/00*
U.S. Cl. 355—28 **26 Claims**



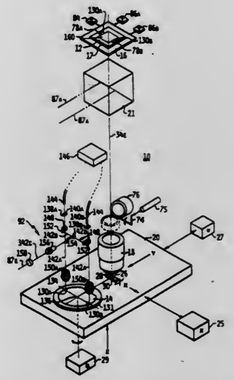
1. An automatic developer/printer apparatus for obtaining photographic prints from a developed negative comprising:
(a) a projection assembly means for projecting light through a developed negative comprising a negative carrier and an optical apparatus wherein said optical apparatus is displaceable perpendicular to the surface of said negative;
(b) an exposure darkroom means comprising photosensitive material, wherein said exposure darkroom means exposes said photosensitive material to said light projected through said negative and said optical apparatus wherein said darkroom means further comprises a projection plane comprising means for receiving light projected through said negative and said optical apparatus wherein the entire projection assembly means is displaceable perpendicular to said projection plane;
(c) a developing means for developing said photosensitive material exposed to said light projected through said negative; and
(d) a housing wherein said housing comprises a drying chamber for drying said exposed and developed photosensitive material and a treatment product reservoir for storing excess treatment product, wherein said projection assembly means is positioned parallel and adjacent to said exposure darkroom means, said exposure darkroom means is positioned above said developing means, said developing means is positioned parallel and adjacent to said housing, and said housing is positioned under said projection assembly means wherein said projection assembly means, said exposure darkroom means, said developing means and said housing comprise separate elements having separate outer walls, wherein said apparatus further comprises means for displacing said optical apparatus and said projection assembly means in synchronism so as to obtain an enlarged and focused image projected on said projection plane.

4,573,791

STEP-AND-REPEAT PROJECTION ALIGNMENT AND EXPOSURE SYSTEM

Edward H. Phillips, Middletown, Calif., assignor to Optimetrix Corporation, Mountain View, Calif.

Division of Ser. No. 396,099, Jul. 7, 1982, Pat. No. 4,473,293, which is a continuation of Ser. No. 26,722, Apr. 3, 1979, abandoned. This application Sep. 12, 1984, Ser. No. 649,767
Int. Cl.⁴ G03B *27/32, 27/42*
U.S. Cl. 355—77 **8 Claims**



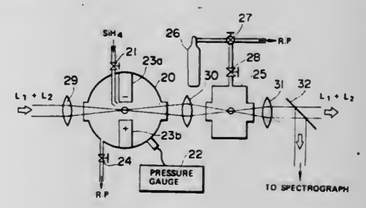
1. A method for aligning first and second relatively-moveable objects with respect to one another, said method comprising the steps of:
supporting each of the first and second objects for independent movement along coordinate first and second axes and about a coordinate third axis;
aligning the first object with respect to the coordinate first and second axes; and
aligning the second object with respect to the coordinate first and second axes and, hence, with respect to the first object.

4,573,792

METHOD OF AND APPARATUS FOR QUANTITATIVE ANALYSIS IN ACCORDANCE WITH CARS

Koichi Kajiyama, Hiratsuka; Norio Moro, Yamato; Kazuaki Sajiki, Fujisawa, and Tadayoshi Yamaguchi, Hiratsuka, all of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Mar. 30, 1983, Ser. No. 480,482
Claims priority, application Japan, Mar. 31, 1982, 57-54627; Jul. 9, 1982, 57-119636
Int. Cl.⁴ G01J *3/44;* G01N *21/65*
U.S. Cl. 356—301 **5 Claims**



5. An apparatus for performing quantitative analysis using CARS comprising:

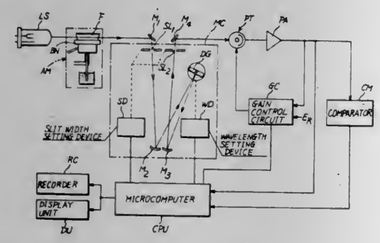
(a) a first laser means for generating laser light of a first frequency;
(b) a second laser means for generating laser light of a predetermined frequency bandwidth;
(c) optical means for forming a simple laser beam from said laser light of a first frequency and said laser light of a predetermined frequency bandwidth;
(d) a first transparent cell filled with a first material of unknown concentration and having a first Stokes frequency lying within said predetermined bandwidth;
(e) a second transparent cell filled with a second material of known concentration and having a second Stokes frequency lying within said predetermined bandwidth, said second transparent cell being disposed in series with said first first transparent cell along the optical path of said single laser beam;
(f) a spectrograph for recording the spectrum of said single laser beam following passage through said first and second transparent cells; and
(g) a multi-channel detector for detecting the intensity of anti-Stokes light produced upon passage of said laser beam through said transparent cells at every wavelength of a spectrum, wherein the concentration of said first material can be calculated from the ratio of the intensity of the anti-Stokes light corresponding to said first material to the intensity of the anti-Stokes light corresponding to said second material.

4,573,793

SPECTROPHOTOMETER AUTOMATIC ADJUSTMENT FOR DIFFERENCES BETWEEN NOMINAL AND ACTUAL WAVELENGTH SETTINGS

Kikuo Sasaki, Kyoto, Japan, assignor to Shimadzu Corporation, Kyoto, Japan

Filed Dec. 23, 1983, Ser. No. 564,889
Claims priority, application Japan, Dec. 30, 1982, 57-228244
Int. Cl.⁴ G01J *3/18, 3/04*
U.S. Cl. 356—326 **6 Claims**



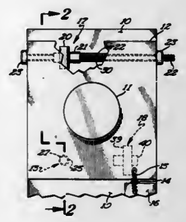
1. A spectrophotometer comprising:
(a) a light source means for providing a beam of light having an emission line spectrum;
(b) a monochromator comprising an entrance slit through which said beam of light enters said monochromator, a dispersing means for dispersing said beam of light into a series of wavelengths, an exit slit through which a monochromatic light of a selected one of said wavelengths emerges from said monochromater, a slit width setting means for setting said entrance and exit slits to a same variable width, and a wavelength setting means for setting said dispersing element to such a position as to provide a monochromatic light, corresponding to said position, of one of said series of wavelengths at said exit slit;
(c) a light measuring means for measuring the intensity of said monochromatic light at said exit slit and producing a corresponding electrical output signal; and
(d) a control means for controlling said slit width setting means and said wavelength setting means in such a sequential manner that in a wavelength setting mode said dispersing means is set to a position of a designated wavelength, and said slits are widened to a predetermined width so as to measure a beam of light having a spectrum with an emission line at said designated wavelength, and for controlling sensitivity adjusting of said light measuring means so that said output signal is kept at a predetermined constant level, and then said slits are narrowed, whereupon said dispersing means is operated such that wavelength scanning is conducted over a range of wavelengths including said designated wavelength so as to detect a peak in said emission line spectrum, and then said dispersing means is set to said peak position.

4,573,794

ANALYTICAL INSTRUMENT OPTICAL ELEMENT SUPPORT SYSTEM

Joel P. Covey, and Allen J. Zerbel, both of Madison, Wis.

Filed Mar. 3, 1983, Ser. No. 471,733
Int. Cl.⁴ G01B *9/02*
U.S. Cl. 356—346 **14 Claims**



1. In an analytical instrument of the type having a source of analytical radiation and having optical elements for directing said radiation through said instrument, an improved system for supporting and spatially orienting an optical element carried by a support plate which comprises:
planar base means secured within said instrument;
means carried by said base means for spacing one support plate portion from said base means while allowing a spatial reorientation of said support plate around said support plate portion;
first and second point contact means adjustably spacing different support plate portions from said base means, each of said first and second point contact means comprising generally cylindrical means and generally conical means having their major axes non-parallel and contacting each other at a point at their periphery with at least one of said cylindrical means and conical means being movable relative to the other; and
means resiliently biasing said base means and support plate toward each other.

4,573,795

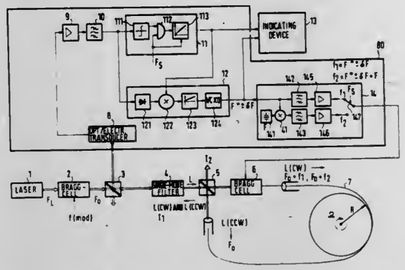
ROTATION RATE MEASURING INSTRUMENT

Wilfried Auch, Asperg; Friedemann Mohr, Renningen; Eberhard Schlemper, Vaihingen, and Walter Steudle, Schlaitdorf, all of Fed. Rep. of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Sep. 13, 1982, Ser. No. 417,510
Claims priority, application Fed. Rep. of Germany, Sep. 16, 1981, 3136688
Int. Cl.⁴ G01B *9/02*
U.S. Cl. 356—350 **11 Claims**

1. An instrument based on Sagnac effect for measuring the rotation rate of a mechanical member comprising:
a closed light path of substantially constant radius circumferentially disposed about a rotating circle having a center coincident with the center of rotation of said mechanical member;

means for generating a coherent light beam, and means for splitting said light beam into two separate light beams for propagation through said closed light path one split beam into a clockwise direction and the other split beam in a counterclockwise direction;
means for frequency modulating one of said split light beams with cyclically alternating first and second modulation frequencies, said one split light beam thereby having a phase shift ϕ_{B1} introduced as a separately identifiable characteristic;



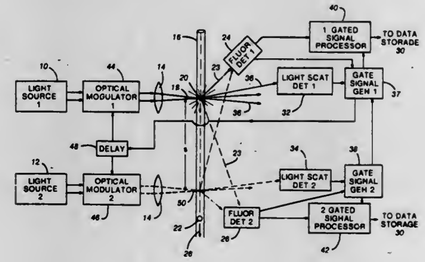
means for superimposing said two light beams in a return light beam from said closed light path, said return light beam having components of intensities $\cos^2(\phi s/2)$ and $\sin^2(\phi s/2)$, where ϕs is a phase shift between said two light beams due to said Sagnac effect that is proportional to rate of rotation; and
means for measuring the differential phase shift ϕ between the light signals of said two beams after passage through said light path where $\phi = \phi s + \phi_{B1}$ as a measurement of the angular velocity of said mechanical member.

4,573,796

APPARATUS FOR ELIMINATING BACKGROUND INTERFERENCE IN FLUORESCENCE MEASUREMENTS

John C. Martin, and James H. Jett, both of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 6, 1984, Ser. No. 568,768
Int. Cl.⁴ G01J *3/42;* G01N *21/64*
U.S. Cl. 356—318 **14 Claims**



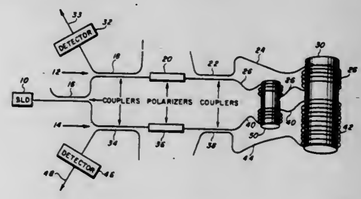
1. In a flow cytometer measuring device having first and second light sources for forming respective first and second beams of focused light to excite different fluorescent dyes bound to specific components of biological particles, the measuring device including a fluorescence detector for producing fluorescence data, and a data storage system for storing said fluorescence data, the improvement comprising an apparatus for modulating on and off light from a light source to eliminate background interference from one light source while the other light source excites the biological particle and the resulting fluorescence is detected, said apparatus including:
a. first and second light scatter detectors for detecting light scattered by biological particles:
b. first and second gate signal generators for generating first and second gate signals, said first gate signal generator being responsive to said first light scatter detector and said second gate signal generator being responsive to said second light scatter detector;
c. first and second gated signal processing means for receiving said first and second gate signals respectively and for transmitting the fluorescence data to the data storage system, said first gated signal processing means being connected to said first gate signal generator, the fluorescence detector and the data storage system, said second gated signal processing means being connected to said second gate signal generator, the fluorescence detector and the data storage system;
d. delay means for delaying said gate signal generated by one of said gate signal generators, said delay means being connected to receive said gate signal and producing a delayed gate signal in response thereto; and
e. an optical modulator associated with one of the light sources, said optical modulator being connected to said delay means to receive said delayed gate signal and modulate on and off the light from the light source in response thereto.

4,573,797

ANALOG FIBER GYRO WITH EXTENDED LINEAR RANGE

William K. Burns, Alexandria, Va., and Robert P. Moeller, Fort Washington, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 24, 1984, Ser. No. 583,549
Int. Cl.⁴ G01B *9/02;* G01C *19/64*
U.S. Cl. 356—350 **31 Claims**



1. An extended linear dynamic range fiber optic gyroscope system with a gyroscope system output comprising:
a fiber optic first gyroscope disposed on a platform for obtaining a linear output for a first range of platform rotation rates, and including a fiber optic interofermeter coil wherein light is introduced into said first coil for propagating therearound in mutually opposite directions to emerge therefrom for detection of the relative phase shift induced by rotation of said platform, said first gyroscope further including a first detector and demodulator for providing a quantity proportional to said relative phase shift, said first coil having a first axis and being described by a first quantity L_1R_1/λ_1, where L_1 and R_1 are the length and radius, respectively, of the first coil, and λ_1 is the wavelength of the light propagating therein, said first quantity providing said linear gyroscope output at said detector and demodulator for said first range of platform rotation rates;
a second fiber optic gyroscope disposed on said platform for obtaining a linear output for a second range of platform rotation rates, which range partially overlaps said first

range, and including a second fiber optic interferometer coil, wherein light is introduced into said second coil for counter propagating therearound in mutually opposite directions to emerge therefrom for detection of the relative phase shift induced by the rotation of said platform, said second gyroscope further including a second detector and demodulator for providing a quantity proportional to said relative phase shift, said second coil having a second axis which is parallel to said first axis and being described by a second quantity L_2R_2/λ_2, where L_2 and R_2 are the length and radius, respectively, for said second coil, and λ_2 is the wavelength of the light propagating in said second coil, said second quantity providing said linear gyroscope output for said second range of platform rotation rates;

means for comparing at least one of the detector outputs to a reference value equal to a gyroscope output value within the overlap between said first and second ranges and generating a control signal in accordance therewith; and

a switching circuit for switching one or the other of the detector and demodulator outputs of the gyroscope system output in accordance with said control signal so that the gyroscope which is operating within its linear range is utilized.

4,573,798

METHOD AND APPARATUS FOR MEASURING PATTERN AREA PERCENTAGE FOR ENGRAVING FILMS

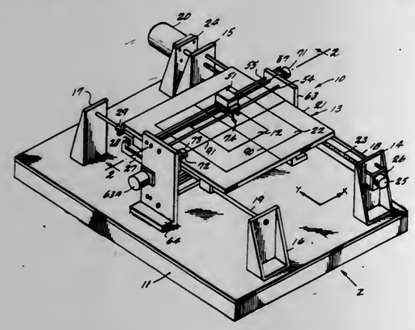
Hideo Fujie, Shizuoka, and Kousaku Togashi, Yokohama, both of Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 13, 1982, Ser. No. 408,128

Claims priority, application Japan, Sep. 16, 1981, 56-145845; Sep. 16, 1981, 56-145844

Int. Cl.⁴ G01B *11/28*

U.S. Cl. 356—432 **4 Claims**



1. Apparatus for measuring pattern area percentages of each of a plurality of columns into which a plurality of engraving films having a matter to be printed on a printing plate are divided, said columns corresponding to the spacing of ink supply adjusting keys of a printing machine comprising:

a base;

a stage slidably mounted on said base for movement in a direction Y;

a transparent member mounted on said stage for receiving one of said plurality of films thereon;

optical means mounted on said base for movement in a direction X perpendicular to said direction Y including a light source mounted on one side of said transparent member, a single light detector mounted on the other side of said transparent member facing said light source to produce an output, means between said source and detector defining a rectangular measuring area through which light passes from said source to said detector, and means for adjusting the width of said rectangular area;

means for driving said stage and said optical means respectively in said Y and X directions; and

control means including means for storing data relating to the number and spacing of the ink supply adjusting keys of the printing machine, the size of the engraving film and the printing position of the film on the printing plate and microprocessor means for determining the divisions of the columns to be measured on said film in accordance with the stored data, producing control signals for adjusting the width of said rectangular area in accordance with the determined divisions, producing drive signals for said drive means and calculating the pattern area percentages of each column from the output of said light detector.

4,573,799

DEGASSING EXTRUSION DEVICE

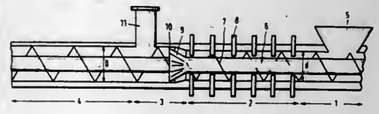
Dietmar Anders, Hanover, Fed. Rep. of Germany, assignor to Hermann Berstorff Maschinenbau GmbH, Hannover, Fed. Rep. of Germany

Filed Aug. 23, 1983, Ser. No. 525,710

Claims priority, application 08261982, Aug. 26, 1982, 82107840

Int. Cl.⁴ B30B *11/22, 11/24*

U.S. Cl. 366—89 **5 Claims**



1. A degassing extrusion device suitable for extruding thermoplastic materials and rubber comprising a hollow cylinder, worm means extending axially within said hollow cylinder, said interior of said hollow cylinder defining a plurality of treatment regions, said treatment regions comprising a feed region for receiving material to be treated, a pin region downstream of and in communication with said feed region and having pins located therein which extend radially into the space between said cylinder and said worm so as to increase the pressure in said pin region, a degassing region downstream of an in communication with said pin region and a discharge region downstream of and in communication with said degassing region, wherein said degassing region is immediately downstream of said pin region and said hollow cylinder has a first diameter in said degassing and discharge regions and a second diameter in said pin region, said first diameter exceeding said second diameter.

4,573,800

BLENDER BULK FEED VALVE

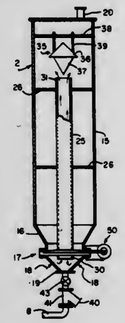
Eugene R. Lasso, Freemansburg, and John J. Pitsko, Nazareth, both of Pa., assignors to Fuller Company, Bethlehem, Pa.

Filed Dec. 10, 1984, Ser. No. 680,213

Int. Cl.⁴ B01F *13/02*

U.S. Cl. 366—101 **9 Claims**

1. A pneumatic conveying and material blending system including a vertically oriented vessel having sidewalls, a bottom and a top and an inlet for solid particulate material in the bottom; a hollow, open-ended vertically oriented column mounted in said bin, spaced from and coaxially aligned with the inlet for material; means for supplying a stream of gaseous fluid and fresh solid particulate material to be blended to said inlet for flow upwardly through said column and for selectively entraining solid particulate material already in the vessel and conveying said fresh material and entrained material upwardly through the column whereby said fresh solid particulate material and solid particulate material already in the vessel which is entrained in the stream of gaseous fluid are dispersed onto the top surface of material in the vessel to thereby blend the material; and means for controlling the quantity of material already in the vessel which is entrained into the stream of fresh solid particulate material flowing upwardly through the column.



4,573,801

APPARATUS FOR PRODUCING A GAS SOLID TWO PHASE FLOW JET HAVING A CONSTANT MASS OR VOLUME FLOW RATE AND PREDETERMINED VELOCITY

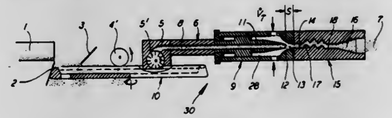
Kurt Leschonski, Am Dammgraben 20, and Stephan Röthele, Am Rollberg 5, both of 3392 Clausthal-Zellerfeld, Fed. Rep. of Germany

Filed Feb. 27, 1984, Ser. No. 583,675

Claims priority, application Fed. Rep. of Germany, Mar. 2, 1983, 3307406

Int. Cl.⁴ B01F *15/02*

U.S. Cl. 366—154 **22 Claims**



1. A metering-dispersing apparatus for producing a gas-solid two phase flow jet having a constant flow rate and predetermined velocity, with the solids being fully and uniformly dispersed therein, comprising:

(a) means forming a metering groove which is rotatable about an axis, said metering groove having a cross section to establish a consolidated solid particle mass flow of constant cross section;

(b) metering means including a vibrating feeder chute having a dispensing location spaced above the metering groove for feeding solid particles to said metering groove;

(c) wiper means disposed downstream of the dispensing location of the metering groove as seen in the direction of rotation of said metering groove and at an adjustable distance from said metering groove for the selected removal of surplus solids;

(d) means for compressing the solids remaining in solid groove, after passing said wiper means, disposed downstream of said wiper means in the direction of rotation of said metering groove for uniformly and lightly compressing the solid particles in said metering groove; and

(e) a flow channel including:

(i) an injector having a suction mouth immersed in said metering groove downstream of said compressing means in the direction of rotation of said metering groove;

(ii) dispersing means following said injector and including a plurality of impact surfaces having a zig-zag outline within said flow channel arranged to be hit successively by the gas-solid particle mixture moving from said injector to said dispersing means; and

(iii) an outlet nozzle downstream of said plurality of impact surfaces.

4,573,802

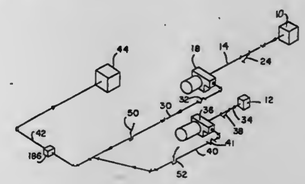
DEICING METHOD AND APPARATUS

Jerome J. Kerrigan, Northbrook, and Gregory E. Domanowski, Oak Park, both of Ill., assignors to F. J. Kerrigan Plumbing Co., Wilmette, Ill.

Filed Nov. 17, 1983, Ser. No. 552,831

Int. Cl.⁴ G05D *11/02*; B01F *15/04*

U.S. Cl. 366—152 **4 Claims**



1. Control circuitry including interlocking means for indicating a fault condition of the flow of a specific fluid, and a fluidic system adapted to selectively provide a first-fluid-only flow and a first- and second-fluid mixture-flow at desired output ports, said control circuitry comprising in combination, a system flow fault relay, a first fluid fault relay and a second fluid flow fault relay, each of said relays including a coil and indicating means, movable contacts, the coil of said system low fault relay being connected to contacts of said other two relay coils to be energized when the coil of either of said other two contacts is energized in response to a respective fluid flow fault, and each of said other two relay coils being connected respectively to be de-energized when the second of said other relay coils is energized to thereby allow only one indicating means to be energized at a time.

4,573,803

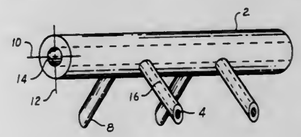
INJECTION NOZZLE

Gregory A. Gritters, Indio; Walter E. Nellis, Bermuda Dunes, and John L. Featherstone, El Centro, all of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Filed May 15, 1984, Ser. No. 610,332

Int. Cl.⁴ B01F *5/04*

U.S. Cl. 366—167 **21 Claims**



1. A nozzle useful for injecting a corrosive fluid into a fluid stream comprising:

(a) a substantially straight tubular injector body having an axial bore therethrough; and

(b) at least two pairs of substantially straight injection tubes having axial bores therethrough fluid tightly connected to the axial bore of the injector body, the injection tubes of each pair proceeding radially from, and in the same plane normal to, the axis of the injector body, and with each of the injection tubes lying in one of two planes containing

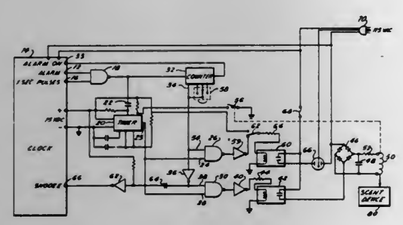
the axis of the injector body, which injection tubes cut a third plane parallel to the axial bore of the injector body.

4,573,804

SCENT-AWAKE ELECTRONIC CLOCK

James P. Kavoussi, 1401 - 80th St., Brooklyn, N.Y. 11228, and Louise D. Hartford, 391 Durant Ave., Staten Island, N.Y. 10308

Filed Apr. 8, 1985, Ser. No. 720,530
Int. Cl.⁴ G04B *47/00*
U.S. Cl. 368—12 **2 Claims**



1. A scent-awake electronic clock, comprising in combination:

(a) an electronic clock having an alarm contact closure which is activated at a predetermined time, output clock pulses which occur at one second intervals, and a snooze input which, when triggered, deactivates said closure and reactivates said closure after a fixed period of time thereby permitting a snooze interval followed by another alarm contact closure;

(b) a first NAND gate;

(c) a second NAND gate;

(d) a third NAND gate;

(e) a timer circuit which is initiated when said alarm contact closure and said clock pulses are inputted to said first NAND gate; wherein said timer circuit output is inputted to said second NAND gate and said third NAND gate; wherein said timer circuit is reset at the end of every alarm period; whereby the duration of both a scent alarm and an external alarm are determined by said timer circuit's interval;

(f) a counter whose output is initiated when a predetermined number of said clock pulses has occurred, wherein said output is inputted to said second NAND gate and wherein said output is inverted and then inputted to said third NAND gate; whereby the interval of time between the initiation of a scent alarm and the initiation of a snooze time period may be selected by varying the modulus of said counter;

(g) said second NAND gate the output of which is inverted and inputted to a first relay;

(h) said first relay the output of which activates an external alarm;

(i) said third NAND gate the output of which is inverted and inputted to a second relay;

(j) said second relay the output of which activates a scent alarm;

(k) an inverter, with a series capacitor at its input which takes said inverted pulse from one input of said third NAND gate and couples a pulse to said snooze input when said counter is finished counting, thereby initiating said snooze period;

(l) said scent alarm which releases a scent during a first alarm period, and

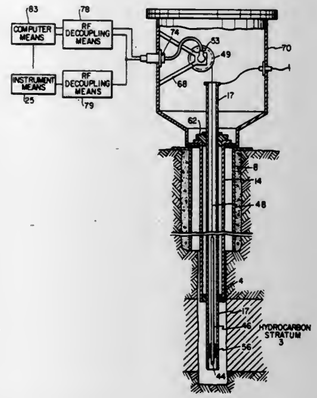
(m) an external alarm socket which is activated after said snooze interval during a snooze alarm period.

4,573,805

METHOD FOR MEASURING TEMPERATURE OF A HYDROCARBON STRATUM SUBJECTED TO RF ELECTROMAGNETIC ENERGY

Kerry D. Savage, and Donald J. Dowling, both of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Mar. 28, 1983, Ser. No. 479,593
Int. Cl.⁴ G01K *13/00*; G01V *31/26*
U.S. Cl. 374—136 **11 Claims**



1. In the RF retorting of a hydrocarbon stratum in an earth formation, traversed by a borehole with an applicator having a hollow inner conductor and an outer conductor, a method for measuring the temperature of the hydrocarbon stratum in the vicinity of the borehole which comprises the steps of:

sensing the temperatures at different positions within the inner conductor of the applicator in the vicinity of the hydrocarbon stratum with a plurality of thermocouple junctions with each thermocouple junction providing an electrical signal representative of the temperature sensed by the thermocouple junction,

conducting the electrical signal from the sensing positions to the surface of the earth with wires connecting each thermocouple junction and being brought up inside the inner conductor of the applicator to the surface;

decoupling an RF voltage from the conducted electrical signals by coiling the wires as a group so that each wire acquires an inductance, and connecting each wire after the coiling of the wires to ground through a capacitor so that a decoupled electrical signal appears at the connection of a wire and a capacitor, and

providing an indication of the temperature in accordance with the decoupled electrical signals.

4,573,806

THERMOCOUPLE ISOLATION BLOCK SYSTEM

M. Samuel Moore, Northridge, and Charles F. Paluka, Canoga Park, both of Calif., assignors to Semco Instruments, Inc., No. Hollywood, Calif.

Filed May 2, 1985, Ser. No. 729,544
Int. Cl.⁴ G01K *1/08, 1/14*
U.S. Cl. 374—144 **13 Claims**

1. An engine temperature monitoring system for aircraft engines, comprising:

at least one aircraft engine;

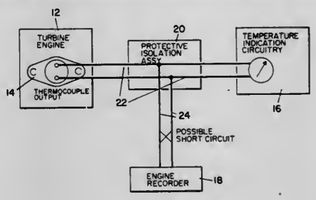
thermocouple means for sensing the operating temperature at one or more selected points of said aircraft engine and producing temperature varying signals at a first pair of terminals;

a first aircraft circuit coupled to receive signals from said thermocouple means at said terminals;

a thermocouple output isolation assembly means connected to said pair of terminals for receiving and transmitting thermocouple signals from said pair of terminals;

a second aircraft circuit requiring temperature signals coupled to said isolation assembly; and

said isolation assembly including a pair of input buses for securing to said first pairs of terminals, a housing, a pair of output terminals securely mounted on said housing, a pair



of resistors mounted within said housing and connecting said input buses to said output terminals, and high temperature insulation material surrounding said resistors and spacing said output terminals from said housing;

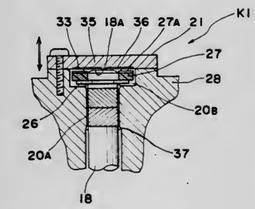
whereby any possible short circuit in the connections from said isolation assembly output terminals to said second aircraft circuit would have minimal effect on the temperature signals received by said first aircraft circuit.

4,573,807

FLUID BEARING DEVICE

Takafumi Asada, Hirakata; Churyo Yoshida, Amagasaki; Minoru Koda, Yawata, and Hideaki Ohno, Sennan, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kodoma, Japan

Filed Jan. 29, 1985, Ser. No. 696,244
Claims priority, application Japan, Jan. 31, 1984, 59-16551
Int. Cl.⁴ F16C *32/06*
U.S. Cl. 384—100 **12 Claims**



1. A fluid bearing device comprising:

a shaft;

a sleeve which is rotatably supported by said shaft;

a thrust bearing plate which is supported by said sleeve such that one face of said thrust bearing plate is brought into contact with one end face of said shaft;

a radial groove for producing a dynamic pressure, which is formed on at least one of an outer periphery of said shaft and an inner periphery of said sleeve; and

a spiral groove which is formed on at least one of said end face of said shaft and said face of said thrust bearing plate;

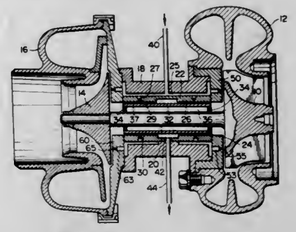
said radial groove retaining therein oil, while said spiral groove retains therein grease containing base oil and thickener, with said base oil being identical, in compositions and viscosity, with said oil retained in said radial groove.

4,573,808

PNEUMATIC JOURNAL BEARING

Kaoru Katayama, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Japan

Filed Jan. 23, 1985, Ser. No. 694,005
Claims priority, application Japan, Feb. 10, 1984, 59-24085
Int. Cl.⁴ F16C *32/06, 37/00*
U.S. Cl. 384—114 **5 Claims**



1. A pneumatic journal bearing comprising:

a generally cylindrical bearing body having a cylindrical bearing surface on the inner side:

a rotatable torque or power transmitting shaft which has an outer diameter substantially smaller than the diameter of said cylindrical bearing surface and extends coaxially through the cylindrical space defined by said bearing;

a cylindrical journal member which comprises a hollow cylinder having an inner diameter substantially larger than the outer diameter of said shaft and an outer diameter slightly smaller than the diameter of said bearing surface and two end plates each of which is a disk tightly fitted into an endmost section of the cylindrical journal member, has an opening through which said shaft extends, and is fixed to both said shaft and said hollow cylinder such that said hollow cylinder is held coaxial with and spaced from said shaft so as to define a cross-sectionally annular space around said shaft and so as to leave a clearance space of a predetermined width between the outer surface thereof and said bearing surface; and

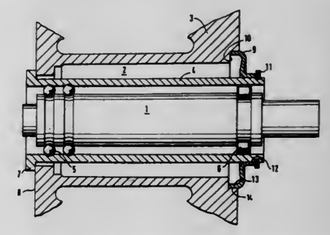
gas passage means for introducing a pressurized gas into said clearance space, whereby said journal member from said shaft prevents change in the width of said clearance space when said said shaft is heated to a high temperature.

4,573,809

SHAFT MOUNTING

Werner Jacob, Frankfurt, Fed. Rep. of Germany, assignor to INA Walzlager Schaeffler KG, Fed. Rep. of Germany

Filed Nov. 7, 1984, Ser. No. 669,629
Claims priority, application Fed. Rep. of Germany, Nov. 11, 1983, 3340857
Int. Cl.⁴ F16C *19/49, 27/00*
U.S. Cl. 384—493 **8 Claims**



1. An antifriction bearing arrangement for rotatably mounting a shaft in a bore of a housing, the said antifriction bearing

arrangement in addition to the shaft comprising a sleeve receiving two antifriction bearings mounted therein at a distance from each other for supporting the shaft, the sleeve being arranged in the bore of the housing which has a higher coefficient of thermal expansion than the parts of the antifriction bearing arrangement and being provided with a radially outwardly directed flange which by elastic spring means is pressed against a contact surface of the housing traversed by the bore and thereby frictionally fixed in the radial direction in relation to the contact surface, characterized in that the sleeve and the housing are axially braced by the said elastic spring means which preferably yield axially, abut a housing surface plane parallel to the contact surface and radially support the sleeve at its end remote from the flange in relation to the housing.

4,573,810

SELF-PUMPING HYDRODYNAMIC BEARING

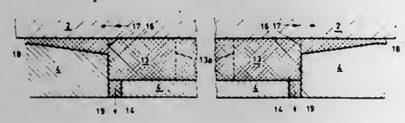
Armin Fust, Gebenstorf, and Mihailo Starcevic, Mellingen, both of Switzerland, assignors to BBC Brown, Boveri & Co., Ltd., Baden, Switzerland

Filed Aug. 15, 1984, Ser. No. 640,840

Claims priority, application Switzerland, Aug. 31, 1983, 4776/83

Int. Cl.⁴ F16C *1/24, 3/14, 32/06*

U.S. Cl. 384—322 **17 Claims**



7. A self-pumping hydrodynamic bearing comprising:

(a) at least one stationary component having a sliding surface;

(b) a moving component which slides on the sliding surface of said at least one stationary component and which is separated from the sliding surface of said at least one stationary component by a lubrication gap through which lubricant flows during use of the self-pumping hydrodynamic bearing; and

(c) a lubricant discharge duct;

(d) the sliding surface of said at least one stationary component being sized, shaped, and positioned relative to said moving component to provide a pumping gap therebetween through which, during the use of the self-pumping hydrodynamic bearing, lubricant is forced in the direction of motion of said moving component;

(e) said pumping gap being bounded a constriction which divides the flow of lubricant into at least two branches, at least one of which continues into said lubrication gap and at least one of which enters said lubricant discharge duct;

(f) said constriction comprising:

(i) an abrupt shoulder at the downstream boundary of said pumping gap, the working surface of said abrupt shoulder being at least generally perpendicular to the flow of the lubricant through said pumping gap, and

(ii) a gradually inclined ramp connecting said abrupt shoulder to said lubrication gap.

4,573,811

CENTER-FREE LARGE ROLLING BEARING

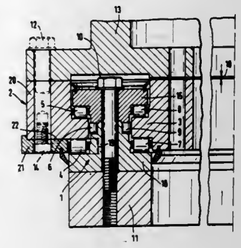
Dietrich Andree, and Walter Creutz, both of Dortmund, Fed. Rep. of Germany, assignors to Hoesch Aktiengesellschaft, Dortmund, Fed. Rep. of Germany

Filed Apr. 3, 1985, Ser. No. 719,360

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1984, 3413286

Int. Cl.⁴ F16C *19/30*

U.S. Cl. 384—622 **7 Claims**



1. A centre-free large rolling bearing in double constructional form having three bearing races (1, 2, 3), two of which are rotatable independently of each other and with respect to the third, and arranged therebetween rolling element rows (4, 5, 6, 7, 8, 9) for rotational connection of two components (11, 13), a centre race (1) being fixedly connectable to a first component (11) and an outer race (2) or an inner race (3) being fixedly connectable to a second component (13), characterized in that the centre race (1) consists of a plurality of sub-races (15, 16), that the outer race (2) connected to the second component (13) likewise consists of a plurality of sub-races (20, 21) and a parting line (22) of said outer race is disposed substantially at the same level as the rolling element row (4), bearing the supported load, of said outer race, and that the inner race (3) not connected to the second component (13) has a spacing (18) from the component (13) which is less than the height (19) of the rolling element row (4), bearing the supported load, of the connected outer race (2).

4,573,812

INTERCHARACTER SPACE PROCESSING APPARATUS FOR PRINTERS

Yoshihisa Kondo, Iwate, Japan, assignor to Alps Electric Co., Ltd., Japan

Filed Sep. 28, 1984, Ser. No. 655,938

Claims priority, application Japan, Sep. 29, 1983, 58-181504

Int. Cl.⁴ B41J *19/32*

U.S. Cl. 400—121 **2 Claims**

1. An intercharacter space processing apparatus for use in a printer, comprising:

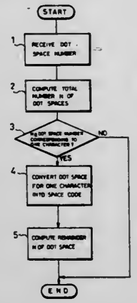
(a) a receiver for receiving print code signals;

(b) a memory for storing character codes received by said receiver;

(c) a dot space control unit responsive to an intercharacter dot space signal received by said receiver for inserting an intercharacter space code between character codes stored in said memory, so that the printer will print characters on a print surface based on information stored in said memory;

(d) first means for computing the total number of dot spaces of the intercharacter dot space area and producing a signal when the dot space area according to the intercharacter dot space signal is greater than a predetermined dot space area represented by a space character code; and

(e) second means responsive to said signal from said first means for converting the intercharacter dot space area into an intercharacter space code comprising one or more space character codes and a remainder dot space area code, which is equal to the excess of the intercharacter dot space area over the space character area, and storing said code into said memory.



4,573,813

RIBBON LIFT DEVICE FOR A PRINTER

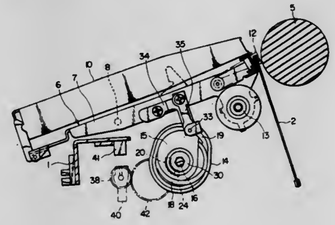
Hideo Aoki, and Kazuaki Takahashi, both of Kodaira, Japan, assignors to Silver Seiko, Ltd., Japan

Filed Jan. 17, 1985, Ser. No. 692,244

Claims priority, application Japan, Jan. 17, 1984, 59-4867

Int. Cl.⁴ B41J *35/22*

U.S. Cl. 400—214 **11 Claims**



1. A ribbon lift device for selectively moving a base member to position a print ribbon and a correction ribbon supported thereon to a print position to allow printing with said print ribbon or said correction ribbon, comprising:

a bidirectional drive motor;

a first cam coupled to be rotated by said drive motor and having a reference position for rotation;

said first cam having a cam groove formed on a face thereof;

a cam follower mounted on said base member and in engagement with said cam groove of said first cam;

said cam groove of said first cam having a first portion which moves, when said cam is rotated in a first direction from said reference position, said base member to position said print ribbon to said print position;

a second cam mounted for rotation relative to said first cam; and

coupling means for coupling said first cam to said second cam such that rotation of said first cam in a second direction opposite to said first direction will rotate said second cam in integral relationship and yet said second cam will not be rotated by rotation of said first cam in said first direction; and

said second cam having a cam lobe which acts on said cam follower to move, when said first cam is rotated in said second direction from said reference position, said base member to position said correction ribbon to said print position.

4,573,814

DOT MATRIX PRINTER

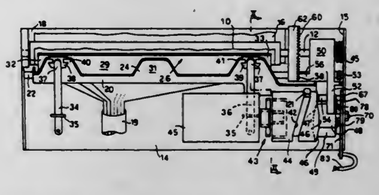
Pierangelo Berruti, Chivasso, and Giancarlo Cella, Ivrea, both of Italy, assignors to Ing. C. Olivetti & C. S.p.A., Ivrea, Italy

Filed Nov. 5, 1984, Ser. No. 668,158

Claims priority, application Italy, Nov. 18, 1983, 68208 A/83

Int. Cl.⁴ B41J *19/92, 19/80*

U.S. Cl. 400—568 **4 Claims**



1. A dot matrix printer comprising

a housing,

a shaft rotatably mounted on said housing,

a cylindrical platen mounted on said shaft,

a printing head reciprocally movable along said platen for selectively printing dots on a printing medium located on said platen and a line-spacing device to intermittently advance said medium between two successive lines of printed dots,

said line-spacing device comprising a toothed gear wheel mounted on said shaft and coupled with said platen and an arm pivotally mounted on said shaft and arranged for radial and axial displacements on said shaft relative to said toothed gear wheel, said arm being actuated by a single cylically rotatable cam member for intermittently rotating said toothed gear wheel, said cam member having a radial cam profile and an axial cam profile, said arm comprising an axially extending toothed sector engageable with a corresponding frontal toothing of said toothed gear wheel, a first cam follower actuated by said axial cam profile for axially translating said arm with respect to said toothed gear wheel from a first position in which said sector meshes with said frontal toothing to a second position in which said sector is axially spaced from the toothed wheel, and a second cam follower actuated by said radial cam profile for rotating said arm in a direction to advance said medium when said arm is in said first position and for rotating said arm in an opposite direction when in said second position.

4,573,815

PRINTER

Yasunori Watanabe, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Sep. 21, 1984, Ser. No. 653,077

Claims priority, application Japan, Sep. 30, 1983, 58-152834[U]

Int. Cl.⁴ B41J *13/14*

U.S. Cl. 400—642 **13 Claims**

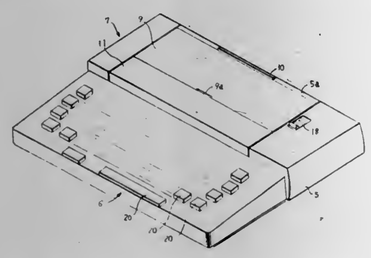
1. A printing device including a print mechanism wherein a print head is disposed in front of a platen and moves along said platen for printing characters on a sheet of paper which is backed up by said platen and fed perpendicular to a longitudinal direction of said platen, comprising:

covering means including a main cover having an opening which is located above said print mechanism and extends over a printing width of said print mechanism;

a paper holder pivotally mounted on said main cover at a position adjacent to a rear end of said opening, said paper holder being pivotable between a closed position for covering said opening and an open position wherein said paper holder uncovers said opening and extends obliquely in a first rear upward direction away from said print

mechanism, said paper holder being pivoted in a first direction from said closed position to said open position to support and guide the sheet of paper supplied to said print mechanism; and

a paper guide mounted on said covering means adjacent to a front edge of said opening of said main cover for pivotal motion about an axis, said paper guide being retained by biasing means in a paper-guiding position thereof when said paper holder is in said open position, said paper guide



in said paper-guiding position extending obliquely in a second rear upward direction from said axis of pivot over said print mechanism to define a paper exit path along which the printed sheet of paper is fed from said print mechanism out of said opening, said paper guide being pushed downwardly by said paper holder and pivoted in said first direction to a storage position thereof against a biasing force of said biasing means when said paper holder is pivoted to the closed position in a second direction opposite to said first direction.

4,573,816

ELASTIC BEARINGS FOR SHAFTS

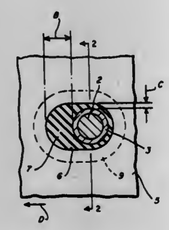
Gerhard Pamler, Nuremberg, Fed. Rep. of Germany, assignor to Triumph-Adler A.G. fur Buro- und Informationstechnik, Nuremberg, Fed. Rep. of Germany

Filed May 24, 1984, Ser. No. 613,269

Claims priority, application Fed. Rep. of Germany, Jul. 13, 1983, 3325279

Int. Cl.⁴ F16C *27/06*; B41J *11/04*

U.S. Cl. 400—661 **5 Claims**



1. Apparatus for mounting the trunions of a printing machine platen to constrain oscillations resulting from type character impacts thereagainst essentially to a predetermined direction only comprising,

machine side frames having generaly non-circular openings having their longest dimension extending in said predetermined direction,

complimentary shaped elastic noise buffers mounted in said frame openings, and

trunion bushings mounted in openings through and adjacent one end of said buffers so that the dimension of the buffers relative to the trunion axis in said predetermined direction is a multiple of the dimensions in other directions such that oscillations are constrained essentially to said predetermined direction.

4,573,817

MECHANICAL PENCIL

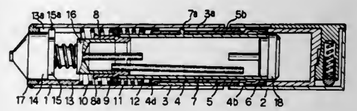
Mitsuo Maki, Tokyo; Tomohiro Hosoo, Chiba, and Katsuyoshi Kikukawa, Koshigaya, all of Japan, assignors to Platinum Pen of America, Inc., Tex.

Filed May 8, 1981, Ser. No. 261,987

Claims priority, application Japan, Jul. 22, 1980, 55-102750

Int. Cl.⁴ B43K *21/00, 21/22*

U.S. Cl. 401—65 **6 Claims**



1. A mechanical pencil, comprising:

(a) a barrel having an open, flat frontal end;

(b) sheath means disposed axially adjacent to said barrel at the rear end thereof;

(c) cam means positively engaging said sheath means, said cam means having a camming surface mounted for rotation and for movement forwardly and backwardly in an axial direction within a predetermined range with respect to said barrel;

(d) slider means fitted in said cam means;

(e) support means fixedly fitted onto the front end of said slider means;

(f) writing unit means provided with a push type lead feed mechanism fixedly fitted into the front end portion of said support means;

(g) cam engagement means on said slider means for engaging said camming surface, said camming surface being configured and dimensioned to move said slider means from a first position wherein said writing unit means fixed thereto through said support means is entirely contained within said barrel to a second position wherein said writing unit means fixed thereto through said support means protrudes from said frontal end of said barrel;

(h) first spring means to urge said cam means toward said frontal end of said barrel when said writing unit means is in said first position, thereby urging said sheath means into close-fitting relationship with said barrel; and

(i) second spring means to urge said cam means backwardly within said barrel when said writing unit means is in said second position, thereby urging said sheath means into spaced axial relationship with said barrel.

4,573,818

CAP ASSEMBLY FOR A SINGLE OR PLURAL WRITING INSTRUMENTS

Kimio Kodera, Tokyo, Japan, assignor to Platinum Pen Co., Ltd., Tokyo, Japan

Filed Dec. 13, 1984, Ser. No. 681,573

Claims priority, application Japan, Feb. 29, 1984, 59-27438[U]

Int. Cl.⁴ B43K *9/00*

U.S. Cl. 401—131 **5 Claims**

1. A modular writing instrument cap system, comprising:

at least one cap including a tubular sidewall having one open end and an opposite end closed by a transversely-oriented tubular barrel which includes a transversely-oriented bore that is open at both ends;

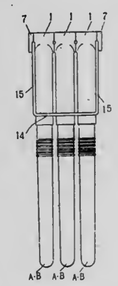
means on said cap sidewall constructed and arranged for removably securing the cap on a writing instrument in telescopically enclosing relation to a working end of such writing instrument;

said barrel being coaxially abuttable end-to-end with corresponding barrels of like caps to provide a series of adjoining caps, effectively having a shared transversely-oriented bore, and an exposed barrel end at each end of such series;

a generally U-shaped bail, including a cross-arm and two generally parallel legs, each leg having a free end portion which is bent back generally at approximately a right angle and includes intermediate its extent an at least generally semi-circular hump, so that each such free end portion is generally omega-shaped;

each end of each said barrel having means defining a correspondingly omega-shaped groove formed therein so as to open axially outwardly thereof;

a pair of terminator rings each having a corresponding omega-shaped groove formed therein so as to open axially



inwardly therefrom; each bail free end portion being received in a passageway defined by confrontation of a respective said omega-shaped groove at a respective exposed barrel end and a respective said omega-shaped groove in a respective said terminator ring;

at least one internally threaded sleeve received in said transversely-oriented bore so as to have one end disposed adjacent a said omega-shaped groove of one said exposed barrel end and another end disposed adjacent a said omega-shaped groove of an opposite said exposed barrel end; and

a respective screw bearing from axially outwardly against each terminator ring and having a shank thereof threaded into said at least one sleeve for securing said bail in relation to said at least one cap.

4,573,819

SYSTEM FOR SUPPLYING INK FOR WRITING INSTRUMENTS

Günther Herrnring, Alvesloe, Fed. Rep. of Germany, assignor to Montblanc-Simplo GmbH, Hamburg, Fed. Rep. of Germany

Filed Jun. 2, 1983, Ser. No. 500,257

Claims priority, application Fed. Rep. of Germany, Jun. 2, 1982, 3220750

Int. Cl.⁴ B43K *5/00, 5/08, 5/18, 5/10*

U.S. Cl. 401—151 **9 Claims**

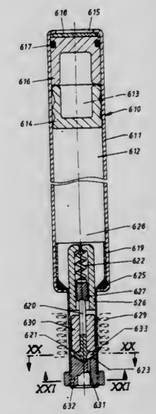
1. A system for supplying ink or writing liquid for a writing instrument which operates with liquid ink and has a writing element, said system in combination comprising:

a primary, permanently compressible, non-capillary, large-volume reservoir for said liquid ink that has an overpressure therewith;

a secondary, small-volume reservoir which communicates with the atmosphere and with said writing element;

an auxiliary charging valve for producing a connection between said primary and secondary reservoirs, said auxiliary charging valve being controllable as a function of need;

an electric motor which has a rotor; said auxlliary charging valve including a valve seat structurally arranged therewith, and a valve body provided with said rotor of said electric motor operable as a pump drive for conveying the liquid ink from the primary reservoir to the secondary reservoir and then to the writing element, said valve body cooperating with said valve seat, which is coaxially disposed relative thereto; said valve body being provided with a recess which communicates with said primary reservoir, and said valve seat being provided with a channel which communicates with said secondary reservoir.



4,573,820

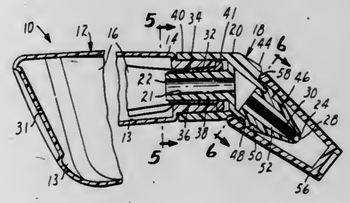
APPLICATOR TIP ASSEMBLY FOR A PEN-LIKE INSTRUMENT

Kenneth J. Kirchhoff, Gem Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Jul. 2, 1984, Ser. No. 627,288

Int. Cl.⁴ B43K *3/04, 7/10*

U.S. Cl. 401—214 **1 Claim**



1. An applicator tip assembly for use in a pen-like instrument, said tip assembly comprising:

a body having an inlet end and an outlet end, having a through opening with an inlet in said inlet end, and an outlet in said outlet end;

an applicator member within said through opening having a surface shaped to make sealing engagement against said body at said outlet end and being shaped to project through said outlet and past the outlet end of said body when said applicator member is in engagement with said body; and

spring means for biasing said applicator member against the outlet end of said body, wherein said through opening in said body is partially defined by longitudinally extending radially inwardly projecting spaced fins, and said spring means comprises an elongate coil spring having a compressible portion between and guided for longitudinal movement by said fins adjacent said applicator member, and an anchor portion at the end of said compressible

portion opposite said applicator member in firm engagement with the inner edges of said fins, portions of said through opening defined between said fins affording easy passage of fluid around said spring in said through opening.

4,573,821

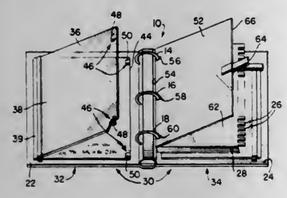
WINDOW INDEX SYSTEM FOR RING BINDERS

Charles T. Gilreath, 217 NW. 34 Drive, Gainesville, Fla. 32607

Continuation of Ser. No. 456,537, Jan. 7, 1983, abandoned. This application Mar. 8, 1985, Ser. No. 709,972

Int. Cl.⁴ B42D *13/00, 11/04, 21/00*

U.S. Cl. 402—78 **14 Claims**



11. A window system in combination with a loose-leaf ring binder of the type including a spine having a plurality of rings for retaining sheets, a front cover, and a rear cover, said window system comprising:

a transparent homing window sheet having elongated apertures at one edge in engagement with the sheet-retaining rings as the first sheet immediately inside one of the covers for protecting and facilitating view of an information record sheet also secured by the sheet-retaining rings and underlying said transparent homing window sheet, said homing window sheet having sufficient rigidity to serve as a sheet lifter; and

an extending tab at another edge of said homing sheet to facilitate return to said transparent homing window sheet from any location within the ring binder.

13. A loose-leaf ring binder comprising:

a spine including a plurality of rings for retaining sheets;

a front cover;

a rear cover; and

at least one prime storage area including:

a transparent window sheet hinged at one edge to the inside of at least one of said covers for protecting and facilitating view of a first underlying information record sheet,

a latch system including at least one element carried by said hinged transparent window sheet and at least one other element carried by one of said covers in alignment with said one element for retaining said hinged transparent window sheet and the underlying information record sheet against the inside of said one of said covers, and

a transparent homing window sheet secured at one edge by said sheet-retaining rings as the first sheet immediately inside said one of said covers for protecting and facilitating view of another information record sheet also secured by said sheet-retaining rings and underlying said transparent homing window, said homing window sheet having sufficient rigidity to serve as a sheet lifter.

4,573,822

SHEET LIFTER FOR A LOOSE-LEAF BINDER

Dell K. Allen, 195 S. Inglewood Dr., Orem, Utah 84057

Filed Feb. 27, 1984, Ser. No. 583,769

Int. Cl.⁴ B42F *13/00*

U.S. Cl. 402—80 L **14 Claims**

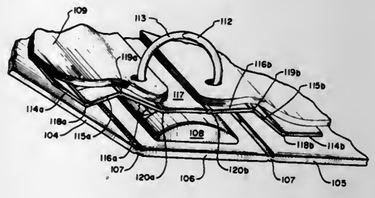
1. In a loose leaf binder comprising a pair of outer leaves joined to a spine and a plurality of rings mounted on a spring plate attached to said spine, an apparatus for lifting sheets secured by the rings of said loose leaf binder, said apparatus comprising a pair of flexible members each of said flexible members having an inner edge thereof permanently joined to said spine and an outer edge thereof permanently joined to one of said outer leaves and a middle portion defined between said edges, the middle portions of said flexible members being unattached to said spine and outer leaves such that when said outer leaves are folded to a closed position said middle portions of said flexible members will buckle so as to lift said sheets secured to said rings.

12. An apparatus for lifting sheets bound within a binder comprising:

a pair of first strip members;

a pair of second strip members positioned adjacent and parallel to each of said respective first strip members;

means for hingeably connecting said first strip members to said respective second strip members along adjacent parallel edges thereof;



a pair of third strip members positioned adjacent to said first strip members and opposite to said second strip members, each of said third strip members being permanently attached to a leaf of said binder;

means for hingeably connecting said third strip members to said respective first strip members along adjacent parallel edges thereof;

a fourth strip member positioned adjacent and parallel to said second strip members and opposite to said first strip members, said fourth strip member being attached to the spine portion of said binder; and

means for hingeably connecting said fourth strip member to said second strip members along adjacent parallel edges thereof.

4,573,823

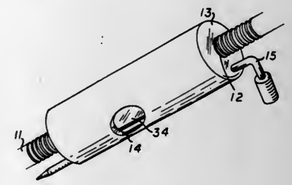
ADJUSTABLE PASS-THROUGH JOINT

Victor S. Dennis, 13342 Mango Dr., Del Mar, Calif. 92014

Filed Jan. 28, 1985, Ser. No. 695,470

Int. Cl.⁴ F16B *7/18;* **F16C** *11/00*

U.S. Cl. 403—118 **8 Claims**



1. An adjustable pass-through join comprising:

a main joint body having

a first bore longitudinally therethrough, and

a second bore orthogonally intersecting said first bore;

a clamping member rockingly inserted into said second bore and having an opening in line with said first bore;

a rod slideably installed through said first bore and said opening;

wherein said opening is shaped and dimensioned to permit

free axial travel of said rod therethrough when said locking member is held in a first position, and to prevent the axial travel of said rod when said clamping member is held in a second position; and

means for locking said clamping member in said second position including means for rotating said clamping member about the axle of said second bore until opposite sides at opposite ends of said opening are forced against said rod.

4,573,824

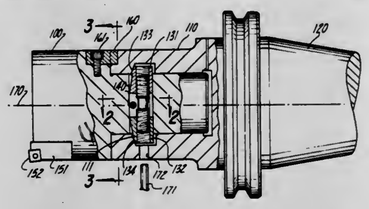
APPARATUS FOR COUPLING A FIRST MEMBER TO A SECOND MEMBER

Ray G. Ehle, Redford, Mich., assignor to GTE Products Corporation, Stamford, Conn.

Filed Feb. 10, 1984, Ser. No. 578,802

Int. Cl.⁴ F16B *21/00*

U.S. Cl. 403—322 **14 Claims**



1. Apparatus for coupling a male member to a female member along a common longitudinal axis, the male and female members each having shank portions, with the male member having an axially extending pilot portion of cross-sectional area less than that of the male member shank portion and a first section adjoining the shank portion and a smaller second end section, the pilot portion shaped for mating engagement with a cavity in the shank portion of the female member, the apparatus comprising:

first and second wedge means each having a wedging surface, the first and second wedge means carried by the male member on the second section of the pilot;

wedge actuator means coupled to the first and second wedge means, operative to simultaneously move the first and second wedge means in opposite directions traverse to the longitudinal axis; and

conical reaction surface means on the female member confronting complementary convex conical wedging surfaces of the first and second wedge means in a manner such that as the wedge actuator means moves the first and second wedge means in predetermined opposite directions, the wedging surfaces engage the reaction surface means with substantial surface contact so as to provide a force urging the first and second members together along the axis in substantially rigid fashion.

4,573,825

APPARATUS FOR MOUNTING A DISK TO A SHAFT

Ralph Muellenberg, Im Wiesengrund 6, D-4048 Grevenbroich 12, Fed. Rep. of Germany

Filed Mar. 6, 1984, Ser. No. 586,825

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1983, 3315769

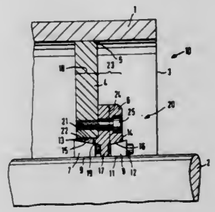
Int. Cl.⁴ B25G *3/20;* **F16B** *2/00*

U.S. Cl. 403—370 **8 Claims**

1. An apparatus for mounting a disk on a shaft, said disk having a central opening through which said shaft extends, said apparatus comprising:

a flanged hub ring, said hub ring having an axially extending radially thin walled portion having an outer circumferential surface abutting an inner surface of said disk along said central opening, a radially thick walled portion connected to said thin walled portion and disposed outside of said central opening, and a pair of oppositely inclined conical surfaces formed on said hub ring;

two individual rings split into a plurality of segments, said rings received at axially spaced positions on said shaft, said rings having oppositely inclined conical surfaces mating, respectively, with said conical surfaces of said hub ring; and



means to move said individual rings relative to each other such that the conical surfaces of said individual rings produce a radially outward pressure on the conical surfaces of said hub ring, said means comprising screws connected to draw said rings toward one another.

4,573,826

MOBILE CRUSHER UNIT FOR CLEARING ROUGH TERRAIN, PREPARING ROAD FORMWORKS AND ROADBEDS, OPERATING OPEN-WORKS MINES, AND THE LIKE

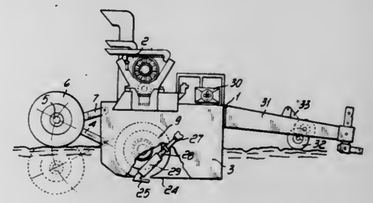
Alessandro Piovesan, Rovigo, Italy, assignor to ATIC S.r.l., Taglio Di Po, Italy

Filed Mar. 29, 1984, Ser. No. 594,832

Claims priority, application Italy, May 23, 1983, 21228 A/83

Int. Cl.⁴ E01L *23/00*

U.S. Cl. 404—90 **2 Claims**



1. A mobile crusher unit, comprising a power driven horizontal rotor including a shaft rotatively carrying spaced-apart discs provided, adjacent the edges thereof, with at least three throughgoing round holes located at symmetrical locations with respect to said shaft, through said aligned holes in said discs there being passed as many cylindrical bars carrying, in rotary fit, hammer yoke holders each whereof is positioned between a said disc pair and has, at least at corresponding locations on the legs thereof, two throughgoing holes, one of which is threaded and the other has an enlarged cross-section portion, secured between each leg pair of said hammer yoke holders, in rotary fit by means of a threaded pin, there being a hammer comprising substantially an elongate prismatic element having a corresponding throughgoing hole, a serrated blade being further provided, located at a lower level than said shaft and having a horizontal longitudinal axis, said serrated blade being subjected to oscillatory movements in a normal direction to the plane of lay thereof, said rotor and blade being carried on a self-propelled frame the rearward end whereof is mounted on two wheels interconnected by an axle adapted to be raised from and lowered onto said frame, a pair of double-

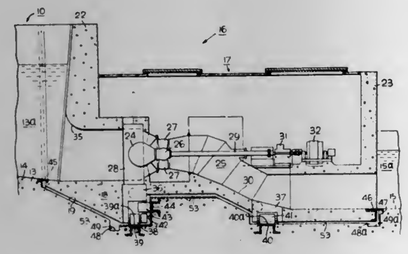
acting hydraulic jacks being provided for producing the oscillatory movements of said blade, said jacks having parallel axes and forming a given angle from vertical, the connection between the piston rods of said jacks and the corresponding ends of said oscillating blade being accomplished by means of a rod encompassed by a protective sleeve.

4,573,827

LATERALLY MOVABLE POWERHOUSE

Howard A. Mayo, Jr., York, Pa., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed May 10, 1984, Ser. No. 609,027
Int. Cl.[4] E02B *9/08*
U.S. Cl. 405—78 **12 Claims**



1. A hydraulic turbine installation for a site comprising a dam having a floor and opposing sidewalls defining a spillway for water flow from an upper elevation to a lower elevation,
a frame member;
a hydraulic turbine carried by said frame member comprising a water passageway defined by said frame; a turbine runner within said passageway and a generator operably connected to said runner to be driven by said runner;
said frame member having intake means for directing water to the runner;
said floor having an upper surface including a plurality of bearing surface portions with said bearing surface portions on a downstream side of said dam and extending horizontally transverse to said direction of water flow; said bearings surface portions having a length horizontally transverse to said direction of water flow with said length sufficient to span said spillway and extend past a downstream side of said dam a distance greater than a width of said frame member;
bearing means secured to a bottom surface of said frame member and aligned to support said frame member on said bearing surface portion for providing sliding movement of said frame horizontally transverse to said direction of water between a first position with said frame member intake means within said spillway and a second position with said frame member out of said spillway and on a downstream side of said dam;
power actuated means for selectively sliding said frame member between said first and second positions.

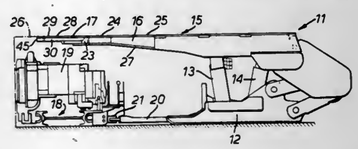
4,573,828

ROOF SUPPORT SUITABLE FOR USE IN MINES

Michael D. Jones, Worcester, and James B. Longford, Gloucester, both of England, assignors to Dowty Mining Equipment Limited, England

Filed Apr. 3, 1984, Ser. No. 596,254
Claims priority, application United Kingdom, Apr. 29, 1983, 8311825
Int. Cl.[4] E21D *15/44, 17/08*
U.S. Cl. 405—293 **11 Claims**

1. A roof support, suitable for use in mines, including a floor-engaging structure, extendable and contractible prop means carried by said structure, a roof-engageable canopy, supported by said prop means, which comprises a main portion and an extension portion each of which includes a respective upper plate member and a respective lower plate member, the upper faces of the two upper plate members being engageable with the roof, and fastening means for rigidly connecting said



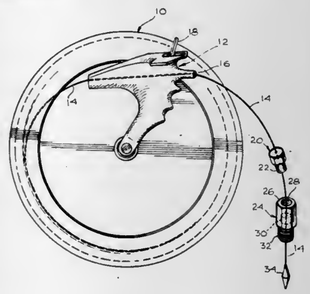
extension portion and said main portion together, the one immediately adjacent the other to provide smooth, substantially uninterrupted, transition from one said upper face to the other, said fastening means including at least one connecting member adapted to lie at least substantially within the thickness of said upper plate members.

4,573,829

PLASTIC-PIPE LOCATOR TOOL

Terrell M. Keene, 800 S. Bradfield Ave., Compton, Calif. 90221; Wiley C. Calhoun, 13739 McNab St., Bellflower, Calif. 90706; Edgar J. Flemming, 5742 S. Van Ness St., Los Angeles, Calif. 90062; Eugene E. Haggard, 4259 N. Jerry Ave., Baldwin Park, Calif. 91706; David L. Taylor, 11249 Hulme Ave., Lynwood, Calif. 90262; Richard N. Hartley, 11600 Hollyview Dr., La Mirada, Calif. 90638; Francisco J. Martinez, 8348 Terradell St., Pico Rivera, Calif. 90660; Harry E. Sullivan, 1559 Albright St., Upland, Calif. 91786; Arvil B. Mason, 13627 Ocana Ave., Bellflower, Calif. 90706, and Wayne M. Lucas, 411 N. Willow Ave., Long Beach, Calif. 90806

Filed Jun. 29, 1984, Ser. No. 626,191
Int. Cl.[4] E03B *7/09*
U.S. Cl. 405—157 **5 Claims**



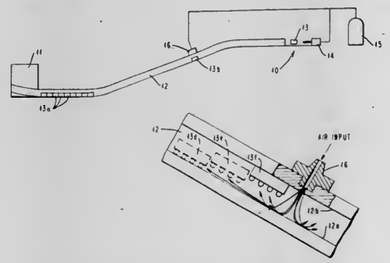
1. A plastic-pipe locator tool including:
a hand-grip portion;
a reel rotatably supported from said hand-grip portion;
a locator wire extendably carried by said reel, said hand-grip portion having an opening therethrough for the passage of said locator wire;
a plastic bushing having an opening therethrough of a first diameter and having an externally threaded portion thereon of a second diameter;
a coupler having first and second ends and having an opening therethrough to permit the passage therethrough of said locator wire;
said opening through said coupler being internally threaded proximate said first end of said coupler and being dimensioned to receive, in cooperating fashion, said externally threaded portion of said first bushing;
a packing member for preventing the leaking of fluid from said coupler, said packing member being carried snugly in said opening through said coupler and having a centrally disposed passage therethrough dimensioned to snugly but slidably engage said locator wire as it passes through said coupler; and,
a guide member affixed to said locator wire at the end of such wire remote from said reel, said guide member being of an oblate-spheroid-like shape.

4,573,830

CHIP DECELERATOR

Raymond H. Richardson, Essex, and Robert T. Valley, South Burlington, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 21, 1984, Ser. No. 622,913
Int. Cl.[4] B65G *51/03*
U.S. Cl. 406—84 **3 Claims**



1. A workpiece transfer apparatus comprising:
a reservoir of workpieces to be transferred, each of said workpiece having a predetermined length,
a receiving element for receiving a workpiece transferred from said reservoir,
a track having a bottom, sidewalls and a top, at least partially closed, and an inclined section coupling the reservoir and the receiving element,
means for applying a timed propelling pulse of gas to a selected workpiece to propel the selected workpiece from the reservoir onto the track towards said receiving element,
means mounted on said inclined section of said track more than five workpiece lengths from the propelling means, for applying, at a selected time after the selected workpiece has entered the track, a timed decelerating pulse of gas, perpendicular to the direction of travel of said propelled selected workpiece to decelerate said selected workpiece at a predetermined position in said track so that upon termination of the timed decelerating pulse of gas, the selected workpiece is relieved of said decelerating pulse of gas and permitted to traverse the remainder of the track under the influence of the force of gravity.

4,573,831

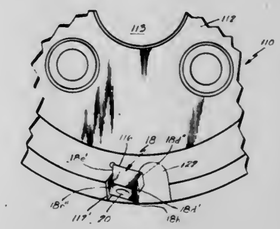
CUTTER BLADE

Ralph W. Lacey, Grosse Point Parke, Mich., assignor to Dijet Industrial Co., Ltd., Grosse Pointe, Mich.

Continuation of Ser. No. 544,134, Oct. 21, 1983, abandoned.
This application Jun. 10, 1985, Ser. No. 742,646
Int. Cl.[4] B26D *1/00*
U.S. Cl. 407—42 **12 Claims**

5. A milling cutter assembly, comprising:
a cutter body having a plurality of insert blade stations spaced apart about its periphery, and oriented to rotate about an axis disposed generally perpendicular to the direction of cutter feed;
a plurality of cutter blades mounted in said blade stations;
at least one of said cutter blades, having a blade body with a pair of opposite side faces, a plurality of peripheral edge surfces, and a cutting edge formed at the juncture of at least one of said peripheral edge surfaces with one of said side faces; said one cutter blade including a plurality of laterally spaced apart notches extending completely through said cutting edge to reduce chip width for improved chip removal, whereby during cutting a plurality of corresponding upstanding ribs are formed in the operating surface of the workpiece, which ribs are immediately removed from the operating surface of the workpiece by a subsequent one of said cutter blades before a subsequent pass of said one cutter blade through the workpiece; wherein
said cutter blade cutting edge is oriented at an acute, predetermined axial rake angle to the rotational axis of said cutter body; and
said notches through said cutting edge are defined by opposite sidewalls that are oriented in a mutually divergent relationship in a direction away from said cutting edge, wherein each of said notch sidewalls is disposed at a small acute recession angle to a plane normal to said cutting edge, whereby said notch sidewalls do not abut the ribs formed by said notches as said cutter blade cuts through the operating surface of the workpiece.

10. A milling cutter assembly, comprising:
a cutter body having at least one blade station positioned at its periphery; said blade station including a blade receiving slot defined by a flat base surface and a convex, generally



V-shaped back surface with inner and outer reference surfaces; said inner reference surface being flat, positioned radially inwardly of said outer reference surface, and intersecting said base surface at a predetermined acute angle; said blade receiving slot including a relief channel extending along the intersection of said inner reference surface and said base surface;
at least one cutter blade having opposite side faces and a plurality of peripheral edge surfaces, wherein one of said side faces intersects a first one of said peripheral edge surfaces to form a cutting edge, and the other one of said side faces intersects a second one of said peripheral edge surfaces at an acute angle which is substantially commensurate with said predetermined acute angle of said blade receiving slot to form a mounting edge located opposite to said cutting edge; said second peripheral edge surface also intersecting a third peripheral edge surface at an angle greater than said V-shaped back surface;
means for retaining said cutter blade in a predetermined orientation in said blade receiving slot, wherein said other side face and said second peripheral edge surface of said cutter blade abut said base surface and said inner reference surface respectively of said blade receiving slot, with the mounting edge of said cutter blade disposed within said relief channel, and said third peripheral edge surface of said cutter blade spaced apart from the second surface of said blade receiving slot, whereby cutting forces wedge said cutter blade securely into said blade receiving slot.

4,573,832

SINGLE AND MULTIPLE RECESSING TOOL

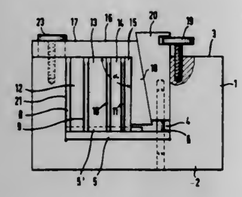
Karl Zinner, Nuremberg, Fed. Rep. of Germany, assignor to Firma Zinner GmbH, Nuremberg, Fed. Rep. of Germany

Filed May 5, 1983, Ser. No. 491,627

Claims priority, application Fed. Rep. of Germany, May 19, 1982, 3219019

Int. Cl.⁴ B23B *27/06, 29/22, 29/24;* **B26D** *3/06*

U.S. Cl. 407—70 **9 Claims**



1. A tool mounting comprising a holder element having a recess, an elongated cutting plate mounted in said recess, said holder element having a first and second side wall between which said cutting plate is mounted, a substantially L-shaped frame element mounted on said holder element, said L-shaped frame element having a first leg disposed over said cutting plate and a second leg spaced from said second side wall, said second leg having a sloping surface, a wedge element disposed between said second leg and said second side wall, said wedge element having an inclined surface, said inclined surface of said wedge element engaging said sloping surface to provide a wedging action to thereby laterally clamp and wedge said cutting plate against said first side wall, a first clamping screw engaging said frame element and threaded into said holder element to secure said frame element on said holder element, a second clamping screw threaded into said holder element and operably engaging said wedge element to dispose said wedge element toward the bottom of said recess, said elongated cutting plate having a generally longitudinal axis extending along the longitudinal length thereof and having a cutting edge on at least one longitudinal end thereof, said cutting plate having a transverse groove extending generally transversely of said longitudinal axis, and a rib element on said holder element extending generally transversely of said longitudinal axis, said rib element being engaged by said groove, said cutting plate being slideable transversely of said longitudinal axis as said rib element slides in said groove, whereby said engaged groove and rib element establish the longitudinal position of said cutting plate on said holder element.

4,573,833

NOZZLE DEVICE FOR CUTTING FLUID FOR MACHINE TOOLS

Koji Kondo, Fukui, Japan, assignor to Kabushiki Kaisha Matsuura Kikai Seisakusho, Japan

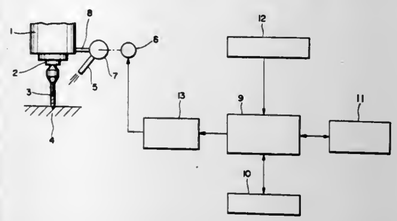
Filed Oct. 14, 1983, Ser. No. 542,213

Claims priority, application Japan, Dec. 13, 1982, 57-217039

Int. Cl.⁴ B23B *39/08, 51/06;* **B05B** *15/08*

U.S. Cl. 408—3 **2 Claims**

1. A machine, comprising a tool support, a cutting tool rotatably mounted and vertically movable on said support, means supporting a workpiece for engagement by said tool, a rotary actuator rotatably supported on said support, a nozzle having a fluid discharge carried by said actuator and rotatable with said actuator to aim the discharge at the engagement of said tool with the workpiece, a drive motor connected to said actuator to rotate said actuator for varying the direction of the discharge relative to said tool, and control means connected to said drive motor to regulate the driving of said drive motor in



accordance with a program positioning of the tool relative to the workpiece.

4,573,834

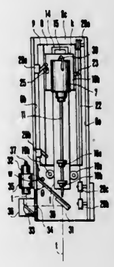
PIERCER

Nobuo Nasu, Fukuyama, Japan, assignor to Kabushiki Kaisha Kawakami Seisakusho, Hiroshima, Japan

Filed Dec. 31, 1984, Ser. No. 687,590

Int. Cl.⁴ B23G *1/00*

U.S. Cl. 408—16 **3 Claims**



1. A piercer comprising a frame including an upper frame section and a lower frame section of given lengths and which are disposed in parallel opposing relationship with a given difference in elevation therebetween, a channel plate extending uprightly from the free end of the upper frame section to a given height and including an associated guide plate or guide rail extending lengthwise thereof, a slider disposed to be movable up and down along the guide plate or the guide rail and fixedly carrying a rotary drill with its drill bit directed downward, a reflector disposed slightly below the tip of the drill bit, a lamp disposed in a wall of the channel plate for directing light toward the reflector so as to be reflected thereby to project a point mark of light to a location which is vertically and directly below the tip of the drill bit, the reflector being disposed to be movable away from the path of movement of the drill bit during the upward and downward movement of the slider, and an anti-deflection holder for the drill bit which is located slightly above the location of the tip of the drill bit, the anti-deflection holder being adapted to move down together with the rotary drill, to remain stationary on a stack of cloths as the drill bit pierces through the stack of cloths and then moves upward together with the rotary drill during the upward movement thereof.

4,573,835

MACHINE FOR BORING A PLATE WORKPIECE

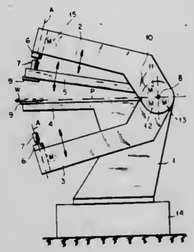
Rudolf Eckardt, Wesel, and Horst Frielingsdorf, Remscheid, both of Fed. Rep. of Germany, assignor to Flachglass Aktiengesellschaft, Gelsenkirchen, Fed. Rep. of Germany

Filed Sep. 10, 1981, Ser. No. 300,968

Claims priority, application Fed. Rep. of Germany, Sep. 11, 1980, 3034107

Int. Cl.⁴ B23B *47/00*

U.S. Cl. 408—37 **4 Claims**



1. A machine for boring a hole in a glass plate, said machine comprising:

a support;

a lower clamp arm carried on said support and having an upper clamp surface adapted to support the glass plate;

an upper clamp arm carried on said support and having a vertically displaceable lower clamp surface adapted to press the glass plate down against said upper clamp surface;

a lower drill arm pivotal about a horizontal axis on said support and having an outer end provided with an upwardly directed boring tool centered on a tool axis;

an upper drill arm pivotal about said horizontal axis on said support and having an outer end provided with a downwardly directed boring tool centered on a tool axis, the tool axes lying in a common vertical plane generally perpendicular to the horizontal axis;

drive means for rotating the tools about the respective tool axes; and

motor means for moving at least one of said clamp arms toward the other clamp arm to secure the glass plate between the clamp surfaces and for pivoting both of said drill arms similarly toward each other about the horizontal axis from a position with the tool axes crossing each other toward a position with the tool axes coaxial and the tools in vertical engagement through the glass plate held by the clamp arms, whereby such movement of said tool arms bores a hole vertically through the glass plate.

4,573,836

DEVICE FOR TRANSFERRING FLUID TO A ROTATING TOOL HOLDER

Kjell Andersson, Fagersta, Sweden, assignor to Seco Tools AB, Fagersta, Sweden

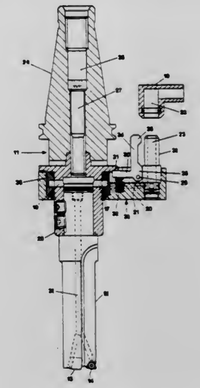
Filed Mar. 30, 1983, Ser. No. 480,479

Claims priority, application Sweden, May 21, 1982, 8203183

Int. Cl.⁴ B23Q *11/10*

U.S. Cl. 408—59 **9 Claims**

1. A device for transferring fluid, such as cooling or flushing medium, to a rotary holder for a tool for chip-forming machining of workpieces, such as a drill, the device comprising a housing arranged on the holder for rotation relative thereto about an axis of rotation, said housing comprising a first connecting member intended to, in use, be connected to a second connecting member on a machine tool, said second connecting member communicating with a fluid source, first passage means in said housing for connecting the fluid source with second passage means in the holder, said housing being provided with a locking means which is adapted to non-rotatably interconnect the housing and the holder when the first and second connecting members are moved apart and release the holder from the housing for rotation relative thereto about said axis when said first and second connecting members are connected to each other, the improvement wherein the locking means is adapted to release the holder from the housing upon the application of a force on the locking means directed substantially radially with reference to said axis.



4,573,837

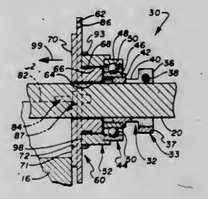
LONGITUDINAL FEED ATTACHMENT FOR A BORING BAR

James F. Flaten, Burnsville, Minn., assignor to Tobin-Arp Manufacturing Company, Eden Prairie, Minn.

Filed Feb. 3, 1984, Ser. No. 576,910

Int. Cl.⁴ B23B *39/00*

U.S. Cl. 408—111 **12 Claims**



1. A feed attachment for controlling the axial movement of a rotatable boring bar relative to a workpiece, the feed attachment comprising:

a base portion selectively secured to the bar for rotation therewith about the longitudinal axis of the bar;

a collar rotatably mounted concentrically with respect to the base portion so that the collar rotates about the axis independently from the rotation of the bar and base portion, the collar having a threaded portion thereon;

a workpiece engagement member having a reference surface on one side thereof for nonfixedly engaging a side surface of the workpiece and bearing a threaded portion on an opposite sude thereof which mates with the threaded portion of the collar; and

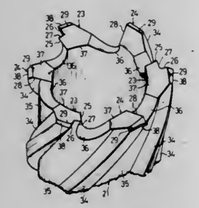
pin means extending outwardly from said one side of the engagement member for nonfixedly engaging an upper surface of the workpiece to limit rotation of the plate member with respect to the bar and workpiece and so that rotation of the collar moves the collar, base portion and bar axially with respect to said engaging means and the workpiece.

4,573,838

HOLE CUTTER

Takashi Omi, and Shohei Ohmi, both of Anjo, Japan, assignors to Omi Kogyo Co., Ltd., Anjo, Japan

Filed Apr. 5, 1984, Ser. No. 597,145
Int. Cl.⁴ B23B *51/04*
U.S. Cl. 408—204 **8 Claims**



1. A hole cutter, comprising:

a generally cylindrical cutter body adapted to be rotated by power means and having an end portion, and

a plurality of first and second cutting teeth connected to and situated circularly around the end portion of the cutter body, said first and second cutting teeth being mutually interspersed around the end portion of the cutter body,

each first cutting tooth including at least one first cutting surface having a predetermined clearance angle and a cutting angle relative to the horizontal plane perpendicular to the central axis of the cutter body, said clearance angle extending rearwardly relative to the rotational direction of the cutter body and the cutting angle extending radially of the cutter body, and first and second cutting edges situated at a front end of the first cutting surface, said second cutting edge being situated radially outwardly and circumferentially rearwardly away from the first cutting edge relative to the cutter body so that the first and second cutting edges form stepped edges and the second cutting edge is located from the cutter body more remotely than the first cutting edge,

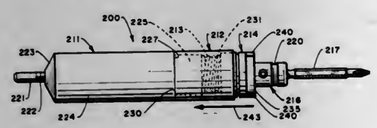
each second cutting tooth including at least one second cutting surface having the same clearance angle and cutting angle as those of the first cutting tooth, and a third cutting edge situated at a front edge of the second cutting surface of the second cutting tooth, said third cutting edge being located in the axial direction of the cutter body between the first and second cutting edges so that when the hole cutter is operated, the first, second and third cutting edges cut chips of different thickness to facilitate ejection of the chips from the hole cutter.

4,573,839

MOUNTING CHUCK FOR A DRILL HAVING REVERSIBLE TOOLS THEREIN

Danny Finnegan, 6840 Hickory Ave., Orangevale, Calif. 95662

Filed Aug. 16, 1982, Ser. No. 408,623
Int. Cl.⁴ B23B *31/06*
U.S. Cl. 408—239 R **9 Claims**



1. A mounting chuck adapted to contain one or more working tools in a position for use comprising:

a main body portion having an elongated axial passageway extending therethrough opening at one end and closed at the other end,and an elongated shank extending from said closed end coaxially aligned with said passageway for coupling said chuck to a drill;

a cylindrical member mounted in the open end of said main body portion having an axial passageway coaxial with the elongated axial passageway in the main body portion, said member terminating in an open end and having a cut-out wall section, said cutout wall section having parallel spaced internal walls and an aperture extending through said wall section and a detent in said aperture extending partly into said axial passageway therethrough but restrained from entering said passageway entirely, by the wall surrounding said aperture being less in diameter than the diameter of said detent;

a first collar rotatably mounted on the outer periphery of said member encircling said aperture and retaining said detent between the wall surrounding said aperture and the inner wall of said collar, said collar having inner wall portions of two differing diameters, one of said inner wall portions engaging said detent in a position whereby said detent extends into said axial passageway and the other of said inner wall portions being spaced a sufficient distance from the outer wall of said member to permit said detent to withdraw slightly out of said axial passageway in said member;

resilient means between said member and said body portion and said first collar normally biasing said first collar toward said open end of said body portion;

a tool holder having a main body portion having a configuration substantially the same as said cut-out wall section and insertible therein, said main body portion of said tool holder having an axially extending passageway axially aligned with the axial passageways through said member and said first mentioned main body portion, and a pair of bosses on both sides of said body portion of said tool holder, each of said bosses having apertures therein aligned with the passageway through said tool holder main body portion, and each of said bosses having tool retaining means therein adapted to extend into the apertures in said bosses to engage a tool inserted therein to thereby retain a tool in fixed position in said boss, each of said bosses having an annular groove therein adapted to receive said detent to lock said tool holder in said member only when said detent is in said groove, said tool holder being disposed in said main body portion with said detent entering said groove in one of said bosses; and

a second collar encircling a portion of the open end of said body member, said resilient means and the outer wall of said first collar, said second collar being freely rotatable and axially fixed relative to said first collar and adapted to serve as a handle whereby axial movement of said first collar against the bias of said resilient means toward the closed end of said main body portion allows said detent to withdraw slightly out of said passageway through said member and into said groove in said boss while release of said first collar permits said resilient means to bias said first collar back to its normal position where said detent extends slightly into said passageway through said member and into said groove in said boss.

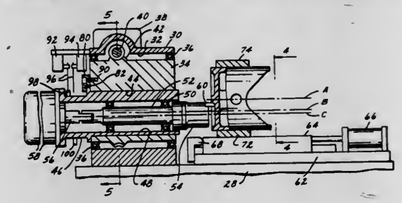
4,573,840

PISTON COUNTERBORING MACHINE

Frank C. Skrentner, Fenton, Mich., assignor to Lamb Technicon Corp., Warren, Mich.

Filed Apr. 2, 1984, Ser. No. 596,141
Int. Cl.⁴ B23C *3/04, 3/34*
U.S. Cl. 409—200 **11 Claims**

1. A machine for machining the solid outer end face of a piston so as to form in said end face an annular counterbore with an axially outwardly projecting central land at the center thereof comprising, a base, a headstock housing on said base having an axial bore therein, means for mounting a piston to be machined on said base so that the central axis of the piston is aligned with the axis of said bore, a carrier journalled for rotation in said bore, said carrier having an axially extending bore therein which is eccentric relative to the axis of rotation of the carrier, a spindle housing secured in the bore of the carrier to rotate therewith, said spindle housing being rotatably adjustable in said carrier bore, said spindle housing having an axially extending bore therein which is disposed eccentrically relative to the central axis of the spindle housing, a tool spindle journalled for rotation in said spindle housing bore and constructed and arranged to receive a cutting tool thereon adapted to engage said end face of the piston when the piston and tool



are displaced axially toward one another, means for moving the piston axially relative to the spindle, a motor carried by said spindle housing for rotation therewith and having an output shaft operably connected to said spindle for rotating the spindle around its own central axis to rotate the cutting tool, and drive means simultaneously rotating the carrier about the axis of the bore of the headstock housing through at least one revolution so as to cause the rotating cutting tool to orbit around the central axis of the housing bore and thereby machine said counterbore.

4,573,842

RESILIENT TIE-DOWN DEVICE

Ralph F. Mantela, Union Lake; Charles J. Brady, Milford; Thomas M. Johnson, Howell; Hugh W. Larsen, Milford, and Thomas L. Schallhorn, Howell, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 24, 1983, Ser. No. 469,254
Int. Cl.⁴ B60P *3/06*
U.S. Cl. 410—23 **1 Claim**



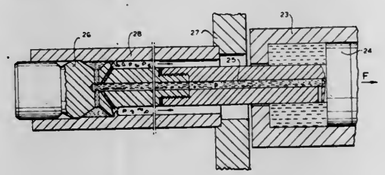
1. A resilient tie-down device adapted to be interposed between a hook device connected to a vehicle frame and a chain connected to a vehicle transporter for providing a restraint system which reduces forces transmitted to the vehicle during shipment thereof, said resilient tie-down device including an elongated webbing having a pair of opposed ends and made of a woven yarn of synthetic material having a minimum breaking elongation of 30%, said webbing having each of said opposed ends doubled over so as to form a strap having a pair of spaced loop portions with said opposed ends located between said loop portions, a first guide member located in one of said loop portions of said strap for pivotal connection with said hook device and a second guide member located in one of said loop portions of said strap for pivotal connection with said hook device and a second guide member located in the other of said loop portions of said strap for pivotal connection with said chain, means fastening said opposed ends of said webbing to each other between said loop portions, said strap being pretensioned and encapsulated in a jacket of elastomeric materials so as to provide a linear spring rate and minimize wear and abrasion of said strap.

4,573,841

METHOD OF AND APPARATUS FOR THE FINISH SHAPING OF PROFILED CYLINDRICAL HOLES

Georgi K. Petkov; Nikola M. Netzov; Botyo P. Botev, and Dimiter N. Bankovski, all of Gabrovo, Bulgaria, assignors to N P S P po Hydroplastichna Obrabotka na Metalite, Gabrovo, Bulgaria

Filed Nov. 15, 1983, Ser. No. 551,716
Claims priority, application Bulgaria, Dec. 22, 1982, 58988
Int. Cl.⁴ B23D *37/00, 43/02*
U.S. Cl. 409—244 **8 Claims**



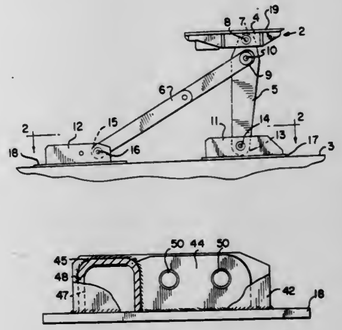
1. A method for the precise and finish processing of a profiled cylindrical hole in a workpiece, comprising first removing chips along the hole being processed and during the removal of the chips along the hole subjecting the machined zone of the hole to plastic deformation by feeding fluid under high pressure and at a high speed into the deformation zone, whereby the fluid also removes the chips from the machined deformation zone.

4,573,843

HITCH MOUNTING MEANS

Harold E. Hesch, St. John, Ind., and George S. McNally, So. Holland, Ill., assignors to Pullman Standard, Chicago, Ill.

Filed Jun. 23, 1983, Ser. No. 507,143
Int. Cl.⁴ B60P *3/07*
U.S. Cl. 410—58 **11 Claims**



1. A pivot mount for pivotally attaching an end of a fifth wheel support strut to a railway car, said mount comprising:

rigid base means;

a pair of end members spaced from each other and rigidly affixed to said base means;

a pair of lug members rigidly affixed to said base means, said pair of lug members being positioned between said end members and said lug members being spaced from each other and from said end members;

pivot means for pivotally attaching a support strut means to each of said end members and to a respective adjacent lug member spaced from each said end member; and

a support beam having:

a first wall portion attached to the base means and extending upwardly therefrom and being disposed transversely with respect to the lug and end members, the first wall portion having an upper end;

a second wall portion connected to the upper end of the first wall portion and extending transversely and rearwardly therefrom, the second wall portion having a rearward end; and

a third wall portion connected to the rearward end of the second wall portion and extending transversely and downward therefrom, the third wall portion having a lower end attached to the base means, whereby the support beam forms a torque box structure with the base means,

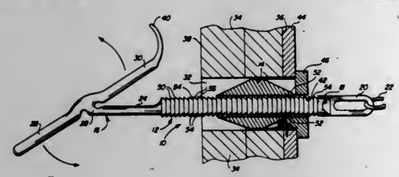
said torque box structure being rigidly affixed to each of said end members and each of said lug members for rigidifying said pivot mount and for receiving from the lug members and the end members forces received from the strut and for transmitting those forces to the base means, each of said lug members being rigidly affixed to one of said wall portions of said support beam and being supportingly engaged by another of said wall portions of said beam.

4,573,844

ANCHORING BOLT DEVICE

Gareth J. Smith, 15533 Tupper St., Sepulveda, Calif. 91343

Filed Nov. 25, 1983, Ser. No. 555,072
Int. Cl.⁴ F16B *21/00*
U.S. Cl. 411—340 **13 Claims**



1. An improved anchor bolt device, said device comprising, in combination:

(a) a bolt adapted to be inserted through an opening in a wall, said bolt including

i. an elongated shaft bearing shaft surface gripping means, and,

ii. a pair of inter-connected, substantially rigid, opposed arms integral with and pivotally connected to the front end of said bolt and adapted to move between a collapsed, inoperative position wherein one arm extends forwardly of the end of shaft and the other arm extends rearwardly of said end of said shaft so as to pass with said shaft through an opening in a wall, and an operative extended position substantially at a right angle to said shaft, said pair of opposed arms when at rest, extending at an angle other than 90° with respect to said shaft,

iii. a portion of the front end of said shaft constituting resilient, deformable means connecting said shaft to said arms and adapted to urge said arm towards said operative position; and,

(b) a collet adapted to releasably connect to the rear portion of said shaft, said collet having,

i. an opening extending therethrough, which opening receives the rear end of said shaft, and,

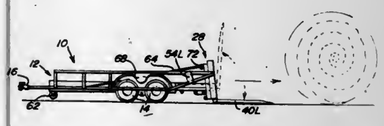
ii. securing means surrounding said opening and adapted to releasably engage said shaft gripping means to releasably secure said shaft against a wall.

4,573,845

SELF-LOADING TRAILER

Marvin L. Carpenter, Rte. 2, Box 300, Diana, Tex. 75640

Filed Oct. 15, 1984, Ser. No. 661,231
Int. Cl.⁴ A01D *90/08*; **B60P** *1/14*
U.S. Cl. 414—24.5 **14 Claims**



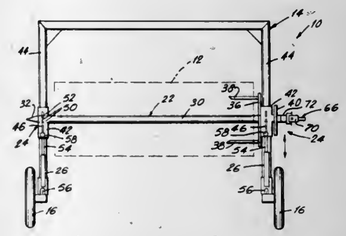
12. A self-loading and unloading trailer for use when towed by a farm tractor or the like in loading and unloading articles such as hay bales, the trailer comprising a wheeled frame having hitch means at a forward end thereof for connection to the tractor or the like, and a loading and unloading carriage at a rear loading end thereof, the carriage being pivotally mounted about a transverse axis at the rear of the frame and comprising elongate arms for receipt in the rearward ends thereof of respective releasable loading forks, the cariage having a lowered loading position wherein the forks extend behind the frame substantially level with the ground for backing under an article to be loaded, the carriage being pivotally movable from the loading position to an elevated position causing the forks to lift the article onto the rear end of the frame, aligned lengthwise track sections in the frame and carriage respectively, a carrier with a releasable fork mounted for movement along the track sections for moving the article lengthwise toward the forward end of the frame and for unloading articles from the frame by reverse movement of the carrier along the track sections, and drive means for selectively moving the carrier lengthwise in forward and reverse directions along the track sections and for pivoting the loading and unloading carriage between the loading and elevated positions.

4,573,846

HAY BALE PROCESSOR

Weldon C. Willbanks, and George Spector, both of 233 Broadway RM 3615, New York, N.Y. 10007

Filed Sep. 17, 1984, Ser. No. 651,525
Int. Cl.⁴ A01D *87/12*
U.S. Cl. 414—24.6 **5 Claims**



1. An apparatus connected to a prime mover for handling a bale which comprises:

(a) a wheeled frame member;

(b) means for connecting said frame member to said prime mover to permit said frame member to be moved with respect to said bale supported on the ground so that said frame member extends around said bale;

(c) an elongated support for engaging and supporting said bale;

(d) means on said frame member for rotatably engaging opposite ends of said elongated support member;

(e) means on said frame member for raising and lowering said elongated support member relative to said ground whereby upward movement of said elongated support member will cause said bale to be raised from said ground;

(f) means on said frame member for rotating said elongated support member whereby rotation of said elongated support member will cause said bale to unroll, wherein said elongated support comprises:

(a) an elongated shaft having a pointed end and a splined end, said pointed end passes through center of said bale while said splined end engages said means for rotating said elongated support member;

(b) a first disc member having bale penetrating tines affixed near splined end of said elongated shaft; and

(c) a second disc member affixed between said first disc member and said splined end of said elongated shaft; wherein said means on said frame member for rotatably engaging opposite ends of said elongated support member comprises:

(a) a pair of sleeves, each said sleeve slideably mounted to an upright portion of said frame member;

(b) a pair of plates, each said plate transversely mounted to each said sleeve and having a beveled edge extending outwardly therefrom;

(c) two pairs of rollers each said pair of rollers mounted to top of each said plate; and

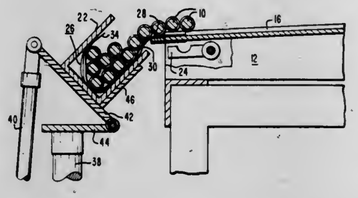
(d) two pivotable spring loaded latches, each said latch mounted to each said sleeve above each said pair of rollers to rotatably engage one end of said elongated shaft whereby one of said latches is between said first disc member and said second disc member preventing elongated shaft from laterally sliding off said rollers.

4,573,847

NUCLEAR FUEL ROD CHANNEL TRAY LOADING SYSTEM

Cecil A. Howell, and Ernest R. Lacy, both of Columbia, S.C., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 12, 1983, Ser. No. 522,898
Int. Cl.⁴ B65G *57/18*
U.S. Cl. 414—63 **11 Claims**



1. A system for loading a group of elongated rods into a tray from an inclined ramp having a lower terminus, comprising:

(a) a controllable rod stop disposed on said ramp, said stop having an engaged position which blocks said rods and a disengaged position which releases said rods;

(b) a hermetically-sealed envelope containing air of atmospheric pressure and having two generally opposing ends with one of said ends attached to said ramp proximate said ramp's lower terminus, said envelope also having a lower surface with a hole proximate said ramp's lower terminus, with said envelope being of sufficient stiffness to atmospherically self-inflate, when unburdened, and to self-project its other of said two ends generally away from said ramp's lower terminus at a preselected distance, when unencumbered; and

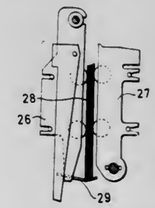
(c) means for disposing said tray generally adjacent to, and underneath, said envelope, when said rods are to be loaded into said tray, for said rods to roll from said ramp onto said envelope pushing said envelope into contact with said tray, when said stop is disengaged, and for said envelope to lower said rods to the bottom of said tray as air is pushed out of said hole of said envelope by the weight of said rods thereon.

4,573,848

ARRANGEMENT FOR DISPENSING SHEETS FROM A STORE THEREOF, FOR EXAMPLE BANK NOTES

Leif Lundblad, Häradsvägen 102, S-141 41 Huddinge, Sweden

Filed Dec. 5, 1983, Ser. No. 558,106
Claims priority, application Sweden, Dec. 6, 1982, 8206935
Int. Cl.⁴ B65H *31/30*
U.S. Cl. 414—104 **3 Claims**



1. An arrangement for dispensing sheets from a store (**10**) of sheets, for example bank notes, to one (**11**) of a plurality of withdrawal stations (**11, 12**), including first transport means (**13–14**) for transporting sheets from the store (**10**) to a collecting station (**15**), a plurality of so-called finger wheels (**31, 32, 33**) arranged immediately upstream of the collecting station (**15**), so as to reduce the speed of the sheets, and second transport means (**16–17**) for transporting the collected bundle of sheets from the collecting station (**15**) to the withdrawal station (**11**), said collecting station (**15**) comprising two mutually opposing walls (**26, 27**), between which the bundle of sheets is clamped during the initial stage of transportation from said collecting station (**15**) to said withdrawal station (**11**), characterized in that the walls (**26, 27**) are provided with wheels, rollers or the like (e.g., **261, 271**) which are arranged to co-act with each other, two and two, one on each wall and which are arranged to transport the bundle of sheets in one of a number of possible directions, in dependence upon to which withdrawal station (**11**) of said withdrawal stations (**11–12**) the ordered sheets are to be dispensed and one of said walls is also formed as a sheet removal means (**27**) for co-action with the finger wheels (**31, 32, 33**) which project through openings (**2720, 2740, 2760**) in said wall (**27**) when said wall is turned from the collecting station (**15**) to the sheet removal position; and in that flaps (**2721, 2741, 2761**) are arranged to cover said openings (**2720, 2740, 2760**) when the wall (**27**) is pivoted to the collecting station (**15**), and comprises a wall defining said collecting station and the selected transport direction for the bundle of sheets is the same as the direction of the pivot axis of said wall.

4,573,849

SPOUT AIMER WITH FEED ROLL ROTATION SENSING

Stanley J. Johnson, Cedar Falls, and Gary L. Gold, Waterloo, both of Iowa, assignors to Deere & Company, Moline, Ill.

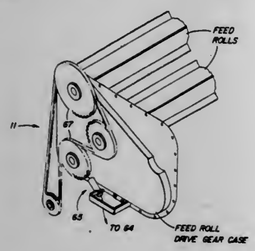
Continuation of Ser. No. 482,690, Apr. 6, 1983, abandoned. This application Jul. 18, 1985, Ser. No. 756,919
Int. Cl.⁴ B65G *67/22*
U.S. Cl. 414—334 **6 Claims**

1. In a forage harvester having rotatable feed rolls and a

movable spout for directing crop to a crop-receiving wagon coupled thereto, characterized by:

control means for automatically moving the spout to evenly fill the wagon, the control means comprising a sweep mode timer which expires after a predetermined time period and means for preventing automatic movement of the spout unless the sweep mode timer has expired;

rotation sensing means for sensing the rotation of the feed rolls; and



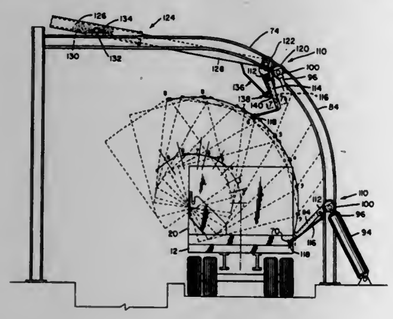
disable means for preventing automatic movement of the spout by the control means when the rotation sensing means detects that the feed rolls are rotating slower than a certain rotation speed, the disable means comprising means for periodically restarting the sweep mode timer to prevent expiration thereof unless the feed rolls are rotating faster than said certain rotation speed.

4,573,850

CONTAINER AND HANDLING APPARATUS THEREFOR

Diego R. Suarez, 6847 Granada Blvd., Coral Gables, Fla. 33146

Division of Ser. No. 578,013, Feb. 8, 1984, Pat. No. 4,527,939.
This application Dec. 7, 1984, Ser. No. 679,216
Int. Cl.⁴ B65G *67/42*
U.S. Cl. 414—382 **6 Claims**



1. Container dumping apparatus comprising:

a. a guide rail extending upwardly adjacent to and over a vehicle carrying a tiltable container;

b. hook means for engaging a hooking bar extending from a container;

c. carriage means connected with said hook means, said carriage means supported for movement along said guide rail;

d. means for moving said carriage means along said guide rail with said hook means engaging a hook receiving means carried by a tiltable container from an initial position in which the container is upright and at rest, to a final position in which the container has been tilted about a tilt axis to dump the contents thereof; and

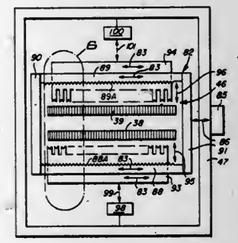
e. shock absorber means carried by said guide rail to engage said carriage means for providing resistance to movement of said carriage means in a tilting direction of said container to prevent a rapid forward jerking movement of the container after the center of gravity of the container passes through the highest point in its path of travel.

4,573,851

SEMICONDUCTOR WAFER TRANSFER APPARATUS AND METHOD

Robert M. Butler, Tempe, Ariz., assignor to Microglass, Inc., E. Syracruse, N.Y.

Filed May 18, 1983, Ser. No. 495,642
Int. Cl.⁴ B65G *65/04*
U.S. Cl. 414—404 **15 Claims**



1. A wafer transfer system for transferring semiconductor wafers between first and second wafer carriers, said system comprising in combination:

(a) carrier support means for receiving and supporting either of said first and second wafer carriers;

(b) elevator means for engaging lower edge portions of wafers in the one of said first and second wafer carriers then on said carrier support means and raising the wafers into a wafer holding region located above said one of said wafer carriers, and for engaging lower edge portions of wafers in said wafer holding region and lowering them into respective sets of grooves in the one of said first and second wafer carriers then on said carrier support means;

(c) first and second spaced groups of wafer supporting grooves in said elevator means, each wafer supporting groove of said first group being aligned with a corresponding wafer supporting groove of said second group to cooperate therewith in engaging lower edge portions of a wafer to support that wafer, wherein a first wafer supporting groove of said first group includes a first flat, vertical surface for engaging a first peripheral portion of a first face of a first wafer and a first steeply inclined surface opposed to said first flat vertical surface for supporting an edge point of said first wafer and exerting a horizontal force, due to the weight of said first wafer, that urges said first peripheral portion of said first wafer tightly against said first flat, vertical surface, and wherein a first wafer supporting groove of said second group includes a second flat, vertical surface for engaging a second peripheral portion of an opposite second face of said first wafer and a second steeply inclined surface opposed to said second flat, vertical surface for supporting another edge point of said first wafer and exerting a horizontal force, due to the weight of said first wafer, that urges said second peripheral portion of said first wafer tightly against said second flat, vertical surface, whereby said first wafer is held firmly in a precisely vertical position by said first wafer supporting grooves of said first and second groups, respectively, during upward and downward movement of said elevator means;

(d) first retaining means, movable into said wafer holding region while a first group of wafers is being held therein and having a plurality of grooves, for retaining said wafers of said first group in said wafer holding region after said elevator means is lowered, and retractable from said wafer holding region to allow said wafers of said first group to be lowered from said wafer holding region by said elevator means, wherein said plurality of grooves of said first retaining means engage lower edges of respective wafers of said first group spaced from and adjacent to said edge portion engaged by said wafer supporting grooves; and

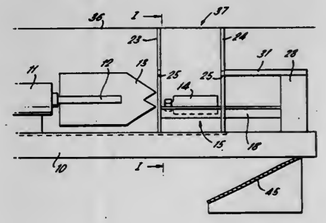
(e) second retaining means, disposed on an opposite side of said wafer holding region from said first retaining means, and having a plurality of grooves that are aligned with said plurality of grooves of said first retaining means, respective, edges of said wafers of said first group coming to rest in respective ones of said plurality of grooves of said second retaining means as said elevator means is lowered.

4,573,852

VIAL RUPTURING APPARATUS

John H. T. Rinfret, and Elizabeth M. Rinfret, both of Grange Farm, Farthorpe, West Ashby, Horncastle, Lincolnshire, United Kingdom

Continuation of Ser. No. 407,938, Aug. 13, 1982, abandoned.
This application Jan. 23, 1985, Ser. No. 693,822
Claims priority, application United Kingdom, Aug. 13, 1981, 8124807
Int. Cl.⁴ B65B *69/00*
U.S. Cl. 414—412 **9 Claims**



1. An apparatus for rupturing an elongated plastic vial which has opposite first and second ends and a longitudinal central axis therethrough, said apparatus comprising

a support means comprising a pair of parallel, horizontally-oriented bars for supporting said elongated vial such that said longitudinal axis thereof is generally horizontally oriented, said bars defining a drainage channel therebetween,

a rupturing means for rupturing said elongated vial in parallel with its longitudinal central axis, said rupturing means consisting of a blade holder and a knife blade, said knife blade extending beyond said blade holder and towards the first end of said elongated vial, said knife blade having a sharpened edge facing said first end of said elongated vial,

an abutment means for contacting the second end of said elongated vial and preventing said elongated vial from sliding in a direction parallel to its longitudinal central axis as the knife blade of said rupturing means moves through said vial,

distance-reducing means for reducing the distance between said rupturing means and said abutment means to cause the knife blade of said rupturing means to rupture said elongated vial in parallel with its longitudinal central axis,

an upwardly-oriented flat sheet having an upper edge and a lower edge, the lower edge being connected to one of said pair of parallel, horizontally-oriented bars, and

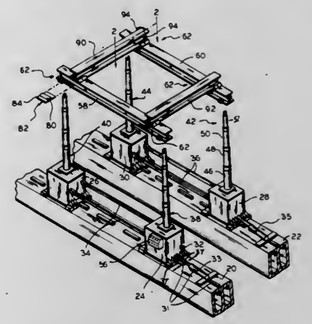
a cassette means connected to the upper edge of said flat sheet, said cassette discharging individual elongated plastic vials onto said flat sheet to roll thereabong into position on said pair of parallel, horizontally-oriented bars.

4,573,853

GANTRIES FOR HAULING HEAVY LOADS OVER FIXED PATHS

Gary Lorenz, 5206 37th Ave. Court, Moline, Ill. 61265

Filed Feb. 24, 1984, Ser. No. 583,468
Int. Cl.⁴ B60P *3/00;* **B66C** *5/04*
U.S. Cl. 414—460 **10 Claims**



1. A gantry comprising at least four base members positioned at the corners of a generally rectangular pattern and adapted to move along at least two spaced parallel paths, tie rod means for assembling said four base members into two associated pairs, each of said pairs being positioned to follow an individually associated one of said paths, lifting means comprising at least one hydraulic ram extending perpendicularly upward from each of said base members, superstructure means generally forming a rectangular frame attached at its corners to the tops of said hydraulic rams for lifting a load within the space between said parallel paths which is straddled by said gantry, and coupling means in said superstructure for providing flexibility at each of the corners of said rectangular frame, said flexibility being along two perpendicular axes in a plane parallel to said two paths said superstructure comprises a first pair of spaced parallel beams pivotally coupled to the tops of said hydraulic rams with freedom to pivot up or down in a direction which is parallel to said paths, a second pair of spaced parallel beams resting on and extending between said first pair of beams thereby forming a generally rectangular frame, and rocker plate means comprising an arcuate segment of a cylinder positioned between the first and second of said beams at each point where a second beam rests on a first beam, the contours of said cylindrical segment enabling said superstructure to have approximately 10° freedom to rock side to side in directions which are perpendicular to said paths.

4,573,854

APPARATUS FOR LOADING A WHEELCHAIR OR SIMILAR OBJECT

Robert E. McFarland, 8301 NW. 39th Expressway, Bethany, Okla. 73008

Filed Dec. 23, 1983, Ser. No. 565,164
Int. Cl.⁴ B60R *7/00*
U.S. Cl. 414—462 **60 Claims**

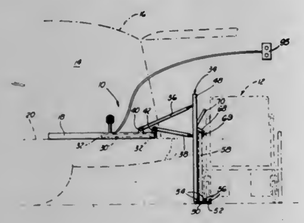
1. Apparatus for loading a wheelchair or other object into a rear compartment of a vehicle, said apparatus comprising:

a chassis adapted for attachment to a lower surface of said rear compartment, and having a forward portion and a rearward portion, and defining a plurality of spaced guide tracks;

a carriage comprising roller means including at least one roller in guided, rolling contact with a guide track of said chassis, such that said carriage may be rolled between forwardmost and rearwardmost positions in relation to said chassis;

a rack to hold the wheelchair or other object; and

rotatable linkage means pivotally connecting said rack to said carriage, whereby, as said linkage means is rotated in a substantially continuous forward pivotal motion during a loading cycle, said rack and the wheelchair or other object held thereon are raised from a substantially vertically oriented loading position at the rear of the vehicle in which said rack is adjacent a ground surface rearward of said vehicle to facilitate placement of the wheelchair or other object thereonto, forwardly pivoted through approximately 90°, passing through a point of maximum



elevation, and lowered to a substantially horizontal storage position in which said rack is adjacent and substantially parallel to said carriage and chassis in said compartment, said cycle being reversible for unloading;

wherein said carriage passes through said rearwardmost position during said loading and unloading cycles, and when said rack and said chair or other object are in said storage position, said carriage, said rack and said chair, can be concurrently rolled to said forwardmost position for transport by said vehicle.

4,573,855

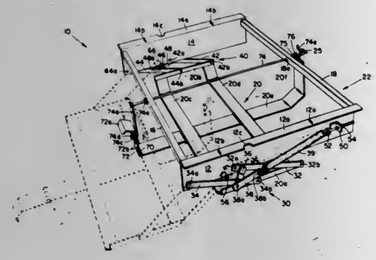
SWINGABLE TIRE CARRIER

Charles Braswell, Burnet, Tex., assignor to Tejas Designs, Inc., Burnet, Tex.

Filed Oct. 16, 1984, Ser. No. 661,457

Int. Cl.⁴ B62D *43/04*

U.S. Cl. 414—463 **6 Claims**



1. A tire carrier for use with a vehicle comprising:

a mounting frame attachable to an undersurface of the vehicle;

a tire receiving frame dimensioned to receive a tire usable on the vehicle;

pivotable means for interconnecting said tire receiving frame and said mounting frame such that said tire receiving frame is suspended below said mounting frame and is movable between a retracted, storage position and an extended, open position;

manually releasable latch means acting between said mounting frame and said tire receiving frame for retaining said tire receiving frame in said storage position, said latch means including

a rod pivotable about an axis parallel with the direction of movement of said tire receiving frame;

a lock bar carried by said rod at one end thereof and extending generally perpendicularly from said rod;

a hook carried by and movable with the other end of said rod;

means at one end of said tire receiving frame for engaging said hook in said storage position; and

means at the other end of said tire receiving frame for engaging said lock bar when said rod is rotated such that said hook is engaged, whereby rotation of said rod is prevented until said lock bar is disengaged.

4,573,856

APPARATUS FOR LOGISTICAL OPERATIONS WITH TEXTILE MACHINERY

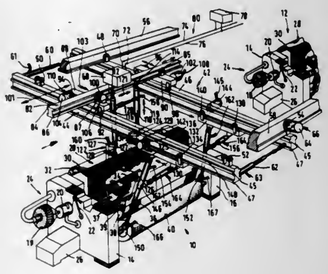
Wolfgang K. Meyer, Winterthur, and Fritz-Werner Breyer, Frauenfeld, both of Switzerland, assignors to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Sep. 20, 1983, Ser. No. 533,962

Claims priority, application European Pat. Off., Sep. 24, 1982, 82810399.4

Int. Cl.⁴ D03D *1/00*

U.S. Cl. 414—561 **13 Claims**



1. An apparatus for logistical operations with textile machinery, said apparatus comprising

a rack for mounting over at least one textile machine in movable relation, said rack including at least two parallel carrier beams, means for adjusting said carrier beams transversely relative to one another and a third beam mounted transversely of said adjustable carrier beams for movement longitudinally of said carrier beams;

at least one element movably mounted on and longitudinally of each carrier beam;

at least one operative device mounted on each said element for infeeding into a textile machine located below said rack;

at least two reciprocating actuators movably mounted on said third beam; and

second means for moving said actuators relative to each other longitudinally of said third beam.

4,573,857

VEHICLE TOWING MECHANISM

Calvin R. Porter, Sr., and Calvin R. Porter, Jr., both of Kansas City, Mo., assignors to Ready Built Tow Trucks, Inc., Kansas City, Mo.

Filed Jan. 17, 1983, Ser. No. 458,200

Int. Cl.⁴ B60P *3/12*

U.S. Cl. 414—563 **2 Claims**

1. A vehicle towing mechanism in combination with a truck having winch means for towing a vehicle; said vehicle towing mechanism comprising:

(a) a proximate support member pivotally connected to said truck forward of a rear portion of said truck and extending rearwardly therefrom and longitudinally therewith;

(b) a first riser tube attached to said truck rear portion;

(c) a second riser tube telescopically received relative to said first riser tube so as to telescope along a generally vertical axis; said second riser tube having a clevis attached thereto and surrounding and supporting said proximate support member;

(d) means for selectively vertically locking said second riser tube in a telescoping position relative to said first riser tube;

(e) a sleeve member telescopically received relative to said proximate support member;

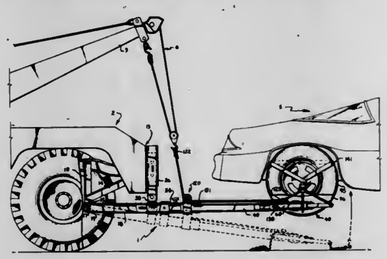
(f) an elongate main support member having a first end and a second end; said first end being telescopically received relative to said sleeve member and said proximate support member; said main support member including:

(1) an upper wall, a lower wall and spaced side walls interconnecting said upper and lower walls;

(2) said side walls being vertically aligned and formed of a high tensile steel and prestressed into a bowed configuration having an upward curvature in a vertical plane from a longitudinal center thereof toward said first and second ends thereof, respectively;

(3) said lower wall being fixedly attached to said side walls near a bottom thereof; and

(4) said upper wall being fixedly attached to said side walls near a top thereof after said side walls have been prestressed whereby said upper wall acts to retain said prestressed side walls in said bowed configuration;



(g) a wheel-supporting apparatus adapted for securely engaging and supporting a set of wheels of the vehicle to be towed, said wheel-supporting apparatus including:

(1) a pivotal adapter telescopically received relative to said main support member second end;

(2) a crossbar having first and second ends and a center section; said crossbar center section being swingably connected to said pivotal adapter and extending generally transversely therefrom to allow rotation of said wheel-supporting apparatus in a generally horizontal plane when said main support member is horizontally aligned;

(3) first and second transverse arm members telescopically received relative to said first and second crossbar ends respectively;

(4) first and second wheel-engaging devices connected to respective first and second arm members; each of said wheel-engaging devices having a rotating section and a fixed section; said fixed and rotating sections each having a longitudinal component and a transverse component;

(5) said wheel-engaging devices having a first position in which said rotating section transverse components are spaced from and generally parallel to respective fixed section transverse components and said longitudinal components are generally coaxial; said wheel-engaging devices when in said first position thereof defining wheel-receiving spaces;

(6) each of said wheel-engaging devices having a second position in which said rotating sections are rotated away from said wheel-receiving space such that a respective rotating section transverse component is positioned inwardly of a line projected through an inner edge of said fixed section longitudinal component;

(7) wheel-retention means comprising first and second chain units each including a hooking section and an extension section; each of said hooking sections being connected to a respective rotating section transverse component; each of said extension sections being attached to said crossbar center section and extending through a longitudinal bore in a respective fixed section transverse component and being adapted to respectively engage said chain hooking sections; and

(h) a lift mechanism including:

(1) a support cable having a first end and a second end; said cable first end being operatively connected to said tow truck winch means;

(2) a support peg attached to and extending upwardly from said pivotal adapter;

(3) sheave means attached to said sleeve member for guiding said support cable;

(4) said support cable extending through said sheave means and being connected to said support peg at said support cable second end, whereby the vehicle towing mechanism is lifted upon operation of the tow truck winch means.

4,573,858

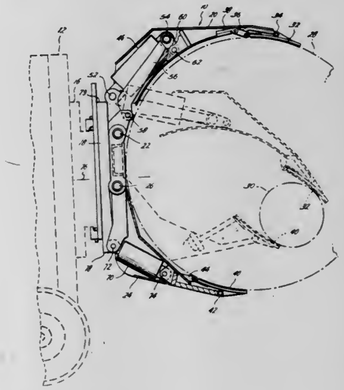
CLAMPING ATTACHMENT FOR A LIFT TRUCK HAVING TWO PIVOTING ARMS

Stuart W. Sinclair, Lake Jackson, Tex., assignor to Long Reach Manufacturing Co., Houston, Tex.

Filed Feb. 16, 1984, Ser. No. 580,990

Int. Cl.⁴ B66C *1/42*

U.S. Cl. 414—620 **14 Claims**



1. A clamping attachment for use on a lift truck comprising,

a frame,

a first arm pivotally connected to the frame,

a second arm pivotally connected to the frame, said second arm being shorter than the first arm,

first and second hydraulic piston and cylinder means connected to the first and second arms, respectively, for moving said arms toward each other to close for clamping loads therebetween and away from each other to open to release loads,

said first and second hydraulic piston and cylinder means being connected in parallel whereby both arms simultaneously move inwardly until one arm contacts a load and

said one arm will stop and the other arm will continue inward movement, and

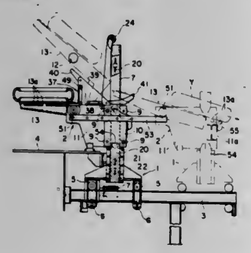
a biasing valve connected to said second hydraulic piston and cylinder means for initially preventing hydraulic fluid opening said second arm whereby on opening said arms the first arm opens while the second arm remains closed until the first arm completely opens, said biasing valve including a check valve for allowing the flow of hydraulic fluid from said second hydraulic piston and cylinder means.

4,573,859

APPARATUS FOR UNLOADING CURED TIRES FROM A TIRE VULCANIZING PRESS

Itaru Amano; Yoshimata Maikuma, both of Kobe; Keiji Ozaki, Hyogo, and Hisaaki Ohnishi, Kobe, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Mar. 1, 1983, Ser. No. 470,949
Claims priority, application Japan, Mar. 2, 1982, 57-34165
Int. Cl.[4] B65G *61/00*
U.S. Cl. 414—628 **15 Claims**



1. An apparatus for unloading a cured tire from a tire vulcanizing press having a center forming mechanism, said apparatus comprising:

a movable tire support member tiltably mounted on a liftable support member and for supporting said cured tire thereon;

means for moving said movable tire support member horizontally toward and away from said center forming mechanism of said tire vulcanizing press and for receiving and unloading said cured tire;

means for tilting said movable tire support member toward a tire discharging side of said press at a lifted position over said center forming mechanism; and

a guide cam member mounted on said means for moving said movable tire support member for engaging said movable tire support member and for guiding said movable tire support member toward a lower tire discharge point in a predetermined tilted posture, said guide cam member including a first auxiliary cam plate connected thereto for selectively guiding movement of said movable tire support member.

4,573,860

EQUIPMENT FOR DISENTANGLING BARS

Rolf Peddinghaus, Deterberger strasse 25, 5828 Ennepetal, Fed. Rep. of Germany

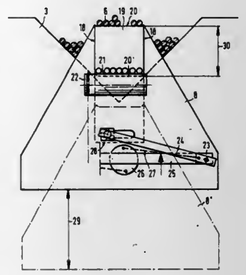
Filed May 7, 1984, Ser. No. 607,452
Int. Cl.[4] B65G *47/12*
U.S. Cl. 414—745 **12 Claims**

1. In a device for disentangling elongated bars, including a plurality of relatively longitudinally spaced frames each extending at right angles relative to the length of the bars and each having an upwardly directed V-shaped cut-out, the V-shaped cut-outs being mutually aligned, and vertically liftable supports disposed between said frames, each support having a central portion extending vertically relative to the length of the bars and having a width which is less than the maximum width of said V-shaped cut-outs, the improvement comprising:

a downwardly extending slot through the central portion of each liftable support formed by downwardly extending opposed side walls and a bottom wall in each support;

a conveyor element mounted in each support and extending across the respective slot;

a bulkhead operatively mounted in each slot for vertical movement therein guided by said opposed side walls thereof between an upper position and a lower position;



a bottom edge on each bulkhead; and

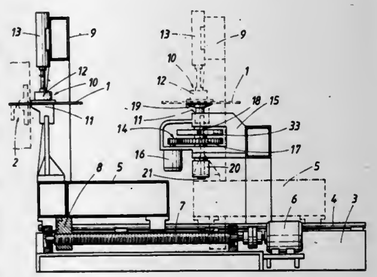
an upper edge on each bulkhead which in said upper position forms the upper edge of the respective associated support for supporting bars thereon and in said lower position lies below the respective conveyor element, so that said opposed side walls of said slots define the lateral boundaries of a conveyor channel above said conveyor elements when said bulkheads are in said lower position.

4,573,861

APPARATUS FOR FEEDING SHEET METAL ELEMENTS TO A BENDING

Johann Aschauer, Eferding, Austria, assignor to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Jun. 13, 1983, Ser. No. 503,793
Claims priority, application Austria, Jun. 23, 1982, 2420/82
Int. Cl.[4] B21D *43/11*
U.S. Cl. 414—751 **12 Claims**



1. An apparatus for feeding and rotating a sheet metal element, comprising the combination of

(a) a frame,

(b) a carriage displaceably mounted on said frame for feeding the sheet metal element,

(c) gripping means operable to grip the sheet metal element in a predetermined plane, said gripping means including

(1) a non-rotatable gripping jaw mounted on said carriage,

(2) a rotary backing jaw mounted on said frame independently of said carriage and rotatable about an axis extending perpendicularly to said plane, and

(3) a rotary gripping jaw carried by said frame independently of said carriage, movable perpendicularly to said predetermined plane and rotatable about said axis, said non-rotatable gripping jaw and said rotary gripping jaw being adapted selectively to cooperate with said rotary backing jaw to grip said sheet metal element therebetween,

(d) actuating means operable in alternation to force said backing jaw selectively against the non-rotatable gripping jaw or to move the rotary gripping jaw perpendicularly to said predetermined plane against said rotary backing jaw to grip said sheet metal element therebetween, the actuating means comprising

(1) a first element connected to said rotary gripping jaw and

(2) a second element arranged to engage said carriage when said actuating means is operated while said carriage is in said predetermined position,

(3) the first and second elements being movable relative to each other perpendicularly to said predetermined plane, and

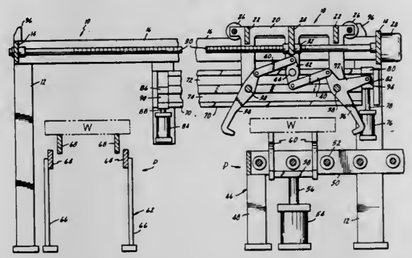
(e) rotary drive means mounted on said frame independently of said carriage and operable to rotate said rotary gripping jaw when said sheet metal element is gripped between the rotary gripping and backing jaws.

4,573,862

WORKPIECE TRANSFER DEVICE

Paul L. Anderson, Trenton, Mich., assignor to Lamb Technicon Corp., Warren, Mich.

Filed Sep. 24, 1984, Ser. No. 653,360
Int. Cl.[4] B65G *25/04*
U.S. Cl. 414—753 **11 Claims**



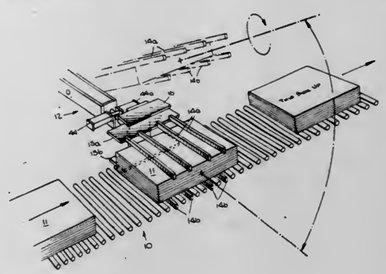
1. A device for transferring workpieces from a first station to a second station comprising a support, guide means on said support extending between said stations, a workpiece carrier movable on said guide means between said stations, a workpiece gripper on said carrier and movable therewith, means for actuating said gripper to a work gripping position when the carrier is adjacent said first station and thereby grip a workpiece at said first station for transfer to the second station, means for actuating said gripper to a work-releasing position when the carrier reaches the second station to release the workpiece at said second station, a track fixed on said support and extending along a path generally parallel to said guide means, a follower mounted on said carrier for translatory movement therewith, said follower being operatively connected with the work gripper and shiftable by said actuating means between a first position wherein the work gripper is actuated to the work-gripping position and a second position when the work gripper is actuated to the work-releasing position, said follower when in said first position being engagable with said track upon movement of the carrier from said first to said second station and in said second position being disengaged from said track upon movement of the carrier from said second to said first station, said follower being locked against shifting movement when engaged with said track to retain said work gripper in said work gripping position.

4,573,863

FLUID DRIVEN TUBE POSITIONER

Ronald T. Picotte, Murray, Utah, assignor to St. Regis Corporation, New York, N.Y.

Filed Nov. 13, 1984, Ser. No. 670,888
Int. Cl.[4] B65G *47/24*
U.S. Cl. 414—763 **5 Claims**



1. A tube positioner for inverting a hand of tubes resting on a surface, comprising:

clamp means for engaging opposed surfaces of the hand of tubes including a U-shaped frame, a guide bar having its opposite ends connected to the legs of the frame, and two sets of clamp arms carried by the frame and adapted to engage the opposed surfaces of the hand of tubes, one set of clamp arms being mounted on the guide bar for reciprocating movement therealong parallel to the other set of clamp arms;

means for elevating and lowering the clamp means relative to said surface, after both sets of clamp arms engage the hand of tubes, along a first reference axis extending in a vertical direction;

means for tilting the clamp means in its elevated condition, prior to inverting the hand of tubes, about a second reference axis extending perpendicular to the first reference axis and for returning the clamp means to its non-tilted condition after inverting the hand of tubes;

means for inverting said clamp means and the hand of tubes engaged thereby about a third reference axis extending perpendicular to the second reference axis; and

means for releasing said clamp means from the hand of tubes to deposit the inverted hand of tubes on the surface.

4,573,864

REGENERATIVE TURBOMACHINE

Alan Moore, 4 Partickhill Ave., Glasgow G11 5AA, Scotland

Filed Aug. 15, 1984, Ser. No. 640,852
Claims priority, application United Kingdom, Aug. 19, 1983, 8322367
Int. Cl.[4] F04D *5/00*
U.S. Cl. 415—53 T **8 Claims**

1. A regenerative turbomachine comprising

a bladed rotor;

an annular housing surrounding the rotor and defining an annular flow channel for a working fluid;

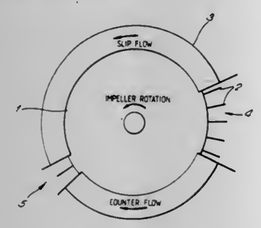
an inlet port for admitting the fluid to the housing;

an outlet port spaced circumferentially of the rotor from the inlet port, by which the fluid can leave the housing;

and guide means for guiding the fluid entering the inlet port through a slip flow path and a counter-flow path, each flow path making successive passes through the blading in a generally axial sense,

wherein in the slip flow path successive passes are made

which reintroduce the fluid to the rotor blades at circumferential positions spaced successively in the direction of intended rotor rotation, and



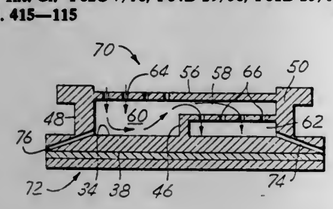
in the counter flow path successive passes are made which reintroduce the fluid to the rotor blades at circumferential positions spaced successively in the direction counter to the intended direction of rotor rotation.

4,573,865

MULTIPLE-IMPINGEMENT COOLED STRUCTURE

Edward S. Hsia, Cincinnati; Raghuram J. Emani, and John H. Starkweather, both of West Chester, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Division of Ser. No. 297,688, Aug. 31, 1981, Pat. No. 4,526,226.
This application Apr. 2, 1984, Ser. No. 595,754
Int. Cl.⁴ F02C *7/18*; F04D *29/58*; F01D *25/12*
U.S. Cl. 415—115 **4 Claims**



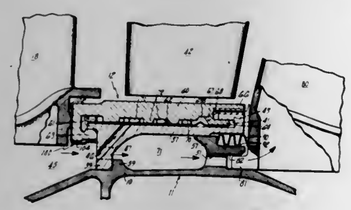
1. In a shroud which defines a flowpath for hot gases in a gas turbine engine, the improvement comprising:
(a) means for directing airstreams against a first shroud portion for impingement cooling thereof and
(b) means for collecting some of the air of (a) after impingement and redirecting the collected air against a second shroud portion for impingement cooling thereof.

4,573,866

SEALED SHROUD FOR ROTATING BODY

James J. Sandy, Jr., Palm Beach Gardens, Fla., and Brian P. Huth, East Hartford, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed May 2, 1983, Ser. No. 490,696
Int. Cl.⁴ F01D *25/24*
U.S. Cl. 415—116 **11 Claims**



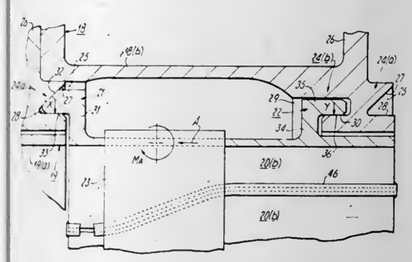
1. In combination with a turbine assembly mounted in an outer casing, a shroud for surrounding a stage of turbine blades between stationary inlet and outlet vanes, said shroud construction comprising a tip shroud support ring extending around the tips of the turbine blades and fixedly positioned on the outer engine casing, a plurality of tip shroud members mounted on the inner circumference of said shroud support ring, passageway means for directing a cooling fluid between said shroud support ring and said tip shroud members, the forward inner end of said shroud support ring having a cylindrical flange extending therefrom, the forward ends of each of the tip shroud members having attaching means slideable over said cylindrical flange, means attaching said rearward ends of said tip shroud members to said tip shroud support ring, an annular metal can positioned over the forward ends of said tip shroud members and enclosing them while the rearward edge of the can engages said tip shroud support ring to form a seal and prevent flow therebetween.

4,573,867

HOUSING FOR TURBOMACHINE ROTORS

Derek G. Hand, Bristol, England, assignor to Rolls-Royce Limited, London, England

Filed Nov. 22, 1982, Ser. No. 443,609
Claims priority, application United Kingdom, Nov. 26, 1981, 8135783
Int. Cl.⁴ F01D *25/26*
U.S. Cl. 415—134 **18 Claims**



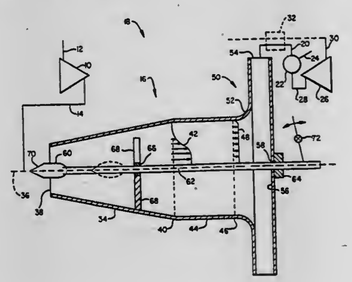
1. A housing for a rotor of a turbomachine comprising: radially spaced inner and outer casings, the inner casing comprising a segmented hollow cylinder each segment of which has one or more stator vanes projecting radially inwards, the inner casing being located relative to the outer casing by two or more axially spaced sets of fixing devices; each fixing device comprising a pair of locating means one of which is provided on the outer casing and the other of which is provided on each segment of the inner casing, one of the locating means of each fixing device of a first of the sets being provided with a first surface inclined to a direction extending axially along the casings and a second surface that constitutes a sealing face which lies at an angle to the first surface, and the other locating means of each fixing device of the first set being provided with third and fourth surfaces that confront and engage respectively the said first and second surfaces; one of the locating means of each fixing device of a second of the sets being provided with a fifth surface and the other locating means of each pair of the second set having a sixth surface that confronts, engages, and is movable axially relative to the fifth surface, the first, second, third, fourth, fifth and sixth surfaces all being positioned, shaped, and arranged, relative to each other so that, in use, gas loads acting on the vanes urge the segments in an axial direction and thereby urge the third surface into contact with the first surface and cause the segments to slide in a direction along the incline of the first surface to urge the fourth and sixth surface into sealing contact with respectively the second and fifth surfaces, thereby providing a sealing means at each locating means.

4,573,868

HIGH AREA RATIO, VARIABLE ENTRANCE GEOMETRY COMPRESSOR DIFFUSER

Sigmunn Stroem, Kongsberg, and Rolf J. Mowill, Oslo, both of Norway, assignors to A/S Kongsberg Vapenfabrikk, Norway

Division of Ser. No. 438,990, Nov. 4, 1982. This application Feb. 6, 1984, Ser. No. 577,383
Int. Cl.⁴ F04D *29/56*
U.S. Cl. 415—157 **8 Claims**



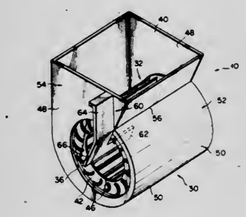
1. Diffuser apparatus for use in combination with a rotary compressor having an axis of rotation, the apparatus comprising a plurality of individual diffuser assembly means for collectively controlling the gas mass flow rate through the compressor, said plurality of diffuser assembly means being spaced about the axis of rotation, each of said diffuser assembly means including
(a) a pipe diffuser first stage having an axis and a cross-sectional flow area smoothly increasing in the direction of flow, said first stage also having an entrance for receiving gas at a relatively high velocity from the compressor and also having an exit; and
(b) means for adjustably varying the first stage flow area, wherein said area varying means includes:
(i) a spike member having a contoured axisymmetric face with an axially-varying cross-sectional area; and
(ii) means for slidably positioning said spike member in said increasing area first stage and along the first stage axis for presenting said contoured face to oppose the gas flowing in the entrance to said first stage, to selectably vary the flow area of said first stage.

4,573,869

BLOWER

Manabu Kitamoto, Fuji, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 15, 1983, Ser. No. 514,030
Claims priority, application Japan, Jul. 21, 1982, 57-127116
Int. Cl.⁴ F04D *29/44, 29/66*
U.S. Cl. 415—182 **7 Claims**



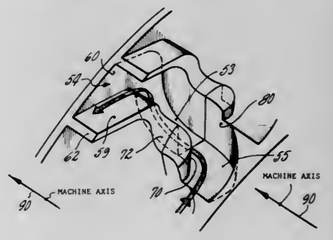
1. A blower comprising:
a sirocco fan of substantially cylindrical shape and having a central axis;
driving means for rotating the fan around said central axis;
a fan case including a containing portion of substantially cylindrical shape for coaxially containing the fan, a circular inlet opposite to one axis end of the fan and a guide portion extending from the containing portion and defining an outlet at its extended end, and a casing nose defined in the boundary between the containing portion and the guide portion, wherein air is sucked through the inlet into the case and diffused from the outlet by the rotation of the fan;
a first wind direction plate mounted on the outer surface of the case for straightening the flow of the air from the exterior of the fan case into the inlet, the first wind direction plate having a portion which extends from near the center of the inlet toward the casing nose; and
a second wind direction plate for straightening the flow of the air at suction and discharge regions in the fan case, said second plate extending from the first plate through the inlet into the fan along the axial direction of the fan and radially extending substantially from the center of the fan toward the casing nose.

4,573,870

SOLID TURBINE WHEEL WITH GUIDED DISCHARGE

Zaher M. Moussa, Greensburg, Pa., assignor to Elliott Turbomachinery Co., Inc., Jeannette, Pa.

Filed Oct. 26, 1984, Ser. No. 665,246
Int. Cl.⁴ F01D *1/02*
U.S. Cl. 415—202 **10 Claims**



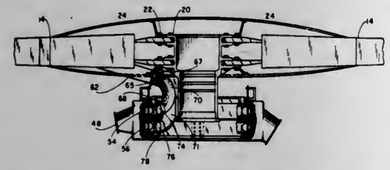
1. An impulse-type turbine having an inlet and an outlet with a flow path therebetween, a nozzle ring and a turbine wheel which comprises:
said turbine wheel having first and second circumferential rim portions of varying diameter each of a predetermined width with a plurality of uniformly spaced, overlapping buckets formed around said rim portions;
each of said buckets defining a first generally half U-shaped passageway having a leg portion, and a curved portion connected to the leg portion, a second generally half U-shaped portion connected to the curved portion, an L-shaped passageway extending from the second half U-shaped portion to the second rim portion and said leg portion extending to the first rim portion of the wheel;
a solid center portion defined by the passageways of the adjacent buckets; and
labyrinth sealing means circumferentially extending about said rim portion and coacting with said center portions to provide a fluid seal between said leg portion which defines an inlet fluid path and the L-shaped portion which defines an outlet fluid path within the bucket.

4,573,871

X-WING AIRCRAFT CIRCULATION CONTROL

Timothy A. Krauss, Harwinton, and Leo Kingston, Stratford, both of Conn., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 29, 1984, Ser. No. 645,469.
Int. Cl.⁴ B64C *27/18*
U.S. Cl. 416—20 R **3 Claims**



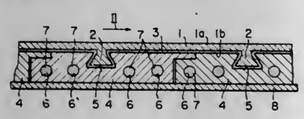
1. In (1) a circulation control rotor system for a helicopter having (a) air ejection slots and circulation control air passageways in its rotor blades for achieving cyclic control by ejected airflow around each rotor blade, (b) a stationary airflow plenum in its hub having ports therein for airflow therefrom, (c) rotating air ducts having input ends in alignment with the plenum ports, and opposite ends connected to the rotor blade air passageway for conducting plenum airflow from the ports to the rotor blade ejection slots, and (d) a series of control valves in the plenum airflow ports for governing airflow to the rotating air ducts as the ducts pass each valve in sequence azimuthally around the hub, (2) means for preventing loss of plenum pressure in the event of a blade air pressure loss including means sensing air pressure in the rotating air duct for each blade, and means comparing the sensed rotating air duct pressure with pressure at the control valves, the means for preventing loss of plenum pressure further including a closure means disposed in each rotating air duct, capable when activated of cutting off airflow into the rotating duct, and means activating said closure means in response to a comparing means signal from the means for comparing.

4,573,872

HIGH TEMPERATURE HEAT RESISTANT STRUCTURE

Yuji Nakata, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Oct. 26, 1983, Ser. No. 545,646
Claims priority, application Japan, Dec. 27, 1982, 57-232318
Int. Cl.⁴ F01D *5/8*; F28F *7/02*
U.S. Cl. 416—96 A **5 Claims**



1. A heat resistant structure adapted to be used in a passage through which flows a high temperature fluid, comprising:
- a heat resistant metal plate having a smooth outer surface exposed to the fluid;
- a layer of ceramic fiber material having a high heat transmission resistance extended along an internal surface of said metal plate;
- a plurality of heat conductive bodies each spaced apart from adjacent bodies and each located in close contact with said ceramic fiber layer on a side thereof away from said metal plate, each of said heat conductive bodies being provided with a portion which is in slidable contact with a corresponding portion of the adjacent bodies; and
- a plurality of passages provided through each of said heat conductive bodies for passing a coolant therethrough,

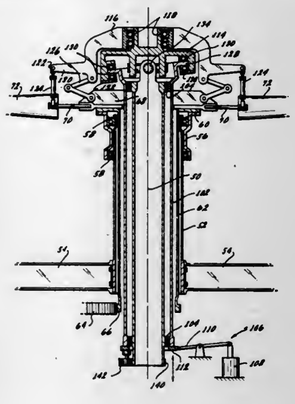
said heat resistant metal plate being provided with a plurality of projections on said internal surface thereof and each of said plurality of heat conductive bodies being provided with a recess engageable with respective ones of said plurality of projections with said ceramic fiber layer being interposed between each projection and respective recess.

4,573,873

COLLECTIVE AND CYCLIC IN-MAST PITCH CONTROL SYSTEM FOR A HELICOPTER

Samuel S. Yao, Fountain Valley, and Samuel K. F. Chu, Harbor City, both of Calif., assignors to Hughes Helicopters, Inc., Culver City, Calif.

Filed Jan. 13, 1983, Ser. No. 457,695
Int. Cl.⁴ B64C *27/74*
U.S. Cl. 416—114 **14 Claims**



1. An apparatus for control of a rotary blade system in a helicopter having a fuselage including a plurality of controllable rotor blades comprising:
- a stationary mast extending from said fuselage of said helicopter characterized by a longitudinal axis;
- a collective pitch control tube disposed within said stationary mast and concentric therewith, said collective pitch control tube having an upper flange defining a first plane inclined at an angle with respect to said longitudinal axis, said collective pitch control tube longitudinally displaceable within said mast;
- a cyclic pitch control tube disposed within said stationary mast;
- a first swashplate coupled to said cyclic pitch control tube, said first swashplate rotatably fixed to said cyclic pitch control tube about said longitudinal axis and rotatably free with respect to said cyclic pitch control tube about all axes of rotation perpendicular to said longitudinal axis, said first swashplate also slidingly coupled to said upper flange of said collective pitch control tube through a lower flange, said lower flange being inclined with respect to said first swashplate by an angle equal to said inclination of said upper flange of said collective pitch control tube, said first swashplate and cyclic pitch control tube rotatable about said longitudinal axis with respect to said collective pitch control tube and said upper flange thereof, the inclination of said first swashplate being determined by the relative angular position of said first swashplate with respect to said inclined upper flange of said collective pitch control tube;
- bearing means for providing a low friction, rotatable coupling between said first swashplate and said upper flange, said bearing means being disposed in said first swashplate in a second plane inclined with respect to said longitudinal axis;
- a drive shaft disposed within said stationary mast and connected to said plurality of rotor blades for imparting rotary motion to said plurality of rotor blades when said drive shaft is rotated; and
- pitch linkage means for coupling said first swashplate to said plurality of rotor blades to control the pitch of said blades and wherein said pitch linkage means is coupled to said first swashplate so that inclination of said first swashplate with respect to said longitudinal axis of said mast causes the pitch of said rotor blades to be cyclically changed, and so that longitudinal displacement of said swashplate causes the pitch of said rotor blades to be collectively controlled,

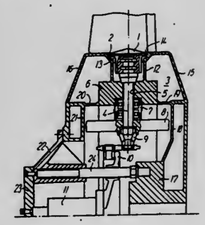
whereby accurate control of said rotor blades is obtained without substantial feedback of reversible control forces transmitted therethrough, whereby stiffness of said control system is increased allowing more accurate blade control, whereby the number of parts and connections are reduced for increased reliability, whereby damage vulnerability is decreased, and whereby air drag is substantially reduced due to higher compactness of said apparatus.

4,573,874

SPRING BIASED BAYONET COUPLING FOR FAN BLADES

Steen H. Andersen, Naestved, and Bendt O. Pedersen, Karrebaeksminde, both of Denmark, assignors to Nordisk Ventilator Co. A/S, Naestved, Denmark

Filed Oct. 5, 1984, Ser. No. 657,902
Claims priority, application Denmark, Oct. 7, 1983, 4631/83
Int. Cl.⁴ F04D *29/36*
U.S. Cl. 416—157 R **4 Claims**



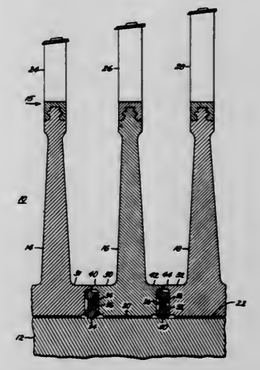
1. A blade with a blade shaft (4) for an impeller of an axial flow fan, said impeller having a wheel rim (3), in which a number af blades are rotatably journalled each with a blade root (1; 48) connected with the blade shaft (4), the blade shaft being connected inside the wheel rim with a common adjusting device (10) for turning all the blades around the axes of the blades and blade shafts during rotation of the impeller, characterized in that the blade and the blade shaft (4; 51) are connected by bayonet engagement between these two elements, whereby a part (4; 49) of one element forming a bayonet plug member has at least one pair of opposed cam portions (28, 29; 52, 53) at a distance from its external end, which forms a smooth guide portion (25; 54), said cam portions being adapted for engagement with recesses (30, 31; 55, 56) formed in a bore (27; 57) in a part (1; 50) of the other element forming a bayonet socket member and extending between a bottom portion serving as a fit bore (26) for said smooth guide portion (25; 57) and a pair of opposed internally projecting shoulder portions (32, 33), said recesses (30, 31; 55,56) being formed with a play in the axial direction relative to the axial length of the cam portions (28, 29; 52, 53) of the bayonet plug member, at least two fixation screws (34, 35; 61, 62) extending from the external side of the blade root (1) through threaded bores (36, 37; 63, 64) in the wall of the blade root (1; 48) for insertion of their ends forming smooth guide portions (38, 39) into fit bores (40, 41; 59, 60) in a centering portion (42; 50) of the blade shaft (4) and having inwards relative to said guide portions (38, 39; 59, 60) a shoulder portion (43; 65) for abutment against a spring member (44; 66) arranged between the blade root (1; 48) and the side of said centering portion (42; 50) facing the blade root.

4,573,875

CAPTURED RADIAL KEY FOR STEAM TURBINE WHEELS

Eloy V. Emeterio, Amsterdam; Robert E. Deallenbach, Schenectady; Martin F. O'Connor, Scotia, and Oleg Klufas, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed May 29, 1984, Ser. No. 615,016
Int. Cl.⁴ F01D *1/02*
U.S. Cl. 416—198 A **10 Claims**



1. In a steam turbine, a rotor comprising:
- a rotatable shaft;
- a plurality of wheels axially spaced along said shaft and respectively affixed to said shaft by an interference shrink-fit between the respective radially inner surface of said wheels and said shaft, each wheel of said plurality of wheels carrying a plurality of circumferentially aligned steam turbine blades at the radially outermost portion of said wheel, at least two adjacent wheels, each of said at least two adjacent wheels respectively comprising:
- a hub section at the radially inner portion of the wheel, said hub including a substantially circumferential, axial end face surface at each axial end of the hub, whereby the axial end face surface of one of said at least two adjacent wheels opposes an axial end face surface of the next adjacent one of said at least two adjacent wheels to form a pair of corresponding opposing axial end face surfaces;
- a circumferential lip axially extending from the axial end face surface opposing the axial end face surface of the next adjacent wheel, the axially outboard portion of said lip being in close proximity to the corresponding axially outboard portion of the lip on the opposing axial end face surface of the next adjacent wheel;
- a pair of axially extending, arcuately spaced apart lands disposed on the axial end face which includes said lip, said pair of lands forming a substantially radial slot therebetween, each pair of lands disposed intermediate the radially inner portion of said lip and the radially inner portion of said hub, radial slots on each opposing end face surface of said pair of axial end face surfaces axially aligned to form a substantially radial keyway between said at least two adjacent wheels;
- a substantially I-beam shaped key, said key including respective upper and lower lateral extensions respectively extending in opposite directions from said key, disposed in said keyway, said key further including a leading and a trailing face and a respective concave portion intermedi-

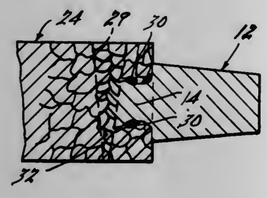
ate respective upper and lower lateral extensions, respective concave portions of said key mating with the corresponding radial slot which forms said keyway, respective upper and lower lateral extensions of said key including respective outboard surfaces contacting radially outer and inner portions of respective axial end faces of said pair of corresponding opposing axial end face surfaces, said key further including upper radial extremity extending radially from said upper lateral extensions, respectively, said upper radial extremity respectively contacting a radially inner portion of at least one of said lips of said pair of corresponding opposing axial end face surfaces and said lower radial extremity in close proximity to said shaft, respectively, and a respective leading and trailing face of said key contacting respective leading and trailing sidewalls of said keyway, respectively, and said key preventing rotation of one said adjacent wheel relative to the other said adjacent wheel.

4,573,876

INTEGRAL BLADED DISK

Michael J. Egan, Milford, and Gary J. Quill, Birmingham, both of Mich., assignors to Williams International Corporation, Walled Lake, Mich.

Division of Ser. No. 466,168, Feb. 14, 1983, Pat. No. 4,538,331.
This application Oct. 4, 1984, Ser. No. 657,599
Int. Cl.⁴ F01D *5/30*
U.S. Cl. 416—213 R **1 Claim**



1. A turbine rotor comprising
a plurality of blades having dovetails at the radially inner ends thereof,
a metallic hub cast about the dovetails of said blades,
a Ni-Cr-B diffusion bonding material interposed between the dovetails of said blades and said hub, and
an electron beam weld zone comprising columnar grains extending axially of said turbine rotor and radially limited so as to include only the radially inner end portions of the dovetails of said blades and the adjacent portions of said hub.

4,573,877

APPARATUS FOR ELEVATING LIQUIDS INCLUDING A PAIR OF VENTURI PIPES HAVING WIND AS MOTIVE FLUID

Iosif Baumberg, Brooklyn, N.Y., assignor to Dammin Software and Technology Inc., Fair Lawn, N.J.

Filed Feb. 12, 1985, Ser. No. 700,960
Int. Cl.⁴ F04B *23/04;* **F04F** *5/00*
U.S. Cl. 417—76 **5 Claims**

1. An arrangement for elevating liquids, comprising
a substantially vertical delivery pipe having a lower end and an upper end;
a first Venturi pipe extending substantially horizontally and having an inlet diffuser for receiving wind, and a constriction connected with said upper end of said delivery pipe, and an outlet diffuser;
a substantially vertical liquid supply pipe located lower than said delivery pipe and having a lower end to be introduced into a liquid, and an upper end;
a second Venturi pipe extending substantially horizontally and having an inlet diffuser open to atmosphere, a constriction connected with said upper end of said supply pipe, and an outlet diffuser; and
a connecting pipe which connects said outlet diffuser of said second Venturi pipe with said lower end of said delivery



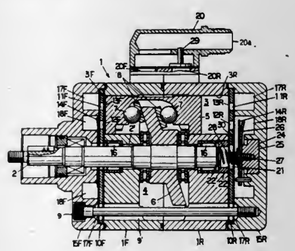
pipe so that said lower end of said delivery pipe is located lower than said outlet diffuser of said second Venturi pipe whereby a composite column of portions of liquid and air exists in the delivery pipe during operation of said arrangement.

4,573,878

VARIABLE-DELIVERY COMPRESSOR

Makoto Ohno; Hisao Kobayashi, and Kimio Kato, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Jun. 14, 1984, Ser. No. 620,463
Claims priority, application Japan, Jun. 24, 1983, 58-98348[U]
Int. Cl.⁴ F04B *1/18, 1/28*
U.S. Cl. 417—270 **6 Claims**



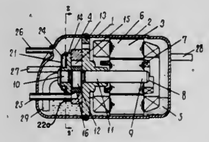
1. A variable-delivery compressor comprising:
a cylinder block having compression chambers;
compression means including a drive shaft, a swashplate fixed to said drive shaft, and double-headed pistons which engage said swashplate and are slidably reciprocated in said compression chambers to compress a gas therein;
a front and a rear side cover disposed at opposite ends of said cylinder block, and defining a front and a rear discharge chamber, respectively;
a front valve plate having front discharge ports communicating with front halves of said compression chambers and said front discharge chamber;
a rear valve plate having rear discharge ports communicating with rear halves of said compression chambers and said rear discharge chamber;
a plurality of discharge valves of a reed type disposed opposite to said front and rear discharge ports, respectively, each of said discharge valves having generally elongated shape with one end portion thereof operable to close and open a corresponding one of said front and rear discharge ports; and
an actuator member disposed at one end of said front and rear discharge chambers which serves as a delivery-adjusting discharge chamber for adjusting a delivery of the compressor, said actuator member holding said discharge valves associated with said delivery-adjusting discharge chamber, said actuator member being movable between an operative position adjacent the corresponding valve plate, at which said discharge valves are operative, and an inoperative position spaced away from said operative position, at which said discharge valves are inoperative,
said corresponding valve plate associated with said delivery-adjusting discharge chamber having a pressure relief opening which is opposite to said actuator member and which communicates with a suction space and said delivery-adjusting discharge chamber, said suction space being formed in said cylinder block and communicating with an inlet for introducing the gas into said compression chambers,
said plurality of discharge valves held by said actuator member being formed as an integral delivery-adjusting valving member, said valving member comprising a base portion fixed to said actuator member and closing said pressure relief opening when said actuator member is placed in said operative position, said valving member further comprising a plurality of generally elongated valving portions which extend from said base portion radially of the base portion and which are spaced from each other circumferentially of said actuator member, a free end part of each of said valving portions serving as said one end portion of said of said plurality of discharge valves,
said corresponding valve plate comprising, between said pressure relief opening and said discharge ports, portions defining a plurality of mutually independent arcuate recesses respectively opposite to each of said generally elongated valving portions of said delivery-adjusting valving member, said arcuate recesses extending only partially into the thickness of said corresponding valve plate and being spaced from each other along a circle concentric with said pressure relief opening, each of said arcuate recesses being open at opposite ends thereof to said delivery-adjusting discharge chamber even while said valving portions of the delivery-adjusting valving member are held in contact with said corresponding valve plate.

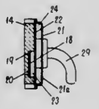
4,573,879

ROTARY COMPRESSOR

Toshio Uetuji, Hirakata, and Noriaki Ohkubo, Fujisawa, both of Japan, assignors to Matsushita Refrigeration Company, Osaka, Japan

Filed Jun. 21, 1984, Ser. No. 623,224
Claims priority, application Japan, Jun. 24, 1983, 58-114543; Sep. 5, 1983, 58-163575
Int. Cl.⁴ F04B *21/00*
U.S. Cl. 417—312 **11 Claims**





1. A rotary compressor, comprising:
a motor unit including a stator and rotor;

a compressor mechanism section including
a cylinder having a first side facing said motor unit and a second side opposite said first side,
a rotary piston rotationally mounted in said cylinder,
a first bearing between said motor unit and said cylinder, and
a second bearing at said second side, said first and second bearings respectively covering said first and second sides of said cylinder, said second bearing having a first face facing said cylinder, a second face opposite said first face, a concavity opening into said second face, and a valve hole extending from said concavity to said second side of said cylinder so as to provide communication therebetween;
a motor operated compressor element including a crankshaft interlocking said motor unit and said compressor mechanism section such that said rotary piston is rotationally driven in said cylinder by said motor unit through said crankshaft;
a case enclosing said motor unit, said compressor mechanism section and said element;
a discharge valve element over said valve hole filling part less than all of said concavity;
a diaphragm covering said second face of said bearing, including said concavity; and
a discharge cover covering said diaphragm so as to define therebetween a discharge chamber for receiving pressurized gas therein, said diaphragm having a permanently open diaphragm hole therein in the proximity of said valve hole, so as to provide communication therethrough between said concavity and said discharge chamber, whereby the portion of said concavity not filled by said discharge valve element and said diaphragm define muffler means for muffling sounds of said compressor.

4,573,880

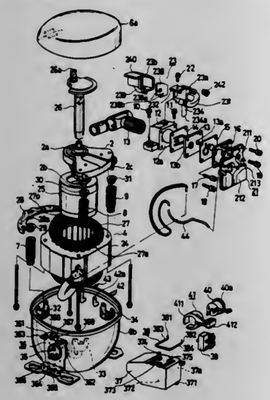
HERMETICALLY SEALED MOTOR COMPRESSOR

Yutaka Hirano; Hirokazu Kawakami, both of Ota; Masaki Tanaami, Oramachi; Motohiko Kosano; Hiroshi Takagi, both of Isezaki; Yoshio Ishiai, Ota, and Ituo Iwahashi, Chiyodamachi, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka and Tokyo Sanyo Electric Co., Ltd., Gunma, both of Japan

Continuation of Ser. No. 442,138, Nov. 16, 1982, abandoned.
This application Mar. 4, 1985, Ser. No. 707,187
Claims priority, application Japan, Sep. 2, 1982, 57-153723; Sep. 2, 1982, 57-153725
Int. Cl.⁴ F04B *39/00*
U.S. Cl. 417—312 **10 Claims**

1. A hermetically sealed motor compressor having high volumetric efficiency, said compressor comprising:
a casing including a suction coupling having an open end within said casing,
a compressor mounted in said casing, including a cylinder and a piston reciprocatingly slidable in said cylinder, said cylinder including a head plate with a suction hole and a discharge hole, said head plate comprising a stamped out metal plate and a valve plate, said cylinder further including a dish-shaped member attached to the stamped out metal plate and defining therewith a discharge valve chamber, said dish-shaped member being configured to cover said discharge hole without covering said suction hole,
a suction muffler formed of a material having a low coefficient of thermal conductivity, the suction muffler having a suction port, said suction port being in close spaced relation to the open end of said suction coupling for drawing said refrigerant gas into said suction muffler, and
a connection pipe formed of a material having a low coefficient of thermal conductivity, said connection pipe directly connecting said suction muffler to said cylinder through said suction hole of said head plate for transmitting said refrigerant gas from said suction muffler directly to said cylinder, said connection pipe having a distal end, the

distal end being inserted into said suction hole of said head plate, said distal end having no contact with said dish-shaped member, thereby avoiding heat transfer from hot



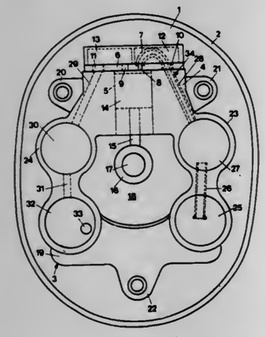
compressed refrigerant gas in said cylinder and dish-shaped member to said refrigerant gas in said connection pipe for improving the volumetric efficiency of said motor compressor.

4,573,881

REFRIGERATION COMPRESSOR HAVING A TUBULAR INSERT OF THERMALLY INSULATING MATERIAL IN SUCTION PASSAGE

Bendt W. Romer, Sonderborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Continuation of Ser. No. 642,077, Aug. 20, 1984, abandoned.
This application May 20, 1985, Ser. No. 736,271
Claims priority, application Fed. Rep. of Germany, Sep. 7, 1983, 3332259
Int. Cl.⁴ F04B *39/12*
U.S. Cl. 417—312 **10 Claims**



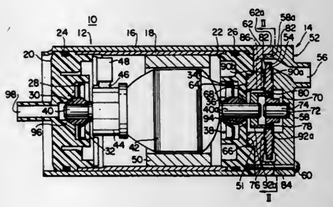
1. An encapsulated refrigerator motor compressor, comprising, a capsule, a compressor unit resiliently mounted in said capsule, a cylinder block casting for said compressor unit, said casting defining a cylinder chamber for receiving a piston and a sound damping chamber, means attached to said casting forming pressure and suction valve chambers adjacent the outer end of said cylinder, valve plate means between said chambers and said cylinder, a suction gas inlet passage in said casting adjacent said cylinder and extending between said sound damping chamber and said suction valve chamber, and insulation means for reducing the transfer of heat to suction gas in said suction gas inlet passage and in said suction valve chamber, said insulation means comprising said valve plate means including a suction valve orifice between said suction valve chamber and said cylinder and a suction passage orifice between said suction valve chamber and said suction gas inlet passage, a tubular insert of thermally insulating material inserted in said suction gas inlet passage and extending through said suction passage orifice in said valve plate means and through said suction valve chamber to said suction valve orifice in said valve plate means.

4,573,882

ELECTRICALLY OPERATED FUEL PUMP APPARATUS

Kiyohiko Watanabe, Chiryu; Kazuma Matsui, Toyohashi; Yoshiyuki Hattori, Toyoake; Toshihiro Takei, Kariya; Toshiaki Nakamura, Anjo, and Shunsaku Ohnishi, Toyota, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed May 17, 1982, Ser. No. 378,724
Int. Cl.⁴ F04B *35/04;* F04D *5/00*
U.S. Cl. 417—366 **3 Claims**



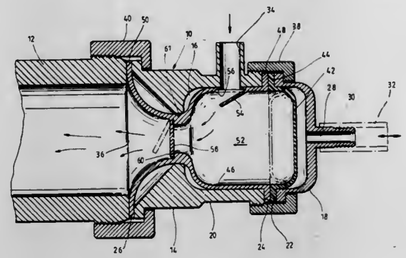
1. An electric motor and a fuel pump assembly comprising:
a regenerative pump including a first housing and an impeller rotatably mounted therein;
an electric motor including a second housing and a motor shaft;
a pair of bearings rotatably supporting said motor shaft on opposite end walls of said second housing, said motor shaft having an end portion extending outwardly beyond one of said end walls of said second housing;
said first housing being substantially aligned with said second housing and having one end wall fixed to said one end wall of said second housing;
a second shaft provided independently of said motor shaft and fixed only at one end to the other end wall of said fist housing to rotatably support said impeller thereon;
said impeller being not fixed to said second shaft axially thereof;
said impeller and said first housing being arranged such that the opposite sides of said impeller and the end walls of said first housing are disposed in substantially liquid-sealing but slidable relationship with each other;
said one end wall of said first housing being formed therein with a through-hole; and
joint means in said through-hole fixed to said end portion of said motor shaft and loosely but drivingly connected to said impeller for transmitting rotation of said motor shaft to said impeller, whereby ssaid regenerative pump and said electric motor can be assembled separately and then connected together into said assembly.

4,573,883

DISPOSABLE BLOOD PUMP

George P. Noon; Louis W. Feldman, both of Houston, and Julia A. Peterson, South Houston, all of Tex., assignors to Baylor College of Medicine, Houston, Tex.

Filed Mar. 1, 1985, Ser. No. 707,255
Int. Cl.⁴ F04B *43/06;* A61M *1/10*
U.S. Cl. 417—394 **3 Claims**



1. A disposable blood pump comprising,
a rigid housing having a cavity therein and having first and second parts, said first part having a first supporting shoulder and said second part having a second and third supporting shoulder,
said first part including a port for receiving actuating fluid,
said second part including a blood inlet port and a blood outlet port,
coupling means connected between the first and second parts for joining said two parts with the first and second shoulders adjacent each other,
coupling means connected to the second part for joining the second part to another blood handling device,
a flexible hemocompatible diaphragm positioned in the cavity, said diaphragm having an outer edge supported between the first and second supporting shoulders,
a flexible wall hemocompatible pumping chamber having first and second ends, and positioned in said cavity, said first end supported between the first and second supporting shoulders, said second end engaging said third shoulder,
said chamber having an integral inlet leaf valve and an integral outlet leaf valve, said inlet valve being in communication with the blood inlet port, and said outlet valve being in communication with the blood outlet port, said valves being operable between open and closed positions by alternately actuating the diaphragm.

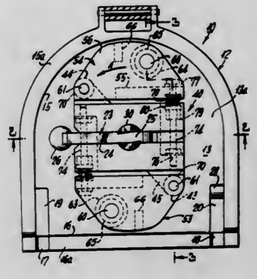
4,573,884

PERISTALTIC PUMP

Vernon H. Troutner, St. Petersburg, Fla., assignor to Extracorporeal Medical Specialties, Inc., King of Prussia, Pa.

Division of Ser. No. 410,736, Aug. 23, 1982, Pat. No. 4,487,558.
This application Jul. 30, 1984, Ser. No. 636,040
Int. Cl.⁴ F04B *9/14, 43/08*
U.S. Cl. 417—374 **3 Claims**

1. In a roller pump of the type comprising:
(a) a backing plate having an upper surface, a lower surface, and an opening therethrough,
(b) a bearing mounted in said opening,
(c) a shaft mounted in said bearing, said shaft having a first end portion and a second end portion, the first end portion of the shaft extending upwardly from the upper surface of the backing plate and having an opening which extends inwardly from the upper end of the shaft and which is defined by a pair of generally parallel, vertically extending side walls, the second end portion of the shaft extending downwardly from the lower surface of the backing plate and being adapted for coupling to a drive means,
(d) an arcuate backing wall on the upper surface of the backing plate,
(e) a pump head removably mounted on the upper portion of the shaft, said pump head comprising a hub portion and at least one roller means mounted for rotation about an axis which is parallel to the axis of said shaft,
(f) a handle means comprising an arm being pivotally mounted on said pump head and adapted to be engaged with said opening in said shaft to mechanically couple said pump head to said shaft,



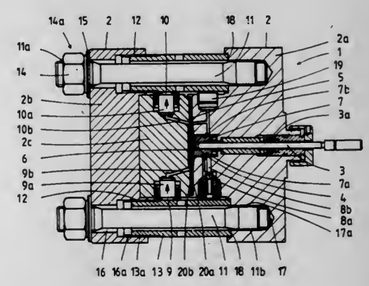
the improvement wherein said arm has a generally centrally located recessed portion, said shaft comprises at least one ledge on one side of said opening, and a wedge shaped portion has been cut away from the side wall diagonally across said opening from said ledge, whereby when said arm is engaged with said opening and the pump shaft is rotated, said ledge overrides said recessed portion, thus preventing said pump head from moving upwardly on the shaft.

4,573,885

PISTON DIAPHRAGM PUMP

Dirk Petersen, Norderstedt, Fed. Rep. of Germany, assignor to Bran & Lübbe GmbH, Norderstedt, Fed. Rep. of Germany

Filed Apr. 15, 1985, Ser. No. 723,624
Claims priority, application Fed. Rep. of Germany, Apr. 13, 1984, 3414006
Int. Cl.⁴ F04B *43/06*
U.S. Cl. 417—383 **5 Claims**



1. In a piston diaphragm pump, comprising a housing having an inlet passage and an outlet passage; valves connected to said inlet and outlet passage, said housing having a feeding chamber connected to said inlet and outlet passage via said valves, said housing including housing portions releasably clamped to each other; at least one diaphragm sealingly clamped between said housing portions; a piston working chamber filled with a hydraulic medium in an operation position and separated from said feeding chamber by said diaphragm; a reciprocally displaceable piston in said working chamber and being operative

to cause stroke deflections of said diaphragm so as to change volumes of said feeding chamber; a plurality of clamping bolts each connected to one of said housing portions and extending parallel to a direction of clamping of the housing portions to each other, each of said bolts having a threaded portion; and a plurality of clamping elements each provided with a thread tightened on a respective threaded portion of each bolt to draw said housing portions to each other, the improvement comprising:

(a) at least one of said housing portions being provided with at least one supporting thread which extends parallel to said direction of clamping;

(b) at least one supporting member to be screwed to said supporting thread and projecting in an assembled position in the direction towards another of said housing portions by a distance corresponding to its screwed position; and

(c) said another housing portion having an abutment surface extended at right angles to said direction of clamping, said supporting member upon being screwed outwardly relative to said supporting thread abutting against said abutment surface.

4,573,886

VALVE ASSEMBLY FOR HIGH PRESSURE PUMP

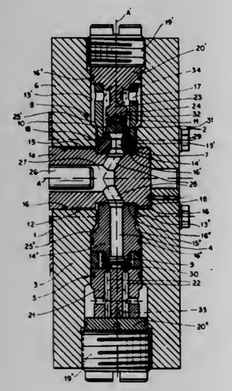
Wolfgang Maasberg, Hünxe-Krudenburg, and Adalbert Huperz, Hockenheim, both of Fed. Rep. of Germany, assignors to Woma-Apparatebau Wolfgang Massberg & Co. GmbH, Duisburg, Fed. Rep. of Germany

Continuation of Ser. No. 193,669, Oct. 3, 1980, abandoned. This application Apr. 5, 1983, Ser. No. 481,441

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1979, 2940606

Int. Cl.⁴ F04B *21/00*

U.S. Cl. 417—454 **12 Claims**



1. A valve assembly for a high-pressure pump, said assembly comprising:

a valve housing having a central bore centered on a main longitudinal axis and a transverse bore extending radially from said central bore in opposite directions along a transverse axis and subdivided by said central bore into an intake transverse-bore part and an exhaust transverse-bore part, the housing being of a material with a relatively low resistance to erosion;

respective intake and exhaust sleeves in said intake and exhaust bore parts;

respective intake and exhaust valves in said intake and exhaust sleeves;

a flow-splitting sleeve in said central bore and having a pair of lateral branches opening respectively in said intake and exhaust bore parts into said intake and exhaust sleeves, said sleeves being received in the respective bores with radial play relative to the respective axes and forming with the respective bores respective annular chambers that communicate with one another, one of said intake and exhaust sleeves being formed with a radial passage opening into the respective chamber, the sleeves all being of a material with a relatively high tensile strength and resistance to erosion; and

seal means including seals engaged between said sleeves and the respective bores for isolating said chambers from communication with said bores and the interiors of said sleeves except through said passage and for pressurization of said chambers by said pump through said passage, whereby there is substantially no flow in the annular chambers.

4,573,887

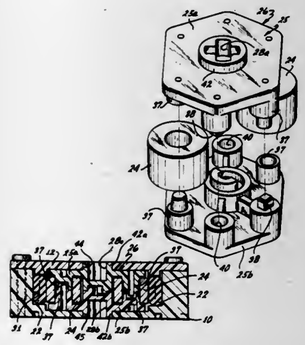
CORROSION-RESISTANT ROLLER-TYPE PUMP

Jo Dee. J. Smith, Tustin, Calif., assignor to S. E. Rykoff & Co., Los Angeles, Calif.

Filed Sep. 16, 1983, Ser. No. 532,671

Int. Cl.⁴ F04B *43/12, 45/08*

U.S. Cl. 417—477 **7 Claims**



1. A rotary pump for pumping measured amounts of corrosive fluids, comprising:

a housing containing a chamber having a curved inner wall;

a removable cover with an outer sursface for closing the chamber;

power-driven rotor means within said housing;

a soft resilient tube with two ends, disposed within the chamber along said inner wall, said tube being squeezed closed by said rotor means against said inner wall at spaced intervals so as to transport predetermined quantities of fluid along said tube as said rotor means turns;

relatively stiff, kink-resistent conduit means engaging the ends of said tube for conveying fluid into and out of said tube; and

clamping means forming a releasable fluid-type bond between the ends of said tube and said conduit means;

said rotor means containing opposed outer surfaces, each of which surfaces is provided with a like, outwardly extending annular boss with an outer surface; and said cover containing a circular opening for rotatably receiving one of said bosses when the cover is in closed relationship with the housing, with the outer surface of the boss being in a generally planar relationship with the outer surface of the cover.

4,573,888

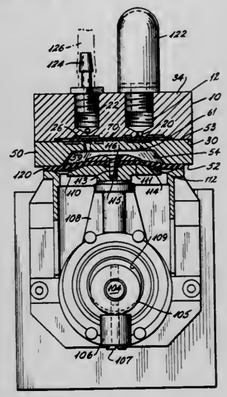
FLUID PUMP

Dwight W. Kitchin, Littleton, Colo., assignor to Aspen Laboratories, Inc., Englewood, Colo.

Continuation of Ser. No. 530,838, Sep. 9, 1983, abandoned. This application Apr. 4, 1985, Ser. No. 720,115

Int. Cl.⁴ F04B *21/02*

U.S. Cl. 417—560 **5 Claims**



1. An improved fluid pump with a check valve cooperating with a reciprocating diaphragm comprising:

(a) an inlet upstream of the check valve;

(b) an outlet downstream of the check valve;

(c) a valve seat between said inlet and outlet;

(d) a resilient valve member movably mounted between said inlet and outlet and cooperating with said valve seat to allow flow above a predetermined pressure from said inlet to said outlet while preventing flow in a reverse direction;

(e) a first chamber disposed on one side of said resilient valve member and substantially surrounding said valve seat and a second chamber disposed on the other side of said resilient valve member and surrounding said outlet;

(f) the diameter of said first chamber being slightly greater than the diameter of said second chamber and the diameter of said second chamber being slightly greater than the diameter of said valve seat;

(g) said valve member being formed as a portion of a valve plate, said valve member including an isthmus connected to a main portion of said valve plate, and said isthmus is wedged between an outer peripheral portion of said first chamber and an outer peripheral portion of said second chamber; and

(h) said first chamber further includes a tongue-like extension extending outwardly from said outer peripheral portion thereof, said valve member includes a tongue-like extension which extends into said tongue-like extension of said first chamber in spaced relation to said main portion of said valve plate and said valve member tongue-like extension remaining in engagement with the outer peripheral portion of said second chamber at all times even when said main portion is moved relative to said valve seat.

4,573,889

BEARINGS FOR GEAR PUMPS

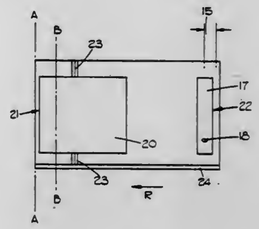
Jeffrey A. Lane, West Midlands, England, assignor to Lucas Industries, Ltd., Birmingham, England

Filed Nov. 7, 1983, Ser. No. 549,680

Claims priority, application United Kingdom, Nov. 10, 1982, 8232053

Int. Cl.⁴ F04C *29/02;* F16C *32/06*

U.S. Cl. 418—73 **8 Claims**



1. A bearing bush for a pump in which rotation of externally meshed gears is accompanied by displacement of a liquid thereby, said bush having a substantially cylindrical bore, said pump including a second bush arranged in parallel with the first-mentioned bush, a first recess in said bore adjacent a critical zone thereof, said critical zone lying substantially in the first quadrant in the direction of rotation of a shaft in said first-mentioned bush, measured from a plane including the axes of the two bushes, a first passage connected to said first recess for supplying a liquid under pressure to said first recess, a second recess in said bore, said second recess lying wholly outside said critical zone and having an axial extent less than the axial extent of said first-mentioned bush, said second recess having ends thereof spaced axially inwards from the opposite ends of said bush, the circumferential extent of said second recess being not less than 130 degrees, said second recess thereby providing a liquid reservoir within said bore, and a second passage for supplying a liquid to said second recess said second passage having a circumferential extent substantially less than that of said second recess.

4,573,890

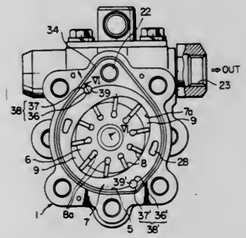
VANE PUMP WITH LOCATING PINS FOR CAM RING

Shigeyuki Hadama, Atsugi, and Kyoichi Sugizaki, Ebina, both of Japan, assignors to Atsugi Motor Parts Co., Ltd., Japan

Filed Oct. 22, 1984, Ser. No. 663,133

Int. Cl.⁴ F04C *2/00, 15/00;* B23P *15/00*

U.S. Cl. 418—108 **4 Claims**



1. A vane pump having:

a housing;

a cam ring fixedly housed in an annular recessed portion of the housing;

a rotor rotatably supported within the cam ring; and

a plurality of vanes fitted to slots formed in the rotor in such a way as to be slidably movable in the radial direction of the rotor in contact with the elliptical inner circumferential surface of the cam ring, wherein the improvement which comprises:

(a) a pair of semicircular housing grooves formed on the inner circumferential surface of the annular recessed portion of the housing and in the axial direction of the housing, said two semicircular housing grooves being located diametrically opposed to the center of the recessed portion;

(b) a pair of semicircular cam ring grooves formed on the outer circumferential surface of the cam ring and in the axial direction of the housing, said two semicircular cam ring grooves being located diametrically opposed to the center of the cam ring in such a way as to provide two locating pin holes in cooperation with said two semicircular housing grooves, respectively; and

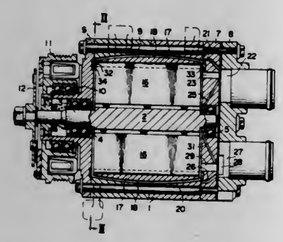
(c) a pair of locating pins pressure-fitted, respectively, to said locating pin holes formed by said two semicircular housing grooves and said two semicircular cam ring grooves in order to forcibly eliminate a developed eccentricity between the housing and the cam ring, one locating pin having an appropriate diameter greater than that of the locating pin holes being previously selected according to the eccentricity developed at positions where the two locating pin holes are formed, a diameter of the other locating pin being substantially equal to that of the other locating pin holes.

4,573,891

ROTARY SLEEVE OF A ROTARY COMPRESSOR

Hiroshi Sakamaki, Utsunomiya; Yukio Horikoshi, Kazo, and Kikuji Yanagihashi, Yono, all of Japan, assignors to Nippon Piston Ring Kabushiki Kaisha, Tokyo, Japan

Filed May 17, 1984, Ser. No. 611,214
Claims priority, application Japan, May 20, 1983, 58-087619
Int. Cl.⁴ F04C *18/344*
U.S. Cl. 418—173 **6 Claims**



1. A rotary compressor comprising:

a central housing with an internal cavity;

a rotary sleeve rotatably floating, suspended within said central housing by means of a pneumatic bearing chamber, the radial distance between the rotary sleeve and the central housing being wider at both end portions of the rotary sleeve;

a rotor rotatably housed in said rotary sleeve and a vane free to move into and out of said rotor;

a barrel formed on the outside surface of said rotary sleeve, the radius of said barrel gradually diminishing from the axial center toward both ends; and

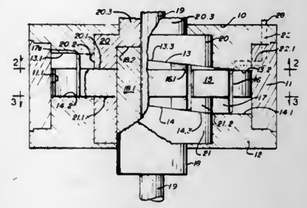
a barrel formed on the inside surface of said central housing, said barrel on the inside surface of said central housing spacedly following said barrel formed on the outside surface of said rotary sleeve at least over one part of the length of said rotary sleeve.

4,573,892

ROTARY FLUID DEVICE WITH AXIALLY SLIDING VANES

Clement O. DuFrene, Cottage Grove, Minn., assignor to Gordon Rosenmeier, Little Falls, Minn., a part interest

Continuation of Ser. No. 677,553, Dec. 3, 1984, abandoned, which is a continuation-in-part of Ser. No. 526,340, Aug. 25, 1983, Pat. No. 4,534,436. This application Jun. 20, 1985, Ser. No. 746,467
Int. Cl.⁴ F01C *1/00*
U.S. Cl. 418—219 **3 Claims**



1. A rotary fluid motor or pump device comprising

a housing including an outer cylindrical member and opposing plate members which form walls defining a circular interior cavity with opposing contoured annular cam surfaces equi-distantly spaced from each other at all points of equal radii from the center of said cavity, said opposing cam surfaces being on said opposing plate members, each said opposing plate member having an annular bushing fixed thereto at a central location thereof,

a shaft extending from the exterior of said housing through at least one said bushing into said cavity,

a rotor concentrically mounted on said shaft at a location within said cavity between said bushings and said opposing cam surfaces and dividing said cavity into two opposing chambers with said rotor therebetween, said bushings providing bushing surfaces against which a radially inward lateral surface of said rotor is adapted to rotate, said rotor consisting of a single element having at least eight radial slots equally spaced circumferentially about the peripheral portion thereof,

a slidable vane member in each said slot of said rotor, each said vane member extending as a wall between said opposing contoured annular cam surfaces, said bushings forming at their outer annular surfaces an inner race for said vane members, said outer race for said vane members being formed by the inner surface of said outer cylindrical member of said housing, and

two separated fluid passage systems through the walls of said housing, each said system having a single port in communication with each said chamber,

said device being particularly characterized by the fact that each said opposing cam surface has a valley portion spaced from the rotor and a diametrically opposed hill portion nearest the rotor, with diametrically opposed uniformly graduated slopes between said valley and hill portions, each said slope extending over a circumferential arc of at least about 130°,

never less than two said slidable vane members are at a location along each said slope of each said cam surface, regardless of the rotational orientation of said rotor,

a circumferential arc no greater than about 50° separates said single port of one fluid passage system from said single port of the other fluid passage system in communication with a said chamber, with each said single port of communication being adjacent to end of a cam surface slope located nearest said rotor and opening on said slope, each said porting including a channel consisting of a groove on the cam surface slope for chamber communication over an arc substantially equal to the arc of the cam surface slope with which the port is associated, and

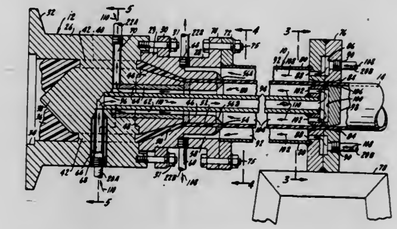
at least six chamber spaces between vane members of said device are always functioning to receive fluid and at least six such chamber spaces are always functioning to exit fluid at all times during rotation of said rotor.

4,573,893

EXTRUSION DIE WITH EXTERNAL AND INTERNAL COOLING MEANS

Michael A. Waters, Elk Grove Village, and Daniel P. Boll, Mt. Prospect, both of Ill., assignors to Application Engineering Corporation, Wood Dale, Ill.

Filed Apr. 2, 1984, Ser. No. 596,032
Int. Cl.⁴ B29D *7/02*; B29F *3/08*
U.S. Cl. 425—71 **18 Claims**



1. Cooling apparatus for an extruder of the kind in which hot molten resin is forced through an extruding die to form an elongated extrusion of given cross-sectional shape, employing a liquid coolant, comprising:

a cylindrical shell having its inner end surrounding the outlet of the extruding die and projecting outwardly therefrom in encompassing relation to a predetermined length of the extrusion emerging from the die;

a shell seal ring extending radially inwardly of the outer end of the shell and having an axial outlet opening with a shape conforming to the external cross-sectional shape of the extrusion;

the shell, the seal ring, and the external surface of the extrusion affording an annular, sealed cooling chamber encompassing a predetermined length of the extrusion emerging from the die;

an annular cooling chamber extension formed in the extruding die, in fluid communication with the cooling chamber so as to effectively extend the cooling chamber into the die;

at least one inlet port connected to the outer end of the cooling chamber;

at least one outlet port connected to the cooling chamber extension;

and means, connected to the inlet and outlet ports, for filling the cooling chamber with a liquid coolant and for circulating the liquid coolant through the cooling chamber from its outer end to its inner end and out through the chamber extension to cool the external surface of the extrusion and solidify the extrusion as it emerges from the extruder

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4,573,894

APPARATUS FOR VENTLESS TIRE MOLDING

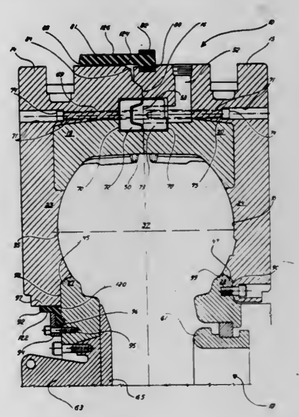
Jerome J. Blayne, Brecksville; James Sidles, Richfield, and Donald R. Bartley, Cuyahoga Falls, all of Ohio, assignors to The B. F. Goodrich Company, New York, N.Y.

Filed Nov. 23, 1984, Ser. No. 674,397
Int. Cl.⁴ B29H *5/02*
U.S. Cl. 425—36 **8 Claims**

1. In a tire mold having tread, sidewall and bead components defining a mold cavity, the mold being radially divided by a circumferential parting line intersecting with an external surface of the mold, at least some mold components being moveable to open and close the mold along the parting line, the improvement comprising:

an inner mold surface defined by the bead, tread and sidewall components essentially free of venting outlets by which a fluid may pass from within the mold cavity to without;

at least one conduit means having a point of communication positioned at the parting line radially outwardly of the tread components and a vaccum source, the conduit means being configured for interruptable interconnection with the vacuum source and the conduit means and vacuum source being of a size sufficient whereby the mold, upon being sealed, may be evacuated to not more than 16932 Pa within not more than 60 seconds of vacuum application;



a seal disposed to enclose annularly in a sealing relationship the parting line, positioned radially outwardly of the conduit means point of communication, the seal being of a nature wherein one seal surface is exposed to pressure within the mold cavity and an obverse seal surface is exposed to a pressure sourced outside the mold cavity, and whereby upon evacuation of the mold cavity, by inherent seal configuration, the seal is urged into a more tightly sealing relationship, the seal being configured to sealingly engage outer surfaces of the mold as separated by the parting line beginning in a range of mold openings along the parting line of between 0.10 and not more than 5.08 centimeters to substantially preclude the movement of air into the mold cavity, and the seal being configured to be capable of continuing to preclude such air movement during and after mold closure.

4,573,895

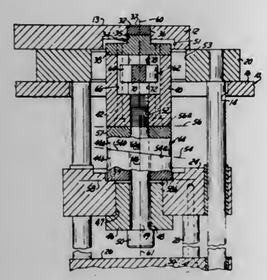
ADJUSTABLE DIE AND PUNCH ASSEMBLY FOR COMPACTING POWDER MATERIAL

Raymond P. DeSantis, Troy, and Herbert J. Puffer, Jr., Garden City, both of Mich., assignors to PTX-Pentronix, Inc., Lincoln Park, Mich.

Division of Ser. No. 419,827, Sep. 20, 1982, Pat. No. 4,450,127, which is a continuation-in-part of Ser. No. 351,482, Feb. 23, 1982, Pat. No. 4,390,335. This application Feb. 21, 1984, Ser. No. 581,979
Int. Cl.⁴ B30B *11/02*
U.S. Cl. 425—78 **6 Claims**

1. A punch and die assembly for powder compacting press, said assembly comprising a die plate having an upper surface, at least one bore through said die plate, a punch having an end slidably disposed in said bore in said die plate, said punch having an end face normally substantially parallel to said die plate under surface, a punch base member, a reciprocal platen supporting said punch base member, means for reciprocating

said platen, and means disposed between said punch base member and said platen for adjustably inclining said punch for disposing said punch face non-parallel to said die plate upper surface, wherein said means for adjustably inclining said punch comprises an adjusting member disposed between said platen and said punch base member, said adjusting member having



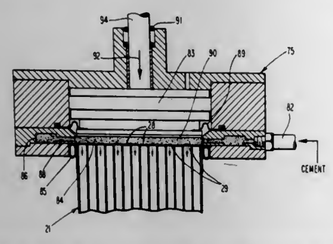
parallel end faces and being made in two portions having a common surface of junction disposed in a plane at an angle to said parallel end faces, said two portions being independently rotatable relative to each other around a common axis at said surface of junction for inclining one of said end faces realtive to the other.

4,573,896

APPARATUS FOR SELECTIVELY MANIFOLDING HONEYCOMB STRUCTURES

Roy T. Bonzo, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Division of Ser. No. 283,732, Jul. 15, 1981. This application Apr. 21, 1983, Ser. No. 487,446
Int. Cl.⁴ B29C *27/14*
U.S. Cl. 425—125 **4 Claims**



1. A press apparatus for charging a flowable material into a honeycomb structure having a plurality of cells open at an end face thereof comprising:

a press head having a chamber with an opening at an outer surface of the press head to accept said honeycomb structure for charging and further having a bore extending away from said chamber opposite said opening;

means for securing said end face of said honeycomb structure across said opening, said means for securing comprising a pneumatically inflatable collar affixed to said press head;

means for injecting said flowable material through said press head into said chamber;

piston means slidably mounted in said bore for pressing said flowable material in said chamber into the end face of said structure; and

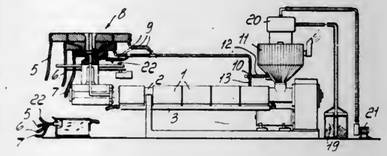
a flexible annular diaphram affixed at its outer edges to said press head and at its center to said piston means.

4,573,897

SYSTEM FOR HOT EXTRUDING, DRAWING, AND SIMILARLY PROCESSING PLASTOMERS OR ELASTOMERS, INCORPORATING A MEANS OF RECOVERING AND UTILIZING HEATED AIR FROM THE COOLING OF HEATED PARTS

Gaetano Piazzola, Via Borri, 148, 21100 Varese, Italy

Filed Mar. 12, 1984, Ser. No. 588,653
Claims priority, application Italy, Mar. 17, 1983, 20132 A/83
Int. Cl.⁴ B29B *13/02*
U.S. Cl. 425—143 **1 Claim**



1. In a system for extruding, molding, drawing and similarly hot processing plastomers or elastomers, utilizing for cylinder heating ventilated electric thermal units mounted on said cylinder, the improvement therein said system is a closed loop type of system comprising a plurality of pipes adapted to deliver hot air from said electric thermal units to areas of said system requiring heat application and to return at least a part of said air to said electric thermal units and wherein said electric thermal units are adapted and constructed to admit hot air into a channel communicating with an insulated hot air storage chamber therefrom a plurality of thermally insulated duct lines extend coupled to specially provided grooves arranged peripherally to the various parts of the blow-working head, or molds, or dies, or flat heads, said hot air being then exhausted through additional duct lines and a three way valve into a drier or dehumidifier acting as a granule feeder, a part of said air being returned to said thermal units to decrease the thermal work of the latter, thereby improving thermal efficiency, said cylinder temperature and pressure working conditions and the life of said thermal units.

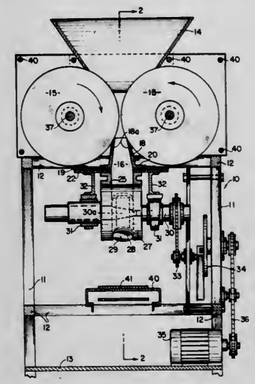
4,573,898

POSITIVE PRESSURE DOUGH DIVIDER

Donald A. Jones, Mornington; Gerhard F. Wawra, Vermont South, and William R. Moss, Wantirna, all of Australia, assignors to Baker Perkins, Pty., Ltd., Victoria, Australia

PCT No. PCT/AU83/00133, § 371 Date Aug. 3, 1984, § 102(e) Date Aug. 3, 1984, PCT Pub. No. WO84/02633, PCT Pub. Date Jul. 19, 1984
PCT Filed Sep. 27, 1983, Ser. No. 638,482
Claims priority, application Australia, Jan. 4, 1983, PF7487
Int. Cl.⁴ A21C *5/04*
U.S. Cl. 425—145 **9 Claims**

1. A positive pressure dough divider comprising a dough supply, a pair of rotatable sheeting rolls for creating positive pressure in the dough while carrying the dough from said supply into a transfer passage leading to one or more volumetric measuring chambers, wherein said rolls provide a positive pressure rise along the direction of flow in the transfer passage between the rolls sufficient to charge the measuring chamber or chambers with dough under pressure, and barriers extending between the rolls and adjacent to ends of the rolls for preventing leakage of dough at the ends, the barriers being formed to diverge outwardly toward the ends and with respect to the direction of dough flow between the rolls and to follow



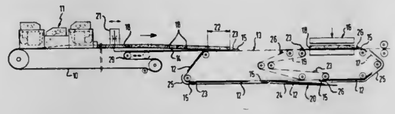
the circumferential surfaces of the rolls with a safe running clearance from the rolls.

4,573,899

PLANT FOR THE MANUFACTURE OF PARTICLEBOARD

Dieter Wiemann, Barsinghausen, and Günther Bodusch, Springe, both of Fed. Rep. of Germany, assignors to Bison-Werke Bahre & Greten GmbH & Co. KG, Springe, Fed. Rep. of Germany

Filed Dec. 20, 1983, Ser. No. 563,373
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1982, 3247551
Int. Cl.⁴ B29C *43/02, 43/34, 45/77*
U.S. Cl. 425—145 **15 Claims**



1. A plant for the manufacture of particle board comprising:

a stationary scattering station for forming a mat of particulate material;

an endless forming band onto which said mat-forming material is scattered, said forming band being mounted on stationary supporting means;

means for continuously moving said forming band beneath said scattering station at a constant speed;

a movable mat cutting saw disposed above said mat for dividing said mat into individual mat sections;

a plurality of mat carriers each having first and second sides and a head strip;

an intermediate endless conveyor disposed after said forming band for moving said mat carriers beneath mat sections supplied from said forming band, whereby each mat section is transferred onto a respective mat carrier;

a vertically and horizontally moveable transfer table disposed between said scattering station and said intermediate conveyor, said transfer table having an end which overlaps said intermediate conveyor and said endless forming band, moving from said scattering station over said transfer table and being deflected around said end of said transfer table;

means for advancing and retracting said transfer table relative to said intermediate conveyor to vary said overlap, whereby said transfer table is in an advanced position at the start of transfer of a mat section from the forming band to a respective one of said mat carriers and in a retracted position at the completion of said transfer;

a cyclically operating press disposed after said intermediate conveyor and having an inlet and an outlet;

loading and unloading means for said press, with said forming band, said intermediate conveyor and said loading and unloading means corresponding to move said mat section in a transport plane;

means for separating pressed mat sections from said mat carriers at said outlet of said press;

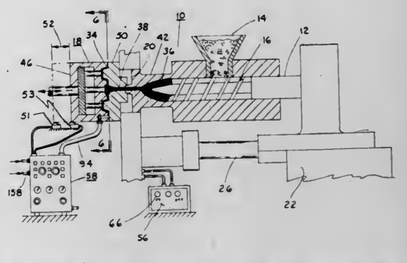
means disposed beneath said transport plane for returning mat carriers separated from said pressed mat sections to said intermediate conveyor; wherein said intermediate conveyor simultaneously serves to supply said mat carriers to said loading means and has transport means for engaging said head strips at said first and second sides; wherein said loading and unloading means means includes further transport means for engaging said head strips at said first and second sides; wherein said further transport means move during part of their movement in said transport plane parallel to and alongside the first said transport means; wherein said means for returning mat carriers separated from said pressed mat sections includes a transfer station disposed between said loading and unloading means and said intermediate conveyor; and wherein said intermediate conveyor is constructed as an accelerating conveyor, there being means for driving said intermediate conveyor at said constant speed of said forming band during transfer of a said mat section onto a said mat carrier and for accelerating said intermediate conveyor when the said mat section is fully transferred to said mat carrier.

4,573,900

EVACUATION SYSTEM FOR INJECTION MOLDING MACHINES

Lyle Smith, Danbury, Conn., assignor to Alpha Molding Technologies Associates, Danbury, Conn.

Filed Dec. 6, 1984, Ser. No. 679,053
Int. Cl.⁴ B29F *1/00*
U.S. Cl. 425—157 **8 Claims**



1. An apparatus for controlling operating pressure during predetermined increments of time in a mold cycle for producing intricate and thin wall plastic parts formed within a cyclical injection molding die operatively associated with an injection molding machine, said apparatus comprising:

A. a mold cavity located between a mating male and female die member of said cyclical injection molding die, said mold cavity having an inlet port for receiving a heated thermoplastic material,

B. a sealing device for insuring an airtight bond between said mating male and female die member during said mold cycle when said cyclical injection molding die is closed,

C. a venting path for operatively applying a sustained negative pressure to said mold cavity during a first time interval beginning after said cyclical injection molding die has

closed and before said cyclical injection molding die has filled with said heated thermoplastic material,

D. first control means for maintaining a substantially constant negative pressure within said mold cavity during said first time interval of said mold cycle while said intricate, and thin walled parts are being formed,

E. second control means for reversing said substantially constant negative air pressure to a positive air pressure and for maintaining said positive air pressure at a level sufficiently high enough during a second time interval of said mold cycle to cause a predetermined incremental and uniform separation of said intricate and thin walled plastic parts from said male and female die member at a predetermined increment of time substantially close to that portion of time in said mold cycle when said cyclical injection molding die initially opens, and

F. means for resetting said first and second control means to an initial condition whereupon a succeeding mold cycle will be started.

4,573,901

DIE CARRIER MEMBER FOR DIE CLOSING UNIT OF INJECTION MOLDING MACHINE

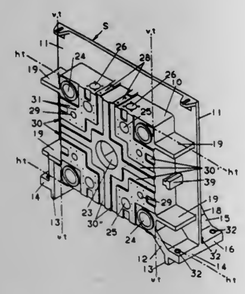
Karl Hehl, Arthur-Hehl-Strasse 32, 7298 Lossburg 1, Fed. Rep. of Germany

Filed Jan. 25, 1985, Ser. No. 694,757

Claims priority, application Fed. Rep. of Germany, Jan. 25, 1984, 3402404; Jan. 25, 1984, 3402405

Int. Cl.⁴ B29F *1/06*

U.S. Cl. 425—451 **14 Claims**



1. A die closing unit for an injection molding machine comprising a stationary die carrier member and a movable die carrier member, hydraulic actuator means driving the movable die carrier member to execute die opening and closing movements in relation to a stationary die carrier member along a longitudinal center axis of the die closing unit and producing an elevated die closing pressure, and four parallel tie rods engaged in aligned tie rod bores of the two die carrier members, the tie rods guiding the movable die carrier member in said movements, the two die carrier members having oppositely facing parallel die mounting faces to which the stationary and movable die halves of an injection molding die are attachable, said die mounting faces extending perpendicularly to said center axis and having substantially identical rectangular outlines, in the four corner areas of which are located the tie rod bores; the improvement therein, having for its purpose to enhance the dimensional stability and rigidity of the die closing unit, being characterized in that:

at least one of the two die carrier members is in the form of a rectangular plate of cast iron having two parallel opposite plate faces, one of which is machined to serve as the die mounting face of the die carrier member;

the cast iron is of a type which forms a casting skin the tensile strength of which is considerably greater than the strength of the cast iron below said skin;

the machined die mounting face includes substantially continuous narrow machined surface portions surrounding the four tie rod bores,

the remainder of the surface area of the rectangular plate defines a pattern of shallow face grooves the bottom surface of which is parallel to the mounting face and not machined, so as to retain its casting skin; and

the face grooves in said pattern are oriented parallel to the sides of the rectangle and spaced apart, so as to alternate with band-like machined surface portions of substantially the same width as the face grooves, the casting skin in the face grooves thereby serving to stabilize and stiffen the carrier member.

4,573,902

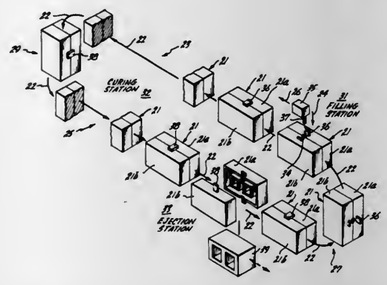
MACHINE FOR MANUFACTURING FOAM BUILDING BLOCKS

Nikolaus J. Heilman, Kent; David A. Wix, Seattle, and Gary M. Egerer, Auburn, all of Wash., assignors to Interblock Partners, Ltd., Kent, Wash.

Filed Jun. 24, 1983, Ser. No. 507,548

Int. Cl.⁴ B29C *45/04, 45/42, 45/64*

U.S. Cl. 425—543 **14 Claims**



1. A machine for forming molded items, the machine having a plurality of forming molds, each forming mold including pieces movable with respect to one another such that the forming mold can be changed between a closed configuration in which the pieces form a mold cavity having a hole for injection of raw materials and a separated configuration in which a molded item can be removed from the forming mold, the machine further having conveyor means for supporting and moving the forming molds along a path-of-travel through filling and ejection stations, filling means located at the filling station for injecting raw materials through the holes into the forming molds, and ejection means located at the ejection station for removing molded items from the forming molds, characterized in that the forming molds move through the filling station in the closed configuration and the filling means includes a gun having a nozzle, a positioning mechanism for lowering the nozzle into the holes in the forming molds as the forming molds enter the filling station and for moving the gun with the movement of the forming molds as the forming molds move through the filling station, and means for injecting the raw materials into the closed forming molds through the nozzle as the forming molds move through the filling station.

4,573,903

OPTICAL COMPONENT MOLDING APPARATUS FOR FOLLOWING THE DIFFERENTIAL SHRINKAGE OF MOLDED SYNTHETIC MATERIAL

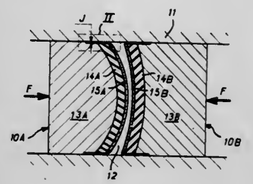
Jean Boudet, Bressey sur Tille, and Guy Rolland, Vincennes, both of France, assignors to Essilor International Cie Generale d'Optique, Paris, France

Filed Jul. 15, 1983, Ser. No. 513,998

Claims priority, application France, Jul. 16, 1982, 82 12479

Int. Cl.⁴ B29D *11/00*

U.S. Cl. 425—555 **20 Claims**



1. A device suitable for molding synthetic molding material into optical components, said device comprising two spaced mold parts disposed in face-to-face relationship and defining a mold cavity for an optical component; at least one of said mold parts including a rigid supporting base, a molding die elastically deformable in the course of molding a component, and an intermediate pad of an incompressible elastic material disposed between said base and said molding die and completely covering the respective surfaces thereof; said pad being of a thickness and elasticity to form means for effecting movement of said molding die to follow differential shrinkage of molded synthetic material in the course of setting of said molded synthetic material.

4,573,904

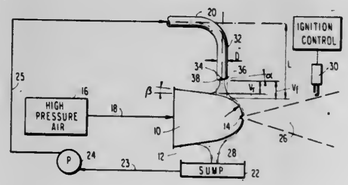
LIQUID DELIVERY APPARATUS AND METHOD FOR LIQUID FUEL BURNERS AND LIQUID ATOMIZERS

Robert S. Babington, 1113 Ingelside Ave., McLean, Va. 22101, assignor to Robert S. Babington, McLean, Va.

Filed Mar. 17, 1983, Ser. No. 476,453

Int. Cl.⁴ F23D *5/12*

U.S. Cl. 431—117 **19 Claims**



1. In an atomizing means of the type including a plenum having an exterior wall with a small aperture therethrough through which pressurized air delivered from pressurized source means is caused to issue, the exterior surface of said wall being smooth and convex, the improvement comprising:

a tube through which liquid fuel from a fuel supply means is to be flowed over said exterior surface and across said aperture, said tube having a downwardly directed, substantially straight portion at its exit end with a center line, said straight portion terminating above said plenum with a discharge opening having its front edge closer to said aperture than its rear edge, the distance from said front edge to said convex portion being from 1.5 to 2.0 times the distance from said rear edge to said convex portion both distances being measured parallel to said centerline,

whereby when fuel flows through said tube at low flow rates suitable for low atomization rates, said tube causes the fuel stream between said discharge opening and said exterior surface to take on a bulbous shape which minimizes the film thickness at said aperture; and when fuel flows through said tube at higher flow rates suitable for high atomization rates, said tube causes the fuel stream between said discharge opening and said exterior surface to direct itself toward said aperture to thereby increase the film thickness at said aperture and means for igniting said atomized liquid fuel.

4,573,905

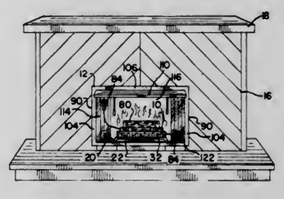
BURNER UNIT FOR FIREPLACE SIMULATION

Wayne E. Meyers, 401 N. Glen, West Chicago, Ill. 60185

Filed Nov. 13, 1984, Ser. No. 670,264

Int. Cl.⁴ F23Q *2/32*

U.S. Cl. 431—125 **7 Claims**



1. A burner unit particularly adapted for use in a nonvented enclosure, said unit comprising:

a base with enclosed light source,

a base plate connecting with and positioned over said base with said plate formed with a cutout having an irregular front edge,

glass means positioned in said cutout to provide upward illumination from said light source and to produce in part a visual glowing ember effect,

grate means attached to said base plate above said cutout,

a fuel cell having a container portion connecting with said grate means and a lid portion having slides operatively connecting with guides attached to sides of said container portion to allow or preclude access to said fuel cell container portion, and

vent means formed in said fuel cell container portion and said lid to allow air circulation about fuel canisters disposable in said fuel cell container portion,

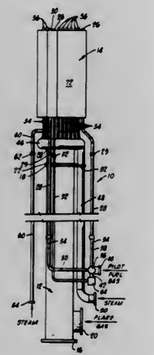
wherein during use of said burner unit fuel in said canisters may burn to produce heat with a temperature of said fuel, said fuel canisters and said fuel cell regulated by said air circulation, and light from said light source passing through said glass means to reflect from rock pieces disposable on said glass means may visually simulate glowing embers under said grate means, and during non-use of said burner unit said fuel cell lid may be positioned to enclose said container portion and limit said circulation of air sufficiently to inhibit combustion therein while allowing air circulation sufficient to vent said fuel cell as required.

4,573,906

SHIELDED SMOKE SUPPRESSING FLARE GAS BURNER

Robert E. Schwartz; Roger K. Noble, and Michael R. Keller, all of Tulsa, Okla., assignors to John Zink Company, Tulsa, Okla.

Continuation-in-part of Ser. No. 645,420, Aug. 29, 1984. This application Feb. 21, 1985, Ser. No. 704,048
Int. Cl.⁴ F23D *13/20*
U.S. Cl. 431—202 **13 Claims**



1. A flame impingement and heat shielded smoke suppressing flare gas burner comprising:
- a tubular member having a flare gas discharge end and an inlet end adapted for connection to a source of flare gas;
- a smoke suppressant manifold adapted for connection to a source of smoke suppressant positioned exteriorly of said tubular member;
- a plurality of smoke suppressant conduits connected to said manifold and extending exteriorly of said tubular member adjacent the discharge end portion thereof for discharging smoke suppressant;
- pilot flame burner means for igniting flare gas discharged from said tubular member positioned adjacent the discharge end thereof;
- pilot fuel conduit means for supplying fuel to said pilot flame burner means connected to said burner means and extending exteriorly of said tubular member to the inlet end thereof; and
- an external protective covering formed of refractory material attached over said plurality of smoke suppressant conduits, over said pilot fuel conduit means and over the exterior wall surface of said tubular member at the discharge end portion thereof whereby said exterior wall surface, said smoke suppressant conduits and said pilot fuel conduit means are shielded by said protective covering and an aerodynamically improved external discharge end portion is provided on said tubular member.

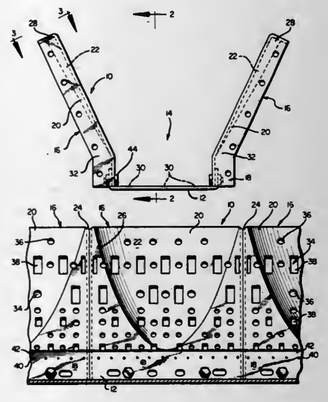
4,573,907

LOW OXYGEN AND LOW PRESSURE DROP BURNER

William P. Coppin, and Tadeusz Karabin, both of Muncie, Ind., assignors to Maxon Corporation, Muncie, Ind.

Filed Nov. 7, 1984, Ser. No. 669,019
Int. Cl.⁴ F23D *15/00*
U.S. Cl. 431—351 **19 Claims**

1. An improved burner unit for disposition in longitudinally connected array to form a burner trough, such burner for use in relatively lower oxygen and/or lower pressure drop air streams, and having improved thermal expansion performance, said burner unit comprising:
- a burner base disposed at the bottom of the burner trough;
- a pair of mixing plates having aeration openings therein, said mixing plates disposed on opposite lateral sides of said burner base, said mixing plates having
- i. a lower flange disposed at the bottom of said mixing plate for attachment thereof to said burner base,
- ii. a mixing plate body extending upwardly from said lower flange to form the sides of such burner trough, said mixing plate sides comprising a bulge therein which



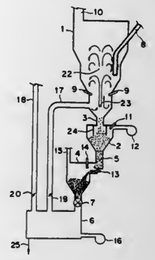
protrudes outwardly with respect to the burner trough said bulge containing at least a portion of said aeration openings, and
- iii. side flanges disposed on and extending from the sides of said mixing plate for engagement with and securement in series to a corresponding side flange of a further mixing plate to form the burner.

4,573,908

METHOD AND APPARATUS FOR PRODUCING WHITE CEMENT CLINKER

Toshikazu Ichiyanagi, Kumagaya; Kanzaburo Sudo, Saitama; Zenzaburo Kawai, Kumagaya; Shoji Sekine, Niza, and Hiroshi Teshigawara, Koshigaya, all of Japan, assignors to Chichibu Cement Kabushiki Kaisha and Ishikawajima-Harima Jukogyo Kabushiki Kaisha, both of Tokyo, Japan

Filed Jun. 11, 1985, Ser. No. 743,498
Claims priority, application Japan, Jun. 11, 1984, 59-118345
Int. Cl.⁴ F27B *15/00*; F27D *15/02*
U.S. Cl. 432—58 **3 Claims**



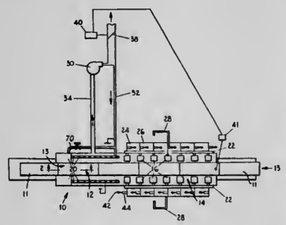
1. An apparatus for producing white cement clinker comprising a fluidized bed burning furnace for burning white cement raw material particles into clinker particles, a reduction chamber below said burning furnace for reducing the clinker particles from said burning furnace, a jet injection pipe intercommunicating between a top of said reduction chamber and a bottom of said burning furnace a primary cooling chamber communicated with said reduction chamber for cooling the clinker particles from said reduction chamber by spraying water and a secondary cooling chamber communicated with said primary cooling chamber, through means for feeding a predetermined quantity of clinker particles, for further cooling the cooled clinker particles from said primary cooling chamber with the air.

4,573,909

BILLET HEATING FURNACE WITH ADJUSTABLE PRESSURIZED ENTRANCE SEAL

Robert M. Scanlon, Rockford, Mich., assignor to Granco-Clark, Inc., Belding, Mich.

Filed Aug. 3, 1984, Ser. No. 637,436
Int. Cl.⁴ F27B *3/04*
U.S. Cl. 432—133 **4 Claims**



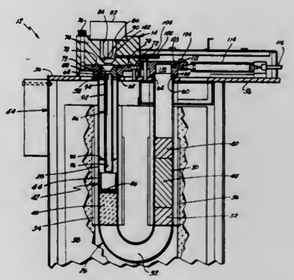
1. In a furnace for heating articles to an elevated temperature wherein the articles are moved serially from an entrance end of the furnace to an exit end thereof comprising:
- a preheater section at an entrance end of the furnace and a heating chamber at an exit end thereof;
- means in said heating chamber for directing combustible gases against the articles therein;
- means for providing turbulent gas flow along the length of said preheater section;
- exhaust means including a fan communicating with said preheater section for drawing the exhaust gases of said combustible gases from the furnace;
- said exhaust means drawing said exhaust gases from said heating chamber to said preheater section;
- means for pressurizing said exhaust gases;
- means for communicating said pressurized exhaust gases with said means providing turbulent gas flow;
- means in said preheater section defining first and second chambers therein, said first chamber extending from the entrance end of the furnace along a portion of the length of said preheater section and said second chamber extending from said first chamber to said heating chamber; and
- means for maintaining said first chamber at a first pressure at about atmospheric pressure and above the pressure of said second chamber with said pressurized exhaust gases, the improvement which comprises:
- means external to said preheater section for adjusting said pressure in said first chamber independent of the pressure in said second chamber;
- said means for maintaining the pressure in said first chamber at a first pressure comprises a conduit between said fan outlet and said first chamber, and said means for adjusting said pressure in said first chamber includes an adjustable valve in said conduit;
- said means defining said first and second chambers includes a first baffle adjacent the entrance end of said furnace and a second baffle spaced inwardly from said first baffle; and
- said first and second baffles include openings which closely conform to the configuration of articles which are heated in said furnace whereby said openings and said articles define a gap sealing arrangement.

4,573,910

CARBON, HYDROGEN, AND NITROGEN ANALYZER

Roger L. Bredeweg, Stevensville, Mich., assignor to Leco Corporation, St. Joseph, Mich.

Division of Ser. No. 355,214, Mar. 5, 1982, Pat. No. 4,525,328. This application Feb. 8, 1985, Ser. No. 699,574
Int. Cl.⁴ F27B *14/00*; G01N *31/12*
U.S. Cl. 432—156 **13 Claims**



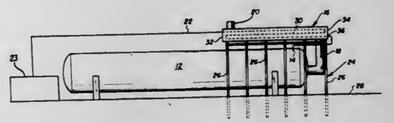
1. A combustion furnace for the combustion of a sample into constituent gases comprising:
- an analytical furnace;
- crucible-support means for supporting a crucible within said furnace;
- sample-release means for dropping the sample to be analyzed into the crucible;
- guide means for guiding the sample dropped from said sample-release means into the crucible; and
- means adapted to be connected to a source of pressurized oxygen for directing oxygen downwardly through said guide means onto the sample in the crucible to facilitate combustion of the sample.

4,573,911

HEATER TREATER ECONOMIZER SYSTEM

Karl C. Kimmich, Bakersfield, Calif., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 30, 1984, Ser. No. 605,549
Int. Cl.⁴ F27D *17/00*; F28D *7/00*; E21B *36/00*; F27B *14/00*
U.S. Cl. 432—179 **2 Claims**



1. In combination:
- a heater treater for preshipment processing of heavy oil having an inlet for receiving an oil/water emulsion and a combustion heater for heating said oil/water emulsion and an outlet for supplying processed heavy oil for shipment;
- a freewater knockout tank having an inlet for receiving an oil/water slurry and an outlet for providing an oil/water emulsion; and
- a preheater placed between said outlet of said freewater knockout tank and said inlet of said heater treater, said preheater having a housing with an opening for receiving exhaust gas from said combustion heater of said heater treater, a plurality of conduit sections running the length of said housing arranged in horizontal rows, said conduit sections connected at opposite ends to provide a continuous conduit extending from outlet of said freewater knockout tank to said inlet of said heater treater and having heat conductive fins for heat transfer between said

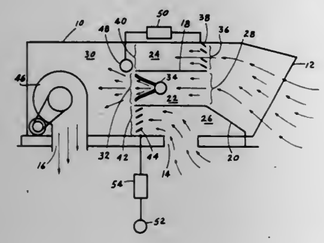
exhaust gas and said conduit sections, said housing having vertical baffles for directing said exhaust gas alternatively up and down in a serpentine manner and horizontal baffles for sealing openings between said horizontal rows on a side of said housing, said housing having an insulating cover to prevent heat loss to outside ambience.

4,573,912

SPACE HEATER

Charles W. Albritton, Hermitage; William N. Powis, Sharpsville, both of Pa., and William M. Graham, Poland, Ohio, assignors to ITT Corporation, New York, N.Y.

Filed Jun. 26, 1984, Ser. No. 624,648
Int. Cl.⁴ F24H *1/00, 3/02;* G05D *23/00*
U.S. Cl. 432—222 **13 Claims**



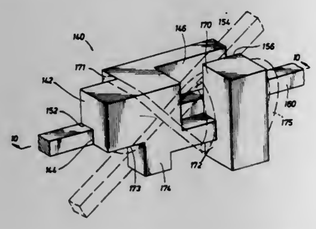
1. A space heater comprising a housing having a discharge opening thereon, an outside air inlet opening and an inside air inlet opening, blower means for causing air to flow through said housing from said air inlet openings to said discharge opening, direct air burner means located upstream of said discharge opening and downstream of said cutside air inlet opening, first adjustable damper means for bypassing some of the air from said outside air inlet opening around said burner or for directing more of this air across said burner, second adjustable damper means for varying the flow of inside air from said inside air inlet opening to said discharge opening, first control means operating said first adjustable damper means to maintain a constant flow of air across said burner, second control means operating said second adjustable damper means to control the flow of inside air.

4,573,913

LINGUAL ORTHODONTIC APPLIANCE SYSTEM FOR EDGEWISE THERAPY

Thomas D. Creekmore, 1620 Fountainview, Houston, Tex. 77057

Division of Ser. No. 369,932, Apr. 19, 1982, Pat. No. 4,529,382. This application Sep. 17, 1984, Ser. No. 651,477
Int. Cl.⁴ A61C *7/00*
U.S. Cl. 433—17 **11 Claims**



1. A lingual orthodontic appliance for edgewise orthodontic therapy, comprising:

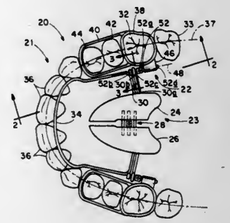
a pair of lingual molar tube brackets adapted for attachment to the lingual surfaces of opposed molars of each of a patient's oral arch forms, each of said molar tube brackets defining mesio-occlusally oriented slot means and mesio-distally oriented slot means in intersecting relation permitting mesio-occlusal insertion of respective archwire extremities therein and permitting pivotal rotation of the mesio-occlusally inserted archwire extremities relative to said molar tube brackets to permit insertion of the archwire toward the gingival into the occlusally oriented archwire slots of respective lingual brackets and into seated relation within said mesio-distally oriented slot means.

4,573,914

FORMATIVE ORTHODONTIC APPLIANCE

Philip J. Nord, 5213 SE. 30th #210A, Portland, Oreg. 97202

Filed Jan. 28, 1985, Ser. No. 695,706
Int. Cl.⁴ A61C *3/00*
U.S. Cl. 433—18 **5 Claims**



1. In a formative orthodontic appliance having counteracting pressure-applying first and second members, the first member including band means fixedly joinable to a tooth, a mechanism for adjustably biasing the first and second members comprising:

a body, fixedly adjoined to the band means, wherein a machine-screw-threaded bore extends into said body;

an arm having a first end fixedly adjoined to the second member and a second end having a loop positioned adjacent said body; and

adjustable joining means having a screw portion inserted into said bore, matingly threaded to said bore, for adjustment with respect to said body along a longitudinal axis of rotation, and a spool-like section which rotatably retains said loop.

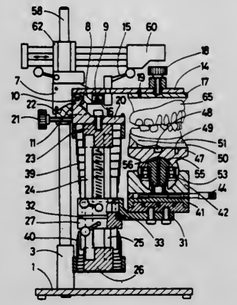
4,573,915

OCCLUSIO-REFERENTIAL ARTICULATOR

Eugen Merz, Alte Landstrasse 94, CH 8803 Rüschlikon; Sami Sandhaus, 4, Avenue de Provence, CH-1024 Lausanne, and Norbert Troger, Brüelweg 38, CH-4147 Aesch, all of Switzerland

Filed Sep. 10, 1984, Ser. No. 648,890
Claims priority, application Switzerland, Sep. 16, 1983, 5047/83
Int. Cl.⁴ A61C *11/00*
U.S. Cl. 433—64 **10 Claims**

1. An occlusio-referential articulator comprising a frame on which are mounted an upper plane support (**14**) for the mold of the upper maxillary (**65**), extending approximately horizontally and fixed in the position of use, a movable lower plane support (**47**) for the mold of the lower maxillary (**51**), and means for displacing and positioning the lower plane support relative to the upper plane support both perpendicularly to the upper support and parallel to this support, wherein the lower support (**47**) comprises a movable piece (**27**) on a guide means (**24**) approximately perpendicular to the upper plane support (**14**) and said movable piece (**27**) is mounted to slide on two guide columns (**24,25**) of said guide means (**24**) and is suspended on at least one weight-compensating spring (**38**) and said movable piece (**27**) supports (and supporting) an arm (**31**) which extends perpendicularly to said guide means (**24**) and is mounted to slide vertically on the said movable piece (**27**) with a limited travel and which is provided with a manually actuated stop means (**34**) for its vertical displacement on the said movable



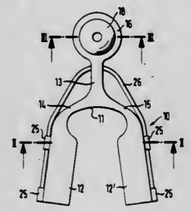
piece (**27**), said arm (**31**) carrying two intersecting orthogonal slideways (**41**),(**42**), each provided with a graduated actuating screw, the upper slideway (**42**) carrying a spherical knuckle (**46**) which supports a plane table (**47**) possessing positioning means (**48,49**) for the mold of the lower maxillary or its support (**50**).

4,573,916

DEVICE FOR DETERMINING THE RELATIVE POSITION OF THE UPPER JAW AND LOWER JAW FOR THE PRODUCTION OF DENTURES

Robert Sturtzkopf, Wilhelm-Hey-Str. 14, 8000 Munich 60, Fed. Rep. of Germany

Filed Aug. 3, 1984, Ser. No. 637,395
Claims priority, application Fed. Rep. of Germany, Aug. 12, 1983, 3329284
Int. Cl.⁴ A61C *9/00*
U.S. Cl. 433—71 **4 Claims**



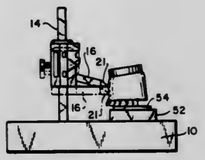
1. A device for determining the mutual alignment of the chewing surfaces of the upper and lower jaw for the purpose of producing dentures, wherein a freely shapeable hardenable wadding is interposed between the upper and lower jaw which is allowed to harden once the chewing surfaces have been firmly closed on each other and wherein the wadding comprises a plastic bag in fork-like shape having a pair of shanks each adapted to be engaged by the molars at the respective sides of the mouth of a user, including a filling opening which is elongated in a tubular shape and communicating with the interior of the shanks, the improvement comprising said bag being recessed in the area of the frontal teeth sufficiently not to be engaged thereby when said shanks are engaged by the molars and providing tubular connections for connecting the shanks of the bag outside the area of the frontal teeth to each other and to the filling opening.

4,573,917

MEASURING DEVICE FOR MAXILLOFACIAL TRIAL SURGERY

Kim L. Erickson, 36 Lawrence Ave., Bedford Hills, N.Y. 10507

Filed Dec. 13, 1984, Ser. No. 681,371
Int. Cl.⁴ A61C *3/00*
U.S. Cl. 433—75 **12 Claims**



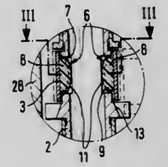
1. A measuring device for orthognathic surgery utilizing the Frankfort Horizontal reference plane and for use in surgical planning comprising a model platform having a precisely flat platform surface representing the Frankfort Horizontal plane, a model block resting on said platform surface and provided with a dental model thereon that has been oriented relative to said model platform, a vertically movable caliper mounted on and 90 degrees to said platform and having means for accurately measuring said dental model, and a scriber maintained substantially parallel to said flat platform surface for accurately placing reference lines that have been measured by said caliper on said mounted dental model for facilitating prospective surgical procedures.

4,573,918

CLAMPING ARRANGEMENT FOR THE CLAMPING ENGAGEMENT OF INSTRUMENTS

Erich Bareth, Ummendorf, Fed. Rep. of Germany, assignor to Kaltenbach & Voight GmbH & Co., Fed. Rep. of Germany

Filed Nov. 27, 1984, Ser. No. 675,125
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1983, 3346248
Int. Cl.⁴ A61C *1/14*
U.S. Cl. 433—127 **32 Claims**



1. In a clamping arrangement for the clamping of implement, such as dental instruments; including a mounting sleeve rotatably supported within a handpiece and connected with a rotary drive, and including an axially extending sidewall forming a socket to receive a shank of an instrument inserted thereinto; clamping means for gripping said shank; and an external spring element imparting a force on said clamping means; the improvement comprising:

the sidewall of the mounting sleeve forms at least one opening radially extending through said sidewall;

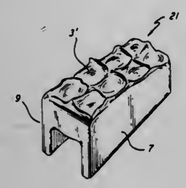
the clamping means are separate from and releasably mounted on aid mounting sleeve, and are supported by the mounting sleeve for radial movement through the opening in the sidewall thereof; and

the external spring element is mounted on the clamping means and urges the clamping means radially inward through the opening in the sidewall of the mounting sleeve.

4,573,919
DENTURE STABILIZER FOR MUSICIAN

Frank Sinkora, 7875 French St., Northfield, Ohio 44067

Filed May 2, 1984, Ser. No. 606,381
Int. Cl.[4] A61C *5/00*
U.S. Cl. 433—140 7 Claims



1. A denture stabilizer for musicians comprising a member having a flattened upper surface for engagement by the teeth extending from the musician's upper jaw and a flattened lower surface opposite said upper surface for engagement by the teeth extending from the musician's lower jaw, said upper and lower surfaces being spaced from each other by a distance small enough to maintain the musician's mouth in a substantially closed position, and one of said upper and lower surfaces having an irregular contour to engage the irregular surface of the teeth engaged by said surface, said stabilizer holding a denture comprising any said teeth in the musician's mouth in place against forces applied to the denture by the mouthpiece of a musical instrument.

4,573,920
DEVICE FOR CLEANING THE PROXIMAL FACES OF TEETH

Etienne Y. d'Argembeau, Rue de Belle-Vue, 24, B - 1050 Bruxelles, Belgium

Filed Apr. 19, 1984, Ser. No. 601,822
Claims priority, application Belgium, Apr. 29, 1983, 210669
Int. Cl.[4] A61C *3/00*
U.S. Cl. 433—141 4 Claims

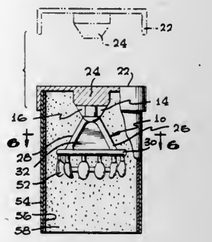


1. A device for cleaning the curved proximal side faces of teeth, comprising: an elongate handle (3), and two rectangular elastically deformable sheets (2) attached by one edge, opposite free edges thereof, to the handle, said sheets being disposed parallel to each other and each having a plane of symmetry which is substantially perpendicular to a longitudinal axis of the handle, the distance between two adjacent sheets being such that, when these sheets are pressed against the side face of two adjacent teeth, the free edges of both of said sheets follow the curved proximal faces of the two adjacent teeth and penetrate into the space between said adjacent teeth, wherein said distance between two adjacent sheets is less than the width of the smallest teeth, and is 1.5 to 3.0 mm.

4,573,921
PROSTHESIS AND APPARATUS FOR MOLDING THE PROSTHESIS

Robert P. Berger, 4421 Rochelle Pl., Encino, Calif. 91316

Filed Jun. 27, 1984, Ser. No. 625,112
Int. Cl.[4] B29C *33/52, 41/40*
U.S. Cl. 433—167 15 Claims



12. A molded article comprising:
a substantially central mold gate;
at least two elogated runners connected to said substantially central gate; and
a web connected to said runners substantially throughout their length, said web being thinner than said runners.

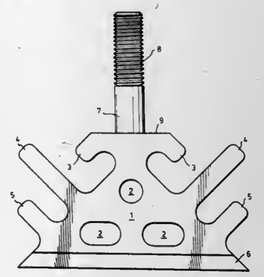
14. The article of claim 12 wherein said two runners are connected to said substantially central gate adjacent each other and said two runners diverge in a direction position away from said substantially central gate and a cross runner is connected to both of said divergent members away from said substantially central gate, said web being attached to said three runners to substantially close all opening between said runners viewed in a direction normal to said web.

15. The article of claim 14 further including a dental prosthesis attached to said cross runner.

4,573,922
ARTIFICIAL ENDO-OSSEOUS PILLAR FOR SUPPORTING FIXED PROSTHETIC MEMBERS

Lino L. Bello, 39, Corso del Popolo, 38017 Mezzolombardo, Italy

Filed Jan. 13, 1984, Ser. No. 571,182
Claims priority, application Italy, Jan. 31, 1983, 47647 A/83
Int. Cl.[4] A61C *8/00*
U.S. Cl. 433—176 9 Claims

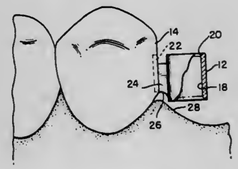


1. Artificial endo-osseous pillar for supporting a fixed oral prosthetic member, which consists of a biologically acceptable plate, substantially triangularly shaped, having on its surface a plurality of holes and along the oblique sides of said surface a plurality of projections and protrusions, said projections and protrusions being of various length and upwardly faced and symmetrical to opposed ones, said plate ending at its upper extremity in a vertical pin integral with a very small shoulder, said pin serving to fix a stump that protrudes into the oral cavity, said plate ending at its lower extremity in a rectilinear and conically tapered edge.

4,573,923
DENTURE CONNECTOR

Melvin D. Poveromo, Miami, Fla., assignor to George Poveromo; March Poveromo and Melanie Poveromo, all of Bay Harbor Islands, Fla.

Filed May 25, 1984, Ser. No. 614,078
Int. Cl.[4] A61C *13/22*
U.S. Cl. 433—181 11 Claims

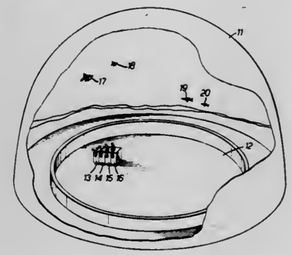


1. A denture connector comprising:
a female member attached to a denture crown by a web portion having a curved edge to accommodate the crest of the gingiva;
a male member adapted to be received in the female member for rotation therein, said male member having at least one slit in the end thereof, said slit extending through the diameter of the male member and extending approximately one half its height, whereby the end of the male member may be compressed;
a sleeve for attachment to the male member after compression of said male member; and
an attachment member extending from the male member for attaching the male member to adjacent denture material.

4,573,924
TARGET IMAGE PRESENTATION SYSTEM

Anthony Nordberg, Sussex, England, assignor to GQ Defence Equipment Limited, Godalming, England

Filed Nov. 9, 1984, Ser. No. 670,065
Claims priority, application United Kingdom, Nov. 14, 1983, 8330355
Int. Cl.[4] F41J *5/08*
U.S. Cl. 434—20 12 Claims

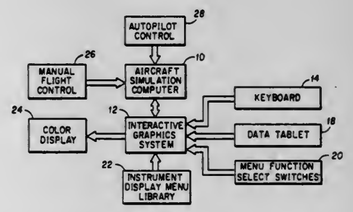


1. A target presentation system for displaying images of a target on the interior surface of a part-spherical dome to provide for an observer within the dome a visual representation of an aerial target flying a predetermined flight profile within an airspace surrounding the observer comprising projection means disposed in a predetermined position offset from the center of the dome for projecting an image carrying beam carrying target images corresponding to those which would be viewed by a ground observer during the flight of the target in the predetermined flight profile and means disposed adjacent the predetermined position offset from the center of the dome directing the image carrying beam to positions on the dome corresponding to those positions of a target traversing the airspace represented by the dome, the projection means including focus control means to maintain the image on the dome in focus throughout the visual representation of the predetermined flight profile for a predetermined position of the target presentation system within the dome offset from the centre of the dome.

4,573,925
ELECTRONIC FLIGHT INSTRUMENT DESIGN AND EVALUATION TOOL

C. James Styers, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Sep. 14, 1982, Ser. No. 418,105
Int. Cl.[4] G09B *9/08*
U.S. Cl. 434—49 25 Claims
MICROFICHE APPENDIX INCLUDED
(3 Microfiche, 293 Pages)

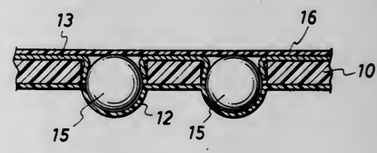


11. An instrument display design and evaluation system comprising:
means for generating a plurality of control signals representing varyihg parameters displayed by an instrument;
means for generating a plurality of individual display items, with each display item being associated with a different one of said varying parameters and including means for forming a menu of said display items;
means for selecting and displaying individual ones of said display items in the configuration of an instrument display; and
means for altering said display items in response to said control signals to reflect the dynamic operation of the instrument display in response to said changing parameters.

4,573,926
BRAILLE PRINT BOARD

Chozo Okada, 23-20, Yagiyamahoncho 1-chome, Sendai-shi, Miyagi-ken, Japan

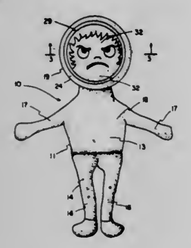
Filed Dec. 31, 1984, Ser. No. 688,142
Int. Cl.[4] G09B *21/02*
U.S. Cl. 434—115 4 Claims



1. A braille print board comprising:

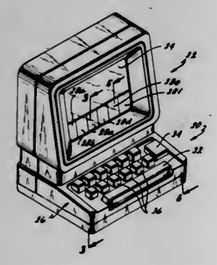
a print plate having a plurality of sets of 6-dot holes punched therein for forming braille letters;
a retaining sheet pressed onto one side of said plate;
a dot hole sheet pressed onto the other side of said plate, said dot hole sheet and said retaining sheet having braille letters in the form of punctures in said dot hole sheet and depressions in said retaining sheet, said punctures and depressions being aligned with said holes in said print plate and formed with a braille typewriter or a braille pen through said dot hole sheet;
balls placed in said holes through said punctures; and
a cover sheet pasted over said dot hole sheet so as to prevent said balls from dropping out of said holes.

4,573,927
MEANS AND METHOD OF SHOWING FEELINGS
Patricia T. Newman, 315 Shepard St., Raleigh, N.C. 27607
Filed Aug. 29, 1984, Ser. No. 645,235
Int. Cl.⁴ G09B *19/00*; A63H *3/00*
U.S. Cl. 434—236 **9 Claims**



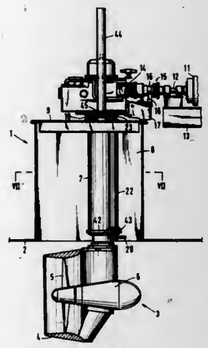
1. The method of teaching a child to accept and express emotional feelings comprising: giving said child a doll-like figure; giving said child at least four separate and removable facial panels, each depicting one of the commonly felt emotions of happiness, sadness, anger and fear; instructing said child to illustrate his/her feelings by attaching an appropriate facial panel to said doll corresponding to his/her feelings whereby a child is provided with a non-threatening means of expressing his/her feelings.

4,573,928
TEACHING TOY
Yoshizo Seki, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan
Filed Oct. 26, 1984, Ser. No. 665,101
Int. Cl.⁴ G09B *3/02*
U.S. Cl. 434—348 **17 Claims**



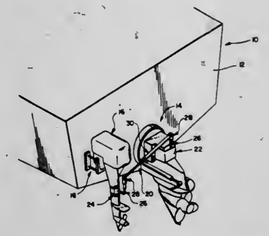
1. A toy which comprises:
a housing;
an indicia carrier means movably located on said housing, said indicia carrier means including indicia located thereon;
a viewing means located on said housing in association with said indicia carrier means, said indicia carrier means movable with respect to said viewing means, said viewing means permitting viewing a first portion of said indicia on said indicia carrier means and in response to movement of said indicia carrier means with respect to said viewing means said viewing means permitting viewing a further portion of said indicia on said indicia carrier means;
a plurality of cover members arranged in an array on said housing between said indicia carrier means and said viewing means, each of said cover members capable of moving one at a time in a predetermined fixed sequence between a covered position and an uncovered position, each of said cover members capable of covering a portion of said viewable indicia when in its respective covered position;
operator interface means operatively associated with both said plurality of indicia cover members and said indicia carrier means, said operator interface means operable by an operator of said toy in response to operation of said operator interface means each of said plurality of indicia cover members sequentially moving from their respective covered position to their respective uncovered position to sequentially uncover greater and greater portions of said viewable indicia on said indicia carrier means followed by said indicia carrier means moving to said further position and said plurality of indicia cover members moving to their respective covered positions.

4,573,929
PROPELLER DEVICE FOR A SHIP
Jarmo Savikurki, and Kim Jansson, both of Rauma, Finland, assignors to Hollming Ltd., Finland
Filed Jan. 30, 1984, Ser. No. 574,992
Claims priority, application Finland, Feb. 3, 1983, 830373
Int. Cl.⁴ B63H *5/12*
U.S. Cl. 440—54 **12 Claims**



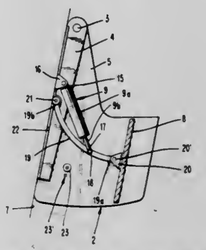
1. A propeller device for a ship, said propeller device having a propeller, an upper part and a lower part, and a transmission system for transmitting rotation from an engine having an engine shaft to said propeller, said transmission system including a drive shaft in the upper part of said propeller device, said drive shaft being driven by said shaft of said engine, an upper angular gearbox coupled to said drive shaft, a vertical shaft coupled to said upper angular gearbox, a lower angular gearbox coupled to said vertical shaft, and a propeller shaft in the lower part of said propeller device coupled to said lower angular gearbox, said propeller device comprising
a coupling having a coupling member between said drive shaft of said propeller device and said engine shaft whereby said propeller device may be uncoupled from said engine via said coupling member, said coupling member being displaceable in axial directions, so that said propeller device may be raised,
said ship having a bottom and a well formed in said bottom, said well having a top and a wall, said propeller device being positioned underneath the bottom of said ship in use, so that said propeller device may be raised into said well when out of operation, said propeller device further comprising raising means for raising said propeller device into said well, said raising means including a vertical hydraulic cylinder in said well alongside said propeller device, said cylinder having a bottom end affixed to said wall of said well and a top end affixed to the top of said well, a support plate supporting said propeller device at its lower part in said well, a slide ring mounted on said hydraulic cylinder and said hydraulic cylinder functioning as a guide, a piston in said hydraulic cylinder passing through the top of said well to above said top, and having an upper end affixed to the upper part of said propeller device, said piston producing a raising movement of said propeller device.

4,573,930
STEERING MECHANISMS FOR OUTBOARD MOTOR
Charles L. Queen, 2243 S. Highland Dr., Camano Island, Wash. 98292
Continuation-in-part of Ser. No. 339,612, Jan. 15, 1982, abandoned, which is a continuation of Ser. No. 67,806, Aug. 20, 1979, Pat. No. 4,311,471. This application May 10, 1982, Ser. No. 376,152
Int. Cl.⁴ B63H *21/26*
U.S. Cl. 440—56 **11 Claims**



1. A remote steering device adapted for use in a boat comprising:
i. a main propulsion unit in operative engagement with a transom of said boat for rotation about a first axis between a first lower operating position and a second upper nonoperating position, said main propulsion unit being steerable from a cockpit portion of said boat;
ii. an auxiliary outboard motor mounted externally of said boat to said transom for rotation about a second axis between a first lower operating position and a second upper nonoperating position; said remote steering device adapted for slaving attachment of said auxiliary outboard motor to said main unit in order to steer said auxiliary outboard motor from said cockpit portion of said boat by steering said main unit, said remote steering device comprising:
a. a first bracket adapted to be mounted to said main unit;
b. a first ball joint connected to said first bracket, said first ball joint having a first ball housing and a first ball member mounted in the first ball housing for rotation about three axes mutually perpendicular to one another;
c. a second bracket adapted to be attached to said auxiliary outboard motor;
d. a second ball joint connected to said second bracket, said second ball joint having a second ball housing and a second ball member mounted in the second ball housing for rotation about three axes mutually perpendicular to one another; and
e. automatically adjustable connecting rod means connected between said two ball joints, said rod means comprising:
1. a first tubular rod member having a first end connected to one of said ball joints and having a second end portion;
2. a second rod member having a first end connected to another of said ball joints and a second end portion which extends into the second end portion of the first rod member in telescoping relationship, said second rod member being rotatably engaged by said first rod member for rotation about a lengthwise axis of said second rod member relative to said first rod member;
3. the second end portion of the second rod member being formed with a plurality of arcuate grooves spaced from one another along the lengthwise axis of the second rod member, each of said grooves being positioned generally in a plane transverse to said lengthwise axis;
4. biased pin means mounted in the second end portion of the first rod member to releasably engage the grooves of the second end portion of the second rod member, in a manner that when said pin means is engaging one of said grooves and a predetermined force exerted between said first and second rod members parallel to said lengthwise axis is exceeded, said pin means moves out of the groove which it is engaging to permit said second rod member to move axially relative to said first rod member so that said pin means comes into engagement with another of said grooves to provide an incremental length adjustment of said connecting rod means.

4,573,931
ATTACHMENT MEANS FOR OUTBOARD MOTORS
Verner Andersson, Stationsgatan 1B, and Kaj Andersson, Kaskö plan 5, both of 824 00 Hudiksvall, Sweden
Filed Oct. 30, 1984, Ser. No. 666,348
Claims priority, application Sweden, Nov. 1, 1983, 8306003
Int. Cl.⁴ B63H *5/12*
U.S. Cl. 440—61 **9 Claims**



1. An assembly for attaching an outboard motor to a boat hull, said assembly comprising:
an attachment base affixable to the boat hull;
an attachment housing having a support section for receiving an outboard motor;
means for pivotably attaching said attachment housing to said attachment base so that said attachment housing is angularly positionable about a first, approximately horizontal axis;
a lever arm having a first end and a free end;
means for pivotably attaching said first end of said lever arm to said attachment housing so that said lever arm is pivotable about a second, approximately horizontal axis;
stop means fixed to said attachment housing for limiting the pivoting motion of said lever arm;
controlled means connected to said lever arm at a location between said free end and said first end for selectively adjusting the angular position of said attachment housing, said controlled means adjusting the angular position of said attachment housing according to trim by pivoting said lever arm about said second axis with said free end in

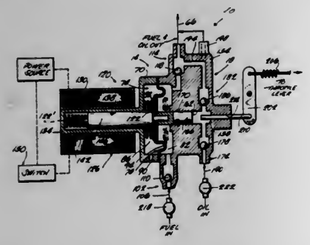
contact with and moving along said boat hull between a first lever position spaced from said stop means and a second lever position adjacent said stop means, said controlled adjusting means adjusting the angular position of said attachment housing to a tilting position by urging said lever arm against said stop means.

4,573,932

ELECTRICAL FLUID PUMPING DEVICE INCLUDING FIRST AND SECOND PUMPING PORTIONS

Chester G. DuBois, Zion, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Feb. 8, 1984, Ser. No. 578,024
Int. Cl.[4] B63H *21/10*
U.S. Cl. 440—88 **12 Claims**



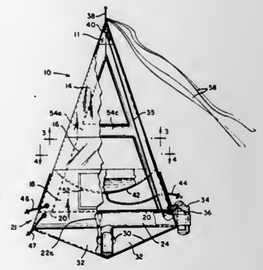
1. A marine propulsion device comprising a propeller, a lower unit rotatably supporting said propeller, an upper unit supported by said lower unit and including an engine including a crankshaft and carburetion means for supplying fuel to said engine, drive train means driven by said crankshaft for rotating said propeller, and a fluid pumping device comprising a pump housing defining a recess, a movable wall which is in said recess and which cooperates with said recess to define a variable volume fuel pumping chamber, a fuel inlet in communication with said fuel pumping chamber and adapted to communicate with a source of fuel, check valve means in said fuel inlet permitting fuel flow into and preventing fuel flow from said fuel pumping chamber, a fuel outlet in communication with said carburetion means and said fuel pumping chamber, check valve means in said fuel outlet for permitting fuel flow from and preventing fuel flow into said fuel pumping chamber, biasing means for moving said movable wall in one direction, solenoid means comprising a plunger connected to said movable wall, and solenoid coil means for moving said plunger and said movable wall in an opposite direction against the action of said biasing means, a bore which is in said pump housing and which extends perpendicularly from said movable wall and which partially defines a variable volume oil pumping chamber, a piston which is received in said bore and which includes a first end attached to said movable wall and a second end cooperating with said bore to form said variable volume oil pumping chamber, an oil inlet in communication with said oil pumping chamber and adapted to communicate with a source of oil, check valve means in said oil inlet for permitting oil flow into and preventing oil flow from said oil pumping chamber, an oil outlet in communication with said engine and said oil pumping chamber, and check valve means in said oil outlet for permitting oil flow from and preventing oil flow into said oil pumping chamber.

4,573,933

FLOATING SEARCH AND RESCUE INFLATABLE PYRAMID

Robert W. Cameron, #60 Lakeshore Plaza, Suite 1, Kirkland, Wash. 98033

Filed Jun. 20, 1983, Ser. No. 506,042
Int. Cl.[4] B63B *21/52*
U.S. Cl. 441—16 **8 Claims**



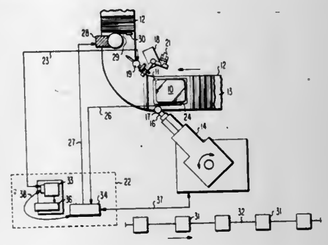
1. A pyramid-shaped floating search and rescue inflatable signal and safety mechanism, comprising:
an inflatable base comprising a plurality of horizontally disposed base tubes, and a centrally positioned depending inflatable anchor tube extending downwardly and containing a weight;
a plurality of inflatable beams extending upwardly from the base to an apex;
flat panels of flexible sheet material extending between said inflatable beams to form a first pyramidal surface, said panels including an upper radar reflective panel portion, a lower colored panel portion, and a translucent panel portion positioned between said upper and lower panel portions;
a solar still mechanism positioned within the enclosure formed by said first pyramidal surface; and
flexible sea anchor panels stretched from said base tubes to the lowermost end of said inflatable anchor tube, said sea anchor panels having flood ports therein for restricted entry and exit of water and forming a second, depending pyramidal surface.

4,573,934

SYSTEM FOR IDENTIFYING ENVELOPES HAVING EXCESSIVE PANEL-FUNNEL OFFSET AND DISPENSING ARTICLES

Douglas A. Strouse, Lancaster County, Pa., assignor to RCA Corporation, Princeton, N.J.

Filed Jul. 31, 1984, Ser. No. 636,256
Int. Cl.[4] H01J *9/26*; B23Q *7/12*
U.S. Cl. 445—3 **12 Claims**



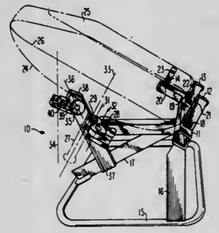
1. A system for measuring the panel-funnel offset of tube envelopes and for dispensing identification articles onto the fixtures of rejected envelopes comprising:
means for measuring said panel-funnel offset and providing a measured offset value;
means for sensing the size of said envelope and providing a size signal to identify said envelope as one of several envelope sizes;
means for dispensing an identification article onto the fixture of envelopes having an excessive panel-funnel offset;
means for placing a reject mark on envelopes having an excessive panel-funnel offset;
programmable control means for receiving said measured offset value, said control means having a stored designed offset value for each of said envelope sizes and an offset tolerance value for all of said envelope sizes; said control means including first comparison means for receiving said measured offset value and one of said designed offset values in accordance with said size signal and providing an offset difference, second comparison means for receiving said offset difference and said offset tolerance for providing a reject signal when said offset difference exceeds said offset tolerance whereby said reject signal actuates said means for dispensing and said means for placing to dispense an identification article onto said fixture and to place a reject mark onto said envelope.

4,573,935

SEALING FIXTURE FOR COLOR KINESCOPES

Myron H. Wardell, Jr., Lititz, Pa., assignor to RCA Corporation, Princeton, N.J.

Filed Jan. 19, 1984, Ser. No. 572,152
Int. Cl.[4] H01J *9/24*
U.S. Cl. 445—66 **6 Claims**



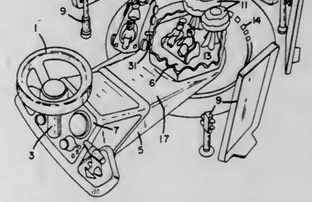
1. A fixture for supporting and accurately positioning the faceplate panel and funnel of a substantially rectangular kinescope envelope during the fritting together of said panel and said funnel, said panel and said funnel having mating sealable edges along which fritting occurs, and said funnel including a neck portion affixed to the remainder of said funnel through a contoured portion; said fixture comprising:
a referencing frame configured to engage at least two adjacent sides of said panel and said funnel, said frame being tilted with respect to a vertical axis whereby the longitudinal axis of said funnel supported by said fixture tilts toward the juncture of said two sides;
a plurality of support members fixed to said referencing frame along both of said two sides, each of said support members supporting a funnel referencing element and a panel referencing element, said funnel referencing elements being spaced a first predetermined distance from said frame whereby at least two of said funnel referencing elements contact one of said sides of said funnel in the proximity of said sealable edge and at least one of said funnel referencing elements contacts the other side of said funnel in the proximity of said sealable edge, said funnel referencing elements being rotatable about fixed axes substantially parallel to said frame, said panel referencing elements being spaced a second predetermined distance from said frame whereby said panel referencing elements contact said two sides of said panel;
a plurality of neck positioning means arranged to receive said neck portion in the proximity of said contoured portion, said neck positioning means being rotatable about axes extending substantially parallel to one another and being tilted with respect to a vertical axis whereby said neck portion is gravity centered between said neck positioning means by rotation of said neck positioning means; and
funnel urging means positioned to contact said contoured portion and urge said funnel toward said funnel referencing elements, said funnel urging means being a disc-shaped member rotatable about a fixed axis angularly disposed with respect to said funnel longitudinal axis.

4,573,936

DRIVING TOY

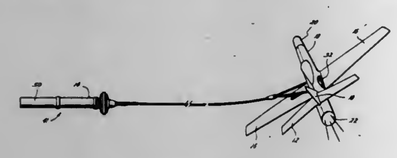
Tobin Wolf, 285 Aycrigg Ave., Passaic, N.J. 07006

Filed Oct. 3, 1983, Ser. No. 538,543
Int. Cl.[4] A63H *17/14*
U.S. Cl. 446—7 **19 Claims**



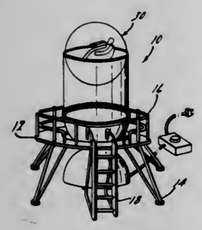
1. A system for driving a toy along a predetermined path on a surface of varying height about a base member, comprising:
(a) a base member, first rotatable means mounted in said base member,
(b) a toy, and
(c) second means mounted in said base member and being responsive to rotation of said first rotatable means for driving said toy along said surface; said second means comprising a first rotatable arm rotatable about a pivot for rotary movement in a first plane, a second rotatable arm pivotably secured to said first arm for rotation in a second plane normal to said first plane, and
(d) means for detachably coupling said toy to said second arm to cause movements of said toy corresponding to movements of said second arm in either plane,
(e) said second means including a section of a disc secured to and rotatably responsive to rotation of said first rotatable means, means to limit rotation of said disc to a predetermined angle, a rigid member pivotably secured to said disc and movable in a reciprocating manner responsive to disc rotation, ratchet means including a ratchet wheel, said ratchet means being connected to said rigid member and responsive to a reciprocation cycle of said rigid member to rotate said ratchet wheel in only one direction, said first arm being rigidly secured to said ratchet wheel.

4,573,937
JET PROPELLED MODEL AIRPLANE
Victor Stanzel, P.O. Box 28, Schulenburg, Tex. 78956
Filed Jul. 19, 1984, Ser. No. 632,388
Int. Cl.[4] A63H *27/04*
U.S. Cl. 446—31 12 Claims



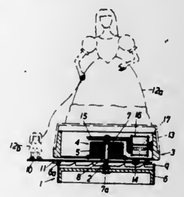
1. A toy aircraft comprising:
an elongated body having wings and a tail assembly attached thereto;
centrifugal fan means housed within said body for powering said aircraft;
a hand-held remote drive unit for driving said fan means, said remote drive unit comprising,
an electric motor, and
switch means for selectively operating said electric motor;
an elongated flexible drive cable extending between and operatively connected to said remote drive unit and said centrifugal fan means for rotatively driving said centrifugal fan means from said drive unit; and
means for controlling the rate of acceleration of said fan means when said electric motor is switched on and for controlling the rate of deceleration of said fan means when said motor is switched off, said means comprising a flywheel disposed in said hand-held remote drive unit and operatively connected to at least one of said electric motor and said elongated flexible drive cable.

4,573,938
SPACESHIP TYPE TOY
Mark S. Sassak, 2405 Arenda, Las Vegas, Nev. 89102
Filed Feb. 27, 1984, Ser. No. 583,657
Int. Cl.[4] A63H *33/40, 17/00, 27/00*
U.S. Cl. 446—179 10 Claims



10. A spaceship type toy comprising, in combination:
a space capsule including an upper spherical portion, and a lower spherical portion engaging said upper spherical portion,
an elongated tube oriented substantially vertically, said tube closely receiving said capsule and having an upper opened end, defined by a perimenter edge lying substantially along a horizontal plane
a base supporting said tube,
a fan duct installed within said base and communicating with the vertically lower end of said tube, and
fan means installed within said fan duct, said fan means supplying air pressure to said tube such that said capsule may be translated within said tube to said upper end of said tube such that a portion of said capsule extends above said perimeter edge, while a remaining portion of said capsule remains within said tube.

4,573,939
TOY MUSIC BOX
Chojiro Hoshino, 5-18-1 Kamimuneoka, Shiki-shi, Saitama-ken, Japan
Filed Apr. 25, 1984, Ser. No. 603,638
Claims priority, application Japan, Apr. 27, 1983, 58-63653[U]
Int. Cl.[4] A63H *13/02*
U.S. Cl. 446—298 1 Claim

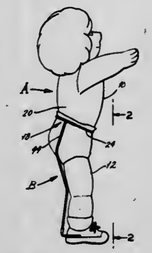


1. A toy music box wherein a table having an ornament is rotatably coupled to a stationary platform and rotated by being driven in a first rotational direction relative to said platform by a driving means within said music box, the toy music box being characterized by:
a rod having one end rotatably coupled to said table at a point eccentric to the axis of rotation of said table, another end of said rod extending out beyond the edge of said table;
an ornament coupled to said another end of said rod;
a spring means attached to said table and coupled to said one end of said rod to bias said another end of said rod relative to said table in said first rotational direction;
a protrusion attached to said rod; and
means including a plurality of protrusions provided on said platform for selectively engaging with said protrusion on said rod;
whereby said rod cyclically is stopped from rotating with said table in said first direction by said protrusion on said rod engaging with one of said plurality of protrusions on said platform as said base rotates and is then released after a predetermined rotation of said table to rotate in said first rotational direction, moving at first relative to said table and then therewith until said protrusion on said rod engages with another of said plurality of protrusions on said platform.

4,573,940
DOLL AND MEANS FOR STANDING SAME
Robert A. Showers, 325 E. Third, Alton, Ill. 62002
Filed Apr. 23, 1984, Ser. No. 602,810
Int. Cl.[4] A63H *3/46*
U.S. Cl. 446—376 7 Claims

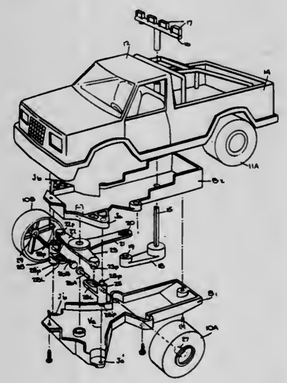
1. In combination with a doll having intrinsically flexible leg components permitting the doll's legs to move relative to its torso, a doll stand detachably securable to said doll and including means for extrinsically maintaining the doll legs in inflexible condition relative to its torso, and comprising:
left and right relatively rigid leg-brace elements having a length at least as great as the doll's legs,
independent respective, ankle-engaging means carried at the lower ends of the leg-brace elements for independently attaching to ankles of the doll, and
torso securement means interconnected with the upper ends of each of the leg-brace elements for mutual securement thereof to the torso of the doll and for maintaining the respective leg-brace elements along the doll's legs for preventing bending thereof relative to its torso,

said leg-brace elements extending downwardly from said torso securement means at the back of the respective doll legs so as to be visibly obscured from the front of the doll,



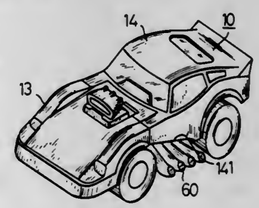
whereby the doll is maintained in stiff-legged condition for permitting it to remain in a self-supported, standing position with its weight resting on its feet.

4,573,941
STEERABLE TOY VEHICLE
John Holden, Mt. Joy, Pa.; Sam Colombrito, Old Bridge, N.J., and Arthur H. Jeffreys, York, Pa., assignors to Buddy L Corp., New York, N.Y.
Filed Aug. 23, 1984, Ser. No. 643,394
Int. Cl.[4] A63H *17/38*
U.S. Cl. 446—451 4 Claims



1. A steerable, four-wheeled toy vehicle comprising:
A. right and left front wheels and right and left rear wheels supported for rotation on the chassis of the vehicle;
B. a vertical steering post having a handle secured to the upper end thereof at a raised position with respect to the body of the vehicle so that it can be manipulated by a player, the post extending through the chassis and terminating in a crank at the underside of the vehicle at right angles to the post;
C. a T-shaped lever having a leg pivotally connected to the crank and right and left outstretched arms on either side of the leg, the fulcrum of the lever being at the junction of the leg and the arms, whereby when the crank is turned by the post in one direction, the arms of the lever are caused to swing in the opposite direction;
D. a bearing provided with axially extending end pivots for each of the front wheels for receiving a short wheel axle anchored in the hub of the related front wheel, the pivots of said bearings being journaled at fixed points on opposite sides of the longitudinal axis of the vehicle, each for rotation about a respective vertical axis normal to the wheel axle, the bearing for the right front wheel being pivotally coupled to the right arm and the bearing for the left front wheel being pivotally coupled to the left arm of the lever, each bearing having a lateral lug with a slot therein which receives a pivot pin on the associated lever arm whereby when the steering post is turned by the handle, the front wheels are steered so that they both assume the same angle with respect to the longitudinal axis of the vehicle but do not otherwise shift with respect to said fixed points;
E. A two-piece box secured to the underside of the vehicle and enclosing the crank, the lever and the pivoted couplings between the bearings and arms, said box defining the journals for the pivots of said bearings.

4,573,942
MOTOR VEHICLE WITH ELONGATION MEANS AND MOVABLE EXHAUST
Iwakichi Ogawa, Kashiwa, Japan, assignor to Takara Co. Ltd., Tokyo, Japan
Filed Aug. 17, 1983, Ser. No. 524,522
Claims priority, application Japan, Sep. 30, 1982, 57-148146; Nov. 1, 1982, 57-164560[U]
Int. Cl.[4] A63H *29/00*
U.S. Cl. 446—457 4 Claims

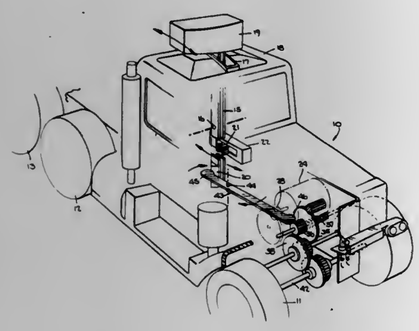


1. A toy vehicle capable of elongated reconfiguration comprising:
a front body portion configured to simulate the front of a vehicle;
a rear body portion configured to simulate the rear of a vehicle;
means for driving the toy vehicle across a support surface;
means interconnecting the front and rear body portions in a movable arrangement on a common longitudinal axis, the front and rear body portions being movable along the longitudinal axis from a position adjacent each other to a position apart from each other whereby the vehicle can assume an elongated vehicle configuration with a space between said body portions, said interconnecting means including means for securing said body portions in said adjacent position and means biasing said body portions toward said apart position;
two sets of simulated motor exhaust pipes connected to the toy vehicle and extending respectively outwardly on each side of the body portions in directions approximately perpendicular to the longitudinal axis;
means for pivotally mounting the sets of exhaust pipes so that they are positioned in a lower initial position when the front and rear body portions are positioned adjacent to each other and are automatically positioned in a relatively higher raised position between the front and rear body portions to provide a more racey appearance when the front and rear body portions are released to be configured in the elongated vehicle configuration; and
means associated with said driving means for automatically releasing said securing means to permit said reconfiguration as said vehicle is driven across said support surface.

4,573,943
MOTORIZED TOY VEHICLE

Melvin R. Kennedy, New York, N.Y.; Dietmar Nagel, Chester, N.J., and Abraham A. Arad, Westport, Conn., assignors to Buddy L Corporation, New York, N.Y.

Filed Dec. 18, 1984, Ser. No. 683,045
Int. Cl.[4] A63H *29/24*
U.S. Cl. 446—463 2 Claims



1. A toy vehicle provided with a set of wheels mounted on an axle, said vehicle comprising:

(A) a bi-directional d-c motor operatively coupled to the wheel axle through a clutch which is engageable to cause the axle to turn in a direction determined by the polarity of the voltage applied to the motor, said motor being provided with an elongated output gear which is coupled by the clutch to an input gear of a gear train whose final gear is mounted on the wheel axle, said clutch being constituted by a clutch gear axially shiftable on a shaft and engaging said elongated motor output gear regardless of its axial position, said clutch gear having a pinion on one face thereof which engages its input gear on the gear train only when said clutch gear is urged by a spring pressing against its other face into an axial position affecting such engagement;

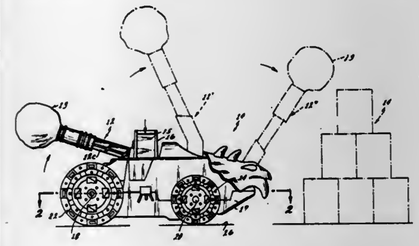
(B) an independent polarity-reversing switch provided with an actuator connecting a battery to the motor, said switch being shiftable from a neutral position in which the battery is disconnected from the motor to either a forward position in which the battery is connected to the motor in one polarity or a reverse position in which the battery is connected to the motor in the opposite polarity; and

(C) a shift stick mechanism operatively linked both to the clutch and to the actuator of the switch so that when the stick is in its neutral position, the switch is in the corresponding position and the clutch is disengaged whereby the vehicle then free rolling; and when the stick is in its forward position, the switch is in the corresponding position and the clutch is then engaged to drive the wheels in the forward direction; and when the stick is in its reverse position, the switch is in the corresponding position and the clutch is then engaged to drive the wheels in the reverse direction; said shift stick mechanism including a cam head on one end of the stick engaged by a cam follower on one end of a pivoted lever on whose other end is a finger which engages the face of the clutch gear, said head having a peak and slopes on either side thereof whereby when the cam follower rests on the peak in the neutral position of the stick and of the switch, it swings the lever to cause the finger to effect disengagement of the clutch gear.

4,573,944
BALL SWINGING TOY VEHICLE

Granville Crow, Lomita; Larry H. Renger, Hawiian Gardens, and Roger H. Sweet, Long Beach, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Jan. 4, 1985, Ser. No. 688,837
Int. Cl.[4] A63H *17/00*
U.S. Cl. 446—465 15 Claims



1. In combination with a toy vehicle including a housing, an axle coupled to said housing, and at least one ground-engaging wheel on said axle for moving said vehicle to different positions on a supporting surface, the improvement which comprises:

an arm member having a first end coupled to said axle for pivotable movement relative to the vehicle;

simulated weight means affixed to the other end of said arm member;

manually operable control means on said vehicle; and

means interoperatively interconnecting said control means and said first end of said arm member including rack and pinion means for enabling pivoting of said arm member in response to operation of said control means, whereby said arm member may be swung from a nested position relatively within said vehicle to a position outside of said vehicle thereby bringing said simulated weight means into engagement with an object or the supporting surface.

4,573,945
DAMPER DISC OF A LONG TRAVEL TYPE

Kouji Kajitani, and Hirotaka Fukushima, both of Neyagawa, Japan, assignors to Kabushiki Kaisha Daikin Seisakusho, Osaka, Japan

Filed Dec. 13, 1984, Ser. No. 681,316
Claims priority, application Japan, Dec. 22, 1983, 58-243146
Int. Cl.[4] F16D *3/14*
U.S. Cl. 464—68 6 Claims



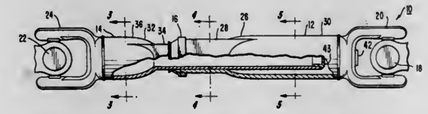
1. A damper disc of a long travel type comprising a hub adapted to be connected to an output shaft; a pair of circumferentially spaced flanges projecting radially outwardly from the outer periphery of the hub; a pair of side plates connected to a torque input portion, disposed at both sides of the flange and rotatably fitted around the hub; spacers circumferentially

spaced to the flanges; sub-plates rigidly holding the spacers and rotatably fitted around portions of the hub between the side plates and the flange; a first friction member disposed between the flange and the sub-plate; a second friction member disposed between the sub-plate and the side-plate; a first spring always circumferentially connecting the flange and the sub-plates in a first torsion operation in which a relative torsion angle between the flange and the sideplates is lower than a predetermined value; second and third springs disposed circumferentially between the side plates and the flange with the spacers therebetween, the second and third springs being arranged to act in series and adapted to circumferentially connect the flange and the side-plates in a second torsion operation in which a relative torsion angle between the flange and the sideplates is larger than the predetermined value but less than another larger value of the relative torsion angle; and one of the second and third springs being connected between the flange and the sideplates during a third torsion operation where the relative torsion angle is greater than said larger value.

4,573,946
DRIVELINE

Ronald N. Brissette, Medina, Ohio, assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Jul. 15, 1983, Ser. No. 513,944
The portion of the term of this patent subsequent to Jul. 17, 2001, has been disclaimed.
Int. Cl.[4] F16J *15/32*; F16D *3/06*
U.S. Cl. 464—133 7 Claims



1. A slip-type driveline assembly comprising:

a first member with a generally polygonal cross section, said first member having a first end with means for connecting it to a cross of a universal type joint and a second end having an opening into a cavity within the body of said first member, said cavity having a generally polygonal cross section, wherein the outer surface of one wall of said second end of said first member includes a transverse groove;

a second member having a first end portion, a central portion, and a second end portion, said first and central portions being slidably received into said cavity of said first member through the second end of said first member, the outer surface of said first end portion of said second member generally complementing the inner surface of said polygonal cavity of said first member, said central portion having a generally polygonal cross section with smooth surface, said second end portion of said second member having means for connecting it to a cross of a universal type joint; and

a resilient one-piece sealing member including:

(a) four first walls being joined such that said first walls form a square cross section with a square opening, said cross section forming a plane that is perpendicular to the longitudinal axis of said driveline assembly,

(b) four radially inwardly extending second walls joined to an end of a said corresponding first wall,

(c) radially inwardly converging truncated square pyramidal walls, the radially outward ends of said pyramidal wall being joined to the radially inner ends of said second walls,

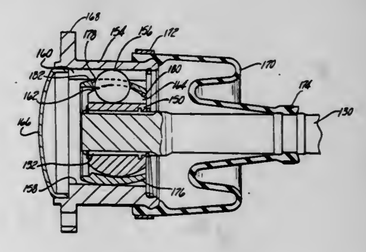
(d) four radially outwardly extending reinforcing rib members joined to the radially inner end of said pyramidal walls wherein the square cross section formed by the inner section of said reinforcing rib members with said pyramidal walls is slightly less than the cross section of said second member that slidably passes therethrough, and

(e) means for mounting said sealing member at the second end of said first member, said mounting means including at least one radially inwardly extending ridge member on the inner surface of one of said first walls and integral therewith, said ridge member being transversely disposed to the longitudinal axis of said driveline assembly and fits into and generally complements the transverse groove.

4,573,947
CONSTANT VELOCITY UNIVERSAL JOINT

Daniel W. Hazebrook, Detroit; Glenn F. Gehrke, Brighton, and Michael J. Schmidt, Grosse Pointe Park, all of Mich., assignors to GKN Automotive Components, Inc., Southfield, Mich.

Continuation of Ser. No. 459,722, Jan. 20, 1983, abandoned, which is a division of Ser. No. 183,757, Sep. 3, 1980, abandoned.
This application Sep. 4, 1984, Ser. No. 646,494
Int. Cl.[4] F16D *3/02*
U.S. Cl. 464—146 11 Claims



6. A constant velocity joint comprising:

an outer joint member having a cylindrical portion, said cylindrical portion having an axis and a plurality of longitudinal grooves along an inner cylindrical surface;

an inner joint member coaxially mounted with said outer joint member for cooperation therewith, said inner joint member having an axis common with said axis of said outer joint member and a plurality of longitudinal grooves substantially parallel to said plurality of longitudinal grooves in said outer joint member, said inner joint member further having an outer contoured surface;

a plurality of spherical members mounted in said plurality of longitudinal grooves of said inner and outer joint members for transmitting torque between said inner and outer joint members, said plurality of spherical members each having a predetermined spherical radius having a center of curvature lying in a plane normal to said common axis of said inner and outer joint members, said normal plane intersecting said common axis, said intersection of said normal plane and said common axis being a joint center;

an annular restraining member centrally disposed between said inne and outer joint members, said annular restraining member further comprising:

a part-spherical outer surface cooperating with said inner cylindrical surface of said outer joint member, said part-spherical outer surface having a first generating radius with a center of curvature lying in a plane normal to said common axis of said inner and outer joint members, said normal plane intersecting said common axis at a first predetermined distance from said joint center;

an inner spherical surface disposed adjacent said part-spherical outer surface, said inner spherical surface and said part-spherical outer surface having portions defining a plurality of apertures interposed between said part-spherical outer surface and said inner spherical

surface, each one of said plurality of spherical members being located respectively in each one of said plurality of apertures, said inner spherical surface having a second generating radius with a center of curvature located on said common axis, said center of curvature of said second generating radius being spaced along said common axis a second predetermined distance from said joint center, said second predetermined distance being equal to and opposite from said first predetermined distance such that said first and second predetermined distance lie on opposite sides of said joint center; and

means providing a first limited relative axial movement of said inner joint member relative to said outer joint member to permit said pluralities of spherical members to roll in said plurality of longitudinal parallel grooves of said inner and outer joint members as said inner joint member moves axially relative to said outer joint member, said means further comprising means providing a second limited relative axial movement of said inner joint member relative to said annular restraining member, said means providing a second limited relative axial movement being integral with said outer contoured surface of said inner joint member and located centrally about said center of said second generating radius whereby when said inner joint member moves axially relative to said outer joint member, said inner joint member moves a second limited axial distance relative to said annular restraining member prior to said annular restraining member moving axially relative to said outer joint member so that the force required to transmit torque between said inner and outer joint members is reduced and said joint members isolate vibrations from being transmitted while maintaining the torsional characteristics of said constant velocity joint.

4,573,948

SPEED VARIATOR PULLEY

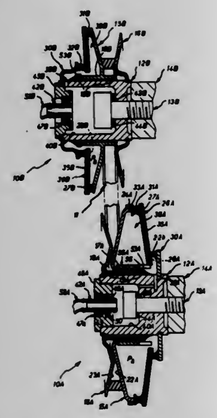
Jacques Thirion de Briel, Levallois Perret, France, assignor to Valeo, Paris, France

Filed May 15, 1984, Ser. No. 610,512

Claims priority, application France, May 16, 1983, 83 08047

Int. Cl.⁴ F16H *11/04*

U.S. Cl. 474—28 **11 Claims**



1. A variable speed pulley device comprising a hub, two annular flange plates disposed around said hub and facing each other, one of said flange plates being a movable flange plate and mounted for axial movement relative to said hub against the bias of a diaphragm spring, said diaphragm spring bearing axially against a peripheral part of said movable flange plate for rocking movement, and a central part of said diaphragm bearing axially against a support member fixed axially relative to said hub, and a pressure regulating chamber adapted to be connected by a fluid passage to a source of pressurized fluid; said pressure regulating chamber comprising an at least partially fluid-tight enclosure defined by said movable flange plate, said diaphragm spring, said support member and said hub.

4,573,949

DERAILLEUR FOR A BICYCLE

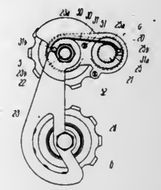
Masashi Nagano, Izumi, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Filed Nov. 14, 1983, Ser. No. 551,585

Claims priority, application Japan, Nov. 17, 1982, 57-202657; Jan. 19, 1983, 58-7649

Int. Cl.⁴ F16H *9/00*

U.S. Cl. 474—80 **6 Claims**



1. A derailleur for a bicycle comprising a base member, a movable member, and a support means for supporting said movable member so that it is movable axially relative to a multistage sprocket assembly for the bicycle with respect to said base member; said movable member including a guide mechanism which guides a driving chain to one sprocket at said multistage sprocket assembly, said guide mechanism comprising a first support member supported swingably to said movable member through a first pivot shaft and having a free end, a second support member supported swingably to the free end of said first support member through a second pivot shaft and having a free end, a guide pulley mounted rotatably to the free end of said first support member, and a tension pulley mounted rotatably to the free end of said second support member; said guide mechanism further comprising a rotary member mounted rotatably around said first pivot shaft, a tension spring interposed, between said rotary member and said movable member, for rotating said rotary member in the direction of imparting tension to said chain; and an interlocking mechanism interposed between said rotary member and said second support member for allowing an elastic force of said spring to act on said second support member in a predetermined ratio.

4,573,950

CHAIN GUIDE IN A FRONT DERAILLEUR

Masashi Nagano, Izumi, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

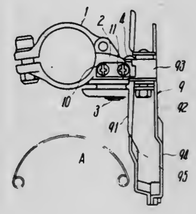
Filed Jun. 20, 1984, Ser. No. 622,583

Claims priority, application Japan, Jun. 24, 1983, 58-98468[U]

Int. Cl.⁴ F16H *7/18*

U.S. Cl. 474—80 **3 Claims**

1. A chain guide for a front derailleur associated with a front chain gear assembly having at least three chain gears of different diameters, said derailleur for switching a driving chain from one front chain gear to another for changing bicycle gear speeds, comprising an inner guide plate and an outer guide plate, each comprising an elongate and lengthwise curved plate and being substantially parallel to each other, said plates being spaced at an interval larger than a width of said chain and supported movably axially of said front chain gears, said outer guide plate having an outer plate chain biasing region which comes into contact with said chain and biases said chain toward an inner smaller diameter front chain gear when said chain is switched thereto from an outer larger diameter front chain gear and an outer plate chain moving region having an



outside swollen portion swollen outwardly with respect to said front gears, said outside swollen portion enabling said chain to move when switched to said inner smaller diameter front chain gear, said outer plate chain moving region being positioned below said outer plate chain biasing region.

4,573,951

DERAILLEUR FOR A BICYCLE

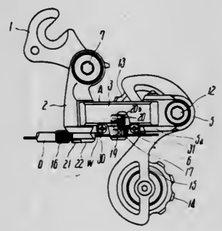
Masashi Nagano, Izumi, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Filed Mar. 23, 1984, Ser. No. 592,787

Claims priority, application Japan, Mar. 30, 1983, 58-47183[U]

Int. Cl.⁴ F16H *9/00*

U.S. Cl. 474—82 **5 Claims**



1. A derailleur for a bicycle comprising a four member linkage mechanism which is transformable and has a base member, a pair of linkage members, a movable member having a chain guide, and four connecting shafts for connecting said four members; a mounting base for a control wire which is fixed to one of said four members of said linkage mechanism, said mounting base entering into a space surrounded by said four members of said linkage mechanism, an entering portion of said base having a receiving portion for said control wire and a through bore extending in the same direction as said connecting shafts; and, at least one tightening member fitted into said through bore at said base to fixedly press a control wire onto said wire receiving portion at said base, said tightening member extending in the same direction as said connecting shafts and having at, at least one lengthwise end, a control portion operable from above said linkage mechanism when said derailleur is mounted on a bicycle.

4,573,952

TENSIONING DEVICE WITH A CONTROL MECHANISM FOR THE TENSION OF A BELT

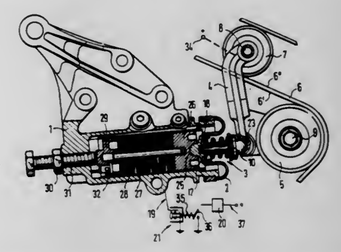
Heinz Schulze, Stuttgart, Fed. Rep. of Germany, assignor to Dr. Ing. h.c.F. Porsche A.G., Fed. Rep. of Germany

Filed Feb. 1, 1984, Ser. No. 575,891

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1983, 3304543

Int. Cl.⁴ F16H *7/08*

U.S. Cl. 474—110 **14 Claims**



1. A tensioning installation with a device for controlling the tension of a belt, comprising tensioning roller means, a tensioner housing means, and pressure means, the tensioning roller means being pressed against the belt by way of the pressure means being longitudinally displaceable within the tensioner housing means, said pressure means including an electric contact means responding to the tensioning force, said contact means being operable to trigger a warning signal at an indicating apparatus in case of a non-permissively reduced tension of the belt, said pressure means including said electric contact means having an electrically conducting contact pin, an insulating sleeve centered and fixed on the contact pin, an electrically conducting contact sleeve longitudinally guided on the insulating sleeve, and a compression spring stressed between a collar of the insulating sleeve and a recess of the contact sleeve, the contact means being located between an end face of the contact pin and a conical bottom of the contact sleeve.

4,573,953

DRIVING BELT

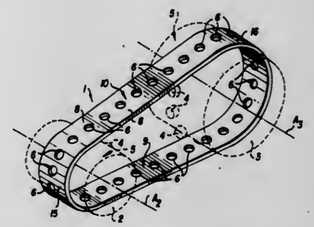
Giorgio Tangorra, Monza, Italy, assignor to Industrie Pirelli S.p.A., Milan, Italy

Filed May 3, 1984, Ser. No. 606,627

Claims priority, application Italy, May 4, 1983, 20924 A/83

Int. Cl.⁴ F16H *55/30, 7/02*

U.S. Cl. 474—152 **6 Claims**



1. A continuous driving belt of elastomeric material adapted for transmitting movement between two pulleys having external cylindrical surfaces, each of the pulleys being rotatable around an axis and also being provided with pins projecting radially from said external surface and adapted for insertion into corresponding holes made in the belt itself when the wound lengths of the belts stay in contact over the whole

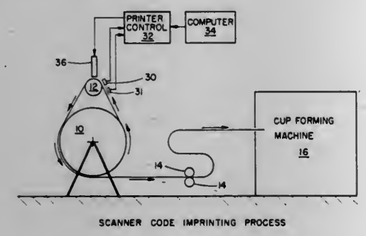
width with the external surfaces of the pulleys, said belt having an elastomeric material provided with a Shore-A hardness greater than 75 degrees and the bands of the belt placed laterally with respect to said holes embedding a reinforcing structure formed by a plurality of annular elements parallel to the longitudinal mid-plane of the belt and being constructed of a material having an elongation which is substantially less than that of the elastomeric material, whereby when during use movement is transmitted between the pulleys and the belt, the elastic strain of the lengths of the belt which are wound on the pulleys is rigorously always maintained in an arc-shaped circumference.

4,573,954

DIGITAL ENCODING AND ELECTRONIC SCANNING OF DRINK CUPS

Martin J. Berger, Dobbs Ferry, N.Y., and Sheldon P. Apsell, Newton, Mass., assignors to PepsiCo Inc., Purchase, N.Y.

Filed Sep. 4, 1984, Ser. No. 647,035
Int. Cl.[4] B31B *1/88*
U.S. Cl. 493—55 **13 Claims**



SCANNER CODE IMPRINTING PROCESS

1. A method of conducting an on-the-cup promotion by placing a machine-readable code on each cup, with the code indicating a promotion winner or not, comprising:

a. printing decorative indicia on cup blank stock prior to formation of individual cup blanks into cups in a cup forming machine;

b. printing a machine-readable code containing promotional prize information on each individual cup blank, in an automated controlled printing operation separate from said decorative printing operation, prior to formation of the blank into a cup in a cup forming machine;

c. forming the blanks into cups with a cup forming machine, subsequent to the machine-readable code printing operation;

d. scanning the machine-readable code on the cup at the point of sale of the cup to determine if the cup is a prize winner; and

e. indicating by a display at the point of sale whether or not the customer's cup is a prize winner.

4,573,955

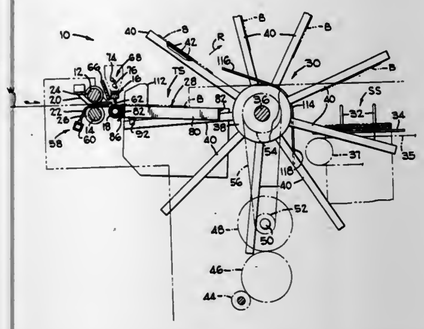
APPARATUS FOR STACKING THERMOPLASTIC SHEETS

Steven W. Mory, Green Bay, and Ronald L. Lotto, Bonduel, both of Wis., assignors to FMC Corporation, Chicago, Ill.

Filed Oct. 7, 1983, Ser. No. 539,789
Int. Cl.[4] B31B *1/64, 49/04;* B65H *29/32;* B65G *57/04*
U.S. Cl. 493—204 **1 Claim**

1. In an apparatus for processing thermoplastic web intermittently unwound from a web roll and provided with means for making equally spaced pairs of holes adjacent one edge of the web and means for sealing and severing equal increments of the web along a line transverse to the direction of web advance to thereby produce web segments of equal dimensions and each of which contain a pair of holes, said apparatus further including means for supporting the leading advanced web increment before and following severance, means for transferring and stacking the segment on pins projecting through the pair of holes;

the improvement in said apparatus comprising means operable during advance of the web for directing high velocity air streams in the direction of web advance and between the path of the web and said supporting means, and means for directing high velocity air streams derived from nozzles located below and adjacent the ends of the web segment parallel to the direction of web advance, said air streams having the combined effect to remove waviness or wrinkles from the web segment while it is deployed on the supporting means, means for directing high velocity air streams derived from a plurality of nozzles located above the path of the web and impinging the web at longitudinally spaced zones, said transfer means includes a



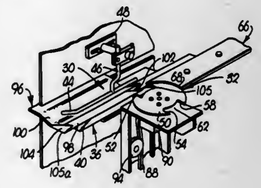
pair of transfer arm assemblies mounted on opposite ends of a transverse support shaft, each of said transverse arm assemblies including a plurality of radially extending circumferentially spaced hollow arms provided with holes communicating with a source of vacuum, means for rotating said arms in synchronism with the intermittent advance of the web with said arms describing paths straddling the supporting means to grasp successive web segments and transport the segment held thereby in a circular arc onto the pins, and means positioned between said transfer arm assemblies and adjacent said support shaft at a position spaced longitudinally downstream from the supporting means and said support shaft for deflecting the air currents created by said airstreams downwardly from the path in which the segments are transferred and placed on the pins.

4,573,956

SLITTER ASSEMBLY FOR DOUBLE FOLD BOTTOMER APPARATUS

Harold K. Johnson, Junction City, Kans., assignor to Mid America Machine Corp., Junction City, Kans.

Filed Sep. 8, 1983, Ser. No. 530,238
Int. Cl.[4] B21B *1/22*
U.S. Cl. 493—237 **14 Claims**



1. A slitter mechanism for slitting the defining walls of the open end of an unfilled tube or the like, said mechanism comprising:

means for continuously moving said unfilled tube along a path of travel;

means adjacent said path of travel for separating at least certain portions of said end-defining walls of said continuously moving tube;

slitter means proximal to said separating means and including a pair of respective, spaced apart slitting edges; and

shifting means operably coupled with said slitter means for forming a pair of independent, spaced apart slits in said unfilled tube at respective spaced apart slitting locations while the tube is continuously moving along said path of travel, said shifting means including means for moving each of said slitting edges between said separated end-defining wall portions and into slitting engagement with the unfilled tube at a corresponding respective slitting location.

4,573,957

SYSTEM FOR THE TRANSPORT AND RAISING OF PACKING CONTAINER BLANKS

Alf Billberg, Oxie, Sweden, assignor to Tetra Pak International AB, Lund, Sweden

Filed Feb. 24, 1984, Ser. No. 583,201
Claims priority, application Sweden, Mar. 1, 1983, 8301122
Int. Cl.[4] B31B *1/78*
U.S. Cl. 493—309 **23 Claims**

1. A system for delivering unfolded packing containers from a source of flattened, tubular packing container blanks, said system comprising a feeding conveyor for conveying flattened blanks from said source along a conveyor path and a set of gripping elements at a fixed location spaced from said source along said conveyor path, said conveyor moving past said set of gripping elements said set of gripping elements including at least one primary gripping element, at least one secondary gripping element extending above said conveyor path and means for pivoting said primary gripping element about an axis transverse to and above said conveyor path between an inclined position relative to said conveyor path and a second position above said conveyor path, said primary gripping element at said inclined position extending below said conveyor path and defining a guide from the conveyor onto said secondary gripping element, said primary gripping element pivoting toward said secondary gripping element as said primary gripping element moves to said second position so to unfold the blank and to position the blank above said conveyor path.

17. A catching device suitable for catching folded container blanks being moved along a first conveyor path by a conveyor moving past said catching device and for raising each caught blank above said conveyor path in an unfolded state, said folded container blanks having a forward folded edge and a trailing folded edge, said catching device comprising:

a secondary arm defining a secondary catch above said conveyor path for receiving the forward folded edge, said secondary arm having surfaces leading to said secondary catch;

a primary arm pivotable about an axis transverse to and above said conveyor path from an inclined position to a raised position, said primary arm at said inclined position intercepting said conveyor path at an incline and defining a guide onto said secondary arm, said primary arm including a primary catch for receiving the trailing folded edge, said primary catch being positioned below said conveyor path when said primary arm is at said inclined position, said primary catch being positioned above said conveyor path when said primary arm is at said raised position so as to unfold said container blank in cooperation with said secondary catch; and

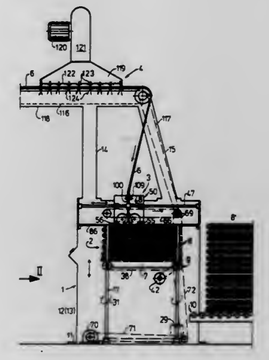
means for reciprocating said primary arm between said inclined and raised positions.

4,573,958

CUTTLING MACHINE FOR CONTINUOUS INPUT OF WEB

Peter J. Biesinger, Saumstr. 15, Herbertingen, Fed. Rep. of Germany (D-7944)

Filed Jul. 3, 1984, Ser. No. 627,871
Claims priority, application Fed. Rep. of Germany, May 8, 1984, 8413894
Int. Cl.[4] B31F *1/00*
U.S. Cl. 493—415 **11 Claims**



1. A machine for folding continuously supplied textile web in a stack comprising:

a frame;

a substantially horizontal stack support table;

means connected to said table for supporting said table for vertical stepwise movement downwardly and for the return of said table to an uppermost position;

a carriage movably mounted on said frame for reciprocating movement with respect to said frame and table parallel to the plane of said table;

carriage guide means mounted on said frame for supporting and guiding said carriage in said reciprocating movement;

a pair of web feeding bars rotatably mounted on said carriage directly adjacent the top of the stack in parallel spaced relationship with their axes of rotation parallel with respect to each other and perpendicular to the direction of reciprocation of said carriage;

two gear wheels rotatably mounted on said frame on opposite sides of said carriage;

an endless chain operatively engaging said two gear wheels to be driven thereby in a closed loop with the portions thereof between said gear wheels being parallel to the direction of reciprocation of said carriage;

a sliding member mounted on said chain;

a slide on said carriage extending perpendicular to said direction of reciprocation slidably engaging with said sliding member to form a sliding connection between said chain and carriage;

means to rotate one of said gear wheels for reciprocating said carriage on said carriage guide means at regular intervals on an unchanging horizontal path of travel so

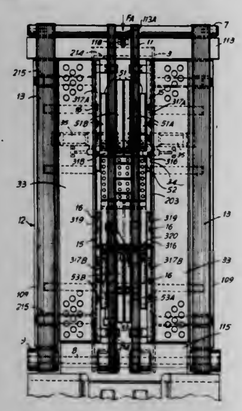
that textile web fed through the space between said bars is deposited on said table in a folded manner;
means connected to said table supporting means for lowering said table in stepwise manner so that each lowering step commences at the end of each reciprocating stroke of said carriage and is equal to a whole number based on unity of thickness of the web being folded;
at least one rack mounted on said frame;
toothed wheel means operatively engaging said rack; and
freewheel means operatively connecting said toothed wheel means to said bars for driving said bars, so that reciprocation of said carriage causes said toothed wheel means in engagement with said rack through said freewheel means to rotate one of said bars in the feeding direction of rotation and the other of said bars to freewheel in one direction of reciprocation of said carriage, and the other of said bars to rotate in the feeding direction of rotation and said one bar to freewheel in the other direction of reciprocation of said carriage in continuous succession of alternate operations to produce said folding.

4,573,959

FABRIC FOLDING MACHINE

Renato Baccianti, Calenzano, Italy, assignor to Automa s.r.l. Costruzione Macchine Automatiche, Italy

Filed Jan. 10, 1983, Ser. No. 457,032
Int. Cl.[4] B31B *1/26*; B65H *45/00*; A41H *15/00*
U.S. Cl. 493—458 **9 Claims**



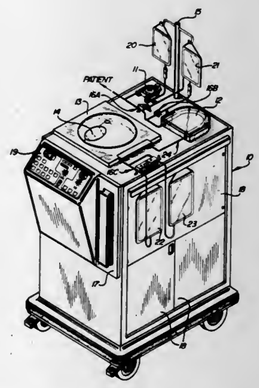
1. A machine for folding a fabric, comprising:
a structure (1) with a slide surface (31,32) for the fabric;
a multiple-belt conveyor (12) connected to said structure for feeding, halting and further feeding the fabric in a fabric feed direction (F_A), said conveyor having a plurality of belts with interspace therebetween;
suction apertures in said slide surface structure for retaining the fabric during folding operations;
two longitudinal plates (33) each hinged to said struture for rotation on an axis which is parallel to said fabric feed direction and positioned to receive the fabric in order to effect longitudinal folding of the fabric;
means connected to said longitudinal plate for rotating said longitudinal plates about said axis;
two comb-like blades (51, 53) mounted to said structure by hinges (52,55) having axes which are perpendicular to said fabric feed direction, said comb-like blades being turnable in opposite directions in order to effect transverse folding by acting in the interspaces between the conveyor belts;
means connected to said comb-like blades for turning said comb-like blades in opposite directions;
mounting means connected between at least one of said two comb-like blades (53) and said structures for displacement of said at least one comb-like blade into at least two positions in said feed direction to adjust for the length of the fabric to be folded in the feed direction;
suction means (318,320) connected to said structure and positioned to act along the hinges (52,55) of said comb-like blades to retain the fabric against said hinges; and
halting and positioning means (118) connected to said conveyor for halting said conveyor to stop the fabric at a selected position on said slide surfaces, said longitudinal blades and said comb-like blades.

4,573,960

THREE PHASE IRRADIATION TREATMENT PROCESS

Jack Goss, Clearwater, Fla., assignor to Extracorporeal Medical Specialties, Inc., King of Prussia, Pa.

Filed Oct. 29, 1984, Ser. No. 665,834
Int. Cl.[4] A61M *37/00*
U.S. Cl. 604—6 **6 Claims**



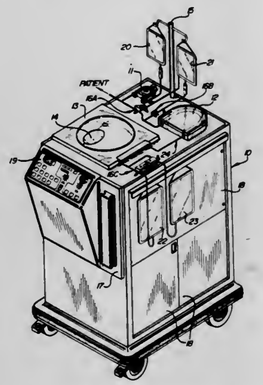
1. In a system for altering cells including treating the cells with a photoactivatable reagent and irradiating said cells and reagent whereby said reagent is caused to be activated and to affect said cells, a three phase method for so treating the blood of a patient comprising the steps of:
in a first phase,
collecting with a collection tubing set, whole blood from a patient having previously been given a pharmaceutically effective amount of a photoactivatable agent;
passing said whole blood into a continuous centrifuge for obtaining plasma and a leukocyte enriched portion;
storing a predetermined volume of said plasma and said leukocyte enriched portion;
returning nonleukocyte enriched portions and any excess plasma to said patient through said collection tubing set;
disconnecting said patient from said collection tubing set;
in a second phase,
passing said stored leukocyte enriched portion through an irradiation tubing set, including an irradiation chamber for photoactivating said reagent, until a predetermined level of photoactivation has been achieved; and
in a third phase,
returning said irradiated leukocyte enriched portion to said patient through a return tubing set.

4,573,961

ELECTRONIC CONTROL METHODS FOR PUVAPHERESIS APPARATUS

Martin J. King, Largo, Fla., assignor to Extracorporeal Medical Specialties, Inc., King of Prussia, Pa.

Filed Oct. 29, 1984, Ser. No. 665,831
Int. Cl.[4] A61M *37/00*
U.S. Cl. 604—6 **4 Claims**



1. In an extracorporeal patient treatment system for the photoactivation of a reagent in contact with the patient's blood, said system including an anticoagulant infusion pump, a blood pump, a continuous centrifuge for obtaining various blood fractions, containers for receiving said fractions and for returning some fractions to the patient while other fractions are irradiated at an irradiation station, and sensors for generating signals in accordance with blood temperature, irradiation station cooling air flow and irradiation source current and voltage, a method for ensuring the safety of the patient undergoing treatment comprising:
monitoring the temperature of the blood fraction to be irradiated as it enters and as it exits the irradiation station;
further monitoring the flow of cooling air supplied to said irradiation station;
additionally monitoring the current and voltage supplied to the radiation source associated with said irradiation station;
wherein said monitoring is performed on an analog basis whereby said analog signals are individually compared to preset thresholds so that said treatment system may be entirely halted if any of said thresholds is exceeded while, simultaneously, said monitoring is also performed on a digital basis, said sensor signals being converted to a digital basis by analog to digital converter means to enable digital monitoring by a microprocessor in accordance with preprogrammed software criteria communicated to said microprocessor.

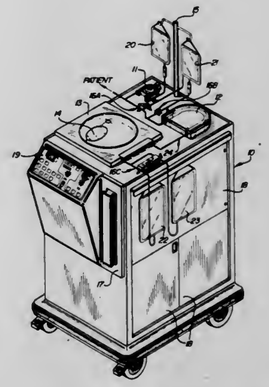
4,573,962

CASSETTE DRAWER ASSEMBLY FOR PHOTOACTIVATION PATIENT TREATMENT SYSTEM

Vernon H. Troutner, St. Petersburg, Fla., assignor to Extracorporeal Medical Specialties, Inc., King of Prussia, Pa.

Filed Oct. 29, 1984, Ser. No. 665,817
Int. Cl.[4] A61M *37/00*
U.S. Cl. 604—6 **5 Claims**

1. In a patient treatment system for extracorporeally irradiating blood from said patient to photoactivate a reagent in contact therewith and wherein said blood is circulated through a plurality of serially connected, cylindrical cavities having a radiation source centrally disposed therein forming a treatment cassette, an apparatus for use in said treatment system and for receiving said cassette comprising:
a container formed from front and back panels connecting top and bottom panels and adapted to receive said cassette;
means for supplying electrical power to said radiation source of said treatment cassette, said means for supplying electrical power having first power interconnect means mounted on said container for matably engaging second power interconnect means mounted on said patient treatment system;



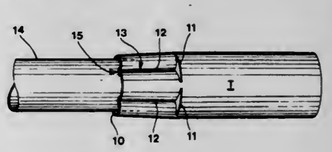
said container being movably mounted on tracks attached to said patient treatment system whereby said container must be moved to a first position to permit installation or removal of said cassette and where movement to said first position disengages said first power interconnect means from said second power interconnect means and wherein said container must be moved to a second position to engage said first and second means for supplying energy to activate said radiation source.

4,573,963

OUTER TAMPON TUBE WITH FINGER GRIP

Donald A. Sheldon, Outagamie County, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Oct. 17, 1983, Ser. No. 542,853
Int. Cl.[4] A61F *13/20*
U.S. Cl. 604—15 **7 Claims**



6. An outer tampon tube comprising:
an elongated tubular element having a longitudinal axis and two ends, with an insertion portion at one end and a gripping portion at the other end,
said gripping portion having a plurality of spaced longitudinally extending inwardly turned ribs formed therein for engaging the outer surface of a tampon plunger element insertable within said gripping portion, said ribs being formed by a plurality of spaced slits extending generally around a circumference of said tubular element in the same general plane, and a plurality of longitudinal crease lines, a crease line extending from a respective slit and

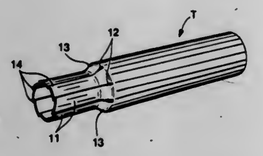
toward an end, said crease lines when indented radially inwardly on said tubular element forming said ribs.

4,573,964

OUTER TAMPON TUBE WITH RECESSED FINGER GRIP

Dawn M. Huffman, Winnebago County, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Oct. 17, 1983, Ser. No. 542,864
Int. Cl.⁴ A61F *13/20*
U.S. Cl. 604—15 **10 Claims**



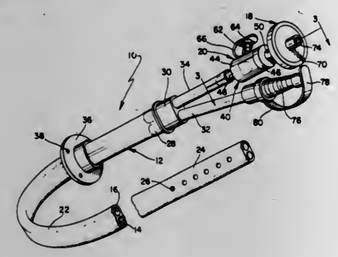
1. An elongated outer tampon tube formed from a single tubular element, said outer tampon tube having a longitudinal axis and two ends, with an insertion portion at one end and a gripping portion at the other end, said gripping portion being recessed with an outside diameter that is smaller than the outside diameter of said insertion portion, said recessed gripping portion being comprised of a plurality of overlapped elongated sections formed on said single tubular element by a plurality of slits through said tubular element, said slits being spaced around the circumference of said tubular element and extending generally longitudinally along said tubular element from the gripping portion end to a point spaced inwardly from that end.

4,573,965

DEVICE FOR DRAINING WOUNDS

Ronald D. Russo, Barrington, R.I., assignor to Superior Plastic Products Corp., Cumberland, R.I.

Filed Feb. 13, 1984, Ser. No. 580,091
Int. Cl.⁴ A61M *27/00*
U.S. Cl. 604—30 **5 Claims**



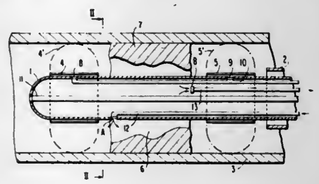
1. A device for draining wounds and the like comprising:
(a) a catheter member having distal and proximal ends and having first and second longitudinally extending lumens therethrough;
(b) an antibacteria filter mounted in in-line communication with said second lumen for filtering gases passing therethrough; and
(c) a check valve element mounted in in-line communication with said second lumen and with said filter so that gases can flow through said filter and through said second lumen toward said second lumen distal end but so that fluids from a wound adjacent said second lumen distal end are prevented from flowing back through said second lumen and into said filter, whereby blockage of said filter as a result of backflow of said fluids is prevented.

4,573,966

METHOD AND APPARATUS FOR REMOVING AND/OR ENLARGING CONSTRICTED AREAS IN VESSELS CONDUCTING BODY FLUIDS

Andreas Weikl, and Volkmar Merkel, both of Erlangen, Fed. Rep. of Germany, assignors to Schneider Medintag AG, Fed. Rep. of Germany

Filed Nov. 24, 1982, Ser. No. 444,464
Claims priority, application Fed. Rep. of Germany, Nov. 24, 1981, 3146459; Sep. 29, 1982, 3235974
Int. Cl.⁴ A61M *25/00*
U.S. Cl. 604—53 **40 Claims**



1. An apparatus, adapted for use with means for supplying a dissolving fluid to an isolated area in a vascular passageway, of a size to fit within a vascular passageway conducting body fluids, such as arteries and veins conducting blood, for selectively isolating constricted areas in the vascular passageway, such as stenosis, and treating the isolated area with the dissolving fluid, the apparatus comprising a flexible treatment catheter, two balloon means disposed near the end of the flexible catheter, each of the two balloon means being expandable by a pressure medium so as to contact the inside of the passageway and being controllable from outside the catheter, the two balloon means being disposed one after the other at such a distance that one balloon means is adapted to be placed ahead of and the other behind the constricted area, the two balloon means being expandable for operatively sealing off and thereby isolating the constricted area, at least two partition walls extending substantially the full length of the catheter subdividing the catheter into at least four channel means, opening means in said catheter connecting two of the at least four channel means to the area isolated by the two balloon means, whereby dissolving fluid for treatment of the isolated area can be supplied to the isolated area through one of the opening means from outside the catheter and removed from the isolated area through another of said opening means.

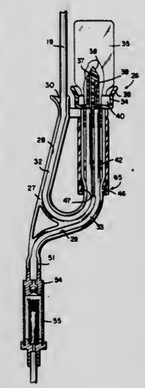
4,573,967

VACUUM VIAL INFUSION SYSTEM

William W. Hargrove, Indianapolis; Dale C. Harris, Fairland; Michael J. Akers, Greenwood, all of Ind., and Charles R. Sperry, Westport, Conn., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Dec. 6, 1983, Ser. No. 558,060
Int. Cl.⁴ A61W *5/00*
U.S. Cl. 604—56 **9 Claims**

1. In an intravenous administration set comprising a container containing a fluid, a delivery tube connected to the container for dispensing fluid therefrom, injection means for connecting the delivery tube to a patient, a drip chamber situated in the delivery tube for permitting the determination of the administration rate of the fluid, and control means for controlling the administration rate of the fluid, the improvement comprising: a vial containing a medicine under a partial vacuum, penetrating means penetrating an end of the vial to provide two pathways to the interior of the vial, two adjacent sections of the delivery tube being arranged contiguous to each other and connected to the two pathways of the penetrating means, fluid flow restricting means situated in the delivery tube between the injection means and the penetrating means for permitting fluid flow into the vial only from said container, and



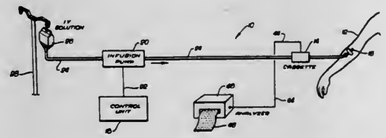
means embracing said adjacent sections of the delivery tube for releasably closing both pathways to the interior of the vial to temporarily prevent flow of fluid through the penetrating means.

4,573,968

INFUSION AND BLOOD CHEMISTRY MONITORING SYSTEM

Kenneth B. Parker, Alpine, Calif., assignor to IVAC Corporation, San Diego, Calif.

Filed Aug. 16, 1983, Ser. No. 523,733
Int. Cl.⁴ A61B *5/00*
U.S. Cl. 604—67 **16 Claims**



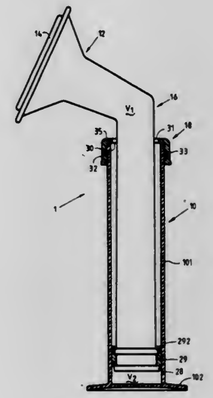
1. A system for infusing fluid into a patient and for monitoring patient blood chemistry, comprising:
an infusion line;
a catheter at one end of said infusion line and adapted for insertion into the patient;
a reversible infusion pump operable for pumping an infusion fluid through said infusion line and said catheter in a first direction for infusion into the patient;
a blood chemistry sensor mounted in flow communication with said infusion line near said catheter for providing an indication of patient blood chemistry upon contact with a patient blood sample; and
control means for controllably interrupting operation of said infusion pump in said first direction to interrupt supply of infusion fluid into the patient for a selected time interval;
said control means further including means for operating said infusing pump for pumping infusion fluid through said infusion line in a second direction for drawing a patient blood sample through said catheter into contact with said sensor and then to resume operation in said first direction for reinforcing the drawn blood sample through said catheter into the patient followed by resumed infusion of said infusion fluid.

4,573,969

BREAST PUMP

Klaus Schlensog, Cham; Christian Beer, Boniswil, and Robert Riedweg, Lucerne, all of Switzerland, assignors to Ameda AG, Zug, Switzerland

Filed Jan. 3, 1984, Ser. No. 567,891
Claims priority, application Switzerland, Jan. 11, 1983, 122/83
Int. Cl.⁴ A61M *1/06*
U.S. Cl. 604—74 **9 Claims**



1. In a breast pump comprising:
an elongated outer cylinder means having a first or lower closed end and a second or upper open end;
a hollow piston means having
a suction bell portion for putting against a mother's breast to surround a teat,
an elongated tubular portion integrally connected at its first or upper end with said suction bell portion and having a second or lower open end, and
a resilient annular sealing means mounted at the outer side of the tubular portion near said lower end thereof;
said elongated tubular portion being inserted into said outer cylinder means for reciprocating displacement relative to said cylinder means in a substantially axial direction so as to move said closed lower end of said cylinder means to-and-fro relative to said open lower end of said tubular portion; and
said sealing means cooperating with said outer cylinder means to generate a suction effect upon said fro movement;
the improvement consisting substantially of: said elongated tubular portion being tapered substantially over the entire length thereof so that its outer diameter at its upper end is smaller than its outer diameter at its lower end for permitting limited tilting of the longitudinal axis of said outer cylinder means relative to the longitudinal axis of said elongated tubular portion, and said suction bell portion being arranged at predetermined angle α of from about 30° to about 90° with respect to the position of the longitudinal axis of said suction bell portion in relation to the longitudinal axis of said tubular portion for permitting the outer cylinder to be held more nearly vertical when said pump is operated to extract milk from the breast of a person whose thorax is in a substantially vertical or upright position.

4,573,970

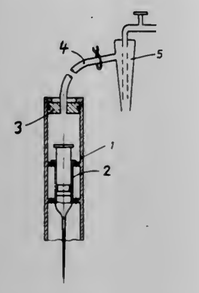
SUCTION INJECTOR

Wolfgang Wagner, Exerzierstr. 1, Berlin 65, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 241,378, Feb. 26, 1981, Pat. No. 4,393,870, which is a continuation-in-part of Ser. No. 93,615, Nov. 9, 1979, Pat. No. 4,284,077, which is a division of Ser. No. 933,136, Aug. 14, 1978, abandoned, and a continuation-in-part of Ser. No. 793,951, May 5, 1977, Pat. No. 4,114,691, which is a continuation-in-part of Ser. No. 634,741, Nov. 21, 1975, abandoned. This application Aug. 6, 1982, Ser. No. 405,560

Int. Cl.[4] A61M *5/32*

U.S. Cl. 604—115 **22 Claims**



1. A suction injector, particularly for use with hypodermic injections, comprising:
   a tubular housing;
   partitioning means, slidably disposed in the housing and frictionally sealed against the housing, thereby dividing the housing into two chambers of oppositely varying volume;
   supporting means in one of the chambers of the housing, on one side of said partitioning means, for supporting a container filled with medicine and constructed to be operated by volume reduction in said chamber and having a cannula for ejecting the medicine in the container;
   suction cup means at one end of the housing, being at the same side of said partitioning means as said supporting means;
   means for applying a vaccum to said one chamber at said same side of the partitioning means to be effective also at the suction cup, so that skin forced into the suction cup thereby being penetrated by the cannula; and
   due to said friction, said partitioning means delayedly sliding exclusively on account of the established vacuum in said one chamber towards the container for operating the same through reduction in volume of said chamber in order to obtain ejection of medicine through the cannula.

4,573,971

AUTOMATIC INJECTION DEVICE

Paulus R. Kamstra, Olst, Netherlands, assignor to Duphar International Research B.V., Weesp, Netherlands

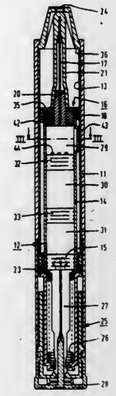
Continuation-in-part of Ser. No. 405,367, Aug. 5, 1982, Pat. No. 4,529,403. This application Dec. 13, 1983, Ser. No. 560,925

Claims priority, application Netherlands, Aug. 10, 1981, 8103744

Int. Cl.[4] A61M *5/00*

U.S. Cl. 604—191 **12 Claims**

1. An automatic device for injecting two or more different injection liquids which may not be in contact with each other for long periods of time, comprising a combination of a discharge mechanism, a cartridge holder and a cartridge which is slidably accommodated in the holder and which comprises an ampoule, a piston which is movable in the ampoule and seals same, and a hypodermic needle connected to the front of the ampoule by means of a needle mount, and, if desired, covered by a flexible sheath to maintain the needle in a sterile condition, said device being characterized in (a) that said cartridge includes said injection liquids and the ampoule between the piston and the needle mount comprises one or more stoppers which are movable in the ampoule and which, before use of the device, keep the injection liquids present in the ampoule separated from each other in that their circumference adjoins the inner wall of the ampoule in a sealing manner, (b) that said cartridge includes means maintaining most of the peripheral area of said ampoule in radially spaced relationship from said holder, (c) that the needle mount comprises a neck connected



to the front of said ampoule in which the injection needle is sealingly connected, (d) that the rear face of the neck of the needle mount or the front face of the stopper nearest to the rear face of the neck of the needle mount comprises a plurality of spacing supports, and (e) that the inner wall of the ampoule is locally deformed between the needle mount and the stopper or foremost stopper over a length which is slightly larger than the length of the stopper or the collected stoppers in such a manner that upon actuation of the device a bypass is formed, allowing the injection liquid or liquids behind the stopper or stoppers to reach the needle past the stopper or stoppers.

4,573,972

AUTOMATIC INJECTION DEVICE

Paulus R. Kamstra, Olst, Netherlands, assignor to Duphar International Research B.V., Weesp, Netherlands

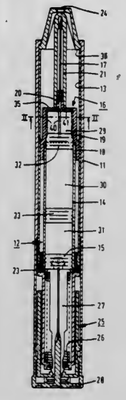
Continuation-in-part of Ser. No. 405,367, Aug. 5, 1982, Pat. No. 4,529,403. This application Dec. 13, 1983, Ser. No. 560,935

Claims priority, application Netherlands, Aug. 10, 1981, 8103744

Int. Cl.[4] A61M *5/08*

U.S. Cl. 604—191 **10 Claims**

1. An automatic device for injecting two or more different injection liquids which may not be in contact with each other for long periods of time, comprising a combination of a discharge mechanism, a cartridge holder and a cartridge which is slidably accommodated in the holder and which comprises an ampoule, a piston which is movable in the ampoule and seals same, and a hypodermic needle connected to the front of the ampoule by means of a needle mount, and, if desired, covered by a flexible sheath to maintain the needle in a sterile condition, said device being characterized in that said cartridge includes said injection liquids and the ampoule between the piston and the needle mount comprises one or more stoppers which are movable in the ampoule and which, before use of the device, keep the injection liquids present in the ampoule separated from each other in that their circumference adjoins the inner wall of the ampoule in a sealing manner, and that the needle mount comprises a collar connected to the front of the ampoule in a sealing manner, a neck in which the injection needle is connected, and an entirely or substantially cylindrical shaft between the collar and the neck, a passage being formed in the inner wall of the shaft and the rear face of the neck past which the injection liquid or injection liquids can reach the needle when during use of the device the stopper or stoppers is or are moved into the shaft of the needle mount; the inner wall of the shaft of the needle mount having a circular or oval cross-section, the rear face of the neck of the needle mount comprising



a plurality of spacing supports; and the region bounded by the inner wall of the shaft and the spacing supports on the rear face of the neck having a slightly larger circumference than the expanded stopper or stoppers and being slightly longer than the stopper or the collective stoppers, so that the stopper or the collective stoppers in the extreme forward position can fill this region substantially entirely but in which an aperture remains around the stopper or stoppers; and said collar including means for maintaining the ampoule in radially spaced relationship from said holder.

4,573,973

CASE FOR PROTECTING A SYRINGE BODY

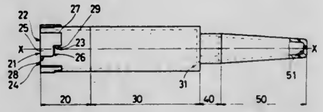
Michel A. Mezi, Quetigny, France, assignor to Laboratoire Spad, Quetigny, France

Filed Aug. 16, 1984, Ser. No. 641,487

Claims priority, application France, Sep. 2, 1983, 83 14563

Int. Cl.[4] A61M *5/00*

U.S. Cl. 604—197 **5 Claims**



1. Case for protecting a syringe body constituted by a hollow tubular member which fits tightly on the outer face of the body, one end of this member being closed off by a solid wall, the length of the case being such that when the body is introduced into the latter, the tip for fixing the syringe on a gripping tool remains exposed and the needle which projects outside the body is protected in an air-tight manner, inside the case, without contact with the inner faces of the latter, the case being provided internally with an abutment which limits the penetration of the syringe body in the case so that the needle does not reach the closing wall, the open end of the case being closed by a removable blind cap having an inner diameter corresponding to the outer diameter of said end of the case so that this cap constitutes a virtually air-tight closure enclosing and protecting the syringe body in the case, characterised by the fact that its open end comprises, also distributed on the outer periphery of the case along equidistant generatrices parallel to the axis of symmetry of the case, parts in relief of identical thickness, in the form of angle members whereof one side namely the side which is oriented towards the opening of the case, is situated on a single circumference parallel to the rim of said opening, the apex of each internal rightangle being situated on another single circumference which is parallel to the former and by the fact that the cap comprises, also distributed on its inner periphery in contact with the case along equidistant generatrices, parallel to its axis of symmetry, parts in relief of identical thickness, in the form of rectangles whereof the same side, directed towards the opening in the cap, is situated on a single circumference parallel to the rim of the opening in the cap, the peripheral spacing between the rectangles corresponding to the peripheral spacing between the sides of the angle members parallel to the axis of symmetry common to the case and to the cap, so that positioning of the cap on the case introduces the rectangles between the angle members and that a rotation of the cap with respect to the case places these rectangles in the rightangles of the angle members all orientated in the same direction in order to ensure locking of the cap on the case.

4,573,974

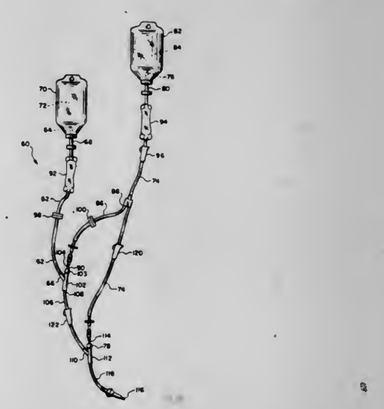
MEDICAL ADMINISTRATION SET ENABLING SEQUENTIAL DELIVERY OF TWO LIQUIDS AT DIFFERENT FLOW RATE

Rick Ruschke, McHenry, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Continuation of Ser. No. 445,872, Dec. 1, 1982, abandoned. This application Apr. 25, 1985, Ser. No. 726,928

Int. Cl.[4] A61M *5/14*

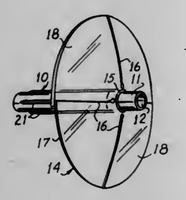
U.S. Cl. 604—81 **12 Claims**



1. A medical liquid administration set for the sequential administration of two medical liquid sources, which can be delivered at different liquid flow rates without readjustment of the set, the administration set comprising:
   (a) a first conduit including a proximal end for connection to a first liquid sources, and a distal end;
   (b) a second conduit including a proximal end for connection to a second liquid source, and a distal end, said second conduit being devoid of any gas barrier means;
   (c) a cross over branch having an upstream end in communication with said second conduit between said proximal and distal ends of said second conduit, and a downstream end in communication with said first conduit at said distal end of said first conduit, said cross over branch being devoid of any gas barrier means;

(d) a common conduit including a proximal end in communication with both said distal end of said first conduit and said downstream end of said cross over branch, and further including a common conduit distal end, said common conduit distal end being in communication with said second conduit at said second conduit distal end, said common conduit being devoid of any gas barrier means;
(e) a liquid outlet located no greater than about four inches downstream of distal ends of both said common conduit and said second conduit, there being no gas barrier means between said distal ends of both said common conduit and said second conduit and said liquid outlet;
(f) a one-way valve in said cross over branch permitting liquid flow only in the direction from said upstream end to said downstream end;
(g) a one-way valve in said first conduit permitting liquid flow only in the direction from said first conduit proximal end to said first conduit distal end;
(h) adjustable liquid delivery rate control means on said second conduit, downstream of said upstream end;
(i) whereby in operation said distal ends of said common conduit and said second conduit are disposed at an elevation lower than, equal to or not substantially higher than said liquid outlet.

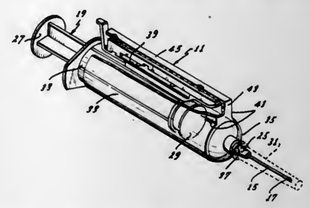
4,573,975
PROTECTIVE SHIELD FOR NEEDLE RECEIVER
Brian S. Frist, 65 Cameron Glen Dr., Atlanta, Ga. 30328, and Wayne H. Lazarus, 50 Bransford Rd., Atlanta, Ga. 30342
Filed Jan. 4, 1985, Ser. No. 688,734
Int. Cl.[4] A61M *5/32*
U.S. Cl. 604—192 **8 Claims**



1. A protective shield, for a needle receiver comprising a container for a hypodermic needle, said container having an open top for receiving said needle, and a neck portion adjacent to said open top, said protective shield including a piece of sheet material defining a central opening therethrough, said central opening being adapted to receive said neck portion of said container, said piece of sheet material having a periphery, and means for allowing said protective shield to fold whereby said periphery is effectively shortened and said sheet of material assumes a generally conical shape, a washer carried on said container adjacent to said neck for limiting the motion of said protective shield in one direction, and a retainer carried on said neck for holding said protective shield against said washer.

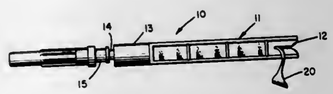
4,573,976
SHIELDED NEEDLE
Norma A. Sampson, Fullerton, and Earl W. Sampson, Ontario, both of Calif., assignors to Dolores A. Smith, Fullerton, Calif., a part interest
Filed May 24, 1984, Ser. No. 613,460
Int. Cl.[4] A61M *5/00*
U.S. Cl. 604—198 **14 Claims**

1. An apparatus for injecting a substance into a human or an animal comprising:
a body adapted to have the substance to be injected pass therethrough;
means for mounting a needle on the body with the needle having a passage extending therethrough and terminating in a point whereby the substance can pass from the body to and through the passage of the needle;
a removable shield covering said needle;
a needle guard having open opposite ends movable on the body between an extending position in which the guard obstructs access to the point of the needle and a retracted position in which the guard does not materially obstruct access to the point of the needle and in which the needle



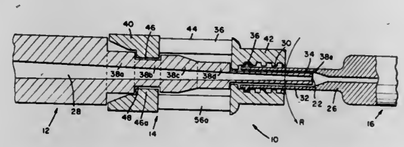
and shield project through one of said open ends of said needle guard, said extended and retracted positions being axially spaced;
means for releasably retaining the guard in the retracted position; and
means on the body and the guard for resisting movement of the guard from the extended position back toward the retracted position.

4,573,977
BLADDER-TYPE SYRINGE
A. Gerrit Crawford, 6223 Bakman St., North Hollywood, Calif. 91606
Filed Feb. 27, 1984, Ser. No. 583,775
Int. Cl.[4] A61M *1/00*
U.S. Cl. 604—212 **4 Claims**



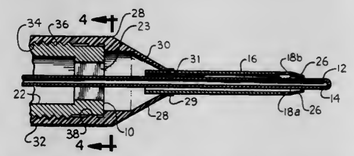
1. A bladder-type syringe which the user employs to collect blood samples, said bladder-type syringe comprising:
a. an elongated bladder which is formed out of a high gas-diffusion barrier film and which has an open end and a closed end with said elongated bladder having longitudinal convolusions whereby the amount of gas contained within said elongated bladder is minimized so that when said elongated bladder is filled with the blood sample there is a minimal amount of air trapped therewithin;
b. a hypodermic needle which has a sharp distal end with and a blunt proximal end and which a user employs to penetrate into a blood vessel;
c. bladder coupling means for fixedly, but detachably, and fluidly coupling said elongated bladder at its said open end to said hypodermic needle at its said blunt proximal end extending into said coupling means in order to reduce deadspaces in said coupling means; and
d. an elongated member which has a first end and a second end and which has a flat surface with a keeper slot at its said first end, said elongated bladdder being fixedly, but detachably, coupled to said keeper slot whereby the user is able to support said elongated bladder and isolate any air bubbles contained in said elongated bladder and said bladder coupling means being mechanically coupled to said elongated member at its said second end whereby said elongated bladder is suspended above said flat surface of said elongated member and whereby when said elongated bladder is filled with a blood sample the user removes the blood sample by pressing said elongated bladder between his thumb and said flat surface of said elongated member.

4,573,978
ANGIOGRAPHIC SYRINGE AND CONNECTOR FOR JOINING A CATHETER THERETO
David M. Reilly, Glenshaw, Pa., assignor to Medrad, Inc., Pittsburgh, Pa.
Filed Mar. 15, 1984, Ser. No. 680,407
Int. Cl.[4] A61M *5/325*
U.S. Cl. 604—240 **17 Claims**



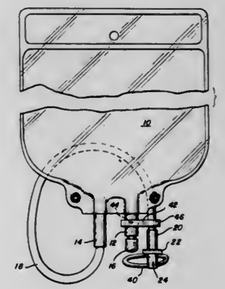
1. A syringe assembly for introducing fluids into the body of an animal and connectable with a catheter, said assembly comprising:
a syringe having a tubular body with an outwardly extending flange at one end, a piston slidably positioned in said body, a discharge extension, an intermediate portion connecting said tubular body and said discharge extension, said discharge extension including engagement means for engaging a connector thereto, and an outlet from said discharge extension;
a connector comprising a hollow tubular body having a first and second end and an intermediate portion defining the axial spacing between said first and second ends, said connector including first attachment means positioned internally on said first end and disposed for engaging said discharge extension engagement means, and second attachment means positioned internally on said second end and disposed for engaging said catheter; and
said first attachment means designed to rotatably engage said discharge extension engagement means so as to permit purely rotational movement of said connector about said discharge extension and preclude translational movement thereon.

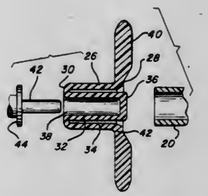
4,573,979
IRRIGATION/ASPIRATION TIP
Larry W. Blake, Irvine, Calif., assignor to Innovative Surgical Products, Inc., Santa Ana, Calif.
Filed Aug. 23, 1984, Ser. No. 644,057
Int. Cl.[4] A61M *5/325*
U.S. Cl. 604—240 **15 Claims**



1. A device for use on a surgical irrigation/aspiration instrument, comprising:
a cannula having first and second ends, said cannula having a first aperture adjacent said first end for communicating with a portion of the body, and having a second aperture adjacent said second end for communicating with said surgical instrument; and
a flexible support connecting said second aperture of said cannula to said surgical instrument so as to provide a fluid tight connection, said flexible support forming a flexible joint adjacent said second cannula, said flexible support being made of a more flexible material than said cannula so as to allow said cannula to rotate about said support without the need to deform said cannula to cause said rotation.

4,573,980
PORT PROTECTOR
Frank Karrasch, Wadsworth, and John F. Love, Palatine, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.
Continuation of Ser. No. 533,076, Sep. 19, 1983, abandoned. This application Jun. 27, 1985, Ser. No. 750,048
Int. Cl.[4] A61M *5/005*
U.S. Cl. 604—256 **1 Claim**





1. A port protector for closing the end of a tubular port, the port having an interior with an inner diameter and an exterior with an outer diameter, said port protector comprising
means defining an elastic inner tubular member which, when unstretched, has a normal outer diameter which exceeds the inner diameter of the port, said inner tubular member being stretchable to reduce its normal outer diamter, said inner tubular member including an interior bore having a closed end and an axially opposite end which is open for accommodating within said interior bore the insertion of a push rod to press against said closed bore end to insert said inner tubular member into the interior of the port by stretching said inner tubular member to reduce said normal outer diameter, said elastic inner tubular member relaxing, upon removal of the push rod from said bore, to return toward said normal outer diameter, thereby sealingly occupying the interior of the port,
means defining an elastic outer tubular member joined to said inner tubular member at a junction adjacent to said open end of said inner tubular member bore, said outer tubular member being normally folded back at said junction to peripherally surround said inner tubular member, said outer tubular member, when folded, having a normal, unstretched interior diameter greater than said normal outer diameter of said inner tubular member and less than the outer diameter of the port so that, when said inner tubular member sealingly occupies the interior of the port,

said outer tubular member sealingly surrounds the exterior of the port, and

means defining a handle joined to said outer tubular member at a point spaced away from said junction between said inner and outer tubular members, said handle being joined at said point at radially opposite portions of said outer tubular member, said handle being operative, in response to a pulling force applied along the axis of the port, for first peeling said elastic outer tubular member away from the exterior of the port until said junction between said inner and outer tubular members is reached and, in response to a continuation of said pulling force, for pulling said inner tubular member out of the interior of the port.

4,573,981

PROTECTIVE SHEATH STRUCTURE FOR A CATHETER ASSEMBLY

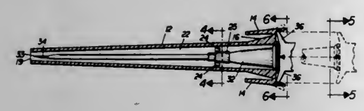
Richard H. McFarlane, 2571 Kaneville Rd., Geneva, Ill. 60134

Filed Oct. 24, 1983, Ser. No. 544,464

The portion of the term of this patent subsequent to Feb. 19, 2002, has been disclaimed.

Int. Cl.⁴ A61M *5/00*

U.S. Cl. 604—263 **11 Claims**



1. A sheath structure of the type positioned in substantially enclosing, protective relation to a catheter assembly comprising:

(a) said sheath structure including a body means having a substantially elongated configuration of a predetermined length sufficient to extend beyond the catheter assembly portion being enclosed,

(b) entrance means including an opening formed at one end of the body means and dimensioned to allow passage of the enclosed catheter assembly portion therethrough,

(c) locking means integrally formed on said body means adjacent said entrance means and structured to selectively engage and disengage a flange structure formed on the catheter assembly,

(d) said locking means comprising two finger elements each pivotally connected on opposite sides of the body means and including a lever portion spaced from said body means and extending in substantially parallel relation to the other of said finger elements and away from said entrance means,

(e) each finger element further including a gripping portion integrally secured to said lever portion and extending colinear therewith in the opposite direction, said gripping portion structured to lockingly engage the flange structure of the catheter assembly,

(f) said flange structure comprising two flange elements extending outwardly from opposite sides of a catheter base of said catheter assembly, each flange element configured for grasping engagement by one of said finger elements,

(g) guide means disposed adjacent said locking means and structured to orient said flange elements into communicating relation with said locking means,

(h) whereby said sheath structure may be selectively secured to and removed from enclosing relation to said catheter assembly.

4,573,982

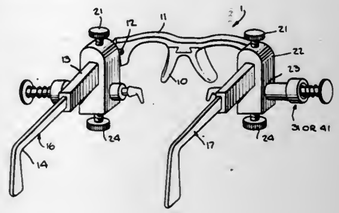
EYE FRAME OPHTHALMIC DRUG DELIVERY DEVICE

Alexander E. Forbes, and John L. Haslam, both of Lawrence, Kans., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Nov. 10, 1983, Ser. No. 550,427

Int. Cl.⁴ A61M *35/00*

U.S. Cl. 604—300 **6 Claims**



1. A universally adjustable ophthalmic drug delivery device comprising: (a) a bridge having an adjustable nose piece thereon; (b) temples hingedly mounted at the ends of the bridge piece for securing said device to a patient's ears; (c) a pair of blocks slidably mounted on the channel portion of said temples; (d) a pair of syringes slidably mounted, perpendicular to the longitudinal axis of said temples, on said blocks said syringe ends terminating in the vicinity of the patient's eye such that the block and syringe are so adjusted to fit and deliver a dose of ophthalmic medicament to the lower cul-de-sac of the patient's eye.

4,573,983

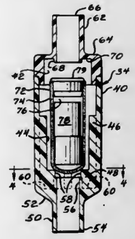
LIQUID COLLECTION SYSTEM HAVING AN ANTI-SEPTIC MEMBER ON THE DISCHARGE SECTION

Larry D. Annis, Elgin, Ill., assignor to The Kendall Company, Boston, Mass.

Filed Jul. 27, 1984, Ser. No. 635,017

Int. Cl.⁴ A61M *1/00*

U.S. Cl. 604—322 **6 Claims**



1. A urine drainage collection system, comprising:

a drainage container having a chamber for collection of liquid therein;

a flexible tubular discharge section having an outer end in fluid communication with a lower portion of said chamber for discharge of collected urine;

a clamp on said tubular section for releasably opening and closing the tubular section; and

a tubular anti-septic device means containing an antiseptic capsule in fluid communication with the outer end of the tubular discharge section, said device having an annular wall and inner and outer sections forming a cavity to contain said antiseptic capsule, base portion means at the outer end of said tubular device means forming at least one well portion, said well portion acting to trap minor portions of urine when urine is discharged from said container

chamber, a pocket means formed by projections at the inner section of the tubular device to act as a barrier trap against the passage of urine back to the collection bag when the antiseptic device and the flexible tubular discharge section are inverted from a discharge condition to a storage condition.

4,573,984

WASTE RETAINING RECEPTACLES FOR PATIENTS WITH COLOSTOMIES AND ILEOSTOMIES

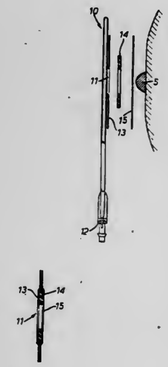
George Y. Benzies, 47, The Riding, Woking, Surrey, England (GU215TA)

Filed Sep. 14, 1983, Ser. No. 532,711

Claims priority, application United Kingdom, Dec. 11, 1982, 8235367

Int. Cl.⁴ A61F *5/44*

U.S. Cl. 604—339 **8 Claims**



1. A waste retaining receptacle for adhering to the body of a user to collect body waste issuing from the user's body via a stoma or similar orifice, said receptacle including an inlet aperture for waste, seal means surrounding said aperture for sealingly being adhered to the user's body around the stoma, said seal means comprising two laminae of relatively thin material bonded one to each side of a flexible annular ring resiliently deformable non-viscous material having a thickness substantially greater than the thickness of said laminae, one of the laminae being attached to the receptacle around said inlet aperture, and the other lamina being adapted to be adhered to the user's body around the stoma, said laminae extending each a substantial distance beyond the periphery of said flexible ring and bonded to one another over a substantial surface area at least around a major portion of the periphery of said flexible ring sheet.

4,573,985

URINARY COLLECTION METHOD AND DEVICE

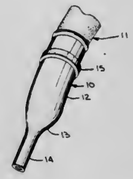
Roy P. Finney, Tampa, Fla., assignor to Medical Engineering Corp., Racine, Wis.

Continuation-in-part of Ser. No. 150,231, May 15, 1980, Pat. No. 4,318,396, and a continuation-in-part of Ser. No. 266,455, May 22, 1981, abandoned, and a continuation-in-part of Ser. No. 328,827, Dec. 9, 1981, Pat. No. 4,411,261, and a continuation-in-part of Ser. No. 478,449, Mar. 24, 1983, Pat. No. 4,532,920. This application Jan. 6, 1984, Ser. No. 568,745

Int. Cl.⁴ A61F *5/44*

U.S. Cl. 604—349 **2 Claims**

1. A method of modifying the penis of an incontinent patient so that an elastic sheath of a urinary collection device can be securely retained thereon, which method comprises making an incision in the penis, implanting into each of the corpora cavernosa of the penis a generally cylindrical penile implant having an expansible inflatable chamber and a self sealing means for filling such chamber, closing the incision, periodically injecting fluid into said chamber through said self sealing means via a cannula to stretch and expand the chamber and the penis until



the penis is large enough and firm enough to securely retain the elastic sheath of a urinary collection device but still flexible enough to bend without discomfort to the patient and then placing an elastic urinary collection sheath upon the thus modified penis.

4,573,986

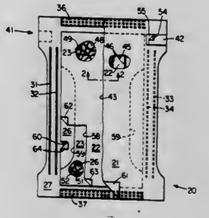
DISPOSABLE WASTE-CONTAINMENT GARMENT

James A. Minetola, Cincinnati, and David R. Tucker, Mason, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Sep. 17, 1984, Ser. No. 651,374

Int. Cl.⁴ A61F *13/18*

U.S. Cl. 604—366 **32 Claims**



1. A disposable waste-containment garment comprising an absorbent core, a liquid permeable lamina, and a liquid impermeable backsheet, said absorbent core comprising a mass of fibers substantially devoid of interfiber bonds, said absorbent core being disposed intermediate said lamina and said backsheet, and adhesively secured in face to face relation to said lamina with an open pattern of adhesive having an average weight of from about eight-tenths to about four-and-seven-tenths grams per square meter.

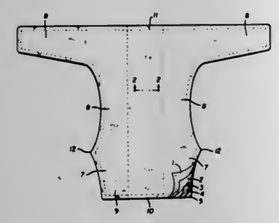
26. A disposable waste-containment garment comprising an absorbent core, a liquid permeable lamina, and a liquid impermeable backsheet, said absorbent core comprising a mass of fibers substantially devoid of interfiber bonds, said absorbent core being disposed intermediate said lamina and said backsheet, and adhesively secured in face to face relation to said lamina with a reticulated network of filaments of hot melt adhesive.

4,573,987

REUSABLE MULTI-LAYERED DIAPER WITH WICKING ACTION

Kenneth A. Lamb, Jr., Miami, Fla., assignor to KW Marketing Incorporated, Miami Lakes, Fla.

Filed Mar. 27, 1985, Ser. No. 716,683
Int. Cl.[4] A61F *13/16*
U.S. Cl. 604—378 3 Claims



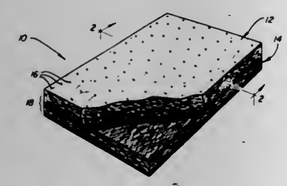
1. A multi-layer reusable, washable diaper for use in contact with the skin comprising:
a 100% natural cotton first layer for contacting the skin;
a hydrophobic contiguous second layer having a synthetic bonded monofilament construction providing a wicking action for drawing moisture away from the skin;
a highly absorbent cotton third layer;
a highly absorbent combination cotton and synthetic bonded monofilament terrycloth fourth layer;
a highly absorbent combination cotton and synthetic bonded monofilament terrycloth outer fifth layer;
said diaper providing a breathable air vapor porous characteristic at normal atmospheric pressure throughout the combination of all layers of the diaper;
all layers of said diaper constructed with substantially the same resistance to machine washing and drying.

4,573,988

SUPERTHIN ABSORBENT PRODUCT

Heinz A. Pieniak, North Brunswick, and Michael J. Iskra, Flemington, both of N.J., assignors to Personal Products Company, Milltown, N.J.

Continuation-in-part of Ser. No. 505,579, Jun. 20, 1983, which is a continuation-in-part of Ser. No. 439,963, Nov. 8, 1982, Pat. No. 4,500,315. This application May 7, 1984, Ser. No. 607,379
The portion of the term of this patent subsequent to Feb. 19, 2002, has been disclaimed.
Int. Cl.[4] A61F *13/16*
U.S. Cl. 604—379 37 Claims



1. A disposable absorbent compressed composite comprising a first layer, a second layer, and a transition zone integrally and intimately connecting said first and second layers, said first layer comprising a fibrous web having a dry bulk recovery of at least about 30 percent, an initial dry bulk of at least about 40 cc/gm, a wet bulk of at least about 30 cc/gm and a weight less than about 4 oz/yd^2, and a plurality of particles of superabsorbent material disposed intermittently throughout said first layer, said superabsorbent particles being present in at least about 200 percent dry-add-on basis, said second layer comprising substantially uniformly disposed, hydrophilic particles selected from the group consisting of cellulosic fibers, peat moss, rayon fibers, acrylic fibers, and mixtures thereof, said particles being sufficiently closely spaced to adjacent particles to promote rapid movement of liquid along the plane of said layer, and said transition zone comprising portions of said hydrophilic particles extending into and becoming integral with said first layer with portions of said hydrophilic particles in intimate contact with said superabsorbent material, said composite being compressed substantially reduce its thickness.

4,573,989

DISPOSABLE DIAPER AND METHOD OF MANUFACTURE

Hamzeh Karami, Embourg, and Myriam Delvaux, Hannut, both of Belgium, assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Dec. 13, 1982, Ser. No. 449,364
Int. Cl.[4] A61F *13/16*
U.S. Cl. 604—381 3 Claims



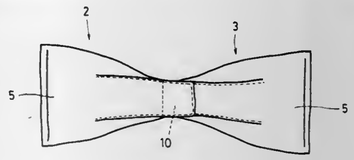
1. A disposable diaper comprising an absorbent pad positioned between a top sheet and a waterproof backing sheet, said absorbent pad being characterized by the absence of wadding sheets to improve suppleness of said diaper, and a liquid binder sprayed on said backing sheet between said absorbent pad and said backing sheet to stabilize said pad to said backing sheet.

4,573,990

DISPOSABLE DIAPERS

Hiroaki Ohsaki, Nagoya, Japan, assignor to Ohsaki Eisei Zairyo K.K., Nagoya, Japan

Filed Nov. 20, 1984, Ser. No. 673,350
Claims priority, application Japan, Nov. 24, 1983, 58-222895
Int. Cl.[4] A61F *13/16*
U.S. Cl. 604—385 R 2 Claims



1. A disposable diaper comprising a web of layered material including a water absorbent, non-woven top sheet, a waterproof backing sheet bonded to said top sheet at their peripheral margins to form a generally rectangular bag having longitudinal and transverse edges, and at least one layered middle pad encased in said bag, and extending over substantially the entire area of said bag;
said web having a front portion serving as a front diapering area applicable to the abdomen of a human body, a rear portion serving as a diapering area applicable to the buttocks of a human body, and a medial portion therebetween;
said web, with said top sheet facing up, being folded along its longitudinal center line into a generally inverted Ω-shaped vertical cross sectional configuration, and subsequently being folded intermediate the transverse edges of said bag and along the transverse edges of said medial portion into a generally S-shaped vertical cross-sectional configuration,
wherein the contiguous, longitudinal edges of said bag in the S-shaped folded area are bonded together to form a pocket open at the transverse edge contiguous to said front diapering area, said pocket being located to receive urine and retain urine separate from feces, which is received in said rear diapering area.

4,573,991

GATHERABLE LAMINATED STRUCTURE INCLUDING AN APERTURED ELASTIC MEMBER

Heinz A. Pieniak, North Brunswick, N.J., and Virginia R. Mesek, Oak Forest, Ill., assignors to Personal Products Company, Milltown, N.J.

Continuation of Ser. No. 386,451, Jun. 8, 1982, abandoned, which is a continuation-in-part of Ser. No. 210,507, Nov. 26, 1980, abandoned, which is a continuation-in-part of Ser. No. 134,369, Mar. 27, 1980, abandoned, which is a continuation-in-part of Ser. No. 60,704, Jul. 27, 1979, abandoned. This application Jul. 23, 1984, Ser. No. 633,568
Int. Cl.[4] A61F *13/16*
U.S. Cl. 604—385 A 7 Claims



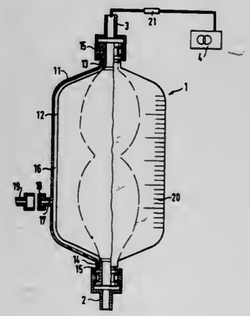
1. A laminated structure adapted to be gather for improved fit about a portion of the human body comprising: first and second layers positioned adjacent to one another, said layers being formed of flexible gatherable material, an elastic member disposed between said layers, said elastic member consisting of longitudinal and transverse interconnected elastic elements and being reticulated with apertures comprising a net-like construction, said second and first layers being secured together through at least some of said apertures.

4,573,992

APPARATUS FOR RECEIVING AND REINFUSING BLOOD

Günter H. Marx, Gauting, Fed. Rep. of Germany, assignor to Solco Basel AG, Birsfelden, Switzerland

Filed May 12, 1983, Ser. No. 494,094
Claims priority, application Fed. Rep. of Germany, May 17, 1982, 3218561
Int. Cl.[4] A61M *5/14*
U.S. Cl. 604—408 8 Claims



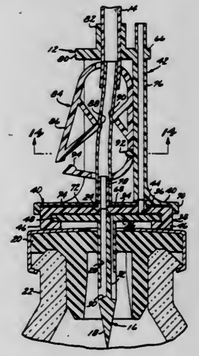
1. An apparatus for receiving blood from a patient and reinfusing the blood into the patient, comprising: a deformable container, first connection means on the deformable container for connecting the deformable container to a suction line for aspirating blood from the patient, second connection means on the deformable container for connecting the deformable container to a reduced pressure source for sucking the blood into the deformable container from said suction line, one of said connection means also forming means for reinfusing blood from the deformable container into the patient, an outer container of substantial rigidity and having an inside surface defining with the outside of the deformable container a fluid-tight space, and third connection means on said outer container for selectively closing said space to prevent collapse of the deformable container during sucking of blood thereinto, and for connecting said space with a source of a fluid medium for increasing the pressure in said space for reinfusing the blood into the patient from said deformable container through said one connection means.

4,573,993

FLUID TRANSFER APPARATUS

Robert E. Hoag, Irvine, and Axel Mnich, Fallbrook, both of Calif., assignors to Instafil, Inc., Irvine, Calif.

Filed Sep. 29, 1983, Ser. No. 537,055
Int. Cl.[4] A61J *1/00*
U.S. Cl. 604—411 15 Claims



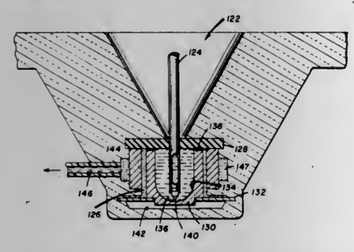
1. Fluid transfer apparatus comprising:
a cannula including a proximal extremity and a distal extremity adapted to extend into a vessel into which fluid is to be transferred, said cannula having cannula attachment means adjacent said proximal extremity, a distal filling passage and a distal vent passage;
a handle including a handle base having handle attachment means coupled to said cannula attachment means for mounting said cannula to said handle, said handle including a proximal filling passage in fluid communication with said distal filling passage for conveying fluid into said vessel, and an elongated tubular conduit defining a proximal vent passage in fluid communication at one extremity with said distal vent passage and open at its opposite extremity for venting said vessel to atmosphere or for connection to the conduit of a vacuum system for venting into the vacuum system, said cannula attachment means and said handle attachment means being movable relative to each other for rapid coupling and decoupling to enable mounting and demounting of said cannula relative to said handle and mounting of a replacement cannula;
flexible conduit means coupled at one extremity to said proximal filling passage and extending through said handle, said conduit means being adapted for connection at its opposite extremity to a source of fluid; and
occluding means carried by said handle and operative to control fluid flow through said conduit means.

4,573,994

REFILLABLE MEDICATION INFUSION APPARATUS

Robert E. Fischell, Silver Spring, Md., and Peter C. Lord, Valencina, Calif., assignors to The Johns Hopkins University, Baltimore, Md.

Continuation-in-part of Ser. No. 34,155, Apr. 27, 1979, Pat. No. 4,373,527. This application Dec. 7, 1981, Ser. No. 327,818
Int. Cl.[4] A61M 7/00
U.S. Cl. 604—891 64 Claims



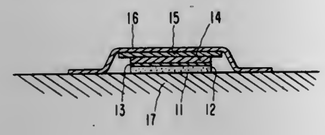
1. A system having a medication infusion apparatus including a medication container and an apparatus for filling the medication container, said system comprising in combination:
a medication container having an input;
a dispensing means adapted to communicate with said input of said medication container; and,
a valve, operably disposed at said input of said medication container, said valve comprising a reciprocally mounted valve poppet which is urged into an open position when a portion of said dispensing means is disposed in a preselected position in said medication infusion apparatus, removal of said portion of said dispensing means from said preselected position causing said valve poppet to be urged into a closed position, said dispensing means in fluid communication with said medication container only when said valve poppet is urged into said open position.

4,573,995

TRANSDERMAL THERAPEUTIC SYSTEMS FOR THE ADMINISTRATION OF NALOXONE, NALTREXONE AND NALBUPHINE

Yu-Ling Chen, Cupertino; Leslie L. Chun, Palo Alto, and David J. Enscore, Sunnyvale, all of Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Filed Oct. 9, 1984, Ser. No. 659,122
Int. Cl.[4] A61K 9/00
U.S. Cl. 604—896 33 Claims



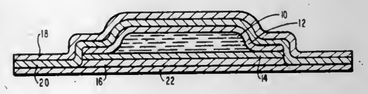
1. A composition of matter for the transdermal administration of a drug selected from the group consisting of naloxone, naltrexone and nalbuphine and mixtures thereof, comprising a matrix containing the base form of the drug and a skin permeation enhancing amount of polyethylene glycol monolaurate.

4,573,996

DEVICE FOR THE ADMINISTRATION OF AN ACTIVE AGENT TO THE SKIN OR MUCOSA

Alfred Kwiatek, New York, N.Y., and Jack W. Schwartz, Burlington, Vt., assignors to Jonergin, Inc., Swanton, Vt.

Filed Jan. 3, 1984, Ser. No. 567,540
Int. Cl.[4] A61L 15/06
U.S. Cl. 604—897 25 Claims



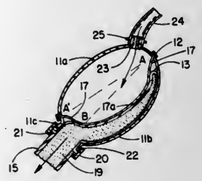
1. A device for the administration of an active agent to the skin or mucosa of a host comprising a reservoir containing said active agent, said reservoir including an inner surface and an outer surface, an active agent permeable membrane layer formed on said inner surface of said reservoir, said active agent permeable membrane layer including an outer surface facing said reservoir and an inner surface, an active agent impermeable barrier layer formed on said outer surface of said reservoir, so that said reservoir is completely enclosed between said active agent permeable membrane layer and said active agent impermeable barrier layer, said active agent impermeable barrier layer having an inner surface facing said reservoir and an outer surface, and extending peripherally beyond said reservoir about the entire periphery thereof so as to create an extended peripheral area of said active agent impermeable barrier layer, an active agent impermeable adhesive layer applied to said inner surface of said extended peripheral area of said active agent impermeable barrier layer, and an active agent permeable adhesive layer applied to said inner surface of said active agent permeable membrane layer, whereby substantially the entire inner surface of said device contains either said active agent impermeable adhesive layer or said active agent permeable membrane layer, each of said active agent permeable adhesive layer and said active agent permeable adhesive layer being adopted to adhere to the skin or mucosa of said host so as to permit said device to be firmly adhered thereto, whereby active agent can be released through said active agent permeable membrane layer and said active agent permeable adhesive layer to said skin or mucosa to provide a continuous dose of said active agent thereto, but cannot permeate through said active agent impermeable barrier layer or radially outward through said active agent impermeable adhesive layer.

4,573,997

RIGHT VENTRICULAR ASSIST DEVICE

Craig B. Wisman, Harrisburg; William Pierce, Hummelstown, and James H. Donachy, Annville, all of Pa., assignors to Research Corporation, New York, N.Y.

Filed Mar. 19, 1984, Ser. No. 590,813
Int. Cl.[4] A61F 2/22
U.S. Cl. 623—3 15 Claims



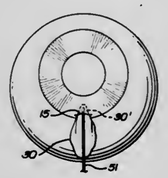
1. A right ventricluar assist device for assisting the circulation of the blood, said device comprising:
(a) a smooth seamfree ellipsoidal sac formed of segmented polyurethane for receiving blood to be circulated, said sac having a single valveless passageway to provide a single inlet and outlet,
(b) a rigid ellipsoidal shell surrounding said sac, said shell having X, Y and R axes, wherein X and Y define an ellipse, and R defines a radius rotated to form the ellipsoid, said ellipsoid having a longitudinal axis and an equatorial plane, said shell having a first opening for said single valveless passageway generally aligned with said longitudinal axis and a second opening for pressurizing an interior portion of said shell,
(c) A flexible diaphragm extending across the interior of said shell, said diaphragm providing a means for alternately expanding and collapsing said sac, said diaphragm dividing the interior of the ellipsoidal shell into two unequal volumes, with the sac and first opening in a first and larger volume, and the second opening and a pressurizing chamber defined in a second and smaller volume, the perimeter of said diaphragm defining an ellipitical plane that is angled with respect to said equatorial plane to expel at least 80% of the blood present in said sac as a positive pressure is supplied through said second opening, said diaphragm being angled and dimensioned to prevent the collapse of said sac when blood is expelled therefrom;
(d) means for grafting the valveless passageway to a pulmonary artery.

4,573,998

METHODS FOR IMPLANTATION OF DEFORMABLE INTRAOCULAR LENSES

Thomas R. Mazzocco, Granada Hills, Calif., assignor to Staar Surgical Co., Monrovia, Calif.

Filed Feb. 5, 1982, Ser. No. 346,105
Int. Cl.[4] A61F 2/16; A61B 17/00, 17/28
U.S. Cl. 623—6 24 Claims



1. A method for implantation of an artificial intraocular lens for replacement of a surgically removed crystalline lens, the method comprising the steps of:
providing an intraocular lens having a deformable optical zone portion with prescribed memory characteristics;
deforming said intraocular lens by compressing said optical zone portion to a diameter of about 80% or less of the cross-sectional diameter of the optic in an unstressed state;
inserting the intraocular lens through a relatively small incision made in the ocular tissue; allowing the lens implant to return to its original configuration, full size and fixed focal length after insertion in the eye; whereby a safer, more convenient surgical procedure and more comfortable fit for the eye is achieved.

4,573,999

HUMAN BREAST PROSTHESIS

Daniel J. Netto, 153 N. Vendome St., Los Angeles, Calif. 90026

Filed Oct. 14, 1983, Ser. No. 541,994
Int. Cl.[4] A61F 1/00
U.S. Cl. 623—7 7 Claims



1. A prosthetic implant for surgical implantation within living tissue, said implant comprising body means having undulations over a substantial portion of its exteriorly directed surface, said undulations defining a plurality of predetermined substantially concentric peaks and intervening valleys about a substantially vertical projection axis, said surface of said body means being made of material sufficiently rigid to maintain the shape of said peaks and valleys in the absence of pressure against said exteriorly directed surface, but yieldable to pressures on said exteriorly directed surface by any fibrous growth which may bridge said valleys, whereby said pressures tend to displace the material of said body means and flatten said peaks rather than acting against any adjacent living tissue.

2. An implant according to claim 1, wherein said body means comprises a filling material and a covering enveloping and containing said filling material.

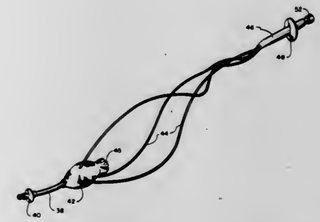
3. An implant according to claim 2, wherein said filling material is a fluid.

4,574,000

ARTIFICIAL FALLOPIAN TUBE

Stephen K. Hunter, 1402 S. 1025 West, Syracuse, Utah 84041

Filed Aug. 24, 1984, Ser. No. 644,315
Int. Cl.[4] A61F 2/04; A61M 25/00
U.S. Cl. 623—12 23 Claims



1. A prosthetic fallopian tube adapted for surgical placement in a patient lacking functional natural fallopian tubes, comprising:
means for collecting ova discharged by one of the patient's ovaries;
means for communicating between the collecting means and the patient's uterine cavity so that ova collected by the collecting means can pass into the uterine cavity;
means for carrying fluid into the collecting means such that ova collected by the collecting means will be carried from the collecting means to the uterine cavity; and
means for controlling the rate that fluid is carried into the collecting means so that the ovum is ejected into the uterine cavity at a time when nidation is possible.

4,574,001

PROCESS FOR PRODUCING FINELY DIVIDED DISPERSIONS OF METAL OXIDES IN ALUMINUM HYDROXIDE

Klaus Bielfeldt, Konigswinter, and Dieter J. Braun, Kriegsdorf, both of Fed. Rep. of Germany, assignors to Vereinigte Aluminiumwerke Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 7, 1984, Ser. No. 587,259

Claims priority, application Fed. Rep. of Germany, Mar. 7, 1983, 3308008

Int. Cl.⁴ B01D *9/02*

U.S. Cl. 23—301 **8 Claims**

1. A process for producing finely divided dispersions of metal oxide particles having a coating of aluminum hydroxide comprising:

seeding a supersaturated sodium aluminate liquor containing dissolved aluminum hydroxide with seed particles of at least one metal oxide;

subjecting the seeded liquor to predetermined crystallization conditions for from about 24 to about 72 hours to form crystallized solid metal oxide particles having an aluminum hydroxide coating;

separating the crystallized solid particles from the liquor; and

drying the crystallized solid particles obtained.

4,574,002

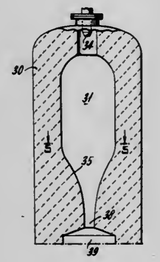
COAL GASIFICATION COMBUSTION CHAMBER STRUCTURE

Devendra T. Barot, W. Covina, Calif., assignor to Texaco Inc., White Plains, N.Y.

Filed May 24, 1984, Ser. No. 615,658

Int. Cl.⁴ C10J *3/48, 3/72*

U.S. Cl. 48—77 **1 Claim**



1. In a down flow generator for coal gasification having a refractory lined floor with a throat therethrough ending in an exit for product gas, slag and fly ash, the improvement comprising

said throat being round in cross-section and shaped approximately in accordance with the ratios employed in a contraction cone of a wind tunnel to produce monotonically increasing flow of fluid velocity therethrough whereby said product gas, slag and fly ash are discharged having an equal velocity profile diametrically across said throat at the exit end thereof.

4,574,003

PROCESS FOR IMPROVED DENSIFICATION OF SOL-GEL PRODUCED ALUMINA-BASED CERAMICS

Alvin P. Gerk, Lewiston, N.Y., assignor to Minnesota Mining and Manufacturing Co., Saint Paul, Minn.

Filed May 3, 1984, Ser. No. 606,500

Int. Cl.⁴ C04B *35/10;* **C09C** *1/68*

U.S. Cl. 51—309 **9 Claims**

1. In the sol-gel process for forming a dense, solid, alumina-based ceramic, the process comprising:

a. preparing an aqueous dispersion of aluminum oxide monohydrate containing a precursor of a modifying additive which is a metal-containing compound in the form of a strongly oxidizing, soluble salt;

b. gelling the dispersion;

c. drying the gelled dispersion to form a solid;

d. calcining the solid; and

e. sintering the calcined solid,

the improvement comprising adding to the aqueous dispersion at least about 10 weight percent, based upon the oxide equivalent of the soluble salt precursor, of at least one densification aid selected from the group consisting of ethylene glycol, polyethylene glycol, propylene glycol, polypropylene glycol, glycerine, and di-isopropanol amine, said densification aid providing in the ceramic produced by said process a density which is noticeably increased over that produced by the same process without said densification aid.

2. The process of claim 1 where the metal-containing compound is at least one precursor of the oxides of magnesium, zinc, cobalt, nickel, zirconium, hafnium, chromium and titanium.

3. The process of claim 2 where the anion of the precursor is a nitrate or perchlorate.

9. The process of claim 1 where the dense, alumina-base ceramic is an abrasive grain.

4,574,004

METHOD FOR CHARGING PARTICLES SUSPENDED IN GASES

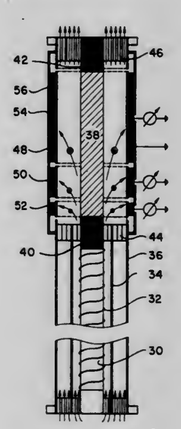
Andreas Schmidt-Ott, 12 Am Holbrig, and Hans-Christoph Siegmann, 24 Kurberstrasse, both of CH-8049 Zurich, Switzerland

Continuation of Ser. No. 323,463, Nov. 20, 1981, abandoned. This application Apr. 5, 1984, Ser. No. 597,056

Claims priority, application Switzerland, Oct. 28, 1980, 8002/80

Int. Cl.⁴ B03C *3/12, 3/38;* **H01J** *27/24*

U.S. Cl. 55—4 **7 Claims**



1. A method for electrically charging small particles suspended in a gas, in a material and surface sensitive, non-destructive manner, comprising the steps of:

irradiating a gas containing small particles in suspension by exposing the gas to ultraviolet radiation of photon energy above the photo-threshold of the particles and below the ionization threshold of the gas to generate, substantially solely by photoemission of electrons from the particles, positively charged particles, photoelectrons, and nega-

tively charged small ions formed by attachment of photoelectrons to gas molecules;

absorbing and neutralizing diffused photoelectrons and small ions by absorption onto a charge absorbing surface having a constant electric potential and a sufficient surface conductivity at a low photoelectric yield to avoid charge buildup and increase of negative mobile charge, and

causing the charged particles to remain in the vicinity of the charge absorbing surface for a time insufficient to permit substantial precipitation of the positively charged particles at said surface.

4,574,005

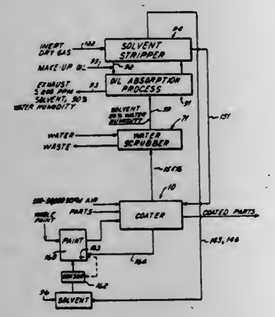
CONTINUOUS COATER SOLVENT RECOVERY PROCESS

Walter H. Cobbs, Jr., Amherst; Robert J. Huddleston, Bay Village, both of Ohio, and Robert A. Guldner, San Francisco, Calif., assignors to Nordson Corporation, Amherst, Ohio

Continuation of Ser. No. 545,600, Oct. 26, 1983, abandoned, which is a continuation of Ser. No. 363,091, Mar. 29, 1982, abandoned. This application Aug. 22, 1984, Ser. No. 643,103

Int. Cl.⁴ B01D *53/14*

U.S. Cl. 55—48 **9 Claims**



1. A process for the recovery of a blend of solvents in a spray coating system and for reintroducing the recovered blend of solvents back into the spray coating system, said system including a chamber for spray coating of workpieces, a coating supply system for supplying coating material containing hydrocarbon solvent blends to said chamber, an exhaust system for removing coating material overspray from the chamber including a water scrubber to remove airborne coating material particles, and a system for recovering coating material from the chamber and returning it to said coating supply system, said process comprising the steps of:

(a) extracting a stream containing a mixture of air, water vapor and hydrocarbon solvent vapors from said exhaust system at a rate of about 500 to 50,000 standard cubic feet per minute;

(b) subjecting said stream to an absorption process which employs a hydrophobic absorption medium to absorb all but about 200 ppm of said blend of solvent vapors in said stream while the air and water vapor contained in said stream passes through said absorption process;

(c) separating said blend of solvent vapors from said hydrophobic absorption medium by stripping said solvent vapors therefrom with a dry inert gas;

(d) returning the hydrophobic absorption medium to said absorption process, said medium now containing less than about 0.001 mole fraction of any one solvent;

(e) recovering said blend of solvent vapors substantially free of water and said hydrophobic absorption medium; and

(f) returning said recovered blend of solvents to said spray coating system (1) by introducing said recovered blend of solvent vapors into said chamber to increase the solvent humidity in said chamber to thereby retard the evaporation of solvent from said coating material supplied to said chamber, (2) by condensing said recovered blend of solvent vapors recovered in step (e) and introducing the condensed blend of solvents to said system as a liquid to return solvent lost in the coating process to the coating supply system, or (3) by a combination of steps (1) and (2), said blend of solvents being returned in substantially the same proportion as in the stream extracted in step (a).

4,574,006

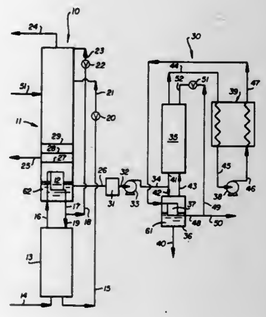
PROCESS TO PRODUCE A KRYPTON-XENON CONCENTRATE FROM A LIQUID FEED

Harry Cheung, Buffalo, N.Y., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Aug. 16, 1984, Ser. No. 641,553

Int. Cl.⁴ F25J *3/04*

U.S. Cl. 62—22 **16 Claims**



1. A process for the production of a krypton-xenon concentrate from a liquid feed, while also recovering a liquid product substantially free of rare gases, comprising enabling avoidance of excessive complication(s) occasioned by the handling of oxygen by the steps of:

(A) providing a feed liquid comprising oxygen, krypton and xenon to a reboiling zone to form a reboiling liquid;

(B) partially vaporizing the reboiling liquid to produce a vapor, and a liquid krypton-xenon concentrate;

(C) recovering krypton-xenon concentrate;

(D) passing the vapor against downflowing reflux liquid in a column;

(E) stripping krypton and xenon from the vapor to the reflux liquid to produce a lean vapor and a richer liquid;

(F) passing the richer liquid to the reboiling zone to form part of the reboiling liquid;

(G) withdrawing lean vapor from the column;

(H) heating the withdrawn lean vapor;

(I) compressing the heated lean vapor;

(J) cooling the compressed lean vapor by indirect heat exchange with the heating lean vapor;

(K) condensing the cooled lean vapor in the reboiling zone by indirect heat exchange with the partially vaporizing reboiling liquid to produce a lean liquid;

(L) passing a portion of the lean liquid to the column to form said reflux liquid; and

(M) recovering a portion of lean liquid as liquid product substantially free of rare gases.

4,574,007

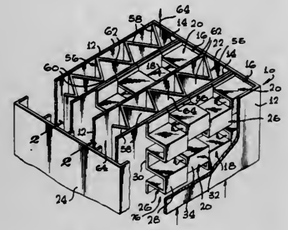
FRACTIONATING APPARATUS

James D. Yearout, 270 Portofino Way, #303, Redondo Beach, Calif. 90277; Robert R. Provin, 5241 Loyola Ave., Westminster, Calif. 92683, and John S. Browne, 15965 Stanmont St., Whittier, Calif. 90603

Filed Sep. 6, 1984, Ser. No. 647,901

Int. Cl.⁴ F25J *3/02*

U.S. Cl. 62—42 **21 Claims**



1. Fractionating apparatus especially adapted for non-adiabatic distillation comprising means designed for continuous separation and intermixing of the adjacent vapor streams and intermixing thereof with descending liquid and additional liquid holdup, sufficient to provide efficient non-adiabatic fractionation, including a unit having two series of corrugated sheets disposed in horizontal relation across said unit, each of said series of corrugated sheets extending vertically of said unit, the sheets of each said series of sheets being in substantially horizontal alignment, with each of said series of corrugated sheets offset vertically from the adjacent series of corrugated sheets, each corrugated sheet forming a plurality of vertically disposed fins, and forming a plurality of vertically disposed side channels between alternate offset corrugations of alternate corrugated sheets, said side channels providing a tortuous vertical path for upward flow and intimate mixing of vapor, and providing a descending path of flow of liquid from said fins on adjacent corrugations of adjacent corrugated sheets, through said side channels, and intimate mixing of the liquid phase, and intimate mixing of the vapor phase with the liquid phase, the fins on adjacent offset corrugations also providing liquid holdup of the descending liquid.

4,574,008

APPARATUS FOR MOUNTING AN ELECTRON GUN ASSEMBLY WITHIN THE GLASS NECK OF A CATHODE RAY TUBE

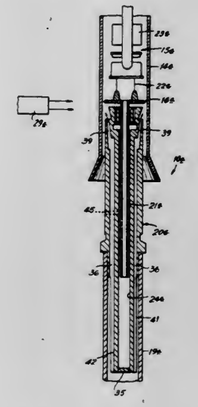
Masahiro Kobayashi, San Diego, Calif., assignor to Sony Corporation, Tokyo, Japan

Filed Jul. 11, 1984, Ser. No. 629,609

Int. Cl.⁴ C03B *23/217*

U.S. Cl. 65—155 **16 Claims**

11. An electron gun mounting tube for use in an apparatus in which an electron gun assembly having a glass stem and exhaust tubulation, and metallic leads extending through the stem is assembled within the glass neck of a cathode ray tube envelope by welding said stem and said glass neck together with an inert gas being supplied into said glass neck through said electron gun mounting tube; said electron gun mounting tube having a central bore which is closed at its lower end and opened at its upper end for receiving said exhaust tubulation when an electron gun is mounted on the tube, said tube further having longitudinal passages for passing said inert gas to said glass neck and being spaced outwardly from said central bore and isolated from the latter, said longitudinal passages each opening at one end adjacent said upper end of the mounting tube.



4,574,009

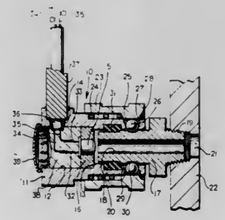
GOB ARRIVAL SENSOR FOR A GLASS FORMING MACHINE

Mathias P. Welker, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Jan. 7, 1985, Ser. No. 689,350

Int. Cl.⁴ C03B *7/08*

U.S. Cl. 65—158 **6 Claims**



1. In apparatus for sensing the passage of a gob of molten glass through a gob deflector or guide, the improvement comprising, a nipple fixed in and extending from a radial opening adjacent the lower end of the gob deflector, a hollow, quick-disconnect housing adapted to fit over said nipple, said housing being formed with a longitudinal passage therethrough with the quick-disconnect feature forming one end of the passage, a washer-shaped spacer lying in a plane, normal to the axis of said passage and intermediate the ends thereof, a phototransistor with a pair of leads mounted in an opening in said spacer with its leads extending into the other end of said passage, an elongated cable, an elongated high temperature insulating sleeve, a pair of insulated wires within said insulating sleeve, said wire containing sleeve extending within said housing with one end of said wires positioned in said other end of said housing, means connecting the wires to said transistor leads, a plug closing the opening in the other end of said housing, and means connecting the other end of said wires to a gob arrival signal device.

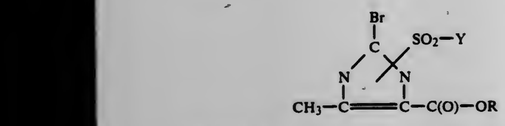
4,574,010

HERBICIDAL ESTERS OF N-SUBSTITUTED 2-BROMO-4-METHYLIMIDAZOLE-5-CARBOXYLIC ACID

Andrea Leone-Bay, Ridgefield, Conn., and Peter E. Timony, Valley Cottage, N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Filed May 6, 1985, Ser. No. 730,927
Int. Cl.⁴ A01N *43/50*; C07D *233/90*
U.S. Cl. 71—92 **17 Claims**

9. The method of controlling undesirable vegetation comprising applying to the area where control is desired an herbicidally effective amount of a compound having the structural formula



wherein R is C_1-C_{10} alkyl and Y is C_1-C_6 alkyl optionally substituted with halogen or $-N(R')_2$ wherein R' is C_1-C_{10} alkyl.

4,574,011

SINTERED ALLOY BASED ON CARBIDES

Christian Bonjour, and Francois Duvanel, both of Nyon, Switzerland, assignors to Stellram S.A., Nyon, Switzerland

Filed Mar. 6, 1984, Ser. No. 586,790
Claims priority, application Switzerland, Mar. 15, 1983, 1421/83
Int. Cl.⁴ C22C *19/03, 19/07, 28/00, 29/02*
U.S. Cl. 75—241 **8 Claims**

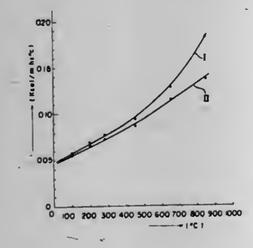
1. Sintered alloy for use in the manufacture or ornamental articles and consisting essentially of 75 to 90% by weight of a mixture of carbides and 10 to 25% by weight of a binder, said binder consisting essentially of 60 to 70% by weight of Ni, Co and Ru, and 30 to 40% by weight of molybdenum carbide, and in which the Ru is present in a quantity of 10 to 25% of the whole of the three elements Co, Ni and Ru, the density of the alloy being 7.5 to 8.0.

4,574,012

CALCIUM SILICATE SHAPED PRODUCT

Yasuo Oguri, Tokyo; Mitsuru Awata, Kodaira, and Noriyuki Ariyama, Hino, all of Japan, assignors to Mitsubishi Chemical Industries Ltd., Tokyo, Japan

Filed Dec. 28, 1982, Ser. No. 453,828
Claims priority, application Japan, Feb. 24, 1982, 57-28358
Int. Cl.⁴ C04B *7/34*; E04B *1/76*
U.S. Cl. 106—120 **7 Claims**



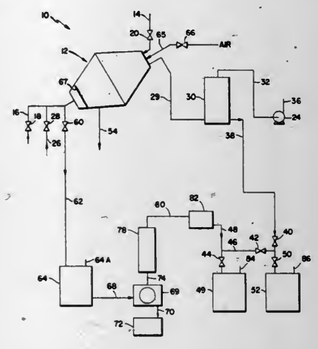
1. A shaped calcium silicate product in which the shaped calcium silicate matrix material has incorporated therein particles of silicon carbide, silicon nitride or ilmenite, said shaped calcium silicate matrix material being prepared by dispersing a calcareous material and a siliceous material selected from the group consisting of diatomaceous earth, ground quartzite, quartz, silicon dust and silicon containing industrial by-products in water; heating the dispersion to react said calcareous and siliceous materials, thereby forming a calcium silicate slurry; press filter molding said slurry in a filter press; and drying said molded material.

4,574,013

METHOD FOR DECONTAMINATING SOIL

Robert L. Peterson, North Syracuse, N.Y., assignor to Galson Research Corporation, East Syracuse, N.Y.

Filed Apr. 18, 1985, Ser. No. 724,642
The portion of the term of this patent subsequent to May 8, 2001, has been disclaimed.
Int. Cl.⁴ B08B *3/08*
U.S. Cl. 134—2 **21 Claims**



1. A method of decontaminating soil contaminated with a halogenated organic compound, said method including the steps of: forming a slurry of the contaminated soil and a reagent mixture comprising a sulfoxide catalyst and an alkali constituent which is: an alkali metal hydroxide, a mixture of an alkali metal hydroxide and an alcohol, or an alkoxide and maintaining said slurry under temperature and pressure conditions which are effective to promote halogen displacement reactions between said halogenated organic compound and the alkali.

4,574,014

PROCESS FOR MANUFACTURING A FORMED CONTACT PART

Dieter Stöckel, Birkenfeld, and Friedrich E. Schneider, Pforzheim, both of Fed. Rep. of Germany, assignors to G. Rau GmbH & Co., Pforzheim, Fed. Rep. of Germany

Filed Oct. 1, 1984, Ser. No. 656,631
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1983, 3335274
Int. Cl.⁴ C21D *8/12*
U.S. Cl. 148—11.5 P **6 Claims**

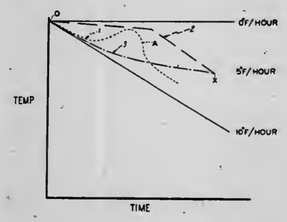
1. In the manufacture of a formed bimetallic rivet having a contact part with constituents which include at least one noble metal, said constituents forming a metal alloy, wherein the contact part is shaped and butt welded to a wire-shaped length of a carrier material, the improvement which comprises forming from the alloy constituents a wire-shaped composite material in which the alloy constituents are heterogeneously embedded, cutting the composite material and the carrier material into lengths, butt-welding of the lengths of the composite and the carrier material, forming a bimetallic rivet from said butt welded lengths, subjecting said bimetallic rivet to heat treatment so as to convert the composite material into the alloy.

4,574,015

NICKLE BASE SUPERALLOY ARTICLES AND METHOD FOR MAKING

Paul D. Genereux, Cromwell, and Daniel F. Paulonis, Higganum, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 27, 1983, Ser. No. 565,490
Int. Cl.⁴ C22F *1/10*
U.S. Cl. 148—11.5 N **26 Claims**



1. A method for increasing the forgeability of a nickel base superalloy article which comprises:

heat treating the article so as to solutionize a substantial amount of the gamma prime phase and slow cooling the article to a temperature below the gamma prime solvus start temperature to produce a coarse overaged gamma prime structure.

4,574,016

METHOD OF TREATING STEEL FOR A VEHICLE SUSPENSION SPRING HAVING A GOOD SAG-RESISTANCE

Toshiro Yamamoto; Ryohei Kobayashi; Mamoru Kurimoto, and Toshio Ozone, all of Aichi, Japan, assignors to Aichi Steel Works, Ltd., Tokai and Chuo Hatsujo Kabushiki Kaisha, Nagoja, both of, Japan

Division of Ser. No. 289,852, Aug. 4, 1981, Pat. No. 4,448,617. This application Mar. 2, 1984, Ser. No. 585,479
Claims priority, application Japan, Aug. 5, 1980, 55-108020; May 16, 1981, 56-74639
Int. Cl.⁴ C21D *9/02*
U.S. Cl. 148—144 **13 Claims**

1. A process for improving the sag-resistance of a vehicle suspension spring, comprising the steps of:

preparing alloy spring steel consisting essentially of by weight 0.50–0.80% carbon, 1.50–2.50% silicon, 0.50–1.50% manganese and 0.05–0.50% niobium, the remainder being iron together with impurities;

rapidly heating the alloy spring steel to an austenitizing temperature from about 900° to 1200° C. for dissolving carbide of niobium in the austenite; and

quenching and tempering at a tempering temperature from about 400° to 580° C. for precipitating dissolved carbide of niobium as a fine carbide of niobium in the martensite structure.

4,574,017

METHOD FOR SECURING CONCRETE FORM BOARD TO POOL AND MAINTAINING CONCRETE FROM POOL LINER TRACK

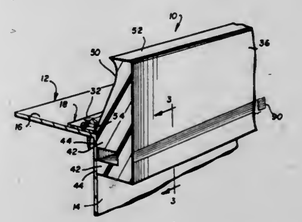
William J. Stegmeier, 3313 Ambassador Row, Arlington, Tex. 76013

Filed Oct. 18, 1984, Ser. No. 663,066
Int. Cl.⁴ F04G *17/00*; B28B *7/06*; E04B *1/16*
U.S. Cl. 156—60 **10 Claims**

1. A method for achieving a standard relationship in mounting a coping form board to a pool mouth-bounding structure which has an inwardly-opening, constricted-mouthed pool liner track provided thereon perimetrically of the pool mouth above an at least generally vertically-oriented, inwardly-facing surface of the pool mouth-bounding structure, so as to provide a form for molding the inner end surface of coping for the pool from an originally fluent, settable composition such as concrete,

said method comprising:

providing said coping form board to have an outer face having a profile on an upper portion thereof suitable for molding the inner end surface of coping for the pool, to have at least one outwardly-presented, foot sole on a lower portion thereof and, between said upper and lower portions, to have at least one outwardly projecting, longitudinally extending outwardly tapering protrusion which,



basally thereof, is at least slightly thicker when free than the corresponding degree of openness dimension of said constricted-mouthed pool liner track;

at least generally aligning said at least one protrusion form board with the mouth of the pool liner track; and

pushing the coping form board outwardly towards said pool mouth-bounding structure sufficiently to cause said at least one protrusion to forcibly enter said pool liner track through the mouth thereof and to cause the at least one foot sole to engage said at least generally vertically-oriented, inwardly-facing surface of the pool mouth-bounding structure.

4,574,018

PILE FABRIC PRODUCTION PROCESS

Yutaka Masuda, and Teruo Nakamura, both of Otsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Dec. 30, 1983, Ser. No. 567,265
Claims priority, application Japan, Jan. 7, 1983, 58-446
Int. Cl.⁴ D04H *11/00*; B32B *5/02*
U.S. Cl. 156—72 **10 Claims**



1. A process for producing a pile fabric which comprises providing a fiber base composed of composite fibers, which fibers comprise at least two individual components, applying an adhesive to said fiber base, electrostatically implanting short flock fibers in said adhesive and fiber base, hardening said adhesive with said short fibers in place, and thereafter removing at least one component of the fiber base.

4,574,019

PROCESS FOR ATTACHING ANODE BLOCKS TO AN ANODE SUSPENSION MEANS

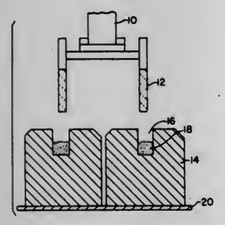
Hans Friedli, and Edwin Gut, both of Steg, Switzerland, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Jan. 7, 1985, Ser. No. 689,300

Claims priority, application Switzerland, Jan. 18, 1984, 216/84

Int. Cl.⁴ B32B *31/16*

U.S. Cl. 156—73.6 **13 Claims**



1. Process for adhesively attaching carbon anode blocks to stud means of an anode suspension means which comprises: placing an adhesive in holes in the anode block; inserting the stud means into the adhesive; preheating at least one of the stud means and anode block at least in the region of the holes wherein the stud means is preheated to a temperature between 30° and 60° C. and the anode block is preheated to a temperature between 25° and 40° C., wherein the preheating is such that the temperature of the adhesive exceeds 25° C. at least 60 seconds after inserting the stud means; vibrating at least one of the anode blocks and the anode suspension means until the stud means come to rest on the bottom of the holes under the force of their own weight; and at least partially hardening the adhesive.

4,574,020

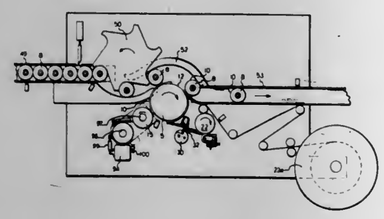
APPARATUS AND METHOD FOR WRAPPING A PLASTIC LABEL AROUND A CONTAINER

Harold R. Fosnaught, Perrysburg, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Nov. 28, 1983, Ser. No. 555,758

Int. Cl.⁴ B65C *3/16, 9/22*

U.S. Cl. 156—80 **10 Claims**



1. In apparatus for wrapping a plastic label about a bottle and adhering the label to the bottle, where the label is a composite sheet of a solid polymer layer and foam polymer layer with the foam layer being applied to the bottle surface, the improvement comprising, just before wrapping, means for applying a solvent for the polymer of the foam polymer layer to at least two finite areas of the surface of the foam layer with one area adjacent the leading edge of the label and the other area constituting a full height strip along the trailing edge of the label the solvent dissolving the polymer of the foam layer rapidly to form a momentary tacky bond at the finite areas of the leading edge sufficient to tack the label to the container, the leading edge bond becoming weaker and weaker as the solvent evaporates, and means for rolling a bottle along the solvent treated label with the leading edge momentarily tacked to the bottle and the trailing edge bonding to itself to form an overlapping seam in which the trailing edge finite area bond becomes stronger and stronger, wherein said means for applying a solvent to the label comprises a rotating gravure roll having at least two areas of indentation in its surface, with each area being circumferentially spaced from the other a distance slightly less than the full length of a label, means for moving the foam surface of the label into engagement with the gravure roll, and means engaging the gravure roll surface for applying the solvent to the areas of indentation in said gravure roll, said solvent supplying means further comprises an elevated container for said solvent, means for cooling the solvent in said container, means connecting the bottom of said solvent container to the bottom of said fountain and means connected to the top of said fountain for returning excess solvent from said fountain to said elevated container.

3. In a method of providing a label around a container having a body whereby the label is wrapped around the container and the plastic label comprises a foam polymer layer, the method comprising the steps of:

A. transporting toward a wrapping station a sheet of the plastic label stock whereby the transporting is continuous and the length axis of the stock is parallel to the horizontal;

B. cutting the stock to form a plurality of labels of a desired length;

C. moving the leading edge of the label to a vacuum drum;

D. placing and guiding the label on the periphery of the drum with the top face next to the peripheral drum surface; and

E. wrapping the label around the container, the improvement comprising:

F. just before wrapping, applying a low boiling, quick evaporating solvent for the polymer of the foam layer to the underside of the foam layer in at least a finite area adjacent the leading edge of the label to form a momentary tacky bond that is a viscous tacky solution of the polymer in the solvent in the finite area, the bond between the label and the container becoming weaker and weaker after wrapping, whereby the label can be easily and cleanly stripped from the container so the container can be recycled; and

G. applying the solvent to a finite area of the trailing edge to form a solid adhesive bond between the foam layer and the overlapped end of the label, the bond at the overlapped ends becoming stronger and stronger.

4,574,021

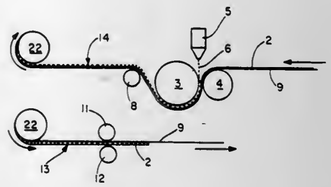
SOFT MOISTURE RESISTANT TISSUE PRODUCT

Dan D. Endres, and Attila Matray, both of Outagamie County, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Division of Ser. No. 471,574, Mar. 3, 1983, Pat. No. 4,489,118. This application Aug. 6, 1984, Ser. No. 638,831

Int. Cl.⁴ B32B *31/20*

U.S. Cl. 156—152 **2 Claims**



1. A process for making a multi-layered tissue comprising:

(a) extruding a thermoplastic coating onto a first tissue ply, said first tissue ply being in superposed and unattached contacting relationship with a second tissue ply;

(b) cooling the thermoplastic coating to form a plastic film which is substantially bonded overall to said first tissue ply;

(c) winding the superposed plies onto a roll wherein either the first ply or the second ply is toward the center of the roll;

(d) unwinding said roll by first unwinding only the ply not toward the center of the roll as described in step (c) for one revolution of the roll and thereafter unwinding said first and second plies together, such that the plastic film is between said first and second plies; and

(e) sufficiently bonding said plies together to maintain the integrity of the product.

4,574,022

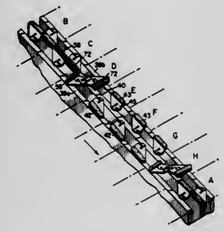
APPARATUS AND METHOD FOR TRANSFERRING AND APPLYING MATERIAL

Carl W. Johnson, Neenah, and Stanley W. Kotschi, Oshkosh, both of Wis., assignors to H. B. Fuller Company, St. Paul, Minn.

Filed Mar. 5, 1984, Ser. No. 586,137

Int. Cl.⁴ B32B *31/08*

U.S. Cl. 156—164 **36 Claims**



1. An apparatus for applying discrete lengths of an elastic material to a moving web, said apparatus comprising:

(a) means for supplying an elastic material;

(b) a plurality of applicator units, each applicator unit having a first applicator segment and a second applicator segment, wherein said material is supplied onto said first and second applicator segments.

(c) means for rotating said plurality of applicator segments around a drum axis;

(d) means for creating corrugations, having peaks and valleys, in the moving web;

(e) means for feeding the web to said corrugating creating means;

(f) means for bonding said material to the said peaks of the moving web; and

(g) means for rotating said first applicator segment around a first axis and said second applicator segment around a second axis, wherein said first and second applicator segments are linearly aligned when passing under said supply means, then said first and second applicator segments rotate around said first and second axes to place said first and second applicator segments in spaced relationship when said material is bonded to said peaks of the web, then said first and second applicator segments rotate around said first and second axes to place said first and second applicator segments back in linear alignment.

27. A method of applying discrete lengths of an elastic material to a moving web, said method comprising:

(a) feeding a web material to a corrugating roll, the corrugated roll, having an outer surface having plurality of peaks and valleys and a plurality of holes;

(b) causing the web to go into the valleys of the roll;

(c) transferring the elastic material onto a plurality of applicator units, each applicator unit having a first and second applicator segment, wherein the material is transferred onto said first and second applicator segments;

(d) holding the material on the applicator segments until the applicator segments reach a transfer point;

(e) rotating the plurality of applicator units around a drum axis;

(f) rotating the first applicator segment around a first axis and rotating the second applicator segment around a second axis, wherein said first and second applicator segments are linearly aligned when the elastic material is transferred to the applicator segments, then said first and second applicator segments rotate around the first and second axes to place the first and second applicator segments in spaced relationship;

(g) transferring the elastic material from the applicator segments to the peaks of the moving web on the corrugating roll;

(h) continuing the rotation around the drum, first and second axes, wherein the first and second applicator segments rotate to place the first and second applicator segments back in linear alignment; and

(i) removing the web from the corrugating roll and pulling the web straight, wherein the material is stretched and bonded to the web between the peaks.

4,574,023

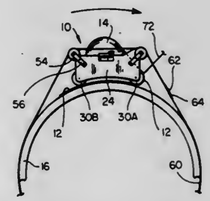
APPARATUS AND METHOD FOR APPLYING SLEEVES TO PIPE

Neil A. Edwards, Redwood City; James C. Holmes, San Francisco, and Denis I. Wales, Millbrae, all of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Jan. 26, 1984, Ser. No. 574,752

Int. Cl.⁴ B65H *81/00*

U.S. Cl. 156—187 **15 Claims**



1. An apparatus for wrapping wrapping material on an elongated cylindrical substrate to form a sleeve on the substrate, the apparatus comprising:

(a) at least one guide for placement around the circumference of the substrate and holding means for securely holding the guide in place around the substrate so that (i) the guide is in plane perpendicular to the longitudinal axis of the substrate, (ii) the guide is immovable axially on the substrate, and (iii) the guide is immovable circumferentially around the substrate; and

(b) a wrapping material dispenser comprising (i) means for supporting a roll of the wrapping material so that the wrapping material can be dispensed from the roll, (ii) at least one roller for pressing dispensed wrapping material against the substrate, and (iii) tracking means for tracking the guide around the substrate for dispensing wrapping material around the pipe to provide a sleeve, any overlapping portions of the sleeve being substantially coincident.

7. A method for forming a sleeve on an elongated cylindrical substrate comprising the steps of:

(a) placing a pair of guides around the circumferential periphery of the substrate with the guides parallel to each other and spaced apart;

(b) selecting a dispenser comprising (i) means for supporting roll of wrapping material so that the wrapping material can be dispensed from the roll, (ii) at least one roller for

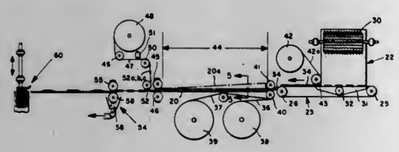
pressing dispensed wrapping material against the substrate, and (iii) tracking means for tracking the guide around the substrate;
(c) securing the guides to the substrate so that the guides are in a plane perpendicular to the longitudinal axis of the substrate and so the guides are (i) immovable axially on the substrate and (ii) immovable circumferentially around the substrate; and
(d) moving the dispenser around the circumference of the substrate with the tracking means tracking the guides to provide a sleeve, any overlapping portions of the sleeve being substantially coincident.

4,574,024

APPARATUS AND METHOD OF MANUFACTURING HYGIENIC DISPOSABLE PADS

G. P. VanMalderen, Buggenhout, Belgium, assignor to Ontex PVBA, Buggenhout, Belgium

Filed Feb. 27, 1984, Ser. No. 583,891
Int. Cl.⁴ B32B *31/10*
U.S. Cl. 156—202 **9 Claims**



1. Apparatus for automatically and continuously preparing hygienic disposable pads comprising:
A. forming mean for fomeing fluff into a definitive shape, said forming means being a continuous belt with recessed mesh portions defining a desired shape at spaced intervals;
B. fluffer and metering means associated with said forming means, said fluffer and metering means being capable of grinding paper sheet material into fluff and delivering a metered amount of fluff onto said mesh portions of said forming means; said forming means having an associated vacuum source beneath said mesh portions;
C. drive means capable of effecting continuous travel of said forming means in a predetermined path past said fluffer and metering means;
D. supply means for supplying three strips of sheet material;
E. guide means for guiding the strips from said supply means to define a double layer on the bottom of the fluff and one layer on the top;
F. powered means capable of effecting continuous travel of the shaped fluff and strips past a plurality of operation-performing stations;
G. folding means cooperating with the movement of said powered means and the fluff and strips carried thereon for folding the sides of the bottom sheet material onto the top layer;
H. crimping means for crimping the end portions so as to form a package with said fluff and strips;
I. means for simultaneously applying at least three stripes of adhesive material and a protective layer over the folded portion under compression so as to cause one of said adhesive stripes to penetrate the outermost layer and adhere the folded portions and form a closed package; and
J. means for severing the end portions so as to form individual package units.

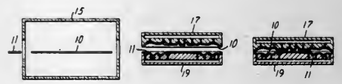
7. A method for continuously preparing hygienic disposable pads comprising:
A. forming fluff having a definitive shape on a recessed meshed forming means comprising an endless belt having spaced mesh portions;
B. grinding paper sheet material into fluff and delivering a metered amount of fluff onto said forming means while similtaniously passing the mesh portion over a suction source so as to compact said fluff;
C. effecting continuous travel of said forming means in a predetermined path;
D. supplying three strips of sheet material wherein at least one of said strips is non-woven;
E. guiding the strips to define a double layer on the bottom of the shaped fluff wherein said non-woven strip is the outermost layer and one layer on the top;
F. effecting continuous travel of the shaped fluff and strips past a plurality of operation-performing stations;
G. folding the sides of the bottom sheet material onto the top layer;
H. crimping the end portions so as to form a package with said fluff and strips;
I. simultaneously applying at least three stripes of adhesive material and a protective layer over the folded portions under compression so as to cause one of said adhesive stripes to penetrate the outermost layer and adhere the folded portions and form a closed package;
J. severing the end portions so as to form individual package units.

4,574,025

METHOD OF FORMING AN END PANEL FOR A BUILDING AND DOOR UNIT

Phillip R. Juaire, Brooklyn Center; Fredric M. Wagner, Rogers, and Leo F. Wildgen, Bloomington, all of Minn., assignors to Satellite Industries, Inc., Minneapolis, Minn.

Filed Dec. 29, 1983, Ser. No. 566,582
Int. Cl.⁴ B32B *31/18*
U.S. Cl. 156—245 **4 Claims**



1. The method of forming a wall for a building in which a door is mounted comprising the steps of
forming a first panel in a mold,
forming a mating second panel in a mold,
placing said molded panels in mating engagement while said panels are heated at a temperature to bond said panels at areas of mating engagement,
cooling said bonded panels to define a rigid structure,
cutting a central section from said rigid structure along an area where said panels were bonded together to define at least three edges of a door,
cutting the remaining portion of said rigid structure from said central cut area to an edge of said rigid structure where said panels were bonded to cut said remaining portion into two sections,
sliding the sections together along the last-mentioned cutting to overlap said sections along the cut edges, and
joining said sections at said overlap to move opposite edges of said sections remaining upon cutting said central section to form a frame for said central section defining the door.

4,574,026

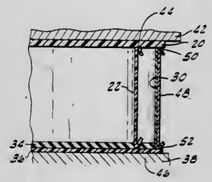
DAMPED WATERBED MATTRESS AND METHOD FOR MANUFACTURING SAME

Howard A. Winther, Union City, Calif., assignor to Royal Waterbeds, Inc., Ellisville, Mo.

Filed Jan. 3, 1984, Ser. No. 567,466
Int. Cl.⁴ B29C *65/04*
U.S. Cl. 156—274.4 **3 Claims**

1. A method for manufacturing a damped waterbed comprising the steps of:

(a) applying a first pliant elastomeric sheet to a flat supporting base;
(b) laying at least one second pliant elastomeric sheet upon said first sheet;
(c) providing at least one first die, said first die having a first margin, a second margin, and an inside surface margin adjoining said first margin and said second margin, and an outside surface margin;
(d) fitting a first loop of a third sheet to cover said first margin, said inside surface margin, and said second margin;
(e) placing said first die upon said second sheet such that said third sheet abuts said second sheet along said first margin;
(f) placing a fourth pliant elastomeric sheet upon said first die such that said third sheet abuts said fourth sheet along said second margin;
(g) bonding said second sheet to said first sheet and to said third sheet along said first margin;



(h) bonding said third sheet to said fourth sheet along said second margin thereby to form a first chamber of said fourth sheet, and second sheet and said third sheet attached to a first sheet;
(i) collapsing said chamber through said inside surface for removing said first die from said supporting base;
(j) placing a second die around each said first chamber, said second die having an inwardly disposed surface margin joining a third margin and a fourth margin, and said second die being provided with a band of a fifth pliant elastomeric sheet along said inwardly disposed surface margin and covering said third margin and said fourth margin, said third margin abutting said first sheet;
(k) placing said forth sheet upon said fourth margin abutting said fifth sheet;
(l) bonding said first sheet to said fourth sheet along said third margin; and
(m) bonding said fourth sheet to said fifth sheet along said fourth margin.

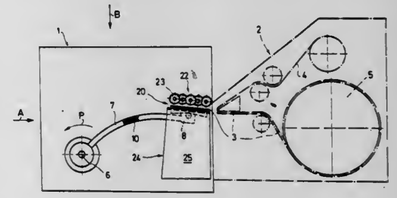
4,574,027

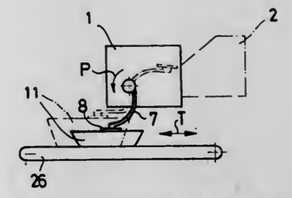
DEVICE FOR AFFIXING ADHESIVE LABELS TO OBJECTS

Hübert Weinündbrot, Hechingen-Stein, Fed. Rep. of Germany, assignor to Bizerba-Werke Wilhelm Kraut GmbH & Co. KG, Balingen, Fed. Rep. of Germany

Filed Dec. 30, 1983, Ser. No. 567,352
Claims priority, application Fed. Rep. of Germany, Jan. 18, 1983, 3301439
Int. Cl.⁴ B32B *31/00*; G05G *15/00*; B44C *1/00*; B31F *5/00*
U.S. Cl. 156—352 **11 Claims**

1. Device for attaching adhesive labels to objects comprising a labelling arm, which is rotatably mounted and driven by a motor, and a suction head mounted on the free end of said arm, said suction head being connected to a vacuum source via a hollow suction tube for the purpose of drawing a label by suction onto the suction head, characterized in that the hollow suction tube forms the labelling arm supporting the suction head, the tube forming the labelling arm and supporting the suction head is formed from an elastically bendable material, the end of the tube opposite the end bearing the suction head is rotatable about an axis of rotation, the motor rotates the tube





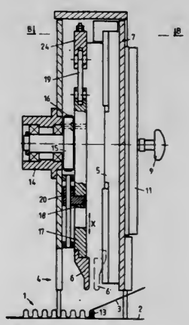
about said axis in a single direction, and the suction head also consists of a bendable elastic material.

4,574,028

APPARATUS FOR PRODUCING A CORRUGATED SHEET

Otto J. Hofer, Schaan, Liechtenstein, assignor to Interrondo AG, Grabs, Switzerland

Filed Jan. 24, 1984, Ser. No. 573,411
Claims priority, application Switzerland, Feb. 10, 1983, 741/83
Int. Cl.⁴ B31F *1/20*
U.S. Cl. 156—462 **8 Claims**



1. Apparatus for producing a corrugated element comprising means defining a path along which a carrier web and a superposed top web are to be fed longitudinally and a cyclically operating shaping station extending transversely across said path for forming corrugations in the top web, said shaping station including at least two vertically reciprocable pressing devices extending transversely over said path for impressing corrugations in the top web, at least two separate guide means allocated respectively to said pressing devices for guiding them in their vertical reciprocation, means for reciprocating said pressing devices in said guide means, said guide means being mounted for displacement relative to each other and to a plane extending transversely with respect to said path, and

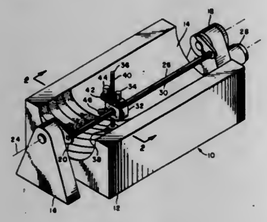
adjusting means for independently adjusting the position of said guide means relative to said plane and to each other, said guide means interacting with said pressing devices such that the displacement of the guide means relative to the transversely extending plane results in a corresponding displacement of said pressing devices relative to each other and said transversely extending plane.

4,574,029

APPARATUS FOR FORMING CONCAVE TAPE WRAPPED COMPOSITE STRUCTURES

William J. Murray, Midlothian, Tex., assignor to LTV Aerospace and Defense Company, Dallas, Tex.

Filed Apr. 27, 1984, Ser. No. 604,490
Int. Cl.⁴ B32B *31/04*
U.S. Cl. 156—500 **23 Claims**



1. An apparatus for manufacturing concave composite tape structures comprising:
a mold having a concave surface;
at least one mounting plate rotatably mounted at one end of said mold, said mounting plate mounted for rotation about a point on a longitudinal axis of said concave surface;
a longitudinal shaft mounted to said at least one mounting plate, said longitudinal shaft mounted to a point on said at least one mounting plate which is displaced a selected distance from said longitudinal axis of said concave surface;
a tape dispenser carriage movably mounted to said longitudinal shaft;
a movable radial shaft mounted to said tape dispenser carriage, said radial shaft mounted said selected distance from said longitudinal shaft wherein the longitudinal axis of said radial shaft extends through said longitudinal axis of said concave surface; and
a composite tape dispenser mounted to said radial shaft for applying composite tape to said concave surface.

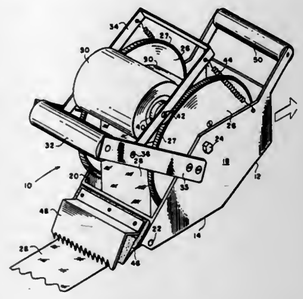
4,574,030

APPARATUS FOR DISPENSING TAPE HAVING A PROTECTIVE BACKING

Henry D. Pilcher, 123 N. Pointe Dr., Auburndale, Fla. 33823

Filed Jan. 16, 1984, Ser. No. 571,362
Int. Cl.⁴ B32B *31/18*
U.S. Cl. 156—522 **8 Claims**

1. A portable dispenser for adhesively-coated tape or the like of the type having a protective backing, said dispenser comprising:
(a) a frame having opposing and generally parallel panels, said frame defining a dispensing opening;
(b) a dispensing reel of an adhesively-coated tape having a protective backing;
(c) a rod for supporting said dispensing reel between said opposing panels spaced from said dispensing opening for rotatably supporting said reel;
(d) rub-out means on said frame for urging said tape against a surface to which said tape is to be affixed as said tape passes along a directed path through said dispensing opening;
(e) a take-up roller supported by said frame;
(f) a forward handle affixed to said panels and extending beyond said dispensing reel;



(g) a swing arm rotatably pinned at one end to said handle and supporting said take-up roller; and
(h) means at the other end of said swing arm for biasing said take-up roller toward said dispensing reel.

4,574,031

ADDITIVE PROCESSING ELECTROLESS METAL PLATING USING AQUEOUS PHOTORESIST

John K. Dorey, II, Ewing Township, Mercer County, N.J.; James T. Huneke, Lower Makefield Township, Bucks County; Bruce S. Madsen, Nockamixon Township, Upper Bucks County, both of Pa., and Theodore F. Schaaf, Lawrence Township, Mercer County, N.J., assignors to AT&T Technologies, Inc., Berkeley Heights, N.J.

Filed Mar. 29, 1985, Ser. No. 717,813
Int. Cl.⁴ B44C *1/22*; C03C *15/00*; B05D *5/12*; B29C *17/08*
U.S. Cl. 156—655 **10 Claims**

1. A method for making a printed circuit including the steps of:
(a) applying a photoresist mask to the surface of a substrate to delineate the desired pattern, said photoresist being soluble in an aqueous alkaline solution of pH >10;
(b) treating the substrate with a chromic acid solution so as to etch the exposed substrate surface;
(c) washing the substrate in a reducing media having a pH of ≤ 10 so as to reduce and remove chrome from the surface;
(d) catalyze the surface of the substrate; and
(e) electrolessly deposit a thin flash metal deposit from a hypophosphite type flash electroless plating solution.

4,574,032

PROCESS FOR DELIGNIFICATION OF LIGNOCELLULOSIC MATERIAL IN THE PRESENCE OF ANTHRAQUINONE IN SOLUTION WITH WHITE AND BLACK LIQUORS

Michael B. Ringley, Charleston Hgts., S.C., assignor to Westvaco Corporation, New York, N.Y.

Continuation of Ser. No. 84,930, Oct. 15, 1979, abandoned. This application Mar. 18, 1982, Ser. No. 359,202
Int. Cl.⁴ D21C *3/02, 3/20, 3/26, 11/00*
U.S. Cl. 162—38 **3 Claims**

1. In the process for the delignification of lignocellulosic material by
(a) treating the lignocellulosic material in a closed reaction vessel with a kraft pulping liquor containing from 0.001% to 10.0% by weight, based on the lignocellulosic material, of anthraquinone, the treatment taking place at a maximum temperature of from 150° C. to 200° C. for a period of from 0.5 to 480 minutes,
(b) discharging the pulping liquor from the lignocellulosic material, and

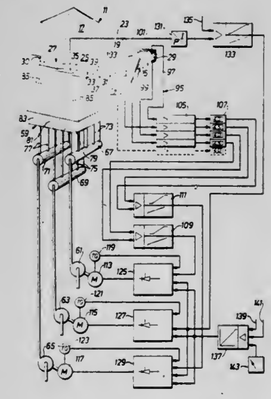
(c) washing the lignocellulosic material with water or an aqueous liquor inert to the lignocellulosic material to obtain a delignified cellulosic material,
a preliminary step consisting essentially of introducing the anthraquinone into the vessel in solution first formed by combining the anthraquinone with a mixture consisting of from 10% to 50% by volume white liquor and, correspondingly, from 90% to 50% by volume black liquor, wherein the volume percentages are based on the total volume of the white liquor-black liquor mixture.

4,574,033

METHOD AND APPARATUS FOR DELIVERING A MULTILAYER JET OF STOCK TO A FORMING SURFACE IN A PAPERMAKING MACHINE

Harry I. Myrén, Karlstad, Sweden, assignor to KMW Aktiebolag, Karlstad, Sweden

Filed Jun. 22, 1983, Ser. No. 506,380
Claims priority, application Sweden, Jul. 6, 1982, 8204166
Int. Cl.⁴ D21F *1/02*
U.S. Cl. 162—198 **8 Claims**



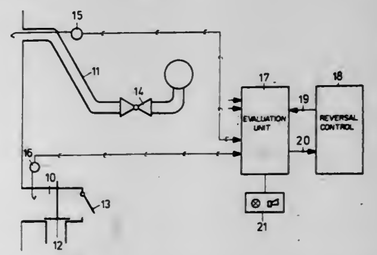
1. In a method of delivering a multilayer stock jet to a forming surface in a papermaking machine with a multilayer headbox having a slice chamber formed by side walls and top and bottom walls terminating in lip members defining a slice opening and at least one relatively rigid stock separating partition dividing said chamber into separate slice channels, said partition being fixed at its upstream end and having one side attached to the adjacent side wall at a point downstream of and at a distance from said upstream end and the other side attached to the adjacent opposite side wall at a point downstream of and at a distance from said upstream end so as to be free of play in a direction perpendicular to the plane of the partition, in which separate papermaking stocks are fed by separate pumps through said slice chamber channels and discharged through said slice opening to the forming surface, the improvement comprising detecting any deviation from a straight line of the run of said partition between said points where it is attached to the side walls of the slice chamber, produced by difference in pressure in the papermaking stock flowing through said slice channels, and adjusting the pressure in at least one of said slice channels to reduce the magnitude of said deviation to a negligible amount.
2. In apparatus for delivering a multilayer jet of papermaking stock to a forming surface, comprising a multilayer headbox having side walls and top and bottom lip members defining a slice chamber converging to a slice opening, at least one relatively rigid partition in the headbox extending from side wall to side wall and at least up to the slice opening and dividing the slice chamber into separate slice channels, said partition being fixed at its upstream end and having one side attached to the adjacent side wall at a point downstream of and at a distance from said upstream end and the other side attached to the adjacent opposite wall at a point downstream of and at a distance from said upstream end so as to be free of play in a direction perpendicular to the plane of the partition, and at least first and second pumps for supplying separate papermaking stocks to said respective slice channels, the improvement comprising means for detecting any deviation from a straight line of the run of said partition between said points where it is attached to the side walls of the slice chamber, produced by difference in pressure in the papermaking stock flowing through said slice channels, and means responsive to any said deviation for adjusting the pressure in said slice channels so as to reduce said deviation to a negligible amount.

4,574,034

METHOD FOR MONITORING THE REVERSAL SYSTEM OF COKE OVEN BATTERIES

Otto Lemke; Dieter Stalherm, both of Recklinghausen, and Reimer Haack, Haltern-Lavesum, all of Fed. Rep. of Germany, assignors to Firma Carl Still GmbH & Co. KG, Fed. Rep. of Germany

Filed Feb. 16, 1984, Ser. No. 580,790
Claims priority, application Fed. Rep. of Germany, Feb. 19, 1983, 3305871
Int. Cl.⁴ C10B *21/10*
U.S. Cl. 201—1 **3 Claims**



1. A method of monitoring the reversal system of regenerative operations in a coke oven battery, said coke oven battery having a plurality of coke ovens with a plurality of air and waste heat valves and a plurality of rich gas supply ducts each with a rich gas reversal valve, comprising separately measuring the temperature in each air and waste heat valve during the flow of waste heat and during the flow of air, comparing each of the measured temperatures with desired values for the flow of waste heat and the flow of air respectively and, upon an undue deviation of any of the measured values from the desired values, generating control signals which indicate the failure of at least one air and waste heat valve from operating correctly during a regenerative operation.

4,574,035

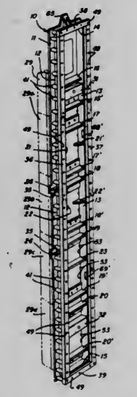
WARP-RESISTANT SELF-SEALING COKE OVEN DOOR

Robert W. Highley, 1802 W. 159th Ave., Crown Point, Ind. 46307, and Stephen J. Stanczak, 9135 S. Western Ave., Chicago, Ill. 60620

Filed Nov. 15, 1984, Ser. No. 671,627
Int. Cl.⁴ C10B *25/02, 25/06, 25/16*
U.S. Cl. 202—242 **11 Claims**

1. A fabricated coke oven door having a reinforcing warp-resistant construction for maintaining a long-lasting sealing engagement with a generally rectangular opening of a coking chamber comprising: a rigid door plate dimensioned to overlie the opening of a coking chamber, elongated rectangular spaced longitudinal stiffener plates extending substantially the

length of said door plate and secured to the outer side of the door plate, rectangular transverse stiffener plates secured to the ends of said longitudinal stiffener plates, said stiffener plates spaced from the longitudinal and transverse edges of the door plate and having the wide sides thereof disposed perpendicular to the outer surface of the door plate, a plurality of transverse braces connecting said longitudinally extending stiffener plates at spaced intervals along the length of the longitudinal stiffener plates and said transverse braces being secured to said door plate, each said stiffener plate having secured to the outer end thereof a rectangular bar of like length



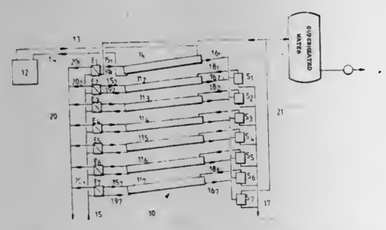
with each of said rectangular bars extending laterally outwardly to about the edge of said door plate in a plane parallel with the plane of the door plate, spring box means fixedly disposed between the lower surface of said rectangular bars and said door plate forming a reinforcing rigid framework with said door plate, and said spring box means adapted to co-act through apertures in said door plate with sealing means which is mountable on the inner surface of said door plate to form a sealing engagement between said oven door and a door frame of said coking chamber when said oven door is operatively mounted on said coking chamber.

4,574,036

METHOD AND AN INSTALLATION FOR PURIFYING INDUSTRIAL WASTE WATER, PARTICULARLY PROCESS WATER FROM DYEING WORKS

Pierre A. Henriot, St. Dié , France, assignor to Ets. Ch. Scareder & Fils, Saint-Dié , France

Filed Jan. 17, 1983, Ser. No. 458,353
Int. Cl.[4] B01D *1/26*; C02F *1/04*
U.S. Cl. 203—39 **7 Claims**



1. A method of purifying polluted industrial waste water having a high chemical demand for oxygen and fine particles in suspension, the method comprising the steps of:

directly heating and evaporating the polluted water to produce a mixture of water vapor and sludge without first subjecting it to mechanical separation by sieving or decanting;

separating sludge from the water vapor; condensing the water vapor;

subjecting the condensed water vapor to a coagulation-flocculation chemical purifying process; and

filtering the purified condensed water vapor.

5. An apparatus for purifying polluted industrial waste water having a high chemical demand for oxygen and fine particles in suspension, wherein the apparatus comprises:

an outlet pipe for conveying waste water from an industrial process,

an evaporator directly connected to the outlet pipe conveying waste water,

a separator connected to receive a mixture of vapor and sludge from the evaporator to separate sludge therefrom,

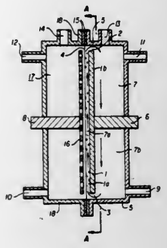
a coagulation-flocculation means for treating the water vapor in a condensed state, and a filter means for receiving treated water from the coaggulation-flocculation means.

4,574,037

VERTICAL TYPE ELECTROLYTIC CELL AND ELECTROLYTIC PROCESS USING THE SAME

Yasushi Samejima, Kakogawa; Minoru Shiga, Himeji; Toshiji Kano, Kakogawa; Koji Saiki, Toyonaka, and Tsutomu Nishio, deceased, late of Kakogawa, all of Japan (by Haruko Nishio, legal representative), assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Dec. 30, 1983, Ser. No. 566,931
Claims priority, application Japan, Apr. 12, 1983, 58-64324
Int. Cl.[4] C25B *1/46*
U.S. Cl. 204—98 **15 Claims**



14. A process for electrolyzing an aqueous solution of an alkali metal halide which comprises (1) generating a cathode gas in a cathode gas generating room of a vertical type electrolytic cell partitioned by an ion exchange membrane into an anode compartment and a cathode compartment, said cathode compartment being divided by a non-perforated cathode plate into a cathode gas generation room and a cathode gas separation room, whereby a catholyte is caused to flow upward in the cathode gas generation room in a mixed stream of the catholyte and the cathode gas by the action of a gas lift effect produced by the cath de gas, (2) introducing said mixed stream into said cathode gas separation room through an opened portion provided near the uppermost part of said cathode plate, (3) separating the catholyte from the cathode gas, whereby the resulting catholyte has a smaller gas content than the mixed stream in the cathode gas generation room, then (4) introducing said resulting catholyte into said cathode gas generation room through an opened portion provided near the lowermost part of said cathode plate, whereby a circulating flow of catholyte is allowed to take place between said cathode gas generation room and said cathode gas separation room through said opened portions provided near the uppermost and lowermost parts of said cathode plate.

4,574,038

MICROWAVE INDUCED CATALYTIC CONVERSION OF METHANE TO ETHYLENE AND HYDROGEN

Jeffrey K. S. Wan, Kingston, Canada, assignor to Alberta Oil Sands Technology and Research Authority, Edmonton, Canada

Filed Aug. 1, 1985, Ser. No. 761,394
Int. Cl.[4] B01J *19/12*; C07C *2/00*
U.S. Cl. 204—162 R **5 Claims**

1. A process for converting methane to ethylene and hydrogen comprising:

providing methane in a reaction zone containing a catalyst, said catalyst being capable of absorbing microwave radiation;

irradiating the methane in the presence of said catalyst with pulsed microwave radiation for a sufficient period of time, to thereby convert methane to ethylene and hydrogen; and

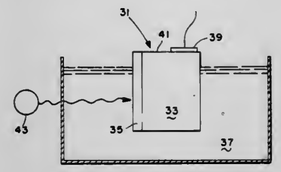
recovering said reaction products.

4,574,039

PHOTOCORROSION RESISTANT SEMICONDUCTOR PHOTOELECTRODES

Stephen C. Pyke, Willowick, and Mark R. Bruce, Berea, both of Ohio, assignors to The Standard Oil Company (Ohio), Cleveland, Ohio

Filed Sep. 24, 1984, Ser. No. 653,415
Int. Cl.[4] C25B *11/04*
U.S. Cl. 204—290 R **10 Claims**



1. A semiconductor photoelectrode resistant to photocorrosion, said photoelectrode comprising a semiconductor body having at least one outside surface and a silicon dioxide layer on said at least one outside surface of said body for receiving illumination, wherein said silicon dioxide layer is doped with metal atoms of at least one of the group of tantalum, vanadium, titanium, and niobium.

4,574,040

APPARATUS FOR VERTICAL GEL ELECTROPHORESIS

Timothy E. Delony, San Leandro, and Daniel Y. M. Chu, San Francisco, both of Calif., assignors to Bio-Rad Laboratories, Inc., Richmond, Calif.

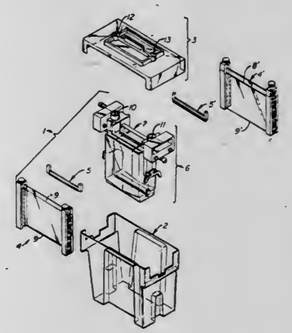
Continuation-in-part of Ser. No. 601,193, Apr. 17, 1984, abandoned. This application Sep. 26, 1984, Ser. No. 655,001
Int. Cl.[4] G01N *27/28*
U.S. Cl. 204—299 R **18 Claims**

1. Apparatus for performing electrophoresis across at least one vertical gel, comprising:

a lateral enclosure for said vertical gel open at the top and bottom and extending upward at one side to a height sufficient to form a liquid-retaining wall;

a U-shaped frame combinable with one said lateral enclosure at each side thereof to form a liquid-retaining receptable defined by said U-shaped frame and one said liquid-retaining wall from each said lateral enclosure, the interior thereof communicating with the open top of each said lateral enclosure;

a pin on one of said lateral enclosure and said U-shaped frame and a guide for said pin on the other of said lateral enclosure and said U-shaped frame, said pin and guide in cooperating relationship to slide said lateral enclosure into pivotal contact with said U-shaped frame; and



a lug on one of said lateral enclosure and said U-shaped frame and a releasable catch for said lug on the other of said lateral enclosure and said U-shaped frame to secure said lateral enclosure against said U-shaped frame.

4,574,041

METHOD FOR OBTAINING A SELECTIVE SURFACE FOR COLLECTORS OF SOLAR AND OTHER RADIATION

Joseph Zahavi, Haifa, and Shoshana Tamir, Tirat-Hacarmel, both of Israel, assignors to Technion Research and Development Foundation Ltd., Haifa, Israel

Filed Aug. 16, 1984, Ser. No. 641,253
Claims priority, application Israel, Aug. 16, 1983, 69507
Int. Cl.[4] C25D *5/18, 5/48*; G02B *1/10*
U.S. Cl. 204—38.3 **8 Claims**

1. A method for obtaining a selective surface for thermal, and particularly solar, radiation collectors which comprises the steps of:

(a) anodizing by alternating current in a density range of between 5 to 60 A/dm^2 a zinc-coated metal plate of a thickness in the range of between 2μ to 30μ, said plate being immersed in an alkaline bath containing between 2 to 30 g/l OH^-, and

(b) passivating said anodized plate in an acidic bath containing more than 2 g/l H^+.

4,574,042

GAS ANALYZING APPARATUS

Hideo Shiraishi, Yokohama, Japan, assignor to Fuji Electric Corporate Research & Development Co., Ltd., Yokosuka, Japan

Filed Feb. 3, 1984, Ser. No. 576,636
Claims priority, application Japan, Feb. 14, 1983, 58-21727
Int. Cl.[4] G01N *27/46*
U.S. Cl. 204—429 **5 Claims**

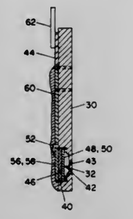
1. A gas analyzing apparatus comprising:

a planar insulating ceramic substrate having multistage grooves in a major surface thereof forming a cavity and a relatively small aperture extending from a surface of the substrate to an interior surface of the cavity;

an electrolytic disc mounted within the grooves so that the cavity is closed to form a gas analyzing compartment, wherein when the apparatus is placed in a region having an oxygen containing gaseous mixture to be analyzed, the gas analyzing compartment is in communication with the region through the aperture such that the gaseous mixture diffuses into the gas analyzing chamber at a relatively slow rate;

at least one pair of metallic electrodes formed on opposing

major surfaces of the electrolytic disc, the electrodes being formed in a manner so as to allow any oxygen in the gas analyzing compartment to contact at least a portion of the major surface of the electrolytic disc within the gas analyzing compartment and to allow any oxygen withdrawn through the electrolytic disc to pass through at least a portion of the other major surface thereof;



means for coupling at least one pair of the electrodes to a source of electrical charge, wherein the oxygen content of the gaseous mixture is determined by the quantity of electrical charge supplied to the electrodes coupled to the source of electrical charge.

4,574,043

CATALYTIC PROCESS FOR MANUFACTURE OF LOW POUR LUBRICATING OILS

Arthur W. Chester, Cherry Hill; William E. Garwood, Haddonfield, both of N.J., and James C. Vartuli, West Chester, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 19, 1984, Ser. No. 673,060
Int. Cl.[4] C10G *45/62, 45/64, 65/12*
U.S. Cl. 208—59 **13 Claims**

1. A process for hydrodewaxing a petroleum fraction having a boiling point above about 550° F., to produce a dewaxed lubricating oil base stock, comprising

contacting a feedstock of said petroleum fraction, in the presence of hydrogen, with a supported catalyst composition comprising, in combination, about 20 to about 50 percent by weight of a support material; about 0.1 to about 3 weight percent of at least one Group VIII metal; the remainder being a porous crystalline silicate having a silicon to aluminum mole ratio, expressed in terms of the mole ratio of SiO_2 to Al_2O_3, of at least about 20, characterized by an X-ray diffraction pattern which is at least substantially identical to that of Table A, designated herein ZSM-22, wherein contact of said feedstock with said supported catalyst is undertaken under conditions including a pressure of from about 200 psig to about 3000 psig; a temperature of from about 260° C. to about 482° C.; a feedstock LHSV ranging from about 0.2 to about 20 and from about 500 and up to about 20,000 standard cubic feet of hydrogen per barrel of feedstock.

4,574,044

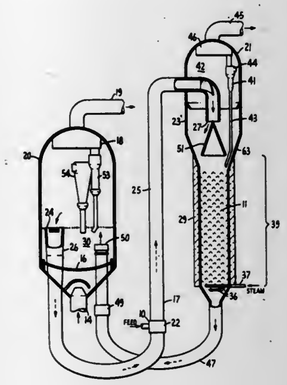
METHOD FOR SPENT CATALYST TREATING FOR FLUIDIZED CATALYTIC CRACKING SYSTEMS

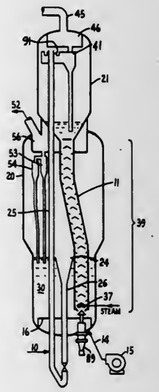
Russell R. Krug, Novato, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 363,946, Mar. 31, 1982, abandoned. This application May 8, 1984, Ser. No. 608,229
Int. Cl.[4] C10G *11/05, 11/18;* **B01J** *29/38, 38/06*
U.S. Cl. 208—120 **10 Claims**

1. In a fluid catalytic cracking process wherein the hydrocarbon feed contacts a crystalline zeolitic cracking catalyst for not longer than 10 seconds in a reaction zone and thereafter said catalyst is separated from the relatively dispersed phase of said reacting mixture of heated catalyst and hydrocarbon vapors, the resultant dense phase of spent catalyst is stripped of entrained or adsorbed hydrocarbon vapors by passing flowing steam through said dense phase before return of the resulting stripped catalyst which is essentially free of volatile hydrocarbons but containing residual nonvolatile hydrocarbons as coke, to a regenerator for oxidative regeneration including oxidation of said coke and recirculation of the resultant heated and regenerated catalyst for contact with additional hydrocarbon feed, the improvement comprising

subjecting said dense phase of spent crystalline zeolitic catalyst after said normal steam stripping of hydrocarbon vapors to an additional period of time at substantially the same temperature as in said normal steam stripping step and below about 1000° F. and in the presence of steam,





said steam added in an amount and to an extent during said additional period of time so that steam reacts with coke on the catalyst to form hydrocarbon gas,

said additional period of time being sufficient to modify catalyst and/or coke thereon, whereby upon subsequent oxidative regeneration and recycle of said zeolitic catalyst to the reaction zone there results an increase in conversion when compared to an absence of said additional period of time.

2. The process of claim 1 wherein said additional period of time ranges from ½ to 30 minutes.

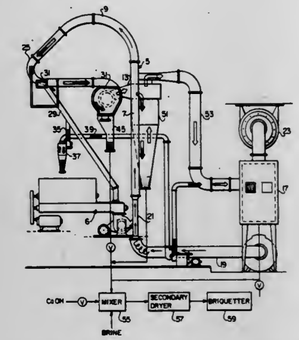
3. The process of claim 1 wherein said additional period of time is 1.2–5 times that of the normal stripping period.

4,574,045

REMOVAL OF UNDESIRABLE SUBSTANCES FROM FINELY DIVIDED PARTICLES

Edward Y. Crossmore, Jr., Box 201, New Bethlehem, Pa. 16242

Continuation of Ser. No. 350,888, Feb. 22, 1982, abandoned. This application Sep. 10, 1984, Ser. No. 649,147
Int. Cl.[4] B07B *9/02*
U.S. Cl. 209—11 **16 Claims**



1. A method for separating heavy weight, middle weight and light weight solid particles from an admixture of solid particulate substances containing same which comprises

(i) heating and drawing a conveying gas through a closed separation system comprising a series of three separation stages all in communication with each other;

(ii) prior to said first separation stage, contacting said heated conveying gas with said admixture with solid particulate substances having a mesh size of minus 30 to minus 250 and introducing said conveying gas and admixture of solid particulate substances into an elongated vertical heating duct having a curved section at the upper end so as to remove surface moisture from said particulate substances;

(iii) drawing said heated conveying gas with said dried admixture of particles through the curved section of said elongated heating duct at a flow rate and a solids to heated conveying gas loading that produces a laminar flow wherein heavy weight particles are positioned as a lamina in a different segment of the duct than the remaining middle weight and light weight particles by centripetal force induced therein;

(iv) drawing the laminar flow of particles through said first separation stage where the dried particles are passed through a first elbow-shaped duct;

(v) splitting away said heavy particle lamina from said remaining middle and light weight particle laminae by a first adjustable splitting means comprising a movable deflector positioned within said elbow-shaped duct;

(vi) drawing additional air into said first elbow-shaped duct via an adjustable air inlet means located ahead of said splitting means for controlling the degree of centripetal force generated at the first separation stage;

(vii) drawing the remaining middle and light weight particles to said second separation stage where the particles are passed through a second elbow-shaped duct to produce a laminar flow wherein middle weight particles are to be separated from the remaining particles positioned as laminae in different segments of the duct by centripetal force induced therein;

(viii) splitting away some of said middle weight particles as a lamina by a second adjustable splitting means comprising a movable deflector positioned within said second duct;

(ix) drawing the remaining middle and light weight particles into a circular duct wherein a centripetal force is induced to create a lamina of middle weight particles not separated in step (vii);

(x) splitting away more of the middle weight particles in the lamina created in step (ix) by a third adjustable splitting means comprising a movable deflector position within said circular duct; and

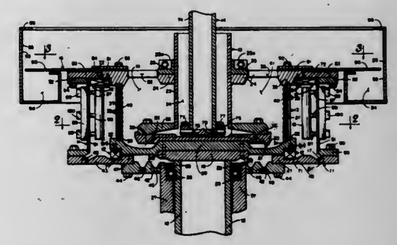
(xi) drawing the remaining particles to said third separation stage comprising a cyclone separator wherein light weight particles are separated as a cyclone overflow from remaining middle weight particles separated as a cyclone underflow.

4,574,046

CENTRIFUGAL JIG FOR ORE BENEFICIATION

Earnest A. Sprow, E. 8620 - 44th Ave., Spokane, Wash. 99206

Filed Sep. 21, 1984, Ser. No. 653,029
Int. Cl.[4] B03B *5/20*
U.S. Cl. 209—44 **10 Claims**



1. A centrifugal jig for separating a more dense fraction from a less dense fraction of particulate pulp material comprising:

a hutch peripherally defining a chamber;

a vertical rotor journaled for rotation in the hutch and having an upper rotor plate and a lower rotor plate, said hutch and said lower plate constructed and arranged for substantial containment of fluidic media therein;

means for rotating the rotor;

a cylindrical jig screen defining the periphery of a jigging chamber carried within the hutch by the rotor for coaxial rotation therewith;

input means for directing particulate pulp material into the jigging chamber and onto the lower inner surface of the cylindrical jig screen;

plural pulsing means spacedly positioned about the periphery of the jig screen, each pulsing means directing a continuous stream of pressurized air to and through the jigging screen at spaced positions to pulse the material on the jig screen at each such spaced position as the jig screen rotates past each position so that the jigged particles have adaquate space to expand into so that they do not substantially interfere with each other;

tailings collection means to receive the less dense fraction of the particulate pulp material from the top of the jig screen for exhaustion; and

concentrate collection means in the lower portion of the hutch to receive for collection the more dense fraction of particulate pulp material that passes through the jig screen and into the hutch.

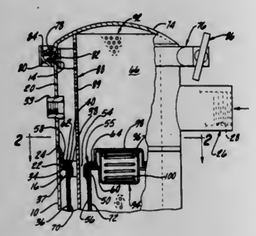
7. The method for separating a more dense fraction from a less dense fraction of particulate pulp material, comprising the steps of:

introducing a slurry of pulp material into a jigging chamber, having a cylindrical peripheral jig screen defining a jig bed on its inner surface and surrounded by a fluidic media;

rotating the peripheral jig screen about its axis at a velocity sufficient to cause centrifugal loading on the jig bed substantially in excess of the force of gravity and to cause rotation in the fluidic media and particulate matter therein

to move that particulate matter radially outwardly to the jigging bed supported on the jig screen;
simultaneously jigging the pulp material in the rotating cylindrical jig bed by directing pressurized gas radially inwardly therethrough at plural peripherally spaced positions thereabout to cause the jig bed at said spaced positions to expand inwardly and thereafter at least partially collapse outwardly as it moves past the areas of pressurized gas impingement;
collecting a heavier fraction of particulate matter radially outwardly of the jigging screen; and
removing a lighter fraction of particulate matter from the upper portion of the jigging screen.

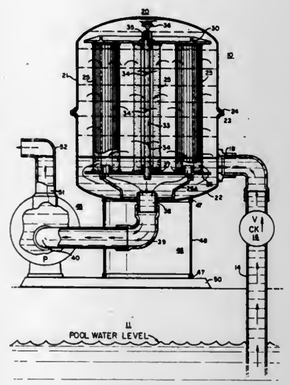
4,574,047
FILTERING DEVICE
Borje O. Rosaen, 4031 Thornoaks, Ann Arbor, Mich. 48104
Division of Ser. No. 549,246, Nov. 4, 1983, Pat. No. 4,496,459. This application Aug. 6, 1984, Ser. No. 638,126
Int. Cl.[4] B01D *27/10*
U.S. Cl. 210—130 **2 Claims**



1. A fluid filtering device comprising:
an elongated housing having an open top, an interior wall and defining an interior chamber,
said housing having an inlet and an outlet open to said chamber,
a first elongated and tubular strainer secured to said housing within said chamber so that said first strainer is spaced inwardly from said interior wall of said housing,
a second elongated and tubular strainer contained within and spaced inwardly from said first strainer,
means for securing said strainers together at their ends most spaced from said open end of said housing,
a filter assembly removably insertable between said strainers through said open housing top whereupon said filter assembly is positioned between said inlet and said outlet said filter assembly comprising a toroidal filter bag having an outer periphery and an inner periphery,
means for securing the outer periphery of said bag to the end of said first strainer closest to said open housing top,
means for securing the inner periphery of said bag to the end of said second strainer closest to said open housing top,
a cover, and
means for detachably securing said cover across said open end of said housing.

4,574,048
VACUUM FILTER SYSTEM FOR SWIMMING POOLS
William A. van den Broek, Doylestown, Pa., assignor to KDI Sylvan Pools, Inc., Doylestown, Pa.
Continuation-in-part of Ser. No. 453,233, Dec. 27, 1982, abandoned. This application Feb. 27, 1984, Ser. No. 583,872
Int. Cl.[4] B10D *35/00*; E04H *3/16*
U.S. Cl. 210—136 **4 Claims**

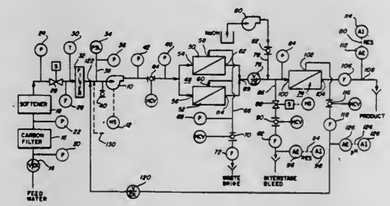
1. A vacuum filter system for filtering water in swimming pools which comprises
at least one suction pipe line connection to a swimming pool to remove water for filtering from said swimming pool,
a closed vacuum filter tank for filtering water having an inlet and an outlet,
said suction pipe line connected to said inlet of said filter tank,
said filter tank is of separable two piece construction, including an upper half and a lower half,
clamp means for retaining said tank halves in assembled condition,
said bottom tank half has a lower retainer plate engaged with and supported therein,
said lower retainer plate has a plurality of hollow projections spaced therearound,
a plurality of filter cartridges carried on said projections and extending vertically upwardly,
an upper retainer plate engaged with said filter cartridges,
a hollow tube carried on a central projection of said lower plate and engaged with said upper retainer plate,



said tube having means defining a plurality of openings,
a removable cap engaged with said tube and retaining said cartridges between said plates,
a vacuum pump having an inlet pipe line connected to said filter tank outlet and a return connection,
said inlet of said vacuum pump in communication with said outlet of said filter tank said vacuum pump having means for controlling the operation of said vacuum in said tank, so that water from said pool flows thereinto, displacing any air therein, until said tank is in a flooded condition,
the air in said tank is pulled downwardly through said tube and below said lower retainer plate,
the water in said tank is forced through said filter cartridges and mixed with said air, which enters the inlet of said vacuum pump, and
at least one return pipe line connected to said pump return connection for returning filtered water to said pool.

4,574,049
REVERSE OSMOSIS SYSTEM
Gregory A. Pittner, Danville, Calif., assignor to Arrowhead Industrial Water, Inc., Los Angeles, Calif.
Filed Jun. 4, 1984, Ser. No. 616,729
Int. Cl.[4] B01D *13/00*
U.S. Cl. 210—639 **10 Claims**

1. A water purification process for removing dissolved solids of the type that are normally present in a municipal water supply or the like, which comprises the steps of:
providing a first reverse osmosis unit having an inlet, a product outlet and a brine outlet;
providing a second reverse osmosis unit having an inlet, a product outlet and a brine outlet;
locating said second reverse osmosis unit downstream of said first reverse osmosis unit with the product outlet of said first reverse osmosis unit being coupled to the inlet of said second reverse osmosis unit;
providing water to be purified to the inlet of said first reverse osmosis unit;
treating the product from said reverse osmosis unit at a location upstream of said second reverse osmosis unit with a chemical treatment agent comprising a solution having a pH that exceeds 7 to reduce carbon dioxide concentration of the product by chemical conversion and to ionize certain otherwise difficult to remove chemicals; and
directing the product from said second reverse osmosis unit toward a point of use or storage for purified water.



4,574,050
METHOD FOR PREVENTING THE PRECIPITATION OF FERRIC COMPOUNDS DURING THE ACID TREATMENT OF WELLS
Curtis W. Crowe, and Charles M. Maddin, both of Tulsa, Okla., assignors to Dowell Schlumberger Incorporated, Tulsa, Okla.
Continuation of Ser. No. 397,008, Jul. 9, 1982, abandoned, which is a continuation of Ser. No. 131,298, Mar. 18, 1980, abandoned. This application Jul. 18, 1985, Ser. No. 756,913
Int. Cl.[4] E21B *43/27*
U.S. Cl. 252—8.55 C **9 Claims**

1. A method for preventing the undesirable formation and precipitation of ferric compounds from a spent treatment acid containing dissolved iron following an acidizing treatment of subterranean formations surrounding a wellbore, said method comprising adding to said treatment acid prior to contact with the formation an amount of ascorbic acid and/or erythorbic acid, and/or a soluble salt of said acid, sufficient to prevent the formation and precipitation of ferric compounds from the treatment acid upon spending.

4,574,051
THERMOCHEMICAL ENERGY STORAGE
Andrew J. Matthews, Bournemouth, and Simon A. Thomas, Ringwood, both of England, assignors to Edeco Holdings Limited, London, England
Filed Aug. 3, 1983, Ser. No. 519,995
Claims priority, application United Kingdom, Aug. 12, 1982, 8223256
Int. Cl.[4] C09K *5/06*
U.S. Cl. 252—70 **1 Claim**

1. A thermal energy storage medium consisting essentially of sodium acetate trihydrate and xanthan gum having a concentration in the range of 1 to 5% by weight of the medium.

4,574,052
CRACKLING AEROSOL FOAM
Anil J. Gupte, Seymour, and Joyce M. Kendall, Huntington, both of Conn., assignors to Richardson-Vicks Inc., Wilton, Conn.
Filed May 31, 1984, Ser. No. 615,574
Int. Cl.[4] C11D *17/00*; C09K *3/30*
U.S. Cl. 252—90 **20 Claims**

1. An aerosol foam composition producing pronounced and prolonged auditory effects upon discharge from an aerosol container comprising, as percent by weight,
molecular sieve about 16 to about 34%,
surfactant about 1.6 to about 3.4%,
vehicle about 22.4% to about 47.6%,
liquified gas propellant, about 15 to about 60%,
and wherein the vehicle is selected from the group consisting of alkylene glycols, polyalkylene glycols, vegetable oils and mixtures thereof and the liquified gas propellant is selected from the group consisting of liquified hydrocarbon and fluorinated hydrocarbon gases.

4,574,053
SOAP/SYNDET BARS FILLED WITH FATTY ACID COATED REACTIVE FILLER
Donald V. Kinsman, Fort Thomas, and Clement H. Luken, Jr., Highland Heights, both of Ky., assignors to National Distillers and Chemical Corporation, New York, N.Y.
Filed Oct. 1, 1984, Ser. No. 656,805
Int. Cl.[4] C11D *17/00*
U.S. Cl. 252—134 **23 Claims**

1. A synthetic detergent, a combination of soap and detergent or a soap, each in bar, form comprising particulate filler material capable of reacting chemically with fatty acid wherein the individual particles of said filler are coated with fatty acid that has been reacted with and is chemically bonded to said filler.

4,574,054
MOLECULAR WEIGHT CONTROLLERS COMBINATION FOR CAPROLACTAM POLYMERIZATION PROCESSES
Aldemaro Ciaperoni, Bollate, and Alberto Cappelli, Cogliate, both of Italy, assignors to Snia Fibre S.p.A., Via Friuli, Italy
Filed Dec. 28, 1983, Ser. No. 566,384
Claims priority, application Italy, Dec. 31, 1982, 25075 A/82
Int. Cl.[4] C09K *3/00*; C08G *69/16*
U.S. Cl. 252—188.31 **8 Claims**

1. A combination of polycaprolactam molecular weight controllers to be added to a polymerizable caprolactam composition comprising the following three components:
(a) a monofunctional primary amine having a boiling point equal to or higher than 180° C. at atmospheric pressure, and a basic dissociation constant equal to or higher than 1.7×10^{-5};
(b) a monofunctional organic acid having an acid dissociation constant higher than 1.5×10^{-5}; and
(c) a salified aminoacid containing at least 10 carbon atoms and having the amino groups salified by a monofunctional organic or inorganic acid having an acid dissociation constant higher than 1.0×10^{-2}.

4,574,055
RESISTOR COMPOSITIONS
Eiichi Asada, Tokyo; Toshio Inokuma, Fujisawa, and Mikio Yamazoe, Oume, all of Japan, assignors to Shoei Chemical Inc., Tokyo, Japan
Filed Dec. 12, 1984, Ser. No. 680,640
Claims priority, application Japan, Jan. 6, 1984, 59-595
Int. Cl.[4] H01B *1/02, 1/06*
U.S. Cl. 252—514 **8 Claims**

1. A resistor composition comprising conductive particles, a glass frit and a vehicle, said conductive particles comprising particles selected from the group consisting of coated RuO_2 particles and a mixture of said coated RuO_2 particles and uncoated RuO_2 particles wherein the weight ratio of coated RuO_2 particles/uncoated RuO_2 particles is from 5/95 to 100/0, said coated RuO_2 particles having a polynary oxide coating of a metal component selected from the group consisting of (1) Bi and Ru; (2) Pb and Ru; and (3) Bi, Pb and Ru; the weight ratio of said conductive particles to said glass frit being in the range of 60:40 to 5:95.

4,574,056

DIE-BONDING ELECTROCONDUCTIVE PASTE

Shoichi Kimura, Tsukui, Japan, assignor to Kidd, Inc., Kanagawa, Japan

Filed Dec. 5, 1984, Ser. No. 678,246
Claims priority, application Japan, Dec. 16, 1983, 58-236023
Int. Cl.[4] H01B *1/16*
U.S. Cl. 252—514 **15 Claims**

1. A die bonding electroconductive paste containing at least one element having the same valence as the valence of a semiconductor element to be die-bonded or a compound of said element and a reducing substance selected from the group consisting of metal hydrides, metal carbides, grignard reagents, fatty acids of 12 to 22 carbon atoms, zinc and aluminum lower alkyls of 1-3 carbon atoms, metal salts of naphthenic, acetic and propionic acids, and hydrazine, said paste permitting ohmic contact to be effected between said paste and said semiconductor at a temperature of not less than 100° C.

4,574,057

COMPOSITIONS FOR PRINTING INK VARNISHES

Michael D. Kaza, and Paul S. Sauers, both of Pittsburgh, Pa., assignors to Neville Chemical Company, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 615,027, May 29, 1984, abandoned. This application Oct. 7, 1985, Ser. No. 784,371
Int. Cl.[4] C08F *216/06;* C09D *11/02, 11/06, 11/10*
U.S. Cl. 260—101 **26 Claims**

1. A composition comprising:

(a) a predominant amount of dicyclopentadiene; and lesser amounts of

(b) at least one member selected from the group consisting of dimerized aliphatic cyclic and non-cyclic dienes of five carbon atoms; debutanized aromatic concentrates; C-5 olefins; acyclic conjugated C-5 dienes; monoolefins, diolefins, and polyenes each having more than five carbon atoms and having no aromatic rings; and

(c) at least one member selected from the group consisting of tall oil; fatty acid-containing materials and rosin acid containing materials; and

(d) at least one ethylenically unsaturated lower aliphatic dicarboxylic acid or anhydride; and

(e) at least one member selected from the group consisting of materials containing two or more reactive groups, at least one of which must be a hydroxyl group.

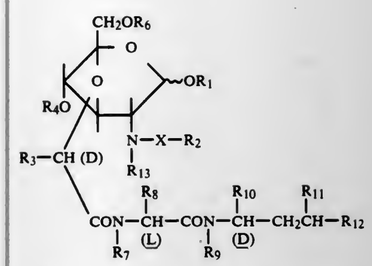
4,574,058

ANTIGEN DERIVATIVES AND PROCESSES FOR THEIR PREPARATION

Gerhard Baschang, Bettingen; Felix M. Dietrich, Basel; Roland Gisler, Binningen, all of Switzerland; Albert Hartmann, Grenzach, Fed. Rep. of Germany; Jaroslav Stanek, Birsfelden, Switzerland, and Lajos Tarcsay, Grenzach-Wyhlen, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 303,244, Sep. 17, 1981, Pat. No. 4,397,844, which is a division of Ser. No. 14,190, Feb. 22, 1979, abandoned. This application Mar. 21, 1983, Ser. No. 477,281
Claims priority, application Switzerland, Feb. 24, 1978, 2035/78; Apr. 7, 1978, 3777/78; May 18, 1978, 5394/78
The portion of the term of this patent subsequent to Aug. 9, 2000, has been disclaimed.
Int. Cl.[4] C07C *103/52*
U.S. Cl. 260—112.5 R **15 Claims**

1. A muramyl-peptide of the general formula



(II)

in which X is a carbonyl group, R_1, R_4 and R_6 are tri-lower alkyl-silyl, R_2 is unsubstituted or substituted alkyl or carbocyclic aryl, R_3 is hydrogen or alkyl, R_7 and R_{13} are hydrogen or lower alkyl, R_8 is hydrogen, lower alkyl, free, esterified or etherified hydroxy-lower alkyl, free, esterified or etherified mercapto-lower alkyl, free or acylated amino-lower alkyl, cycloalkyl having 5 or 6 carbon atoms, cycloalkyl-lower alkyl, of which the cycloalkyl radical contains 5 or 6 carbon atoms, unsubstituted or substituted aryl or aralkyl, nitrogen-containing heterocyclyl or heterocyclyl-lower alkyl, R_7 and R_8 together can also be alkylene having 3 or 4 carbon atoms, R_9 is hydrogen or lower alkyl, the radicals R_{10} and R_{12} independently of one another are a carboxyl radical which may or may not be esterified or amidised, and R_{11} is hydrogen or a carboxyl radical which may or may not be esterified or amidised.

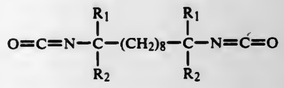
4,574,059

DECANE-1,10-DIISOCYANATES AND METHODS OF MAKING THE SAME

Jacques Kervennal, Lyons, and Pierre Durual, Vernaison, both of France, assignors to ATOCHEM, France

Filed Feb. 27, 1985, Ser. No. 706,319
Claims priority, application France, Mar. 2, 1984, 84 03253
Int. Cl.[4] C07C *119/045, 119/042*
U.S. Cl. 560—347 **9 Claims**

1. Decane-1,10-diisocyanates corresponding to the formula



wherein R_1 is an alkyl or cycloalkyl radical and R_2 is a hydrogen atom or an alkyl or cycloalkyl radical.

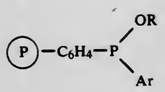
4,574,060

SELECTIVE CONVERSION OF ACRYLONITRILE INTO 1,4-DICYANO-1-BUTENE CATALYZED BY POLYMER-BOUND ALKYL DIARYLPHOSPHINITES

William J. Boyle, Jr., Warren; Frank Mares, Whippany, and Andrea M. Wallo, Morristown, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Nov. 3, 1982, Ser. No. 438,687
Int. Cl.[4] C07C *121/30*
U.S. Cl. 558—457 **16 Claims**

1. A heterogeneous catalytic process for converting acrylonitrile into 1,4-dicyano-1-butene which comprises contacting a liquid phase comprising acrylonitrile with an effective amount of polymer-bound alkyl diarylphosphinite catalyst which is solid under process conditions for a time sufficient to effect conversion of acrylonitrile into 1,4-dicyano-1-butene, wherein said catalyst has the formula:



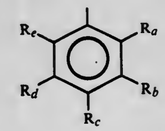
wherein:

P represents polystyrene crosslinked with at least about 1% of divinylbenzene;

—C_6H_4 represents a phenylene ring derived from and bound to said solid polymer of styrene;

—OR represents an alkoxy group wherein R is alkyl straight chain or branched, having 1–10 carbons, or cycloalkyl having 5–10 carbons;

—Ar represents an aryl group having the formula



wherein R_a through R_e are independently selected from the group consisting of:

(a) hydrogen;

(b) alkyl, straight chain or branched, having 1–10 carbons;

(c) cycloalkyl, having 5–10 carbons;

(d) —OR^3, wherein R^3 represents alkyl having 1–10 carbons or cycloalkyl having 5–10 carbons; and

(e) —$N(R^4R^5)$ wherein R^4 and R^5 are independently alkyl, straight chain or branched, having 1–10 carbons or cycloalkyl having 5–10 carbons;

wherein two of said R_a through R_e groups may form part of a fused alicyclic ring.

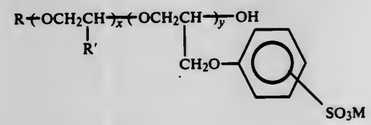
4,574,061

ALKOXY ARYL SULFONATE SURFACTANTS

Donald G. Ries, Richmond, Tex., assignor to Nalco Chemical Company, Oak Brook, Ill.

Filed May 2, 1985, Ser. No. 729,775
Int. Cl.[4] C07C *143/42*
U.S. Cl. 260—512 C **3 Claims**

1. A sulfonate having the structural formula:



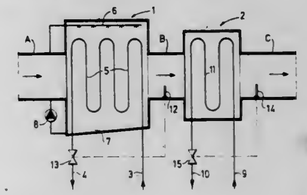
where in the above formula, R is a C_6–C_{20} alkyl or alkaryl group, R′ is from the group consisting of hydrogen or lower alkyl radicals of from 1–4 carbon atoms, x is an integer having the value between 0–50, y is an integer within the range of 1–5, and M is from the group consisting of sodium and potassium.

4,574,062

APPARATUS FOR TREATING CONTAMINATED GAS

Jacob Weitman, Tryffelvagen 8, S-611 63 Nykoping, Sweden

PCT No. PCT/SE81/00254, § 371 Date May 12, 1982, § 102(e) Date May 12, 1982, PCT Pub. No. WO82/00960, PCT Pub. Date Apr. 1, 1982
Continuation of Ser. No. 380,744, May 12, 1984, abandoned. This PCT application Sep. 11, 1981, Ser. No. 619,707
Claims priority, application Sweden, Sep. 12, 1980, 8006388
Int. Cl.[4] B01D *47/06, 47/12*
U.S. Cl. 261—147 **2 Claims**



1. An apparatus for treating air contaminated with impurities by scrubbing, humidifying and tempering the air to provide air having a predetermined degree of purity, a relative humidity of substantially 100% and a predetermined temperature, the apparatus comprising an inlet for contaminated air, an outlet for purified air and a flow path therebetween; injection means for injecting a spray of liquid into said flow path; and heat exchanger means in said flow path for providing contact surfaces having one side in contact with said spray and said air and another side in contact with a heat transporting fluid, wherein:

said flow path extends from said inlet to said outlet radially outwardly through said heat exchanger means for directing air along said flow path;

said heat exchanger means comprises first and second pluralities of axially stacked layers of coils of tubular elements, said pluralities being axially spaced from one another, each said layer including radially inner and outer coils interconnected for the passage of said heat transporting fluid through said tubular elements from a coil inlet means connected to said outer coils to a coil outlet means connected to said inner coils;

said injecting means comprises first and second pluralities of injection nozzles disposed radially inwardly of said first and second pluralities of coils, respectively, for directing said spray thereagainst; and

said inlet includes first and second inlet ducts positioned and arranged for directing contaminated air across said first and second pluralities of coils generally radially outwardly thereof.

4,574,063

METHOD OF FORMING GLASS OR CERAMIC ARTICLE

George W. Scherer, Big Flats, N.Y., assignor to Corning Glass Works, Corning, N.Y.

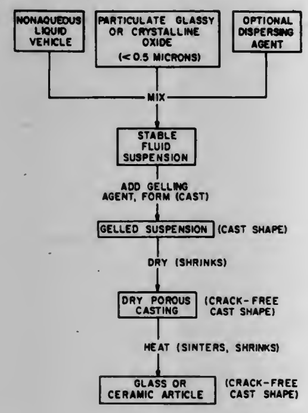
Continuation-in-part of Ser. No. 492,890, May 9, 1983, abandoned, which is a continuation of Ser. No. 339,395, Jan. 15, 1982, abandoned. This application Jun. 27, 1983, Ser. No. 508,185
Int. Cl.[4] C04B *35/14;* C03B *37/016*
U.S. Cl. 264—60 **37 Claims**

1. A method for making a porous glass or ceramic product which comprises the steps of:

(a) suspending a particulate glassy or crystalline oxide in a non-aqueous liquid vehicle to provide a stable fluid suspension of oxide particles, said particles having an average diameter not exceeding about 0.5 microns;

(b) forming the suspension into a selected configuration corresponding to that of the product to be made and causing the suspension to gel in that configuration, gellation being caused by the addition to the suspension of a

gelling agent in an amount at least effective to produce a gelled intermediate, and



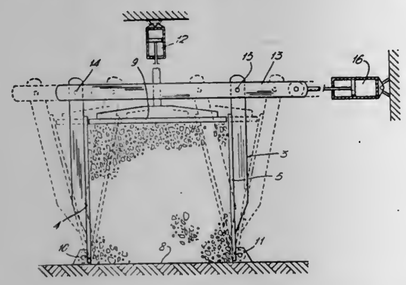
(c) drying the gelled intermediate while maintaining the configuration thereof to provide an integral, essentially crack-free porous product having the configuration of the gelled intermediate.

4,574,064

METHOD FOR CONTINUOUS CASTING OF OBJECTS OUT OF A HIGH-VISCOSITY CASTING MIX

Ilmari Paakkinen, Toijala, Finland, assignor to Oy Partek AB, Toijala, Finland

PCT No. PCT/FI82/00046, § 371 Date Jun. 10, 1983, § 102(e) Date Jun. 10, 1983, PCT Pub. No. WO83/01593, PCT Pub. Date May 11, 1983
PCT Filed Oct. 21, 1982, Ser. No. 506,548
Claims priority, application Finland, Nov. 10, 1981, 813556
Int. Cl.⁴ B28B *1/08*
U.S. Cl. 264—70 **4 Claims**



1. A method for continuous slide-casting of concrete objects or corresponding elements for compacting a high-viscosity mix in a slide-casting mold having a casting base and opposite wall portions comprising:

producing only parallel dislocations back and forth in various regional zones of the mechanically pressurized high-viscosity casting mix present in the mold, and in particular in parallel dislocation planes of the casting mix placed perpendicularly to the longitudinal direction of the casting base, pivoting at least two opposite wall portions of the slide-casting mold so as to be synchronized and always in the same direction in relation to each other, said pivoting provided around substantially parallel vertical shafts placed at a distance from each other, included in the planes of the mold walls, and being placed side by side in relation to the longitudinal direction of the casting base.

4,574,065

NON-DIRECTIONAL FLOOR TILE

Francis J. Appleyard, East Petersburg, and John H. Young, Lancaster, both of Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Division of Ser. No. 564,033, Dec. 21, 1983, abandoned. This application Jul. 27, 1984, Ser. No. 635,057
Int. Cl.⁴ B32B *27/04, 27/20*
U.S. Cl. 264—76 **1 Claim**

1. A method for making an improved composition tile having a filled thermoplastic mass of a primary coloration, said mass being a thermoplastic binder system and a filler, the steps comprising:

(a) mixing together the thermoplastic binder system and a filler in a conventional mixing means,

(b) at some point prior to removing the mass of plastic material from the mixer, blending thereinto a mass of hard particle means of marble with a Mohs hardness of 2.5 to 3.5 and having a coloration different from the coloration of the thermoplastic mass,

(c) dumping the plastic mass from the mixer onto a two-roll mill or calendering means which will pass the mass between the nips of the rolls and form the mass of material into a sheet form, and then forming the sheet into a plurality of square tile units wherein the hard particle means added to the plastic mass will appear as a dot pattern distributed across the surface of the tile product appearing as non-directional, unsmeared shapes in the surface area of the tile product, with the hard particles being of a contrasting coloration to the coloration of the plastic mass, and said filled plastic mass of subparagraph (a) being in an elongated smeared direction.

4,574,066

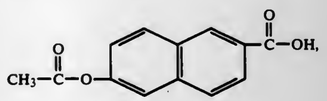
PROCESS FOR THE EXPEDITIOUS FORMATION OF A HIGH STRENGTH SHAPED ARTICLE OF POLY(6-OXY-2-NAPHTHOATE-4-OXYBENZOATE)

John D. Gibbon, Charlotte, N.C.; Terry E. Lawler, Helena, Ala.; Hyun-Nam Yoon, Summit, and Larry F. Charbonneau, Chatham, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Feb. 27, 1984, Ser. No. 583,643
Int. Cl.⁴ D01D *1/02, 5/08, 10/02*
U.S. Cl. 264—85 **28 Claims**

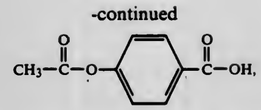
1. An improved process for the expeditious formation of a high strength shaped article of poly(6-oxy-2-naphthoate-4-oxybenzoate) which is capable of forming an anisotropic melt phase comprising:

(a) polymerizing under melt polymerization conditions in a polymerization zone at a temperature above 220° C. approximately 10 to 90 mole percent of monomer I and approximately 10 to 90 mole percent of monomer II with the evolution of acetic acid by-product, wherein monomer I is:



and monomer II is:

-continued



with the polymerization being conducted under a non-oxidizing gaseous atmosphere in the presence of a catalytic quantity of a potassium salt which is capable of catalyzing the polymerization, with said polymerization conditions including a polymerization temperature of at least 320° C. and which exceeds the melting temperature of the polymer product by at least 20° C. while operating at substantially atmospheric pressure until at least 95 percent of the stoichiometric quantity of acetic acid by-product is evolved and removed from said polymerization zone, and a subsequent polymerization temperature of at least 320° C. and which exceeds the melting temperature of the polymer by at least 20° C. while operating at a substantially reduced pressure of approximately 5 to 200 mm. of mercury to further increase the molecular weight of the polymer,

(b) melt extruding the resulting polymer product to form a shaped article, and

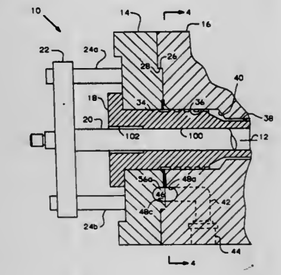
(c) increasing the strength of said shaped article by at least 50 percent by heating in a non-deleterious gaseous atmosphere at a temperature below the melting temperature of said shaped article for two hours or less.

4,574,067

CROSSHEAD WITH STATIC MIXERS

Daryl D. Cerny, Greenville, Ohio, and Edwin J. Diebolt, Muncie, Ind., assignors to Ball Corporation, Muncie, Ind.

Filed Mar. 1, 1985, Ser. No. 707,721
Int. Cl.⁴ B29D *23/04;* B29F *3/04, 3/02;* B01F *7/24*
U.S. Cl. 264—209.8 **45 Claims**



1. A crosshead for extruding a thermoplastic material along a longitudinal axis, which crosshead comprises:

supply passage means, being disposed radially outward from said longitudinal axis, for receiving molten thermoplastic material;

distribution passage means, comprising a first distribution branch that is in fluid communication with said supply passage means, for providing an annular flow of said thermoplastic material;

mixing passage means, being in fluid communication with said annular flow of said distribution passage means, and having an exit with a first cross sectional area, for mixing said thermoplastic material as said thermoplastic material flows through said mixing passage means;

forging passage means, being disposed circumferentially around said longitudinal aixs, being in fluid communication with said exit of said mixing passage means, and having an outlet that is in fluid communication with said die opening, for compressively forging said thermoplastic material into a tubular layer of thermoplastic material having a second cross sectional area that is greater than said first cross sectional area; and

extrusion opening means, comprising a core that is disposed along said longitudinal axis, comprising a die opening that is annularly disposed around said core, and comprising the annular space between said core and said die opening, for extruding said compressively forged layer of thermoplastic material into a tubular layer of thermoplastic material having a third cross sectional area that is substantially equal to said annular space.

31. A method for extruding a thermoplastic material along a longitudinal axis, through an extrusion opening that lies intermediate of a core and an annularly disposed die opening, and into a tubular layer of thermoplastic material, which method comprises:

(a) injecting a flow of molten thermoplastic material into a crosshead;

(b) providing an annular stream of said thermoplastic material that is circumferentially disposed around said longitudinal axis and that is radially spaced apart therefrom by dividing said injected flow of thermoplastic material into two separate streams, flowing one of said streams of said thermoplastic material partially around said longitudinal axis in one direction, and substantially completing encirclement of said longitudinal axis by flowing the other of said streams of said thermoplastic material partially around said longitudinal axis in the other direction;

(c) feeding said annularly disposed stream of said thermoplastic material into an annularly disposed mixing passage that includes an entry, and that includes an exit having a first cross sectional area;

(d) mixing said thermoplastic material as said thermoplastic material flows through said mixing passage from said entry to said exit;

(e) compressively forging said thermoplastic material into a tubular layer of thermoplastic material having a second cross sectional area that is larger than said first cross sectional area; and

(f) extruding said tubular layer of thermoplastic material through an extrusion opening having a third cross sectional area.

4,574,068

UNIVERSAL LOGIC CARD

William D. Hill, San Jose; William A. Mercanti, Jr., Campbell; Christian K. Apple, Mountain View, all of Calif., and Gary S. Loomis, Johnston, R.I., assignors to General Electric Company, San Jose, Calif.

Continuation of Ser. No. 449,221, Dec. 14, 1982, abandoned. This application Mar. 27, 1985, Ser. No. 717,467
Int. Cl.⁴ G21C *17/00*
U.S. Cl. 376—259 **2 Claims**
MICROFICHE APPENDIX INCLUDED
(2 Microfiche, 68 Pages)

1. A universal logic card adapted to execute a selected transfer functions in a nuclear power plant comprising:

first programmable digital logic means including;

a plurality of input latches,

a plurality of output latches,

a first digital processor,

a first programmable memory means effective to direct said first digital processor to execute said selected transfer function, and

first means for controlled coupling of said first digital processor to said plurality of input latches and said plurality of output latches to operate said selected transfer function in real time analog an actual operating path for exercising responses to said transfer function;

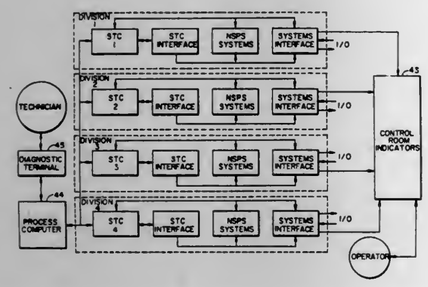
second means for controlled coupling including;

a second digital processor,

means selectively coupling said input latches to said second microprocessor,

means selectively coupling said output latches to said second microprocessor, and

second program memory means effective to direct said first digital processor to execute said transfer function and to compare the input latches and output latches for verifying processing of said selected transfer function;



third means for controlled coupling of said first digital processor to said plurality of input latches and said plurality of output latches to operate said transfer function in a short time transparent domain along said actual operating path to test, but not exercise, responses to said transfer function.

4,574,069

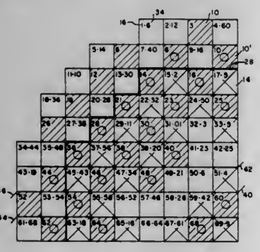
IN-CORE FUEL MANAGEMENT FOR NUCLEAR REACTOR

Malcolm F. Ross, Bloomfield, and Sidney Visner, W. Hartford, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Division of Ser. No. 209,165, Nov. 21, 1980, Pat. No. 4,451,427, which is a continuation of Ser. No. 874,955, Feb. 3, 1978, abandoned. This application Feb. 6, 1984, Ser. No. 577,632

Int. Cl.⁴ G21C *19/20*

U.S. Cl. 376—267 **5 Claims**



1. In the first cycle of a pressurized water nuclear power reactor having a multiplicity of elongated, square fuel assemblies supported side-by-side to form a generally cylindrical, stationary core consisting entirely of fresh fuel assemblies, wherein the assemblies are of three enrichment types, each assembly of the first type having a substantially similar low average fissile enrichment of at least about 1.8 weight percent U-235, each assembly of the second type having a substantially similar intermediate average fissile enrichment at least about 0.4 weight percent greater than that of the first type, and each assembly of the third type having a substantially similar high average fissile enrichment at least about 0.4 weight percent greater than that of the intermediate type, the arrangement of the low, intermediate, and high enrichment assembly types which comprises:

a. a generally cylindrical inner core region consisting of approximately two-thirds the total assemblies in the core and forming a figurative checkerboard array having

1. a first checkerboard component at least two-thirds of which consists of high enrichment and intermediate enrichment assemblies, at least some of the high enrichment assemblies containing fixed burnable poison shims, and
2. a second checkerboard component consisting of assemblies other than the high enrichment type; and

b. a generally annular outer region consisting of the remaining assemblies and including at least some but less than two-thirds of the high enrichment type assemblies.

4,574,070

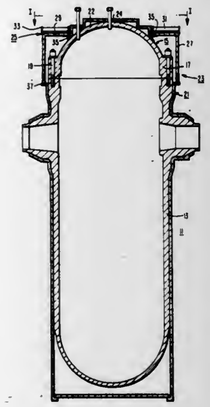
THERMAL INSULATION OF NUCLEAR REACTOR

Ronald M. Blaushild, Penn Hills, and Richard E. Tome, Murrysville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 5, 1983, Ser. No. 510,490

Int. Cl.⁴ G21C *11/08*

U.S. Cl. 376—289 **14 Claims**



1. A nuclear reactor including a vessel having a body and a head, a thermal insulating shield for said head, said shield including a plurality of removable, one-piece shielding units of thermal insulating material, each said unit being of generally inverted L longitudinal cross section and including a generally vertical member and a generally horizontal member rigidly joined to said vertical member, means, on each shielding unit, cooperative with units adjacent to said each unit in said thermal insulating shield, for interlocking said each unit with its said adjacent units, said interlocking means being structured to permit separation of said each unit from interlock with its said adjacent units by displacement of said each unit relative to its said adjacent units, said units, when each unit is interlocked with its said adjacent units forming an effective thermal insulating shield for said head with said generally vertical members extending along said head laterally and said generally horizontal members extending over at least a portion of said head and means, on said each unit, remotely operable, to interlock said each unit with its said adjacent units or, when said each unit and its said adjacent units are interlocked, to displace said each unit relative to its said adjacent units to separate said each unit from interlock with its said adjacent units.

4,574,071

PROCESS FOR REMOVING DISSOLVED OXYGEN FROM WATER USING HYDRAZINE

Sunil G. DeSilva, Wilkins Township, Allegheny County, and Charles W. Hearp, Trafford, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 537,924, Sep. 30, 1983, abandoned. This application Dec. 5, 1984, Ser. No. 678,380

Int. Cl.⁴ C23F *11/08*

U.S. Cl. 422—14 **8 Claims**

1. In a process for the removal of dissolved oxygen from the aqueous media circulated in a steam generation system having copper alloy feedtrain components, including in series a feedwater heating system, steam generator, condenser, and condenser pump operative to recycle aqueous medium to the system through the feedwater heaters, and wherein hydrazine is added to the aqueous media, prior to said feedwater heaters, to react with said dissolved oxygen, the improvement wherein:

the hydrazine-containing aqueous media, after passage through the condenser pump, is contacted with in a column of an effective amount of a noble metal, selected from the group consisting of palladium and platinum, dispersed on a stable carrier material for a period of time effective to react the hydrazine with the dissolved oxygen at a temperature of between about 20°–40° C. and at a pressure of between about 50–150 psig, to reduce the dissolved oxygen content of the aqueous media to a value of less than 10 parts per billion, prior to passage of the aqueous medium to the feedwater heaters so as to reduce formation of oxides of copper which could be transported to and cause corrosion of the steam generator.

4,574,072

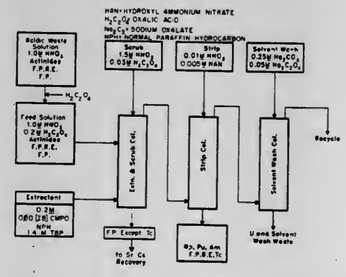
METHOD FOR EXTRACTING LANTHANIDES AND ACTINIDES FROM ACID SOLUTIONS BY MODIFICATION OF PUREX SOLVENT

E. Philip Horwitz, and Dale G. Kalina, both of Naperville, Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Continuation-in-part of Ser. No. 608,299, May 8, 1984, which is a division of Ser. No. 517,475, Jul. 26, 1983. This application May 21, 1984, Ser. No. 612,199

Int. Cl.³ B01D *11/04;* **C01F** *17/00;* **C22B** *59/00;* **C01G** *56/00*

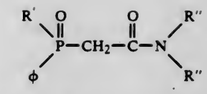
U.S. Cl. 423—9 **20 Claims**



1. A process for the recovery of multivalent lanthanide and actinide values from an aqueous acid solution containing these and other values comprising:

adjusting the molarity of the acid in the aqueous solution to between 0.1 and 12.0 M to form a feed solution;

contacting the feed solution with an extraction solution consisting of an organic extractant and a phase modifier in an inert water-immiscible organic diluent, the extractant having the formula:



where ϕ is phenyl, R′ is a straight or branched alkyl containing from 6 to 12 carbon atoms and R″ is an alkyl containing from 3 to 6 carbon atoms, the phase modifier is selected from the group consisting of tri-n-butyl phosphate, dibutyl butylphosphonate, tris(2-ethylhexyl)phosphine oxide, dihexylsulfoxide and methylisobutyl ketone, whereby the multivalent lanthanide and actinide values are selectively extracted from the feed solution, thereby loading the extraction solution,

separating the loaded extractant solution from the feed solution, and

stripping the multivalent lanthanide and actinide values from the extraction solution.

4,574,073

PROCESS FOR MANUFACTURING COARSE, CRYSTALLINE ALUMINA

Klaus Meyer, Schaffhausen, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Continuation of Ser. No. 477,863, Mar. 23, 1983, abandoned. This application Jan. 23, 1985, Ser. No. 694,032

Claims priority, application Switzerland, Mar. 29, 1982, 1911/82

Int. Cl.⁴ C01F *7/02*

U.S. Cl. 423—111 **7 Claims**

1. A process for manufacturing single crystal, coarse, crystalline alumina, α-Al_2O_3, of average crystal diameter larger than or equal to 10μ suitable for grinding, lapping and polishing which comprises providing a material consisting of charged dry absorption alumina from dry absorption scrubbing units for dry scrubbing the waste gases given off during the aluminum reduction process in connection with fused salt reduction cells producing aluminum, said material containing all of the impurities picked up during said process and calcining the starting material to provide single crystal, coarse, crystalline alumina having an average crystal diameter larger than or equal to 10 μ.

4,574,074

PROCESS FOR THE PRODUCTION OF ALUMINUM TRIHYDROXIDE HAVING A MEDIUM OF LESS THAN 4 MICRONS, WHICH CAN BE VARIED AS REQUIRED

Benoit Cristol, and Jacques Mordini, both of Provence, France, assignors to Aluminum Pechiney, Gardanne, France

PCT No. PCT/FR83/00210, § 371 Date Jun. 13, 1984, § 102(e) Date Jun. 13, 1984, PCT Pub. No. WO84/01569, PCT Pub. Date Apr. 26, 1984

PCT Filed Oct. 18, 1983, Ser. No. 622,083

Claims priority, application France, Oct. 20, 1982, 82 17955

Int. Cl.⁴ C01F *7/02*

U.S. Cl. 423—124 **14 Claims**

1. In a process for the production of aluminum trihydroxide by decomposing a supersaturated sodium aluminate solution by adding aluminum trihydroxide primer to said sodium aluminate solution and said solution is agitated to precipitate aluminum trihydroxide, the improvement comprising grinding the aluminum trihydroxide primer until said primer has a specific B.E.T. surface area of at least 8 square meters per gram, adding said primer to a hot supersaturated sodium aluminate solution at a temperature of from 30°–80° C. in a quantity up to 20 grams per liter of said solution such that the total surface area of said primer added is at least 100 square meters per liter of sodium aluminate solution, and then agitating the resulting suspension until a weight ratio of dissolved Al_2O_3 to caustic Na_2O of at most 0.7 is obtained, whereby aluminum trihydroxide having a

median diameter of less than 4 microns, with unimodal distribution and minimum deviation is precipitated.

4,574,075
PURIFICATION OF ALKALI METAL NITRATES
Jack D. Rickly, Dumont, N.J., and B. Timothy Pennington, Sulphur, La., assignors to Olin Corporation, Cheshire, Conn.
Filed Dec. 6, 1984, Ser. No. 678,858
Int. Cl.[4] C01F *11/36*
U.S. Cl. 423—184 **22 Claims**

1. The process for removing heavy metal contaminants from an impure alkali metal nitrate containing them which comprises:
   a. admixing said impure alkali metal nitrate with sufficient water to form an aqueous solution thereof;
   b. adjusting the pH of said aqueous solution to within the range from between 2 and about 6;
   c. adjusting the concentration of nitrite ion in said aqueous solution to provide at least six times the stoichiometric proportion necessary to reduce said heavy metal impurities contained therein;
   d. admixing sufficient basic material with the aqueous alkali metal nitrate solution to raise the pH of the resulting mixture to above about 6, whereby a precipitate of solid heavy metal contaminants forms within said aqueous solution; and
   e. separating said solid heavy metal contaminants from the resulting purified aqueous solution of alkali metal nitrate.

4,574,076
REMOVAL OF HYDROGEN SULFIDE FROM GEOTHERMAL STEAM
Harry M. Castrantas, Newtown, Pa., assignor to FMC Corporation, Philadelphia, Pa.
Filed Nov. 4, 1976, Ser. No. 738,651
Int. Cl.[4] C01B *17/16, 31/20;* B01D *53/44;* F03G *7/02*
U.S. Cl. 423—224 **15 Claims**

1. A process for removing hydrogen sulfide from geothermal steam which comprises passing geothermal steam containing hydrogen sulfide through a steam pipe at a temperature below 195° C., but not below the boiling point of water at atmospheric pressure, under conditions of turbulent flow and injecting into said steam pipe a base and hydrogen peroxide.

4,574,077
PROCESS FOR PRODUCING PITCH BASED GRAPHITE FIBERS
Seiichi Uemura, Tokyo; Takao Hirose, Kamakura; Yoshio Sohda, Kawasaki; Takayoshi Sakamoto, Hiratsuka, and Yoshio Kishimoto, Yokosuka, all of Japan, assignors to Nippon Oil Company Limited, Japan
Filed Oct. 10, 1984, Ser. No. 659,261
Claims priority, application Japan, Oct. 14, 1983, 58-190953; May 1, 1984, 59-37286; May 31, 1984, 59-10958
Int. Cl.[4] D01F *9/14*
U.S. Cl. 423—447.6 **5 Claims**

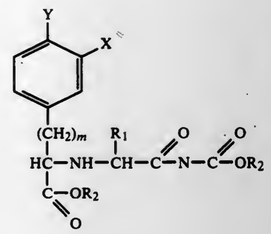
1. A process for producing a pitch-based graphite fiber, which process comprises treating a pitch fiber in an oxidative gas atmosphere to render it infusible, said pitch fiber being obtained by melt-spinning a carbonaceous pitch, then heat-treating the infusiblized fiber at 400°–750° C. in an inert gas atmosphere to obtain a precarbonized fiber containing 1 to 20 percent by weight of oxygen, then raising the temperature to 2,000°–3,000° C. at a rate of 500° C. or higher per minute in an inert gas atmosphere and heat-treating the precarbonized fiber at the raised temperature of 2,000°–3,000° C. in said inert gas atmosphere.

4,574,078
PROCESS AND APPARATUS FOR PREPARING MONODISPERSED, SPHERICAL, NON-AGGLOMERATED METAL OXIDE PARTICLES HAVING A SIZE BELOW ONE MICRON
Paolo Cortesi, Chivasso; Gianni Donati, Rho, and Giuseppe Saggese, Novara, all of Italy, assignors to Montedison S.p.A., Milan, Italy
Filed Feb. 22, 1984, Ser. No. 582,546
Claims priority, application Italy, Feb. 25, 1983, 19819 A/83
Int. Cl.[4] C01G *31/02*
U.S. Cl. 423—592 **8 Claims**

1. A process for preparing spherical, submicronic, monodispersed, and non-agglomerated particles of metal oxides by reacting with steam a gaseous stream containing an aerosol of liquid particles of a hydrolyzable metal compound of a metal selected from the class consisting of titanium, aluminum, zirconium, chromium, vanadium, gallium and iron, characterized in that into a duct, in which flows an inert gas stream containing vapors of said hydrolyzable metal compound, there is fed through a nozzle a cold inert gas stream, the temperatures and flow rates of the two gaseous streams being such as to establish in the duct a temperature lower than the condensation temperature of the said metal compound; the mixed gaseous streams having a turbulent flow in the duct with a Reynolds number equal to or higher than 1,800; and at the duct outlet, the aerosol of the said metal compound liquid particles, which has formed in the duct, is reacted with steam, wherefore solid particles of hydrated oxide of said metal form, which are then calcined to the corresponding metal oxide.

4,574,079
RADIOLABELED ANGIOTENSIN CONVERTING ENZYME INHIBITORS FOR RADIOLABELING MAMMALIAN ORGAN SITES
Haralambos P. Gavras, 11 Coolidge Rd., Wayland, Mass. 01778; James W. Ryan, 3420 Poinciana Ave., Miami, Fla. 33133, and Alfred Chung, 8781 SW. 87th Ave., Miami, Fla. 33125
Filed May 27, 1983, Ser. No. 498,736
Int. Cl.[4] A61K *43/00, 49/00, 49/02;* C07C *103/52*
U.S. Cl. 424—1.1 **10 Claims**

1. A radiolabeled angiotensin converting enzyme (ACE) inhibitor having the general formula:



wherein
X is a radiolabeling substituent,
Y is hydroxy, alkoxy containing from 1 to 6 carbon atoms, phenoxy, benzyloxy or amino,
R_1 is hydrogen or methyl,
R_2 is hydrogen, an ester moiety hydrolyzable under mammalian in vivo conditions or an ionically bonded anion of a physiologically acceptable non-toxic salt, and
m is an integer of from 1 to 6.

9. A method of radioimaging a mammalian site which comprises administering into a blood vessel in the mammal a dose of from about 0.01 mg to about 15 mg, per kilogram of body weight, of a radiolabeled angiotensin converting enzyme (ACE) inhibitor as described in claim 1, and then scanning the mammal to produce an image of the site.

4,574,080
COMBINATION FORMULATION
Stig Roswall, Soborg, and Lene B. Thorhus, Holte, both of Denmark, assignors to A/S Alfred Benzon, Copenhagen, Denmark
Filed Aug. 15, 1983, Ser. No. 523,635
Claims priority, application Denmark, Aug. 13, 1982, 3652/82
Int. Cl.[4] A61K *9/22, 9/48, 9/50, 9/54*
U.S. Cl. 424—20 **29 Claims**

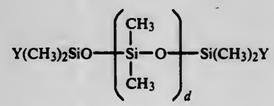
1. A pharmaceutical oral controlled release multiple-unit dosage form containing a multiplicity of individual coated units, each unit containing an active substance coated with a water-insoluble, but water diffusible controlled release coating, each unit additionally comprising particles of active substance adhered to the surface of the controlled release coating in a substantially uniform layer, the particles being at least one power of ten smaller than the coated unit.

4,574,081
ANTIPLAQUE DENTIFRICE HAVING IMPROVED FLAVOR
Stephen J. Shymon, Metuchen, N.J., assignor to Colgate-Palmolive Co., New York, N.Y.
Filed Sep. 25, 1984, Ser. No. 654,351
Int. Cl.[4] A61K *7/18, 7/22*
U.S. Cl. 424—52 **19 Claims**

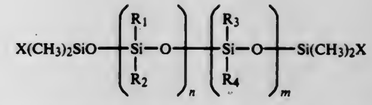
1. An antiplaque dentifrice having improved flavor comprising as the essential ingredients, an effective amount of at least about 0.01% by weight antiplaque quaternary ammonium compound, said dentifrice being devoid of a fluoride-providing compound or containing a fluoride-providing compound in amount which provides about 0.005–1% by weight of fluoride ion, about 0.8–1 2% by weight of a flavoring agent formulation consisting essentially of from at least 15% up to 45% by weight of anethol, from at least 31% up to 46% by weight of menthol and from at least 24% up to 39% by weight of peppermint, and about 0.2–0.6% by weight of a sweetening agent in the weight ratio of about 6:1 to 1.3:1 flavoring agent:sweetening agent, in a dental vehicle comprising about 35–65% by weight of a water-insoluble dental abrasive and humectant containing about 18–30% by weight of at least one of glycerin, sorbitol and polyethylene glycol and about 0.5–5% by weight of a nonionic gelling agent.

4,574,082
ONE-PHASE SILICONE-BASED COSMETIC PRODUCTS CONTAINING WAX
Marlene Tietjen; Jane Hollenberg, both of New York, and Richard T. Rigg, Brooklyn, all of N.Y., assignors to Revlon, Inc., New York, N.Y.
Filed Jul. 29, 1983, Ser. No. 518,497
Int. Cl.[4] A61K *7/021, 7/025*
U.S. Cl. 424—63 **19 Claims**

1. An anhydrous homogeneous single-phase cosmetic stick, cake or cream composition comprising:
(a) 2 to 50 wt. % of dimethylpolysiloxane having the formula



wherein the Y substituents are both $-CH_3$ or both $-OH$, and wherein the degree of polymerization d is sufficient to impart to the dimethylpolysiloxane a viscosity of 0.65 to 10^6 centistokes at 25° C.;
(b) 2 to 50 wt. % of an organosilane having the formula $RSi(CH_3)_3$ or an oragano-polysiloxane having the formula



or mixtures thereof, wherein R is alkyl having 1 to 30 carbon atoms, or an aryl substituent which is phenyl or a phenyl ring connected to the Si by an alkylene bridge up to 3 carbons long or by a vinyl group;
R_1 and R_3 are independently alkyl having 1 to 30 carbon atoms, or an aryl substituent which is phenyl or a phenyl ring connected to the Si by an alkylene bridge up to 3 carbons long or by a vinyl group;
R_2 is alkyl having 2 to 30 carbon atoms, an aryl substituent which is phenyl or a phenyl ring connected to the Si by an alkylene bridge up to 3 carbons long or by a vinyl group, or trimethylsiloxy;
R_4 is alkyl having 2 to 30 carbon atoms, or an aryl substituent which is phenyl or a phenyl ring connected to the Si by an alkylene bridge up to 3 carbons long or by a vinyl group;
n is 1 to 100; m is 0 to 100; and (n plus m) is 1 to 100;
X is alkyl or alkyloxy wherein the alkyl group contains 1 to 30 carbon atoms; and
(c) 4 to 30 wt. % of a cosmetically acceptable wax which does not form a homogeneous single-phase mixture with component (a); provided that there is a sufficient amount of component (b) present that the product formed by cooling to 25° C. a molten, stirred mixture of components (a), (b) and (c) is a single homogeneous phase.

4,574,083
ISOLATES OF PYTHIUM SPECIES WHICH ARE ANTAGONISTIC TO *PYTHIUM ULTIMUM*
Ralph Baker, Fort Collins, Colo., and Ran Lifshitz, Ramat Chen, Israel, assignors to Colorado State University Research Foundation, Fort Collins, Colo.
Filed Nov. 29, 1983, Ser. No. 555,941
Int. Cl.[4] A01N *63/00;* C12N *1/14, 15/00;* C12R *1/648*
U.S. Cl. 424—93 **5 Claims**

1. A biologically pure culture of Pythium isolate N2 having the identifying characteristics of ATCC 20692.

4,574,084
PROCESS FOR THE PREPARATION OF A MODIFIED AQUEOUS CHLORITE SOLUTION, THE SOLUTION PREPARED BY THIS PROCESS AND THE USE THEREOF
Peter Berger, Rathausstrasse 44,, 6900 Heidelberg, Fed. Rep. of Germany
PCT No. PCT/EP84/00046, § 371 Date Oct. 24, 1984, § 102(e) Date Oct. 24, 1984, PCT Pub. No. WO84/03274, PCT Pub. Date Aug. 30, 1984
PCT Filed Feb. 2, 1984, Ser. No. 668,273
Claims priority, application Fed. Rep. of Germany, Feb. 25, 1983, 3306753; Mar. 3, 1983, 33075697
Int. Cl.[4] A61K *33/20, 33/40, 33/42*
U.S. Cl. 424—128 **20 Claims**

1. A process for the preparation of a stabilized, modified, aqueous chlorite solution comprising the steps of:
   providing an aqueous acid solution having a pH of less than about 3;
   adding a peroxy compound to said aqueous acid solution; and
   introducing an aqueous chlorite solution into the acid solution to which said peroxy compound has been added, until the pH of said acid solution exceeds 7 and the solution becomes a greenish color.

4,574,085

METHOD FOR USING DIALYSIS SOLUTION CONTAINING GLYCEROL

Ralph E. Dolkart, Brugge, Belgium, and Nicholas J. Kartinos, Park Ridge, Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed May 15, 1981, Ser. No. 263,818

Int. Cl.[4] A61K *31/70*; A61K *31/195, 33/06, 33/14, 33/22*

U.S. Cl. 424—148 14 Claims

1. A method of performing peritoneal dialysis by inserting into the peritoneal cavity a substantially sugar-free dialysis solution which comprises a water solution of pH 5.6 to 7.4, having physiological salts and glycerin present in concentrations sufficient to safely effect the removal of solutes and water from the patient by diffusion through the peritoneal membrane, said glycerin being present in a concentration of 0.5 to 40 grams per liter; allowing said dialysis solution to dwell in the peritoneal cavity for a period of time sufficient to permit said diffusion of solutes in water; and thereafter removing said dialysis solution from the peritoneal cavity.

4,574,086

METHOD FOR RETARDING DEGRADATION OF FOOD COLORS AND FLAVORS

John R. Shackelford, LaGrange, Ill., assignor to Hercules Incorporated, Wilmington, Del.

Continuation-in-part of Ser. No. 150,298, May 16, 1980, abandoned, which is a continuation-in-part of Ser. No. 967,077, Dec. 6, 1978, abandoned. This application Apr. 28, 1981, Ser. No. 258,373

Int. Cl.[4] A23L *1/272*

U.S. Cl. 426—62 7 Claims

1. A method for retarding loss of natural color and retarding the appearance of unnatural color in dry food blends consisting essentially of: mixing a natural vegetative oleoresin color additive with an amount of dried yeast product effective to stabilize the color of the additive to form a stabilized additive and then mixing the stabilized additive into a dry food to form a dry food blend having a stabilized color.

4,574,087

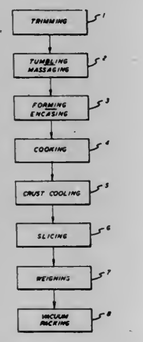
PORTION PRE-SLICED ROAST BEEF PRODUCT AND PROCESS

Roger C. Sheehy, Providence, R.I., and Irwin Muskat, Manchester, N.H., assignors to Granite State Packing Company, Manchester, N.H.

Continuation of Ser. No. 473,067, Mar. 7, 1983, abandoned. This application Nov. 9, 1984, Ser. No. 670,362

Int. Cl.[4] A23L *1/31*

U.S. Cl. 426—129 12 Claims



1. A method of producing a packaged sliced whole muscle roast beef without appreciable loss of muscle fiber and structure, comprising the following steps:

Step 1: trimming a fresh boneless whole muscle primal piece of beef while leaving connective tissue;

Step 2: massaging directly, without intermediate processing steps, the piece so prepared along with others with added water and flavorings and allowing said piece to take up water and soften;

Step 3: placing said piece so massaged and softened but still as a whole muscle into a shape-determining encasement having a substantially uniform cross-section end-to-end;

Step 4: cooking rare-to-medium said piece while so encased;

Step 5: crust cooling said piece while still encased;

Step 6: removing said piece from said encasement, said piece having and holding substantially the shape of said encasement;

Step 7: while applying a confining force on the sides and ends, slicing said piece so shaped across the longitudinal axis thereof in a single pass through a multi-blade slicer producing slices of uniform thickness;

Step 8: weighing said piece so sliced while keeping the slices together in substantially airtight contact and establishing the conformity thereof to a predetermined weight desired for all the roasts of a series; and

Step 9: vacuum packing said piece in an airtight container for shipment, said slicing and all steps subsequent thereto being done in a manner to virtually exclude air from contacting the faces of said slices and thus virtually eliminating premature blooming of said slices prior to unpackaging,

whereby said piece so packaged is a sliced whole muscle rare-to-medium roast beef substantially all of the slices of which are of uniform weight and size.

4,574,088

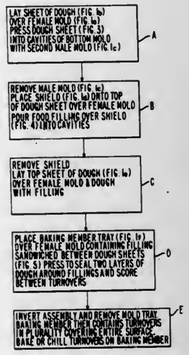
METHOD FOR PRODUCING MULTIPLE FOOD TURNOVERS

Arthur H. Bowden, 429 43rd Ave., San Francisco, Calif. 94121

Filed Feb. 17, 1984, Ser. No. 581,315

Int. Cl.[4] A21D *13/08*

U.S. Cl. 426—275 2 Claims



1. A method of fabricating turnovers comprising:

providing a female die having a top surface and at least three concave food-receiving cavities extending down from said top surface, said cavities having an open top for receiving fillings and closed bottom and side portions for holding such fillings, the portions of said top surface between said open tops of said cavities constituting mullions which separate and surround said open tops,

lining said cavities of said female die with a first layer of dough,

providing a shield comprising a member having a two-dimensional array of through openings which correspond in their shapes and positions to said cavities of said female die, said through openings in said shield being separated by web portions which correspond in shape and size to said mullions on said die,

placing said shield over said die so that the openings of said shield are in registration with the open tops of said cavities and so that the webs of said shield cover said mullions of said die,

pouring food filling over said shield and said die until said cavities are filled to a predetermined degree and inaccurately enough so that portions of said filling fall onto the webs of said shield,

removing said shield with said portions of said filling thereon,

whereby upon removal of said shield, the mullions of said die will be left clear of filling so that fabrication speed of said turnovers will be enhanced,

covering said female die after said cavities are lined with said layer of dough with a second layer of dough so that the filling in each of said cavities is surrounded with dough,

placing a flat tray upon said second layer of dough, thereby forming an assembly,

inverting said assembly and pressing said flat tray and said female mold together so as to seal said second layer of dough to said first layer of dough at the areas of said mullions, and

removing said female die so as to leave formed turnovers on said flat tray.

4,574,089

PROCESS FOR PREPARING A LIQUID COFFEE AROMA

Joseph A. Musto, Bronx; Robert A. Scarella, Hawthorne, both of N.Y.; Harold W. Jacquett, Palisades, N.J.; Angelo V. Riolo, Parsippany, N.J., and Nicholas I. Della Fave, Ridgefield Park, N.J., assignors to General Foods Corporation, White Plains, N.Y.

Filed Apr. 24, 1985, Ser. No. 726,756

Int. Cl.[4] A23F *5/48*

U.S. Cl. 426—386 14 Claims

1. A process for preparing a liquid coffee aroma comprising the steps of:

(a) condensing coffee grinder gas as a frost;

(b) placing the grinder gas frost in a pressure vessel;

(c) supplying heat to the contents of the vessel and allowing the frost to equilibrate at a pressure in excess of 750 psig, thereby forming three phases, a water phase, a liquid carbon dioxide phase, and a gaseous carbon dioxide phase;

(d) draining the water phase from the vessel;

(e) chilling a second vessel to a temperature of less than −80° F.;

(f) venting from below the liquid carbon dioxide surface in the first vessel through a line into the second vessel for a period sufficient to achieve pressure equilibration between the two vessels;

(g) isolating the second pressure vessel from the first;

(h) venting the second vessel so as to reach a pressure of 0 psig in the vessel;

(i) warming the contents of the second vessel with the vessel sealed to a temperature of between about 0° F. and 30° F., so as to sublime all residual carbon dioxide contained therein to the gaseous phase; and

(j) withdrawing a highly concentrated liquid coffee aroma from the second vessel which is essentially carbon dioxide free.

4,574,090

PROCESS OF MAKING A DOUGH CRUST

Jeno F. Paulucci, 2020 Washington Dr., Sanford, Fla. 32771

Filed Feb. 27, 1984, Ser. No. 583,615

Int. Cl.[4] A21D *8/00*

U.S. Cl. 426—439 7 Claims

1. A process of preparing a crust comprising the sequential steps of:

(a) producing a dough sheet having upper and lower surfaces;

(b) docking the dough sheet to provide a plurality of spaced-apart docking holes that extend through the dough sheet and to connect the upper and lower dough surfaces, said holes being large enough such that they do not close during cooking;

(c) cutting the sheet into individual dough pieces;

(d) baking each dough piece at a temperature and for a time sufficient to partially cook the dough thereby, forming a set, uniform bready interior and harder surfaces, the upper and lower dough surfaces and the surfaces through the docking holes being exposed to direct heat during baking and becoming hard forming a bond between the upper and lower surfaces of the dough, and sealing the dough surfaces against substantial oil penetration; and

(e) frying the partially cooked dough piece after the baking step for a time sufficient to cause said dough piece to have a fried outside appearance, a bready interior texture, and a crisp outer surface.

4,574,091

ASPARTAME-SWEETENED GELATIN DESSERT AND SWEETENING COMPOSITION THEREFOR

Wayne L. Steensen, Ridgefield, and Ronald C. Weaver, Danbury, both of Conn., assignors to Nabisco Brands, Inc., Parsippany, N.J.

Filed Jun. 28, 1984, Ser. No. 625,505

Int. Cl.[4] A23L *1/04*

U.S. Cl. 426—548 24 Claims

1. A composition consisting of (a) dipeptide sweetener; (b) a sugar alcohol in a weight ratio of from about 1:1 to about 2:1 based on the weight of the dipeptide sweetener; and (c) maltodextrin in a weight ratio of from about 1:1 to about 2:1 based on the weight of the dipeptide sweetener.

4,574,092

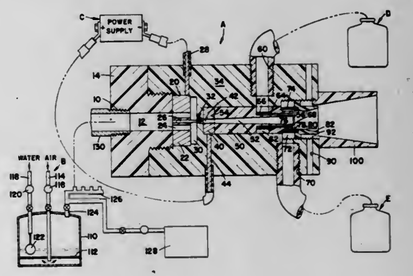
ELECTROGASDYNAMIC COATING SYSTEM

Meredith C. Gourdine, East Orange, N.J., assignor to Energy Innovations, Inc., East Orange, N.J.

Division of Ser. No. 447,478, Dec. 6, 1982, Pat. No. 4,498,631, which is a division of Ser. No. 310,534, Oct. 13, 1981, Pat. No. 4,433,003. This application Nov. 30, 1984, Ser. No. 677,064

Int. Cl.[4] B05D *1/04*

U.S. Cl. 427—33 4 Claims



1. A method of coating workpieces moving through a coating chamber from an upstream side toward a downstream side,

the coating chamber having an upstream electrogasdynamic gun for spraying charged particles contiguous to the upstream side, the method comprising:

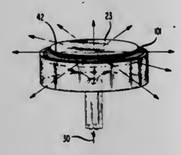
(a) pressurizing a gas saturated with a condensable vapor;
(b) accelerating the saturated gas to a supersonic speed;
(c) ionizing and condensing the vapor into charged droplets;
(d) spraying a cloud of the charged droplets into the coating chamber to establish an electrostatic charge in the chamber;
(e) aspirating particles of a pigmented coating material into the ionized condensing vapor such that the vapor condenses on and charges the coating material particles and spraying the charged coating material particles into the coating chamber to establish a cloud of charged coating material contiguous with the upstream side of the coating chamber;
(f) alternately repeating steps (d) and (e) with the upstream gun such that clouds of charged droplets alone and droplet coated charged coating material particles are alternately established in the coating chamber whereby each repetition of step (d) shifts the preceding charged coating material cloud toward the downstream side of the coating chamber.

4,574,093

DEPOSITION TECHNIQUE

Herbert M. Cox, Berkeley Heights, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 30, 1983, Ser. No. 566,918
Int. Cl.⁴ B05D *5/12*; C23C *16/00*
U.S. Cl. 427—86 **11 Claims**



1. A process for forming a material layer on a surface of a substrate comprising the steps of forming a precursor gaseous flow and directing said flow with a directing means to contact said substrate, thereby inducing formation of said material layer characterized in that (1) said surface of said substrate is, during said formation, spaced an average distance less than ½ the substrate effective radius from a directing surface defined from said directing means by translating an incompressible imaginary sphere having a diameter of 1/10 the substrate effective radius along all accessible surfaces of said directing means and (2) at least 50 percent of said gas flow that contacts said substrate undergoes said contact initially at an interior point of said surface of said surface before it cuts a plane that is tangent to the periphery of said substrate and normal to the surface of said substrate upon which deposition is desired.

4,574,094

METALLIZATION OF CERAMICS

Michael A. DeLuca, Holbrook, and John F. McCormack, Roslyn Heights, both of N.Y., assignors to Kollmorgen Technologies Corporation, Dallas, Tex.

Continuation-in-part of Ser. No. 502,748, Jun. 9, 1983, abandoned. This application May 21, 1984, Ser. No. 611,193
Int. Cl.⁴ B05D *5/12*
U.S. Cl. 427—96 **31 Claims**

23. A process for making a printed circuit on a ceramic substrate comprising:

(a) treating the ceramic surface with a melt comprising one or more alkali metal compounds to adhesion promote or etch the surface;
(b) exposing the surface to a adsorption promoter selected from the group consisting of ethoxylated non-ionic compounds and nitrogen-containing compounds, the nitrogen-containing compounds being selected from the group consisting of quaternary compounds, amine oxides, alkanolamines, amides, betaines, amino acids and guanadine derivatives, in an amount sufficient to, and at a pH which will promote adsorption of catalyst on the surface and eliminate bare spots in an adherent metal layer formed on the surface or selected parts thereof;
(c) treating the ceramic surface exposed to the adsorption promoter with a catalyst for electroless metal deposition;
(d) depositing metal onto the catalyzed surface;
(e) removing portions of the deposited metal to produce a metal printed circuit conductor pattern adhering to the surface of the ceramic substrate.

4,574,095

SELECTIVE DEPOSITION OF COPPER

Thomas H. Baum, San Jose; Frances A. Houle, Fremont; Carol R. Jones, San Jose, all of Calif., and Caroline A. Kovac, Ridgefield, Conn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 19, 1984, Ser. No. 672,975
Int. Cl.⁴ B05D *3/06, 5/12*
U.S. Cl. 427—53.1 **7 Claims**

1. A process for the selective deposition of copper on a substrate, said process comprising the steps:

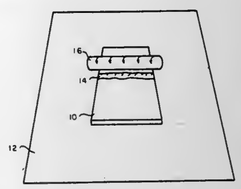
(1) contacting the substrate with the vapor of a palladium compound;
(2) selectively irradiating said palladium compound with light to cause selective deposition of seeds of palladium metal on said substrate; and
(3) depositing copper by electroless deposition on those areas of the substrate which have been seeded with palladium.

4,574,096

SUSPENSION METHOD OF IMPREGNATING ACTIVE MATERIAL INTO COMPOSITE NICKEL PLAQUE

William Ferrando, Arlington, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 29, 1985, Ser. No. 740,115
Int. Cl.⁴ B05D *5/12*; H01M *4/04*
U.S. Cl. 427—126.6 **15 Claims**



1. A process for impregnating a sintered nickel coated graphite fiber plaque with a nickel active material to form a nickel electrode comprising:

(1) forming a suspension of particles of a nickel active material selected from the group consisting of nickel hydroxide, nickel oxide, and mixtures thereof in ethylene glycol wherein the particles are 20 microns or less in size and wherein the weight ratio of ethylene glycol to nickel active material is from 1:1 to 1:4,
(2) gently working the suspension of nickel active material in ethylene glycol into the sintered nickel coated graphte fiber plaque by
(a) applying the suspension onto the top surface of the plaque,
(b) gently pushing the suspension into the plaque while allowing the pull of gravity on the suspension to do much of the work; and
(c) removing any excess of suspension from the surface of the plaque;
(3) evaporating the ethylene glycol from the plaque to leave the particles of nickel active material distributed throughout the plaque; and
(4) repeating steps (2) through (3) until the desired amount of nickel active material has been deposited in the plaque.

10. A process for impregnating a sintered nickel coated graphite fiber plaque with a cadmium active material to form a cadmium electrode comprising:

(1) forming a suspension of particles of a cadmium active material selected from the group consisting of cadmium hydroxide, cadmium oxide, and mixtures thereof in ethylene glycol wherein the particles are 20 microns or less in size and wherein the weight ratio of ethylene glycol to cadmium active material is from 1:1 to 1:4;
(2) gently working the suspension of cadmium active material in ethylene glycol into the sintered nickel coated graphite fiber plaque by
(a) applying the suspension onto the top surface of the plaque,
(b) gently pushing the suspension into the plaque while allowing the pull of gravity on the suspension to do much of the work; and
(c) removing any excess of suspension from the surface of the plaque;
(3) evaporating the ethylene glycol from the plaque to leave the particles of the cadmium active material distributed throughout the plaque; and
(4) repeating steps (2) through (3) until the desired amount of nickel activated material has been deposited in the plaque.

4,574,097

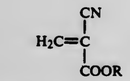
REINFORCED THIXOTROPIC GEL COMPOSITION

Travis W. Honeycutt, Irvine, Calif., assignor to Isopedix Corporation, Irvine, Calif.

Filed Aug. 10, 1984, Ser. No. 639,339
Int. Cl.⁴ C08K *3/36*
U.S. Cl. 428—36 **26 Claims**

1. A thixotropic gel composition comprising

A. an α-cyanoacrylate monomer of the formula



wherein R is a member selected from the group consisting of an alkyl from approximately 1 to 16carbon atoms; phenyl, cyclohexyl, alkoxy-alkyl, allyl and furfuryl groups;

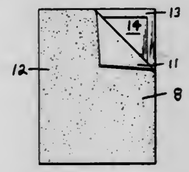
B. dry colloidal fumed silica;
C. a plasticizer;
D. a stabilizer;
E. a free radical scavenger; and
F. a filler in the form of fibers or spheres or mixtures of fibers and spheres substantially insoluble in and inert to said α-cyanoacrylate monomer.

4,574,098

PATTERN TRANSPOSING TAPE

James D. Sampson, 14257 Burning Tree Dr., Victorville, Calif. 92392

Continuation-in-part of Ser. No. 134,198, Mar. 27, 1981, abandoned. This application Aug. 8, 1983, Ser. No. 520,913
Int. Cl.⁴ B32B *7/10*; C09J *7/02*
U.S. Cl. 428—40 **7 Claims**



1. A thin flexible material having a pressure sensitive adhesive coating on each face, the adhesive coating on one face having greater adhesive capability than the adhesive coating on the opposite face whereby said material can be affixed to a surface of an object with the adhesive coating of lesser adhesive capability in contact therewith and whereby another surface, separate from said object, can then be brought into contact with said flexible material so that its adhesive coating of greater adhesive capability is in contact with the latter surface, and whereby said latter surface can then be pulled away from the surface of said object to leave said flexible material adherent to said latter surface in the form of a pattern defining an outline of at least part of said object;

said adhesive coating of greater adhesive capability comprising an elastomer selected from the group consisting of high molecular weight synthetic and natural rubbers, polyvinylethylether, and acrylate polymers and contains a quantity of tackifier resin sufficient to give it relatively high adhesive strength, and the adhesive coating of lesser adhesive capability comprising an elastomer selected from the group consisting of high molecular weight synthetic and natural rubbers, polyvinylethylether, and acrylate polymers and containing a quantity of tackifier resin less, on a percentage of total weight basis, than that in the adhesive coating of greater adhesive capability.

2. A thin flexible material in accordance with claim 1 in tape form.

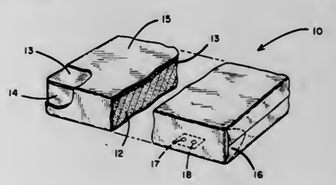
3. A thin flexible material in accordance with claim 2 having a removable liner on at least one of its faces.

4,574,099

ACOUSTICAL PANELS

Michael T. Nixon, 2810 N. Urbandale La., Plymouth, Minn. 55447

Filed Jan. 20, 1984, Ser. No. 572,466
Int. Cl.⁴ B32B *1/04*
U.S. Cl. 428—68 **20 Claims**



1. An acoustical panel comprised of an inner core fabricated of a loosely woven fibrous material; at least one middle layer on at least one side of the inner core which enhances durability

without significantly reducing the sound absorption characteristics of the inner core; edge support means; an outer layer which surrounds and encapsulates said inner core, middle layer and edge supports, said outer layer being made of a plastic film material which is impermeable to moisture and air, and which, upon exposure to heat, shrinks to achieve smooth, tight surfaces; and means for venting gases from the interior of the panel during the heat shrinking of the outer layer.

4,574,100

PLASTICS MATERIAL MESH STRUCTURE

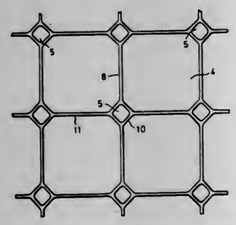
Frank B. Mercer, Blackburn, England, assignor to P.L.G. Research Limited, Blackburn, England

Continuation of Ser. No. 363,447, Mar. 30, 1982, abandoned. This application Nov. 26, 1984, Ser. No. 674,724

Claims priority, application United Kingdom, Apr. 3, 1981, 8110472

Int. Cl.⁴ B29C *17/02*; B32B *3/24*

U.S. Cl. 428—134 **19 Claims**



1. An integral plastics material mesh structure which has been formed by stretching a starting material having a thickness of at least 0.75 mm, the structure having a pattern of generally octagonal first openings and second openings which are substantially smaller than the first openings, each opening being bounded essentially by a plurality of orientated strands which are interconnected at respective junctions at each of which only three strands meet, and the crotches between the strands at the junctions being orientated in the direction running around the crotch.

4,574,101

EXERCISE MAT

Raymond A. Tricca, West Barnstable, and John K. Foster, Harwichport, both of Mass., assignors to Packaging Industries, Inc., Hyannis, Mass.

Filed Sep. 2, 1983, Ser. No. 529,129

Int. Cl.⁴ B32B *3/26*

U.S. Cl. 428—138 **14 Claims**

1. An exercise mat comprising a central, relatively thick core layer of closed-cell foam , said core layer having a plurality of air chambers therein, and two relatively thin outer skin layers of closed-cell foam , the density of said core layer being less than the density of each of said outer skin layers, each of said thin outer skin layers being laminated in sealed relationship to a respective outer surface of said thick core layer.

4,574,102

RADIATION IMAGE STORAGE PANEL

Satoshi Arakawa; Terumi Matsuda, both of Kaisei; Akio Ishizuka, Fujinomiya, and Yoshihiko Shibahara, Minamiashigara, all of Japan, assignors to Fuji Photo Film Company, Ltd., Kanagawa, Japan

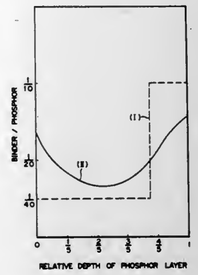
Filed Jun. 4, 1984, Ser. No. 617,021

Claims priority, application Japan, Jun. 3, 1983, 58-99237

Int. Cl.⁴ B32B *7/00, 19/02, 19/04*

U.S. Cl. 428—212 **6 Claims**

1. A radiation image storage panel comprising a support, a phosphor layer provided on the support which comprises a binder and a stimulable phosphor dispersed therein, and a protective film provided on the phosphor layer, characterized in that a mixing ratio of the binder to the stimulable phosphor



in said phosphor layer so varies as to show a minimum value within a region of depth of from 1/5 to 4/5 of the thickness of the phosphor layer, the depth being expressed in terms of relative distance from the protective film-side surface.

4,574,103

VINYL CHLORIDE POLYMER LAMINATE

Richard W. Stamper, Lambertville, Mich., and Robert C. Hultz, Toledo, Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 518,247, Jul. 28, 1983, Pat. No. 4,515,744. This application Mar. 6, 1985, Ser. No. 709,009

Int. Cl.⁴ B32B *7/02*

U.S. Cl. 428—213 **3 Claims**

1. A laminate comprising

(A.) a first layer having a thickness of from about 12 to 50 mils, being of a compounded and stabilized vinyl chloride polymer plastisol composition containing antimony trioxide and being free of a curing agent and

(B.) a second layer on said first layer having a thickness of from about 12 to 50 mils, being of a compounded and stabilized vinyl chloride polymer plastisol composition containing titanium dioxide and being free of a curing agent, said layers having been heated at a temperature of from about 250° to 400° F. for from about one to five minutes to fuse said layers and to adhere said layers together to obtain a flexible vinyl chloride polymer laminate.

4,574,104

MULTI-LAYER FILM

Takanori Aishima; Makoto Utsumi, and Yoshihiro Ezaki, all of Sodegaura, Japan, assignors to Idemitsu Petrochemical Co., Ltd., Tokyo, Japan

Filed Oct. 19, 1984, Ser. No. 662,774

Claims priority, application Japan, Nov. 14, 1983, 58-213550

Int. Cl.⁴ B32B *3/00*

U.S. Cl. 428—220 **22 Claims**

1. A multi-layer film comprising at least three layers, said three layers comprising two outer layers and an intermediate layer positioned between said outer layers,

said intermediate layer being a resin composition comprising from 90 to 10% by weight of a high density polyethylene and from 10 to 90% by weight of an ethylene α-olefin copolymer, each of said two outer layers comprises an ethylene α-olefin copolymer and at least one of said two outer layers is a resin composition comprising from 98 to 50% by weight of an ethylene α-olefin copolymer and from 2 to 50% by weight of a low density polyethylene produced by the high pressure polymerization method.

4,574,105

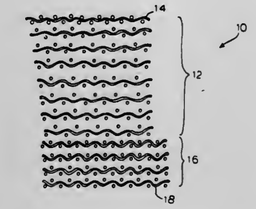
PENETRATION RESISTANT TEXTILE PANELS WITH PLIES OF NYLON AND PLIES OF KEVLAR

James G. Donovan, Norwell, Mass., assignor to Albany International Corp., Albany, N.Y.

Filed Feb. 15, 1984, Ser. No. 580,438

Int. Cl.⁴ B32B *5/02*

U.S. Cl. 428—233 **5 Claims**



1. A penetration resistant textile panel, which comprises;

a plurality of plies of woven poly(p-phenylene terephthalamide) yarns forming the face of said panel; and

a plurality of plies selected from the group consisting of needled, non-woven staple fibers of a nylon polyamide and woven yarns of a nylon polyamide, forming the back side of the panel;

said face plies comprising one-half to three-quarters by weight of said panel and said back side plies comprising one-quarter to one-half by weight of said panel.

4,574,106

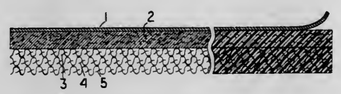
SELF MOLDING FIBERGLAS

Jimmy H. Rogers, P.O. Box 362, Point Clear, Ala. 36564

Filed Jul. 30, 1984, Ser. No. 636,104

Int. Cl.⁴ B32B *5/26, 17/02, 17/06, 17/12*

U.S. Cl. 428—235 **3 Claims**



1. A semi ridged composite sheet consisting of a sheet of aluminum bonded to a sheet of mat fiberglas which is bonded to several layers of fiberglas cloth.

3. A semi ridged composite sheet consisting of a sheet of paper board bonded to a semi ridged sheet of mat fiberglas which is bonded to several layers of fiberglas cloth.

4,574,107

METHOD OF PRODUCING A COATED FABRIC

Serge Ferrari, La Tour du Pin, France, assignor to Tissage et Enduction Serge Ferrari S.A., La Tour du Pin, France

Filed Sep. 7, 1984, Ser. No. 648,249

Claims priority, application France, Sep. 20, 1983, 83 15117

Int. Cl.⁴ B05D *3/02*; B32B *7/00*; D04H *1/58, 1/04*

U.S. Cl. 428—259 **14 Claims**

11. A coated material produced according to the process comprising:

producing a plurality of weft threads comprised of a disintegrable material;

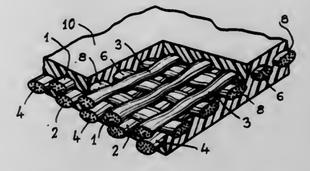
producing a plurality of weft threads comprised of a non-disintegrable material;

producing a plurality of warp threads comprised of a non-disintegrable material;

weaving a support fabric from said warp and weft threads wherein said disintegrable weft threads are interspersed among said non-disintegrable weft threads such that, if said disintegrable weft threads were removed:

(a) said warp threads would be disposed substantially in parallel in two substantially parallel layers, but with the threads in one layer laterally shifted relative to the threads in the other layer; and

(b) said non-disintegrable weft threads would be disposed substantially in parallel in a middle layer pressed between the two layers of warp threads, with the weft threads substantially orthogonal to the warp threads;



coating said support fabric with a coating composition comprised of substantially the same material as said disintegrable weft threads;

heating the coated support fabric at a temperature which will melt said disintegrable weft threads, fuse the coating composition and melted threads together, and gel the fused coating composition and melted threads.

4,574,108

FIBER REINFORCED COMPOSITE

Stoyko C. Fakirov, Sofia, Bulgaria, and Jerold M. Schultz, Newark, Del., assignors to University of Delaware, Newark, Del.

Continuation of Ser. No. 553,107, Nov. 18, 1983, abandoned. This application May 2, 1985, Ser. No. 729,893

Int. Cl.⁴ B32B *9/00*; D02G *3/00*

U.S. Cl. 428—292 **4 Claims**

1. In a reinforced plastic matrix of improved mechanical strength, having embedded therein reinforcing fibers, an improved reinforcing fiber characterized by:

a diameter variation along its axis producing alternate lengths of large diameter and small diameter wherein the axial distance from the smallest to the largest diameter of the fiber is 2 to 5 times the diameter variation to produce a socket in the matrix corresponding to the large diameter and small diameter lengths of the fiber, the small diameter socket locking the large diameter length of the fiber in the large diameter socket; and

the alternating large and small diameter lengths of the fiber forming a smoothly undulating contour free of sudden changes in diameter to minimize areas of stress concentration in the fiber under axial tension.

4,574,109

COMPOSITIONS INCORPORATING GLASS BEADS AND METHODS OF PREPARING THEM

Pierre Laroche, Nalinnes, Belgium, assignor to Glaverbel, Brussels, Belgium

Filed Nov. 8, 1984, Ser. No. 669,525

Claims priority, application United Kingdom, Nov. 24, 1983, 8331375

Int. Cl.⁴ B32B *27/14, 5/16*

U.S. Cl. 428—325 **23 Claims**

1. A composition comprising an intimate mixture of glass beads and finely divided material, wherein the glass beads have a mean diameter of not more than 80 micrometers and a size range spread which is at least half the mean diameter of the beads, and wherein said finely divided material is hydrophobic, inorganic, substantially chemically inert with respect to the beads, has a specific surface of at least 50 m^2/g, and is present

in said mixture in an effective amount not exceeding 5% by weight of the beads, whereby the bulk settled density of the mixture is greater than that of the glass beads alone and greater quantities of said composition can be incorporated in a specific amount of polymer resin for any selected viscosity than the quantity of glass beads alone which results in that viscosity.

4,574,110

PROCESS FOR PRODUCING MICROCAPSULES AND MICROCAPSULE SLURRY

Makoto Asano, Yokohama; Kiyoharu Hasegawa, Kamakura; Yukio Tamura, Shibata, and Yoshihiro Oono, Shiroishi, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Filed Jul. 24, 1984, Ser. No. 633,960

Claims priority, application Japan, Jul. 28, 1983, 58-136871; Apr. 11, 1984, 59-70959; Jun. 27, 1984, 59-130867

Int. Cl.⁴ B01J *13/02*; B32B *27/42*

U.S. Cl. 428—402.21 **7 Claims**

1. Process for producing microcapsules by covering a hydrophobic material with an aminoaldehyde polycondensation product as a wall-forming material in an acidic aqueous medium containing an anionic water-soluble polymer, characterized in that a multi-component copolymer containing as essential monomer components thereof at least three types of acrylic monomers, which are selected respectively from (A) acrylic acid and/or methacrylic acid, (B) acrylonitrile and/or methacrylonitrile and (C) an acrylamidoalkylsulfonic acid and/or a sulfoalkyl acrylate, is used as the anionic water-soluble polymer, the proportions of said three types of monomers being from 20 to 70 mole percent of monomer (A), from 20 to 70 mole percent of monomer (B) and from 0.5 to 30 mole percent of monomer (C), respectively, and the amount of the anionic water-soluble polymer used being 0.5 to 10 weight percent of the microcapsule-producing system.

7. Microcapsule slurry obtained by covering a hydrophobic material with an aminoaldehyde polycondensation Product as a wall-forming material in an acidic aqueous medium containing an anionic water-soluble polymer, characterized in that the anionic water-soluble polymer is a multi-component copolymer containing as essential monomer components thereof at least three types of acrylic monomers selected respectively from (A) acrylic acid and/or methacrylic acid, (B) acrylonitrile and/or methacrylonitrile and (C) an acrylamidoalkylsulfonic acid and/or sulfoalkyl acrylate, the proportions of said three types of monomers being from 20 to 70 mole percent of monomer (A), from 20 to 70 mole percent of monomer (B) and from 0.5 to 30 mole percent of monomer (C), respectively, and the amount of the anionic water-soluble polymer used in the microcapsule-producing system being 0.5 to 10 weight percent.

4,574,111

ELECTRIC INSULATION

Hans-Joachim Henkel, and Norbert Müller, both of Erlangen, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 616,694, Jun. 4, 1984, abandoned. This application Jun. 28, 1985, Ser. No. 750,061

Claims priority, application Fed. Rep. of Germany, Jun. 13, 1983, 3321268

Int. Cl.⁴ B32B *15/08*

U.S. Cl. 428—461 **4 Claims**

1. An insulated electrical conductor comprising an electrically conducting material in combination with an electrically insulating polyolefin composition containing at least one alcoholate of magnesium, calcium or aluminum as an additive thereto, said additive acting upon said polyolefin composition to prevent the formation of water trees when said composition is dielectrically stressed by the presence of an electric field.

4,574,112

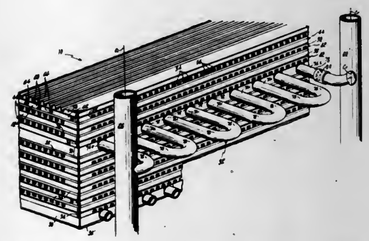
COOLING SYSTEM FOR ELECTROCHEMICAL FUEL CELL

Richard D. Breault, Coventry; Richard D. Sawyer, Canton, and Thomas E. DeMarche, New Haven, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 23, 1983, Ser. No. 564,989

Int. Cl.⁴ H01M *8/24*

U.S. Cl. 429—26 **11 Claims**



1. In an electrochemical cell stack of the type which engages a first reactant inlet manifold, a first reactant outlet manifold, a second reactant inlet manifold and a second reactant outlet manifold and further has a first face which adapts the stack to engage the first reactant inlet manifold, a second face which adapts the stack to engage the first reactant outlet manifold, a third face which adapts the stack to engage the second reactant enlet manifold and a fourth face which adapts the stack to engage the second reactant outlet manifold, the electrochemical cell stack further including a plurality of heat producing cells and a cooling system for the cells, the cooling system including a plurality of cooler assemblies spaced from the other, each of which is disposed between a pair of heat producing cells and is adapted by channels extending therethrough to receive cooling tubes, the cooling system further including a means for circulating cooling fluid which includes a feed tube and a return tube, the improvement which comprises:

a plurality of conduits, each conduit extending in an associated cooler assembly between the feed tube and the return tube to form a flow path for cooling fluid which extends from the center of the feed tube to the center of the return tube and which has a minimum hydraulic diameter D_f; the conduit having a set of cooling tubes disposed in the channels of the cooler assembly, each tube having an inlet, an outlet, and an average hydraulic diameter D_t between the inlet and the outlet, each set of tubes including an entrance cooling tube, at least one intermediate cooling tube, and an exit cooling tube;

wherein the minimum hydraulic diameter D_f of each flow path extending from the center of the feed tube to the center of the return tube is equal to or greater than three fourths of the average hydraulic diameter of said cooling tubes D_t to avoid plugging of the flow path at the minimum hydraulic diameter of the flow path under long term operative conditions,

wherein the inlet of the entrance tube is joined to and is in flow communication with the feed tube, the outlet of the exit tube is joined to and is in flow communication with the return tube and the inlet of each intermediate tube is joined to and is in flow communication with the outlet of an adjacent tube such that the cooling tubes extending between the feed tube and the return tube are serially connected in serial flow communication to provide a tortuous flow path for cooling fluid through an associated cooler assembly which has a flow resistance characteristic that ensures a predetermined supply of cooling fluid to each cooler assembly, and

wherein at least one entrance cooling tube is adjacent to the second face and extends across the stack between the third face and the fourth face.

4,574,113

RECHARGEABLE CELL

Richard T. Gray, Levittown, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 199,141, Oct. 22, 1980. This application Jul. 15, 1981, Ser. No. 283,325

Int. Cl.⁴ H01M *4/60, 4/40, 10/40*

U.S. Cl. 429—194 **13 Claims**

1. A substantially anhydrous cell comprising a cathode which comprises a mixture of polyacetylene powder and an electrically conductive material, an organic solvent, an electrolyte comprising a salt which is soluble in said solvent and an inorganic intercalating anode, said cathode being insoluble in said solvent when said cathode is either undoped or p-doped, said solvent being stable to electrochemical decomposition and the anions of said salt being capable of p-doping said polyacetylene when an external electrical power source is supplied to said cell.

4,574,114

PHOTOSENSITIVE COMPOSITION FOR ELECTROPHOTOGRAPHY HAVING POLYVINYL CARBAZOLE AND SILICONE OIL

Masahiro Tsutsumi; Toru Nakazawa, both of Osaka, and Yasuharu Utsunomiya, Nara, all of Japan, assignors to Mita Industrial Company, Ltd., Osaka, Japan

Filed Nov. 16, 1983, Ser. No. 552,108

Claims priority, application Japan, Dec. 25, 1982, 57-228828

Int. Cl.⁴ G03G *5/06*

U.S. Cl. 430—81 **12 Claims**

1. A photosensitive composition for electrophotography, comprising:

a single photoconductive layer of a uniform dispersion of polyvinyl carbazole, a charge-generating organic pigment, and as a sensitizing agent a silicone oil.

4,574,115

SILVER HALIDE LIGHT-SENSITIVE MATERIALS HAVING A LAYER OF GRAINS HAVING DYE ABSORBED THEREON

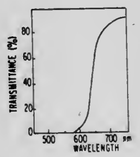
Keiichi Adachi; Tadashi Ikeda, and Tadaaki Tani, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 22, 1984, Ser. No. 643,202

Claims priority, application Japan, Aug. 22, 1983, 58-152961

Int. Cl.⁴ G03C *5/24*

U.S. Cl. 430—522 **20 Claims**



1. A silver halide light-sensitive material comprising a support having coated thereon

(1) an emulsion layer containing light-sensitive silver halide grains, and

(2) a layer containing grains selected from the group consisting of silver halide, zinc oxide, lead oxide, titanium oxide, cadmium oxide, copper oxide, tin oxide, thallium halides, cadmium sulfide and CdSe grains on which a dye which is capable of being adsorbed on said grains so as to give sharp absorption is adsorbed and which cannot be substantially developed and are sparingly soluble in water, wherein the absorption maximum of said adsorbed dye is separated by 20 nm or more from the sensitization maximum of an emulsion layer located in a position farther from the incident light of exposure than the layer containing said dye.

4,574,116

METHODS AND CELL LINES FOR IMMORTALIZATION AND MONOCLONAL ANTIBODY PRODUCTION BY ANTIGEN-STIMULATED B-LYMPHOCYTES

Henry S. Kaplan, Stanford; Nelson N. H. Teng; Kit S. Lam, both of Palo Alto, all of Calif., and Francisco Calvo-Riera, Leon, Spain, assignors to The Board of Trustees of the Leland Stanford Jr. University, Stanford, Calif.

Filed Jan. 13, 1983, Ser. No. 457,795

Int. Cl.⁴ C12P *21/00*; C12N *15/00, 13/00, 5/00*

U.S. Cl. 435—68 **15 Claims**

1. A method for producing a heteromyeloma comprising:

fusing in a fusing medium (a) first human myeloma donor cells, which cells are sensitive to a first selective means and have a gene providing resistance to a second selective means originating from said gene being introduced into said donor cells in vitro with (b) rodent recipient myeloma cells capable of stable maintenance in vitro without significant secretion of their own immunoglobulin proteins and significantly less sensitive than said donor cells to said first selective means but sensitive to the second selective means to which said gene provides resistance, to provide a mixture of cells including recipient cells having at least one donor chromosome containing said resistance gene;

growing said mixture of cells under selective conditions for sensitivity to said first and second selective means; and

isolating heteromyelomas comprising recipient cells having at least one chromosome of said donor cells bearing said gene.

4,574,117

STABILIZATION OF PHENYLALANINE AMMONIA-LYASE IN A BIOREACTOR USING REDUCING AGENTS

Patricia J. Vollmer, and Jeffrey J. Schruben, both of Paducah, Ky., assignors to Genex Corporation, Rockville, Md.

Filed Jun. 6, 1984, Ser. No. 617,805

Int. Cl.⁴ C12P *13/22*; C12N *9/96, 9/88*

U.S. Cl. 435—108 **6 Claims**

1. A method for producing L-phenylalanine which comprises:

(a) cultivating a PAL-producing microorganism under aerobic, growth-promoting conditions;

(b) inducing the cells produced in step (a) to make PAL under PAL-producing conditions;

(c) forming a bioreaction mixture by combining, under L-phenylalanine-producing conditions, the PAL produced by step (b) with t-cinnamic acid and ammonium ions in the presence of one or more reducing agents, to produce L-phenylalanine; and

(d) recovering the L-phenylalanine so produced.

4,574,118

PREDICTING HYDROCARBON POTENTIAL OF AN EARTH FORMATION UNDERLYING A BODY OF WATER BY ANALYSIS OF SEEPS CONTAINING LOW CONCENTRATIONS OF CARBONACEOUS GASES

Gerard J. Demaison, Orinda, and Isaac R. Kaplan, Sherman Oaks, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 366,542, Apr. 8, 1982, Pat. No. 4,444,889, which is a continuation of Ser. No. 135,026, Mar. 28, 1980, abandoned. This application Dec. 29, 1983, Ser. No. 566,929

The portion of the term of this patent subsequent to Jul. 20, 1999, has been disclaimed.

Int. Cl.⁴ G01N *33/24*

U.S. Cl. 436—29 **3 Claims**

1. Method of on-site collection and examination of small

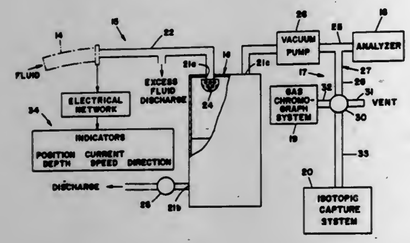
concentrations of methane dissolved in water so as to predict hydrocarbon potential of an earth formation underlying a body of water, said formation being a source of said methane, said method comprising:

(a) at a known geographic location, continuously sampling said water at a selected flow rate and at a selected depth;

(b) continuously vacuum separating said water into liquid and gas phases;

(c) quantitatively separating interfering gas species from said methane at a series of separating stations by conveying said separated gas phase of step (b) via an air carrier vented to atmosphere and flowing at a known flow rate, in seriation to and through said separating stations; said separation at said separating stations including the substeps of:

(i) removing water vapor and molecular carbon dioxide



from the passing gas phase in the presence of said air carrier;

(ii) oxidizing any carbon monoxide to carbon dioxide;

(iii) trapping the carbon dioxide of step (ii); and

(iv) cryogenically trapping out all low-, mid-, and high-range molecular weight hydrocarbons above C_1;

(d) quantitatively oxidizing said methane in the gas phase at an oxidizing station without significant isotopic fractionation occurring;

(e) cryogenically trapping the gaseous oxidant of step (d) in the form of carbon dioxide at a trapping station without significant isotopic fractionation occurring; and

(f) isotopically analyzing said trapped oxidant of step (e) for carbon distribution so as to determine biogenic and/or thermogenic origin of said methane and thereby aid in the evaluation of the hydrocarbon potential of said earth formation.

4,574,119

CHROME-MAGNESITE REFRACTORIES AND METHOD OF PREPARATION

John D. Perry, Calumet, Canada, and David J. Michael, White Oak, Pa., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Jun. 11, 1984, Ser. No. 619,671

Int. Cl.⁴ C04B *35/12*

U.S. Cl. 501—114 **4 Claims**

1. A refractory brick made from a size graded batch comprising 20–30 weight percent magnesite containing less than 0.8 weight percent silica, and the remainder a chrome ore whose ratio between the oxides of chromium and the oxides of aluminum and iron is greater than 2 to 1, having a silica content less than 2.7 weight percent, an iron oxide content less than 17 weight percent, and wherein the chrome ore to magnesite ratio is between 2.33 and 4 to 1.

4,574,120

METHOD FOR PREPARING HIGH ACTIVITY SILICA SUPPORTED HYDROTREATING CATALYSTS

Mark S. Thompson, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Oct. 15, 1984, Ser. No. 660,624

Int. Cl.⁴ B01J *27/04, 27/10, 23/74*

U.S. Cl. 502—220 **4 Claims**

1. A method for preparing a silica supported hydrotreating catalyst containing from about 10–25%w molybdenum and from about 1–5%w nickel and/or cobalt as hydrogenation metals which comprises:

(a) reacting a mixture of $MoCl_5$ and a compound selected from the group consisting of $Ni(H_2O)_6Cl_2$, $Co(H_2O)_6Cl_2$ and mixtures thereof in amounts to provide a desired catalytic metals concentration of the support in the presence of a solubilizing amount of acetonitrile;

(b) heating the mixture to between about 25° and 80° C. until most of the metal compounds have reacted and/or dissolved;

(c) removing any undissolved solids from the solution;

(d) impregnating the dried silica support with the hydrogenation metals-containing solution in one or more steps; and

(e) drying the impregnated silica support at elevated temperature.

4,574,121

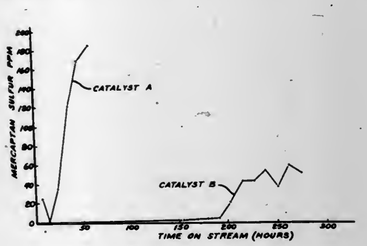
METAL CHELATE MERCAPTAN OXIDATION CATALYST

Robert R. Frame, Glenview, Ill., assignor to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 555,910, Nov. 29, 1983, Pat. No. 4,498,977. This application Nov. 26, 1984, Ser. No. 675,099

Int. Cl.⁴ B01J *31/22;* **C10G** *27/10, 29/00*

U.S. Cl. 502—163 **11 Claims**



1. A catalytic composite comprising a metal chelate mercaptan oxidation catalyst in an amount from about 0.01 to about 20 weight percent based on said catalytic composite and a solid carrier material having an average particle size of less than about 110 mesh.

7. The catalytic composite of claim 1 wherein said composite contains a quaternary ammonium salt.

10. A catalytic composite comprising a metal chelate mercaptan oxidation catalyst selected from the group consisting of metal phthalocyanine and metal compounds of tetrapyridinoporphyrazine in an amount from about 0.01 to about 20 weight percent based on said catalytic composite and a solid carrier material having an average particle size of less than about 110 mesh.

4,574,122

SUBSTITUTED O-ACYLGLYCOSYLAMIDES, PHARMACEUTICAL COMPOSITIONS AND METHOD OF USE

Bernd-Wieland Krüger, Wuppertal; Oswald Lockhoff, Cologne; Peter Stadler, Haan; Karl G. Metzger, Wuppertal, all of Fed. Rep. of Germany; Hans-Georg Opitz, Emeryville, Calif.; Klaus G. Stünkel, Wuppertal, and Hans-Joachim Zeller, Velbert, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

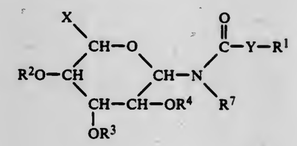
Filed Nov. 28, 1984, Ser. No. 675,690

Claims priority, application Fed. Rep. of Germany, Dec. 7, 1983, 3344257

Int. Cl.⁴ A61K *31/70;* **C07H** *5/06*

U.S. Cl. 514—42 **13 Claims**

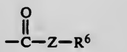
1. A compound of the formula



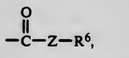
in which

X is hydrogen or the radical $-CH_2OR^5$,

three of R^2, R^3, R^4 and R^5 each independently is hydrogen or



and the fourth is



Y and Z each independently is oxygen, sulphur, NH or CH_2, and

R^1, R^6 and R^7 each independently is an optionally substituted hydrocarbon radical having up to 50 carbon atoms.

12. A method of activating the immune system of a patient which comprises administering to a patient an amount effective therefor of a compound according to claim 1.

4,574,123

4,4'-ALKYLENEDIPIPERIDINE DERIVATIVES

Philip N. Edwards, Bramhall, and Michael S. Large, Congleton, both of England, assignors to Imperial Chemical Industries PLC, London, England

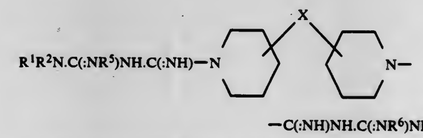
Filed May 3, 1984, Ser. No. 606,688

Claims priority, application United Kingdom, May 9, 1983, 8312665

Int. Cl.⁴ C07D *401/14;* **A01N** *43/40;* **A61K** *31/445*

U.S. Cl. 514—210 **8 Claims**

1. A 4,4'-alkylenebis[piperidine-1-(N-amidinoamidine)] derivative of the formula:



or a tautomeric form thereof, wherein each of R^1, R^2, R^3 and R^4, which may be the same or different, is hydrogen or an alkyl, alkenyl or alkoxyalkyl radical each having up to 20 carbon atoms; or R^1, R^2 and the nitrogen atom to which they are attached, or R^3 and R^4 and the nitrogen atom to which they are attached, which may be the same or different, are each a 1-azetidinyl, 1-pyrrolidinyl, piperidino, hexamethyleneimino, heptamethyleneimino, morpholino or 4-(1–8C alkanoyl)-1-piperazinyl radical each of which may bear 1–3C alkyl substituents; a 3–20C cycloalkyl radical; or a phenyl or phenylalkyl radical optionally substituted by chlorine, bromine, iodine or fluorine atoms, or by amino, carbamoyl, cyano, hydroxy, nitro, trifluoromethyl, methyl, ethyl, propyl, butyl, pentyl, hexyl, methoxy, ethoxy, propoxy, acetamido, propionamido, butyramido, methylamino, ethylamino, propylamino, acetyl, propionyl, butyryl, methoxycarbonyl, ethoxycarbonyl, dimethylamino or diethylamino radicals; provided that at least one of R^1, R^2, R^3 and R^4 is other than hydrogen; X is a direct bond or a 1–6C straight- or branched-chain alkylene radical which is linked to the 3- or 4-positions of the piperidine rings; and R^5 and R^6, which may be the same or different, are each hydrogen or a 1–8C alkyl radical; and the acid addition salts thereof.

6. An antibacterial or antifungal composition comprising an effective antibacterial or antifungal amount of a compound as claimed in claim 1 and an inert diluent or carrier therefor.

4,574,124

LIPID ABSORPTION-INHIBITING AGENTS AND THEIR USE

Hans-Joachim Kabbe, Leverkusen; Hans-Peter Krause, and Rüdiger Sitt, both of Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

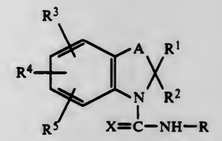
Division of Ser. No. 424,828, Sep. 27, 1982, Pat. No. 4,460,607, which is a division of Ser. No. 206,314, Oct. 31, 1980, abandoned. This application Jan. 23, 1984, Ser. No. 573,168

Claims priority, application Fed. Rep. of Germany, Nov. 9, 1979, 2945238; Aug. 8, 1980, 3030024

Int. Cl.⁴ A61K *31/535;* **C07D** *265/28*

U.S. Cl. 514—228 **11 Claims**

1. An alkylurea derivative of the formula (I)



in which

R represents a straight-chain, branched or cyclic alkyl or alkenyl radical, with in each case 6 to 18 carbon atoms, the said alkyl and alkenyl groups optionally being substituted by chlorine, bromine, fluorine, alkoxy with 1 to 4 carbon atoms, or by phenyl,

R^1 and R^2 are identical or different and each represent an alkyl radical with 1 or 2 carbon atoms,

R^3, R^4 and R^5 are identical or different and each represent a hydrogen, chlorine, or bromine atom or a trifluoromethyl, alkyl, alkylmercapto, or alkoxy radical, the said alkyl and alkoxy radicals or moieties each containing 1 to 4 carbon atoms, or represent a phenoxy or chlorophenoxy radical,

A represents



in which

R′ and R″ are identical or different and each denote a hydrogen atom or a methyl or ethyl radical, and

X represents oxygen.

9. A method of combating diseases of the lipometabolism in warm-blooded animals which comprises administering to the animals a hypolipidemically effective amount of a compound as defined in claim 1 either alone, or in admixture with an inert pharmaceutical carrier in the form of a medicament.

4,574,125

NAPHTHO-[1,2-B]-QUINOLIZIUM DERIVATIVES AS ANTIDIARRHEAL AGENTS

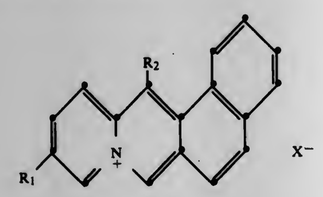
Michael H. Fisher, Ringoes, and Thomas M. Jacks, Westfield, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Apr. 23, 1984, Ser. No. 603,027

Int. Cl.⁴ A61K *31/44*

U.S. Cl. 514—284 **7 Claims**

1. A method for the treatment of enterotoxin-caused diarrhea which comprises administering to a human or animal afflicted with such diarrhea an effective amount of a compound having the formula:



I

wherein:

R_1 and R_2 are independently hydrogen, loweralkyl, loweralkoxy or halogen; and

X is halogen.

4,574,126

PYRIDINE DERIVATIVES HISTAMINE H_2-ANTAGONISTS

David G. Cooper, Letchworth, and George S. Sach, Welwyn, both of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

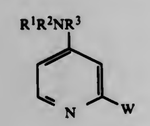
Filed Mar. 9, 1983, Ser. No. 473,520

Claims priority, application United Kingdom, Mar. 17, 1982, 8207835; Mar. 31, 1982, 8209540

Int. Cl.⁴ A61K *31/445*; C07D *213/57, 213/36*

U.S. Cl. 514—318 **15 Claims**

1. A compound of the formula (1):



(1)

or a pharmaceutically acceptable salt thereof, where

R^1 and R^2 are the same or different and are C_{1-6} alkyl or with the nitrogen atom to which they are attached form a pyrrolidino or piperidino group;

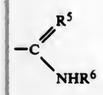
R^3 is C_{1-4}alkylene;

W is a group $—XYCH_2CH_2NHR^4$ in which

Y is methylene or sulphur;

X is methylene or oxygen, provided that it is methylene when Y is sulphur, and

R^4 is a group of formula (2):



(2)

where R^5 is NCN, NNO_2, NH or $CHNO_2$ and R_6 is hydrogen, hydroxy, amino, C_{1-6} alkyl or when Y is methylene, C_{2-4} alkynyl except that R^5 is not NH when R^6 is hydrogen.

15. A method for blocking histamine H_2-receptors which comprises administering to an animal an effective amount to block said receptors of a compound of claim 1.

4,574,127

OXAZOLES AND THIAZOLES CONTAINING AN AMINOHYDROXYPROPOXYPHENYL MOIETY

John J. Baldwin, Gwynedd Valley, and Gerald S. Ponticello, Lansdale, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed May 7, 1984, Ser. No. 607,906

Int. Cl.⁴ C07D *277/28, 263/32*; A61K *31/42, 31/425*

U.S. Cl. 514—365 **3 Claims**

1. A compound which is a member of the group

2-{p-[3-(3,4-dimethoxyphenylethylamino)-2-hydroxypropoxy]phenyl}oxazole;

(S)-{p-[3-(3,4-dimethoxyphenylethyl)amino-2-hydroxypropoxy]phenyl}thiazole; and

2-[p-(3-cyclopropylamino-2-hydroxypropoxy)phenyl]-thiazole;

and, the pharmacologically acceptable acid addition salts thereof.

4,574,128

5-(4-CHLORO-3-SULFAMOYLBENZOYL)-2,3-DIHYDRO-2-BENZOFURANCARBOXYLIC ACIDS AND THEIR COMPOSITIONS HAVING DIURETIC, SALURETIC AND URICOSURIC ACTIVITY

Bernhard Seuring; Hans-Jochen Lang, both of Hofheim am Taunus; Max Hropot, Flörsheim am Main, and Roman Muschaweck, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

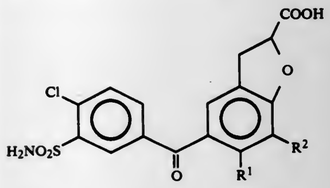
Filed May 15, 1984, Ser. No. 610,484

Claims priority, application Fed. Rep. of Germany, May 17, 1983, 3317884

Int. Cl.⁴ A61K *31/34*; C07D *307/85*

U.S. Cl. 514—469 **3 Claims**

1. A 5-(4-Chloro-3-sulfamoylbenzoyl)-2,3-dihydro-2-benzofurancarboxylic acid of the formula I



I

in the form of a racemic mixture or an optical isomer, in which R1 and R2 are identical or different and represent hydrogen, halogen or methyl, and its physiologically tolerated salts.

3. A pharmaceutical composition having diuretic, saluretic and uricosuric activity comprising an effective amount of a compound as claimed in claim 1 and a pharmaceutically acceptable carrier.

4,574,129

TOPICAL NONSTEROIDAL ANTI-INFLAMMATORY METHODS

Xina Nair, East Amherst, N.Y., and Davis L. Temple, Jr., Wallingford, Conn., assignors to Bristol-Myers Company, New York, N.Y.

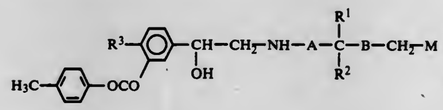
Division of Ser. No. 575,418, Jan. 31, 1984, Pat. No. 4,540,581. This application May 23, 1985, Ser. No. 737,119

Int. Cl.⁴ A61K *31/24, 31/405*

U.S. Cl. 514—540 **7 Claims**

1. A method of reducing topical inflammation in a mammal in need thereof which comprises topically administering to said mammal an amount effective to produce a topical anti-inflammatory effect of a composition comprising

(a) a compound of the formula



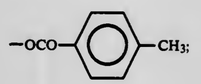
wherein R^1 and R^2 are independently hydrogen or (lower)-alkyl, provided that R^1 and R^2 cannot both be hydrogen;

wherein M is phenyl, indole or hydrogen;

wherein A is $(—CH_2—)_n$ in which n is 0, 1 or 2;

wherein B is $(—CH_2—)_m$ in which m is 0, 1 or 2; and

wherein R^3 is —OH or



and

(b) a compatible, topically acceptable vehicle.

4,574,130

POLYMERIZABLE COMPOUNDS

William D. Potter, Bishops Stortford, and Sinan B. Kiamil, Harlow, both of United Kingdom, assignors to Smith & Nephew Associated Companies P.L.C., United Kingdom

PCT No. PCT/GB83/00165, § 371 Date Nov. 7, 1983, § 102(e) Date Nov. 7, 1983, PCT Pub. No. WO84/00163, PCT Pub. Date Jan. 19, 1984

PCT Filed Jun. 30, 1983, Ser. No. 557,142

Claims priority, application United Kingdom, Jul. 3, 1982, 8219303

Int. Cl.⁴ C08F *222/20*

U.S. Cl. 523—111 **7 Claims**

1. An adhesive emulsion polymer of monomers consisting essentially of one or more acrylic monomers selected from the group consisting of acrylic and methacrylic acids or alkyl esters or hydroxyalkyl esters or amides thereof and one or more monomers of the formula (I):

$$CH_2{=}C(R){—}COO{—}(CH_2{—}CH(CH_3){—}O{—})_x{-}{—}(CH_2{—}CH_2{—}O)_y{—}OC{—}A{—}COOH$$

or a salt thereof, wherein

R is H or CH_3,

x is an integer from 2 to 20,

y is an integer from 0 to 5, and A is an alkylene, alkenyl or phenylene radical such that $A(COOH)_2$ is a dibasic acid capable of forming an anhydride $A(CO_2)O$.

2. A polymer according to claim 1 which is a pressure-sensitive adhesive polymer of monomers which comprise 39 to 59% by weight of n-butyl acrylate, 39 to 59% by weight of 2-ethylhexyl acrylate, 0.3 to 5% by weight of acrylamide or hydroxyethyl methacrylate and 1 to 5% by weight of a methacrylyl poly(oxypropylene) succinate mono ester containing an average of 7 oxypropylene units per molecule or the ammonium salt thereof.

4. An adhesive surgical or medical dressing comprising a pressure-sensitive adhesive polymer according to claim 2.

4,574,131

PREPARATION OF HIGH-IMPACT NYLON MOLDING MATERIALS

Rainer Theysohn, Frankenthal; Hans G. Dorst, Deidesheim; Graham E. McKee, Weinheim; Rolf Steinberger, Schifferstadt; Walter Ziegler, Edingen-Neckarhausen, and Franz Zahradnik, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 30, 1984, Ser. No. 645,813

Claims priority, application Fed. Rep. of Germany, Sep. 2, 1983, 3331730

Int. Cl.⁴ C08K *3/34*

U.S. Cl. 523—209 **1 Claim**

1. A process for the preparation of high-impact nylon molding materials, containing 30–88% by weight of a thermoplastic nylon, 10–50% by weight of an organosilane-coated silicate reinforcing filler, 0.1–5% by weight of a polyurethane ionomer, 2–30% by weight of a carboxyl-containing thermoplastic elastomer and, as an option, effective amounts of conventional additives, wherein, in a first stage, the silicate filler coated with an organosilane and a polyurethane ionomer is mixed with the nylon at above the melting point of the latter, and in a second stage the thermoplastic elastomer is finely dispersed in the filler-containing nylon at above the melting point of the latter.

4,574,132

GENERAL PURPOSE EXPANDABLE ADHESIVE

David C. Sayles, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 9, 1984, Ser. No. 669,919

Int. Cl.⁴ C08K *3/36*

U.S. Cl. 523—466 **2 Claims**

1. A general purpose expandable adhesive having bonding properties of improved tensile strength and with reduced void formations, improved chemical resistance, improved heat distortion, and improved thixotropic properties, said general purpose expandable adhesive comprising, in parts by weight a first portion comprised of about 74 parts of diglycidyl ether of bisphenol A, about 7.4 parts of diglycidyl ether of 1,4-butanediol, about 3.8 parts of submicroscopic silica thickener thixotrope, about 14.8 parts of silica of about 325 mesh particle size, about 37.0 parts of an amidoamine curing agent, and of a second portion comprised of from about 6 to about 12 parts of the copolymerized product of the monomer of 6-caprolactone and the diglycidyl ethers of bisphenol A and 1,4-butanediol; said first portion undergoing shrinkage during curing while said second portion is undergoing expansion during curing as a result of the expansion that said monomer of 6-caprolactone undergoes and as a result forces its way into crevices that would not be penetrated with said first portion that undergoes shrinkage, thereby producing a near strain-free adhesive bond as a result of the reaction of said first portion with said second portion whereby shrinkage of said first portion is offset by expansion of said second portion to prevent stress buildup in the adhesive matrix comprised of said first portion and said second portion of said general purpose expandable adhesive.

4,574,133

POLYMER COMPOSITION

Jeffrey D. Umpleby, Ferney-Voltaire, France, assignor to BP Chemicals Limited, London, England

Filed Dec. 17, 1984, Ser. No. 682,193

Claims priority, application United Kingdom, Jan. 5, 1984, 8400149

Int. Cl.⁴ C08K *5/51*

U.S. Cl. 524—147 **16 Claims**

1. A crosslinkable composition comprising a silyl modified ethylene (co) polymer and a phosphorus or antimony compound containing at least one X-R group wherein X represents the phosphorus or antimony, R is a hydrogen atom or is an organic substituent which is bonded to atom X via a carbon or oxygen atom and wherein X is in the trivalent or pentavalent state and further comprising a silanol condensation catalyst.

4,574,134

ANTIHAZE COMPOSITIONS AND PROCESS

Kenneth W. Willcox, and Kenneth R. Mills, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 9, 1984, Ser. No. 669,907

Int. Cl.⁴ C08K *5/17, 5/20, 5/42;* **C08L** *9/06*

U.S. Cl. 524—157 **27 Claims**

1. A molding composition consisting essentially of:

(1) a copolymer of conjugated diene/monovinyl-substituted aromatic hydrocarbon monomer; wherein said conjugated diene has from 4 up to about 12 carbon atoms per molecule and said monovinyl-substituted aromatic hydrocarbon monomer has from 8 up to about 18 carbon atoms per molecule;

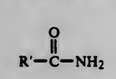
(2) 0.1 to about 10 parts by weight per 100 parts copolymer of at least one compound having the formula

$$M(NO_2)_m$$

where m=1 when M is the ammonium ion or an alkali metal, and m=2 when M is an alkaline earth metal; and

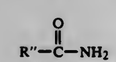
(3) an amount of at least one antihaze agent sufficient to reduce haze in said composition when subjected to injection molding conditions, wherein said at least one antihaze agent is selected from the group consisting of:

(a) saturated fatty acid amides of the formula



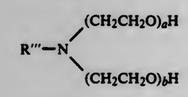
where R′ is a saturated hydrocarbon radical having about 11 to about 23 carbon atoms,

(b) unsaturated fatty acid amides of the formula



where R″ is a mono-unsaturated hydrocarbon radical having about 11 to about 23 carbon atoms,

(c) tertiary alkanolamines of the formula



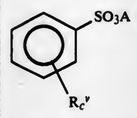
where R‴ is an alkyl group having about 7 to about 20 carbon atoms, a≧1, b≧1, with the proviso that a+b>50,

(d) hydrocarbyl sulfates of the formula

$$R^{iv}SO_3A$$

where R^{iv} is an alkyl, aryl, cycloalkyl, alkaryl or aralkyl radical having about 9 to about 21 carbon atoms and A is a cation selected from the group consisting of alkali metal cations and the ammonium ion,

(e) alkylbenzenesulfonates of the formula



where R^{v} is a branched chain or linear alkyl radical having about 9 to about 16 carbon atoms, c is an integer from 1-3 inclusive and A is as defined above, and mixtures of any two or more thereof.

4,574,135

Patent Not Issued For This Number

4,574,136

PLASTICIZED POLYVINYL BUTYRAL INTERLAYERS

I. Luis Gomez, Longmeadow, Mass., assignor to Monsanto Company, St. Louis, Mo.

Filed Aug. 15, 1983, Ser. No. 523,305

Int. Cl.⁴ C08L *91/00;* **C08K** *5/10*

U.S. Cl. 524—310 **5 Claims**

1. In a polyvinyl butyral sheet plasticized with a multiester of an alcohol having 2 to 4 hydroxyl groups and a C_{16} to C_{20} unsaturated fatty acid having a hydroxyl group attached to the acid molecule, the improvement which comprises, in property-improving combination with such multiester, a synergistically effective amount of a monoester of a glycol and said C_{16} to C_{20} unsaturated fatty acid, wherein the ratio of said monoester to said multiester is between about 1:1 to about 5:1.

4,574,137

PROCESS FOR PREPARING COPOLYMER POLYOLS

John F. Serratelli, Lake Jackson, and Michael A. Norton, Friendswood, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 23, 1984, Ser. No. 643,517

Int. Cl.⁴ C08F *216/02, 216/14, 220/26, 2/42*

U.S. Cl. 524—724 **14 Claims**

1. In a process for preparing a polymer polyahl comprising polymerizing an ethylenically unsaturated monomer or mixtures thereof in a polyahl or polyahl mixture whereby a dispersion of polymer particles is prepared in a continuous polyahl phase, the improvement comprising conducting said polymerization in the presence of a halogen selected from chlorine, bromine and iodine, an interhalogen in which the atoms are selected from chlorine, bromine or iodine or an iodine-releasing inorganic compound, said halogen, interhalogen or iodine-releasing inorganic compound being present in an amount sufficient to provide improved stability to said copolymer polyahl.

8. The improved process of claim 1 wherein the polyahl or polyahl mixture contains graft polymerization sites.

9. The improved process of claim 8 wherein the polyahl or polyahl mixture contains purposefully introduced ethylenic unsaturation.

10. The improved process of claim 9 wherein the polyahl or polyahl mixture comprises the reaction product of a polyahl and a difunctional compound having an additional polymerizable ethylenically unsaturated group and another functional group which reacts with a polyahl to form a bond between the difunctional compound and the polyahl.

12. The improved process of claim 10 wherein the difunctional compound is an ethylenically unsaturated isocyanate.

4,574,138

RAPID CURE ACRYLIC MONOMER SYSTEMS CONTAINING ELEMENTAL ALUMINUM METAL

James P. Moran, Jr., 30 Paper Chase Dr., Farmington, Conn. 06032, and Mark Holmes, 46 Wintergreen Dr., Quaker Hill, Conn. 06375

Filed Jan. 9, 1984, Ser. No. 568,311

Int. Cl.⁴ C08K *3/08*

U.S. Cl. 524—786 **39 Claims**

1. A polymerizable composition comprising, in combination:

(1) at least one polymerizable acrylic monomer system comprising a urethane acrylate monomer having vinyl reactive ends, and at least one hydroxy-terminated, monofunctional, short-chain monomer which is soluble in or miscible with the urethane acrylate monomer;

(2) an effective amount for initiation of a free radical initiator; and

(3) a compatible, powdered filler material comprising elemental (atomized) aluminum metal powder in an amount in the range of from about 20% to about 70% by weight of the total composition,

said composition being further characterized by the ability to achieve handling strength in 3 to 10 seconds.

4,574,139

POLYMER HAVING A FLUORINE-CONTAINING END GROUP AND PRODUCTION OF THE SAME

Toshiaki Sato; Junnosuke Yamauchi, both of Kurashiki, and Takuji Okaya, Nagaokakyo, all of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed May 25, 1984, Ser. No. 614,158

Claims priority, application Japan, Jun. 17, 1983, 58-109798; Jun. 17, 1983, 58-109799

Int. Cl.⁴ C08F *8/18*

U.S. Cl. 525—61 **10 Claims**

1. A polymer having an organic fluorine-containing group only at the end of said polymer represented by the formula

$$R_f—(X)_m—S—P$$

wherein m is 0 or 1 and R_f is:

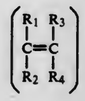
(a) a fluorinated alkyl group which is represented by

$$A—(CF_2—)_q$$

wherein A is hydrogen, fluorine, $(CF_3)_2CH$, or $(CF_3)_2CF$ and q is 2–20; or

(b) a fluorinated alkyl ether group which is $(CF_3)_2—C—F—O—(CF_2)_q$ wherein q is 2–20, or $(CF_3)_2—C—F—O—[CF(—CF_3)—CF_2—O—]_tCF(—CF_3)$, wherein t is 1 to 10;

wherein P is a polymeric base formed from a monomer capable of radical polymerization, said monomer being represented by



wherein

R_1 is hydrogen, a C_{1-10} alkyl group, halogen, or aryl group;

R_2 is hydrogen or $CH_2=CH—$;

R_3 is hydrogen, a C_{1-10} alkyl group, halogen, or CN; and

R_4 is hydrogen, a hydroxyl group, C_{1-10} alkyl group, C_{1-20} acyloxy group, halogen, aryl group, CN, or COOH or a salt, ester, or amide thereof; and

wherein X is a group that links R_f to S.

4,574,140

GREEN STRENGTH OF ELASTOMERS

Paul H. Sandstrom, Tallmadge, and Emil M. Friedman, Cleveland Heights, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

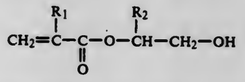
Filed Jun. 27, 1983, Ser. No. 508,297

Int. Cl.⁴ C08L *9/00;* **C08F** *236/02*

U.S. Cl. 525—123 **14 Claims**

1. A process for forming a synthetic elastomer copolymer having improved green strength comprising reacting at least one type of a synthetic elastomer forming monomer with a hydroxyl containing monomer,

said synthetic elastomer forming monomer selected from the class consisting of (1) at least one type of a conjugated diene monomer having from 4 to 10 carbon atoms, and (2) at least one type of an olefin monomer having from 2 to 14 carbon atoms in combination with at least one type of a conjugated diene monomer having from 4 to 10 carbon atoms, wherein the amount of said olefin monomer by weight to the total weight of the copolymer of the diene and olefin ranges from about 1.0 percent to about 55 percent, said hydroxyl containing monomer having the formula



wherein R_1 and R_2 are either hydrogen or a methyl group and the amount of said hydroxyl monomer in said copolymer ranges from about 0.5 percent to about 75 percent by weight based upon the total weight of said hydroxyl containing monomer and synthetic elastomer forming monomer in said elastomer copolymer.

2. The process of claim 1 wherein said synthetic elastomer copolymer is partially crosslinked by adding and reacting from 0.1 to 10.0 parts by weight of a diisocyanate crosslinking agent, based upon 100 parts of said copolymer,

wherein said diisocyanate is selected from the class consisting of aliphatic diisocyanates containing 2 to 16 carbon atoms, cycloaliphatic diisocyanates containing from 6 to 16 carbon atoms, aromatic diisocyanates containing 6 to 16 carbon atoms and combinations thereof.

4,574,141

METHOD FOR PRODUCING GRAFT-COPOLYMERS OF VINYL CHLORIDE AND POLYFLUORINE RESIN BY COPOLYMERIZATION

Cheng-Yi Cheng; Shou-Yuan Lee; Kwang-Ming Chen, and Chee-Yuan Wo, all of Kao Hsiung City, Taiwan, assignors to Formosa Plastics Corporation, Taipei, Taiwan

Filed Jun. 15, 1984, Ser. No. 621,103
Int. Cl.[4] C08F *259/08*
U.S. Cl. 525—252 **12 Claims**

1. A method of graft copolymerization of vinyl chloride and polyfluorine resin comprising the steps of

(a) heating to about 90° C. vinyl chloride monomer and polyfluorine resin in an alkaline solution under stirring conditions the ratio by weight of polyfluorine to vinyl chloride being greater than 0 and up to 1;

(b) subsequently cooling the alkaline solution to room temperature;

(c) adding a suspension agent, diluting with water and adding an initiator;

(d) stirring the resultant mixture to a substantially homogenized state;

(e) heating the resultant homogenized reaction mixture to a graft copolymerization temperature to substantially complete graft copolymerization of vinyl chloride and the polyfluorine resin; and

(f) neutralizing, washing and drying the polymerized mixture.

4,574,142

CURABLE ADHESIVE COMPOSITION TOUGHENED WITH STYRENE-BUTADIENE BLOCK COPOLYMER RUBBERS

Ronald S. Charnock, Celbridge, Ireland, assignor to Loctite (Ireland) Ltd., Dublin, Ireland

Continuation-in-part of Ser. No. 503,073, Jun. 13, 1983, abandoned, which is a continuation of Ser. No. 281,264, Jul. 8, 1981, abandoned. This application Oct. 11, 1984, Ser. No. 659,753
Claims priority, application Ireland, Jul. 11, 1980, 1449/80
Int. Cl.[4] C08F *279/00*
U.S. Cl. 525—305 **14 Claims**

1. A curable composition produced by mixing or contacting an activator component with a polymerizable component, the composition characterized in that it consists of said activator and said polymerizable components; said activator and polymerizable components are intermixed or in contact with each other so as to form an activated composition; both said components of said activated composition are free of organic sulfonyl chloride compounds; and said polymerizable component comprises a polymerizable acrylic ester monomer, at least 33% by weight of a styrene-butadiene block copolymer rubber, an adhesion promoter and a free radical catalyst system comprising a free radical initiator.

4,574,143

AMINE CURING AGENTS AND EPOXY RESINS CURED THEREWITH

Kathy B. Sellstrom, and Harold G. Waddill, both of Austin, Tex., assignors to Texaco, Inc., White Plains, N.Y.

Continuation-in-part of Ser. No. 510,696, Jul. 5, 1983, abandoned. This application Nov. 9, 1984, Ser. No. 670,171
Int. Cl.[4] C08L *67/00*
U.S. Cl. 525—438 **37 Claims**

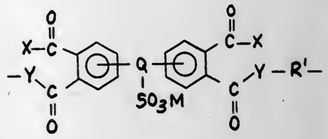
1. A composition for use in the curing of a 1,2-epoxy resin consisting essentially of a solution of an at least partially degraded normally solid secondary amide-containing polyethylene terephthalate in an amine curing agent.

4,574,144

SULFONATED POLYIMIDES AND POLYAMIC ACIDS AND METHOD FOR THEIR PREPARATION

John B. Yates, III, Clifton Park, and David J. Smith, Schoharie, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 17, 1984, Ser. No. 682,202
Int. Cl.[4] C08L *77/12*
U.S. Cl. 525—435 **17 Claims**



1. A sulfonated polymer comprising structural units having formula I in the drawings, wherein M is one equivalent of a cation; Q is a divalent radical comprising at least one aromatic ring substituted with at least one activating group toward electrophilic aromatic substitution; R^1 is an aromatic hydrocarbon radical containing about 6–20 carbon atoms or a halogenated derivative thereof, an alkylene or cycloalkylene radical containing about 2–20 carbon atoms, or a bis-alkylenepoly(dialkylsiloxane) radical; X is OH and Y is NH, or X and Y taken together are N.

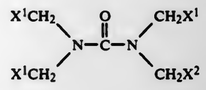
4,574,145

EPOXY CURING AGENTS AND METHOD FOR MAKING THEM

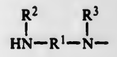
Lowell O. Cummings, San Anselmo, Calif., assignor to Chemcrete International, Belmont, Calif.

Continuation-in-part of Ser. No. 396,319, Jul. 8, 1982, Pat. No. 4,490,510. This application Sep. 28, 1984, Ser. No. 656,140
Int. Cl.[4] C08G *8/28*; C08L *61/24, 61/34*
U.S. Cl. 525—509 **25 Claims**

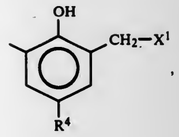
1.



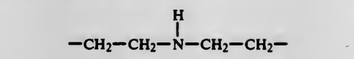
where X^1 is

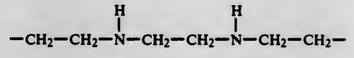


and X^2 is X^1 or



where R^1 is one of the following:

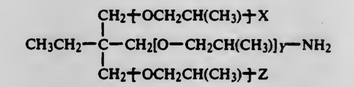
(a) 

(b) 

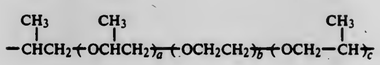
(c)

(d)

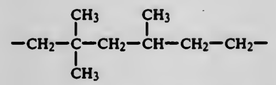
x varying from about 2 to about 6

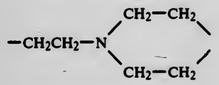
(e) 

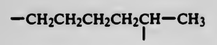
where X+Y+Z=5.3

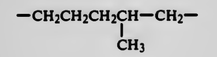
(f) 

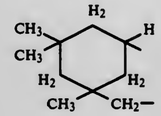
where a+c=3.5
and b=13.5

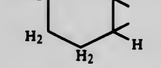
(g) 

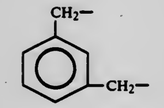
(h) 





(i) 

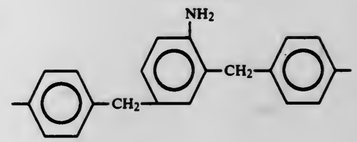
(j) 

(k) 

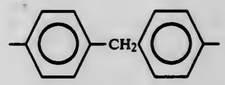
(l)

(m) 

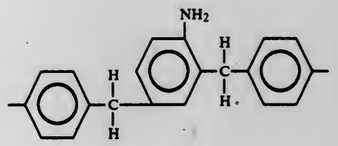
-continued

(n) 

(o) mixture of



and



(p) $-CH_2-CH_2-CH_2-$

R^2 and R^3 are both H where R^1 is any of (a) to (o) and when R^1 is (p), either R^2 or R^3, but not both, is $C_{18}H_{35}$, while the other is H, and
R^4 is H or an alkyl radical with one to nine carbon atoms.

4,574,146

THERMOSETTING COATING COMPOSITION USEFUL AS PRIMER AND CHIP RESISTANT PRIMER II'

Panagiotis I. Kordomenos, Mt. Clemens; Andrew H. Dervan, Fraser, and Dennis J. Grebur, Berkley, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jul. 5, 1983, Ser. No. 510,799
The portion of the term of this patent subsequent to Nov. 19, 2002, has been disclaimed.
Int. Cl.[4] C08G *59/16*
U.S. Cl. 525—530 **14 Claims**

1. A novel, epoxy-polyester graft copolymer adapted for use in a thermosetting composition, which copolymer has a number average molecular weight (Mn) of between about 2,000 and about 20,000, said copolymer being prepared by polymerization of lactone monomers in the presence of hydroxy functional epoxy ester resin precursor having a number average molecular weight (Mn) of between about 1,000 and about 4,000 and being formed by reacting diepoxide, which has been chain extended with dicarboxylic acid, with hydroxy functional secondary amine in chain terminating reaction in approximately 1 to 1 equivalent ratio, wherein said polymerization of said lactone monomers is carried out at a temperature between about 130° C. and about 200° C. and the polymerization reaction mixture comprises between about 10 and about 80 weight percent said hydroxy functional epoxy ester resin precursor and between about 20 and about 90 weight percent said lactone monomers.

4,574,147

PROCESS FOR THE PRODUCTION OF POLYURETHANES, POLYURETHANES CONTAINING TERMINAL AROMATIC AMINO GROUPS AND THEIR USE

Walter Meckel, Neuss, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 15, 1985, Ser. No. 691,593

Claims priority, application Fed. Rep. of Germany, Jan. 19, 1984, 3401753

Int. Cl.⁴ C08G *18/10*

U.S. Cl. 528—64 **11 Claims**

1. A process for the production of a crosslinkable, predominately linear polyurethane containing terminal aromatic amino groups which comprises reacting

(A) an organic, substantially difunctional polyisocyanate,

(B) a substantially difunctional polyhydroxyl compound having a molecular weight of 400 to about 6000 and/or

(C) a substantially difunctional chain-extending agent having a molecular weight of 18 to about 399 and

(D) a chain-terminating agent comprising a member from the group consisting of araliphatic diamines and aromatic diamines containing amino groups of different reactivity to NCO-groups, in

(E) solvents which are substantially inert to the reactants,

in a single-stage or multistage reaction, characterized in that component (A) is reacted with component (B) and/or (C) in an NCO:isocyanate-reactive group ratio of about 1.15:1 to 1.02:1 to form a polyurethane containing terminal NCO-groups, having a molecular weight of at least 10,000 and an NCO-content of ≦0.2 equivalents and ≧0.001 equivalents of NCO/1000 g of polyurethane, and said polyurethane is subsequently reacted with chain-terminating agent (D) in an NCO:NH_2-ratio of about 1:5 to 1:1.66 to form polyurethanes containing terminal aromatic amino groups.

4,574,148

POLYESTER RESINS CAPABLE OF FORMING CONTAINERS HAVING IMPROVED GAS BARRIER PROPERTIES

Thomas H. Wicker, Jr., and Robert B. Barbee, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 21, 1985, Ser. No. 747,608

Int. Cl.⁴ C08G *63/18, 63/66*

U.S. Cl. 528—173 **14 Claims**

1. A polyester composition capable of being formed into molded containers having good gas barrier properties comprising the reaction product of

(A) a diol containing up to about 8 carbon atoms, and

(B) a diacid component comprising

(i) about 5 to 95 mole percent of at least one first diacid selected from the group consisting of [thiobis(p-phenyleneoxy)]diacetic acid, [sulfonylbis(p-phenyleneoxy)]diacetic acid, and mixtures thereof, and

(ii) 5 to about 95 mole percent of naphthalene dicarboxylic acid,

wherein said polyester has an inherent viscosity of about 0.5 to 1.5.

4,574,149

FLUORINATED ORGANOSILOXANE COPOLYMERS

Chi-Long Lee; Thomas F. Lim, both of Midland, and Antony P. Wright, Rhodes, all of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Oct. 26, 1984, Ser. No. 664,897

The portion of the term of this patent subsequent to Oct. 22, 2002, has been disclaimed.

Int. Cl.⁴ C08G *77/24*

U.S. Cl. 528—42 **5 Claims**

1. A resinous, benzene-soluble organosiloxane copolymer consisting essentially of (a) repeating units of the formulae $SiO_{4/2}$; $R(CH_3)_2SiO_{\frac{1}{2}}$; and units of the general formula $R'CH_2CH_2Si(R'')_nO_{(3-n)/2}$ where R represents a saturated or ethylenically unsaturated hydrocarbon radical containing from 1 to 4 carbon atoms or a phenyl radical, R' represents a monovalent organic group containing at least 4 perfluorinated carbon atoms, R'' represents an alkyl radical containing from 1 to 3 carbon atoms or a phenyl radical; (b) silicon-bonded hydroxyl groups; and, optionally (c) R_2SiO units; n is 0, 1 or 2, the molar ratio of all units in the copolymer other than silicon-bonded hydroxyl groups and $SiO_{4/2}$ units to said $SiO_{4/2}$ units is from 0.7:1 to 1.1:1, inclusive, and the concentration of silicon-bonded hydroxyl groups in said copolymer is up to 4.0% by weight.

4,574,150

DRY FREE-FLOWING WATER-SOLUBLE COMPLEXES OF CHITOSAN

Paul R. Austin, Wilmington, Del., assignor to University of Delaware, Newark, Del.

Filed Feb. 19, 1985, Ser. No. 703,070

Int. Cl.⁴ C08B *37/08*

U.S. Cl. 536—20 **8 Claims**

5. A dry, free-flowing, water-soluble carboxylic acid complex of chitosan prepared according to a process comprising the steps of:

(A) combining to form a mixture;

(1) one part by weight of particulate chitosan in which at least about 70% of all amino groups are deacetylated;

(2) one-half to about 30 parts by weight of a liquid selected from the group consisting of alkanes containing about five to about nine carbon atoms, monoketones, monoesters, mono- and di-ethers, mononitriles, and mononitroalkanes containing two to four carbon atoms, normally liquid mono- and poly-chloroalkanes and alkenes containing one to two carbon atoms; and

(3) from about 0.1 to about 30 equivalents of a normal or iso-monocarboxylic acid for each amino group equivalent in said chitosan, said carboxylic acid containing one to four carbon atoms and zero to one of the groups (a), (b), (c) consisting of:

(a) one to two chlorine atoms;

(b) one keto group;

(c) one hydroxyl group;

(4) from zero to about 30% percent by weight of water based on the weight of the carboxylic acid;

(B) maintaining said mixture until said chitosan is rendered water-soluble;

(C) recovering and drying said water-soluble carboxylic acid complex of chitosan at a temperature below the denaturation temperature.

4,574,151

AMINE SALTS AND PRODUCTS CONTAINING THEM

Brian W. Adams, Newtown Abbey, Northern Ireland, assignor to Peter Robin Broughton Lawrence, London, England

Filed Aug. 11, 1983, Ser. No. 522,413

Claims priority, application United Kingdom, Aug. 20, 1982, 8223983

Int. Cl.⁴ C08B *15/06*

U.S. Cl. 536—31 **12 Claims**

1. A water soluble salt formed between a naturally occurring polysaccharide polymeric acid modified to increase the average number of acid groups per saccharide unit and at least 40% (by weight of the salt) of an alkaloid.

4,574,152

CEPHALOSPORIN COMPOUNDS

David Noble, Slough, England, assignor to Glaxo Group Limited, London, England

Filed Jan. 14, 1983, Ser. No. 457,940

Claims priority, application United Kingdom, Jan. 15, 1982, 8201139

Int. Cl.⁴ C07D *501/02*

U.S. Cl. 544—4 **12 Claims**

1. A ternary complex comprising a 7-[D-5-amino-5-carboxypentanamido]cephalosporin complexed with copper (II) ions and an organic nitrogen base containing from 6 to 15 carbon atoms selected from aliphatic primary amines, aromatic amines, nitrogen heterocyclic compounds and aralkyl primary amines having at least two carbon atoms in the alkyl moiety.

4,574,153

8-OXO-2-OXA-1-AZABICYCLO(4.2.0)OCTANE-3-CARBOXYLIC ACIDS

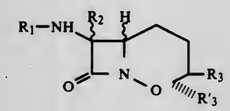
David Kronenthal, Yardley, Pa.; Paula L. Kuester, West Trenton, and William H. Koster, East Amwell Township, Hunterdon County, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Mar. 1, 1985, Ser. No. 707,357

Int. Cl.⁴ C07D *498/04*

U.S. Cl. 544—63 **17 Claims**

1. A compound having the formula

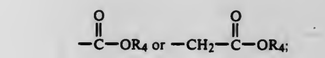


or a pharmaceutically acceptable salt thereof, wherein

R_1 is an acyl group derived from a carboxylic acid;

R_2 is hydrogen, methoxy, or formamido;

one of R_3 and R'_3 is hydrogen and the other is



and

R_4 is hydrogen, alkyl, substituted alkyl, phenyl, substituted phenyl, phenylalkyl or (substituted phenyl)alkyl;

wherein the term "substituted alkyl" refers to alkyl groups substituted with one, or more, azido, amino, halogen, hydroxy, carboxy, cyano, alkoxycarbonyl, alkoxy, phenyloxy, (substituted phenyl)oxy, mercapto, alkylthio, phenylthio, (4, 5, 6 or 7-membered heterocycle)oxy, alkylsulfinyl or alkylsulfonyl groups; and

the term "substituted phenyl" refers to phenyl substituted with 1, 2 or 3 halogen, hydroxy, carboxy, cyano, alkoxycarbonyl, aminocarbonyl, alkanoyloxy, trifluoromethyl, alkyl of 1 to 4 carbon atoms or alkoxy of 1 to 4 carbon atoms groups.

4,574,154

TRIAZINE ADDITION COMPOUNDS

Hidemasa Okamoto; Mitsuo Yamanaka, and Kazuyoshi Fujii, all of Hirakata, Japan, assignors to Ube Industries, Ltd., Ube, Japan

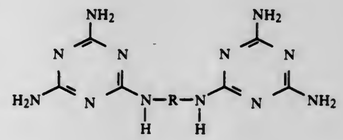
Filed Dec. 28, 1983, Ser. No. 566,195

Claims priority, application Japan, Dec. 28, 1982, 57-227979; Apr. 7, 1983, 58-59958

Int. Cl.⁴ C07D *403/14*

U.S. Cl. 544—192 **25 Claims**

1. A triazine addition compound consisting essentially of one mole of a triazine derivative having the formula (I):



(I)

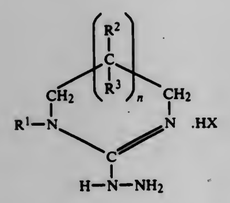
in which R is a divalent hydrocarbon residue containing 1–12 carbon atoms,

and one or two moles of one or two compounds selected from the group consisting of cyanuric acid and isocyanuric acid.

4,574,155
PROCESS FOR PREPARING 2-HYDRAZINO-1,3-DIAZACYCLOALK-2-ENE HYDROHALIDES
Thurairajah Padmanathan, Piscataway, N.J., assignor to American Cyanamid Company, Stamford, Conn.
Filed Mar. 8, 1984, Ser. No. 587,414
Int. Cl.⁴ C07D *239/02, 109/04*
U.S. Cl. 544—330 **16 Claims**

1. A process for preparing a compound of formula (I)

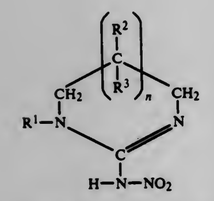
(I)



wherein R^1 is hydrogen, C_1–C_6 alkyl, C_1–C_6 hydroxyalkyl, C_1–C_6 alkoxyalkyl, phenyl, substituted phenyl, benzyl, or substituted benzyl, R^2 and R^3 are independently hydrogen, C_1–C_6 alkyl, C_1–C_6 alkoxy, C_1–C_6 alkoxyalkyl, hydroxyl, phenyl, substituted phenyl, benzyl and substituted benzyl, with the proviso that none of the substituted radicals contain a halo, sulfidyl, nitro or ring keto group, and n is an integer from 0 to 3, comprising:

reacting a one molar proportion of a compound of formula (II)

(II)

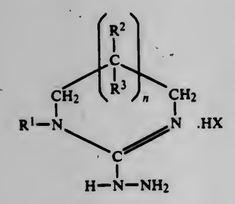


wherein R^1, R^2, R^3 and n are as defined above with about an equimolar proportion of an ammonium halide or hydrazonium halide, and about 1 to 2 molar proportions of hydrazine hydrate in a composition selected from a C_1 to C_4 aliphatic alcohol, water or a mixture thereof, at a temperature from about ambient to the reflux, and isolating the compound of formula (I).

11. A process for preparing a 2-hydrazino-1,3-diazacycloalk-2-ene dihydrohalide comprising:

reacting a compound of the formula

(I)



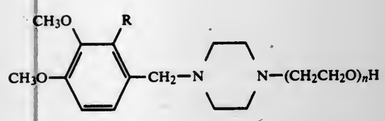
wherein R^1 is hydrogen, C_1–C_6 alkyl, or C_1–C_6 hydroxyalkyl, R^2 and R^3 are independently hydrogen or C_1–C_6 alkyl, n is 0 to 3 and X is a halide ion, with hydrogen halide wherein the halide ion is the same as defined above in a C_1–C_4 alkyl alcohol at about 0° to 30° C.; and

recovering the corresponding 2-hydrazino-1,3-diazacycloalk-2-ene dihydrohalide.

4,574,156
POLYMETHOXYBENZYL PIPERAZINE DERIVATIVES EFFECTIVE FOR IMPROVING BLOOD CIRCULATION SYSTEM
Masao Morita, Hirakata; Jiro Sugimoto, Yao; Komei Mizuno, Takatsuki; Motoaki Tanaka, Urawa, and Fumiyoshi Urano, Niiza, all of Japan, assignors to Wako Pure Chemical Industries, Ltd., Osaka, Japan
Filed Dec. 7, 1984, Ser. No. 679,346
Claims priority, application Japan, Dec. 10, 1983, 58-233404
Int. Cl.⁴ C07D *295/00*; A61K *31/495*
U.S. Cl. 544—398 **6 Claims**

1. A compound of the formula:

(I)



wherein R is hydrogen or a methoxy group; and n is an integer of 2 to 5, or a pharmaceutically acceptable acid addition salt thereof.

4,574,157
PROCESS FOR PREPARING ANHYDROUS CYCLIC IMIDO ESTERS
Walter K. Homann, Dülmen, Fed. Rep. of Germany, assignor to Chemische Werke Huels, AG, Fed. Rep. of Germany
Filed Jun. 28, 1983, Ser. No. 508,621
Claims priority, application Fed. Rep. of Germany, Jul. 3, 1982, 3224880
Int. Cl.⁴ C07D *263/04, 263/08*
U.S. Cl. 548—239 **12 Claims**

1. In a process for preparing an anhydrous cyclic imido ester by reacting a nitrile with an amino alcohol, in the presence of a metal compound as catalyst, and driving off resultant ammonia, the improvement comprising effecting the reaction at a temperature of 90°–230° C. and under a pressure of 1.1–10 bar.

4,574,158
ACETAL PURIFICATION USING PHASE TRANSFER CATALYSTS
Jeff T. Fenton, Ponca City, Okla., assignor to Conoco Inc., Ponca City, Okla.
Filed Nov. 1, 1982, Ser. No. 438,071
The portion of the term of this patent subsequent to Dec. 27, 2000, has been disclaimed.
Int. Cl.⁴ C07D *321/00*
U.S. Cl. 549—347 **7 Claims**

1. A method for purifying acetals comprising

(1) placing acetals in a molten state

(2) contacting said acetals with alkali metal hydroxide and a phase transfer catalyst for a time sufficient to reduce impurities present, and

(3) recovering the purified acetal

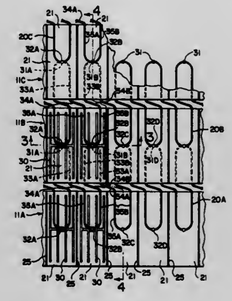
4,574,159
PROCESS FOR THE PREPARATION OF O-METHYL-N-VINYLURETHANE
Jürgen-Rolf Hassdenteufel, Cologne, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Filed May 25, 1984, Ser. No. 614,571
Claims priority, application Fed. Rep. of Germany, May 28, 1983, 3319451
Int. Cl.⁴ C07C *125/065*
U.S. Cl. 560—157 **14 Claims**

1. A process for the preparation of O-methyl-N-vinylurethane which comprises subjecting a composition consisting essentially of N-alpha-methoxyethyl-O-methylurethane to pyrolysis in a tube reactor and cooling the resultant pyrolysate, wherein substantially pure O-methyl-N-vinylurethane is separated out from said pyrolysate and the resultant mother liquor is passed to a new pyrolysis and wherein methanol is added on to the resultant mother liquor in the presence of a base.

4,574,160
FLEXIBLE, ROLLABLE PHOTOVOLTAIC CELL MODULE

Ronald C. Cull, Milan; Robert A. Hartman, and Paul E. Koch, both of Chagrin Falls, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Sep. 28, 1984, Ser. No. 656,175
Int. Cl.⁴ H01L *25/02*
U.S. Cl. 136—245 **26 Claims**



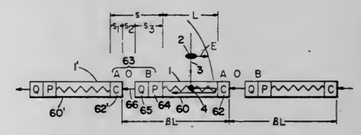
1. A photovoltaic module comprising:
busbar means;
a plurality of individual photovoltaic cell strips, each said cell strip having an electrically conductive substrate layer, a semiconductor body deposited on said substrate layer, and a transparent electrically conductive layer deposited on said semiconductor body, said transparent electrically conductive layer being selectively sectioned to define a plurality of electrically distinct photovoltaic cells carried by said cell strip;
grid means deposited on said transparent electrically conductive layer of each said photovoltaic cell;
continuous electrically conductive filament means alternately and repetitively connected, at contact points, to said electrically conductive substrate layer of one said photovoltaic cell strip and to said grid means of another said photovoltaic cell strip, wherein said filament means is connected medially of the lateral edges of said respective cell strips; and
means for connecting said transparent electrically conductive layer of one said photovoltaic cell strip to said busbar means.

26. A flexible photovoltaic array roll comprising:
a plurality of longitudinally spaced flexible photovoltaic modules, wherein said photovoltaic modules comprise busbar means, a plurality of individual photovoltaic cell strips, each said cell strip having an electrically conductive substrate layer, a semiconductor body deposited on said substrate layer, and a transparent electrically conductive layer deposited on said semiconductor body, said transparent electrically conductive layer being selectively sectioned to define a plurality of electrically distinct photovoltaic cells carried by said cell strip, grid means deposited on said transparent electrically conductive layer of said photovoltaic cell, continuous electrically conductive filament means alternately and repetitively connected, at contact points, to said electrically conductive substrate layer of one said photovoltaic cell strip and to said grid means of another said photovoltaic cell strip, said filament means including a first stress relief region proximate to a said contact point on one said cell strip, a second stress relief region proximate to a said contact point on a next adjacent said cell strip, and a third stress relief region interposed between said second and third stress relief regions and, means for connecting said transparent electrically conductive layer of one said photovoltaic cell strip to said busbar means;
means for receiving electrical energy from said modules; and
means which encapsulate said modules and said means for receiving.

4,574,161
ORDERED DIPOLAR LIGHT-ELECTRIC POWER CONVERTER

Alvin M. Marks, Bigelow Rd., Athol, Mass. 01331

Continuation-in-part of Ser. No. 637,405, Aug. 3, 1984, which is a continuation-in-part of Ser. No. 462,240, Mar. 2, 1983, which is a continuation-in-part of Ser. No. 330,791, Dec. 15, 1981, Pat. No. 4,445,050, and a continuation-in-part of Ser. No. 596,428, Apr. 3, 1984, which is a continuation-in-part of Ser. No. 222,377, Jan. 5, 1981, Pat. No. 4,442,019, which is a continuation of Ser. No. 909,944, May 26, 1978, abandoned. This application Sep. 14, 1984, Ser. No. 650,708
Int. Cl.⁴ H01L *31/04*
U.S. Cl. 136—263 **13 Claims**

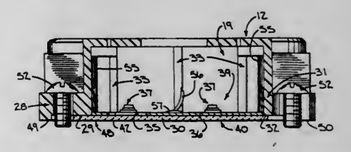


1. A light/electric power converter comprising a sheet-like volume, a plurality of elongated light-absorbing electrically-conducting particles in said sheet, said elongated particles being linearly arranged along an axis in strings; said light energy being converted to energetic electrons in said strings, asymmetric junctions interspersed and connected to said particles
in said strings, said asymmetric junctions passing said electrons in only one direction along said conducting strings; said strings being substantially parallel, a first electrode and a second electrode connected to a first terminal and a second terminal respectively; said particle strings being normal to and between said first and second electrodes, a load, said load being connected between said first and second terminals, whereby light power is converted in said sheet to electric power and delivered to said load.

4,574,162
COMPACT CIRCUIT PACKAGE WITH IMPROVED CONSTRUCTION FOR CLAMPING TO ENHANCE HEAT TRANSFER

Lance R. Kaufman, 131 W. White Oak Way 96N, Mequon, Wis. 53092

Division of Ser. No. 362,498, Mar. 26, 1982, Pat. No. 4,449,292. This application Feb. 6, 1984, Ser. No. 577,205
Int. Cl.⁴ H01L *23/40*
U.S. Cl. 174—16 HS **1 Claim**



1. A compact circuit package with improved construction for clamping to enhance heat transfer, comprising
an insulating housing providing a circuit retaining cavity including a base surface surrounded by a peripheral-side wall having

a first pair of spaced side wall portions each terminating at a first rim located substantially within a first plane and

a second pair of spaced side wall portions each terminating at a second rim located substantially within a second plane spaced from said first plane

with said first and second rims surrounding an opening into said cavity and each of said first and second side wall portions containing an abutment to limit the depth of entry into said cavity,

a heat conducting electrically insulating substrate located within said opening and engaging said abutments to substantially enclose said cavity and including

a first side facing said cavity and containing a heating generating electrical component and

an oppositely disposed second side located substantially within a third plane substantially co-extensive with at least one of said first and second planes

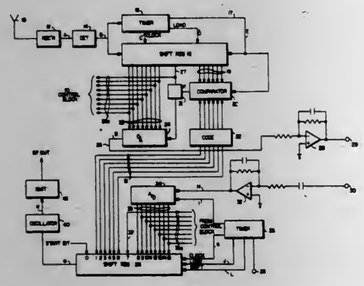
to form a clamping surface including said substrate second side and at least one pair of said first and second rims to permit said clamping surface to be clamped against an external heat dissipating object by clamping pressure being distributed along said substrate second side and at least one pair of said first and second rims to permit increased substantial clamping pressure without damaging said substrate and said side walls.

4,574,163

DIGITAL RADIO TELEPHONE

Thomas J. Zato, Palatine, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed Nov. 22, 1983, Ser. No. 554,424
Int. Cl.⁴ H04Q 7/04
U.S. Cl. 179—2 EA **5 Claims**



1. A method of wireless communication between a base station and a remote station in a radio telephone system comprising the steps of:

assigning fixed digital identification addresses to said base station and to said remote station;

converting audio data information and function data information to be transmitted between said stations into digital data; and

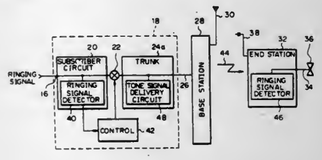
transmitting said digital data in packets, each packet including an identification address, an audio/function signal for identifying said audio data and said function data and either said audio data information or said function data information.

4,574,164

RINGING SIGNAL TRANSMISSION SYSTEM FOR RADIOTELEPHONE SYSTEM

Hiromi Orikasa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 19, 1984, Ser. No. 652,296
Claims priority, application Japan, Sep. 26, 1983, 58-178684
Int. Cl.⁴ H04Q 7/04
U.S. Cl. 179—2 EB **2 Claims**



1. In a radiotelephone system comprising a telephone switching network which includes a telephone exchange for sending a ringing signal, at least one base station connected to the telephone switching network, and a plurality of end stations each being provided with a telephone, wherein a multichannel access radio section is set up between the base station and each of the end stations and the telephone at each of the end stations produces a calling tone in synchronism with a ringing signal after the ringing signal from the telephone exchange is transmitted over the radio section, a ringing signal transmission system comprising:

trunk circuits connected between the base station and the telephone exchange in correspondence with channels of the radio section; and

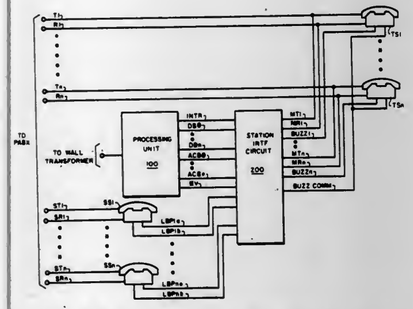
a tone signal generator circuit called by the telephone exchange to generate a calling tone signal for a predetermined period of time immediately after the completion of a connection of the radio section for a call to be received by one of the end stations, with no regard to a ringing signal to be delivered from the telephone exchange, said calling tone signal being transmitted to said one end station.

4,574,165

SECRETARIAL ANSWERING SYSTEM

Louis W. Smith, St. Petersburg, Fla., and Janos I. Csapo, Oakton, Va., assignors to GTE Business Communication Systems Inc., Northlake, Ill.

Filed Oct. 11, 1983, Ser. No. 540,463
Int. Cl.⁴ H04M 3/50, 3/58
U.S. Cl. 179—18 BD **14 Claims**



1. A secretarial telephone answering system for use with a telephone switching system including a switching center, and both a secretarial telephone station and a plurality of subscriber telephone stations all connected to said switching center, said switching center being operative to apply a ringing signal to a called subscriber station, said subscriber stations being operative to provide busy and idle conditions, and said secretarial station being operative to provide a buzzing requested message, including a code identifying said called subscriber station, said telephone answering system comprising:

a processing unit connected to said secretarial station; and

a plurality of line circuits each connected to said processing unit and an associated one of said subscriber stations;

each of said line circuits being operative in response to detection of said busy or idle condition, or ringing signal at an associated called subscriber station to provide a busy, idle or ringing detected signal, respectively;

said processing unit being operative to periodically scan said line circuits for said busy, idle and ringing detected signals and upon detection thereof, being operative to apply to said secretarial station busy, idle or ringing detected messages, respectively, each including a busy, idle or ringing detected code, respectively, and a code identifying an associated subscriber station;

said processing unit being further operative in response to said buzzing requested message to apply a buzzing control signal to the line circuit associated with said called subscriber station; and

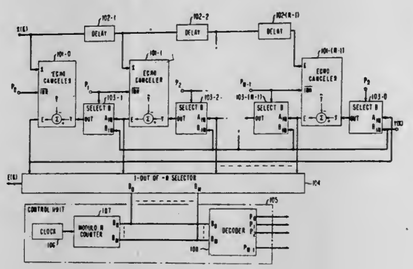
said line circuit being operative in response to said buzzing control signal to apply a buzzing signal to said called subscriber station.

4,574,166

TANDEM ADAPTIVE FILTER ARRANGEMENT

Charles W. K. Gritton, North Brunswick, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Feb. 4, 1983, Ser. No. 464,029
Int. Cl.⁴ H04B 3/20
U.S. Cl. 179—170.2 **13 Claims**



7. Apparatus comprising:

a plurality of adaptive echo cancelers, each including a receive input, a transmit input and a transmit output;

means for switchably connecting said transmit inputs and transmit outputs of said plurality of adaptive echo cancelers in a tandem arrangement; and

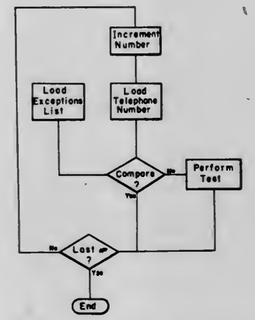
means for controlling switching of said transmit inputs and transmit outputs of said adaptive echo cancelers so that the relative positions of said adaptive echo cancelers are switched in said tandem arrangement at a predetermined rate.

4,574,167

METHOD AND APPARATUS FOR CONFIGURABLE LINE TESTING

David J. Olek, Victor, N.Y., assignor to TII Computer Systems, Inc., Copiague, N.Y.

Filed Aug. 29, 1984, Ser. No. 645,461
Int. Cl.⁴ H04B 3/46
U.S. Cl. 179—175.3 R **2 Claims**



2. Apparatus for testing telephone lines in numerical order without the need to access certain telephone lines in such order comprising:

means for storing an exceptions list which identifies each line that is not to be tested,

means for storing a record of the next telephone line to be tested,

means for comparing said record against said exceptions list, and

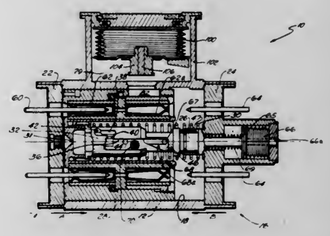
means for incrementing said record if the next line to be tested appears on the exceptions list and comparing the incremented record with the exceptions list or for initiating a test of that telephone line when a number is reached that does not appear on the exceptions list.

4,574,168

MULTIPLE-STAGE INTEGRATING ACCELEROMETER

Howard F. Devaney, Cedar Crest, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 27, 1984, Ser. No. 625,326
Int. Cl.⁴ H01H 35/14; F42C 15/24
U.S. Cl. 200—61.53 **18 Claims**



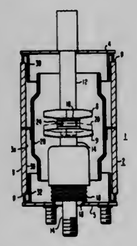
1. An accelerometer assembly for use in activating a switch or the like responding to multiple acceleration pulses in series, comprising:

a housing forming a chamber having a first and second end;

a mass slidably disposed in said chamber and movable during acceleration from said first end toward said second end;

means for biasing said movable mass toward a reset position adjacent said first end;
means for damping the movement of said mass in said chamber;
cam and follower means carried by said movable mass and said housing for relative movement in response to said acceleration, said cam and follower means including means for temporarily blocking the mass movement toward said second end after a first acceleration pulse;
said cam and follower means cooperating together to allow continued movement toward said second end and switch activation in response to at least a second separate acceleration pulse in series with the first.

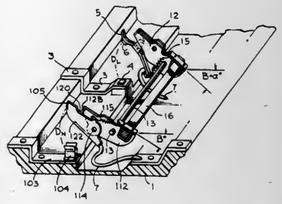
4,574,169
BIMETALLIC ARC SHIELD
Vincent J. Santilli, Corning, N.Y., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Sep. 4, 1984, Ser. No. 647,205
Int. Cl.[4] H01H *33/66*
U.S. Cl. 200—114 B **2 Claims**



1. A vacuum type circuit interrupter including in combination, means for defining an evacuated envelope, a pair of separable contacts disposed within the evacuated envelope and separable to establish arcing, a vapor condensing arc shield provided interiorly within said evacuated envelope to prevent deposition of metallic particles emitted from the arcing region onto the means defining the evacuated envelope, said vapor condensing arc shield being bimetallic and consisting of a first layer of copper and a second layer of a relatively high breakdown voltage material, said material being selected from the group consisting of stainless steel and steel, one major surface of said copper layer facing toward said arcing region of said interrupter, said layer of high breakdown voltage material being affixed to a second major surface of said copper layer over the entire length of said shield, said second major surface of said copper layer being opposed to said one major surface of said copper layer.

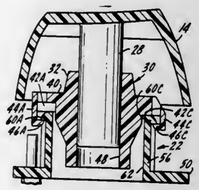
4,574,170
MULTI-POLAR CIRCUIT BREAKER
Ken-ichi Abe, and Ryoji Ozaki, both of Kawasaki, Japan, assignors to Fuji Electric Co., Ltd., Tokyo, Japan
Continuation-in-part of Ser. No. 508,050, Jun. 27, 1983, abandoned. This application Aug. 20, 1984, Ser. No. 642,496
Claims priority, application Japan, Jul. 15, 1982, 57-122131
Int. Cl.[4] H01H *21/54*
U.S. Cl. 200—153 G **11 Claims**

1. A multi-polar circuit breaker for switching multiple lines, including a neutral line and a voltage-carrying line, in an electrical power system, including:
a neutral-line switching assembly and a voltage-carrying-line-switching assembly;
said voltage-carrying-line-switching assembly including a first holder, a first movable contact element carried by said first holder in pivotable relationship thereto, and a first fixed contact element;
said neutral-line-switching assembly including a second holder, a second movable contact element carried by said second holder in pivotable relationship thereto and a second fixed contact element;
said second movable contact element having a first edge remote from said second fixed contact element;
a first stop carried on said second holder for engaging said first edge of said second movable contact element to limit the pivoting of said second contact element in a first direction;
a spring coupled between said second movable contact



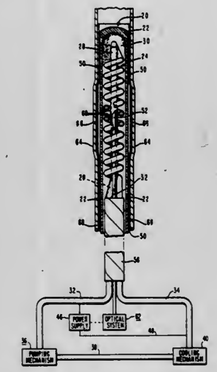
element and said second holder for biasing said second movable contact element pivotably towards said first stop;
said neutral-line-switching assembly and said voltage-carrying-line-switching assembly being inter-linked by a tie-bar for motion of said holders in unison, said second movable contact element being spaced from said second fixed contact element, in the opened condition of said neutral-line-switching assemlby, a distance less than the spacing of said first movable contact element from said first fixed contact element, in the opened condition of said voltage-carrying-line-switching assembly.

4,574,171
KEYBOARD AUXILIARY BEARING
Ronald S. Denley, Woodstock, Ill., assignor to Oak Industries Inc., Rancho Bernardo, Calif.
Filed Aug. 3, 1984, Ser. No. 637,266
Int. Cl.[4] H01H *3/12*
U.S. Cl. 200—340 **13 Claims**



1. In a keyboard having at least one irregularly-shaped keycap mounted on a plunger which is reciprocative along an axis of motion in a main switch housing, the irregular keycap having coupling means attached to its underside, an auxiliary support for preventing binding of the plunger, comprising a bearing having securement means for engaging the coupling means, the securement means allowing relative motion between the bearing and the keycap only in a direction parallel to the plunger axis of motion, and mounting means for attaching the bearing to the keyboard such that the bearing can shift in a plane perpendicular to the plunger axis of motion but cannot skew in a plane parallel to the plunger axis of motion.

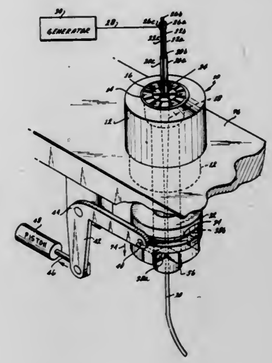
4,574,172
BRAZING WAND WITH FIBER OPTIC TEMPERATURE SENSOR
Robert D. Burack, Pittsburgh, Pa., and Rudolph W. Brachold, Waldwick, N.J., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Continuation of Ser. No. 324,910, Nov. 25, 1981, abandoned. This application Apr. 19, 1984, Ser. No. 602,088
Int. Cl.[4] H05B *6/38*
U.S. Cl. 219—10.49 R **11 Claims**



1. Internal heating apparatus for use in steam generator heat exchange tubes, comprising:
an electrically insulating protective member capable of being disposed in a steam generator heat exchange tube;
a hollow electrically conductive tubular member capable of conducting a fluid therethrough and disposed in said protective member, said tubular member having a substantially straight leg and having a portion thereof helically wound around a portion of said straight leg forming an induction coil for heating said tube;
a single strand quartz fiber optic cable disposed within said coil for detecting the temperature of said tube
a two color pyrometer connected to said fiber optic cable for determining the temperature of said tube; and
a power supply electrically connected to said tubular member for supplying an electrical current to said tubular member.

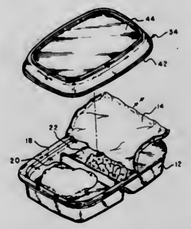
4,574,173
DEVICE FOR RF WELDING AN IV TUBE TO A CATHETER LUMEN
Laurence M. Bennett, Sandy, Utah, assignor to Warner-Lambert Company, Morris Plains, N.J.
Filed May 4, 1984, Ser. No. 607,329
Int. Cl.[4] H05B *6/54*
U.S. Cl. 219—10.53 **18 Claims**

1. A device for RF welding an IV tube to a multilumen catheter comprising:
means cooperative with said catheter for compressively engaging a portion of said IV tube with a dimensionally incompatible portion of a lumen of said catheter;
an electrically conductive mandrel insertable into said IV tube;
an electrical ground associated with said compressive means; and
means connectable with said mandrel for generating RF energy between said mandrel and said ground to weld a



continuous and integral bond at the interface between said IV tube and said catheter.

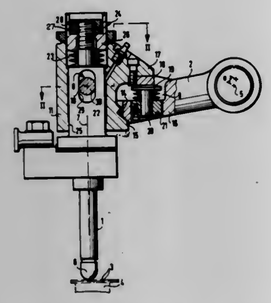
4,574,174
CONVENIENCE DINNER CONTAINER AND METHOD
Thomas P. McGonigle, 2087 Oakdale, Glenside, Pa. 19038
Filed May 21, 1984, Ser. No. 612,087
Int. Cl.[4] H05B *6/64*
U.S. Cl. 219—10.55 M **2 Claims**



1. A method for providing, storing, and cooking a convenience meal in a either microwave oven or a convectional oven comprising:
(a) assembling a meal for microwave or heat reconstitution in an upside down fashion in a lid having at least one compartment,
(b) installing in the lid as least one vent hole in the compartment located generally under the meal,
(c) covering each vent hole with an adhesive sealing means which prevents the meal from escape and contact with the elements,
(d) covering and sealing each open compartment of the lid with a foil sealing means to protect the meal,
(e) storing the lid with the meal sealed inside, under conditions to protect the freshness of the meal until use,
(f) removing the foil to expose the meal,
(g) inverting the lid over a dish of a size such that the lid interfits over the sides of the dish, the dish having a complimentary compartment for each compartment of the lid, wherein the dish is microwavable and of a construction and material suitable for reuse,
(h) removing the adhesive sealing means to expose each vent hole,

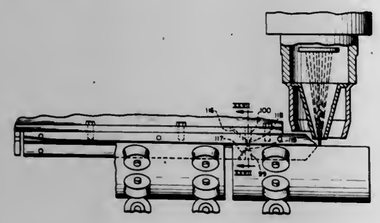
(i) causing the meal in the lid to drop into the dish, and
(j) cooking the meal.

4,574,175
RESISTANCE WELDING APPARATUS
Milenko Jovanovic, Augsburg, Fed. Rep. of Germany, assignor to Bayerische Motoren Werke Aktiengesellschaft, Fed. Rep. of Germany
Filed Apr. 20, 1984, Ser. No. 602,504
Claims priority, application Fed. Rep. of Germany, Apr. 22, 1983, 3314646
Int. Cl.⁴ B23K *11/10*
U.S. Cl. 219—86.1 **27 Claims**



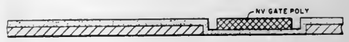
1. A resistance welding apparatus, comprising an actuatable pivot arm, a welding electrode carried by said pivot arm, said welding electrode extending at least approximately perpendicularly with respect to the pivot arm and being displaceable within limits with respect thereto against a spring force, and joint means arranged approximately in the electrode axis to enable pivotal movement of the welding electrode with respect to the pivot arm in response to elasticities and bearing play forces in the welding operation.

4,574,176
METHOD AND APPARATUS FOR PULSED HIGH ENERGY DENSITY WELDING
Charles M. Sharp, Mount Arlington, N.J., assignor to SWS Incorporated, Landing, N.J.
Filed Nov. 28, 1983, Ser. No. 555,641
Int. Cl.⁴ B23K *26/00*
U.S. Cl. 219—121 LD **31 Claims**



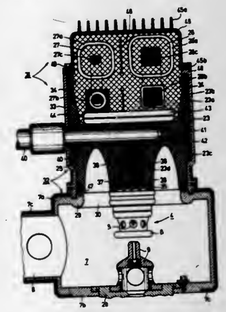
1. A method of forming a continuous weld at high speed comprising the steps of moving a member to be welded at high speed relative to a pulsed high energy density welding means capable of producing a plurality of short duration pulses of energy having an average power density of at least 10^6 watts/inch^2, forming a continuous weld along said member with a plurality of overlapping welds formed by applying a plurality of short duration pulses of high density energy from said pulses high energy density welding means to said member, detecting the movement of said moving member in the vicinity of said welding means and controlling the pulsing of said pulsed high energy density welding means during said welding in response to the detected movement of said moving member so that the energy for welding from the pulses per unit length of the member is accurately controlled.

4,574,177
PLASMA ETCH METHOD FOR TiO_2
Chung S. Wang, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Continuation of Ser. No. 344,562, Feb. 1, 1982, abandoned. This application Nov. 13, 1984, Ser. No. 671,027
Int. Cl.⁴ B23K *9/00;* **G02B** *5/14*
U.S. Cl. 219—121 PE **14 Claims**



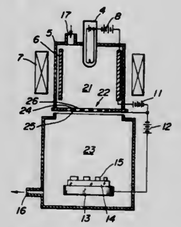
1. A method for selectively etching a layer of TiO_2, comprising the steps of:
(a) providing a layer of TiO_2;
(b) forming a patterned layer of masking material on said TiO_2;
(c) exposing said patterned TiO_2 layer to an atmosphere of a carbohalogen and oxygen at a pressure greater than 0.1 Torr; and
(d) applying RF power to said carbohalogen atmosphere near said TiO_2 layer.

4,574,178
ELECTRON GUN
Helmut Spruck, Gilching, Fed. Rep. of Germany, assignor to Leybold-Heraeus GmbH, Cologne, Fed. Rep. of Germany
Filed Sep. 13, 1984, Ser. No. 650,403
Claims priority, application Fed. Rep. of Germany, Sep. 17, 1983, 3333686
Int. Cl.⁴ H01J *37/065*
U.S. Cl. 219—121 ET **12 Claims**



1. An electron gun comprising:
a beam generator with a cathode and beam-forming electrode;
a high-voltage connection and a high-voltage insulator to which said beam generator is attached;
at least one insulating transformer and circuit means for producing auxiliary voltages at high-voltage potential;
a grounded conductive jacket surrounding said beam generator and said high-voltage insulator, said insulating transformer being disposed above said high-voltage insulator;
insulating means mounted directly on said high-voltage insulator, said at least one insulating transformer being embedded in said insulating means, a portion of said insulating means overlapping said grounded jacket; and
a conductive hood which surrounds said portion of said insulating means and which encloses said at least one insulating transformer and together with said jacket forms a Faraday cage, and said circuit means for the auxiliary voltages also being disposed in said Faraday cage.

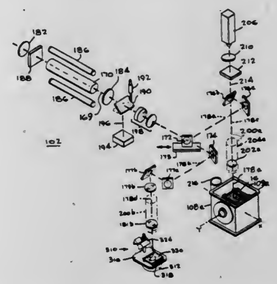
4,574,179
ION BEAM MACHINING DEVICE
Takahisa Masuzawa, Kamakura, and Ichiro Tsuchiya, Tokyo, both of Japan, assignors to University of Tokyo, Tokyo, Japan
Filed Feb. 29, 1984, Ser. No. 584,962
Claims priority, application Japan, Jul. 14, 1983, 58-126848
Int. Cl.⁴ H05H *5/02;* **B23K** *9/00*
U.S. Cl. 219—121 PG **4 Claims**



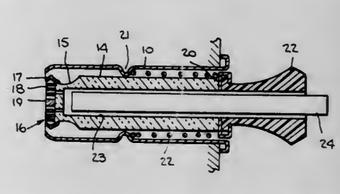
1. An ion beam machining device, comprising: a plasma-generating chamber for producing plasma ions, an ion-extracting grid for extracting the produced ions as ion beams, a machining chamber for irradiating the extracted ion beams onto a workpiece, said ion-extracting grid having an electrical insulator layer facing the plasma-generating chamber and an electrical conductor layer, and a plurality of holes extending through both said insulator layer and said conductor layer, and means for connecting said conductor layer to a workpiece through a suppressor power source to generate an electric potential which is negative relative to potential of said plasma, wherein said insulator layer of said grid is thicker than said conductive layer thereof to focus said ion beam for machining.

4,574,180
BEAM ALIGNMENT SYSTEM FOR LASER WELDING SYSTEM
William H. Kasner, Penn Hills; Richard A. Miller, N. Huntingdon, and Vincent A. Toth, Penn Township, Westmoreland County, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Jun. 19, 1984, Ser. No. 622,296
Int. Cl.⁴ B23K *26/02*
U.S. Cl. 219—121 LY **17 Claims**

1. Apparatus for performing a plurality of laser machining operations, said laser machining apparatus comprising:
(a) means for emitting a laser beam along a path;
(b) means disposed within said path and movable along an axis for variably focusing the laser beam at a plurality of different focal spots corresponding to said plurality of laser machining operations;
(c) means for aligning at least a portion of said path with said axis, whereby the lateral displacement of each of said plurality of focal spots from said axis is reduced as said focusing means is moved along said axis;
(d) an alignment target; and
(e) means for removably mounting said alignment target within said path, whereby said alignment target intercepts the laser beam and casts a shadow whose pattern is indicative of whether or not said path is aligned with said axis.



4,574,181
AROMA-GENERATING AUTOMOBILE CIGARETTE LIGHTER
Donald Spector, 380 Mountain Rd., Union City, N.J. 07087
Filed Oct. 9, 1984, Ser. No. 658,778
Int. Cl.⁴ F22B *1/28;* **F23Q** *7/00*
U.S. Cl. 219—274 **7 Claims**



1. An automobile cigarette lighter adapted to generate an aromatic vapor, the lighter being releasably retained within a dashboard socket provided with terminals connected to a battery of the vehicle, said lighter comprising:
A. a cylindrical shell;
B. a spring-biased plunger telescopically received in the shell;
C. a disc-shaped heater attached to a front end of the plunger and having contacts which in an inactive position of the lighter are spaced from the terminals;
D. a knob attached to a rear end of the plunger and projecting beyond the shell, whereby when the knob is pressed in, the plunger is advanced to an activated position in which the contacts of the heater engage the terminals in the socket to effect energization of the heater;
E. a latching element to retain the plunger in its activated state and to release the plunger when the heater temperature reaches a predetermined level, said plunger and said knob having a central duct therein extending longitudinally from a point adjacent the heater to an opening in the knob; and
F. a replaceable tubular fragrance cartridge inserted in the duct and having an open-ended heat-responsive aroma-producing element therein which is activated by the heat to exude an aromatic vapor into the vehicle interior, said cartridge having a length relative to that of said duct whereby a front end of the inserted cartridge lies adjacent said heater in heat exchange relationship therewith, and a rear end thereof extends beyond the opening in the knob whereby the cartridge may readily be removed from the

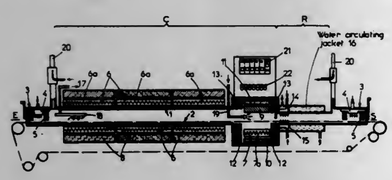
duct, the aroma being discharged from the open rear end of the cartridge.

4,574,182

CONTINUOUS FURNACE FOR SOLDERING ELECTRONIC COMPONENTS

Richard Pescatore, Antibes, and Jean-Jack Boumendil, Villeneuve-Loubet, both of France, assignors to Piezo-Ceram Electronique, Antibes, France

Filed Nov. 17, 1983, Ser. No. 552,975
Claims priority, application France, Nov. 17, 1982, 82 19220
Int. Cl.⁴ F27B *9/06*
U.S. Cl. 219—388 **2 Claims**



1. A continuous furnace for soldering an assembly of electronic components mounted on a substrate which is opaque to infrared rays by means of a soldering product having an eutectic melting temperature, comprising in combination:

a metallic muffle defining a furnace chamber through which said assembly to be soldered is to travel, said muffle being adapted to contain said assembly in a controlled atmosphere and having an inlet and an outlet for entry and exit of said assembly, respectively, and said chamber comprising, in order, from the inlet to the outlet of said muffle, a first heating section, a second heating section and a cooling section;

conveying means for transporting said assembly, said means entering the chamber at the inlet of said muffle and leaving it at the outlet of said muffle;

means for driving said conveying means;

first heating means, external to said muffle, for heating said first heating section and ensuring a temperature rise of said assembly up to a temperature plateau below the eutectic melting temperature of the soldering product;

second heating means, internal to said muffle, for heating, in said second heating section, the soldering product to a temperature above said eutectic melting temperature while heating said electronic components to a lower temperature, said second heating means including infrared-ray-emitting heating means located beneath said conveying means and a reflector provided, in said second heating section, above and facing said conveying means;

means for thermally insulating said first and second heating sections;

forced cooling means for cooling said cooling section;

means for introducing at least one gas into said chamber; and

isolation means provided at the inlet and outlet of said muffle for isolating the chamber.

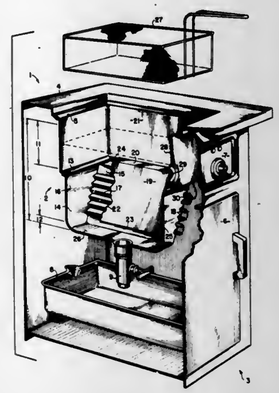
4,574,183

ELECTRICALLY HEATED DEEP FRYER

Hermann Knauss, Oberderdingen, Fed. Rep. of Germany, assignor to E.G.O. Elektro-Gerate Blanc u. Fischer, Fed. Rep. of Germany

Filed Aug. 14, 1984, Ser. No. 640,564
Claims priority, application Fed. Rep. of Germany, Aug. 18, 1983, 3329793
Int. Cl.⁴ F27D *11/00*
U.S. Cl. 219—438 **17 Claims**

1. An electrically heated deep fat fryer comprising: a main container having walls defining a frying fat area, said walls being made of material to be heated and the walls being adapted to hold frying fat, an upper zone of said main container forming a frying area for receiving a food-holding insert, said main container below the frying area and directly adjacent thereto forming a frying fat flow circulation well having a smaller width than the frying area, at least one wall of the main container on an outside of the well having groove-like depressions, electric tubular heating elements being inserted in the



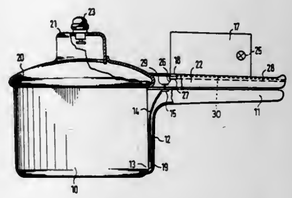
depressions over substantially an entire height of the well, the heating elements being attached to the wall in thermally conductive connection and inside the well an insert wall being positioned so as to form a rising flow channel with said wall and a falling flow channel on an opposite side of the insert wall, said insert wall forming a common wall of the rising and falling channels.

4,574,184

SAUCEPAN AND COVER FOR A COOKING UTENSIL, PARTICULARY A STEAM PRESSURE COOKING PAN

Kurt Wolf, Wildbad, and Wolfram K. Andre, Aichwald, both of Fed. Rep. of Germany, assignors to Kurt Wolf & Co. KG, Fed. Rep. of Germany

Continuation of Ser. No. 539,482, Oct. 6, 1983, Pat. No. 4,535,229. This application May 9, 1985, Ser. No. 732,140
Claims priority, application Fed. Rep. of Germany, Oct. 20, 1982, 3238768
Int. Cl.⁴ F27D *11/00*
U.S. Cl. 219—440 **11 Claims**



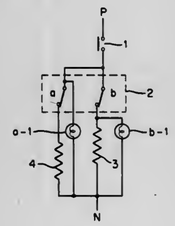
1. A cooking vessel comprising a saucepan of heat conductive material and a cover, particularly a steam pressure cooker, to which heat is applied from an external heat source underneath said saucepan and to which a temperature-dependent resistor is attached as a temperature sensor and connected to a computing device for determination of the temperature in said saucepan and for transmission of electrical signals corresponding to the temperature measured, characterized by a measuring point (13) being located on the external surface of said saucepan (10) in the transition region between the pan wall and the pan bottom, said temperature sensor (19) being mounted to said pan (10) at said measuring point (13) in a heat-conducting fashion; said measuring point (13) and said temperature sensor (19) being covered by an attachment portion (12) of a handle (11) which is mounted detachably on said pan (10); said handle (11) mounted on said pan (10), facing a handle (22) mounted on said cover (20), said handle (11) provided on an upper surface with a connection contact (15) and said handle (11) aligned with said handle (22) when said cover (22) is positioned on said saucepan (10), said connection contact (15) in electrical connection with a counter-contact (29) provided on a lower surface of said handle (22) mounted on said cover (20); said handle (22) having a plug receptacle (28) to receive said computing device formed as separate plug unit (17) in which a connection contact (27) is provided to match a counter-contact (18) provided on said plug unit (17); said counter-contact (29) and said connection contact (27) in said handle (22) are in electrical contact with each other; and said plug unit (17) is mechanically insertable in said plug receptacle (28), whereby said counter-contact (18) provided on said plug unit (17) is in electrical contact with said connection contact (27) provided in said plug receptacle (28).

4,574,185

TEMPERATURE CONTROL CIRCUITRY FOR A COOKING APPARATUS

Frédy Wenger, Chemin de l'Ormet 17A, 1024 Ecublens, Switzerland

Filed Nov. 14, 1984, Ser. No. 671,552
Claims priority, application Switzerland, Nov. 16, 1983, 6148/83
Int. Cl.⁴ H05B *10/02*
U.S. Cl. 219—494 **5 Claims**



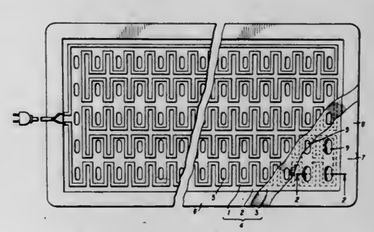
1. In a cooking apparatus having a liquid cooking medium, circuitry comprising a first electrically controlled indicator operable to sensibly indicate when a preselected temperature obtains in the liquid cooking medium, a second electrically controlled indicator operable to sensibly indicate when a given temperature below said preselected temperature obtains in the liquid cooking medium, a thermostatic device operable automatically in dependence upon temperatures of the liquid cooking medium having a normally initially closed first switch operable automatically to an open position in dependence upon temperatures detected in the liquid cooking medium connected to open automatically and cause the first indicator to sensibly indicate when the preselected temperature obtains and operable automatically to a closed position when the temperature is below said preselected temperature, and a second switch operable automatically to closed and open positions in dependence upon temperatures detected in the liquid cooking medium and connected to operate automatically to a position to cause the second indicator to sensibly indicate that the given temperature below said preselected temperature obtains, means for heating automatically controlling the application of heat to the liquid cooking medium connected to be controlled electrically by said normally initially closed first switch for effectively applying of heat to the liquid cooking medium, and electrical connections under control of the first switch for automatically disconnecting the last-mentioned means when the temperature of said liquid cooking medium is above the preselected temperature and for connecting said last-mentioned means when the temperature of the liquid cooking medium is below said preselected temperature.

4,574,186

HEATING SHEET

Yoshio Sakai, Ueda, and Takeshi Yamada, Saku, both of Japan, assignors to Totoku Electric Co., Ltd., Tokyo, Japan

Filed Mar. 24, 1983, Ser. No. 478,492
Claims priority, application Japan, Apr. 6, 1982, 57-49566[U]
Int. Cl.⁴ H05B *3/36*
U.S. Cl. 219—528 **2 Claims**



1. A heating sheet comprising a heater element which is obtained by forming a metal foil heating circuit on one surface of a first plastic sheet and superposing a second plastic sheet of the same shape as said first plastic sheet thereover, and adhering said first and second plastic sheets together; through holes formed in a regular pattern in portions of said heater element other than portions having said metal foil heating circuit formed therein; and a pair of protective thermoplastic covers which clamp said heater element therebetween and which are bonded together at a periphery of said heating sheet and through said through holes; wherein those portions of said protective covers which correspond to said through holes are recessed and indented due to said through holes in said heater element, thereby distinguishing the locations of said through holes.

4,574,187

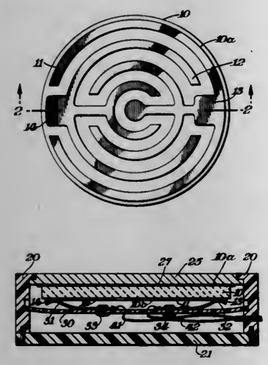
SELF REGULATING PTCR HEATER

James E. Crews, North Adams, and George H. Rodriguez, Williamstown, both of Mass., assignors to Sprague Electric Company, North Adams, Mass.

Filed Aug. 29, 1980, Ser. No. 182,548
Int. Cl.⁴ H05B *3/10*
U.S. Cl. 219—541 **8 Claims**

1. A self regulating PTCR heater comprising a ceramic PTCR plate, a pair of interdigitated film electrodes being bonded to one major surface of said plate, and an electrodes terminations means at said one major surface for electrically

connecting said electrodes to an electrical energy source, the opposite major surface of said plate being entirely metal free to



enable efficient heat transfer therefrom to an abutting object to be heated.

4,574,188

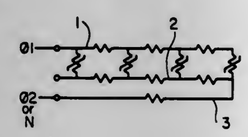
ELONGATE ELECTRICAL ASSEMBLIES

John A. Midgley, San Carlos, and Richard H. Hulett, Los Altos, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Continuation of Ser. No. 369,309, Apr. 16, 1982, abandoned. This application Jun. 14, 1985, Ser. No. 745,367

Int. Cl.[4] H05B *3/54*

U.S. Cl. 219—549 **33 Claims**



1. An electrical circuit which comprises

(1) an elongate self-regulating heater which is at least 330 feet in length and which comprises

(a) a first elongate electrical connection means having a near end and a far end;

(b) a second elongate electrical connection means having a near end and a far end; and

(c) a plurality of electrical heating elements, each of said heating elements having a thermal output which decreases with temperature, whereby the heater is self-regulating, said heating elements being connected in parallel with each other between the first and second electrical connection means; and

(2) a third elongate electrical connection means which has a near end and a far end, the far end being electrically connected to said second connection means at its far end and the remainder of the third connection means being insulated from the heater; and

(3) a source of electrical power which is physically located near the near ends of the connection means and which is connected to the near end of the first connection means and to the near end of the third connection means;

whereby current inrush is reduced and power is distributed more evenly along the length of the heater.

4,574,189

TAXIMETER ASSEMBLY

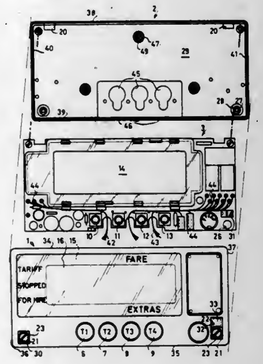
Jürgen Adams, and Hans-Peter Scholl, both of Villingen-Schwenningen, Fed. Rep. of Germany, assignors to Kienzle Apparate GmbH, Villingen-Schwenningen, Fed. Rep. of Germany

Filed May 23, 1985, Ser. No. 737,343

Claims priority, application Fed. Rep. of Germany, May 26, 1984, 3419773

Int. Cl.[4] G07B *13/00*

U.S. Cl. 235—30 R **11 Claims**



1. In a taximeter assembly including electronic calculating means having data storage capacity, an operating keyboard and data indicating means for displaying actual operating data and stored data upon request, the improvement comprising:

housing means consisting essentially of a front and a rear flat housing panel;

detent means interlocking said front and rear panels together;

lead-sealed screw connection means securing said front and rear panels together;

electronic taximeter circuit means mounted on a single printed circuit board installed between said front and rear housing panels;

actuating elements and an exchangeable face plate having operating indicia thereon mounted on said front housing panel;

said rear housing panel being arranged to serve as a carrier element receiving said electronic taximeter circuit means and being equipped with means for feeding cable connections there through, said rear housing panel simultaneously operating as the mounting plate for said assembly for fastening said assembly in a vehicle.

4,574,190

VERIFYING SYSTEM

Hiroyuki Nishimura, Kameoka, Japan, assignor to Omron Tateisi Electronics Co., Kyoto, Japan

Continuation of Ser. No. 450,736, Dec. 17, 1982, abandoned. This application Nov. 29, 1984, Ser. No. 675,269

Claims priority, application Japan, Dec. 21, 1981, 56-205082; Jan. 8, 1982, 57-1439[U]

Int. Cl.[4] G06K *7/08*

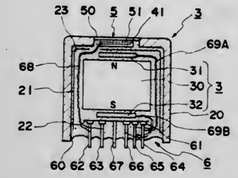
U.S. Cl. 235—449 **2 Claims**

1. A system for the verification of a magnetic printed material as to whether it is genuine or counterfeit, comprising

magnetic and photo sensors arranged on the same scan line relative to the magnetically printed material for reading magnetic and optical patterns on the same scan line;

a first discriminating means for, after the magnetic and optical patterns are superimposed one above the other at the same check point, discriminating the change in level thereof; and

a second discriminating means for discriminating change in the level of the magnetic pattern,



wherein the verification is performed on the basis of the results of the discrimination performed by the first and second discriminating means.

4,574,191

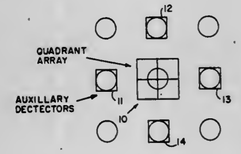
WIDE FIELD-OF-VIEW LASER SPOT TRACKER

Raymond W. Conrad, Russellville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 30, 1982, Ser. No. 454,807

Int. Cl.[4] G01J *1/20*

U.S. Cl. 250—203 R **7 Claims**



1. A system for optically tracking radiation emissions from a distant target comprising focusing means for receiving and focusing said radiation emissions onto a focal plane; a phase diffraction device placed in space relationship to the focusing means so as to cause an array of spots to appear on the focal plane; each spot being of a predetermined size and each spot being of a predetermined distance from adjacent spots; a plurality of radiation detectors located on the focal plane and spaced from each other in the same manner as the spacing of said spots; and tracking means connected to said radiation detectors, phase diffraction device and focusing means so as to cause said system to track said target.

4,574,192

FLEXIBLE FIBER OPTIC TYING MEMBER FOR THEFTPROOF DEVICE

Tadao Kitagawa, Kamifukuoka; Yutaka Kosuge, Sayama; Yoichiro Noda, Miyazaki, and Tomosaburo Sato, Kawagoe, all of Japan, assignors to Honda Giken Kogyo K.K., Tokyo; Kabushiki Kaisha Honda Rokku, Miyazaki and Kokoku Control Cable Kabushiki Kaisha, Saitama, all of, Japan

Division of Ser. No. 438,341, Nov. 1, 1982. This application Sep. 19, 1984, Ser. No. 652,216

Claims priority, application Japan, Nov. 16, 1981, 56-183389; Nov. 16, 1981, 56-183390

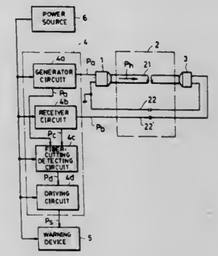
Int. Cl.[4] H01J *5/16*

U.S. Cl. 250—227 **3 Claims**

1. An elongate flexible tying member having an optical fiber longitudinally extending through said flexible tying member and a pair of optoelectric elements arranged at opposite ends of said optical fiber, one of said optoelectric elements being a light source and the other of said optoelectric elements being a light receptor, for use in a theftproof device including means responsive to a change in an electrical signal generated by one of said optoelectric elements, which corresponds to a change in a photo signal generated by the other of said optoelectric elements and transmitted in said optical fiber, for performing a warning function, said flexible tying member further comprising:

a flexible hollow tubular member having a hollow interior extending axially thereof;

a first layer including said optical fiber and at least one electric wire, said optical fiber and electric wire of said first layer being arranged substantially parallel with each



other and longitudinally extending through the hollow interior of said flexible hollow tubular member, said electric wire being electrically connected to at least one of said optoelectric elements; and

a second layer including a reinforcing member, said reinforcing member of said second layer longitudinally extending through the hollow interior of said flexible hollow tubular member in parallel with said optical fiber and electric wire of said first layer, said reinforcing member of said second layer comprising a plurality of strands, each formed of a plurality of twisted steel wires.

4,574,193

METHOD FOR LOGGING FLUID FLOW RATE, WATER FRACTION, AND/OR SALINITY OF WATER FLOWING INTO A WELL

Dan M. Arnold, and Harry D. Smith, Jr., both of Houston, Tex., assignors to Halliburton Company, Duncan, Okla.

Filed Dec. 26, 1984, Ser. No. 686,564

Int. Cl.[4] G01V *5/00*

U.S. Cl. 250—270 **20 Claims**

1. A method for logging salinity of water in fluids flowing into a portion of a borehole, comprising the steps of:

moving a logging sonde along a longitudinal axis of the portion of the borehole at a first relative velocity between the sonde and the fluids in the borehole while

irradiating fluids in the portion of the borehole with neutrons from a neutron source carried by the sonde, said neutrons being sufficiently energetic to induce activation of oxygen, sodium and chlorine in said fluids;

detecting gamma rays induced by said activation with at least one detector carried by the sonde at a location longitudinally displaced from the neutron source; and

generating a first count rate signal responsive to gamma rays detected at said first velocity;

moving the logging sonde along the same portion of the borehole at a second relative velocity between the sonde and the fluids in the borehole while

irradiating fluids in the portion of the borehole with neutrons from said neutron source;

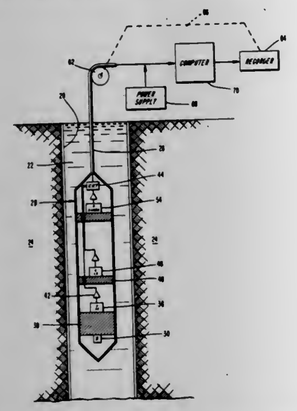
detecting gamma rays induced by activation with said detector; and

generating a second count rate signal responsive to gamma rays detected at said second velocity;

producing first and second relative velocity signals related in

value to said first and second relative velocities, respectively;

producing a logging signal related in value to the salinity of



water in the fluids produced from the portion of the borehole responsive to said first and second count rate signals and said first and second relative velocity signals; and

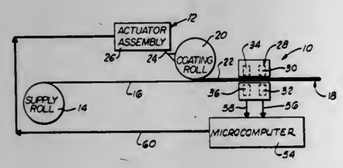
recording said logging signal.

4,574,194

METHOD AND APPARATUS FOR MONITORING THE MANUFACTURE OF A TWO-COMPONENT WEB

Montgomery R. Coats, Edmond, and Dawn E. Holt, Oklahoma City, both of Okla., assignors to Fife Corporation, Oklahoma City, Okla.

Filed Nov. 1, 1983, Ser. No. 547,628
Int. Cl.⁴ G01N *23/16*
U.S. Cl. 250—308 **38 Claims**



1. An apparatus for generating signals indicative of the specific weight of both components of a layered, two-component web, comprising:

a first radiation sensor for providing a first detector signal indicative of the total specific weight of the web, the first radiation sensor comprising a first radiation detector and means for directing a first radiation beam through the finished web to the first radiation detector so that the first detector signal provides a measure of the attenuation of the first radiation beam by the web;

a second radiation sensor for providing a second detector signal indicative of an effective, one-component specific weight of the web, the second radiation sensor comprising a second radiation detector and means for directing a second radiation beam through the finished web to the second radiation detector so that the second detector signal provides a measure of the attenuation of the second radiation beam by the web; and

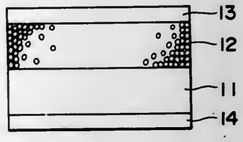
computer means, connected to the radiation sensors, for generating said signals indicative of the specific weights of the web components in response to reception of said detector signals by the computer means; wherein the first radiation beam is characterized in that the attenuation of the first radiation beam in the web is substantially independent of the relative specific weights of the two components of the web; and wherein the second radiation beam is characterized in that the intensity of the second radiation beam decays exponentially in both components of the web with the attenuation coefficient of the second radiation beam for one component of the web differing from the attenuation coefficient of the second radiation beam for the other component of the web.

4,574,195

RADIATION IMAGE STORAGE PANEL

Masanori Teraoka, and Terumi Matsuda, both of Kaisei, Japan, assignors to Fuji Photo Film Company, Ltd., Kanagawa, Japan

Filed Mar. 16, 1984, Ser. No. 590,487
Claims priority, application Japan, Mar. 17, 1983, 58-45685
Int. Cl.⁴ G03C *5/16*
U.S. Cl. 250—327.2 **7 Claims**



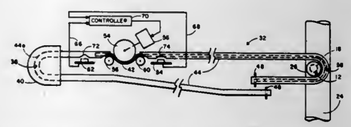
1. A radiation image storage panel comprising a support, a phosphor layer provided on the support which comprises a binder and a stimulable phosphor dispersed therein, and a protective film provided on the phosphor layer, characterized in that said support has a surface hardness lower than that of said protective film.

4,574,196

COIL SPRING CONVEYOR FOR POSITIONING AN EXTERNAL RADIOACTIVE STANDARD IN A LIQUID SCINTILLATION COUNTER

Richard S. Kampf, Costa Mesa, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Continuation of Ser. No. 560,313, Dec. 12, 1983, abandoned, which is a continuation of Ser. No. 331,482, Dec. 15, 1981, abandoned. This application Dec. 10, 1984, Ser. No. 679,617
Int. Cl.⁴ G01N *23/00*; G01T *1/20*
U.S. Cl. 250—328 **15 Claims**



1. In a liquid scintillation counter having a counting chamber for receiving a liquid sample containing a liquid scintillator and a sample of a radioactive substance to be counted, improved apparatus for positioning a radioactive source in an operating location to irradiate the liquid sample in the counting chamber comprising the combination of:

(1) a flexible conveyor including an elongate, generally tubular coil spring section having an interior tubular bore configured to receive the radioactive source;

(2) means for retaining the radioactive source in a predetermined axial position within the coil spring;

(3) means supporting the coil spring for movement along a conveyor path between a storage location for the radioactive source remote from the counting chamber and an operating location for the radioactive source proximate the counting chamber; and

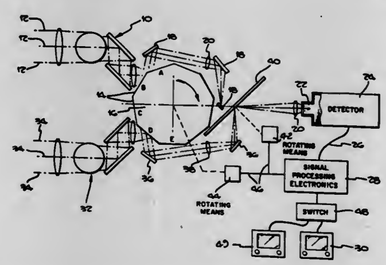
(4) drive means coupled to the coil spring and operative to drive the coil spring along the conveyor path for conveying the radioactive source between the storage and operating locations.

4,574,197

DUAL FIELD OF VIEW SENSOR

Waldo W. Kliever, Playa del Rey, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.

Filed Mar. 24, 1983, Ser. No. 478,438
Int. Cl.⁴ H01J *31/50*; H04N *3/08*
U.S. Cl. 250—334 **19 Claims**



1. A dual path optical sensor system comprising:

(a) detector means having an input and an output for receiving a light signal at said input and for converting the light signal into an electrical signal for transmission thereof from said output;

(b) a rotatable polygon scanner having a plurality of substantially equal reflective facets thereon;

(c) means for rotating said scanner at a constant speed;

(d) first optical means for receiving a first light beam and for directing the first light beam on said facets;

(e) second optical means for receiving the first light beam as it is reflected from said facets and for directing the first light beam onto said input of said detector means;

(f) third optical means for receiving a second light beam and for directing the second light beam onto said facets, said first and third optical means being mutually positioned so that, when the first light beam is impinging directly on one of said facets, the second light beam is impinging on the mid-point between two adjacent other ones of said facets, and vice-versa;

(g) fourth optical means for receiving the second light beam as it is reflected from said facets and for directing the second light beam onto said input of said detector means;

(h) means for preventing simultaneous receipt of the first and second light beams on said detector means input; and

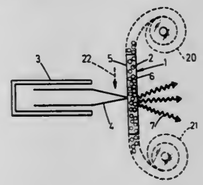
(i) means connected to said output of said detector means for receiving and processing signals resulting from the first and second light beams.

4,574,198

METHOD AND DEVICE FOR PRODUCING PHOTONS IN THE ULTRAVIOLET-WAVELENGTH RANGE

Amand A. Lucas, Croix Andre 3, 4150 Nandrin, Belgium; Jack C. Rife, Suite 209 - 2710 Macomb St., NW., Washington, D.C. 20008, and Stephen E. Donnelly, 7 Canberra Grove, Brighton East, Victoria 3187, Australia

PCT No. PCT/BE83/00010, § 371 Date Jan. 9, 1984, § 102(e) Date Jan. 9, 1984, PCT Pub. No. WO83/04099, PCT Pub. Date Nov. 24, 1983
PCT Filed May 5, 1983, Ser. No. 576,386
Claims priority, application Luxembourg, May 7, 1982, 84136
Int. Cl.⁴ G21G *4/00*
U.S. Cl. 250—493.1 **23 Claims**



1. Method for producing photons in the UV-wavelength range, comprising the steps of:

planting in a solid matrix, ions from a gas which is inert or insoluble relative to the matrix by performing an ionic bombardment of one surface from the solid matrix with low-energy ions from at least one said gas in such a way as to obtain a low-depth planting of the gas ions in the solid matrix;

and thereafter excitating the captive gas in the solid matrix by electronic low-energy bombardment of the solid matrix; and

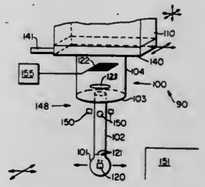
radiating and emitting said photons from the solid matrix due to the excitated gas.

4,574,199

SENSING LOCATION OF AN OBJECT

Timothy R. Pryor, Tecumseh, Canada, assignor to Diffracto Ltd., Windsor, Canada

Filed Jan. 27, 1983, Ser. No. 461,685
Int. Cl.⁴ G01N *21/86*
U.S. Cl. 250—561 **38 Claims**



1. An apparatus for sensing the presence or location of an object in a plane perpendicular to a reference axis comprising:

optical detector means for optically detecting by use of optical triangulation techniques the presence or approximate location of the object in the plane perpendicular to the reference axis;

contact detector means for contacting the object in the plane perpendicular to the reference axis and for determining the precise location of the object; and

moving means for moving said optical detector means and said contact detector means relative to the object along the reference axis.

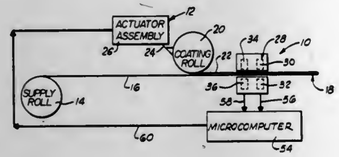
water in the fluids produced from the portion of the borehole responsive to said first and second count rate signals and said first and second relative velocity signals; and recording said logging signal.

4,574,194

METHOD AND APPARATUS FOR MONITORING THE MANUFACTURE OF A TWO-COMPONENT WEB

Montgomery R. Coats, Edmond, and Dawn E. Holt, Oklahoma City, both of Okla., assignors to Fife Corporation, Oklahoma City, Okla.

Filed Nov. 1, 1983, Ser. No. 547,628
Int. Cl.⁴ G01N *23/16*
U.S. Cl. 250—308 **38 Claims**

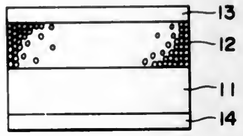


1. An apparatus for generating signals indicative of the specific weight of both components of a layered, two-component web, comprising:

a first radiation sensor for providing a first detector signal indicative of the total specific weight of the web, the first radiation sensor comprising a first radiation detector and means for directing a first radiation beam through the finished web to the first radiation detector so that the first detector signal provides a measure of the attenuation of the first radiation beam by the web;

a second radiation sensor for providing a second detector signal indicative of an effective, one-component specific weight of the web, the second radiation sensor comprising a second radiation detector and means for directing a second radiation beam through the finished web to the second radiation detector so that the second detector signal provides a measure of the attenuation of the second radiation beam by the web; and

computer means, connected to the radiation sensors, for generating said signals indicative of the specific weights of



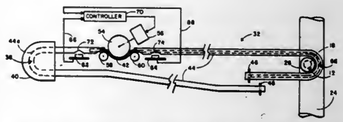
1. A radiation image storage panel comprising a support, a phosphor layer provided on the support which comprises a binder and a stimulable phosphor dispersed therein, and a protective film provided on the phosphor layer, characterized in that said support has a surface hardness lower than that of said protective film.

4,574,196

COIL SPRING CONVEYOR FOR POSITIONING AN EXTERNAL RADIOACTIVE STANDARD IN A LIQUID SCINTILLATION COUNTER

Richard S. Kampf, Costa Mesa, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Continuation of Ser. No. 560,313, Dec. 12, 1983, abandoned, which is a continuation of Ser. No. 331,482, Dec. 15, 1981, abandoned. This application Dec. 10, 1984, Ser. No. 679,617
Int. Cl.⁴ G01N *23/00*; G01T *1/20*
U.S. Cl. 250—328 **15 Claims**



1. In a liquid scintillation counter having a counting chamber for receiving a liquid sample containing a liquid scintillator and a sample of a radioactive substance to be counted, improved apparatus for positioning a radioactive source in an operating location to irradiate the liquid sample in the counting chamber comprising the combination of:

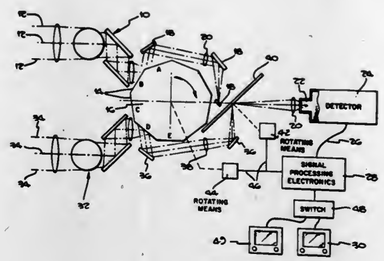
(1) a flexible conveyor including an elongate, generally tubular coil spring section having an interior tubular bore configured to receive the radioactive source;

(2) means for retaining the radioactive source in a predetermined axial position within the coil spring;

(3) means supporting the coil spring for movement along a

Aircraft Compan./, El Segundo, Calif.

Filed Mar. 24, 1983, Ser. No. 478,438
Int. Cl.⁴ H01J *31/50*; H04N *3/08*
U.S. Cl. 250—334 **19 Claims**



1. A dual path optical sensor system comprising:

(a) detector means having an input and an output for receiving a light signal at said input and for converting the light signal into an electrical signal for transmission thereof from said output;

(b) a rotatable polygon scanner having a plurality of substantially equal reflective facets thereon;

(c) means for rotating said scanner at a constant speed;

(d) first optical means for receiving a first light beam and for directing the first light beam on said facets;

(e) second optical means for receiving the first light beam as it is reflected from said facets and for directing the first light beam onto said input of said detector means;

(f) third optical means for receiving a second light beam and for directing the second light beam onto said facets, said first and third optical means being mutually positioned so that, when the first light beam is impinging directly on one of said facets, the second light beam is impinging on the mid-point between two adjacent other ones of said facets, and vice-versa;

(g) fourth optical means for receiving the second light beam as it is reflected from said facets and for directing the second light beam onto said input of said detector means;

(h) means for preventing simultaneous receipt of the first and second light beams on said detector means input; and

(i) means connected to said output of said detector means for receiving and processing signals resulting from the first and second light beams.

1. Method for producing photons in the UV-wavelength range, comprising the steps of:

planting in a solid matrix, ions from a gas which is inert or insoluble relative to the matrix by performing an ionic bombardment of one surface from the solid matrix with low-energy ions from at least one said gas in such a way as to obtain a low-depth planting of the gas ions in the solid matrix;

and thereafter excitating the captive gas in the solid matrix by electronic low-energy bombardment of the solid matrix; and

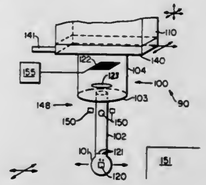
radiating and emitting said photons from the solid matrix due to the excitated gas.

4,574,199

SENSING LOCATION OF AN OBJECT

Timothy R. Pryor, Tecumseh, Canada, assignor to Diffracto Ltd., Windsor, Canada

Filed Jan. 27, 1983, Ser. No. 461,685
Int. Cl.⁴ G01N *21/86*
U.S. Cl. 250—561 **38 Claims**



1. An apparatus for sensing the presence or location of an object in a plane perpendicular to a reference axis comprising:

optical detector means for optically detecting by use of optical triangulation techniques the presence or approximate location of the object in the plane perpendicular to the reference axis;

contact detector means for contacting the object in the plane perpendicular to the reference axis and for determining the precise location of the object; and

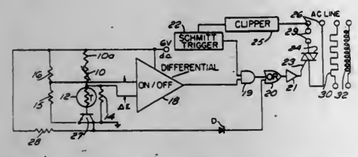
moving means for moving said optical detector means and said contact detector means relative to the object along the reference axis.

4,574,200

THERMISTOR TEMPERATURE CONTROL CIRCUIT

William H. Racca, Two Primrose Dr., Riverside, R.I. 02915; Michael A. Bolvin, 432 Country View Dr., Warwick, R.I. 02886, and Mel E. Bilezerian, N. Smithfield, R.I., assignors to William H. Racca and Michael A. Bolvin

Filed Jan. 18, 1984, Ser. No. 571,746
Int. Cl.⁴ H01H *35/00*
U.S. Cl. 307—117 **3 Claims**



1. Method of constructing a temperature responsive Wheatstone bridge having branches using a thermistor that will control a circuit over a temperature range having a maximum temperature and a lower temperature, wherein said maximum temperature and said lower temperature having a temperature ratio of greater than 4:1 comprising the steps of:

a. selecting a thermistor which will have a resistance at the maximum temperature of the range of approximately 1k ohms,

b. placing the thermistor in a branch of said bridge and selecting a resistance to parallel the thermistor and reduce the impedance of said thermistor branch at the lower temperature end of the range,

c. selecting a variable resistance in a branch in series with the thermistor branch between a upper and lower value of the resistance of the thermistor in parallel with the resistance operating in said range whereby a low impedance bridge may be constructed with low noise and low leakage,

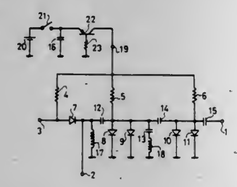
d. applying a voltage across the series connection of the variable resistance and thermistor, whereby the output of the bridge will be a voltage level to control an operational amplifier in open loop format.

4,574,201

RADIO FREQUENCY SWITCHING CIRCUIT DEVICE

Toru Ohyama, Miyagi, and Takao Nomura, Kakuda, both of Japan, assignors to Alps Electric Co., Ltd., Japan

Filed Sep. 24, 1982, Ser. No. 423,115
Claims priority, application Japan, Sep. 28, 1981, 56-143611[U]
Int. Cl.⁴ H03K *17/56*; H03H *7/00*
U.S. Cl. 307—243 **8 Claims**



1. A device for switching between two radio frequency signals, comprising:

means including first and second terminals for receiving respective radio frequency input signals;

means including a D.C. voltage terminal for receiving a D.C. voltage;

switching means controlled by the D.C. voltage to be in conductive or non-conductive states;

means including a transistor connected in series with said D.C. voltage terminal for applying said D.C. voltage to said switching means; and

a resonance circuit including a capacitor connected to said switching means and to said transistor for receiving input signals from said first and second terminals and for trapping one of the radio frequency signals by the operation of said switching means;

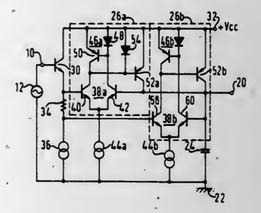
said resonance circuit having an effective capacitance the discharging path of which includes said transistor, such that when the switching means is in a non-conductive state and the transistor is in a substantially off state, the time constant of the discharging path is sufficiently long relative to the frequencies of said radio frequency signals to keep the capacitance charged to maintain said switching means in the non-conductive state.

4,574,202

RECTIFIER CIRCUIT WITH ATTACK TIME VARIABLE IN RESPONSE TO AN INPUT SIGNAL LEVEL

Atsushi Ogawa, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Oct. 15, 1982, Ser. No. 434,485
Claims priority, application Japan, Oct. 15, 1981, 56-164705
Int. Cl.⁴ H03K *5/153, 5/00*
U.S. Cl. 307—261 **15 Claims**



1. A signal rectifier circuit with attack time changeable in response to an input signal level comprising:

an input terminal for receiving said input signal;

an output terminal;

capacitor means connected between said output terminal and a reference potential terminal;

first means for rectifying said input signal having an input signal current path connected between said input terminal and said output terminal for delivering said input signal, in rectified form, to said output terminal, said first rectifying means including first means for determining a first time constant together with said capacitor means;

second means for rectifying said input signal having an input signal current path connected in parallel with said input signal current path of said first rectifying means for delivering said input signal, in rectified form, to said output terminal, said second rectifying means including second means for determining a second time constant together with said capacitor means;

means for applying an offset voltage to one of said first and second rectifying means; and wherein

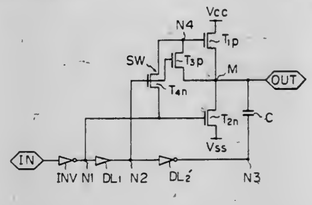
said first and second rectifying means include peak detector circuits.

4,574,203

CLOCK GENERATING CIRCUIT PROVIDING A BOOSTED CLOCK SIGNAL

Fumio Baba, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 9, 1983, Ser. No. 502,570
Claims priority, application Japan, Jun. 30, 1982, 57-111532
Int. Cl.⁴ H03K *5/02*
U.S. Cl. 307—269 **10 Claims**



1. A clock generating circuit, operatively connected to first and second voltage sources, having a voltage difference therebetween, and receiving an input clock signal, said circuit comprising:

a first transistor of a first channel type, operatively connected to the first voltage source and having a gate;

a second transistor of a second channel type, operatively connected in series with said first transistor, forming a junction point therebetween, and to the second voltage source, and having a gate;

a first delay circuit, operatively connected to receive the input clock signal, for producing a delayed clock signal by delaying the input clock signal by a predetermined time delay;

a bootstrap capacitor, having a first end operatively connected to the junction point between said first and second transistors and to the output of said first delay circuit and having a second end, said bootstrap capacitor being charged to a level nearly the same as the level of said first voltage source by turning on said first transistor and turning off said second transistor, the voltage level of said bootstrap capacitor being changed by the input delayed clock signal, output by said first delay circuit, during the charging of said bootstrap capacitor, thereby producing at the second end of said bootstrap capacitor an output clock signal having first and second voltage levels with a difference therebetween which is larger than the voltage difference between the first and second voltage sources; and

a switch circuit, operatively connected to the input of said first delay circuit, the gates of said first and second transistors and the junction point, for connecting the gate of said first transistor with the junction point only for a period of time during which the voltage level of said bootstrap capacitor is changed by the delayed clock signal, and otherwise connecting the gate of said first transistor with the gate of said second transistor.

4,574,204

CIRCUIT FOR HOLDING A PULSE DURING A PREDETERMINED TIME INTERVAL AND AN IMPROVED MONOSTABLE MULTIVIBRATOR

Yves A. Bonnet, Saint Laurent Du Var, France, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 6, 1982, Ser. No. 405,804
Claims priority, application European Pat. Off., Sep. 8, 1981, 81430029.9
Int. Cl.⁴ H03K *3/284, 3/33*
U.S. Cl. 307—273 **1 Claim**

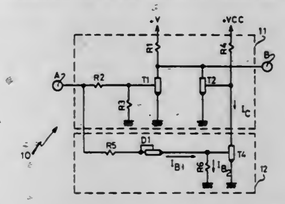
1. A monostable multivibrator for initiating an output pulse in response to the trailing edge of an input pulse, comprising:

input means connected to the base of a first transistor for receiving said input pulse;

output means connected to the collector of said first transistor and to the collector of a second transistor for providing said output pulse, the collectors of said first and second transistors being connected to a first voltage source and the emitters of said first and second transistors being grounded;

a third transistor having a collector connected to the base of said second transistor and to said first voltage source, an emitter connected to ground, and a base connected through a diode to said input means, wherein a charge is stored in the base of said third transistor when said input pulse is applied to said input means; and

a base-emitter resistor connected between the base and the emitter of said third transistor for controllably dissipating the stored charge in said third transistor base, wherein the duration of said output pulse is determined by the value of said base-emitter resistor.

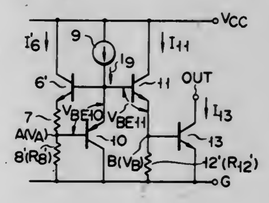


4,574,205

TEMPERATURE DETECTING TRANSISTOR CIRCUIT

Katsumi Nagano, Shimonoseki, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Jun. 17, 1983, Ser. No. 505,435
Claims priority, application Japan, Jun. 18, 1982, 57-103944
Int. Cl.⁴ H01L *31/00*; H03K *3/01*; H02H *5/04*
U.S. Cl. 307—310 **6 Claims**



1. A temperature detecting transistor circuit comprising:

first and second transistors of a first conductivity type, the base electrodes of which are connected to each other;

means for connecting the collectors of said first and second transistors to a first power source terminal;

first and second resistors connected in series;

means for connecting the emitter of said first transistor to a second power source terminal through said first and second resistors connected in series;

a third resistor;

means for connecting the emitter of said second transistor to said second power source terminal through said third resistor;

a current source connected between a node connecting the base electrodes of said first and second transistors and said first power source terminal;

a third transistor of a second conductivity type which is connected at the emitter to said node connecting the base electrodes of said first and second transistors, at the collector to said second power source terminal, and at the

base electrode to a node connecting said first and second resistors; and

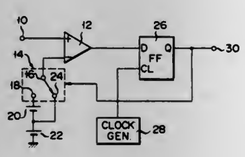
a fourth transistor which is connected at the base electrode to the emitter of said second transistor, at the emitter to said second power source terminal, and at the collector to an output terminal producing an output current responsive to temperature.

4,574,206

WAVE-SHAPING CIRCUIT

Shigeru Todokoro, Fujisawa, and Tadashi Kojima, Yokosuka, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 9, 1981, Ser. No. 300,604
Claims priority, application Japan, Sep. 16, 1980, 55-128334
Int. Cl.⁴ H03K *5/08, 5/135*
U.S. Cl. 307—359 **6 Claims**



1. A wave-shaping circuit which comprises:

an input terminal for receipt of a coded signal;

means for generating a reference signal which reference signal varies between low and high levels in response to a control signal;

means for comparing said coded signal supplied through said input terminal with said reference signal and for producing a first type output signal when said coded input signal is less than said reference signal and for producing a second type output signal when said coded input signal is greater than said reference signal;

a clock signal generator;

means, connected to said comparing means and said clock signal generator, for holding an output signal from said comparing means for a period of time which is related to the duration of said output signal from said comparing means and in synchronism with a clock signal from said clock signal generator; and

means for branching part of an output signal from said holding means and supplying this branched output signal to said reference signal generating means as said control signal such that said reference signal generating means generates said low level reference signal when said holding means holds said first type output signal and generates said high level reference signal when said holding means holds said second type output signal from said comparing means.

4,574,207

LATERAL BIDIRECTIONAL DUAL NOTCH FET WITH NON-PLANAR MAIN ELECTRODES

James A. Benjamin, Waukesha; Herman P. Schutten, Milwaukee, both of Wis., and Robert W. Lade, Fort Myers, Fla., assignors to Eaton Corporation, Cleveland, Ohio

Filed Jun. 21, 1982, Ser. No. 390,471
Int. Cl.⁴ H03K *17/687*
U.S. Cl. 307—577 **20 Claims**

1. A bidirectional FET, comprising in a semiconductor substrate:

a first source region of one conductivity type semiconductor material;

a first region of opposite conductivity type semiconductor material including a first channel region portion and forming a junction with said first source region;

a single drift region of one conductivity type semiconductor material forming another junction with said first region of opposite conductivity type;

a second region of opposite conductivity type semiconductor material including a second channel region portion and forming a junction with said drift region;

a second source region of said one conductivity type semiconductor material forming a junction with said second region of opposite conductivity type;

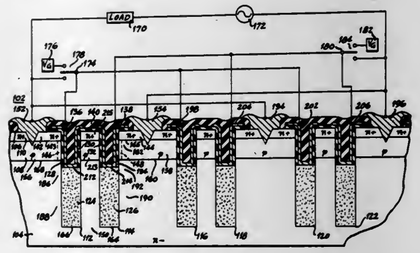
first and second spaced notches extending between said first and second source regions and said first and second channel regions, and extending into said drift region;

first insulated gate means in said first notch and including a portion proximate said first channel region and adapted for application of an electrical potential for producing electric fields of sufficient intensity to invert the conductivity type in said first channel region;

second insulated gate means in said second notch and including a portion proximate said second channel region and adapted for application of an electrical potential for producing electric fields of sufficient intensity to invert the conductivity type in said second channel region;

first main electrode means extending into and through said first source region and into at least said first region of opposite conductivity type;

second main electrode means extending into and through said second source region and into at least said second region of opposite conductivity type;



said single drift region forming first and second PN junctions with respective said first and second channel regions, said first and second source regions forming third and fourth PN junctions with respective said first and second channel regions;

a source of alternating voltage impressed across said first and second main electrode means such that during the first half cycle of said alternating voltage said first PN junction is a forward biased junction and said second PN junction is a reverse biased junction, and such that during the second half cycle of said alternating voltage said second PN junction is a forward biased junction and said first PN junction is a reverse biased junction;

a first gating voltage source connected to said first gate means in said second half cycle of said alternating voltage to create a first inversion channel region between said single drift region and said first source region to short the otherwise blocking reverse biased said first PN junction during said second half cycle of said alternating voltage such that current flows through said FET from said second main electrode means to said first main electrode means during said second half cycle of said alternating voltage;

a second gating voltage source connected to said second gate means in said first half cycle of said alternating voltage to create a second inversion channel region between said single drift region and said second source region to short the otherwise blocking reverse biased said second PN junction during said first half cycle of said alternating voltage such that current flows through said FET from said first main electrode means to said second main electrode means during said first half cycle of said alternating voltage;

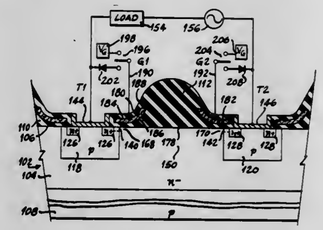
said FET having an OFF state in the absence of said gating electrical potential from said first and second gating voltage sources, said single drift region supporting OFF state blocking voltage in both directions, and wherein said first and second gate means are at non-common potentials in said OFF state.

4,574,208

RAISED SPLIT GATE EFET AND CIRCUITRY

Robert W. Lade, Fort Myers, Fla.; Herman P. Schutten, Milwaukee, and James A. Benjamin, Waukesha, both of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed Jun. 21, 1982, Ser. No. 390,483
Int. Cl.⁴ H03K *17/687*
U.S. Cl. 307—577 **7 Claims**



1. A bidirectional FET, comprising in a semiconductor substrate:

a first source region of one conductively type semiconductor material;

a first channel region of opposite conductivity type semiconductor material forming a junction with said first source region;

a single drift region of said one conductivity type semiconductor material forming another junction with said first channel region;

a second region of said opposite conductivity type semiconductor material forming a junction with said drift region;

a second source region of said one conductivity type semiconductor material forming a junction with said second channel region; and

raise gate electrode means disposed proximate said first and second channel regions and including at least a portion spaced a greater distance from said drift region, said rasied gate electrode means adapted for application of an electrical potential for producing an electric field of sufficient intensity to invert the conductivity type in at least a portion of said first and second channel regions, said raised gate electrode means comprising split gate electrodes comprising a first gate electrode spaced above said first channel region and extending upwardly and laterally over said drift region, and a second gate electrode spaced above said second channel region and extending upwardly and laterally over said drift region and laterally spaced apart from said first gate electrode;

said single drift region forming first and second PN junctions with respective said first and second channel regions, said first and second source regions forming third and fourth PN junctions with respective said first and second channel regions;

a first main electrode contacting said first source region and said first channel region;

a second main electrode contacting said second source region and said second channel region;

a source of alternating voltage impressed across said first and second main electrodes such that during the first half cycle of said alternating voltage said first PN junction is a forward biased junction and said second PN junction is a reverse biased junction, and such that during the second half cycle of said alternating voltage said second PN junction is a forward biased junction and said first PN junction is a reverse biased junction;

a first gating voltage source connected to said first gate electrode in said second half cycle of said alternating voltage to create a first inversion channel region between said single region and said first source region to short the otherwise blocking reverse biased said first PN junction during said second half cycle of said alternating voltage such that current flows through said FET from said second main electrode to said first main electrode during said second half cycle of said alternating voltage;

a second gating voltage source connected to said second gate electrode in said first half cycle of said alternating voltage to create a second inversion channel region between said single drift region and said second source region to short the otherwise blocking reverse biased said second PN junction during said first half cycle of said alternating voltage such that current flows through said FET from said first main electrode to said second main electrode during said first half cycle of said alternating voltage;

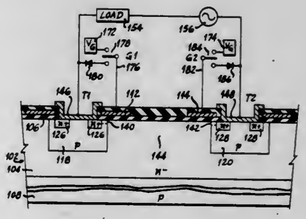
said FET having on OFF state in the absence of said gating electrical potential from said first and second gating voltage sources, said single drift region supporting OFF state blocking voltage in both directions, and wherein said first and second gate electrodes are at non-common potentials in said OFF state.

4,574,209

SPLIT GATE EFET AND CIRCUITRY

Robert W. Lade, Fort Myers, Fla.; Herman P. Schutten, Milwaukee, and James A. Benjamin, Waukesha, both of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed Jun. 21, 1982, Ser. No. 390,562
Int. Cl.⁴ H03K *17/687*
U.S. Cl. 307—577 **6 Claims**



1. A bidirectional FET, comprising in a semiconductor substrate:

a first source region of one conductivity type semiconductor material;

a first channel region of opposite conductivity type semiconductor material forming a junction with said first source region;

a single drift region of said one conductivity type semiconductor material forming another junction with said first channel region;

a second channel region of opposite conductivity type semiconductor material forming a junction with said drift region;

a second source region of said one conductivity type semi-

conductor material forming a junction with said second channel region; and

split gate electrode means comprising a first gate electrode disposed proximate said first channel region and a second gate electrode disposed proximate said second channel region, and adapted for application of an electrical potential for producing electric fields of sufficient intensity to invert the conductivity type in at least a portion of said first and second channel regions;

said single drift region forming first and second PN junctions with respective said first and second channel regions, said first and second source regions forming third and fourth PN junctions with respective said first and second channel regions;

a first main electrode contacting said first source region and said first channel region;

a second main electrode contacting said second source region and said second channel region;

a source of alternating voltage impressed across said first and second main electrodes such that during the first half cycle of said alternating voltage said first PN junction is a forward biased junction and said second PN junction is a reverse biased junction, and such that during the second half cycle of said alternating voltage said second PN junction is a forward biased junction and said first PN junction is a reverse biased junction;

a first gating voltage source connected to said first gate electrode in said second half cycle of said alternating voltage to create a first inversion channel region between said single drift and said first source region to short the otherwise blocking reverse biased said first PN junction during said second half cycle of said alternating voltage such that current flows through said FET from said second main electrode to said first main electrode during said second half cycle of said alternating voltage;

a second gating voltage source connected to said second gate electrode in said first half cycle of said alternating voltage to create a second inversion channel region between said single drift region and said second source region to short the otherwise blocking reverse biased said second PN junction during said first half cycle of said alternating voltage such that current flows through said FET from said first main electrode to said second main electrode during said first half cycle of said alternating voltage;

said FET having an OFF state in the absence of said gating electrical potential from said first and second gating voltage sources, said single drift region supporting OFF state blocking voltage in both directions, and wherein said first and second gate electrodes are at non-common potentials in said OFF state.

4,574,210

EXTERNAL ROTOR MOTOR HAVING A COOLING SYSTEM

Heinz Wieland, Waldenburg, Fed. Rep. of Germany, assignor to Wilhelm Gebhardt GmbH, Waldenburg, Fed. Rep. of Germany

Filed Jul. 7, 1983, Ser. No. 511,396
Int. Cl.⁴ H02K *9/00*
U.S. Cl. 310—59 **8 Claims**

1. An external rotor motor having an external rotor and an inner fixed stator, said motor characterized by:

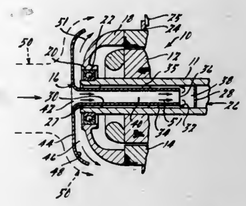
a shaft having an axially extending hollow interior with said stator fixed on said shaft;

said rotor rotatably supported on the shaft;

a deflecting plate axially spaced away from said rotor and stator and radially extending outward from a central longitudinal axis of said shaft to form a channel between said plate and said rotor;

said shaft having a passage formed within the axially extending hollow interior to receive a heat transporting medium and to pass said heat transporting medium to said channel and radially outward through said channel to form a first flow of said heat transporting medium;

means for generating a second flow of said heat transporting



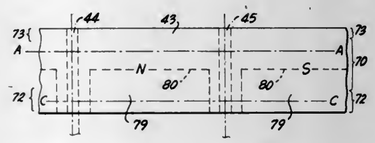
medium on an opposite side of said deflecting plate with respect to said channel and radially beyond said deflecting plate such that a suction effect occurs at an outer periphery of said channel to produce said first flow.

4,574,211

BRUSHLESS D.C. MOTOR

Rolf Müller, St. Georgen, and Reinhold Wurdak, Furtwangen, both of Fed. Rep. of Germany, assignors to Papst-Motoren GmbH & Co. KG, St. Georgen, Fed. Rep. of Germany

Filed Jun. 23, 1982, Ser. No. 391,145
Claims priority, application Fed. Rep. of Germany, Jun. 30, 1981, 3125694
Int. Cl.⁴ H02K *11/00*
U.S. Cl. 310—68 R **24 Claims**



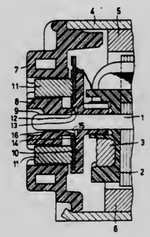
1. Brushless d.c. motor having a stator (**10**) and a permanent magnet rotor (**40**) facing each other across a substantially cylindrical air gap (**23**), said stator including a lamination-stack core and conductor means thereon for energization by current pulses, said rotor having a first axially extending portion (**72**) extending beyond the stator for control of at least one galvanomagnetic sensor (**30**) located outside said air gap (**23**) for control thereof by the poles of said first axially extending rotor portion, said sensor being adapted for controlling the application to said conductor means of pulses energized by d.c., the poles of said rotor being distributed in the circumferential direction on the rotor and incorporating the improvement that the magnetization of said rotor, at least in said first axially extending portion, is constituted in a pattern providing regions of relatively weaker magnetization in the respective mid portions of the magnetic poles and regions of relatively stronger magnetization adjacent to said midportions and extending towards the boundaries (**44,45**) between adjacent magnetic poles.

4,574,212

COMMUTATOR END DUST SEAL FOR AN ELECTRIC MOTOR

Bernardus Haijkens, Drachten, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 558,067, Dec. 5, 1983. This application Mar. 14, 1985, Ser. No. 712,323
Claims priority, application Netherlands, Dec. 9, 1982, 8204764
Int. Cl.⁴ H02K *5/10*
U.S. Cl. 310—88 **1 Claim**



1. An electric motor comprising a stator, a rotor having a rotor shaft, a bearing journalled around one end of the shaft, a commutator on said one shaft end, and brushes engaging said commutator,

characterized by comprising a sleeve extending axially from and formed with said bearing as a one-piece unitary element, said sleeve having an inner surface defining an open-ended frusto-conical space surrounding the shaft and tapering toward the interior of the bearing,

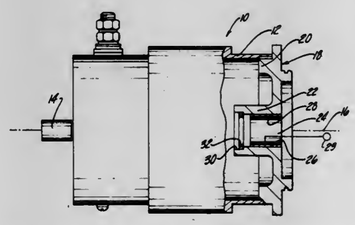
said commutator having an annular recess and said sleeve extending into said recess to form a dust seal.

4,574,213

BEARING SUPPORT AND SEAL FOR A STARTER MOTOR HOUSING

Julius J. Stevens, Fort Deposit, Ala., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

Continuation of Ser. No. 487,264, Apr. 21, 1983. This application Nov. 26, 1984, Ser. No. 674,716
Int. Cl.⁴ H02K *5/10, 7/08*
U.S. Cl. 310—90 **7 Claims**



1. A starter motor housing having a shaft rotatably mounted therein comprising:

a tubular and cylindrical housing member, said housing member open at one end and forming an interior housing chamber,

a circular end plate having an integral elongated sleeve with an axial bore extending axially outwardly from one side of said end plate,

means for detachably securing said end plate to said open end of said housing so that said sleeve extends axially inwardly into said housing chamber, said axial sleeve bore forming a bearing surface for the shaft,

a resilient seal carried adjacent an inner end of said sleeve, said seal engaging an outer peripheral surface of the shaft, said seal being radially compressed between said sleeve and the shaft to thereby form a fluid tight seal between said sleeve and the shaft,

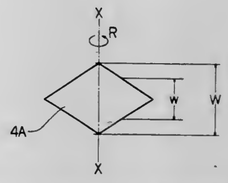
wherein said seal forms the only fluid seal between said shaft and said end plate so that a lubricant can flow from an outer end of said sleeve and along said bearing surface.

4,574,214

ELECTRIC ROTARY DEVICE OF PERMANENT MAGNET TYPE

Kiyonori Fujisaki, 195-4 Ooyaguchi, Matsudo-shi, Chiba-ken, Japan

Continuation of Ser. No. 417,909, Sep. 14, 1982, abandoned. This application Oct. 11, 1984, Ser. No. 659,858
Claims priority, application Japan, Sep. 24, 1981, 56-141837[U]
Int. Cl.⁴ H02K *21/26*
U.S. Cl. 310—154 **8 Claims**



1. An electric rotary device of permanent magnet type comprising:

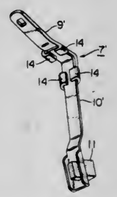
a stator including a plurality of permanent magnets and a rotor mounted within the stator for rotation about a central axis, said rotor including an armature core and a plurality of windings wound around said armature core, said permanent magnets each having an axial length dimension at the center thereof along the central axis of rotation, the axial length dimension along the central axis being a maximum at the center of each permanent magnet and being progressively reduced toward both side ends of each permanent magnet.

4,574,215

BRUSHGEAR FOR MINIATURE MOTORS

Takaichi Mabuchi, Matsudo, Japan, assignor to Mabuchi Motor Co., Ltd., Japan

Filed Aug. 16, 1983, Ser. No. 523,429
Claims priority, application Japan, Aug. 20, 1982, 57-125733[U]
The portion of the term of this patent subsequent to Jan. 15, 2001, has been disclaimed.
Int. Cl.⁴ H02K *13/00*
U.S. Cl. 310—239 **16 Claims**



1. Brushgear for a miniature motor comprising: brush arms each having a terminal strip, made of a flexible and electrically

conductive metal strip, forming a terminal portion adapted to extend through a motor case of the motor and adapted for external connection, and a commutator contactor strip, made of a highly resilient and electrically conductive metal strip, forming a commutator contactor portion adapted for making electrical contact with a commutator of the motor by means of a brush mounted on said commutator contactor strip; and brush supporting means provided on a case cover of the motor case for supporting said brush arm; said terminal strip having a plurality of projections formed by extending the strip; said projections being bent and crimped, with said terminal strip and said commutator contactor strip at least partly overlapping, to join said terminal and commutator contactor strip together into one piece at a joint.

4,574,216

CATHODE-RAY TUBE AND SEMICONDUCTOR DEVICE FOR USE IN SUCH A CATHODE-RAY TUBE

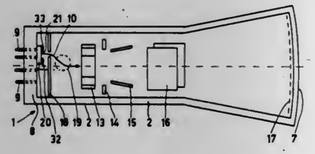
Arthur M. E. Hoeberechts, and Gerardus G. P. van Gorkom, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

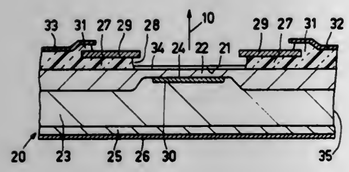
Continuation of Ser. No. 422,228, Sep. 23, 1982, abandoned. This application Mar. 19, 1985, Ser. No. 713,584

Claims priority, application Netherlands, Oct. 29, 1981, 8104893

Int. Cl.⁴ H01J *29/04*

U.S. Cl. 313—444 **13 Claims**





1. A device for recording or displaying pictures, comprising an elongated cathode-ray tube with an elongated axis and having, in an evacuated envelope, a target and a semiconductor cathode having a semiconductor body with a major surface on which a first electrically insulating material layer having at least one aperture is provided, which semiconductor body comprises at least a p-n junction in which the application of voltage in the reverse direction across the p-n junction causes electrons to be generated in the semiconductor body by avalanche multiplication, said electrons emanating from the semiconductor body at the area of the aperture in the first electrically insulating material, and in which at least an accelerating electrode is provided on the first electrically insulating material at least at the area of the edge of the aperture in said layer, wherein the improvement comprises additional electrically-insulating material covering at least part of the semiconductor body other than said aperture in the first insulating material, said additional electrically insulating material having at least two deflection electrodes on it for generating a static dipole field.

4,574,217

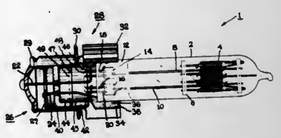
INCANDESCENT LAMP AND BASE

Edward A. Pendergrass, Mentor, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Feb. 14, 1983, Ser. No. 466,284

Int. Cl.⁴ H01K *1/50*

U.S. Cl. 313—579 **3 Claims**



1. A tungsten halogen cycle lamp of the relatively high voltage type with a three-part electrically insulated ceramic base which comprises:

(a) a transparent vitreous envelope containing a multi-filament incandescent lamp coil suspended from a filament mount and connected to a pair of refractory metal inleads hermetically sealed to the vitreous envelope in a press seal region at one end of said envelope;

(b) externally extending termination conductors secured to said lamp inleads to provide electrical current to said lamp;

(c) an inert gas filling within said vitreous envelope which contains sufficient halogen to produce the halogen cycle during lamp operation;

(d) wherein the improvement comprises having all three base parts sealed together in butt-sealed engagement along a horizontal plane transverse to the longitudinal lamp axis by means of ceramic sealing material, said ceramic base comprising an upper base part having a central cavity opening in which the press seal end of said lamp is supported and a lower base part which contains a passageway for said externally extending termination conductors, said base parts being spaced apart with an intermediate base part also containing a passageway for said externally extending termination conductors;

(e) ceramic sealing material being disposed in the central cavity of said upper base part to secure the press seal end of said lamp in said cavity; and

(f) a two-part metal base shell secured to said ceramic base which serves as a means to optically focus the lamp filament, said metal base shell having an inner shell member directly bonded to the exterior surface of said ceramic base part which is inserted into an outer shell member for a predetermined distance related to the optical focus of said lamp filament, and with said externally extending termination conductors protruding from the lower base part of said ceramic base and being electrically connected to said metal base shell.

4,574,218

METAL VAPOR LAMP HAVING INTERNAL MEANS PROMOTING CONDENSATE FILM FORMATION

Robert L. Bateman, Jr., Chagrin Falls, and Thomas F. Soules, Cleveland Hts., both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

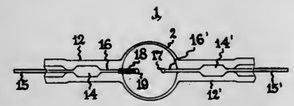
Filed Dec. 20, 1979, Ser. No. 105,588

Int. Cl.⁴ H01J *61/35*

U.S. Cl. 313—635 **6 Claims**

1. A high intensity metal vapor discharge lamp comprising: a sealed envelope having light-transmitting walls; a filling in said envelope producing a vapor in which an electric discharge generates light; said filling including a dose of metal salt substantially in excess of the quantity vaporized in operation of said lamp; said dose being liquid at the wall temperature in said envelope during operation;

electrode means for supporting a discharge within said envelope; and



film-formation-promoting means comprising a coating of fine refractory oxide particles adherent to the interior surface of said envelope for promoting the formation and spreading of a liquid condensate film thereon.

4,574,219

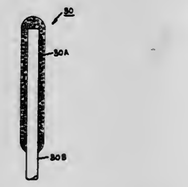
LIGHTING UNIT

John M. Davenport, Lyndhurst; Richard L. Hansler; Ralph M. Potter, both of Pepper Pike; John M. Blank, Windsor; Dimitri M. Speros, Painesville; Arthur S. Homa, Cleveland Hts.; Amarendra Mishra, Lyndhurst, and Robert A. Leskovec, Richmond Hts., all of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed May 25, 1984, Ser. No. 613,926

Int. Cl.⁴ H01J *7/44*

U.S. Cl. 315—49 **16 Claims**



1. An improved electrode for use in a gas discharge tube and capable of being rendered thermionic in response to a ballast circuit,

said gas discharge tube comprising a light-transmissive envelope containing (1) an inert gas having a fill pressure of about 10 torr to about 500 torr; (2) a metal selected from the group consisting of mercury and mercury cadmium amalgam and alloys thereof; and (3) a metal halide gas selected from the group of compounds of sodium iodide and scandium iodide;

said ballast circuit comprising means for sequentially supplying to said improved thermionic electrode, (1) breakdown high voltage in the range of about 300 volts to about 2000 volts, and (2) a voltage in the range of about 0 volts to about 170 volts with limiting steady state currents in the range of about 0.3 ampere to about 0.6 ampere and transient currents of about 100 amperes and about 10 amperes; and

said improved thermionic electrode comprising a cermet material covering at least a portion of said electrode, said cermet material having a particle size in the range of about 1.0 microns to about 50 microns and comprised of a tungsten powder and a metal oxide having respective percent weight ratios in the range of 98 to 70 and 2 to 30, said metal oxide being formed from a metal selected from the group consisting of scandium, aluminum, dysprosium, thorium, yttrium and zirconium and mixtures of the selected metals.

4,574,220

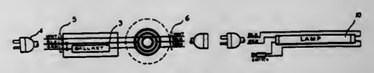
COMBINATION ELECTRIC POWER BUS AND FLUORESCENT DROP LIGHT

Ernest L. Tate, 9628 San Diego St., Spring Valley, Calif. 92077

Filed Apr. 1, 1983, Ser. No. 467,890

Int. Cl.⁴ H05B *37/02, 41/00;* **H02G** *11/02*

U.S. Cl. 315—57 **11 Claims**



1. An AC electric power bus for powering conventional single-phase AC devices and for alternately providing fluorescent lighting, comprising:

(a) a first and a second wire connected across a source of AC electric power,

(b) a fluorescent lamp ballast means having two terminals, a first terminal being in electrical communication with the second wire,

(c) a first coupling means having three electrical contacts, a first contact being in electrical communication with the first wire, a second contact being in electrical communication with the second wire, and a third contact being in electrical communication with a second terminal of the ballast means, the first and second contacts being adapted to outlet the AC electric power to the conventional AC devices,

(d) a second coupling means having at least two contacts and adapted to mate with the first coupling means such that when they are mated a first contact of the second coupling means is in electrical communication with the first contact of the first coupling means, and a second contact of the second coupling means is in electrical communication with the third contact of the first coupling means, and

(e) a fluorescent tube having two ionizing terminals, a first ionizing terminal being in electrical communication with the first contact of the second coupling means, and a second ionizing terminal being in electrical communication with the second contact of the second coupling means.

4,574,221

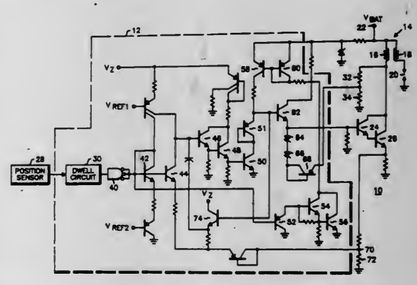
IGNITION CONTROL INTEGRATED CIRCUIT HAVING SUBSTRATE INJECTION PREVENTING MEANS

Robert M. Hess, Roselle, Ill., and Robert B. Jarrett, Tempe, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 4, 1984, Ser. No. 567,973

Int. Cl.⁴ H05B *37/00*

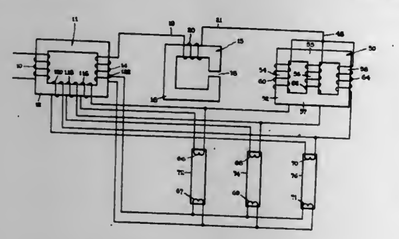
U.S. Cl. 315—209 T **19 Claims**



1. An integrated circuit of the type having a semiconductor substrate and adapted to facilitate the storage of energy in and the release of energy from external capacitive or inductive loads resulting in transient voltages within said integrated

circuit during the release of said stored energy and wherein said integrated circuit includes an output transistor having a base, an emitter, and a collector, signals at one of said emitter and collector used for controlling the storage and release of said energy, conduction of said output transistor being controller by a driver stage coupled to the base of said output transistor and providing drive signals thereto, the improvement comprising substrate injection preventing means for precluding the injection of current from said substrate into at least said output transistor notwithstanding said transient voltages, said substrtate injection preventing means comprising control means in said integrated circuit and separate from said driver stage for preventing current flow through said base of said output transistor during the release of said stored energy and despite said transient voltages, thereby preventing substrate injection.

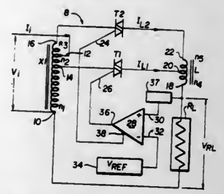
4,574,222
BALLAST CIRCUIT FOR MULTIPLE PARALLEL NEGATIVE IMPEDANCE LOADS
Thomas E. Anderson, Avon, Conn., assignor to General Electric Company, Schenectady, N.Y.
Filed Dec. 27, 1983, Ser. No. 565,319
Int. Cl.[4] H05B *41/16, 41/24*
U.S. Cl. 315—254 **12 Claims**



1. A gas discharge lamp circuit comprising:
power supply means for supplying an a.c. voltage output;
impedance means for limiting the current level of said a.c. voltage output from said power supply means;
a plurality of at least three electrical load means connected electrically in parallel for receiving electrical power from said power supply means; and
current-balancing transformer means for providing current sharing among said plurality of electrical load means comprising:
magnetic core means having a plurality of magnetic core legs equal to the number of electrical load means and magnetic core top bars and bottom bars connecting said plurality of core legs;
a plurality of electrical windings each disposed upon a respective one of said core legs and connected electrically in series with a respective one of said electrical loads; said windings being wound upon said respective core legs such that magnetic flux induced in each of said respective core legs by current flowing through said respective windings to supply said respective loads tends to flow in the same direction relative to said top and bottom bars.

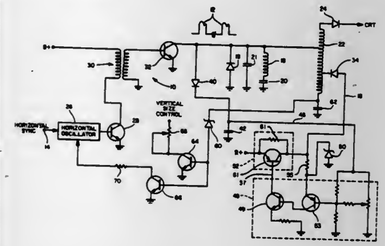
4,574,223
FAST WARMUP BALLAST FOR HID LAMPS
Ira J. Pitel, Morristown, N.J., assignor to HID Systems, Inc., Sparta, N.J.
Filed Jan. 12, 1984, Ser. No. 570,111
Int. Cl.[4] H05B *41/14, 41/36*
U.S. Cl. 315—307 **16 Claims**

2. A fast warmup ballast for a high intensity discharge lamp comprising
a transformer having two input taps adapted for connection to an a.c. power source and two output taps,
a multitap inductor having one tap adapted for connection through a lamp to one of said input taps of said transformer and two other taps each connected through one of two selectively operable switch means to one of said two output taps of said transformer, and



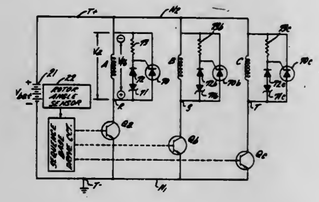
means for alternatively closing one or the other of said switch means in response to comparison of an operating characteristic of the lamp to a reference,
whereby during lamp warmup a high current is supplied to the lamp through one of said switch means, and after warmup a high voltage is supplied through the other of said switch means.

4,574,224
VARIABLE RATE HORIZONTAL DEFLECTION SYSTEM FOR A VIDEO MONITOR
Philip J. Nowaczyk, Chicago, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.
Filed Aug. 17, 1983, Ser. No. 524,165
Int. Cl.[4] H01J *29/70, 29/76*
U.S. Cl. 315—408 **22 Claims**



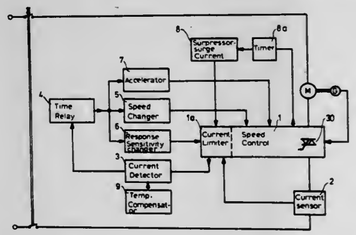
1. Apparatus for operating the CRT of a video display, comprising:
a horizontal deflection yoke;
means for generating a B+ boltage;
means for developing a variable frequency horizontal oscillator signal;
a horizontal output transistor coupled to the horizontal deflection yoke and responsive to said horizontal oscillator signal and to said B+ voltage for developing a horizontal output signal having a frequency corresponding to the frequency of said horizontal oscillator signal and a pulse amplitude which is a function of said B+ voltage and the frequency of said horizontal oscillator signal;
means coupled between the horizontal output transistor and the horizontal deflection yoke for peak detecting the pulse amplitude of said horizontal output signal; and
means responsive to said peak detected pulse amplitude for adjusting the level of said B+ voltage to maintain the pulse amplitude of said horizontal output signal constant despite variations in the frequency of the horizontal oscillator signal.

4,574,225
APPARATUS FOR ACCOMMODATING INDUCTIVE FLYBACK IN PULSED MOTOR WINDINGS
Arthur A. Pershall, Machesney Park, and George H. Holling, Roscoe, both of Ill., assignors to Pacific Scientific Company, Anaheim, Calif.
Filed Aug. 6, 1984, Ser. No. 637,850
Int. Cl.[4] H02P *6/02*
U.S. Cl. 318—254 **33 Claims**



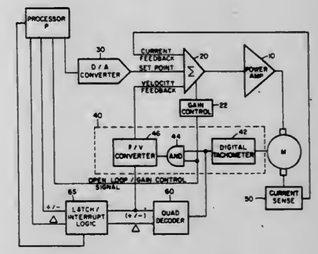
1. In a d.c. motor having a magnetic field multipole rotor and plurality of stator phase windings with switching means to sequentially connect the windings to a d.c. voltage source as the rotor turns through successive angular regions, a flyback circuit associated with at least one of said windings and comprising, in combination
(a) means constituting a normally non-conductive current flow path in parallel with the winding, said means including an element which, when enabled, makes said path conductive with substantally negligible opposition to current flow,
(b) means responsive to the voltage across said winding for setting said element into an enabled state when said voltage (i) is of the polarity created by inductive flyback action and (ii) exceeds a predetermined threshold magnitude, and
(c) means for restoring said element to its disabled state, after it has been enabled, when current flow therethrough falls essentially to a predetermined low value.

4,574,226
METHOD AND APPARATUS FOR CONTROLLING AN ELECTRIC MOTOR THE ROTATIONAL SPEED OF WHICH IS AUTOMATICALLY REDUCED IN NO-LOAD IDLING OPERATION
Alfred Binder, Bisingen, Fed. Rep. of Germany, assignor to Kress-Elektrik GmbH & Co., Bisingen, Fed. Rep. of Germany
Filed Oct. 19, 1983, Ser. No. 543,268
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1983, 3335237
Int. Cl.[4] H02P *7/38*
U.S. Cl. 318—317 **19 Claims**



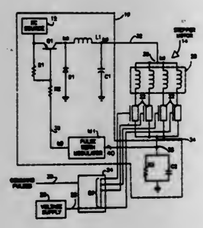
1. A method for controlling an electric motor of the type for driving hand tools, saws, and the like, the rotational speed of which is automatically reduced during no-load idling operation and increased under load to predetermined speeds by sensing the electric motor current and evaluating it for abrupt changes in the effective voltage supplied to the motor, comprising the steps of:
(a) automatically changing the sensitivity range of the current-sensing means to a higher threshold value upon transition of the motor to a higher speed under load conditions; and
(b) delaying for a predetermined time resetting the motor to a lower idling speed after transition to the no-load condition.

4,574,227
DUAL MODE SERVO
John C. Herder, and Randall G. Guay, both of San Antonio, Tex., assignors to Datapoint Corporation, San Antonio, Tex.
Filed Nov. 14, 1983, Ser. No. 550,950
Int. Cl.[4] G05B *11/18, 13/00*
U.S. Cl. 318—594 **7 Claims**



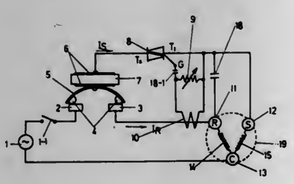
1. A servo positioning system for controlling a servo motor to a selectable target position, comprising:
(a) processor means responsive to the motor position relative to the target position to provide (i) a current-control set point signal, and when the motor is translated to a preselected open-loop position near target position, (ii) a gain control and an open-loop signal;
(b) a servo power amplifier responsive to a current control signal from a summing amplifier to provide current to the servo motor; and
(c) a velocity feedback loop responsive to the velocity of said servo motor to provide a velocity feedback signal unless disabled by said open-loop signal;
(d) said summing amplifier being responsive (i) to said current-control set point signal, and (ii) said velocity feedback signal unless disabled by an open loop condition, to provide said current control signal to the servo power amplifier;
(e) said summing amplifier being switchable from a high gain state at the beginning of motor advance to a low gain state at an open-loop position selectably proximate to the target position in response to said gain control signal;
(f) such that when said motor is proximate to target position, said summing amplifier is switched to its low gain state and said velocity feedback signal is disabled, opening the velocity feedback loop;
(g) the output of said power amplifier, and therefore the velocity of the motor, being thereby determined by said set point.

4,574,228
CURRENT CONTROLLED MOTOR DRIVE CIRCUIT
Larry A. Blue, Bahama, and David E. Conner, Cary, both of N.C., assignors to International Business Machines Corp., Armonk, N.Y.
Filed Dec. 7, 1984, Ser. No. 679,336
Int. Cl.[4] H02P 8/00
U.S. Cl. 318—696 9 Claims



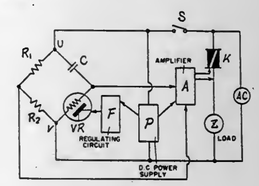
1. A circuit arrangement for driving a motor comprising:
first means operable for generating a DC voltage signal;
a chopper circuit means operable for correlating the voltage signal with an input drive signal and to output a modified DC voltage signal whose on-to-off time ratio is being dictated by a duty cycle of the input drive signal;
a filtering means operable for averaging the modified DC voltage signal and for supplying the averaged voltage signal to the motor;
a second means coupled to said motor and operable for monitoring current flow therethrough and for providing an error signal representative of said current; and
a third means responsive to the error signal and operable to generate and output the input drive signal whose duty cycle is being controlled by the error signal.

4,574,229
POWER EFFICIENT MOTOR STARTER AND CIRCUIT BREAKER FOR AN INDUCTION MOTOR
In S. Kim, Samig Apart 10 - dong 615, Cheongdam - dong Kangnam - Ku, Seoul, Rep. of Korea
Filed Dec. 27, 1983, Ser. No. 565,870
Claims priority, application Rep. of Korea, Oct. 20, 1983, 82-4954; Nov. 30, 1983, 83-10159[U]; Dec. 29, 1983, 82-10514[U]
Int. Cl.[4] H02P 1/24; H02H 7/085
U.S. Cl. 318—788 6 Claims



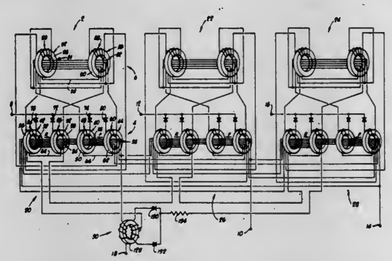
1. A starting and thermal overload protection circuit for a motor having at least one main coil and a starter coil arranged in parallel comprising:
a power source having at least first and second power supply terminals, said first power supply terminal serially connected to said motor coils;
overcurrent protection means for protecting said motor from an overcurrent, said overcurrent protection means including,
a conductive bimetallic contact support, and
at least one moveable contact mounted thereon interacting with a stationary contact,
said stationary and moveable contacts and said bimetallic support being serially connected between said second power supply terminal and said main coil to provide power from said power source to said motor, said moveable contacts being normally in contact with said stationary contacts, said bimetallic contact support moving said moveable contact away from said stationary contact when an overcurrent heats said bimetallic contact support; and
means for supplying a starting current to said motor coil, said means for supplying including,
a positive thermal coefficient resistance mounted in juxtaposition to said bimetallic contact support and electrically connected thereto,
a triac serially connected between said positive thermal coefficient resistance and said starter coil for controllably supplying current thereto for motor starting,
current sensing means for detecting current supplied said main coil by said power source,
means, operatively interconnected between said triac and current sensing means, for gating said triac ON only in response to a detected current substantially greater than the normal current supplied to said main coil during normal operating conditions, and
a phase control capacitance interposed between said triac and said means for gating and ensuring substantially complete conduction of said triac when gated ON by said means for gating.

4,574,230
PHASE-REGULATED SWITCHING CIRCUIT
Kazumi Masaki, Osaka, Japan, assignor to Ken Hayashibara, Okayama, Japan
Filed May 14, 1984, Ser. No. 610,252
Int. Cl.[4] G05F 1/455
U.S. Cl. 323—242 1 Claim



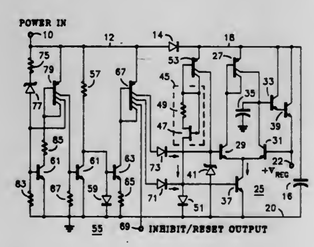
1. A phase-regulating switching circuit for ac electric equipment, essentially consisting of:
a bidirectional triode thyristor;
an amplifier connected at its output terminal to one gate of the bidirectional triode thyristor;
an ac Wheatstone bridge bearing in one arm a variable resistance comprising one of a photocoupler or a thermistor, said Wheatstone bridge being connected at one branch to the input terminal of said amplifier and at its other branch between the cathode and anode of the bidirectional triode thyristor through an ac electric equipment;
an RC phase regulating circuit having a time constant connected to the variable resistance; and
means for supplying a dc energy to said amplifier and the RC phase regulating circuit.

4,574,231
MAGNETIC AMPLIFIER APPARATUS FOR BALANCING OR LIMITING VOLTAGES OR CURRENTS
Donald W. Owen, 801 Brookwood Dr., Apartment 108, Oklahoma City, Okla. 73139
Filed Apr. 4, 1984, Ser. No. 596,726
Int. Cl.[4] G05F 1/335
U.S. Cl. 323—253 27 Claims



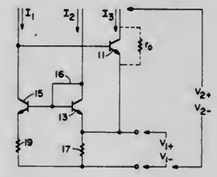
1. An apparatus for controlling the magnitude of an alternating current electrical signal, said apparatus comprising:
first variable impedance means for providing first and second electrical paths, each of said first and second electrical paths having a respective impedance which is variable in response to an effectively direct current control signal;
connector means for connecting each of said first and second electrical paths with a source of electrical current so that alternating electrical currents can flow through each of said first and second electrical paths;
second variable impedance means for providing a third electrical path having an impedance which is variable in response to currents flowing through said first and second electrical paths; and
connecting means for connecting said alternating current electrical signal to said third electrical path so that the magnitude of said alternating current electrical signal is controllable by varying the impedance of said third electrical path in response to said control signal.

4,574,232
RAPID TURN-ON VOLTAGE REGULATOR
Thomas J. Petty, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Oct. 21, 1983, Ser. No. 544,931
Int. Cl.[4] G05F 1/56
U.S. Cl. 323—268 9 Claims



1. A rapid turn-on voltage regulator comprising:
amplifier means, including negative feedback, for providing a regulated voltage source at an output thereof,
a power source coupled to said amplifier means;
a current source coupled to said amplifier means and said power source for providing a relatively small bias current to said amplifier means; and
current pulse generating means coupled to said amplifier means and said power source for providing a pulse of current which is large relative to the bias current, to said amplifier means to rapidly bring said amplifier means to an operating level.

4,574,233
HIGH IMPEDANCE CURRENT SOURCE
Stewart S. Taylor, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.
Filed Mar. 30, 1984, Ser. No. 595,227
Int. Cl.[4] G05F 3/26
U.S. Cl. 323—316 3 Claims



1. A current source having a high output impedance, comprising:
a first bipolar transistor for producing an output current at its collector;
a first resistor connected between the emitter of the first transistor and a reference potential level, whereby the potential at the emitter of the first transistor is representative of the output current of the first transistor;
a second bipolar transistor having its emitter connected to the emitter of the first transistor and its base coupled to its collector;
a third bipolar transistor having its base connected to the base of the second transistor and its collector coupled to the base of the first transistor; and
a second resistor connected between the emitter of the second transistor and said reference potential level,
whereby when the collectors of the second and third transistors are connected to first and second constant current sources respectively, changes in the potential at the emitter of the second transistor bring about corresponding changes in the potential at the base of the third transistor, and changes in the potential at the base of the third transistor bring about changes in the base current of the first transistor.

4,574,234
SYSTEM FOR MEASURING SELECTED PARAMETERS OF ELECTRICAL SIGNALS AND METHOD
Michael Inbar, Santa Barbara, Calif., assignor to Applied Magnetics Corporation, Goleta, Calif.
Filed Sep. 26, 1984, Ser. No. 654,809
Int. Cl.[4] G01R 15/12, 23/12
U.S. Cl. 324—73 R 17 Claims

1. An electrical measuring system for measuring selected parameters of electrical signals having a frequency within a known frequency range wherein said electrical signals are derived by relative movement between magnetic transducers and a magnetic medium having prerecorded data thereon and the measured selected parameters are represented by digital output signals, said system comprising
input means including automatic amplifying means for receiving said electrical signals and for selectively amplifying said electrical signals to a preselected amplitude level;
a digital peak detecting means for sequentially producing a digital representation of a plurality of processed electrical

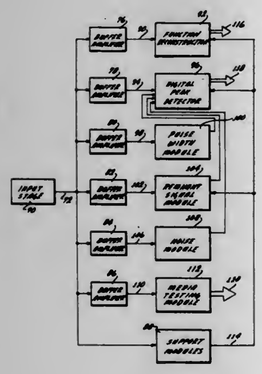
signals and for producing a digital representation of the peak value for each processed electrical signal applied thereto representing the selected parameters of the electrical signals, said digital peak detecting means including means for sampling the signals applied thereto at a frequency which is less than the frequency of the input electrical signals;

a first means operatively coupled to said input means for receiving and applying said preselected amplitude level electrical signals to a function reconstruction means for producing a sample value function representative of the amplitude of the preselected amplitude level electrical signals at the sampling instant and for applying said peak detection signal to said digital peak detecting means for producing a digital representation of the peak amplitude of said sampled electrical signals;

a second means operatively coupled to said input means for receiving said preselected amplitude level electrical signals and producing an overwrite signal representing the amplitude of a remnant signal having a frequency within a known frequency range which is present in the preselected amplitude level electrical signals and for applying the same to the digital peak detecting means for producing a digital output signal representative of the magnitude of the overwrite signal;

a third means operatively coupled to said input means for receiving said preselected amplitude level electrical signals and producing therefrom a train of known amplitude pulses having a known period and a variable pulse width which is a function of the width of the pulse widths of the preselected amplitude level electrical signals and deriving therefrom an integrated voltage signal representative thereof and applying the same to the digital peak detecting means to produce a digital representation of the average pulse widths; and

a fourth means operatively coupled to said input means for receiving said preselected amplitude electrical signals and producing a direct current voltage signal representative of the power of noise spectra signals within said preselected amplitude level electrical signals and applying the same to the digital peak detecting means for producing a digital representation of the power of said noise spectra signals.

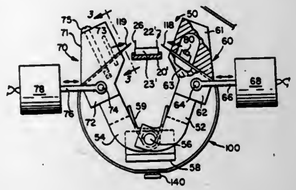


4,574,235

TRANSMISSION LINE CONNECTOR AND CONTACT SET ASSEMBLY FOR TEST SITE

Thomas C. Kelly, White Bear Lake; Robert J. Wurscher, Shoreview; Dennis M. Petrich, Wayzata, and Earl H. Rideout, Coon Rapids, all of Minn., assignors to Micro Component Technology, Inc., Shoreview, Minn.

Filed Jun. 5, 1981, Ser. No. 270,709
Int. Cl.⁴ G01R *31/02, 1/06*
U.S. Cl. 324—158 F **23 Claims**



1. Apparatus for selectively making electrical contact between contacts of a contact set assembly and contact elements of an electrical device to be engaged thereby, comprising:

said contacts set assembly, wherein said assembly includes:

(i) a flexible insulating layer having opposed, substantially parallel first and second surfaces and first and second spaced edges; and

(ii) a plurality of controlled impedance conductive lines disposed generally parallelly on said first surface in laterally spaced relationship, each of said lines having a first terminal portion adjacent said first edge of said insulating layer and a second terminal portion remote from said first terminal portion;

first means for selectively flexing said insulating layer with said controlled impedance conductive lines disposed on said first surface thereof, to urge said first edge toward said second edge;

second means providing electrical connections to said second terminal portions of said lines; and

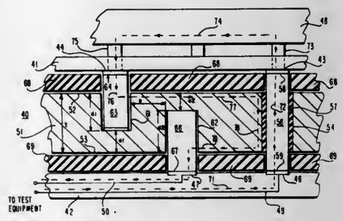
third means for introducing an electrical device to be contacted into a station between said first and second edges, wherein, as said first means flexes said insulating layer, contact elements of an electrical device in said station are engaged by said first terminal portions.

4,574,236

HIGH FREQUENCY TEST FIXTURE

Charles D. Hechtman, Plainsboro, N.J., assignor to AT&T Technologies, Inc., Berkeley Heights, N.J.

Filed Oct. 27, 1983, Ser. No. 546,221
Int. Cl.⁴ G01R *31/02*
U.S. Cl. 324—158 F **22 Claims**



1. A test fixture comprising:

a support body having first and second substantially parallel, electrically conductive major surfaces in electrical contact with each other;

a double-ended probe extending through said support body beyond said first and second major surfaces thereof, said probe being insulated from first and second surfaces;

a first probing element in electrical contact with, and extending from said first major surface so as to be positioned proximate to one end of the double-ended probe;

a second probing element in electrical contact with and extending through said second major surface so as to be positioned proximate to the other end of the double-ended probe; and

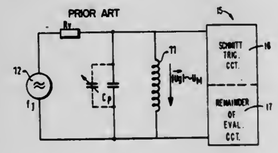
the first and second probing elements are electrically interconnected to each other by said first and second major surfaces which serve to pass a high frequency signal therealong between the first and second probing elements.

4,574,237

ROTARY SPEED MEASURING APPARATUS

Hansjörg Hachtel, Weissach, and Klaus Dobler, Gerlingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 21, 1983, Ser. No. 534,301
Claims priority, application Fed. Rep. of Germany, Nov. 13, 1982, 3242109
Int. Cl.⁴ G01P *3/48, 3/54*
U.S. Cl. 324—173 **4 Claims**



1. Apparatus for measuring rotary speed of a body by means of a measuring wheel (10) drivingly connected to said body and a coil (11) conducting an alternating electric current of a predetermined frequency (f_{TM}), said coil being disposed in the neighborhood of said wheel so as to provide a signal (U_g) dependent upon the speed of said wheel, which signal is produced by the change of the inductance of said coil during the measurement, means being provided for evaluation of said signal by a circuit responding to a voltage reaching a predetermined threshold voltage (U_T), in which apparatus there is the improvement comprising:

periodically repetitive marking features (13*a*,13*b*) disposed in the circumferential direction of said wheel which comprise, within every period of the periodicity of the repetition of said marking features, at least one zone (13*a* or 13*b*) consisting of ferromagnetic material and at least one zone (13*b* or 13*a*) consisting of diamagnetic or paramagnetic but nevertheless electrically conducting material, and

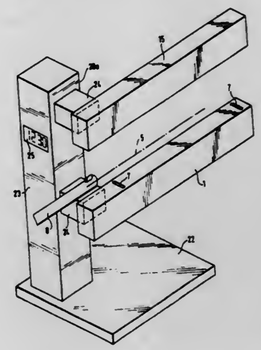
means for providing as said threshold voltage (U_T) a voltage approximately equal to the voltage (U_{ML}) that would be provided as said signal (U_g) by said coil when said wheel is infinitely far therefrom, said ferromagntic material or said frequency (f_{TM}) both being so chosen that the magnetostatic effect is greater than the eddy current effect in said zones consisting of ferromagnetic material.

4,574,238

PROJECTILE SPEED MEASURING APPARATUS

Leopold Weinlich, Industriestrasse 6, D-6831 Reilingen, Fed. Rep. of Germany

Filed May 11, 1984, Ser. No. 609,450
Claims priority, application Fed. Rep. of Germany, May 20, 1983, 3318378
Int. Cl.⁴ G01P *3/66, 3/80*
U.S. Cl. 324—178 **29 Claims**



1. Projectile speed measuring apparatus, particularly to determine muzzle velocity of a projectile fired from a handgun or other small arm in the direction of a measuring path (5) along which the projectile is adapted to pass, comprising

two light gates located in spaced positions at a predetermined distance from each other along said measuring path (5);

a light responsive element (2) positioned at each one of the light gates;

a screen shielding the light gates and the light responsive elements from the projectile and being formed with an aperture (7) for each light gate;

and electronic response evaluation circuit coupled to the light responsive element providing an output signal representative of the speed of the projectile,

and comprising, in accordance with the invention,

a separating wall (4) located essentially parallel to said measuring path (5), the measuring path being located at one side thereof,

said separating wall (4) forming said screen, being formed with said apertures (7) extending from a zone close to the muzzle of the gun and positioned beyond the light responsive elements farthest from the muzzle;

the light responsive elements (2) being located at the other side of the separating wall, to protect the light responsive elements against damage due to the projectiles (6) in the event of misaiming or misfiring of the gun, and to then provide a glancing surface for the projectile and to prevent ricochets.

4,574,239

METHOD FOR FLOW MEASUREMENT USING NUCLEAR MAGNETIC RESONANCE

Jerome R. Singer, Berkeley, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Filed Jul. 19, 1983, Ser. No. 515,336
Int. Cl.⁴ G01R *33/20*
U.S. Cl. 324—306 **34 Claims**

1. A method for generating a detectable signal related to the rate of linear displacement, in a predetermined direction, of nuclei within an object under the influence of a static unidirectional magnetic field and within the range of an NMR detector oriented to detect a zero signal when the spins of said nuclei

are equilibrated to precessions at Larmor frequencies in accordance with the intensity of said magnetic field and a positive signal when said spins are excited away from said equilibrated state by a predetermined energy increment, said method comprising:

(a) equilibrating the spins of said nuclei to precess at said Larmor frequencies,

(b) selectively exciting a predetermined volume within said object to an extent which would be sufficient to generate a net NMR signal of zero when combined with the excitation corresponding to said predetermined energy increment,

(c) selectively exciting said volume by said predetermined energy increment at a first predetermined relaxation time interval after the excitation of step (b) but within the full spin-lattice relaxation time thereof to generate a detectable NMR response, and

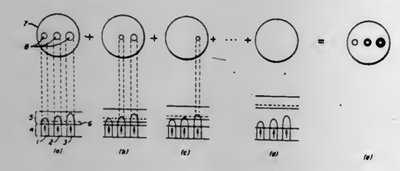
(d) repeating steps (b) and (c) in sequence at least once using further predetermined relaxation time intervals of differing duration.

4,574,240

METHOD FOR FLOW MEASUREMENT USING NUCLEAR MAGNETIC RESONANCE

Joel M. Libove, and Jerome R. Singer, both of Berkeley, Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Jul. 19, 1983, Ser. No. 515,332
Int. Cl.⁴ G01R *33/20*
U.S. Cl. 324—306 **40 Claims**



1. A method for generating a detectable signal related to the linear displacement, in a predetermined direction, of nuclei within an object under the influence of a magnetic field and within the range of sensitivity of an NMR detector, comprising:

(a) aligning the spins of said nuclei with said magnetic field;

(b) exciting said nuclei to generate in said detector a signal of the type requiring a plurality of discrete excitations at least two of which are separated by a predetermined time interval of finite duration, by confining two of said separated excitations to a first selected planar volume and a second selected planar volume, respectively, both of which are substantially perpendicular to said predetermined direction and laterally coextensive with each other, with at least a portion of each said volume lying outside the other along said predetermined direction; and

(c) detecting the presence of said signal as an indication of the movement of nuclei from said first planar volume to said second planar volume during said predetermined time interval.

4,574,241

MARINE SURVEYING APPARATUS AND METHOD FOR LOCATING PIPELINES BURIED UNDER THE SEABED

C. L. Jack Stelly, P.O. Box 53353, Lafayette, La. 70505

Filed Aug. 22, 1983, Ser. No. 525,017
Int. Cl.⁴ G01V *3/165;* **E21B** *7/12, 7/26;* **E02D** *21/00*
U.S. Cl. 324—326 **13 Claims**

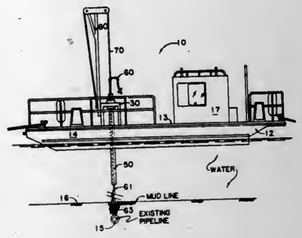
7. A method of marine surveying for hidden pipelines that are buried under the seabed, comprising the steps of:

a. preliminarily determining the approximate location of the pipeline;

b. vertically positioning a casing above the pipeline to be located with a marine vessel having a laterally adjustable support that holds the casing in a vertical position;

c. movably supporting an elongated probe rod with the casing so that the probe rod can be elevated and lowered along a generally vertical path defined by the casing;

d. thrusting the probe rod downwardly through the casing



and into the underlying seabed while the casing laterally supports the probe rod;

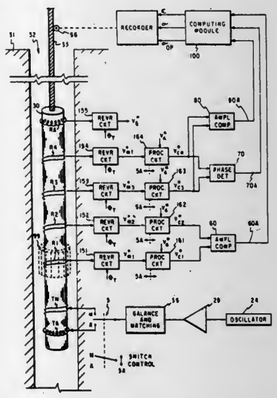
e. sequentially moving the casing position with the adjustable support into a number of laterally spaced preselected prospective sites to be probed until the pipe is contacted by the probe so that the pipeline horizontal elevation and the location at the probe site can be measured, each prospective site being surveyed by thrusting the probe rod downwardly through the casing and into the underlying seabed.

4,574,242

ELECTROMAGNETIC LOGGING WITH REDUCTION OF SPURIOUS TRANSVERSE MAGNETIC COMPONENTS

Brian Clark, Ridgefield, Conn., and Gerald S. Huchital, Houston, Tex., assignors to Schlumberger Technology Corporation, New York, N.Y.

Filed Jun. 23, 1982, Ser. No. 391,097
Int. Cl.⁴ G01V *3/30*
U.S. Cl. 324—338 **28 Claims**



17. Apparatus for determining properties of formations surrounding a borehole, comprising:

an elongated logging device moveable in the borehole;

a main transmitter and an auxiliary transmitter mounted on the device;

a main receiver and an auxiliary receiver mounted on the device in spaced relationship to the transmitters;

means for energizing the main transmitter with electromagnetic energy;

means for energizing the auxiliary transmitter with transverse magnetic electromagnetic energy;

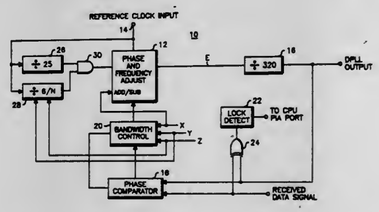
means for adjusting the energizing of the auxiliary transmitter in accordance with the transverse magnetic electromagnetic energy component received at the auxiliary receiver.

4,574,243

MULTIPLE FREQUENCY DIGITAL PHASE LOCKED LOOP

Stephen N. Levine, Itasca, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 3, 1984, Ser. No. 567,715
Int. Cl.⁴ H03K *5/13, 5/22;* **H03D** *13/00*
U.S. Cl. 328—155 **2 Claims**



1. An improved multiple frequency digital phase locked loop (DPLL) for processing received data signal and producing an output signal which is phase-locked to the received data signal, comprising:

(a) phase comparator means having first and second inputs, wherein the first input is coupled to the received data signal and the second input is coupled to the DPLL output signal, and an output for providing an output signal indicative of the relative phase between said incoming data signal and said DPLL output signal;

(b) clock means for generating a reference clock signal;

(c) programmable divider means, coupled to said reference clock signal and having an output and programmable inputs, for generating a programmable clock signal related to said reference clock signal according to a divider ratio controlled by said programmable inputs;

(d) digital means, coupled to the output of said programmable divider means for generating first and second derived clock signals, one such signal being in a delayed relation to the other;

(e) phase and frequency adjust means coupled to said clock means for producing a composite clock signal by selectively adding or subtracting said first and second derived clock signals, periodically, at a rate defined by said programmable clock signal to effect a frequency adjustment or by individually adding or subtracting pulses in response to said phase comparator output signal to effect a phase adjustment;

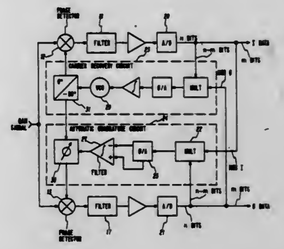
(f) frequency divider means coupled to said phase and frequency adjust means for processing said composite clock signal to produce the digital phase-locked loop output signal.

4,574,244

QAM DEMODULATOR AUTOMATIC QUADRATURE LOOP USING N-M LSB'S

Manley J. Head, Wylie, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jun. 22, 1984, Ser. No. 623,802
Int. Cl.⁴ H03D *3/18;* **H03K** *9/02;* **H04L** *5/12, 25/02*
U.S. Cl. 329—50 **11 Claims**



1. A system for the demodulation of a Quadrature Amplitude Modulation (QAM) signal, of the type having in-phase and quadrature channels, each having an m bit demodulated output, thereby defining a $2^m \times 2^m$ QAM vector space, said system comprising:

detector means in each of said channels, each detector means responsive to said QAM signal and a signal at a carrier frequency input, and each for generating an analog output;

an analog-to-digital converter, responsive to said analog signal in a first one of said channels, for providing said m bits and a bit group including at least the most significant one of the bits less significant than said m bits in the digital representation of the analog signal;

a control loop including said detector means in said first channel and said analog-to-digital converter, and further including

means for adjusting, in response to a control signal, the phase of a local oscillator signal which is nominally phase aligned with said QAM vector space, and for applying the phase adjusted signal to the carrier frequency input of said first channel detector means, and

means for deriving from said bit group a measure of the phase difference between the phase adjusted oscillator output applied to said first channel and said demodulated output vector space, and for providing a control signal representative of said measure to the means for phase adjusting,

whereby the means for phase adjusting is controlled to provide the local oscillator output to the detector in said first channel in controlled phase alignment with respect to said QAM vector space, for properly demodulating said QAM signal.

4,574,245

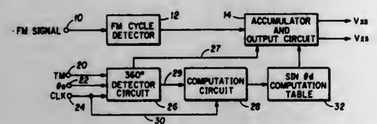
MULTISENSOR DEMODULATOR AND A/D CONVERTER

Wilmer A. Mickelson, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Oct. 5, 1982, Ser. No. 432,874
Int. Cl.⁴ H03D *3/00;* **G01P** *9/02*
U.S. Cl. 329—110 **18 Claims**

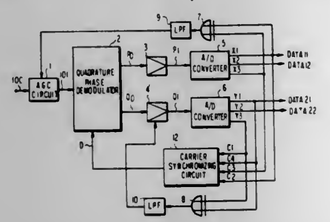
1. A signal demodulation system comprising: means for receiving a modulated cyclic signal; means for detecting each cycle of said modulated signal; means for selecting a sine value in response to each detected cycle;

means for cumulatively summing the sine values selected during a predetermined interval; and



means for providing an output of said summation over said predetermined interval as a demodulated signal.

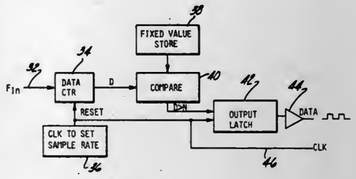
4,574,246
DEMODULATOR WITH AGC CIRCUIT FOR MULTI-LEVEL QUADRATURE AMPLITUDE-MODULATED CARRIER WAVE
Yasuharu Yoshida, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Mar. 13, 1984, Ser. No. 589,265
Claims priority, application Japan, Mar. 16, 1983, 58-43495
Int. Cl.⁴ H03D *3/00*
U.S. Cl. 329—124 **12 Claims**



1. A demodulator with an automatic gain control circuit, comprising:
first control circuit means for varying an amplitude of a multi-level quadrature amplitude-modulated carrier wave in response to a first control signal;
quadrature phase demodulator means for phase-detecting an output of said first control circuit means by reference carrier waves which are different in phase by 90 degrees from each other, and for providing an inphase demodulated signal and a quadrature-phase demodulated signal;
first multilevel discriminator means and second multilevel discriminator means for respectively discriminating said inphase and quadrature-phase demodulated signals with respect to multiple levels and for generating digital outputs;
second control circuit means interposed between said quadrature phase demodulator means and said multilevel discriminator means, for varying an amplitude of one of said inphase and quadrature-phase demodulated signals in response to a second control signal; and
control signal generator means for generating said first and second control signals in response to the outputs of said first and second multilevel discriminator means.

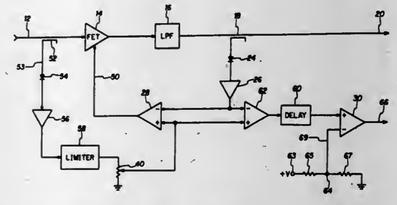
4,574,247
FM SIGNAL DEMODULATOR
Keith Jacob, Ann Arbor, Mich., assignor to Multi-Elmac Company, Novi, Mich.
Filed May 21, 1984, Ser. No. 612,394
Int. Cl.⁴ A03D *3/04*
U.S. Cl. 329—126 **6 Claims**

1. A method for demodulating an FM signal consisting of at least first and second discrete frequency components f0 and f1 representing data values and for deriving an output signal containing said data comprising the steps of:
sampling the FM signal periodically and at a rate higher than the rate of occurrence of said components;
counting the number of excursions n of said signal during each sample time;



comparing the sample counts n to a number N which is higher than the maximum number of f0 excursions which occur during a sample time and which is lower than the maximum number of f1 excursions which occur during a sample time; and
generating an output having a first characteristic when n is less than N and a second characteristic when n is greater than N.

4,574,248
RF POWER AMPLIFIER FOR USE WITH VHF TRANSCEIVERS
Kirk A. Snodgrass, Phoenix, Ariz., assignor to Rockwell International Corporation, El Segundo, Calif.
Filed May 7, 1984, Ser. No. 607,849
Int. Cl.⁴ H03G *3/20*; G01R *21/00*
U.S. Cl. 330—2 **11 Claims**

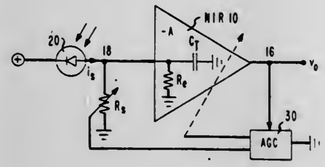


1. A power amplifier system comprising:
means for providing an input signal;
means for amplifying said input signal and providing an amplified output signal; and
means for comparing a sample of said input signal forming a reference signal with a sample of said output signal for controlling the amplification produced by said means for amplifying to produce a constant gain for input signal levels less than or equal to a predetermined limit and a constant power output for signal levels exceeding said predetermined limit.

4,574,249
NONINTEGRATING LIGHTWAVE RECEIVER
Gareth F. Williams, Summit, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.
Division of Ser. No. 300,376, Sep. 8, 1981. This application Apr. 1, 1985, Ser. No. 718,712
Int. Cl.⁴ H01J *40/14*
U.S. Cl. 330—59 **4 Claims**

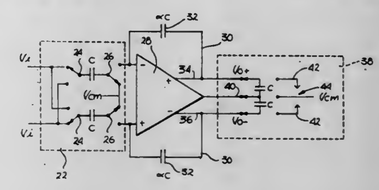
1. Apparatus (FIGS. 9, 12, 33/40) for amplifying a NRZ digital optical signal having a bit rate B and bandwidth Δf comprising:

a nonintegrating receiver having an input capacitance C_T and including:
a photodiode for receiving said signal and converting it to an electrical current i_s,
an input terminal to which said electrical current is applied and an output terminal at which an amplified output voltage v_o appears,
a voltage amplifier connected between said terminals, said amplifier having a forward voltage gain $(-A)$ with poles therein at a frequencies f_{ai} outside Δf, and
a negative feedback circuit, connected between said terminals, including a current source for generating a feedback current i_f which is proportional to v_o, said current source having a transconductance g_f which is of opposite sign to A and comprising
a voltage integrator having its input connected to said output terminal and having a pole in its transfer function at a frequency f_i, and
a parallel combination of a feedback resistor R_F and a feedback capacitance C_F connected between said input terminal and the output of said integrator, said combination having a zero in its transfer function at f_i so that said transconductance g_f is essentially constant with frequency within Δf,



the output voltage v_f of said integrator being related to v_o, in the frequency domain, by the relationship $v_f = a\text{-}v_o/(s+2\pi f_i)$, the equivalent input conductance g_e of said amplifier being given by $g_e = 1/Ag_f$, and for said receiver to be nonintegrating $Aa > 2\pi C_T 0.56B/C_F$,
said feedback circuit in combination with C_T producing a feedback voltage gain β with a feedback pole therein at a frequency f_f within Δf, and said amplifier and said feedback circuit forming a loop circuit having a loop gain $A\beta$, and for stability said feedback circuit pole being the dominant pole in $A\beta$ versus frequency, and
a range extender for preventing the saturation of said receiver at high amplitudes of i_s including
a variable resistor R_s having one end connected to said input terminal, and
an automatic gain control (AGC) circuit responsive to said optical signal for decreasing R_s when i_s reaches said high amplitudes,
said AGC circuit having a threshold below which the output voltage of said amplifier increases with increasing current and above which said output voltage is essentially constant, and
said variable resistor has a high resistance R_{s2} below said threshold and a lower variable resistance R_{s1} above said threshold.

4,574,250
SWITCHED CAPACITOR FILTER UTILIZING A DIFFERENTIAL INPUT AND OUTPUT CIRCUIT AND METHOD
Daniel Senderowicz, Berkeley, Calif., assignor to Intel Corporation, Santa Clara, Calif.
Filed Oct. 13, 1981, Ser. No. 311,144
Int. Cl.⁴ H03F *3/45*
U.S. Cl. 330—258 **3 Claims**

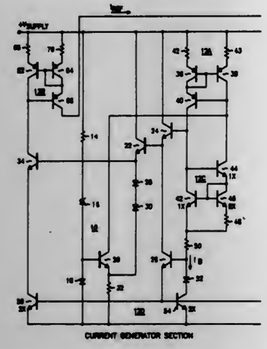


1. In an integrated circuit, a differential integration circuit having first and second inputs comprising:
a balanced output operational amplifier having a negative input terminal and a positive input terminal;
a first balanced switched capacitor sampler coupled to said first and second inputs said first sampler also coupled to said amplifier negative and positive input terminals;
a second balanced switched capacitor sampler;
a positive voltage output of said operational amplifier coupled to said second sampler and fed back to said amplifier negative input terminal through a first capacitor;
a negative voltage output of said operational amplifier coupled to said second sampler and fed back to said amplifier positive input terminal through a second capacitor;
a center voltage output of said operational amplifier equal to the difference between said positive voltage output and said negative voltage output, said center voltage output coupled to said second sampler;
whereby differential signals may be transferred through said circuit such that said circuit has improved power supply rejection and high signal to noise ratio.

4,574,251
LOGARITHMIC DIGITALLY VARIABLE GAIN CONTROLLED AMPLIFIER
Barry L. Jason, Bedford, Tex., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Oct. 1, 1984, Ser. No. 656,821
Int. Cl.⁴ H03G *3/20*; G06G *7/24*
U.S. Cl. 330—279 **7 Claims**

1. An integratable, gain controlled amplifier circuit receiving a binary input signal, said amplifier circuit comprising:
an amplifier having a signal input, a control input and an output and having a gain which is proportional to a control current being applied to said control input;
a current generator for providing a first current;
control means receiving the first current and responsive to the binary input signal for dividing the first current to produce a control current equalling a predetermined fraction of said first current such that the binary input signal

corresponds to a predetermined logarithmic attenuation of the control current; and



means for applying said control current to said amplifier's control input to thereby provide a predetermined logarithmic attenuation in the amplifier.

4,574,252

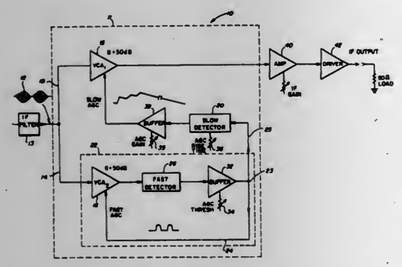
CONSTANT RISE AGC DEVICE

Robert A. Slack, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 25, 1985, Ser. No. 715,992

Int. Cl.⁴ H03G *3/20*

U.S. Cl. 330—281 **10 Claims**



1. A constant rise AGC device comprising:

a primary AGC loop for receiving an input signal from an input terminal and splitting the input signal to input and output components of the primary AGC loop, the input signal to the input component being processed within the primary AGC loop to control the gain of the input signal at the output component of the primary AGC loop;

the primary AGC loop having slow detection means;

a secondary AGC loop within the primary AGC loop, the secondary AGC loop including said input component and having its output connected to the slow detection means; and

the secondary AGC loop having fast detection means for preventing self-imposed saturation;

whereby the secondary AGC loop can be utilized to provide a constant AGC buildup signal for any input signal greater than a predetermined dB range, and the remainder of the primary AGC loop, which receives the constant AGC buildup signal from the secondary AGC loop, can be optimized for desired rise and fall times so that the latter's output signal can be relatively unaffected by interference bursts, signal gaps and fading in the input signal.

4,574,253

BROADBAND CONTROL AMPLIFIER

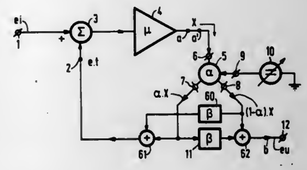
Henri J. Velo, Hilversum, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 11, 1985, Ser. No. 700,380

Claims priority, application Netherlands, Feb. 14, 1984, 8400463

Int. Cl.⁴ H03F *1/34*

U.S. Cl. 350—293 **4 Claims**



1. A broadband control amplifier, comprising an amplifier whose input is connected to the output of a differential combining circuit and whose output is connected to the signal input of a signal splitter having a transfer factor α, a first output of the signal splitter producing an output signal equal to $(1-\alpha)$ times the input signal and which is coupled to the output terminal of the control amplifier, a second output of the signal splitter producing an output signal equal to α times the input signal and which is coupled by a first network to the output of the control amplifier and is further coupled to a first input of the differential combining circuit, a second input of the combining circuit being connected to the input terminal of the control amplifier, characterized in that at least one of the coupling paths of the first output and the second output of the signal splitter includes a second network to compensate for the influence of the transfer factor α of the signal splitter on the open loop gain of the control amplifier.

4,574,254

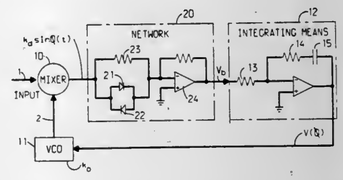
PHASE-LOCK LOOP CIRCUIT PROVIDING VERY FAST ACQUISITION TIME

Bernard Glance, Colts Neck, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation-in-part of Ser. No. 613,421, May 24, 1984, abandoned. This application Sep. 7, 1984, Ser. No. 648,241

Int. Cl.⁴ H03L *7/00*

U.S. Cl. 331—17 **10 Claims**



1. A phase-lock loop arrangement comprising:

a voltage controlled oscillator (VCO) for providing a predetermined frequency output signal in response to a predetermined input control signal;

means responsive to both an input signal to the loop and the predetermined frequency output signal from the VCO for generating an output error signal representative of the difference in phase between the two signals;

means capable of directly transforming the output error signal from the generating means, over a range o predetermined phase differences, into an output signal comprising a predetermined nonlinear response wherein small values of the transforming means output signal are generated which increase linearly away from zero for a small range of values of the output error signal on either side of a zero output error signal and then increase exponentially for output error signals outside said small range of values; and

means responsive to the output signal from the transforming means for integrating the transforming means output signal and generating the input control signal to the VCO which is representative of the resultant integrated signal.

4,574,255

MMC SUBSTRATE INCLUDING CAPACITORS HAVING PEROVSKITE STRUCTURE DIELECTRIC AND ELECTRICAL DEVICES INCLUDING MMC SUBSTRATE

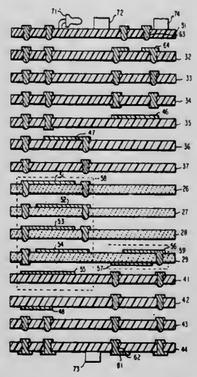
Shuzo Fujii; Yuzo Shimada; Kazuaki Utsumi, and Yutaka Saito, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Dec. 15, 1983, Ser. No. 561,506

Claims priority, application Japan, Dec. 15, 1982, 57-219753; Feb. 8, 1983, 58-19201; Feb. 25, 1983, 58-30308; Feb. 25, 1983, 58-30309; Mar. 15, 1983, 58-42576; Mar. 16, 1983, 58-43461; Mar. 16, 1983, 58-43462; Mar. 16, 1983, 58-43482; Mar. 22, 1983, 58-47449; Apr. 4, 1983, 58-57856

Int. Cl.⁴ H03L *7/06, 1/02;* **H03B** *5/36;* **G01K** *7/32*

U.S. Cl. 331—25 **37 Claims**



1. In a monolithic multicomponents ceramic (MMC) substrate comprising at least one dielectric layer which is of at least one composition having a perovskite structure, a plurality of insulative layers on both sides of said at least one dielectric layer, a plurality of resistive films on at least one of said dielectric and said insulative layers, said resistive films being resistors, a plurality of pairs of conductive films on both sides of at least one of said at least one dielectric layer, said pairs of conductive films being capacitors, and a plurality of wiring conductors on and through predetermined ones of said dielectric and said insulative layers to form an electrical circuit together with said resistive films and said pairs.

4,574,256

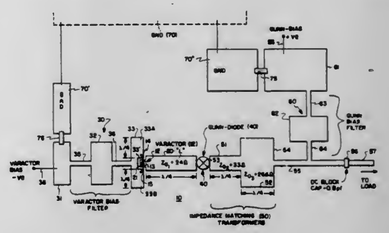
VARACTOR TUNED MICROSTRIP OSCILLATOR FOR KA BAND OPERATION

Donald R. Singh, Minneapolis, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 31, 1984, Ser. No. 688,125

Int. Cl.⁴ H03B *5/08*

U.S. Cl. 331—107 SL **3 Claims**



1. A planar varactor tuned microstrip oscillator for Ka band operation comprising:

(a) a GaAs Gunn diode having a terminal,

(b) a varactor having an output and a bias connection,

(c) a source of varactor negative bias potential;

(d) a first filter means connected between said source of varactor bias potential and said varactor bias connection,

(e) an impedance inverter microstrip connected between said varactor and said Gunn diode terminal,

(f) a source of Gunn positive bias potential,

(g) an impedance matching transformer having an input and an output,

(h) means connecting said transformer input to said Gunn diode terminal, said transformer output being connected via a DC blocking capacitor to load connection means,

(i) a second filter means connected between said transformer output and said source of Gunn positive bias potential,

(j) ground means, and

(k) second and third capacitive means connected respectively between said sources of bias potential and said ground means,

whereby said varactor tunes said Gunn diode to oscillate in the Ka band.

4,574,257

CRYSTAL RESONATOR OSCILLATOR HAVING CIRCUITRY FOR SUPPRESSING UNDESIRED CRYSTAL HARMONICS

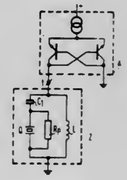
Wolfdietrich G. Kasperkovitz, and Herman W. Van Rumpt, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 6, 1984, Ser. No. 577,430

Claims priority, application Netherlands, May 30, 1983, 8301905

Int. Cl.⁴ H03B *5/36*

U.S. Cl. 331—116 R **4 Claims**



1. An oscillator circuit comprising:

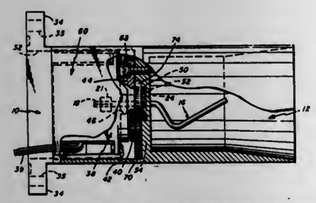
an amplifier having a reference level connection, and input and output connected to a signal carrying terminal; and
a resonant network having one end connected to said signal carrying terminal, and another end connected to said reference level connection, said resonant network including:
(a) a crystal resonator;
(b) an LC-network coupled to said crystal resonator for selecting a higher order resonator frequency of said crystal resonator; and
(c) a resistor connected in parallel with said crystal resonator for suppressing oscillations at a parasitic oscillation frequency produced from said LC-network and a case capacitance associated with said crystal resonator.

4,574,258

POLARIZED SIGNAL RECEIVING APPARATUS

Donald C. Cloutier, Exeter, N.H., assignor to M/A-COM, Inc., Burlington, Mass.

Filed Aug. 27, 1984, Ser. No. 644,513
Int. Cl.[4] H01P *1/161*; H01Q *3/02*
U.S. Cl. 333—21 A **15 Claims**



15. A polarized signal receiving apparatus comprising;
a first waveguide for transmitting polarized signals,
a second waveguide for receiving polarized signals at one end thereof,
means for securing the first waveguide to the second waveguide,
an antenna means having integrally formed portions including a receiver probe portion disposed in the second waveguide and extending generally axially of the second waveguide, for receiving one polarization of the incident signal, a launch probe portion concentric with the axis of the first waveguide and extending generally axially of the first waveguide for launching said signal therein, and a drive portion intermediate the receiver and launch probe portions, said drive portion including a first drive means,
and a drive source supported in a housing member which defines the first waveguide and comprising at least a second drive means adapted to mesh with the first drive means for driving the antenna means.

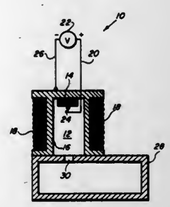
4,574,259

HIGH SWITCHING SPEED ELECTRICALLY TUNED MICROWAVE MAGNETIC RESONANCE DEVICES

George T. Rado, McLean, Va.; Carmine Vittoria, Bowie, Md., and James M. Ferrari, Springfield, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 20, 1984, Ser. No. 684,207
Int. Cl.[4] H01P *1/19*
U.S. Cl. 333—157 **14 Claims**

1. An apparatus for changing the phase of a microwave signal comprising:
a microwave cavity
means for producing an axial magnetic field inside the microwave cavity;
a sample, having an anistropy field H_a, that exhibits the magneto-electric effect which allows for changes in the anistropy field H_a of the sample in response to a voltage applied across the sample, said sample being loaded inside said cavity such that said sample is located in the magnetic field produced by said magnetic field producing means;
means for biasing said sample so a voltage difference will lies across said sample; and



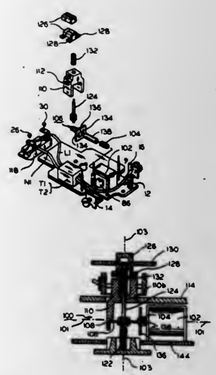
means for coupling the microwave signal to said cavity so that said sample in said cavity will absorb the microwave signal and then reemit the microwave signal with a phase shift through said coupling means, the phase shift of the reemitted microwave signal being determined by the voltage induced by the biasing means on the sample.

4,574,260

SNAP ACTING SOLENOID OPERATED RESET LATCH MECHANISM

Terry E. Franks, Leicester, N.C., assignor to Square D Company, Palatine, Ill.

Filed Dec. 14, 1983, Ser. No. 561,607
Int. Cl.[4] H01H *83/02, 73/06*
U.S. Cl. 335—18 **18 Claims**



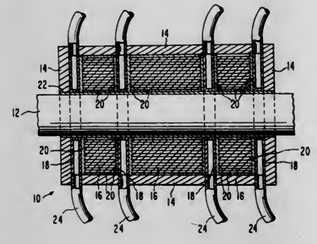
1. A trip free snap acting switch comprising:
a movable contact carrier
movable contacts carried by the carrier and movable into engagement with stationary contacts when the carrier is moved in a first direction to a first position and movable out of engagement with the stationary contacts when the carrier is moved from the first position in a second direction that is opposite the first direction from the first position to a second position,
a movable actuator
a pair of over center springs positioned between the carrier and the actuator for moving the carrier from the second position to the first position with a snap action movement when the actuator is moved in the second direction to a first actuator position and for moving the carrier from the first position to the second position with a snap action movement when the actuator is moved in the first direction to a second actuator position,
an operating button and stem member movable between a reset position and a tripped position,
a spring positioned between the stem member and a support constantly urging the stem member in the second direction toward the tripped position,
a movable latch member having a sliding engagement with the stem member and an abutting engagement with the actuator for releasably maintaining the actuator at the second position and the stem member at the reset position when the latch member is at a reset position and permitting movement of the actuator to the first position and the stem member to the tripped position when the latch member is at a tripped position,
and means including a slotted plate and a solenoid for selectively maintaining the latch member at its reset and tripped positions.

4,574,261

BAKEABLE ELECTROMAGNETS

Ronald R. Cochran, Mountain View, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Aug. 23, 1985, Ser. No. 768,884
Int. Cl.[4] H01F *5/00*
U.S. Cl. 335—299 **8 Claims**



1. A bakeable electromagnet assembly comprising:
a coil of metal foil suitable for baking at 500° C. successive layers of said metal foil being insulated by Kapton film,
at least two cooling plates of high thermal conductivity material suitable for baking at 500° C. adapted to be connected to a source of cooling fluid,
an external shell of material suitable for baking at 500° C.,
a linear of material suitable for baking at 500° C., said coil and cooling plates being contained within said external shell and said liner, and
a powder of high thermal conductivity and low electrical conductivity between said cooling plates and said coil and filling any void within the assembly whereby to insulate said coil and conduct heat away from said coil.

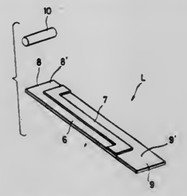
4,574,262

LAMINATION-WOUND CHIP COIL AND METHOD FOR MANUFACTURING THE SAME

Yoshikazu Hamazawa, Yao; Tatsuro Hirai, Neyagawa; Tunenobu Horikoshi, and Tomio Ishida, both of Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 8, 1981, Ser. No. 328,636
Claims priority, application Japan, Dec. 9, 1980, 55-177195[U]
Int. Cl.[4] H01F *15/10, 17/04*
U.S. Cl. 336—192 **8 Claims**

1. A lamination-wound chip coil comprising:
(a) a winding core made of a first magnetic material having the capacity to shrink when subjected to sintering;
(b) a roll of laminate consisting of an elongated magnetic sheet and a conductive strip deposited on said magnetic sheet, said magnetic sheet comprising a second magnetic material having the capacity to shrink when subjected to sintering, said second magnetic material having a greater capacity to shrink than said first magnetic material, said laminate being rolled up around said winding core so as to place said winding core within the roll laminate, said roll laminate and winding core therein being sintered together forming an integral sintered body, said sintered magnetic sheet being shrunk to a greater extent than said sintered



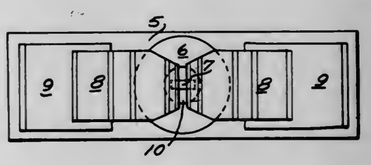
winding core, whereby, a winding tightening pressure occurs between said roll laminate and said winding core, said conductive strip having first and second ends which are respectively positioned at both sides of said magnetic sheet so that said first and second ends are exposed at both sides of the rolled up laminate, and together with said winding core forming an integral sintered body; and
(c) first and second terminal electrodes respectively connected to the both sides of said sintered body at said first and second ends of said conductive strip.

4,574,263

INFRARED RADIATION DETECTOR

Kevin C. Liddiard, Fairview Park, Australia, assignor to The Commonwealth of Australia, Canberra, Australia

PCT No. PCT/AU81/00130, § 371 Date May 21, 1982, § 102(e) Date May 21, 1982, PCT Pub. No. WO82/01066, PCT Pub. Date Apr. 1, 1982
Continuation of Ser. No. 387,852, May 21, 1982, abandoned.
This PCT application Sep. 17, 1981, Ser. No. 742,365
Claims priority, application Australia, Sep. 24, 1980, PE5725
Int. Cl.[4] H01L *31/08*
U.S. Cl. 338—18 **17 Claims**



1. An infrared radiation detector comprising
(a) a substrate formed of a stable material such as an aluminum oxide ceramic, a glass, a metal having an electrically insulating surface, or a silicon slice, said substrate having a hole therethrough;
(b) a pair of bonding pads spaced apart one on each side of the said hole;
(c) a pellicle having a thickness less than 50 nm to have a low heat retaining capacity and high thermal resistance formed of an insulating or semiconductor material selected from the group consisting of aluminium oxide, silicon dioxide, silicon monoxide, silicon nitride, cryolite, germanium, and silicon, positioned to span the said aperture;
(d) a detector comprised of an essentially straight electrical resistance element fixed on the said pellicle to be posi-

tioned over the said hole, and comprising an ultrathin infrared-absorbing film less than 10 nm thick selected to form both the absorber of infrared energy and a resistance element and selected from the group consisting of nickel, palladium, platinum and iridium such metal being selected to have a low heat retaining capacity and high thermal resistance; and

(e) a pair of thin-film conductive contacts connecting opposite sides of the said detector element to the said bonding pads.

4,574,264

THIN FILM OXYGEN SENSOR WITH MICROHEATER

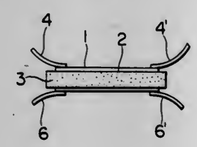
Hideaki Takahashi; Haruyoshi Kondo; Takashi Takeuchi; Kiyoharu Hayakawa, and Hideaki Muraki, all of Aichi, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi, Japan

Filed Nov. 15, 1983, Ser. No. 552,201

Claims priority, application Japan, Nov. 17, 1982, 57-200390

Int. Cl.⁴ H01L *7/00*

U.S. Cl. 338—34 **5 Claims**



1. A thin film oxygen sensor for furnishing an output signal indicating whether the excess air factor is larger or smaller than 1, said sensor comprising:

a substrate having opposite surfaces;

a sensor portion on one of said surfaces of said substrate and including an oxide semiconductor;

a microheater on the opposite said surface of said substrate; and

a porous catalyst layer on said sensor portion and having a thickness and an average pore diameter such that the ratio of said thickness to said average pore diameter fails within the range of 50 to 3000,

whereby non-combusted components are combusted within said porous catalyst layer thereby furnishing said output signal stably and accurately.

4,574,265

SYSTEM FOR MONITORING THE SENSOR RESPONSIVE TO A PERIODIC CONDITION IN AN INTERNAL COMBUSTION ENGINE

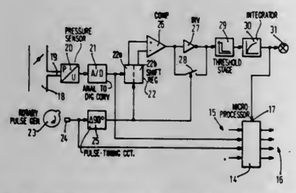
Günther Kaiser, Stuttgart, and Werner Nitschke, Ditzingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Apr. 4, 1983, Ser. No. 481,859

Claims priority, application Fed. Rep. of Germany, Apr. 3, 1982, 3212561

Int. Cl.⁴ B60Q *1/00*

U.S. Cl. 340—52 R **7 Claims**



1. System for monitoring a sensor of an internal combustion machine when the sensor is responsive to a physical magnitude that varies periodically in step with the operating rhythm of the engine, comprising:

a transducer included in said sensor for producing an electrical output signal representative of said periodically varying physical magnitude;

a timing device (**25**) for periodically sampling said transducer output signal at intervals equal to an odd multiple, including unity, of one half of the period of a cycle of said periodic physical magnitude (P_M) and for thereby producing a sequence of output pulses representative of the magnitudes of time samples of said transducer output signals;

means (**22, 26**) for continuously measuring the difference between the magnitudes represented by successive pulses of said sequence and providing an output corresponding thereto, including shift register storage means (**22**) having an input connected to the pulse output of said timing device (**25**) and and comparison means (**26**) connected to said storage means;

means (**27,28**) for compensating for the alternating reversals of the sign of the differences measured by said difference measuring means (**26**) in successive difference measurements, and thereby providing an output signal representative of the absolute value of successive differences measured by said difference measuring means (**26**), and

means for comparing said absolute value output signal with a reference signal of predetermined value, for producing a warning signal when said absolute value signal persistently remains smaller than said reference signal.

4,574,266

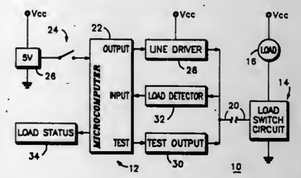
ELECTRICAL LOAD MONITORING SYSTEM AND METHOD

Richard J. Valentine, Mesa, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 13, 1983, Ser. No. 503,961

Int. Cl.⁴ B60Q *1/00*; G08B *29/00, 21/00*

U.S. Cl. 340—52 F **4 Claims**



1. A method for detecting an electrical condition of a remote electrical load connected to a source voltage line comprising the steps of:

coupling said load to a common voltage line by means of a load switching circuit having a drive line input thereto;

connecting a load monitor circuit at a drive line output thereof to said drive line input of said load switching circuit by means of a drive line;

providing a test signal at said drive line output; and

detecting a response from said load switching circuit on said drive line in response to said test signal.

4,574,267

TIRE PRESSURE WARNING SYSTEM

Trevor O. Jones, Shaker Heights, Ohio, assignor to TRW Inc., Cleveland, Ohio

Continuation of Ser. No. 375,699, May 6, 1982, abandoned. This application Jun. 14, 1985, Ser. No. 744,893

Int. Cl.⁴ B60C *23/00*

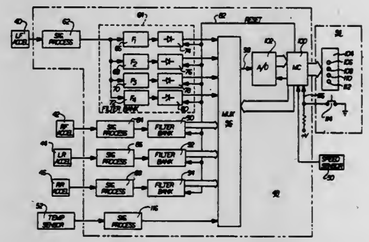
U.S. Cl. 340—58 **15 Claims**

1. Apparatus for detecting changes in inflation pressure of a tire on a vehicle, said apparatus comprising:

means for generating an electric signal indicative of vertical accelerations experienced by said tire, said accelerations exhibiting a resonant frequency dependent upon inflation pressure of said tire;

means for determining a first value of the resonant frequency experienced by said tire at a first time and for determining a second value of the resonant frequency experienced by said tire at a second time, both determined from said generated electric signal indicative of the vertical accelerations experienced by said tire;

means for storing said determined first value of the resonant frequency experienced by said tire;



comparing means for comparing said determined second value of the resonant frequency experienced by said tire with said stored determined first value of the resonant frequency experienced by said tire and for generating a signal indicative of a difference therebetween; and

alarm means responsive to said comparing means for providing an alarm to a driver when said signal generated by said comparing means indicates there is a difference between said stored determined first value of the resonant frequency and said determined second value of the resonant frequency greater than a predetermined amount.

4,574,268

THEFT WARNING SYSTEM

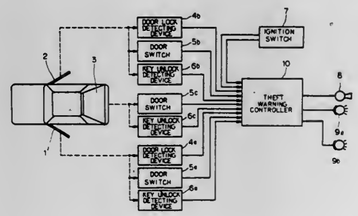
Kenichi Ohnishi, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Feb. 22, 1985, Ser. No. 704,279

Claims priority, application Japan, May 22, 1984, 59-102839

Int. Cl.⁴ B60R *25/04*; E05B *45/06*

U.S. Cl. 340—64 **11 Claims**



11. A theft warning system for use in a vehicle having a plurality of doors with door lock devices, comprising:

an ignition switch having an open and a closed position and generating a signal indicating whether it is open or closed;

a plurality of door switches, one for each of said doors, each said switch generating a signal indicating when its respective door is open;

at least one detector for generating a signal when at least one of said door lock devices is unlocked;

a plurality of key unlock detectors, one for each of said door lock devices, each said door unlock detector generating a signal when its respective door lock device is unlocked by use of a door key;

a programmed microprocessor receiving the signals generated by said door switches, said detectors, said door unlock detectors and said ignition switch, for setting a theft detecting condition when a last of said doors is closed by an operator outside of said vehicle while all of said door lock devices are maintained in a locked condition, and for generating a theft warning signal when a door is subsequently opened or unlocked without use of a door key; and

means for sounding a horn of said vehicle and flashing headlights and taillights of said vehicle responsive to said theft warning signal.

4,574,269

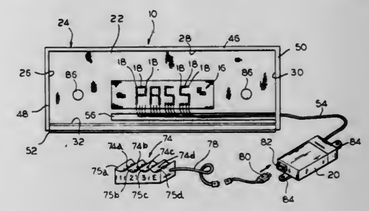
VEHICLE COMMUNICATOR

Gregory R. Miller, 3831 Thyme Dr., #4, Rockford, Ill. 61111

Filed Apr. 10, 1985, Ser. No. 721,882

Int. Cl.⁴ B60Q *1/00*

U.S. Cl. 340—97 **24 Claims**



1. A visual communicator for a rear window of a vehicle comprising:

semi-transparent means adapted to be disposed in said rear window of said vehicle for viewing from outside of said vehicle, said semi-transparent means having a degree of transparency accommodating normal use of an inside rearview mirror of said vehicle by a driver of said vehicle;

a message display unit including a plurality of light emitting diodes arranged in a matrix, said light emitting diodes comprising at least a portion of semi-transparent means and being selectively energizable to emit light, said matrix being disposed in a limited discrete portion of said rear window;

a message control unit for selectively energizing said light emitting diodes, said message control unit being operationally interconnected to said light emitting diodes and being programmed to energize said light emitting diodes in any one of a plurality of preselected patterns, said preselected patterns forming messages for viewing from outside of said vehicle; and

means for selectively actuating said message control unit.

4,574,270

ANALOG-TO-DIGITAL CURRENT CONVERTER

Rudy J. van de Plassche, Sunnyvale, Calif., assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 27, 1983, Ser. No. 498,617

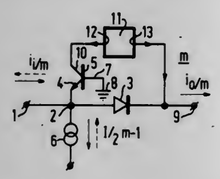
Claims priority, application Netherlands, Jun. 8, 1982, 8202301

Int. Cl.⁴ H03K *13/02*

U.S. Cl. 340—347 AD **18 Claims**

1. An analogue-to-digital current converter comprising n stages which each supply one bit and are arranged in series with an input of a stage being connected to an output of a preceding stage, a node in each stage being connected (1) to the input of that stage, (2) to one end of a first diode, whose other end is connected to the output of that stage, (3) to the

emitter of a first transistor in common-base arrangement, and (4) to a reference-current source connected in such a way that for an input current at the input a difference current is produced at the node, said emitter carrying the difference current if said current has the one current direction and the first diode carrying the difference current if said current has the other



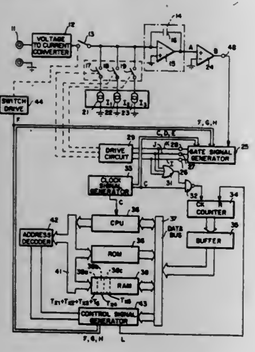
current direction, characterized in that a current-mirror circuit is connected to the collector of the first transistor and to the output of that stage so that said output carries an output current of a value substantially equal to that of the collector current of the first transistor and in a direction that corresponds to the forward direction of the first diode.

4,574,271

MULTI-SLOPE ANALOG-TO-DIGITAL CONVERTER

Eiichi Yada, Gyoda, Japan, assignor to Takeda Riken Co., Ltd., Tokyo, Japan

Filed Nov. 9, 1982, Ser. No. 440,411
Claims priority, application Japan, Nov. 9, 1981, 56-179916
Int. Cl.⁴ H03K *13/02, 13/20*
U.S. Cl. 340—347 NT **28 Claims**



1. A converter for converting an input analog signal to a corresponding digital value, comprising

a clock for providing clock pulses,

an integrator for integrating signals input thereto and for providing an output corresponding to the integrated value,

a first switch for inputting said input analog signal to said integrator during a first time period of predetermined length corresponding to a respective number of said clock pulses,

a first reference signal and a second switch for inputting said first reference signal to said integrator together with said inputting of said analog input signal, said first reference signal having polarity opposite that of said input analog signal and a magnitude that is preselected to be larger than said input analog signal,

a comparator for comparing said output of said integrator with a first reference level, and for providing a corresponding output indicating whether said output of the integrator is larger or smaller than said first reference level,

means for driving said second switch to provide said inputting of said first reference signal to said integrator for a predetermined number of second time periods during said first time period, wherein the length of each said second time period has a predetermined maximum value and a shorter value depending on the occurrence of a change in the output of said comparator and the occurrences of said clock pulses,

counting means for counting said clock pulses during said second time periods,

calculating means for computing the digital value corresponding to the input analog signal based on information including the count values of said counting means during said second time periods,

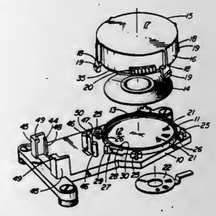
wherein the occurrence of each said shorter value of each said second time period effectively increases the range of the magnitude of the input analog signal that can be converted to said corresponding digital value, and the completion of the computing of the input value corresponding to the digital analog signal involves returning the integrated value output of said integrator to a further reference level.

4,574,272

TONE RINGER FOR TELEPHONE SETS AND OTHER TELECOMMUNICATIONS APPARATUS

Michael Brown, Nepean, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Oct. 13, 1982, Ser. No. 434,117
Int. Cl.⁴ G08B *3/00;* **H01L** *41/04*
U.S. Cl. 340—384 R **6 Claims**



1. A tone ringer comprising:

a base member having a bottom surface and a peripherally extending ledge spaced from said bottom surface;

a circular vibratory element resting at its periphery on said ledge;

a top housing having a top surface and a downwardly extending rim;

said rim having an axially extending portion extending downwardly at the inner periphery of the rim, said axially extending portion including a downwardly extending rib, said rib resting on the periphery of said vibratory element;

a plurality of clamping members positioned around said top housing and extending down from the bottom edge of said rim; a plurality of wedging members extending upward from said base housing, a wedging member aligned with each clamping member; an upwardly facing surface on each clamping member and a downwardly facing surface on each wedging member, at least one of the plurality of upward facing surfaces and the plurality of downward facing surfaces being inclined;

each one of said upwardly facing surface adapted to engage under a respective one of said downwardly facing surfaces, relative rotation of top housing and base housing member engaging said upwardly facing surfaces and said downwardly facing surfaces and forcing said to housing

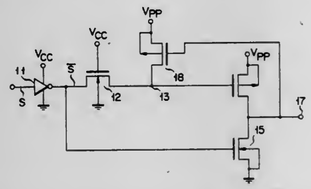
down and deforming said rib to claim said vibratory element on to said ledge.

4,574,273

CIRCUIT FOR CHANGING THE VOLTAGE LEVEL OF BINARY SIGNALS

Shigeru Atsumi, and Sumio Tanaka, both of Tokyo, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Nov. 4, 1983, Ser. No. 548,783
Claims priority, application Japan, Nov. 12, 1982, 57-198596
Int. Cl.⁴ H03K *17/10, 19/094*
U.S. Cl. 307—475 **3 Claims**



1. A circuit for changing a signal voltage level, comprising:

input means for receiving an input binary signal;

gate means, connected to said input means, for generating an output binary signal corresponding to the input binary signal;

a first reference terminal to which a high voltage, higher than the high level of said input binary signal, is supplied;

a second reference terminal to which a constant voltage lower than the high voltage and equal to or higher than the high level of said input binary signal is supplied;

a disconnecting n-channel MOS transistor having a current path with two ends, one end of which is connected to said gate means, and a gate which is connected to said second reference terminal;

inverting means, having a first input terminal which is connected to the other end of the current path of said disconnecting n-channel MOS transistor and a second input terminal which is connected to said gate means, for converting the output binary signal of said gate means to a higher-volage binary signal, said inverting means having an output terminal for providing the converted higher-voltage binary signal; and

feedback means, comprising a p-channel MOS transistor having a source connected to the first reference terminal, a drain connected to said first input terminal of said inverting means, and a gate connected to said output terminal of said inverting means, for causing the voltage level at said first input terminal of said inverting means to be set at said high voltage when the voltage of the converted higher-voltage binary signal reaches a given voltage level,

said disconnecting n-channel MOS transistor electrically isolating said gate means and said second input terminal of said inverting means from the high voltage applied at said first input terminal of said inverting means.

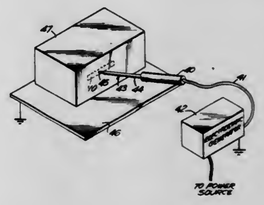
4,574,274

NON-CONTACT ELECTROSTATIC DEACTIVATOR

George G. Pinneo, Fort Lauderdale, Fla., assignor to Sensormatic Electronics Corporation, Boca Raton, Fla.

Filed Aug. 9, 1982, Ser. No. 406,336
Int. Cl.⁴ G08B *13/24*
U.S. Cl. 340—572 **10 Claims**

1. Apparatus for deactivating a surveillance tag, the detection of which by an interrogation station is dependent upon the condition of a semiconductor contained in said tag, said apparatus comprising an electrode, a source of electrostatic energy coupled thereto for energizing said electrode, and means for establishing an electric current return path to said source, said electrode and means being disposed for association with said surveillance tag such as to cause an electrostatic discharge



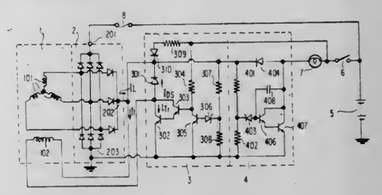
between said electrode and means through said semiconductor in said tag sufficient to degrade said semiconductor and render said tag undetectable by said interrogation station.

4,574,275

BATTERY CHARGE INDICATING CIRCUIT

Mitsuharu Morishita, and Shinichi Kouge, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 21, 1983, Ser. No. 477,541
Claims priority, application Japan, Mar. 23, 1982, 57-47925
Int. Cl.⁴ G08B *21/00*
U.S. Cl. 340—636 **1 Claim**



1. A circuit for indicating the state of a battery (5) charged by an alternator (1) having a field winding (102) and at least one armature winding (101), comprising:

(a) a full wave rectifier (2) for rectifying the output voltage of an alternator, including a first supply terminal (201) connected with a battery for charging the battery, and a second supply terminal (202) connected with a field winding for exciting the field winding;

(b) a series combination of a diode (404) for preventing reverse charging current and an indicating lamp (7) for showing the charging state of said battery connected between said second supply terminal and said battery;

(c) a voltage regulator (3) for maintaining the output voltage at said first and second supply terminals at a first predetermined value most suitable for charging said battery by controlling the current of said field winding;

(d) switching means including first and second transistors forming a Darlington circuit in which a collector-emitter path of said first transistor (407) is connected between the junction of said diode and said indicating lamp and ground, and a collector-emitter path of said second transistor (406) is connected between a collector and a base of said first transistor;

(e) a voltage divider including first and second resistors (401, 402) connected in series for dividing the output voltage at said second supply terminal of said full wave rectifier;

(f) a Zener diode (403) connected between a junction of said voltage divider resistors and a base of said second transistor and conductive when said output voltage reaches a second predetermined voltage higher than said first predetermined voltage for activating said switching means to

form a current path including said indicating lamp and said battery; and

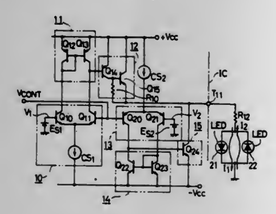
(g) means for maintaining the indicating lamp steadily and brightly illuminated upon an interruption of the charging connection between the first rectifier supply terminal and the battery rather than dimly flickering due to the cyclic conduction and non-conduction of the Zener diode, said maintaining means comprising a capacitor (408) connected between the collector and the base of said second transistor to be charged when said Zener diode conducts and discharged when said Zener diode ceases to conduct to thus maintain said switching means conductive for a predetermined period.

4,574,276

INDICATING SYSTEM

Tetsuo Sato, Takasaki, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 8, 1983, Ser. No. 473,211
Claims priority, application Japan, Apr. 16, 1982, 57-62438
Int. Cl.⁴ G08B *21/00*
U.S. Cl. 340—661 **13 Claims**



1. An indicating system comprising:

(a) a first voltage comparator having a first input terminal connected to receive a first reference voltage and a second input terminal connected to receive a control signal;

(b) a second voltage comparator having a first input terminal connected to receive a second reference voltage and a second input terminal connected to receive said control signal;

(c) first output circuit means having an input terminal connected to an output terminal of said first voltage comparator for producing a current of a first polarity at a common output terminal when the voltage level of said control signal is higher than said first reference voltage;

(d) second output circuit means having an input terminal connected to an output terminal of said second voltage comparator for producing a current of a second polarity at said common output terminal when the voltage level of said control signal is lower than said second reference voltage;

(e) a first indicating device having a unidirectional current characteristic, one end of which is connected to said common output terminal so as to allow the current of the first polarity to flow therethrough and to prevent the current of the second polarity from flowing therethrough; and

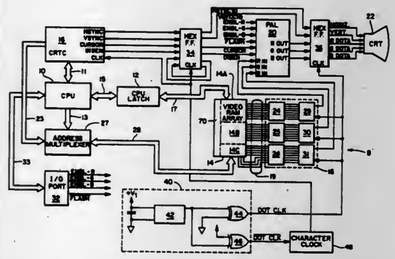
(f) a second indicating device having a unidirectional current characteristic, one end of which is connected to said common output terminal so as to allow the current of the second polarity to flow therethrough and to prevent the current of the first polarity from flowing therethrough.

4,574,277

SELECTIVE PAGE DISABLE FOR A VIDEO DISPLAY

Charles A. Krause, Stevensville, and Babu Rajaram, St. Joseph, both of Mich., assignors to Zenith Radio Corporation, Glenview, Ill.

Filed Aug. 30, 1983, Ser. No. 527,944
Int. Cl.⁴ G09G *1/28*
U.S. Cl. 340—703 **11 Claims**



1. In a raster scanned color video display comprised of a matrix of discrete picture elements, a color control system comprising:

a plurality of memory means each representing a primary color and having a unique storage location for each discrete picture element of said display for the storage of digital memory data signals representative of a respective color component of each of the picture elements of said display;

signal processing means coupled to each of said memory means for reading said digital memory data signals therefrom and for generating a plurality of ENABLE signals each corresponding to a respective one of said memory means in accordance with operating instructions stored in said signal processing means;

control means coupled to said signal processing means and to said plurality of memory means and responsive to said operating instructions for generating timing signals synchronized with the raster scan of said video display; and

circuit means coupled to each of said memory means, said signal processing means, said control means and to said video display and responsive to said ENABLE signals generated by said signal processing means for providing said digital memory data signals from each of said memory means to said display means in accordance with operating instructions stored in said signal processing means and in synchronism with said timing signals from said control means wherein the digital memory data signals from one of said memory means is not displayed if a corresponding ENABLE signal is not received from said signal processing means.

4,574,278

VIDEO SYNTHESIZER

Steven P. Apelman, Long Island, N.Y., assignor to Ragen Data Systems, Inc., Central Islip, N.Y.

Filed May 19, 1983, Ser. No. 496,192
Int. Cl.⁴ G09G *1/00*
U.S. Cl. 340—722 **31 Claims**

1. A video synthesizer for an oscilloscope comprising:

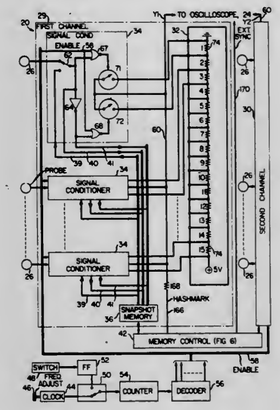
a. means for establishing a set of voltage levels, the voltage levels in said set being distributed in groups wherein each group has a maximum voltage level and a minimum voltage level;

b. means for sequentially combining individual signals of a set of input signals with respective ones of said voltage levels to provide a sequence of combined signals, said combining means including, means for sampling the signals of said set of input signals, and means for substituting a range of said voltage levels in a group for a range of voltage levels in a corresponding sampled input signal;

c. means for coupling said combined signals to an input terminal of an oscilloscope; and

d. means for adjusting a repetition frequency of said combining means to be a nonintegral multiple of a repetition frequency of said set of input signals; and wherein

e. the range of voltage levels in one group is different from the range of voltage levels in each other one of said groups for presenting simultaneously representations of said input signals in a spaced-apart format on said oscilloscope.

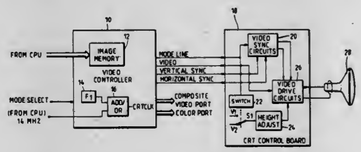


4,574,279

VIDEO DISPLAY SYSTEM HAVING MULTIPLE SELECTABLE SCREEN FORMATS

Kenneth B. Roberts, Houston, Tex., assignor to Compaq Computer Corporation, Houston, Tex.

Filed Nov. 3, 1982, Ser. No. 438,975
Int. Cl.⁴ G09G *1/16*
U.S. Cl. 340—731 **16 Claims**



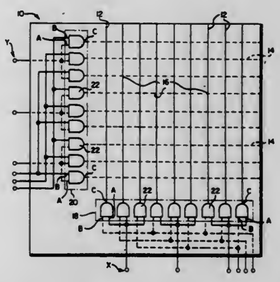
1. A video display system responsive to mode select signals for displaying alphanumeric characters or graphic data in a display field of a video CRT screen having a height adjustment, the CRT operating from horizontal and vertical scan frequencies, the height of the display field determined by the screen format selected where the selected screen format includes a number of horizontal scan lines, the system including a means responsive, respectively, to first and second mode select signals for selecting a first screen format having a first number of horizontal scan lines and a second screen format having a second number of horizontal scan lines, where the height and width of the display field for both said first and second screen formats is the same, and where the first and second screen formats are generated, respectively, from first and second horizontal scan frequencies, said means adapted to generate said alphanumeric characters in either of said selected screen formats where said displayed characters are substantially identical in both said formats.

4,574,280

GAS DISCHARGE LOGIC DEVICE FOR USE WITH AC PLASMA PANELS

Larry F. Weber, Champaign, Ill., assignor to The Board of Trustees of The University of Illinois, Urbana, Ill.

Filed Jan. 28, 1983, Ser. No. 462,029
Int. Cl.⁴ G09G *3/22, 3/10*
U.S. Cl. 340—771 **14 Claims**



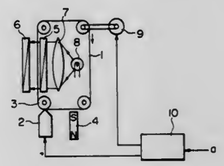
1. An AC gas discharge logic element for generating high voltage pulses to address a plasma panel comprising spaced dielectric members with associated input electrodes (A & B) and an output electrode (C) which is adapted for connection to the plasma panel, the electrodes isolated by said dielectric members from a dischargeable gaseous medium, and said dielectric members, electrodes and gaseous medium responding to signals applied to said input electrodes (A & B) for discharging said gaseous medium and to form a dielectric voltage level at the input electrodes (A & B) after discharge which is different than the initial dielectric voltage level at the output electrode (C) prior to said discharge, thereby enabling the subsequent voltage level of the output electrode (C) after said discharge to approach the formed dielectric voltage level at the input electrodes (A & B).

4,574,281

IMAGE DISPLAY DEVICE

Haruhiko Moriguchi; Yoshiki Kikuchi, and Takashi Ohmori, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jul. 22, 1982, Ser. No. 401,045
Claims priority, application Japan, Jul. 24, 1981, 56-115167
Int. Cl.⁴ G09G *3/00*
U.S. Cl. 340—783 **8 Claims**



1. An image display device, comprising:

a magnetic film belt including a magnetizable recording medium,

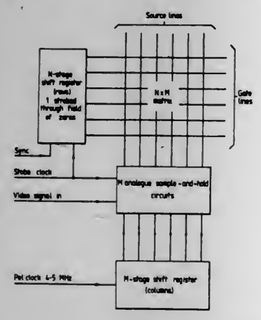
a thermal head for selectively and locally heating desired portions of said recording medium to a temperature close to the Curie point or compensation point in response to a video signal to form a magnetization distribution on said recording medium,

a light source,

a polarizer for polarizing light from said light source,

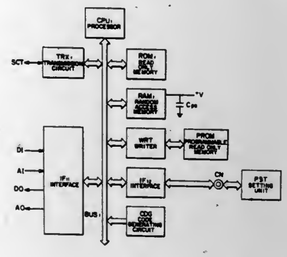
means for applying said light thus polarized to said magnetic film belt,
an analyzer arranged in the optical path of light output from said belt for obtaining an image corresponding to said video signal, and
means for moving said belt past said thermal head and to said applying means.

4,574,282
COHERENT LIGHT IMAGE GENERATION
William A. Crossland, Harlow; Jack R. Peters, Dunmow; Peter W. Ross, and Peter J. Ayliffe, both of Bishop's Stortford, all of England, assignors to International Standard Electric Corporation, New York, N.Y.
Filed Mar. 18, 1983, Ser. No. 476,649
Int. Cl.⁴ G09G *3/36*
U.S. Cl. 340—784 **12 Claims**



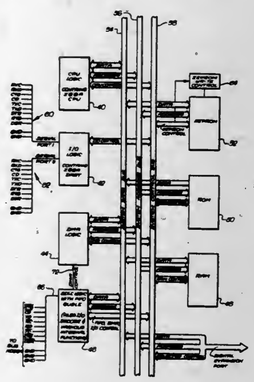
1. A coherent light imaging arrangement comprising:
means for generating a coherent light image, including,
at least one reflective mode liquid crystal display cell having a liquid crystal layer that is sandwiched between an electroded transparent front plate and a backing plate which includes a semiconductor layer provided with a matrix array of semiconductor gates and a matrix array of reflective electrodes situated at said liquid crystal layer to define respective picture elements in the latter and individually connected to said gates to be addressed thereby, and
a laser operative for directing coherent radiation on said reflective mode liquid crystal display cell; and
means for driving said generating means, including
a drive circuitry connected with said gates and operative for so processing an input video signal as to modulate the optical properties of selected ones of said picture elements in dependence on their positions by developing a selected electric field distribution between the electroded front plate and the individual electrodes of the backing plate in accordance with the information contents of said input video signal, said drive circuitry being operative for repetitively addressing each of the reflective electrodes of the matrix array via the associated gate, and, after each addressing, to close the gate for a predetermined period, and then reopen at least once to discharge a reflective electrode and reclose the gate before refreshing said reflective electrode with its next addressing with data.

4,574,283
DATA TRANSMISSION SYSTEM FOR USE IN AN AIR CONDITIONING CONTROL APPARATUS
Mutsumi Arakawa, Machida; Junichi Ueno, Ayase; Yozo Kawaguchi, Sendai; Norio Shimura, Kamakura; Shoichi Matsunaga, Hatano, and Kiyoshi Fukaya, Hiratsuka, all of Japan, assignors to Yamatake Honeywell, Japan
Filed Dec. 20, 1982, Ser. No. 451,648
Claims priority, application Japan, Dec. 22, 1981, 56-207442
Int. Cl.⁴ H04Q *9/00*; F24F *3/00*
U.S. Cl. 340—825.08 **14 Claims**



1. A data transmission system for use in an air conditioning control apparatus, said system being composed of a main controller and a plurality of terminal controllers for successively transmitting data to and receiving data from said main controller in response to polling signals from said main controller, said polling signals transmitted in a polling sequence, characterized in that a finally polled one of said terminal controllers transmits an end code indicating that it is the last terminal controller in the polling sequence, said main controller detecting completion of transmission of data to and reception of data from all of the terminal controllers in response to said end code.

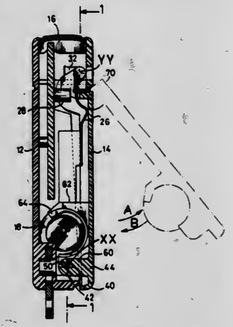
4,574,284
COMMUNICATION BUS INTERFACE UNIT
David G. Feldman, El Segundo, and Hubert M. France, Jr., Palos Verdes Estates, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.
Filed Jan. 26, 1983, Ser. No. 461,282
Int. Cl.⁴ H04Q *9/00*; H04J *6/02*
U.S. Cl. 340—825.52 **18 Claims**



1. For use in a local-area computer network having a communication bus and a plurality of user devices connected to

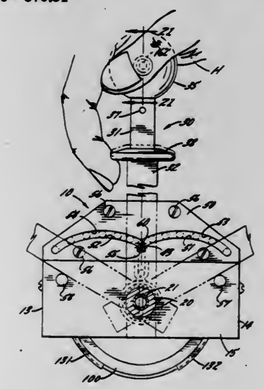
transmit and receive information over the bus, a bus interface unit comprising:
means for connecting said bus interface unit to a plurality of user devices, each of which is capable of transmitting information to or receiving information from said bus interface unit;
means for connecting said bus interface unit to the communication bus through a plurality of logical ports; and
logical switching means for each user device, switchable between a command mode in which information from the user device is not passed to the bus, and a connected mode in which information from the user device is passed to the bus through its corresponding logical port, and information received from the bus through the same logical port is passed to the user device; and
wherein said logical switching means is also switchable from the connected mode, in which the user device is logically connected to a remote device through the bus, to a talk mode, in which information entered into the user device is automatically transmitted to the connected remote device when a special character is encountered in the information, and information entered into the connected remote device is transmitted to said bus interface unit and is automatically output to the user device when a special character is encountered in the information.

4,574,285
REMOTE CONTROL DEVICE HAVING A PIVOTING CASE COVER
Jacques Bascou, Maule, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt, France
Filed Feb. 17, 1984, Ser. No. 581,100
Claims priority, application France, Feb. 17, 1983, 83 02554
Int. Cl.⁴ G08C *19/00*; H04Q *9/00*
U.S. Cl. 340—825.69 **8 Claims**



1. An emitter for a remote control device for a locking element, comprising:
a case, a portion of said case forming a cover, said cover being hinged on said case around a first axis of articulation located in the vicinity of a first end of said cover, said cover also being hinged on said case around a movable second axis of articulation parallel to said first axis of articulation and located in the vicinity of a second end of said cover;
a direct current power source mounted in said case;
means mounted in said case for generating a coded message;
electric contact means in said case, said contact means being positioned in said case so as to be actuated by means associated with said second end of said cover upon said cover pivoting about said first axis;
means operatively connected to said direct current power source, said contact means and said means for generating a coded message, for emitting said coded message in response to actuation of said contact means;
means for biasing said second axis of articulation to a position such that said contact means is not actuated by said means associated with said second end of said cover; and
locking and unlocking means for selectively fixing said first axis of articulation;
whereby when said first axis of articulation is fixed by said locking and unlocking means, said cover can pivot about said first axis and in opposition to said means for biasing for actuating said contact means, and whereby when said first axis of articulation is not fixed by said locking and unlocking means, said cover can pivot about said second axis of articulation to open said cover.

4,574,286
CONTROLLER OF MAGNETICALLY SATURATED TYPE HAVING PROGRAMMED OUTPUT CHARACTERISTIC
Herman J. Andresen, 726 Carriage Hill, Glenview, Ill. 60025
Filed Feb. 28, 1983, Ser. No. 470,165
Int. Cl.⁴ G08C *19/06*; H01H *19/00*; G05G *9/00*
U.S. Cl. 340—870.31 **26 Claims**



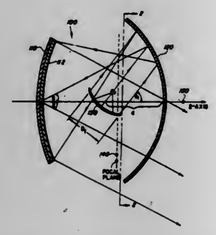
1. In a controller for producing a variable electrical output signal in response to manual manipulation, the combination comprising a frame, a carrier, means for guiding the carrier on the frame for relative forward and reverse movement with respect to the frame, a pair of tubes made of magnetically saturable material, each tube having an elongated sheet-like permanent magnet arranged in parallel proximity, the magnet being rigidly mounted on the carrier and both of the tubes being rigidly secured to the frame, the magnet having a pair of active angled edges separated from one another, the angled edges extending generally in the length dimension of the magnet, the tubes being so oriented and so spaced from one another that they simultaneously, transversely intersect the respective angled edges thereby dividing each tube into a saturated portion and an unsaturated portion, the tubes each being engaged by at least one turn of wire threaded therethrough, a detector circuit having its input connected to the turns of wire and having means for producing an electrical output signal in accordance with the differential magnetic saturation of the tubes, the angled edges of the magnet being so acutely angled with respect to the direction of relative movement that upon such movement the tubes are each progressively engaged by successive portions of the respective angled edges and, depending upon the direction of movement, one of the tubes is progressively more saturated in its longitudinal dimension while the remaining tube is progressively less saturated in its longitudinal dimension thereby to produce a corresponding change in the output signal of the detector circuit, the acute angle being sufficiently shallow so that the active range of relative movement between the carrier and the frame substantially exceeds the length dimension of the tubes.

4,574,287

FIXED APERTURE, ROTATING FEED, BEAM SCANNING ANTENNA SYSTEM

William M. Waters, Millersville, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 4, 1983, Ser. No. 472,330
Int. Cl.⁴ H01Q *19/195*
U.S. Cl. 343—756 **7 Claims**



1. A beam scanning antenna system comprising:
a fixed primary reflector for collimating an incident beam of electromagnetic energy, said primary reflector having a generally spherical curvature, a reflecting surface on its concave side, a focal plane and an axis through the vertex of the spherical curvature of said primary reflector, said axis being normal to a plane determined by a circular cross-section of said spherical curvature;
a fixed secondary reflector for collimating an incident beam of electromagnetic energy, said secondary reflector having a generally spherical curvature, a reflecting surface formed of a polarized grid on its concave side, a focal plane, and an axis through the vertex of the spherical curvature of said secondary reflector, said secondary reflector being confocal and coaxial with said primary reflector and being disposed for directing a beam of electromagnetic energy toward the reflecting surface of said primary reflector, and
a rotatable antenna having a surface area smaller than said secondary reflector, said rotatable antenna being disposed for directing a collimated beam of electromagnetic energy toward the reflecting surface of said secondary reflector, whereby a beam of electromagnetic energy emitted by said rotatable antenna will scan the reflecting surface of said secondary reflector.

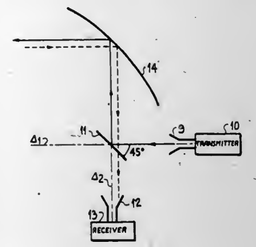
4,574,288

PASSIVE ELECTROMAGNETIC WAVE DUPLEXER FOR MILLIMETRIC ANTENNA

Gilles Sillard, and Michel Baril, both of Paris, France, assignors to Thomson CSF, Paris, France

Filed Aug. 26, 1982, Ser. No. 411,958
Claims priority, application France, Aug. 28, 1981, 81 16467
Int. Cl.⁴ H01Q *19/10*
U.S. Cl. 343—781 P **9 Claims**

1. A passive duplexer for electromagnetic waves, within a radar system comprising a transmitter operating in the millimetric range, a receiver operating in the millimetric range, and an antenna fed by said transmitter and also redirecting electromagnetic signals received from a target to said receiver, comprising:
a first horn adapted to be connected to said transmitter and having a propagation axis Δ_1;
a second horn adapted to be connected to said receiver and having a propagation axis Δ_2 orthogonal to said axis Δ_1; and
plane circular grid means formed by a dielectric disc metallized on one surface thereof for reflecting or passing incident signals depending upon the power level of said incident signals, said grid means being inclined at a 45° angle with respect to said axes Δ_1 and Δ_2, said metallized surface having a network of resonant slots for passing said incident signals each slot including a diode in conducting relation thereacross.

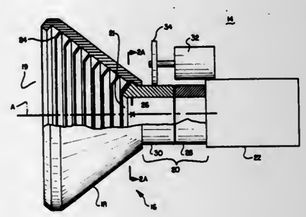


4,574,289

ROTARY SCAN ANTENNA

Albert S. Henderson, Melbourne, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed May 31, 1983, Ser. No. 499,505
Int. Cl.⁴ H01Q *13/02*
U.S. Cl. 343—786 **14 Claims**



1. An apparatus comprising:
a horn antenna having a phase center,
at least one electrically conductive metallic rod-like element located adjacent a wall of said horn antenna at an axial position near said phase center, and
means coupled to said element for rotating said element around said phase center so as to thereby cause the phase center of said horn antenna to also rotate.

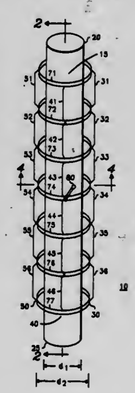
4,574,290

HIGH GAIN VERTICALLY POLARIZED ANTENNA STRUCTURE

Kazimierz Siwiak, Sunrise, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 13, 1984, Ser. No. 570,574
Int. Cl.⁴ H01Q *9/32*
U.S. Cl. 343—827 **8 Claims**

1. A high gain antenna structure for operation over a predetermined range of frequencies about a predetermined center frequency, comprising:
a hollow vertical conductive cylinder having a first radius about a vertical central axis;
an array of vertical radiating elements disposed around said conductive cylinder at a second radius about said central axis, said second radius being larger in magnitude than said first radius;
said vertical radiating elements being arranged in a plurality of vertical columns and having a number N of vertical radiating elements in each column, said vertical columns being arranged symetrically about said axis;
distributing means for supplying electrical energy to each of said vertical radiating elements so that the instantaneous current flows in the same direction in all of said vertical radiating elements, and wherein any horizontal currents flowing in said distribution means are substantially cancelled by out-of-phase horizontal currents; and
input means, coupled to said distributing means and positioned within said hollow vertical conductive cylinder,



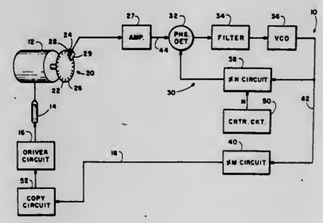
for receiving an electrical signal and supplying said signal to said distributing means;
wherein N is an even number and wherein said distributing means includes at least N−1 ring parallel transmission lines having radius approximately equal to said second radius, and wherein each of said vertical radiating elements includes an upper and a lower end and wherein each adjacent upper and lower end of vertically adjacent vertical radiating elements is coupled to one of said ring parallel transmission lines.

4,574,291

PHASE LOCKED SYNCHRONIZER FOR PRINTER TIMING CONTROL

Guenther W. Wimmer, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Aug. 29, 1984, Ser. No. 645,577
Int. Cl.⁴ G01D *15/18, 15/24*
U.S. Cl. 346—75 **16 Claims**



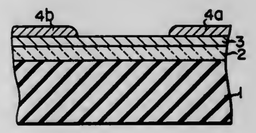
1. An apparatus for generating a trigger signal synchronized with a selectable angular displacement of a rotating object comprising:
a position encoder to monitor the rotation of the rotating object and to produce an output signal proportional to object rotation through a fixed fraction of a revolution,
a frequency multiplier coupled to generate an output signal having a frequency N times the frequency of the position encoder output signal, wherein N is an adjustable number, and
a frequency divider coupled to generate the trigger signal of a frequency comprising a fixed fraction of the frequency of the frequency multiplier output signal, the angular displacement of the rotating object associated with each cycle of the trigger signal being selected by appropriate adjustment of N.

4,574,292

THERMAL HEAD

Osamu Takikawa, Kamakura, and Mitsuo Harata, Kawasaki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 27, 1984, Ser. No. 675,212
Claims priority, application Japan, Jan. 27, 1984, 59-11851; Jun. 26, 1984, 59-130110
Int. Cl.⁴ E01D *15/10;* **H05B** *1/00*
U.S. Cl. 346—76 PH **8 Claims**



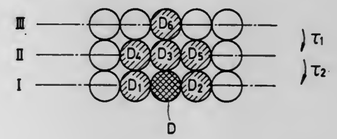
1. A thermal head having a substrate, and a heating resistor of thin film type formed thereon:
wherein said heating resistor is a deposited metal oxide film consisting essentially of ruthenium oxide and an oxide of at least one metal M selected from the group consisting of calcium, strontium, barium, lead, bismuth and thallium, and containing as a main component at least one metal oxide selected from the group consisting of $RuCaO_3$, $RuSrO_3$, $RuBaO_3$, $RuPbO_3$, $RuTlO_{7/2}$ and $RuBiO_{7/2}$, said deposited metal oxide film having an atomic ratio M/Ru of the metal M to ruthenium of 0.6 to 2 and a thickness of 1 micron or less.

4,574,293

COMPENSATION FOR HEAT ACCUMULATION IN A THERMAL HEAD

Toshiharu Inui, and Haruhiko Moriguchi, both of Ebina, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed May 16, 1984, Ser. No. 611,365
Claims priority, application Japan, May 23, 1983, 58-90324; May 23, 1983, 58-90325; May 23, 1983, 58-90326
Int. Cl.⁴ B41J *3/20;* **G01D** *15/10*
U.S. Cl. 364—76 PH **57 Claims**



1. A heat accumulation compensation method for a thermal head having a plurality of heating elements wherein energy to be applied to each heating element is subjected to control

corresponding to heat accumulation state of said each heating element, comprising:

a first step for calculating the heat accumulation state of said each heating element based on the present and past image information of said each heating element and based on present and past image information of heating elements adjacent to each heating element;

a second step for correcting energy applied to said each heating elements in printing the present line according to said calculated heat accumulation state; and

a third step for controlling energy to be applied to said each heating element in printing the present line based on said corrected energy and information representing the thermal head base plate temperature.

4,574,294

RECORD MATERIAL

Kenneth J. Shanton, Beaconsfield, England, assignor to The Wiggins Teape Group Limited, Hampshire, England

Filed Jun. 15, 1984, Ser. No. 621,100

Claims priority, application United Kingdom, Jun. 15, 1983, 8316233

Int. Cl.⁴ B41M *5/16, 5/18, 5/22*

U.S. Cl. 346—210 **10 Claims**

1. Pressure sensitive record material in which the colour forming reaction is produced from a substantially colourless chromogenic material capable of acquiring a positive charge to produce its coloured form and a metal/oxime colour developer capable of engendering the acquisition of a positive charge by the chromogenic material, the chromogenic material and the colour developer being isolated from each other by a pressure sensitive barrier.

4,574,295

CHARGE COUPLED DEVICE HAVING MEANDERING CHANNELS

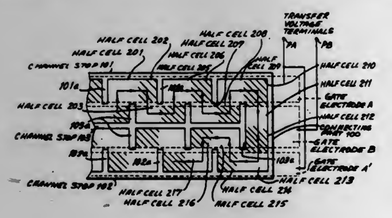
Kunihiro Tanikawa, Akashi, and Osamu Ohtsuki, Kobe, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 963,922, Nov. 24, 1978, which is a continuation of Ser. No. 787,759, Apr. 15, 1977, abandoned. This application Nov. 29, 1984, Ser. No. 676,775

The portion of the term of this patent subsequent to Dec. 31, 2002, has been disclaimed.

Int. Cl.⁴ H01L *29/78;* G11C *19/28*

U.S. Cl. 357—24 **3 Claims**



1. A charge coupled device having a semiconductor substrate and at least two charge transfer routes on the substrate mutually connected to provide a single transfer line bent back on itself, the two charge transfer routes being defined by three spaced parallel band-shaped channel stops, including a central channel stop, formed on said substrate and using in common said central channel stop, said channel stops defining two charge transfer areas therebetween, a plurality of short channel stops alternately extending from each of the band-shaped channel stops toward the center of the charge transfer area, each of the channel stops being a barrier to prevent the transfer of charge, a plurality of cells, each comprising a small area between next-adjacent ones of the short channel stops of a corresponding one of the band-shaped channel stops, said cells being staggered along said charge transfer route, an insulative film covering the charge transfer area, at least three elongated parallel gate electrodes on the insulative film and having transfer voltages applied thereto to induce charge storage sites whereby charges are transferred along said charge transfer route in each channel, a central one of said three gate electrodes commonly covering the cells of said central channel stop of said band-shaped channel stops and being used in common by said two charge transfer routes and another of the gate electrodes commonly covering the cells of an adjacent one of said band-shaped channel stops thereby forming a single directional meander-shaped charge transfer channel in the charge transfer area under a pair of said gate electrodes, said charge coupled device comprising

depletion layer forming means for forming an asymmetrical depletion layer in each of the cells in a regular arrangement to determine a transfer direction of the charge, said depletion layer forming means in said charge transfer routes being arranged in different patterns to provide a reverse transfer direction in each of said routes; and

coupling means between adjacent end cells of said charge transfer routes for permitting forward transfer of the charge, both transfer routes using each one of adjacent band-shaped channel stops of said charge transfer routes, and both charge transfer routes using each adjacent one of said gate electrodes.

4,574,296

GATE TURN-OFF THYRISTOR WITH A CATHODE BASE LAYER HAVING FOUR DISTINCT IMPURITY CONCENTRATIONS

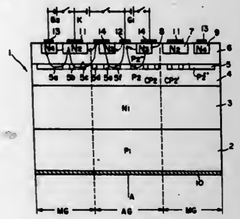
Tetsuro Sueoka, Kawasaki, and Takeharu Kubo, Tokyo, both of Japan, assignors to Kabushiki Kaisha Meidensha, Tokyo, Japan

Filed Jul. 19, 1983, Ser. No. 515,279

Claims priority, application Japan, Aug. 5, 1982, 57-136721

Int. Cl.⁴ H01L *29/74*

U.S. Cl. 357—38 **4 Claims**



1. In a gate turn-off thyristor having an anode A, cathode K, a first gate G_1, a second gate G_2 and a gate current amplifying electrode arranged between the cathode and the first gate, the cathode and the second gate being arranged in a main thyristor portion MG and the first gate and the gate current amplifying electrode being arranged in an auxiliary thyristor portion AG, both the main and auxiliary thyristor portions being formed with a semiconductor device including alternately-different four PNPN semiconductor layers comprised of:

(a) a first P-type layer P_1 having an anode electrode;

(b) a first N-type layer N_1 adjoining said first P-type layer P_1;

(c) a second P-type layer including:

a first-impurity atom concentrations CP_2 and CP_2' layer P_2 both contacting said first N-type layer N_1; and

a second-impurity atom concentration CP_2^- layer P_2^- adjoining said first-impurity atom concentration layer P_2 and under the cathode K and first and second electrodes G_1 and G_2, said second concentration CP_2^- being of lower concentration than concentrations CP_2 and CP_2'; and

(d) a plurality of second N-type layers formed in the layer P_2^- and including a layer N_2 formed under the cathode, a layer N_3 formed under the gate current amplifying electrode, wherein said first-impurity atom concentration layer P_2 includes an impurity atom concentration CP_2' formed in the main thyristor portion MG having a higher impurity concentration than the impurity atom concentration CP_2 formed in the auxiliary thyristor portion AG, whereby turn-on time and turn-off time of the thyristor are both improved.

4,574,297

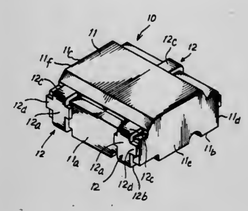
ENCAPSULATED SEMICONDUCTOR WITH TERMINALS HAVING TABS TO INCREASE SOLDER WETTING

Shiro Ooi, Kyoto, Japan, assignor to Rohm Company Limited, Kyoto, Japan

Continuation of Ser. No. 283,730, Jul. 15, 1981, abandoned. This application Jan. 23, 1984, Ser. No. 573,118

Int. Cl.⁴ H01L *23/28, 23/48;* H05K *3/34*

U.S. Cl. 357—68 **5 Claims**



1. A semiconductor device, comprising:

a package of plastic resinous material, said package having a first surface for abutment with a circuit board, a second surface spaced away from said first surface, said second surface including a first central portion flanked by first and second edge portions, said edge portions spaced from said first surface a lesser distance than said central portion, said second surface further including slanted portions connecting said first and second edge portions to said central portion such that said second surface has a mesa-shaped topography, said package further including side surfaces spaced apart from one another and abutting said first surface and said edge portions of said second surface, and end surfaces spaced apart from one another and abutting said first and second surfaces and abutting said side surfaces;

a semiconductor element encapsulated in said package; and

a terminal of said semiconductor element, said terminal including a first portion on one of said side surfaces of said package, said first portion extending to said second surface of said package, said terminal further including a second portion on said one of said side surfaces, said second portion extending from said first portion to both of said end surfaces of said package.

4,574,298

III-V COMPOUND SEMICONDUCTOR DEVICE

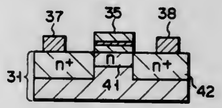
Haruo Yamagishi, Fujisawa, and Hisao Kamo, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Dec. 23, 1983, Ser. No. 565,101

Claims priority, application Japan, Dec. 27, 1982, 57-227057

Int. Cl.⁴ H01L *29/46, 29/64*

U.S. Cl. 357—71 **9 Claims**



1. A semiconductor device comprising:

a III-V compound semiconductor substrate;

a first conductive layer comprising a nitride of a high-melting transition metal of one of Groups IV, V and VI of the Periodic Table formed on said substrate;

a second conductive layer comprising a nitride of a high-melting transition metal of one of Groups IV, V and VI of the Peiodic Table formed on said first conductive layer, said nitride being different in composition from that of said nitride of the first conductive layer; and

an electrode metal layer formed on said second conductive layer.

4,574,299

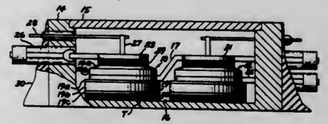
THYRISTOR PACKAGING SYSTEM

Homer H. Glascock, II; Constantine A. Neugebauer, and Harold F. Webster, all of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 239,719, Mar. 2, 1981, abandoned. This application Oct. 11, 1983, Ser. No. 540,739

Int. Cl.⁴ H01H *23/36, 23/14*

U.S. Cl. 357—81 **19 Claims**



1. A thyristor packaging system comprising:

(a) an aluminum support having a thickness of less than about 50 mils and having an upper surface;

(b) a first structured metal, strain buffer comprised of a bundle of substantially parallel, closely packed strands of metal wire, said strain buffer having upper and lower surfaces respectively formed from upper, adjacent ends of said strands of metal wire and from lower, adjacent ends of said strands of metal wire, said strain buffer lower surface having a bond with said aluminum support upper surface;

(c) a first conductive strap having upper and lower surfaces;

(d) low thermal impedance and electrically insulating means connecting said first strap lower surface to said strain buffer upper surface;

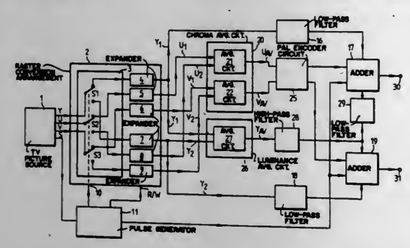
(e) a thyristor having upper and lower surfaces each with an electrode thereon, said thyristor lower electrode having a bond with said first strap upper surface; and

(f) a second conductive strap having a lower surface, said strap lower surface having a bond with said thyristor upper electrode.

4,574,300
HIGH-DEFINITION COLOR TELEVISION TRANSMISSION SYSTEM

Michael G. Hulyer, Crawley Down, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 28, 1983, Ser. No. 556,260
Claims priority, application United Kingdom, Dec. 22, 1982, 8236368
Int. Cl.⁴ H04N *11/20*
U.S. Cl. 358—11 **12 Claims**



1. A method of transmitting a high definition color television signal including a wide band television signal having adjacent low and high frequency luminance components and color information and having n lines per picture, said method comprising:

A. converting said wide band television signal into a first narrower band television signal having adjacent low and high frequency luminance portions, m lines per picture, where m is substantially ½n, and field and picture rates which are the same as that for said wide band television signal, wherein said converting step comprises:

(1) deriving the low frequency luminance portion in respective adjacent lines in a field of said first narrower band television signal from said low frequency luminance components in alternate lines in a corresponding field of said wide band television signal;

(2) deriving the high frequency luminance portion in respective adjacent lines in said field of said first narrower band television signal from the average of said high frequency luminance components in respective adjacent lines in said field of said wide band television signal;

(3) deriving color information for respective adjacent lines in said field of said first narrower band television signal from the average of said color information in adjacent lines in said field of said wide band television signal; and

(4) modulating said color information onto a color subcarrier located within the bandwidth of said high frequency luminance portion of said narrower band television signal;

B. transmitting said first narrower band television signal by way of a first transmission path;

C. converting said wide band television signal into a second narrower band television signal having adjacent low and high frequency luminance portions and the same number of lines and field and picture rates as that of said first narrower band television signal, wherein said converting step comprises:

(1) deriving the low frequency luminance portion in respective adjacent lines in a field of said second narrower band television signal from said low frequency luminance components in respective intervening lines in said field of said wide band television signal; and

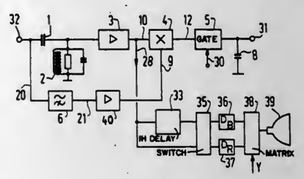
(2) deriving the high frequency luminance portion in respective adjacent lines in said field of said second narrower band television signal from the average of said high frequency luminance components in respective adjacent lines in said field of said wide band television signal; and

D. transmitting said second narrower band television signal by way of a second transmission path, whereby said first and second narrower band television signals may be received together and a wide band television signal having n lines per picture reconstituted therefrom for reproduction as a high definition television display or the first narrower band television may be received alone for reproduction as a color display of standard quality.

4,574,301
SECAM COLOR IDENTIFYING CIRCUIT

Jean-Pierre Sachs, Paris, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 30, 1984, Ser. No. 635,997
Claims priority, application France, Aug. 24, 1983, 83 13642
Int. Cl.⁴ H04N *9/47, 11/18, 9/45, 9/455*
U.S. Cl. 358—18 **4 Claims**

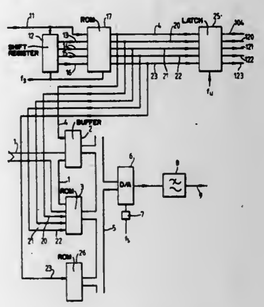


1. A colour identifying circuit forming part of a colour decoding system of the SECAM type, the system comprising a so-called "cloche" pulse-shaping filter (2), said identifying circuit being mainly constituted by a phase comparator (4) coupled to a phase shifting circuit, a so-called "colour identifying burst" signal being applied to one of the two inputs of said phase comparator whilst this signal, after having been conveyed through said phase shifting circuit is applied to the other input, characterized in that the phase shifting circuit is constituted by the cloche pulse-shaping filter (2).

4,574,302
TELEVISION SIGNAL ENCODER

Thomas C. Mackereth, Cambridge, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 6, 1983, Ser. No. 558,730
Claims priority, application United Kingdom, Dec. 10, 1982, 8235333
Int. Cl.⁴ H04N *9/455*
U.S. Cl. 358—21 R **7 Claims**



1. Apparatus for producing a composite video signal having predetermined blanking intervals with preselected transitions from the unblanked to the blanked and the blanked to the unblanked states in response to digital color difference signals and a digital luminance signal applied thereto, comprising

means for processing said digital luminance and color difference signals to create processed digital luminance and color difference signals having a predetermined blanking amplitude during said predetermined blanking intervals and having said preselected transitions;

means for adding a color burst signal to said processed digital color difference signal thereby creating a final digital signal;

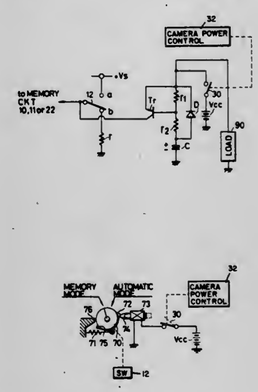
means connected to said processing means and said adding means for generating said composite video signal from said final digital signal and said processed digital luminance signal; and

wherein said means for processing said digital color difference signals comprises first read-only memory means having a first and second set of first memory address inputs and a first memory enable input, means connecting said first set of first memory address inputs to receive said digital color difference signals, means for applying an enable signal to said first memory enable input during said transitions from said unblanked to said blanked and said blanked to said unblanked states, and means for applying further address signals to said second set of first memory inputs during said transition periods, said first read-only memory producing first memory output signals equal to predetermined percentages of said color difference signals, said predetermined percentages corresponding to said further address signals, said processing means further comprising second read-only memory means furnishing a digital blanking level signal when enabled, and means for enabling said second read-only memory means between said transitions from said unblanked to said blanked and said blanked to said unblanked states.

4,574,303
WHITE BALANCE CONTROL SYSTEM FOR COLOR TELEVISION CAMERA WITH AUTOMATIC SWITCHOVER CONTROL

Takaaki Hashimoto, Noda; Ryuzo Motoori, Kawasaki, and Kazushi Minagawa, Yokohama, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Jun. 21, 1983, Ser. No. 506,459
Claims priority, application Japan, Jun. 24, 1983, 57-107664
Int. Cl.⁴ H04N *9/73*
U.S. Cl. 358—29 **9 Claims**



1. A color television camera comprising:

(a) generation means for generating color signals of an object to be shot;

(b) detecting means for detecting a color temperature of a light illuminating said object and generating at least one detection signal in accordance with said detected color temperature;

(c) control means for controlling said generating means so as to adjust the colors of a picture in accordance with said detection signal;

(d) memory means having automatic and memory control modes, said memory means transmitting said detection signal to said control means in said automatic control mode, and said memory means storing said detection signal and outputting said stored detection signal to said control means in said memory control mode;

(e) selection means adapted to select one of said automatic and memory control modes of said memory means;

(f) power source means for energizing said camera; and

(g) change means responsive to the energizing of said camera by said power source means to change over said memory means to said automatic control mode irrespective of said memory control mode selected by said selection means.

5. A color television camera comprising:

(a) generating means for generating color signals of an object to be shot;

(b) detecting means for detecting a color temperature of a light illuminating said object and generating at least one detection signal in accordance with said detected color temperature;

(c) control means for controlling said generation means so as to adjust the colors of a picture in accordance with said detection signal;

(d) memory means having automatic and memory control modes, said memory means transmitting said detection signal to said control means in said automatic control mode, said memory means storing said detection signal and outputting said stored detection signal to said control means in said memory control mode;

(e) selection means adapted to select one of said automatic and memory control modes of said memory means;

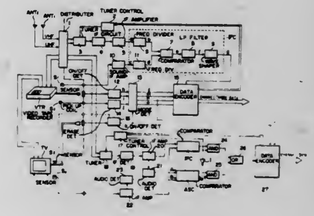
(f) power source means for energizing said camera and deenergizing said camera; and

(g) changing means responsive to said deenergizing of said camera by said power source means to change over said selection means to the first control mode when the second control mode has been selected.

4,574,304
AUDIENCE RATING MEASURING SYSTEM FOR TELEVISION AND VIDEO TAPE RECORDER

Fumio Watanabe, Zama, and Yoshikazu Itoh, Kunitachi, both of Japan, assignors to Video Research Limited, Tokyo, Japan

Filed Apr. 20, 1984, Ser. No. 602,404
Claims priority, application Japan, Apr. 22, 1983, 58-71221; Jun. 17, 1983, 58-107896; Jun. 17, 1983, 58-107897
Int. Cl.⁴ H04N *17/04, 17/06*
U.S. Cl. 358—84 **6 Claims**



1. An audience rating measuring system for a television receiver adapted for receiving a plurality of channels and a video tape recorder having a plurality of operation modes connected thereto and adapted for selectively receiving said channels, said system comprising:

video tape recorder channel discrimination means for detecting the channels received by the video tape recorder;

video tape recorder operation mode discrimination means for detecting the operation modes of the video tape recorder; and

television channel discrimination means for detecting the channels received by the television receiver;

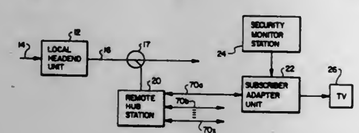
said audience measuring system detecting the modes of the video tape recorder and the television receiver when used in combination.

4,574,305

REMOTE HUB TELEVISION AND SECURITY SYSTEMS

John G. Campbell, Irving, and Carl F. Schoeneberger, Carrollton, both of Tex., assignors to Tocum, Incorporated, Irving, Tex.

Filed Aug. 11, 1983, Ser. No. 522,908
Int. Cl.⁴ H04N 7/10
U.S. Cl. 358—86 **5 Claims**



1. In a data communication system in which data, including television signals, are transmitted from a central station to a plurality of remote user stations at different levels of service, and data including security information are transmitted from the remote user stations to the central station, the combination comprising:

(a) a remote hub processing station in communication with and located remote from the central station and the plurality of user stations, having:

(1) first splitter means for splitting the television signals transmitted by the central station into a plurality of television signals, one for each level of service provided to the remote user stations,

(2) a plurality of second splitter means in communication with said first splitter means, each second splitter means receiving a portion of one of said plurality of television signals and splitting said one signal into a plurality of user television signals for said remote user stations,

(3) a plurality of filter means, each filter means receiving one of said plurality of television signals and transmitting to one of said second splitter means said portion of one of the television signals representative of one level of service provided to the plurality of user stations,

(4) a plurality of data communication links, each extending from one of said second splitter means to one of the remote user stations,

(5) security data separator means connected to each of said plurality of data communication links for receiving security signals from said remote user stations and transmitting the security signals on a common security bus,

(6) security logic means in communication with said security bus for generating security data representative of the security signals from the remote user stations, and

(7) transmitter means in communication with said security logic means for transmitting the security data to the central station, and

(b) a plurality of adapter means in communication with said remote hub processing station, each adapter means being located at one of said remote user stations, and having:

(1) frequency separator means in communication with one of said data communication links for receiving the user television signals from one of said second splitter means and for transmitting the security signals to said security data separator means,

(2) a plurality of security monitoring devices, each having an alarm means for selectively generating an alarm signal representative of the status of the security monitoring device,

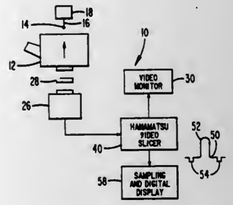
(3) security arming means connected to each of said security monitoring devices for receiving said alarm signals and generating the security signals representative of the status of the security monitoring devices to the frequency separator means.

4,574,306

APPARATUS AND METHOD FOR AUTOMATICALLY MEASURING THE SHOE-LENGTH OF A VIDEO DISC STYLUS

John A. van Raalte, Princeton, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Jan. 27, 1984, Ser. No. 574,462
Int. Cl.⁴ H04N 7/18
U.S. Cl. 358—107 **9 Claims**



1. Apparatus for automatically measuring the length of a body having microscopic dimensions comprising:

(a) an optical microscope capable of being focused on said body and forming an optical image only thereof;

(b) a video camera coupled to said microscope and arranged to form first video signals representative of said optical image;

(c) video slicer means responsive to said first video signals for generating second video signals representative of the brightness of said optical image only along a particular sampling line; and

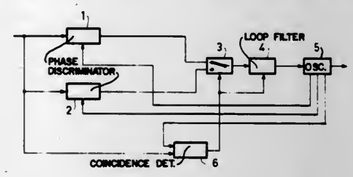
(d) sampling and display means responsive to said second video signal for automatically determining a value representative of the length of said body along said sampling line and generating a third-signal representative of said determined value in predetermined units of length.

4,574,307

LINE SYNCHRONIZING CIRCUIT FOR A PICTURE DISPLAY DEVICE

Antonius H. H. J. Nillesen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 7, 1983, Ser. No. 529,893
Claims priority, application Netherlands, Sep. 14, 1982, 8203556
Int. Cl.⁴ H03L 7/00; H04N 5/04
U.S. Cl. 358—158 **9 Claims**



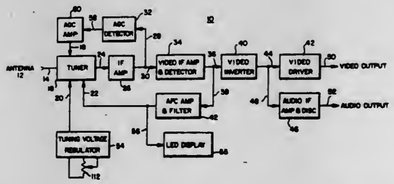
1. A line synchronizing circuit for a picture display device, comprising a control loop for controlling the frequency and/or the phase of a line oscillator, having means for applying an incoming pulse-shaped line synchronizing signal and a reference signal generated by the oscillator to a phase discriminator circuit for determining the phase difference between the signals applied thereto and having a loop filter for smoothing the phase discriminator output signal and for applying the smoothed phase discriminator output signal as a control signal, to the oscillator for the control thereof, said control loop being such that during operation, in a target state thereof, the center instant of an edge of the reference signal substantially coincides with the center instant between a leading edge and the subsequent trailing edge of a line synchronizing pulse, the line synchronizing circuit also comprising a coincidence detector for detecting a phase difference between an incoming line synchronizing pulse and an oscillator pulse of said line oscillator which difference is less than a predetermined value and for changing-over the mode of operation of the control loop, characterized in that said line synchronizing circuit further comprises means coupled to said phase discriminator circuit for changing the operation thereof in response to said coincidence detector, whereby, when coincidence is detected, said phase discriminator circuit controls said line oscillator so that the center instant of the leading edge of an incoming line synchronizing pulse substantially coincides with the center instant between said edge of the reference signal and a first preceding edge thereof.

4,574,308

FM VIDEO RECEIVER

Galen R. Gibson, Bartlesville, and Ralph E. Anstaett, Jr., Tulsa, both of Okla., assignors to Dell-Star Corporation, Tulsa, Okla.

Filed Apr. 20, 1984, Ser. No. 602,475
Int. Cl.⁴ H04N 5/44
U.S. Cl. 358—188 **2 Claims**



1. An FM video receiver supplied with a plurality of frequency modulated (FM) composite video signals by an antenna comprising:

an ultra high frequency tuner having an antenna signal input, an automatic gain control (AGC) signal input and an automatic frequency control (AFC) signal input, said antenna signal input capable of receiving said plurality of FM composite video signals and said tuner including means for selecting one of said plurality of FM composite video signals, said tuner including an amplifying means for amplifying said selected FM composite video signal, said tuner including means for generating an intermediate frequency composite signal carrying the same intelligence as the amplified selected FM composite video signal at a frequency lower than said selected FM composite video signal, said tuner applying said intermediate frequency composite video signal on a corresponding output;

an intermediate frequency amplifier having an input coupled to said output of said tuner, said intermediate frequency amplifier amplifying said intermediate frequency composite signal and applying the amplified intermediate frequency composite signal to a corresponding output;

means for limiting and discriminating said amplified intermediate frequency composite signal, said means for limiting and discriminating tuned to the video portion of said amplified intermediate frequency composite signal and generating an amplitude modulated video signal corresponding to the amplitude of the frequency variation of the video portion of said amplified intermediate frequency composite signal, said amplitude modulated video signal being applied to an output of said means for limiting and discriminating;

a video driver coupled to said output of said means for limiting and discriminating, said video driver amplifying said amplitude modulated video signal to generate a line level video signal at a corresponding output;

an automatic gain control (AGC) means coupled said output of said intermediate frequency amplifier, said AGC means providing a feedback signal to said AGC signal input of said tuner to affect the tuner amplifying means and to stabilize said intermediate frequency composite signal;

an automatic frequency control (AFC) means coupled to said output of said means for limiting and discriminating, said AFC means providing a feedback signal to said AFC signal input of said tuner to affect said means for selecting one of said plurality of FM composite video signals; and

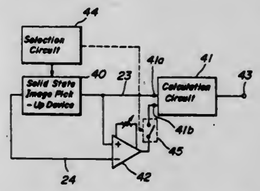
an audio intermediate frequency amplifier coupled to said output of said means for limiting and discriminating, said audio amplifier including means for separating the audio portion from said amplitude modulated video signal, and including an audio limiter and discriminator means, said audio amplifier generating an amplitude modulated audio signal corresponding to the amplitude of the frequency variation of the audio portion of said amplified intermediate frequency composite signal and applying said amplitude modulated audio signal to a corresponding output.

4,574,309

SOLID STATE IMAGE PICK-UP DEVICE

Yasuo Arisawa, Matsumoto; Yoshimasa Kusazaki, Nagano; Hidetoshi Yamada, Tokyo; Akira Watanabe, Fuchu, and Yutaka Yunoki, Kunitachi, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Aug. 31, 1983, Ser. No. 528,033
Claims priority, application Japan, Sep. 9, 1982, 57-157289
Int. Cl.⁴ H04N 3/12, 5/14
U.S. Cl. 358—212 **13 Claims**



1. A solid state image pick-up device comprising

means having a number of picture elements arranged in a matrix form, each picture element including at least one MOS transistor and a photodiode;

horizontal scanning means connected to said picture elements for scanning horizontally the picture elements at a given horizontal scanning period;

vertical scanning means connected to said picture elements for scanning the picture elements at a given vertical scanning period;

signal reading-out means including first and second signal read-out lines selectively connected to the picture elements under the control of said horizontal and vertical scanning means in such a manner that signal charges stored in the photodiodes are read-out twice within a frame period to perform a shutter function having a variable shutter open time;

contour enhancing means for enhancing a contour of an image in a vertical direction by reading-out signal charges stored in two vertically adjacent photodiodes simulta-

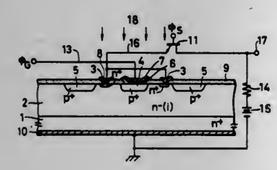
neously, while said shutter open time is fixed to the frame period, to effect a contour enhancement function; and selection means for selecting one of said shutter function and contour enhancement function at will.

4,574,310

ONE-DIMENSIONAL SEMICONDUCTOR IMAGING DEVICE

Jun-ichi Nishizawa, No. 6-16, Komegafukuro 1-chome, Sendai-shi, Miyagi, and Takashige Tamamushi, Miyagi, both of Japan, assignors to Jun-ichi Nishizawa, Miyagi, Japan

Filed Dec. 13, 1983, Ser. No. 561,110
Claims priority, application Japan, Dec. 13, 1982, 57-218586
Int. Cl.⁴ H04N *3/12*
U.S. Cl. 358—212 **3 Claims**



1. A semiconductor device comprising a linear array of pixels each comprising a static induction transistor comprising: a pair of principal electrode regions comprising two semiconductor regions of one conduction type arranged facing each other through a channel region made of high resistivity semiconductor material; first and second gate regions comprising semiconductor regions of the other conduction type formed in contact with said channel region for to controlling current flow between said two principal electrode regions; and a transparent electrode formed on at least one part of said first gate electrode through a capacitor, carriers generated by light excitation being accumulated in said first gate region so as to effect control over current flowing between said two principal electrodes, one of said two principal electrode regions being common to all pixels and being connected to a video signal output terminal through a switch, said output terminal being connected to one terminal of a video power supply through a load resistance, the other principal electrode region and said second gate region being common to all pixels, said first gate region of each static induction transistor being independently connected to a different output of a scanning circuit through a capacitor.

4,574,311

RANDOM ARRAY SENSING DEVICES

Howard L. Resnikoff, Boston; Tomaso Poggio, Wellesley, and Karl Sims, Boston, all of Mass., assignors to Thinking Machines Corporation, Cambridge, Mass.

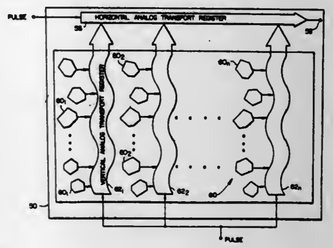
Filed Apr. 4, 1985, Ser. No. 720,017
Int. Cl.⁴ H04N *5/22*
U.S. Cl. 358—213 **20 Claims**

1. A sensing device for generating an output signal corresponding to an input signal, comprising

a substrate;

an array of sensor elements for receiving said input signal, said sensor elements having their barycenters distributed on the surface of said substrate in a random, non-periodic pattern; and

transfer members located on the surface of said substrate and interposed between said sensor elements, said transfer



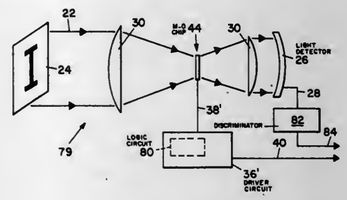
members being coupled to said sensor elements for generating said output signal.

4,574,312

MAGNETO-OPTIC IMAGE SCANNING DETECTOR

Robert H. Anderson, Long Beach, Calif., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed May 5, 1982, Ser. No. 375,329
Int. Cl.⁴ H04N *3/10*; G02F *1/09*
U.S. Cl. 358—213 **8 Claims**



1. In a solid state optical image scanner wherein a magneto-optic composite chip having a plurality of areas alterable to pass or block light is disposed in a light beam between an image and a light detector and driven as a light valve in a scanning pattern both to pass light through selected areas as a desired light signal which generates a corresponding electrical signal of interest, and to block light through other selected areas that continue to pass constant background or noise light, the improvement to increase the light signal-to-background light noise ratio comprising:

(a) altering each area between the passing and blocking states to pass light at a selected area at a pre-determined frequency thereby generating a pulsating light signal portion;

(b) detecting the pulsating light signal portion and the constant background steady light portion; and,

(c) sensing the pulsating light signal portion and generating a corresponding electrical output signal of interest as a function thereof representative of the selected area.

4,574,313

CASCADED CCD SHIFT REGISTERS HAVING DIFFERENT NUMBERS OF CLOCKING PHASES

Donald F. Battson, Landisville, Pa., assignor to RCA Corporation, Princeton, N.J.

Filed Dec. 12, 1984, Ser. No. 680,847
Int. Cl.⁴ H04N *3/15*
U.S. Cl. 358—213 **3 Claims**

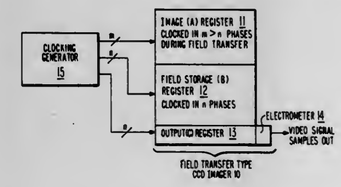
1. In Combination:

a first CCD shift register comprising a charge transfer channel

with input and output ends and a plurality of gate electrodes crossing over said charge transfer channel, said gate electrodes consecutively ordinally numbered first through m^{th} within consecutive cycles of m successive gate electrodes, from input to output ends of the charge transfer channel of said first CCD shift register, m being a positive integer greater than another positive integer n;

a second CCD shift register comprising a charge transfer channel with input and output ends and a plurality of gate electrodes crossing over said charge transfer channel, said gate electrodes consecutively ordinally numbered first through n^{th} within consecutive cycles of n successive gate electrodes, from input to output ends of the charge transfer channel of said second CCD shift register;

a connection of the output end of the charge transfer channel



of said first CCD shift register to the input end of the charge transfer channel of said CCD shift register; and

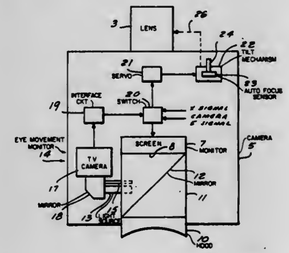
means for generating first and second clocking signals of the same periodicity, said first clocking signal having m phases ordinally numbered first through m^{th} respectively applied to gate electrodes of said first CCD register having the same ordinal numbering as the phase so applied, said second clocking signal having n phases ordinally numbered first through n^{th} respectively applied to gate electrodes of said second CCD register having the same ordinal numbering as the phase so applied, selected phases of said first and second clocking voltages being arranged to overlap in time in such phasing as to avoid merger of successive charge packets at said connection of the output end of the charge transfer channel of said first CCD shift register to the input end of the charge transfer channel of said second shift register.

4,574,314

CAMERA AUTOFOCUS TECHNIQUE

Lee S. Weinblatt, 797 Winthrop Rd., Teaneck, N.J. 07666

Continuation-in-part of Ser. No. 383,282, May 28, 1982, abandoned. This application Mar. 28, 1984, Ser. No. 594,221
Int. Cl.⁴ H04N *5/232*
U.S. Cl. 358—227 **10 Claims**



1. An autofocus system for use on a camera having a lens, said system comprising:

eye movement monitoring means for detecting the rotational eye position of a cameraman as he views a certain scene to generate a signal representative of such eye position;

autofocus means coupled to said lens for suitably focusing the lens;

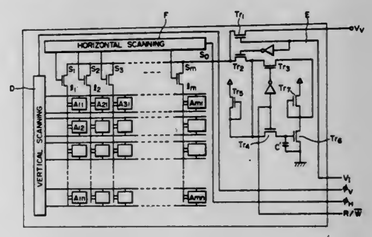
means responsive to said eye-position-representative signal for aiming said autofocus means in the direction looked at by the cameraman.

4,574,315

CIRCUIT FOR DRIVING DISPLAY APPARATUS

Masahiro Yoshimura, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 8, 1983, Ser. No. 530,472
Claims priority, application Japan, May 11, 1983, 58-82922
Int. Cl.⁴ H04N *5/66*
U.S. Cl. 358—241 **11 Claims**



1. A display circuit connected to receive a video signal, comprising:

a plurality of picture elements for displaying an image, each of said plurality of picture elements including:

a display element; and

a drive circuit, operatively connected to said display element, for driving said display element based on a drive voltage corresponding to the video signal, said drive circuit including a data holding element, a data writing element for writing the drive voltage corresponding to the video signal into said data holding element, and a data reading element for reading the drive voltage from said data holding element; and

a data regenerative circuit, operatively connected to said drive circuit of each of said picture elements, for receiving the drive voltages read from said respective drive circuits of said picture elements, for regenerating the drive voltages, and for providing the regenerated drive voltages for rewriting in said respective drive circuits by said data writing element.

4,574,316

DOCUMENT SCANNERS

Hugh Wilman, 76 Mount Grace Rd., Potters Bar, Hertfordshire, and James Brotton, 1 Moss Dr., Haslingfield, Cambridgeshire, both of England

Filed Nov. 4, 1983, Ser. No. 549,198
Claims priority, application United Kingdom, Nov. 5, 1982, 8231677
Int. Cl.⁴ H04N *1/04*
U.S. Cl. 358—285 **9 Claims**

1. A document scanner for scanning a page of a book comprising:

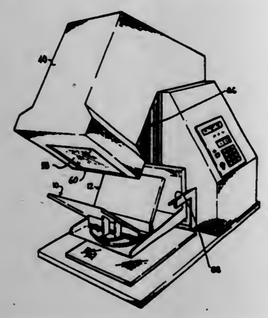
i. a housing movable between at least first and second positions having at least one flat face containing a window through which light from a document to be copied can pass,

ii. a scanner within the housing adapted to scan an image of the document to generate an electrical video signal corresponding to the information carried by the document,

iii. means for supporting a document such as a book face

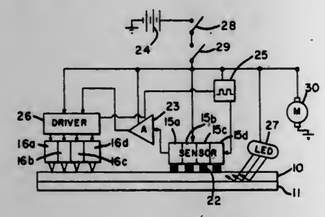
upwards so that, in the first position of the housing, the document book can be moved into contact with the window,

iv. a pivoting joint between the housing and a support therefore to permit rotation of the housing into the second position in which the window is unobstructed,



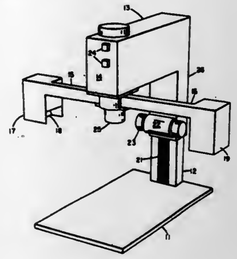
v. a carrier mounted relative to the housing and with which the window is aligned in said second position of the housing to allow an image of a document such as a film on the carrier to be formed on the scanner.

4,574,317
HAND SCANNABLE PORTABLE COPIER AND METHOD
Wayne Scheible, 9 Fencewood La., Hamlin, N.Y. 14464
Filed Dec. 12, 1983, Ser. No. 560,469
Int. Cl.⁴ H04N *1/04, 1/10, 1/23*
U.S. Cl. 358—285 **9 Claims**



1. A hand held copier, completely solid state, combined scanner and printer comprising:
a miniature light source,
an optoelectric sensor including a solid state miniature linear array and optical focusing means,
a solid state miniature print head array,
said light source, sensor, and print head all being fixedly mounted on the same side of a support in spaced apart relationship to concurrently scan and print out the scanned image in coplanar relationship but at laterally spaced apart positions,
whereby the manually controlled positioning and scanning of a document to be copied enables the concurrent scanning and printing of the image to be copied at laterally spaced apart positions as the original document is traversed by the copier.

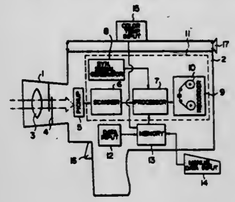
4,574,318
LIGHT ARRANGEMENT FOR SCANNER-DIGITIZER
Douglas C. Dayton, Cambridge; Clifford E. LaCount, Townsend, and Burton G. McConchie, Reading, all of Mass., assignors to Wang Laboratories, Inc., Lowell, Mass.
Filed Sep. 30, 1983, Ser. No. 537,612
Int. Cl.⁴ H04N *1/04*
U.S. Cl. 358—285 **14 Claims**



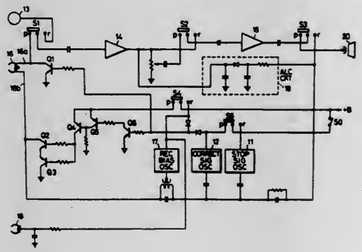
1. A video scanning arrangement for scanning and digitizing documents having alphanumeric and/or other image information thereon, and comprising:
a tablet on which a document to be scanned and digitized is placed,
a support member having a first end attached to said tablet,
an arm member having a first end movably attached to said support member so that said arm member can move along said support member to be at varying distances from said tablet,
a scanner attached to a second end of said arm member, said scanner being actuable to scan a document on said tablet for the creation of a digital representation of said document,
at least one light arm, with each light arm having a first end pivotally attached to said arm member, and
a light source attached to each light arm, with each light arm normally being folded against said arm member for storage when said video scanning arrangement is not in use, and each light arm being extendable from said arm member when said video scanning arrangement is in use to move said light source thereon pivotally outward to a fixed position relative to the scanner, to provide uniform illumination of said document.

4,574,319
ELECTRONIC CAMERA HAVING NON-IMAGE DATA RECORDER
Masahiro Konishi, Saitama, Japan, assignor to Fuji Photo Film Co., Ltd., Japan
Filed May 3, 1982, Ser. No. 374,171
Claims priority, application Japan, May 12, 1981, 56-71144
Int. Cl.⁴ H04N *5/76*
U.S. Cl. 358—335 **28 Claims**

1. An electronic camera comprising a photographic lens, an image pickup device having a plurality of picture elements for receiving image information from said photographic lens and converting said image information into an electric image data output signal, and a mechanism for recording said image data output signal from said image pickup device on a recording medium, characterized in that said camera is provided with means for recording data other than said image information on the same recording medium as said recording medium on which said image information is recorded, said data other than said image information comprising defective picture element address data for indicating the position of any defective picture elements in said image pickup device.

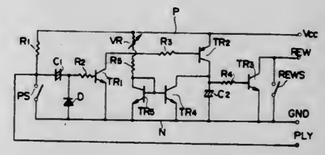


4,574,320
DICTATING MACHINE HAVING A REVISING FUNCTION
Yuji Urayama, Maebashi, Japan, assignor to Victor Company of Japan Ltd., Yokohama, Japan
Filed Dec. 27, 1983, Ser. No. 565,630
Claims priority, application Japan, Dec. 28, 1982, 57-200363[U]
Int. Cl.⁴ G11B *15/12*
U.S. Cl. 360—62 **7 Claims**



1. A dictating machine having a revising function for carrying out recording and reproduction of messages with respect to a magnetic tape having at least first and second tracks, said first track being used for recording a message, said second track being used for recording a new content which is recorded when revising the message, said dictating machine comprising:
a power source;
recording signal supplying means for supplying a signal indicative of the message or the new content which is to be recorded;
recording and reproducing means for recording the output signal of said recording signal supplying means on the first or second track of said magnetic tape in a recording state thereof and for reproducing the recorded signal from the first or second track of said magnetic tape in a reproducing state thereof, said recording and reproducing means comprising a single magnetic head;
erasing means for erasing the recorded signal on the first or second track of said magnetic tape in an operating state thereof;
bias signal generating means for supplying a bias signal to said recording and reproducing means in an operating state thereof;
stop signal generating means for supplying a stop signal to said recording and reproducing means in an operating state thereof, said stop signal having a first frequency and indicating an end of the message; and
correction signal generating means for supplying a correction signal to said recording and reproducing means in an operating state thereof, said correction signal having a second frequency and indicating a part in the message where a correction or addition of a content is required,
said correction signal generating means supplying the correction signal to said single magnetic head during non-operating states of said erasing means and said bias signal generating means so that said single magnetic head records the correction signal over a pre-recorded signal on the first track by superimposing without erasing the pre-recorded signal,
said single magnetic head recording and reproducing the signal indicative of the message on and from the first track in a first longitudinal direction of said magnetic tape, said single magnetic head recording and reproducing the signal indicative of the new content on and from the second track in a second longitudinal direction of said magnetic tape, said second longitudinal direction being opposite to said first longitudinal direction,
the recording and reproduction of the signal indicative of the new content on and from the second track in said second longitudinal direction being realized by reversing the side of the magnetic tape.

4,574,321
AUTOMATIC BACKSPACE DEVICE FOR A TAPE RECORDER
Katsumi Kanayama, Tokyo, Japan, assignor to Olympus Optical Company Limited, Japan
Filed Nov. 22, 1982, Ser. No. 443,220
Claims priority, application Japan, Nov. 26, 1981, 56-175983[U]; Nov. 26, 1981, 56-175984[U]
Int. Cl.⁴ G11B *15/48*
U.S. Cl. 360—74.1 **5 Claims**



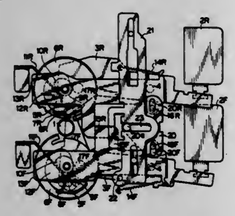
3. An automatic backspace device characterized by a reproduction operating switch for actuating a magnetic tape; producing means for producing a constant discharge current in response to operation of said switch, a time constant circuit having a time constant; a first transistor which is turned on in response to current from said producing means, a capacitor, means for supplying electrical current to said capacitor during a time period when said first transistor is turned on; a current mirror circuit having second and third transistors; means connected to said second transistor for forming a predetermined electrical current; and the third transistor being connected in parallel with said capacitor for discharging said capacitor with said predetermined electrical current; and a fourth transistor to be turned on in response to electrical current discharged by said capacitor for producing a rewind signal and rewinding said magnetic tape while said fourth transistor is turned on.

4,574,322

CHANNEL CHANGING MECHANISM OF A TAPE PLAYER

Yuji Teraguchi, and Sadayoshi Endo, both of Tokyo, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Filed Feb. 10, 1984, Ser. No. 578,948
Claims priority, application Japan, Feb. 15, 1983, 58-22043
Int. Cl.⁴ G11B *15/44, 21/08*
U.S. Cl. 360—74.1 **7 Claims**



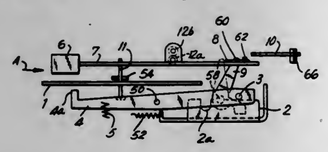
1. A channel changing mechanism of a tape player which comprises:
forward-drive means for setting the tape player in its fast-forwarding drive mode;
reverse-drive means for setting the tape player in its rewinding drive mode;
forward-drive and reverse-drive electromagnetic plungers for actuating said forward-drive means and reverse-drive means, respectively;
an off plate responsive to a head shift mechanism of the tape player and to one of said electromagnetic plungers and taking different positions between the stop mode and the play mode of the tape player;
first drive gear continuously rotated by a drive motor of the tape player;
a change gear having a tooth train engageable with said first drive gear and a pair of cut-off partly breaking said tooth train and disengageable with said first drive gear;
a change link plate reciprocal responsively to rotation of said change gear for switching the tape player from a forward-drive mode to a reverse-drive mode or vice versa; and
a change-off plate for locking said change gear at a position disengageable with said first drive gear, and responsive to said off plate when the off plate is in a position corresponding to the play mode of the tape player.

4,574,323

FLEXIBLE MAGNETIC DISK DRIVE

Masao Momose, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Oct. 19, 1982, Ser. No. 435,201
Claims priority, application Japan, Oct. 20, 1981, 56-167482
Int. Cl.⁴ G11B *17/04, 5/82*
U.S. Cl. 360—99 **17 Claims**



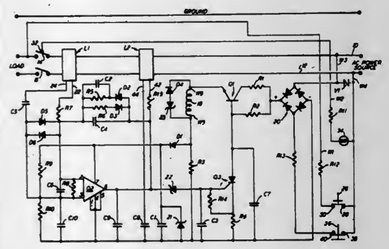
1. A flexible magnetic disk drive including a disk ejection mechanism comprising:
an ejector having a portion for contact by a magnetic disk inserted in said ejection mechanism, said ejector being subject to translation by force of said inserted disk pushing in a first direction on said portion for contact, and a first engagement portion;
spring means for opposing said translation of said ejector, said spring means tending to return said ejector in a second direction opposite to said first direction to a non-translated position;
a lock lever mounted for pivoting about an axis and including a second engagement portion, said first engagement portion of said ejector and said second engagement portion of said lock lever being subject to interengagement upon translation of said ejector to a selected position by said disk, said lock lever pivoting in one direction during said interengagement, said lock lever having a blocking portion, said blocking portion being for blocking removal of said disk when said disk is in said drive, said blocking portion being coupled to said lock lever so that said blocking portion is moved into a blocking position by said pivoting in said one direction;
a slide lever, and an ejection transmission lever, said ejection transmission lever being pivotally mounted in said drive and configured so that said ejection transmission lever is subject to pivoting upon motion of said slide lever in an ejecting direction, said ejection transmission lever being pivoted into contact with said second engagement portion of said lock lever when said slide lever moves in said ejecting direction, contact of said ejection transmission lever and said second engagement portion causing disengaging of said first and second engaging portions, and pivoting of said lock lever about said axis upon said disengagement, said blocking portion of said lock lever moving from said blocking position, said spring means moving said ejector in said second direction, said ejector portion for contact by said magnetic disk causing said disk to be ejected as said ejector is forced to return to said non-translated position by said spring means.

4,574,324

GROUND FAULT CIRCUIT INTERRUPTER

Thomas N. Packard, Syracuse, N.Y., assignor to Pass & Seymour, Inc., Solvay, N.Y.

Filed Oct. 5, 1983, Ser. No. 539,153
Int. Cl.⁴ H02H *3/33*
U.S. Cl. 361—46 **28 Claims**



1. A ground fault circuit interrupter for opening a power distribution line including hot and neutral conductors and extending between an electrical power source and a load, said interrupter comprising:
(a) a relay having at least one member interposed in said distribution line and movable between open and closed positions with respect thereto, means biasing said member to said open position, and a coil operable to move said member to said closed position in response to current flow through said coil;
(b) at least one sensing means adapted to generate a signal in response to an imbalance of current flow in the conductors of said distribution line, indicating a ground fault condition;

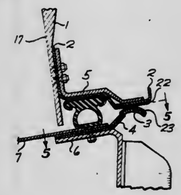
(c) a power supply line communicating with said power distribution line to provide current to said coil to maintain said member in said closed position;
(d) switching means electrically connected to said coil and operable in response to said signal to remove current from said coil, thereby permitting said member to move to said normally open position and interrupting the circuit through said distribution line between said source and said load; and
(e) circuit means so arranged with respect to said coil, said sensing means and said switching means that current is removed from said coil in the event of said ground fault condition when a short circuit across said switching means is present.

4,574,325

LIGHTNING PROTECTION ELECTRICAL CIRCUIT PATH FOR COUPLING BETWEEN AIRCRAFT STRUCTURES

Raymond G. C. Holton, Bothell, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Feb. 9, 1984, Ser. No. 578,396
Int. Cl.⁴ H05F *3/02*
U.S. Cl. 361—218 **5 Claims**



1. A lightning protection electrical current path for coupling between aircraft structures comprising:
a first aircraft structure;
a second aircraft structure;
a grounding clip electrically conductively connected to said first aircraft structure;
a grounding strip electrically conductively connected to said second aircraft structure;
said grounding clip and said grounding strip comprising stainless steel; and,
said grounding strip and said grounding clip having tungsten carbide coated interfacing and abutting surface portions.

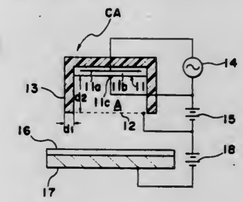
4,574,326

ELECTRICAL CHARGING APPARATUS FOR ELECTROPHOTOGRAPHY

Hisashi Myochin, Toyohashi, and Kuniki Seino, Aichi, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Mar. 6, 1985, Ser. No. 708,945
Claims priority, application Japan, Mar. 9, 1984, 59-34727[U]
Int. Cl.⁴ H05F *3/06*
U.S. Cl. 361—229 **7 Claims**

1. An electrical charging apparatus which comprises;
a charging panel including a first electrode formed by a metallic plate, a heat-resistant electrically insulative member for covering a surface of said first electrode, and a second electrode in the form of a thin wire fixed to a surface of said heat-resistant electrically insulative member so as to face said first electrode through said heat-resistant electrically insulative member,
a power source for applying a high voltage AC current between said first electrode and said second electrode,
a third electrode in the form of a mesh provided to confront said second electrode, and



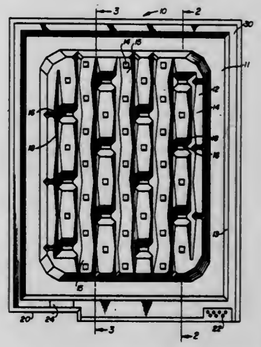
a support member for supporting said third electrode and also for surrounding three sides of said charging panel.

4,574,327

CAPACITIVE TRANSDUCER

Leslie B. Wilner, Palo Alto, Calif., assignor to Becton, Dickinson and Company, Paramus, N.J.

Filed May 18, 1984, Ser. No. 611,765
Int. Cl.⁴ H01G *7/00;* **G01L** *1/22*
U.S. Cl. 361—283 **12 Claims**



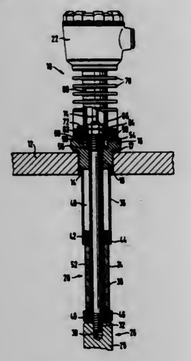
1. A plate for use as the movable capacitor plate in a capacitive sensing apparatus, characterized by
(a) said plate comprised of monocrystalline silicon;
(b) a rim forming the periphery of said plate;
(c) a central seismic mass on said plate, and spaced on each side edge from said rim;
(d) a membrane spring surrounding said seismic mass and forming the connection thereof on all sides to said rim;
(e) said seismic mass being supported on said membrane for movement in a plane normal to the plane of said plate, when mounted in a capacitive sensing apparatus;
(f) at least one hole formed in said seismic mass for forming fluid communication between each side of said mass when mounted in a capacitive sensing apparatus;
(g) a plurality of grooves formed in one face of said plate;
(h) said grooves extending in said face from said hole to a point spaced from said hole;
(i) said grooves being of gradually decreasing cross section in direct relationship to the distance away from said hole; and
(j) electrical contact means on said plate for transmitting the measured stimuli of said plate when mounted in a capacitive sensing apparatus.

4,574,328

SENSOR FOR CAPACITIVELY MEASURING THE LEVEL OF MATERIAL IN A CONTAINER

Winfried Maier, Maulburg, Fed. Rep. of Germany, assignor to Endress u. Hauser GmbH u. Co., Maulburg, Fed. Rep. of Germany

Filed Jun. 6, 1983, Ser. No. 592,332
Claims priority, application Fed. Rep. of Germany, Jun. 4, 1982, 8216324[U]
Int. Cl.⁴ G01F *23/26*; H01G *5/28*
U.S. Cl. 361—284 **13 Claims**



1. A sensor for capacitively measuring the level of material in a container, said sensor comrising:
- an elongated electrically conductive sensor electrode extending through an opening in a wall of said container into said container, said sensor electrode having a first part and a second part and being connected to mesuring circuitry responding to the capacitance between said sensor electrode and a counter-electrode, which capacitance depends on the level of material in said container;
- mounting means for mounting said sensor electrode in an electrically insulating and pressure-tight manner in said container wall opening;
- a metallic tubular member connected to said mounting means in a moisture-proof manner and surrounding said first part of said sensor electrode to define a space beween said tubular member and said sensor electrode whereby said tubular member and said sensor electrode are electrically insulated from one another, said tubular member having an inner end remote from said mounting means, said first part of said sensor electrode which is surrounded by said tubular member being inactive for capacitive level measurement;
- means for sealing said inner end of said tubular member so as to prevent entry of moisture into said space between said tubular member and said sensor electrode;
- said second part of said sensor electrode extending beyond said sealing means and defining an active part of said sensor electrode for capacitive level measurement.

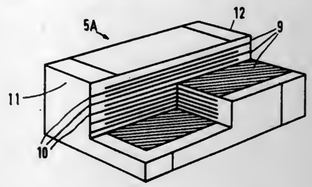
4,574,329

MULTILAYER CERAMIC CAPACITOR

Antonius J. H. Eijkelenkamp; Gijsbertus de With, and Willem R. de Wild, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 1, 1984, Ser. No. 656,220
Claims priority, application Netherlands, Oct. 7, 1983, 8303448; Jun. 13, 1984, 8401865
Int. Cl.⁴ H01G *1/01*
U.S. Cl. 361—321 **20 Claims**

1. A multilayer capacitor composed of alternate dielectric layers of dielectric oxidic ceramic material and of an electrode material, and formed into a compact unit by the application of heat and pressure, characterized in that the capacitor is formed of a compact unit through a thermal treatment by simultaneously applying pressure in a direction transverse to the planes of said layers, and has layers of electrode material consisting of a mixture of 7 to 60% by volume of metal having a high conductivity and of 40 to 93% by volume of particles of a ceramic material having a sintering temperature which is higher than the sintering temperature of the oxidic ceramic material of the dielectric layers.

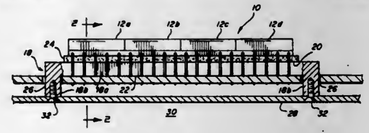


4,574,330

HEAT SINK FOR DISSIPATING HEAT GENERATED BY ELECTRONIC DISPLAYS

Marvin M. Cohen, and Francis L. Payne, both of Tucson, Ariz., assignors to Burr-Brown Corporation, Tucson, Ariz.

Continuation of Ser. No. 450,983, Dec. 20, 1982, abandoned. This application Aug. 5, 1985, Ser. No. 763,072
Int. Cl.⁴ H05K *7/20*
U.S. Cl. 361—388 **5 Claims**



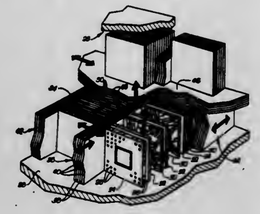
1. An article for dissipating heat comprising in combination
- a heat generating alphanumeric display and an electronic circuit board, said alphanumeric display being electrically connected to said circuit board;
- a solid heat sink thermally coupled to a portion of the underside of said alphanumeric display, said solid heat sink having a surface contact portion smaller than the width of the underside of said alphanumeric display and in thermal contact with said portion of the underside of said alphanumeric display, said surface contact portion of said solid heat sink being centrally disposed with respect to the width of the alphanumeric display;
- a heat dissipating plate spaced from said circuit board, at least one solid extension portion of said solid heat sink extending through said circuit board and in thermal and mechanical contact with said dissipating plate, a second portion of said heat sink contiguous to said solid extension portion located on a non-conductive surface portion of said circuit board, said heat sink transferring heat generated by said alphanumeric display directly to said dissipating plate.

4,574,331

MULTI-ELEMENT CIRCUIT CONSTRUCTION

Robert Smolley, Portuguese Bend, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed May 31, 1983, Ser. No. 499,136
Int. Cl.⁴ H05K *1/14*
U.S. Cl. 361—393 **5 Claims**



1. A three-dimensional integrated-circuit packaging construction, comprising:
- a plurality of integrated-circuit (IC) chip packages arrayed in parallel relationship with each other, each of said IC chip packages having input/output contact areas located on various faces of the package, and having edge contact areas;
- chip package interconnection means disposed between each adjacent pair of said IC chip packages, to establish desired electrical connections between the two, said IC chip packages and said chip package interconnection means together forming a first IC chip module;
- at least one additional IC chip module of similar construction to said first IC chip module;
- transverse chip module interconnection means disposed between said first and additional IC chip modules, and between any other adjacent pairs of IC chip modules, to establish selected connections between side edge contact areas of two modules, said transversely interconnected IC chip modules forming a first IC chip module layer;
- at least one additional IC chip module layer of similar construction to said first IC chip module layer; and
- chip module layer interconnection means disposed between said first and additional IC chip module layers, and between any other adjacent pairs of IC chip module layers, to establish selected connections between said IC chip module layers;
- whereby interconnections between IC chip packages may be made in any of three dimensions, and current path lengths within the interconnections are minimized.

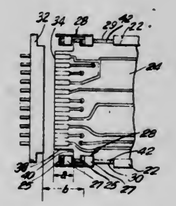
4,574,332

CAGE APPARATUS FOR PRINTED CIRCUIT BOARDS AND METHOD FOR PREVENTING SHARP SPIKES IN THE SIGNAL APPLIED TO SAID PRINTED CIRCUIT BOARDS

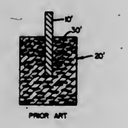
Anthony D. Calabro, UNITRACK Div., Calabro Industries, Inc., 1372 Enterprise Dr., West Chester, Pa. 19380

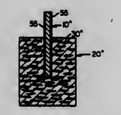
Filed Jun. 29, 1983, Ser. No. 508,827
Int. Cl.⁴ H01R *23/68*
U.S. Cl. 361—413 **1 Claim**

1. A cage apparatus for receiving a plurality of printed circuit boards, each said printed circuit board being generally rectangular in configuration and including opposed top and bottom edges and a connector edge, said top and bottom edge being provided with electrically conductive strips attached thereto, said connector edge including a plurality of pin connector means for electrically joining each said circuit board to a multiple pin connector, said cage apparatus comprising:
- top and bottom supports disposed in spaced parallel relationship with the spacing therebetween being equal or slightly greater than the distance between the top and bottom edges of each said circuit board;
- spaced apart end plates connected to and extending between said top and bottom supports;
- a plurality of multiple pin connectors extending between and connected to said top and bottom supports, said multiple pin connectors being disposed in spaced parallel relationship to one another;
- a pair of dielectric mounting guides for each said multiple pin connector, the dielectric mounting guides in each said pair being mounted respectively to said top and bottom supports such that each said dielectric mounting guide is aligned with but spaced from its associated multiple pin connector, the spacing between the dielectric mounting guides in each said pair corresponding to the distance between the top and bottom edges of each said circuit board each said dielectric mounting guide including a plurality of spring fingers for biasingly engaging the associated circuit board and guiding the circuit board toward the associated multiple pin connector;
- a pair of electrically conductive mounting guides for each said multiple pin connector, the electrically conductive mounting guides in each said pair being aligned collinearly respectively with the dielectric mounting guides and being disposed intermediate one said dielectric mounting guide and the associated multiple pin connector, each said electrically conductive mounting guide including a plurality of spring fingers for biasingly engaging the electrically conductive strips of said circuit board, said spring fingers of said electrically conductive mounting guide being spaced from the associated multiple pin connector such that the electrically conductive strips must engage the electrically conductive mounting guides prior to the insertion of the circuit board into the multiple pin connector,
- means for providing an electrical signal to said multiple pin connectors; and
- means for providing an electrical signal to said multiple pin connectors; and
- means for providing a electrical potential across the electrically conductive mounting guides in each said pair, whereby the provision of the electrical potential across the mounting guides prior to insertion of each said circuit board into the corresponding multiple pin connector prevents sharp spikes in the electrical signal upon said insertion.



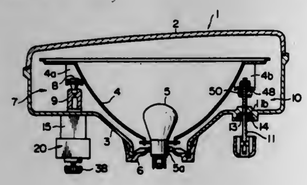
4,574,333
LOW DENSITY TANTALUM ANODE BODIES
William B. Snyder, Greenville, S.C., assignor to Union Carbide Corporation, Danbury, Conn.
Filed Jun. 12, 1985, Ser. No. 743,959
Int. Cl.⁴ H01G 9/00
U.S. Cl. 361—433 **1 Claim**





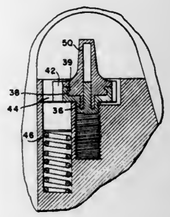
1. A tantalum anode body formed of high surface area tantalum particles pressed to a density of from about 3 to 5 grams/cc about a tantalum riser wire having a coating of nickel of from about 500 Å to 5000 Å.

4,574,334
DEVICE FOR ADJUSTING THE INCLINATION OF THE LIGHT AXIS OF HEADLAMPS OF A MOTOR VEHICLE
Kenkichi Igura, Fujisawa, Japan, assignor to Ichikoh Industries, Ltd., Tokyo, Japan
Filed Mar. 21, 1984, Ser. No. 591,830
Claims priority, application Japan, Mar. 22, 1983, 58-39685[U]; Mar. 22, 1983, 58-39686[U]; Aug. 16, 1983, 58-126162[U]
Int. Cl.⁴ F21V 3/18
U.S. Cl. 362—66 **6 Claims**



1. In a device for adjusting the inclination of a light axis of a headlamp by controlling a light axis changing mechanism which changes the light axis of a headlamp in relation to a car body, said light axis changing mechanism comprising:
a mounting means arranged on a side of the headlamp;
a ball joint for cooperating with the mounting means to achieve a ball socket joint; and
a connector rod means one end of which is connected to the ball joint;
and said light axis adjusting device comprising:
a casing;
a motor arranged in the casing;
a hollow gear means arranged to be rotatable in the casing;
a speed reduction mechanism arranged in the casing and connected to the motor and the hollow gear means to reduce the output of the motor and transmit it to the hollow gear means;
a sleeve inserted into the hollow gear means and moved linearly when the hollow gear means is rotated;
a means for converting the rotation of the hollow gear means to a force which causes the sleeve to be moved linearly; and
an adjusting rod means connected with an end of said connector rod means by a ball joint mechanism which is constructed by a spherical socket provided at the end of one of said rod means and having slit, and a ball means formed at the end of the other of said rod means and having projection engaged with said slit for coupling said spherical socket and ball means in the manner that both rod means can swing freely with respect to each other but rotate integrally;
said adjusting rod means being reciprocated with the connector rod means, following the movement of the sleeve to adjust the inclination of the light axis of the headlamp.

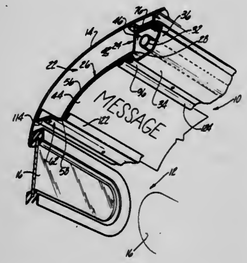
4,574,335
LIGHTED GUN SIGHTS
Itzchak Frimer, Bnei Brak, Israel, assignor to Orlite Engineering Ltd., Zone A Nes Ziona, Israel
Continuation of Ser. No. 316,053, Oct. 28, 1981, abandoned.
This application Sep. 12, 1984, Ser. No. 650,552
Claims priority, application Israel, Oct. 31, 1980, 61388
Int. Cl.⁴ F41G 1/34
U.S. Cl. 362—84 **7 Claims**



1. Apparatus for assisting aiming of firearms in darkness comprising:
a sight defining two spaced upstanding elements, each bearing at identical levels thereon one of a pair of light sources defining dots;
a forward pointer having a longitudinal axis, said pointer comprising a base portion whose height is determined by rotatable threading thereof into a socket fixed on the firearm, and a top portion which is rotatably mounted with respect to said base portion and arranged for rotation about a rotation axis defined by the longitudinal axis of said forward pointer without changing the height thereof; and a third light source defining a dot associated with the top portion of said forward pointer of said firearm, said third light source arranged to be aligned along a line between said pair of light sources and aligned with a target when the firearm is aimed in darkness, whereby said third light source may be maintained in a rearward facing direction with respect to the firearm at any height thereof.

4,574,336
CORNICE LIGHTING FIXTURE FOR MASS TRANSIT VEHICLES
Liudas K. Mikalonis, Northville, Mich., assignor to Transmatic, Inc., Waterford, Mich.
Filed Mar. 27, 1984, Ser. No. 594,020
Int. Cl.⁴ B60Q 1/00
U.S. Cl. 362—260 **4 Claims**

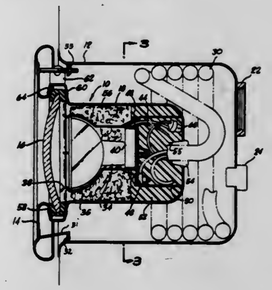
1. A cornice lighting fixture for mass transit vehicles, said fixture comprising:
an elongated sheet-like unitary molded body including a lamp panel defining one longitudinal margin of the fixture and a trim panel extending obliquely in a downward and outward direction from a corner-like juncture of one edge thereof with one edge of the lamp panel and defining the other longitudinal margin of the fixture,
said trim panel including a mounting flange extending along the other edge thereof,
said lamp panel including a vertical portion extending upwardly from said one edge thereof and including a horizontal portion extending inwardly from the vertical portion and terminating in a free edge, said lamp panel opening inwardly and downwardly and adapted to receive a fluorescent tube,
an extruded connector extending along said free edge and attached thereto, said connector having a horizontal portion overlapping said horizontal portion of the lamp panel to provide a double-wall mounting strip for connecting the fixture to the vehicle, said connector having a groove



therein extending along said free edge and opening downwardly,
an elongated lens cooperating with said lamp panel to enclose said fluorescent tube and having an upper edge interlocked in said groove and having a lower edge terminating adjacent said corner-like juncture and secured to said one edge of said trim panel outwardly of said corner-like juncture by a removable fastener,
first and second extruded retainer strips secured to said trim panels and extending longitudinally thereof in parallel spaced relation, each of said retainer strips having an overhanging lip extended along one edge thereof and spaced from the surface of said trim panel to define a retaining groove which opens toward the other retainer strip, said retaining grooves being adapted to receive the edges of an advertising card to retain it on said trim panel adjacent said lamp housing,
said first retainer strip being disposed outwardly of said lower edge of said lens.

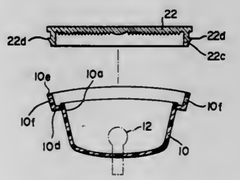
4,574,337
UNDERWATER LIGHTS
Charles B. Poppenheimer, Pasadena, Calif., assignor to GTY Industries, Sun Valley, Calif.
Filed Feb. 10, 1984, Ser. No. 579,134
Int. Cl.⁴ F21V 31/00
U.S. Cl. 362—267 **14 Claims**

1. An underwater light, comprising
a thermally-conductive housing having a first opening;
a lens assembly sealably closing said first opening;
a heat conductive reflector within said housing directed toward said opening;
a lamp within said reflector; and



thermally-conductive elements comprising metallic wool material extending between said reflector and said housing and in thermal contact therewith.

4,574,338
LIGHT ASSEMBLY WITH FLEXED THERMOPLASTIC FRESNEL LENS
Masaru Takasaki, Ebina, and Masutoshi Aoyama, Yokohama, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan
Filed Oct. 5, 1984, Ser. No. 658,220
Claims priority, application Japan, Oct. 11, 1983, 58-188359
Int. Cl.⁴ F21V 5/00
U.S. Cl. 362—278 **18 Claims**



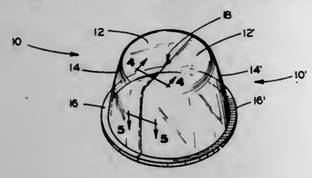
1. A light assembly comprising:
a housing of thermoplastic resin having a convexly curved mouth;
an electric bulb disposed in said housing;
a fresnel lens of thermoplastic resin, wherein said fresnel lens comprises an originally flat lens which is flexed by a given degree to form said fresnel lens; and
means for securing said lens to the mouth of said housing while flexing same by said given degree.

4,574,339
INTERLOCKING LENS STRUCTURE FOR A SIGNAL LAMP
Harold R. Stine, Delta, Ohio, assignor to Fulton Industries, Inc., Wauseon, Ohio
Filed Apr. 27, 1984, Ser. No. 604,877
Int. Cl.⁴ F21V 5/04
U.S. Cl. 362—360 **13 Claims**

1. A lens piece adaptable for use in an interlocking lens structure comprising:
a top portion including an edge having a first region formed with a groove and a second region formed with a projec-

tion, said groove and projection of said top portion being complementary in dimensions; and

a side portion connected to said top portion including two edges joining said edge of said top portion, one of said side portion edges formed with a groove and the other of said



side portion edges formed with a projection, said groove and projection of said side portion being complementary in dimensions, the depth of said groove and projection of said top portion being different than the depth of said groove and projection of said side portion whereby two of the lens pieces interlock to form a lens structure.

4,574,340

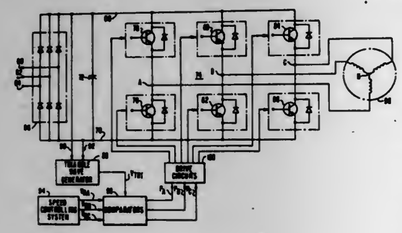
INVERTER WITH CONSTANT VOLTAGE TO FREQUENCY RATIO OUTPUT CAPABILITY

Donal E. Baker, American Township, Allen County, Ohio, assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 22, 1984, Ser. No. 623,582

Int. Cl.⁴ H02P *5/40*

U.S. Cl. 363—41 **5 Claims**



1. An electronic inverter comprising:

a pair of DC link conductors;

a plurality of output power pole terminals;

an output circuit having a plurality of branch circuits connected in parallel between said DC link conductors, each of said branch circuits including a pair of switching transistors connected in series wherein each output power pole is connected to a point between the transistors in one of said branch circuits;

a plurality of drive circuits for supplying base current to each of said transistors, each drive circuit including a controlled current feedback transformer which uses the collector current of the associated switching transistor to supply the required base drive current; and

means for generating a switching pattern waveform for controlling the duty cycle of each of said switching transistors, said switching pattern alternating between a logic high level and a logic low level wherein each successive logic level lasts for a time which is less than the saturation time of the controlled current feedback transformer in each drive circuit while the period of the fundamental frequency of the inverter output voltage is greater than the saturation time of the controlled current feedback transformer in each drive circuit.

4,574,341

CURRENT SUPPLY APPARATUS FOR AN A.C. CONSUMER

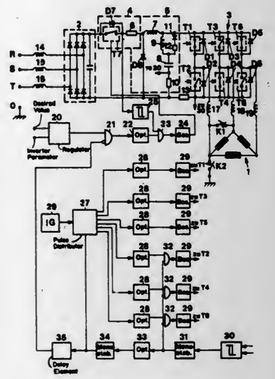
Kjeld Hellegaard, Nordborg, and Hans Doktor, Aarhus C, both of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Filed Nov. 25, 1983, Ser. No. 555,069

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1982, 3246706

Int. Cl.⁴ H02H *7/122*

U.S. Cl. 363—56 **3 Claims**



1. A current supply apparatus for an A.C. consumer, comprising, an inverter having a bridge circuit comprising, transistors and relaxation diodes, a rectifier, a transistor chopper between said rectifier and said inverter, a smoothing circuit behind said chopper having a smoothing coil and a smoothing capacitor, base control circuit means respectively for said chopper transistor and said inverter transistors, a first current measuring resistor behind said chopper, a second current measuring resistor in the current return line of said inverter, a pulse generator, a pulse distributor feeding pulses of said pulse generator to said inverter base control circuits, a current regulator feeding control pulses to said chopper base control circuit responsive to an operating parameter of said inverter, means for feeding a blocking signal to said base control circuits of said chopper and said inverter depending on overcurrent measuring signals derived from said first and second current measuring resistor, respective optocoupler means for feeding said control pulses to said chopper and inverter transistor base control circuits, and respective gate means between those of said base circuits and those of said optocoupler means which are associated with said chopper and with said transistors connected to said return line of said inverter, said gate means being feedable with appropriate blocking signals responsive to overcurrent signals detected by said current measuring resistors.

4,574,342

RESONANCE DRIVER

Wesley G. Runyan, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Aug. 17, 1983, Ser. No. 523,999

Int. Cl.⁴ H02M *7/515*

U.S. Cl. 363—134 **7 Claims**

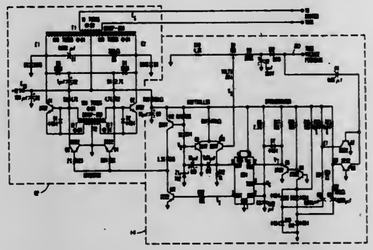
1. A resonant power supply system comprising:

means for providing a DC voltage;

means for converting said DC voltage into an alternating current and providing an alternating current output;

an inductance-capacitance tank circuit coupled to receive said alternating current output and produce a resonant sinusoidal voltage output across the capacitance of said tank circuit;

means responsive to said resonant sinusoidal voltage output for controlling said means for converting to synchronize and control said alternating current to maintain a constant



voltage, sinusoidal resonant output from said tank circuit; and

a capacitive impedance coupled as an electric load in electrical parallel with capacitance of said tank circuit to receive said resonant sinusoidal voltage.

4,574,343

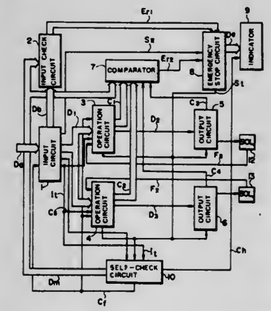
CONTACTLESS PRESS CONTROL DEVICE

Takao Inatomi, Kanazu, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Sep. 29, 1982, Ser. No. 427,927

Int. Cl.⁴ G05B *9/02*; G01R *31/28*; G01P *3/48*

U.S. Cl. 364—184 **1 Claim**



1. A contactless control device for a press having a controller for controlling the operation of the press and an abnormality detector for detecting the abnormality of the operation of said controller, a detection of such abnormality preventing press operation, comprising:

means for generating dummy fault signals before said press is started and applying the signals to said abnormality detector, and

means for detecting as a fault the state when no fault detection signal is generated from said abnormality detector upon application of each dummy fault signal, such fault detection preventing press operation, and

wherein said dummy fault signals correspond to items to be checked, and an initial dummy fault signal is generated when power is fed to said press or when said press is stopped at its top dead center, and the next dummy fault signal is generated only when an abnormality is not detected for each item to be checked.

4,574,344

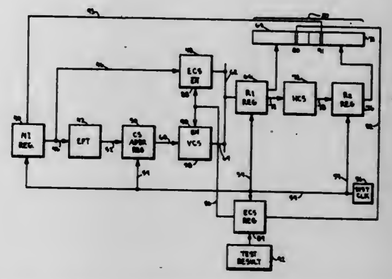
ENTRY CONTROL STORE FOR ENHANCED CPU PIPELINE PERFORMANCE

Richard L. Harris, San Jose, and Robert W. Horst, Cupertino, both of Calif., assignors to Tandem Computers Incorporated, Cupertino, Calif.

Filed Sep. 29, 1983, Ser. No. 537,038

Int. Cl.⁴ G06F *9/00*

U.S. Cl. 364—200 **6 Claims**



1. In a central processing unit having apparatus for executing macroinstructions emulated by microinstructions having a plurality of lines of microcode, a control store arrangement including:

an entry point table, addressed by said macroinstructions, for providing a pointer related to each of said macroinstructions,

a control store having output lines, responsive to each of said pointers, for providing on output lines connected thereto the second and subsequent lines of said microcode for each of said macroinstructions,

an entry control store, containing the first line of microcode for each macroinstruction, addressed by said macroinstructions, having output lines

Selection means, responsive to microcode indicia in each of said macroinstructions which indicates that execution of the next of said macroinstructions should be started, for selectively connecting said output lines of said control store or said output lines of said entry control store to said bus.

4,574,345

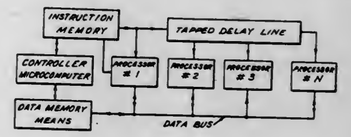
MULTIPROCESSOR COMPUTER SYSTEM UTILIZING A TAPPED DELAY LINE INSTRUCTION BUS

Gregory A. Konesky, Hampton Bays, N.Y., assignor to Advanced Parallel Systems, Inc., Port Jefferson, N.Y.

Continuation-in-part of Ser. No. 250,075, Apr. 1, 1981, abandoned. This application Apr. 27, 1983, Ser. No. 489,169

Int. Cl.⁴ G06F *15/04, 15/20*

U.S. Cl. 364—200 **13 Claims**



1. A multiprocessor data processing system, which comprises

(a) a plurality of microprocessor units,

(b) an instruction memory device electrically storing a common set of instructions in a pre-ordered sequence, each of said instructions being stored in representative digital electrical signal form,

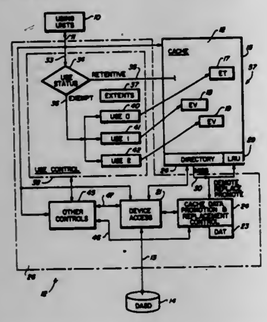
(c) said instruction memory device including an output port,
(d) first electrical control means being associated with said instruction memory device and operable to control said instruction memory device whereby the digital electrical signals representative of each of said instructions are applied to said output port, pursuant to the pre-ordered sequence, one at a time, in a timed sequence,
(e) a tapped delay line instruction bus means having an input port electrically connected to the output port of said instruction memory device and including a plurality of individual tap buses,
(f) said tapped delay line instruction bus means including second electrical control means operable to control the digital electrical signals representative of said instructions applied to the input port in said pre-ordered, timed sequence whereby the digital electrical signals for each of said pre-ordered instructions are applied to each of said individual tap buses, one tap bus at a time, pursuant to said pre-ordered sequence, in a timed, time-skewed sequence synchronized with said first-mentioned time sequence,
(g) each of said plurality of microprocessor units being electrically connected to one of said individual tap buses, whereby each of said microprocessor unit receives the representative electrical signals for each of the instructions pursuant to said pre-ordered, time sequences.

4,574,346

METHOD AND APPARATUS FOR PERIPHERAL DATA HANDLING HIERARCHIES

Michael H. Hartung, Tucson, Ariz., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 29, 1982, Ser. No. 426,367
Int. Cl.⁴ G06F *12/08, 13/14*
U.S. Cl. 364—200 **64 Claims**



1. In a data-storage hierarchy for being connected to a host processor having a plurality of computer processes for data processing operations and the hierarchy having a rapid-access front store and a slow-access back store; data transfer means coupled to said host processor and to said front and back stores to automatically transfer data therebetween, each store having a plurality of addressable data storage areas;
the improvement including, in combination:
commitment control means for receiving and storing commands from the host processor indicating for each of said addressable data storage areas in said front store either a first type of data receivable from the host processor which is committed to be retentively stored by said hierarchy or for each of said addressable data storage areas in said front store a second type of data receivable from the host processor which is to be exempted from said retentive storage commitment, change means in said commitment control means responsive to the commands received from the host processor for changing said indications for any one of said addressable data storage areas in said front store and connected to said data transfer means for actuating the data transfer means to transfer data between said front store to said back store in accordance with said changed indications; and
data storage control means coupled to said commitment control means and to said data transfer means and having first means for being responsive to the first type of data for storing such received first type of data in said back store and in said front store when access by said host-processor to such first type of data is to be enhanced and having second means for being responsive to the second type of data for storing such received second type of data in said front store.

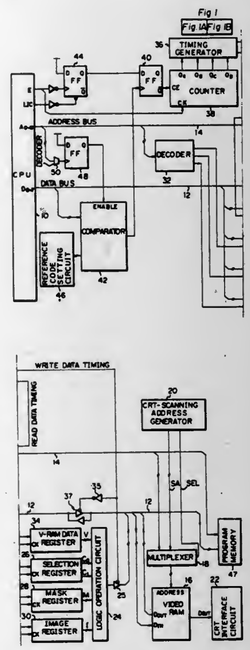
4,574,347

DATA PROCESSING APPARATUS FOR PERFORMING HIGH-SPEED ARITHMETIC OPERATIONS

Shosuke Mori, Tokyo; Makoto Awaga, Yokohama; Kiminori Fujisaku; Mitsuru Yamauchi, both of Inagi, and Hitoshi Ono, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 7, 1983, Ser. No. 549,472
Claims priority, application Japan, Nov. 8, 1982, 57-194558
Int. Cl.⁴ G06F *7/38*
U.S. Cl. 364—200 **23 Claims**

Fig 1
Fig 1A/Fig 1B



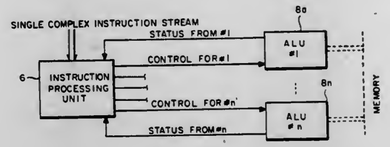
1. A data processing apparatus, comprising:
a central processing unit for executing a plurality of instruction codes;
a data bus connected to said central processing unit;
memory means, connected to said data bus, for storing data received from said central processing unit via said data bus;
identification means, connected to said data bus, for identifying a predetermined instruction code from the plurality of instruction codes, the predetermined instruction code requiring said central processing unit to access said memory means; and
logic operation means, connected to said data bus, said central processing unit and said identification means, for operating on data when the predetermined instruction code is identified, by receiving data from said memory means via said data bus, executing a first operation using the received data to produce data, and writing the produced data in said memory means, said logic operation means receiving, executing and writing while said central processing unit is executing a second operation as instructed by the predetermined instruction code, thereby completing the first operation in less time than said central processing unit would take to complete the first operation.

4,574,348

HIGH SPEED DIGITAL SIGNAL PROCESSOR ARCHITECTURE

Gregory M. Scallon, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Jun. 1, 1983, Ser. No. 499,842
Int. Cl.⁴ G06F *7/00, 9/06*
U.S. Cl. 364—200 **13 Claims**



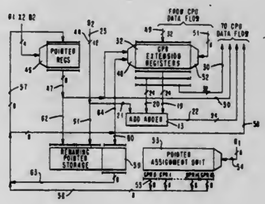
1. A data processor comprising:
(a) a sequence controller for generating complex instruction address signals identifying addresses of complex instructions, a plurality of said complex instructions forming a program for solving an algorithm,
(b) program memory storage means for storing said complex instructions at address locations identified by said address signals,
(c) a first and second arithmetic and logic unit (ALU) for processing data in accordance with said complex instructions from said program memory storage means,
(d) said complex instructions having first fields for providing first instructions to said first ALU, and distinct, second fields for providing distinct, second instructions to said second ALU,
(e) said first and second fields of said complex instructions simultaneously transmitted respectively to said first and second ALUs for synchronizing the operation of said first and second ALUs in executing said program,
(f) a data memory storage device for storing data,
(g) a data address unit connected to said data memory storage device for generating data addresses to control storage and retrieval of data in said data memory storage device,
(h) said complex instructions including third fields for providing data address instructions,
(i) said data address unit connected to receive said data address instructions of said third fields from said program memory storage device for selecting said data addresses to be generated,
(j) said first and second ALUs connected to receive data from said data memory storage device, and
said third fields of said complex instruction transmitted simultaneously with said first and second fields to synchronize data storage and retrieval of said data memory storage device.

4,574,349

APPARATUS FOR ADDRESSING A LARGER NUMBER OF INSTRUCTION ADDRESSABLE CENTRAL PROCESSOR REGISTERS THAN CAN BE IDENTIFIED BY A PROGRAM INSTRUCTION

Rudolph N. Rechtschaffen, Scarsdale, N.Y., assignor to International Business Machines Corp., Armonk, N.Y.

Continuation of Ser. No. 249,270, Mar. 30, 1981, abandoned.
This application Mar. 21, 1984, Ser. No. 591,705
Int. Cl.⁴ G06F *9/00*
U.S. Cl. 364—200 **4 Claims**



1. A data processing system having main storage means comprising addressable locations containing data and instructions, a central processor including an instruction register connected to the main storage means for receiving and storing instructions including a first binary field representing an address displacement value and indentifying a particular addressable main storage location, one or more second binary fields each identifying one of a predetermined number (n) of instruction addressable general purpose registers, and an operation field specifying an operation to be performed, one operation being a load instruction effecting transfer of data to a specified one of said instruction addressable general purpose registers, and transfer means responsive to a central processor generated main storage address for fetching and transferring to the central processor the data and instructions, the improvement allowing access to a larger number (m) of general purpose registers without increasing the size of said second binary fields comprising:
a plurality m of hardware registers in the central processor for storing data transferred from the main storage means in the central processor, including access means for effecting read-in or read-out of data in said plurality of hardware registers, said plurality m being greater than the predetermined number of instruction addressable general purpose registers identified by the one or more second binary fields of an instruction, and
register renaming means, including means connected and responsive to the first binary field and the second binary fields of a load instruction, and connected to said access means of said plurality m of hardware registers, said register renaming means controlling further access to one of said plurality m hardware registers in response to identification of one of said n instruction addressable general purpose registers.

4,574,350

SHARED RESOURCE LOCKING APPARATUS

Daniel C. Starr, St. Charles, Ill., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed May 19, 1982, Ser. No. 379,731
Int. Cl.⁴ G06F *13/00, 13/14*
U.S. Cl. 364—200 **40 Claims**

1. A program controlled system having a memory READ command and a memory WRITE command for reading and writing memory, respectively, by sending the command to memory, the system for selectively treating the conventional memory READ or memory WRITE command either as a

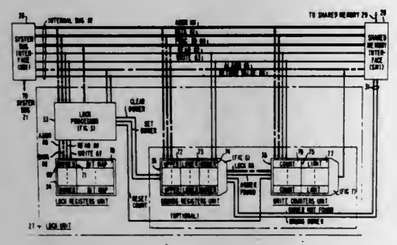
memory command or as a resource locking request, the system comprising:

(A) a plurality of devices for accessing resources;

(B) at least one resource coupled to the plurality of devices for access by the plurality of devices;

(C) resource access controlling apparatus coupled to the plurality of devices for controlling access to the at least one resource by the plurality of devices;

(D) each of the plurality of devices having means for requesting from the resource access controlling apparatus access to a resource by sending one of the memory READ command and the memory WRITE command to the resource access controlling apparatus, and for awaiting a response from the resource access controlling apparatus to the request before continuing operation that includes accessing the resource;



(E) the resource access controlling apparatus including

(1) means, responsive to the one of the memory READ and the memory WRITE commands sent to the apparatus, for determining whether the resource may currently be accessed by a requesting device,

(2) means, responsive to one or more of the one of the memory READ and the memory WRITE commands sent to the apparatus, for selecting for access to the resource a device requesting access to the resource, and

(3) means, cooperative with the determining means and the selecting means and responsive to the one of the memory READ and the memory WRITE commands sent to the apparatus by the selected device, for sending to the selected device a response when the determining means indicate that the resource may be accessed, to grant the selected device exclusive use of the resource.

4,574,351

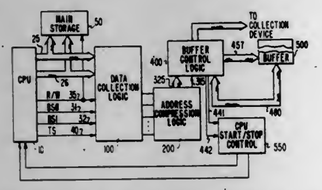
APPARATUS FOR COMPRESSING AND BUFFERING DATA

Lam Q. Dang; Charles P. Geer; Merle E. Houdek; Eugene R. Jones; Frank G. Soltis; John A. Soyring, and Thomas M. Walker, all of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 3, 1983, Ser. No. 471,944

Int. Cl.⁴ G06F *15/74, 5/00*

U.S. Cl. 364—200 **12 Claims**



1. Apparatus for compressing and buffering large amounts of data collected in real time from a computer system having a central processing unit (CPU), control means having an output for starting and stopping said CPU, virtual storage addressed by virtual storage addresses and real storage addressed by real storage addresses formed by converting the virtual addresses to real storage addresses, the improvement comprising;

means for converting said real storage addresses to virtual storage addresses where said virtual storage addresses include a segment identifier and an offset;

compression menas for compressing said virtual storage addresses formed by converting said real storage addresses, said compression means including means for adding leading bits to said offset to distinguish said offset from said segment identifier, means for adding other bits to said offset to relate said offset to a segment identifier and means for temporarily storing only unique segment identifiers of said virtual storage addresses formed by converting said real addresses and for temporarily storing all offsets including said added bits;

buffer means coupled to the compression means for storing said segment identifiers and said offsets temporarily stored by said compression means;

monitoring means for monitoring said buffer means and providing a stop CPU signal to said control means upon said buffer means having a predetermined amount of data; and

emptying means coupled to the monitoring means for emptying said buffer means to a collection device after it has been filled with said predetermined amount of data and for providing a start CPU signal to said control means after said buffer has been emptied.

4,574,352

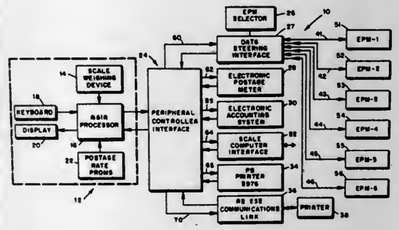
DROP SHIPMENT MAILING SYSTEM

Vincent G. Coppola, Branford; John L. Lorenzo, Southbury; Edwin G. Grisgraber, Shelton, and Flavio M. Manduley, Woodbury, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Mar. 7, 1983, Ser. No. 472,521

Int. Cl.⁴ G01G *19/40*

U.S. Cl. 364—466 **10 Claims**



1. A mailing system comprising, in combination, a scale including weighing means for determining weights, data entry means for entering postage value determining data, and processor means responsive to the weights and the postage value determining data for determining postage values; a plurality of electronic postage meters for dispensing postage denominations for mail service, each postage meter adapted to dispense postage denominations for mailing from a selected different postal zone distribution point; a data steering interface for establishing an interconnection between the postage value determining processor and a selected one of said postage meters; and selector means for operator input of a postage meter selection signal for selecting one of the plurality of postage meters, the selector means being interconnected with the data steering interface for directing the data steering interface to establish an interconnection with the selected postage meter.

4,574,353

YARN SUPPLY DEVICE GROUP

Jerker Hellström, Nol; Lars H. G. Tholander, Huskvarna, and Kurt A. G. Jacobsson, Ulricehamn, all of Sweden, assignors to Aktiebolaget IRO, Ulricehamn, Sweden

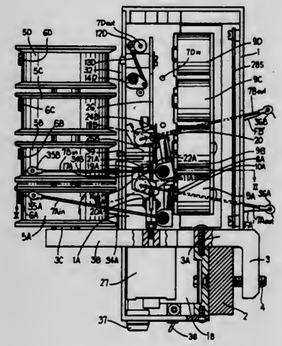
PCT No. PCT/EP82/00238, § 371 Date Jun. 29, 1983, § 102(e) Date Jun. 29, 1983, PCT Pub. No. WO83/01634, PCT Pub. Date May 11, 1983

PCT Filed Nov. 4, 1982, Ser. No. 522,372

Claims priority, application Sweden, Nov. 4, 1981, 8106506

Int. Cl.⁴ G06F *15/46;* D04B *15/48*

U.S. Cl. 364—470 **15 Claims**



1. A yarn supply device group, comprising a central control unit, a plurality of yarn supply devices adapted to be attached to a textile machine, and a plurality of conductors which are connected to each said yarn supply device and to said central control unit, wherein each said yarn supply device includes electrically actuable devices and an electronic switching arrangement which controls said electrically actuable devices, each said switching arrangement including a memory which can be written and read and which is adapted to store a unique address sent to the yarn supply device by said central control unit through at least one of said conductors, and wherein said central control unit includes means for sending said unique addresses to said memories of said yarn supply devices when said textile machine is switched on.

4,574,354

METHOD AND APPARATUS FOR TIME-ALIGNING DATA

Michael A. Mihalik, Beaverton; Gerd H. Hoeren, Lake Oswego; Michael G. Reiney, Tigard; James J. Besemer, Portland, and Steven R. Palmquist, Beaverton, all of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Nov. 19, 1982, Ser. No. 442,948

Int. Cl.⁴ G06F *15/20;* G01R *31/28*

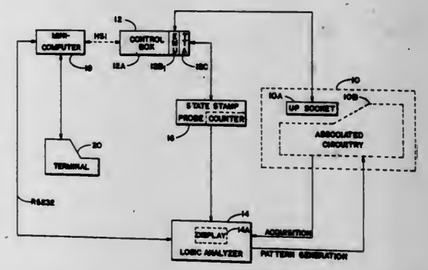
U.S. Cl. 364—481 **10 Claims**

1. A method of time aligning in chronological order a second set of data with a corresponding separately-generated first set of data, comprising the steps of:

acquiring by separate means said first set of data and said second set of data;

producing a series of identifiers wherein an identifier is produced in response to each acquisition of said first set of data;

associating each of said identifiers with said each acquisition of said first set of data and with acquisitions of said second set of data which correspond with said each acquisition of said first set of data; and



grouping said corresponding acquisitions of said first and second sets of data in chronological order in accordance with said series of identifiers.

4,574,355

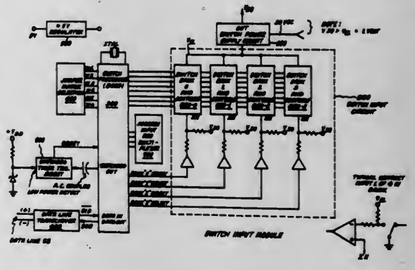
ARRANGEMENT FOR SENSING REMOTE BINARY INPUTS

Robert M. Beatty, Warwick; Edward B. Miller, and Paul G. Huber, both of West Warwick, all of R.I., assignors to General Electric Company, Bridgeport, Conn.

Filed Nov. 2, 1983, Ser. No. 548,110

Int. Cl.⁴ H02J *3/10*

U.S. Cl. 364—492 **9 Claims**



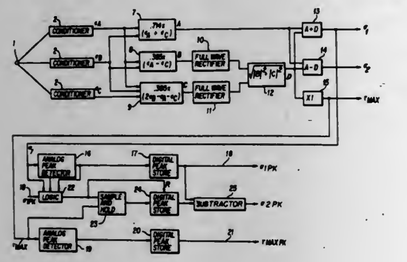
1. In a system for controlling distributed electrical loads including a central controller for providing a data signal defining the manner in which said loads are to be controlled; plural transceiver devices, each device being connected to control a subset of said loads by controlling relays in respective power circuits of said loads and including means for receiving contact closure inputs and transmitting information related thereto to the central controller; and a single data line connecting said central controller with each transceiver device, and improved transceiver device, comprising:

means, coupled to said receiving means, for monitoring the current state of any contact closure input to said transceiver and transmitting information indicative thereof to the central controller.

4,574,356
PEAK DYNAMIC STRESS CALCULATOR

George K. Schattschneider, Victoria, and James R. Matthews, Lower Sackville, both of Canada, assignors to Minister of National Defence of Her Majesty's Canadian Government, Ottawa, Canada

Filed Feb. 22, 1983, Ser. No. 468,627
Claims priority, application Canada, Feb. 11, 1982, 468627
Int. Cl.[4] G01B 7/16
U.S. Cl. 364—508 7 Claims



3. Apparatus for the determination of stress in a structural member of a known material, comprising:

a rectangular strain gauge rosette, including a first strain gauge rosette arm located along a principal axis of the structural member to be measured for providing a first input signal ϵ_A, a second strain gauge rosette arm located at a 45° angle to the first arm for providing a second input signal ϵ_B, and a third strain gauge rosette arm located at a 90° angle to the first ram for providing a third input signal ϵ_C;

first analog signal processor means, connected to receive the three input signals ϵ_A, ϵ_B, and ϵ_C, for continuously providing three stress signals, namely, a maximum principal stress signal σ_1 representative of maximum principal stress detected by the rosette, a minimum principal stress signal σ_2 representative of minimum principal stress detected by the rosette, and a maximum shear stress signal τ_{max} representative of maximum shear stress detected by the rosette, for each instantaneous input signal upon receipt of said input signals, the first signal processor means including circuit means having three simultaneous analog transfer functions,

$$\sigma_1 = \quad (1)$$

$$E\left[\frac{\epsilon_A + \epsilon_C}{2(1-\nu)} + \frac{1}{2(1+\nu)}\sqrt{(\epsilon_A - \epsilon_C)^2 + (2\epsilon_B - \epsilon_A - \epsilon_C)^2}\right]$$

$$\sigma_2 = \quad (2)$$

$$E\left[\frac{\epsilon_A + \epsilon_C}{2(1-\nu)} - \frac{1}{2(1+\nu)}\sqrt{(\epsilon_A - \epsilon_C)^2 + (2\epsilon_B - \epsilon_A - \epsilon_C)^2}\right]$$

$$\tau_{MAX} = \frac{\sigma_1 - \sigma_2}{2} = \quad (3)$$

$$\frac{E}{2(1-\nu)}\sqrt{(\epsilon_A - \epsilon_C)^2 + (2\epsilon_B - \epsilon_A - \epsilon_C)^2}$$

where ν and E are first and second constants, respectively, of the structural member material; and

second signal processor means for providing and storing three output signals, namely, a peak maximum principal stress signal σ_{1PK} representative of peak maximum principal stress detected by the rosette, a signal σ_{2PK} representative of minimum principal stress at the instant of peak maximum principal stress, and a peak maximum shear stress signal $\tau_{max\ PK}$ representative of peak maximum shear stress detected by the rosette, in which the second signal processor means comprises

first signal storing means for storing the peak voltage amplitude of the maximum principal stress signal σ_1,

a first comparator having an output, a first input connected to receive said peak voltage amplitude stored by the first signal storing means, and a second input;

a first AND gate having an output, a first input connected to receive the output signal of the first comparator, and a second input connected to receive a clock signal,

a first counter, having an output and having an input connected to the output of the first AND gate;

a first digital-to-analog converter having an input connected to the output of the first counter, for continuously providing the peak maximum principal stress signal σ_{1PK}, the second input of the first comparator being connected to receive the peak principal stress signal σ_{1PK} provided by the first digital-to-analog converter, whereby the first AND gate passes clock pulses which are counted the first counter whenever the peak voltage amplitude applied to the first input of the first comparator exceeds the peak maximum principal stress signal σ_{1PK} applied to the second input of the first comparator,

a second comparator having an output, a first input connected to receive the peak voltage amplitude stored by the first signal storing means, and a second input connected to receive the maximum principal stress signal σ_1, for generating an output signal of a predetermined polarity whenever the maximum stress principal stress signal σ_1 exceeds the stored peak voltage amplitude,

a third comparator having an output, a first input connected to receive the peak maximum principal stress signal σ_{1PK}, and a second input connected to receive the maximum principal stress signal σ_1, for generating an output signal of said predetermined polarity when the maximum stress principal stress signal σ_1 exceeds the peak maximum principal stress signal σ_{1PK},

a second AND gate having an output, a first input connected to the output of the second comparator, and a second input connected to the output of the third comparator,

a sample and hold circuit, having an output, a first input connected to receive the maximum shear stress signal τ_{max}, and a second input connected to the output of the second AND gate, for sampling and holding the peak voltage value of the maximum shear stress signal τ_{max} at the time of occurrence of a new peak maximum principal stress,

a fourth comparator having an output, a first input connected to the output of the sample and hold circuit, and a second input,

a third AND gate having an output, a first input connected to the output of the fourth comparator, and a second input connected to receive the clock signal,

a second counter having an output and having an input connected to the output of the third AND gate,

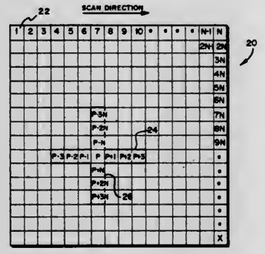
a second digital-to-analog converter, connected to the output of the second counter, for providing a second counter output signal, the second input of the fourth comparator being connected to receive the second counter output signal, and

subtractor means, connected to receive the second counter output signal and the peak maximum principal stress signal σ_{1PK}, for doubling the second counter output signal and subtracting the doubled second counter output signal from the peak maximum principal stress signal σ_{1PK}, to continuously provide the signal σ_{2PK} representative of the minimum principal stress at the instant of peak maximum principal stress.

4,574,357
REAL TIME CHARACTER THINNING SYSTEM

José Pastor, Westport; Harry L. Parker, and David H. Wilson, both of Fairfield, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Feb. 21, 1984, Ser. No. 582,109
Int. Cl.[4] G06K 9/44
U.S. Cl. 364—518 35 Claims



1. A system for providing a video output signal representing a thinned image from digitized video input signals representing discrete picture elements (pixels) of a scanned image, comprising:

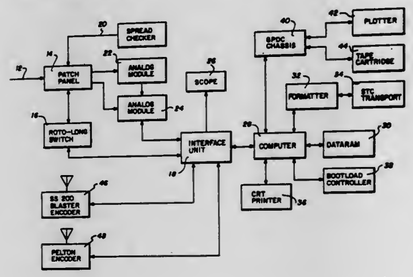
convolver circuit means for identifying those pixels which are to be retained as part of the thinned image, those pixels which are to be discarded from the thinned image, and contingent pixels which may be part of the thinned image; and

matrix filter circuit means electrically coupled to said convolver means for determining which of the contingent pixels are to be discarded and which of the contingent pixels are to be retained as part of the video output signal representing a thinned image.

4,574,358
MONITOR DISPLAY CONTROL

Robert D. Peterson, Plano, and Wayne A. Penner, Farmers Branch, both of Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Sep. 14, 1982, Ser. No. 418,125
Int. Cl.[4] G01V 1/00
U.S. Cl. 364—550 13 Claims



1. In a seismic data acquisition system including a receiver for receiving and processing seismic data signals from a plurality of channels and a recorder connected to the output of the receiver for recording the seismic data signals, a monitor display comprising:

first means connected to the output of the receiver for converting each seismic data signal from each channel to an amplitude signal by integrating said each seismic data signal;

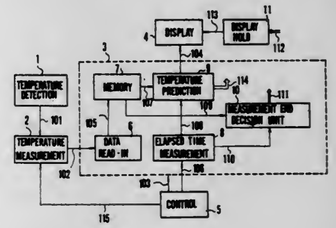
second means for associating each channel of said plurality of channels with a display location; and

display means connected to said first means and said second means for displaying said amplitude signal at a display location corresponding to each channel before recording said seismic data signals.

4,574,359
ELECTRONIC CLINICAL THERMOMETER, AND METHOD OF MEASURING BODY TEMPERATURE

Hideo Ishizaka, and Yoshiki Hanzawa, both of Fujinomiya, Japan, assignors to Terumo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 14, 1983, Ser. No. 561,181
Claims priority, application Japan, Dec. 21, 1982, 57-222944; Dec. 21, 1982, 57-222946
Int. Cl.[4] G01K 7/24
U.S. Cl. 364—557 18 Claims



1. An electronic clinical thermometer comprising:

temperature detecting means for detecting temperature at a part of a body and for generating a first signal indicative of the detected temperature;

storage means for sequentially storing the first signal;

elapsed time measuring means for measuring time which has elapsed since start of measurement and for generating a second signal indicative of the measured elapsed time;

first arithmetic means for reading the first signal, corresponding to a prescribed length of past time, out of said storage means to obtain a mean value during said length of past time, and for producing a third signal;

second arithmetic means for obtaining a predicted value of a stable temperature from the second and third signals on the basis of a stable temperature prediction function in which measurement time is a variable, the function defining a temperature change up to final, stable temperature;

first control means in response to which arithmetic operations are performed by said first and second arithmetic means at a predetermined period;

display means for displaying the predicted value of stable temperature; and

second control means responsive to said elapsed time measuring means for subjecting the first signal and third signal to a comparison at two successive points in time;

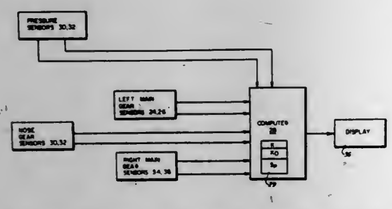
wherein after said second control means determines that the second signal has exceeded a first prescribed elapsed time and that a difference exhibited by the third signal corresponding to two successive points in time no longer shows an increase outside a first prescribed range, the third signal corresponding to a present point in time is compared with the third signal at the preceding point in time and, when the first signal exhibits a decrease outside a second prescribed range, said second control means halts the operation of said first and second arithmetic means.

4,574,360

HELICOPTER WEIGHT MEASURING SYSTEM

Charles D. Bateman, Bellevue, Wash., assignor to Sundstrand Data Control, Inc., Rockford, Ill.

Filed Apr. 1, 1983, Ser. No. 481,487
Int. Cl.⁴ G01G *19/00*; G06F *15/20*
U.S. Cl. 364—567 **7 Claims**



1. A weight measuring system for a helicopter having a set of landing gear and a rotating wing for imparting lift having an effective disc area, comprising:

first means for generating a representation of the load supported by the set of landing gear;

second means including a pressure sensor having an output representing the slipstream pressure developed by the rotating wing, a memory for storing a representation of said effective disc area and means coupled to said pressure sensor and said memory for generating a representation of said lift from said slipstream pressure and said effective disc area; and

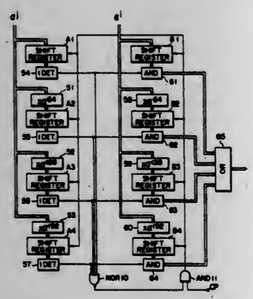
third means coupled to said first and second means for calculating an indication of the total weight of the helicopter from said load supported by the set of landing gear and said lift.

4,574,361

APPARATUS FOR DIVIDING THE ELEMENTS OF A GALOIS FIELD

Jun Inagawa, Yokohama; Masahide Nagumo, Kawasaki, and Tadashi Kojima, Yokosuka, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 10, 1983, Ser. No. 473,765
Claims priority, application Japan, Jun. 15, 1982, 57-102803; Jun. 15, 1982, 57-102805
Int. Cl.⁴ G06F *7/52*
U.S. Cl. 364—761 **6 Claims**



1. An apparatus for dividing one element α^i of a Galois field $GF(2^m)$ consisting of 2^m elements by another element α^j, thus performing a division of $\alpha^i \div \alpha^j$, where α is the root of a modulus polynominal $F(x)$, said apparatus comprising:

a first linear shift register for storing data representing the element α_i;

a second linear shift register for storing data representing the element α^j;

a first "1" detector circuit connected to the output of said first linear shift register;

first shift means for detecting the number of times said first "1" detector circuit produces no output and for generating a shift signal to shift said first and second linear shift registers M times according to the detecting result; and

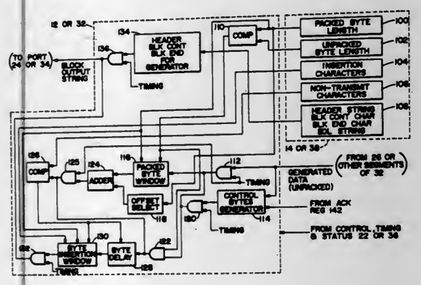
first output means for providing, as a quotient of the division $\alpha^i \div \alpha^j$, that output $\alpha^i \cdot \alpha^M$ of said second linear shift register which is obtained when the output of said first linear shift register controlled by said first shift means becomes $\alpha^j \cdot \alpha^M = 1$, when said first output means receives a "1" detection output of said first "1" detector circuit which is obtained when said first "1" detector circuit detects that $\alpha^j \cdot \alpha^M = 1$.

4,574,362

BLOCK MODE DIGITAL SIGNAL CONDITIONING METHOD AND APPARATUS

Howard R. Spindel, Tualatin; Vincent N. Ast, Jr., Portland, and Gary L. Brown, Tualatin, all of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Apr. 12, 1982, Ser. No. 367,660
Int. Cl.⁴ G06F *5/00*
U.S. Cl. 364—900 **6 Claims**



1. A method of conditioning a digital data string for transmission between a first and a second digital unit on an asynchronous communication line, the method comprising the steps of:

a. determining a maximum number of bits per byte each of the first and second digital units can accept;

b. serializing a plurality of data bytes to be transmitted from the first digital unit into a continuous string of data bits;

c. prefixing a preselected header string to the data string to identify the transmission source;

d. packing the serialized data string of step b. into pseudo-bytes each having a number of bits that is no longer than the smaller of the maximum numbers determined in step a.;

e. appending a preselected control character string following the data string to identify the end of the packed data string; and

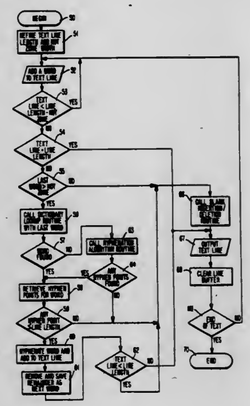
f. arithmetically adding an offset value to each pseudo-byte, the value of which is dependent on and preselected for the length of the pseudo-bytes.

4,574,363

MIXED MODE ENHANCED RESOLUTION HYPHENATION FUNCTION FOR A TEXT PROCESSING SYSTEM

Richard G. Carlgren, Gaithersburg; Martin A. Reed, Rockville, and Walter S. Rosenbaum, Bethesda, all of Md., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 13, 1982, Ser. No. 397,703
Int. Cl.⁴ G06F *9/20, 5/00*; B41B *27/10*
U.S. Cl. 364—900 **10 Claims**



1. In a text processing system including at least a central processor, a keyboard, a display, a memory and a printer, an improved method for producing right margin justified text data comprising in combination the steps of:

(a) setting a text line length;

(b) setting a hot zone width less than said text line length;

(c) scanning text data in said memory and concatenating strings of said text data into a text line;

(d) comparing the length of said text line to the set text line length;

(e) inserting a hyphen into a last text string in said text line when the length of said text line exceeds said set text line length;

(f) deleting from said text line an entire portion of said last text string which follows said hyphen;

(g) scanning the text line for text strings equal to members of a set of text strings stored elsewhere in said memory;

(h) adding space to said text line preceding and following said text strings equal to said members of said stored set of text strings until said text line length equals said set line length; and

(i) printing said text line, whereby said text line ends with said hyphen at an end of said set text line length as a result of the addition of space before and after text strings in said line equal to members of said set of text strings stored elsewhere in said memory.

4,574,364

METHOD AND APPARATUS FOR CONTROLLING IMAGE DISPLAY

Kuniaki Tabata, Tokyo; Susumu Tsuhara; Tetsuo Machida, both of Sagamihara; Hidefumi Iwami, Machida, and Yasuyuki Okada, Sagamihara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

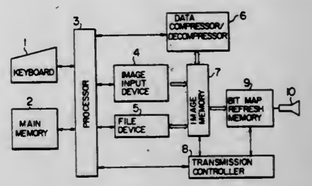
Filed Nov. 23, 1982, Ser. No. 443,872
Int. Cl.⁴ G06F *3/153*
U.S. Cl. 364—900 **10 Claims**

1. An image display control system comprising:

a file device for storing a plurality of image data;

image display means for displaying partial areas of said image data in a plurality of windows on a display screen;

a memory containing a file management table for managing information including titles of image data stored in said file device and storage addresses therefor and a window management table for managing information including locations and sizes of the windows on the display screen, titles of the image data, window levels indicative of the order of superposition of the windows on the display screen and quarry locations of the image data in the memory;



an input device for inputting commands and data on said locations and sizes of the windows, said titles of the image data, said window levels, and the quarry locations of the image data for storage in said memory; and

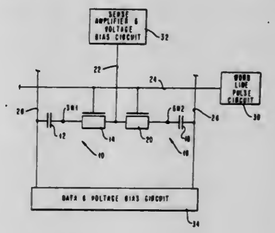
a processor connected to said image display means, said memory, said input device and said file device for reading out the image data from said file device in accordance with a command indicative of execution of display inputted from said input device for controlling the display of the desired quarried images obtained from said file device in the windows of said image display means on the basis of data stored in said file management table and said window management table.

4,574,365

SHARED ACCESS LINES MEMORY CELLS

Roy E. Scheuerlein, Burlington, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 18, 1983, Ser. No. 485,808
Int. Cl.⁴ G11C *13/00, 11/24*
U.S. Cl. 365—149 **26 Claims**



20. A memory comprising

a sense line,

first and second bit lines,

first switching means having a control electrode interposed between said sense line and said first bit line,

a first storage capacitor having a first conductive plate connected to said first bit line and a second conductive plate connected to said sense line through said first switching means,

second switching means having a control electrode interposed between said sense line and said second bit line,

a second storage capacitor having a first conductive plate connected to said second bit line and a second conductive

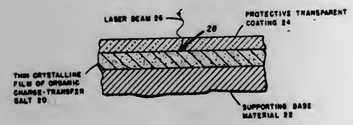
plate connected to said sense line through said second switching means,
a word line connected to said control electrodes,
means for selectively applying a voltage pulse to said word line,
means for selectively applying a voltage to said sense line, and
means for selectively applying data signals to said first and second bit lines.

4,574,366

OPTICAL STORAGE AND SWITCHING DEVICES USING ORGANIC CHARGE TRANSFER SALTS

Richard S. Potember; Theodore O. Poehler, both of Baltimore, and Richard C. Benson, Columbia, all of Md., assignors to The Johns Hopkins University, Baltimore, Md.

Filed Feb. 7, 1983, Ser. No. 464,771
Int. Cl.⁴ G11C *11/00*
U.S. Cl. 365—153 **75 Claims**



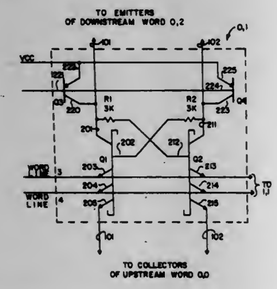
1. An optically sensitive apparatus comprising:
an organic charge transfer salt formed from a donor complexed with an organic electron acceptor; and,
a source of electromagnetic energy at optical frequency, said electromagnetic energy illuminating an area on said organic electron charge transfer salt and causing said illuminated area to undergo an electrochemical topotactic redox reaction which causes a charge transfer between said organic electron acceptor and said donor, thereby switching said illuminated area from an equilibrium state to a second state, said second state having a detectably different charge distribution from said equilibrium state.

4,574,367

MEMORY CELL AND ARRAY

Barry A. Hoberman, Palo Alto, and William E. Moss, Sunnyvale, both of Calif., assignors to Monolithic Memories, Inc., Santa Clara, Calif.

Filed Nov. 10, 1983, Ser. No. 551,736
Int. Cl.⁴ G11C *11/40*
U.S. Cl. 365—179 **8 Claims**



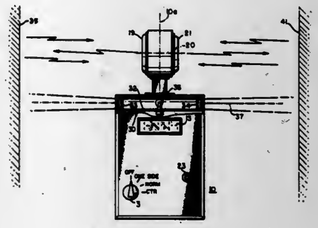
5. A memory array comprising a plurality of rows and columns of memory cells wherein each of said memory cells comprises:
a first and a second transistor in a first row, each of said transistors comprising a plurality of electrodes including a first, a second and a third emitter, a base and a collector;
means for coupling each of said first and said second transistors to a pair of corresponding transistors in an adjacent row of said memory cells in said array; and
means for applying predetermined potentials to said electrodes for transferring a bit of information between said first and said second transistors and said corresponding transistors in said adjacent row.

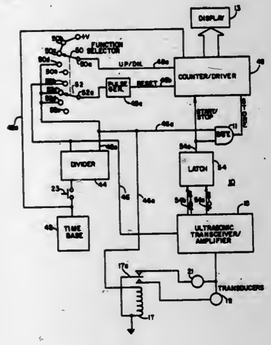
4,574,368

DISTANCE MEASURING SYSTEM USING ULTRASONIC RANGING

James N. Lipschutz, Gulph Mills, Pa., assignor to Record Industrial Company, King of Prussia, Pa.

Filed Feb. 23, 1983, Ser. No. 469,090
Int. Cl.⁴ G01S *15/10, 7/56*
U.S. Cl. 367—108 **9 Claims**





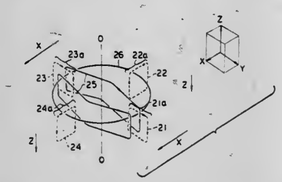
1. A system for measuring the distance between a first and a second object comprising:
a first and second ultrasonic transducer;
switching means including counter means for energizing the first transducer to transmit a first ultrasonic pulse to said first object and thereupon actuating the counter means to begin the start of an initial count, means for stopping the initial count by said counter means when the first ultrsonic pulse is received by said first transducer;
said switching means including timing means for energizing the second transducer to transmit a second ultrasonic pulse to said second object only after a delay interval which begins at the start of the initial count and is substantially equal to the maximum range of the first transducer thereby causing the first ultrsonic pulse to be entirely dissipated before transmitting the second pulse;
restarting the initial count by the counter means upon transmittal of the second ultrasonic pulse; and
means for stopping the restarted count when the second ultrasonic pulse is received by the second trnsducer and means for displaying the resultant count as a number related to the total distance between the first and second objects.

4,574,369

TRACKING/FOCUSING DEVICE FOR POSITIONING AN OPTICAL LENS UNIT

Hiroshi Koide, Sagamihara; Junichi Watanabe, Kawasaki, and Shigemoto Tenmyo, Tokyo, all of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Filed Jan. 28, 1983, Ser. No. 461,741
Claims priority, application Japan, Jan. 28, 1982, 57-12143; May 28, 1982, 57-90956; May 31, 1982, 57-91472; May 31, 1982, 57-98638; Jun. 9, 1982, 57-99042; Jun. 10, 1982, 57-99586
Int. Cl.⁴ H04N *5/781;* G11B *7/00, 21/00*
U.S. Cl. 369—44 **6 Claims**



1. An optical positioning device for positioning an optical lens unit relative to information recording tracks on an optical recording surface comprising:
a body case having a vertical passageway with a central vertical axis;
a bobbin moveably disposed in said vertical passageway and supporting said optical lens unit, and having a vertical hollow defined therein; top and bottom support members resiliently connecting respective top and bottom portions of the bobbin to wall portion of the vertical pasageway so that said bobbin can move in both a vertical direction and a horizontal direction;
a first coil wound around a vertical axis of said bobbin;
a second coil would around a horizontal axis of said bobbin and circumscribing the bobbin in a vertical plane near the central vertical axis of the vertical passageway;
magnetic field generating means including an inner portion located in the hollow of said bobbin and an outer portion located outside said bobbin, said inner and outer portions defining a magnetic flux gap whose magnetic flux intersects both first and second coils so that the bobbin moves in said vertical direction when current is passed through the first coil and in said horizontal direction when current is passed through the second coil.

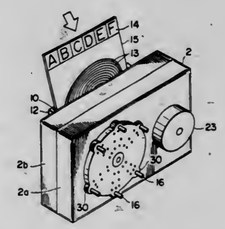
4,574,370

SOUND REPRODUCTION SELECTION APPARATUS FOR A SIMPLIFIED SOUND REPRODUCING DEVICE

Eishi Koike, Sagamihara, Japan, assignor to Ozen Corporation, Tokyo, Japan

Filed Jan. 16, 1985, Ser. No. 691,839
Claims priority, application Japan, Aug. 23, 1984, 59-175535
Int. Cl.⁴ G11B *3/40, 17/00*
U.S. Cl. 369—65 **5 Claims**

1. A sound reproducing selection apparatus for a simplified sound reproducing device comprising:
a casing;
an aperture formed in the casing;
a tone arm swingably mountable within the casing;
a center pin mounted within the casing;
a turn table rotatably supported by the center pin;
a sound reproducing stylus mounted on the tone arm and projecting toward the aperture in the casing;
an electric motor mounted within the casing for rotating the turn table;
a speaker diaphragm attached to the turn table opposite from the tone arm;
a record holder swingably attached at one end to the casing adjacent the aperture in the casing and having a record disc fixing portion formed at an opposite end;
first means for biasing the record holder away from the aperture in the casing;
the record holder being movable against the force of the first biasing means to a position parallel to the turn table;
a record disc having a plurality of record grooves formed therein, each of the record grooves having starting and end points of sound reproduction, the starting points of sound reproduction on each of the record grooves being spaced along the outer circumference of the record disc;
indexing means formed on the record disc for showing the item to be recorded in each record groove;
the record disc being insertable into the record holder with the indexing means being visible from outside of the record holder;
the sound reproducing stylus being engageable with the record disc when the record holder is urged against the force of the first biasing means;
means for temporarily stopping the sound reproducing stylus at a position in which the sound reproducing stylus can engage one of the record grooves in the record disc, the stopping means including;
(a) a plurality of selection poles corresponding in number to the number of record grooves on the record disc depressably mounted on the casing and extending into the casing;



(b) a stopper projecting radially outward from the outer periphery of the turn table and creating a locus of rotation about the periphery of the turn table upon rotation of the turn table; and
(c) the selection poles projecting onto the locus of rotation of the stopper when any one of the selection poles is depressed from outside of the casing;
a source of electrical power;
means for connecting the source of electrical power to the motor to rotate the motor after the sound reproducing stylus has engaged the selected record groove, the connecting means including:
(a) a plurality of electrically conductive energizing members respectively engageable with one of the selection poles;
(b) second means for biasing each of the selection poles toward the outside of the casing;
(c) a metal guide plate holding the selection poles along the periphery of the turn table and guiding the selection poles onto the locus of rotation of the stopper, the metal guide plate being capable of engaging the second biasing means;
(d) a projection formed on each of the selection poles, the projection urging the second biasing means into contact with the metal guide plate when the selection pole associated with the second biasing means is depressed; and
(e) the second biasing means associated with one of the

selection poles which is depressed and the metal guide plate forming a pair of contacts to complete a circuit between the source of electrical power and the motor to connect electrical power to the motor and cause rotation of the motor.

4,574,371

APPARATUS FOR RECORDING AND REPRODUCING INFORMATION ON AN OPTICAL DISC

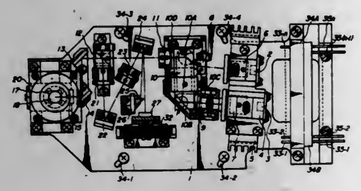
Haruhiko Takemura, Hino; Kiichi Kato, Hachioji, and Masaharu Sakamoto, Tokyo, all of Japan, assignors to Olympus Optical Company Limited, Japan

Filed Feb. 16, 1983, Ser. No. 466,910

Claims priority, application Japan, Feb. 20, 1982, 57-25243; Mar. 2, 1982, 57-28413[U]; Mar. 2, 1982, 57-28414[U]; May 11, 1982, 57-78680

Int. Cl.⁴ G11B *7/00*

U.S. Cl. 369—100 **31 Claims**



1. An apparatus for recording and reproducing information on and from an optical disc recording medium comprising:

recording and reproducing light sources;

an objective lens for focussing recording and reproducing light beams emitted from the recording and reproducing light sources onto the optical disc record medium;

a single composing optical member arranged between the light sources and the objective lens and having a reflection surface which reflects one of the recording and reproducing light beams and an optical surface upon which the light beam reflected by said reflection surface is made incident at an incident angle not smaller than a critical angle of total reflection and the other light beam is made incident at an incident angle substantially equal to Brewster's angle so that almost all of the other light beam is transmitted through the optical surface, for emitting composed recording and reproducing light beams; and

means comprising a plurality of optical members for directing the composed recording and reproducing light beams toward the objective lens.

4,574,372

LOCKING DEVICE FOR RECORD PLAYER APPARATUS

Stéphane M. A. d'Alayer de Costemore d'Arc, Ways, Belgium, assignor to Staar S.A., Brussels, Belgium

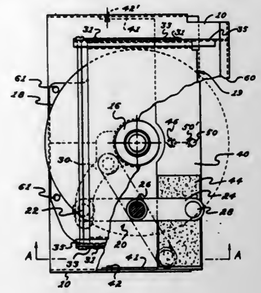
Filed Jan. 4, 1984, Ser. No. 568,141

Claims priority, application Belgium, Jan. 18, 1983, 209919; Jan. 30, 1983, 211089

Int. Cl.⁴ G11B *3/10, 7/00*

U.S. Cl. 369—244 **4 Claims**

1. In a record player having a movable record positioning means for translating a record from an inoperative load position to an operative play position, and a movable scanning support for operatively associating a laser carried by the support with a rotating record, the improvement comprising locking means associated with the movable scanning support having a locked position for engaging said support to restrain movement thereof and an unlocked position for freeing said support for scanning the record, and actuator means associated with the locking means for rendering said locking means locked when the player is switched off and including means for engaging the movable record positioning means for rendering



said locking means unlocked when the record positioning means is in the play position.

4,574,373

DIGITAL MULTIPLEX DEVICE

Reijo Ahola, Espoo, Finland, assignor to Oy Noki AB, Helsinki, Finland

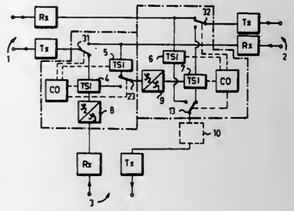
PCT No. PCT/FI83/00038, § 371 Date Dec. 23, 1983, § 102(e) Date Dec. 23, 1983, PCT Pub. No. WO83/03937, PCT Pub. Date Nov. 10, 1983

PCT Filed Apr. 29, 1983, Ser. No. 567,854

Claims priority, application Finland, May 3, 1982, 821550

Int. Cl.⁴ H04J *1/10, 3/08, 3/02;* H04Q *11/04*

U.S. Cl. 370—58 **9 Claims**



1. A digital multiplex device in an apparatus for branching a synchronous time multiplexed digital information stream between first, second and third ports, each of said ports including a transmitter and receiver, the device comprising first and second selectively activated phase controlling networks, each of said networks including: first and second input terminal means and first and second output terminal means, first and second time division multiplexers, first and second switch means and a phase changer, the first multiplexer being directly connected to the first input terminal means of the respective network, the phase changer having an input directly connected to the second input terminal means of the respective network and an output directly connected to a first input of the second multiplexer of the respective network, the first switch means selectively connecting the first input terminal means of the network to the first output terminal means of the respective network or for connecting a first output of the second phase changer to the first output means of the respective network, the second switch means selectively connecting the second output terminal means to be responsive to an output of the first multiplexer of the respective network or to a second output of the second multiplexer of the respective network; first input terminal means of the first and second networks being adapted to be respectively responsive to output signals of the receivers

of the first and second ports, the first output terminal means of the first and second networks being adapted to respectively supply signals to inputs of the transmitters of the first and second ports, the second input terminal means of the second network being adapted to be connected to the second output terminal means of the first network, the second input terminal means of the first network being adapted to be connected to an output of the receiver of the third port, the second output terminal means of the second network being adapted to be connected to an input of the transmitter of the third port.

4,574,374

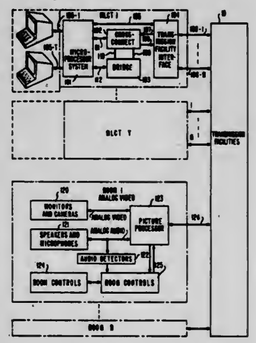
MULTILOCATION VIDEO CONFERENCE TERMINAL INCLUDING RAPID VIDEO SWITCHING

Dominick Scordo, Middletown, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Oct. 25, 1983, Ser. No. 545,363

Int. Cl.⁴ H04Q *11/04;* H04J *3/08*

U.S. Cl. 370—62 **14 Claims**



1. In apparatus for transmitting video and audio information to a plurality of remote locations:

means associated with each of the remote locations for receiving at least first and second digital signals from each remote location, one of said at least first and second received signals includes video control signals in first prescribed bit locations, audio information in second prescribed bit locations and video information in third prescribed bit locations and the other of said at least first and second received signals includes video information, and said receiving means includes first formatting means for inserting said control signals and said audio information into first predetermined time slots of a first corresponding digital signal, for inserting said video information from said one of said at least first and second received signals into second predetermined time slots of said first corresponding signal and for inserting said video information from said other of said at least first and second received signals into third predetermined time slots in an at least second corresponding digital signal for the location;

means for processing said audio information from each of said remote locations into audio information to be transmitted to each of said remote locations;

second means for formatting said processed audio information for each remote location into predetermined fixed time slots assigned to the corresponding location in a plurality of composite signals associated on a one-to-one basis with the remote locations;

means associated with said receiving means for generating said plurality of composite signals, said generating means including means for combining said formatted audio information with said formatted video information to generate said composite signal for each location including the video information from that location in first predetermined time slots and the processed audio information for each of the plurality of locations in second predetermined time slots corresponding to the locations, wherein each of said composite signals includes all the video information from an associated location and the processed audio information for all of the remote locations; and

means supplied with said plurality of composite signals for controllably selecting any of said composite signals for transmission to any of said remote locations.

4,574,375

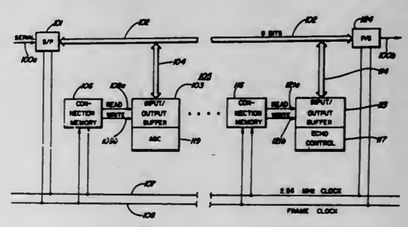
INTERFACE ARRANGEMENT FOR A TELEPHONE SYSTEM OR THE LIKE

Michael F. Kemp, and Claude J. Champagne, both of Ontario, Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Oct. 12, 1983, Ser. No. 541,080

Int. Cl.⁴ H04Q *11/04;* H04J *3/02*

U.S. Cl. 370—67 **6 Claims**



1. An interface means for applying information from a channel of a first digital bus to at least one processing circuit and for returning said information, after processing, to a respective channel, said means characterized by:

a serial to parallel converter means for transforming the digital data on said first bus to parallel digital data on a second digital bus;

a plurality of circuit means for selectively accessing said second bus, each said circuit means under the control of a respective connection memory means;

each said connection memory means responsive to timing signals for controlling the access of an associated circuit means to said second bus such that said associated circuit means accesses said second bus at the appropriate time to receive the digital information from a selected channel on said second bus, and also accesses said bus at the appropriate time to transmit the digital information to a selected channel on said second bus.

4,574,376

ACTIVATION OF A TRANSMISSION LINK BY CODE SENDING

Ingemar E. Dahlqvist, Johanneshov, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

PCT No. PCT/SE83/00451, § 371 Date Jun. 29, 1984, § 102(e) Date Jun. 29, 1984, PCT Pub. No. WO84/02816, PCT Pub. Date Jul. 19, 1984

PCT Filed Dec. 14, 1983, Ser. No. 626,866

Claims priority, application Sweden, Dec. 30, 1982, 8207517

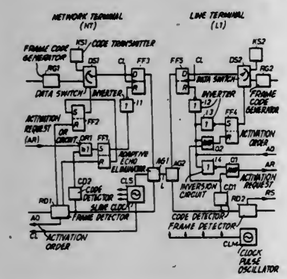
Int. Cl.⁴ H04J *3/06;* H04L *7/00*

U.S. Cl. 370—103 **2 Claims**

1. A method in a telecommunication system for activating means from idling state to active state, there being included in the system a digital transmission link consisting of a subscriber side including a network terminal (NT) assigned to the subscriber, and a station side including a line terminal (LT) assigned to the station, said line terminal being connected to a clock pulse oscillator constituting the master clock for the system, and said network terminal being connected to a local

clock pulse oscillator constituting a slave clock characterized in that;

for activation initiated by a subscriber said network terminal (NT) is adapted for receiving an activation request from a connected subscriber, and that said terminal (NT) on reception of the activation request is caused to send a code corresponding to the request in the form of a binary, continuous and cyclic bit pattern with plesiochronous clock pulse rate to the line terminal (LT) through the line (L), and that said line terminal is adapted for detecting said activation request and in response thereto is to send back to the subscriber side an activation order signal in the form of binary data in frame format including synchronizing information, and that on reception of said frame format the network terminal (NT) interprets this as an activation order, and is adapted for synchronizing its own clock pulse rate with the master clock information in the incoming bit flow, and that for received frame synchronizing information the network terminal is caused to send an activation order to the subscriber and to send data in



frame format including frame synchronizing information back again to the station side, and that the line terminal is adapted to detect said data in frame format and in response to the result send acknowledgement signals to the station, and that for station-initiated activation, the line terminal (LT) is adapted for directly sending an activation order in the form of a continuously transmitted cyclic bit pattern which, on detection in the network terminal (NT), is arranged to trigger sending a corresponding continuous cyclic bit pattern from the network terminal to the line terminal, and that the pattern is disposed for detection in the line terminal, which is adapted for transmitting data in frame format including synchronizing information back to the subscriber side, and that the network terminal, on detection of frame synchronism, is caused to send an activation order to the subscriber and to send data in frame format including frame synchronism to the line terminal, and that the line terminal (LT) is adapted to detect said data in frame format and in response to the result is caused to send acknowledgement signals to the station.

4,574,377

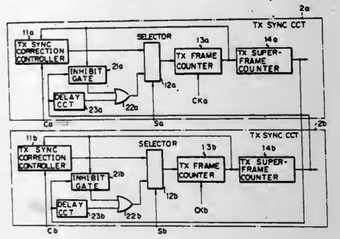
SYNCHRONIZATION METHOD AND APPARATUS IN REDUNDANT TIME-DIVISION-MULTIPLE-ACCESS COMMUNICATION EQUIPMENT

Sachio Miyazaki, Tokyo, and Shinichiro Aoki, Sagamihara, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 18, 1983, Ser. No. 553,073
Claims priority, application Japan, Nov. 26, 1982, 57-205977
Int. Cl.⁴ H04J *3/06*; H04L *3/00*
U.S. Cl. 370—104 **10 Claims**

1. A synchronization method in redundant time-division-multiple-access communication equipment having at least an active transmission synchronization circuit for generating an active transmission frame timing signal and a standby transmission synchronization circuit for generating a standby transmission frame timing signal, said method comprising the steps of:

(a) synchronizing the standby transmission frame timing signal to a frequency divided signal based on the active



transmission frame timing signal at timings where the frequency divided signal is supplied; and

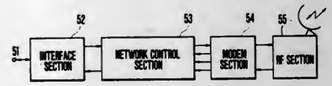
(b) independently running the standby transmission frame timing signal at timings where the frequency divided signal is not supplied.

4,574,378

MULTIPLE ACCESS SYSTEM AND METHOD

Kazutomo Kobayashi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 10, 1983, Ser. No. 503,264
Claims priority, application Japan, Jun. 14, 1982, 57-101913; Feb. 24, 1983, 58-29741; Mar. 11, 1983, 58-40057
Int. Cl.⁴ H04J *3/06*
U.S. Cl. 370—104 **11 Claims**



1. A multiple access system for performing packet communication involving the sharing of a single communication medium by a plurality of users through a plurality of channels such that each user monitors the state of each channel and the probability of packet transmission is controlled in accordance with the monitored results comprising:

an interface section for linking data together as a packet;

a modem section for modulating/demodulating a packet, said modem section including

a modulator for modulating the packet;

a demodulator for demodulating a modulated packet to generate a demodulated signal; and

a slot sync signal detector for receiving the demodulated signal to extract the slot sync signal constantly propagated along the channel;

a carrier detector for detecting whether or not the channel is being used and for generating an empty or a busy signal;

a network control section for performing access control, said network control section including

a collision detector for detecting a transmitting packet and a delayed receiving packet so as to detect a collision of the transmitting packet with another transmitting packet, said collision detector generating a success signal when the transmitting packet and the delayed receiving packet coincide with each other and a collision signal when the transmitting packet and the delayed receiving packet do not coincide,

a retransmitter for retransmitting a packet identical with the transmitting packet when the transmitting packet collides with said delayed receiving packet, and

a control circuit for receiving a slot sync pulse, a busy or empty signal, a success or collision signal, and a packet arrival pulse, and for generating a control signal to control packet transmission; and

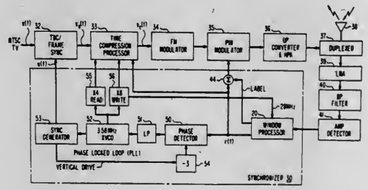
an RF section connected to said modem section for converting an IF signal to a high frequency transmission signal and vice versa.

4,574,379

SYNCHRONIZATION TECHNIQUE FOR NON-COLOCATED TV SIGNALS IN A TDMA SATELLITE COMMUNICATION SYSTEM

Kai Y. Eng, Cliffwood Beach, and Barin G. Haskell, Tinton Falls, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 16, 1983, Ser. No. 505,099
Int. Cl.⁴ H04J *3/06*
U.S. Cl. 370—104 **9 Claims**



1. Apparatus for synchronizing television burst signal transmissions from a ground station to arrive at a distant station in a separate time slot of a time division multiple access (TDMA) sequence from other similar burst signals from other ground stations of a communication system, the apparatus comprising:

processor means (20) capable of detecting whether one or more existing time slot burst transmissions are received from the other ground stations within a frame period of the TDMA sequence and then generating an output window signal corresponding to either (a) a first time slot burst transmission period in the frame period of the TDMA sequence when no time slot burst transmissions from the other ground stations are detected, or (b) a next vacant time slot burst transmission period of the TDMA sequence when one or more existing time slot burst transmissions are detected, for use in transmitting the ground station's television burst signals to the distant station;

oscillator means (52) capable of generating a standard television color subcarrier frequency as an output signal;

synchronous generating means (53) responsive to the output signal from the oscillator means for generating standard television line or field period timing signals as an output signal which are in phase with the output signals from the oscillator means for aligning input television line or field signals, respectively, with synchronized time slot periods of the TDMA sequence;

means (32–35) responsive to the output signals from the synchronous generating means, the oscillator means and the processor means for transmitting a predetermined plurality of time compressed television line or field signals from a separate television program in each television burst signal; and

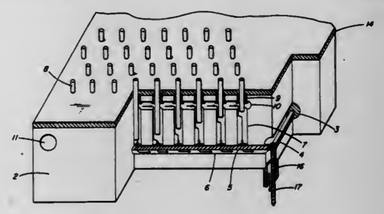
phase detecting means (50) responsive to the output signals from the processor means and synchronous generating means for detecting a difference in phase between the two signals and for generating an output signal representative of such phase difference which will appropriately change the phase of the output signal of the oscillator means and, in turn, the output signal of the synchronous generating means to cancel said detected phase difference.

4,574,380

SELF-OPTIMIZING ELECTRODE AND PULSE-STABILIZED SUPER HIGH POWER C.W. GAS LASERS

Kyong H. Nam, 11130 - 24A Ave., Edmonton, Alberta, Canada T6J 4Y9

Filed Nov. 29, 1982, Ser. No. 445,183
Claims priority, application Canada, Jun. 24, 1982, 405873
Int. Cl.⁴ H01S *3/097*
U.S. Cl. 372—87 **31 Claims**



1. A self-optimizing electrode assembly for a high power gas laser comprising:

(a) a plurality of electrical energy conducting electrode elements physically and electrically separated from one another;

(b) a heat resisting dielectric body in which said electrode elements are supported, one end of said electrode elements protruding from said dielectric body;

(c) an inlet channel for transporting an aqueous solution into and through said dielectric body;

(d) an outlet channel for transporting the aqueous solution through and out of said dielectric body;

(e) a plurality of transverse channels corresponding in number with the plurality of electrode elements, each transverse channel surrounding at least a portion of its respective electrode, each channel connecting with the inlet channel and the outlet channel, each of said transverse channels isolating physically and electrically a respective end of an electrode element opposite the end of the electrode element protruding from the dielectric body;

(f) at least one electric conductor spaced from the ends of the plurality of electrode elements opposite the ends protruding from the dielectric body to form a series of gaps, the conductor being used for distributing electrical energy to the plurality of electrode elements; and

(g) means for transporting an electrical energy conducting aqueous solution through the inlet, transverse and outlet channels.

4,574,381

APPARATUS FOR ESTABLISHING AND MAINTAINING A STABLE DISCHARGE ACROSS A STREAM OF FLOWING GAS, PARTICULARLY USEFUL FOR HIGH-POWER LASERS

David Katz, Tel Aviv, Israel, assignor to Metalworking Lasers International Ltd., Neve Sharett, Israel

Filed Sep. 30, 1982, Ser. No. 431,253
Int. Cl.⁴ H01S *3/097*
U.S. Cl. 372—87 **8 Claims**

1. Apparatus for establishing and maintaining a stable discharge across a stream of gas flowing through a gas-flow channel, comprising:

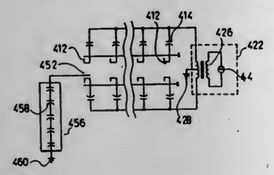
an electrode system including a group of working electrodes disposed on opposite sides of the gas flow channel and spaced longitudinally thereof in the direction of gas flow, which working electrodes include at least one upstream electrode at the upstream end of the gas flow channel;

a high-voltage alternating current source connected at one

side to each of said working electrodes and at the opposite side to a point of fixed reference potential;

and a ballast impedance connected to each of said working electrodes for stabilizing the electrical discharge;

said electrode system further including at least one starting electrode adjacent to said upstream working electrode



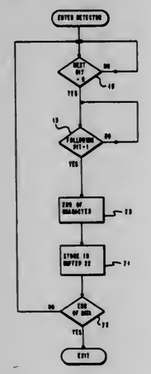
and connected to said point of fixed reference potential via a ballast impedance of substantially larger impedance value than those connected to said working electrodes, such that said starting electrode is effective to bring the point of fixed reference potential to the upstream working electrode to start the discharge, and to draw little current after the discharge has been started.

4,574,382

VARIABLE LENGTH CHARACTER CODE SYSTEM

Michael A. Ko, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 5, 1983, Ser. No. 539,249
Int. Cl.⁴ H04B *14/04*
U.S. Cl. 375—25 **5 Claims**



1. A digital communication system for transmitting variable length code representations of a set of characters comprising

means for transmitting a data stream comprising a sequence of variable length digital code representations of said characters and a fixed digital code representation having a predetermined bit sequence following the end of each character representation, said predetermined bit sequence occurring only within said fixed digital code representation, wherein said fixed digital code representation forms an integral part of each of said variable length digital code representations, and

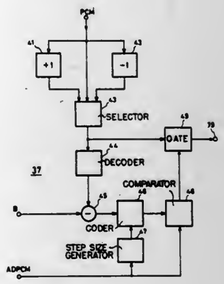
means for receiving said data stream including decoding means for reading fixed code representations in order to determine the end of each variable length character representation.

4,574,383

DECODER OF ADAPTIVE DIFFERENTIAL PULSE CODE MODULATION

Kazunari Irie, Tokyo; Masahiro Taka, and Hideyo Murakami, both of Kanagawa, all of Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo, Japan

Filed Dec. 5, 1983, Ser. No. 558,194
Claims priority, application Japan, Dec. 6, 1982, 57-213602
Int. Cl.⁴ H04B *14/06*
U.S. Cl. 375—27 **6 Claims**



1. A decoder for adaptive differential pulse code modulation (ADPCM) input signals developed with a predetermined prediction logic, comprising:

means for decoding an input ADPCM signal,

means for adding a prediction signal to the output signal from said decoding means,

prediction means fed with an output signal from said adding means for generating said prediction signal at a logic equal to said predetermined prediction logic and supplying said prediction signal to an input of said adding means for adding therein as aforesaid,

coding means for coding the output signal from said adding means as a PCM signal having a nominal code value, and,

transcoding means operative on three signals namely said ADPCM signal, said prediction signal and said nominal valued PCM signal for developing a desired PCM signal, including:

means for generating a PCM signal having a value one step higher than said nominal code value and a PCM signal having a value one step lower than said nominal value,

means for selecting one of the said nominal higher and lower valued PCM signals,

second decoding means for decoding the selected PCM signal from said selecting means,

substraction means for subtracting the output signal of said decoding means and the output prediction signal from said prediction means,

second means for coding said subtraction into an ADPCM signal having a logical value, by a step size of said input ADPCM signal,

means for comparing the logical value of the output ADPCM signal from said second coding means with that of said input ADPCM signal, and

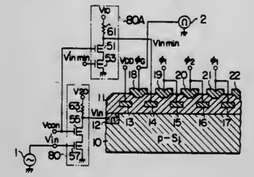
gate means for gating out the output PCM signal from said selecting means when the comparing means has an equal output.

4,574,384

SIGNAL TRANSFER SYSTEM USING A CHARGE TRANSFER DEVICE

Toshinori Murata, Yokohama; Masafumi Kazumi, Tokyo, and Yuji Ito, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 23, 1983, Ser. No. 525,696
Claims priority, application Japan, Aug. 25, 1982, 57-146156; Sep. 17, 1982, 57-160972
Int. Cl.⁴ H03K *23/46*
U.S. Cl. 377—58 **12 Claims**



1. A charge transfer system comprising:

a charge transfer device having a semiconductor substrate including a diffusion region, a first region adjacent to said diffusion region, a second region adjacent to said first region, and a third region to which charge carriers stored in said second region are transferred, a first electrode disposed above said first region and insulated from said substrate, and a second electrode disposed above said second region and insulated from said substrate, said charge carriers being responsive to a voltage difference between a voltage applied to said diffusion region and a voltage applied to said second electrode when a clock pulse is applied to said first electrode;

a signal source for generating an electrical signal to be charge-transferred;

a clock pulse source for supplying said clock pulse to said first electrode of said charge transfer device;

signal supply means connected between said signal source and said diffusion region of said charge transfer device for controlling an amplitude of a signal applied to said diffusion region; and

control means for supplying a bias voltage varying with a change of a peak value of said electrical signal to said second electrode of said charge transfer device so as to maintain a minimum value of said charge carriers corresponding to said peak value of said electrical signal at a relatively constant value.

4,574,385

CLOCK DIVIDER CIRCUIT INCORPORATING A J-K FLIP-FLOP AS THE COUNT LOGIC DECODING MEANS IN THE FEEDBACK LOOP

Charles E. Huffman, Plano, and Jeffrey L. Foust, Dallas, both of Tex., assignors to Rockwell International Corporation, El Segundo, Calif.

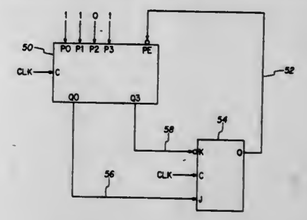
Filed Feb. 16, 1984, Ser. No. 580,973
Int. Cl.⁴ H03K *21/38*
U.S. Cl. 377—107 **3 Claims**

1. The method of dividing a clock signal comprising, the steps of:

counting the clock signal cycles with a counter means and outputting a binary count indication on a plurality of signal leads;

monitoring the logic value of two of the binary count indication signal leads by directly connecting the same with respective J-K inputs of a J-K flip-flop; and

actuating the setting of the counter means to a given value with an output of the J-K flip-flop when a predetermined



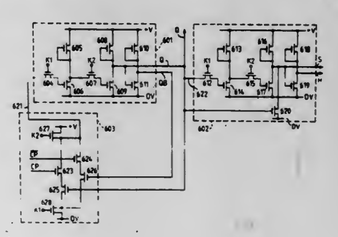
set of logic values are applied to said J-K inputs of said J-K flip-flop.

4,574,386

DYNAMICALLY OPERABLE TWO-PHASE LOGIC CIRCUITS

John R. Kinghorn, Sutton, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 4, 1983, Ser. No. 491,510
Claims priority, application United Kingdom, May 12, 1982, 8213749
Int. Cl.⁴ H03K *23/44*
U.S. Cl. 377—121 **6 Claims**



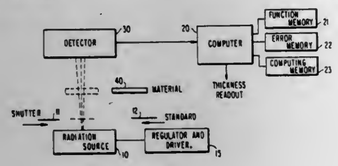
1. A dynamically operable two-phase circuit arrangement comprising first and second dynamic switching circuit, each of which has an input stage, a non-inverting output stage and an inverting output stage, each stage being responsive to either one of two possible logic levels at an input to produce the other logic level at an output, the input stage having its input connected to receive an input logic level by a first transfer stage controlled by first drive clock pulses of one phase, the non-inverting output stage having its input connected to receive the output logic level of the input stage by a second transfer stage controlled by second, substantially non-overlapping drive clock pulses of another phase, and the inverting output stage having its input connected to receive the output logic level of the non-inverting output stage, which circuit arrangement further comprises a combinatorial logic circuit which is operable under two-phase control by said first and second drive clock pulses and in response to applied counter clock pulses to cause the first dynamic switching circuit to perform a divide-by-two operation, and which circuit arrangement is characterized in that one of the output stages of the first dynamic switching circuit has its output connected to the input of the input stage of the second dynamic switching circuit and by a switching stage to the output of the corresponding output stage of the second dynamic switching circuit, the arrangement being such that at said latter output shift pulses having only one half the repetition frequency of the counter clock pulses are produced.

4,574,387

APPARATUS AND METHOD FOR MEASURING THICKNESS

Dominique Gignoux, Bethesda, and Russell Murray, Laurel, both of Md., assignors to Data Measurement Corporation, Gaithersburg, Md.

Filed Sep. 18, 1981, Ser. No. 303,574
Int. Cl.⁴ G01N *23/16*; G01B *15/02*
U.S. Cl. 378—56 **8 Claims**



1. A radiation thickness gauge comprising:
a radiation source;
a radiation detector spaced from said source and located in the beam emitted by said source, said detector comprising means translating the intensity of the radiation received by the detector into an electrical signal output;
a first path extending through the space between said source and detector for the passage of a material whose thickness is to be measured;
a second path in said space, parallel to said first path, for introducing one of several standards of known thickness of reference material on demand;
shutter means of radiation absorbing material movable into said space to absorb the beam upon command;
means for recording several values of detector outputs corresponding to several combinations of standards, and computer means comprising means for determining a thickness function that best fits the relationship between the recorded values of standards thicknesses and corresponding detector outputs and recording said function as a relationship between thickness and detector output;
said computer means further comprising means for determining a value of thickness of the material to be measured by applying said thickness function to the detector output when the material whose thickness is to be measured is in the beam;
memory means for storing as errors the difference between the known thickness of each standard combination and the thickness obtained by calculation by applying said thickness function to the detector output obtained by placing said standard combination in the radiation beam; and
said computer means further comprising means for correcting detector outputs by:
1. calculating a thickness ratio as a function having as a numerator the known thickness of a standard combination minus the recorded error of said standard combination and having as a denominator the thickness as obtained by measuring the standard combination while using a previously stored thickness function; and
2. updating the thickness function by multiplying the previously stored function by said thickness ratio.

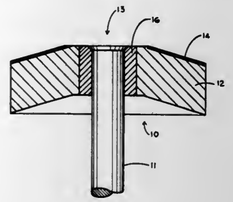
4,574,388

CORE FOR MOLYBDENUM ALLOY X-RAY ANODE SUBSTRATE

John H. Port, Solon; Dennis G. Kukoleck, Garfield Heights, and Robert M. Guezuraga, Chagrin Falls, all of Ohio, assignors to General Electric Company, Milwaukee, Wis.

Filed May 24, 1984, Ser. No. 613,489
Int. Cl.⁴ H01J *35/10*; B23K *15/00, 19/00*
U.S. Cl. 378—144 **9 Claims**

5. A rotary anode assembly for attachment to an axial stem comprising a disc having an outer annulus composed of a first material which is not compatible with said stem for purposes of diffusion bonding, and an inner annulus attached to said outer annulus and having a central opening for receiving the axial



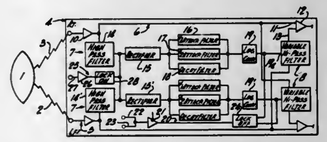
stem, said inner annulus being composed of a second material which is compatible with said stem for purposes of diffusion bonding.

4,574,389

STEREOPHONIC RECEIVER HAVING A NOISE REDUCTION CONTROL CIRCUIT

Larry Schotz, 118 Green Bay Rd., Thiensville, Wis. 53092

Filed Jul. 15, 1983, Ser. No. 514,034
Int. Cl.⁴ H04H *5/00*
U.S. Cl. 381—10 **22 Claims**



1. A stereo signal receiver apparatus for receiving broadcast stereo sound signals including a left channel signal and a right channel signal and reproducing said received sound signals with noise reduction, comprising:
a left channel for transmitting the received left channel signal,
a right channel for transmitting the received right channel signal,
high frequency separation control means connected to the right and left channels for blending of the two signals in each of said channels, and
means to monitor the high frequency stereo signal content of each of said received signals and connected to said control means to control the separation in each channel in accordance with said high frequency signal content.

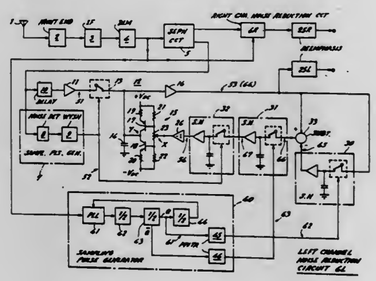
4,574,390

NOISE REDUCTION FOR STEREOPHONIC FM SIGNALS BY HIGH-SPEED SAMPLING AND LINEAR INTERPOLATION

Kazutoshi Hirohashi, Yokohama, and Yukinobu Ishigaki, Tokyo, both of Japan, assignors to Victor Company of Japan, Limited, Yokohama, Japan

Filed Mar. 26, 1984, Ser. No. 594,683
Claims priority, application Japan, Mar. 26, 1983, 58-50825; Mar. 31, 1983, 58-56430
Int. Cl.⁴ H04H *5/00*
U.S. Cl. 381—13 **18 Claims**

1. A noise reduction circuit for use with an FM receiver adapted to receive a composite stereophonic FM signal comprising a sum of left and right channel signals on a main channel, a difference between left and right channel signals on a subcarrier channel, a pilot signal and the sidebands of a suppressed subcarrier which is twice the frequency of said pilot signal and modulated by said difference, said receiver including a demodulator for demodulating said composite FM signal, comprising:
noise detecting means for detecting an impulse noise in the demodulated signal;
first means responsive to the output of said noise detecting means for sampling said demodulated signal immediately prior to the occurrence of said noise;
second means for sampling said demodulated signal at a frequency twice the frequency of said pilot signal;



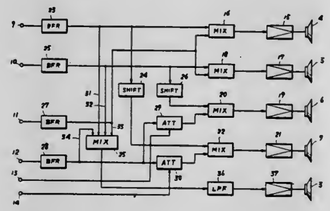
third means responsive to the outputs of said first and second means for generating a signal representing the slope ratio of said demodulated signal sampled by said first means; and
fourth means for linearly integrating said slope ratio signal to generate a linearly varying signal and combining same with the demodulated signal sampled by said first means.

4,574,391

STEREOPHONIC SOUND PRODUCING APPARATUS FOR A GAME MACHINE

Masaharu Morishima, Nara, Japan, assignor to Funai Electric Company Limited, Osaka, Japan

Filed Oct. 27, 1983, Ser. No. 545,855
Claims priority, application Japan, Aug. 22, 1983, 58-154325
Int. Cl.⁴ H04R *5/00*
U.S. Cl. 381—18 **7 Claims**



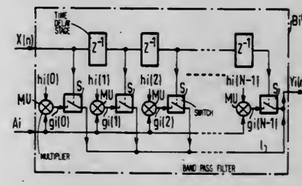
1. A stereophonic sound producing apparatus for a game machine, comprising a left-hand and a right-hand background sound input terminals which receive signals from a first signal source; front and rear game sound input terminals receiving signals from a second signal source; left-hand and right-hand control signal input terminal receiving control signals from said second signal source; and first, second, third and fourth loudspeakers disposed at a forwardly right-hand side, a forwardly left side, a rearwardly right-hand side, and a rearwardly left side with respect to a seat disposed generally at a center portion of a game machine body, each loudspeaker being connected at respective precedent stages thereof to first, second, third, and fourth power amplifiers and to first, second, third and fourth mixers, respectively; said right-hand background sound input terminal being connected to said first mixer and to said fourth mixer through a first phase shifter, said left-hand background input terminal being connected to said second mixer and to said third mixer through a second phase shifter; one of said front and said rear game sound input terminals being connected to said first and said second mixers, the other one of front and said rear game sound input being connected to each of said third and said fourth mixers separately through respective first and second variable gain controllers; said left-hand and said right-hand control signal input terminals being connected to respective ones of said first and said second variable gain controllers respectively, such that sterophonic sounds are obtained by logical signals supplied from said left-hand and right-hand control signal input terminals.

4,574,392

ARRANGEMENT FOR THE TRANSMISSION OF SPEECH ACCORDING TO THE CHANNEL VOCODER PRINCIPLE

Ruediger Reiss, Haar, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

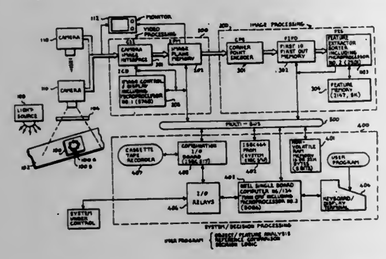
Filed Jul. 22, 1982, Ser. No. 400,958
Claims priority, application Fed. Rep. of Germany, Sep. 22, 1981, 3137679
Int. Cl.⁴ G10L *1/00*
U.S. Cl. 381—51 **4 Claims**



1. A speech synthesizer for receiving and converting digital sum signals transmitted in successive frames into speech, each digital sum signal comprising a plurality of envelope value signals of speech for a plurality of spectral channels which differ as a result of frequency position and width and at least one parameter value signal of a speech-associated parameter assigned to a respective channel, said synthesizer comprising:
dividing means for dividing the digital sum signal into its envelope and parameter value signals;
pulse generating means connected to said dividing means to receive a parameter value signal and operable to produce pulses as excitation pulses; and
a time-variant finite pulse response filter bank connected to said pulse generating means to receive excitation pulses and to said dividing means to receive said envelope value signals, said filter bank including coefficient inputs to receive filter bank weighting coefficients and multiplication means for multiplying said coefficients with the envelope values in the rhythm of the successive frames, said filter bank comprising
a plurality of multipliers each including a first input means connected to receive a respective envelope value signal, a second input means connected to receive a weighting coefficient and output means,
an output line constituting the filter bank output,
an excitation line having a maximum of N taps, said excitation line connected to said pulse generating means,
a plurality of N−1 time delay circuits separately interposed in said excitation line between the first and the N−1 tap, and
a plurality of switches each connected between a respective multiplier output means and said output line, and each comprising a control input connected to a respective tap,

whereby the totality of the filter coefficients fix the filter response.

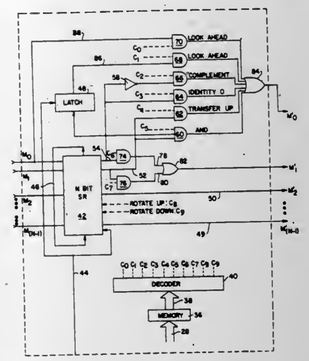
4,574,393
GRAY SCALE IMAGE PROCESSOR
George F. Blackwell, 4809 Bear Rd., and Harold W. Tomlinson, Jr., 4020 Bay Park Dr., both of Liverpool, N.Y. 13088
Filed Apr. 14, 1983, Ser. No. 485,051
Int. Cl.[4] G06K 9/00
U.S. Cl. 382—17 7 Claims



1. A visual image processing method for digitally processing an electronic monochrome video image of an object within a predefined field of view so as to automatically identify the color of the object, said method comprising the steps of:
converting a predetermined visual field of view to a sequence of digital electronic video signals each of which represents the gray scale intensity of a corresponding elemental picture element of a two dimensional view of such a visual field of view;
constructing a histogram of the frequency of occurrency of the gray scale intensity values over the field of view;
eliminating from the histogram gray scale values not associated with reflections attributable to the color of the object;
computing an average gray scale value for the object as a function of the remaining gray scale values in the histogram; and
comparing the average gray scale value for the object to predetermined gray scale values for known colors to thereby identify the color of the object.

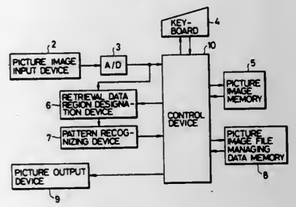
4,574,394
PIPELINE PROCESSOR
Wlodzimierz Holsztynski, and Stephen S. Wilson, both of Ann Arbor, Mich., assignors to Environmental Research Institute of MI, Ann Arbor, Mich.
Continuation of Ser. No. 269,143, Jun. 1, 1981, Pat. No. 4,524,455. This application Apr. 10, 1984, Ser. No. 598,724
The portion of the term of this patent subsequent to Jun. 18, 2002, has been disclaimed.
Int. Cl.[4] G06K 9/36
U.S. Cl. 382—41 9 Claims

1. A system for processing spacially oriented data represented as a matrix comprising a plurality of lines of data words, the system comprising:
a plurality of interconnected processing cells, each processing cell being adapted to sequentially process each of the data words in a stream of data corresponding to one of the plurality of lines of data words respectively in parallel with the other interconnected processing cells, each of the processing cells comprising:
(1) a memory for storing a single data word in the sequence, the memory having data inputs, data outputs, and a control input,
(2) first means for accessing data corresponding to data words either preceding or subsequent to the single data word in the sequence,
(3) data inputs operably coupled with data outputs from an interconnected processing cell,
(4) data outputs operably coupled with data inputs from an interconnected processing cell, and



(5) logic means for generating an output as a preselected function of the data corresponding to the single data word stored in memory, data accessed by said first means, and data provided from the data inputs coupled with data outputs from an interconnected processing cell.

4,574,395
PICTURE IMAGE FILING APPARATUS
Hiroshi Kato, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan
Filed Jan. 16, 1984, Ser. No. 571,169
Claims priority, application Japan, Jan. 14, 1983, 58-3412
Int. Cl.[4] G06K 9/00; G06F 7/10
U.S. Cl. 382—61 7 Claims

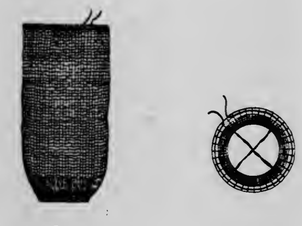


1. A picture image filing apparatus, comprising: reading means for optically reading an original document to generate image data representing an image on said document;
selection means for selecting, from said image data, at least one retrieval data signal representing said retrieval data, said selection means comprising means for detecting selection data among said image data, means responsive to said selection data for generating a selection signal indicating a particular image area containing said retrieval data, and means responsive to said selection signal for selecting said retrieval data signals from said image data; and
storage means for storing said image data together with retrieval data for use in later retrieving said image data from said storage means.

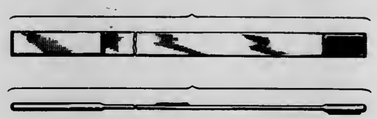
DESIGNS

MARCH 4, 1986

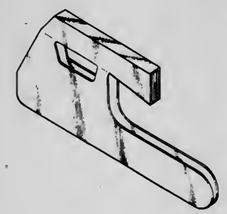
282,788
NET FOR PROTECTION AGAINST INSECTS
Erik Svanberg, Östersund, Sweden, assignor to Strumpfabriken Vinetta Aktiebolag, Östersund, Sweden
Filed Sep. 1, 1983, Ser. No. 528,571
Claims priority, application Sweden, Mar. 1, 1983, 83-0572
Term of patent 14 years
U.S. Cl. D8—1



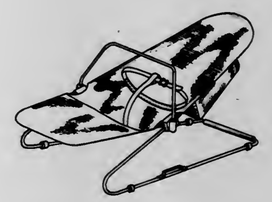
282,789
BLACK BELT
Kerdall Remboldt, 628 St. Andrew, Rapid City, S. Dak. 57701
Filed Feb. 10, 1982, Ser. No. 347,630
Term of patent 14 years
U.S. Cl. D2—380



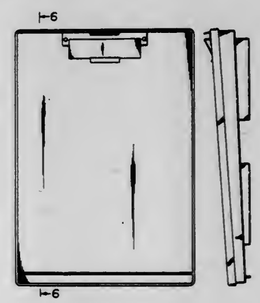
282,790
MERCHANDISE HANGER
Janusz Morawski, P.O. Box 562, Postal Station P, Toronto, Canada (M5S 2R1)
Filed Sep. 19, 1983, Ser. No. 533,930
Term of patent 14 years
U.S. Cl. D6—327



282,791
INFANT SEAT
William Lockett, III, 9902 W. Layton Ave., Littleton, Colo. 80123, and Edward D. Oliver, Manchester, N.H., assignors to William Lockett, III, Littleton, Colo.
Filed Aug. 10, 1983, Ser. No. 521,744
Term of patent 14 years
U.S. Cl. D6—333



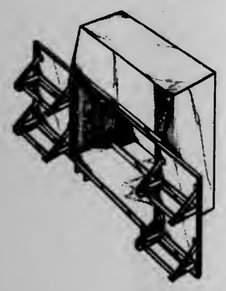
282,792
PORTABLE DESK
Benson Zinbarg, 11 Chestnut Hill La., Stamford, Conn. 06903
Filed Oct. 28, 1983, Ser. No. 546,575
Term of patent 14 years
U.S. Cl. D6—406



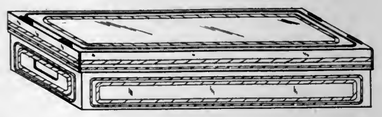
282,793
SUPPORT STAND FOR MOPS, TOWELS OR SIMILAR ARTICLE
Helen Zombeck, R.D. 1, Box 262-F, Lambertville, N.J. 08530
Filed Aug. 5, 1983, Ser. No. 520,588
Term of patent 14 years
U.S. Cl. D6—411

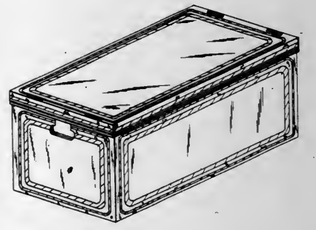


282,794
BATTERY STORAGE CABINET
Ilya Katzman, Bloomfield, N.J., assignor to Cooper Industries, Inc., Houston, Tex.
Filed Nov. 25, 1983, Ser. No. 555,197
Term of patent 14 years
U.S. Cl. D6—432

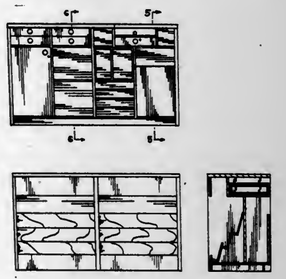


282,795
CHEST
Mark Densen, 18 Blackburn Pl., Summit, N.J. 07901
Filed Sep. 23, 1983, Ser. No. 535,246
Term of patent 14 years
U.S. Cl. D6—440

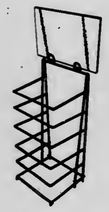




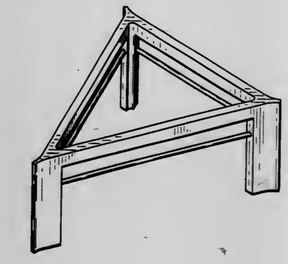
282,796
REGISTER COUNTER
Ronald J. Hoffman, San Rafael; Douglas Alair, Long Beach; Robin S. LaFleur, Sausalito, and Claude Salzberger, San Francisco, all of Calif., assignors to ComputerLand Corporation, Hayward, Calif.
Filed Dec. 23, 1982, Ser. No. 452,752
Term of patent 14 years
U.S. Cl. D6—445



282,797
DISPLAY STAND
Linda H. Dixon, 1221 Andersen Dr., San Rafael, Calif. 94901
Filed Oct. 24, 1983, Ser. No. 544,667
Term of patent 14 years
U.S. Cl. D6—465



282,798
TABLE BASE
William Doezema, Grand Rapids, Mich., assignor to Baker, Knapp & Tubbs, Inc., Chicago, Ill.
Filed Oct. 18, 1983, Ser. No. 543,187
Term of patent 14 years
U.S. Cl. D6—495



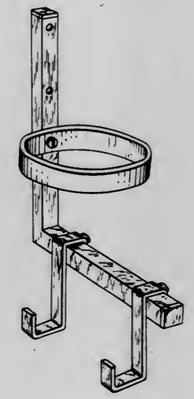
282,799
TABLE BASE
William Doezema, Grand Rapids, Mich., assignor to Baker, Knapp & Tubbs, Inc., Chicago, Ill.
Filed Oct. 18, 1983, Ser. No. 543,189
Term of patent 14 years
U.S. Cl. D6—495



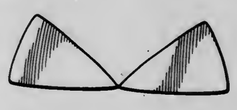
282,800
FRAME FOR A CHAIR
Kurt H. Sorensen, 22 Rhyndarra St., Yeronga, Q. 4104, Australia
Filed May 24, 1983, Ser. No. 497,674
Claims priority, application Australia, Nov. 24, 1982, 2207/82
Term of patent 14 years
U.S. Cl. D6—500



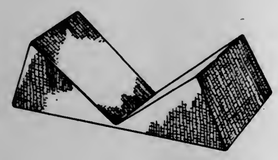
282,801
STORAGE BRACKET FOR A CHAIN SAW
Douglas E. Goins, Rte. 4, Box 337, and Johnny E. Rhodes, 623 N. Poplar St., both of Lincolnton, N.C. 28092
Filed Jul. 29, 1983, Ser. No. 518,401
Term of patent 14 years
U.S. Cl. D6—553



282,802
HEAD REST
Roy Righini, 12 Tillock St., Thornleigh, New South Wales, Australia
Filed Jul. 15, 1983, Ser. No. 514,288
Claims priority, application Australia, Jan. 17, 1983, 2671/83
Term of patent 14 years
U.S. Cl. D6—596



282,803
HEAD REST
Roy Righini, 12 Tillock St., Thornleigh, New South Wales, Australia
Filed Jul. 15, 1983, Ser. No. 514,329
Claims priority, application Australia, Jan. 17, 1983, 2670/83
Term of patent 14 years
U.S. Cl. D6—596



282,804
PLATE OR SIMILAR ARTICLE
Steve A. Unger, Manlius, N.Y., assignor to Syracuse China Corporation, Syracuse, N.Y.
Filed Mar. 24, 1983, Ser. No. 478,638
Term of patent 14 years
U.S. Cl. D7—23



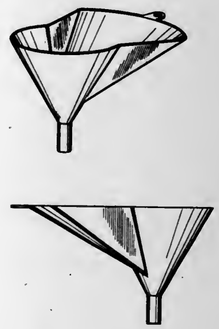
282,805
PLATE OR SIMILAR ARTICLE
Steve A. Unger, Manlius, N.Y., assignor to Syracuse China Corporation, Syracuse, N.Y.
Filed Mar. 23, 1983, Ser. No. 478,089
Term of patent 14 years
U.S. Cl. D7—25



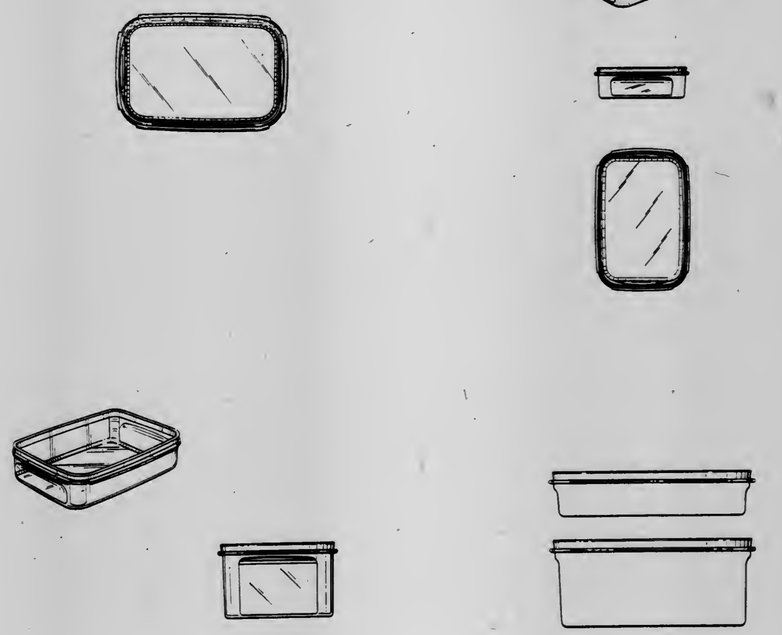
282,806
DECAL FOR A PLATE OF SIMILAR ARTICLE
Steve A. Unger, Manlius, N.Y., assignor to Syracuse China Corporation, Syracuse, N.Y.
Filed Mar. 22, 1983, Ser. No. 477,849
Term of patent 14 years
U.S. Cl. D7—39



282,807
GUARD FUNNEL
Patricia W. Hasse, 2608 Crown Crest La., La Jolla, Calif. 92037
Filed Mar. 2, 1984, Ser. No. 538,155
Term of patent 14 years
U.S. Cl. D7—68



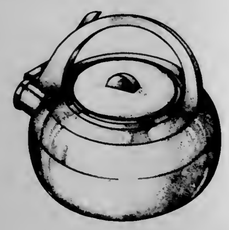
282,808
FOOD STORAGE CONTAINER OR THE LIKE
Robert H. C. M. Daenen, Hekelgem, Belgium, and Rino Conti, Stoughton, Mass., assignors to Dart Industries Inc., Northbrook, Ill.
Filed Aug. 10, 1982, Ser. No. 406,847
The portion of the term of this patent subsequent to Aug. 6, 1999, has been disclaimed.
Term of patent 14 years
U.S. Cl. D7—79



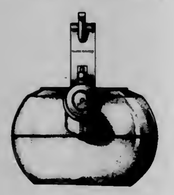
282,809
FOOD STORAGE CONTAINER OR THE LIKE
Robert H. C. M. Daenen, Hekelgem, Belgium, and Rino Conti, Stoughton, Mass., assignors to Dart Industries Inc., Northbrook, Ill.
Filed Aug. 10, 1982, Ser. No. 406,848
The portion of the term of this patent subsequent to Aug. 6, 1999, has been disclaimed.
Term of patent 14 years
U.S. Cl. D7—79



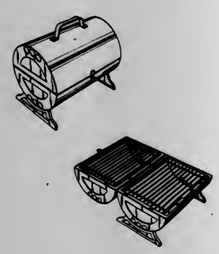
282,810
TEA KETTLE OR SIMILAR ARTICLE
Joy C. Urich, New York, N.Y., assignor to M. Kamenstein, Inc., White Plains, N.Y.
Filed Aug. 11, 1983, Ser. No. 522,098
Term of patent 14 years
U.S. Cl. D7—322







282,811
PORTABLE BARBECUE
Lillian C. Best, 9831 Foster Rd., Downey, Calif. 90242
Filed Apr. 29, 1983, Ser. No. 490,050
Term of patent 14 years
U.S. Cl. D7—332



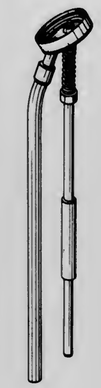
282,812
COMBINED HANDLE AND ADAPTER FERRULE WITH TIGHTENING KNOB FOR GARDENING IMPLEMENTS
Franco Clivio, Ulm, and Dieter Raffler, Neu-Ulm, both of Fed. Rep. of Germany, assignors to Gardena Kress & Kastner GmbH, Fed. Rep. of Germany
Filed Feb. 17, 1983, Ser. No. 467,389
Claims priority, application Fed. Rep. of Germany, Aug. 17, 1982, GRAIII13548203
Term of patent 14 years
U.S. Cl. D8—1

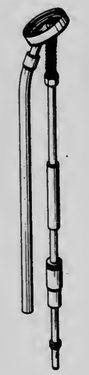


282,813
BENDER BOARD HOLDER
R. Warner Tappan, and Pam R. Tappan, both of 27265 Calle Anejo, Capistrano Beach, Calif. 92624
Filed Nov. 28, 1983, Ser. No. 555,826
Term of patent 14 years
U.S. Cl. D8—1

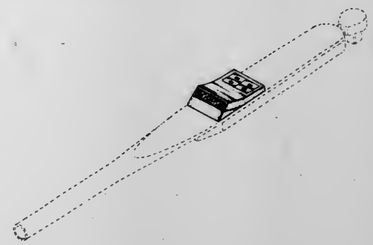


282,814
FREEZE PLUG TOOL
Maynard L. Smith, P.O. Box 90804, San Diego, Calif. 92109
Filed Feb. 9, 1983, Ser. No. 465,304
Term of patent 14 years
U.S. Cl. D8—14

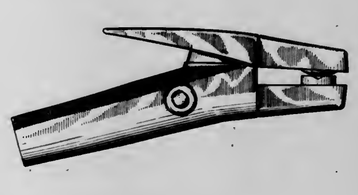




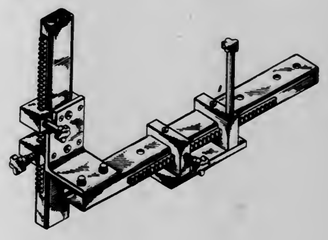
282,815
TORQUE TOOL READOUT UNIT
Bosko Grabovac, Arcadia, Calif., assignor to Consolidated Devices, Inc., City of Industry, Calif.
Filed Jan. 20, 1983, Ser. No. 449,476
Term of patent 14 years
U.S. Cl. D8—24



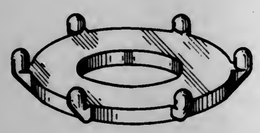
282,816
AIR CARBON-ARC CUTTING AND GOUGING TORCH
David B. Chaney, Columbus, and Michael J. Duwell, Cincinnati, both of Ohio, assignors to Arcair Company, Lancaster, Ohio
Filed Aug. 8, 1983, Ser. No. 521,204
Term of patent 14 years
U.S. Cl. D8—30



282,817
POSITIONER TO SUPPORT A GAS CUTTING TORCH, A WELDING TORCH OR THE LIKE
David E. Johnson, Pataskala, and Kenneth E. McCall, Lancaster, both of Ohio, assignors to Arcair Company, Lancaster, Ohio
Filed Mar. 2, 1983, Ser. No. 471,390
Term of patent 14 years
U.S. Cl. D8—71



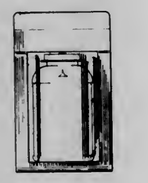
282,818
LOCKING RING FOR MEAT CASINGS OR THE LIKE
Arnoldus J. B. M. Bos, Zolder, Belgium, assignor to International Chemical Engineering Estab., Vaduz, Liechtenstein
Filed Jan. 18, 1983, Ser. No. 458,917
Term of patent 14 years
U.S. Cl. D8—394



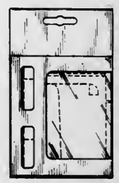
282,819
PACKAGING CONTAINER
Andre Laurent, and Daniel Charron, both Montreal, Canada, assignors to Promotions Jean-Rene Inc., Montreal, Canada
Filed Apr. 27, 1984, Ser. No. 604,584
Term of patent 14 years
U.S. Cl. D9—314



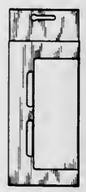
282,820
PACKAGED BOTTLE OF PILLS
Paul Carelli, 94 Chapel Hill Ter., Kinnelon, N.J. 07405
Filed Aug. 18, 1983, Ser. No. 524,384
Term of patent 14 years
U.S. Cl. D9—337



282,821
DISPLAY PACKAGE
Androus D. Noyes, Ossining, N.Y., assignor to Duracell Inc., Bethel, Conn.
Filed Apr. 1, 1983, Ser. No. 481,221
Term of patent 14 years
U.S. Cl. D9—415



282,822
COMBINED PACKAGING AND DISPLAY CONTAINER FOR A FLASHLIGHT
Androus D. Noyes, Ossining, N.Y., assignor to Duracell Inc., Bethel, Conn.
Filed Apr. 1, 1983, Ser. No. 481,417
Term of patent 14 years
U.S. Cl. D9—415



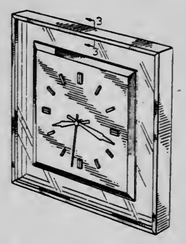
282,823
COMBINED TRAY AND LID
Jozef T. Franek, Chorleywood, and Paul Porucznik, St. Alban's, both of England, assignors to Metal Box, plc, England
Filed Oct. 4, 1982, Ser. No. 432,425
Term of patent 14 years
U.S. Cl. D9—429

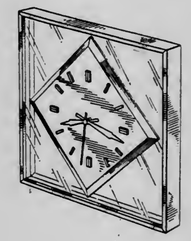


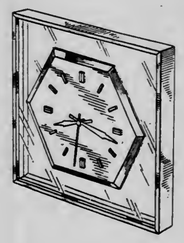
282,824
TRAY
Jozef T. Franek, Chorleywood, and Paul Porucznik, St. Alban's, both of England, assignors to Metal Box plc, England
Filed Oct. 4, 1982, Ser. No. 432,424
Claims priority, application United Kingdom, Apr. 27, 1982, 1006390
Term of patent 14 years
U.S. Cl. D9—429

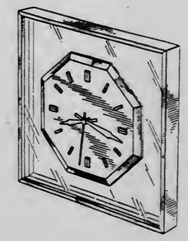


282,825
CLOCK
Ari Kostios, Downsview, Canada, assignor to Aristo Designart Inc., Downsview, Canada
Division of Ser. No. 358,415, Mar. 15, 1982, Pat. No. Des. 276,982. This application Sep. 7, 1984, Ser. No. 648,408
Claims priority, application Canada, Sep. 16, 1981, 16-09-81-10
Term of patent 14 years
U.S. Cl. D10—25



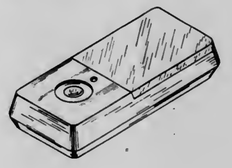




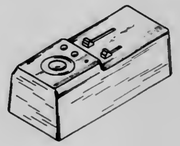




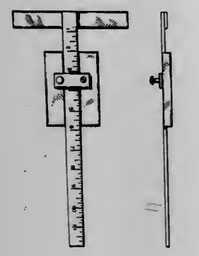
282,826
PROGRAMMABLE LIGHT TIMING SWITCH
Richard L. Hoogner, Sunnyvale, Calif., assignor to Security Switch Ltd., San Ramon, Calif.
Filed Mar. 28, 1983, Ser. No. 479,374
Term of patent 14 years
U.S. Cl. D10—40



282,827
PROGRAMMABLE LIGHT TIMING SWITCH FOR MOUNTING ON AN ELECTRICAL OUTLET
Richard L. Hoogner, Sunnyvale, Calif., assignor to Security Switch Ltd., San Ramon, Calif.
Filed Mar. 29, 1983, Ser. No. 479,383
Term of patent 14 years
U.S. Cl. D10—40



282,828
MAT MARKING DEVICE OR SIMILAR ARTICLE
Howard M. Holder, 28794 Bradley Rd., Sun City, Calif. 92381
Filed Nov. 28, 1983, Ser. No. 555,894
Term of patent 14 years
U.S. Cl. D10—62



282,829
EARRING
Marina Bulgari, Athens, Greece, assignor to Marina B. Creation S.A., Vaduz, Liechtenstein
Filed Dec. 16, 1983, Ser. No. 562,215
Claims priority, application Greece, Jun. 17, 1983, 358968/83
Term of patent 14 years
U.S. Cl. D11—75







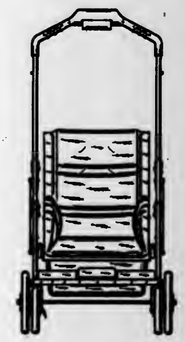
282,830
MOTORCAR
Hiroshi Zaima, Wako, and Yusuke Saitoh, Asaka, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 7, 1988, Ser. No. 472,625
Claims priority, application Japan, Sep. 8, 1982, 57-40704
Term of patent 14 years
U.S. Cl. D12—91





282,831
STROLLER
James M. Kain, Tipp City, Ohio, assignor to Questor Corp., Tampa, Fla.
Filed Oct. 28, 1983, Ser. No. 546,624
Term of patent 14 years
U.S. Cl. D12—129





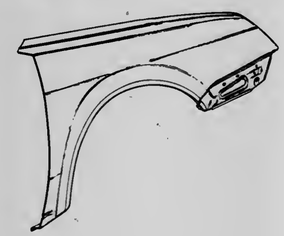
282,832
STROLLER FOOT REST
James M. Kain, Tipp City, Ohio, assignor to Questor Corp., Tampa, Fla.
Filed Oct. 28, 1983, Ser. No. 546,767
Term of patent 14 years
U.S. Cl. D12—133



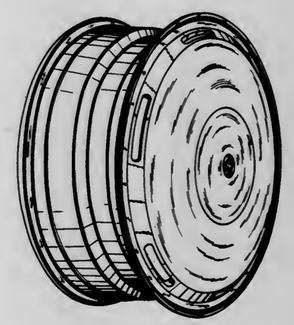
282,833
AUTOMOBILE HOOD
Shinken Tanaka, Hatano, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan
Filed Apr. 8, 1983, Ser. No. 483,299
Term of patent 14 years
U.S. Cl. D12—173



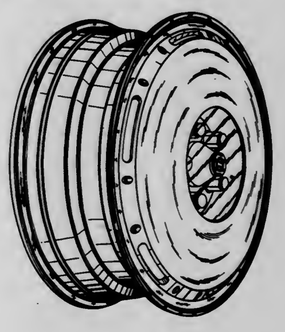
282,834
AUTOMOBILE FRONT FENDER
Takayasu Matsui, Tokyo, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan
Filed Apr. 8, 1983, Ser. No. 483,298
Term of patent 14 years
U.S. Cl. D12—184



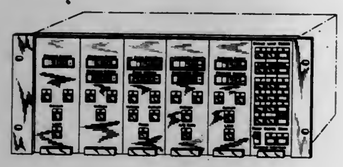
282,835
VEHICLE WHEEL
John A. Main, Plymouth, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.
Filed Apr. 14, 1983, Ser. No. 485,139
Term of patent 14 years
U.S. Cl. D12—209



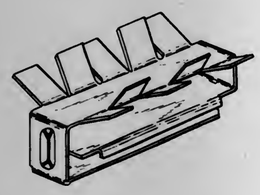
282,836
VEHICLE WHEEL
John A. Main, Plymouth, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.
Filed Apr. 14, 1983, Ser. No. 485,140
Term of patent 14 years
U.S. Cl. D12—209



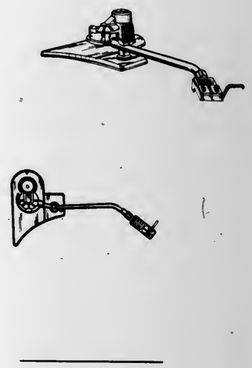
282,837
ION SOURCE CONTROL PANEL
Gary E. Thornton, Ft. Collins; Robert A. Zarren, Boulder, and R. Larry Choate, Loveland, all of Colo., assignors to Ion Tech, Inc., Ft. Collins, Colo.
Filed Sep. 9, 1983, Ser. No. 530,625
Term of patent 14 years
U.S. Cl. D13—12



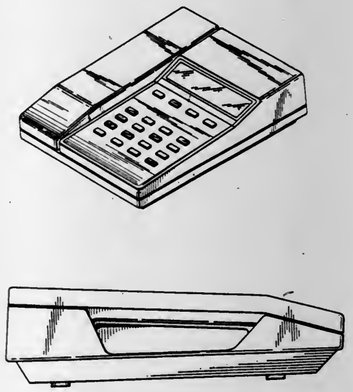
282,838
SLIP-ON HEAT SINK FOR ENCASED ELECTRICAL PACKAGES
Alfred F. McCarthy, Belmount, N.H., assignor to Aavid Engineering, Inc., Laconia, N.H.
Filed Mar. 25, 1983, Ser. No. 478,919
The portion of the term of this patent subsequent to Oct. 2, 1998, has been disclaimed.
Term of patent 14 years
U.S. Cl. D13—23



282,839
TONE ARM
Vladimir F. Vinogradov, ulitsa Gorkogo, 135, kv. 17; Juris Z. Dreimanis, ulitsa Vangazhu, 32, kv. 16; Aivars A. Kruklis, ulitsa Kirova, 27, and Dzintars A. Kave, ulitsa Raunas, 45, korpus 5, Kv. 208, all of Riga, U.S.S.R.
Filed Apr. 20, 1982, Ser. No. 370,073
Claims priority, application U.S.S.R., Apr. 4, 1980, 21582
Term of patent 14 years
U.S. Cl. D14—27



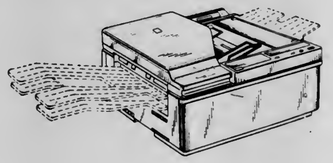
282,840
TELEPHONE
Eric J. Marshall, London, United Kingdom, assignor to The Marshall Telephone Corporation Limited, United Kingdom
Filed Dec. 9, 1983, Ser. No. 559,698
Claims priority, application United Kingdom, Jun. 3, 1983, 1013504
Term of patent 14 years
U.S. Cl. D14—53



282,841
KEY TELEPHONE SET
Hiroshi Inaba, Kawasaki, Japan, assignor to Nitsuko Limited, Kawasaki, Japan
Filed Jul. 11, 1983, Ser. No. 512,367
Claims priority, application Japan, Feb. 1, 1983, 58-3331
Term of patent 14 years
U.S. Cl. D14—58



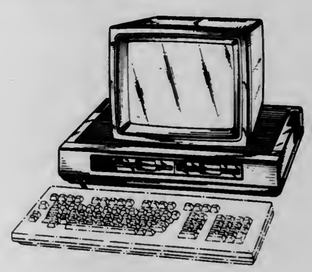
282,842
FACSIMILE TRANSCEIVER
Takashi Yomo, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan.
Filed Oct. 18, 1983, Ser. No. 543,035
Claims priority, application Japan, Apr. 25, 1983, 58-17439
Term of patent 14 years
U.S. Cl. D14—94



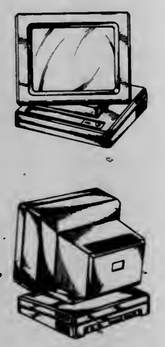
282,843
PORTABLE ELECTRONIC COMPUTER
Masaki Kurihara, Shiojiri, Japan, assignor to Epson Corporation, Nagano and Kabushiki Kaisha Suwa Seikosha, Tokyo, both of Japan
Filed May 19, 1983, Ser. No. 496,342
Claims priority, application Japan, Nov. 22, 1982, 57-52659
Term of patent 14 years
U.S. Cl. D14—100



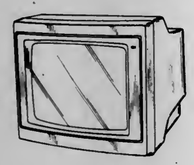
282,844
PERSONAL COMPUTER
Kenji Ekuan, Tokyo, Japan, assignor to Epson Corporation, Tokyo, Japan
Filed Mar. 17, 1983, Ser. No. 476,308
Claims priority, application Japan, Sep. 17, 1982, 57-42532
Term of patent 14 years
U.S. Cl. D14—106



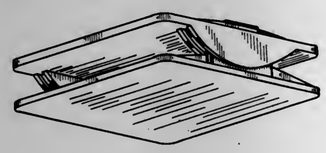
282,845
VIDEO TERMINAL
Barbara K. Lewis, Sunnyvale, Calif., assignor to Qume Corporation, San Jose, Calif.
Filed Apr. 12, 1983, Ser. No. 484,135
Term of patent 14 years
U.S. Cl. D14—113



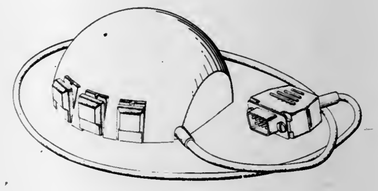
282,846
COMPUTER DISPLAY
Kazuyuki Tsuburaya, Akikawa; Takanori Nishiyama, Koganei, and Kazunori Yanagisawa, Higashiyamato, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Aug. 4, 1983, Ser. No. 520,516
Claims priority, application Japan, Feb. 10, 1983, 58-4862; Feb. 10, 1983, 58-4864
Term of patent 14 years
U.S. Cl. D14—113



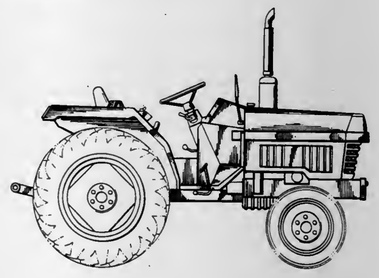
282,847
TILT AND ROTATE BASE FOR A DISPLAY MONITOR
Siebolt Hettinga, 8000 University Ave., Des Moines, Iowa 50311
Filed Jun. 20, 1983, Ser. No. 505,969
Term of patent 14 years
U.S. Cl. D14—114

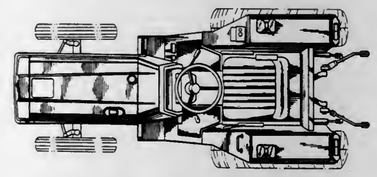


282,848
DEVICE TO FOLLOW LINES ON A DRAWING AND TO REGISTER THE ORDINATES OF GIVEN POINTS OF SAID DRAWING
Eric Depraz, Vaud, Switzerland, assignor to Depraz S.A., Vaud, Switzerland
Filed Jul. 20, 1983, Ser. No. 515,479
Claims priority, application Hague, Jan. 20, 1983, 72.879
Term of patent 14 years
U.S. Cl. D14—114



282,849
AGRICULTURAL TRACTOR
Genichi Funabashi, Sennan, Japan, assignor to Kubota, Ltd., Japan
Filed Sep. 16, 1983, Ser. No. 532,984
Claims priority, application Japan, Jun. 17, 1983, 58-26306
Term of patent 14 years
U.S. Cl. D15—23

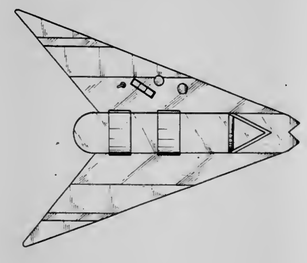




282,850
KEYBOARD MUSICAL INSTRUMENT OR SIMILAR ARTICLE
Masaru Futami, Fujisawa, Japan, assignor to Lowrey Industries, Inc., Deerfield, Ill.
Filed Jul. 28, 1983, Ser. No. 518,180
Claims priority, application Japan, Dec. 27, 1982, 57-58593
Term of patent 14 years
U.S. Cl. D17—1



282,851
GUITAR BODY
Angelo G. Tornese, 8521 Oakford Dr., Springfield, Va. 22152
Filed Aug. 3, 1982, Ser. No. 404,865
Term of patent 14 years
U.S. Cl. D17—18



282,852
PICKGUARD FOR A GUITAR
James L. D'Aquisto, 3235 Manhassett, Greenport, N.Y. 11944
Filed Nov. 7, 1983, Ser. No. 549,674
Term of patent 14 years
U.S. Cl. D17—20



282,853
DESK-TOP ELECTRONIC CALCULATOR
Eiichi Yoshioka, Abiko, and Osamu Murakami, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 5, 1983, Ser. No. 557,934
Claims priority, application Japan, Jul. 25, 1983, 58-32620
Term of patent 14 years
U.S. Cl. D18—7



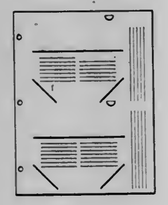
282,854
DESK-TOP ELECTRONIC CALCULATOR
Eiichi Yoshioka, Abiko, and Yuji Harada, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 5, 1983, Ser. No. 557,939
Claims priority, application Japan, Jul. 7, 1983, 58-29605
Term of patent 14 years
U.S. Cl. D18—7



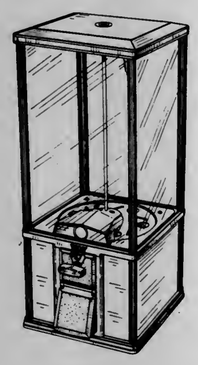
282,855
PAINTER'S CAP PRINTING ATTACHMENT FOR SILK SCREEN MACHINE OR THE LIKE
Roger L. Jennings, Glen Falls, N.Y., assignor to R. Jennings Manufacturing Co., Inc., Fort Ann, N.Y.
Filed Oct. 11, 1983, Ser. No. 540,753
Term of patent 14 years
U.S. Cl. D18—22



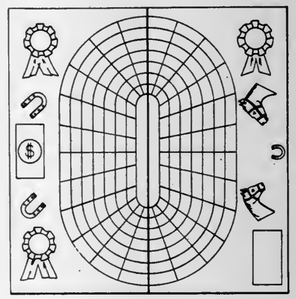
282,856
ALBUM PAGE FOR STORING COMPUTER DISKS OR SIMILAR ARTICLE
Douglas P. Daly, 115 Osborne Ave., Mamaroneck, N.Y. 10543
Filed Jul. 1, 1983, Ser. No. 510,960
Term of patent 14 years
U.S. Cl. D19—33



282,857
COIN OPERATED VENDING MACHINE
Joseph W. Schwarzli, 430 Comstock Rd., Scarborough, Ontario, Canada (M1L 2H6)
Filed Jul. 6, 1983, Ser. No. 511,187
Term of patent 14 years
U.S. Cl. D20—7



282,858
HORSE RACING GAMEBOARD
Jose M. G. Gonzales, 8520 Summer, Albuquerque, N. Mex. 87112
Filed Aug. 25, 1983, Ser. No. 526,651
Term of patent 14 years
U.S. Cl. D21—27



282,859
TOY RAKEHEAD
Nancy Burhop, 2412 Prospect St., Evanston, Ill. 60201
Filed Dec. 7, 1983, Ser. No. 558,832
Term of patent 14 years
U.S. Cl. D21—120



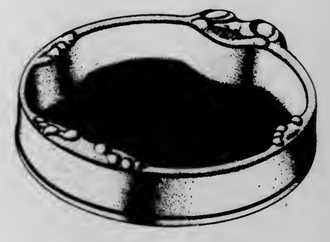
282,860
CHILD'S CLOWN FIGURE TOY
Peter G. Adams, East Grinstead, England, assignor to Hestair Kiddicraft Limited, Surrey, England
Filed Jun. 16, 1983, Ser. No. 505,066
Term of patent 14 years
U.S. Cl. D21—173



282,861
FACIAL APPLIANCE FOR MAKEUP
Barry R. Koper, 7647 Lemp Ave., North Hollywood, Calif. 91605
Continuation-in-part of Ser. No. 161,014, Jun. 19, 1980, which is a continuation-in-part of Ser. No. 46,229, Jun. 7, 1979. This application Apr. 21, 1982, Ser. No. 370,209
Term of patent 14 years
U.S. Cl. D21—190



282,862
WADING POOL
James F. Mariol, 481 Dean View Dr., Cincinnati, Ohio 45224
Filed Jun. 8, 1983, Ser. No. 502,178
Term of patent 14 years
U.S. Cl. D21—252



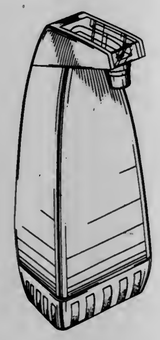
282,863
POLICE BATON
Charles R. Kashary, Jr., Brooklyn, Ohio, assignor to DKZ, Incorporated, Cleveland, Ohio
Filed Apr. 20, 1983, Ser. No. 486,852
Term of patent 14 years
U.S. Cl. D22—1



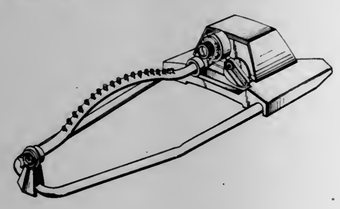
282,864
SEMIAUTOMATIC RIFLE
Robert A. Weaver, Escondido, Calif., assignor to Weaver Arms, Inc., Escondido, Calif.
Filed May 19, 1983, Ser. No. 496,266
Term of patent 14 years
U.S. Cl. D22—6



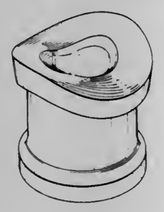
282,865
WATER FILTER
Raymond E. Ward, 1150 Anchorage La., LeRondelet, San Diego, Calif. 92106
Filed Oct. 3, 1983, Ser. No. 538,175
Term of patent 14 years
U.S. Cl. D23—4



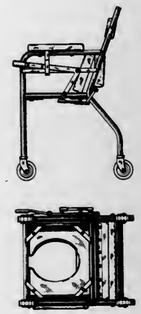
282,866
LAWN SPRINKLER
Ronald G. Hayes, Batavia, Ohio, assignor to L. R. Nelson Corporation, Peoria, Ill.
Filed Apr. 20, 1984, Ser. No. 602,489
Term of patent 14 years
U.S. Cl. D23—8



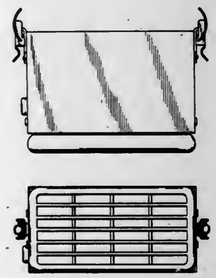
282,867
WELDING OUTLET
Bobby W. Ryan, Houston, and Glynn E. Woods, Kingwood, both of Tex., assignors to WFI International, Inc., Houston, Tex.
Filed Mar. 21, 1983, Ser. No. 475,262
Term of patent 14 years
U.S. Cl. D23—40



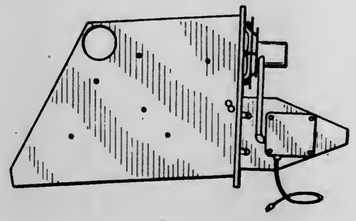
282,868
COMMODE CHAIR
Bob S. Shigenaka, 181 Tally Ho Rd., and John S. Figueiredo, P.O. Box Drawer 0, both of Arroyo Grande, Calif. 93420
Filed May 2, 1983, Ser. No. 490,520
Term of patent 14 years
U.S. Cl. D23—48



282,869
HOUSING FOR ELECTRIC HEATER ACCESSORY FOR A PORTABLE BLOWER
Clyde B. Parnell, Godwin, N.C., assignor to Fasco Industries, Inc., Boca Raton, Fla.
Filed Jan. 19, 1983, Ser. No. 459,046
Term of patent 14 years
U.S. Cl. D23—73



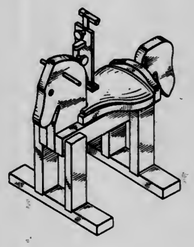
282,870
AIR-TO-AIR HEAT EXCHANGER
L. Benning; E. Novecosky, and D. Van Ee, all of Humboldt, Canada, assignors to Del-Air Systems Ltd., Humboldt, Canada
Filed Dec. 13, 1982, Ser. No. 448,930
Term of patent 14 years
U.S. Cl. D23—136



282,871
FAN
Frank Hutter, Shallow Lake, Canada, assignor to Caframo Limited, Wiarton, Canada
Filed Jan. 14, 1983, Ser. No. 458,043
Claims priority, application Canada, Jul. 16, 1982, 16-07-82-1
Term of patent 14 years
U.S. Cl. D23—158



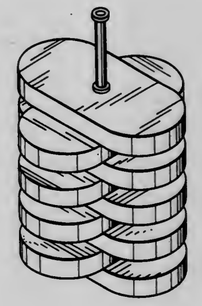
282,872
X-RAY FILM CASSETTE HOLDER FOR USE WITH CHILDREN
Dennis D. Hayes, 1127 Pillsbury, Lancaster, Calif. 93534, and Dean D. Hayes, 39727 Calle Lomite, Green Valley, Calif. 91350
Filed Sep. 22, 1983, Ser. No. 534,754
Term of patent 14 years
U.S. Cl. D24—2



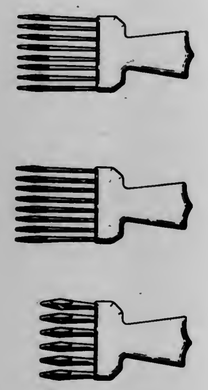
282,873
SPOTLIGHT
Richard L. May, Manhattan Beach, and Howard T. Ibaraki, Hacienda Heights, both of Calif., assignors to Mr. Gasket Company, Cleveland, Ohio
Filed Dec. 1, 1983, Ser. No. 557,056
Term of patent 14 years
U.S. Cl. D26—45



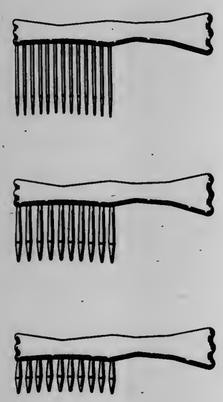
282,874
LAMP BASE
Sante G. Alessandro, New York, N.Y., assignor to Erwin-Lambeth, Inc., Thomasville, N.C.
Filed Mar. 25, 1983, Ser. No. 479,014
Term of patent 14 years
U.S. Cl. D26—93



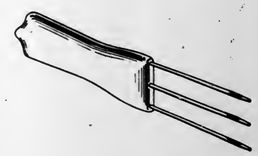
282,875
HAIR PICK
Franklin D. Harvey, 22 E. Broad St., Richmond, Va. 23219
Filed Jul. 10, 1984, Ser. No. 629,404
Term of patent 14 years
U.S. Cl. D28—31



282,876
COMB
Franklin D. Harvey, 22 E. Broad St., Richmond, Va. 23219
Filed Jul. 10, 1984, Ser. No. 629,406
Term of patent 14 years
U.S. Cl. D28—31



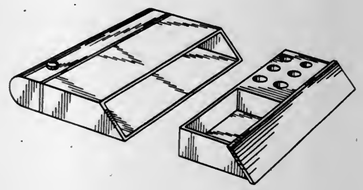
282,877
HAIR LIFT
Franklin D. Harvey, 22 E. Broad St., Richmond, Va. 23219
Filed Jul. 10, 1984, Ser. No. 629,412
Term of patent 14 years
U.S. Cl. D28—31



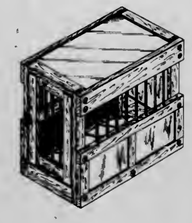
282,878
SHAVING RAZOR
Herbert M. Skidmore, 2208 Wheaton Dr., Norman, Okla. 73071
Filed Jan. 23, 1984, Ser. No. 573,011
Term of patent 14 years
U.S. Cl. D28—46



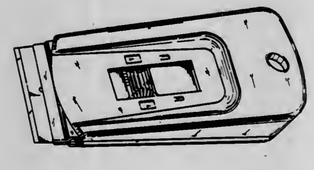
282,879
NAIL POLISH DRYER
Charlene A. Roberton, P.O. Box #1482, Oak Brook, Ill. 60521
Filed Aug. 4, 1983, Ser. No. 520,482
Term of patent 14 years
U.S. Cl. D28—58



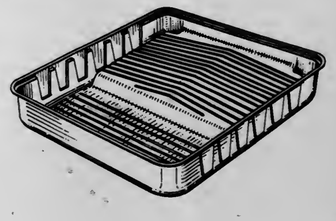
282,880
ANIMAL CRATE
Ronald E. Barati, Clifford Estates, R.D. 1, Ligonier, Pa. 15658
Filed Oct. 4, 1983, Ser. No. 539,077
Term of patent 14 years
U.S. Cl. D30—1



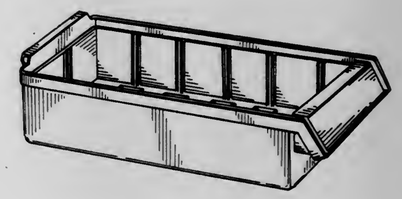
282,881
HAND SCRAPER TOOL
Donald Gringer, New York, N.Y., assignor to Allway Tools, Inc., Bronx, N.Y.
Filed Nov. 18, 1983, Ser. No. 553,251
Term of patent 14 years
U.S. Cl. D32—48



282,882
ROLLER COATER PAINT TRAY
Philip J. Allison, Renforth, and Morley L. Smith, Beaconsfield, both of Canada, assignors to T. S. Simms & Co. Limited, Saint John, Canada
Filed Mar. 10, 1983, Ser. No. 474,818
Claims priority, application Canada, Feb. 9, 1983, 09-02-83-3
Term of patent 14 years
U.S. Cl. D32—53.1



282,883
STORAGE BIN
Heikki Kiiski, Turku, Finland, assignor to Treston Oy, Turku, Finland
Filed Feb. 25, 1983, Ser. No. 469,987
Claims priority, application Finland, Aug. 31, 1982, 740/82; Aug. 31, 1982, 742/82
Term of patent 14 years
U.S. Cl. D34—40



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 4TH DAY OF MARCH, 1986

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A & O Engineering, Inc.: *See—*
Orphall, Axel W.; and Albers, Bernd G., 4,573,643, Cl. 241-189.00R.

A/S Alfred Benzon: *See—*
Roswall, Stig; and Thorhus, Lene B., 4,574,080, Cl. 424-20.000.

A/S Kongsberg Vapenfabrikk: *See—*
Stroem, Sigmunn, 4,573,315, Cl. 60-39.370.
Stroem, Sigmunn; and Mowill, Rolf J., 4,573,868, Cl. 415-157.000.

Abe, Ken-ichi; and Ozaki, Ryoji, to Fuji Electric Co., Ltd. Multi-polar circuit breaker. 4,574,170, Cl. 200-153.00G.

Abe, Michio, to Tokai TRW & Co., Ltd. Rack-pinion steering gear and method for cutting rack teeth. 4,573,372, Cl. 74-422.000.

Abel, Kent W.: *See—*
Kloehn, Kurt J.; Rajala, Gregory J.; and Abel, Kent W., 4,573,382, Cl. 83-53.000.

Abramson, Robert D.; Donovan, David A.; and Field, Nathaniel L., to Ford Motor Company. Angular positioning actuator. 4,573,348, Cl. 73-118.000.

Adachi, Keiichi; Ikeda, Tadashi; and Tani, Tadaaki, to Fuji Photo Film Co., Ltd. Silver halide light-sensitive materials having a layer of grains having dye absorbed thereon. 4,574,115, Cl. 430-522.000.

Adams, Brian W., to Lawrence, Peter Robin Broughton. Amine salts and products containing them. 4,574,151, Cl. 536-31.000.

Adams, John F. E.; Proffit, Philip J. G.; Oakley, Nicholas R.; and Folland, Rickworth, to Metal Box p.l.c. Containers. 4,573,597, Cl. 215-12.00R.

Adams, Jurgen; and Scholl, Hans-Peter, to Kienzle Apparate GmbH. Taximeter assembly. 4,574,189, Cl. 235-30.00R.

Adell, Robert, to U.S. Product Development Company. Magnetic door edge guard. 4,573,288, Cl. 49-462.000.

Adidas Sportschuhfabriken Adi Dassler Stiftung & Co. KG: *See—*
Feurer-Zogel, Rudolf; and Vogler, Rudolf, 4,573,279, Cl. 36-35.00R.

Advanced Cardiovascular Systems, Inc.: *See—*
Samson, Wilfred J.; and Frisbie, Jeffrey S., 4,573,470, Cl. 128-344.000.

Advanced Parallel Systems, Inc.: *See—*
Konesky, Gregory A., 4,574,345, Cl. 364-200.000.

Ahola, Reijo, to Oy Noki AB. Digital multiplex device. 4,574,373, Cl. 370-58.000.

Aichi Steel Works, Ltd.: *See—*
Yamamoto, Toshiro; Kobayashi, Ryohei; Kurimoto, Mamoru; and Ozone, Toshio, 4,574,016, Cl. 148-144.000.

Aikawa, Kunihiko: *See—*
Irimajiri, Shoichiro; Komuro, Katsusuke; and Aikawa, Kunihiko, 4,573,546, Cl. 180-89.100.

Aishima, Takanori; Utsumi, Makoto; and Ezaki, Yoshihiro, to Idemitsu Petrochemical Co., Ltd. Multi-layer film. 4,574,104, Cl. 428-220.000.

Aker Oil Tools, Inc.: *See—*
Reinhardt, Paul A., 4,573,529, Cl. 166-68.000.

Akers, Michael J.: *See—*
Hargrove, William W.; Harris, Dale C.; Akers, Michael J.; and Sperry, Charles R., 4,573,967, Cl. 604-56.000.

AKT Consultants Pty, Limited: *See—*
Ruiz-Avila, Jose L., 4,573,278, Cl. 34-168.000.

Aktiebolaget Electrolux: *See—*
Andreasson, Bo C., 4,573,556, Cl. 188-137.000.

Aktiebolaget IRO: *See—*
Hellstrom, Jerker; Tholander, Lars H. G.; and Jacobsson, Kurt A. G., 4,574,353, Cl. 364-470.000.

Akutagawa, Hitoshi, to Mazda Motor Corporation. Auxiliary power transmission having synchronizing mechanism. 4,573,371, Cl. 74-339.000.

Albany International Corp.: *See—*
Donovan, James G., 4,574,105, Cl. 428-233.000.

Albers, Bernd G.: *See—*
Orphall, Axel W.; and Albers, Bernd G., 4,573,643, Cl. 241-189.00R.

Albert, Hans. Method apparatus of measuring axial parallelism of roller pairs. 4,573,274, Cl. 33-182.000.

Alberta Oil Sands Technology and Research Authority: *See—*
Wan, Jeffrey K. S., 4,574,038, Cl. 204-162.00R.

Albritton, Charles W.; Powis, William N.; and Graham, William M., to ITT Corporation. Space heater. 4,573,912, Cl. 432-222.000.

Aldridge, Donald J. Knot tying apparatus. 4,573,719, Cl. 289-17.000.

Alfatechnic AG: *See—*
Dubach, Werner F., 4,573,600, Cl. 215-237.000.

Allen, Dell K. Sheet lifter for a loose leaf binder. 4,573,822, Cl. 402-80.00L.

Allen, James L.: *See—*
Barmatz, Martin B.; Allen, James L.; and Gaspar, Mark S., 4,573,356, Cl. 73-505.000.

Allied Corporation: *See—*
Bose, Debasis; Datta, Amitava; and DeCristofaro, Nicholas J., 4,573,630, Cl. 228-263.180.
Boyle, William J., Jr.; Mares, Frank; and Wallo, Andrea M., 4,574,060, Cl. 558-457.000.
Deem, Brian C.; and Hall, John L., 4,573,561, Cl. 192-91.00A.
Prendergast, Ian D., 4,573,664, Cl. 266-44.000.
Ritsema, Irving R., 4,573,554, Cl. 188-73.380.
Wang, Der-Shi, 4,573,558, Cl. 188-268.000.

Allis-Chalmers Corporation: *See—*
Mayo, Howard A., Jr., 4,573,827, Cl. 405-78.000.

Alma Products Company: *See—*
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Aloka Co., Ltd.: *See—*
Namekawa, Koroku; Koyano, Akira; and Kasai, Chihiro, 4,573,477, Cl. 128-663.000.

Alpha Molding Technologies Associates: *See—*
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Alps Electric Co., Ltd.: *See—*
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Kondo, Yoshihisa, 4,573,812, Cl. 400-121.000.
Ohyama, Toru; and Nomura, Takao, 4,574,201, Cl. 307-243.000.

Aluminum Pechiney: *See—*
Cristol, Benoit; and Mordini, Jacques, 4,574,074, Cl. 423-124.000.

ALZA Corporation: *See—*
Chen, Yu-Ling; Chun, Leslie L.; and Enscore, David J., 4,573,995, Cl. 604-896.000.

Amada Company, Limited: *See—*
Yoneda, Akiyoshi, 4,573,360, Cl. 73-850.000.

Amano, Itaru; Maikuma, Yoshimata; Ozaki, Keiji; and Ohnishi, Hisaaki, to Kabushiki Kaisha Kobe Seiko Sho. Apparatus for unloading cured tires from a tire vulcanizing press. 4,573,859, Cl. 414-628.000.

Ambrose, John W.: *See—*
Lee, Graham L.; Shuttlewood, Jeffrey R.; and Ambrose, John W., 4,573,505, Cl. 141-92.000.

Ameda AG: *See—*
Schlensog, Klaus; Beer, Christian; and Riedweg, Robert, 4,573,969, Cl. 604-74.000.

American Cyanamid Company: *See—*
Padmanathan, Thurairajah, 4,574,155, Cl. 544-330.000.
Ryles, Roderick G.; and Robustelli, Albert G., 4,573,533, Cl. 166-275.000.

American Home Products Corporation: *See—*
Tuccillo, Mark J., 4,573,479, Cl. 128-698.000.

American Plasticraft Co.: *See—*
Simovits, Stephen S., Jr., 4,573,755, Cl. 339-111.000.

American Standard Inc.: *See—*
Sulfstede, Louis E.; Bergt, Carl; and Helt, Robert W., 4,573,326, Cl. 62-156.000.
Tischer, James C.; and Larson, James W., 4,573,324, Cl. 62-115.000.

Amlani, Kishan D., to Eaton Corporation. Multi-axis load transducer. 4,573,362, Cl. 73-862.040.

Amoco Corporation: *See—*
Blake, William R., 4,573,532, Cl. 166-264.000.

AMP Incorporated: *See—*
Dornes, Bryan J.; Paukovits, Edward J., Jr.; Spong, Richard V.; and Talarico, Robert J., 4,573,262, Cl. 29-739.000.

Amtel, Inc.: *See—*
Pomonik, George M.; and Jansen, Martin B., 4,573,425, Cl. 114-230.000.

Amtrol Inc.: *See—*
O'Connor, Robert F., 4,573,611, Cl. 222-147.000.

Anchor/Darling Valve Company: *See—*
Husted, Rodney O., 4,573,660, Cl. 251-195.000.

Anders, Dietmar, to Hermann Berstorff Maschinenbau GmbH. Degassing extrusion device. 4,573,799, Cl. 366-89.000.

Andersen, Steen H.; and Pedersen, Bendt O., to Nordisk Ventilator Co. A/S. Spring biased bayonet coupling for fan blades. 4,573,874, Cl. 416-157.00R.

Anderson, Paul L., to Lamb Technicon Corp. Workpiece transfer device. 4,573,862, Cl. 414-753.000.

Anderson, Robert H., to Litton Systems, Inc. Magneto-optic image scanning detector. 4,574,312, Cl. 358-213.000.

Anderson, Thomas E., to General Electric Company. Ballast circuit for multiple parallel negative impedance loads. 4,574,222, Cl. 315-254.000.

Anderson, Warren, to Grumman Aerospace Corporation. Test system for electromagnetic trailer brake system. 4,573,350, Cl. 73-129.000.

Andersson, Kaj: *See—*
Andersson, Verner; and Andersson, Kaj, 4,573,931, Cl. 440-61.000.

Andersson, Kjell, to Seco Tools AB. Device for transferring fluid to a rotating tool holder. 4,573,836, Cl. 408-59.000.

Andersson, Verner; and Andersson, Kaj. Attachment means for outboard motors. 4,573,931, Cl. 440-61.000.

Andre, Wolfram K.: *See—*
Wolf, Kurt; and Andre, Wolfram K., 4,574,184, Cl. 219-440.000.

Andreas Stihl: *See—*
Lindemann, Bernd; Landwehr, Gotz; and Kaiser, Hans-Georg, 4,573,386, Cl. 83-833.000.

Andreasson, Bo C., to Aktiebolaget Electrolux. Actuator for the release of an automatic emergency brake of a hand-operated powered tool. 4,573,556, Cl. 188-137.000.

Andree, Dietrich; and Creutz, Walter, to Hoesch Aktiengesellschaft. Center-free large rolling bearing. 4,573,811, Cl. 384-622.000.

Andresen, Herman J. Controller of magnetically saturated type having programmed output characteristic. 4,574,286, Cl. 340-870.310.

Annis, Larry D., to Kendall Company, The. Liquid collection system having an anti-septic member on the discharge section. 4,573,983, Cl. 604-322.000.

Anstaett, Ralph E., Jr.: *See—*
Gibson, Galen R.; and Anstaett, Ralph E., Jr., 4,574,308, Cl. 358-188.000.

Aoki, Hideo; and Takahashi, Kazuaki, to Silver Seiko, Ltd. Ribbon lift device for a printer. 4,573,813, Cl. 400-214.000.

Aoki, Hiroyasu, to Yasui Sangyo Co., Ltd. Safety device for protecting fall of a lift. 4,573,552, Cl. 187-8.500.

Aoki, Shinichiro: *See—*
Miyazaki, Sachio; and Aoki, Shinichiro, 4,574,377, Cl. 370-104.000.

Aoyama, Masutoshi: *See—*
Takasaki, Masaru; and Aoyama, Masutoshi, 4,574,338, Cl. 362-278.000.

Apelman, Steven P., to Ragen Data Systems, Inc. Video synthesizer. 4,574,278, Cl. 340-722.000.

Apple, Christian K.: *See—*
Hill, William D.; Mercanti, William A., Jr.; Apple, Christian K.; and Loomis, Gary S., 4,574,068, Cl. 376-259.000.

Appleyard, Francis J.; and Young, John H., to Armstrong World Industries, Inc. Non-directional floor tile. 4,574,065, Cl. 264-76.000.

Application Engineering Corporation: *See—*
Waters, Michael A.; and Boll, Daniel P., 4,573,893, Cl. 425-71.000.

Applied Magnetics Corporation: *See—*
Inbar, Michael, 4,574,234, Cl. 324-73.00R.

Apsell, Sheldon P.: *See—*
Berger, Martin J.; and Apsell, Sheldon P., 4,573,954, Cl. 493-55.000.

APV Burnett & Rolfe Ltd.: *See—*
Lee, Graham L.; Shuttlewood, Jeffrey R.; and Ambrose, John W., 4,573,505, Cl. 141-92.000.

Arad, Abraham A.: *See—*
Kennedy, Melvin R.; Nagel, Dietmar; and Arad, Abraham A., 4,573,943, Cl. 446-463.000.

Arakawa, Kazuhiko, to Canon Kabushiki Kaisha. Display device for focus detecting camera. 4,573,785, Cl. 354-409.000.

Arakawa, Mutsumi; Ueno, Junichi; Kawaguchi, Yozo; Shimura, Norio; Matsunaga, Shoichi; and Fukaya, Kiyoshi, to Yamatake Honeywell. Data transmission system for use in an air conditioning control apparatus. 4,574,283, Cl. 340-825.080.

Arakawa, Satoshi, to Fuji Photo Optical Co., Ltd. Endoscope. 4,573,450, Cl. 128-6.000.

Arakawa, Satoshi; Matsuda, Terumi; Ishizuka, Akio; and Shibahara, Yoshihiko, to Fuji Photo Film Company, Ltd. Radiation image storage panel. 4,574,102, Cl. 428-212.000.

Arcair Company: *See—*
Strohl, Robert L.; Moore, Paul E.; and Toth, Alexander, 4,573,665, Cl. 266-48.000.

Arcu Armaturindustri AB: *See—*
Hammarstedt, Gosta, 4,573,493, Cl. 137-315.000.

Arens, Hans; Kern, Hans; and Haslberger, Richard, to Grunbeck Wasseraufbereitung GmbH. Tube separator. 4,573,491, Cl. 137-218.000.

Ares, Inc.: *See—*
Stoner, Eugene M., 4,573,395, Cl. 89-33.160.

Arisawa, Yasuo; Kusazaki, Yoshimasa; Yamada, Hidetoshi; Watanabe, Akira; and Yunoki, Yutaka, to Olympus Optical Co., Ltd. Solid state image pick-up device. 4,574,309, Cl. 358-212.000.

Ariyama, Noriyuki: *See—*
Oguri, Yasuo; Awata, Mitsuru; and Ariyama, Noriyuki, 4,574,012, Cl. 106-120.000.

Armbruster, George E., to Illinois Bell Telephone Company. Temporary duct liner interconnect device. 4,573,715, Cl. 285-94.000.

Armstrong World Industries, Inc.: *See—*
Appleyard, Francis J.; and Young, John H., 4,574,065, Cl. 264-76.000.

Arndt, Klaus; and Sanvido, Saverio, to Contraves AG. Periscope-like sighting device. 4,573,773, Cl. 350-541.000.

Arnold, Dan M.; and Smith, Harry D., Jr., to Halliburton Company. Method for logging fluid flow rate, water fraction, and/or salinity of water flowing into a well. 4,574,193, Cl. 250-270.000.

Arnold, Jeffrey M.; Brosnahan, James R.; Koong, Terrence H.; Mans, Thomas A.; and Milo, Theodore A., to Datascope Corporation. Automatic pulse rate trigger-source select circuit. 4,573,478, Cl. 128-670.000.

Arrington, John P.; Jaraczewski, Kathleen A.; Moisson, Marc F.; and Wisecarver, Martin L., to Raychem Corp. Tube storage and delivery device. 4,573,607, Cl. 221-25.000.

Arrowhead Industrial Water, Inc.: *See—*
Pittner, Gregory A., 4,574,049, Cl. 210-639.000.

Arthro-Medic, Inc.: *See—*
Williams, J. Webster, Jr., 4,573,482, Cl. 128-804.000.

Artz, Gerd; and Figge, Dieter, to Haftung Fried. Krupp Gesellschaft mit beschrankter. Testing apparatus for detecting damage of the casting belts of a continuous casting mold. 4,573,521, Cl. 164-451.000.

Asada, Eiichi; Inokuma, Toshio; and Yamazoe, Mikio, to Shoei Chemical Inc. Resistor compositions. 4,574,055, Cl. 252-514.000.

Asada, Takafumi; Yoshida, Churyo; Koda, Minoru; and Ohno, Hideaki, to Matsushita Electric Industrial Co., Ltd. Fluid bearing device. 4,573,807, Cl. 384-100.000.

Asano, Makoto; Hasegawa, Kiyoharu; Tamura, Yukio; and Oono, Yoshihiro, to Mitsui Toatsu Chemicals, Incorporated. Process for producing microcapsules and microcapsule slurry. 4,574,110, Cl. 428-402.210.

Aschauer, Johann, to Voest-Alpine Aktiengesellschaft. Apparatus for feeding sheet metal elements to a bending. 4,573,861, Cl. 414-751.000.

ASEA Aktiebolag: *See—*
Persson, Hans, 4,573,335, Cl. 72-63.000.

Ashline, William J.: *See—*
Seymour, Raymond K.; Palmieri, Joseph M.; Ashline, William J.; and Doughty, Dennis J., 4,573,259, Cl. 29-602.00R.

Aspen Laboratories, Inc.: *See—*
Kitchin, Dwight W., 4,573,888, Cl. 417-560.000.

Ast, Vincent N., Jr.: *See—*
Spindel, Howard R.; Ast, Vincent N., Jr.; and Brown, Gary L., 4,574,362, Cl. 364-900.000.

AT&T Bell Laboratories: *See—*
Cox, Herbert M., 4,574,093, Cl. 427-86.000.
Eng, Kai Y.; and Haskell, Barin G., 4,574,379, Cl. 370-104.000.
Glance, Bernard, 4,574,254, Cl. 331-17.000.
Gordon, Eugene I.; Hartman, Robert L.; and Nash, Franklin R., 4,573,255, Cl. 29-574.000.
Gritton, Charles W. K., 4,574,166, Cl. 179-170.200.
Scordo, Dominick, 4,574,374, Cl. 370-62.000.
Starr, Daniel C., 4,574,350, Cl. 364-200.000.
Williams, Gareth F., 4,574,249, Cl. 330-59.000.

AT&T Technologies, Inc.: *See—*
Dorey, John K., II; Huneke, James T.; Madsen, Bruce S.; and Schaaf, Theodore F., 4,574,031, Cl. 156-655.000.
Hechtman, Charles D., 4,574,236, Cl. 324-158.00F.

ATIC S.r.l.: *See—*
Piovesan, Alessandro, 4,573,826, Cl. 404-90.000.

Atkinson, Brian: *See—*
Rosiek, Jozef; Spruce, Frank; and Atkinson, Brian, 4,573,446, Cl. 126-92.00R.

Atkinson, Walter E., to Engineered Data Products, Inc. Reel stabilizer and ejection device. 4,573,589, Cl. 211-41.000.

Atlas Metal Industries, Inc.: *See—*
Ramey, Edwin O., 4,573,415, Cl. 108-129.000.

ATOCHEM: *See—*
Kervennal, Jacques; and Durual, Pierre, 4,574,059, Cl. 560-347.000.

Atsugi Motor Parts Co., Ltd.: *See—*
Hadama, Shigeyuki; and Sugizaki, Kyoichi, 4,573,890, Cl. 418-108.000.
Io, Shinichi; and Saeki, Funio, 4,573,258, Cl. 29-596.000.

Atsumi, Shigeru; and Tanaka, Sumio, to Tokyo Shibaura Denki Kabushiki Kaisha. Circuit for changing the voltage level of binary signals. 4,574,273, Cl. 307-475.000.

Auch, Wilfried; Mohr, Friedemann; Schlemper, Eberhard; and Steudle, Walter, to International Standard Electric Corporation. Rotation rate measuring instrument. 4,573,795, Cl. 356-350.000.

Audeh, Costandi A.; and Offenhauer, Robert D., to Mobil Oil Corporation. In-situ gasification of tar sands utilizing a combustible gas. 4,573,530, Cl. 166-260.000.

Audi NSU Auto Union Aktiengesellschaft: *See—*
Pischke, Reiner; and Kohler, Karl-Heinz, 4,573,440, Cl. 123-333.000.

Aumann, James T.: *See—*
Carroll, Jimmy L.; and Aumann, James T., 4,573,539, Cl. 175-58.000.

Austin, Paul R., to University of Delaware. Dry free-flowing water-soluble complexes of chitosan. 4,574,150, Cl. 536-20.000.

Automa s.r.l. Costruzione Macchine Automatiche: *See—*
Baccianti, Renato, 4,573,959, Cl. 493-458.000.

Automated Portion Control Technology, Inc.: *See—*
Sullivan, Norman D.; and Baker, Forrest E., 4,573,388, Cl. 83-867.000.

Awaga, Makoto: *See—*
Mori, Shosuke; Awaga, Makoto; Fujisaku, Kiminori; Yamauchi, Mitsuru; and Ono, Hitoshi, 4,574,347, Cl. 364-200.000.

Awata, Mitsuru: *See—*
Oguri, Yasuo; Awata, Mitsuru; and Ariyama, Noriyuki, 4,574,012, Cl. 106-120.000.

Ayers, Ray R.: *See—*
Kipp, Robert M.; and Ayers, Ray R., 4,573,713, Cl. 285-319.000.

Ayliffe, Peter J.: *See—*
Crossland, William A.; Peters, Jack R.; Ross, Peter W.; and Ayliffe, Peter J., 4,574,282, Cl. 340-784.000.

B. F. Goodrich Company, The: *See—*
Blayne, Jerome J.; Sidles, James; and Bartley, Donald R., 4,573,894, Cl. 425-36.000.

Baba, Fumio, to Fujitsu Limited. Clock generating circuit providing a boosted clock signal. 4,574,203, Cl. 307-269.000.

Babcock-Hitachi Kabushiki Kaisha: *See—*
Kotaka, Ikuo, 4,573,524, Cl. 165-96.000.

Babington, Robert S., to Babington, Robert S. Liquid delivery apparatus and method for liquid fuel burners and liquid atomizers. 4,573,904, Cl. 431-117.000.

Baccianti, Renato, to Automa s.r.l. Costruzione Macchine Automatiche. Fabric folding machine. 4,573,959, Cl. 493-458.000.

Bachalo, Larry E. Lifting device for removing honey comb assemblies from supers. 4,573,228, Cl. 6-12.00R.

Baggs, Burton D.: *See—*
Smith, Alexander; and Baggs, Burton D., 4,573,306, Cl. 56-10.400.

Baird, Thomas E., Sr.; and Jailor, John J., to Scott & Fetzer Company, The. Rug cleaning attachment. 4,573,235, Cl. 15-328.000.

Baker, Donal E., to Westinghouse Electric Corp. Inverter with constant voltage to frequency ratio output capability. 4,574,340, Cl. 363-41.000.

Baker, Forrest E.: *See—*
Sullivan, Norman D.; and Baker, Forrest E., 4,573,388, Cl. 83-867.000.

Baker Perkins, Pty., Ltd.: *See—*
Jones, Donald A.; Wawra, Gerhard F.; and Moss, William R., 4,573,898, Cl. 425-145.000.

Baker, Ralph; and Lifshitz, Ran, to Colorado State University Research Foundation. Isolates of pythium species which are antagonistic to *Pythium ultimum*. 4,574,083, Cl. 424-93.000.

Baker, Terry L. Billiard glove. 4,573,220, Cl. 2-161.00A.

Baker, Wilford S.; and Harrison, James J., to Gulf Oil Corporation. Cement compositions and method of cementing casing in a well. 4,573,534, Cl. 166-293.000.

Bald, Hubert. Apparatus for producing an adjusting torque. 4,573,379, Cl. 82-28.00R.

Bald, Hubert. Apparatus for producing an adjusting rotary movement. 4,573,380, Cl. 82-28.00R.

Baldwin, John J.; and Ponticello, Gerald S., to Merck & Co., Inc. Oxazoles and thiazoles containing an aminohydroxypropoxyphenyl moiety. 4,574,127, Cl. 514-365.000.

Ball Corporation: *See—*
Cerny, Daryl D.; and Diebolt, Edwin J., 4,574,067, Cl. 264-209.800.

Banff Golf Company, Inc.: *See—*
Young, Henry N., IV; and Smith, Richard C., 4,573,685, Cl. 273-173.000.

Bankovski, Dimiter N.: *See—*
Petkov, Georgi K.; Netzov, Nikola M.; Botev, Botyo P.; and Bankovski, Dimiter N., 4,573,841, Cl. 409-244.000.

Barbee, Robert B.: *See—*
Wicker, Thomas H., Jr.; and Barbee, Robert B., 4,574,148, Cl. 528-173.000.

Bareth, Erich, to Kaltenbach & Voight GmbH & Co. Clamping arrangement for the clamping engagement of instruments. 4,573,918, Cl. 433-127.000.

Baril, Michel: *See—*
Sillard, Gilles; and Baril, Michel, 4,574,288, Cl. 343-781.00P.

Barmatz, Martin B.; Allen, James L.; and Gaspar, Mark S., to California Institute of Technology. Single transducer levitator. 4,573,356, Cl. 73-505.000.

Barot, Devendra T., to Texaco Inc. Coal gasification combustion chamber structure. 4,574,002, Cl. 48-77.000.

Bartley, Donald R.: *See—*
Blayne, Jerome J.; Sidles, James; and Bartley, Donald R., 4,573,894, Cl. 425-36.000.

Bartman, Nicholas: *See—*
Frampton, Jeffery A.; and Bartman, Nicholas, 4,573,735, Cl. 296-218.000.

Baschang, Gerhard; Dietrich, Felix M.; Gisler, Roland; Hartmann, Albert; Stanek, Jaroslav; and Tarcsay, Lajos, to Ciba-Geigy Corporation. Antigen derivatives and processes for their preparation. 4,574,058, Cl. 260-112.50R.

Bascou, Jacques, to Regie Nationale des Usines Renault. Remote control device having a pivoting case cover. 4,574,285, Cl. 340-825.690.

BASF Aktiengesellschaft: *See—*
Theysohn, Rainer; Dorst, Hans G.; McKee, Graham E.; Steinberger, Rolf; Ziegler, Walter; and Zahradnik, Franz, 4,574,131, Cl. 523-209.000.

Bassett, James H.: *See—*
Ehrecke, Kevin L.; Braet, Jerome A.; and Bassett, James H., 4,573,308, Cl. 56-14.400.

Bataille, Jean M., to Dynapac AB. Double-safety arrangement for a self-propelled hand-guided machine. 4,573,543, Cl. 180-19.100.

Bateman, Charles D., to Sundstrand Data Control, Inc. Helicopter weight measuring system. 4,574,360, Cl. 364-567.000.

Bateman, Robert L., Jr.; and Soules, Thomas F., to General Electric Company. Metal vapor lamp having internal means promoting condensate film formation. 4,574,218, Cl. 313-635.000.

Battson, Donald F., to RCA Corporation. Cascaded CCD shift registers having different numbers of clocking phases. 4,574,313, Cl. 358-213.000.

Baum, Marcel, to Dragerwerk Aktiengesellschaft. Respiratory system. 4,573,462, Cl. 128-204.250.

Baum, Thomas H.; Houle, Frances A.; Jones, Carol R.; and Kovac, Caroline A., to International Business Machines Corporation. Selective deposition of copper. 4,574,095, Cl. 427-53.100.

Bauman, Jack. Laryngoscope blade with a bendable tip. 4,573,451, Cl. 128-11.000.

Baumberg, Iosif. Apparatus for elevating liquids including a pair of Venturi pipes having wind as motive fluid. 4,573,877, Cl. 417-76.000.

Baxter Travenol Laboratories, Inc.: *See—*
Dolkart, Ralph E.; and Kartinos, Nicholas J., 4,574,085, Cl. 424-148.000.
Karrasch, Frank; and Love, John F., 4,573,980, Cl. 604-256.000.
Ruschke, Rick, 4,573,974, Cl. 604-81.000.

Bayer Aktiengesellschaft: *See—*
Hassdenteufel, Jurgen-Rolf, 4,574,159, Cl. 560-157.000.
Ippen, Jakob; and Stuttgen, Friedel, 4,573,510, Cl. 152-159.000.
Kabbe, Hans-Joachim; Krause, Hans-Peter; and Sitt, Rudiger, 4,574,124, Cl. 514-228.000.
Kruger, Bernd-Wieland; Lockhoff, Oswald; Stadler, Peter; Metzger, Karl G.; Opitz, Hans-Georg; Stunkel, Klaus G.; and Zeiler, Hans-Joachim, 4,574,122, Cl. 514-42.000.
Meckel, Walter, 4,574,147, Cl. 528-64.000.

Bayerische Motoren Werke Aktiengesellschaft: *See—*
Jovanovic, Milenko, 4,574,175, Cl. 219-86.100.
Schier, Gunther, 4,573,697, Cl. 280-276.000.

Baylor College of Medicine: *See—*
Noon, George P.; Feldman, Louis W.; and Peterson, Julia A., 4,573,883, Cl. 417-394.000.

Bayshore, Charles A., to Vistakon, Inc. Bifocal contact lens. 4,573,775, Cl. 351-161.000.

BBC Brown, Boveri & Co., Ltd.: *See—*
Fust, Armin; and Starcevic, Mihailo, 4,573,810, Cl. 384-322.000.

Beatty, Robert M.; Miller, Edward B.; and Huber, Paul G., to General Electric Company. Arrangement for sensing remote binary inputs. 4,574,355, Cl. 364-492.000.

Beckman Instruments, Inc.: *See—*
Kampf, Richard S., 4,574,196, Cl. 250-328.000.

Becton, Dickinson and Company: *See—*
Wilner, Leslie B., 4,574,327, Cl. 361-283.000.

Beer, Christian: *See—*
Schlensog, Klaus; Beer, Christian; and Riedweg, Robert, 4,573,969, Cl. 604-74.000.

Bell & Howell Company: *See—*
Svyatsky, Eduard; Rabindran, K. George; and Faber, Thomas J., 4,573,675, Cl. 271-122.000.

Bello, Lino L. Artificial endo-osseous pillar for supporting fixed prosthetic members. 4,573,922, Cl. 433-176.000.

Bemis Company, Inc.: *See—*
Wildmoser, Martin M., 4,573,305, Cl. 53-466.000.

Benjamin, James A.; Schutten, Herman P.; and Lade, Robert W., to Eaton Corporation. Lateral bidirectional dual notch FET with non-planar main electrodes. 4,574,207, Cl. 307-577.000.

Benjamin, James A.: *See—*
Lade, Robert W.; Schutten, Herman P.; and Benjamin, James A., 4,574,208, Cl. 307-577.000.
Lade, Robert W.; Schutten, Herman P.; and Benjamin, James A., 4,574,209, Cl. 307-577.000.

Bennett, Laurence M., to Warner-Lambert Company. Device for RF welding an IV tube to a catheter lumen. 4,574,173, Cl. 219-10.530.

Benscoter, Richard D.; Hadfield, Robert W.; and Bowman, Timothy S., to Butler Manufacturing Company. Economy poke-thru. 4,573,297, Cl. 52-221.000.

Benson, Florence; and Shireman, Mark J., to Honeywell Inc. Automatic lead wire tinning of tape-packaged components. 4,573,430, Cl. 118-411.000.

Benson, Richard C.: *See—*
Potember, Richard S.; Poehler, Theodore O.; and Benson, Richard C., 4,574,366, Cl. 365-153.000.

Benzies, George Y. Waste retaining receptacles for patients with colostomies and ileostomies. 4,573,984, Cl. 604-339.000.

Berger, Martin J.; and Apsell, Sheldon P., to PepsiCo Inc. Digital encoding and electronic scanning of drink cups. 4,573,954, Cl. 493-55.000.

Berger, Peter. Process for the preparation of a modified aqueous chlorite solution, the solution prepared by this process and the use thereof. 4,574,084, Cl. 424-128.000.

Berger, Robert P. Prosthesis and apparatus for molding the prosthesis. 4,573,921, Cl. 433-167.000.

Berglund, Jan, to Wicanders AB. Screw cap with security ring. 4,573,601, Cl. 215-252.000.

Bergrath, Siegmar; and Kappertz, Fritz, to Singer Spezialnadelfabrik GmbH. Needle packaging. 4,573,575, Cl. 206-380.000.

Bergt, Carl: *See—*
Sulfstede, Louis E.; Bergt, Carl; and Helt, Robert W., 4,573,326, Cl. 62-156.000.

Bernard, Jean: *See—*
Beyl, Jean; Bernard, Jean; le Faou, Daniel; and Peyre, Henri, 4,573,700, Cl. 280-605.000.

Berruti, Pierangelo; and Cella, Giancarlo, to Ing. C. Olivetti & C. S.p.A. Dot matrix printer. 4,573,814, Cl. 400-568.000.

Bertrams, Josef, to W. Schlafhorst & Co. Method and apparatus for feeding a dosed mixture of splicing air and liquid into the splicing chamber of a compressed-air yarn splicing device. 4,573,313, Cl. 57-22.000.

Besemer, James J.: *See—*
Mihalik, Michael A.; Hoeren, Gerd H.; Reiney, Michael G.; Besemer, James J.; and Palmquist, Steven R., 4,574,354, Cl. 364-481.000.

Beuhler, Allyson J.: *See—*
Polak, Anthony J.; Wrezel, James A.; and Beuhler, Allyson J., 4,573,768, Cl. 350-357.000.

Beyl, Jean; Bernard, Jean; le Faou, Daniel; and Peyre, Henri, to STE Look. Ski brake. 4,573,700, Cl. 280-605.000.

Bezler, Wilhelm; and Stark, Ewald, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Adjustment arrangement for circumferential register in rotary printing machines. 4,573,408, Cl. 101-248.000.

Bezner, Baruch J., to Dan-Pal. Light transmitting wall panels. 4,573,300, Cl. 52-563.000.

Bielfeldt, Klaus; and Braun, Dieter J., to Vereinigte Aluminiumwerke Aktiengesellschaft. Process for producing finely divided dispersions of metal oxides in aluminum hydroxide. 4,574,001, Cl. 23-301.000.

Biesinger, Peter J. Cuttling machine for continuous input of web. 4,573,958, Cl. 493-415.000.

Bilezerian, Mel E.: *See—*
Racca, William H.; Bolvin, Michael A.; and Bilezerian, Mel E., 4,574,200, Cl. 307-117.000.

Billberg, Alf, to Tetra Pak International AB. System for the transport and raising of packing container blanks. 4,573,957, Cl. 493-309.000.

Binder, Alfred, to Kress-Electrik GmbH & Co. Method and apparatus for controlling an electric motor the rotational speed of which is automatically reduced in no-load idling operation. 4,574,226, Cl. 318-317.000.

Bio-Rad Laboratories, Inc.: *See—*
Delony, Timothy E.; and Chu, Daniel Y. M., 4,574,040, Cl. 204-299.00R.

Biraghi, Giuseppe; Clavarino, Amedeo; Roth, Ferdinando; and Tarquini, Michele. Container for a rotating transparency projector fixable at a selected height on a vertical guide. 4,573,748, Cl. 312-7.200.

Bison-Werke Bahre & Greten GmbH & Co. KG: *See—*
Wiemann, Dieter; and Bodusch, Gunther, 4,573,899, Cl. 425-145.000.

Bizerba-Werke Wilhelm Kraut GmbH & Co. KG: *See—*
Weinundbrot, Hubert, 4,574,027, Cl. 156-352.000.

Black & Decker Inc.: *See—*
Merkator, Manfred; and Schmid, Karl, 4,573,621, Cl. 227-8.000.

Blackwell, George F.; and Tomlinson, Harold W., Jr. Gray scale image processor. 4,574,393, Cl. 382-17.000.

Blake, Larry W., to Innovative Surgical Products, Inc. Irrigation/aspiration tip. 4,573,979, Cl. 604-240.000.

Blake, William R., to Amoco Corporation. Jacquard fluid controller for a fluid sampler and tester. 4,573,532, Cl. 166-264.000.

Blank, John M.: *See—*
Davenport, John M.; Hansler, Richard L.; Potter, Ralph M.; Blank, John M.; Speros, Dimitri M.; Homa, Arthur S.; Mishra, Amarendra; and Leskovec, Robert A., 4,574,219, Cl. 315-49.000.

Blasius, Udo; May, Karl-Heinz; and Rodi, Anton, to Heidelberger Druckmaschinen AG. Printing press with register motors. 4,573,410, Cl. 101-365.000.

Blaushild, Ronald M.; and Tome, Richard E., to Westinghouse Electric Corp. Thermal insulation of nuclear reactor. 4,574,070, Cl. 376-289.000.

Blayne, Jerome J.; Sidles, James; and Bartley, Donald R., to B. F. Goodrich Company, The. Apparatus for ventless tire molding. 4,573,894, Cl. 425-36.000.

Blue, Larry A.; and Conner, David E., to International Business Machines Corp. Current controlled motor drive circuit. 4,574,228, Cl. 318-696.000.

Blum, Albert. Hoisting apparatus for electric submersible pump units. 4,573,726, Cl. 294-86.330.

Bodusch, Gunther: *See—*
Wiemann, Dieter; and Bodusch, Gunther, 4,573,899, Cl. 425-145.000.

Boeing Company, The: *See—*
Clayton, James L., 4,573,650, Cl. 244-118.500.
Holton, Raymond G. C., 4,574,325, Cl. 361-218.000.
Scallon, Gregory M., 4,574,348, Cl. 364-200.000.
Yourkowski, Frank M.; and Zoerb, Melvin C., 4,573,649, Cl. 244-102.00R.

Boettger, Conrad H. Urinal holder for hospital overbed stand and the like. 4,573,653, Cl. 248-153.000.

Boll, Daniel P.: *See—*
Waters, Michael A.; and Boll, Daniel P., 4,573,893, Cl. 425-71.000.

Bolton, Theodore S.; and Michaels, John H., to Carrier Corporation. Apparatus for mounting a packaged terminal air controller to a plastic well sleeve. 4,573,328, Cl. 62-263.000.

Bolvin, Michael A.: *See—*
Racca, William H.; Bolvin, Michael A.; and Bilezerian, Mel E., 4,574,200, Cl. 307-117.000.

Bonjour, Christian; and Duvanel, Francois, to Stellram S.A. Sintered alloy based on carbides. 4,574,011, Cl. 75-241.000.

Bonnet, Yves A., to International Business Machines Corporation. Circuit for holding a pulse during a predetermined time interval and an improved monostable multivibrator. 4,574,204, Cl. 307-273.000.

Bonzo, Roy T., to Corning Glass Works. Apparatus for selectively manifolding honeycomb structures. 4,573,896, Cl. 425-125.000.

Booth, Barclay: *See—*
Clar, Milton; and Booth, Barclay, 4,573,409, Cl. 101-426.000.

Booth, Stuart E.; Clifford, Andrew W.; and Parratt, Noel J., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Fiber-reinforced metals. 4,573,517, Cl. 164-61.000.

Bose, Debasis; Datta, Amitava; and DeCristofaro, Nicholas J., to Allied Corporation. Homogeneous low melting point copper based alloys. 4,573,630, Cl. 228-263.180.

Boston University: *See—*
Shapiro, Jerrold M., 4,573,778, Cl. 351-219.000.

Botev, Botyo P.: *See—*
Petkov, Georgi K.; Netzov, Nikola M.; Botev, Botyo P.; and Bankovski, Dimiter N., 4,573,841, Cl. 409-244.000.

Boudet, Jean; and Rolland, Guy, to Essilor International Cie Generale d'Optique. Optical component molding apparatus for following the differential shrinkage of molded synthetic material. 4,573,903, Cl. 425-555.000.

Bouglas, Allan B., to British Replin Limited. Flame-resistant fabrics. 4,573,500, Cl. 139-426.00R.

Boumendil, Jean-Jack: *See—*
Pescatore, Richard; and Boumendil, Jean-Jack, 4,574,182, Cl. 219-388.000.

Bournay, Frederick M., Jr.; and Giurtino, Joel F., to Cordis Corporation. LED Staggered back lighting panel for LCD module. 4,573,766, Cl. 350-345.000.

Bowden, Arthur H. Method for producing multiple food turnovers. 4,574,088, Cl. 426-275.000.

Bowman, Timothy S.: *See—*
Benscoter, Richard D.; Hadfield, Robert W.; and Bowman, Timothy S., 4,573,297, Cl. 52-221.000.

Boxhorn, George R.: *See—*
Boxhorn, John F.; and Boxhorn, George R., 4,573,432, Cl. 119-28.000.

Boxhorn, John F.; and Boxhorn, George R., to C. I. Banker Wire & Iron Works, Inc. Wire mesh flooring. 4,573,432, Cl. 119-28.000.

Boyd, Hermon; A. Thermally actuated heat exchange method and system. 4,573,525, Cl. 165-104.220.

Boyle, William J., Jr.; Mares, Frank; and Wallo, Andrea M., to Allied Corporation. Selective conversion of acrylonitrile into 1,4-dicyano-1-butene catalyzed by polymer-bound alkyl diarylphosphinites. 4,574,060, Cl. 558-457.000.

BP Chemicals Limited: *See—*
Umpleby, Jeffrey D., 4,574,133, Cl. 524-147.000.

Braas & Co. GmbH: *See—*
Hofmann, Karl-Heinz, 4,573,291, Cl. 52-43.000.

Brachold, Rudolph W.: *See—*
Burack, Robert D.; and Brachold, Rudolph W., 4,574,172, Cl. 219-10.49R.

Bradley, Ralph H., to North American Philips Consumer Electronics Corp. Rear projection screen. 4,573,764, Cl. 350-128.000.

Brady, Charles J.: *See—*
Mantela, Ralph F.; Brady, Charles J.; Johnson, Thomas M.; Larsen, Hugh W.; and Schallhorn, Thomas L., 4,573,842, Cl. 410-23.000.

Braet, Jerome A.: *See—*
Ehrecke, Kevin L.; Braet, Jerome A.; and Bassett, James H., 4,573,308, Cl. 56-14.400.

Bran & Lubbe GmbH: *See—*
Petersen, Dirk, 4,573,885, Cl. 417-383.000.

Braswell, Charles, to Tejas Designs, Inc. Swingable tire carrier. 4,573,855, Cl. 414-463.000.

Braun, Dieter J.: *See—*
Bielfeldt, Klaus; and Braun, Dieter J., 4,574,001, Cl. 23-301.000.

Braun, Ernst; and Braun, Gert, to Halbach & Braun. Chain conveyor driver construction. 4,573,565, Cl. 198-719.000.

Braun, Gert: *See—*
Braun, Ernst; and Braun, Gert, 4,573,565, Cl. 198-719.000.

Breault, Richard D.; Sawyer, Richard D.; and DeMarche, Thomas E., to United Technologies Corporation. Cooling system for electrochemical fuel cell. 4,574,112, Cl. 429-26.000.

Bredeweg, Roger L., to Leco Corporation. Carbon, hydrogen, and nitrogen analyzer. 4,573,910, Cl. 432-156.000.

Breed Corporation: *See—*
Breed, David S., 4,573,706, Cl. 280-734.000.

Breed, David S., to Breed Corporation. Passenger compartment sensor requiring substantial velocity change. 4,573,706, Cl. 280-734.000.

Bremer, Guenter, to Daimler-Benz Aktiengesellschaft. Arrangement for the mounting of measuring devices of axle measurement equipments. 4,573,275, Cl. 33-288.000.

Bresser, Robert E.; and Wursthorn, Karl R., to Morton Thiokol, Inc. Stabilizer compositions for PVC resins. 4,574,135, Cl. 524-182.000.

Breyer, Fritz-Werner: *See—*
Meyer, Wolfgang K.; and Breyer, Fritz-Werner, 4,573,856, Cl. 414-561.000.

Brian, James A., to Crown Zellerbach Corporation. Corner lock on paperboard baking and shipping tray. 4,573,633, Cl. 229-32.000.

Briggs, Aubrey C.: *See—*
Pater, Larry L.; and Briggs, Aubrey C., 4,573,637, Cl. 239-11.000.

Brinks, Robert J.: *See—*
Dilworth, James L.; and Brinks, Robert J., 4,573,636, Cl. 239-2.00S.

Brissette, Ronald N., to Rockwell International Corporation. Driveline. 4,573,946, Cl. 464-133.000.

Bristol, Alexander C. Aspheric spectacle lens blank. 4,573,777, Cl. 351-167.000.

Bristol-Myers Company: *See—*
Ellis, Jeffrey, 4,573,590, Cl. 211-86.000.
Nair, Xina; and Temple, Davis L., Jr., 4,574,129, Cl. 514-540.000.

British Replin Limited: *See—*
Bouglas, Allan B., 4,573,500, Cl. 139-426.00R.

Brockmanns, Karl-Josef; and Lunenschloss, Joachim, to W. Schlafhorst & Co. Friction spinning apparatus. 4,573,312, Cl. 57-5.000.

Brorsson, Tommy K. L., to Safety Transport Inter Development AB. Arrangement in vehicle safety belts of the three-point type. 4,573,708, Cl. 280-808.000.

Brosnahan, James R.: *See—*
Arnold, Jeffrey M.; Brosnahan, James R.; Koong, Terrence H.; Mans, Thomas A.; and Milo, Theodore A., 4,573,478, Cl. 128-670.000.

Brother Kogyo Kabushiki Kaisha: *See—*
Watanabe, Yasunori, 4,573,815, Cl. 400-642.000.

Brotton, James: *See—*
Wilman, Hugh; and Brotton, James, 4,574,316, Cl. 358-285.000.

Brown, Gary L.: *See—*
Spindel, Howard R.; Ast, Vincent N., Jr.; and Brown, Gary L., 4,574,362, Cl. 364-900.000.

Brown, Michael, to Northern Telecom Limited. Tone ringer for telephone sets and other telecommunications apparatus. 4,574,272, Cl. 340-384.00R.

Brown, Robert W., to Production Design Products, Inc. Carpet rolling machine. 4,573,644, Cl. 242-67.10R.

Browne, John S.: *See—*
Yearout, James D.; Provin, Robert R.; and Browne, John S., 4,574,007, Cl. 62-42.000.

Bruce, Mark R.: *See—*
Pyke, Stephen C.; and Bruce, Mark R., 4,574,039, Cl. 204-290.00R.

Bruhn, Bernhard, to Koh-I-Noor Rapidograph, Inc. Ink dropper closure. 4,573,503, Cl. 141-24.000.

Brunswick Corporation: *See—*
Entringer, David C.; Gruenwald, David J.; and Felix, Dale K., 4,573,318, Cl. 60-310.000.

BTU Engineering Corporation: *See—*
Sarkozy, Robert F., 4,573,431, Cl. 118-725.000.

Buckhorn Material Handling Group Inc.: *See—*
Miller, Daniel R., 4,573,577, Cl. 206-506.000.

Buddy L Corp.: *See—*
Holden, John; Colombrito, Sam; and Jeffreys, Arthur H., 4,573,941, Cl. 446-451.000.
Kennedy, Melvin R.; Nagel, Dietmar; and Arad, Abraham A., 4,573,943, Cl. 446-463.000.

Buffalo Brake Beam: *See—*
Malachowski, Jerome A.; and Horvatis, James F., 4,573,555, Cl. 188-52.000.

Bullara, Leo A., to Huntington Institute of Applied Research. Implantable electrode array. 4,573,481, Cl. 128-784.000.

Burack, Robert D.; and Brachold, Rudolph W., to Westinghouse Electric Corp. Brazing wand with fiber optic temperature sensor. 4,574,172, Cl. 219-10.49R.

Burlington Industries, Inc.: *See—*
Daniel, Vernon T.; Johnson, James R.; and Robbins, Edward J., 4,573,353, Cl. 73-198.000.

Burns, William K.; and Moeller, Robert P., to United States of America, Navy. Analog fiber gyro with extended linear range. 4,573,797, Cl. 356-350.000.

Buroff, Arthur N. Self-propelled recreational vehicle. 4,573,696, Cl. 280-247.000.

Burr-Brown Corporation: *See—*
Cohen, Marvin M.; and Payne, Francis L., 4,574,330, Cl. 361-388.000.

Butler Manufacturing Company: *See—*
Benscoter, Richard D.; Hadfield, Robert W.; and Bowman, Timothy S., 4,573,297, Cl. 52-221.000.

Butler, Robert M., to Microglass, Inc. Semiconductor wafer transfer apparatus and method. 4,573,851, Cl. 414-404.000.

C. I. Banker Wire & Iron Works, Inc.: *See—*
Boxhorn, John F.; and Boxhorn, George R., 4,573,432, Cl. 119-28.000.

C. I. Hayes Inc.: *See—*
Westeren, Herbert W.; Harrison, Ronald A.; and Tavitian, Vartan M., 4,573,667, Cl. 266-114.000.

Calabro, Anthony D. Cage apparatus for printed circuit boards and method for preventing sharp spikes in the signal applied to said printed circuit boards. 4,574,332, Cl. 361-413.000.

Calhoun, Wiley C.: *See—*
Keene, Terrell M.; Calhoun, Wiley C.; Flemming, Edgar J.; Haggard, Eugene E.; Taylor, David L.; Hartley, Richard N.; Martinez, Francisco J.; Sullivan, Harry E.; Mason, Arvil B.; and Lucas, Wayne M., 4,573,829, Cl. 405-157.000.

California Institute of Technology: *See—*
Barmatz, Martin B.; Allen, James L.; and Gaspar, Mark S., 4,573,356, Cl. 73-505.000.

Call, Daniel D., to Oy Fiskars AB. Folding fillet knife with blade latching means. 4,573,268, Cl. 30-161.000.

Calvo-Riera, Francisco: *See—*
Kaplan, Henry S.; Teng, Nelson N. H.; Lam, Kit S.; and Calvo-Riera, Francisco, 4,574,116, Cl. 435-68.000.

Cam Gears Limited: *See—*
Wilson, Alan G., 4,573,399, Cl. 92-110.000.

Cameron, Donald C., to Dow Chemical Company, The. Reducer coupling and positioner tool for the coupling. 4,573,712, Cl. 285-12.000.

Cameron, Robert W. Floating search and rescue inflatable pyramid. 4,573,933, Cl. 441-16.000.

Campbell, John G.; and Schoeneberger, Carl F., to Tocum, Incorporated. Remote hub television and security systems. 4,574,305, Cl. 358-86.000.

Campen, Lawrence E., to General Motors Corporation. Hardbar energy absorbing and vibration damping bumper system damping feature. 4,573,724, Cl. 293-136.000.

Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence of Her Majesty's Canadian Government: *See—*
Carrier, Christian J. L.; and Shea, Charles J., 4,573,316, Cl. 60-39.823.

Canon Kabushiki Kaisha: *See—*
Arakawa, Kazuhiko, 4,573,785, Cl. 354-409.000.
Kato, Masatake, 4,573,781, Cl. 354-201.000.
Nagashima, Nao; Suzuki, Koji; Nagahira, Jyoji; Kuroda, Kouki; and Takayanagi, Yoshiaki, 4,573,788, Cl. 355-14.00R.
Suzuki, Kenji, 4,573,784, Cl. 354-406.000.

Cantin, Michel; Jaussaud, Pierre; and Olivella, Roger, to Institut National Polytechnique de Grenoble. Device for fixing a telpher chair to a cable provided with a travelling surface for rollers. 4,573,414, Cl. 104-202.000.

Cappelli, Alberto: *See—*
Ciaperoni, Aldemaro; and Cappelli, Alberto, 4,574,054, Cl. 252-188.310.

Caretto, Robert J. Method of constructing houses. 4,573,302, Cl. 52-742.000.

Carl Still GmbH & Co. KG, Firma: *See—*
Lemke, Otto; Stalherm, Dieter; and Haack, Reimer, 4,574,034, Cl. 201-1.000.

Carlgren, Richard G.; Reed, Martin A.; and Rosenbaum, Walter S., to International Business Machines Corporation. Mixed mode enhanced resolution hyphenation function for a text processing system. 4,574,363, Cl. 364-900.000.

Carlton, Lewis M.; O'Mary, Bob L.; and Cruse, Teddy H., to Murphy Management, Inc. Dump valve. 4,573,489, Cl. 137-59.000.

Carpenter, Francis W., III: *See—*
Van Doorn, Donald W.; Hawkins, James B.; Carpenter, Francis W., III; Lange, Robert E.; and Webb, Tommy W., 4,573,403, Cl. 100-43.000.

Carpenter, Marvin L. Self-loading trailer. 4,573,845, Cl. 414-24.500.

Carrier, Christian J. L.; and Shea, Charles J., to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence of Her Majesty's Canadian Government. Integrated weatherseal/igniter for solid rocket motor. 4,573,316, Cl. 60-39.823.

Carrier Corporation: *See—*
Bolton, Theodore S.; and Michaels, John H., 4,573,328, Cl. 62-263.000.

Carroll, Jimmy L.; and Aumann, James T., to Norton Christensen, Inc. Hydraulically pulsed indexing system for sleeve-type core barrels. 4,573,539, Cl. 175-58.000.

Carson, Charles F. Apparatus for producing simulated felled seam. 4,573,420, Cl. 112-142.000.

Carstensen, Kenneth J. System and method for assuring integrity of tubular sections. 4,573,359, Cl. 73-761.000.

Carville, Donna B.; Feig, Edwin R.; Rose, Gene D.; and Pulliam, Mary H., to Dow Chemical Company, The. Additives for nonaqueous liquids. 4,573,488, Cl. 137-13.000.

Castrantas, Harry M., to FMC Corporation. Removal of hydrogen sulfide from geothermal steam. 4,574,076, Cl. 423-224.000.

Cavalli, Alfredo. Machine for making ice-cream and similar cold products, with a removable freezing container. 4,573,329, Cl. 62-342.000.

Celanese Corporation: *See—*
Gibbon, John D.; Lawler, Terry E.; Yoon, Hyun-Nam; and Charbonneau, Larry F., 4,574,066, Cl. 264-85.000.

Cella, Giancarlo: *See—*
Berruti, Pierangelo; and Cella, Giancarlo, 4,573,814, Cl. 400-568.000.

Cerny, Daryl D.; and Diebolt, Edwin J., to Ball Corporation. Crosshead with static mixers. 4,574,067, Cl. 264-209.800.

Champagne, Claude J.: *See—*
Kemp, Michael F.; and Champagne, Claude J., 4,574,375, Cl. 370-67.000.

Chap, John P., to Selfix, Inc. Molded shower shelf. 4,573,591, Cl. 211-113.000.

Chapman, David N., to Sundstrand Corporation. Multiple schedule valve. 4,573,661, Cl. 251-234.000.

Charbonneau, Larry F.: *See—*
Gibbon, John D.; Lawler, Terry E.; Yoon, Hyun-Nam; and Charbonneau, Larry F., 4,574,066, Cl. 264-85.000.

Charnock, Ronald S., to Loctite (Ireland) Ltd. Curable adhesive composition toughened with styrene-butadiene block copolymer rubbers. 4,574,142, Cl. 525-305.000.

Checon Corporation: *See—*
Conaway, Donald E., Jr.; and Jost, Ernest M., 4,573,265, Cl. 29-879.000.

Chemcrete International: *See—*
Cummings, Lowell O., 4,574,145, Cl. 525-509.000.

Chemische Werke Huels, AG: *See—*
Homann, Walter K., 4,574,157, Cl. 548-239.000.

Chen, Kwang-Ming: *See—*
Cheng, Cheng-Yi; Lee, Shou-Yuan; Chen, Kwang-Ming; and Wo, Chee-Yuan, 4,574,141, Cl. 525-252.000.

Chen, Yu-Ling; Chun, Leslie L.; and Enscore, David J., to ALZA Corporation. Transdermal therapeutic systems for the administration of naloxone, naltrexone and nalbuphine. 4,573,995, Cl. 604-896.000.

Cheng, Cheng-Yi; Lee, Shou-Yuan; Chen, Kwang-Ming; and Wo, Chee-Yuan, to Formosa Plastics Corporation. Method for producing graft-copolymers of vinyl chloride and polyfluorine resin by copolymerization. 4,574,141, Cl. 525-252.000.

Chester, Arthur W.; Garwood, William E.; and Vartuli, James C., to Mobil Oil Corporation. Catalytic process for manufacture of low pour lubricating oils. 4,574,043, Cl. 208-59.000.

Cheung, Harry, to Union Carbide Corporation. Process to produce a krypton-xenon concentrate from a liquid feed. 4,574,006, Cl. 62-22.000.

Chevron Research Company: *See—*
Demaison, Gerard J.; and Kaplan, Isaac R., 4,574,118, Cl. 436-29.000.
Krug, Russell R., 4,574,044, Cl. 208-120.000.

Chichester, Willard L., to Clark Equipment Company. Vehicle hydraulic system with single pump. 4,573,319, Cl. 60-422.000.

Chichibu Cement Kabushiki Kaisha: *See—*
Ichiyanagi, Toshikazu; Sudo, Kanzaburo; Kawai, Zenzaburo; Sekine, Shoji; and Teshigawara, Hiroshi, 4,573,908, Cl. 432-58.000.

Chinon Kabushiki Kaisha: *See—*
Maruyama, Takashi, 4,573,783, Cl. 354-403.000.

Chiu, Norman H.; and Schneider, David A., to General Electric. Self-diagnostic system for an appliance incorporating an automatic ice-maker. 4,573,325, Cl. 62-129.000.

Choi, Yoon H. Electrical door lock. 4,573,333, Cl. 70-279.000.

Chu, Daniel Y. M.: *See—*
Delony, Timothy E.; and Chu, Daniel Y. M., 4,574,040, Cl. 204-299.00R.

Chu, Samuel K. F.: *See—*
Yao, Samuel S.; and Chu, Samuel K. F., 4,573,873, Cl. 416-114.000.

Chun, Leslie L.: *See—*
Chen, Yu-Ling; Chun, Leslie L.; and Enscore, David J., 4,573,995, Cl. 604-896.000.

Chung, Alfred: *See—*
Gavras, Haralambos P.; Ryan, James W.; and Chung, Alfred, 4,574,079, Cl. 424-1.100.

Chuo Hatsujo Kabushiki Kaisha: *See—*
Yamamoto, Toshiro; Kobayashi, Ryohei; Kurimoto, Mamoru; and Ozone, Toshio, 4,574,016, Cl. 148-144.000.

Ciaperoni, Aldemaro; and Cappelli, Alberto, to Snia Fibre S.p.A. Molecular weight controllers combination for caprolactam polymerization processes. 4,574,054, Cl. 252-188.310.

Ciba-Geigy Corporation: *See—*
Baschang, Gerhard; Dietrich, Felix M.; Gisler, Roland; Hartmann, Albert; Stanek, Jaroslav; and Tarcsay, Lajos, 4,574,058, Cl. 260-112.50R.

Citizen Watch Company Limited: *See—*
Honda, Yasuhiro; Ueno, Katumi; Nishizaki, Genichi; Kitahara, Harumi; and Kamioka, Hiroshi, 4,573,261, Cl. 29-701.000.

Clar, Milton; and Booth, Barclay, to Paper, Inc. Method of treating printed computer paper. 4,573,409, Cl. 101-426.000.

Clarion Co., Ltd.: *See—*
Teraguchi, Yuji; and Endo, Sadayoshi, 4,574,322, Cl. 360-74.100.

Clark, Brian; and Huchital, Gerald S., to Schlumberger Technology Corporation. Electromagnetic logging with reduction of spurious transverse magnetic components. 4,574,242, Cl. 324-338.000.

Clark Equipment Company: *See—*
Chichester, Willard L., 4,573,319, Cl. 60-422.000.

Clark, Fred C.: *See—*
Gardner, Robert P., 4,573,434, Cl. 119-77.000.

Clarke, John A., to U.S. Philips Corporation. Projection lens system. 4,573,769, Cl. 350-432.000.

Clausin, Pierre, to Proengin S.A. Sail shortening roller for sailing boats. 4,573,424, Cl. 114-106.000.

Clavarino, Amedeo: *See—*
Biraghi, Giuseppe; Clavarino, Amedeo; Roth, Ferdinando; and Tarquini, Michele, 4,573,748, Cl. 312-7.200.

Clayton, James L., to Boeing Company, The. Fire-safe aircraft waste disposal system. 4,573,650, Cl. 244-118.500.

Cleemput, Camiel D. E.; and Coussement, Hedwig L. Z., to International Standard Electric Corporation. Screen printing device. 4,573,406, Cl. 101-127.100.

Clemens, Donald W., to Rotor Tool Company, The. Gear reversing mechanism for power tools. 4,573,370, Cl. 74-337.500.

Clemmow, Raymond J.; Radford, Leonard; and Thorpe, John D., to Padley & Venables Limited. Pick and the combination of a pick and holder. 4,573,744, Cl. 299-81.000.

Clifford, Andrew W.: *See—*
Booth, Stuart E.; Clifford, Andrew W.; and Parratt, Noel J., 4,573,517, Cl. 164-61.000.

Cloutier, Donald C., to M/A-COM, Inc. Polarized signal receiving apparatus. 4,574,258, Cl. 333-21.00A.

Coats, Montgomery R.; and Holt, Dawn E., to Fife Corporation. Method and apparatus for monitoring the manufacture of a two-component web. 4,574,194, Cl. 250-308.000.

Cobbs, Walter H., Jr.; and Rehman, William R., to Nordson Corporation. Process for coating substrates with aqueous polymer dispersions. 4,573,429, Cl. 118-322.000.

Cobbs, Walter H., Jr.; Huddleston, Robert J.; and Guldner, Robert A., to Nordson Corporation. Continuous coater solvent recovery process. 4,574,005, Cl. 55-48.000.

Cochran, John P.; and Macemon, Herbert J., to Kuhlman Corporation. Transformer bushing. 4,573,757, Cl. 339-126.0RS.

Cochran, Robert. Fluid flow control system. 4,573,327, Cl. 62-238.600.

Cochran, Ronald R., to Varian Associates, Inc. Bakeable electromagnets. 4,574,261, Cl. 335-299.000.

Cohen, Marvin M.; and Payne, Francis L., to Burr-Brown Corporation. Heat sink for dissipating heat generated by electronic displays. 4,574,330, Cl. 361-388.000.

Cohen, Michael A. Video shelving. 4,573,588, Cl. 211-41.000.

Colgate-Palmolive Company: *See—*
Karami, Hamzeh; and Delvaux, Myriam, 4,573,989, Cl. 604-381.000.
Shymon, Stephen J., 4,574,081, Cl. 424-52.000.

Colombrito, Sam: *See—*
Holden, John; Colombrito, Sam; and Jeffreys, Arthur H., 4,573,941, Cl. 446-451.000.

Colorado School of Mines: *See—*
Voorhees, Kent J.; and Klusman, Ronald W., 4,573,354, Cl. 73-432.00R.

Colorado State University Research Foundation: *See—*
Baker, Ralph; and Lifshitz, Ran, 4,574,083, Cl. 424-93.000.

Colt Industries Operating Corp.: *See—*
Corrette, Richard H., 4,573,376, Cl. 76-107.00R.

Combustion Engineering, Inc.: *See—*
Deve, Vagn, 4,573,417, Cl. 110-236.000.
Ross, Malcolm F.; and Visner, Sidney, 4,574,069, Cl. 376-267.000.

Commonwealth of Australia, The: *See—*
Liddiard, Kevin C., 4,574,263, Cl. 338-18.000.

Compaq Computer Corporation: *See—*
Roberts, Kenneth B., 4,574,279, Cl. 340-731.000.

Conaway, Donald E., Jr.; and Jost, Ernest M., to Checon Corporation. Method of making electrical contacts. 4,573,265, Cl. 29-879.000.

Conner, David E.: *See—*
Blue, Larry A.; and Conner, David E., 4,574,228, Cl. 318-696.000.

Connery, Colin A. Axial lead component package with wax retaining mechanism. 4,573,574, Cl. 206-328.000.

Conoco Inc.: *See—*
Fenton, Jeff T., 4,574,158, Cl. 549-347.000.

Conque, Louis J.: *See—*
Mayon, Allen J., 4,573,682, Cl. 273-148.00B.

Conrad, Raymond W., to United States of America, Army. Wide field-of-view laser spot tracker. 4,574,191, Cl. 250-203.00R.

Conta, Robert L.; and Wallach, Harvey N., to United States Surgical Corporation. Hollow body organ stapling instrument and disposable cartridge employing relief vents. 4,573,468, Cl. 128-305.000.

Container Corporation of America: *See—*
Kohler, Karl A.; and House, Richard F., 4,573,634, Cl. 229-38.000.
Udell, Theodore H., 4,573,605, Cl. 220-304.000.

Contraves AG: *See—*
Arndt, Klaus; and Sanvido, Saverio, 4,573,773, Cl. 350-541.000.

Cookson, Leonard A. Trays. 4,573,729, Cl. 294-158.000.

Cooper, David G.; and Sach, George S., to Smith Kline & French Laboratories Limited. Pyridine derivatives histamine H_2-antagonists. 4,574,126, Cl. 514-318.000.

Cooper, Kenneth: *See—*
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Coppin, William P.; and Karabin, Tadeusz, to Maxon Corporation. Low oxygen and low pressure drop burner. 4,573,907, Cl. 431-351.000.

Coppola, Vincent G.; Lorenzo, John L.; Grisgraber, Edwin G.; and Manduley, Flavio M., to Pitney Bowes Inc. Drop shipment mailing system. 4,574,352, Cl. 364-466.000.

Cordis Corporation: *See—*
Bournay, Frederick M., Jr.; and Giurtino, Joel F., 4,573,766, Cl. 350-345.000.
Hess, Stanley R., 4,573,473, Cl. 128-642.000.

Corning Glass Works: *See—*
Bonzo, Roy T., 4,573,896, Cl. 425-125.000.
Scherer, George W., 4,574,063, Cl. 264-60.000.

Corrette, Richard H., to Colt Industries Operating Corp. Method of producing thread rolling die. 4,573,376, Cl. 76-107.00R.

Cortesi, Paolo; Donati, Gianni; and Saggese, Giuseppe, to Montedison S.p.A. Process and apparatus for preparing monodispersed, spherical, non-agglomerated metal oxide particles having a size below one micron. 4,574,078, Cl. 423-592.000.

Cortopassi, Jeffery J., to Taco Bell. Taco support. 4,573,570, Cl. 206-45.330.

Coussement, Hedwig L. Z.: *See—*
Cleemput, Camiel D. E.; and Coussement, Hedwig L. Z., 4,573,406, Cl. 101-127.100.

Covey, Joel P.; and Zerbel, Allen J. Analytical instrument optical element support system. 4,573,794, Cl. 356-346.000.

Cox, Herbert M., to AT&T Bell Laboratories. Deposition technique. 4,574,093, Cl. 427-86.000.

Cox, Lyle V.: *See—*
Thrash, Tommy K.; Tock, Richard W.; Cox, Lyle V.; and Quattlebaum, W. Gregg, 4,573,447, Cl. 126-263.000.

Crane Packing Limited: *See—*
Wilkinson, Samuel C. W., 4,573,691, Cl. 277-96.100.

Crawford, A. Gerrit. Bladder-type syringe. 4,573,977, Cl. 604-212.000.

Creekmore, Thomas D. Lingual orthodontic appliance system for edgewise therapy. 4,573,913, Cl. 433-17.000.

Crepinsek, Alois. Deadbolt lock adjustable for mounting in doors of various thicknesses. 4,573,334, Cl. 70-451.000.

Creutz, Walter: *See—*
Andree, Dietrich; and Creutz, Walter, 4,573,811, Cl. 384-622.000.

Crews, James E.; and Rodriguez, George H., to Sprague Electric Company. Self regulating PTCR heater. 4,574,187, Cl. 219-541.000.

Cristol, Benoit; and Mordini, Jacques, to Aluminum Pechiney. Process for the production of aluminum trihydroxide having a medium of less than 4 microns, which can be varied as required. 4,574,074, Cl. 423-124.000.

Cross Company, The: *See—*
Frazee, Rivan F., 4,573,747, Cl. 308-3.00A.
Roman, Horst L., 4,573,566, Cl. 198-461.000.

Crossland, William A.; Peters, Jack R.; Ross, Peter W.; and Ayliffe, Peter J., to International Standard Electric Corporation. Coherent light image generation. 4,574,282, Cl. 340-784.000.

Crossmore, Edward Y., Jr. Removal of undesirable substances from finely divided particles. 4,574,045, Cl. 209-11.000.

Crow, Granville; Renger, Larry H.; and Sweet, Roger H., to Mattel, Inc. Ball swinging toy vehicle. 4,573,944, Cl. 446-465.000.

Crowe, Curtis W.; and Maddin, Charles M., to Dowell Schlumberger Incorporated. Method for preventing the precipitation of ferric compounds during the acid treatment of wells. 4,574,050, Cl. 252-8.55C.

Crown Zellerbach Corporation: *See—*
Brian, James A., 4,573,633, Cl. 229-32.000.

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Csapo, Janos I.: *See—*
Smith, Louis W.; and Csapo, Janos I., 4,574,165, Cl. 179-18.0BD.

Cuir, Gerard: *See—*
Cuir, Jean P.; and Cuir, Gerard, 4,573,677, Cl. 271-236.000.

Cuir, Jean P.; and Cuir, Gerard. Feed guide stops for positioning sheet products. 4,573,677, Cl. 271-236.000.

Cull, Ronald C.; Hartman, Robert A.; and Koch, Paul E., to Standard Oil Company, The. Flexible, rollable photovoltaic cell module. 4,574,160, Cl. 136-245.000.

Cummings, Lowell O., to Chemcrete International. Epoxy curing agents and method for making them. 4,574,145, Cl. 525-509.000.

Cummins Engine Company, Inc.: *See—*
Kasting, Edward W., 4,573,439, Cl. 123-195.00A.

Cybermation, Inc.: *See—*
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Dahlqvist, Ingemar E., to Telefonaktiebolaget L M Ericsson. Activation of a transmission link by code sending. 4,574,376, Cl. 370-103.000.

Dailey Petroleum Services Corporation: *See—*
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Daimler-Benz Aktiengesellschaft: *See—*
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d'Alayer de Costemore d'Arc, Stephane M. A., to Staar S.A. Locking device for record player apparatus. 4,574,372, Cl. 369-244.000.

D'Amico, Dennis. Measuring device for use in remote locations. 4,573,270, Cl. 33-143.00K.

Dan-Pal: *See—*
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Danfoss A/S: *See—*
Hellegaard, Kjeld; and Doktor, Hans, 4,574,341, Cl. 363-56.000.
Romer, Bendt W., 4,573,881, Cl. 417-312.000.

Dang, Lam Q.; Geer, Charles P.; Houdek, Merle E.; Jones, Eugene R.; Soltis, Frank G.; Soyring, John A.; and Walker, Thomas M., to International Business Machines Corporation. Apparatus for compressing and buffering data. 4,574,351, Cl. 364-200.000.

Daniel, Vernon T.; Johnson, James R.; and Robbins, Edward J., to Burlington Industries, Inc. Method and apparatus for obtaining a nozzle velocity profile of a tenter oven. 4,573,353, Cl. 73-198.000.

d'Argembeau, Etienne Y. Device for cleaning the proximal faces of teeth. 4,573,920, Cl. 433-141.000.

Data Measurement Corporation: *See—*
Gignoux, Dominique; and Murray, Russell, 4,574,387, Cl. 378-56.000.

Datapoint Corporation: *See—*
Herder, John C.; and Guay, Randall G., 4,574,227, Cl. 318-594.000.

Datascope Corporation: *See—*
Arnold, Jeffrey M.; Brosnahan, James R.; Koong, Terrence H.; Mans, Thomas A.; and Milo, Theodore A., 4,573,478, Cl. 128-670.000.

Datta, Amitava: *See—*
Bose, Debasis; Datta, Amitava; and DeCristofaro, Nicholas J., 4,573,630, Cl. 228-263.180.

Daudi, Anwar R., to Motor Wheel Corporation. Method of wheel manufacture for correcting rotational non-uniformity of a pneumatic tire and wheel assembly, apparatus for performing such method and resulting wheel. 4,573,338, Cl. 72-333.000.

Davenport, John M.; Hansler, Richard L.; Potter, Ralph M.; Blank, John M.; Speros, Dimitri M.; Homa, Arthur S.; Mishra, Amarendra; and Leskovec, Robert A., to General Electric Company. Lighting unit. 4,574,219, Cl. 315-49.000.

Dawson, Christopher: *See—*
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Dayton, Douglas C.; LaCount, Clifford E.; and McConchie, Burton G., to Wang Laboratories, Inc. Light arrangement for scanner-digitizer. 4,574,318, Cl. 358-285.000.

Deallenbach, Robert E.: *See—*
Emeterio, Eloy V.; Deallenbach, Robert E.; O'Connor, Martin F.; and Klufas, Oleg, 4,573,875, Cl. 416-198.00A.

DeCristofaro, Nicholas J.: *See—*
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Deem, Brian C.; and Hall, John L., to Allied Corporation. Drive mechanism. 4,573,561, Cl. 192-91.00A.

Deere & Company: *See—*
Ehrecke, Kevin L.; Braet, Jerome A.; and Bassett, James H., 4,573,308, Cl. 56-14.400.
Hoch, John J.; and Stricker, David K., 4,573,544, Cl. 180-68.100.
Johnson, Stanley J.; and Gold, Gary L., 4,573,849, Cl. 414-334.000.

de Freitas, Elias M., to Termolar S/A. Sealing and top-drainage improvement in mechanical device to transfer liquids from containers. 4,573,613, Cl. 222-213.000.

DeHart, Arnold O.; and Symons, James D., to General Motors Corporation. Sealing surface and method. 4,573,690, Cl. 277-1.000.

Dehnke, Mary K.: *See—*
Greminger, George K., Jr.; Hall, Richard H.; and Dehnke, Mary K., 4,573,578, Cl. 206-524.400.

Deighton, Guy A.; and Moore, Gerry W., to International Business Machines Corporation. Variable size circular aperture camera. 4,573,779, Cl. 354-4.000.

DeLand, Daniel L., to Alma Products Company. Clutch disc assembly. 4,573,562, Cl. 192-106.200.

Del Fabro, Giorgio: *See—*
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Del Fabro, Marcello; and Del Fabro, Giorgio, to SAE-Societa Automatismi Elettonici s.r.l. Pincers for the extraction of metal rods from bundles. 4,573,246, Cl. 29-252.000.

Delhaes, Johannes C., to Rubber- en Kunststoffabriek ENBI, B. V. Transport roller, especially for transporting paper. 4,573,563, Cl. 193-37.000.

Dell-Star Corporation: *See—*
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Della Fave, Nicholas I.: *See—*
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Dellinger, Thomas B.; Hoppe, Eugene A.; and Jones, Charles E., to Mobil Oil Corporation. Method for drilling deviated wellbores. 4,573,540, Cl. 175-61.000.

Delony, Timothy E.; and Chu, Daniel Y. M., to Bio-Rad Laboratories, Inc. Apparatus for vertical gel electrophoresis. 4,574,040, Cl. 204-299.00R.

DeLuca, Michael A.; and McCormack, John F., to Kollmorgen Technologies Corporation. Metallization of ceramics. 4,574,094, Cl. 427-96.000.

Delvaux, Myriam: *See—*
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Demaison, Gerard J.; and Kaplan, Isaac R., to Chevron Research Company. Predicting hydrocarbon potential of an earth formation underlying a body of water by analysis of seeps containing low concentrations of carbonaceous gases. 4,574,118, Cl. 436-29.000.

DeMarche, Thomas E.: *See—*
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Denley, Ronald S., to Oak Industries Inc. Keyboard auxiliary bearing. 4,574,171, Cl. 200-340.000.

Dennis, Victor S. Adjustable pass-through joint. 4,573,823, Cl. 403-118.000.

Denter, Ulrich; and Schulein, Rolf-Gunter, to Leifheit AG. Kitchen utensil for cutting of food. 4,573,387, Cl. 83-856.000.

deRojas, Edward: *See—*
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De Rossi, Ivo. Automatic contact-pin setting apparatus for testing an "off-grid" printed circuit. 4,573,263, Cl. 29-741.000.

Dervan, Andrew H.: *See—*
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DeSantis, Raymond P.; and Puffer, Herbert J., Jr., to PTX-Pentronix, Inc. Adjustable die and punch assembly for compacting powder material. 4,573,895, Cl. 425-78.000.

deSilva, Sunil G.; and Hearp, Charles W., to Westinghouse Electric Corp. Process for removing dissolved oxygen from water using hydrazine. 4,574,071, Cl. 422-14.000.

Devaney, Howard F., to United States of America, Energy. Multiple-stage integrating accelerometer. 4,574,168, Cl. 200-61.530.

Deve, Vagn, to Combustion Engineering, Inc. Sand reclamation system embodying a combination thermal reclaimer and sand-to-sand heat exchanger apparatus. 4,573,417, Cl. 110-236.000.

de Wild, Willem R.: *See—*
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de With, Gijsbertus: *See—*
Eijkelenkamp, Antonius J. H.; de With, Gijsbertus; and de Wild, Willem R., 4,574,329, Cl. 361-321.000.

DeWoolfson, Bruce H.; Flowers, Stanley; and Freund, Robert F., to Environmental Products Corporation. Glass bottle collection and crushing apparatus. 4,573,641, Cl. 241-36.000.

Diebolt, Edwin J.: *See—*
Cerny, Daryl D.; and Diebolt, Edwin J., 4,574,067, Cl. 264-209.800.

Dietrich, Felix M.: *See—*
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Diffracto Ltd.: *See—*
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Dijet Industrial Co., Ltd.: *See—*
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Dilworth, James L.; and Brinks, Robert J., to Nubs Nob, Inc. Method and apparatus for making artificial snow. 4,573,636, Cl. 239-2.00S.

Dinstuhl, Klaus: *See—*
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Di Vincenzo, Serge: *See—*
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Dobler, Klaus: *See—*
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Dobson Park Industries Plc.: *See—*
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Dr. Ing. h.c.F. Porsche A.G.: *See—*
Schulze, Heinz, 4,573,952, Cl. 474-110.000.
Dohlen, Gerard; Le Marquis, Jean-Claude; and Oberlin, Claude, to Electricite de France. Method for tapping into tubing under a controlled atmosphere, in particular for tubing in a nuclear power station. 4,573,628, Cl. 228-170.000.
Doktor, Hans: *See—*
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Dolkart, Ralph E.; and Kartinos, Nicholas J., to Baxter Travenol Laboratories, Inc. Method for using dialysis solution containing glycerol. 4,574,085, Cl. 424-148.000.
Domanowski, Gregory E.: *See—*
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Donachy, James H.: *See—*
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Donati, Gianni: *See—*
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Donn Incorporated: *See—*
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Donnelly, Stephen E.: *See—*
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Donomoto, Tadashi; Tanaka, Atsuo; and Katou, Shinji, to Toyota Jidosha Kabushiki Kaisha. Method for forming metal base composite. 4,573,519, Cl. 164-97.000.
Donovan, David A.: *See—*
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Donovan, James G., to Albany International Corp. Penetration resistant textile panels with plies of nylon and plies of Kevlar. 4,574,105, Cl. 428-233.000.
Dorey, John K., II; Huneke, James T.; Madsen, Bruce S.; and Schaaf, Theodore F., to AT&T Technologies, Inc. Additive processing electroless metal plating using aqueous photoresist. 4,574,031, Cl. 156-655.000.
Dornes, Bryan J.; Paukovits, Edward J., Jr.; Spong, Richard V.; and Talarico, Robert J., to AMP Incorporated. Apparatus for force fitting components into a workpiece. 4,573,262, Cl. 29-739.000.
Dorst, Hans G.: *See—*
Theysohn, Rainer; Dorst, Hans G.; McKee, Graham E.; Steinberger, Rolf; Ziegler, Walter; and Zahradnik, Franz, 4,574,131, Cl. 523-209.000.
Doughty, Dennis J.: *See—*
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Dow Chemical Company, The: *See—*
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Carville, Donna B.; Feig, Edwin R.; Rose, Gene D.; and Pulliam, Mary H., 4,573,488, Cl. 137-13.000.
Greminger, George K., Jr.; Hall, Richard H.; and Dehnke, Mary K., 4,573,578, Cl. 206-524.400.
McLachlan, Richard D.; Jewett, Gary L.; and Evans, John C., 4,573,761, Cl. 350-96.240.
Serratelli, John F.; and Norton, Michael A., 4,574,137, Cl. 524-724.000.
Dow Corning Corporation: *See—*
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Dowell Schlumberger Incorporated: *See—*
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Dowling, Donald J.: *See—*
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Dowty Mining Equipment Limited: *See—*
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Baum, Marcel, 4,573,462, Cl. 128-204.250.
Dravo Corporation: *See—*
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Dresser Industries, Inc.: *See—*
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Dubach, Werner F., to Alfatechnic AG. Snap closure for a container. 4,573,600, Cl. 215-237.000.
DuBois, Chester G., to Outboard Marine Corporation. Electrical fluid pumping device including first and second pumping portions. 4,573,932, Cl. 440-88.000.
Ducos, Michel, to Sarl Photosysteme. Automatic developer/printer apparatus for obtaining photographic prints from a negative. 4,573,790, Cl. 355-28.000.
DuFrene, Clement O., to Rosenmeier, Gordon, a part interest. Rotary fluid device with axially sliding vanes. 4,573,892, Cl. 418-219.000.
Dukes, John N.; and Merrick, Edwin B., to Hewlett-Packard Company. Receiving radiation from loops in a common plane for monitoring hospital patients leadlessly. 4,573,475, Cl. 128-653.000.
Dumortier, Thierry M., to Fabrique Nationale Herstal, en abrege FN, Societe Anonyme. Device for adjusting the step of the mast of a sailboard or similar. 4,573,423, Cl. 114-91.000.
Dunn, Aubrey J.: *See—*
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Kamstra, Paulus R., 4,573,972, Cl. 604-191.000.
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Dyson, James, to Prototypes, Ltd. Vacuum cleaning appliances. 4,573,236, Cl. 15-333.000.
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E. R. Squibb & Sons, Inc.: *See—*
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Eagle Industries, Inc.: *See—*
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Benjamin, James A.; Schutten, Herman P.; and Lade, Robert W., 4,574,207, Cl. 307-577.000.
Kalns, Ilmars, 4,573,545, Cl. 180-79.100.
Lade, Robert W.; Schutten, Herman P.; and Benjamin, James A., 4,574,208, Cl. 307-577.000.
Lade, Robert W.; Schutten, Herman P.; and Benjamin, James A., 4,574,209, Cl. 307-577.000.
Eberle, Jurg, to Feramatic AG. Monorail transport system. 4,573,413, Cl. 104-120.000.
Eck, Leonard F., to Hein-Werner Corporation. Connector for a vehicle measuring system. 4,573,273, Cl. 33-180.0AT.
Eckardt, Rudolf; and Frielingsdorf, Horst. Machine for boring a plate workpiece. 4,573,835, Cl. 408-37.000.
Eckelberry, Jim: *See—*
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EcoEnergy I, Ltd.: *See—*
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Edeco Holdings Limited: *See—*
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Edwards, Neil A.; Holmes, James C.; and Wales, Denis I., to Raychem Corporation. Apparatus and method for applying sleeves to pipe. 4,574,023, Cl. 156-187.000.
Edwards, Philip N.; and Large, Michael S., to Imperial Chemical Industries PLC. 4,4'-Alkylenedipiperidine derivatives. 4,574,123, Cl. 514-210.000.
Egan, Michael J.; and Quill, Gary J., to Williams International Corporation. Integral bladed disk. 4,573,876, Cl. 416-213.00R.
Egerer, Gary M.: *See—*
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Eguchi, Shinsuke, to Nissan Motor Co., Ltd. Clutch drum for multiple plate clutch assembly. 4,573,560, Cl. 192-87.100.
Ehle, Ray G., to GTE Products Corporation. Apparatus for coupling a first member to a second member. 4,573,824, Cl. 403-322.000.
Ehrecke, Kevin L.; Braet, Jerome A.; and Bassett, James H., to Deere & Company. Harvesting platform with a floating cutterbar. 4,573,308, Cl. 56-14.400.
Eijkelenkamp, Antonius J. H.; de With, Gijsbertus; and de Wild, Willem R., to U.S. Philips Corporation. Multilayer ceramic capacitor. 4,574,329, Cl. 361-321.000.
Electricite de France: *See—*
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Eli Lilly and Company: *See—*
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Ellis, Jeffrey, to Bristol-Myers Company. Clip strip display unit. 4,573,590, Cl. 211-86.000.
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Emery, Leslie M. Manual tool for shaping horseshoes. 4,573,339, Cl. 72-384.000.
Emeterio, Eloy V.; Deallenbach, Robert E.; O'Connor, Martin F.; and Klufas, Oleg, to General Electric Company. Captured radial key for steam turbine wheels. 4,573,875, Cl. 416-198.00A.
Endo, Itaru; and Inoue, Yasuo, to Olympus Optical Co., Ltd. Inverted-design microscope. 4,573,772, Cl. 350-526.000.
Endo, Sadayoshi: *See—*
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Endres, Dan D.; and Matray, Attila, to Kimberly-Clark Corporation. Soft moisture resistant tissue product. 4,574,021, Cl. 156-152.000.

Endress u. Hauser GmbH u. Co.: *See—*
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Energy Innovations, Inc.: *See—*
Gourdine, Meredith C., 4,574,092, Cl. 427-33.000.
Eng, Kai Y.; and Haskell, Barin G., to AT&T Bell Laboratories. Synchronization technique for non-colocated TV signals in a TDMA satellite communication system. 4,574,379, Cl. 370-104.000.
Engineered Data Products, Inc.: *See—*
Atkinson, Walter E., 4,573,589, Cl. 211-41.000.
Enscore, David J.: *See—*
Chen, Yu-Ling; Chun, Leslie L.; and Enscore, David J., 4,573,995, Cl. 604-896.000.
Entringer, David C.; Gruenwald, David J.; and Felix, Dale K., to Brunswick Corporation. Exhaust elbow for marine propulsion system. 4,573,318, Cl. 60-310.000.
Environmental Products Corporation: *See—*
DeWoolfson, Bruce H.; Flowers, Stanley; and Freund, Robert F., 4,573,641, Cl. 241-36.000.
Environmental Research Institute of MI: *See—*
Holsztynski, Wlodzimierz; and Wilson, Stephen S., 4,574,394, Cl. 382-41.000.
Erickson, Kim L. Measuring device for maxillofacial trial surgery. 4,573,917, Cl. 433-75.000.
Erkomat Oy: *See—*
Rosenstrom, Pertti, 4,573,504, Cl. 141-59.000.
Erwin Muller GmbH & Co.: *See—*
Muller, Erwin; Zakrzewski, Czeslaw; and Matzdorf, Burghard, 4,573,624, Cl. 227-121.000.
Essilor International Cie Generale d'Optique: *See—*
Boudet, Jean; and Rolland, Guy, 4,573,903, Cl. 425-555.000.
Ethicon, Inc.: *See—*
Golden, Donald M.; and McVay, William P., 4,573,469, Cl. 128-334.00C.
Ets. Ch. Scareder & Fils: *See—*
Henriot, Pierre A., 4,574,036, Cl. 203-39.000.
Etude et Development en Metallurgie: *See—*
Merrien, Pierre L.; and Merrien, Pierre A., 4,573,522, Cl. 164-456.000.
Evans, John C.: *See—*
McLachlan, Richard D.; Jewett, Gary L.; and Evans, John C., 4,573,761, Cl. 350-96.240.
Exacta S.p.A.: *See—*
Peloggio, Alessandro, 4,573,419, Cl. 112-27.000.
Extracorporeal Medical Specialties, Inc.: *See—*
Goss, Jack, 4,573,960, Cl. 604-6.000.
King, Martin J., 4,573,961, Cl. 604-6.000.
Troutner, Vernon H., 4,573,884, Cl. 417-374.000.
Troutner, Vernon H., 4,573,962, Cl. 604-6.000.
Ezaki, Yoshihiro: *See—*
Aishima, Takanori; Utsumi, Makoto; and Ezaki, Yoshihiro, 4,574,104, Cl. 428-220.000.
Ezekoye, Levi I., to Westinghouse Electric Corp. Valve packing leakage monitoring device. 4,573,344, Cl. 73-46.000.
F. J. Kerrigan Plumbing Co.: *See—*
Kerrigan, Jerome J.; and Domanowski, Gregory E., 4,573,802, Cl. 366-152.000.
Faber, Thomas J.: *See—*
Svyatsky, Eduard; Rabindran, K. George; and Faber, Thomas J., 4,573,675, Cl. 271-122.000.
Fabrique Nationale Herstal, en abrege FN, Societe Anonyme: *See—*
Dumortier, Thierry M., 4,573,423, Cl. 114-91.000.
Faiveley Entreprises: *See—*
Favrel, Michel; and Penanhoat, Jean-Francois, 4,573,286, Cl. 49-214.000.
Fakirov, Stoyko C.; and Schultz, Jerold M., to University of Delaware. Fiber reinforced composite. 4,574,108, Cl. 428-292.000.
Fan, Robert J.; and Visser, Teunis. Connector system for a single optical fiber. 4,573,760, Cl. 350-96.210.
Favaro, Lori. Protective covering for portable audio devices. 4,573,573, Cl. 206-305.000.
Favrel, Michel; and Penanhoat, Jean-Francois, to Faiveley Entreprises. Device for suspending and guiding a movable panel, in particular for an oblique-displacement sliding door. 4,573,286, Cl. 49-214.000.
Featherstone, John L.: *See—*
Gritters, Gregory A.; Nellis, Walter E.; and Featherstone, John L., 4,573,803, Cl. 366-167.000.
Fecker, Rainer: *See—*
Lehmann, Werner; Fecker, Rainer; and Fuss, Manfred, 4,573,672, Cl. 270-45.000.
Feig, Edwin R.: *See—*
Carville, Donna B.; Feig, Edwin R.; Rose, Gene D.; and Pulliam, Mary H., 4,573,488, Cl. 137-13.000.
Feldman, David G.; and France, Hubert M., Jr., to TRW Inc. Communication bus interface unit. 4,574,284, Cl. 340-825.520.
Feldman, Louis W.: *See—*
Noon, George P.; Feldman, Louis W.; and Peterson, Julia A., 4,573,883, Cl. 417-394.000.
Felix, Dale K.: *See—*
Entringer, David C.; Gruenwald, David J.; and Felix, Dale K., 4,573,318, Cl. 60-310.000.
Felix, Willi, to Jos. Hunkeler Ltd. Apparatus for folding and stacking of continuous web in zigzag arrangement. 4,573,670, Cl. 270-39.000.
Fenton, Jeff T., to Conoco Inc. Acetal purification using phase transfer catalysts. 4,574,158, Cl. 549-347.000.
Feramatic AG: *See—*
Eberle, Jurg, 4,573,413, Cl. 104-120.000.
Ferrando, William, to United States of America, Navy. Suspension method of impregnating active material into composite nickel plaque. 4,574,096, Cl. 427-126.600.
Ferrari, James M.: *See—*
Rado, George T.; Vittoria, Carmine; and Ferrari, James M., 4,574,259, Cl. 333-157.000.
Ferrari, Serge, to Tissage et Enduction Serge Ferrari S.A. Method of producing a coated fabric. 4,574,107, Cl. 428-259.000.
Feurer-Zogel, Rudolf; and Vogler, Rudolf, to Adidas Sportschuhfabriken Adi Dassler Stiftung & Co. KG. Running sole for shoes, especially sports shoes, with adjustable heel cushioning. 4,573,279, Cl. 36-35.00R.
Field, Nathaniel L.: *See—*
Abramson, Robert D.; Donovan, David A.; and Field, Nathaniel L., 4,573,348, Cl. 73-118.000.
Fife Corporation: *See—*
Coats, Montgomery R.; and Holt, Dawn E., 4,574,194, Cl. 250-308.000.
Figari, Andres G. Method of casting floors and ceilings of buildings and a panel for use therein. 4,573,303, Cl. 52-743.000.
Figge, Dieter: *See—*
Artz, Gerd; and Figge, Dieter, 4,573,521, Cl. 164-451.000.
Figueras, Michel. Horse hoof-shoeing sole plate. 4,573,538, Cl. 168-14.000.
Fillmore, William E., to Owens-Illinois, Inc. Child resistant package with tamper indicating band. 4,573,599, Cl. 215-225.000.
Finike Italiana Marposs S.p.A.: *See—*
Golinelli, Guido; and Possati, Mario, 4,573,272, Cl. 33-172.00E.
Finnegan, Danny. Mounting chuck for a drill having reversible tools therein. 4,573,839, Cl. 408-239.00R.
Finney, Roy P., to Medical Engineering Corp. Urinary collection method and device. 4,573,985, Cl. 604-349.000.
Fischell, Robert E.; and Lord, Peter C., to Johns Hopkins University, The. Refillable medication infusion apparatus. 4,573,994, Cl. 604-891.000.
Fisher, Michael H.; and Jacks, Thomas M., to Merck & Co., Inc. Naphtho-[1.2-b]-quinolizium derivatives as antidiarrheal agents. 4,574,125, Cl. 514-284.000.
Fite, F. Bartow: *See—*
Holcomb, David A.; and Tryon, James A., 4,573,244, Cl. 241-169.000.
Flaten, James F., to Tobin-Arp Manufacturing Company. Longitudinal feed attachment for a boring bar. 4,573,837, Cl. 408-111.000.
Fleming, John H. Drain shield for eave gutters. 4,573,290, Cl. 52-12.000.
Flemming, Edgar J.: *See—*
Keene, Terrell M.; Calhoun, Wiley C.; Flemming, Edgar J.; Haggard, Eugene E.; Taylor, David L.; Hartley, Richard N.; Martinez, Francisco J.; Sullivan, Harry E.; Mason, Arvil B.; and Lucas, Wayne M., 4,573,829, Cl. 405-157.000.
Flo-Con Systems, Inc.: *See—*
Shapland, Earl P., 4,573,616, Cl. 222-600.000.
Flowers, Stanley: *See—*
DeWoolfson, Bruce H.; Flowers, Stanley; and Freund, Robert F., 4,573,641, Cl. 241-36.000.
FMC Corporation: *See—*
Castrantas, Harry M., 4,574,076, Cl. 423-224.000.
Mory, Steven W.; and Lotto, Ronald L., 4,573,955, Cl. 493-204.000.
Fohl, Artur, to Repa Feinstanswerk GmbH. Driving device especially for return stiffening of a safety belt in an automatic safety belt wind-up device. 4,573,322, Cl. 60-638.000.
Folland, Rickworth: *See—*
Adams, John F. E.; Proffit, Philip J. G.; Oakley, Nicholas R.; and Folland, Rickworth, 4,573,597, Cl. 215-12.00R.
Fontana, Ludovico, to Tecnovar Italiana S.p.A. Box distributor for sequentially discharging objects from aircraft and landcraft means. 4,573,393, Cl. 89-1.590.
Forbes, Alexander E.; and Haslam, John L., to Merck & Co., Inc. Eye frame ophthalmic drug delivery device. 4,573,982, Cl. 604-300.000.
Forbo-Teppichwerk AG: *See—*
Meroni, Rico, 4,573,299, Cl. 52-513.000.
Ford Aerospace and Communications Corp.: *See—*
Morenus, Richard C.; and Frazer, Alson C., 4,573,648, Cl. 244-3.220.
Ford Motor Company: *See—*
Abramson, Robert D.; Donovan, David A.; and Field, Nathaniel L., 4,573,348, Cl. 73-118.000.
Kordomenos, Panagiotis I.; Dervan, Andrew H.; and Grebur, Dennis J., 4,574,146, Cl. 525-530.000.
Ford, Ronald R. Snow scraper for ski boots. 4,573,710, Cl. 280-813.000.
Formosa Plastics Corporation: *See—*
Cheng, Cheng-Yi; Lee, Shou-Yuan; Chen, Kwang-Ming; and Wo, Chee-Yuan, 4,574,141, Cl. 525-252.000.
Fosnaught, Harold R., to Owens-Illinois, Inc. Apparatus and method for wrapping a plastic label around a container. 4,574,020, Cl. 156-80.000.
Foster, John K.: *See—*
Tricca, Raymond A.; and Foster, John K., 4,574,101, Cl. 428-138.000.
Fournier, Pascal; and Peraud, Jean-Claude, to Pont A Mousson S.A. Apparatus for rapid tempering a metal or alloy on a moving belt. 4,573,520, Cl. 164-253.000.
Foust, Jeffrey L.: *See—*
Huffman, Charles E.; and Foust, Jeffrey L., 4,574,385, Cl. 377-107.000.

Foy, Martin, to Morganite Ceramic Fibres Limited; and Insulated Chimneys (Trim) Limited, a part interest. Insulated chimney pipes. 4,573,400, Cl. 98-60.000.

Frama AG: *See—*
Haug, Werner, 4,573,673, Cl. 271-111.000.

Frame, Robert R., to UOP Inc. Metal chelate mercaptan oxidation catalyst. 4,574,121, Cl. 502-163.000.

Frampton, Jeffery A.; and Bartman, Nicholas, to Idex (Jersey) Limited. Hinge assembly. 4,573,735, Cl. 296-218.000.

France, Hubert M., Jr.: *See—*
Feldman, David G.; and France, Hubert M., Jr., 4,574,284, Cl. 340-825.520.

Frank, Hubertus; and Gebauer, Rainer, to INA Walzlager Schaeffler KG. Lip seal with elastic attaching band. 4,573,692, Cl. 277-152.000.

Franks, Terry E., to Square D Company. Snap acting solenoid operated reset latch mechanism. 4,574,260, Cl. 335-18.000.

Frazee, Rivan F., to Cross Company, The. Apparatus for aligning a machine tool saddle. 4,573,747, Cl. 308-3.00A.

Frazer, Alson C.: *See—*
Morenus, Richard C.; and Frazer, Alson C., 4,573,648, Cl. 244-3.220.

Frei, Linae. Jewelry display. 4,573,585, Cl. 211-13.000.

Freund, Robert F.: *See—*
DeWoolfson, Bruce H.; Flowers, Stanley; and Freund, Robert F., 4,573,641, Cl. 241-36.000.

Friedel, Bernard G. Horticultural aid. 4,573,310, Cl. 56-329.000.

Frieder, Philip M.; and deRojas, Edward, to Optical Systems International Inc. Biconvex aphakic prosthetic lens. 4,573,776, Cl. 351-167.000.

Friedli, Hans; and Gut, Edwin, to Swiss Aluminium Ltd. Process for attaching anode blocks to an anode suspension means. 4,574,019, Cl. 156-73.600.

Friedman, Emil M.: *See—*
Sandstrom, Paul H.; and Friedman, Emil M., 4,574,140, Cl. 525-123.000.

Frielingsdorf, Horst: *See—*
Eckardt, Rudolf; and Frielingsdorf, Horst, 4,573,835, Cl. 408-37.000.

Frimer, Itzchak, to Orlite Engineering Ltd. Lighted gun sights. 4,574,335, Cl. 362-84.000.

Frisbie, Jeffrey S.: *See—*
Samson, Wilfred J.; and Frisbie, Jeffrey S., 4,573,470, Cl. 128-344.000.

Frist, Brian S.; and Lazarus, Wayne H. Protective shield for needle receiver. 4,573,975, Cl. 604-192.000.

Frobose, James W., to Jasper Corporation, The. Upholstered seat for clean room. 4,573,740, Cl. 297-452.000.

Fuhrer, Rudolf: *See—*
Liebhardt, Josef; and Fuhrer, Rudolf, 4,573,411, Cl. 102-256.000.

Fuji Electric Co., Ltd.: *See—*
Abe, Ken-ichi; and Ozaki, Ryoji, 4,574,170, Cl. 200-153.00G.

Fuji Electric Corporate Research & Development Co., Ltd.: *See—*
Shiraishi, Hideo, 4,574,042, Cl. 204-429.000.

Fuji Photo Film Co., Ltd.: *See—*
Adachi, Keiichi; Ikeda, Tadashi; and Tani, Tadaaki, 4,574,115, Cl. 430-522.000.
Arakawa, Satoshi; Matsuda, Terumi; Ishizuka, Akio; and Shibahara, Yoshihiko, 4,574,102, Cl. 428-212.000.
Kobayashi, Kesanao; Toyama, Tadao; and Yoshida, Susumu, 4,573,782, Cl. 354-299.000.
Konishi, Masahiro, 4,574,319, Cl. 358-335.000.
Teraoka, Masanori; and Matsuda, Terumi, 4,574,195, Cl. 250-327.200.

Fuji Photo Optical Co., Ltd.: *See—*
Arakawa, Satoshi, 4,573,450, Cl. 128-6.000.
Sato, Susumu; and Oshima, Hideharu, 4,573,780, Cl. 354-195.120.

Fuji Xerox Co., Ltd.: *See—*
Inui, Toshiharu; and Moriguchi, Haruhiko, 4,574,293, Cl. 364-76.0PH.
Kato, Hiroshi, 4,574,395, Cl. 382-61.000.
Moriguchi, Haruhiko; Kikuchi, Yoshiki; and Ohmori, Takashi, 4,574,281, Cl. 340-783.000.

Fujie, Hideo; and Togashi, Kousaku, to Toshiba Kikai Kabushiki Kaisha. Method and apparatus for measuring pattern area percentage for engraving films. 4,573,798, Cl. 356-432.000.

Fujii, Kazuyoshi: *See—*
Okamoto, Hidemasa; Yamanaka, Mitsuo; and Fujii, Kazuyoshi, 4,574,154, Cl. 544-192.000.

Fujii, Shuzo; Shimada, Yuzo; Utsumi, Kazuaki; and Saito, Yutaka, to NEC Corporation. MMC Substrate including capacitors having perovskite structure dielectric and electrical devices including MMC substrate. 4,574,255, Cl. 331-25.000.

Fujimori, Kyoichi: *See—*
Sekiguchi, Akira; Ichikawa, Takeo; Inoue, Kazuo; Fujimori, Kyoichi; Hirano, Yutaka; and Yasuhara, Seishi, 4,573,347, Cl. 73-119.00A.

Fujisaki, Kiyonori. Electric rotary device of permanent magnet type. 4,574,214, Cl. 310-154.000.

Fujisaki, Masaru; Tsuchida, Tetsuo; Sasajima, Yoichi; Ito, Hiroshisa; and Morita, Masahiro, to Honda Giken Kogyo Kabushiki Kaisha; and Sumitomo Electric Industries, Ltd. Carbon fiber reinforced plastic spoke plate. 4,573,745, Cl. 301-63.0PW.

Fujisaku, Kiminori: *See—*
Mori, Shosuke; Awaga, Makoto; Fujisaku, Kiminori; Yamauchi, Mitsuru; and Ono, Hitoshi, 4,574,347, Cl. 364-200.000.

Fujitsu Limited: *See—*
Baba, Fumio, 4,574,203, Cl. 307-269.000.
Miyazaki, Sachio; and Aoki, Shinichiro, 4,574,377, Cl. 370-104.000.
Mori, Shosuke; Awaga, Makoto; Fujisaku, Kiminori; Yamauchi, Mitsuru; and Ono, Hitoshi, 4,574,347, Cl. 364-200.000.
Tanikawa, Kunihiro; and Ohtsuki, Osamu, 4,574,295, Cl. 357-24.000.

Fukaya, Kiyoshi: *See—*
Arakawa, Mutsumi; Ueno, Junichi; Kawaguchi, Yozo; Shimura, Norio; Matsunaga, Shoichi; and Fukaya, Kiyoshi, 4,574,283, Cl. 340-825.080.

Fukushima, Hirotaka: *See—*
Kajitani, Kouji; and Fukushima, Hirotaka, 4,573,945, Cl. 464-68.000.

Fuller Company: *See—*
Lasso, Eugene R.; and Pitsko, John J., 4,573,800, Cl. 366-101.000.

Fulton Industries, Inc.: *See—*
Stine, Harold R., 4,574,339, Cl. 362-360.000.

Funai Electric Company Limited: *See—*
Morishima, Masaharu, 4,574,391, Cl. 381-18.000.

Funkhouser, Bernard M. Chain saw cutting table. 4,573,385, Cl. 83-788.000.

Furuya, Harumi, to Henry Mann, Inc. Apparatus for cutting and forming leads. 4,573,501, Cl. 140-147.000.

Fuss, Manfred: *See—*
Lehmann, Werner; Fecker, Rainer; and Fuss, Manfred, 4,573,672, Cl. 270-45.000.

Fust, Armin; and Starcevic, Mihailo, to BBC Brown, Boveri & Co., Ltd. Self-pumping hydrodynamic bearing. 4,573,810, Cl. 384-322.000.

G. Rau GmbH & Co.: *See—*
Stockel, Dieter; and Schneider, Friedrich E., 4,574,014, Cl. 148-11.50P.

Gaasterland, Douglas E.: *See—*
Rich, Alan H.; Gaasterland, Douglas E.; and Tedder, Thomas E., 4,573,467, Cl. 128-303.100.

Galloway, Howard R.; and Shanks, Gary, to Network Medical Containers Pty, Ltd. Environmentally controlled medication container. 4,573,581, Cl. 206-570.000.

Galson Research Corporation: *See—*
Peterson, Robert L., 4,574,013, Cl. 134-2.000.

Gardner, Robert P., to Clark, Fred C. Pet watering apparatus. 4,573,434, Cl. 119-77.000.

Garkusha, Ivan S.; Kazak, Vadim N.; and Kapralov, Valery K., to Vsesojuznoe Nauchno-Proizvod-Stvennoe Obiedinenie "Sojuzpromgaz". Method of underground gasification of coal seam. 4,573,531, Cl. 166-259.000.

Garrett Corporation, The: *See—*
Mock, Edward A., 4,573,323, Cl. 60-665.000.

Garwood, William E.: *See—*
Chester, Arthur W.; Garwood, William E.; and Vartuli, James C., 4,574,043, Cl. 208-59.000.

Gaspar, Mark S.: *See—*
Barmatz, Martin B.; Allen, James L.; and Gaspar, Mark S., 4,573,356, Cl. 73-505.000.

Gass, Gene C. Unisocket construction for front compartment of a unitized automobile body. 4,573,734, Cl. 296-189.000.

Gavras, Haralambos P.; Ryan, James W.; and Chung, Alfred. Radiolabeled angiotensin converting enzyme inhibitors for radiolabeling mammalian organ sites. 4,574,079, Cl. 424-1.100.

Gebauer, Rainer: *See—*
Frank, Hubertus; and Gebauer, Rainer, 4,573,692, Cl. 277-152.000.

Gebruder Buhler AG: *See—*
Maag, Wilhelm; and Straub, Paul, 4,573,568, Cl. 198-731.000.

Geer, Charles P.: *See—*
Dang, Lam Q.; Geer, Charles P.; Houdek, Merle E.; Jones, Eugene R.; Soltis, Frank G.; Soyring, John A.; and Walker, Thomas M., 4,574,351, Cl. 364-200.000.

Gehrke, Glenn F.: *See—*
Hazebrook, Daniel W.; Gehrke, Glenn F.; and Schmidt, Michael J., 4,573,947, Cl. 464-146.000.

General Dynamics Corporation/Convair Div.: *See—*
Streetman, Joe W.; and Simson, Anton K., 4,573,396, Cl. 89-36.080.

General Electric: *See—*
Chiu, Norman H.; and Schneider, David A., 4,573,325, Cl. 62-129.000.

General Electric Company: *See—*
Anderson, Thomas E., 4,574,222, Cl. 315-254.000.
Bateman, Robert L., Jr.; and Soules, Thomas F., 4,574,218, Cl. 313-635.000.
Beatty, Robert M.; Miller, Edward B.; and Huber, Paul G., 4,574,355, Cl. 364-492.000.
Davenport, John M.; Hansler, Richard L.; Potter, Ralph M.; Blank, John M.; Speros, Dimitri M.; Homa, Arthur S.; Mishra, Amarendra; and Leskovec, Robert A., 4,574,219, Cl. 315-49.000.
Emeterio, Eloy V.; Deallenbach, Robert E.; O'Connor, Martin F.; and Klufas, Oleg, 4,573,875, Cl. 416-198.00A.
Glascock, Homer H., II; Neugebauer, Constantine A.; and Webster, Harold F., 4,574,299, Cl. 357-81.000.
Hill, William D.; Mercanti, William A., Jr.; Apple, Christian K.; and Loomis, Gary S., 4,574,068, Cl. 376-259.000.
Hsia, Edward S.; Emani, Raghuram J.; and Starkweather, John H., 4,573,865, Cl. 415-115.000.
Pendergrass, Edward A., 4,574,217, Cl. 313-579.000.
Port, John H.; Kukoleck, Dennis G.; and Guezuraga, Robert M., 4,574,388, Cl. 378-144.000.

Seymour, Raymond K.; Palmieri, Joseph M.; Ashline, William J.; and Doughty, Dennis J., 4,573,259, Cl. 29-602.00R.
Yates, John B., III; and Smith, David J., 4,574,144, Cl. 525-435.000.

General Foods Corporation: *See—*
Musto, Joseph A.; Scarella, Robert A.; Jacquett, Harold W.; Riolo, Angelo V.; and Della Fave, Nicholas I., 4,574,089, Cl. 426-386.000.

General Motors Corporation: *See—*
Campen, Lawrence E., 4,573,724, Cl. 293-136.000.
DeHart, Arnold O.; and Symons, James D., 4,573,690, Cl. 277-1.000.
Givan, David E., 4,573,364, Cl. 74-7.00E.
Gondert, Theodore R.; and MacDonald, Richard A., 4,573,730, Cl. 296-1.00S.
Hamilton, Kent R.; and Kramer, John H., 4,573,271, Cl. 33-169.00C.
LeBlanc, James C.; and LeBlanc, Richard S., 4,573,397, Cl. 89-41.120.
Ludecke, Otto A., 4,573,317, Cl. 60-303.000.
Mantela, Ralph F.; Brady, Charles J.; Johnson, Thomas M.; Larsen, Hugh W.; and Schallhorn, Thomas L., 4,573,842, Cl. 410-23.000.
Richard, Dennis J., 4,573,496, Cl. 137-625.210.
Shellhause, Ronald L., 4,573,249, Cl. 29-432.000.
Shellhause, Ronald L., 4,573,557, Cl. 188-216.000.
Zaydel, Wieslaw S., 4,573,733, Cl. 296-191.000.

General Signal Corporation: *See—*
Ludwig, Albert R., 4,573,498, Cl. 137-625.470.

General Tire & Rubber Company, The: *See—*
Stamper, Richard W.; and Hultz, Robert C., 4,574,103, Cl. 428-213.000.

Genereux, Paul D.; and Paulonis, Daniel F., to United Technologies Corporation. Nickle base superalloy articles and method for making. 4,574,015, Cl. 148-11.50N.

Genex Corporation: *See—*
Vollmer, Patricia J.; and Schruben, Jeffrey J., 4,574,117, Cl. 435-108.000.

Genicom Corporation: *See—*
Harris, Samuel C., Jr., 4,573,645, Cl. 242-75.470.

Gerk, Alvin P., to Minnesota Mining and Manufacturing Co. Process for improved densification of sol-gel produced alumina-based ceramics. 4,574,003, Cl. 51-309.000.

Gerry, Guy T.: *See—*
Gerry, Kenneth L., 4,573,669, Cl. 269-271.000.

Gerry, Kenneth L., to Gerry, Guy T. Jaw plate. 4,573,669, Cl. 269-271.000.

Gibbon, John D.; Lawler, Terry E.; Yoon, Hyun-Nam; and Charbonneau, Larry F., to Celanese Corporation. Process for the expeditious formation of a high strength shaped article of poly(6-oxy-2-naphthoate-4-oxybenzoate). 4,574,066, Cl. 264-85.000.

Gibson, Galen R.; and Anstaett, Ralph E., Jr., to Dell-Star Corporation. FM Video receiver. 4,574,308, Cl. 358-188.000.

Gignoux, Dominique; and Murray, Russell, to Data Measurement Corporation. Apparatus and method for measuring thickness. 4,574,387, Cl. 378-56.000.

Gillette Company, The: *See—*
Jacobson, Chester F., 4,573,266, Cl. 30-41.000.

Gilreath, Charles T. Window index system for ring binders. 4,573,821, Cl. 402-78.000.

Gish, Larry D.: *See—*
Rothe, Charles T.; and Gish, Larry D., 4,573,495, Cl. 137-414.000.

Gisler, Roland: *See—*
Baschang, Gerhard; Dietrich, Felix M.; Gisler, Roland; Hartmann, Albert; Stanek, Jaroslav; and Tarcsay, Lajos, 4,574,058, Cl. 260-112.50R.

Giurtino, Joel F.: *See—*
Bournay, Frederick M., Jr.; and Giurtino, Joel F., 4,573,766, Cl. 350-345.000.

Givan, David E., to General Motors Corporation. Gear reduction starter drive. 4,573,364, Cl. 74-7.00E.

GKN Automotive Components, Inc.: *See—*
Hazebrook, Daniel W.; Gehrke, Glenn F.; and Schmidt, Michael J., 4,573,947, Cl. 464-146.000.

Glance, Bernard, to AT&T Bell Laboratories. Phase-lock loop circuit providing very fast acquisition time. 4,574,254, Cl. 331-17.000.

Glascock, Homer H., II; Neugebauer, Constantine A.; and Webster, Harold F., to General Electric Company. Thyristor packaging system. 4,574,299, Cl. 357-81.000.

Glaverbel: *See—*
Laroche, Pierre, 4,574,109, Cl. 428-325.000.

Glaxo Group Limited: *See—*
Noble, David, 4,574,152, Cl. 544-4.000.

Glynwed Screws & Fastenings Limited: *See—*
Golby, John B., 4,573,750, Cl. 312-38.000.

GNB Batteries Inc.: *See—*
Wolf, Alby H.; and Oswald, Thomas L., 4,573,514, Cl. 164-4.100.

Goff, Charles W.; and Goff, Charles W., Jr. Machine gun. 4,573,394, Cl. 89-33.010.

Goff, Charles W., Jr.: *See—*
Goff, Charles W.; and Goff, Charles W., Jr., 4,573,394, Cl. 89-33.010.

Golby, John B., to Glynwed Screws & Fastenings Limited. Dispensing apparatus. 4,573,750, Cl. 312-38.000.

Gold, Gary L.: *See—*
Johnson, Stanley J.; and Gold, Gary L., 4,573,849, Cl. 414-334.000.

Goldberg, James R. Molded safety closure device and method for making same. 4,573,602, Cl. 215-256.000.

Golden, Donald M.; and McVay, William P., to Ethicon, Inc. Two-piece tissue fastener with coinable leg staple and retaining receiver and method and instrument for applying same. 4,573,469, Cl. 128-334.00C.

Golinelli, Guido; and Possati, Mario, to Finike Italiana Marposs S.p.A. Axial movement gauging head. 4,573,272, Cl. 33-172.00E.

Gomez, I. Luis, to Monsanto Company. Plasticized polyvinyl butyral interlayers. 4,574,136, Cl. 524-310.000.

Gondert, Theodore R.; and MacDonald, Richard A., to General Motors Corporation. Drag reducing partial tonneau for pickup truck. 4,573,730, Cl. 296-1.00S.

Good Displays, Inc.: *See—*
Small, Marc J.; and Powers, David E., 4,573,513, Cl. 160-135.000.

Goodlaxson, James M. Corn popping machine and method of assembling the same. 4,573,401, Cl. 99-323.500.

Goodyear Aerospace Corporation: *See—*
Knaus, Ernest, 4,573,508, Cl. 150-55.000.

Goodyear Tire & Rubber Company, The: *See—*
Matthews, John S., Jr., 4,573,587, Cl. 211-24.000.
Sandstrom, Paul H.; and Friedman, Emil M., 4,574,140, Cl. 525-123.000.
Smith, William T.; Rooney, Timothy M.; and Watts, George T., 4,573,509, Cl. 152-158.000.

Gordon, Eugene I.; Hartman, Robert L.; and Nash, Franklin R., to AT&T Bell Laboratories. Purging: a reliability assurance technique for semiconductor lasers utilizing a purging process. 4,573,255, Cl. 29-574.000.

Gordon, Marvin; and Lichtenstein, Joseph, to Whitman Medical Corporation. Adjustable in-line valve for sterile fluids. 4,573,658, Cl. 251-95.000.

Goss, Jack, to Extracorporeal Medical Specialties, Inc. Three phase irradiation treatment process. 4,573,960, Cl. 604-6.000.

Goto, Shinji; Kingo, Takao; Ochi, Akira; and Yoshikawa, Yoshiro, to Nissan Shatai Company, Limited. Fuel filler system for an automotive vehicle. 4,573,694, Cl. 280-5.00A.

Gourdine, Meredith C., to Energy Innovations, Inc. Electrogasdynamic coating system. 4,574,092, Cl. 427-33.000.

GQ Defence Equipment Limited: *See—*
Nordberg, Anthony, 4,573,924, Cl. 434-20.000.

Graco Metal Products Inc.: *See—*
Saint, David, 4,573,224, Cl. 5-99.00C.

Graham, William M.: *See—*
Albritton, Charles W.; Powis, William N.; and Graham, William M., 4,573,912, Cl. 432-222.000.

Granco-Clark, Inc.: *See—*
Scanlon, Robert M., 4,573,909, Cl. 432-133.000.

Granite State Packing Company: *See—*
Sheehy, Roger C.; and Muskat, Irwin, 4,574,087, Cl. 426-129.000.

Grant, Frederic F., to Eastman Kodak Company. Tape guide mechanism for dynamic tracking control. 4,573,619, Cl. 226-190.000.

Grathoff, Hartmut, to M.A.N. Maschinenfabrik Augsburg-Nurnberg. Bucketwheel excavator with oscillating nozzles. 4,573,743, Cl. 299-39.000.

Gray, Richard T., to Rohm and Haas Company. Rechargeable cell. 4,574,113, Cl. 429-194.000.

Grebur, Dennis J.: *See—*
Kordomenos, Panagiotis I.; Dervan, Andrew H.; and Grebur, Dennis J., 4,574,146, Cl. 525-530.000.

Green, David T.; and Gunning, Edgar D., to United States Surgical Corporation. Surgical fastener applying apparatus with variable fastener arrays. 4,573,622, Cl. 227-19.000.

Greenberg, I. Melvin. Surgical holder for a laparoscope or the like. 4,573,452, Cl. 128-20.000.

Greminger, George K., Jr.; Hall, Richard H.; and Dehnke, Mary K., to Dow Chemical Company, The. Method and material for the restraint of polar organic liquids. 4,573,578, Cl. 206-524.400.

Griffiths, Edward E. Remote controlled crane hook coupler. 4,573,725, Cl. 294-82.280.

Grimes, John T. Gameboard apparatus with separating die. 4,573,688, Cl. 273-241.000.

Grisgraber, Edwin G.: *See—*
Coppola, Vincent G.; Lorenzo, John L.; Grisgraber, Edwin G.; and Manduley, Flavio M., 4,574,352, Cl. 364-466.000.

Gritters, Gregory A.; Nellis, Walter E.; and Featherstone, John L., to Union Oil Company of California. Injection nozzle. 4,573,803, Cl. 366-167.000.

Gritton, Charles W. K., to AT&T Bell Laboratories. Tandem adaptive filter arrangement. 4,574,166, Cl. 179-170.200.

Grohoski, Jane L.; and Marinari, Diane L. Haircutting device. 4,573,267, Cl. 30-133.000.

Gruber, Alfons: *See—*
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Gruenwald, David J.: *See—*
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Grumman Aerospace Corporation: *See—*
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Grunbeck Wasseraufbereitung GmbH: *See—*
Arens, Hans; Kern, Hans; and Haslberger, Richard, 4,573,491, Cl. 137-218.000.

GTE Business Communication Systems Inc.: *See—*
Smith, Louis W.; and Csapo, Janos I., 4,574,165, Cl. 179-18.0BD.

GTE Products Corporation: *See—*
Ehle, Ray G., 4,573,824, Cl. 403-322.000.

GTY Industries: *See—*
Poppenheimer, Charles B., 4,574,337, Cl. 362-267.000.

Guay, Randall G.: *See—*
Herder, John C.; and Guay, Randall G., 4,574,227, Cl. 318-594.000.
Guest, John D. Tube couplings. 4,573,716, Cl. 285-323.000.
Guezuraga, Robert M.: *See—*
Port, John H.; Kukoleck, Dennis G.; and Guezuraga, Robert M., 4,574,388, Cl. 378-144.000.
Guim, Raul. Tilt free container. 4,573,604, Cl. 220-69.000.
Guldner, Robert A.: *See—*
Cobbs, Walter H., Jr.; Huddleston, Robert J.; and Guldner, Robert A., 4,574,005, Cl. 55-48.000.
Gulf Oil Corporation: *See—*
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Gunning, Edgar D.: *See—*
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Gupte, Anil J.; and Kendall, Joyce M., to Richardson-Vicks Inc. Crackling aerosol foam. 4,574,052, Cl. 252-90.000.
Gut, Edwin: *See—*
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H. B. Fuller Company: *See—*
Johnson, Carl W.; and Kotschi, Stanley W., 4,574,022, Cl. 156-164.000.
Haack, Reimer: *See—*
Lemke, Otto; Stalherm, Dieter; and Haack, Reimer, 4,574,034, Cl. 201-1.000.
Haas, Johannes: *See—*
Ruffer, Alfred; Maubach, Peter; Haas, Johannes; and Quester, Horst, 4,573,484, Cl. 131-327.000.
Haase, William H.: *See—*
Murdick, Brian K.; and Haase, William H., 4,573,579, Cl. 206-525.000.
Hachtel, Hansjorg; and Dobler, Klaus, to Robert Bosch GmbH. Rotary speed measuring apparatus. 4,574,237, Cl. 324-173.000.
Hackett, Steven B. Method and means for in situ repair of heat exchanger tubes in nuclear installations or the like. 4,573,248, Cl. 29-423.000.
Hadama, Shigeyuki; and Sugizaki, Kyoichi, to Atsugi Motor Parts Co., Ltd. Vane pump with locating pins for cam ring. 4,573,890, Cl. 418-108.000.
Hadfield, Robert W.: *See—*
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Haftung Fried. Krupp Gesellschaft mit beschrankter: *See—*
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Hagemeyer, Bruce A.; and Minter, Mearl J., to Rolscreen Company. Double opening exterior french door and door improvements. 4,573,287, Cl. 49-381.000.
Haggard, Eugene E.: *See—*
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Hagglund, Erik. Method and apparatus for wire drawing. 4,573,336, Cl. 72-278.000.
Haijkens, Bernardus, to U.S. Philips Corporation. Commutator end dust seal for an electric motor. 4,574,212, Cl. 310-88.000.
Halbach & Braun: *See—*
Braun, Ernst; and Braun, Gert, 4,573,565, Cl. 198-719.000.
Hall, John L.: *See—*
Deem, Brian C.; and Hall, John L., 4,573,561, Cl. 192-91.00A.
Hall, Lester B. Breathing mask. 4,573,463, Cl. 128-205.240.
Hall, Richard H.: *See—*
Greminger, George K., Jr.; Hall, Richard H.; and Dehnke, Mary K., 4,573,578, Cl. 206-524.400.
Halliburton Company: *See—*
Arnold, Dan M.; and Smith, Harry D., Jr., 4,574,193, Cl. 250-270.000.
Manke, Kevin R., 4,573,535, Cl. 166-321.000.
Hamada, Hideo; Morimoto, Yoshiro; Suga, Masaaki; Murasugi, Takashi; and Suzuki, Tadashi, to Nissan Motor Company, Limited. Control system and method for automatic transmission for automotive vehicle. 4,573,375, Cl. 74-863.000.
Hamazawa, Yoshikazu; Hirai, Tatsuro; Horikoshi, Tunenobu; and Ishida, Tomio, to Matsushita Electric Industrial Co., Ltd. Lamination-wound chip coil and method for manufacturing the same. 4,574,262, Cl. 336-192.000.
Hamilton, Kent R.; and Kramer, John H., to General Motors Corporation. Machine performance sensor. 4,573,271, Cl. 33-169.00C.
Hammarstedt, Gosta, to Arcu Armaturindustri AB. Sequentially controlled water mixer. 4,573,493, Cl. 137-315.000.
Hand, Derek G., to Rolls-Royce Limited. Housing for turbomachine rotors. 4,573,867, Cl. 415-134.000.
Hans Nussbaum: *See—*
Nussbaum, Hans, 4,573,663, Cl. 254-89.00H.
Hansen, Nancy. Baby changing apparatus. 4,573,608, Cl. 221-92.000.
Hansler, Richard L.: *See—*
Davenport, John M.; Hansler, Richard L.; Potter, Ralph M.; Blank, John M.; Speros, Dimitri M.; Homa, Arthur S.; Mishra, Amarendra; and Leskovec, Robert A., 4,574,219, Cl. 315-49.000.
Hanson, Richard A. Leader winding device. 4,573,284, Cl. 43-57.200.
Hanzawa, Yoshiki: *See—*
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Harata, Mitsuo: *See—*
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Harboe, Jahn, to Saugbruksforeningen. Device for splitting and cutting of firewood. 4,573,507, Cl. 144-193.00A.
Hargrove, William W.; Harris, Dale C.; Akers, Michael J.; and Sperry, Charles R., to Eli Lilly and Company. Vacuum vial infusion system. 4,573,967, Cl. 604-56.000.
Harkins, Daniel J., to Thermal Design, Inc. Building insulation system. 4,573,298, Cl. 52-404.000.
Harnischfeger Corporation: *See—*
Oliphant, Larry J., 4,573,592, Cl. 212-182.000.
Harris Corporation: *See—*
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Harris, Dale C.: *See—*
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Harris-Marinoni S.A.: *See—*
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Harris, Richard L.; and Horst, Robert W., to Tandem Computers Incorporated. Entry control store for enhanced CPU pipeline performance. 4,574,344, Cl. 364-200.000.
Harris, Samuel C., Jr., to Genicom Corporation. Ribbon tension control. 4,573,645, Cl. 242-75.470.
Harrison, James J.: *See—*
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Harrison, Ronald A.: *See—*
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Hartford, Louise D.: *See—*
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Hartley, Richard N.: *See—*
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Hartman, Robert A.: *See—*
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Hartman, Robert L.: *See—*
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Hartmann, Albert: *See—*
Baschang, Gerhard; Dietrich, Felix M.; Gisler, Roland; Hartmann, Albert; Stanek, Jaroslav; and Tarcsay, Lajos, 4,574,058, Cl. 260-112.50R.
Hartung, Michael H., to International Business Machines Corporation. Method and apparatus for peripheral data handling hierarchies. 4,574,346, Cl. 364-200.000.
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Asano, Makoto; Hasegawa, Kiyoharu; Tamura, Yukio; and Oono, Yoshihiro, 4,574,110, Cl. 428-402.210.
Hashimoto, Takaaki; Motoori, Ryuzo; and Minagawa, Kazushi, to Nippon Kogaku K.K. White balance control system for color television camera with automatic switchover control. 4,574,303, Cl. 358-29.000.
Haskell, Barin G.: *See—*
Eng, Kai Y.; and Haskell, Barin G., 4,574,379, Cl. 370-104.000.
Haslam, John L.: *See—*
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Haslberger, Richard: *See—*
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Hassdenteufel, Jurgen-Rolf, to Bayer Aktiengesellschaft. Process for the preparation of O-methyl-N-vinylurethane. 4,574,159, Cl. 560-157.000.
Hatagishi, Shingo, to Yoshida Kogyo K.K. Method and apparatus for feeding sliders to slider pocket for assembling sliders on an uncut fastener chain. 4,573,264, Cl. 29-766.000.
Hatch Associates Ltd.: *See—*
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Hattori, Yoshiyuki: *See—*
Watanabe, Kiyohiko; Matsui, Kazuma; Hattori, Yoshiyuki; Takei, Toshihiro; Nakamura, Toshiaki; and Ohnishi, Shunsaku, 4,573,882, Cl. 417-366.000.
Haug, Werner, to Frama AG. Feed mechanism for individual flat articles. 4,573,673, Cl. 271-111.000.
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Hazebrook, Daniel W.; Gehrke, Glenn F.; and Schmidt, Michael J., to GKN Automotive Components, Inc. Constant velocity universal joint. 4,573,947, Cl. 464-146.000.

Head, Manley J., to Rockwell International Corporation. QAM Demodulator automatic quadrature loop using n-m LSB's. 4,574,244, Cl. 329-50.000.
Hearp, Charles W.: *See—*
deSilva, Sunil G.; and Hearp, Charles W., 4,574,071, Cl. 422-14.000.
Heartland Industries, Inc.: *See—*
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Hechtman, Charles D., to AT&T Technologies, Inc. High frequency test fixture. 4,574,236, Cl. 324-158.00F.
Hecker, Joel; Stern, Howard; and Heydenburg, Thomas, to Robotic Vision Systems, Inc. Beam deflection mechanism. 4,573,758, Cl. 350-3.710.
Heesch, Max O., to ITT Corporation. Manual seat recliner. 4,573,738, Cl. 297-362.000.
Hehl, Karl. Die carrier member for die closing unit of injection molding machine. 4,573,901, Cl. 425-451.000.
Heidelberger Druckmaschinen AG: *See—*
Blasius, Udo; May, Karl-Heinz; and Rodi, Anton, 4,573,410, Cl. 101-365.000.
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Heilman, Nikolaus J.; Wix, David A.; and Egerer, Gary M., to Interblock Partners, Ltd. Machine for manufacturing foam building blocks. 4,573,902, Cl. 425-543.000.
Hein-Werner Corporation: *See—*
Eck, Leonard F., 4,573,273, Cl. 33-180.0AT.
Held, Kurt. Continuous-acting press with multi-layered press bands. 4,573,404, Cl. 100-151.000.
Hellegaard, Kjeld; and Doktor, Hans, to Danfoss A/S. Current supply apparatus for an A.C. consumer. 4,574,341, Cl. 363-56.000.
Hellstrom, Jerker; Tholander, Lars H. G.; and Jacobsson, Kurt A. G., to Aktiebolaget IRO. Yarn supply device group. 4,574,353, Cl. 364-470.000.
Helmer, Michael T. Easter egg dyeing and drying device. 4,573,586, Cl. 211-14.000.
Helt, Robert W.: *See—*
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Henderson, Albert S., to Harris Corporation. Rotary scan antenna. 4,574,289, Cl. 343-786.000.
Henkel, Hans-Joachim; and Muller, Norbert, to Siemens Aktiengesellschaft. Electric insulation. 4,574,111, Cl. 428-461.000.
Henriot, Pierre A., to Ets. Ch. Scareder & Fils. Method and an installation for purifying industrial waste water, particularly process water from dyeing works. 4,574,036, Cl. 203-39.000.
Henry Mann, Inc.: *See—*
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Hercules Incorporated: *See—*
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Herder, John C.; and Guay, Randall G., to Datapoint Corporation. Dual mode servo. 4,574,227, Cl. 318-594.000.
Hermann Berstorff Maschinenbau GmbH: *See—*
Anders, Dietmar, 4,573,799, Cl. 366-89.000.
Hernandez, Paul C. Hedge trimmer. 4,573,269, Cl. 30-240.000.
Herrnring, Gunther, to Montblanc-Simplo GmbH. System for supplying ink for writing instruments. 4,573,819, Cl. 401-151.000.
Hesch, Harold E.; and McNally, George S., to Pullman Standard. Hitch mounting means. 4,573,843, Cl. 410-58.000.
Hess, Robert M.; and Jarrett, Robert B., to Motorola, Inc. Ignition control integrated circuit having substrate injection preventing means. 4,574,221, Cl. 315-209.00T.
Hess, Stanley R., to Cordis Corporation. Cardiac mapping probe. 4,573,473, Cl. 128-642.000.
Hewlett-Packard Company: *See—*
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Heydenburg, Thomas: *See—*
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HID Systems, Inc.: *See—*
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Highley, Robert W.; and Stanczak, Stephen J. Warp-resistant self-sealing coke oven door. 4,574,035, Cl. 202-242.000.
Hill, Arthur T., to Warner-Lambert Technologies, Inc. Microscope adjustment apparatus. 4,573,771, Cl. 350-521.000.
Hill, Clinton W., to U.S. Plastics Corp. Lamp assembly. 4,573,754, Cl. 339-60.00M.
Hill, William D.; Mercanti, William A., Jr.; Apple, Christian K.; and Loomis, Gary S., to General Electric Company. Universal logic card. 4,574,068, Cl. 376-259.000.
Hillyard, Colin D., to Pirelli General plc. Applying an elastic sleeve over an elongate body. 4,573,251, Cl. 29-450.000.
Hirai, Tatsuro: *See—*
Hamazawa, Yoshikazu; Hirai, Tatsuro; Horikoshi, Tunenobu; and Ishida, Tomio, 4,574,262, Cl. 336-192.000.
Hirano, Yutaka; Kawakami, Hirokazu; Tanaami, Masaaki; Kosano, Motohiko; Takagi, Hiroshi; Ishiai, Yoshio; and Iwahashi, Ituo, to Sanyo Electric Co., Ltd.; and Tokyo Sanyo Electric Co., Ltd. Hermetically sealed motor compressor. 4,573,880, Cl. 417-312.000.
Hirano, Yutaka: *See—*
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Hirasuna, Alan R.; and Veal, Gordon R., to L'Garde, Inc. Casing packer. 4,573,537, Cl. 166-387.000.
Hirohashi, Kazutoshi; and Ishigaki, Yukinobu, to Victor Company of Japan, Limited. Noise reduction for stereophonic FM signals by high-speed sampling and linear interpolation. 4,574,390, Cl. 381-13.000.
Hirose, Takao: *See—*
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Hirsch, Hermann. Strap with connecting part. 4,573,221, Cl. 2-338.000.
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Hitachi, Ltd.: *See—*
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Murata, Toshinori; Kazumi, Masafumi; and Ito, Yuji, 4,574,384, Cl. 377-58.000.
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Simada, Tamotu; Shimbo, Chiaki; Horiuchi, Hideyuki; and Takatsuji, Masamoto, 4,573,466, Cl. 128-303.100.
Tabata, Kuniaki; Tsuhara, Susumu; Machida, Tetsuo; Iwami, Hidefumi; and Okada, Yasuyuki, 4,574,364, Cl. 364-900.000.
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Hitachi Zosen Corporation: *See—*
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Hoag, Robert E.; and Mnich, Axel, to Instafil, Inc. Fluid transfer apparatus. 4,573,993, Cl. 604-411.000.
Hoberman, Barry A.; and Moss, William E., to Monolithic Memories, Inc. Memory cell and array. 4,574,367, Cl. 365-179.000.
Hoch, John J.; and Stricker, David K., to Deere & Company. Cooling air duct and screen arrangement for an air cooled engine. 4,573,544, Cl. 180-68.100.
Hoeberechts, Arthur M. E.; and van Gorkom, Gerardus G. P., to U.S. Philips Corporation. Cathode-ray tube and semiconductor device for use in such a cathode-ray tube. 4,574,216, Cl. 313-444.000.
Hoechst Aktiengesellschaft: *See—*
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Hoeren, Gerd H.: *See—*
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Andree, Dietrich; and Creutz, Walter, 4,573,811, Cl. 384-622.000.
Hofer, Otto J., to Interrondo AG. Apparatus for producing a corrugated sheet. 4,574,028, Cl. 156-462.000.
Hoffman, Gregory A. Spinal fixation apparatus. 4,573,454, Cl. 128-69.000.
Hofmann, Karl-Heinz, to Braas & Co. GmbH. Ridge or hip covering for tiled roofs. 4,573,291, Cl. 52-43.000.
Hokushin Kogyo Kabushiki Kaisha: *See—*
Yoshida, Hiroshi; Toyoshima, Takefumi; Iwabori, Tomio; Ohkura, Hideaki; Miyamoto, Yasuo; Nishimura, Izumi; Oikawa, Toshiyuki; Sekijima, Kenji; and Ohashi, Makoto, 4,573,656, Cl. 248-562.000.
Holcomb, David A.; and Tryon, James A., to Fite, F. Bartow. Combination condiment grinder and dispenser. 4,573,244, Cl. 241-169.000.
Holden, John; Colombrito, Sam; and Jeffreys, Arthur H., to Buddy L Corp. Steerable toy vehicle. 4,573,941, Cl. 446-451.000.
Holland, John M., to Cybermation, Inc. Mobile base for robots and the like. 4,573,548, Cl. 180-211.000.
Hollenberg, Jane: *See—*
Tietjen, Marlene; Hollenberg, Jane; and Rigg, Richard T., 4,574,082, Cl. 424-63.000.
Holling, George H.: *See—*
Pershall, Arthur A.; and Holling, George H., 4,574,225, Cl. 318-254.000.
Hollming Ltd.: *See—*
Savikurki, Jarmo; and Jansson, Kim, 4,573,929, Cl. 440-54.000.
Holmes, James C.: *See—*
Edwards, Neil A.; Holmes, James C.; and Wales, Denis I., 4,574,023, Cl. 156-187.000.
Holmes, Mark: *See—*
Moran, James P., Jr.; and Holmes, Mark, 4,574,138, Cl. 524-786.000.
Holsztynski, Wlodzimierz; and Wilson, Stephen S., to Environmental Research Institute of MI. Pipeline processor. 4,574,394, Cl. 382-41.000.
Holt, Dawn E.: *See—*
Coats, Montgomery R.; and Holt, Dawn E., 4,574,194, Cl. 250-308.000.
Holton, Raymond G. C., to Boeing Company, The. Lightning protection electrical circuit path for coupling between aircraft structures. 4,574,325, Cl. 361-218.000.
Homa, Arthur S.: *See—*
Davenport, John M.; Hansler, Richard L.; Potter, Ralph M.; Blank, John M.; Speros, Dimitri M.; Homa, Arthur S.; Mishra, Amarendra; and Leskovec, Robert A., 4,574,219, Cl. 315-49.000.
Homann, Walter K., to Chemische Werke Huels, AG. Process for preparing anhydrous cyclic imido esters. 4,574,157, Cl. 548-239.000.
Homes, Graham D., to Lucas Industries Public Limited Company. Fluid control valve. 4,573,659, Cl. 251-129.020.
Honda Giken Kogyo K.K.: *See—*
Kitagawa, Tadao; Kosuge, Yutaka; Noda, Yoichiro; and Sato, Tomosaburo, 4,574,192, Cl. 250-227.000.

Honda Giken Kogyo Kabushiki Kaisha: *See—*
Fujisaki, Masaru; Tsuchida, Tetsuo; Sasajima, Yoichi; Ito, Hiroshisa; and Morita, Masahiro, 4,573,745, Cl. 301-63.0PW.
Inomata, Fumio; and Wakusaka, Kazuharu, 4,573,550, Cl. 180-296.000.
Irimajiri, Shoichiro; Komuro, Katsusuke; and Aikawa, Kunihiko, 4,573,546, Cl. 180-89.100.
Shimizu, Yasuo; and Ogura, Masami, 4,573,373, Cl. 74-468.000.
Takahashi, Hirotake; and Nishikawa, Kenji, 4,573,698, Cl. 280-279.000.
Yoshida, Hiroshi; Toyoshima, Takefumi; Iwabori, Tomio; Ohkura, Hideaki; Miyamoto, Yasuo; Nishimura, Izumi; Oikawa, Toshiyuki; Sekijima, Kenji; and Ohashi, Makoto, 4,573,656, Cl. 248-562.000.

Honda, Yasuhiro; Ueno, Katumi; Nishizaki, Genichi; Kitahara, Harumi; and Kamioka, Hiroshi, to Citizen Watch Company Limited. Automatic assembling machine. 4,573,261, Cl. 29-701.000.

Honeycutt, Travis W., to Isopedix Corporation. Reinforced thixotropic gel composition. 4,574,097, Cl. 428-36.000.

Honeywell Inc.: *See—*
Benson, Florence; and Shireman, Mark J., 4,573,430, Cl. 118-411.000.
Singh, Donald R., 4,574,256, Cl. 331-107.0SL.

Hooten, Howard G. Necktie knot simulator. 4,573,219, Cl. 2-152.00R.

Hoppe, Eugene A.: *See—*
Dellinger, Thomas B.; Hoppe, Eugene A.; and Jones, Charles E., 4,573,540, Cl. 175-61.000.

Horikoshi, Tunenobu: *See—*
Hamazawa, Yoshikazu; Hirai, Tatsuro; Horikoshi, Tunenobu; and Ishida, Tomio, 4,574,262, Cl. 336-192.000.

Horikoshi, Yukio: *See—*
Sakamaki, Hiroshi; Horikoshi, Yukio; and Yanagihashi, Kikuji, 4,573,891, Cl. 418-173.000.

Horiuchi, Hideyuki: *See—*
Simada, Tamotu; Shimbo, Chiaki; Horiuchi, Hideyuki; and Takatsuji, Masamoto, 4,573,466, Cl. 128-303.100.

Horn, Hans. Linear drive. 4,573,369, Cl. 74-110.000.

Horst, Robert W.: *See—*
Harris, Richard L.; and Horst, Robert W., 4,574,344, Cl. 364-200.000.

Horvatis, James F.: *See—*
Malachowski, Jerome A.; and Horvatis, James F., 4,573,555, Cl. 188-52.000.

Horwitz, E. Philip; and Kalina, Dale G., to United States of America, Energy. Method for extracting lanthanides and actinides from acid solutions by modification of purex solvent. 4,574,072, Cl. 423-9.000.

Hoshino, Chojiro. Toy music box. 4,573,939, Cl. 446-298.000.

Hosomizu, Hiroshi: *See—*
Taniguchi, Nobuyuki; Hosomizu, Hiroshi; Tsuji, Kenji; Omaki, Takanobu; and Nakai, Masaaki, 4,573,786, Cl. 354-416.000.

Hosoo, Tomohiro: *See—*
Maki, Mitsuo; Hosoo, Tomohiro; and Kikukawa, Katsuyoshi, 4,573,817, Cl. 401-65.000.

Houdek, Merle E.: *See—*
Dang, Lam Q.; Geer, Charles P.; Houdek, Merle E.; Jones, Eugene R.; Soltis, Frank G.; Soyring, John A.; and Walker, Thomas M., 4,574,351, Cl. 364-200.000.

Houle, Frances A.: *See—*
Baum, Thomas H.; Houle, Frances A.; Jones, Carol R.; and Kovac, Caroline A., 4,574,095, Cl. 427-53.100.

House, Richard F.: *See—*
Kohler, Karl A.; and House, Richard F., 4,573,634, Cl. 229-38.000.

Howell, Cecil A.; and Lacy, Ernest R., to Westinghouse Electric Corp. Nuclear fuel rod channel tray loading system. 4,573,847, Cl. 414-63.000.

Howes, Peter, to Lucas Industries Public Limited Company. Fuel injection pumping apparatus. 4,573,444, Cl. 123-502.000.

Hoy, David J. Knee orthotic hinge joint. 4,573,455, Cl. 128-80.00C.

HPS Corporation: *See—*
Peacock, Roy N., 4,573,717, Cl. 285-365.000.

Hropot, Max: *See—*
Seuring, Bernhard; Lang, Hans-Jochen; Hropot, Max; and Muschaweck, Roman, 4,574,128, Cl. 514-469.000.

Hsia, Edward S.; Emani, Raghuram J.; and Starkweather, John H., to General Electric Company. Multiple-impingement cooled structure. 4,573,865, Cl. 415-115.000.

Huber, Paul G.: *See—*
Beatty, Robert M.; Miller, Edward B.; and Huber, Paul G., 4,574,355, Cl. 364-492.000.

Huchital, Gerald S.: *See—*
Clark, Brian; and Huchital, Gerald S., 4,574,242, Cl. 324-338.000.

Huddleston, Robert J.: *See—*
Cobbs, Walter H., Jr.; Huddleston, Robert J.; and Guldner, Robert A., 4,574,005, Cl. 55-48.000.

Huffman, Charles E.; and Foust, Jeffrey L., to Rockwell International Corporation. Clock divider circuit incorporating a J-K flip-flop as the count logic decoding means in the feedback loop. 4,574,385, Cl. 377-107.000.

Huffman, Dawn M., to Kimberly-Clark Corporation. Outer tampon tube with recessed finger grip. 4,573,964, Cl. 604-15.000.

Hughes Aircraft Company: *See—*
Kliever, Waldo W., 4,574,197, Cl. 250-334.000.

Hughes Helicopters, Inc.: *See—*
Yao, Samuel S.; and Chu, Samuel K. F., 4,573,873, Cl. 416-114.000.

Huiber, Otto A., to Hi-Tech Engineering, Inc. Valve leak detector. 4,573,343, Cl. 73-40.000.

Hukuba Kogyo Kabushiki Kaisha: *See—*
Saeki, Kimihiro; and Kobayashi, Kiyoshi, 4,573,230, Cl. 15-41.00R.

Hulett, Richard H.: *See—*
Midgley, John A.; and Hulett, Richard H., 4,574,188, Cl. 219-549.000.

Hulseweh, Terry S., to Motorola, Inc. Method of forming self-aligned implanted channel-stop and buried layer utilizing non-single crystal alignment key. 4,573,257, Cl. 29-576.00E.

Hultz, Robert C.: *See—*
Stamper, Richard W.; and Hultz, Robert C., 4,574,103, Cl. 428-213.000.

Hulyer, Michael G., to U.S. Philips Corporation. High-definition color television transmission system. 4,574,300, Cl. 358-11.000.

Huneke, James T.: *See—*
Dorey, John K., II; Huneke, James T.; Madsen, Bruce S.; and Schaaf, Theodore F., 4,574,031, Cl. 156-655.000.

Hunter, Stephen K. Artificial fallopian tube. 4,574,000, Cl. 623-12.000.

Huntington Institute of Applied Research: *See—*
Bullara, Leo A., 4,573,481, Cl. 128-784.000.

Huperz, Adalbert: *See—*
Maasberg, Wolfgang; and Huperz, Adalbert, 4,573,886, Cl. 417-454.000.

Hurley, Byron H.; and Ricks, Walter G., to Hurley, Byron H. Container filling apparatus and method. 4,573,502, Cl. 141-1.000.

Hutner, Erwin E. Golf tee dispenser. 4,573,610, Cl. 221-281.000.

Hurtig, Mats E.; and Karlsson, Gosta K. Apparatus for measuring wind-speed and/or direction. 4,573,352, Cl. 73-189.000.

Husted, Rodney O., to Anchor/Darling Valve Company. Double disc gate valve. 4,573,660, Cl. 251-195.000.

Huth, Brian P.: *See—*
Sandy, James J., Jr.; and Huth, Brian P., 4,573,866, Cl. 415-116.000.

Hyatt, Douglas K.: *See—*
Hyatt, James R.; and Hyatt, Douglas K., 4,573,381, Cl. 82-36.00R.

Hyatt, James R.; and Hyatt, Douglas K., to Top Tech, Inc. Boring device. 4,573,381, Cl. 82-36.00R.

Hyde, Kirk R., to Kirkplastic Company Incorporated. Secure credit card and method of manufacturing same. 4,573,711, Cl. 283-98.000.

Hydro-Plan Engineering Ltd.: *See—*
Mehoudar, Raphael, 4,573,640, Cl. 239-542.000.

Ichikawa, Takeo: *See—*
Sekiguchi, Akira; Ichikawa, Takeo; Inoue, Kazuo; Fujimori, Kyoichi; Hirano, Yutaka; and Yasuhara, Seishi, 4,573,347, Cl. 73-119.00A.

Ichikoh Industries, Ltd.: *See—*
Igura, Kenkichi, 4,574,334, Cl. 362-66.000.

Ichiyanagi, Toshikazu; Sudo, Kanzaburo; Kawai, Zenzaburo; Sekine, Shoji; and Teshigawara, Hiroshi, to Chichibu Cement Kabushiki Kaisha; and Ishikawajima-Harima Jukogyo Kabushiki Kaisha. Method and apparatus for producing white cement clinker. 4,573,908, Cl. 432-58.000.

Idemitsu Petrochemical Co., Ltd.: *See—*
Aishima, Takanori; Utsumi, Makoto; and Ezaki, Yoshihiro, 4,574,104, Cl. 428-220.000.

Idesign, Inc.: *See—*
Ma, Hansan, 4,573,332, Cl. 70-30.000.

Idex (Jersey) Limited: *See—*
Frampton, Jeffery A.; and Bartman, Nicholas, 4,573,735, Cl. 296-218.000.

Igura, Kenkichi, to Ichikoh Industries, Ltd. Device for adjusting the inclination of the light axis of headlamps of a motor vehicle. 4,574,334, Cl. 362-66.000.

Iikura, Shoichi, to Kabushiki Kaisha Toshiba. Robot hand. 4,573,727, Cl. 294-115.000.

Ikeda, Tadashi: *See—*
Adachi, Keiichi; Ikeda, Tadashi; and Tani, Tadaaki, 4,574,115, Cl. 430-522.000.

Illinois Bell Telephone Company: *See—*
Armbruster, George E., 4,573,715, Cl. 285-94.000.

Imahashi, Hiromichi; Kawahara, Akira; Konishi, Takao; Morimoto, Yoshihumi; Terui, Michio; and Yagi, Yoshio, to Hitachi, Ltd.; Sumitomo Metal Industries, Ltd.; and Nippon Mining Co., Ltd. Method of production of cladding tube for nuclear fuel element. 4,573,629, Cl. 228-173.200.

Imperial Chemical Industries PLC: *See—*
Edwards, Philip N.; and Large, Michael S., 4,574,123, Cl. 514-210.000.

Implant Technologies: *See—*
Szachowicz, Edward H.; and Walsh, John, 4,573,460, Cl. 128-200.260.

INA Walzlager Schaeffler KG: *See—*
Frank, Hubertus; and Gebauer, Rainer, 4,573,692, Cl. 277-152.000.
Jacob, Werner, 4,573,809, Cl. 384-493.000.

Inagawa, Jun; Nagumo, Masahide; and Kojima, Tadashi, to Tokyo Shibaura Denki Kabushiki Kaisha. Apparatus for dividing the elements of a Galois field. 4,574,361, Cl. 364-761.000.

Inatomi, Takao, to Kabushiki Kaisha Komatsu Seisakusho. Contactless press control device. 4,574,343, Cl. 364-184.000.

Inbar, Michael, to Applied Magnetics Corporation. System for measuring selected parameters of electrical signals and method. 4,574,234, Cl. 324-73.00R.

Industrie Pirelli S.p.A.: *See—*
Tangorra, Giorgio, 4,573,953, Cl. 474-152.000.

Industrietechnik Kalenborn GmbH: *See—*
Stocksiefen, Peter; and Gruber, Alfons, 4,573,231, Cl. 15-104.06R.

Ing. C. Olivetti & C. S.p.A.: *See—*
Berruti, Pierangelo; and Cella, Giancarlo, 4,573,814, Cl. 400-568.000.

Ing. Loro Piana & C. S.p.A.: *See—*
Prandina, Aldo F., 4,573,227, Cl. 5-486.000.

Innovative Surgical Products, Inc.: *See—*
Blake, Larry W., 4,573,979, Cl. 604-240.000.

Inokuma, Toshio: *See—*
Asada, Eiichi; Inokuma, Toshio; and Yamazoe, Mikio, 4,574,055, Cl. 252-514.000.

Inomata, Fumio; and Wakusaka, Kazuharu, to Honda Giken Kogyo Kabushiki Kaisha. Exhaust pipe apparatus for vehicle. 4,573,550, Cl. 180-296.000.

Inoue, Kazuo: *See—*
Sekiguchi, Akira; Ichikawa, Takeo; Inoue, Kazuo; Fujimori, Kyoichi; Hirano, Yutaka; and Yasuhara, Seishi, 4,573,347, Cl. 73-119.00A.

Inoue, Yasuo: *See—*
Endo, Itaru; and Inoue, Yasuo, 4,573,772, Cl. 350-526.000.

Instafil, Inc.: *See—*
Hoag, Robert E.; and Mnich, Axel, 4,573,993, Cl. 604-411.000.

Institut National Polytechnique de Grenoble: *See—*
Cantin, Michel; Jaussaud, Pierre; and Olivella, Roger, 4,573,414, Cl. 104-202.000.

Insulated Chimneys (Trim) Limited: *See—*
Foy, Martin, 4,573,400, Cl. 98-60.000.

Intel Corporation: *See—*
Senderowicz, Daniel, 4,574,250, Cl. 330-258.000.

Interblock Partners, Ltd.: *See—*
Heilman, Nikolaus J.; Wix, David A.; and Egerer, Gary M., 4,573,902, Cl. 425-543.000.

International Business Machines Corporation: *See—*
Baum, Thomas H.; Houle, Frances A.; Jones, Carol R.; and Kovac, Caroline A., 4,574,095, Cl. 427-53.100.
Blue, Larry A.; and Conner, David E., 4,574,228, Cl. 318-696.000.
Bonnet, Yves A., 4,574,204, Cl. 307-273.000.
Carlgren, Richard G.; Reed, Martin A.; and Rosenbaum, Walter S., 4,574,363, Cl. 364-900.000.
Dang, Lam Q.; Geer, Charles P.; Houdek, Merle E.; Jones, Eugene R.; Soltis, Frank G.; Soyring, John A.; and Walker, Thomas M., 4,574,351, Cl. 364-200.000.
Deighton, Guy A.; and Moore, Gerry W., 4,573,779, Cl. 354-4.000.
Hartung, Michael H., 4,574,346, Cl. 364-200.000.
Ko, Michael A., 4,574,382, Cl. 375-25.000.
Lechaton, John S.; Pitner, Philip M.; and Srinivasan, Gurumakonda R., 4,573,256, Cl. 29-576.00B.
Rechtschaffen, Rudolph N., 4,574,349, Cl. 364-200.000.
Richardson, Raymond H.; and Valley, Robert T., 4,573,830, Cl. 406-84.000.
Scheuerlein, Roy E., 4,574,365, Cl. 365-149.000.

International Harvester Company: *See—*
Slindee, Edward A., 4,573,349, Cl. 73-119.00A.

International Paper Company: *See—*
Murdick, Brian K.; and Haase, William H., 4,573,579, Cl. 206-525.000.

International Shoe Machine Corporation: *See—*
Moreira, Anthony F., 4,573,229, Cl. 12-8.100.

International Standard Electric Corporation: *See—*
Auch, Wilfried; Mohr, Friedemann; Schlemper, Eberhard; and Steudle, Walter, 4,573,795, Cl. 356-350.000.
Cleemput, Camiel D. E.; and Coussement, Hedwig L. Z., 4,573,406, Cl. 101-127.100.
Crossland, William A.; Peters, Jack R.; Ross, Peter W.; and Ayliffe, Peter J., 4,574,282, Cl. 340-784.000.

Interrondo AG: *See—*
Hofer, Otto J., 4,574,028, Cl. 156-462.000.

Inui, Toshiharu; and Moriguchi, Haruhiko, to Fuji Xerox Co., Ltd. Compensation for heat accumulation in a thermal head. 4,574,293, Cl. 364-76.0PH.

Inventio AG: *See—*
Schlegel, Urs; Tomse, Ljudevit; and Wenger, Urs, 4,573,542, Cl. 177-132.000.

Io, Shinichi; and Saeki, Funio, to Atsugi Motor Parts Co., Ltd. Method of manufacturing motor. 4,573,258, Cl. 29-596.000.

Ipema, Neal J.; and Portz, William E., to True Temper Corporation. Lawn rake. 4,573,311, Cl. 56-400.170.

Ippen, Jakob; and Stuttgen, Friedel, to Bayer Aktiengesellschaft. Tire for heavy loads. 4,573,510, Cl. 152-159.000.

Ireland, Clive L. M., to J. K. Lasers Limited. Dispersive prism arrangement. 4,573,765, Cl. 350-286.000.

Irie, Kazunari; Taka, Masahiro; and Murakami, Hideyo, to Nippon Telegraph & Telephone Public Corporation. Decoder of adaptive differential pulse code modulation. 4,574,383, Cl. 375-27.000.

Irimajiri, Shoichiro; Komuro, Katsusuke; and Aikawa, Kunihiko, to Honda Giken Kogyo Kabushiki Kaisha. Three-wheeled motor vehicle. 4,573,546, Cl. 180-89.100.

Ishiai, Yoshio: *See—*
Hirano, Yutaka; Kawakami, Hirokazu; Tanaami, Masaaki; Kosano, Motohiko; Takagi, Hiroshi; Ishiai, Yoshio; and Iwahashi, Ituo, 4,573,880, Cl. 417-312.000.

Ishida, Tomio: *See—*
Hamazawa, Yoshikazu; Hirai, Tatsuro; Horikoshi, Tunenobu; and Ishida, Tomio, 4,574,262, Cl. 336-192.000.

Ishigaki, Yukinobu: *See—*
Hirohashi, Kazutoshi; and Ishigaki, Yukinobu, 4,574,390, Cl. 381-13.000.

Ishikawajima-Harima Jukogyo Kabushiki Kaisha: *See—*
Ichiyanagi, Toshikazu; Sudo, Kanzaburo; Kawai, Zenzaburo; Sekine, Shoji; and Teshigawara, Hiroshi, 4,573,908, Cl. 432-58.000.

Ishizaka, Hideo; and Hanzawa, Yoshiki, to Terumo Kabushiki Kaisha. Electronic clinical thermometer, and method of measuring body temperature. 4,574,359, Cl. 364-557.000.

Ishizuka, Akio: *See—*
Arakawa, Satoshi; Matsuda, Terumi; Ishizuka, Akio; and Shibahara, Yoshihiko, 4,574,102, Cl. 428-212.000.

Iskra, Michael J.: *See—*
Pieniak, Heinz A.; and Iskra, Michael J., 4,573,988, Cl. 604-379.000.

Isopedix Corporation: *See—*
Honeycutt, Travis W., 4,574,097, Cl. 428-36.000.

Ito, Hiroshisa: *See—*
Fujisaki, Masaru; Tsuchida, Tetsuo; Sasajima, Yoichi; Ito, Hiroshisa; and Morita, Masahiro, 4,573,745, Cl. 301-63.0PW.

Ito, Katsumi: *See—*
Yoshimura, Shingo; Ito, Katsumi; and Tanaka, Shigeru, 4,573,547, Cl. 180-168.000.

Ito, Yoshihiro. Autogenic training and treating apparatus. 4,573,472, Cl. 128-399.000.

Ito, Yuji: *See—*
Murata, Toshinori; Kazumi, Masafumi; and Ito, Yuji, 4,574,384, Cl. 377-58.000.

Itoh, Yoshikazu: *See—*
Watanabe, Fumio; and Itoh, Yoshikazu, 4,574,304, Cl. 358-84.000.

ITT Corporation: *See—*
Albritton, Charles W.; Powis, William N.; and Graham, William M., 4,573,912, Cl. 432-222.000.
Heesch, Max O., 4,573,738, Cl. 297-362.000.

IVAC Corporation: *See—*
Parker, Kenneth B., 4,573,968, Cl. 604-67.000.

Iwabori, Tomio: *See—*
Yoshida, Hiroshi; Toyoshima, Takefumi; Iwabori, Tomio; Ohkura, Hideaki; Miyamoto, Yasuo; Nishimura, Izumi; Oikawa, Toshiyuki; Sekijima, Kenji; and Ohashi, Makoto, 4,573,656, Cl. 248-562.000.

Iwahashi, Ituo: *See—*
Hirano, Yutaka; Kawakami, Hirokazu; Tanaami, Masaaki; Kosano, Motohiko; Takagi, Hiroshi; Ishiai, Yoshio; and Iwahashi, Ituo, 4,573,880, Cl. 417-312.000.

Iwami, Hidefumi: *See—*
Tabata, Kuniaki; Tsuhara, Susumu; Machida, Tetsuo; Iwami, Hidefumi; and Okada, Yasuyuki, 4,574,364, Cl. 364-900.000.

J, K. Lasers Limited: *See—*
Ireland, Clive L. M., 4,573,765, Cl. 350-286.000.

Jacks, Thomas M.: *See—*
Fisher, Michael H.; and Jacks, Thomas M., 4,574,125, Cl. 514-284.000.

Jacob, Keith, to Multi-Elmac Company. FM Signal demodulator. 4,574,247, Cl. 329-126.000.

Jacob, Werner, to INA Walzlager Schaeffler KG. Shaft mounting. 4,573,809, Cl. 384-493.000.

Jacobson, Chester F., to Gillette Company, The. Razor blade assembly. 4,573,266, Cl. 30-41.000.

Jacobsson, Kurt A. G.: *See—*
Hellstrom, Jerker; Tholander, Lars H. G.; and Jacobsson, Kurt A. G., 4,574,353, Cl. 364-470.000.

Jacquett, Harold W.: *See—*
Musto, Joseph A.; Scarella, Robert A.; Jacquett, Harold W.; Riolo, Angelo V.; and Della Fave, Nicholas I., 4,574,089, Cl. 426-386.000.

Jailor, John J.: *See—*
Baird, Thomas E., Sr.; and Jailor, John J., 4,573,235, Cl. 15-328.000.

Jansen, Martin B.: *See—*
Pomonik, George M.; and Jansen, Martin B., 4,573,425, Cl. 114-230.000.

Jansson, Kim: *See—*
Savikurki, Jarmo; and Jansson, Kim, 4,573,929, Cl. 440-54.000.

Janszen, Jeffrey G. Water powered batting device. 4,573,679, Cl. 273-26.00E.

Jaraczewski, Kathleen A.: *See—*
Arrington, John P.; Jaraczewski, Kathleen A.; Moisson, Marc F.; and Wisecarver, Martin L., 4,573,607, Cl. 221-25.000.

Jarrett, Robert B.: *See—*
Hess, Robert M.; and Jarrett, Robert B., 4,574,221, Cl. 315-209.00T.

Jason, Barry L., to Motorola, Inc. Logarithmic digitally variable gain controlled amplifier. 4,574,251, Cl. 330-279.000.

Jasper Corporation, The: *See—*
Frobose, James W., 4,573,740, Cl. 297-452.000.

Jaussaud, Pierre: *See—*
Cantin, Michel; Jaussaud, Pierre; and Olivella, Roger, 4,573,414, Cl. 104-202.000.

Jeffreys, Arthur H.: *See—*
Holden, John; Colombrito, Sam; and Jeffreys, Arthur H., 4,573,941, Cl. 446-451.000.

Jenner, Frank H.: *See—*
Smith, John L.; and Jenner, Frank H., 4,573,756, Cl. 339-117.00P.

Jeschke, Willi, to Heidelberger Druckmaschinen AG. Inking mechanism for offset printing machines. 4,573,407, Cl. 101-148.000.

Jett, James H.: *See—*
Martin, John C.; and Jett, James H., 4,573,796, Cl. 356-318.000.

Jewell, Jack L., to United States of America, Air Force. Optical flip-flop system. 4,573,767, Cl. 350-354.000.

Jewett, Gary L.: *See—*
McLachlan, Richard D.; Jewett, Gary L.; and Evans, John C., 4,573,761, Cl. 350-96.240.

John Zink Company: *See—*
Schwartz, Robert E.; Noble, Roger K.; and Keller, Michael R., 4,573,906, Cl. 431-202.000.

Johns Hopkins University, The: *See—*
Fischell, Robert E.; and Lord, Peter C., 4,573,994, Cl. 604-891.000.
Potember, Richard S.; Poehler, Theodore O.; and Benson, Richard C., 4,574,366, Cl. 365-153.000.

Johnson, Carl N.; Phadke, Hemant; and Sieling, Roger L., to Ranco Incorporated. Pressure control device and method of making the same. 4,573,398, Cl. 92-101.000.

Johnson, Carl W.; and Kotschi, Stanley W., to H. B. Fuller Company. Apparatus and method for transferring and applying material. 4,574,022, Cl. 156-164.000.

Johnson, Harold K., to Mid America Machine Corp. Slitter assembly for double fold bottomer apparatus. 4,573,956, Cl. 493-237.000.

Johnson, James R.: *See—*
Daniel, Vernon T.; Johnson, James R.; and Robbins, Edward J., 4,573,353, Cl. 73-198.000.

Johnson, Stanley J.; and Gold, Gary L., to Deere & Company. Spout aimer with feed roll rotation sensing. 4,573,849, Cl. 414-334.000.

Johnson, Thomas E., to Timberjack Inc. Snubbing apparatus for grapples and the like. 4,573,728, Cl. 294-119.400.

Johnson, Thomas M.: *See—*
Mantela, Ralph F.; Brady, Charles J.; Johnson, Thomas M.; Larsen, Hugh W.; and Schallhorn, Thomas L., 4,573,842, Cl. 410-23.000.

Joint Lock Corporation, The: *See—*
Orchard, Melvin C.; and Rogers, Michael, 4,573,721, Cl. 292-145.000.

Jokel, Isidore. Window intrusion barrier. 4,573,285, Cl. 49-55.000.

Jonergin, Inc.: *See—*
Kwiatek, Alfred; and Schwartz, Jack W., 4,573,996, Cl. 604-897.000.

Jones, Bruce D.: *See—*
Starling, Jeffrey T.; and Jones, Bruce D., 4,573,603, Cl. 220-5.00R.

Jones, Carol R.: *See—*
Baum, Thomas H.; Houle, Frances A.; Jones, Carol R.; and Kovac, Caroline A., 4,574,095, Cl. 427-53.100.

Jones, Charles E.: *See—*
Dellinger, Thomas B.; Hoppe, Eugene A.; and Jones, Charles E., 4,573,540, Cl. 175-61.000.

Jones, Donald A.; Wawra, Gerhard F.; and Moss, William R., to Baker Perkins, Pty., Ltd. Positive pressure dough divider. 4,573,898, Cl. 425-145.000.

Jones, Eugene R.: *See—*
Dang, Lam Q.; Geer, Charles P.; Houdek, Merle E.; Jones, Eugene R.; Soltis, Frank G.; Soyring, John A.; and Walker, Thomas M., 4,574,351, Cl. 364-200.000.

Jones, Frank W. Dicing device for sliced food articles. 4,573,384, Cl. 83-404.300.

Jones, Michael D.; and Longford, James B., to Dowty Mining Equipment Limited. Roof support suitable for use in mines. 4,573,828, Cl. 405-293.000.

Jones, Stanley C., to Marathon Oil Company. Apparatus and method for the automatic porosity and permeability testing of multiple core samples. 4,573,342, Cl. 73-38.000.

Jones, Trevor O., to TRW Inc. Tire pressure warning system. 4,574,267, Cl. 340-58.000.

Joormann, Hendrik J. M.; and Spierings, Gijsbertus A. C. M., to U.S. Philips Corporation. Germanium-free optical fibers having large numerical apertures. 4,573,762, Cl. 350-96.340.

Jos. Hunkeler Ltd.: *See—*
Felix, Willi, 4,573,670, Cl. 270-39.000.

Josse, Jean-Jacques; Pujols, Guy; and Di Vincenzo, Serge, to Societe Nationale Elf Aquitaine. Multi-drain drilling and petroleum production start-up device. 4,573,541, Cl. 175-78.000.

Jost, Ernest M.: *See—*
Conaway, Donald E., Jr.; and Jost, Ernest M., 4,573,265, Cl. 29-879.000.

Jovanovic, Milenko, to Bayerische Motoren Werke Aktiengesellschaft. Resistance welding apparatus. 4,574,175, Cl. 219-86.100.

Juaire, Phillip R.; Wagner, Fredric M.; and Wildgen, Leo F., to Satellite Industries, Inc. Method of forming an end panel for a building and door unit. 4,574,025, Cl. 156-245.000.

Jung, Ingvar K. E., to Westinghouse Electric Corp. Steam generator flow control device. 4,573,526, Cl. 165-134.100.

Junkers, Gerd, to Wahlco, Inc. Injection probe. 4,573,638, Cl. 239-397.500.

K-Line Industries, Inc.: *See—*
Kammeraad, James A., 4,573,340, Cl. 72-479.000.

Kabbe, Hans-Joachim; Krause, Hans-Peter; and Sitt, Rudiger, to Bayer Aktiengesellschaft. Lipid absorption-inhibiting agents and their use. 4,574,124, Cl. 514-228.000.

Kabe, Kazuyuki; and Morikawa, Tuneo, to Yokohama Rubber Co., Ltd., The. Pneumatic tire. 4,573,511, Cl. 152-548.000.

Kabushiki Kaisha Daikin Seisakusho: *See—*
Kajitani, Kouji; and Fukushima, Hirotaka, 4,573,945, Cl. 464-68.000.
Koshimo, Masahiko; and Murakami, Kiyoharu, 4,573,374, Cl. 74-574.000.

Kabushiki Kaisha Honda Rokku: *See—*
Kitagawa, Tadao; Kosuge, Yutaka; Noda, Yoichiro; and Sato, Tomosaburo, 4,574,192, Cl. 250-227.000.

Kabushiki Kaisha Kawai Gakki Seisakusho: *See—*
Saito, Tsutomu, 4,573,390, Cl. 84-115.000.

Kabushiki Kaisha Kawakami Seisakusho: *See—*
Nasu, Nobuo, 4,573,834, Cl. 408-16.000.

Kabushiki Kaisha Kobe Seiko Sho: *See—*
Amano, Itaru; Maikuma, Yoshimata; Ozaki, Keiji; and Ohnishi, Hisaaki, 4,573,859, Cl. 414-628.000.
Kitamura, Minoru; Yoshii, Kenta; Kawasaki, Shozo; Matsuo, Katsuyoshi; and Tomonaga, Mitsuo, 4,573,515, Cl. 164-468.000.

Kabushiki Kaisha Komatsu Seisakusho: *See—*
Inatomi, Takao, 4,574,343, Cl. 364-184.000.
Kajiyama, Koichi; Moro, Norio; Sajiki, Kazuaki; and Yamaguchi, Tadayoshi, 4,573,792, Cl. 356-301.000.

Kabushiki Kaisha Matsuura Kikai Seisakusho: *See—*
Kondo, Koji, 4,573,833, Cl. 408-3.000.

Kabushiki Kaisha Meidensha: *See—*
Sueoka, Tetsuro; and Kubo, Takeharu, 4,574,296, Cl. 357-38.000.

Kabushiki Kaisha Suwa Seikosha: *See—*
Momose, Masao, 4,574,323, Cl. 360-99.000.

Kabushiki Kaisha Toshiba: *See—*
Iikura, Shoichi, 4,573,727, Cl. 294-115.000.
Sanbayashi, Takeshi; and Oushiden, Hideshi, 4,573,787, Cl. 355-14.00E.
Takikawa, Osamu; and Harata, Mitsuo, 4,574,292, Cl. 346-76.0PH.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See—*
Ohno, Makoto; Kobayashi, Hisao; and Kato, Kimio, 4,573,878, Cl. 417-270.000.

Kabushiki Kaisha Toyota Chuo Kenkyusho: *See—*
Takahashi, Hideaki; Kondo, Haruyoshi; Takeuchi, Takashi; Hayakawa, Kiyoharu; and Muraki, Hideaki, 4,574,264, Cl. 338-34.000.

Kabushiki Kaisha Universal: *See—*
Okada, Kazuo, 4,573,681, Cl. 273-143.00R.

Kaiser, Gunther; and Nitschke, Werner, to Robert Bosch GmbH. System for monitoring the sensor responsive to a periodic condition in an internal combustion engine. 4,574,265, Cl. 340-52.00R.

Kaiser, Hans-Georg: *See—*
Lindemann, Bernd; Landwehr, Gotz; and Kaiser, Hans-Georg, 4,573,386, Cl. 83-833.000.

Kajitani, Kouji; and Fukushima, Hirotaka, to Kabushiki Kaisha Daikin Seisakusho. Damper disc of a long travel type. 4,573,945, Cl. 464-68.000.

Kajiyama, Koichi; Moro, Norio; Sajiki, Kazuaki; and Yamaguchi, Tadayoshi, to Kabushiki Kaisha Komatsu Seisakusho. Method of and apparatus for quantitative analysis in accordance with CARS. 4,573,792, Cl. 356-301.000.

Kaletsky, Robert B. Apparatus for the automatic purging of the reservoir in a water recirculation system. 4,573,490, Cl. 137-124.000.

Kalina, Dale G.: *See—*
Horwitz, E. Philip; and Kalina, Dale G., 4,574,072, Cl. 423-9.000.

Kalns, Ilmars, to Eaton Corporation. Fail-safe device for an electrical power assisted steering system including an in-line clutch mechanism. 4,573,545, Cl. 180-79.100.

Kaltenbach & Voight GmbH & Co.: *See—*
Bareth, Erich, 4,573,918, Cl. 433-127.000.

Kambin, Parviz, to Pilling Co. Method for decompressing herniated intervertebral discs. 4,573,448, Cl. 128-1.00R.

Kamioka, Hiroshi: *See—*
Honda, Yasuhiro; Ueno, Katumi; Nishizaki, Genichi; Kitahara, Harumi; and Kamioka, Hiroshi, 4,573,261, Cl. 29-701.000.

Kammeraad, James A., to K-Line Industries, Inc. Valve guide liner broaching tool. 4,573,340, Cl. 72-479.000.

Kamo, Hisao: *See—*
Yamagishi, Haruo; and Kamo, Hisao, 4,574,298, Cl. 357-71.000.

Kampf, Richard S., to Beckman Instruments, Inc. Coil spring conveyor for positioning an external radioactive standard in a liquid scintillation counter. 4,574,196, Cl. 250-328.000.

Kamstra, Paulus R., to Duphar International Research B.V. Automatic injection device. 4,573,971, Cl. 604-191.000.

Kamstra, Paulus R., to Duphar International Research B.V. Automatic injection device. 4,573,972, Cl. 604-191.000.

Kan, C. Eric: *See—*
Sharma, Rajeeva; and Kan, C. Eric, 4,573,402, Cl. 100-38.000.

Kanai, Seita; and Kanazawa, Hirotaka, to Mazda Motor Corporation. Suspension and steering control of motor vehicles. 4,573,705, Cl. 280-708.000.

Kanayama, Katsumi, to Olympus Optical Company Limited. Automatic backspace device for a tape recorder. 4,574,321, Cl. 360-74.100.

Kanazawa, Hirotaka: *See—*
Kanai, Seita; and Kanazawa, Hirotaka, 4,573,705, Cl. 280-708.000.

Kaneda, Michihiro: *See—*
Sugiyama, Seiji; Suenaga, Norihiro; Suenaga, Nobuyuki; and Kaneda, Michihiro, 4,573,465, Cl. 128-303.100.

Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See—*
Samejima, Yasushi; Shiga, Minoru; Kano, Toshiji; Saiki, Koji; and Nishio, Tsutomu, deceased, 4,574,037, Cl. 204-98.000.

Kano, Toshiji: *See—*
Samejima, Yasushi; Shiga, Minoru; Kano, Toshiji; Saiki, Koji; and Nishio, Tsutomu, deceased, 4,574,037, Cl. 204-98.000.

Kaplan, Henry S.; Teng, Nelson N. H.; Lam, Kit S.; and Calvo-Riera, Francisco, to Leland Stanford Jr. University, The Board of Trustees of the. Methods and cell lines for immortalization and monoclonal antibody production by antigen-stimulated B-lymphocytes. 4,574,116, Cl. 435-68.000.

Kaplan, Isaac R.: *See—*
Demaison, Gerard J.; and Kaplan, Isaac R., 4,574,118, Cl. 436-29.000.

Kappertz, Fritz: *See—*
Bergrath, Siegmar; and Kappertz, Fritz, 4,573,575, Cl. 206-380.000.

Kapralov, Valery K.: *See—*
Garkusha, Ivan S.; Kazak, Vadim N.; and Kapralov, Valery K., 4,573,531, Cl. 166-259.000.

Karabin, Tadeusz: *See—*
Coppin, William P.; and Karabin, Tadeusz, 4,573,907, Cl. 431-351.000.

Karami, Hamzeh; and Delvaux, Myriam, to Colgate-Palmolive Company. Disposable diaper and method of manufacture. 4,573,989, Cl. 604-381.000.

Karlsson, Gosta K.: *See—*
Hurtig, Mats E.; and Karlsson, Gosta K., 4,573,352, Cl. 73-189.000.

Karrasch, Frank; and Love, John F., to Baxter Travenol Laboratories, Inc. Port protector. 4,573,980, Cl. 604-256.000.

Kartinos, Nicholas J.: *See—*
Dolkart, Ralph E.; and Kartinos, Nicholas J., 4,574,085, Cl. 424-148.000.

Kasai, Chihiro: *See—*
Namekawa, Koroku; Koyano, Akira; and Kasai, Chihiro, 4,573,477, Cl. 128-663.000.

Kasner, William H.; Miller, Richard A.; and Toth, Vincent A., to Westinghouse Electric Corp. Beam alignment system for laser welding system. 4,574,180, Cl. 219-121.0LY.

Kasperkovitz, Wolfdietrich G.; and Van Rumpt, Herman W., to U.S. Philips Corporation. Crystal resonator oscillator having circuitry for suppressing undesired crystal harmonics. 4,574,257, Cl. 331-116.00R.

Kasting, Edward W., to Cummins Engine Company, Inc. Oil pump arrangement for supplying oil under pressure in an internal combustion engine. 4,573,439, Cl. 123-195.00A.

Katayama, Kaoru, to Nissan Motor Co., Ltd. Pneumatic journal bearing. 4,573,808, Cl. 384-114.000.

Kato, Chiaki: *See—*
Ogino, Takao; Katsuya, Hiroo; Kato, Chiaki; Kato, Itsuro; and Kato, Tsutomu, 4,573,428, Cl. 118-60.000.

Kato, Hiroshi, to Fuji Xerox Co., Ltd. Picture image filing apparatus. 4,574,395, Cl. 382-61.000.

Kato, Itsuro: *See—*
Ogino, Takao; Katsuya, Hiroo; Kato, Chiaki; Kato, Itsuro; and Kato, Tsutomu, 4,573,428, Cl. 118-60.000.

Kato, Kiichi: *See—*
Takemura, Haruhiko; Kato, Kiichi; and Sakamoto, Masaharu, 4,574,371, Cl. 369-100.000.

Kato, Kimio: *See—*
Ohno, Makoto; Kobayashi, Hisao; and Kato, Kimio, 4,573,878, Cl. 417-270.000.

Kato, Masatake, to Canon Kabushiki Kaisha. Viewfinder having two image planes. 4,573,781, Cl. 354-201.000.

Kato, Tsutomu: *See—*
Ogino, Takao; Katsuya, Hiroo; Kato, Chiaki; Kato, Itsuro; and Kato, Tsutomu, 4,573,428, Cl. 118-60.000.

Kato, Yoshitake; and Naoi, Mitsuaki, to Hitachi Maxell, Ltd.; and Matsumi Electric Co. Recording disc cartridge. 4,573,572, Cl. 206-303.000.

Katou, Shinji: *See—*
Donomoto, Tadashi; Tanaka, Atsuo; and Katou, Shinji, 4,573,519, Cl. 164-97.000.

Katsuya, Hiroo: *See—*
Ogino, Takao; Katsuya, Hiroo; Kato, Chiaki; Kato, Itsuro; and Kato, Tsutomu, 4,573,428, Cl. 118-60.000.

Katz, David, to Metalworking Lasers International Ltd. Apparatus for establishing and maintaining a stable discharge across a stream of flowing gas, particularly useful for high-power lasers. 4,574,381, Cl. 372-87.000.

Kaufman, Charles E.; Shetler, Marvin R.; and Sharp, William M., to Restroom Facilities Corporation. Prefabricated, self-contained building. 4,573,292, Cl. 52-79.100.

Kaufman, Lance R. Compact circuit package with improved construction for clamping to enhance heat transfer. 4,574,162, Cl. 174-16.0HS.

Kavoussi, James P.; and Hartford, Louise D. Scent-awake electronic clock. 4,573,804, Cl. 368-12.000.

Kawaguchi, Yozo: *See—*
Arakawa, Mutsumi; Ueno, Junichi; Kawaguchi, Yozo; Shimura, Norio; Matsunaga, Shoichi; and Fukaya, Kiyoshi, 4,574,283, Cl. 340-825.080.

Kawahara, Akira: *See—*
Imahashi, Hiromichi; Kawahara, Akira; Konishi, Takao; Morimoto, Yoshihumi; Terui, Michio; and Yagi, Yoshio, 4,573,629, Cl. 228-173.200.

Kawai, Osamu; Yamamoto, Kazuo; and Yokote, Yoshihiro, to NSK-Warner K.K. Latch device for a webbing anchor. 4,573,709, Cl. 280-804.000.

Kawai, Zenzaburo: *See—*
Ichiyanagi, Toshikazu; Sudo, Kanzaburo; Kawai, Zenzaburo; Sekine, Shoji; and Teshigawara, Hiroshi, 4,573,908, Cl. 432-58.000.

Kawakami, Hirokazu: *See—*
Hirano, Yutaka; Kawakami, Hirokazu; Tanaami, Masaaki; Kosano, Motohiko; Takagi, Hiroshi; Ishiai, Yoshio; and Iwahashi, Ituo, 4,573,880, Cl. 417-312.000.

Kawasaki, Shozo: *See—*
Kitamura, Minoru; Yoshii, Kenta; Kawasaki, Shozo; Matsuo, Katsuyoshi; and Tomonaga, Mitsuo, 4,573,515, Cl. 164-468.000.

Kaza, Michael D.; and Sauers, Paul S., to Neville Chemical Company. Compositions for printing ink varnishes. 4,574,057, Cl. 260-101.000.

Kazak, Vadim N.: *See—*
Garkusha, Ivan S.; Kazak, Vadim N.; and Kapralov, Valery K., 4,573,531, Cl. 166-259.000.

Kazumi, Masafumi: *See—*
Murata, Toshinori; Kazumi, Masafumi; and Ito, Yuji, 4,574,384, Cl. 377-58.000.

KDI Sylvan Pools, Inc.: *See—*
van den Broek, William A., 4,574,048, Cl. 210-136.000.

Keene, Terrell M.; Calhoun, Wiley C.; Flemming, Edgar J.; Haggard, Eugene E.; Taylor, David L.; Hartley, Richard N.; Martinez, Francisco J.; Sullivan, Harry E.; Mason, Arvil B.; and Lucas, Wayne M. Plastic-pipe locator tool. 4,573,829, Cl. 405-157.000.

Keller, Michael R.: *See—*
Schwartz, Robert E.; Noble, Roger K.; and Keller, Michael R., 4,573,906, Cl. 431-202.000.

Kelly, Thomas C.; Wurscher, Robert J.; Petrich, Dennis M.; and Rideout, Earl H., to Micro Component Technology, Inc. Transmission line connector and contact set assembly for test site. 4,574,235, Cl. 324-158.00F.

Kemp, Michael F.; and Champagne, Claude J., to Northern Telecom Limited. Interface arrangement for a telephone system or the like. 4,574,375, Cl. 370-67.000.

Kendall Company, The: *See—*
Annis, Larry D., 4,573,983, Cl. 604-322.000.

Kendall, Joyce M.: *See—*
Gupte, Anil J.; and Kendall, Joyce M., 4,574,052, Cl. 252-90.000.

Kennard, Reed H.; and Miller, Lewis R., to Vickers, Incorporated. Power transmission. 4,573,365, Cl. 74-15.800.

Kennard, Reed H., to Vickers, Incorporated. Power transmission. 4,573,366, Cl. 74-15.800.

Kennedy, Melvin R.; Nagel, Dietmar; and Arad, Abraham A., to Buddy L Corporation. Motorized toy vehicle. 4,573,943, Cl. 446-463.000.

Kennel, Gordon H. Sled apparatus. 4,573,695, Cl. 280-20.000.

Kern, Hans: *See—*
Arens, Hans; Kern, Hans; and Haslberger, Richard, 4,573,491, Cl. 137-218.000.

Kerrigan, Jerome J.; and Domanowski, Gregory E., to F. J. Kerrigan Plumbing Co. Deicing method and apparatus. 4,573,802, Cl. 366-152.000.

Kervennal, Jacques; and Durual, Pierre, to ATOCHEM. Decane-1,10-diisocyanates and methods of making the same. 4,574,059, Cl. 560-347.000.

Kiamil, Sinan B.: *See—*
Potter, William D.; and Kiamil, Sinan B., 4,574,130, Cl. 523-111.000.

Kidd, Inc.: *See—*
Kimura, Shoichi, 4,574,056, Cl. 252-514.000.

Kienzle Apparate GmbH: *See—*
Adams, Jurgen; and Scholl, Hans-Peter, 4,574,189, Cl. 235-30.00R.

Kikuchi, Hidetomo, to N.C.A. Co., Ltd. Apparatus for unrolling and spreading rolled cloth. 4,573,618, Cl. 226-42.000.

Kikuchi, Yoshiki: *See—*
Moriguchi, Haruhiko; Kikuchi, Yoshiki; and Ohmori, Takashi, 4,574,281, Cl. 340-783.000.

Kikukawa, Katsuyoshi: *See—*
Maki, Mitsuo; Hosoo, Tomohiro; and Kikukawa, Katsuyoshi, 4,573,817, Cl. 401-65.000.

Kim, In S. Power efficient motor starter and circuit breaker for an induction motor. 4,574,229, Cl. 318-788.000.

Kimberly-Clark Corporation: *See—*
Endres, Dan D.; and Matray, Attila, 4,574,021, Cl. 156-152.000.
Huffman, Dawn M., 4,573,964, Cl. 604-15.000.
Kloehn, Kurt J.; Rajala, Gregory J.; and Abel, Kent W., 4,573,382, Cl. 83-53.000.
Sheldon, Donald A., 4,573,963, Cl. 604-15.000.

Kimberly-Clark Limited: *See—*
Maddison, David; and Dawson, Christopher, 4,573,612, Cl. 222-94.000.

Kimmich, Karl C., to Mobil Oil Corporation. Heater treater economizer system. 4,573,911, Cl. 432-179.000.

Kimura, Shoichi, to Kidd, Inc. Die-bonding electroconductive paste. 4,574,056, Cl. 252-514.000.

King, Martin J., to Extracorporeal Medical Specialties, Inc. Electronic control methods for puvapheresis apparatus. 4,573,961, Cl. 604-6.000.

Kinghorn, John R., to U.S. Philips Corporation. Dynamically operable two-phase logic circuits. 4,574,386, Cl. 377-121.000.

Kingo, Takao: *See—*
Goto, Shinji; Kingo, Takao; Ochi, Akira; and Yoshikawa, Yoshiro, 4,573,694, Cl. 280-5.00A.

Kingston, Leo: *See—*
Krauss, Timothy A.; and Kingston, Leo, 4,573,871, Cl. 416-20.00R.

Kinsman, Donald V.; and Luken, Clement H., Jr., to National Distillers and Chemical Corporation. Soap/syndet bars filled with fatty acid coated reactive filler. 4,574,053, Cl. 252-134.000.

Kipp, Robert M.; and Ayers, Ray R., to Shell Oil Company. Belle-lock grip device. 4,573,713, Cl. 285-319.000.

Kirchhoff, Kenneth J., to Minnesota Mining and Manufacturing Company. Applicator tip assembly for a pen-like instrument. 4,573,820, Cl. 401-214.000.

Kirchner-Carl, Angelika. Furniture structural component. 4,573,741, Cl. 297-452.000.

Kirk, Kenneth H.; and Tarbuck, Robert R., to Sperry Corporation. Apparatus for maintaining electronic component pin alignment. 4,573,254, Cl. 29-564.800.

Kirkplastic Company Incorporated: *See—*
Hyde, Kirk R., 4,573,711, Cl. 283-98.000.
Kishimoto, Yoshio: *See—*
Uemura, Seiichi; Hirose, Takao; Sohda, Yoshio; Sakamoto, Takayoshi; and Kishimoto, Yoshio, 4,574,077, Cl. 423-447.600.
Kitagawa, Tadao; Kosuge, Yutaka; Noda, Yoichiro; and Sato, Tomosaburo, to Honda Giken Kogyo K.K.; Kabushiki Kaisha Honda Rokku; and Kokoku Control Cable Kabushiki Kaisha. Flexible fiber optic tying member for theftproof device. 4,574,192, Cl. 250-227.000.
Kitahara, Harumi: *See—*
Honda, Yasuhiro; Ueno, Katumi; Nishizaki, Genichi; Kitahara, Harumi; and Kamioka, Hiroshi, 4,573,261, Cl. 29-701.000.
Kitamoto, Manabu, to Tokyo Shibaura Denki Kabushiki Kaisha. Blower. 4,573,869, Cl. 415-182.000.
Kitamura, Minoru; Yoshii, Kenta; Kawasaki, Shozo; Matsuo, Katsuyoshi; and Tomonaga, Mitsuo, to Kabushiki Kaisha Kobe Seiko Sho. Method for electromagnetically stirring molten steel in continuous casting. 4,573,515, Cl. 164-468.000.
Kitchin, Dwight W., to Aspen Laboratories, Inc. Fluid pump. 4,573,888, Cl. 417-560.000.
Klem, Richard H. Anti-pitch suspension. 4,573,702, Cl. 280-697.000.
Kliever, Waldo W., to Hughes Aircraft Company. Dual field of view sensor. 4,574,197, Cl. 250-334.000.
Klintland: *See—*
Nilsson, Karl-Ivar, 4,573,687, Cl. 273-184.00B.
Kloehn, Kurt J.; Rajala, Gregory J.; and Abel, Kent W., to Kimberly-Clark Corporation. Apparatus and method for cutting a web. 4,573,382, Cl. 83-53.000.
Klufas, Oleg: *See—*
Emeterio, Eloy V.; Deallenbach, Robert E.; O'Connor, Martin F.; and Klufas, Oleg, 4,573,875, Cl. 416-198.00A.
Klusman, Ronald W.: *See—*
Voorhees, Kent J.; and Klusman, Ronald W., 4,573,354, Cl. 73-432.00R.
KMW Aktiebolag: *See—*
Myren, Harry I., 4,574,033, Cl. 162-198.000.
Knaack, Howard L.; and Weger, Kenneth F., Jr., to Knaack Manufacturing Company. Vehicle storage drawer unit. 4,573,731, Cl. 296-376.000.
Knaack Manufacturing Company: *See—*
Knaack, Howard L.; and Weger, Kenneth F., Jr., 4,573,731, Cl. 296-376.000.
Knaebel, Kent S., to EcoEnergy I, Ltd. Power generating cycle. 4,573,321, Cl. 60-649.000.
Knaus, Ernest, to Goodyear Aerospace Corporation. Collapsible storage tank. 4,573,508, Cl. 150-55.000.
Knauss, Hermann, to E.G.O. Elektro-Gerate Blanc u. Fischer. Electrically heated deep fryer. 4,574,183, Cl. 219-438.000.
Knorr-Bremse GmbH: *See—*
Nadas, Julius, 4,573,553, Cl. 188-59.000.
Ko, Michael A., to International Business Machines Corporation. Variable length character code system. 4,574,382, Cl. 375-25.000.
Kobayashi, Hisao: *See—*
Ohno, Makoto; Kobayashi, Hisao; and Kato, Kimio, 4,573,878, Cl. 417-270.000.
Kobayashi, Kazuo, to Alps Electric Co., Ltd. Carriage driving apparatus. 4,573,368, Cl. 74-108.000.
Kobayashi, Kazutomo, to NEC Corporation. Multiple access system and method. 4,574,378, Cl. 370-104.000.
Kobayashi, Kesanao; Toyama, Tadao; and Yoshida, Susumu, to Fuji Photo Film Co., Ltd. Developing apparatus for forming an image in light-sensitive material using photopolymerizable composition. 4,573,782, Cl. 354-299.000.
Kobayashi, Kiyoshi: *See—*
Saeki, Kimihiro; and Kobayashi, Kiyoshi, 4,573,230, Cl. 15-41.00R.
Kobayashi, Masahiro, to Sony Corporation. Apparatus for mounting an electron gun assembly within the glass neck of a cathode ray tube. 4,574,008, Cl. 65-155.000.
Kobayashi, Ryohei: *See—*
Yamamoto, Toshiro; Kobayashi, Ryohei; Kurimoto, Mamoru; and Ozone, Toshio, 4,574,016, Cl. 148-144.000.
Kobold, Klaus. Float-type flowmeter. 4,573,361, Cl. 73-861.710.
Koch, Paul E.: *See—*
Cull, Ronald C.; Hartman, Robert A.; and Koch, Paul E., 4,574,160, Cl. 136-245.000.
Koch, Scott R.: *See—*
Miller, Dennis; and Koch, Scott R., 4,573,250, Cl. 29-447.000.
Kochte, Werner W.; and Meeker, Paul K., to Scott & Fetzer Company, The. Hand-held vacuum cleaner. 4,573,234, Cl. 15-323.000.
Kochte, Werner W.; and Nimon, Susan K., to Scott & Fetzer Company, The. Hand vacuum with tilting intake. 4,573,237, Cl. 15-344.000.
Koda, Minoru: *See—*
Asada, Takafumi; Yoshida, Churyo; Koda, Minoru; and Ohno, Hideaki, 4,573,807, Cl. 384-100.000.
Kodera, Kimio, to Platinum Pen Co., Ltd. Cap assembly for a single or plural writing instruments. 4,573,818, Cl. 401-131.000.
Koh-I-Noor Rapidograph, Inc.: *See—*
Bruhn, Bernhard, 4,573,503, Cl. 141-24.000.
Kohler, Karl A.; and House, Richard F., to Container Corporation of America. Tamper-evident carton. 4,573,634, Cl. 229-38.000.
Kohler, Karl-Heinz: *See—*
Pischke, Reiner; and Kohler, Karl-Heinz, 4,573,440, Cl. 123-333.000.
Koide, Hiroshi; Watanabe, Junichi; and Tenmyo, Shigemoto, to Ricoh Co., Ltd. Tracking/focusing device for positioning an optical lens unit. 4,574,369, Cl. 369-44.000.
Koike, Eishi, to Ozen Corporation. Sound reproduction selection apparatus for a simplified sound reproducing device. 4,574,370, Cl. 369-65.000.
Kojima, Tadashi: *See—*
Inagawa, Jun; Nagumo, Masahide; and Kojima, Tadashi, 4,574,361, Cl. 364-761.000.
Todokoro, Shigeru; and Kojima, Tadashi, 4,574,206, Cl. 307-359.000.
Kokoku Control Cable Kabushiki Kaisha: *See—*
Kitagawa, Tadao; Kosuge, Yutaka; Noda, Yoichiro; and Sato, Tomosaburo, 4,574,192, Cl. 250-227.000.
Kollmorgen Technologies Corporation: *See—*
DeLuca, Michael A.; and McCormack, John F., 4,574,094, Cl. 427-96.000.
Komuro, Katsusuke: *See—*
Irimajiri, Shoichiro; Komuro, Katsusuke; and Aikawa, Kunihiko, 4,573,546, Cl. 180-89.100.
Kondo, Haruyoshi: *See—*
Takahashi, Hideaki; Kondo, Haruyoshi; Takeuchi, Takashi; Hayakawa, Kiyoharu; and Muraki, Hideaki, 4,574,264, Cl. 338-34.000.
Kondo, Koji, to Kabushiki Kaisha Matsuura Kikai Seisakusho. Nozzle device for cutting fluid for machine tools. 4,573,833, Cl. 408-3.000.
Kondo, Yoshihisa, to Alps Electric Co., Ltd. Intercharacter space processing apparatus for printers. 4,573,812, Cl. 400-121.000.
Konesky, Gregory A., to Advanced Parallel Systems, Inc. Multiprocessor computer system utilizing a tapped delay line instruction bus. 4,574,345, Cl. 364-200.000.
Konge, Shinichi: *See—*
Morishita, Mitsuharu; and Konge, Shinichi, 4,574,275, Cl. 340-636.000.
Konishi, Masahiro, to Fuji Photo Film Co., Ltd. Electronic camera having non-image data recorder. 4,574,319, Cl. 358-335.000.
Konishi, Takao: *See—*
Imahashi, Hiromichi; Kawahara, Akira; Konishi, Takao; Morimoto, Yoshihumi; Terui, Michio; and Yagi, Yoshio, 4,573,629, Cl. 228-173.200.
Konzak, Peter. Bird scaring device. 4,573,427, Cl. 116-22.00A.
Koong, Terrence H.: *See—*
Arnold, Jeffrey M.; Brosnahan, James R.; Koong, Terrence H.; Mans, Thomas A.; and Milo, Theodore A., 4,573,478, Cl. 128-670.000.
Kordomenos, Panagiotis I.; Dervan, Andrew H.; and Grebur, Dennis J., to Ford Motor Company. Thermosetting coating composition useful as primer and chip resistant primer II'. 4,574,146, Cl. 525-530.000.
Korn, Heinrich. Chair with a height-adjustable back rest. 4,573,737, Cl. 297-353.000.
Kortenbach & Rauh Kommanditgesellshaft: *See—*
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Kosano, Motohiko: *See—*
Hirano, Yutaka; Kawakami, Hirokazu; Tanaami, Masaaki; Kosano, Motohiko; Takagi, Hiroshi; Ishiai, Yoshio; and Iwahashi, Ituo, 4,573,880, Cl. 417-312.000.
Koshimo, Masahiko; and Murakami, Kiyoharu, to Kabushiki Kaisha Daikin Seisakusho. Vibration damper assembly. 4,573,374, Cl. 74-574.000.
Koster, William H.: *See—*
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Kosuge, Yutaka: *See—*
Kitagawa, Tadao; Kosuge, Yutaka; Noda, Yoichiro; and Sato, Tomosaburo, 4,574,192, Cl. 250-227.000.
Kotaka, Ikuo, to Babcock-Hitachi Kabushiki Kaisha. Heat exchanger. 4,573,524, Cl. 165-96.000.
Kotschi, Stanley W.: *See—*
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Kovac, Caroline A.: *See—*
Baum, Thomas H.; Houle, Frances A.; Jones, Carol R.; and Kovac, Caroline A., 4,574,095, Cl. 427-53.100.
Koyano, Akira: *See—*
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Kraftwerk Union Aktiengesellschaft: *See—*
Schwerdtner, Otto v.; and Dinstuhl, Klaus, 4,573,551, Cl. 181-218.000.
Kralick, James, to Mechanical Technology Incorporated. Combustion system. 4,573,320, Cl. 60-517.000.
Kramer, John H.: *See—*
Hamilton, Kent R.; and Kramer, John H., 4,573,271, Cl. 33-169.00C.
Krause, Charles A.; and Rajaram, Babu, to Zenith Radio Corporation. Selective page disable for a video display. 4,574,277, Cl. 340-703.000.
Krause, Hans-Peter: *See—*
Kabbe, Hans-Joachim; Krause, Hans-Peter; and Sitt, Rudiger, 4,574,124, Cl. 514-228.000.
Krauss, Timothy A.; and Kingston, Leo, to United States of America, Army. X-Wing aircraft circulation control. 4,573,871, Cl. 416-20.00R.
Kress-Electrik GmbH & Co.: *See—*
Binder, Alfred, 4,574,226, Cl. 318-317.000.
Krol, Thomas C. Percutaneous gastrostomy kit. 4,573,576, Cl. 206-471.000.
Kronenthal, David; Kuester, Paula L.; and Koster, William H., to E. R. Squibb & Sons, Inc. 8-Oxo-2-oxa-1-azabicyclo(4.2.0)octane-3-carboxylic acids. 4,574,153, Cl. 544-63.000.

Krones AG Hermann Kronseder Maschinenfabrik: *See—*
Weiss, Wilhelm, 4,573,486, Cl. 134-104.000.
Krug, Russell R., to Chevron Research Company. Method for spent catalyst treating for fluidized catalytic cracking systems. 4,574,044, Cl. 208-120.000.
Kruger, Bernd-Wieland; Lockhoff, Oswald; Stadler, Peter; Metzger, Karl G.; Opitz, Hans-Georg; Stunkel, Klaus G.; and Zeiler, Hans-Joachim, to Bayer Aktiengesellschaft. Substituted O-acylglycosylamides, pharmaceutical compositions and method of use. 4,574,122, Cl. 514-42.000.
Kruschik, Klaus: *See—*
Nowak, Gerhard; Winter, Alfred; Morbitzer, Hans P.; Kruschik, Klaus; and Taucher, Robert, 4,573,701, Cl. 280-616.000.
Krutchen, Charles M.; Ranjan, Raj; and Yang, Jan-Chin, to Mobil Oil Corporation. Melt rheometer control. 4,573,345, Cl. 73-56.000.
Kubo, Takeharu: *See—*
Sueoka, Tetsuro; and Kubo, Takeharu, 4,574,296, Cl. 357-38.000.
Kubota, Ltd.: *See—*
Yoshimura, Shingo; Ito, Katsumi; and Tanaka, Shigeru, 4,573,547, Cl. 180-168.000.
Kuester, Paula L.: *See—*
Kronenthal, David; Kuester, Paula L.; and Koster, William H., 4,574,153, Cl. 544-63.000.
Kuhlman Corporation: *See—*
Cochran, John P.; and Macemon, Herbert J., 4,573,757, Cl. 339-126.0RS.
Kukoleck, Dennis G.: *See—*
Port, John H.; Kukoleck, Dennis G.; and Guezuraga, Robert M., 4,574,388, Cl. 378-144.000.
Kumihara Safe Co., Inc.: *See—*
Masachika, Hiroshi, 4,573,416, Cl. 109-66.000.
Kunst, Robert J.; Lahey, Gerald F.; and Wille, Herbert S., to Pullman Standard, Inc. Railway car underframe adapted for use with couple or drawbar construction. 4,573,594, Cl. 213-51.000.
Kuraray Co., Ltd.: *See—*
Sato, Toshiaki; Yamauchi, Junnosuke; and Okaya, Takuji, 4,574,139, Cl. 525-61.000.
Kurimoto, Ltd.: *See—*
Tadokoro, Yoshiharu, 4,573,492, Cl. 137-239.000.
Kurimoto, Mamoru: *See—*
Yamamoto, Toshiro; Kobayashi, Ryohei; Kurimoto, Mamoru; and Ozone, Toshio, 4,574,016, Cl. 148-144.000.
Kuroda, Kouki: *See—*
Nagashima, Nao; Suzuki, Koji; Nagahira, Jyoji; Kuroda, Kouki; and Takayanagi, Yoshiaki, 4,573,788, Cl. 355-14.00R.
Kurt Wolf & Co. KG: *See—*
Wolf, Kurt; and Andre, Wolfram K., 4,574,184, Cl. 219-440.000.
Kusazaki, Yoshimasa: *See—*
Arisawa, Yasuo; Kusazaki, Yoshimasa; Yamada, Hidetoshi; Watanabe, Akira; and Yunoki, Yutaka, 4,574,309, Cl. 358-212.000.
Kusz, Maximillian, to Owens-Illinois, Inc. Ring seal tamper indicating device. 4,573,582, Cl. 206-807.000.
Kuzmenko, Arnold: *See—*
Pfister, Jorg; and Kuzmenko, Arnold, 4,573,245, Cl. 28-187.000.
KW Marketing Incorporated: *See—*
Lamb, Kenneth A., Jr., 4,573,987, Cl. 604-378.000.
Kwiatek, Alfred; and Schwartz, Jack W., to Jonergin, Inc. Device for the administration of an active agent to the skin or mucosa. 4,573,996, Cl. 604-897.000.
LaBate, Micheal D. Slag and hot metal runner systems. 4,573,668, Cl. 266-196.000.
Labelle, Henri M. R. Vertical closure hinge with an anti-binding feature. 4,573,240, Cl. 16-355.000.
Laboratoire Spad: *See—*
Mezi, Michel A., 4,573,973, Cl. 604-197.000.
Laboratories Merck Sharp & Dohme - Chibret: *See—*
Paoletti, Jean-Claude, 4,573,506, Cl. 141-98.000.
Lacey, Ralph W., to Dijet Industrial Co., Ltd. Cutter blade. 4,573,831, Cl. 407-42.000.
LaCount, Clifford E.: *See—*
Dayton, Douglas C.; LaCount, Clifford E.; and McConchie, Burton G., 4,574,318, Cl. 358-285.000.
Lacy, Ernest R.: *See—*
Howell, Cecil A.; and Lacy, Ernest R., 4,573,847, Cl. 414-63.000.
Lade, Robert W.; Schutten, Herman P.; and Benjamin, James A., to Eaton Corporation. Raised split gate EFET and circuitry. 4,574,208, Cl. 307-577.000.
Lade, Robert W.; Schutten, Herman P.; and Benjamin, James A., to Eaton Corporation. Split gate EFET and circuitry. 4,574,209, Cl. 307-577.000.
Lade, Robert W.: *See—*
Benjamin, James A.; Schutten, Herman P.; and Lade, Robert W., 4,574,207, Cl. 307-577.000.
Lahey, Gerald F.: *See—*
Kunst, Robert J.; Lahey, Gerald F.; and Wille, Herbert S., 4,573,594, Cl. 213-51.000.
Lake, Norman M. Nasal sealer and filter. 4,573,461, Cl. 128-201.180.
Lam, Kit S.: *See—*
Kaplan, Henry S.; Teng, Nelson N. H.; Lam, Kit S.; and Calvo-Riera, Francisco, 4,574,116, Cl. 435-68.000.
Lamb, Kenneth A., Jr., to KW Marketing Incorporated. Reusable multi-layered diaper with wicking action. 4,573,987, Cl. 604-378.000.
Lamb, Steve; Moore, Robert R.; and La Porte, Frank, Jr. Lower extremity muscle conditioner device. 4,573,678, Cl. 272-96.000.
Lamb Technicon Corp.: *See—*
Anderson, Paul L., 4,573,862, Cl. 414-753.000.
Skrentner, Frank C., 4,573,840, Cl. 409-200.000.
Lamle, Stewart M.; and Setteducati, Mark. Educational puzzle cube. 4,573,683, Cl. 273-157.00R.
Lamphier, Wilbur N. Closed circuit heating system. 4,573,635, Cl. 237-70.000.
Landwehr, Gotz: *See—*
Lindemann, Bernd; Landwehr, Gotz; and Kaiser, Hans-Georg, 4,573,386, Cl. 83-833.000.
Lane, Jeffrey A., to Lucas Industries, Ltd. Bearings for gear pumps. 4,573,889, Cl. 418-73.000.
Lang, Hans-Jochen: *See—*
Seuring, Bernhard; Lang, Hans-Jochen; Hropot, Max; and Muschaweck, Roman, 4,574,128, Cl. 514-469.000.
Lange, Robert E.: *See—*
Van Doorn, Donald W.; Hawkins, James B.; Carpenter, Francis W., III; Lange, Robert E.; and Webb, Tommy W., 4,573,403, Cl. 100-43.000.
Lankton, Gordon B.; and Paradis, Joseph R., to Nypro Inc. Close pitch harnessing device. 4,573,242, Cl. 24-16.0PB.
La Porte, Frank, Jr.: *See—*
Lamb, Steve; Moore, Robert R.; and La Porte, Frank, Jr., 4,573,678, Cl. 272-96.000.
Large, Michael S.: *See—*
Edwards, Philip N.; and Large, Michael S., 4,574,123, Cl. 514-210.000.
Laroche, Pierre, to Glaverbel. Compositions incorporating glass beads and methods of preparing them. 4,574,109, Cl. 428-325.000.
Larsen, Hugh W.: *See—*
Mantela, Ralph F.; Brady, Charles J.; Johnson, Thomas M.; Larsen, Hugh W.; and Schallhorn, Thomas L., 4,573,842, Cl. 410-23.000.
Larson, James W.: *See—*
Tischer, James C.; and Larson, James W., 4,573,324, Cl. 62-115.000.
Larsson, Erik J., to Safe Bridge AB. Floating boom. 4,573,426, Cl. 114-267.000.
Lasso, Eugene R.; and Pitsko, John J., to Fuller Company. Blender bulk feed valve. 4,573,800, Cl. 366-101.000.
Laten, Bobby W.; and Prater, Johnny L., to United States of America, Army. Fiber deployment mechanism. 4,573,647, Cl. 244-3.120.
Lawler, Terry E.: *See—*
Gibbon, John D.; Lawler, Terry E.; Yoon, Hyun-Nam; and Charbonneau, Larry F., 4,574,066, Cl. 264-85.000.
Lawrence, James D., to Dailey Petroleum Services Corporation. Method and apparatus for flushing a well. 4,573,536, Cl. 166-373.000.
Lawrence, Peter Robin Broughton: *See—*
Adams, Brian W., 4,574,151, Cl. 536-31.000.
Lazarus, Wayne H.: *See—*
Frist, Brian S.; and Lazarus, Wayne H., 4,573,975, Cl. 604-192.000.
LeBlanc, James C.; and LeBlanc, Richard S., to General Motors Corporation. Turret control system. 4,573,397, Cl. 89-41.120.
LeBlanc, Richard S.: *See—*
LeBlanc, James C.; and LeBlanc, Richard S., 4,573,397, Cl. 89-41.120.
Lechaton, John S.; Pitner, Philip M.; and Srinivasan, Gurumakonda R., to International Business Machines Corporation. Method for making a high performance transistor integrated circuit. 4,573,256, Cl. 29-576.00B.
Leco Corporation: *See—*
Bredeweg, Roger L., 4,573,910, Cl. 432-156.000.
Lee, Chi-Long; Lim, Thomas F.; and Wright, Antony P., to Dow Corning Corporation. Fluorinated organosiloxane copolymers. 4,574,149, Cl. 528-42.000.
Lee, Graham L.; Shuttlewood, Jeffrey R.; and Ambrose, John W., to APV Burnett & Rolfe Ltd. Container washing and filling machine. 4,573,505, Cl. 141-92.000.
Lee, Shou-Yuan: *See—*
Cheng, Cheng-Yi; Lee, Shou-Yuan; Chen, Kwang-Ming; and Wo, Chee-Yuan, 4,574,141, Cl. 525-252.000.
Leem, Tae Y. Pencil case. 4,573,571, Cl. 206-214.000.
le Faou, Daniel: *See—*
Beyl, Jean; Bernard, Jean; le Faou, Daniel; and Peyre, Henri, 4,573,700, Cl. 280-605.000.
Lehmann, Werner; Fecker, Rainer; and Fuss, Manfred, to Mathias Bauerle GmbH. Paper folding machine. 4,573,672, Cl. 270-45.000.
Leifheit AG: *See—*
Denter, Ulrich; and Schulein, Rolf-Gunter, 4,573,387, Cl. 83-856.000.
Leiter Swank Industries, Inc.: *See—*
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Leland Stanford Jr. University, The Board of Trustees of the: *See—*
Kaplan, Henry S.; Teng, Nelson N. H.; Lam, Kit S.; and Calvo-Riera, Francisco, 4,574,116, Cl. 435-68.000.
Le Marquis, Jean-Claude: *See—*
Dohlen, Gerard; Le Marquis, Jean-Claude; and Oberlin, Claude, 4,573,628, Cl. 228-170.000.
Lemke, Otto; Stalherm, Dieter; and Hasck, Reimer, to Carl Still GmbH & Co. KG, Firma. Method for monitoring the reversal system of coke oven batteries. 4,574,034, Cl. 201-1.000.
Lensky, Albert: *See—*
Olesen, Paul; Lensky, Albert; and Pendzich, Richard J., 4,573,625, Cl. 227-131.000.
Leone-Bay, Andrea; and Timony, Peter E., to Stauffer Chemical Company. Herbicidal esters of N-substituted 2-bromo-4-methylimidazole-5-carboxylic acid. 4,574,010, Cl. 71-92.000.
Leschonski, Kurt; and Rothele, Stephan. Apparatus for producing a gas solid two phase flow jet having a constant mass or volume flow rate and predetermined velocity. 4,573,801, Cl. 366-154.000.

Leskovec, Robert A.: *See—*
Davenport, John M.; Hansler, Richard L.; Potter, Ralph M.; Blank, John M.; Speros, Dimitri M.; Homa, Arthur S.; Mishra, Amarendra; and Leskovec, Robert A., 4,574,219, Cl. 315-49.000.
Levenberg, Nat. Chair for handicapped persons. 4,573,736, Cl. 297-339.000.
Levine, Stephen N., to Motorola, Inc. Multiple frequency digital phase locked loop. 4,574,243, Cl. 328-155.000.
Lewis, Kermit E.; and Roberts, Arthur S., Jr., to Lewis, Kermit E., a part interest. Automatic pill dispenser and method of administering medical pills. 4,573,606, Cl. 221-2.000.
Leybold-Heraeus GmbH: *See—*
Spruck, Helmut, 4,574,178, Cl. 219-121.0ET.
L'Garde, Inc.: *See—*
Hirasuna, Alan R.; and Veal, Gordon R., 4,573,537, Cl. 166-387.000.
Libove, Joel M.; and Singer, Jerome R., to University of California, The Regents of the. Method for flow measurement using nuclear magnetic resonance. 4,574,240, Cl. 324-306.000.
Lichtenstein, Joseph: *See—*
Gordon, Marvin; and Lichtenstein, Joseph, 4,573,658, Cl. 251-95.000.
Lichy, Dale. Locks for articulated rolling grilles. 4,573,512, Cl. 160-133.000.
Liddiard, Kevin C., to Commonwealth of Australia, The. Infrared radiation detector. 4,574,263, Cl. 338-18.000.
Liebhardt, Josef; and Fuhrer, Rudolf, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung. Safety device for a weapon detonator or fuse. 4,573,411, Cl. 102-256.000.
Lienhard, Robert W., to Swiss Fabricating, Inc. Framework for building construction. 4,573,294, Cl. 52-93.000.
Lietzau, Joachim, to Mannesmann AG. Tower crane with hammer head adaptation. 4,573,593, Cl. 212-239.000.
Lifshitz, Ran: *See—*
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Lim, Thomas F.: *See—*
Lee, Chi-Long; Lim, Thomas F.; and Wright, Antony P., 4,574,149, Cl. 528-42.000.
Lindemann, Bernd; Landwehr, Gotz; and Kaiser, Hans-Georg, to Andreas Stihl. Saw chain for a power-driven chain saw. 4,573,386, Cl. 83-833.000.
Linger, Virgil S. Vehicle suspensions. 4,573,703, Cl. 280-701.000.
Lipschutz, James N., to Record Industrial Company. Distance measuring system using ultrasonic ranging. 4,574,368, Cl. 367-108.000.
Litton, Bruce W. Thumb and finger extension device. 4,573,459, Cl. 128-92.00A.
Litton Systems, Inc.: *See—*
Anderson, Robert H., 4,574,312, Cl. 358-213.000.
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Lockhoff, Oswald: *See—*
Kruger, Bernd-Wieland; Lockhoff, Oswald; Stadler, Peter; Metzger, Karl G.; Opitz, Hans-Georg; Stunkel, Klaus G.; and Zeiler, Hans-Joachim, 4,574,122, Cl. 514-42.000.
Loctite (Ireland) Ltd.: *See—*
Charnock, Ronald S., 4,574,142, Cl. 525-305.000.
Logue, Murl F. Shower head. 4,573,639, Cl. 239-428.500.
Long Reach Manufacturing Co.: *See—*
Sinclair, Stuart W., 4,573,858, Cl. 414-620.000.
Longford, James B.: *See—*
Jones, Michael D.; and Longford, James B., 4,573,828, Cl. 405-293.000.
Loomis, Gary S.: *See—*
Hill, William D.; Mercanti, William A., Jr.; Apple, Christian K.; and Loomis, Gary S., 4,574,068, Cl. 376-259.000.
Lord, Barry: *See—*
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Lord, Peter C.: *See—*
Fischell, Robert E.; and Lord, Peter C., 4,573,994, Cl. 604-891.000.
Lorenz, Gary. Gantries for hauling heavy loads over fixed paths. 4,573,853, Cl. 414-460.000.
Lorenz, Rainer, to Palitex Project-Company GmbH. Yarn wetting device particularly for use in a two-for-one twister. 4,573,314, Cl. 57-296.000.
Lorenzo, John L.: *See—*
Coppola, Vincent G.; Lorenzo, John L.; Grisgraber, Edwin G.; and Manduley, Flavio M., 4,574,352, Cl. 364-466.000.
Lotto, Ronald L.: *See—*
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Karrasch, Frank; and Love, John F., 4,573,980, Cl. 604-256.000.
Lovelace, Donald E.; Schexnayder, Michael C.; and Snyder, George W., to United States of America, Army. Plug nozzle kinetic energy penetrator rocket. 4,573,412, Cl. 102-374.000.
Lower, Jerry L., to Zimmer, Inc. Bone fixation plate. 4,573,458, Cl. 128-92.00D.
LTV Aerospace and Defense Company: *See—*
Murray, William J., 4,574,029, Cl. 156-500.000.
Lucas, Amand A.; Rife, Jack C.; and Donnelly, Stephen E. Method and device for producing photons in the ultraviolet-wavelength range. 4,574,198, Cl. 250-493.100.
Lucas Industries, Ltd.: *See—*
Lane, Jeffrey A., 4,573,889, Cl. 418-73.000.
Lucas Industries Public Limited Company: *See—*
Homes, Graham D., 4,573,659, Cl. 251-129.020.
Howes, Peter, 4,573,444, Cl. 123-502.000.
Lucas, Wayne M.: *See—*
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Ludecke, Otto A., to General Motors Corporation. Diesel exhaust cleaner and regeneration burner system with indexing particulate trap. 4,573,317, Cl. 60-303.000.
Ludwig, Albert R., to General Signal Corporation. Ball valve. 4,573,498, Cl. 137-625.470.
Luken, Clement H., Jr.: *See—*
Kinsman, Donald V.; and Luken, Clement H., Jr., 4,574,053, Cl. 252-134.000.
Lummus Industries, Inc.: *See—*
Van Doorn, Donald W.; Hawkins, James B.; Carpenter, Francis W., III; Lange, Robert E.; and Webb, Tommy W., 4,573,403, Cl. 100-43.000.
Lund, David: *See—*
Mullane, William E.; and Lund, David, 4,573,260, Cl. 29-623.100.
Lundblad, Leif. Arrangement for dispensing sheets from a store thereof, for example bank notes. 4,573,848, Cl. 414-104.000.
Lunenschloss, Joachim: *See—*
Brockmanns, Karl-Josef; and Lunenschloss, Joachim, 4,573,312, Cl. 57-5.000.
Luongo, Michael C., to Westinghouse Electric Corp. Turbine blade vibration detection apparatus. 4,573,358, Cl. 73-660.000.
Lyng, William E. Locker handle assembly. 4,573,722, Cl. 292-148.000.
M/A-COM, Inc.: *See—*
Cloutier, Donald C., 4,574,258, Cl. 333-21.00A.
M.A.N. Maschinenfabrik Augsburg-Nurnberg: *See—*
Grathoff, Hartmut, 4,573,743, Cl. 299-39.000.
M.A.N.-Roland Druckmaschinen Aktiengesellschaft: *See—*
Bezler, Wilhelm; and Stark, Ewald, 4,573,408, Cl. 101-248.000.
Ma, Hansan, to Idesign, Inc. Portable security box. 4,573,332, Cl. 70-30.000.
Maag, Wilhelm; and Straub, Paul, to Gebruder Buhler AG. Chain for a flight conveyor. 4,573,568, Cl. 198-731.000.
Maasberg, Wolfgang; and Huperz, Adalbert, to Woma-Apparatebau Wolfgang Massberg & Co. GmbH. Valve assembly for high pressure pump. 4,573,886, Cl. 417-454.000.
Mabuchi Motor Co., Ltd.: *See—*
Mabuchi, Takaichi, 4,574,215, Cl. 310-239.000.
Mabuchi, Takaichi, to Mabuchi Motor Co., Ltd. Brushgear for miniature motors. 4,574,215, Cl. 310-239.000.
Macdon Industries Ltd.: *See—*
Patterson, Roger L., 4,573,309, Cl. 56-228.000.
MacDonald, Richard A.: *See—*
Gondert, Theodore R.; and MacDonald, Richard A., 4,573,730, Cl. 296-1.00S.
Macemon, Herbert J.: *See—*
Cochran, John P.; and Macemon, Herbert J., 4,573,757, Cl. 339-126.0RS.
Machida, Tetsuo: *See—*
Tabata, Kuniaki; Tsuhara, Susumu; Machida, Tetsuo; Iwami, Hidefumi; and Okada, Yasuyuki, 4,574,364, Cl. 364-900.000.
Mackereth, Thomas C., to U.S. Philips Corporation. Television signal encoder. 4,574,302, Cl. 358-21.00R.
Maddin, Charles M.: *See—*
Crowe, Curtis W.; and Maddin, Charles M., 4,574,050, Cl. 252-8.55C.
Maddison, David; and Dawson, Christopher, to Kimberly-Clark Limited. Liquid soap dispenser. 4,573,612, Cl. 222-94.000.
Madsen, Bruce S.: *See—*
Dorey, John K., II; Huneke, James T.; Madsen, Bruce S.; and Schaaf, Theodore F., 4,574,031, Cl. 156-655.000.
Maier, Winfried, to Endress u. Hauser GmbH u. Co. Sensor for capacitively measuring the level of material in a container. 4,574,328, Cl. 361-284.000.
Maikuma, Yoshimata: *See—*
Amano, Itaru; Maikuma, Yoshimata; Ozaki, Keiji; and Ohnishi, Hisaaki, 4,573,859, Cl. 414-628.000.
Majorica, S.A.: *See—*
Plaza, Jaime P., 4,573,243, Cl. 24-116.00A.
Maki, Mitsuo; Hosoo, Tomohiro; and Kikukawa, Katsuyoshi, to Platinum Pen of America, Inc. Mechanical pencil. 4,573,817, Cl. 401-65.000.
Malachowski, Jerome A.; and Horvátis, James F., to Buffalo Brake Beam. Brake rigging for a railway vehicle truck. 4,573,555, Cl. 188-52.000.
Malhotra, Satish K., to Steyr-Daimler-Puch Aktiengesellschaft. Pistol and grip-and-trigger guard assembly. 4,573,280, Cl. 42-7.000.
Mall, Gunther; Dietrich, Herbert; and Stephan, Willi, to Pfaff Industriemaschinen GmbH. Sewing machine device for making garments with pleats. 4,573,421, Cl. 112-146.000.
Manduley, Flavio M.: *See—*
Coppola, Vincent G.; Lorenzo, John L.; Grisgraber, Edwin G.; and Manduley, Flavio M., 4,574,352, Cl. 364-466.000.
Manke, Kevin R., to Halliburton Company. Sleeve-type low pressure responsive APR tester valve. 4,573,535, Cl. 166-321.000.
Mannesmann AG: *See—*
Lietzau, Joachim, 4,573,593, Cl. 212-239.000.
Mannesmann Tally Corporation: *See—*
Shin, Warren J., 4,573,363, Cl. 74-1.0SS.

Mans, Thomas A.: *See—*
Arnold, Jeffrey M.; Brosnahan, James R.; Koong, Terrence H.; Mans, Thomas A.; and Milo, Theodore A., 4,573,478, Cl. 128-670.000.
Mantel Machine Products, Inc.: *See—*
Mantel, Robert W., 4,573,392, Cl. 86-43.000.
Mantel, Robert W., to Mantel Machine Products, Inc. In-line bullet feeder. 4,573,392, Cl. 86-43.000.
Mantela, Ralph F.; Brady, Charles J.; Johnson, Thomas M.; Larsen, Hugh W.; and Schallhorn, Thomas L., to General Motors Corporation. Resilient tie-down device. 4,573,842, Cl. 410-23.000.
Marathon Oil Company: *See—*
Jones, Stanley C., 4,573,342, Cl. 73-38.000.
Marconi Instruments Limited: *See—*
Smith, John L.; and Jenner, Frank H., 4,573,756, Cl. 339-117.00P.
Mares, Frank: *See—*
Boyle, William J., Jr.; Mares, Frank; and Wallo, Andrea M., 4,574,060, Cl. 558-457.000.
Marinari, Diane L.: *See—*
Grohoski, Jane L.; and Marinari, Diane L., 4,573,267, Cl. 30-133.000.
Marks, Alvin M. Ordered dipolar light-electric power converter. 4,574,161, Cl. 136-263.000.
Marley, Clement F. Mechanical chimney sweep control. 4,573,232, Cl. 15-163.000.
Marti, Juan P. Fastening device for pourer plugs. 4,573,615, Cl. 222-566.000.
Martin Engineering Company: *See—*
Swinderman, Robert T., 4,573,567, Cl. 198-860.400.
Martin, John C.; and Jett, James H., to United States of America, Energy. Apparatus for eliminating background interference in fluorescence measurements. 4,573,796, Cl. 356-318.000.
Martinez, Francisco J.: *See—*
Keene, Terrell M.; Calhoun, Wiley C.; Flemming, Edgar J.; Haggard, Eugene E.; Taylor, David L.; Hartley, Richard N.; Martinez, Francisco J.; Sullivan, Harry E.; Mason, Arvil B.; and Lucas, Wayne M., 4,573,829, Cl. 405-157.000.
Maruyama, Takashi, to Chinon Kabushiki Kaisha. Focusing controlling device. 4,573,783, Cl. 354-403.000.
Marx, Gunter H., to Solco Basel AG. Apparatus for receiving and reinfusing blood. 4,573,992, Cl. 604-408.000.
Marzendorfer, Hans; and Schaller, Werner, to Steirische Wasserkraft- und Elektrizitaets-AG. Method of and apparatus for reheating desulfurized waste gas. 4,573,418, Cl. 110-345.000.
Masachika, Hiroshi, to Kumihara Safe Co., Inc. After hour depository. 4,573,416, Cl. 109-66.000.
Masaki, Kazumi, to Hayashibara, Ken. Phase-regulated switching circuit. 4,574,230, Cl. 323-242.000.
Mason, Arvil B.: *See—*
Keene, Terrell M.; Calhoun, Wiley C.; Flemming, Edgar J.; Haggard, Eugene E.; Taylor, David L.; Hartley, Richard N.; Martinez, Francisco J.; Sullivan, Harry E.; Mason, Arvil B.; and Lucas, Wayne M., 4,573,829, Cl. 405-157.000.
Massaro, Vito. Modular storage rack for tapes. 4,573,749, Cl. 312-12.000.
Masuda, Akira: *See—*
Matsumura, Toshimi; Miyaki, Masahiko; and Masuda, Akira, 4,573,442, Cl. 123-450.000.
Masuda, Yutaka; and Nakamura, Teruo, to Toray Industries, Inc. Pile fabric production process. 4,574,018, Cl. 156-72.000.
Masuzawa, Takahisa; and Tsuchiya, Ichiro, to University of Tokyo. Ion beam machining device. 4,574,179, Cl. 219-121.0PG.
Mathias Bauerle GmbH: *See—*
Lehmann, Werner; Fecker, Rainer; and Fuss, Manfred, 4,573,672, Cl. 270-45.000.
Matray, Attila: *See—*
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Matsuda, Terumi: *See—*
Arakawa, Satoshi; Matsuda, Terumi; Ishizuka, Akio; and Shibahara, Yoshihiko, 4,574,102, Cl. 428-212.000.
Teraoka, Masanori; and Matsuda, Terumi, 4,574,195, Cl. 250-327.200.
Matsui, Kazuma: *See—*
Watanabe, Kiyohiko; Matsui, Kazuma; Hattori, Yoshiyuki; Takei, Toshihiro; Nakamura, Toshiaki; and Ohnishi, Shunsaku, 4,573,882, Cl. 417-366.000.
Matsumi Electric Co.: *See—*
Kato, Yoshitake; and Naoi, Mitsuaki, 4,573,572, Cl. 206-303.000.
Matsumoto, Masao, to Yoshida Kogyo K.K. Apparatus for forming gaps in a slide fastener chain. 4,573,383, Cl. 83-11.000.
Matsumura, Toshimi; Miyaki, Masahiko; and Masuda, Akira, to Nippondenso Co., Ltd. Fuel injection pump having a compact spill-port timing control unit. 4,573,442, Cl. 123-450.000.
Matsunaga, Shoichi: *See—*
Arakawa, Mutsumi; Ueno, Junichi; Kawaguchi, Yozo; Shimura, Norio; Matsunaga, Shoichi; and Fukaya, Kiyoshi, 4,574,283, Cl. 340-825.080.
Matsuo, Katsuyoshi: *See—*
Kitamura, Minoru; Yoshii, Kenta; Kawasaki, Shozo; Matsuo, Katsuyoshi; and Tomonaga, Mitsuo, 4,573,515, Cl. 164-468.000.
Matsushita Electric Industrial Co., Ltd.: *See—*
Asada, Takafumi; Yoshida, Churyo; Koda, Minoru; and Ohno, Hideaki, 4,573,807, Cl. 384-100.000.
Hamazawa, Yoshikazu; Hirai, Tatsuro; Horikoshi, Tunenobu; and Ishida, Tomio, 4,574,262, Cl. 336-192.000.
Matsushita Refrigeration Company: *See—*
Uetuji, Toshio; and Ohkubo, Noriaki, 4,573,879, Cl. 417-312.000
Mattel, Inc.: *See—*
Crow, Granville; Renger, Larry H.; and Sweet, Roger H., 4,573,944, Cl. 446-465.000.
Matthews, Andrew J.; and Thomas, Simon A., to Edeco Holding, Limited. Thermochemical energy storage. 4,574,051, Cl. 252-70.000.
Matthews, James R.: *See—*
Schattschneider, George K.; and Matthews, James R., 4,574,356, Cl. 364-508.000.
Matthews, John S., Jr., to Goodyear Tire & Rubber Company, The. Tire display stand. 4,573,587, Cl. 211-24.000.
Matzdorf, Burghard: *See—*
Muller, Erwin; Zakrzewski, Czeslaw; and Matzdorf, Burghard, 4,573,624, Cl. 227-121.000.
Maubach, Peter: *See—*
Ruffer, Alfred; Maubach, Peter; Haas, Johannes; and Quester, Horst, 4,573,484, Cl. 131-327.000.
Maxon Corporation: *See—*
Coppin, William P.; and Karabin, Tadeusz, 4,573,907, Cl. 431-351.000.
May, Karl-Heinz: *See—*
Blasius, Udo; May, Karl-Heinz; and Rodi, Anton, 4,573,410, Cl. 101-365.000.
Mayo, Howard A., Jr., to Allis-Chalmers Corporation. Laterally movable powerhouse. 4,573,827, Cl. 405-78.000.
Mayon, Allen J., to Conque, Louis J.; and Vincent, Rodney P. Joy stick holder. 4,573,682, Cl. 273-148.00B.
Mazda Motor Corporation: *See—*
Akutagawa, Hitoshi, 4,573,371, Cl. 74-339.000.
Kanai, Seita; and Kanazawa, Hirotaka, 4,573,705, Cl. 280-708.000.
Mazzocco, Thomas R., to Staar Surgical Co. Methods for implantation of deformable intraocular lenses. 4,573,998, Cl. 623-6.000.
McCaffrey, Felim, to Hatch Associates Ltd. Method of and apparatus for continuous centrifugal casting. 4,573,523, Cl. 164-460.000.
McConchie, Burton G.: *See—*
Dayton, Douglas C.; LaCount, Clifford E.; and McConchie, Burton G., 4,574,318, Cl. 358-285.000.
McCormack, John F.: *See—*
DeLuca, Michael A.; and McCormack, John F., 4,574,094, Cl. 427-96.000.
McCormick, Daniel J.: *See—*
Valenti, Richard L.; and McCormick, Daniel J., 4,573,239, Cl. 16-273.000.
McDonald, Gerald R. Maintenance tool for inaccessible wheel valves. 4,573,378, Cl. 81-463.000.
McDonough, M. J. Heat exchanger closure connection. 4,573,527, Cl. 165-154.000.
McFarland, Robert E. Apparatus for loading a wheelchair or similar object. 4,573,854, Cl. 414-462.000.
McFarlane, Richard H. Protective sheath structure for a catheter assembly. 4,573,981, Cl. 604-263.000.
McGonigle, Thomas P. Convenience dinner container and method. 4,574,174, Cl. 219-10.55M.
McKee, Graham E.: *See—*
Theysohn, Rainer; Dorst, Hans G.; McKee, Graham E.; Steinberger, Rolf; Ziegler, Walter; and Zahradnik, Franz, 4,574,131, Cl. 523-209.000.
McLachlan, Richard D.; Jewett, Gary L.; and Evans, John C., to Dow Chemical Company, The. Fiber-optic probe for sensitive Raman analysis. 4,573,761, Cl. 350-96.240.
McNally, George S.: *See—*
Hesch, Harold E.; and McNally, George S., 4,573,843, Cl. 410-58.000.
McNally, James C. Football training apparatus and methods of using same. 4,573,680, Cl. 273-55.00R.
McVay, William P.: *See—*
Golden, Donald M.; and McVay, William P., 4,573,469, Cl. 128-334.00C.
Mechanical Technology Incorporated: *See—*
Kralick, James, 4,573,320, Cl. 60-517.000.
Meckel, Walter, to Bayer Aktiengesellschaft. Process for the production of polyurethanes, polyurethanes containing terminal aromatic amino groups and their use. 4,574,147, Cl. 528-64.000.
Medical Engineering Corp.: *See—*
Finney, Roy P., 4,573,985, Cl. 604-349.000.
Mednis, Juris M., to Universal Symetrics Corporation. Mated container units. 4,573,595, Cl. 215-10.000.
Medrad, Inc.: *See—*
Reilly, David M., 4,573,978, Cl. 604-240.000.
Meeker, Paul K.: *See—*
Kochte, Werner W.; and Meeker, Paul K., 4,573,234, Cl. 15-323.000.
Mehoudar, Raphael, to Hydro-Plan Engineering Ltd. Irrigation emitter unit. 4,573,640, Cl. 239-542.000.
Mercanti, William A., Jr.: *See—*
Hill, William D.; Mercanti, William A., Jr.; Apple, Christian K.; and Loomis, Gary S., 4,574,068, Cl. 376-259.000.
Mercer, Frank B., to P.L.G. Research Limited. Plastics material mesh structure. 4,574,100, Cl. 428-134.000.
Merck & Co., Inc.: *See—*
Baldwin, John J.; and Ponticello, Gerald S., 4,574,127, Cl. 514-365.000.
Fisher, Michael H.; and Jacks, Thomas M., 4,574,125, Cl. 514-284.000.

Forbes, Alexander E.; and Haslam, John L., 4,573,982, Cl. 604-300.000.

Meritus Industries, Inc.: *See—*
Nottingham, John, 4,573,654, Cl. 248-231.100.

Merkator, Manfred; and Schmid, Karl, to Black & Decker Inc. Electromagnetic tacker. 4,573,621, Cl. 227-8.000.

Merkel, Volkmar: *See—*
Weikl, Andreas; and Merkel, Volkmar, 4,573,966, Cl. 604-53.000.

Meroni, Rico, to Forbo-Teppichwerk AG. Floor covering article. 4,573,299, Cl. 52-513.000.

Merrick, Edwin B.: *See—*
Dukes, John N.; and Merrick, Edwin B., 4,573,475, Cl. 128-653.000.

Merrien, Pierre A.: *See—*
Merrien, Pierre L.; and Merrien, Pierre A., 4,573,522, Cl. 164-456.000.

Merrien, Pierre L.; and Merrien, Pierre A., to Etude et Development en Metallurgie. Process and apparatus for automating a baking cycle under hot air of sand molds. 4,573,522, Cl. 164-456.000.

Merz, Eugen; Sandhaus, Sami; and Troger, Norbert. Occlusio-referential articulator. 4,573,915, Cl. 433-64.000.

Mesek, Virginia R.: *See—*
Pieniak, Heinz A.; and Mesek, Virginia R., 4,573,991, Cl. 604-385.00A.

Messer, Michelle. Unit dose medication dispenser. 4,573,580, Cl. 206-534.000.

Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung: *See—*
Liebhardt, Josef; and Fuhrer, Rudolf, 4,573,411, Cl. 102-256.000.

Metal Box p.l.c.: *See—*
Adams, John F. E.; Proffit, Philip J. G.; Oakley, Nicholas R.; and Folland, Rickworth, 4,573,597, Cl. 215-12.00R.

Metalworking Lasers International Ltd.: *See—*
Katz, David, 4,574,381, Cl. 372-87.000.

Metzger, Karl G.: *See—*
Kruger, Bernd-Wieland; Lockhoff, Oswald; Stadler, Peter; Metzger, Karl G.; Opitz, Hans-Georg; Stunkel, Klaus G.; and Zeiler, Hans-Joachim, 4,574,122, Cl. 514-42.000.

Meunier, Paul L., to Thomson-CSF. Elastic surface wave force sensor. 4,573,357, Cl. 73-517.00R.

Meyer, Klaus, to Swiss Aluminium Ltd. Process for manufacturing coarse, crystalline alumina. 4,574,073, Cl. 423-111.000.

Meyer, Wolfgang K.; and Breyer, Fritz-Werner, to Sulzer Brothers Limited. Apparatus for logistical operations with textile machinery. 4,573,856, Cl. 414-561.000.

Meyers, Wayne E. Burner unit for fireplace simulation. 4,573,905, Cl. 431-125.000.

Mezi, Michel A., to Laboratoire Spad. Case for protecting a syringe body. 4,573,973, Cl. 604-197.000.

Michael, David J.: *See—*
Perry, John D.; and Michael, David J., 4,574,119, Cl. 501-114.000.

Michaels, John H.: *See—*
Bolton, Theodore S.; and Michaels, John H., 4,573,328, Cl. 62-263.000.

Mickelson, Wilmer A., to Rockwell International Corporation. Multisensor demodulator and A/D converter. 4,574,245, Cl. 329-110.000.

Micro Component Technology, Inc.: *See—*
Kelly, Thomas C.; Wurscher, Robert J.; Petrich, Dennis M.; and Rideout, Earl H., 4,574,235, Cl. 324-158.00F.

Microglass, Inc.: *See—*
Butler, Robert M., 4,573,851, Cl. 414-404.000.

Mid America Machine Corp.: *See—*
Johnson, Harold K., 4,573,956, Cl. 493-237.000.

Midgley, John A.; and Hulett, Richard H., to Raychem Corporation. Elongate electrical assemblies. 4,574,188, Cl. 219-549.000.

Mieyal, David F., to Donn Incorporated. Honeycomb floor panel and the like. 4,573,304, Cl. 52-807.000.

Mihalik, Michael A.; Hoeren, Gerd H.; Reiney, Michael G.; Besemer, James J.; and Palmquist, Steven R., to Tektronix, Inc. Method and apparatus for time-aligning data. 4,574,354, Cl. 364-481.000.

Mikalonis, Liudas K., to Transmatic, Inc. Cornice lighting fixture for mass transit vehicles. 4,574,336, Cl. 362-260.000.

Miller, Brian S.; and Dunn, Aubrey J., to United States of America, Army. Indium bump hybrid bonding method and system. 4,573,627, Cl. 228-102.000.

Miller, Daniel R., to Buckhorn Material Handling Group Inc. Stackable container. 4,573,577, Cl. 206-506.000.

Miller, Dennis; and Koch, Scott R. Method of repairing a piston shaft assembly of a railway car end-of-car cushioning unit. 4,573,250, Cl. 29-447.000.

Miller, Edward B.: *See—*
Beatty, Robert M.; Miller, Edward B.; and Huber, Paul G., 4,574,355, Cl. 364-492.000.

Miller, Gregory R. Vehicle communicator. 4,574,269, Cl. 340-97.000.

Miller, Lewis R.: *See—*
Kennard, Reed H.; and Miller, Lewis R., 4,573,365, Cl. 74-15.800.

Miller, Richard A.: *See—*
Kasner, William H.; Miller, Richard A.; and Toth, Vincent A., 4,574,180, Cl. 219-121.0LY.

Mills, Kenneth R.: *See—*
Wilcox, Kenneth W.; and Mills, Kenneth R., 4,574,134, Cl. 524-157.000.

Milo, Theodore A.: *See—*
Arnold, Jeffrey M.; Brosnahan, James R.; Koong, Terrence H.; Mans, Thomas A.; and Milo, Theodore A., 4,573,478, Cl. 128-670.000.

Minagawa, Kazushi: *See—*
Hashimoto, Takaaki; Motoori, Ryuzo; and Minagawa, Kazushi, 4,574,303, Cl. 358-29.000.

Minetola, James A.; and Tucker, David R., to Procter & Gamble Company, The. Disposable waste-containment garment. 4,573,986, Cl. 604-366.000.

Minister of National Defence of Her Majesty's Canadian Government: *See—*
Schattschneider, George K.; and Matthews, James R., 4,574,356, Cl. 364-508.000.

Minnesota Mining and Manufacturing Co.: *See—*
Gerk, Alvin P., 4,574,003, Cl. 51-309.000.
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Minolta Camera Kabushiki Kaisha: *See—*
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Taniguchi, Nobuyuki; Hosomizu, Hiroshi; Tsuji, Kenji; Omaki, Takanobu; and Nakai, Masaaki, 4,573,786, Cl. 354-416.000.
Wada, Kenichi, 4,573,789, Cl. 355-14.0SH.

Minter, Mearl J.: *See—*
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Mishra, Amarendra: *See—*
Davenport, John M.; Hansler, Richard L.; Potter, Ralph M.; Blank, John M.; Speros, Dimitri M.; Homa, Arthur S.; Mishra, Amarendra; and Leskovec, Robert A., 4,574,219, Cl. 315-49.000.

Mr. Christmas Incorporated: *See—*
Spinelli, Enrico, 4,573,247, Cl. 29-417.000.

Mita Industrial Company, Ltd.: *See—*
Tsutsumi, Masahiro; Nakazawa, Toru; and Utsunomiya, Yasuharu, 4,574,114, Cl. 430-81.000.

Mitsubishi Chemical Industries Ltd.: *See—*
Oguri, Yasuo; Awata, Mitsuru; and Ariyama, Noriyuki, 4,574,012, Cl. 106-120.000.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Morishita, Mitsuharu; and Konge, Shinichi, 4,574,275, Cl. 340-636.000.

Mitsui Toatsu Chemicals, Incorporated: *See—*
Asano, Makoto; Hasegawa, Kiyoharu; Tamura, Yukio; and Oono, Yoshihiro, 4,574,110, Cl. 428-402.210.

Miyaki, Masahiko: *See—*
Matsumura, Toshimi; Miyaki, Masahiko; and Masuda, Akira, 4,573,442, Cl. 123-450.000.

Miyamoto, Hiroshi; and Omata, Tadao, to ORC Manufacturing Co., Ltd. Sheet material transfer apparatus. 4,573,676, Cl. 271-179.000.

Miyamoto, Yasuo: *See—*
Yoshida, Hiroshi; Toyoshima, Takefumi; Iwabori, Tomio; Ohkura, Hideaki; Miyamoto, Yasuo; Nishimura, Izumi; Oikawa, Toshiyuki; Sekijima, Kenji; and Ohashi, Makoto, 4,573,656, Cl. 248-562.000.

Miyazaki, Sachio; and Aoki, Shinichiro, to Fujitsu Limited. Synchronization method and apparatus in redundant time-division-multiple-access communication equipment. 4,574,377, Cl. 370-104.000.

Mizuno, Komei: *See—*
Morita, Masao; Sugimoto, Jiro; Mizuno, Komei; Tanaka, Motoaki; and Urano, Fumiyoshi, 4,574,156, Cl. 544-398.000.

Mizuno, Shinichi, to Olympus Optical Co., Ltd. Telephoto lens system. 4,573,770, Cl. 350-454.000.

Mnich, Axel: *See—*
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Mobil Oil Corporation: *See—*
Audeh, Costandi A.; and Offenhauer, Robert D., 4,573,530, Cl. 166-260.000.
Chester, Arthur W.; Garwood, William E.; and Vartuli, James C., 4,574,043, Cl. 208-59.000.
Dellinger, Thomas B.; Hoppe, Eugene A.; and Jones, Charles E., 4,573,540, Cl. 175-61.000.
Kimmich, Karl C., 4,573,911, Cl. 432-179.000.
Krutchen, Charles M.; Ranjan, Raj; and Yang, Jan-Chin, 4,573,345, Cl. 73-56.000.
Peterson, Robert D.; and Penner, Wayne A., 4,574,358, Cl. 364-550.000.

Mock, Edward A., to Garrett Corporation, The. Steam generating apparatus and methods. 4,573,323, Cl. 60-665.000.

Moeller, Robert P.: *See—*
Burns, William K.; and Moeller, Robert P., 4,573,797, Cl. 356-350.000.

Mohr, Friedemann: *See—*
Auch, Wilfried; Mohr, Friedemann; Schlemper, Eberhard; and Steudle, Walter, 4,573,795, Cl. 356-350.000.

Moisan, Louis E. Audible and visual indicator. 4,573,281, Cl. 43-17.000.

Moisson, Marc F.: *See—*
Arrington, John P.; Jaraczewski, Kathleen A.; Moisson, Marc F.; and Wisecarver, Martin L., 4,573,607, Cl. 221-25.000.

Momose, Masao, to Kabushiki Kaisha Suwa Seikosha. Flexible magnetic disk drive. 4,574,323, Cl. 360-99.000.

Monolithic Memories, Inc.: *See—*
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Monsanto Company: *See—*
Gomez, I. Luis, 4,574,136, Cl. 524-310.000.

Montblanc-Simplo GmbH: *See—*
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Montedison S.p.A.: *See—*
Cortesi, Paolo; Donati, Gianni; and Saggese, Giuseppe, 4,574,078, Cl. 423-592.000.

Moore, Alan. Regenerative turbomachine. 4,573,864, Cl. 415-53.00T.

Moore, Gerry W.: *See—*
Deighton, Guy A.; and Moore, Gerry W., 4,573,779, Cl. 354-4.000.

Moore, M. Samuel; and Paluka, Charles F., to Semco Instruments, Inc. Thermocouple isolation block system. 4,573,806, Cl. 374-144.000.

Moore, Paul E.: *See—*
Strohl, Robert L.; Moore, Paul E.; and Toth, Alexander, 4,573,665, Cl. 266-48.000.

Moore, Robert R.: *See—*
Lamb, Steve; Moore, Robert R.; and La Porte, Frank, Jr., 4,573,678, Cl. 272-96.000.

Moran, James P., Jr.; and Holmes, Mark. Rapid cure acrylic monomer systems containing elemental aluminum metal. 4,574,138, Cl. 524-786.000.

Morbitzer, Hans P.: *See—*
Nowak, Gerhard; Winter, Alfred; Morbitzer, Hans P.; Kruschik, Klaus; and Taucher, Robert, 4,573,701, Cl. 280-616.000.

Mordini, Jacques: *See—*
Cristol, Benoit; and Mordini, Jacques, 4,574,074, Cl. 423-124.000.

Moreira, Anthony F., to International Shoe Machine Corporation. Side and heel lasting machine. 4,573,229, Cl. 12-8.100.

Morenus, Richard C.; and Frazer, Alson C., to Ford Aerospace and Communications Corp. Ram air combustion steering system for a guided missile. 4,573,648, Cl. 244-3.220.

Morganite Ceramic Fibres Limited: *See—*
Foy, Martin, 4,573,400, Cl. 98-60.000.

Mori, Shosuke; Awaga, Makoto; Fujisaku, Kiminori; Yamauchi, Mitsuru; and Ono, Hitoshi, to Fujitsu Limited. Data processing apparatus for performing high-speed arithmetic operations. 4,574,347, Cl. 364-200.000.

Moriguchi, Haruhiko; Kikuchi, Yoshiki; and Ohmori, Takashi, to Fuji Xerox Co., Ltd. Image display device. 4,574,281, Cl. 340-783.000.

Moriguchi, Haruhiko: *See—*
Inui, Toshiharu; and Moriguchi, Haruhiko, 4,574,293, Cl. 364-76.0PH.

Morikawa, Tuneo: *See—*
Kabe, Kazuyuki; and Morikawa, Tuneo, 4,573,511, Cl. 152-548.000.

Morimoto, Yoshihumi: *See—*
Imahashi, Hiromichi; Kawahara, Akira; Konishi, Takao; Morimoto, Yoshihumi; Terui, Michio; and Yagi, Yoshio, 4,573,629, Cl. 228-173.200.

Morimoto, Yoshiro: *See—*
Hamada, Hideo; Morimoto, Yoshiro; Suga, Masaaki; Murasugi, Takashi; and Suzuki, Tadashi, 4,573,375, Cl. 74-863.000.

Morishige, Eiji: *See—*
Nomura, Hirokazu; Sato, Yukihiko; and Morishige, Eiji, 4,573,666, Cl. 266-80.000.

Morishima, Masaharu, to Funai Electric Company Limited. Stereophonic sound producing apparatus for a game machine. 4,574,391, Cl. 381-18.000.

Morishita, Mitsuharu; and Konge, Shinichi, to Mitsubishi Denki Kabushiki Kaisha. Battery charge indicating circuit. 4,574,275, Cl. 340-636.000.

Morita, Masahiro: *See—*
Fujisaki, Masaru; Tsuchida, Tetsuo; Sasajima, Yoichi; Ito, Hiroshisa; and Morita, Masahiro, 4,573,745, Cl. 301-63.0PW.

Morita, Masao; Sugimoto, Jiro; Mizuno, Komei; Tanaka, Motoaki; and Urano, Fumiyoshi, to Wako Pure Chemical Industries, Ltd. Polymethoxybenzyl piperazine derivatives effective for improving blood circulation system. 4,574,156, Cl. 544-398.000.

Morita, Yoshiyuki; and Nakamura, Hiroshi, to Nippondenso Co., Ltd. System including bi-directional drive mechanism. 4,573,723, Cl. 292-336.300.

Morlock, Ruben D. Can crushing machine. 4,573,405, Cl. 100-157.000.

Moro, Norio: *See—*
Kajiyama, Koichi; Moro, Norio; Sajiki, Kazuaki; and Yamaguchi, Tadayoshi, 4,573,792, Cl. 356-301.000.

Morrison, Ronald D. Self-propelled vehicle. 4,573,437, Cl. 123-44.00B.

Morton Thiokol, Inc.: *See—*
Bresser, Robert E.; and Wursthorn, Karl R., 4,574,135, Cl. 524-182.000.

Mory, Steven W.; and Lotto, Ronald L., to FMC Corporation. Apparatus for stacking thermoplastic sheets. 4,573,955, Cl. 493-204.000.

Moss, William E.: *See—*
Hoberman, Barry A.; and Moss, William E., 4,574,367, Cl. 365-179.000.

Moss, William R.: *See—*
Jones, Donald A.; Wawra, Gerhard F.; and Moss, William R., 4,573,898, Cl. 425-145.000.

Motoori, Ryuzo: *See—*
Hashimoto, Takaaki; Motoori, Ryuzo; and Minagawa, Kazushi, 4,574,303, Cl. 358-29.000.

Motor Wheel Corporation: *See—*
Daudi, Anwar R., 4,573,338, Cl. 72-333.000.

Motorola, Inc.: *See—*
Hess, Robert M.; and Jarrett, Robert B., 4,574,221, Cl. 315-209.00T.
Hulseweh, Terry S., 4,573,257, Cl. 29-576.00E.
Jason, Barry L., 4,574,251, Cl. 330-279.000.
Levine, Stephen N., 4,574,243, Cl. 328-155.000.
Petty, Thomas J., 4,574,232, Cl. 323-268.000.
Siwiak, Kazimierz, 4,574,290, Cl. 343-827.000.
Valentine, Richard J., 4,574,266, Cl. 340-52.00F.

Moussa, Zaher M., to Elliott Turbomachinery Co., Inc. Solid turbine wheel with guided discharge. 4,573,870, Cl. 415-202.000.

Mowill, Rolf J.: *See—*
Stroem, Sigmunn; and Mowill, Rolf J., 4,573,868, Cl. 415-157.000.

Muellenberg, Ralph. Apparatus for mounting a disk to a shaft. 4,573,825, Cl. 403-370.000.

Mukasa, Kohsuke: *See—*
Murata, Seiichiro; Tateishi, Masaru; Hayakawa, Kohji; Sakamoto, Takeshi; Takeuchi, Shin; and Mukasa, Kohsuke, 4,573,422, Cl. 114-65.00R.

Mullane, William E.; and Lund, David, to Taylor-Winfield Corporation, The. Induction heated intercell fusion for lead/acid storage battery. 4,573,260, Cl. 29-623.100.

Muller, Erwin; Zakrzewski, Czeslaw; and Matzdorf, Burghard, to Erwin Muller GmbH & Co. Portable electric stapler. 4,573,624, Cl. 227-121.000.

Muller, Norbert: *See—*
Henkel, Hans-Joachim; and Muller, Norbert, 4,574,111, Cl. 428-461.000.

Muller, Rolf; and Wurdak, Reinhold, to Papst-Motoren GmbH & Co. KG. Brushless D.C. motor. 4,574,211, Cl. 310-68.00R.

Multi-Elmac Company: *See—*
Jacob, Keith, 4,574,247, Cl. 329-126.000.

Murakami, Hideyo: *See—*
Irie, Kazunari; Taka, Masahiro; and Murakami, Hideyo, 4,574,383, Cl. 375-27.000.

Murakami, Kiyoharu: *See—*
Koshimo, Masahiko; and Murakami, Kiyoharu, 4,573,374, Cl. 74-574.000.

Muraki, Hideaki: *See—*
Takahashi, Hideaki; Kondo, Haruyoshi; Takeuchi, Takashi; Hayakawa, Kiyoharu; and Muraki, Hideaki, 4,574,264, Cl. 338-34.000.

Murasugi, Takashi: *See—*
Hamada, Hideo; Morimoto, Yoshiro; Suga, Masaaki; Murasugi, Takashi; and Suzuki, Tadashi, 4,573,375, Cl. 74-863.000.

Murata, Seiichiro; Tateishi, Masaru; Hayakawa, Kohji; Sakamoto, Takeshi; Takeuchi, Shin; and Mukasa, Kohsuke, to Hitachi Zosen Corporation. Ship without transverse reinforcing members between the inner and outer hull plating. 4,573,422, Cl. 114-65.00R.

Murata, Toshinori; Kazumi, Masafumi; and Ito, Yuji, to Hitachi, Ltd. Signal transfer system using a charge transfer device. 4,574,384, Cl. 377-58.000.

Murdick, Brian K.; and Haase, William H., to International Paper Company. Taco tray. 4,573,579, Cl. 206-525.000.

Murphy Management, Inc.: *See—*
Carlton, Lewis M.; O'Mary, Bob L.; and Cruse, Teddy H., 4,573,489, Cl. 137-59.000.

Murray, Russell: *See—*
Gignoux, Dominique; and Murray, Russell, 4,574,387, Cl. 378-56.000.

Murray, William J., to LTV Aerospace and Defense Company. Apparatus for forming concave tape wrapped composite structures. 4,574,029, Cl. 156-500.000.

Musashi Engineering Kabushiki Kaisha: *See—*
Nogi, Hiroyoshi; and Tanaka, Shigeru, 4,573,674, Cl. 271-118.000.

Muscat, Peter P. Convertible top frame. 4,573,732, Cl. 296-108.000.

Muschaweck, Roman: *See—*
Seuring, Bernhard; Lang, Hans-Jochen; Hropot, Max; and Muschaweck, Roman, 4,574,128, Cl. 514-469.000.

Muskat, Irwin: *See—*
Sheehy, Roger C.; and Muskat, Irwin, 4,574,087, Cl. 426-129.000.

Musto, Joseph A.; Scarella, Robert A.; Jacquett, Harold W.; Riolo, Angelo V.; and Della Fave, Nicholas I., to General Foods Corporation. Process for preparing a liquid coffee aroma. 4,574,089, Cl. 426-386.000.

Myochin, Hisashi; and Seino, Kuniki, to Minolta Camera Kabushiki Kaisha. Electrical charging apparatus for electrophotography. 4,574,326, Cl. 361-229.000.

Myren, Harry I., to KMW Aktiebolag. Method and apparatus for delivering a multilayer jet of stock to a forming surface in a papermaking machine. 4,574,033, Cl. 162-198.000.

N.C.A. Co., Ltd.: *See—*
Kikuchi, Hidetomo, 4,573,618, Cl. 226-42.000.

N P S P po Hydroplastichna Obrabotka na Metalite: *See—*
Petkov, Georgi K.; Netzov, Nikola M.; Botev, Botyo P.; and Bankovski, Dimiter N., 4,573,841, Cl. 409-244.000.

Nabisco Brands, Inc.: *See—*
Steensen, Wayne L.; and Weaver, Ronald C., 4,574,091, Cl. 426-548.000.

Nadas, Julius, to Knorr-Bremse GmbH. Disc brake. 4,573,553, Cl. 188-59.000.

Nagahira, Jyoji: *See—*
Nagashima, Nao; Suzuki, Koji; Nagahira, Jyoji; Kuroda, Kouki; and Takayanagi, Yoshiaki, 4,573,788, Cl. 355-14.00R.

Nagano, Katsumi, to Tokyo Shibaura Denki Kabushiki Kaisha. Temperature detecting transistor circuit. 4,574,205, Cl. 307-310.000.

Nagano, Masashi, to Shimano Industrial Company Limited. Derailleur for a bicycle. 4,573,949, Cl. 474-80.000.

Nagano, Masashi, to Shimano Industrial Company Limited. Chain guide in a front derailleur. 4,573,950, Cl. 474-80.000.

Nagano, Masashi, to Shimano Industrial Company Limited. Derailleur for a bicycle. 4,573,951, Cl. 474-82.000.

Nagashima, Nao; Suzuki, Koji; Nagahira, Jyoji; Kuroda, Kouki; and Takayanagi, Yoshiaki, to Canon Kabushiki Kaisha. Image forming device. 4,573,788, Cl. 355-14.00R.

Nagel, Dietmar: *See—*
Kennedy, Melvin R.; Nagel, Dietmar; and Arad, Abraham A., 4,573,943, Cl. 446-463.000.

Nagumo, Masahide: *See—*
Inagawa, Jun; Nagumo, Masahide; and Kojima, Tadashi, 4,574,361, Cl. 364-761.000.
Nair, Xina; and Temple, Davis L., Jr., to Bristol-Myers Company. Topical nonsteroidal anti-inflammatory methods. 4,574,129, Cl. 514-540.000.
Nakai, Masaaki: *See—*
Taniguchi, Nobuyuki; Hosomizu, Hiroshi; Tsuji, Kenji; Omaki, Takanobu; and Nakai, Masaaki, 4,573,786, Cl. 354-416.000.
Nakamats, Yoshiro. Putting training device for golfers. 4,573,686, Cl. 273-184.00A.
Nakamura, Hiroshi: *See—*
Morita, Yoshiyuki; and Nakamura, Hiroshi, 4,573,723, Cl. 292-336.300.
Nakamura, Teruo: *See—*
Masuda, Yutaka; and Nakamura, Teruo, 4,574,018, Cl. 156-72.000.
Nakamura, Toshiaki: *See—*
Watanabe, Kiyohiko; Matsui, Kazuma; Hattori, Yoshiyuki; Takei, Toshihiro; Nakamura, Toshiaki; and Ohnishi, Shunsaku, 4,573,882, Cl. 417-366.000.
Nakano, Kazuo: *See—*
Watanabe, Haruo; Nakano, Kazuo; and Ohnishi, Akito, 4,573,443, Cl. 123-492.000.
Nakata, Rikizo; Okumoto, Tadaoki; Ukai, Mikio; Suzuki, Takamasa; and Yamada, Tomoyoshi, to Toyoda Gosei Co., Ltd. Dust boot with multiple layer construction of bellows. 4,573,693, Cl. 277-212.0FB.
Nakata, Yuji, to Tokyo Shibaura Denki Kabushiki Kaisha. High temperature heat resistant structure. 4,573,872, Cl. 416-96.00A.
Nakazawa, Toru: *See—*
Tsutsumi, Masahiro; Nakazawa, Toru; and Utsunomiya, Yasuharu, 4,574,114, Cl. 430-81.000.
Nalco Chemical Company: *See—*
Ries, Donald G., 4,574,061, Cl. 260-512.00C.
Nam, Kyong H. Self-optimizing electrode and pulse-stabilized super high power C.W. gas lasers. 4,574,380, Cl. 372-87.000.
Namekawa, Koroku; Koyano, Akira; and Kasai, Chihiro, to Aloka Co., Ltd. Ultrasonic diagnostic apparatus. 4,573,477, Cl. 128-663.000.
Naoi, Mitsuaki: *See—*
Kato, Yoshitake; and Naoi, Mitsuaki, 4,573,572, Cl. 206-303.000.
Nash, Franklin R.: *See—*
Gordon, Eugene I.; Hartman, Robert L.; and Nash, Franklin R., 4,573,255, Cl. 29-574.000.
Nasu, Nobuo, to Kabushiki Kaisha Kawakami Seisakusho. Piercer. 4,573,834, Cl. 408-16.000.
National Distillers and Chemical Corporation: *See—*
Kinsman, Donald V.; and Luken, Clement H., Jr., 4,574,053, Cl. 252-134.000.
NEC Corporation: *See—*
Fujii, Shuzo; Shimada, Yuzo; Utsumi, Kazuaki; and Saito, Yutaka, 4,574,255, Cl. 331-25.000.
Kobayashi, Kazutomo, 4,574,378, Cl. 370-104.000.
Orikasa, Hiromi, 4,574,164, Cl. 179-2.0EB.
Yoshida, Yasuharu, 4,574,246, Cl. 329-124.000.
Nellis, Walter E.: *See—*
Gritters, Gregory A.; Nellis, Walter E.; and Featherstone, John L., 4,573,803, Cl. 366-167.000.
Netto, Daniel J. Human breast prosthesis. 4,573,999, Cl. 623-7.000.
Network Medical Containers Pty, Ltd.: *See—*
Galloway, Howard R.; and Shanks, Gary, 4,573,581, Cl. 206-570.000.
Netzov, Nikola M.: *See—*
Petkov, Georgi K.; Netzov, Nikola M.; Botev, Botyo P.; and Bankovski, Dimiter N., 4,573,841, Cl. 409-244.000.
Neugebauer, Constantine A.: *See—*
Glascock, Homer H., II; Neugebauer, Constantine A.; and Webster, Harold F., 4,574,299, Cl. 357-81.000.
Neville Chemical Company: *See—*
Kaza, Michael D.; and Sauers, Paul S., 4,574,057, Cl. 260-101.000.
Newman, Patricia T. Means and method of showing feelings. 4,573,927, Cl. 434-236.000.
Newman-Tonks Engineering Limited: *See—*
Phillips, Douglas C., 4,573,238, Cl. 16-79.000.
Nicolai, J. Steven. Failsafe security lock. 4,573,720, Cl. 292-144.000.
Niedecker, Herbert. Hanger loop assembly. 4,573,241, Cl. 17-44.200.
Niemann, Gary O. Fruit sizer. 4,573,583, Cl. 209-663.000.
Nillesen, Antonius H. H. J., to U.S. Philips Corporation. Line synchronizing circuit for a picture display device. 4,574,307, Cl. 358-158.000.
Nilsson, Karl-Ivar, to Klintland. Golf training device. 4,573,687, Cl. 273-184.00B.
Nimon, Susan K.: *See—*
Kochte, Werner W.; and Nimon, Susan K., 4,573,237, Cl. 15-344.000.
Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Suzuki, Norio, 4,573,389, Cl. 84-1.260.
Nippon Infrared Industries Co., Ltd.: *See—*
Sugiyama, Seiji; Suenaga, Norihiro; Suenaga, Nobuyuki; and Kaneda, Michihiro, 4,573,465, Cl. 128-303.100.
Nippon Kogaku K.K.: *See—*
Hashimoto, Takaaki; Motoori, Ryuzo; and Minagawa, Kazushi, 4,574,303, Cl. 358-29.000.
Nippon Kokan Kabushiki Kaisha: *See—*
Nomura, Hirokazu; Sato, Yukihiko; and Morishige, Eiji, 4,573,666, Cl. 266-80.000.
Nippon Mining Co., Ltd.: *See—*
Imahashi, Hiromichi; Kawahara, Akira; Konishi, Takao; Morimoto, Yoshihumi; Terui, Michio; and Yagi, Yoshio, 4,573,629, Cl. 228-173.200.
Nippon Oil Company Limited: *See—*
Uemura, Seiichi; Hirose, Takao; Sohda, Yoshio; Sakamoto, Takayoshi; and Kishimoto, Yoshio, 4,574,077, Cl. 423-447.600.
Nippon Piston Ring Kabushiki Kaisha: *See—*
Sakamaki, Hiroshi; Horikoshi, Yukio; and Yanagihashi, Kikuji, 4,573,891, Cl. 418-173.000.
Nippon Telegraph & Telephone Public Corporation: *See—*
Irie, Kazunari; Taka, Masahiro; and Murakami, Hideyo, 4,574,383, Cl. 375-27.000.
Nippondenso Co., Ltd.: *See—*
Matsumura, Toshimi; Miyaki, Masahiko; and Masuda, Akira, 4,573,442, Cl. 123-450.000.
Morita, Yoshiyuki; and Nakamura, Hiroshi, 4,573,723, Cl. 292-336.300.
Watanabe, Kiyohiko; Matsui, Kazuma; Hattori, Yoshiyuki; Takei, Toshihiro; Nakamura, Toshiaki; and Ohnishi, Shunsaku, 4,573,882, Cl. 417-366.000.
Nishikawa, Kenji: *See—*
Takahashi, Hirotake; and Nishikawa, Kenji, 4,573,698, Cl. 280-279.000.
Nishimura, Hiroyuki, to Omron Tateisi Electronics Co. Verifying system. 4,574,190, Cl. 235-449.000.
Nishimura, Izumi: *See—*
Yoshida, Hiroshi; Toyoshima, Takefumi; Iwabori, Tomio; Ohkura, Hideaki; Miyamoto, Yasuo; Nishimura, Izumi; Oikawa, Toshiyuki; Sekijima, Kenji; and Ohashi, Makoto, 4,573,656, Cl. 248-562.000.
Nishio, Haruko, legal representative: *See—*
Samejima, Yasushi; Shiga, Minoru; Kano, Toshiji; Saiki, Koji; and Nishio, Tsutomu, deceased, 4,574,037, Cl. 204-98.000.
Nishio, Tsutomu, deceased: *See—*
Samejima, Yasushi; Shiga, Minoru; Kano, Toshiji; Saiki, Koji; and Nishio, Tsutomu, deceased, 4,574,037, Cl. 204-98.000.
Nishiyama, Yosuke, to Toyota Jidosha Kabushiki Kaisha. Apparatus for assembling front under portion of vehicle body. 4,573,626, Cl. 228-6.100.
Nishizaki, Genichi: *See—*
Honda, Yasuhiro; Ueno, Katumi; Nishizaki, Genichi; Kitahara, Harumi; and Kamioka, Hiroshi, 4,573,261, Cl. 29-701.000.
Nishizawa, Jun-ichi; and Tamamushi, Takashige, to Nishizawa, Jun-ichi. One-dimensional semiconductor imaging device. 4,574,310, Cl. 358-212.000.
Nissan Motor Co., Ltd.: *See—*
Eguchi, Shinsuke, 4,573,560, Cl. 192-87.100.
Hamada, Hideo; Morimoto, Yoshiro; Suga, Masaaki; Murasugi, Takashi; and Suzuki, Tadashi, 4,573,375, Cl. 74-863.000.
Katayama, Kaoru, 4,573,808, Cl. 384-114.000.
Takasaki, Masaru; and Aoyama, Masutoshi, 4,574,338, Cl. 362-278.000.
Nissan Shatai Company, Limited: *See—*
Goto, Shinji; Kingo, Takao; Ochi, Akira; and Yoshikawa, Yoshiro, 4,573,694, Cl. 280-5.00A.
Nitschke, Werner: *See—*
Kaiser, Gunther; and Nitschke, Werner, 4,574,265, Cl. 340-52.00R.
Nixon, Michael T. Acoustical panels. 4,574,099, Cl. 428-68.000.
Noble, David, to Glaxo Group Limited. Cephalosporin compounds. 4,574,152, Cl. 544-4.000.
Noble, Roger K.: *See—*
Schwartz, Robert E.; Noble, Roger K.; and Keller, Michael R., 4,573,906, Cl. 431-202.000.
Noda, Yoichiro: *See—*
Kitagawa, Tadao; Kosuge, Yutaka; Noda, Yoichiro; and Sato, Tomosaburo, 4,574,192, Cl. 250-227.000.
Nogi, Hiroyoshi; and Tanaka, Shigeru, to Musashi Engineering Kabushiki Kaisha. Device for delivery of paper sheets for an apparatus for counting the number of paper sheets. 4,573,674, Cl. 271-118.000.
Nomura, Hirokazu; Sato, Yukihiko; and Morishige, Eiji, to Nippon Kokan Kabushiki Kaisha. Apparatus for quenching butt-welded portion of rail. 4,573,666, Cl. 266-80.000.
Nomura, Takao: *See—*
Ohyama, Toru; and Nomura, Takao, 4,574,201, Cl. 307-243.000.
Nonnenmacher, Ronald C.; and Tinder, David V., to United Technologies Automotive, Inc. Method and apparatus for measuring hysteresis of a position sensor. 4,573,341, Cl. 73-1.00D.
Noon, George P.; Feldman, Louis W.; and Peterson, Julia A., to Baylor College of Medicine. Disposable blood pump. 4,573,883, Cl. 417-394.000.
Nord, Philip J. Formative orthodontic appliance. 4,573,914, Cl. 433-18.000.
Nordberg, Anthony, to GQ Defence Equipment Limited. Target image presentation system. 4,573,924, Cl. 434-20.000.
Nordisk Ventilator Co. A/S: *See—*
Andersen, Steen H.; and Pedersen, Bendt O., 4,573,874, Cl. 416-157.00R.
Nordson Corporation: *See—*
Cobbs, Walter H., Jr.; and Rehman, William R., 4,573,429, Cl. 118-322.000.
Cobbs, Walter H., Jr.; Huddleston, Robert J.; and Guldner, Robert A., 4,574,005, Cl. 55-48.000.
North American Philips Consumer Electronics Corp.: *See—*
Bradley, Ralph H., 4,573,764, Cl. 350-128.000.

Northern Telecom Limited: *See—*
Brown, Michael, 4,574,272, Cl. 340-384.00R.
Kemp, Michael F.; and Champagne, Claude J., 4,574,375, Cl. 370-67.000.
Northwood, James E.: *See—*
Quested, Peter N.; and Northwood, James E., 4,573,516, Cl. 164-61.000.
Norton Christensen, Inc.: *See—*
Carroll, Jimmy L.; and Aumann, James T., 4,573,539, Cl. 175-58.000.
Norton, Michael A:: *See—*
Serratelli, John F.; and Norton, Michael A., 4,574,137, Cl. 524-724.000.
Nottingham, John, to Meritus Industries, Inc. Mounting structure for a crib toy. 4,573,654, Cl. 248-231.100.
Nowaczyk, Philip J., to Zenith Electronics Corporation. Variable rate horizontal deflection system for a video monitor. 4,574,224, Cl. 315-408.000.
Nowak, Gerhard; Winter, Alfred; Morbitzer, Hans P.; Kruschik, Klaus; and Taucher, Robert, to TMC Corporation. Release ski binding. 4,573,701, Cl. 280-616.000.
NSK-Warner K.K.: *See—*
Kawai, Osamu; Yamamoto, Kazuo; and Yokote, Yoshihiro, 4,573,709, Cl. 280-804.000.
Nubs Nob, Inc.: *See—*
Dilworth, James L.; and Brinks, Robert J., 4,573,636, Cl. 239-2.00S.
Nusonics, Inc.: *See—*
Zacharias, Ellis M., Jr., 4,573,346, Cl. 73-61.10R.
Nussbaum, Hans, to Hans Nussbaum. Lifting device, especially elevating platform for motor vehicles. 4,573,663, Cl. 254-89.00H.
Nye, Charles L., to Plessey Company plc, The. Coin runway with coin sequencing facility. 4,573,485, Cl. 133-3.00D.
Nypro Inc.: *See—*
Lankton, Gordon B.; and Paradis, Joseph R., 4,573,242, Cl. 24-16.0PB.
Oak Industries Inc.: *See—*
Denley, Ronald S., 4,574,171, Cl. 200-340.000.
Oakley, Nicholas R.: *See—*
Adams, John F. E.; Proffit, Philip J. G.; Oakley, Nicholas R.; and Folland, Rickworth, 4,573,597, Cl. 215-12.00R.
Oberlin, Claude: *See—*
Dohlen, Gerard; Le Marquis, Jean-Claude; and Oberlin, Claude, 4,573,628, Cl. 228-170.000.
Ochi, Akira: *See—*
Goto, Shinji; Kingo, Takao; Ochi, Akira; and Yoshikawa, Yoshiro, 4,573,694, Cl. 280-5.00A.
O'Connor, Martin F.: *See—*
Emeterio, Eloy V.; Deallenbach, Robert E.; O'Connor, Martin F.; and Klufas, Oleg, 4,573,875, Cl. 416-198.00A.
O'Connor, Robert F., to Amtrol Inc. Non-refillable valve. 4,573,611, Cl. 222-147.000.
Offenhauer, Robert D.: *See—*
Audeh, Costandi A.; and Offenhauer, Robert D., 4,573,530, Cl. 166-260.000.
Ogawa, Atsushi, to Tokyo Shibaura Denki Kabushiki Kaisha. Rectifier circuit with attack time variable in response to an input signal level. 4,574,202, Cl. 307-261.000.
Ogawa, Iwakichi, to Takara Co. Ltd. Motor vehicle with elongation means and movable exhaust. 4,573,942, Cl. 446-457.000.
Ogino, Takao; Katsuya, Hiroo; Kato, Chiaki; Kato, Itsuro; and Kato, Tsutomu, to Sumitomo Electric Industries, Ltd.; and Sharp Kabushiki Kaisha. Release agent applicator for use with copying machine. 4,573,428, Cl. 118-60.000.
Ogura, Masami: *See—*
Shimizu, Yasuo; and Ogura, Masami, 4,573,373, Cl. 74-468.000.
Oguri, Yasuo; Awata, Mitsuru; and Ariyama, Noriyuki, to Mitsubishi Chemical Industries Ltd. Calcium silicate shaped product. 4,574,012, Cl. 106-120.000.
Ohashi, Makoto: *See—*
Yoshida, Hiroshi; Toyoshima, Takefumi; Iwabori, Tomio; Ohkura, Hideaki; Miyamoto, Yasuo; Nishimura, Izumi; Oikawa, Toshiyuki; Sekijima, Kenji; and Ohashi, Makoto, 4,573,656, Cl. 248-562.000.
Ohkubo, Noriaki: *See—*
Uetuji, Toshio; and Ohkubo, Noriaki, 4,573,879, Cl. 417-312.000.
Ohkura, Hideaki: *See—*
Yoshida, Hiroshi; Toyoshima, Takefumi; Iwabori, Tomio; Ohkura, Hideaki; Miyamoto, Yasuo; Nishimura, Izumi; Oikawa, Toshiyuki; Sekijima, Kenji; and Ohashi, Makoto, 4,573,656, Cl. 248-562.000.
Ohmi, Shohei: *See—*
Omi, Takashi; and Ohmi, Shohei, 4,573,838, Cl. 408-204.000.
Ohmori, Takashi: *See—*
Moriguchi, Haruhiko; Kikuchi, Yoshiki; and Ohmori, Takashi, 4,574,281, Cl. 340-783.000.
Ohnishi, Akito: *See—*
Watanabe, Haruo; Nakano, Kazuo; and Ohnishi, Akito, 4,573,443, Cl. 123-492.000.
Ohnishi, Hisaaki: *See—*
Amano, Itaru; Maikuma, Yoshimata; Ozaki, Keiji; and Ohnishi, Hisaaki, 4,573,859, Cl. 414-628.000.
Ohnishi, Kenichi, to Toyota Jidosha Kabushiki Kaisha. Theft warning system. 4,574,268, Cl. 340-64.000.
Ohnishi, Shunsaku: *See—*
Watanabe, Kiyohiko; Matsui, Kazuma; Hattori, Yoshiyuki; Takei, Toshihiro; Nakamura, Toshiaki; and Ohnishi, Shunsaku, 4,573,882, Cl. 417-366.000.
Ohno, Hideaki: *See—*
Asada, Takafumi; Yoshida, Churyo; Koda, Minoru; and Ohno, Hideaki, 4,573,807, Cl. 384-100.000.
Ohno, Makoto; Kobayashi, Hisao; and Kato, Kimio, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Variable-delivery compressor. 4,573,878, Cl. 417-270.000.
Ohsaki Eisei Zairyo K.K.: *See—*
Ohsaki, Hiroaki, 4,573,990, Cl. 604-385.00R.
Ohsaki, Hiroaki, to Ohsaki Eisei Zairyo K.K. Disposable diapers. 4,573,990, Cl. 604-385.00R.
Ohtsuki, Osamu: *See—*
Tanikawa, Kunihiro; and Ohtsuki, Osamu, 4,574,295, Cl. 357-24.000.
Ohyama, Toru; and Nomura, Takao, to Alps Electric Co., Ltd. Radio frequency switching circuit device. 4,574,201, Cl. 307-243.000.
Oikawa, Toshiyuki: *See—*
Yoshida, Hiroshi; Toyoshima, Takefumi; Iwabori, Tomio; Ohkura, Hideaki; Miyamoto, Yasuo; Nishimura, Izumi; Oikawa, Toshiyuki; Sekijima, Kenji; and Ohashi, Makoto, 4,573,656, Cl. 248-562.000.
Okada, Chozo. Braille print board. 4,573,926, Cl. 434-115.000.
Okada, Kazuo, to Kabushiki Kaisha Universal. Slot machine with random number generation. 4,573,681, Cl. 273-143.00R.
Okada, Yasuyuki: *See—*
Tabata, Kuniaki; Tsuhara, Susumu; Machida, Tetsuo; Iwami, Hidefumi; and Okada, Yasuyuki, 4,574,364, Cl. 364-900.000.
Okamoto, Hidemasa; Yamanaka, Mitsuo; and Fujii, Kazuyoshi, to Ube Industries, Ltd. Triazine addition compounds. 4,574,154, Cl. 544-192.000.
Okaya, Takuji: *See—*
Sato, Toshiaki; Yamauchi, Junnosuke; and Okaya, Takuji, 4,574,139, Cl. 525-61.000.
Okumoto, Tadaoki: *See—*
Nakata, Rikizo; Okumoto, Tadaoki; Ukai, Mikio; Suzuki, Takamasa; and Yamada, Tomoyoshi, 4,573,693, Cl. 277-212.0FB.
Olek, David J., to TII Computer Systems, Inc. Method and apparatus for configurable line testing. 4,574,167, Cl. 179-175.30R.
Olesen, Paul; Lensky, Albert; and Pendzich, Richard J., to Swingline Inc. Staple forming and driving machine. 4,573,625, Cl. 227-131.000.
Olin Corporation: *See—*
Rickly, Jack D.; and Pennington, B. Timothy, 4,574,075, Cl. 423-184.000.
Smith, Warren F.; Shapiro, Eugene; and Winter, Joseph, 4,573,253, Cl. 29-460.000.
Oliphant, Larry J., to Harnischfeger Corporation. Means to reduce oscillatory deflection of vehicle. 4,573,592, Cl. 212-182.000.
Olivella, Roger: *See—*
Cantin, Michel; Jaussaud, Pierre; and Olivella, Roger, 4,573,414, Cl. 104-202.000.
Olympus Optical Co., Ltd.: *See—*
Arisawa, Yasuo; Kusazaki, Yoshimasa; Yamada, Hidetoshi; Watanabe, Akira; and Yunoki, Yutaka, 4,574,309, Cl. 358-212.000.
Endo, Itaru; and Inoue, Yasuo, 4,573,772, Cl. 350-526.000.
Kanayama, Katsumi, 4,574,321, Cl. 360-74.100.
Mizuno, Shinichi, 4,573,770, Cl. 350-454.000.
Takemura, Haruhiko; Kato, Kiichi; and Sakamoto, Masaharu, 4,574,371, Cl. 369-100.000.
Omaki, Takanobu: *See—*
Taniguchi, Nobuyuki; Hosomizu, Hiroshi; Tsuji, Kenji; Omaki, Takanobu; and Nakai, Masaaki, 4,573,786, Cl. 354-416.000.
O'Mary, Bob L.: *See—*
Carlton, Lewis M.; O'Mary, Bob L.; and Cruse, Teddy H., 4,573,489, Cl. 137-59.000.
Omata, Tadao: *See—*
Miyamoto, Hiroshi; and Omata, Tadao, 4,573,676, Cl. 271-179.000.
Omi Kogyo Co., Ltd.: *See—*
Omi, Takashi; and Ohmi, Shohei, 4,573,838, Cl. 408-204.000.
Omi, Takashi; and Ohmi, Shohei, to Omi Kogyo Co., Ltd. Hole cutter. 4,573,838, Cl. 408-204.000.
Omron Tateisi Electronics Co.: *See—*
Nishimura, Hiroyuki, 4,574,190, Cl. 235-449.000.
Ono, Hitoshi: *See—*
Mori, Shosuke; Awaga, Makoto; Fujisaku, Kiminori; Yamauchi, Mitsuru; and Ono, Hitoshi, 4,574,347, Cl. 364-200.000.
Ontex PVBA: *See—*
VanMalderen, G. P., 4,574,024, Cl. 156-202.000.
Ooi, Shiro, to Rohm Company Limited. Encapsulated semiconductor with terminals having tabs to increase solder wetting. 4,574,297, Cl. 357-68.000.
Oono, Yoshihiro: *See—*
Asano, Makoto; Hasegawa, Kiyoharu; Tamura, Yukio; and Oono, Yoshihiro, 4,574,110, Cl. 428-402.210.
Opitz, Hans-Georg: *See—*
Kruger, Bernd-Wieland; Lockhoff, Oswald; Stadler, Peter; Metzger, Karl G.; Opitz, Hans-Georg; Stunkel, Klaus G.; and Zeiler, Hans-Joachim, 4,574,122, Cl. 514-42.000.
Optical Systems International Inc.: *See—*
Frieder, Philip M.; and deRojas, Edward, 4,573,776, Cl. 351-167.000.
Optimetrix Corporation: *See—*
Phillips, Edward H., 4,573,791, Cl. 355-77.000.

ORC Manufacturing Co., Ltd.: *See—*
Miyamoto, Hiroshi; and Omata, Tadao, 4,573,676, Cl. 271-179.000.
Orchard, Melvin C.; and Rogers, Michael, to Joint Lock Corporation, The. Security lock. 4,573,721, Cl. 292-145.000.
Orikasa, Hiromi, to NEC Corporation. Ringing signal transmission system for radiotelephone system. 4,574,164, Cl. 179-2.0EB.
Orlite Engineering Ltd.: *See—*
Frimer, Itzchak, 4,574,335, Cl. 362-84.000.
Orphall, Axel W.; and Albers, Bernd G., to A & O Engineering, Inc. Impact crushers. 4,573,643, Cl. 241-189.00R.
Oshima, Hideharu: *See—*
Sato, Susumu; and Oshima, Hideharu, 4,573,780, Cl. 354-195.120.
Oswald, Thomas L.: *See—*
Wolf, Alby H.; and Oswald, Thomas L., 4,573,514, Cl. 164-4.100.
Otema, Martin. Security device. 4,573,584, Cl. 211-4.000.
Oushiden, Hideshi: *See—*
Sanbayashi, Takeshi; and Oushiden, Hideshi, 4,573,787, Cl. 355-14.00E.
Outboard Marine Corporation: *See—*
DuBois, Chester G., 4,573,932, Cl. 440-88.000.
Wick, Gerald H., 4,573,307, Cl. 56-11.800.
Owen, Donald W. Magnetic amplifier apparatus for balancing or limiting voltages or currents. 4,574,231, Cl. 323-253.000.
Owens, Charles A. Air cooled horizontal power piston engine. 4,573,436, Cl. 123-41.180.
Owens-Illinois, Inc.: *See—*
Fillmore, William E., 4,573,599, Cl. 215-225.000.
Fosnaught, Harold R., 4,574,020, Cl. 156-80.000.
Kusz, Maximillian, 4,573,582, Cl. 206-807.000.
Perry, Robert A., 4,573,598, Cl. 215-204.000.
Welker, Mathias P., 4,574,009, Cl. 65-158.000.
Oy Fiskars AB: *See—*
Call, Daniel D., 4,573,268, Cl. 30-161.000.
Oy Noki AB: *See—*
Ahola, Reijo, 4,574,373, Cl. 370-58.000.
Oy Partek AB: *See—*
Paakkinen, Ilmari, 4,574,064, Cl. 264-70.000.
Ozaki, Keiji: *See—*
Amano, Itaru; Maikuma, Yoshimata; Ozaki, Keiji; and Ohnishi, Hisaki, 4,573,859, Cl. 414-628.000.
Ozaki, Ryoji: *See—*
Abe, Ken-ichi; and Ozaki, Ryoji, 4,574,170, Cl. 200-153.00G.
Ozawa, Seiji, to Ricoh, Ltd. Toner vessel for copying machine. 4,573,614, Cl. 222-542.000.
Ozen Corporation: *See—*
Koike, Eishi, 4,574,370, Cl. 369-65.000.
Ozone, Toshio: *See—*
Yamamoto, Toshiro; Kobayashi, Ryohei; Kurimoto, Mamoru; and Ozone, Toshio, 4,574,016, Cl. 148-144.000.
P. A. Rentrop, Hubbert & Wagner Fahrzeugausstatungen GmbH & Co. KG: *See—*
Schottker, Willi, 4,573,739, Cl. 297-362.000.
P.L.G. Research Limited: *See—*
Mercer, Frank B., 4,574,100, Cl. 428-134.000.
Paakkinen, Ilmari, to Oy Partek AB. Method for continuous casting of objects out of a high-viscosity casting mix. 4,574,064, Cl. 264-70.000.
Pabst, Rudolf D. Composite lightweight non-metallic vehicle frame. 4,573,707, Cl. 280-792.000.
Pacific Scientific Company: *See—*
Pershall, Arthur A.; and Holling, George H., 4,574,225, Cl. 318-254.000.
Packaging Industries, Inc.: *See—*
Tricca, Raymond A.; and Foster, John K., 4,574,101, Cl. 428-138.000.
Packard, Thomas N., to Pass & Seymour, Inc. Ground fault circuit interrupter. 4,574,324, Cl. 361-46.000.
Padley & Venables Limited: *See—*
Clemmow, Raymond J.; Radford, Leonard; and Thorpe, John D., 4,573,744, Cl. 299-81.000.
Padmanathan, Thurairajah, to American Cyanamid Company. Process for preparing 2-hydrazino-1,3-diazacycloalk-2-ene hydrohalides. 4,574,155, Cl. 544-330.000.
Palitex Project-Company GmbH: *See—*
Lorenz, Rainer, 4,573,314, Cl. 57-296.000.
Palmieri, Joseph M.: *See—*
Seymour, Raymond K.; Palmieri, Joseph M.; Ashline, William J.; and Doughty, Dennis J., 4,573,259, Cl. 29-602.00R.
Palmquist, Steven R.: *See—*
Mihalik, Michael A.; Hoeren, Gerd H.; Reiney, Michael G.; Besemer, James J.; and Palmquist, Steven R., 4,574,354, Cl. 364-481.000.
Paluka, Charles F.: *See—*
Moore, M. Samuel; and Paluka, Charles F., 4,573,806, Cl. 374-144.000.
Pamler, Gerhard, to Triumph-Adler A.G. fur Buro- und Informationstechnik. Elastic bearings for shafts. 4,573,816, Cl. 400-661.000.
Pankow, Arnold A. Portable golf car. 4,573,549, Cl. 180-216.000.
Paoletti, Jean-Claude, to Laboratories Merck Sharp & Dohme - Chibret. Two-bottle assembly for preparing and dispensing a solution. 4,573,506, Cl. 141-98.000.
Paper, Inc.: *See—*
Clar, Milton; and Booth, Barclay, 4,573,409, Cl. 101-426.000.
Papesh, Thomas S. Frame to hold auto bodies for straightening. 4,573,337, Cl. 72-305.000.
Papst-Motoren GmbH & Co. KG: *See—*
Muller, Rolf; and Wurdak, Reinhold, 4,574,211, Cl. 310-68.00R.
Paradis, Joseph R.: *See—*
Lankton, Gordon B.; and Paradis, Joseph R., 4,573,242, Cl. 24-16.0PB.
Park, Owen H., to Heartland Industries, Inc. Building structure. 4,573,293, Cl. 52-92.000.
Parker, Dolores V. Storage and display case. 4,573,569, Cl. 206-1.700.
Parker, Harry L.: *See—*
Pastor, Jose ; Parker, Harry L.; and Wilson, David H., 4,574,357, Cl. 364-518.000.
Parker, Kenneth B., to IVAC Corporation. Infusion and blood chemistry monitoring system. 4,573,968, Cl. 604-67.000.
Parks, Thomas J. Toe lifting shoe. 4,573,457, Cl. 128-80.00E.
Parlex Corporation: *See—*
Rich, Donald S., 4,573,752, Cl. 339-17.00F.
Parratt, Noel J.: *See—*
Booth, Stuart E.; Clifford, Andrew W.; and Parratt, Noel J., 4,573,517, Cl. 164-61.000.
Pass & Seymour, Inc.: *See—*
Packard, Thomas N., 4,574,324, Cl. 361-46.000.
Pastoor, Jacobus: *See—*
van der Sluys, Willem L. N.; Pastoor, Jacobus; and Roelofs, Johannus C. M., 4,573,330, Cl. 62-476.000.
Pastor, Jose ; Parker, Harry L.; and Wilson, David H., to Pitney Bowes Inc. Real time character thinning system. 4,574,357, Cl. 364-518.000.
Pater, Larry L.; and Briggs, Aubrey C., to Dravo Corporation. Accelerating slugs of liquid. 4,573,637, Cl. 239-11.000.
Patterson, Roger L., to Macdon Industries Ltd. Pull-type windrower. 4,573,309, Cl. 56-228.000.
Paukovits, Edward J., Jr.: *See—*
Dornes, Bryan J.; Paukovits, Edward J., Jr.; Spong, Richard V.; and Talarico, Robert J., 4,573,262, Cl. 29-739.000.
Paulonis, Daniel F.: *See—*
Genereux, Paul D.; and Paulonis, Daniel F., 4,574,015, Cl. 148-11.50N.
Paulucci, Jeno F. Process of making a dough crust. 4,574,090, Cl. 426-439.000.
Payne, Francis L.: *See—*
Cohen, Marvin M.; and Payne, Francis L., 4,574,330, Cl. 361-388.000.
Peacock, Roy N., to HPS Corporation. Toggle clamp. 4,573,717, Cl. 285-365.000.
Peddinghaus, Rolf. Equipment for disentangling bars. 4,573,860, Cl. 414-745.000.
Pedersen, Bendt O.: *See—*
Andersen, Steen H.; and Pedersen, Bendt O., 4,573,874, Cl. 416-157.00R.
Peloggio, Alessandro, to Exacta S.p.A. Device for threading knit articles onto the pin holder ring of a linking machine. 4,573,419, Cl. 112-27.000.
Penanhoat, Jean-Francois: *See—*
Favrel, Michel; and Penanhoat, Jean-Francois, 4,573,286, Cl. 49-214.000.
Pendergrass, Edward A., to General Electric Company. Incandescent lamp and base. 4,574,217, Cl. 313-579.000.
Pendzich, Richard J.: *See—*
Olesen, Paul; Lensky, Albert; and Pendzich, Richard J., 4,573,625, Cl. 227-131.000.
Penner, Wayne A.: *See—*
Peterson, Robert D.; and Penner, Wayne A., 4,574,358, Cl. 364-550.000.
Pennington, B. Timothy: *See—*
Rickly, Jack D.; and Pennington, B. Timothy, 4,574,075, Cl. 423-184.000.
PepsiCo Inc.: *See—*
Berger, Martin J.; and Apsell, Sheldon P., 4,573,954, Cl. 493-55.000.
Peraud, Jean-Claude: *See—*
Fournier, Pascal; and Peraud, Jean-Claude, 4,573,520, Cl. 164-253.000.
Perry, John D.; and Michael, David J., to Dresser Industries, Inc. Chrome-magnesite refractories and method of preparation. 4,574,119, Cl. 501-114.000.
Perry, Robert A., to Owens-Illinois, Inc. Child-resistant package with tamper indicating device. 4,573,598, Cl. 215-204.000.
Pershall, Arthur A.; and Holling, George H., to Pacific Scientific Company. Apparatus for accommodating inductive flyback in pulsed motor windings. 4,574,225, Cl. 318-254.000.
Personal Products Company: *See—*
Pieniak, Heinz A.; and Iskra, Michael J., 4,573,988, Cl. 604-379.000.
Pieniak, Heinz A.; and Mesek, Virginia R., 4,573,991, Cl. 604-385.00A.
Persson, Hans, to ASEA Aktiebolag. Hydraulic press with pressure cell. 4,573,335, Cl. 72-63.000.
Pescatore, Richard; and Boumendil, Jean-Jack, to Piezo-Ceram Electronique. Continuous furnace for soldering electronic components. 4,574,182, Cl. 219-388.000.
Peters, Jack R.: *See—*
Crossland, William A.; Peters, Jack R.; Ross, Peter W.; and Ayliffe, Peter J., 4,574,282, Cl. 340-784.000.
Petersen, Dirk, to Bran & Lubbe GmbH. Piston diaphragm pump. 4,573,885, Cl. 417-383.000.
Peterson, Julia A.: *See—*
Noon, George P.; Feldman, Louis W.; and Peterson, Julia A., 4,573,883, Cl. 417-394.000.
Peterson, Robert D.; and Penner, Wayne A., to Mobil Oil Corporation. Monitor display control. 4,574,358, Cl. 364-550.000.

Peterson, Robert L., to Galson Research Corporation. Method for decontaminating soil. 4,574,013, Cl. 134-2.000.
Petkov, Georgi K.; Netzov, Nikola M.; Botev, Botyo P.; and Bankovski, Dimiter N., to N P S P po Hydroplastichna Obrabotka na Metalite. Method of and apparatus for the finish shaping of profiled cylindrical holes. 4,573,841, Cl. 409-244.000.
Petrich, Dennis M.: *See—*
Kelly, Thomas C.; Wurscher, Robert J.; Petrich, Dennis M.; and Rideout, Earl H., 4,574,235, Cl. 324-158.00F.
Petty, Thomas J., to Motorola, Inc. Rapid turn-on voltage regulator. 4,574,232, Cl. 323-268.000.
Peyre, Henri: *See—*
Beyl, Jean; Bernard, Jean; le Faou, Daniel; and Peyre, Henri, 4,573,700, Cl. 280-605.000.
Pfaff Industriemaschinen GmbH: *See—*
Mall, Gunther; Dietrich, Herbert; and Stephan, Willi, 4,573,421, Cl. 112-146.000.
Pfister, Jorg; and Kuzmenko, Arnold, to Rhodia AG. Braking system for yarn beaming assemblies. 4,573,245, Cl. 28-187.000.
Phadke, Hemant: *See—*
Johnson, Carl N.; Phadke, Hemant; and Sieling, Roger L., 4,573,398, Cl. 92-101.000.
Phillips, Douglas C., to Newman-Tonks Engineering Limited. Door closer incorporating self-cleaning and temperature compensating flow control valve. 4,573,238, Cl. 16-79.000.
Phillips, Edward H., to Optimetrix Corporation. Step-and-repeat projection alignment and exposure system. 4,573,791, Cl. 355-77.000.
Phillips Petroleum Company: *See—*
Willcox, Kenneth W.; and Mills, Kenneth R., 4,574,134, Cl. 524-157.000.
Piazzola, Gaetano. System for hot extruding, drawing, and similarly processing plastomers or elastomers, incorporating a means of recovering and utilizing heated air from the cooling of heated parts. 4,573,897, Cl. 425-143.000.
Picotte, Ronald T., to St. Regis Corporation. Fluid driven tube positioner. 4,573,863, Cl. 414-763.000.
Pieniak, Heinz A.; and Iskra, Michael J., to Personal Products Company. Superthin absorbent product. 4,573,988, Cl. 604-379.000.
Pieniak, Heinz A.; and Mesek, Virginia R., to Personal Products Company. Gatherable laminated structure including an apertured elastic member. 4,573,991, Cl. 604-385.00A.
Pierce, William: *See—*
Wisman, Craig B.; Pierce, William; and Donachy, James H., 4,573,997, Cl. 623-3.000.
Pietro Laverda S.p.A.: *See—*
Raineri, Giuseppe, 4,573,483, Cl. 130-27.0AE.
Piezo-Ceram Electronique: *See—*
Pescatore, Richard; and Boumendil, Jean-Jack, 4,574,182, Cl. 219-388.000.
Pilcher, Henry D. Apparatus for dispensing tape having a protective backing. 4,574,030, Cl. 156-522.000.
Pilkington P.E. Limited: *See—*
Swift, David W., 4,573,759, Cl. 350-3.850.
Pilling Co.: *See—*
Kambin, Parviz, 4,573,448, Cl. 128-1.00R.
Pinneo, George G., to Sensormatic Electronics Corporation. Non-contact electrostatic deactivator. 4,574,274, Cl. 340-572.000.
Piovesan, Alessandro, to ATIC S.r.l. Mobile crusher unit for clearing rough terrain, preparing road formworks and roadbeds, operating open-works mines, and the like. 4,573,826, Cl. 404-90.000.
Pippert, Aaron J., to Utex Industries, Inc. Fishing lure. 4,573,283, Cl. 43-42.090.
Pirelli General plc: *See—*
Hillyard, Colin D., 4,573,251, Cl. 29-450.000.
Pischke, Reiner; and Kohler, Karl-Heinz, to Audi NSU Auto Union Aktiengesellschaft. Method for limiting the speed of an internal combustion engine in a vehicle and device for same. 4,573,440, Cl. 123-333.000.
Pitel, Ira J., to HID Systems, Inc. Fast warmup ballast for HID lamps. 4,574,223, Cl. 315-307.000.
Pitner, Philip M.: *See—*
Lechaton, John S.; Pitner, Philip M.; and Srinivasan, Gurumakonda R., 4,573,256, Cl. 29-576.00B.
Pitney Bowes Inc.: *See—*
Coppola, Vincent G.; Lorenzo, John L.; Grisgraber, Edwin G.; and Manduley, Flavio M., 4,574,352, Cl. 364-466.000.
Pastor, Jose ; Parker, Harry L.; and Wilson, David H., 4,574,357, Cl. 364-518.000.
Pitsko, John J.: *See—*
Lasso, Eugene R.; and Pitsko, John J., 4,573,800, Cl. 366-101.000.
Pittner, Gregory A., to Arrowhead Industrial Water, Inc. Reverse osmosis system. 4,574,049, Cl. 210-639.000.
Plastipak Packaging, Inc.: *See—*
Slat, William A., 4,573,596, Cl. 215-12.00R.
Platinum Pen Co., Ltd.: *See—*
Kodera, Kimio, 4,573,818, Cl. 401-131.000.
Platinum Pen of America, Inc.: *See—*
Maki, Mitsuo; Hosoo, Tomohiro; and Kikukawa, Katsuyoshi, 4,573,817, Cl. 401-65.000.
Plaza, Jaime P., to Majorica, S.A. Sliding hook device for clasping pearl or glass bead necklaces that have a free hanging end. 4,573,243, Cl. 24-116.00A.
Plessey Company plc, The: *See—*
Nye, Charles L., 4,573,485, Cl. 133-3.00D.
Pneumo Corporation: *See—*
Spurbeck, Kenneth C., 4,573,494, Cl. 137-331.000.
Poehler, Theodore O.: *See—*
Potember, Richard S.; Poehler, Theodore O.; and Benson, Richard C., 4,574,366, Cl. 365-153.000.
Poggio, Tomaso: *See—*
Resnikoff, Howard L.; Poggio, Tomaso; and Sims, Karl, 4,574,311, Cl. 358-213.000.
Polak, Anthony J.; Wrezel, James A.; and Beuhler, Allyson J., to Signal Companies, Inc., The. Electrochromic devices. 4,573,768, Cl. 350-357.000.
Pomonik, George M.; and Jansen, Martin B., to Amtel, Inc. Rapidly installable mooring and cargo transfer system. 4,573,425, Cl. 114-230.000.
Pont A Mousson S.A.: *See—*
Fournier, Pascal; and Peraud, Jean-Claude, 4,573,520, Cl. 164-253.000.
Ponticello, Gerald S.: *See—*
Baldwin, John J.; and Ponticello, Gerald S., 4,574,127, Cl. 514-365.000.
Poppenheimer, Charles B., to GTY Industries. Underwater lights. 4,574,337, Cl. 362-267.000.
Port, John H.; Kukoleck, Dennis G.; and Guezuraga, Robert M., to General Electric Company. Core for molybdenum alloy x-ray anode substrate. 4,574,388, Cl. 378-144.000.
Porter, Calvin R., Jr.: *See—*
Porter, Calvin R., Sr.; and Porter, Calvin R., Jr., 4,573,857, Cl. 414-563.000.
Porter, Calvin R., Sr.; and Porter, Calvin R., Jr., to Ready Built Tow Trucks, Inc. Vehicle towing mechanism. 4,573,857, Cl. 414-563.000.
Portz, William E.: *See—*
Ipema, Neal J.; and Portz, William E., 4,573,311, Cl. 56-400.170.
Possati, Mario: *See—*
Golinelli, Guido; and Possati, Mario, 4,573,272, Cl. 33-172.00E.
Potember, Richard S.; Poehler, Theodore O.; and Benson, Richard C., to Johns Hopkins University, The. Optical storage and switching devices using organic charge transfer salts. 4,574,366, Cl. 365-153.000.
Potter, Ralph M.: *See—*
Davenport, John M.; Hansler, Richard L.; Potter, Ralph M.; Blank, John M.; Speros, Dimitri M.; Homa, Arthur S.; Mishra, Amarendra; and Leskovec, Robert A., 4,574,219, Cl. 315-49.000.
Potter, William D.; and Kiamil, Sinan B., to Smith & Nephew Associated Companies P.L.C. Polymerizable compounds. 4,574,130, Cl. 523-111.000.
Poveromo, George: *See—*
Poveromo, Melvin D., 4,573,923, Cl. 433-181.000.
Poveromo, March: *See—*
Poveromo, Melvin D., 4,573,923, Cl. 433-181.000.
Poveromo, Melanie: *See—*
Poveromo, Melvin D., 4,573,923, Cl. 433-181.000.
Poveromo, Melvin D., to Poveromo, George; Poveromo, March; and Poveromo, Melanie. Denture connector. 4,573,923, Cl. 433-181.000.
Powers, David E.: *See—*
Small, Marc J.; and Powers, David E., 4,573,513, Cl. 160-135.000.
Powis, William N.: *See—*
Albritton, Charles W.; Powis, William N.; and Graham, William M., 4,573,912, Cl. 432-222.000.
Prandina, Aldo F., to Ing. Loro Piana & C. S.p.A. Blanket assembly composed of at least two interconnectable blankets, for single and double beds. 4,573,227, Cl. 5-486.000.
Prater, Johnny L.: *See—*
Laten, Bobby W.; and Prater, Johnny L., 4,573,647, Cl. 244-3.120.
Prendergast, Ian D., to Allied Corporation. Apparatus and method for removing inclusions. 4,573,664, Cl. 266-44.000.
Prinoth, Erich. Track for motor vehicle having two parallel half-tracks. 4,573,746, Cl. 305-35.0EB.
Procter & Gamble Company, The: *See—*
Minetola, James A.; and Tucker, David R., 4,573,986, Cl. 604-366.000.
Production Design Products, Inc.: *See—*
Brown, Robert W., 4,573,644, Cl. 242-67.10R.
Proengin S.A.: *See—*
Clausin, Pierre, 4,573,424, Cl. 114-106.000.
Proffit, Philip J. G.: *See—*
Adams, John F. E.; Proffit, Philip J. G.; Oakley, Nicholas R.; and Folland, Rickworth, 4,573,597, Cl. 215-12.00R.
Progressive Fastening, Inc.: *See—*
Richards, Peter S., 4,573,652, Cl. 248-74.100.
Prototypes, Ltd.: *See—*
Dyson, James, 4,573,236, Cl. 15-333.000.
Provin, Robert R.: *See—*
Yearout, James D.; Provin, Robert R.; and Browne, John S., 4,574,007, Cl. 62-42.000.
Pryor, Timothy R., to Diffracto Ltd. Sensing location of an object. 4,574,199, Cl. 250-561.000.
PTX-Pentronix, Inc.: *See—*
DeSantis, Raymond P.; and Puffer, Herbert J., Jr., 4,573,895, Cl. 425-78.000.
Puffer, Herbert J., Jr.: *See—*
DeSantis, Raymond P.; and Puffer, Herbert J., Jr., 4,573,895, Cl. 425-78.000.
Pujols, Guy: *See—*
Josse, Jean-Jacques; Pujols, Guy; and Di Vincenzo, Serge, 4,573,541, Cl. 175-78.000.
Pulliam, Mary H.: *See—*
Carville, Donna B.; Feig, Edwin R.; Rose, Gene D ; and Pulliam, Mary H., 4,573,488, Cl. 137-13.000.

Pullman Standard: *See—*
Hesch, Harold E.; and McNally, George S., 4,573,843, Cl. 410-58.000.

Pullman Standard, Inc.: *See—*
Kunst, Robert J.; Lahey, Gerald F.; and Wille, Herbert S., 4,573,594, Cl. 213-51.000.

Pyke, Stephen C.; and Bruce, Mark R., to Standard Oil Company (Ohio), The. Photocorrosion resistant semiconductor photoelectrodes. 4,574,039, Cl. 204-290.00R.

Quattlebaum, W. Gregg: *See—*
Thrash, Tommy K.; Tock, Richard W.; Cox, Lyle V.; and Quattlebaum, W. Gregg, 4,573,447, Cl. 126-263.000.

Queen, Charles L. Steering mechanisms for outboard motor. 4,573,930, Cl. 440-56.000.

Quested, Peter N.; and Northwood, James E., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Method of and apparatus for casting directionally solidified articles. 4,573,516, Cl. 164-61.000.

Quester, Horst: *See—*
Ruffer, Alfred; Maubach, Peter; Haas, Johannes; and Quester, Horst, 4,573,484, Cl. 131-327.000.

Quill, Gary J.: *See—*
Egan, Michael J.; and Quill, Gary J., 4,573,876, Cl. 416-213.00R.

Rabindran, K. George: *See—*
Svyatsky, Eduard; Rabindran, K. George; and Faber, Thomas J., 4,573,675, Cl. 271-122.000.

Racca, William H.; Bolvin, Michael A.; and Bilezerian, Mel E., to Racca, William H.; and Bolvin, Michael A. Thermistor temperature control circuit. 4,574,200, Cl. 307-117.000.

Radford, Leonard: *See—*
Clemmow, Raymond J.; Radford, Leonard; and Thorpe, John D., 4,573,744, Cl. 299-81.000.

Rado, George T.; Vittoria, Carmine; and Ferrari, James M., to United States of America, Navy. High switching speed electrically tuned microwave magnetic resonance devices. 4,574,259, Cl. 333-157.000.

Ragen Data Systems, Inc.: *See—*
Apelman, Steven P., 4,574,278, Cl. 340-722.000.

Raineri, Giuseppe, to Pietro Laverda S.p.A. Combine harvesters. 4,573,483, Cl. 130-27.0AE.

Rajala, Gregory J.: *See—*
Kloehn, Kurt J.; Rajala, Gregory J.; and Abel, Kent W., 4,573,382, Cl. 83-53.000.

Rajaram, Babu: *See—*
Krause, Charles A.; and Rajaram, Babu, 4,574,277, Cl. 340-703.000.

Ramey, Edwin O., to Atlas Metal Industries, Inc. Stand with spring lock legs. 4,573,415, Cl. 108-129.000.

Ranco Incorporated: *See—*
Johnson, Carl N.; Phadke, Hemant; and Sieling, Roger L., 4,573,398, Cl. 92-101.000.
White, Lee A., 4,573,497, Cl. 137-625.290.

Ranjan, Raj: *See—*
Krutchen, Charles M.; Ranjan, Raj; and Yang, Jan-Chin, 4,573,345, Cl. 73-56.000.

Rasmussen, Harvey E.: *See—*
Tesch, Sylvester M., Jr., 4,573,609, Cl. 221-211.000.

Rasmussen, Harvey J.: *See—*
Tesch, Sylvester M., Jr., 4,573,609, Cl. 221-211.000.

Rasmussen, Patricia: *See—*
Tesch, Sylvester M., Jr., 4,573,609, Cl. 221-211.000.

Raychem Corp.: *See—*
Arrington, John P.; Jaraczewski, Kathleen A.; Moisson, Marc F.; and Wisecarver, Martin L., 4,573,607, Cl. 221-25.000.
Edwards, Neil A.; Holmes, James C.; and Wales, Denis I., 4,574,023, Cl. 156-187.000.
Midgley, John A.; and Hulett, Richard H., 4,574,188, Cl. 219-549.000.

RCA Corporation: *See—*
Battson, Donald F., 4,574,313, Cl. 358-213.000.
Strouse, Douglas A., 4,573,934, Cl. 445-3.000.
van Raalte, John A., 4,574,306, Cl. 358-107.000.
Wardell, Myron H., Jr., 4,573,935, Cl. 445-66.000.

Ready Built Tow Trucks, Inc.: *See—*
Porter, Calvin R., Sr.; and Porter, Calvin R., Jr., 4,573,857, Cl. 414-563.000.

Rechtschaffen, Rudolph N., to International Business Machines Corp. Apparatus for addressing a larger number of instruction addressable central processor registers than can be identified by a program instruction. 4,574,349, Cl. 364-200.000.

Record Industrial Company: *See—*
Lipschutz, James N., 4,574,368, Cl. 367-108.000.

Reed, Clifford C. Protective hood for firefighters. 4,573,217, Cl. 2-7.000.

Reed, Martin A.: *See—*
Carlgren, Richard G.; Reed, Martin A.; and Rosenbaum, Walter S., 4,574,363, Cl. 364-900.000.

Reeves, Michael. Disposable straw, lid and cup combination. 4,573,631, Cl. 229-7.00S.

Regie Nationale des Usines Renault: *See—*
Bascou, Jacques, 4,574,285, Cl. 340-825.690.

Rehman, William R.: *See—*
Cobbs, Walter H., Jr.; and Rehman, William R., 4,573,429, Cl. 118-322.000.

Reilly, David M., to Medrad, Inc. Angiographic syringe and connector for joining a catheter thereto. 4,573,978, Cl. 604-240.000.

Reiney, Michael G.: *See—*
Mihalik, Michael A.; Hoeren, Gerd H.; Reiney, Michael G.; Besemer, James J.; and Palmquist, Steven R., 4,574,354, Cl. 364-481.000.

Reinhardt, Paul A., to Aker Oil Tools, Inc. High flow injection anchor. 4,573,529, Cl. 166-68.000.

Reiss, Ruediger, to Siemens Aktiengesellschaft. Arrangement for the transmission of speech according to the channel vocoder principle. 4,574,392, Cl. 381-51.000.

Renger, Larry H.: *See—*
Crow, Granville; Renger, Larry H.; and Sweet, Roger H., 4,573,944, Cl. 446-465.000.

Repa Feinstanswerk GmbH: *See—*
Fohl, Artur, 4,573,322, Cl. 60-638.000.

Reponty, Andre , to Harris-Marinoni S.A. Automatic setting device for slowing down a signature prior to folding in printing press chopper folders. 4,573,671, Cl. 270-20.100.

Research Corporation: *See—*
Wisman, Craig B.; Pierce, William; and Donachy, James H., 4,573,997, Cl. 623-3.000.

Resnikoff, Howard L.; Poggio, Tomaso; and Sims, Karl, to Thinking Machines Corporation. Random array sensing devices. 4,574,311, Cl. 358-213.000.

Restroom Facilities Corporation: *See—*
Kaufman, Charles E.; Shetler, Marvin R.; and Sharp, William M., 4,573,292, Cl. 52-79.100.

Reutlinger, Wolf-Dieter. Device for the determination of the unbalance of propellers. 4,573,355, Cl. 73-455.000.

Revlon, Inc.: *See—*
Tietjen, Marlene; Hollenberg, Jane; and Rigg, Richard T., 4,574,082, Cl. 424-63.000.

Rheeder, Frederik R. L.; and Dixon, Deon, to Trailmor [Proprietary] Limited. Trolley locking device. 4,573,564, Cl. 194-250.000.

Rhodia AG: *See—*
Pfister, Jorg; and Kuzmenko, Arnold, 4,573,245, Cl. 28-187.000.

Rich, Alan H.; Gaasterland, Douglas E.; and Tedder, Thomas E., to United States of America, Health and Human Services. Optical coupling device for biomicroscope. 4,573,467, Cl. 128-303.100.

Rich, Donald S., to Parlex Corporation. Flat cable connection system. 4,573,752, Cl. 339-17.00F.

Richard, Dennis J., to General Motors Corporation. Hydraulic power steering gear and rotary valve therefor. 4,573,496, Cl. 137-625.210.

Richards, Peter S., to Progressive Fastening, Inc. Support system for maritime or other use. 4,573,652, Cl. 248-74.100.

Richardson, Raymond H.; and Valley, Robert T., to International Business Machines Corporation. Chip decelerator. 4,573,830, Cl. 406-84.000.

Richardson-Vicks Inc.: *See—*
Gupte, Anil J.; and Kendall, Joyce M., 4,574,052, Cl. 252-90.000.

Rickly, Jack D.; and Pennington, B. Timothy, to Olin Corporation. Purification of alkali metal nitrates. 4,574,075, Cl. 423-184.000.

Ricks, Walter G.: *See—*
Hurley, Byron H.; and Ricks, Walter G., 4,573,502, Cl. 141-1.000.

Ricoh Co., Ltd.: *See—*
Koide, Hiroshi; Watanabe, Junichi; and Tenmyo, Shigemoto, 4,574,369, Cl. 369-44.000.

Ricoh, Ltd: *See—*
Ozawa, Seiji, 4,573,614, Cl. 222-542.000.

Rideout, Earl H.: *See—*
Kelly, Thomas C.; Wurscher, Robert J.; Petrich, Dennis M.; and Rideout, Earl H., 4,574,235, Cl. 324-158.00F.

Riedweg, Robert: *See—*
Schlensog, Klaus; Beer, Christian; and Riedweg, Robert, 4,573,969, Cl. 604-74.000.

Ries, Donald G., to Nalco Chemical Company. Alkoxy aryl sulfonate surfactants. 4,574,061, Cl. 260-512.00C.

Rife, Jack C.: *See—*
Lucas, Amand A.; Rife, Jack C.; and Donnelly, Stephen E., 4,574,198, Cl. 250-493.100.

Rigg, Richard T.: *See—*
Tietjen, Marlene; Hollenberg, Jane; and Rigg, Richard T., 4,574,082, Cl. 424-63.000.

Riley, Alfred T.; and Lord, Barry. Puzzles. 4,573,684, Cl. 273-157.00R.

Rinfret, Elizabeth M.: *See—*
Rinfret, John H. T.; and Rinfret, Elizabeth M., 4,573,852, Cl. 414-412.000.

Rinfret, John H. T.; and Rinfret, Elizabeth M. Vial rupturing apparatus. 4,573,852, Cl. 414-412.000.

Ringley, Michael B., to Westvaco Corporation. Process for delignification of lignocellulosic material in the presence of anthraquinone in solution with white and black liquors. 4,574,032, Cl. 162-38.000.

Riolo, Angelo V.: *See—*
Musto, Joseph A.; Scarella, Robert A.; Jacquett, Harold W.; Riolo, Angelo V.; and Della Fave, Nicholas I., 4,574,089, Cl. 426-386.000.

Ripoll, Javier G., to Stronghold International AG. Hydraulic jack for stressing elongate elements. 4,573,662, Cl. 254-29.00A.

Ritsema, Irving R., to Allied Corporation. Disc brake with caliper stabilizing tie-bar. 4,573,554, Cl. 188-73.380.

Robbins, Edward J.: *See—*
Daniel, Vernon T.; Johnson, James R.; and Robbins, Edward J., 4,573,353, Cl. 73-198.000.

Robert Bosch GmbH: *See—*
Hachtel, Hansjorg; and Dobler, Klaus, 4,574,237, Cl. 324-173.000.
Kaiser, Gunther; and Nitschke, Werner, 4,574,265, Cl. 340-52.00R.

Roberts, Arthur S., Jr.: *See—*
Lewis, Kermit E.; and Roberts, Arthur S., Jr., 4,573,606, Cl. 221-2.000.

Roberts, Kenneth B., to Compaq Computer Corporation. Video display system having multiple selectable screen formats. 4,574,279, Cl. 340-731.000.

Robotic Vision Systems, Inc.: *See—*
Hecker, Joel; Stern, Howard; and Heydenburg, Thomas, 4,573,758, Cl. 350-3.710.

Robustelli, Albert G.: *See—*
Ryles, Roderick G.; and Robustelli, Albert G., 4,573,533, Cl. 166-275.000.

Rockwell International Corporation: *See—*
Brissette, Ronald N., 4,573,946, Cl. 464-133.000.
Head, Manley J., 4,574,244, Cl. 329-50.000.
Huffman, Charles E.; and Foust, Jeffrey L., 4,574,385, Cl. 377-107.000.
Mickelson, Wilmer A., 4,574,245, Cl. 329-110.000.
Runyan, Wesley G., 4,574,342, Cl. 363-134.000.
Snodgrass, Kirk A., 4,574,248, Cl. 330-2.000.
Styers, C. James, 4,573,925, Cl. 434-49.000.

Rodi, Anton: *See—*
Blasius, Udo; May, Karl-Heinz; and Rodi, Anton, 4,573,410, Cl. 101-365.000.

Rodriguez, George H.: *See—*
Crews, James E.; and Rodriguez, George H., 4,574,187, Cl. 219-541.000.

Roelofs, Johannus C. M.: *See—*
van der Sluys, Willem L. N.; Pastoor, Jacobus; and Roelofs, Johannus C. M., 4,573,330, Cl. 62-476.000.

Rogers, Jimmy H. Self molding fiberglas. 4,574,106, Cl. 428-236.000.

Rogers, Michael: *See—*
Orchard, Melvin C.; and Rogers, Michael, 4,573,721, Cl. 292-145.000.

Rohm Company Limited: *See—*
Ooi, Shiro, 4,574,297, Cl. 357-68.000.

Rohm and Haas Company: *See—*
Gray, Richard T., 4,574,113, Cl. 429-194.000.

Rolland, Guy: *See—*
Boudet, Jean; and Rolland, Guy, 4,573,903, Cl. 425-555.000.

Rolls-Royce Limited: *See—*
Hand, Derek G., 4,573,867, Cl. 415-134.000.

Rolscreen Company: *See—*
Hagemeyer, Bruce A.; and Minter, Mearl J., 4,573,287, Cl. 49-381.000.

Roman, Horst L., to Cross Company, The. Dual stroke transfer drive. 4,573,566, Cl. 198-461.000.

Romer, Bendt W., to Danfoss A/S. Refrigeration compressor having a tubular insert of thermally insulating material in suction passage. 4,573,881, Cl. 417-312.000.

Rooney, Timothy M.: *See—*
Smith, William T.; Rooney, Timothy M.; and Watts, George T., 4,573,509, Cl. 152-158.000.

Rosaen, Borje O. Filtering device. 4,574,047, Cl. 210-130.000.

Rose, Gene D.: *See—*
Carville, Donna B.; Feig, Edwin R.; Rose, Gene D.; and Pulliam, Mary H., 4,573,488, Cl. 137-13.000.

Rosenbaum, Walter S.: *See—*
Carlgren, Richard G.; Reed, Martin A.; and Rosenbaum, Walter S., 4,574,363, Cl. 364-900.000.

Rosenmeier, Gordon: *See—*
DuFrene, Clement O., 4,573,892, Cl. 418-219.000.

Rosenstrom, Pertti, to Erkomat Oy. Equipment for the removal of air out of pulverulent materials. 4,573,504, Cl. 141-59.000.

Rosiek, Jozef; Spruce, Frank; and Atkinson, Brian, to Valor Newhome Limited. Gas fires. 4,573,446, Cl. 126-92.00R.

Ross, Malcolm F.; and Visner, Sidney, to Combustion Engineering, Inc. In-core fuel management for nuclear reactor. 4,574,069, Cl. 376-267.000.

Ross, Peter W.: *See—*
Crossland, William A.; Peters, Jack R.; Ross, Peter W.; and Ayliffe, Peter J., 4,574,282, Cl. 340-784.000.

Roswall, Stig; and Thorhus, Lene B., to A/S Alfred Benzon. Combination formulation. 4,574,080, Cl. 424-20.000.

Roth, Ferdinando: *See—*
Biraghi, Giuseppe; Clavarino, Amedeo; Roth, Ferdinando; and Tarquini, Michele, 4,573,748, Cl. 312-7.200.

Rothe, Charles T.; and Gish, Larry D. Hydrostatic ballcock assembly. 4,573,495, Cl. 137-414.000.

Rothele, Stephan: *See—*
Leschonski, Kurt; and Rothele, Stephan, 4,573,801, Cl. 366-154.000.

Rotor Tool Company, The: *See—*
Clemens, Donald W., 4,573,370, Cl. 74-337.500.

Rowe, Lacy A. Fishing lure. 4,573,282, Cl. 43-42.150.

Royal Waterbeds, Inc.: *See—*
Winther, Howard A., 4,574,026, Cl. 156-274.400.

Rubber- en Kunststoffabriek ENBI, B. V.: *See—*
Delhaes, Johannes C., 4,573,563, Cl. 193-37.000.

Rudner, Merritt A. Prosthetic apparatus for surgical anastomosis. 4,573,471, Cl. 128-346.000.

Ruffer, Alfred; Maubach, Peter; Haas, Johannes; and Quester, Horst, to Wilh. Quester Maschinenfabrik GmbH. Charging device for opening and delivering leaf-type material. 4,573,484, Cl. 131-327.000.

Ruiz-Avila, Jose L., to AKT Consultants Pty, Limited. Apparatus for the dehydration of organic material. 4,573,278, Cl. 34-168.000.

Ruiz, Oscar F. Angiographic catheter. 4,573,476, Cl. 128-658.000.

Runyan, Wesley G., to Rockwell International Corporation. Resonance driver. 4,574,342, Cl. 363-134.000.

Ruschek, Gerhard: *See—*
Wietschorke, Stephan; Ruschek, Gerhard; and Sausner, Andreas, 4,573,441, Cl. 123-339.000.

Ruschke, Rick, to Baxter Travenol Laboratories, Inc. Medical administration set enabling sequential delivery of two liquids at different flow rate. 4,573,974, Cl. 604-81.000.

Russo, Ronald D., to Superior Plastic Products Corp. Device for draining wounds. 4,573,965, Cl. 604-30.000.

Ryan, James W.: *See—*
Gavras, Haralambos P.; Ryan, James W.; and Chung, Alfred, 4,574,079, Cl. 424-1.100.

Ryles, Roderick G.; and Robustelli, Albert G., to American Cyanamid Company. Method for using thermally stable mobility control agents for harsh environmental reservoirs. 4,573,533, Cl. 166-275.000.

S. E. Rykoff & Co.: *See—*
Smith, Jo Dee. J., 4,573,887, Cl. 417-477.000.

Sach, George S.: *See—*
Cooper, David G.; and Sach, George S., 4,574,126, Cl. 514-318.000.

Sachs, Jean-Pierre, to U.S. Philips Corporation. SECAM Color identifying circuit. 4,574,301, Cl. 358-18.000.

SAE-Societa Automatismi Elettonici s.r.l.: *See—*
Del Fabro, Marcello; and Del Fabro, Giorgio, 4,573,246, Cl. 29-252.000.

Saeki, Funio: *See—*
Io, Shinichi; and Saeki, Funio, 4,573,258, Cl. 29-596.000.

Saeki, Kimihiro; and Kobayashi, Kiyoshi, to Hukuba Kogyo Kabushiki Kaisha. Vertically moving mechanism for rotor brush in manual cleaner. 4,573,230, Cl. 15-41.00R.

Safe Bridge AB: *See—*
Larsson, Erik J., 4,573,426, Cl. 114-267.000.

Safety Equipment Corporation: *See—*
Smith, Ronald F., 4,573,699, Cl. 280-432.000.

Safety Transport Inter Development AB: *See—*
Brorsson, Tommy K. L., 4,573,708, Cl. 280-808.000.

Saggese, Giuseppe: *See—*
Cortesi, Paolo; Donati, Gianni; and Saggese, Giuseppe, 4,574,078, Cl. 423-592.000.

Saggs, Gordon J. Convertible length garment. 4,573,218, Cl. 2-93.000.

Saiki, Koji: *See—*
Samejima, Yasushi; Shiga, Minoru; Kano, Toshiji; Saiki, Koji; and Nishio, Tsutomu, deceased, 4,574,037, Cl. 204-98.000.

Saint, David, to Graco Metal Products Inc. Folding playpen. 4,573,224, Cl. 5-99.00C.

St. Regis Corporation: *See—*
Picotte, Ronald T., 4,573,863, Cl. 414-763.000.

Saito, Tsutomu, to Kabushiki Kaisha Kawai Gakki Seisakusho. Play data detecting system for electronic musical instruments. 4,573,390, Cl. 84-115.000.

Saito, Yutaka: *See—*
Fujii, Shuzo; Shimada, Yuzo; Utsumi, Kazuaki; and Saito, Yutaka, 4,574,255, Cl. 331-25.000.

Sajiki, Kazuaki: *See—*
Kajiyama, Koichi; Moro, Norio; Sajiki, Kazuaki; and Yamaguchi, Tadayoshi, 4,573,792, Cl. 356-301.000.

Sakai, Yoshio; and Yamada, Takeshi, to Totoku Electric Co., Ltd. Heating sheet. 4,574,186, Cl. 219-528.000.

Sakamaki, Hiroshi; Horikoshi, Yukio; and Yanagihashi, Kikuji, to Nippon Piston Ring Kabushiki Kaisha. Rotary sleeve of a rotary compressor. 4,573,891, Cl. 418-173.000.

Sakamoto, Masaharu: *See—*
Takemura, Haruhiko; Kato, Kiichi; and Sakamoto, Masaharu, 4,574,371, Cl. 369-100.000.

Sakamoto, Takao, to Tachikawa Spring Co., Ltd. Vertical adjustment device for a vehicle seat. 4,573,657, Cl. 248-575.000.

Sakamoto, Takayoshi: *See—*
Uemura, Seiichi; Hirose, Takao; Sohda, Yoshio; Sakamoto, Takayoshi; and Kishimoto, Yoshio, 4,574,077, Cl. 423-447.600.

Sakamoto, Takeshi: *See—*
Murata, Seiichiro; Tateishi, Masaru; Hayakawa, Kohji; Sakamoto, Takeshi; Takeuchi, Shin; and Mukasa, Kohsuke, 4,573,422, Cl. 114-65.00R.

Samejima, Yasushi; Shiga, Minoru; Kano, Toshiji; Saiki, Koji; and Nishio, Tsutomu, deceased (by Nishio, Haruko, legal representative), to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Vertical type electrolytic cell and electrolytic process using the same. 4,574,037, Cl. 204-98.000.

Sampson, Earl W.: *See—*
Sampson, Norma A.; and Sampson, Earl W., 4,573,976, Cl. 604-198.000.

Sampson, James D. Pattern transposing tape. 4,574,098, Cl. 428-40.000.

Sampson, Norma A.; and Sampson, Earl W., to Smith, Dolores A., a part interest. Shielded needle. 4,573,976, Cl. 604-198.000.

Samson, Wilfred J.; and Frisbie, Jeffrey S., to Advanced Cardiovascular Systems, Inc. Low-profile steerable intraoperative balloon dilitation catheter. 4,573,470, Cl. 128-344.000.

Sanbayashi, Takeshi; and Oushiden, Hideshi, to Kabushiki Kaisha Toshiba. Exposure lamp control for image forming apparatus. 4,573,787, Cl. 355-14.00E.

Sandhaus, Sami: *See—*
Merz, Eugen; Sandhaus, Sami; and Troger, Norbert, 4,573,915, Cl. 433-64.000.

Sandstrom, Paul H.; and Friedman, Emil M., to Goodyear Tire & Rubber Company, The. Green strength of elastomers. 4,574,140, Cl. 525-123.000.

Sandy, James J., Jr.; and Huth, Brian P., to United Technologies Corporation. Sealed shroud for rotating body. 4,573,866, Cl. 415-116.000.

Santilli, Vincent J., to Westinghouse Electric Corp. Bimetallic arc shield. 4,574,169, Cl. 200-114.00B.

Sanvido, Saverio: *See*—
Arndt, Klaus; and Sanvido, Saverio, 4,573,773, Cl. 350-541.000.

Sanyo Electric Co., Ltd.: *See*—
Hirano, Yutaka; Kawakami, Hirokazu; Tanaami, Masaaki; Kosano, Motohiko; Takagi, Hiroshi; Ishiai, Yoshio; and Iwahashi, Ituo, 4,573,880, Cl. 417-312.000.

Sarkozy, Robert F., to BTU Engineering Corporation. Modular V-CVD diffusion furnace. 4,573,431, Cl. 118-725.000.

Sarl Photosysteme: *See*—
Ducos, Michel, 4,573,790, Cl. 355-28.000.

Sasajima, Yoichi: *See*—
Fujisaki, Masaru; Tsuchida, Tetsuo; Sasajima, Yoichi; Ito, Hiroshisa; and Morita, Masahiro, 4,573,745, Cl. 301-63.0PW.

Sasaki, Kikuo, to Shimadzu Corporation. Spectrophotometer automatic adjustment for differences between nominal and actual wavelength settings. 4,573,793, Cl. 356-326.000.

Sassak, Mark S. Spaceship type toy. 4,573,938, Cl. 446-179.000.

Satellite Industries, Inc.: *See*—
Juaire, Phillip R.; Wagner, Fredric M.; and Wildgen, Leo F., 4,574,025, Cl. 156-245.000.

Sato, Susumu; and Oshima, Hideharu, to Fuji Photo Optical Co., Ltd. Photographic recording device for video image. 4,573,780, Cl. 354-195.120.

Sato, Tetsuo, to Hitachi, Ltd. Indicating system. 4,574,276, Cl. 340-661.000.

Sato, Tomosaburo: *See*—
Kitagawa, Tadao; Kosuge, Yutaka; Noda, Yoichiro; and Sato, Tomosaburo, 4,574,192, Cl. 250-227.000.

Sato, Toshiaki; Yamauchi, Junnosuke; and Okaya, Takuji, to Kuraray Co., Ltd. Polymer having a fluorine-containing end group and production of the same. 4,574,139, Cl. 525-61.000.

Sato, Yukihiko: *See*—
Nomura, Hirokazu; Sato, Yukihiko; and Morishige, Eiji, 4,573,666, Cl. 266-80.000.

Sauers, Paul S.: *See*—
Kaza, Michael D.; and Sauers, Paul S., 4,574,057, Cl. 260-101.000.

Saugbruksforeningen: *See*—
Harboe, Jahn, 4,573,507, Cl. 144-193.00A.

Sausner, Andreas: *See*—
Wietschorke, Stephan; Ruschek, Gerhard; and Sausner, Andreas, 4,573,441, Cl. 123-339.000.

Savage, Kerry D.; and Dowling, Donald J., to Texaco Inc. Method for measuring temperature of a hydrocarbon stratum subjected to RF electromagnetic energy. 4,573,805, Cl. 374-136.000.

Savikurki, Jarmo; and Jansson, Kim, to Hollming Ltd. Propeller device for a ship. 4,573,929, Cl. 440-54.000.

Sawyer, Richard D.: *See*—
Breault, Richard D.; Sawyer, Richard D.; and DeMarche, Thomas E., 4,574,112, Cl. 429-26.000.

Sayles, David C., to United States of America, Army. General purpose expandable adhesive. 4,574,132, Cl. 523-466.000.

Scallon, Gregory M., to Boeing Company, The. High speed digital signal processor architecture. 4,574,348, Cl. 364-200.000.

Scanlon, Robert M., to Granco-Clark, Inc. Billet heating furnace with adjustable pressurized entrance seal. 4,573,909, Cl. 432-133.000.

Scarella, Robert A.: *See*—
Musto, Joseph A.; Scarella, Robert A.; Jacquett, Harold W.; Riolo, Angelo V.; and Della Fave, Nicholas I., 4,574,089, Cl. 426-386.000.

Schaaf, Theodore F.: *See*—
Dorey, John K., II; Huneke, James T.; Madsen, Bruce S.; and Schaaf, Theodore F., 4,574,031, Cl. 156-655.000.

Schaller, Werner: *See*—
Marzendorfer, Hans; and Schaller, Werner, 4,573,418, Cl. 110-345.000.

Schallhorn, Thomas L.: *See*—
Mantela, Ralph F.; Brady, Charles J.; Johnson, Thomas M.; Larsen, Hugh W.; and Schallhorn, Thomas L., 4,573,842, Cl. 410-23.000.

Schattschneider, George K.; and Matthews, James R., to Minister of National Defence of Her Majesty's Canadian Government. Peak dynamic stress calculator. 4,574,356, Cl. 364-508.000.

Scheeren, Jan-Mathieu. Food container. 4,573,632, Cl. 229-2.50R.

Scheible, Wayne. Hand scannable portable copier and method. 4,574,317, Cl. 358-285.000.

Scherer, George W., to Corning Glass Works. Method of forming glass or ceramic article. 4,574,063, Cl. 264-60.000.

Scheuerlein, Roy E., to International Business Machines Corporation. Shared access lines memory cells. 4,574,365, Cl. 365-149.000.

Schexnayder, Michael C.: *See*—
Lovelace, Donald E.; Schexnayder, Michael C.; and Snyder, George W., 4,573,412, Cl. 102-374.000.

Schier, Gunther, to Bayerische Motoren Werke A.G. Motorcycle. 4,573,697, Cl. 280-276.000.

Schlegel, Urs; Tomse, Ljudevit; and Wenger, Urs, to Inventio AG. Load-weighing apparatus for an elevator car. 4,573,542, Cl. 177-132.000.

Schlemper, Eberhard: *See*—
Auch, Wilfried; Mohr, Friedemann; Schlemper, Eberhard; and Steudle, Walter, 4,573,795, Cl. 356-350.000.

Schlensog, Klaus; Beer, Christian; and Riedweg, Robert, to Ameda AG. Breast pump. 4,573,969, Cl. 604-74.000.

Schlumberger Technology Corporation: *See*—
Clark, Brian; and Huchital, Gerald S., 4,574,242, Cl. 324-338.000.

Schmid, Karl: *See*—
Merkator, Manfred; and Schmid, Karl, 4,573,621, Cl. 227-8.000.

Schmidt, Michael J.: *See*—
Hazebrook, Daniel W.; Gehrke, Glenn F.; and Schmidt, Michael J., 4,573,947, Cl. 464-146.000.

Schmidt-Ott, Andreas; and Siegmann, Hans-Christoph. Method for charging particles suspended in gases. 4,574,004, Cl. 55-4.000.

Schmidt, Richard B. Automatic toilet tank release. 4,573,223, Cl. 4-408.000.

Schneider, David A.: *See*—
Chiu, Norman H.; and Schneider, David A., 4,573,325, Cl. 62-129.000.

Schneider, Friedrich E.: *See*—
Stockel, Dieter; and Schneider, Friedrich E., 4,574,014, Cl. 148-11.50P.

Schneider Medintag AG: *See*—
Weikl, Andreas; and Merkel, Volkmar, 4,573,966, Cl. 604-53.000.

Schoeneberger, Carl F.: *See*—
Campbell, John G.; and Schoeneberger, Carl F., 4,574,305, Cl. 358-86.000.

Scholl, Hans-Peter: *See*—
Adams, Jurgen; and Scholl, Hans-Peter, 4,574,189, Cl. 235-30.00R.

Schottker, Willi, to P. A. Rentrop, Hubbert & Wagner Fahrzeugausstattungen GmbH & Co. KG. Hinge structure for seat with adjustable backrest. 4,573,739, Cl. 297-362.000.

Schotz, Larry. Stereophonic receiver having a noise reduction control circuit. 4,574,389, Cl. 381-10.000.

Schruben, Jeffrey J.: *See*—
Vollmer, Patricia J.; and Schruben, Jeffrey J., 4,574,117, Cl. 435-108.000.

Schulein, Rolf-Gunter: *See*—
Denter, Ulrich; and Schulein, Rolf-Gunter, 4,573,387, Cl. 83-856.000.

Schultes, Tilmann; and Stiller, Klaus, to Kortenbach & Rauh Kommanditgesellshaft. Umbrella frame with slider release mechanism. 4,573,487, Cl. 135-24.000.

Schultz, Jerold M.: *See*—
Fakirov, Stoyko C.; and Schultz, Jerold M., 4,574,108, Cl. 428-292.000.

Schulze, Heinz, to Dr. Ing. h.c.F. Porsche A.G. Tensioning device with a control mechanism for the tension of a belt. 4,573,952, Cl. 474-110.000.

Schutten, Herman P.: *See*—
Benjamin, James A.; Schutten, Herman P.; and Lade, Robert W., 4,574,207, Cl. 307-577.000.
Lade, Robert W.; Schutten, Herman P.; and Benjamin, James A., 4,574,208, Cl. 307-577.000.
Lade, Robert W.; Schutten, Herman P.; and Benjamin, James A., 4,574,209, Cl. 307-577.000.

Schwartz, Jack W.: *See*—
Kwiatek, Alfred; and Schwartz, Jack W., 4,573,996, Cl. 604-897.000.

Schwartz, Robert E.; Noble, Roger K.; and Keller, Michael R., to John Zink Company. Shielded smoke suppressing flare gas burner. 4,573,906, Cl. 431-202.000.

Schwerdtner, Otto v.; and Dinstuhl, Klaus, to Kraftwerk Union Aktiengesellschaft. Exhaust gas duct for gas turbines. 4,573,551, Cl. 181-218.000.

Scibetta, James S. Cable harness for an electrocardiogram device. 4,573,474, Cl. 128-644.000.

Scordo, Dominick, to AT&T Bell Laboratories. Multilocation video conference terminal including rapid video switching. 4,574,374, Cl. 370-62.000.

Scott & Fetzer Company, The: *See*—
Baird, Thomas E., Sr.; and Jailor, John J., 4,573,235, Cl. 15-328.000.
Kochte, Werner W.; and Meeker, Paul K., 4,573,234, Cl. 15-323.000.
Kochte, Werner W.; and Nimon, Susan K., 4,573,237, Cl. 15-344.000.

Seco Tools AB: *See*—
Andersson, Kjell, 4,573,836, Cl. 408-59.000.

Seino, Kuniki: *See*—
Myochin, Hisashi; and Seino, Kuniki, 4,574,326, Cl. 361-229.000.

Seki, Yoshizo, to Tomy Kogyo Co., Inc. Teaching toy. 4,573,928, Cl. 434-348.000.

Sekiguchi, Akira; Ichikawa, Takeo; Inoue, Kazuo; Fujimori, Kyoichi; Hirano, Yutaka; and Yasuhara, Seishi. Apparatus for measuring fuel injection advance angle in diesel engine. 4,573,347, Cl. 73-119.00A.

Sekijima, Kenji: *See*—
Yoshida, Hiroshi; Toyoshima, Takefumi; Iwabori, Tomio; Ohkura, Hideaki; Miyamoto, Yasuo; Nishimura, Izumi; Oikawa, Toshiyuki; Sekijima, Kenji; and Ohashi, Makoto, 4,573,656, Cl. 248-562.000.

Sekine, Shoji: *See*—
Ichiyanagi, Toshikazu; Sudo, Kanzaburo; Kawai, Zenzaburo; Sekine, Shoji; and Teshigawara, Hiroshi, 4,573,908, Cl. 432-58.000.

Selfix, Inc.: *See*—
Chap, John P., 4,573,591, Cl. 211-113.000.

Sellstrom, Kathy B.; and Waddill, Harold G., to Texaco, Inc. Amine curing agents and epoxy resins cured therewith. 4,574,143, Cl. 525-438.000.

Semco Instruments, Inc.: *See*—
Moore, M. Samuel; and Paluka, Charles F., 4,573,806, Cl. 374-144.000.

Senderowicz, Daniel, to Intel Corporation. Switched capacitor filter utilizing a differential input and output circuit and method. 4,574,250, Cl. 330-258.000.

Sensormatic Electronics Corporation: *See*—
Pinneo, George G., 4,574,274, Cl. 340-572.000.

Serratelli, John F.; and Norton, Michael A., to Dow Chemical Company, The. Process for preparing copolymer polyols. 4,574,137, Cl. 524-724.000.

Setteducati, Mark: *See*—
Lamle, Stewart M.; and Setteducati, Mark, 4,573,683, Cl. 273-157.00R.

Seuring, Bernhard; Lang, Hans-Jochen; Hropot, Max; and Muschaweck, Roman, to Hoechst Aktiengesellschaft. 5-(4-Chloro-3-sulfamoylbenzoyl)-2,3-dihydro-2-benzofurancarboxylic acids and their compositions having diuretic, saluretic and uricosuric activity. 4,574,128, Cl. 514-469.000.

Sexton, Joseph A., Jr.; and Vanwinkle, Eric J. Dimpler apparatus for nail guns. 4,573,623, Cl. 227-66.000.

Seymour, Raymond K.; Palmieri, Joseph M.; Ashline, William J.; and Doughty, Dennis J., to General Electric Company. Method of making an automated Q-line circuit breaker. 4,573,259, Cl. 29-602.00R.

Shackelford, John R., to Hercules Incorporated. Method for retarding degradation of food colors and flavors. 4,574,086, Cl. 426-62.000.

Shanks, Gary: *See*—
Galloway, Howard R.; and Shanks, Gary, 4,573,581, Cl. 206-570.000.

Shanton, Kenneth J., to Wiggins Teape Group Limited, The. Record material. 4,574,294, Cl. 346-210.000.

Shapiro, Eugene: *See*—
Smith, Warren F.; Shapiro, Eugene; and Winter, Joseph, 4,573,253, Cl. 29-460.000.

Shapiro, Jerrold M., to Boston University. Aqueous fluorophotometer. 4,573,778, Cl. 351-219.000.

Shapland, Earl P., to Flo-Con Systems, Inc. Valve, clamp, refractory and method. 4,573,616, Cl. 222-600.000.

Sharma, Rajeeva; and Kan, C. Eric. Caliper control system and method. 4,573,402, Cl. 100-38.000.

Sharp, Charles M., to SWS Incorporated. Method and apparatus for pulsed high energy density welding. 4,574,176, Cl. 219-121.0LD.

Sharp Kabushiki Kaisha: *See*—
Ogino, Takao; Katsuya, Hiroo; Kato, Chiaki; Kato, Itsuro; and Kato, Tsutomu, 4,573,428, Cl. 118-60.000.
Yoshimura, Masahiro, 4,574,315, Cl. 358-241.000.

Sharp, William M.: *See*—
Kaufman, Charles E.; Shetler, Marvin R.; and Sharp, William M., 4,573,292, Cl. 52-79.100.

Shay, Robert W. Method of installing steering wheel lock plate on a steering wheel shaft. 4,573,252, Cl. 29-453.000.

Shea, Charles J.: *See*—
Carrier, Christian J. L.; and Shea, Charles J., 4,573,316, Cl. 60-39.823.

Sheehy, Roger C.; and Muskat, Irwin, to Granite State Packing Company. Portion pre-sliced roast beef product and process. 4,574,087, Cl. 426-129.000.

Sheldon, Donald A., to Kimberly-Clark Corporation. Outer tampon tube with finger grip. 4,573,963, Cl. 604-15.000.

Shell Oil Company: *See*—
Kipp, Robert M.; and Ayers, Ray R., 4,573,713, Cl. 285-319.000.
Thompson, Mark S., 4,574,120, Cl. 502-220.000.

Shellhause, Ronald L., to General Motors Corporation. Method of manufacturing brake shoe assembly. 4,573,249, Cl. 29-432.000.

Shellhause, Ronald L., to General Motors Corporation. Drum brake. 4,573,557, Cl. 188-216.000.

Shelton, Glenn F. Apparatus and method for generating hydrogen gas for use as a fuel additive in diesel engines. 4,573,435, Cl. 123-3.000.

Shepherd, Michael, to Wallace Murray Corporation. Subway electric motor and fan construction. 4,573,559, Cl. 192-58.00B.

Shetler, Marvin R.: *See*—
Kaufman, Charles E.; Shetler, Marvin R.; and Sharp, William M., 4,573,292, Cl. 52-79.100.

Shibahara, Yoshihiko: *See*—
Arakawa, Satoshi; Matsuda, Terumi; Ishizuka, Akio; and Shibahara, Yoshihiko, 4,574,102, Cl. 428-212.000.

Shiga, Minoru: *See*—
Samejima, Yasushi; Shiga, Minoru; Kano, Toshiji; Saiki, Koji; and Nishio, Tsutomu, deceased, 4,574,037, Cl. 204-98.000.

Shimada, Yuzo: *See*—
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Shimadzu Corporation: *See*—
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Shimano Industrial Company Limited: *See*—
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Nagano, Masashi, 4,573,950, Cl. 474-80.000.
Nagano, Masashi, 4,573,951, Cl. 474-82.000.

Shimbo, Chiaki: *See*—
Simada, Tamotu; Shimbo, Chiaki; Horiuchi, Hideyuki; and Takatsuji, Masamoto, 4,573,466, Cl. 128-303.100.

Shimizu, Yasuo; and Ogura, Masami, to Honda Giken Kogyo Kabushiki Kaisha. Lubrication system for auxiliary equipment transmission. 4,573,373, Cl. 74-468.000.

Shimura, Norio: *See*—
Arakawa, Mutsumi; Ueno, Junichi; Kawaguchi, Yozo; Shimura, Norio; Matsunaga, Shoichi; and Fukaya, Kiyoshi, 4,574,283, Cl. 340-825.080.

Shin, Warren J., to Mannesmann Tally Corporation. Vibration isolating coupling. 4,573,363, Cl. 74-1.0SS.

Shiraishi, Hideo, to Fuji Electric Corporate Research & Development Co., Ltd. Gas analyzing apparatus. 4,574,042, Cl. 204-429.000.

Shireman, Mark J.: *See*—
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Shoei Chemical Inc.: *See*—
Asada, Eiichi; Inokuma, Toshio; and Yamazoe, Mikio, 4,574,055, Cl. 252-514.000.

Showers, Robert A. Doll and means for standing same. 4,573,940, Cl. 446-376.000.

Shuttlewood, Jeffrey R.: *See*—
Lee, Graham L.; Shuttlewood, Jeffrey R.; and Ambrose, John W., 4,573,505, Cl. 141-92.000.

Shymon, Stephen J., to Colgate-Palmolive Co. Antiplaque dentifrice having improved flavor. 4,574,081, Cl. 424-52.000.

Sidles, James: *See*—
Blayne, Jerome J.; Sidles, James; and Bartley, Donald R., 4,573,894, Cl. 425-36.000.

Siegmann, Hans-Christoph: *See*—
Schmidt-Ott, Andreas; and Siegmann, Hans-Christoph, 4,574,004, Cl. 55-4.000.

Sieling, Roger L.: *See*—
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Siemens Aktiengesellschaft: *See*—
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Hirschberg, Jakub, 4,573,480, Cl. 128-784.000.
Reiss, Ruediger, 4,574,392, Cl. 381-51.000.

Signal Companies, Inc., The: *See*—
Polak, Anthony J.; Wrezel, James A.; and Beuhler, Allyson J., 4,573,768, Cl. 350-357.000.

Sillard, Gilles; and Baril, Michel, to Thomson CSF. Passive electromagnetic wave duplexer for millimetric antenna. 4,574,288, Cl. 343-781.00P.

Silver Seiko, Ltd.: *See*—
Aoki, Hideo; and Takahashi, Kazuaki, 4,573,813, Cl. 400-214.000.

Simada, Tamotu; Shimbo, Chiaki; Horiuchi, Hideyuki; and Takatsuji, Masamoto, to Hitachi, Ltd. Surgical equipment. 4,573,466, Cl. 128-303.100.

Simovits, Stephen S., Jr., to American Plasticraft Co. Spark gap device for a cathode ray tube socket. 4,573,755, Cl. 339-111.000.

Sims, Karl: *See*—
Resnikoff, Howard L.; Poggio, Tomaso; and Sims, Karl, 4,574,311, Cl. 358-213.000.

Simson, Anton K.: *See*—
Streetman, Joe W.; and Simson, Anton K., 4,573,396, Cl. 89-36.080.

Sinar, Michael M., to United States Steel Corporation. Apparatus for absorbing a force applied to a cable or the like. 4,573,620, Cl. 226-190.000.

Sinclair, Stuart W., to Long Reach Manufacturing Co. Clamping attachment for a lift truck having two pivoting arms. 4,573,858, Cl. 414-620.000.

Singer, Jerome R., to University of California, The Regents of the. Method for flow measurement using nuclear magnetic resonance. 4,574,239, Cl. 324-306.000.

Singer, Jerome R.: *See*—
Libove, Joel M.; and Singer, Jerome R., 4,574,240, Cl. 324-306.000.

Singer Spezialnadelfabrik GmbH: *See*—
Bergrath, Siegmar; and Kappertz, Fritz, 4,573,575, Cl. 206-380.000.

Singh, Donald R., to Honeywell Inc. Varactor tuned microstrip oscillator for Ka band operation. 4,574,256, Cl. 331-107.0SL.

Sinkora, Frank. Denture stabilizer for musician. 4,573,919, Cl. 433-140.000.

Sitt, Rudiger: *See*—
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Sitterle, George, to Vistakon, Inc. Soft toric contact lens. 4,573,774, Cl. 351-160.00H.

Siwiak, Kazimierz, to Motorola, Inc. High gain vertically polarized antenna structure. 4,574,290, Cl. 343-827.000.

Skrentner, Frank C., to Lamb Technicon Corp. Piston counterboring machine. 4,573,840, Cl. 409-200.000.

Slack, Robert A., to United States of America, Navy. Constant rise AGC device. 4,574,252, Cl. 330-281.000.

Slat, William A., to Plastipak Packaging, Inc. Plastic container with vapor barrier. 4,573,596, Cl. 215-12.00R.

Slindee, Edward A., to International Harvester Company. Needle position indicator for a fuel injection nozzle holder. 4,573,349, Cl. 73-119.00A.

Small, Marc J.; and Powers, David E., to Good Displays, Inc. Modular panel construction. 4,573,513, Cl. 160-135.000.

Smith, Alexander; and Baggs, Burton D., to White, E. E. Beltless swingarm mower. 4,573,306, Cl. 56-10.400.

Smith, David J.: *See*—
Yates, John B., III; and Smith, David J., 4,574,144, Cl. 525-435.000.

Smith, Dolores A.: *See*—
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Smith, Gareth J. Anchoring bolt device. 4,573,844, Cl. 411-340.000.

Smith, Harry D., Jr.: *See—*
Arnold, Dan M.; and Smith, Harry D., Jr., 4,574,193, Cl. 250-270.000.
Smith, Jo Dee. J., to S. E. Rykoff & Co. Corrosion-resistant roller-type pump. 4,573,887, Cl. 417-477.000.
Smith, John L.; and Jenner, Frank H., to Marconi Instruments Limited. Electrical interface arrangements. 4,573,756, Cl. 339-117.00P.
Smith Kline & French Laboratories Limited: *See—*
Cooper, David G.; and Sach, George S., 4,574,126, Cl. 514-318.000.
Smith, Louis W.; and Csapo, Janos I., to GTE Business Communication Systems Inc. Secretarial answering system. 4,574,165, Cl. 179-18.0BD.
Smith, Lyle, to Alpha Molding Technologies Associates. Evacuation system for injection molding machines. 4,573,900, Cl. 425-157.000.
Smith & Nephew Associated Companies P.L.C.: *See—*
Potter, William D.; and Kiamil, Sinan B., 4,574,130, Cl. 523-111.000.
Smith, Richard C.: *See—*
Young, Henry N., IV; and Smith, Richard C., 4,573,685, Cl. 273-173.000.
Smith, Ronald F., to Safety Equipment Corporation. Trailer back-up coupling. 4,573,699, Cl. 280-432.000.
Smith, Warren F.; Shapiro, Eugene; and Winter, Joseph, to Olin Corporation. Optical fiber cable fabrication technique. 4,573,253, Cl. 29-460.000.
Smith, William T.; Rooney, Timothy M.; and Watts, George T., to Goodyear Tire & Rubber Company, The. Run flat device. 4,573,509, Cl. 152-158.000.
Smolley, Robert, to TRW Inc. Multi-element circuit construction. 4,574,331, Cl. 361-393.000.
Snia Fibre S.p.A.: *See—*
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Snodgrass, Kirk A., to Rockwell International Corporation. RF Power amplifier for use with VHF transceivers. 4,574,248, Cl. 330-2.000.
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Snyder, William B., to Union Carbide Corporation. Low density tantalum anode bodies. 4,574,333, Cl. 361-433.000.
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Span-America Medical Systems, Inc.: *See—*
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Spann, Donald C., to Span-America Medical Systems, Inc. Foam body support. 4,573,456, Cl. 128-80.00R.
Spector, Donald. Aroma-generating automobile cigarette lighter. 4,574,181, Cl. 219-274.000.
Spector, George: *See—*
Webb, Ted H.; and Spector, George, 4,573,445, Cl. 124-22.000.
Willbanks, Weldon C.; and Spector, George, 4,573,846, Cl. 414-24.600.
Spelber, Leonard G., to Wastemate Corporation. Water powered waste disposer with improved dynamic seal. 4,573,642, Cl. 241-46.00B.
Speros, Dimitri M.: *See—*
Davenport, John M.; Hansler, Richard L.; Potter, Ralph M.; Blank, John M.; Speros, Dimitri M.; Homa, Arthur S.; Mishra, Amarendra; and Leskovec, Robert A., 4,574,219, Cl. 315-49.000.
Sperry, Charles R.: *See—*
Hargrove, William W.; Harris, Dale C.; Akers, Michael J.; and Sperry, Charles R., 4,573,967, Cl. 604-56.000.
Sperry Corporation: *See—*
Kirk, Kenneth H.; and Tarbuck, Robert R., 4,573,254, Cl. 29-564.800.
Spierings, Gijsbertus A. C. M.: *See—*
Joormann, Hendrik J. M.; and Spierings, Gijsbertus A. C. M., 4,573,762, Cl. 350-96.340.
Spindel, Howard R.; Ast, Vincent N., Jr.; and Brown, Gary L., to Tektronix, Inc. Block mode digital signal conditioning method and apparatus. 4,574,362, Cl. 364-900.000.
Spinelli, Enrico, to Mr. Christmas Incorporated. Artificial tree limb maker machine. 4,573,247, Cl. 29-417.000.
Spong, Richard V.: *See—*
Dornes, Bryan J.; Paukovits, Edward J., Jr.; Spong, Richard V.; and Talarico, Robert J., 4,573,262, Cl. 29-739.000.
Sprague Electric Company: *See—*
Crews, James E.; and Rodriguez, George H., 4,574,187, Cl. 219-541.000.
Sprow, Earnest A. Centrifugal jig for ore beneficiation. 4,574,046, Cl. 209-44.000.
Spruce, Frank: *See—*
Rosiek, Jozef; Spruce, Frank; and Atkinson, Brian, 4,573,446, Cl. 126-92.00R.
Spruck, Helmut, to Leybold-Heraeus GmbH. Electron gun. 4,574,178, Cl. 219-121.0ET.
Spurbeck, Kenneth C., to Pneumo Corporation. Spherical ball drive mechanism for a direct drive valve. 4,573,494, Cl. 137-331.000.
Square D Company: *See—*
Franks, Terry E., 4,574,260, Cl. 335-18.000.
Srinivasan, Gurumakonda R.: *See—*
Lechaton, John S.; Pitner, Philip M.; and Srinivasan, Gurumakonda R., 4,573,256, Cl. 29-576.00B.
Sroka, John S. Lightweight power wrench. 4,573,377, Cl. 81-57.200.
Staar S.A.: *See—*
d'Alayer de Costemore d'Arc, Stephane M. A., 4,574,372, Cl. 369-244.000.
Staar Surgical Co.: *See—*
Mazzocco, Thomas R., 4,573,998, Cl. 623-6.000.
Stadler, Peter: *See—*
Kruger, Bernd-Wieland; Lockhoff, Oswald; Stadler, Peter; Metzger, Karl G.; Opitz, Hans-Georg; Stunkel, Klaus G.; and Zeiler, Hans-Joachim, 4,574,122, Cl. 514-42.000.
Stalherm, Dieter: *See—*
Lemke, Otto; Stalherm, Dieter; and Haack, Reimer, 4,574,034, Cl. 201-1.000.
Stamper, Richard W.; and Hultz, Robert C., to General Tire & Rubber Company, The. Vinyl chloride polymer laminate. 4,574,103, Cl. 428-213.000.
Stanczak, Stephen J.: *See—*
Highley, Robert W.; and Stanczak, Stephen J., 4,574,035, Cl. 202-242.000.
Standard Oil Company, The: *See—*
Cull, Ronald C.; Hartman, Robert A.; and Koch, Paul E., 4,574,160, Cl. 136-245.000.
Standard Oil Company (Ohio), The: *See—*
Pyke, Stephen C.; and Bruce, Mark R., 4,574,039, Cl. 204-290.00R.
Stanek, Jaroslav: *See—*
Baschang, Gerhard; Dietrich, Felix M.; Gisler, Roland; Hartmann, Albert; Stanek, Jaroslav; and Tarcsay, Lajos, 4,574,058, Cl. 260-112.50R.
Stanley Works, The: *See—*
Valenti, Richard L.; and McCormick, Daniel J., 4,573,239, Cl. 16-273.000.
Stanton, Austin N. Torque orientation device. 4,573,651, Cl. 244-165.000.
Stanzel, Victor. Jet propelled model airplane. 4,573,937, Cl. 446-31.000.
Starcevic, Mihailo: *See—*
Fust, Armin; and Starcevic, Mihailo, 4,573,810, Cl. 384-322.000.
Stark, Ewald: *See—*
Bezler, Wilhelm; and Stark, Ewald, 4,573,408, Cl. 101-248.000.
Starkweather, John H.: *See—*
Hsia, Edward S.; Emani, Raghuram J.; and Starkweather, John H., 4,573,865, Cl. 415-115.000.
Starling, Jeffrey T.; and Jones, Bruce D., to Worthington Industries, Inc. Fluid container. 4,573,603, Cl. 220-5.00R.
Starr, Daniel C., to AT&T Bell Laboratories. Shared resource locking apparatus. 4,574,350, Cl. 364-200.000.
Stauffer Chemical Company: *See—*
Leone-Bay, Andrea; and Timony, Peter E., 4,574,010, Cl. 71-92.000.
STE Look: *See—*
Beyl, Jean; Bernard, Jean; le Faou, Daniel; and Peyre, Henri, 4,573,700, Cl. 280-605.000.
Steensen, Wayne L.; and Weaver, Ronald C., to Nabisco Brands, Inc. Aspartame-sweetened gelatin dessert and sweetening composition therefor. 4,574,091, Cl. 426-548.000.
Stegmeier, William J. Method for securing concrete form board to pool and maintaining concrete from pool liner track. 4,574,017, Cl. 156-60.000.
Steinberger, Rolf: *See—*
Theysohn, Rainer; Dorst, Hans G.; McKee, Graham E.; Steinberger, Rolf; Ziegler, Walter; and Zahradnik, Franz, 4,574,131, Cl. 523-209.000.
Steirische Wasserkraft- und Elektrizitaets-AG: *See—*
Marzendorfer, Hans; and Schaller, Werner, 4,573,418, Cl. 110-345.000.
Stellram S.A.: *See—*
Bonjour, Christian; and Duvanel, Francois, 4,574,011, Cl. 75-241.000.
Stelly, C. L. Jack. Marine surveying apparatus and method for locating pipelines buried under the seabed. 4,574,241, Cl. 324-326.000.
Stephan, Willi: *See—*
Mall, Gunther; Dietrich, Herbert; and Stephan, Willi, 4,573,421, Cl. 112-146.000.
Stern, Howard: *See—*
Hecker, Joel; Stern, Howard; and Heydenburg, Thomas, 4,573,758, Cl. 350-3.710.
Steudle, Walter: *See—*
Auch, Wilfried; Mohr, Friedemann; Schlemper, Eberhard; and Steudle, Walter, 4,573,795, Cl. 356-350.000.

Stevens, Julius J., to Teledyne Industries, Inc. Bearing support and seal for a starter motor housing. 4,574,213, Cl. 310-90.000.
Steyr-Daimler-Puch Aktiengesellschaft: *See—*
Malhotra, Satish K., 4,573,280, Cl. 42-7.000.
Stiller, Klaus: *See—*
Schultes, Tilmann; and Stiller, Klaus, 4,573,487, Cl. 135-24.000.
Stine, Harold R., to Fulton Industries, Inc. Interlocking lens structure for a signal lamp. 4,574,339, Cl. 362-360.000.
Stiver, Robert N. G. Fly tying combination tool. 4,573,718, Cl. 289-17.000.
Stockel, Dieter; and Schneider, Friedrich E., to G. Rau GmbH & Co. Process for manufacturing a formed contact part. 4,574,014, Cl. 148-11.50P.
Stocksiefen, Peter; and Gruber, Alfons, to Industrietechnik Kalenborn GmbH. Pipe cleaning device. 4,573,231, Cl. 15-104.06R.
Stoner, Eugene M., to Ares, Inc. Linkless ammunition magazine with shell buffer. 4,573,395, Cl. 89-33.160.
Stoop, Charles W. Paint roller assembly for painting chain link fences and similar structures. 4,573,233, Cl. 15-230.110.
Straub, Paul: *See—*
Maag, Wilhelm; and Straub, Paul, 4,573,568, Cl. 198-731.000.
Streetman, Joe W.; and Simson, Anton K., to General Dynamics Corporation/Convair Div. Nuclear blast hardened mobile vehicle. 4,573,396, Cl. 89-36.080.
Stricker, David K.: *See—*
Hoch, John J.; and Stricker, David K., 4,573,544, Cl. 180-68.100.
Stroem, Sigmunn, to A/S Kongsberg Vapenfabrikk. Low pressure loss, convectively gas-cooled inlet manifold for high temperature radial turbine. 4,573,315, Cl. 60-39.370.
Stroem, Sigmunn; and Mowill, Rolf J., to A/S Kongsberg Vapenfabrikk. High area ratio, variable entrance geometry compressor diffuser. 4,573,868, Cl. 415-157.000.
Strohl, Robert L.; Moore, Paul E.; and Toth, Alexander, to Arcair Company. Self-contained exothermic cutting system. 4,573,665, Cl. 266-48.000.
Stronghold International AG: *See—*
Ripoll, Javier G., 4,573,662, Cl. 254-29.00A.
Strouse, Douglas A., to RCA Corporation. System for identifying envelopes having excessive panel-funnel offset and dispensing articles. 4,573,934, Cl. 445-3.000.
Stunkel, Klaus G.: *See—*
Kruger, Bernd-Wieland; Lockhoff, Oswald; Stadler, Peter; Metzger, Karl G.; Opitz, Hans-Georg; Stunkel, Klaus G.; and Zeiler, Hans-Joachim, 4,574,122, Cl. 514-42.000.
Sturtzkopf, Robert. Device for determining the relative position of the upper jaw and lower jaw for the production of dentures. 4,573,916. Cl. 433-71.000.
Stuttgen, Friedel: *See—*
Ippen, Jakob; and Stuttgen, Friedel, 4,573,510, Cl. 152-159.000.
Styers, C. James, to Rockwell International Corporation. Electronic flight instrument design and evaluation tool. 4,573,925, Cl. 434-49.000.
Suarez, Diego R. Container and handling apparatus therefor. 4,573,850, Cl. 414-382.000.
Sudduth, Donald L. Ultraviolet light curing apparatus. 4,573,277, Cl. 34-4.000.
Sudo, Kanzaburo: *See—*
Ichiyanagi, Toshikazu; Sudo, Kanzaburo; Kawai, Zenzaburo; Sekine, Shoji; and Teshigawara, Hiroshi, 4,573,908, Cl. 432-58.000.
Suenaga, Nobuyuki: *See—*
Sugiyama, Seiji; Suenaga, Norihiro; Suenaga, Nobuyuki; and Kaneda, Michihiro, 4,573,465, Cl. 128-303.100.
Suenaga, Norihiro: *See—*
Sugiyama, Seiji; Suenaga, Norihiro; Suenaga, Nobuyuki; and Kaneda, Michihiro, 4,573,465, Cl. 128-303.100.
Sueoka, Tetsuro; and Kubo, Takeharu, to Kabushiki Kaisha Meidensha. Gate turn-off thyristor with a cathode base layer having four distinct impurity concentrations. 4,574,296, Cl. 357-38.000.
Suga, Masaaki: *See—*
Hamada, Hideo; Morimoto, Yoshiro; Suga, Masaaki; Murasugi, Takashi; and Suzuki, Tadashi, 4,573,375, Cl. 74-863.000.
Sugimoto, Jiro: *See—*
Morita, Masao; Sugimoto, Jiro; Mizuno, Komei; Tanaka, Motoaki; and Urano, Fumiyoshi, 4,574,156, Cl. 544-398.000.
Sugita, Katsuhiko; and Uehara, Makoto, to Tsudakoma Kogyo Kabushiki Kaisha. Weft detection stopper for looms. 4,573,499, Cl. 139-370.200.
Sugiyama, Seiji; Suenaga, Norihiro; Suenaga, Nobuyuki; and Kaneda, Michihiro. to Nippon Infrared Industries Co., Ltd. Laser irradiation apparatus. 4,573,465, Cl. 128-303.100.
Sugizaki, Kyoichi: *See—*
Hadama, Shigeyuki; and Sugizaki, Kyoichi, 4,573,890, Cl. 418-108.000.
Sulfstede, Louis E.; Bergt, Carl; and Helt, Robert W., to American Standard Inc. Adaptive defrost control for heat pump system. 4,573,326, Cl. 62-156.000.
Sullivan, Harry E.: *See—*
Keene, Terrell M.; Calhoun, Wiley C.; Flemming, Edgar J.; Haggard, Eugene E.; Taylor, David L.; Hartley, Richard N.; Martinez, Francisco J.; Sullivan, Harry E.; Mason, Arvil B.; and Lucas, Wayne M., 4,573,829, Cl. 405-157.000.
Sullivan, Norman D.; and Baker, Forrest E., to Automated Portion Control Technology, Inc. Pizza docker. 4,573,388, Cl. 83-867.000.
Sultzbaugh, S. Ray. Game. 4,573,689, Cl. 273-348.000.
Sulzer Brothers Limited: *See—*
Meyer, Wolfgang K.; and Breyer, Fritz-Werner, 4,573,856, Cl. 414-561.000.
Sumitomo Electric Industries, Ltd.: *See—*
Fujisaki, Masaru; Tsuchida, Tetsuo; Sasajima, Yoichi; Ito, Hiroshisa; and Morita, Masahiro, 4,573,745, Cl. 301-63.0PW.
Ogino, Takao; Katsuya, Hiroo; Kato, Chiaki; Kato, Itsuro; and Kato, Tsutomu, 4,573,428, Cl. 118-60.000.
Sumitomo Metal Industries, Ltd.: *See—*
Imahashi, Hiromichi; Kawahara, Akira; Konishi, Takao; Morimoto, Yoshihumi; Terui, Michio; and Yagi, Yoshio, 4,573,629, Cl. 228-173.200.
Sunbelt America Corporation: *See—*
Thrash, Tommy K.; Tock, Richard W.; Cox, Lyle V.; and Quattlebaum, W. Gregg, 4,573,447, Cl. 126-263.000.
Sundstrand Corporation: *See—*
Chapman, David N., 4,573,661, Cl. 251-234.000.
Sundstrand Data Control, Inc.: *See—*
Bateman, Charles D., 4,574,360, Cl. 364-567.000.
Superior Plastic Products Corp.: *See—*
Russo, Ronald D., 4,573,965, Cl. 604-30.000.
Supfina Maschinenfabrik Hentzen GmbH & Co KG: *See—*
Wieck, Karl, 4,573,289, Cl. 51-57.000.
Suzuki, Kenji, to Canon Kabushiki Kaisha. Focus detecting apparatus. 4,573,784, Cl. 354-406.000.
Suzuki, Koji: *See—*
Nagashima, Nao; Suzuki, Koji; Nagahira, Jyoji; Kuroda, Kouki; and Takayanagi, Yoshiaki, 4,573,788, Cl. 355-14.00R.
Suzuki, Norio, to Nippon Gakki Seizo Kabushiki Kaisha. Musical tone generation device of waveshape memory type. 4,573,389, Cl. 84-1.260.
Suzuki, Tadashi: *See—*
Hamada, Hideo; Morimoto, Yoshiro; Suga, Masaaki; Murasugi, Takashi; and Suzuki, Tadashi, 4,573,375, Cl. 74-863.000.
Suzuki, Takamasa: *See—*
Nakata, Rikizo; Okumoto, Tadaoki; Ukai, Mikio; Suzuki, Takamasa; and Yamada, Tomoyoshi, 4,573,693, Cl. 277-212.0FB.
Svyatsky, Eduard; Rabindran, K. George; and Faber, Thomas J., to Bell & Howell Company. Document feeder. 4,573,675, Cl. 271-122.000.
Swank, Robert P., to Leiter Swank Industries, Inc. Combination multiple compartment storage bin and sorting tray. 4,573,751, Cl. 312-211.000.
Sweeney, Thomas F., to Vetco Offshore, Inc. Marine riser coupling assembly. 4,573,714, Cl. 285-363.000.
Sweet, Roger H.: *See—*
Crow, Granville; Renger, Larry H.; and Sweet, Roger H., 4,573,944, Cl. 446-465.000.
Swift, David W., to Pilkington P.E. Limited. Optical display apparatus. 4,573,759, Cl. 350-3.850.
Swinderman, Robert T., to Martin Engineering Company. Conveyor housing access port. 4,573,567, Cl. 198-860.400.
Swingline Inc.: *See—*
Olesen, Paul; Lensky, Albert; and Pendzich, Richard J., 4,573,625, Cl. 227-131.000.
Swiss Aluminium Ltd.: *See—*
Friedli, Hans; and Gut, Edwin, 4,574,019, Cl. 156-73.600.
Meyer, Klaus, 4,574,073, Cl. 423-111.000.
Swiss Fabricating, Inc.: *See—*
Lienhard, Robert W., 4,573,294, Cl. 52-93.000.
SWS Incorporated: *See—*
Sharp, Charles M., 4,574,176, Cl. 219-121.0LD.
Symons, James D.: *See—*
DeHart, Arnold O.; and Symons, James D., 4,573,690, Cl. 277-1.000.
Szachowicz, Edward H.; and Walsh, John, to Implant Technologies. Talking tracheostomy tube. 4,573,460, Cl. 128-200.260.
Tabata, Kuniaki; Tsuhara, Susumu; Machida, Tetsuo; Iwami, Hidefumi; and Okada, Yasuyuki, to Hitachi, Ltd. Method and apparatus for controlling image display. 4,574,364, Cl. 364-900.000.
Tachikawa Spring Co., Ltd.: *See—*
Sakamoto, Takao, 4,573,657, Cl. 248-575.000.
Taco Bell: *See—*
Cortopassi, Jeffery J., 4,573,570, Cl. 206-45.330.
Tadokoro, Yoshiharu, to Kurimoto, Ltd. Discharge control valve. 4,573,492, Cl. 137-239.000.
Taka, Masahiro: *See—*
Irie, Kazunari; Taka, Masahiro; and Murakami, Hideyo, 4,574,383, Cl. 375-27.000.
Takagi, Hiroshi: *See—*
Hirano, Yutaka; Kawakami, Hirokazu; Tanaami, Masaaki; Kosano, Motohiko; Takagi, Hiroshi; Ishiai, Yoshio; and Iwahashi, Ituo, 4,573,880, Cl. 417-312.000.
Takahashi, Hideaki; Kondo, Haruyoshi; Takeuchi, Takashi; Hayakawa, Kiyoharu; and Muraki, Hideaki, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Thin film oxygen sensor with microheater. 4,574,264, Cl. 338-34.000.
Takahashi, Hirotake; and Nishikawa, Kenji, to Honda Giken Kogyo Kabushiki Kaisha. Motorcycle steering mechanism. 4,573,698, Cl. 280-279.000.
Takahashi, Kazuaki: *See—*
Aoki, Hideo; and Takahashi, Kazuaki, 4,573,813, Cl. 400-214.000.
Takara Co. Ltd.: *See—*
Ogawa, Iwakichi, 4,573,942, Cl. 446-457.000.

Takasaki, Masaru; and Aoyama, Masutoshi, to Nissan Motor Co., Ltd. Light assembly with flexed thermoplastic fresnel lens. 4,574,338, Cl. 362-278.000.

Takatsuji, Masamoto: *See—*
Simada, Tamotu; Shimbo, Chiaki; Horiuchi, Hideyuki; and Takatsuji, Masamoto, 4,573,466, Cl. 128-303.100.

Takayanagi, Yoshiaki: *See—*
Nagashima, Nao; Suzuki, Koji; Nagahira, Jyoji; Kuroda, Kouki; and Takayanagi, Yoshiaki, 4,573,788, Cl. 355-14.00R.

Takeda Riken Co., Ltd.: *See—*
Yada, Eiichi, 4,574,271, Cl. 340-347.0NT.

Takei, Toshihiro: *See—*
Watanabe, Kiyohiko; Matsui, Kazuma; Hattori, Yoshiyuki; Takei, Toshihiro; Nakamura, Toshiaki; and Ohnishi, Shunsaku, 4,573,882, Cl. 417-366.000.

Takemura, Haruhiko; Kato, Kiichi; and Sakamoto, Masaharu, to Olympus Optical Company Limited. Apparatus for recording and reproducing information on an optical disc. 4,574,371, Cl. 369-100.000.

Takeuchi, Shin: *See—*
Murata, Seiichiro; Tateishi, Masaru; Hayakawa, Kohji; Sakamoto, Takeshi; Takeuchi, Shin; and Mukasa, Kohsuke, 4,573,422, Cl. 114-65.00R.

Takeuchi, Takashi: *See—*
Takahashi, Hideaki; Kondo, Haruyoshi; Takeuchi, Takashi; Hayakawa, Kiyoharu; and Muraki, Hideaki, 4,574,264, Cl. 338-34.000.

Takikawa, Osamu; and Harata, Mitsuo, to Kabushiki Kaisha Toshiba. Thermal head. 4,574,292, Cl. 346-76.0PH.

Talarico, Robert J.: *See—*
Dornes, Bryan J.; Paukovits, Edward J., Jr.; Spong, Richard V.; and Talarico, Robert J., 4,573,262, Cl. 29-739.000.

Tamamushi, Takashige: *See—*
Nishizawa, Jun-ichi; and Tamamushi, Takashige, 4,574,310, Cl. 358-212.000.

Tamir, Shoshana: *See—*
Zahavi, Joseph; and Tamir, Shoshana, 4,574,041, Cl. 204-38.300.

Tamura, Yukio: *See—*
Asano, Makoto; Hasegawa, Kiyoharu; Tamura, Yukio; and Oono, Yoshihiro, 4,574,110, Cl. 428-402.210.

Tanaami, Masaaki: *See—*
Hirano, Yutaka; Kawakami, Hirokazu; Tanaami, Masaaki; Kosano, Motohiko; Takagi, Hiroshi; Ishiai, Yoshio; and Iwahashi, Ituo, 4,573,880, Cl. 417-312.000.

Tanaka, Atsuo: *See—*
Donomoto, Tadashi; Tanaka, Atsuo; and Katou, Shinji, 4,573,519, Cl. 164-97.000.

Tanaka, Motoaki: *See—*
Morita, Masao; Sugimoto, Jiro; Mizuno, Komei; Tanaka, Motoaki; and Urano, Fumiyoshi, 4,574,156, Cl. 544-398.000.

Tanaka, Shigeru: *See—*
Nogi, Hiroyoshi; and Tanaka, Shigeru, 4,573,674, Cl. 271-118.000.
Yoshimura, Shingo; Ito, Katsumi; and Tanaka, Shigeru, 4,573,547, Cl. 180-168.000.

Tanaka, Sumio: *See—*
Atsumi, Shigeru; and Tanaka, Sumio, 4,574,273, Cl. 307-475.000.

Tandem Computers Incorporated: *See—*
Harris, Richard L.; and Horst, Robert W., 4,574,344, Cl. 364-200.000.

Tangorra, Giorgio, to Industrie Pirelli S.p.A. Driving belt. 4,573,953, Cl. 474-152.000.

Tani, Tadaaki: *See—*
Adachi, Keiichi; Ikeda, Tadashi; and Tani, Tadaaki, 4,574,115, Cl. 430-522.000.

Taniguchi, Nobuyuki; Hosomizu, Hiroshi; Tsuji, Kenji; Omaki, Takanobu; and Nakai, Masaaki, to Minolta Camera Kabushiki Kaisha. Flash photographing system. 4,573,786, Cl. 354-416.000.

Tanikawa, Kunihiro; and Ohtsuki, Osamu, to Fujitsu Limited. Charge coupled device having meandering channels. 4,574,295, Cl. 357-24.000.

Tarbuck, Robert R.: *See—*
Kirk, Kenneth H.; and Tarbuck, Robert R., 4,573,254, Cl. 29-564.800.

Tarcsay, Lajos: *See—*
Baschang, Gerhard; Dietrich, Felix M.; Gisler, Roland; Hartmann, Albert; Stanek, Jaroslav; and Tarcsay, Lajos, 4,574,058, Cl. 260-112.50R.

Tarquini, Michele: *See—*
Biraghi, Giuseppe; Clavarino, Amedeo; Roth, Ferdinando; and Tarquini, Michele, 4,573,748, Cl. 312-7.200.

Tate, Ernest L. Combination electric power bus and fluorescent drop light. 4,574,220, Cl. 315-57.000.

Tateishi, Masaru: *See—*
Murata, Seiichiro; Tateishi, Masaru; Hayakawa, Kohji; Sakamoto, Takeshi; Takeuchi, Shin; and Mukasa, Kohsuke, 4,573,422, Cl. 114-65.00R.

Taucher, Robert: *See—*
Nowak, Gerhard; Winter, Alfred; Morbitzer, Hans P.; Kruschik, Klaus; and Taucher, Robert, 4,573,701, Cl. 280-616.000.

Tavitian, Vartan M.: *See—*
Westeren, Herbert W.; Harrison, Ronald A.; and Tavitian, Vartan M., 4,573,667, Cl. 266-114.000.

Taylor, David L.: *See—*
Keene, Terrell M.; Calhoun, Wiley C.; Flemming, Edgar J.; Haggard, Eugene E.; Taylor, David L.; Hartley, Richard N.; Martinez, Francisco J.; Sullivan, Harry E.; Mason, Arvil B.; and Lucas, Wayne M., 4,573,829, Cl. 405-157.000.

Taylor, Stewart S., to Tektronix, Inc. High impedance current source. 4,574,233, Cl. 323-316.000.

Taylor-Winfield Corporation, The: *See—*
Mullane, William E.; and Lund, David, 4,573,260, Cl. 29-623.100.

Technion Research and Development Foundation Ltd.: *See—*
Zahavi, Joseph; and Tamir, Shoshana, 4,574,041, Cl. 204-38.300.

Tecnovar Italiana S.p.A.: *See—*
Fontana, Ludovico, 4,573,393, Cl. 89-1.590.

Tedder, Thomas E.: *See—*
Rich, Alan H.; Gaasterland, Douglas E.; and Tedder, Thomas E., 4,573,467, Cl. 128-303.100.

Tegtmeier, Sheldon D., to Tegtmeier & Sons, Inc. Hydraulic stabilizing mechanism for use with hydraulic elevating system. 4,573,742, Cl. 298-11.000.

Tegtmeier & Sons, Inc.: *See—*
Tegtmeier, Sheldon D., 4,573,742, Cl. 298-11.000.

Tejas Designs, Inc.: *See—*
Braswell, Charles, 4,573,855, Cl. 414-463.000.

Tektronix, Inc.: *See—*
Mihalik, Michael A.; Hoeren, Gerd H.; Reiney, Michael G.; Besemer, James J.; and Palmquist, Steven R., 4,574,354, Cl. 364-481.000.
Spindel, Howard R.; Ast, Vincent N., Jr.; and Brown, Gary L., 4,574,362, Cl. 364-900.000.
Taylor, Stewart S., 4,574,233, Cl. 323-316.000.
Wimmer, Guenther W., 4,574,291, Cl. 346-75.000.

Teledyne Industries, Inc.: *See—*
Stevens, Julius J., 4,574,213, Cl. 310-90.000.

Telefonaktiebolaget L M Ericsson: *See—*
Dahlqvist, Ingemar E., 4,574,376, Cl. 370-103.000.

Temple, Davis L., Jr.: *See—*
Nair, Xina; and Temple, Davis L., Jr., 4,574,129, Cl. 514-540.000.

Teng, Nelson N. H.: *See—*
Kaplan, Henry S.; Teng, Nelson N. H.; Lam, Kit S.; and Calvo-Riera, Francisco, 4,574,116, Cl. 435-68.000.

Tenmyo, Shigemoto: *See—*
Koide, Hiroshi; Watanabe, Junichi; and Tenmyo, Shigemoto, 4,574,369, Cl. 369-44.000.

Teraguchi, Yuji; and Endo, Sadayoshi, to Clarion Co., Ltd. Channel changing mechanism of a tape player. 4,574,322, Cl. 360-74.100.

Teraoka, Masanori; and Matsuda, Terumi, to Fuji Photo Film Company, Ltd. Radiation image storage panel. 4,574,195, Cl. 250-327.200.

Termolar S/A: *See—*
de Freitas, Elias M., 4,573,613, Cl. 222-213.000.

Terui, Michio: *See—*
Imahashi, Hiromichi; Kawahara, Akira; Konishi, Takao; Morimoto, Yoshihumi; Terui, Michio; and Yagi, Yoshio, 4,573,629, Cl. 228-173.200.

Terumo Kabushiki Kaisha: *See—*
Ishizaka, Hideo; and Hanzawa, Yoshiki, 4,574,359, Cl. 364-557.000.

Tesch, Marlynn F.: *See—*
Tesch, Sylvester M., Jr., 4,573,609, Cl. 221-211.000.

Tesch, Sylvester H., Jr.: *See—*
Tesch, Sylvester M., Jr., 4,573,609, Cl. 221-211.000.

Tesch, Sylvester M., Jr., to Tesch, Sylvester H., Jr.; Tesch, Marlynn F.; Rasmussen, Harvey J.; Rasmussen, Patricia; and Rasmussen, Harvey E. Seed planting apparatus. 4,573,609, Cl. 221-211.000.

Teshigawara, Hiroshi: *See—*
Ichiyanagi, Toshikazu; Sudo, Kanzaburo; Kawai, Zenzaburo; Sekine, Shoji; and Teshigawara, Hiroshi, 4,573,908, Cl. 432-58.000.

Tetra Pak International AB: *See—*
Billberg, Alf, 4,573,957, Cl. 493-309.000.

Texaco Inc.: *See—*
Barot, Devendra T., 4,574,002, Cl. 48-77.000.
Savage, Kerry D.; and Dowling, Donald J., 4,573,805, Cl. 374-136.000.
Sellstrom, Kathy B.; and Waddill, Harold G., 4,574,143, Cl. 525-438.000.

Texas Instruments Incorporated: *See—*
Wang, Chung S., 4,574,177, Cl. 219-121.0PE.

Thermal Design, Inc.: *See—*
Harkins, Daniel J., 4,573,298, Cl. 52-404.000.

Theysohn, Rainer; Dorst, Hans G.; McKee, Graham E.; Steinberger, Rolf; Ziegler, Walter; and Zahradnik, Franz, to BASF Aktiengesellschaft. Preparation of high-impact nylon molding materials. 4,574,131, Cl. 523-209.000.

Thinking Machines Corporation: *See—*
Resnikoff, Howard L.; Poggio, Tomaso; and Sims, Karl, 4,574,311, Cl. 358-213.000.

Thirion de Briel, Jacques, to Valeo. Speed variator pulley. 4,573,948, Cl. 474-28.000.

Tholander, Lars H. G.: *See—*
Hellstrom, Jerker; Tholander, Lars H. G.; and Jacobsson, Kurt A. G., 4,574,353, Cl. 364-470.000.

Thomas, Robert J., to Eagle Industries, Inc. Three-dimensional flexible reflectors. 4,573,763, Cl. 350-105.000.

Thomas, Simon A.: *See—*
Matthews, Andrew J.; and Thomas, Simon A., 4,574,051, Cl. 252-70.000.

Thompson, Earl C. Side activated animal watering valve. 4,573,433, Cl. 119-72.500.

Thompson, Mark S., to Shell Oil Company. Method for preparing high activity silica supported hydrotreating catalysts. 4,574,120, Cl. 502-220.000.

Thomson-CSF: *See—*
Meunier, Paul L., 4,573,357, Cl. 73-517.00R.
Sillard, Gilles; and Baril, Michel, 4,574,288, Cl. 343-781.00P.

Thorhus, Lene B.: *See—*
Roswall, Stig; and Thorhus, Lene B., 4,574,080, Cl. 424-20.000.

Thorpe, John D.: *See—*
Clemmow, Raymond J.; Radford, Leonard; and Thorpe, John D., 4,573,744, Cl. 299-81.000.

Thrash, Tommy K.; Tock, Richard W.; Cox, Lyle V.; and Quattlebaum, W. Gregg, to Sunbelt America Corporation. Chemical heater. 4,573,447, Cl. 126-263.000.

Tietjen, Marlene; Hollenberg, Jane; and Rigg, Richard T., to Revlon, Inc. One-phase silicone-based cosmetic products containing wax. 4,574,082, Cl. 424-63.000.

TII Computer Systems, Inc.: *See—*
Olek, David J., 4,574,167, Cl. 179-175.30R.

Timberjack Inc.: *See—*
Johnson, Thomas E., 4,573,728, Cl. 294-119.400.

Timony, Peter E.: *See—*
Leone-Bay, Andrea; and Timony, Peter E., 4,574,010, Cl. 71-92.000.

Tinder, David V.: *See—*
Nonnenmacher, Ronald C.; and Tinder, David V., 4,573,341, Cl. 73-1.00D.

Tischer, James C.; and Larson, James W., to American Standard Inc. Compressor motor housing as an economizer and motor cooler in a refrigeration system. 4,573,324, Cl. 62-115.000.

Tissage et Enduction Serge Ferrari S.A.: *See—*
Ferrari, Serge, 4,574,107, Cl. 428-259.000.

Tissot, Jean. Pressure therapy apparatus. 4,573,453, Cl. 128-64.000.

TMC Corporation: *See—*
Nowak, Gerhard; Winter, Alfred; Morbitzer, Hans P.; Kruschik, Klaus; and Taucher, Robert, 4,573,701, Cl. 280-616.000.

Tobin-Arp Manufacturing Company: *See—*
Flaten, James F., 4,573,837, Cl. 408-111.000.

Tock, Richard W.: *See—*
Thrash, Tommy K.; Tock, Richard W.; Cox, Lyle V.; and Quattlebaum, W. Gregg, 4,573,447, Cl. 126-263.000.

Tocum, Incorporated: *See—*
Campbell, John G.; and Schoeneberger, Carl F., 4,574,305, Cl. 358-86.000.

Todokoro, Shigeru; and Kojima, Tadashi, to Tokyo Shibaura Denki Kabushiki Kaisha. Wave-shaping circuit. 4,574,206, Cl. 307-359.000.

Togashi, Kousaku: *See—*
Fujie, Hideo; and Togashi, Kousaku, 4,573,798, Cl. 356-432.000.

Tokai TRW & Co., Ltd.: *See—*
Abe, Michio, 4,573,372, Cl. 74-422.000.

Tokyo Sanyo Electric Co., Ltd.: *See—*
Hirano, Yutaka; Kawakami, Hirokazu; Tanaami, Masaaki; Kosano, Motohiko; Takagi, Hiroshi; Ishiai, Yoshio; and Iwahashi, Ituo, 4,573,880, Cl. 417-312.000.

Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Atsumi, Shigeru; and Tanaka, Sumio, 4,574,273, Cl. 307-475.000.
Inagawa, Jun; Nagumo, Masahide; and Kojima, Tadashi, 4,574,361, Cl. 364-761.000.
Kitamoto, Manabu, 4,573,869, Cl. 415-182.000.
Nagano, Katsumi, 4,574,205, Cl. 307-310.000.
Nakata, Yuji, 4,573,872, Cl. 416-96.00A.
Ogawa, Atsushi, 4,574,202, Cl. 307-261.000.
Todokoro, Shigeru; and Kojima, Tadashi, 4,574,206, Cl. 307-359.000.
Yamagishi, Haruo; and Kamo, Hisao, 4,574,298, Cl. 357-71.000.

Tome, Richard E.: *See—*
Blaushild, Ronald M.; and Tome, Richard E., 4,574,070, Cl. 376-289.000.

Tomlinson, Harold W., Jr.: *See—*
Blackwell, George F.; and Tomlinson, Harold W., Jr., 4,574,393, Cl. 382-17.000.

Tomonaga, Mitsuo: *See—*
Kitamura, Minoru; Yoshii, Kenta; Kawasaki, Shozo; Matsuo, Katsuyoshi; and Tomonaga, Mitsuo, 4,573,515, Cl. 164-468.000.

Tomse, Ljudevit: *See—*
Schlegel, Urs; Tomse, Ljudevit; and Wenger, Urs, 4,573,542, Cl. 177-132.000.

Tomy Kogyo Co., Inc.: *See—*
Seki, Yoshizo, 4,573,928, Cl. 434-348.000.

Top Tech, Inc.: *See—*
Hyatt, James R.; and Hyatt, Douglas K., 4,573,381, Cl. 82-36.00R.

Toray Industries, Inc.: *See—*
Masuda, Yutaka; and Nakamura, Teruo, 4,574,018, Cl. 156-72.000.

Torczon, David J. Tool guide. 4,573,276, Cl. 33-481.000.

Toshiba Kikai Kabushiki Kaisha: *See—*
Fujie, Hideo; and Togashi, Kousaku, 4,573,798, Cl. 356-432.000.

Toth, Alexander: *See—*
Strohl, Robert L.; Moore, Paul E.; and Toth, Alexander, 4,573,665, Cl. 266-48.000.

Toth, Vincent A.: *See—*
Kasner, William H.; Miller, Richard A.; and Toth, Vincent A., 4,574,180, Cl. 219-121.0LY.

Totoku Electric Co., Ltd.: *See—*
Sakai, Yoshio; and Yamada, Takeshi, 4,574,186, Cl. 219-528.000.

Toyama, Tadao: *See—*
Kobayashi, Kesanao; Toyama, Tadao; and Yoshida, Susumu, 4,573,782, Cl. 354-299.000.

Toyoda Gosei Co., Ltd.: *See—*
Nakata, Rikizo; Okumoto, Tadaoki; Ukai, Mikio; Suzuki, Takamasa; and Yamada, Tomoyoshi, 4,573,693, Cl. 277-212.0FB.

Toyoshima, Takefumi: *See—*
Yoshida, Hiroshi; Toyoshima, Takefumi; Iwabori, Tomio; Ohkura, Hideaki; Miyamoto, Yasuo; Nishimura, Izumi; Oikawa, Toshiyuki; Sekijima, Kenji; and Ohashi, Makoto, 4,573,656, Cl. 248-562.000.

Toyota Jidosha Kabushiki Kaisha: *See—*
Donomoto, Tadashi; Tanaka, Atsuo; and Katou, Shinji, 4,573,519, Cl. 164-97.000.
Nishiyama, Yosuke, 4,573,626, Cl. 228-6.100.
Ohnishi, Kenichi, 4,574,268, Cl. 340-64.000.
Watanabe, Haruo; Nakano, Kazuo; and Ohnishi, Akito, 4,573,443, Cl. 123-492.000.

Trailmor [Proprietary] Limited: *See—*
Rheeder, Frederik R. L.; and Dixon, Deon, 4,573,564, Cl. 194-250.000.

Transmatic, Inc.: *See—*
Mikalonis, Liudas K., 4,574,336, Cl. 362-260.000.

Trepaud, Georges. Heat exchangers with clusters of straight or corrugated tubes, especially to systems for supporting the tubes at fixed and movable axial levels. 4,573,528, Cl. 165-162.000.

Tricca, Raymond A.; and Foster, John K., to Packaging Industries, Inc. Exercise mat. 4,574,101, Cl. 428-138.000.

Triumph-Adler A.G. fur Buro- und Informationstechnik: *See—*
Pamler, Gerhard, 4,573,816, Cl. 400-661.000.

Troger, Norbert: *See—*
Merz, Eugen; Sandhaus, Sami; and Troger, Norbert, 4,573,915, Cl. 433-64.000.

Troutner, Vernon H., to Extracorporeal Medical Specialties, Inc. Peristaltic pump. 4,573,884, Cl. 417-374.000.

Troutner, Vernon H., to Extracorporeal Medical Specialties, Inc. Cassette drawer assembly for photoactivation patient treatment system. 4,573,962, Cl. 604-6.000.

True Temper Corporation: *See—*
Ipema, Neal J.; and Portz, William E., 4,573,311, Cl. 56-400.170.

TRW Automotive Products Inc.: *See—*
Willey, Ronald A., 4,573,646, Cl. 242-107.40A.

TRW Inc.: *See—*
Durkow, Carl J., 4,573,617, Cl. 225-96.000.
Feldman, David G.; and France, Hubert M., Jr., 4,574,284, Cl. 340-825.520.
Jones, Trevor O., 4,574,267, Cl. 340-58.000.
Smolley, Robert, 4,574,331, Cl. 361-393.000.

Tryon, James A.: *See—*
Holcomb, David A.; and Tryon, James A., 4,573,244, Cl. 241-169.000.

Tsuchida, Tetsuo: *See—*
Fujisaki, Masaru; Tsuchida, Tetsuo; Sasajima, Yoichi; Ito, Hiroshisa; and Morita, Masahiro, 4,573,745, Cl. 301-63.0PW.

Tsuchiya, Ichiro: *See—*
Masuzawa, Takahisa; and Tsuchiya, Ichiro, 4,574,179, Cl. 219-121.0PG.

Tsudakoma Kogyo Kabushiki Kaisha: *See—*
Sugita, Katsuhiko; and Uehara, Makoto, 4,573,499, Cl. 139-370.200.

Tsuhara, Susumu: *See—*
Tabata, Kuniaki; Tsuhara, Susumu; Machida, Tetsuo; Iwami, Hidefumi; and Okada, Yasuyuki, 4,574,364, Cl. 364-900.000.

Tsuji, Kenji: *See—*
Taniguchi, Nobuyuki; Hosomizu, Hiroshi; Tsuji, Kenji; Omaki, Takanobu; and Nakai, Masaaki, 4,573,786, Cl. 354-416.000.

Tsutsumi, Masahiro; Nakazawa, Toru; and Utsunomiya, Yasuharu, to Mita Industrial Company, Ltd. Photosensitive composition for electrophotography having polyvinyl carbazole and silicone oil. 4,574,114, Cl. 430-81.000.

Tuccillo, Mark J., to American Home Products Corporation. Systems and methods for monitoring the fetal heart. 4,573,479, Cl. 128-698.000.

Tucker, David R.: *See—*
Minetola, James A.; and Tucker, David R., 4,573,986, Cl. 604-366.000.

Turner Quick-Lift Corporation: *See—*
VanDenberg, Ervin K.; and Eckelberry, Jim, 4,573,704, Cl. 280-704.000.

Ube Industries, Ltd.: *See—*
Okamoto, Hidemasa; Yamanaka, Mitsuo; and Fujii, Kazuyoshi, 4,574,154, Cl. 544-192.000.

Udell, Theodore H., to Container Corporation of America. Replaceable closure arrangement. 4,573,605, Cl. 220-304.000.

Uehara, Makoto: *See—*
Sugita, Katsuhiko; and Uehara, Makoto, 4,573,499, Cl. 139-370.200.

Uemura, Seiichi; Hirose, Takao; Sohda, Yoshio; Sakamoto, Takayoshi; and Kishimoto, Yoshio, to Nippon Oil Company Limited. Process for producing pitch based graphite fibers. 4,574,077, Cl. 423-447.600.

Ueno, Junichi: *See—*
Arakawa, Mutsumi; Ueno, Junichi; Kawaguchi, Yozo; Shimura, Norio; Matsunaga, Shoichi; and Fukaya, Kiyoshi, 4,574,283, Cl. 340-825.080.

Ueno, Katumi: *See—*
Honda, Yasuhiro; Ueno, Katumi; Nishizaki, Genichi; Kitahara, Harumi; and Kamioka, Hiroshi, 4,573,261, Cl. 29-701.000.

Uetuji, Toshio; and Ohkubo, Noriaki, to Matsushita Refrigeration Company. Rotary compressor. 4,573,879, Cl. 417-312.000.

Uhing, Joachim. Closed rolling nut for transforming a rotary movement of a shaft into a thrust movement of the rolling nut. 4,573,367, Cl. 74-89.000.

Ukai, Mikio: *See—*
Nakata, Rikizo; Okumoto, Tadaoki; Ukai, Mikio; Suzuki, Takamasa; and Yamada, Tomoyoshi, 4,573,693, Cl. 277-212.0FB.

Umpleby, Jeffrey D., to BP Chemicals Limited. Polymer composition. 4,574,133, Cl. 524-147.000.

Union Carbide Corporation: *See—*
Cheung, Harry, 4,574,006, Cl. 62-22.000.
Snyder, William B., 4,574,333, Cl. 361-433.000.

Union Oil Company of California: *See—*
Gritters, Gregory A.; Nellis, Walter E.; and Featherstone, John L., 4,573,803, Cl. 366-167.000.

United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See—*
Booth, Stuart E.; Clifford, Andrew W.; and Parratt, Noel J., 4,573,517, Cl. 164-61.000.
Quested, Peter N.; and Northwood, James E., 4,573,516, Cl. 164-61.000.

United States of America
Air Force: *See—*
Jewell, Jack L., 4,573,767, Cl. 350-354.000.
Army: *See—*
Conrad, Raymond W., 4,574,191, Cl. 250-203.00R.
Krauss, Timothy A.; and Kingston, Leo, 4,573,871, Cl. 416-20.00R.
Laten, Bobby W.; and Prater, Johnny L., 4,573,647, Cl. 244-3.120.
Lovelace, Donald E.; Schexnayder, Michael C.; and Snyder, George W., 4,573,412, Cl. 102-374.000.
Miller, Brian S.; and Dunn, Aubrey J., 4,573,627, Cl. 228-102.000.
Sayles, David C., 4,574,132, Cl. 523-466.000.
Energy: *See—*
Devaney, Howard F., 4,574,168, Cl. 200-61.530.
Horwitz, E. Philip; and Kalina, Dale G., 4,574,072, Cl. 423-9.000.
Martin, John C.; and Jett, James H., 4,573,796, Cl. 356-318.000.
Health and Human Services: *See—*
Rich, Alan H.; Gaasterland, Douglas E.; and Tedder, Thomas E., 4,573,467, Cl. 128-303.100.
Navy: *See—*
Burns, William K.; and Moeller, Robert P., 4,573,797, Cl. 356-350.000.
Ferrando, William, 4,574,096, Cl. 427-126.600.
Rado, George T.; Vittoria, Carmine; and Ferrari, James M., 4,574,259, Cl. 333-157.000.
Slack, Robert A., 4,574,252, Cl. 330-281.000.
Waters, William M., 4,574,287, Cl. 343-756.000.

U.S. Philips Corporation: *See—*
Clarke, John A., 4,573,769, Cl. 350-432.000.
Eijkelenkamp, Antonius J. H.; de With, Gijsbertus; and de Wild, Willem R., 4,574,329, Cl. 361-321.000.
Haijkens, Bernardus, 4,574,212, Cl. 310-88.000.
Hoeberechts, Arthur M. E.; and van Gorkom, Gerardus G. P., 4,574,216, Cl. 313-444.000.
Hulyer, Michael G., 4,574,300, Cl. 358-11.000.
Joormann, Hendrik J. M.; and Spierings, Gijsbertus A. C. M., 4,573,762, Cl. 350-96.340.
Kasperkovitz, Wolfdietrich G.; and Van Rumpt, Herman W., 4,574,257, Cl. 331-116.00R.
Kinghorn, John R., 4,574,386, Cl. 377-121.000.
Mackereth, Thomas C., 4,574,302, Cl. 358-21.00R.
Nillesen, Antonius H. H. J., 4,574,307, Cl. 358-158.000.
Sachs, Jean-Pierre, 4,574,301, Cl. 358-18.000.
van de Plassche, Rudy J., 4,574,270, Cl. 340-347.0AD.
van der Sluys, Willem L. N.; Pastoor, Jacobus; and Roelofs, Johannus C. M., 4,573,330, Cl. 62-476.000.
Velo, Henri J., 4,574,253, Cl. 350-293.000.

U.S. Plastics Corp.: *See—*
Hill, Clinton W., 4,573,754, Cl. 339-60.00M.

U.S. Product Development Company: *See—*
Adell, Robert, 4,573,288, Cl. 49-462.000.

United States Steel Corporation: *See—*
Sinar, Michael M., 4,573,620, Cl. 226-190.000.

United States Surgical Corporation: *See—*
Conta, Robert L.; and Wallach, Harvey N., 4,573,468, Cl. 128-305.000.
Green, David T.; and Gunning, Edgar D., 4,573,622, Cl. 227-19.000.

United Technologies Automotive, Inc.: *See—*
Nonnenmacher, Ronald C.; and Tinder, David V., 4,573,341, Cl. 73-1.00D.

United Technologies Corporation: *See—*
Breault, Richard D.; Sawyer, Richard D.; and DeMarche, Thomas E., 4,574,112, Cl. 429-26.000.
Genereux, Paul D.; and Paulonis, Daniel F., 4,574,015, Cl. 148-11.50N.
Sandy, James J., Jr.; and Huth, Brian P., 4,573,866, Cl. 415-116.000.

Universal Symetrics Corporation: *See—*
Mednis, Juris M., 4,573,595, Cl. 215-10.000.

University of California, The Regents of the: *See—*
Libove, Joel M.; and Singer, Jerome R., 4,574,240, Cl. 324-306.000.
Singer, Jerome R., 4,574,239, Cl. 324-306.000.

University of Delaware: *See—*
Austin, Paul R., 4,574,150, Cl. 536-20.000.
Fakirov, Stoyko C.; and Schultz, Jerold M., 4,574,108, Cl. 428-292.000.

University of Illinois, The Board of Trustees of The: *See—*
Weber, Larry F., 4,574,280, Cl. 340-771.000.

University of Tokyo: *See—*
Masuzawa, Takahisa; and Tsuchiya, Ichiro, 4,574,179, Cl. 219-121.0PG.

UOP Inc.: *See—*
Frame, Robert R., 4,574,121, Cl. 502-163.000.

Urano, Fumiyoshi: *See—*
Morita, Masao; Sugimoto, Jiro; Mizuno, Komei; Tanaka, Motoaki; and Urano, Fumiyoshi, 4,574,156, Cl. 544-398.000.

Urayama, Yuji, to Victor Company of Japan Ltd. Dictating machine having a revising function. 4,574,320, Cl. 360-62.000.

Utex Industries, Inc.: *See—*
Pippert, Aaron J., 4,573,283, Cl. 43-42.090.

Utsumi, Kazuaki: *See—*
Fujii, Shuzo; Shimada, Yuzo; Utsumi, Kazuaki; and Saito, Yutaka, 4,574,255, Cl. 331-25.000.

Utsumi, Makoto: *See—*
Aishima, Takanori; Utsumi, Makoto; and Ezaki, Yoshihiro, 4,574,104, Cl. 428-220.000.

Utsunomiya, Yasuharu: *See—*
Tsutsumi, Masahiro; Nakazawa, Toru; and Utsunomiya, Yasuharu, 4,574,114, Cl. 430-81.000.

Valenti, Richard L.; and McCormick, Daniel J., to Stanley Works, The. Three knuckle hinge with bushing inserts in center knuckle and method of making same. 4,573,239, Cl. 16-273.000.

Valentine, Richard J., to Motorola, Inc. Electrical load monitoring system and method. 4,574,266, Cl. 340-52.00F.

Valeo: *See—*
Thirion de Briel, Jacques, 4,573,948, Cl. 474-28.000.

Valley, Robert T.: *See—*
Richardson, Raymond H.; and Valley, Robert T., 4,573,830, Cl. 406-84.000.

Valor Newhome Limited: *See—*
Rosiek, Jozef; Spruce, Frank; and Atkinson, Brian, 4,573,446, Cl. 126-92.00R.

VanDenberg, Ervin K.; and Eckelberry, Jim, to Turner Quick-Lift Corporation. Internal lift axle suspension system. 4,573,704, Cl. 280-704.000.

van den Broek, William A., to KDI Sylvan Pools, Inc. Vacuum filter system for swimming pools. 4,574,048, Cl. 210-136.000.

van de Plassche, Rudy J., to U.S. Philips Corporation. Analog-to-digital current converter. 4,574,270, Cl. 340-347.0AD.

van der Sluys, Willem L. N.; Pastoor, Jacobus; and Roelofs, Johannus C. M., to U.S. Philips Corporation. Absorption heat pump comprising an integrated generator and rectifier. 4,573,330, Cl. 62-476.000.

Van Doorn, Donald W.; Hawkins, James B.; Carpenter, Francis W., III; Lange, Robert E.; and Webb, Tommy W., to Lummus Industries, Inc. Swinging charge door for baler. 4,573,403, Cl. 100-43.000.

van Gorkom, Gerardus G. P.: *See—*
Hoeberechts, Arthur M. E.; and van Gorkom, Gerardus G. P., 4,574,216, Cl. 313-444.000.

VanMalderen, G. P., to Ontex PVBA. Apparatus and method of manufacturing hygienic disposable pads. 4,574,024, Cl. 156-202.000.

van Raalte, John A., to RCA Corporation. Apparatus and method for automatically measuring the shoe-length of a video disc stylus. 4,574,306, Cl. 358-107.000.

Van Rumpt, Herman W.: *See—*
Kasperkovitz, Wolfdietrich G.; and Van Rumpt, Herman W., 4,574,257, Cl. 331-116.00R.

Vanwinkle, Eric J.: *See—*
Sexton, Joseph A., Jr.; and Vanwinkle, Eric J., 4,573,623, Cl. 227-66.000.

Varian Associates, Inc.: *See—*
Cochran, Ronald R., 4,574,261, Cl. 335-299.000.

Vartuli, James C.: *See—*
Chester, Arthur W.; Garwood, William E.; and Vartuli, James C., 4,574,043, Cl. 208-59.000.

VDO Adolf Schindling AG: *See—*
Wietschorke, Stephan; Ruschek, Gerhard; and Sausner, Andreas, 4,573,441, Cl. 123-339.000.

Veal, Gordon R.: *See—*
Hirasuna, Alan R.; and Veal, Gordon R., 4,573,537, Cl. 166-387.000.

Velo, Henri J., to U.S. Philips Corporation. Broadband control amplifier. 4,574,253, Cl. 350-293.000.

Vereinigte Aluminiumwerke Aktiengesellschaft: *See—*
Bielfeldt, Klaus; and Braun, Dieter J., 4,574,001, Cl. 23-301.000.

Vetco Offshore, Inc.: *See—*
Sweeney, Thomas F., 4,573,714, Cl. 285-363.000.

Vickers, Incorporated: *See—*
Kennard, Reed H.; and Miller, Lewis R., 4,573,365, Cl. 74-15.800.
Kennard, Reed H., 4,573,366, Cl. 74-15.800.

Victor Company of Japan, Limited: *See—*
Hirohashi, Kazutoshi; and Ishigaki, Yukinobu, 4,574,390, Cl. 381-13.000.
Urayama, Yuji, 4,574,320, Cl. 360-62.000.

Video Research Limited: *See—*
Watanabe, Fumio; and Itoh, Yoshikazu, 4,574,304, Cl. 358-84.000.

Vincent, Rodney P.: *See—*
Mayon, Allen J., 4,573,682, Cl. 273-148.00B.

Visner, Sidney: *See—*
Ross, Malcolm F.; and Visner, Sidney, 4,574,069, Cl. 376-267.000.

Visser, Teunis: *See—*
Fan, Robert J.; and Visser, Teunis, 4,573,760, Cl. 350-96.210.

Vistakon, Inc.: *See—*
Bayshore, Charles A., 4,573,775, Cl. 351-161.000.
Sitterle, George, 4,573,774, Cl. 351-160.00H.

Vittoria, Carmine: *See—*
Rado, George T.; Vittoria, Carmine; and Ferrari, James M., 4,574,259, Cl. 333-157.000.

Voest-Alpine Aktiengesellschaft: *See—*
Aschauer, Johann, 4,573,861, Cl. 414-751.000.

Vogl, Allen W. Connector adapter for printed circuit board of computer. 4,573,753, Cl. 339-17.0LM.

Vogler, Rudolf: *See—*
Feurer-Zogel, Rudolf; and Vogler, Rudolf, 4,573,279, Cl. 36-35.00R.

Vollmer, Patricia J.; and Schruben, Jeffrey J., to Genex Corporation. Stabilization of phenylalanine ammonia-lyase in a bioreactor using reducing agents. 4,574,117, Cl. 435-108.000.

Voorhees, Kent J.; and Klusman, Ronald W., to Colorado School of Mines. Apparatus and method for geochemical prospecting. 4,573,354, Cl. 73-432.00R.

Vsesojuznoe Nauchno-Proizvod-Stvennoe Obiedinenie "Sojuzpromgaz": *See—*
Garkusha, Ivan S.; Kazak, Vadim N.; and Kapralov, Valery K., 4,573,531, Cl. 166-259.000.

Vulic, Sekula. Swivel clamp. 4,573,655, Cl. 248-278.000.

W. Schlafhorst & Co.: *See—*
Bertrams, Josef, 4,573,313, Cl. 57-22.000.
Brockmanns, Karl-Josef; and Lunenschloss, Joachim, 4,573,312, Cl. 57-5.000.

Wada, Kenichi, to Minolta Camera Kabushiki Kaisha. Duplex copying system. 4,573,789, Cl. 355-14.0SH.

Waddill, Harold G.: *See—*
Sellstrom, Kathy B.; and Waddill, Harold G., 4,574,143, Cl. 525-438.000.

Wagner, Fredric M.: *See—*
Juaire, Phillip R.; Wagner, Fredric M.; and Wildgen, Leo F., 4,574,025, Cl. 156-245.000.

Wagner, Wolfgang. Suction injector. 4,573,970, Cl. 604-115.000.

Wahlco, Inc.: *See—*
Junkers, Gerd, 4,573,638, Cl. 239-397.500.

Wako Pure Chemical Industries, Ltd.: *See—*
Morita, Masao; Sugimoto, Jiro; Mizuno, Komei; Tanaka, Motoaki; and Urano, Fumiyoshi, 4,574,156, Cl. 544-398.000.

Wakusaka, Kazuharu: *See—*
Inomata, Fumio; and Wakusaka, Kazuharu, 4,573,550, Cl. 180-296.000.

Wales, Denis I.: *See—*
Edwards, Neil A.; Holmes, James C.; and Wales, Denis I., 4,574,023, Cl. 156-187.000.

Walker, Thomas M.: *See—*
Dang, Lam Q.; Geer, Charles P.; Houdek, Merle E.; Jones, Eugene R.; Soltis, Frank G.; Soyring, John A.; and Walker, Thomas M., 4,574,351, Cl. 364-200.000.

Wallace Murray Corporation: *See—*
Shepherd, Michael, 4,573,559, Cl. 192-58.00B.

Wallach, Harvey N.: *See—*
Conta, Robert L.; and Wallach, Harvey N., 4,573,468, Cl. 128-305.000.

Wallo, Andrea M.: *See—*
Boyle, William J., Jr.; Mares, Frank; and Wallo, Andrea M., 4,574,060, Cl. 558-457.000.

Walsh, John: *See—*
Szachowicz, Edward H.; and Walsh, John, 4,573,460, Cl. 128-200.260.

Wan, Jeffrey K. S., to Alberta Oil Sands Technology and Research Authority. Microwave induced catalytic conversion of methane to ethylene and hydrogen. 4,574,038, Cl. 204-162.00R.

Wang, Chung S., to Texas Instruments Incorporated. Plasma etch method for TiO_2. 4,574,177, Cl. 219-121.0PE.

Wang, Der-Shi, to Allied Corporation. Compact shock-absorber for tie-down devices. 4,573,558, Cl. 188-268.000.

Wang Laboratories, Inc.: *See—*
Dayton, Douglas C.; LaCount, Clifford E.; and McConchie, Burton G., 4,574,318, Cl. 358-285.000.

Ward, Richard; and Cooper, Kenneth, to Dobson Park Industries Plc. Casting method and apparatus. 4,573,518, Cl. 164-69.100.

Wardell, Myron H., Jr., to RCA Corporation. Sealing fixture for color kinescopes. 4,573,935, Cl. 445-66.000.

Warner-Lambert Company: *See—*
Bennett, Laurence M., 4,574,173, Cl. 219-10.530.

Warner-Lambert Technologies, Inc.: *See—*
Hill, Arthur T., 4,573,771, Cl. 350-521.000.

Warnke, Egon F. Method for stimulating the falling asleep and/or relaxing behavior of a person and an arrangement therefor. 4,573,449, Cl. 128-1.00C.

Wastemate Corporation: *See—*
Spelber, Leonard G., 4,573,642, Cl. 241-46.00B.

Watanabe, Akira: *See—*
Arisawa, Yasuo; Kusazaki, Yoshimasa; Yamada, Hidetoshi; Watanabe, Akira; and Yunoki, Yutaka, 4,574,309, Cl. 358-212.000.

Watanabe, Fumio; and Itoh, Yoshikazu, to Video Research Limited. Audience rating measuring system for television and video tape recorder. 4,574,304, Cl. 358-84.000.

Watanabe, Haruo; Nakano, Kazuo; and Ohnishi, Akito, to Toyota Jidosha Kabushiki Kaisha. Non-synchronous injection acceleration control for a multicylinder internal combustion engine. 4,573,443, Cl. 123-492.000.

Watanabe, Junichi: *See—*
Koide, Hiroshi; Watanabe, Junichi; and Tenmyo, Shigemoto, 4,574,369, Cl. 369-44.000.

Watanabe, Kiyohiko; Matsui, Kazuma; Hattori, Yoshiyuki; Takei, Toshihiro; Nakamura, Toshiaki; and Ohnishi, Shunsaku, to Nippondenso Co., Ltd. Electrically operated fuel pump apparatus. 4,573,882, Cl. 417-366.000.

Watanabe, Yasunori, to Brother Kogyo Kabushiki Kaisha. Printer. 4,573,815, Cl. 400-642.000.

Waters, Michael A.; and Boll, Daniel P., to Application Engineering Corporation. Extrusion die with external and internal cooling means. 4,573,893, Cl. 425-71.000.

Waters, William M., to United States of America, Navy. Fixed aperture, rotating feed, beam scanning antenna system. 4,574,287, Cl. 343-756.000.

Watts, George T.: *See—*
Smith, William T.; Rooney, Timothy M.; and Watts, George T., 4,573,509, Cl. 152-158.000.

Wawra, Gerhard F.: *See—*
Jones, Donald A.; Wawra, Gerhard F.; and Moss, William R., 4,573,898, Cl. 425-145.000.

Weaver, Ronald C.: *See—*
Steensen, Wayne L.; and Weaver, Ronald C., 4,574,091, Cl. 426-548.000.

Webb, Ted H.; and Spector, George. Arrow slingshot. 4,573,445, Cl. 124-22.000.

Webb, Tommy W.: *See—*
Van Doorn, Donald W.; Hawkins, James B.; Carpenter, Francis W., III; Lange, Robert E.; and Webb, Tommy W., 4,573,403, Cl. 100-43.000.

Weber, Larry F., to University of Illinois, The Board of Trustees of The. Gas discharge logic device for use with AC plasma panels. 4,574,280, Cl. 340-771.000.

Webster, Harold F.: *See—*
Glascock, Homer H., II; Neugebauer, Constantine A.; and Webster, Harold F., 4,574,299, Cl. 357-81.000.

Weger, Kenneth F., Jr.: *See—*
Knaack, Howard L.; and Weger, Kenneth F., Jr., 4,573,731, Cl. 296-376.000.

Weikl, Andreas; and Merkel, Volkmar, to Schneider Medintag AG. Method and apparatus for removing and/or enlarging constricted areas in vessels conducting body fluids. 4,573,966, Cl. 604-53.000.

Weinblatt, Lee S. Camera autofocus technique. 4,574,314, Cl. 358-227.000.

Weinlich, Leopold. Projectile speed measuring apparatus. 4,574,238, Cl. 324-178.000.

Weinundbrot, Hubert, to Bizerba-Werke Wilhelm Kraut GmbH & Co. KG. Device for affixing adhesive labels to objects. 4,574,027, Cl. 156-352.000.

Weiss, Wilhelm, to Krones AG Hermann Kronseder Maschinenfabrik. Device for cleaning container filling machines. 4,573,486, Cl. 134-104.000.

Weitman, Jacob. Apparatus for treating contaminated gas. 4,574,062, Cl. 261-147.000.

Welker, Mathias P., to Owens-Illinois, Inc. Gob arrival sensor for a glass forming machine. 4,574,009, Cl. 65-158.000.

Wenger, Fredy. Temperature control circuitry for a cooking apparatus. 4,574,185, Cl. 219-494.000.

Wenger, Urs: *See—*
Schlegel, Urs; Tomse, Ljudevit; and Wenger, Urs, 4,573,542, Cl. 177-132.000.

Westeren, Herbert W.; Harrison, Ronald A.; and Tavitian, Vartan M., to C. I. Hayes Inc. Apparatus for quenching substantially flat workpieces. 4,573,667, Cl. 266-114.000.

Westinghouse Electric Corp.: *See—*
Baker, Donal E., 4,574,340, Cl. 363-41.000.
Blaushild, Ronald M.; and Tome, Richard E., 4,574,070, Cl. 376-289.000.
Burack, Robert D.; and Brachold, Rudolph W., 4,574,172, Cl. 219-10.49R.
deSilva, Sunil G.; and Hearp, Charles W., 4,574,071, Cl. 422-14.000.
Ezekoye, Levi I., 4,573,344, Cl. 73-46.000.
Howell, Cecil A.; and Lacy, Ernest R., 4,573,847, Cl. 414-63.000.
Jung, Ingvar K. E., 4,573,526, Cl. 165-134.100.
Kasner, William H.; Miller, Richard A.; and Toth, Vincent A., 4,574,180, Cl. 219-121.0LY.
Luongo, Michael C., 4,573,358, Cl. 73-660.000.
Santilli, Vincent J., 4,574,169, Cl. 200-114.00B.

Westvaco Corporation: *See—*
Ringley, Michael B., 4,574,032, Cl. 162-38.000.

White, E. E.: *See—*
Smith, Alexander; and Baggs, Burton D., 4,573,306, Cl. 56-10.400.

White, Lee A., to Ranco Incorporated. Refrigerant reversing valve. 4,573,497, Cl. 137-625.290.

White, Timothy P. Inflatable knock-down guitar. 4,573,391, Cl. 84-291.000.

Whitfield, Daniel. Ignition system. 4,573,438, Cl. 123-146.50A.

Whitman Medical Corporation: *See—*
Gordon, Marvin; and Lichtenstein, Joseph, 4,573,658, Cl. 251-95.000.

Wicanders AB: *See—*
Berglund, Jan, 4,573,601, Cl. 215-252.000.

Wick, Gerald H., to Outboard Marine Corporation. Lawn mower dead man control. 4,573,307, Cl. 56-11.800.

Wicker, Thomas H., Jr.; and Barbee, Robert B., to Eastman Kodak Company. Polyester resins capable of forming containers having improved gas barrier properties. 4,574,148, Cl. 528-173.000.
Wideman, Merle L. Thumb ring. 4,573,331, Cl. 63-15.000.
Wieck, Karl, to Supfina Maschinenfabrik Hentzen GmbH & Co KG. Apparatus for superfinishing bearing rollers. 4,573,289, Cl. 51-57.000.
Wieland, Heinz, to Wilhelm Gebhardt GmbH. External rotor motor having a cooling system. 4,574,210, Cl. 310-59.000.
Wiemann, Dieter; and Bodusch, Gunther, to Bison-Werke Bahre & Greten GmbH & Co. KG. Plant for the manufacture of particleboard. 4,573,899, Cl. 425-145.000.
Wiener, Robert P., to Litton Systems, Inc. Hub moment sensor for a horizontal rotor aircraft. 4,573,351, Cl. 73-178.00H.
Wietschorke, Stephan; Ruschek, Gerhard; and Sausner, Andreas, to VDO Adolf Schindling AG. Valve arrangement. 4,573,441, Cl. 123-339.000.
Wiggins Teape Group Limited, The: *See—*
Shanton, Kenneth J., 4,574,294, Cl. 346-210.000.
Wildgen, Leo F.: *See—*
Juaire, Phillip R.; Wagner, Fredric M.; and Wildgen, Leo F., 4,574,025, Cl. 156-245.000.
Wildmoser, Martin M., to Bemis Company, Inc. Unit load wrapping with uniform wrap tension along the periphery of the wrapped load. 4,573,305, Cl. 53-466.000.
Wilh. Quester Maschinenfabrik GmbH: *See—*
Ruffer, Alfred; Maubach, Peter; Haas, Johannes; and Quester, Horst, 4,573,484, Cl. 131-327.000.
Wilhelm Gebhardt GmbH: *See—*
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Wilkinson, Rudolph P. Set of building articles and method of making and using the set to construct a predesigned, pre-engineered structure. 4,573,295, Cl. 52-105.000.
Wilkinson, Rudolph P. Interlocking building blocks. 4,573,301, Cl. 52-607.000.
Wilkinson, Samuel C. W., to Crane Packing Limited. Mechanical face seals. 4,573,691, Cl. 277-96.100.
Willbanks, Weldon C.; and Spector, George. Hay bale processor. 4,573,846, Cl. 414-24.600.
Willcox, Kenneth W.; and Mills, Kenneth R., to Phillips Petroleum Company. Antihaze compositions and process. 4,574,134, Cl. 524-157.000.
Wille, Herbert S.: *See—*
Kunst, Robert J.; Lahey, Gerald F.; and Wille, Herbert S., 4,573,594, Cl. 213-51.000.
Willey, Ronald A., to TRW Automotive Products Inc. Mode selection retractor. 4,573,646, Cl. 242-107.40A.
Williams, Gareth F., to AT&T Bell Laboratories. Nonintegrating lightwave receiver. 4,574,249, Cl. 330-59.000.
Williams International Corporation: *See—*
Egan, Michael J.; and Quill, Gary J., 4,573,876, Cl. 416-213.00R.
Williams, J. Webster, Jr., to Arthro-Medic, Inc. Arthroscopic surgery method. 4,573,482, Cl. 128-804.000.
Wilman, Hugh; and Brotton, James. Document scanners. 4,574,316, Cl. 358-285.000.
Wilner, Leslie B., to Becton, Dickinson and Company. Capacitive transducer. 4,574,327, Cl. 361-283.000.
Wilson, Alan G., to Cam Gears Limited. Piston and cylinder assembly, a power assisted steering gear which includes such an assembly and a method of forming a piston for such an assembly. 4,573,399, Cl. 92-110.000.
Wilson, David H.: *See—*
Pastor, Jose ; Parker, Harry L.; and Wilson, David H., 4,574,357, Cl. 364-518.000.
Wilson, Stephen S.: *See—*
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Wimmer, Guenther W., to Tektronix, Inc. Phase locked synchronizer for printer timing control. 4,574,291, Cl. 346-75.000.
Winter, Alfred: *See—*
Nowak, Gerhard; Winter, Alfred; Morbitzer, Hans P.; Kruschik, Klaus; and Taucher, Robert, 4,573,701, Cl. 280-616.000.
Winter, Joseph: *See—*
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Winther, Howard A., to Royal Waterbeds, Inc. Damped waterbed mattress and method for manufacturing same. 4,574,026, Cl. 156-274.400.
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Arrington, John P.; Jaraczewski, Kathleen A.; Moisson, Marc F.; and Wisecarver, Martin L., 4,573,607, Cl. 221-25.000.
Wisman, Craig B.; Pierce, William; and Donachy, James H., to Research Corporation. Right ventricular assist device. 4,573,997, Cl. 623-3.000.
Wittmann, Franz; and Wittmann, Karl. Insert for a piece of lounging furniture. 4,573,226, Cl. 5-236.00R.
Wittmann, Karl: *See—*
Wittmann, Franz; and Wittmann, Karl, 4,573,226, Cl. 5-236.00R.
Wix, David A.: *See—*
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Wo, Chee-Yuan: *See—*
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Wolf, Alby H.; and Oswald, Thomas L., to GNB Batteries Inc. Electrically heatable mold and method of casting metal straps. 4,573,514, Cl. 164-4.100.
Wolf, Kurt; and Andre, Wolfram K., to Kurt Wolf & Co. KG. Saucepan and cover for a cooking utensil, particulary a steam pressure cooking pan. 4,574,184, Cl. 219-440.000.
Wolf, Robert. Convertible seat-bed and storage unit. 4,573,225, Cl. 5-118.000.
Wolf, Tobin. Driving toy. 4,573,936, Cl. 446-7.000.
Woma-Apparatebau Wolfgang Massberg & Co. GmbH: *See—*
Maasberg, Wolfgang; and Huperz, Adalbert, 4,573,886, Cl. 417-454.000.
Wortberg, Walter. Impact dissipator. 4,573,216, Cl. 2-2.000.
Worthington Industries, Inc.: *See—*
Starling, Jeffrey T.; and Jones, Bruce D., 4,573,603, Cl. 220-5.00R.
Wrezel, James A.: *See—*
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Wright, Antony P.: *See—*
Lee, Chi-Long; Lim, Thomas F.; and Wright, Antony P., 4,574,149, Cl. 528-42.000.
Wrigley, John G. Construction panel and method of providing the same. 4,573,296, Cl. 52-108.000.
Wurdak, Reinhold: *See—*
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Wurscher, Robert J.: *See—*
Kelly, Thomas C.; Wurscher, Robert J.; Petrich, Dennis M.; and Rideout, Earl H., 4,574,235, Cl. 324-158.00F.
Wursthorn, Karl R.: *See—*
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Yada, Eiichi, to Takeda Riken Co., Ltd. Multi-slope analog-to-digital converter. 4,574,271, Cl. 340-347.0NT.
Yagi, Yoshio: *See—*
Imahashi, Hiromichi; Kawahara, Akira; Konishi, Takao; Morimoto, Yoshihumi; Terui, Michio; and Yagi, Yoshio, 4,573,629, Cl. 228-173.200.
Yamada, Hidetoshi: *See—*
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Yamada, Takeshi: *See—*
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Yamada, Tomoyoshi: *See—*
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Yamagishi, Haruo; and Kamo, Hisao, to Tokyo Shibaura Denki Kabushiki Kaisha. III-V Compound semiconductor device. 4,574,298, Cl. 357-71.000.
Yamaguchi, Tadayoshi: *See—*
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Yamamoto, Kazuo: *See—*
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Yamamoto, Toshiro; Kobayashi, Ryohei; Kurimoto, Mamoru; and Ozone, Toshio, to Aichi Steel Works, Ltd.; and Chuo Hatsujo Kabushiki Kaisha. Method of treating steel for a vehicle suspension spring having a good sag-resistance. 4,574,016, Cl. 148-144.000.
Yamanaka, Mitsuo: *See—*
Okamoto, Hidemasa; Yamanaka, Mitsuo; and Fujii, Kazuyoshi, 4,574,154, Cl. 544-192.000.
Yamatake Honeywell: *See—*
Arakawa, Mutsumi; Ueno, Junichi; Kawaguchi, Yozo; Shimura, Norio; Matsunaga, Shoichi; and Fukaya, Kiyoshi, 4,574,283, Cl. 340-825.080.
Yamauchi, Junnosuke: *See—*
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Yanagihashi, Kikuji: *See—*
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Yang, Jan-Chin: *See—*
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Yao, Samuel S.; and Chu, Samuel K. F., to Hughes Helicopters, Inc. Collective and cyclic in-mast pitch control system for a helicopter. 4,573,873, Cl. 416-114.000.
Yasuhara, Seishi: *See—*
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Yasui Sangyo Co., Ltd.: *See—*
Aoki, Hiroyasu, 4,573,552, Cl. 187-8.500.
Yates, John B., III; and Smith, David J., to General Electric Company. Sulfonated polyimides and polyamic acids and method for their preparation. 4,574,144, Cl. 525-435.000.
Yearout, James D.; Provin, Robert R.; and Browne, John S. Fractionating apparatus. 4,574,007, Cl. 62-42.000.
Yo, Bynyo. Filter respirator for protection against smoke and toxic gases. 4,573,464, Cl. 128-206.150.
Yokohama Rubber Co., Ltd., The: *See—*
Kabe, Kazuyuki; and Morikawa, Tuneo, 4,573,511, Cl. 152-548.000.

Yokote, Yoshihiro: *See—*
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Yoneda, Akiyoshi, to Amada Company, Limited. Bending test apparatus. 4,573,360, Cl. 73-850.000.
Yoon, Hyun-Nam: *See—*
Gibbon, John D.; Lawler, Terry E.; Yoon, Hyun-Nam; and Charbonneau, Larry F., 4,574,066, Cl. 264-85.000.
Yoshida, Churyo: *See—*
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Yoshida, Hiroshi; Toyoshima, Takefumi; Iwabori, Tomio; Ohkura, Hideaki; Miyamoto, Yasuo; Nishimura, Izumi; Oikawa, Toshiyuki; Sekijima, Kenji; and Ohashi, Makoto, to Honda Giken Kogyo Kabushiki Kaisha; and Hokushin Kogyo Kabushiki Kaisha. Fluid-sealed engine mounting. 4,573,656, Cl. 248-562.000.
Yoshida Kogyo K.K.: *See—*
Hatagishi, Shingo, 4,573,264, Cl. 29-766.000.
Matsumoto, Masao, 4,573,383, Cl. 83-11.000.
Yoshida, Susumu: *See—*
Kobayashi, Kesanao; Toyama, Tadao; and Yoshida, Susumu, 4,573,782, Cl. 354-299.000.
Yoshida, Yasuharu, to NEC Corporation. Demodulator with AGC circuit for multi-level quadrature amplitude-modulated carrier wave. 4,574,246, Cl. 329-124.000.
Yoshii, Kenta: *See—*
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Yoshikawa, Yoshiro: *See—*
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Yoshimura, Masahiro, to Sharp Kabushiki Kaisha. Circuit for driving display apparatus. 4,574,315, Cl. 358-241.000.
Yoshimura, Shingo; Ito, Katsumi; and Tanaka, Shigeru, to Kubota, Ltd. Automatic running work vehicle. 4,573,547, Cl. 180-168.000.
Young, Henry N., IV; and Smith, Richard C., to Banff Golf Company, Inc. Golf club head with transparent striking face. 4,573,685, Cl. 273-173.000.
Young, John H.: *See—*
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Yourkowski, Frank M.; and Zoerb, Melvin C., to Boeing Company, The. Integrated alternate gear extension and ground-crew door opening/closing system for an aircraft. 4,573,649, Cl. 244-102.00R.
Yunoki, Yutaka: *See—*
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Zacharias, Ellis M., Jr., to Nusonics, Inc. Method of measuring the composition of an oil and water mixture. 4,573,346, Cl. 73-61.10R.
Zago, Giovanni. Crash helmet. 4,573,222, Cl. 2-424.000.
Zahavi, Joseph; and Tamir, Shoshana, to Technion Research and Development Foundation Ltd. Method for obtaining a selective surface for collectors of solar and other radiation. 4,574,041, Cl. 204-38.300.
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Zakrzewski, Czeslaw: *See—*
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Zato, Thomas J., to Zenith Electronics Corporation. Digital radio telephone. 4,574,163, Cl. 179-2.0EA.
Zaydel, Wieslaw S., to General Motors Corporation. Apparatus for mounting plastic body panel. 4,573,733, Cl. 296-191.000.
Zeiler, Hans-Joachim: *See—*
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Zenith Radio Corporation: *See—*
Krause, Charles A.; and Rajaram, Babu, 4,574,277, Cl. 340-703.000.
Zerbel, Allen J.: *See—*
Covey, Joel P.; and Zerbel, Allen J., 4,573,794, Cl. 356-346.000.
Ziegler, Walter: *See—*
Theysohn, Rainer; Dorst, Hans G.; McKee, Graham E.; Steinberger, Rolf; Ziegler, Walter; and Zahradnik, Franz, 4,574,131, Cl. 523-209.000.
Zimmer, Inc.: *See—*
Lower, Jerry L., 4,573,458, Cl. 128-92.00D.
Zinner GmbH, Firma: *See—*
Zinner, Karl, 4,573,832, Cl. 407-70.000.
Zinner, Karl, to Zinner GmbH, Firma. Single and multiple recessing tool. 4,573,832, Cl. 407-70.000.
Zoerb, Melvin C.: *See—*
Yourkowski, Frank M.; and Zoerb, Melvin C., 4,573,649, Cl. 244-102.00R.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 4TH DAY OF MARCH, 1986

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Agranat, Edward A.: *See—*
Blatt, William F.; Agranat, Edward A.; and Rigopulos, Peter N., Re. 32,089, Cl. 210-651.000.

Amicon Corporation: *See—*
Blatt, William F.; Agranat, Edward A.; and Rigopulos, Peter N., Re. 32,089, Cl. 210-651.000.

AT&T Bell Laboratories: *See—*
Jaccodine, Ralph J.; and Michejda, John A., Re. 32,090, Cl. 357-51.000.

Blatt, William F.; Agranat, Edward A.; and Rigopulos, Peter N., to Amicon Corporation. Blood fractionating process and apparatus for carrying out same. Re. 32,089, Cl. 210-651.000.

Jaccodine, Ralph J.; and Michejda, John A., to AT&T Bell Laboratories. Silicon integrated circuits. Re. 32,090, Cl. 357-51.000.

Michejda, John A.: *See—*
Jaccodine, Ralph J.; and Michejda, John A., Re. 32,090, Cl. 357-51.000.

Rigopulos, Peter N.: *See—*
Blatt, William F.; Agranat, Edward A.; and Rigopulos, Peter N., Re. 32,089, Cl. 210-651.000.

LIST OF DESIGN PATENTEES

Aavid Engineering, Inc.: *See—*
McCarthy, Alfred F., 282,838, Cl. D13-23.000.

Adams, Peter G.; to Hestair Kiddicraft Limited. Child's clown figure toy. 282,860, 3-4-86, Cl. D21-173.000.

Alair, Douglas: *See—*
Hoffman, Ronald J.; Alair, Douglas; LaFleur, Robin S.; and Salzberger, Claude, 282,796, Cl. D6-445.000.

Alessandro, Sante G., to Erwin-Lambeth, Inc. Lamp base. 282,874, 3-4-86, Cl. D26-93.000.

Allison, Philip J.; and Smith, Morley L., to T. S. Simms & Co. Limited. Roller coater paint tray. 282,882, 3-4-86, Cl. D32-53.100.

Allway Tools, Inc.: *See—*
Gringer, Donald, 282,881, Cl. D32-48.000.

Arcair Company: *See—*
Chaney, David B.; and Duwell, Michael J., 282,816, Cl. D8-30.000.
Johnson, David E.; and McCall, Kenneth E., 282,817, Cl. D8-71.000.

Aristo Designart Inc.: *See—*
Kostios, Ari, 282,825, Cl. D10-25.000.

Baker, Knapp & Tubbs, Inc.: *See—*
Doezema, William, 282,798, Cl. D6-495.000.
Doezema, William, 282,799, Cl. D6-495.000.

Barati, Ronald E. Animal crate. 282,880, 3-4-86, Cl. D30-1.000.

Benning, L.; Novecosky, E.; and Van Ee, D., to Del-Air Systems Ltd. Air-to-air heat exchanger. 282,870, 3-4-86, Cl. D23-136.000.

Best, Lillian C. Portable barbecue. 282,811, 3-4-86, Cl. D7-332.000.

Bos, Arnoldus J. B. M., to International Chemical Engineering Estab. Locking ring for meat casings or the like. 282,818, 3-4-86, Cl. D8-394.000.

Bulgari, Marina, to Marina B. Creation S.A. Earring. 282,829, 3-4-86, Cl. D11-75.000.

Burhop, Nancy. Toy rakehead. 282,859, 3-4-86, Cl. D21-120.000.

Caframo Limited: *See—*
Hutter, Frank, 282,871, Cl. D23-158.000.

Canon Kabushiki Kaisha: *See—*
Yomo, Takashi, 282,842, Cl. D14-94.000.
Yoshioka, Eiichi; and Murakami, Osamu, 282,853, Cl. D18-7.000.
Yoshioka, Eiichi; and Harada, Yuji, 282,854, Cl. D18-7.000.

Carelli, Paul. Packaged bottle of pills. 282,820, 3-4-86, Cl. D9-337.000.

Chaney, David B.; and Duwell, Michael J., to Arcair Company. Air carbon-arc cutting and gouging torch. 282,816, 3-4-86, Cl. D8-30.000.

Charron, Daniel: *See—*
Laurent, Andre; and Charron, Daniel, 282,819, Cl. D9-314.000.

Choate, R. Larry: *See—*
Thornton, Gary E.; Zarren, Robert A.; and Choate, R. Larry, 282,837, Cl. D13-12.000.

Clivio, Franco; and Raffler, Dieter, to Gardena Kress & Kastner GmbH. Combined handle and adapter ferrule with tightening knob for gardening implements. 282,812, 3-4-86, Cl. D8-1.000.

ComputerLand Corporation: *See—*
Hoffman, Ronald J.; Alair, Douglas; LaFleur, Robin S.; and Salzberger, Claude, 282,796, Cl. D6-445.000.

Consolidated Devices, Inc.: *See—*
Grabovac, Bosko, 282,815, Cl. D8-24.000.

Conti, Rino: *See—*
Daenen, Robert H. C. M.; and Conti, Rino, 282,808, Cl. D7-79.000.
Daenen, Robert H. C. M.; and Conti, Rino, 282,809, Cl. D7-79.000.

Cooper Industries, Inc.: *See—*
Katsman, Iiya, 282,794, Cl. D6-432.000.

Daenen, Robert H. C. M.; and Conti, Rino, to Dart Industries Inc. Food storage container or the like. 282,808, 3-4-86, Cl. D7-79.000.

Daenen, Robert H. C. M.; and Conti, Rino, to Dart Industries Inc. Food storage container or the like. 282,809, 3-4-86, Cl. D7-79.000.

Daly, Douglss P. Album page for storing computer disks or similar article. 282,856, 3-4-86, Cl. D19-33.000.

D'Aquisto, James L. Pickguard for a guitar. 282,852, 3-4-86, Cl. D17-20.000.

Dart Industries Inc.: *See—*
Daenen, Robert H. C. M.; and Conti, Rino, 282,808, Cl. D7-79.000.
Daenen, Robert H. C. M.; and Conti, Rino, 282,809, Cl. D7-79.000.

Del-Air Systems Ltd.: *See—*
Benning, L.; Novecosky, E.; and Van Ee, D., 282,870, Cl. D23-136.000.

Densen, Mark. Chest. 282,795, 3-4-86, Cl. D6-440.000.

Depraz, Eric, to Depraz S.A. Device to follow lines on a drawing and to register the ordinates of given points of said drawing. 282,848, 3-4-86, Cl. D14-114.000.

Depraz S.A.: *See—*
Depraz, Eric, 282,848, Cl. D14-114.000.

Dixon, Linda H. Display stand. 282,797, 3-4-86, Cl. D6-465.000.

DKZ, Incorporated: *See—*
Kashary, Charles R., Jr., 282,863, Cl. D22-1.000.

Doezema, William, to Baker, Knapp & Tubbs, Inc. Table base. 282,798, 3-4-86, Cl. D6-495.000.

Doezema, William, to Baker, Knapp & Tubbs, Inc. Table base. 282,799, 3-4-86, Cl. D6-495.000.

Dreimanis, Juris Z.: *See—*
Vinogradov, Vladimir F.; Dreimanis, Juris Z.; Kruklis, Aivars A.; and Kave, Dzintars A., 282,839, Cl. D14-27.000.

Duracell Inc.: *See—*
Noyes, Androus D., 282,821, Cl. D9-415.000.
Noyes, Androus D., 282,822, Cl. D9-415.000.

Duwell, Michael J.: *See—*
Chaney, David B.; and Duwell, Michael J., 282,816, Cl. D8-30.000.

Ekuan, Kenji, to Epson Corporation. Personal computer. 282,844, 3-4-86, Cl. D14-106.000.

Epson Corporation: *See—*
Ekuan, Kenji, 282,844, Cl. D14-106.000.
Kurihara, Masaki, 282,843, Cl. D14-100.000.

Erwin-Lambeth, Inc.: *See—*
Alessandro, Sante G., 282,874, Cl. D26-93.000.

Fasco Industries, Inc.: *See—*
Parnell, Clyde B., 282,869, Cl. D23-73.000.

Figueiredo, John S.: *See—*
Shigenaka, Bob S.; and Figueiredo, John S., 282,868, Cl. D23-48.000.

Franek, Jozef T.; and Porucznik, Paul, to Metal Box, plc. Combined tray and lid. 282,823, 3-4-86, Cl. D9-429.000.

Franek, Jozef T.; and Porucznik, Paul, to Metal Box plc. Tray. 282,824, 3-4-86, Cl. D9-429.000.

Funabashi, Genichi, to Kubota, Ltd. Agricultural tractor. 282,849, 3-4-86, Cl. D15-23.000.

Futami, Masaru, to Lowrey Industries, Inc. Keyboard musical instrument or similar article. 282,850, 3-4-86, Cl. D17-1.000.

Gardena Kress & Kastner GmbH: *See—*
Clivio, Franco; and Raffler, Dieter, 282,812, Cl. D8-1.000.

Goins, Douglas E.; and Rhodes, Johnny E. Storage bracket for a chain saw. 282,801, 3-4-86, Cl. D6-553.000.

Gonzales, Jose M. G. Horse racing gameboard. 282,858, 3-4-86, Cl. D21-27.000.

Grabovac, Bosko, to Consolidated Devices, Inc. Torque tool readout unit. 282,815, 3-4-86, Cl. D8-24.000.

Gringer, Donald, to Allway Tools, Inc. Hand scraper tool. 282,881, 3-4-86, Cl. D32-48.000.

Harada, Yuji: *See—*
Yoshioka, Eiichi; and Harada, Yuji, 282,854, Cl. D18-7.000.

Harvey, Franklin D. Hair pick. 282,875, 3-4-86, Cl. D28-31.000.

Harvey, Franklin D. Comb. 282,876, 3-4-86, Cl. D28-31.000.

Harvey, Franklin D. Hair lift. 282,877, 3-4-86, Cl. D28-31.000.

Hasse, Patricia W. Guard funnel. 282,807, 3-4-86, Cl. D7-68.000.

Hayes, Dean D.: *See—*
Hayes, Dennis D.; and Hayes, Dean D., 282,872, Cl. D24-2.000.

Hayes, Dennis D.; and Hayes, Dean D. X-Ray film cassette holder for use with children. 282,872, 3-4-86, Cl. D24-2.000.

Hayes, Ronald G., to L. R. Nelson Corporation. Lawn sprinkler. 282,866, 3-4-86, Cl. D23-8.000.

Hestair Kiddicraft Limited: *See—*
Adams, Peter G., 282,860, Cl. D21-173.000.

Hettinga, Siebolt. Tilt and rotate base for a display monitor. 282,847, 3-4-86, Cl. D14-114.000.

Hitachi, Ltd.: *See—*
Tsuburaya, Kazuyuki; Nishiyama, Takanori; and Yanagisawa, Kazunori, 282,846, Cl. D14-113.000.

Hoffman, Ronald J.; Alair, Douglas; LaFleur, Robin S.; and Salzberger, Claude, to ComputerLand Corporation. Register counter. 282,796, 3-4-86, Cl. D6-445.000.

Holder, Howard M. Mat marking device or similar article. 282,828, 3-4-86, Cl. D10-62.000.

Honda Giken Kogyo Kabushiki Kaisha: *See—*
Zaima, Hiroshi; and Saitoh, Yusuke, 282,830, Cl. D12-91.000.

Hoogner, Richard L., to Security Switch Ltd. Programmable light timing switch. 282,826, 3-4-86, Cl. D10-40.000.

Hoogner, Richard L., to Security Switch Ltd. Programmable light timing switch for mounting on an electrical outlet. 282,827, 3-4-86, Cl. D10-40.000.

Hutter, Frank, to Caframo Limited. Fan. 282,871, 3-4-86, Cl. D23-158.000.

Ibaraki, Howard T.: *See—*
May, Richard L.; and Ibaraki, Howard T., 282,873, Cl. D26-45.000.

Inaba, Hiroshi, to Nitsuko Limited. Key telephone set. 282,841, 3-4-86, Cl. D14-58.000.

International Chemical Engineering Estab.: *See—*
Bos, Arnoldus J. B. M., 282,818, Cl. D8-394.000.

Ion Tech, Inc.: *See—*
Thornton, Gary E.; Zarren, Robert A.; and Choate, R. Larry, 282,837, Cl. D13-12.000.

Jennings, Roger L., to R. Jennings Manufacturing Co., Inc. Painter's cap printing attachment for silk screen machine or the like. 282,855, 3-4-86, Cl. D18-22.000.

Johnson, David E.; and McCall, Kenneth E., to Arcair Company. Positioner to support a gas cutting torch, a welding torch or the like. 282,817, 3-4-86, Cl. D8-71.000.

Kabushiki Kaisha Suwa Seikosha: *See—*
Kurihara, Masaki, 282,843, Cl. D14-100.000.

Kain, James M., to Questor Corp. Stroller. 282,831, 3-4-86, Cl. D12-129.000.

Kain, James M., to Questor Corp. Stroller foot rest. 282,832, 3-4-86, Cl. D12-133.000.

Kashary, Charles R., Jr., to DKZ, Incorporated. Police baton. 282,863, 3-4-86, Cl. D22-1.000.

Katsman, Iiya, to Cooper Industries, Inc. Battery storage cabinet. 282,794, 3-4-86, Cl. D6-432.000.

Kave, Dzintars A.: *See—*
Vinogradov, Vladimir F.; Dreimanis, Juris Z.; Kruklis, Aivars A.; and Kave, Dzintars A., 282,839, Cl. D14-27.000.

Kelsey-Hayes Company: *See—*
Main, John A., 282,835, Cl. D12-209.000.
Main, John A., 282,836, Cl. D12-209.000.

Kiiski, Heikki, to Treston Oy. Storage bin. 282,883, 3-4-86, Cl. D34-40.000.

Koper, Barry R. Facial appliance for makeup. 282,861, 3-4-86, Cl. D21-190.000.

Kostios, Ari, to Aristo Designart Inc. Clock. 282,825, 3-4-86, Cl. D10-25.000.

Kruklis, Aivars A.: *See—*
Vinogradov, Vladimir F.; Dreimanis, Juris Z.; Kruklis, Aivars A.; and Kave, Dzintars A., 282,839, Cl. D14-27.000.

Kubota, Ltd.: *See—*
Funabashi, Genichi, 282,849, Cl. D15-23.000.

Kurihara, Masaki, to Epson Corporation; and Kabushiki Kaisha Suwa Seikosha. Portable electronic computer. 282,843, 3-4-86, Cl. D14-100.000.

L. R. Nelson Corporation: *See—*
Hayes, Ronald G., 282,866, Cl. D23-8.000.

LaFleur, Robin S.: *See—*
Hoffman, Ronald J.; Alair, Douglas; LaFleur, Robin S.; and Salzberger, Claude, 282,796, Cl. D6-445.000.

Laurent, Andre; and Charron, Daniel, to Promotions Jean-Rene Inc. Packaging container. 282,819, 3-4-86, Cl. D9-314.000.

Lewis, Barbara K., to Qume Corporation. Video terminal. 282,845, 3-4-86, Cl. D14-113.000.

Lockett, William, III; and Oliver, Edward D., to Lockett, William, III. Infant seat. 282,791, 3-4-86, Cl. D6-333.000.

Lowrey Industries, Inc.: *See—*
Futami, Masaru, 282,850, Cl. D17-1.000.

M. Kamenstein, Inc.: *See—*
Urich, Joy C., 282,810, Cl. D7-322.000.

Main, John A., to Kelsey-Hayes Company. Vehicle wheel. 282,835, 3-4-86, Cl. D12-209.000.

Main, John A., to Kelsey-Hayes Company. Vehicle wheel. 282,836, 3-4-86, Cl. D12-209.000.

Marina B. Creation S.A.: *See—*
Bulgari, Marina, 282,829, Cl. D11-75.000.

Mariol, James F. Wading pool. 282,862, 3-4-86, Cl. D21-252.000.

Marshall, Eric J., to Marshall Telephone Corporation Limited, The. Telephone. 282,840, 3-4-86, Cl. D14-53.000.

Marshall Telephone Corporation Limited, The: *See—*
Marshall, Eric J., 282,840, Cl. D14-53.000.

Matsui, Takayasu, to Nissan Motor Co., Ltd. Automobile front fender. 282,834, 3-4-86, Cl. D12-184.000.

May, Richard L.; and Ibaraki, Howard T., to Mr. Gasket Company. Spotlight. 282,873, 3-4-86, Cl. D26-45.000.

McCall, Kenneth E.: *See—*
Johnson, David E.; and McCall, Kenneth E., 282,817, Cl. D8-71.000.

McCarthy, Alfred F., to Aavid Engineering, Inc. Slip-on heat sink for encased electrical packages. 282,838, 3-4-86, Cl. D13-23.000.

Metal Box, plc: *See—*
Franek, Jozef T.; and Porucznik, Paul, 282,823, Cl. D9-429.000.
Franek, Jozef T.; and Porucznik, Paul, 282,824, Cl. D9-429.000.

Mr. Gasket Company: *See—*
May, Richard L.; and Ibaraki, Howard T., 282,873, Cl. D26-45.000.

Morawski, Janusz. Merchandise hanger. 282,790, 3-4-86, Cl. D6-327.000.

Murakami, Osamu: *See—*
Yoshioka, Eiichi; and Murakami, Osamu, 282,853, Cl. D18-7.000.

Nishiyama, Takanori: *See—*
Tsuburaya, Kazuyuki; Nishiyama, Takanori; and Yanagisawa, Kazunori, 282,846, Cl. D14-113.000.

Nissan Motor Co., Ltd.: *See—*
Matsui, Takayasu, 282,834, Cl. D12-184.000.
Tanaka, Shinken, 282,833, Cl. D12-173.000.

Nitsuko Limited: *See—*
Inaba, Hiroshi, 282,841, Cl. D14-58.000.

Novecosky, E.: *See—*
Benning, L.; Novecosky, E.; and Van Ee, D., 282,870, Cl. D23-136.000.

Noyes, Androus D., to Duracell Inc. Display package. 282,821, 3-4-86, Cl. D9-415.000.

Noyes, Androus D., to Duracell Inc. Combined packaging and display container for a flashlight. 282,822, 3-4-86, Cl. D9-415.000.

Oliver, Edward D.: *See—*
Lockett, William, III; and Oliver, Edward D., 282,791, Cl. D6-333.000.

Parnell, Clyde B., to Fasco Industries, Inc. Housing for electric heater accessory for a portable blower. 282,869, 3-4-86, Cl. D23-73.000.

Porucznik, Paul: *See—*
Franek, Jozef T.; and Porucznik, Paul, 282,823, Cl. D9-429.000.
Franek, Jozef T.; and Porucznik, Paul, 282,824, Cl. D9-429.000.

Promotions Jean-Rene Inc.: *See—*
Laurent, Andre; and Charron, Daniel, 282,819, Cl. D9-314.000.

Questor Corp.: *See—*
Kain, James M., 282,831, Cl. D12-129.000.
Kain, James M., 282,832, Cl. D12-133.000.

Qume Corporation: *See—*
Lewis, Barbara K., 282,845, Cl. D14-113.000.

R. Jennings Manufacturing Co., Inc.: *See—*
Jennings, Roger L., 282,855, Cl. D18-22.000.

Raffler, Dieter: *See—*
Clivio, Franco; and Raffler, Dieter, 282,812, Cl. D8-1.000.

Remboldt, Kerdall. Black belt. 282,789, 3-4-86, Cl. D2-380.000.

Rhodes, Johnny E.: *See—*
Goins, Douglas E.; and Rhodes, Johnny E., 282,801, Cl. D6-553.000.

Righini, Roy. Head rest. 282,802, 3-4-86, Cl. D6-596.000.

Righini, Roy. Head rest. 282,803, 3-4-86, Cl. D6-596.000.

Roberton, Charlene A. Nail polish dryer. 282,879, 3-4-86, Cl. D28-58.000.

Ryan, Bobby W.; and Woods, Glynn E., to WFI International, Inc. Welding outlet. 282,867, 3-4-86, Cl. D23-40.000.

Saitoh, Yusuke: *See—*
Zaima, Hiroshi; and Saitoh, Yusuke, 282,830, Cl. D12-91.000.

Salzberger, Claude: *See—*
Hoffman, Ronald J.; Alair, Douglas; LaFleur, Robin S.; and Salzberger, Claude, 282,796, Cl. D6-445.000.

Schwarzli, Joseph W. Coin operated vending machine. 282,857, 3-4-86, Cl. D20-7.000.

Security Switch Ltd.: *See—*
Hoogner, Richard L., 282,826, Cl. D10-40.000.
Hoogner, Richard L., 282,827, Cl. D10-40.000.

Shigenaka, Bob S.; and Figueiredo, John S. Commode chair. 282,868, 3-4-86, Cl. D23-48.000.

Skidmore, Herbert M. Shaving razor. 282,878, 3-4-86, Cl. D28-46.000.

Smith, Maynard L. Freeze plug tool. 282,814, 3-4-86, Cl. D8-14.000.

Smith, Morley L.: *See—*
Allison, Philip J.; and Smith, Morley L., 282,882, Cl. D32-53.100.

Sorensen, Kurt H. Frame for a chair. 282,800, 3-4-86, Cl. D6-500.000.

Strumpfabriken Vinetta Aktiebolag: *See—*
Svanberg, Erik, 282,788, Cl. D8-1.000.

Svanberg, Erik, to Strumpfabriken Vinetta Aktiebolag. Net for protection against insects. 282,788, 3-4-86, Cl. D8-1.000.

Syracuse China Corporation: *See—*
Unger, Steve A., 282,804, Cl. D7-23.000.
Unger, Steve A., 282,805, Cl. D7-25.000.
Unger, Steve A., 282,806, Cl. D7-39.000.

T. S. Simms & Co. Limited: *See—*
Allison, Philip J.; and Smith, Morley L., 282,882, Cl. D32-53.100.

Tanaka, Shinken, to Nissan Motor Co., Ltd. Automobile hood. 282,833, 3-4-86, Cl. D12-173.000.
Tappan, Pam R.: *See*—
Tappan, R. Warner; and Tappan, Pam R., 282,813, Cl. D8-1.000.
Tappan, R. Warner; and Tappan, Pam R. Bender board holder. 282,813, 3-4-86, Cl. D8-1.000.
Thornton, Gary E.; Zarren, Robert A.; and Choate, R. Larry, to Ion Tech, Inc. Ion source control panel. 282,837, 3-4-86, Cl. D13-12.000.
Tornese, Angelo G. Guitar body. 282,851, 3-4-86, Cl. D17-18.000.
Treston Oy: *See*—
Kiiski, Heikki, 282,883, Cl. D34-40.000.
Tsuburaya, Kazuyuki; Nishiyama, Takanori; and Yanagisawa, Kazunori, to Hitachi, Ltd. Computer display. 282,846, 3-4-86, Cl. D14-113.000.
Unger, Steve A., to Syracuse China Corporation. Plate or similar article. 282,804, 3-4-86, Cl. D7-23.000.
Unger, Steve A., to Syracuse China Corporation. Plate or similar article. 282,805, 3-4-86, Cl. D7-25.000.
Unger, Steve A., to Syracuse China Corporation. Decal for a plate of similar article. 282,806, 3-4-86, Cl. D7-39.000.
Urich, Joy C., to M. Kamenstein, Inc. Tea kettle or similar article. 282,810, 3-4-86, Cl. D7-322.000.
Van Ee, D.: *See*—
Benning, L.; Novecosky, E.; and Van Ee, D., 282,870, Cl. D23-136.000.
Vinogradov, Vladimir F.; Dreimanis, Juris Z.; Kruklis, Aivars A.; and Kave, Dzintars A. Tone arm. 282,839, 3-4-86, Cl. D14-27.000.
Ward, Raymond E. Water filter. 282,865, 3-4-86, Cl. D23-4.000.
Weaver Arms, Inc.: *See*—
Weaver, Robert A., 282,864, Cl. D22-6.000.
Weaver, Robert A., to Weaver Arms, Inc. Semiautomatic rifle. 282,864, 3-4-86, Cl. D22-6.000.
WFI International, Inc.: *See*—
Ryan, Bobby W.; and Woods, Glynn E., 282,867, Cl. D23-40.000.
Woods, Glynn E.: *See*—
Ryan, Bobby W.; and Woods, Glynn E., 282,867, Cl. D23-40.000.
Yanagisawa, Kazunori: *See*—
Tsuburaya, Kazuyuki; Nishiyama, Takanori; and Yanagisawa, Kazunori, 282,846, Cl. D14-113.000.
Yomo, Takashi, to Canon Kabushiki Kaisha. Facsimile transceiver. 282,842, 3-4-86, Cl. D14-94.000.
Yoshioka, Eiichi; and Murakami, Osamu, to Canon Kabushiki Kaisha. Desk-top electronic calculator. 282,853, 3-4-86, Cl. D18-7.000.
Yoshioka, Eiichi; and Harada, Yuji, to Canon Kabushiki Kaisha. Desk-top electronic calculator. 282,854, 3-4-86, Cl. D18-7.000.
Zaima, Hiroshi; and Saitoh, Yusuke, to Honda Giken Kogyo Kabushiki Kaisha. Motorcar. 282,830, 3-4-86, Cl. D12-91.000.
Zarren, Robert A.: *See*—
Thornton, Gary E.; Zarren, Robert A.; and Choate, R. Larry, 282,837, Cl. D13-12.000.
Zinbarg, Benson. Portable desk. 282,792, 3-4-86, Cl. D6-406.000.
Zombeck, Helen. Support stand for mops, towels or similar article. 282,793, 3-4-86, Cl. D6-411.000.

LIST OF PLANT PATENTEES

Jackson & Perkins Company: *See*—
Kordes, Reimer; Kordes, Werner; and Kordes, Hermann, 5,678, Cl. 21.000.
Kordes, Reimer; Kordes, Werner; and Kordes, Hermann, 5,679, Cl. 26.000.
Kordes, Hermann: *See*—
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Kordes, Reimer; Kordes, Werner; and Kordes, Hermann, 5,679, Cl. 26.000.
Kordes, Reimer; Kordes, Werner; and Kordes, Hermann, to Jackson & Perkins Company. Rose plant Korperki. 5,678, 3-4-86, Cl. 21.000.
Kordes, Reimer; Kordes, Werner; and Kordes, Hermann, to Jackson & Perkins Company. Rose plant Korenlo. 5,679, 3-4-86, Cl. 26.000.
Kordes, Werner: *See*—
Kordes, Reimer; Kordes, Werner; and Kordes, Hermann, 5,678, Cl. 21.000.
Kordes, Reimer; Kordes, Werner; and Kordes, Hermann, 5,679, Cl. 26.000.
Ludick, Joseph E. Hibiscus plant. 5,681, 3-4-86, Cl. 54.000.
Moore, James N., to University of Arkansas Agricultural Experiment Station. Grapevine—Mars Cultivar. 5,680, 3-4-86, Cl. 47.000.
Moore, Ralph S., to Sequoia Nursery. Miniature rose plant/var: MORwhy. 5,676, 3-4-86, Cl. 7.000.
Piet, Meyer. Camellia Chrysantha Olympic Gold. 5,682, 3-4-86, Cl. 60.000.
Sequoia Nursery: *See*—
Moore, Ralph S., 5,676, Cl. 7.000.
University of Arkansas Agricultural Experiment Station: *See*—
Moore, James N., 5,680, Cl. 47.000.
Williams, Ernest D. Miniature rose plant *Minjco*'. 5,677, 3-4-86, Cl. 9.000.

LIST OF STATUTORY INVENTION REGISTRATIONS

APPLICANTS TO WHOM STATUTORY INVENTION REGISTRATIONS WERE ISSUED ON THE 4TH DAY OF MARCH, 1986

AT&T Bell Laboratories: *See*—
Smith, Craig G., H36, Cl. 204-52.00R.
Berkowitz, Daniel, to United States of America, Army. Freeze dried cooked meats. H35, 3-4-86, Cl. 426-135.000.
Christou, Aristos; and Davey, John E., to United States of America, United States. Tunnett diode and method of making. H29, 3-4-86, Cl. 357-13.000.
Cowan, Floyd S.: *See*—
Wagner, John R.; Kirschstein, Werner P.; and Cowan, Floyd S., H31, Cl. 209-237.000.
Davey, John E.: *See*—
Christou, Aristos; and Davey, John E., H29, Cl. 357-13.000.
Gubser, Donald U.; and Wolf, Stuart A., to United States of America, United States. Multilayer super-conducting shield and method of manufacturing same. H39, 3-4-86, Cl. 204-192.00S.
Jameson, Robert L.; and Segletes, Steven, to United States of America, Army. Shaped-charge. H33, 3-4-86, Cl. 102-476.000.
Kartik, John S.; and Richardson, William M., to United States of America, Energy. Stud hardware with self-contained stud anti-rotation feature and method of installing studs. H32, 3-4-86, Cl. 411-120.000.
Kim, Yong K.: *See*—
Radel, Robert J.; and Kim, Yong K., H38, Cl. 564-63.000.
Kirschstein, Werner P.: *See*—
Wagner, John R.; Kirschstein, Werner P.; and Cowan, Floyd S., H31, Cl. 209-237.000.
Polaroid Corporation: *See*—
Schettino, Anthony J., H37, Cl. 206-316.000.
Radel, Robert J.; and Kim, Yong K., to Tennesee Valley Authority. Process for the preparation of urea and its derivatives from CO, NO, and a hydrogen source. H38, 3-4-86, Cl. 564-63.000.
Richardson, William M.: *See*—
Kartik, John S.; and Richardson, William M., H32, Cl. 411-120.000.
Schettino, Anthony J., to Polaroid Corporation. Film pack having improved pack spring. H37, 3-4-86, Cl. 206-316.000.
Segletes, Steven: *See*—
Jameson, Robert L.; and Segletes, Steven, H33, Cl. 102-476.000.
Siemer, Darryl D., to United States of America, Energy. Method and apparatus for the preparation of liquid samples for determination of boron. H30, 3-4-86, Cl. 436-171.000.
Smith, Craig G., to AT&T Bell Laboratories. Electroplating process with inert anodes. H36, 3-4-86, Cl. 204-52.00R.
Tennesee Valley Authority: *See*—
Radel, Robert J.; and Kim, Yong K., H38, Cl. 564-63.000.
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Gubser, Donald U.; and Wolf, Stuart A., H39, Cl. 204-192.00S.
Wagner, John R.; Kirschstein, Werner P.; and Cowan, Floyd S. Method and apparatus for determining the size distribution of tobacco. H31, 3-4-86, Cl. 209-237.000.
Werling, Kevin J., to United States of America, Air Force. Aircraft cabin pressurization control system tester. H34, 3-4-86, Cl. 73-40.50R.
Wolf, Stuart A.: *See*—
Gubser, Donald U.; and Wolf, Stuart A., H39, Cl. 204-192.00S.

LIST OF DEFENSIVE PUBLICATIONS

APPLICANTS TO WHOM

DEFENSIVE PUBLICATIONS WERE ISSUED ON THE 4TH DAY OF MARCH, 1986

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O. G. 687.

Balyoz, John; Chang, Chi S.; Fox, Barry C.; Palmieri, John A.; Ghafghaichi, Majid; Jen, Teh-Sen; and Mooney, Donald B. Master image chip organization technique or method. T106,201, 3-4-86, Cl. 29-577.00C.

Chang, Chi S.: *See*—
Balyoz, John; Chang, Chi S.; Fox, Barry C.; Palmieri, John A.; Ghafghaichi, Majid; Jen, Teh-Sen; and Mooney, Donald B., T106,201, Cl. 29-577.00C.

Fox, Barry C.: *See*—
Balyoz, John; Chang, Chi S.; Fox, Barry C.; Palmieri, John A.; Ghafghaichi, Majid; Jen, Teh-Sen; and Mooney, Donald B., T106,201, Cl. 29-577.00C.

Ghafghaichi, Majid: *See*—
Balyoz, John; Chang, Chi S.; Fox, Barry C.; Palmieri, John A.; Ghafghaichi, Majid; Jen, Teh-Sen; and Mooney, Donald B., T106,201, Cl. 29-577.00C.

Jen, Teh-Sen: *See*—
Balyoz, John; Chang, Chi S.; Fox, Barry C.; Palmieri, John A.; Ghafghaichi, Majid; Jen, Teh-Sen; and Mooney, Donald B., T106,201, Cl. 29-577.00C.

Mackles, Leonard. High concentration metered aerosol antiperspirant product. T106,202, 3-4-86, Cl. 424-46.000.

Mooney, Donald B.: *See*—
Balyoz, John; Chang, Chi S.; Fox, Barry C.; Palmieri, John A.; Ghafghaichi, Majid; Jen, Teh-Sen; and Mooney, Donald B., T106,201, Cl. 29-577.00C.

Palmieri, John A.: *See*—
Balyoz, John; Chang, Chi S.; Fox, Barry C.; Palmieri, John A.; Ghafghaichi, Majid; Jen, Teh-Sen; and Mooney, Donald B., T106,201, Cl. 29-577.00C.

CLASSIFICATION OF PATENTS

ISSUED MARCH 4, 1986

NOTE.—First number, class; second number, subclass; third number, patent number

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808 4,573,708
813 4,573,710

CLASS 283
98 4,573,711

CLASS 285
12 4,573,712
94 4,573,715
319 4,573,713
323 4,573,716
363 4,573,714
365 4,573,717

CLASS 289
17 4,573,718
4,573,719

CLASS 292
144 4,573,720
145 4,573,721
148 4,573,722
336.3 4,573,723

CLASS 293
136 4,573,724

CLASS 294
82.28 4,573,725
86.33 4,573,726
115 4,573,727
119.4 4,573,728
158 4,573,729

CLASS 296
1 S 4,573,730
108 4,573,732
189 4,573,734
191 4,573,733
218 4,573,735
376 4,573,731

CLASS 297
339 4,573,736
353 4,573,737
362 4,573,738
4,573,739
452 4,573,740
4,573,741

CLASS 298
11 4,573,742

CLASS 299
39 4,573,743
81 4,573,744

CLASS 301
63 PW 4,573,745

CLASS 305
35 EB 4,573,746

CLASS 307
117 4,574,200
243 4,574,201
261 4,574,202
269 4,574,203
273 4,574,204
310 4,574,205
359 4,574,206
475 4,574,273
577 4,574,207
4,574,208
4,574,209

CLASS 308
3 A 4,573,747

CLASS 310
59 4,574,210
68 R 4,574,211
88 4,574,212
90 4,574,213
154 4,574,214
239 4,574,215

CLASS 312
7.2 4,573,748
12 4,573,749
38 4,573,750
211 4,573,751

CLASS 313
444 4,574,216
579 4,574,217
635 4,574,218

CLASS 315
49 4,574,219
57 4,574,220
209 T 4,574,221
254 4,574,222
307 4,574,223
408 4,574,224

CLASS 318
254 4,574,225
317 4,574,226
594 4,574,227
696 4,574,228
788 4,574,229

CLASS 323
242 4,574,230
253 4,574,231
268 4,574,232
316 4,574,233

CLASS 324
73 R 4,574,234
158 F 4,574,235
4,574,236
173 4,574,237
178 4,574,238
306 4,574,239
4,574,240
4,574,241
326 4,574,242
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CLASS 328
155 4,574,243

CLASS 329
50 4,574,244
110 4,574,245
124 4,574,246
126 4,574,247

CLASS 330
2 4,574,248
59 4,574,249
258 4,574,250
279 4,574,251
281 4,574,252

CLASS 331
17 4,574,254
25 4,574,255
107 SL 4,574,256
116 R 4,574,257

CLASS 333
21 A 4,574,258
157 4,574,259

CLASS 335
18 4,574,260
299 4,574,261

CLASS 336
192 4,574,262

CLASS 338
18 4,574,263
34 4,574,264

CLASS 339
17 F 4,573,752
17 LM 4,573,753
60 M 4,573,754
111 4,573,755
117 P 4,573,756
126 RS 4,573,757

CLASS 340
52 F 4,574,266
52 R 4,574,265
58 4,574,267
64 4,574,268
97 4,574,269
347 AD 4,574,270
347 NT 4,574,271
384 R 4,574,272
572 4,574,274
636 4,574,275
661 4,574,276
703 4,574,277
722 4,574,278
731 4,574,279
771 4,574,280
783 4,574,281
784 4,574,282
825.08 4,574,283
825.52 4,574,284
825.69 4,574,285
870.31 4,574,286

CLASS 343
756 4,574,287
781 P 4,574,288
786 4,574,289
827 4,574,290

CLASS 346
75 4,574,291
76 PH 4,574,292
210 4,574,294

CLASS 350
3.71 4,573,758
3.85 4,573,759
96.21 4,573,760
96.24 4,573,761
96.34 4,573,762
105 4,573,763
128 4,573,764
286 4,573,765
293 4,574,253
345 4,573,766
354 4,573,767
357 4,573,768
432 4,573,769
454 4,573,770
521 4,573,771
526 4,573,772
541 4,573,773

CLASS 351
160 H 4,573,774
161 4,573,775
167 4,573,776
4,573,777
219 4,573,778

CLASS 354
4 4,573,779
195.12 4,573,780
201 4,573,781
299 4,573,782
403 4,573,783
406 4,573,784
409 4,573,785
416 4,573,786

CLASS 355
14 E 4,573,787
14 R 4,573,788
14 SH 4,573,789
28 4,573,790
77 4,573,791

CLASS 356
301 4,573,792
318 4,573,796
326 4,573,793
346 4,573,794
350 4,573,795
4,573,797
432 4,573,798

CLASS 357
24 4,574,295
38 4,574,296
51 Re.32,090
68 4,574,297
71 4,574,298
81 4,574,299

CLASS 358
11 4,574,300
18 4,574,301
21 R 4,574,302
29 4,574,303
84 4,574,304
86 4,574,305
107 4,574,306
158 4,574,307
188 4,574,308
212 4,574,309
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213 4,574,311
4,574,312
4,574,313
227 4,574,314
241 4,574,315
285 4,574,316
4,574,317
4,574,318
335 4,574,319

CLASS 360
62 4,574,320
74.1 4,574,321
4,574,322
99 4,574,323

CLASS 361
46 4,574,324
218 4,574,325
229 4,574,326
283 4,574,327
284 4,574,328
321 4,574,329
388 4,574,330
393 4,574,331
413 4,574,332
433 4,574,333

CLASS 362
66 4,574,334
84 4,574,335
260 4,574,336
267 4,574,337
278 4,574,338
360 4,574,339

CLASS 363
41 4,574,340
56 4,574,341
134 4,574,342

CLASS 364
76 PH 4,574,293
184 4,574,343
200 4,574,344
4,574,345
4,574,346
4,574,347
4,574,348
4,574,349
4,574,350
4,574,351
466 4,574,352
470 4,574,353
481 4,574,354
492 4,574,355
508 4,574,356

518 4,574,357
550 4,574,358
557 4,574,359
567 4,574,360
761 4,574,361
900 4,574,362
4,574,363
4,574,364

CLASS 365
149 4,574,365
153 4,574,366
179 4,574,367

CLASS 366
89 4,573,799
101 4,573,800
152 4,573,802
154 4,573,801
167 4,573,803

CLASS 367
108 4,574,368

CLASS 368
12 4,573,804

CLASS 369
44 4,574,369
65 4,574,370
100 4,574,371
244 4,574,372

CLASS 370
58 4,574,373
62 4,574,374
67 4,574,375
103 4,574,376
104 4,574,377
4,574,378
4,574,379

CLASS 372
87 4,574,380
4,574,381

CLASS 374
136 4,573,805
144 4,573,806

CLASS 375
25 4,574,382
27 4,574,383

CLASS 376
259 4,574,068
267 4,574,069
289 4,574,070

CLASS 377
58 4,574,384
107 4,574,385
121 4,574,386

CLASS 378
56 4,574,387
144 4,574,388

CLASS 381
10 4,574,389
13 4,574,390
18 4,574,391
51 4,574,392

CLASS 382
17 4,574,393
41 4,574,394
61 4,574,395

CLASS 384
100 4,573,807
114 4,573,808
322 4,573,810
493 4,573,809
622 4,573,811

CLASS 400
121 4,573,812
214 4,573,813
568 4,573,814
642 4,573,815
661 4,573,816

CLASS 401
65 4,573,817
131 4,573,818
151 4,573,819
214 4,573,820

CLASS 402
78 4,573,821
80 L 4,573,822

CLASS 403
118 4,573,823
322 4,573,824
370 4,573,825

CLASS 404
90 4,573,826

CLASS 405
78 4,573,827
157 4,573,829
293 4,573,828

CLASS 406
84 4,573,830

CLASS 407
42 4,573,831
70 4,573,832

CLASS 408
3 4,573,833
16 4,573,834
37 4,573,835
59 4,573,836
111 4,573,837
204 4,573,838
239 R 4,573,839

CLASS 409
200 4,573,840
244 4,573,841

CLASS 410
23 4,573,842
58 4,573,843

CLASS 411
340 4,573,844

CLASS 414
24.5 4,573,845
24.6 4,573,846
63 4,573,847
104 4,573,848
334 4,573,849
382 4,573,850
404 4,573,851
412 4,573,852
460 4,573,853
462 4,573,854
463 4,573,855
561 4,573,856
563 4,573,857
620 4,573,858
628 4,573,859
745 4,573,860
751 4,573,861
753 4,573,862
763 4,573,863

CLASS 415
53 T 4,573,864
115 4,573,865
116 4,573,866
134 4,573,867
157 4,573,868
182 4,573,869
202 4,573,870

CLASS 416
20 R 4,573,871
96 A 4,573,872
114 4,573,873
157 R 4,573,874
198 A 4,573,875
213 R 4,573,876

CLASS 417
76 4,573,877
270 4,573,878
312 4,573,879
4,573,880
4,573,881
366 4,573,882
374 4,573,884
383 4,573,885
394 4,573,883
454 4,573,886
477 4,573,887
560 4,573,888

CLASS 418
73 4,573,889
108 4,573,890
173 4,573,891
219 4,573,892

CLASS 422
14 4,574,071

CLASS 423
9 4,574,072
111 4,574,073
124 4,574,074
184 4,574,075
224 4,574,076
447.6 4,574,077
592 4,574,078

CLASS 424
1.1 4,574,079
20 4,574,080
52 4,574,081
63 4,574,082
93 4,574,083
128 4,574,084
148 4,574,085

CLASS 425
36 4,573,894
71 4,573,893
78 4,573,895
125 4,573,896
143 4,573,897
145 4,573,898
4,573,899
157 4,573,900
451 4,573,901
543 4,573,902
555 4,573,903

CLASS 426
62 4,574,086
129 4,574,087
275 4,574,088
386 4,574,089
439 4,574,090
548 4,574,091

CLASS 427
53 T 4,573,092
33 4,574,095
53.1 4,574,093
86 4,574,094
96 4,574,096
126.6 4,574,096

CLASS 428
36 4,574,097
40 4,574,098
68 4,574,099
134 4,574,100
138 4,574,101
212 4,574,102
213 4,574,103
220 4,574,104
233 4,574,105
236 4,574,106
259 4,574,107
292 4,574,108
325 4,574,109
402.21 4,574,110
461 4,574,111

CLASS 429
26 4,574,112
194 4,574,113

CLASS 430
81 4,574,114
522 4,574,115

CLASS 431
117 4,573,904
125 4,573,905
202 4,573,906
351 4,573,907

CLASS 432
58 4,573,908
133 4,573,909
156 4,573,910
179 4,573,911
222 4,573,912

CLASS 433
17 4,573,913
18 4,573,914
64 4,573,915
71 4,573,916
75 4,573,917
127 4,573,918
140 4,573,919
141 4,573,920
167 4,573,921
176 4,573,922
181 4,573,923

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20 4,573,924
49 4,573,925
115 4,573,926
236 4,573,927
348 4,573,928

CLASS 435
68 4,574,116
108 4,574,117

CLASS 436
29 4,574,118

CLASS 440
54 4,573,929
56 4,573,930
61 4,573,931
88 4,573,932

CLASS 441
16 4,573,933

CLASS 445
3 4,573,934
66 4,573,935

CLASS 446
7 4,573,936
31 4,573,937
179 4,573,938
298 4,573,939
376 4,573,940
451 4,573,941
457 4,573,942
463 4,573,943
465 4,573,944

CLASS 464
68 4,573,945
133 4,573,946
146 4,573,947

CLASS 474
28 4,573,948
80 4,573,949
4,573,950
82 4,573,951
110 4,573,952
152 4,573,953

CLASS 493
55 4,573,954
204 4,573,955
237 4,573,956
309 4,573,957
415 4,573,958
458 4,573,959

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114 4,574,119

CLASS 502
163 4,574,121
220 4,574,120

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42 4,574,122
210 4,574,123
228 4,574,124
284 4,574,125
318 4,574,126
365 4,574,127
469 4,574,128
540 4,574,129

CLASS 523
111 4,574,130
209 4,574,131
466 4,574,132

CLASS 524
147 4,574,133
157 4,574,134
182 4,574,135
310 4,574,136
724 4,574,137
786 4,574,138

CLASS 525
61 4,574,139
123 4,574,140
252 4,574,141
305 4,574,142
435 4,574,144
438 4,574,143
509 4,574,145
530 4,574,146

CLASS 528
42 4,574,149
64 4,574,147
173 4,574,148

CLASS 536
20 4,574,150
31 4,574,151

CLASS 544
4 4,574,152
63 4,574,153
192 4,574,154
330 4,574,155
398 4,574,156

CLASS 548
239 4,574,157

CLASS 549
347 4,574,158

CLASS 558
457 4,574,060

CLASS 560
157 4,574,159
347 4,574,059

CLASS 604
6 4,573,960
4,573,961
4,573,962
15 4,573,963
4,573,964
30 4,573,965
53 4,573,966
56 4,573,967
67 4,573,968
74 4,573,969
81 4,573,974
115 4,573,970
191 4,573,971
4,573,972
192 4,573,975
197 4,573,973
198 4,573,976
212 4,573,977
240 4,573,978
4,573,979
256 4,573,980
263 4,573,981
300 4,573,982
322 4,573,983
339 4,573,984
349 4,573,985
366 4,573,986
378 4,573,987
379 4,573,988
381 4,573,989
385 A 4,573,991
385 R 4,573,990
408 4,573,992
411 4,573,993
891 4,573,994
896 4,573,995
897 4,573,996

CLASS 623
3 4,573,997
6 4,573,998
7 4,573,999
12 4,574,000

CLASSIFICATION OF DESIGNS

D2—	380	282,789		25	282,805		337	282,820			282,836		20	282,852		48	282,868
D6—	327	282,790		39	282,806		415	282,821	D13—	12	282,837	D18—	7	282,853		73	282,869
	333	282,791		68	282,807			282,822		23	282,838			282,854		136	282,870
	406	282,792		79	282,808		429	282,823	D14—	27	282,839		22	282,855		158	282,871
	411	282,793			282,809			282,824		53	282,840	D19—	33	282,856	D24—	2	282,872
	432	282,794		322	282,810	D10—	25	282,825		58	282,841	D20—	7	282,857	D26—	45	282,873
	440	282,795		332	282,811		40	282,826		94	282,842	D21—	27	282,858		93	282,874
	445	282,796	D8—	1	282,788			282,827		100	282,843		120	282,859	D28—	31	282,875
	465	282,797			282,812		62	282,828		106	282,844		173	282,860			282,876
	495	282,798			282,813	D11—	75	282,829		113	282,845		190	282,861			282,877
		282,799		14	282,814	D12—	91	282,830			282,846		252	282,862		46	282,878
	500	282,800		24	282,815		129	282,831		114	282,847	D22—	1	282,863		58	282,879
	553	282,801		30	282,816		133	282,832			282,848		6	282,864	D30—	1	282,880
	596	282,802		71	282,817		173	282,833	D15—	23	282,849	D23—	4	282,865	D32—	48	282,881
		282,803		394	282,818		184	282,834	D17—	1	282,850		8	282,866		53.1	282,882
D7—	23	282,804	D9—	314	282,819		209	282,835		18	282,851		40	282,867	D34—	40	282,883

P.—	7	5,676															
	9	5,677		21	5,678		26	5,679		47	5,680		54	5,681		60	5,682

STATUTORY INVENTION REGISTRATIONS

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DEFENSIVE PUBLICATIONS APPLICATIONS

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29—	577 C	T106,201	424—	46	T106,202												

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PATENTS

01 :	4,573,412	4,573,760		4,574,344	4,573,774	4,573,981		4,573,467
	4,573,647	4,573,791		4,574,367	4,573,775	4,573,983		4,573,702
	4,574,106	4,573,803	08 :	4,573,342	4,573,776	4,574,072		4,573,994
	4,574,132	4,573,806		4,573,354	4,573,777	4,574,086		4,574,287
	4,574,191	4,573,823		4,573,589	4,573,779	4,574,121		4,574,363
	4,574,213	4,573,829		4,573,717	4,573,821	4,574,163		4,574,366
02 :	4,573,763	4,573,839		4,573,888	4,573,850	4,574,171		4,574,387
04 :	4,573,219	4,573,844		4,574,083	4,573,866	4,574,221	25 :	Re.32,089
	4,573,257	4,573,873	09 :	4,573,239	4,573,884	4,574,224		4,573,242
	4,573,302	4,573,887		4,573,253	4,573,923	4,574,225		4,573,265
	4,573,323	4,573,911		4,573,259	4,573,960	4,574,243		4,573,266
	4,573,334	4,573,921		4,573,292	4,573,961	4,574,269		4,573,281
	4,573,457	4,573,944		4,573,336	4,573,962	4,574,280		4,573,431
	4,573,490	4,573,968		4,573,468	4,573,985	4,574,286		4,573,778
	4,573,767	4,573,976		4,573,479	4,573,987	4,574,350		4,574,079
	4,573,851	4,573,977		4,573,533	4,574,030	18 : 4,573,293		4,574,101
	4,574,232	4,573,979		4,573,622	4,574,090	4,573,364		4,574,105
	4,574,248	4,573,993		4,573,871	4,574,165	4,573,439		4,574,136
	4,574,266	4,573,995		4,573,900	4,574,208	4,573,454		4,574,161
	4,574,330	4,573,998		4,574,010	4,574,209	4,573,458		4,574,187
	4,574,346	4,573,999		4,574,015	4,574,274	4,573,459		4,574,311
06 :	4,573,248	4,574,002		4,574,052	4,574,289	4,573,554		4,574,318
	4,573,277	4,574,007		4,574,069	4,574,290	4,573,559	26 :	4,573,225
	4,573,296	4,574,008		4,574,091	13 : 4,573,220	4,573,594		4,573,317
	4,573,339	4,574,023		4,574,112	4,573,403	4,573,606		4,573,319
	4,573,356	4,574,026		4,574,138	4,573,975	4,573,620		4,573,338
	4,573,388	4,574,040		4,574,222	17 : 4,573,232	4,573,724		4,573,340
	4,573,396	4,574,044		4,574,242	4,573,235	4,573,843		4,573,341
	4,573,402	4,574,049		4,574,352	4,573,307	4,573,907		4,573,343
	4,573,425	4,574,068		4,574,357	4,573,310	4,573,967		4,573,348
	4,573,451	4,574,088	10 :	4,573,384	4,573,332	4,574,035		4,573,350
	4,573,470	4,574,095		4,574,150	4,573,337	19 : 4,573,287		4,573,362
	4,573,475	4,574,097	12 :	4,573,223	4,573,349	4,573,308		4,573,391
	4,573,481	4,574,098		4,573,233	4,573,567	4,573,401		4,573,397
	4,573,537	4,574,116		4,573,252	4,573,573	4,573,592		4,573,494
	4,573,570	4,574,118		4,573,270	4,573,585	4,573,849		4,573,496
	4,573,576	4,574,145		4,573,285	4,573,591	4,573,925		4,573,545
	4,573,586	4,574,188		4,573,306	4,573,634	4,574,245		4,573,562
	4,573,602	4,574,196		4,573,327	4,573,661	4,574,342		4,573,566
	4,573,607	4,574,197		4,573,395	4,573,675	20 : 4,573,273		4,573,578
	4,573,619	4,574,220		4,573,415	4,573,715	4,573,653		4,573,587
	4,573,631	4,574,234		4,573,471	4,573,731	4,573,956		4,573,596
	4,573,639	4,574,239		4,573,473	4,573,734	4,573,982		4,573,636
	4,573,642	4,574,240		4,573,476	4,573,755	21 : 4,573,325		4,573,646
	4,573,648	4,574,250		4,573,482	4,573,768	4,573,495		4,573,690
	4,573,669	4,574,252		4,573,498	4,573,802	4,574,053		4,573,730
	4,573,678	4,574,261		4,573,569	4,573,853	4,574,117		4,573,732
	4,573,688	4,574,270		4,573,583	4,573,893	22 : 4,573,488		4,573,733
	4,573,689	4,574,284		4,573,604	4,573,905	4,573,534		4,573,738
	4,573,710	4,574,312		4,573,616	4,573,932	4,573,623		4,573,747
	4,573,711	4,574,327		4,573,749	4,573,940	4,573,682		4,573,754
	4,573,714	4,574,331		4,573,753	4,573,974	4,574,241		4,573,761
	4,573,720	4,574,337		4,573,766	4,573,980	24 : 4,573,409		4,573,824

4,573,831	4,574,075	4,574,345	4,574,140	4,574,045	4,574,227
4,573,840	4,574,081	4,574,349	4,574,160	4,574,048	4,574,244
4,573,842	4,574,092	4,574,393	4,574,217	4,574,057	4,574,251
4,573,862	4,574,093	37 : 4,573,353	4,574,218	4,574,065	4,574,279
4,573,876	4,574,125	4,573,420	4,574,219	4,574,070	4,574,305
4,573,895	4,574,155	4,573,435	4,574,267	4,574,071	4,574,358
4,573,909	4,574,166	4,573,502	4,574,339	4,574,076	4,574,382
4,573,910	4,574,176	4,573,757	4,574,340	4,574,113	4,574,385
4,573,947	4,574,181	4,573,927	4,574,388	4,574,127	49 : 4,573,394
4,574,047	4,574,223	4,574,066	40 : 4,573,295	4,574,153	4,573,539
4,574,103	4,574,236	4,574,228	4,573,301	4,574,172	4,573,721
4,574,146	4,574,249	4,574,260	4,573,346	4,574,174	4,573,822
4,574,149	4,574,254	38 : 4,573,405	4,573,365	4,574,180	4,573,863
4,574,247	4,574,306	4,573,427	4,573,366	4,574,313	4,574,000
4,574,277	4,574,314	4,573,549	4,573,434	4,574,332	4,574,173
4,574,336	4,574,374	4,573,742	4,573,489	4,574,368	50 : 4,573,830
4,574,394	4,574,379	39 : 4,573,234	4,573,532	44 : 4,573,611	4,574,365
27 : 4,573,324	35 : 4,573,796	4,573,237	4,573,535	4,573,667	51 : 4,573,282
4,573,430	4,574,168	4,573,249	4,573,712	4,573,965	4,573,385
4,573,460	36 : 4,573,218	4,573,260	4,573,854	4,574,087	4,573,438
4,573,514	4,573,256	4,573,271	4,573,906	4,574,200	4,573,548
4,573,610	4,573,305	4,573,304	4,574,050	4,574,355	4,573,627
4,573,644	4,573,320	4,573,321	4,574,134	45 : 4,573,311	4,573,641
4,573,820	4,573,328	4,573,370	4,574,158	4,573,456	4,573,645
4,573,837	4,573,345	4,573,376	4,574,194	4,573,847	4,573,797
4,573,892	4,573,351	4,573,377	4,574,231	4,574,032	4,573,904
4,574,025	4,573,445	4,573,398	4,574,308	4,574,333	4,574,096
4,574,099	4,573,452	4,573,429	41 : 4,573,378	47 : 4,573,764	4,574,259
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4,574,351	4,573,574	4,573,497	4,574,291	4,573,269	4,573,363
29 : 4,573,580	4,573,590	4,573,508	4,574,354	4,573,283	4,573,649
4,573,857	4,573,625	4,573,509	4,574,362	4,573,288	4,573,650
30 : 4,573,695	4,573,683	4,573,513	42 : Re.32,090	4,573,326	4,573,652
31 : 4,573,250	4,573,722	4,573,557	4,573,224	4,573,359	4,573,699
4,573,276	4,573,736	4,573,561	4,573,254	4,573,433	4,573,707
4,573,298	4,573,758	4,573,577	4,573,262	4,573,436	4,573,902
4,573,608	4,573,771	4,573,579	4,573,267	4,573,447	4,573,930
32 : 4,573,725	4,573,804	4,573,582	4,573,294	4,573,525	4,573,933
4,573,938	4,573,846	4,573,598	4,573,344	4,573,527	4,574,046
33 : 4,573,229	4,573,875	4,573,599	4,573,358	4,573,529	4,574,325
4,574,258	4,573,877	4,573,603	4,573,417	4,573,536	4,574,348
34 : 4,573,255	4,573,896	4,573,654	4,573,448	4,573,540	4,574,360
4,573,290	4,573,917	4,573,655	4,573,461	4,573,633	54 : 4,573,297
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4,573,469	4,573,954	4,573,679	4,573,605	4,573,713	4,573,318
4,573,478	4,573,996	4,573,680	4,573,637	4,573,805	4,573,382
4,573,530	4,574,003	4,573,703	4,573,643	4,573,845	4,573,392
4,573,595	4,574,006	4,573,704	4,573,660	4,573,855	4,573,432
4,573,617	4,574,013	4,573,740	4,573,664	4,573,858	4,573,544
4,573,630	4,574,063	4,573,751	4,573,668	4,573,883	4,573,609
4,573,635	4,574,082	4,573,865	4,573,685	4,573,913	4,573,719
4,573,658	4,574,089	4,573,894	4,573,718	4,573,937	4,573,794
4,573,696	4,574,094	4,573,919	4,573,800	4,574,017	4,573,955
4,573,706	4,574,129	4,573,946	4,573,827	4,574,029	4,573,963
4,573,752	4,574,144	4,573,986	4,573,870	4,574,061	4,573,964
4,573,936	4,574,167	4,574,005	4,573,912	4,574,120	4,574,021
4,573,988	4,574,169	4,574,009	4,573,934	4,574,137	4,574,022
4,573,991	4,574,278	4,574,020	4,573,935	4,574,143	4,574,162
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4,574,043	4,574,317	4,574,067	4,573,978	4,574,193	4,574,389
4,574,060	4,574,324	4,574,135	4,573,997		

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282,811	282,872	282,835	282,806	282,814	42 : 282,880
282,813	282,873	282,836	282,810	282,869	46 : 282,789
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282,827	09 : 282,792	282,794	282,852	282,831	282,875
282,828	17 : 282,859	282,795	282,855	282,832	282,876
282,845	282,879	282,820	282,856	282,862	282,877
282,861					

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36 : T106,201	T106,202				

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ERRATA

In the Official Gazette, Vol. 1063, No 2, February 11, 1986, chemical patents in U.S. Classes 23 through 585 were omitted in the List of Patentees and the Classification of Patents. The corrected indices of the February 11, 1986 Official Gazette appear in their entirety as the last items in this Volume, 1064, No. 1.

LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 11TH DAY OF FEBRUARY, 1986

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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AB Volvo: *See—*
Ingemansson, Bengt-Erik; Bjork, Bertil E.; Hedman, Jan E.; Knutsson, Knut G.; and Larsson, Nils H. I., 4,569,471, Cl. 228-176.000.

Abbott-Northwestern Hospital, Inc.: *See—*
Burton, Charles V., 4,569,340, Cl. 128-75.000.

Abciuk, Pinhas. False ceilings. 4,569,175, Cl. 52-484.000.

Abe, Minoru; and Rikitake, Tetuo, to Kabushiki Kaisha Daikin Seisakusho. Fastening method for a casing. 4,569,459, Cl. 220-293.000.

Acco Babcock Inc.: *See—*
Gilmore, William J., 4,569,190, Cl. 57-201.000.

Aciers et Outillage Peugeot: *See—*
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Tani, Tatsuo; Sawata, Sinji; Tanaka, Tadayoshi; Sakuta, Koichi; Nagata, Yuuji; Eto, Yasushi; Adachi, Makoto; and Matsurra, Yasunori, 4,569,331, Cl. 126-435.000.

Adachi, Yukio; Honma, Hiroshi; and Ohkouchi, Satoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Printing head apparatus and manufacturing method. 4,569,604, Cl. 400-124.000.

Adamantech, Inc.: *See—*
Moore, Robert E., 4,569,784, Cl. 252-315.100.

Adams, Louis R.: *See—*
Hedgepeth, John M.; and Adams, Louis R., 4,569,176, Cl. 52-645.000.

Ades, Adrian R.; and Schmidt, George S., to General Electric Company. Apparatus for heating a turbine wheel. 4,570,053, Cl. 219-413.000.

Adolph, Dietrich, to Robert Bosch GmbH. Test station for fuel injection pump. 4,569,227, Cl. 73-119.00A.

Adolphi, Heinrich: *See—*
Loeffler, Hans-Peter; Seufert, Walter; and Adolphi, Heinrich, 4,569,930, Cl. 514-147.000.

Adrian, Fritz; Dankow, Boris; Heyn, Klaus; and Pogrzeba, Hans-Joachim, to STAEG AG. Method for producing energy from solid, fossil and ballast rich fuels. 4,569,197, Cl. 60-39.020.

Advanced Cardiovascular Systems, Inc.: *See—*
Frisbie, Jeffrey S., 4,569,347, Cl. 128-344.000.

Advanced Equipment Corp.: *See—*
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Aerovox Incorporated: *See—*
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Aesculap-Werke AG: *See—*
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AGA, A.B.: *See—*
Ott, Lesley E.; and Cork, William H., 4,569,204, Cl. 62-63.000.

Agabekov, Youri. Adapter for tubular electric lamp fixture. 4,569,568, Cl. 339-154.00A.

Agency of Industrial Science and Technology: *See—*
Ono, Hiroshi; Hashimoto, Masao; Sugiyama, Eiiti; Fujiwara, Kenji; and Yoshida, Kenji, 4,569,948, Cl. 518-700.000.
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Agostinelli, John A., to Eastman Kodak Company. Method of making light valve arrays having transversely driven electrooptic gates. 4,569,573, Cl. 350-320.000.

Agostini, Louis P. C., to Staar S.A. Drive motor having moving rotor for compact disc player apparatus. 4,570,254, Cl. 369-270.000.

Agrigenetics Research Associates Limited: *See—*
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Ahern, Michael John: *See—*
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Ahlberg, Krister, to Haldex AB. Apparatus in taximeters for coaction by teletransmission with a common calculator unit. 4,570,228, Cl. 364-467.000.

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Gray, Leslie M., III, 4,569,632, Cl. 416-189.000.

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Akerstrom, Ake. Control lever with automatic return to original position. 4,569,244, Cl. 74-471.0XY.

Aktiebolaget Gustavsberg: *See—*
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Renjilian, Armen, 4,569,883, Cl. 428-234.000.

Albert, Hans-Joachim; and Bohm, August, to Oxytechnik GmbH. Band welding installation for joining plates, sheet bars, and bands. 4,570,049, Cl. 219-124.340.

Albrecht, Wolf-Wigand; Hoppe, Axel; Papp, Uwe; and Wolf, Rudiger, to Hermann C. Starck Berlin. Process for improving the flowability and increasing the bulk density of high-surface area valve metal powders. 4,569,693, Cl. 75-252.000.

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Aldridge, Clyde L.; and Bearden, Roby, Jr., to Exxon Research and Engineering Co. Combination coking and hydroconversion process. 4,569,752, Cl. 208-53.000.

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Allen, Bruce S.; Dunalvey, Michael R.; King, Bruce A.; DuPrie, Harold J.; Hudnall, Richard E.; Lapidus, Stanely N.; Gilbert, Daniel R.; Carlson, Anne M.; Thakrar, Kiran; Doig, Robert C.; Kimerer, Brian S.; Sirois, Andrew F.; Poirer, Bruce A.; Hunt, Philip G.; Dziezanowski, Joseph J.; Bromberg, Michael A.; Brown, Michael; and Friedel, Seymour A. Man machine interface. 4,570,217, Cl. 364-188.000.

Allen, Derek R. Enhanced audiotransmission stethoscope. 4,569,413, Cl. 181-131.000.

Allied Corporation: *See—*
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Ando, Toshio, to Chubu Industries, Inc. Food-cutting apparatus. 4,569,266, Cl. 83-411.00R.
Andrews, Mark P.: *See—*
Ozin, Geoffrey A.; and Andrews, Mark P., 4,569,924, Cl. 502-184.000.
Andrews Paper & Chemical Co., Inc.: *See—*
Muller, Peter; Mustacchi, Henry; and Kreicas, Leonard, 4,569,888, Cl. 428-481.000.
Andrews, Todd A., to SCM Corporation. Cheese-containing confectionery-like coating. 4,569,847, Cl. 426-94.000.
Angell, Robert C.: *See—*
Feldt, Earl C.; and Angell, Robert C., 4,569,245, Cl. 74-473.00P.
Annand, Clark: *See—*
Kitchen, Barry J.; Annand, Clark; Jamieson, James L.; and Marschke, Ronald J., 4,569,236, Cl. 73-863.310.
Anthony, Thomas R.; Houston, Douglas E.; and Loughran, James A., to General Electric Company. High-aspect-ratio hollow diffused regions in a semiconductor body. 4,570,173, Cl. 357-20.000.
Antl, Jurgen; Schmidt, Willi J.; and Wredenhagen, Hartmut, to Black & Decker Inc. Wiring arrangement for an electric tool. 4,569,125, Cl. 29-596.000.
Antler, Aharon: *See—*
Alper, Yekutiel; Sagi, Yitzchak; Michai, Gabi; Antler, Aharon; and Elkin, Yitzchak, 4,569,188, Cl. 56-327.00R.
Aoki, Nobuo: *See—*
Miyoshi, Takahito; Masuyama, Kenichi; Dezawa, Shin-ichiro; Okutu, Toshimitu; Nasu, Norio; Aoki, Nobuo; and Fujiyama, Masaaki, 4,569,856, Cl. 427-128.000.
Aoki, Tsutomu; Takahashi, Hiromi; Konoike, Toshiro; Tsuji, Teruji; and Nagata, Wataru, to Shionogi & Co., Ltd. Fluorocyclopropanes. 4,570,018, Cl. 564-1.000.
Aonuma, Mitsuyoshi: *See—*
Maeda, Akio; Aonuma, Mitsuyoshi; and Muranishi, Masahiko, 4,569,958, Cl. 524-100.000.
Applegate, Merlin J.: *See—*
Shirley, James G.; Applegate, Merlin J.; and Brouwer, Floyd, 4,569,239, Cl. 74-89.150.
Arai, Koichi, to Arai Machinery Corporation. Wire locking structure for a filter device. 4,569,763, Cl. 210-497.100.
Arai Machinery Corporation: *See—*
Arai, Koichi, 4,569,763, Cl. 210-497.100.
Arai, Noboru; Ohta, Takahiro; and Inuiya, Masafumi, to Fuji Photo Film Co., Ltd. Automatic focusing apparatus for video camera. 4,570,185, Cl. 358-227.000.
Arai, Takao: *See—*
Kobayashi, Masaharu; Arai, Takao; and Noda, Tsutomu, 4,570,153, Cl. 340-347.0AD.
Arai, Tohru; and Endo, Junji, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Method of forming a nitride layer. 4,569,862, Cl. 427-255.000.
Arao, Kozo: *See—*
Saitoh, Keishi; and Arao, Kozo, 4,569,894, Cl. 430-63.000.
Arasmith, Stanley D. Wood chipping knife and apparatus using same. 4,569,380, Cl. 144-172.000.
Arc Controls, Inc.: *See—*
Veal, Leo D.; and Castle, William R., 4,570,050, Cl. 219-130.310.
Ariga, Takao: *See—*
Mitani, Akio; and Ariga, Takao, 4,569,206, Cl. 62-156.000.
Arkansas Patents, Inc.: *See—*
Davis, Robert E., 4,569,310, Cl. 122-24.000.
Armstrong World Industries, Inc.: *See—*
Arnold, Marlene R.; and Gard, George E., 4,569,222, Cl. 73-9.000.
Barrall, Jeffery L.; Leib, Ronald J.; and Morris, Debra L., 4,569,878, Cl. 428-182.000.
Arneson Products, Inc.: *See—*
Frentzel, Herman E., 4,569,361, Cl. 134-167.00R.
Arnold, Marlene R.; and Gard, George E., to Armstrong World Industries, Inc. Rolling caster floor tester. 4,569,222, Cl. 73-9.000.
Arzubi, Luis M., to International Business Machines Corporation. FET Storage with partitioned bit lines. 4,570,241, Cl. 365-205.000.
Asahi Glass Company Ltd.: *See—*
Suzuki, Keiichiro, 4,569,922, Cl. 501-89.000.
Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Hoshi, Kouroku; and Noro, Shoji, 4,569,950, Cl. 521-88.000.
Asakawa, Tatsushi: *See—*
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Asami, Kazutomo; Wada, Fumio; Ishijima, Koji; and Sato, Yutaka, to Mitsubishi Denki Kabushiki Kaisha. Rotary compressor with heat exchanger. 4,569,645, Cl. 418-63.000.
ASEA Aktiebolag: *See—*
Brogardh, Torgny; Hok, Bertil; and Ovren, Christer, 4,569,570, Cl. 350-96.340.
Ashcombe, Geoffrey T.; Duff-Barclay, Ian; and Morant, Clive, to British Petroleum Company p.l.c., The. Energy storage flywheels and method of mounting. 4,569,114, Cl. 29-525.000.
Ashland Oil, Inc.: *See—*
Busch, Lloyd E.; Walters, Paul W.; and Zandona, Oliver J., 4,569,753, Cl. 208-73.000.
Ashok, Sankaranarayanan; and Breedis, John F., to Olin Corporation. Copper base alloy adapted to be formed as a semi-solid metal slurry. 4,569,702, Cl. 148-414.000.
Askinasi, Joseph K. Athletic shoe sole. 4,569,142, Cl. 36-134.000.
Aspen Laboratories, Inc.: *See—*
Manes, Michael R., 4,569,345, Cl. 128-303.140.
Assard, Gerald L., to United States of America, Navy. Interferometric hydrophone reference leg low frequency compensation. 4,570,248, Cl. 367-149.000.
Astro Research Corporation: *See—*
Hedgepeth, John M.; and Adams, Louis R., 4,569,176, Cl. 52-645.000.
Asty, Michel; Lerat, Bernard; Saglio, Robert; and Viard, Jacky, to Commissariat a l'Energie Atomique. Self-propelled vehicle. 4,569,230, Cl. 73-623.000.
AT&T Bell Laboratories: *See—*
Butherus, Alexander D.; and D'Asaro, Lucian A., 4,569,718, Cl. 156-643.000.
Carbrey, Robert L., 4,570,121, Cl. 340-347.00C.
Kolwicz, Kevin D., 4,570,176, Cl. 357-42.000.
Maury, Alvaro; and Parrillo, Louis C., 4,569,722, Cl. 156-657.000.
Oh, Kye H., 4,569,701, Cl. 148-188.000.
Swanson, Eric J., 4,570,080, Cl. 307-353.000.
AT&T Technologies, Inc.: *See—*
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Havassy, Alan C., 4,570,058, Cl. 235-479.000.
Kovats, William S.; and Pratt, Charles T., 4,569,445, Cl. 209-539.000.
Atara Corporation: *See—*
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Atlantic Richfield Company: *See—*
Voelz, Frederick L.; and Lowther, Frank, 4,570,028, Cl. 585-540.000.
Atobe, Masaaki: *See—*
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Atomic Energy of Canada Limited: *See—*
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Auburn Research Foundation: *See—*
Harris, Hubert; and Smith, Durward A., 4,569,850, Cl. 426-482.000.
Auch, Wilfried; and Schlemper, Eberhard, to International Standard Electric Corporation. Rotation rate measuring instrument. 4,569,593, Cl. 356-350.000.

Auerbach, Joseph; and Kantor, Martin, to Science Union et Cie. Process for synthesizing certain N-benzoylamino indolines. 4,570,001, Cl. 548-483.000.
Aufderharr, Erhard; Gruebl, Ernst; and Pfaff, Siegfried, to Krauss-Maffei A.G. Discharge shaft for a vertical centrifuge. 4,569,760, Cl. 210-372.000.
Aussedat, Francis, to Regie Nationale des Usines Renault. Economical driving indicator device. 4,570,226, Cl. 364-442.000.
Automatic Liquid Packaging, Inc.: *See—*
Weiler, Gerhard H.; and Pagels, Louis T., 4,569,456, Cl. 215-251.000.
Automation Industries, Inc.: *See—*
Vassalotti, Michael, 4,569,506, Cl. 254-29.00A.
Avco Corporation: *See—*
Waddington, Clive; Lagasse, Normand L.; Milo, George T.; and Van Kamerik, John G., 4,569,196, Cl. 60-39.080.
Avner, Correy B. Secondary grilling apparatus. 4,569,279, Cl. 99-450.000.
Baack, Richard A. Oilfield monitor and recorder. 4,570,234, Cl. 364-550.000.
Baba, Yoshio; Uno, Teruo; and Yoshida, Hideo, to Sumitomo Light Metal Industries, Ltd. Aircraft stringer material. 4,569,703, Cl. 148-417.000.
Babcock & Wilcox Company, The: *See—*
Kim, Raymond K., 4,569,232, Cl. 73-861.040.
Bacher, Helmut. Microwave attenuator. 4,570,133, Cl. 333-81.00A.
Backman, Ralf, to Wamac-Idab AB. Newspaper stacking plant. 4,569,513, Cl. 271-189.000.
Baggett, John W., to Standard Oil Company (Indiana). Device for aligning a cutter assembly shaft relative to a die face of an underwater pelletizer. 4,569,809, Cl. 264-40.100.
Baglee, David A.; Smayling, Michael C.; Duane, Michael P.; and Itoh, Mamoru, to Texas Instruments Incorporated. Method of making integrated circuit with reduced narrow-width effect. 4,569,117, Cl. 29-571.000.
Bagnall, Jeffry A.: *See—*
Walker, Michael J.; and Bagnall, Jeffry A., 4,570,247, Cl. 367-93.000.
Baier, Heinz; Kopp, Peter; Schneiderhan, Martin; Reimann, Hans-Peter; Rosch, Hans; and Pfeffer, Erwin, to International Business Machines Corporation. Method for automatic optical inspection. 4,570,180, Cl. 358-106.000.
Baker, Charles L., Jr.; and Puente-Duany, Rafael J., to Exxon Research and Engineering Co. Process for removing solids from a gas containing the same. 4,569,682, Cl. 55-6.000.
Baker, Geraldine L.; and Schmidt, William K., to Du Pont de Nemours, E. I., and Company. Analgesic mixture of oxycodone and ibuprofen. 4,569,937, Cl. 514-282.000.
Baker, Jerry L. Fault detection in a telephone cable pressure monitoring system. 4,570,037, Cl. 179-175.000.
Baker Oil Tools, Inc.: *See—*
Brakhage, William L., Jr.; and Cupples, Timothy R., 4,569,397, Cl. 166-321.000.
Baker Perkins Holdings, Plc.: *See—*
Wiggins, Christopher N.; and Wood, Roger H., 4,569,658, Cl. 432-47.000.
Baker, Robert L.; Chin, Lester P.; Courtois, James A.; Pionke, Lawrence J.; Sharp, Ralph M.; and Willcox, Peter S., to Alumax, Inc. Apparatus and process for producing shaped metal parts. 4,569,218, Cl. 72-342.000.
Baker, Stephen; Hollaway, Leonard C.; and Terrell, Christopher E., to University of Surrey. Structural connections. 4,569,165, Cl. 52-81.000.
Bakoglu, Halil B.: *See—*
Di Stefano, Thomas H.; and Bakoglu, Halil B., 4,570,191, Cl. 360-77.000.
Balachandran, Sudarshan: *See—*
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Balboa Construction Co., Inc.: *See—*
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Baldwin, Gary D., to Westinghouse Electric Corp. Isolated pump in a double pass pump Raman oscillator and optimum conversion of pump energy in a Raman oscillator and amplifier. 4,570,081, Cl. 307-426.000.
Baldwin Hardware Corporation: *See—*
Fayerman, Peter; Shaffer, Elwood; and James, Paul, Jr., 4,569,547, Cl. 292-347.000.
Baliga, Bantval J.; and Wessels, Bruce W., to General Electric Company. Planar gate turn-off field controlled thyristors and planar junction gate field effect transistors, and method of making same. 4,569,118, Cl. 29-571.000.
Ballard Medical Products: *See—*
Palmer, Darrel, 4,569,344, Cl. 128-207.160.
Balmer, Charles. Pneumatic distributing device. 4,569,486, Cl. 239-655.000.
Baltisberger, Erich, to Ferag AG. Method of, and apparatus for, processing two product formations, each formed by substantially flat products, especially printed products. 4,569,488, Cl. 242-59.000.
Balzer, Heinrich: *See—*
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Bannister, Brian C., to Marler Haley ExpoSystems Limited. Structural frame. 4,569,143, Cl. 40-603.000.
Barber, Leonard A., to Pennwalt Corporation. Emulsion polymerization of vinylidene fluoride polymers in the presence of trichlorofluoromethane as chain transfer agent. 4,569,978, Cl. 526-206.000.
Barbknecht, Gary D.; and Terrell, Buford E., to Boeing Company, The. Programmable universal logic driver. 4,570,262, Cl. 371-20.000.
Barnes Group, Inc.: *See—*
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Barnes-Hind, Inc.: *See—*
Lim, Draholav; and Morris, Peter C., 4,569,858, Cl. 427-164.000.
Barnes, James E. Chiropractic table locking device. 4,569,339, Cl. 128-74.000.
Baron, Donald: *See—*
Millberger, Lionel J.; Baron, Donald; and Berner, Paul C., 4,569,404, Cl. 175-208.000.
Barrall, Jeffery L.; Leib, Ronald J.; and Morris, Debra L., to Armstrong World Industries, Inc. Laminated composites using bonding material from reaction of metal oxide, calcium silicate and phosphoric acid. 4,569,878, Cl. 428-182.000.
Barrett, Bracell P., to Barrett Machine Works. Formation sampling bullet. 4,569,403, Cl. 175-4.000.
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Barthel, Gunter, to Ruhrgas Aktiengesellschaft. Process for increasing the heating value of fuel gas mixtures containing hydrogen. 4,569,890, Cl. 429-17.000.
Barton, Jeffrey N.: *See—*
Suh, John T.; Chung, Rack H., deceased; Wang, Nai-Yi; and Barton, Jeffrey N., 4,569,941, Cl. 514-317.000.
Basehore, Paul M., to Stromberg-Carlson Corporation. Digital tone signal generator for telephony system. 4,570,260, Cl. 370-110.200.
BASF Aktiengesellschaft: *See—*
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Lindner, Alfred; Broellos, Klaus; Sandrock, Gerhard; Volkamer, Klaus; and Hefner, Werner, 4,569,725, Cl. 203-38.000.
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Bauer, Werner: *See—*
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Baumann, Michael: *See—*
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Baumann, Peter; and Baumann, Michael, to Beltron GmbH. Massage apparatus. 4,569,337, Cl. 128-32.000.
Baus, Heinz G. Shower enclosure with multi-ply sheets and sectional rails. 4,569,092, Cl. 4-596.000.
Bayer Aktiengesellschaft: *See—*
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Grogler, Gerhard; Hess, Heinrich; Kopp, Richard; and Rasshofer, Werner, 4,569,982, Cl. 528-73.000.
Paul, Winfried; Kress, Hans-Jurgen; Stix, Wolfgang; Lindner, Christian; Neuray, Dieter; and Nouvertne, Werner, 4,569,970, Cl. 525-67.000.
Petruck, Gerd-Michael; Wambach, Raimund; Wissner, Adolf; and Hartung, Sigurd, 4,570,023, Cl. 570-210.000.
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Bayer, Michael S., to Thermal-Barrier Products, Inc. Thermally insulating window assembly. 4,569,154, Cl. 49-504.000.
Bayer, Thomas; Kraus, Georg; Kuenzel, Ulrich; Renz, Gisela; and Schaefer, Rolf, to International Business Machines Corporation. Method and apparatus for the selective, self-aligned deposition of metal layers. 4,569,743, Cl. 204-192.00R.
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BBC Brown, Boveri & Co., Ltd.: *See—*
Killer, Eric, 4,569,730, Cl. 204-24.000.
Beadle, George D. Hydraulic trailer. 4,569,531, Cl. 280-30.000.
Beale, Alvin F., Jr., to Dow Chemical Company, The. Chromium oxide in ion exchange resin. 4,569,765, Cl. 210-673.000.
Beam, Donald D.: *See—*
Hulswitt, Charles E.; and Beam, Donald D., 4,569,391, Cl. 165-166.000.
Bearden, Roby, Jr.: *See—*
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Beaston, John: *See—*
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Beattie, Patrick J.; and Harvey, Nathan A., to John D. Brush & Co., Inc. Media protection system. 4,569,294, Cl. 109-45.000.

Becker, Franz J.; and Racek, Alfred. Lighter of the disposable type having a bottle-opener for bottles with crown-corks, which is attached to said lighter. 4,569,653, Cl. 431-253.000.

Becton, Dickinson and Company: *See—*
Johnson, Michael D., 4,569,707, Cl. 156-78.000.

Beecham Group p.l.c.: *See—*
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Watts, Eric A., 4,569,940, Cl. 514-304.000.

Beede, Earl R. Concrete ramp form. 4,569,500, Cl. 249-123.000.

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Behelfer, Gary L.: *See—*
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Behringwerke Aktiengesellschaft: *See—*
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Bel, Roger P.; and Hascoet, Martial E., to Metallisations et Traitements Optiques MTO. Optical instrument including a focusing eyepiece and an endoscope. 4,569,333, Cl. 128-4.000.

Belew, Patricia W.: *See—*
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Bell, Allyn R.: *See—*
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Bell, Robert J.: *See—*
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Bell, Sammy S., Jr. Vise pads. 4,569,511, Cl. 269-276.000.

Bellgardt, Dieter; Bauer, Werner; Werther, Joachim; and Ritter, Gunter, to Rheinische Braunkohlenwerke AG. Probe tube which can be introduced into a reaction container for detecting the operating condition of a medium. 4,569,228, Cl. 73-432.00R.

Bellos, Thomas J., to Petrolite Corporation. Thioureylenes and uses thereof. 4,569,785, Cl. 252-344.000.

Belokin, Martin P., to Martin Paul, Inc. Dispensing container for powdery, granular and pellet-like materials. 4,569,462, Cl. 222-180.000.

Belton, Timothy. Play building element. 4,569,665, Cl. 446-114.000.

Beltone Electronics Corporation: *See—*
Werwath, Karl W.; and DeGraff, Jon S., 4,569,812, Cl. 264-222.000.

Beltron GmbH: *See—*
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Ben Aim, Roger; Bourdiol, Daniel; Fiessinger, Francois; and Rovel, Jean-Marie, to Societe Lyonnaise des Eaux et de l'Eclairage; Degremont; and Institut de la Filtration et des Techniques Separatives Foulayronnes. Tangential filtration apparatus and plant comprising such apparatus. 4,569,759, Cl. 210-304.000.

Bencker, Rudolf: *See—*
Riederer, Emil; Zahn, Karl-Ludwig; and Bencker, Rudolf, 4,569,648, Cl. 425-222.000.

Benko , Pal: *See—*
Budai, Zoltan; Benko , Pal; Ratz nee Simonek, Ildiko ; Rakoczy nee Pinter; Eva; Magyar, Karoly; Kelemen, Jozsef; and Mandi, Attila, 4,570,002, Cl. 548-495.000.

Bentley, Jeffrey A., to Aerovox Incorporated. Capacitor. 4,570,201, Cl. 361-323.000.

Berecz, Imre, to Microdot Inc. Transfer mechanism. 4,569,628, Cl. 414-739.000.

Berg, James G.: *See—*
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Berg, Lloyd; and Ratanapupech, Pisant. Process for the separation of ethyl acetate from ethanol and water by extractive distillation. 4,569,726, Cl. 203-56.000.

Bergamaschi, Mario; Gervasi, Gian B.; Vecchietti, Vittorio; and Signorini, Massimo, to Dr. L. Zambeletti S.p.A. Biphenylylalkanoic acid derivatives, methods of preparation and pharmaceutical compositions therefrom. 4,570,013, Cl. 560-102.000.

Bergandy, Wieslaw, to National Instrument Company Inc. Filling machine with tandem-operated diaphragm filling units. 4,569,378, Cl. 141-266.000.

Bergerioux, Jean-Marcel; and Allio, Roland, to Hotchkiss-Brandt Sogeme H.B.S. Device for destacking letters associated with a storage magazine and sorting machine equipped with such a device. 4,569,512, Cl. 271-103.000.

Berglund, Jan: *See—*
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Bergquist, Barton L.; and Chang, James C., to University of Northern Iowa Foundations. Low toxicity radiation sensitizer. 4,569,932, Cl. 514-185.000.

Bergs, Norbert A.: *See—*
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Berkley-Small, Inc.: *See—*
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Bernath, Jeno : *See—*
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Berner, Paul C.: *See—*
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Berns, Anthony J.; and Peterson, Hensel B., to Nordic Forge, Inc. Portable animal scale. 4,569,408, Cl. 177-257.000.

Bertrand, Jacques C.: *See—*
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Beson, John, to Beson Technology, Inc. Piping suspender with metal-to-metal seal. 4,569,540, Cl. 285-93.000.

Beson Technology, Inc.: *See—*
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Best Industries, Inc.: *See—*
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Betz Laboratories, Inc.: *See—*
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BICC plc: *See—*
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Bielomatik Leuze GmbH & Co.: *See—*
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Bimber, Russell M.: *See—*
Cryberg, Richard L.; and Bimber, Russell M., 4,570,021, Cl. 568-388.000.

Bird Electronic Corporation: *See—*
Holt, Timothy L., 4,570,117, Cl. 324-72.000.

Birritella, Mark S., to Motorola, Inc. Selectable write current source for bipolar rams. 4,570,238, Cl. 365-189.000.

Bison-Werke Bahre & Greten GmbH & Co. KG: *See—*
Fischer, Kurt; and Weiner, Helmut, 4,569,155, Cl. 51-138.000.

Bitterly, Jack G., to Hemodynamics Technology, Inc. Method and apparatus for monitoring and diagnosing peripheral blood flow. 4,569,355, Cl. 128-691.000.

Bjork, Bertil E.: *See—*
Ingemansson, Bengt-Erik; Bjork, Bertil E.; Hedman, Jan E.; Knutsson, Knut G.; and Larsson, Nils H. I., 4,569,471, Cl. 228-176.000.

Black & Decker Inc.: *See—*
Antl, Jurgen; Schmidt, Willi J.; and Wredenhagen, Hartmut, 4,569,125, Cl. 29-596.000.

Blake, Frederick D., to Minnesota Mining and Manufacturing Company. Water-dispersible pressure-sensitive adhesive and tape made therewith. 4,569,960, Cl. 524-145.000.

Blank, Leon W., to Commercial Shearing, Inc. Remote valve operators. 4,569,372, Cl. 137-625.660.

Blasch Precision Ceramics, Inc.: *See—*
Smith-Johannsen, Robert, 4,569,920, Cl. 501-1.000.

Blattler, Walter A.; Lambert, John M.; and Senter, Peter D., to Dana-Farber Cancer Institute, Inc. Acid-cleavable compound, use in protein conjugates and drug delivery systems. 4,569,789, Cl. 260-112.00R.

Bleakley, Daryl A.: *See—*
Frey, George R.; Dickey, Ronald K.; Bleakley, Daryl A.; and Willison, John E., 4,569,489, Cl. 242-86.510.

Bleckmann, Gerhard; and Lynch, John, to BASF Aktiengesellschaft. Apparatus for closing the gap between the ends of a gravure printing plate clamped on a forme cylinder. 4,569,286, Cl. 101-382.00R.

Bleich, Charles R.; Jarvis, Eugene P.; and Smolucha, Walter E., to Williams Electronics, Inc. Horizontal and vertical image inversion circuit for a video display. 4,570,158, Cl. 340-727.000.

Blem, Allen R.: *See—*
Brouwer, Walter G.; Bell, Allyn R.; Blem, Allen R.; and Davis, Robert A., 4,569,690, Cl. 71-90.000.

Bliss, George N.: *See—*
McEvoy, John C.; Bliss, George N.; and Thomas, Leslie P., 4,569,444, Cl. 209-510.000.

Blom, Ingvar G. A.: *See—*
Olsen, Erik T.; and Blom, Ingvar G. A., 4,569,659, Cl. 432-119.000.

Bloom, Robert D.; Gac, John V.; and Kozol, Eugene T., deceased (by Kozol, Eleanor, executrix), to International Business Machines Corporation. Programmable servo motor speed control apparatus. 4,570,110, Cl. 318-313.000.

Blythin, David J., to Schering Corporation. Anti-inflammatory substituted 9H-8-oxo-pyrimido[2,1-f]purine-2,4-diones. 4,569,936, Cl. 514-267.000.

BMB Company, Inc.: *See—*
Spiker, Quentin B.; Holliday, Richard L.; and Bottenberg, Warren D., 4,569,187, Cl. 56-202.000.

Board of Regents, University of Texas System, The: *See—*
Lagow, Richard J.; and Lin, Wen-Huey, 4,570,004, Cl. 549-352.000.

Board of Trustees operating Michigan State University: *See—*
Carlson, William H.; and Heins, Royal D., 4,569,150, Cl. 47-17.000.

Bode, James W.; and Montegari, Frank A., to International Business Machines Corporation. High speed complementary NOR (NAND) circuit. 4,570,086, Cl. 307-458.000.

Boden, Richard M.; Hanna, Marie R.; and Tyszkiewicz, Theodore J., to International Flavors & Fragrances Inc. 2-Alkylidenyl-3-oxabicyclo[3.1.0]hexanes. 4,570,008, Cl. 549-462.000.

Bodiford, James E., Jr., to Harvey Hubbell Incorporated. Centering detent. 4,569,455, Cl. 213-19.000.

Bodnar, George. Power starter attachment for lawnmowers and other appliances having small internal combustion engines. 4,569,315, Cl. 123-179.0SE.

Boehringer Mannheim GmbH: *See—*
Maier, Josef; Gloger, Manfred; and Draeger, Brigitte, 4,569,917, Cl. 436-71.000.

Boeing Company, The: *See—*
Barbknecht, Gary D.; and Terrell, Buford E., 4,570,262, Cl. 371-20.000.
Klees, Gary W.; and Johnson, Paul E., 4,569,199, Cl. 60-226.100.
Sakata, Sumio T., 4,569,494, Cl. 244-199.000.

Boesen, Thomas E.: *See—*
Harker, John H.; and Boesen, Thomas E., 4,569,638, Cl. 417-365.000.

Bohannon, William D., Jr.; Brent, Herbert E.; Hamilton, Alfred S.; and Kinard, Michael D., to AT&T Technologies, Inc. Methods of making a bonded sheath cable. 4,569,704, Cl. 156-48.000.

Bohm, August: *See—*
Albert, Hans-Joachim; and Bohm, August, 4,570,049, Cl. 219-124.340.

Bolkow, Ludwig; Mehnert, Walter; and Chaborski, Hoiko, to Bolkow, Ludwig. Method of determining the difference between the transit times of measuring pulse signals and reference pulse signals. 4,569,599, Cl. 368-120.000.

Bondy, Ferdinand H. Storage container. 4,569,460, Cl. 220-375.000.

Bonfiglioli, Silverio; Triolo, Innocenzo; and Gardellini, Giovanni, to Weber S.p.A. Carburetor foi internal combustion engines with electronically controlled elements capable of maintaining the idling speed of the engine at a constant level. 4,569,321, Cl. 123-438.000.

Booth, William M., III: *See—*
Phillips, Earl G.; Insalaco, Robert W.; and Booth, William M., III, 4,569,674, Cl. 604-119.000.

Borel, Andre : *See—*
Marion, Louis; and Borel, Andre , 4,569,672, Cl. 493-359.000.

Borel, Georg, to Hermann Wangner GmbH & Co. KG. Composite fabric for use as a clothing for a papermaking machine. 4,569,375, Cl. 139-383.00A.

Borg, Bertil: *See—*
Landaeus, Kjell; and Borg, Bertil, 4,569,402, Cl. 173-126.000.

Borg-Warner Corporation: *See—*
Ledvina, Timothy J., 4,569,671, Cl. 474-201.000.
McIntosh, Arthur M., 4,569,670, Cl. 474-16.000.

Borghesi, Giancarlo, to Buzzi, Enrico. Dual purpose lighter for household use. 4,569,654, Cl. 431-255.000.

Bossany, John A. Insulation for buildings. 4,569,174, Cl. 52-406.000.

Bossetti, Renato, to Societa Impianti Termoelettrici Industriali S.p.A. Furnace for firing ceramic materials, having a crown element incorporating thermal and/or mechanical stress resisting means. 4,569,660, Cl. 432-148.000.

Boston University: *See—*
Shapiro, Jerrold M.; and Teich, Jonathan M., 4,569,354, Cl. 128-665.000.

Botman, Jean-Pierre P. A.: *See—*
Weinand, Guy A.; Botman, Jean-Pierre P. A.; and Busch, Rainer, 4,569,884, Cl. 428-245.000.

Bottenberg, Warren D.: *See—*
Spiker, Quentin B.; Holliday, Richard L.; and Bottenberg, Warren D., 4,569,187, Cl. 56-202.000.

Boub, Jerry H.: *See—*
Miller, Bill; and Boub, Jerry H., 4,569,296, Cl. 111-7.000.

Boucher, Heather A.; and Cody, Ian A., to Exxon Research and Engineering Co. Alkylation of aromatic molecules using a silica-alumina catalyst derived from zeolite. 4,570,027, Cl. 585-455.000.

Boudet, Jean, to Essilor International Cie Generale d'Optique. Method and apparatus for molding optical components. 4,569,807, Cl. 264-2.200.

Boulton, Peter I. P.; Lee, E. Stewart; and Davidson, William E., to University of Toronto Innovations Foundation, The. Local area networks. 4,570,162, Cl. 340-825.500.

Bourdiol, Daniel: *See—*
Ben Aim, Roger; Bourdiol, Daniel; Fiessinger, Francois; and Rovel, Jean-Marie, 4,569,759, Cl. 210-304.000.

Bouthyette, Pierre: *See—*
Gracen, Vernon E.; Sisco, Paul; and Bouthyette, Pierre, 4,569,152, Cl. 47-58.000.

Bouyoucos, John V.; and Selsam, Roger L., to Hydroacoustics Inc. Seismic source. 4,569,412, Cl. 181-119.000.

Boye, Albert A.: *See—*
Pickett, Wiley J.; and Boye, Albert A., 4,569,420, Cl. 184-15.100.

Boyer, Roland: *See—*
Volland, Michel; Remond, Pierre; and Boyer, Roland, 4,569,376, Cl. 139-435.000.

Brakhage, William L., Jr.; and Cupples, Timothy R., to Baker Oil Tools, Inc. Ball valve actuating mechanism. 4,569,397, Cl. 166-321.000.

Brandenberger, Kurt, to Brandenberger, Kurt. Boom arm or cantilever arrangement for swivelling elevator body support. 4,569,091, Cl. 4-562.000.

Brandenstein, Manfred; Ernst, Horst M.; Walter, Lothar; and Friedrich, Wolfgang, to SKF Kugellagerfabriken GmbH. Coupling release, particularly for pulling action couplings. 4,569,429, Cl. 192-98.000.

Braun, Karl, to Aesculap-Werke AG. Clip removing forceps. 4,569,505, Cl. 254-28.000.

Breckenfeld, Paul W.; Broughton, George L.; Macier, James E.; and Calamia, David C., to Outboard Marine Corporation. Air silencer for an internal combustion engine. 4,569,415, Cl. 181-229.000.

Breedis, John F.: *See—*
Ashok, Sankaranarayanan; and Breedis, John F., 4,569,702, Cl. 148-414.000.

Breen, David T.; Burghdurf, Howard F., Jr.; and Huff, Curtis, to Pennwalt Corporation. Tablet press controller and method. 4,570,229, Cl. 364-476.000.

Breitigam, Walter V.; and Jackson, Roy J., to Shell Oil Company. Rapid curing epoxy resin adhesive composition. 4,569,956, Cl. 523-402.000.

Brenner, John W., to Dow Chemical Company, The. Expandable synthetic resinous thermoplastic particles, method for the preparation thereof and the application therefor. 4,569,949, Cl. 521-56.000.

Brent, Herbert E.: *See—*
Bohannon, William D., Jr.; Brent, Herbert E.; Hamilton, Alfred S.; and Kinard, Michael D., 4,569,704, Cl. 156-48.000.

Brent, William E. Attachment device for attaching a paint can and brush holder to a ladder. 4,569,449, Cl. 211-86.000.

Breslow, Jeffrey D.: *See—*
Rosenwinkel, Donald A.; Breslow, Jeffrey D.; and Zaruba, John V., 4,569,527, Cl. 273-251.000.

Breuer, Friedrich: *See—*
Fichte, Rudolf; Breuer, Friedrich; Hahn, Reinhard; and Retelsdorf, Hans-Joachim, 4,569,691, Cl. 75-10.00R.

Breuer, Heinz G., to Rheinmetall G.m.b.H. Manual actuator for recoil-operated breech. 4,569,269, Cl. 89-24.000.

Bridges, Robert B.; Brubaker, John R.; and Hastings, Jerome K., to Eaton Corporation. Thermally actuated variable-rating circuit breaker having selectively connectable heater elements. 4,570,143, Cl. 337-75.000.

Bridges, Robert B.; Brubaker, John R.; Hastings, Jerome K.; and Kroll, John W., to Eaton Corporation. Thermally actuated variable-rating circuit breaker having adjustable heat sink means. 4,570,144, Cl. 337-88.000.

Bridgestone Tire Company Limited: *See—*
Matsumoto, Kenji; and Suzuki, Yasuo, 4,569,381, Cl. 152-548.000.

Brigham and Women's Hospital: *See—*
Szabo, Sandor; and Usadel, Klaus H., 4,569,926, Cl. 514-14.000.

Brightmond Company Limited: *See—*
Chan, Peter, 4,570,216, Cl. 364-143.000.

Brisco, David P., to Halliburton Company. Selective injection packer. 4,569,396, Cl. 166-305.100.

Britax (Wingard) Limited: *See—*
Else, Robert F., 4,569,537, Cl. 280-808.000.

British Petroleum Company p.l.c., The: *See—*
Ashcombe, Geoffrey T.; Duff-Barclay, Ian; and Morant, Clive, 4,569,114, Cl. 29-525.000.

British Shipbuilders (Engineering and Technical Services), Ltd.: *See—*
Lambley, Ian G., 4,570,077, Cl. 290-4.00R.

Broellos, Klaus: *See—*
Lindner, Alfred; Broellos, Klaus; Sandrock, Gerhard; Volkamer, Klaus; and Hefner, Werner, 4,569,725, Cl. 203-38.000.

Brogardh, Torgny; Hok, Bertil; and Ovren, Christer, to ASEA Aktiebolag. Optical sensor having atomically localized luminescence centers. 4,569,570, Cl. 350-96.340.

Brois, Stanley J.: *See—*
Brownawell, Darrell W.; Gutierrez, Antonio; Brois, Stanley J.; Jacques, Donald F.; Behelfer, Gary L.; Ferrell, Thomas M.; and Ilnyckyj, Stephan, 4,569,750, Cl. 208-48.0AA.

Bromberg, Michael A.: *See—*
Allen, Bruce S.; Dunalvey, Michael R.; King, Bruce A.; DuPrie, Harold J.; Hudnall, Richard E.; Lapidus, Stanely N.; Gilbert, Daniel R.; Carlson, Anne M.; Thakrar, Kiran; Doig, Robert C.; Kimerer, Brian S.; Sirois, Andrew F.; Poirer, Bruce A.; Hunt, Philip G.; Dziezanowski, Joseph J.; Bromberg, Michael A.; Brown, Michael; and Friedel, Seymour A., 4,570,217, Cl. 364-188.000.

Brother Kogyo Kabushiki Kaisha: *See—*
Watanabe, Tomoyoshi; Hasegawa, Yuzo; and Makino, Kuniyasu, 4,569,611, Cl. 400-624.000.

Broughton, George L.: *See—*
Breckenfeld, Paul W.; Broughton, George L.; Macier, James E.; and Calamia, David C., 4,569,415, Cl. 181-229.000.

Brouwer, Floyd: *See—*
Shirley, James G.; Applegate, Merlin J.; and Brouwer, Floyd, 4,569,239, Cl. 74-89.150.

Brouwer, Walter G.; Bell, Allyn R.; Blem, Allen R.; and Davis, Robert A., to Uniroyal, Inc.; and Uniroyal, Ltd. 3-Aryl-5,6-dihydro-1,4,2-oxathiazines and their oxides. 4,569,690, Cl. 71-90.000.

Browatzki, Kurt: *See—*
Koepke, Gunther; Frenken, Hans; Bussmann, Heinrich; and Browatzki, Kurt, 4,569,863, Cl. 427-402.000.

Brown, Michael: *See—*
Allen, Bruce S.; Dunalvey, Michael R.; King, Bruce A.; DuPrie, Harold J.; Hudnall, Richard E.; Lapidus, Stanely N.; Gilbert, Daniel R.; Carlson, Anne M.; Thakrar, Kiran; Doig, Robert C.; Kimerer, Brian S.; Sirois, Andrew F.; Poirer, Bruce A.; Hunt, Philip G.; Dziezanowski, Joseph J.; Bromberg, Michael A.; Brown, Michael; and Friedel, Seymour A., 4,570,217, Cl. 364-188.000.

Brown, Sanford W.; and Hill, Robert W. Powder metal process for preparing computer disk substrates. 4,569,822, Cl. 419-23.000.

Brownawell, Darrell W.; Gutierrez, Antonio; Brois, Stanley J.; Jacques, Donald F.; Behelfer, Gary L.; Ferrell, Thomas M.; and Ilnyckyj, Stephan, to Exxon Research & Engineering Co. Method for inhibiting deposit formation in structures confining hydrocarbon fluids. 4,569,750, Cl. 208-48.0AA.

Brubaker, John R.: *See—*
Bridges, Robert B.; Brubaker, John R.; and Hastings, Jerome K., 4,570,143, Cl. 337-75.000.

Bridges, Robert B.; Brubaker, John R.; Hastings, Jerome K.; and Kroll, John W., 4,570,144, Cl. 337-88.000.

Bruner, Harold S., Jr.; and D'Amore, Michael B., to Du Pont de Nemours, E. I., and Company. Manufacture of butanedicarboxylic acid esters. 4,570,016, Cl. 560-204.000.

Brunet, Patrice, to Poutrait-Morin. Portable pump for inflating tires, in particular for a bicycle. 4,569,275, Cl. 92-58.100.

Bruning, Donald D.; and Wier, Donald R., to Phillips Petroleum Company. CO_2-Induced in-situ gelation of polymeric viscosifiers for permeability contrast correction. 4,569,393, Cl. 166-270.000.

Bryan, James S.; and Meadows, Roger D., to Dayco Corporation. Railroad track insulator and part therefor. 4,569,477, Cl. 238-349.000.

Bryan, James S., to Dayco Corporation. Rail fastening system. 4,569,478, Cl. 238-349.000.

Bucherati, Frank: *See*—
Melanson, Lionel J.; and Bucherati, Frank, 4,570,046, Cl. 219-68.000.

Buchmuller, Hans-Peter; Kerk, Klaus; and Kolbe, Klaus, to Rohm GmbH. Construction including a supported element of extruded synthetic resin. 4,569,166, Cl. 52-86.000.

Buck, Hermann, to Bielomatik Leuze GmbH & Co. Apparatus for depositing sheets in a pile. 4,569,622, Cl. 414-45.000.

Bucko, Robert J.: *See*—
Miller, Philip A.; Mullins, Richard M.; and Bucko, Robert J., 4,569,778, Cl. 252-77.000.

Budai, Zoltan; Benko , Pal; Ratz nee Simonek, Ildiko ; Rakoczy nee Pinter, Eva; Magyar, Karoly; Kelemen, Jozsef; and Mandi, Attila, to Egyt Gyogyszervegyeszeti Gyar. Carbazic acid derivatives. 4,570,002, Cl. 548-495.000.

Buehler, Henry J.: *See*—
Dunski, Neil; Bazzi, Ali A.; and Buehler, Henry J., 4,569,959, Cl. 524-101.000.

Buildex Incorporated: *See*—
Villa, Joseph, 4,569,208, Cl. 62-273.000.

Bunch, Richard H., to Bunch, Richard H. Fault finder. 4,570,231, Cl. 364-492.000.

Burghardt, Hans: *See*—
Zentgraf, Helmut; Fricke, Gunter; Geisler, Iring; Balzer, Heinrich; Burghardt, Hans; and Maikranz, Fritz, 4,569,432, Cl. 193-32.000.

Burghdurf, Howard F., Jr.: *See*—
Breen, David T.; Burghdurf, Howard F., Jr.; and Huff, Curtis, 4,570,229, Cl. 364-476.000.

Burguette, Mario D.; and Foss, George D., to Minnesota Mining and Manufacturing Company. Perfluoropolyether compositions which are soluble in non-fluorinated solvents. 4,569,962, Cl. 522-74.000.

Burhans, Walter R., Jr., to Grumman Aerospace Corporation. Integrated multi-role variable sweep wing aircraft. 4,569,493, Cl. 244-76.00R.

Burkmire, Charles R.: *See*—
Forsythe, Bobbie G.; and Burkmire, Charles R., 4,569,428, Cl. 192-70.000.

Burroughs Corporation: *See*—
Hanson, Lawrence G., 4,570,056, Cl. 235-311.000.
Robson, Thomas; and Thompson, Aubrey E., 4,569,583, Cl. 355-14.0CH.
Snyder, Donald E., Jr.; Watters, Donald J.; and Palermiti, Frank M., 4,569,609, Cl. 400-241.400.

Burton, Charles V., to Abbott-Northwestern Hospital, Inc. Gravity traction vest. 4,569,340, Cl. 128-75.000.

Buscaglia, Carl U.; and Knepper, Lawrence E., to International Business Machines Corporation. High-speed sense amplifier circuit with inhibit capability. 4,570,090, Cl. 307-530.000.

Busch, Lloyd E.; Walters, Paul W.; and Zandona, Oliver J., to Ashland Oil, Inc. Oil upgrading by thermal and catalytic cracking. 4,569,753, Cl. 208-73.000.

Busch, Rainer: *See*—
Weinand, Guy A.; Botman, Jean-Pierre P. A.; and Busch, Rainer, 4,569,884, Cl. 428-245.000.

Buschemeyer, Sally Q.: *See*—
Schwartzman, Gilbert; and Buschemeyer, Sally Q., 4,569,612, Cl. 401-206.000.

Buschor, Josef J.; and Jennings, Frederick R., to Pneumatic Scale Corporation. Continuous sealing rim for carton. 4,569,474, Cl. 229-37.00R.

Bush, John R.: *See*—
Sandstrom, William A.; Patel, Jitendra G.; and Bush, John R., 4,569,696, Cl. 134-2.000.

Bushey, Richard D. Reclosable blister package. 4,569,442, Cl. 206-469.000.

Bussmann, Heinrich: *See*—
Koepke, Gunther; Frenken, Hans; Bussmann, Heinrich; and Browatzki, Kurt, 4,569,863, Cl. 427-402.000.

Butherus, Alexander D.; and D'Asaro, Lucian A., to AT&T Bell Laboratories. Method for plasma etching III-V semiconductors with a BCl_3-Cl_2 gas. 4,569,718, Cl. 156-643.000.

Butt, Sheldon H., to Olin Corporation. Low thermal expansivity and high thermal conductivity substrate. 4,569,692, Cl. 75-235.000.

Buttazzoni, Goffredo: *See*—
Di Cio , Alessandro; and Buttazzoni, Goffredo, 4,569,835, Cl. 423-445.000.

Buzzi, Enrico: *See*—
Borghesi, Giancarlo, 4,569,654, Cl. 431-255.000.

C/H Research Associates: *See*—
Graham, Charles H., 4,569,448, Cl. 211-74.000.

Cabi-Akman, Robert; Simond, Remy; and Sprenger, Arthur, to Nestec S.A. Color value measurement. 4,569,594, Cl. 356-408.000.

Caimi, Frank M., to Mine Safety Appliances Company. Adjustable focus lamp. 4,570,204, Cl. 362-17.000.

Caimi, Giovanni: *See*—
Ferri, Beniamino; and Caimi, Giovanni, 4,569,305, Cl. 118-211.000.

Calamia, David C.: *See*—
Breckenfeld, Paul W.; Broughton, George L.; Macier, James E.; and Calamia, David C., 4,569,415, Cl. 181-229.000.

California Institute of Technology: *See*—
Edwards, Dean B.; and Rippel, Wally E., 4,570,212, Cl. 363-138.000.

Calis, Gijsbertus H. M.; and Jennekens, Matheus H. G., to Unie van Kunstmestfabrieken B.V. Process for separating off calcium nitrate tetrahydrate by crystallization. 4,569,677, Cl. 23-301.000.

Camco, Incorporated: *See*—
Pringle, Ronald E., 4,569,398, Cl. 166-321.000.

Cameron, Ewen R.: *See*—
Yardley, Robert; Cameron, Ewen R.; Shutt, Joseph A.; and Walter, Andrew G. N., 4,570,112, Cl. 318-602.000.

Campbell, Alexander C.; and Stevenson, Donald F. M., to Akzo N.V. Diarylindane-1,3-diones, their preparation and use. 4,569,945, Cl. 514-681.000.

Campbell, Francis J., to RCA Corporation. Cathode-ray tube having a faceplate panel with a smooth aspherical screen surface. 4,570,101, Cl. 313-461.000.

Campbell, Thomas G.: *See*—
Ferris, Donald L.; Niebanck, Charles F.; Campbell, Thomas G.; and Olsen, Eric G., 4,569,629, Cl. 416-134.00A.

Cann, Gordon L., to Technion, Incorporated. Heater/emitter assembly. 4,569,198, Cl. 60-203.100.

Canon Kabushiki Kaisha: *See*—
Ichiyanagi, Toshikazu, 4,570,188, Cl. 358-335.000.
Kataoka, Hiroyuki; Yamada, Masanori; and Suzuki, Nobuyuki, 4,569,580, Cl. 354-415.000.
Masaki, Yuichi; and Hotta, Yoshio, 4,569,574, Cl. 350-334.000.
Masuda, Shunichi, 4,569,585, Cl. 355-14.00R.
Matsuda, Hiroshi; Haruta, Masahiro; Eguchi, Ken; Nishimura, Yukuo; Hirai, Yutaka; and Nakagiri, Takashi, 4,569,855, Cl. 427-35.000.
Saitoh, Keishi, 4,569,892, Cl. 430-57.000.
Saitoh, Keishi; Ohnuki, Yukihiko; and Ohno, Shigeru, 4,569,893, Cl. 430-57.000.
Saitoh, Keishi; and Arao, Kozo, 4,569,894, Cl. 430-63.000.
Sato, Mitsuya; and Shimoda, Isamu, 4,569,562, Cl. 308-5.00R.
Sugitani, Hiroshi; Ito, Susumu; and Kobayashi, Junichi, 4,570,167, Cl. 346-140.00R.
Yamashita, Shinichi, 4,570,193, Cl. 360-33.100.

Capaccio, Giancarlo; and Ward, Ian M., to National Research Development Corporation. Polymer materials. 4,569,983, Cl. 528-230.000.

Carballes, Jean C.: *See*—
Henry, Raymond; Carballes, Jean C.; and Mesquida, Guy, 4,570,172, Cl. 357-17.000.

Carbrey, Robert L., to AT&T Bell Laboratories. Video wave codec. 4,570,121, Cl. 340-347.00C.

Carey, John C. Control apparatus. 4,570,145, Cl. 337-113.000.

Carl Freudenberg, Firma: *See*—
Kimura, Hideo; Tabuchi, Masahiro; and Iwasaki, Motokazu, 4,569,343, Cl. 128-155.000.

Carl Still GmbH & Co. KG, Firma: *See*—
Laufhutte, Dieter, 4,569,832, Cl. 423-234.000.

Carlson, Anne M.: *See*—
Allen, Bruce S.; Dunalvey, Michael R.; King, Bruce A.; DuPrie, Harold J.; Hudnall, Richard E.; Lapidus, Stanely N.; Gilbert, Daniel R.; Carlson, Anne M.; Thakrar, Kiran; Doig, Robert C.; Kimerer, Brian S.; Sirois, Andrew F.; Poirer, Bruce A.; Hunt, Philip G.; Dziezanowski, Joseph J.; Bromberg, Michael A.; Brown, Michael; and Friedel, Seymour A., 4,570,217, Cl. 364-188.000.

Carlson, William H.; and Heins, Royal D., to Board of Trustees operating Michigan State University. Method and apparatus for optimization of growth of plants. 4,569,150, Cl. 47-17.000.

Carnes, Ronald C.; and Miller-Jones, Stockton M., to General Electric Company. Multiple frequency annular transducer array and system. 4,569,231, Cl. 73-626.000.

Carpenter, Robert B., to Hughes Tool Company. Matrix control cementing slurry. 4,569,395, Cl. 166-293.000.

Carter, Ernest A.; Eitrheim, John K.; and Wood, Dorothy M., to Motorola, Inc. Series read-only-memory having capacitive bootstrap precharging circuitry. 4,570,239, Cl. 365-203.000.

Carter, Robert C., to Rockwell International Corporation. Receive antenna system in the presence of a transmitting antenna. 4,570,164, Cl. 343-706.000.

Casio Computer Co., Ltd.: *See*—
Osawa, Hiroshi; Kurashima, Isao; and Kawai, Yoshio, 4,570,039, Cl. 200-5.00A.

Cassidy, Benjamin J., to International Paper Company. Flip top carton. 4,569,475, Cl. 229-44.0CB.

Cassidy, John E., to Electro-Nite Co. Method of sampling molten metal. 4,569,237, Cl. 73-864.580.

Castle, William R.: *See*—
Veal, Leo D.; and Castle, William R., 4,570,050, Cl. 219-130.310.

Castleman, Bruce W., to Honeywell Inc. Method for operating an ionization detector and an apparatus utilizing the same. 4,570,073, Cl. 250-432.00R.

CBS Inc.: *See*—
Gabritsos, George C.; and Marshall, Trevor J., Jr., 4,570,250, Cl. 369-97.000.

Cebada, Tomas T.: *See*—
Gil, M. Carmen G.; Parra, Vicente G.; Alonso, Felix S.; and Cebada, Tomas T., 4,569,999, Cl. 546-275.000.

Celanese Corporation: *See*—
Gillberg-LaForce, Gunilla E.; and DeMartino, Ronald N., 4,569,974, Cl. 525-437.000.

Cetus Corporation: *See*—
Koths, Kirston; Thomson, James; Kunitani, Michael; Wilson, Kenneth; and Hanisch, Wolf, 4,569,790, Cl. 260-112.00R.
Koths, Kirston E.; Halenbeck, Robert F.; and Fernandes, Peter M., 4,569,910, Cl. 435-105.000.
Koths, Kirston E.; and Halenbeck, Robert F., 4,569,913, Cl. 435-190.000.
Mark, David F.; and Creasey, Abla A., 4,569,908, Cl. 435-70.000.
Ring, David B., 4,569,915, Cl. 435-254.000.

Chaborski, Hoiko: *See*—
Bolkow, Ludwig; Mehnert, Walter; and Chaborski, Hoiko, 4,569,599, Cl. 368-120.000.

Chadima, George E., Jr.; and Laser, Vadim, to Norand Corporation. Instant portable bar code reader. 4,570,057, Cl. 235-472.000.

Champion International Corporation: *See*—
Moore, Foster L., 4,569,757, Cl. 210-220.000.
Roccaforte, Harry I., 4,569,443, Cl. 206-626.000.

Chan, Hugo W. K., to Advanced Micro Devices, Inc. Method of forming a low resistance quasi-buried contact. 4,569,122, Cl. 29-577.00C.

Chan, Peter, to Brightmond Company Limited. Programmable switch. 4,570,216, Cl. 364-143.000.

Chang, Chin-Hsiung: *See*—
Kulprathipanja, Santi; and Chang, Chin-Hsiung, 4,570,029, Cl. 585-829.000.

Chang, James C.: *See*—
Bergquist, Barton L.; and Chang, James C., 4,569,932, Cl. 514-185.000.

Chang, Laurence W.: *See*—
Singh, Balwant; Forgione, Peter S.; and Chang, Laurence W., 4,570,012, Cl. 560-25.000.

Chang, Wen-Hsuan: *See*—
Piccirilli, Robert M.; McKeough, David T.; and Chang, Wen-Hsuan, 4,569,966, Cl. 524-589.000.

Channell, Andrew W.: *See*—
West, Michael D.; and Channell, Andrew W., 4,569,366, Cl. 137-556.300.

Chapman, John R.; and Gillingham, Gary D., to Sundstrand Corporation. Linear no-back device. 4,569,243, Cl. 74-470.000.

Charan Industries Inc: *See*—
Takefman, Earl, 4,569,086, Cl. 2-49.00R.

Charette, Jacqueline M.; and Kaufman, Mico H. Pocket sized portable smoke raiser. 4,569,655, Cl. 431-290.000.

Charlebois, Leonard J.; and Dick, Kevin H., to Northern Telecom Limited. Sealing closure for a cable splice. 4,570,032, Cl. 174-84.00R.

Charmey, Robert: *See*—
Oriot, Yves; and Charmey, Robert, 4,569,810, Cl. 264-142.000.

Chen, Clay T.: *See*—
Wan, K. Ming; Chen, Mary S.; and Chen, Clay T., 4,570,015, Cl. 560-163.000.

Chen, John Y.: *See*—
Rensch, David B.; and Chen, John Y., 4,569,124, Cl. 29-591.000.

Chen, Mary S.: *See*—
Wan, K. Ming; Chen, Mary S.; and Chen, Clay T., 4,570,015, Cl. 560-163.000.

Cherill, Robert J.: *See*—
Kosley, Raymond W., Jr.; and Cherill, Robert J., 4,569,998, Cl. 546-225.000.

Cherryholmes, John T., to Coleman Company, Inc., The. Reflector for radiant heater. 4,569,329, Cl. 126-92.00B.

Chevron Research Company: *See*—
Herkenhoff, Earl F.; Frasier, Clint W.; and Ostrander, William J., 4,570,246, Cl. 367-68.000.
Liu, Shih-Tung, 4,569,841, Cl. 424-93.000.

Chidzey, John A.; and Huberts, John T., to Varian Associates, Inc. Open loop control for spectrophotometer atomizer furnace. 4,570,054, Cl. 219-490.000.

Chin, Lester P.: *See*—
Baker, Robert L.; Chin, Lester P.; Courtois, James A.; Pionke, Lawrence J.; Sharp, Ralph M.; and Willcox, Peter S., 4,569,218, Cl. 72-342.000.

Chlorine Engineers Corp., Ltd.: *See*—
Goto, Nobutaka; and Ezawa, Nobuyasu, 4,569,729, Cl. 204-23.000.

Chong, F. C.: *See*—
Chong, T. S.; Chong, F. C.; Ng, C. K.; and Lim, T. T., 4,569,814, Cl. 264-279.000.

Chong, T. S.; Chong, F. C.; Ng, C. K.; and Lim, T. T., to Motorola, Inc. Preforming of preheated plastic pellets for use in transfer molding. 4,569,814, Cl. 264-279.000.

Chou, Hsin H.: *See*—
Willett, Stephen J.; Chou, Hsin H.; Hendrickson, Carol E.; and Hendrickson, William A., 4,569,895, Cl. 430-70.000.

Christian Miesen Fahrzeug-und Karosseriewerk GmbH: *See*—
Holling, Gerd, 4,569,095, Cl. 5-82.00R.

Christian, Sherrell G. Archery arrow support device. 4,569,325, Cl. 124-41.00A.

Chrysler Corporation: *See*—
Speth, Adolph P.; Anderson, David L.; and Clayton, Charles W., 4,569,553, Cl. 296-155.000.

Chubu Industries, Inc.: *See*—
Ando, Toshio, 4,569,266, Cl. 83-411.00R.

Chung, Betsy Y., executrix: *See*—
Suh, John T.; Chung, Rack H., deceased; Wang, Nai-Yi; and Barton, Jeffrey N., 4,569,941, Cl. 514-317.000.

Chung, Rack H., deceased: *See*—
Suh, John T.; Chung, Rack H., deceased; Wang, Nai-Yi; and Barton, Jeffrey N., 4,569,941, Cl. 514-317.000.

Church, William F., to Barnes Group, Inc. Counterbalance mechanism. 4,569,490, Cl. 242-107.000.

Ciallella, Loretta K., to Colgate-Palmolive. Stabilization of polyethylene terephthalate-polyoxyethylene terephthalate soil release promoting polymers. 4,569,772, Cl. 252-8.600.

Ciba Geigy Corporation: *See*—
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Cifranic, Steve J. Bookrack. 4,569,447, Cl. 211-42.000.

Cincinnati Milacron Inc.: *See*—
Pugh, John H., 4,569,716, Cl. 156-510.000.
Riehle, Dennis R., 4,569,157, Cl. 51-165.750.

Claas OHG: *See*—
Freye, Theodor; and Hollmann, Bernd, 4,569,439, Cl. 206-83.500.

Claing, Richard G.: *See*—
Przybyszewski, John S.; and Claing, Richard G., 4,569,889, Cl. 428-612.000.

Clayton, Charles W.: *See*—
Speth, Adolph P.; Anderson, David L.; and Clayton, Charles W., 4,569,553, Cl. 296-155.000.

Clifford, David R.: *See*—
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Coachmen Industries, Inc.: *See*—
Gronert, Steven A.; Love, Dale; and Elliott, Stephen R., 4,569,533, Cl. 280-163.000.

Coash, Ronald J.: *See*—
Davis, John E.; Zielke, Terry L.; and Coash, Ronald J., 4,569,481, Cl. 239-177.200.

Coderre, James C.: *See*—
Tung, Chi F.; and Coderre, James C., 4,569,857, Cl. 427-163.000.

Codino, Leno. Process for making lasagna. 4,569,849, Cl. 426-275.000.

Cody, Ian A.: *See*—
Boucher, Heather A.; and Cody, Ian A., 4,570,027, Cl. 585-455.000.

Cohen, Sidney M., to Fuller Company. Process and apparatus for calcining gypsum. 4,569,831, Cl. 423-171.000.

Coker, Thomas G.: *See*—
Dempsey, Russell M.; Coker, Thomas G.; LaConti, Anthony B.; and Fragala, Anthony R., 4,569,735, Cl. 204-98.000.

Coleman Company, Inc., The: *See*—
Cherryholmes, John T., 4,569,329, Cl. 126-92.00B.

Coleman, John H., to Plasma Physics Corporation. Glow discharge method and apparatus and photoreceptor devices made therewith. 4,569,719, Cl. 156-643.000.

Colgate-Palmolive: *See*—
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Colgate-Palmolive Company: *See*—
de Vries, Marijke S., 4,569,838, Cl. 424-49.000.
Ramachandran, Pallassana N.; and Peterson, Kenneth S., 4,569,773, Cl. 252-8.700.

Collonia, Harald, to VDO Adolf Schindling AG. Device for reducing longitudinal dynamic instabilities of vehicles. 4,569,320, Cl. 123-399.000.

Columbia Chase Corporation: *See*—
Goldman, Gerald L.; Gallagher, Joseph W.; and Merlack, William A., 4,569,615, Cl. 404-65.000.

Combustion Engineering: *See*—
Darling, Scott L.; and Thibeault, Paul R., 4,569,680, Cl. 48-77.000.

Combustion Engineering, Inc.: *See*—
Llinares, Vincent, Jr., 4,569,311, Cl. 122-449.000.

Cominco Ltd.: *See*—
Swinkels, Godefridus M.; Sadan, Abraham; Rockandel, Michael A.; and Rensing, Hans, 4,569,676, Cl. 23-295.00S.

Commercial Shearing, Inc.: *See*—
Blank, Leon W., 4,569,372, Cl. 137-625.660.
Petro, John D., 4,569,367, Cl. 137-596.130.

Commissariat a l'Energie Atomique: *See*—
Asty, Michel; Lerat, Bernard; Saglio, Robert; and Viard, Jacky, 4,569,230, Cl. 73-623.000.
Matheron, Gerard; Migny, Philippe; and Placais, Bernard, 4,570,087, Cl. 307-462.000.

Commodore Business Machines Inc.: *See*—
Redfield, James W., 4,570,085, Cl. 307-453.000.

Compagnie Generale d'Electricite, S.A.: *See*—
Duperray, Gerard; and Hilaire, Michel, 4,569,821, Cl. 419-2.000.

Conkle, James P.; Sears, Daniel; and Hicks, James A., to United States of America, Air Force. Portable, sequential air sampler. 4,569,235, Cl. 73-863.030.

Conner, George W.: *See*—
Lim, Sheldon C. P.; Ridley, Douglas F.; Raza, Saiyed A.; and Conner, George W., 4,569,121, Cl. 29-574.000.

Conrad, Karl-Hermann: *See*—
Sasse, H. Rainer; Conrad, Karl-Hermann; Herzog, Rolf; Klein, Hans; and Meier, Bert, 4,569,971, Cl. 525-109.000.

Continental Carbon Company: *See*—
West, Jesse R.; and Garton, Lance M., 4,569,834, Cl. 423-460.000.

Cooper Industries, Inc.: *See*—
Hill, Roy A., 4,569,132, Cl. 30-251.000.

Cooper, Larry T.; and Primmer, Kenneth R., to International Business Machines Corporation. Follower finger sheet separating apparatus. 4,570,061, Cl. 250-222.100.

Cooperstein, Gerald: *See—*
Sohval, A. Robert; Cooperstein, Gerald; Fleischer, David; Goldstein, Shyke A.; and Hearn, David R., 4,570,106, Cl. 315-111.810.

Copeland, James L.: *See—*
Fernholz, Peter J.; Copeland, James L.; and Penttila, Richard C., 4,569,780, Cl. 252-90.000.
Fernholz, Peter J.; Copeland, James L.; and Penttila, Richard C., 4,569,781, Cl. 252-92.000.

Cordis Corporation: *See—*
Mumford, Van E.; and Sasmor, Louis, 4,569,350, Cl. 128-697.000.

Cork, William H.: *See—*
Ott, Lesley E.; and Cork, William H., 4,569,204, Cl. 62-63.000.

Cornell Research Foundation: *See—*
Gracen, Vernon E.; Sisco, Paul; and Bouthyette, Pierre, 4,569,152, Cl. 47-58.000.

Cornu, Pierre-Jean; Perrin, Claude; Dumaitre, Bernard; and Streichenberger, Gilles. Antihypertensive substituted derivatives of 2,5-diamino 1,4-diazole. 4,569,933, Cl. 514-237.000.

Corodova Chemical Company of Michigan: *See—*
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Cosden Technology, Inc.: *See—*
Steiger, Thomas W., 4,569,440, Cl. 206-159.000.

Cottrell, F. Richard, to Polaroid Corporation. Photographic film unit with protective, limited swell polymer for silver halide grains. 4,569,898, Cl. 430-207.000.

Cottrell, Terence B. F., to Lodge-Cottrell Limited. Mast-type electroprecipitator discharge electrodes. 4,569,685, Cl. 55-148.000.

Courtois, James A.: *See—*
Baker, Robert L.; Chin, Lester P.; Courtois, James A.; Pionke, Lawrence J.; Sharp, Ralph M.; and Willcox, Peter S., 4,569,218, Cl. 72-342.000.

Cowles, Richard A., to Inmont Corporation. Metal fixative in automative paint. 4,569,887, Cl. 428-423.100.

Cragin, Susan E.: *See—*
Pakulak, Jack M., Jr.; and Cragin, Susan E., 4,569,287, Cl. 102-293.000.

Crandall, John W.: *See—*
Gibson, Charles A.; and Crandall, John W., 4,570,019, Cl. 564-498.000.

Crawford, Carl R.: *See—*
Shimoni, Yair; Netter, Zvi; and Crawford, Carl R., 4,570,224, Cl. 364-414.000.

Creasey, Abla A.: *See—*
Mark, David F.; and Creasey, Abla A., 4,569,908, Cl. 435-70.000.

Creative Products Resource Associates, Ltd.: *See—*
Smith, James A.; and Murphy, Betty J., 4,569,861, Cl. 427-244.000.

Creedon, Richard L., to GA Technologies Inc. Pipe joint. 4,569,539, Cl. 285-18.000.

Criscimagna, Tony N.; and Martin, William J., to International Business Machines Corporation. "Selstain" integrated circuitry. 4,570,159, Cl. 340-776.000.

Crisp, Stephen: *See—*
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Crommelynck, Roger; and Quartier, Eddy, to N. V. Bekaert S.A. Method for retreading pneumatic tires. 4,569,709, Cl. 156-95.000.

Cross, Kenneth O., to N. A. Woodworth Company. Chuck jaw and mounting therefor. 4,569,530, Cl. 279-123.000.

Cryberg, Richard L.; and Bimber, Russell M., to SDS Biotech Corporation. Preparation of ketones. 4,570,021, Cl. 568-388.000.

Culpepper, Will L.: *See—*
Feliks, James J.; and Culpepper, Will L., 4,569,185, Cl. 53-580.000.

Cupples, Timothy R.: *See—*
Brakhage, William L., Jr.; and Cupples, Timothy R., 4,569,397, Cl. 166-321.000.

Curmi, David M. Ski sharpening tool. 4,569,158, Cl. 51-205.0WG.

Cycles Peugeot: *See—*
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Daiichi Bouseki Kabushiki Kaisha: *See—*
Yamada, Yoshiharu; Nishikawa, Hirotaka; and Yokoyama, Hachirou, 4,569,192, Cl. 57-317.000.

Daikin Kogyo Co., Ltd.: *See—*
Ohmori, Akira; and Ishiwari, Kazuo, 4,569,871, Cl. 428-64.000.

Daimler-Benz Aktiengesellschaft: *See—*
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Dainippon Screen Mfg. Co., Ltd.: *See—*
Ohgami, Nobutoshi; Kitagawa, Masaru; Nishizawa, Hisao; and Seita, Masakazu, 4,569,717, Cl. 156-626.000.

Dainippon Screen Seizo Kabushiki Kaisha: *See—*
Ono, Yoshio; and Sano, Tetsuo, 4,570,187, Cl. 358-287.000.

D'Ambro, Dominic; and Giangiulio, Clayton E., to Le-Jo Enterprises, Inc. Produce wedger. 4,569,280, Cl. 99-538.000.

D'Amore, Michael B.: *See—*
Bruner, Harold S., Jr.; and D'Amore, Michael B., 4,570,016, Cl. 560-204.000.

Dana Corporation: *See—*
Forsythe, Bobbie G.; and Burkmire, Charles R., 4,569,428, Cl. 192-70.000.

Dana-Farber Cancer Institute, Inc.: *See—*
Blattler, Walter A.; Lambert, John M.; and Senter, Peter D., 4,569,789, Cl. 260-112.00R.

Daniels, Steven D.; Stoneham, Jeffrey R.; and Erickson, John K., to Eastman Kodak Company. Light reflector apparatus and method of making. 4,570,203, Cl. 362-16.000.

Dankow, Boris: *See—*
Adrian, Fritz; Dankow, Boris; Heyn, Klaus; and Pogrzeba, Hans-Joachim, 4,569,197, Cl. 60-39.020.

Darling, Scott L.; and Thibeault, Paul R., to Combustion Engineering. Gasifier with economizer gas exit temperature control. 4,569,680, Cl. 48-77.000.

Darmenton, Patrick: *See—*
Grollier, Jean-Francois; Allec, Josiane; Fourcadier, Chantal; Rosenbaum, Georges; and Darmenton, Patrick, 4,569,839, Cl. 424-74.000.

Das, Pankaj K.: *See—*
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D'Asaro, Lucian A.: *See—*
Butherus, Alexander D.; and D'Asaro, Lucian A., 4,569,718, Cl. 156-643.000.

Davari, Bijan; and Das, Pankaj K., to United States of America, Air Force. Selective anodic oxidation of semiconductors for pattern generation. 4,569,728, Cl. 204-15.000.

David, Constant V. Pulsed nuclear power plant. 4,569,819, Cl. 376-273.000.

Davidson, William E.: *See—*
Boulton, Peter I. P.; Lee, E. Stewart; and Davidson, William E., 4,570,162, Cl. 340-825.500.

Davies, Ronald C., to Digital Products Corporation. Gaming device using visible randomization. 4,569,522, Cl. 273-86.00C.

Davis, Charles A., to Varian Associates, Inc. rf Switching apparatus utilizing optical control signals to reduce spurious output. 4,570,079, Cl. 307-311.000.

Davis, John E.; Zielke, Terry L.; and Coash, Ronald J., to Reinke Manufacturing Co., Inc. Corner watering system for center pivot irrigation machines. 4,569,481, Cl. 239-177.200.

Davis, Robert A.: *See—*
Brouwer, Walter G.; Bell, Allyn R.; Blem, Allen R.; and Davis, Robert A., 4,569,690, Cl. 71-90.000.

Davis, Robert E., to Arkansas Patents, Inc. Pulsing combustion. 4,569,310, Cl. 122-24.000.

Davstar Industries, Inc.: *See—*
Muller, Louis F., 4,569,090, Cl. 4-144.200.

Dayco Corporation: *See—*
Bryan, James S.; and Meadows, Roger D., 4,569,477, Cl. 238-349.000.
Bryan, James S., 4,569,478, Cl. 238-349.000.

Debesson, Pierre. System for the detection of programmable stop codes. 4,570,218, Cl. 364-200.000.

De Bie, Johannes H.; and Franken, Adrianus J. J., to U.S. Philips Corporation. Device for the optical scanning of a document. 4,570,063, Cl. 250-227.000.

De Bievre, Paul: *See—*
Vansant, Etienne; De Bievre, Paul; Peeters, Guido J.; Thijs, Anita; and Verhaert, Ingrid, 4,569,683, Cl. 55-58.000.

De Blauwe, Francis J. A. M. C.; and Selleslags, Frank K. A., to N.V. Raychem S.A. Heat-recoverable article. 4,569,868, Cl. 428-35.000.

de Graaf, Jan A., to Hoogovens Groep B.V. Metallurgical vessel having an opening and a flange around the opening. 4,569,508, Cl. 266-275.000.

DeGraff, Jon S.: *See—*
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Degremont: *See—*
Ben Aim, Roger; Bourdiol, Daniel; Fiessinger, Francois; and Rovel, Jean-Marie, 4,569,759, Cl. 210-304.000.

Deguchi, Ryuichi, to Ube Industries, Ltd. Electrically conductive thermoplastic resin composition containing metal and carbon fibers. 4,569,786, Cl. 252-503.000.

de Halleux, Benoit F. Ultrasonic process for measuring stress in a bolt or similar part adapted to this method. 4,569,229, Cl. 73-597.000.

De Laat, Cornelis I.; Segers, Jacobus C.; and Spits, Albert J., to Lever Brothers Company. Process for refining triglyceride oils. 4,569,796, Cl. 260-425.000.

DeMartino, Ronald N.: *See—*
Gillberg-LaForce, Gunilla E.; and DeMartino, Ronald N., 4,569,974, Cl. 525-437.000.

Demmer, Walter H.; Gutsmann, Rolf D.; Bergs, Norbert A.; Heinemann, Ingolf B.; and Warmuth, Otto L., to U.S. Philips Corporation. FM Demodulator using interpolation to approximate zero crossings. 4,570,126, Cl. 329-107.000.

Demoute, Jean-Pierre: *See—*
Tessier, Jean; Teche, Andre ; and Demoute, Jean-Pierre, 4,569,928, Cl. 514-66.000.

Dempou, Kazuo; Niida, Hideo; and Yokoyama, Kunio, to Kabushiki Kaisha Toshiba. Electric refrigerator having improved freezing and defrosting characteristics. 4,569,205, Cl. 62-155.000.

Dempsey, Russell M.; Coker, Thomas G.; LaConti, Anthony B.; and Fragala, Anthony R., to Oronzio de Nora Impianti Elletrochimici, S.p.A. Production of halogens by electrolysis of alkali metal halides in an electrolysis cell having catalytic electrodes bonded to the surface of a solid polymer electrolyte membrane. 4,569,735, Cl. 204-98.000.

Den Norske Stats Oljeselskap A.S.: *See—*
Gudmestad, Ove T.; and Hovland, Martin T., 4,569,618, Cl. 405-258.000.

DeSantis, Raymond P., to PTX-Pentronix, Inc. Tray locator and loader for conveyor apparatus, and method. 4,569,183, Cl. 53-534.000.

Deutsch, Claude. Electrically controlled optical display apparatus for an article of clothing. 4,570,206, Cl. 362-103.000.

Deutsche Gesellschaft fur Wiederaufarbeitung von Kernbrennstoffen mbH: *See—*
Popp, Franz-Wolfgang; and Furing, Kurt, 4,569,818, Cl. 376-272.000.

de Vries, Marijke S., to Colgate-Palmolive Company. Dentifrice. 4,569,838, Cl. 424-49.000.

Dezawa, Shin-ichiro: *See—*
Miyoshi, Takahito; Masuyama, Kenichi; Dezawa, Shin-ichiro; Okutu, Toshimitu; Nasu, Norio; Aoki, Nobuo; and Fujiyama, Masaaki, 4,569,856, Cl. 427-128.000.

Dhabhar, Dadi J., to Richardson-Vicks Inc. Denture adhesive. 4,569,955, Cl. 523-120.000.

Diamond Automations, Inc.: *See—*
McEvoy, John C.; Bliss, George N.; and Thomas, Leslie P., 4,569,444, Cl. 209-510.000.

Di Cio , Alessandro; and Buttazzoni, Goffredo, to Alusuisse Italia S.p.A. Method of producing carbonaceous blocks in a tunnel type furnace. 4,569,835, Cl. 423-445.000.

Dick, Kevin H.: *See—*
Charlebois, Leonard J.; and Dick, Kevin H., 4,570,032, Cl. 174-84.00R.

Dickey, Ronald K.: *See—*
Frey, George R.; Dickey, Ronald K.; Bleakley, Daryl A.; and Willison, John E., 4,569,489, Cl. 242-86.510.

Dickson, Wesley B., to Advanced Equipment Corp. Operable wall system. 4,569,164, Cl. 52-64.000.

Didier Engineering GmbH: *See—*
Geier, Rudolf, 4,569,811, Cl. 264-143.000.

Dieterich, Dieter: *See—*
Wenzel, Wolfgang; and Dieterich, Dieter, 4,569,981, Cl. 528-67.000.

Digital Products Corporation: *See—*
Davies, Ronald C., 4,569,522, Cl. 273-86.00C.

Dillingham, Richard F. Necktie storage rack with folding hanger members. 4,569,450, Cl. 211-96.000.

Disch, Karlheinz; Kiewert, Eva; Weichbrodt, Maria; and Hase, Christian, to Henkel Kommanditgesellschaft auf Aktien. Hard surface detergent compositions containing fatty acid cyanamides. 4,569,782, Cl. 252-106.000.

DiSilvestro, Raymond F., to Motorola, Inc. Lumped-mode resonator. 4,570,137, Cl. 333-219.000.

Di Stefano, Thomas H.; and Bakoglu, Halil B., to International Business Machines Corporation. Optical sensor for servo position control. 4,570,191, Cl. 360-77.000.

Divecha, Amarnath P.; and Wilson, Roger E., to United States of America, Navy. Fabrication of novel whisker reinforced ceramics. 4,569,886, Cl. 428-379.000.

Dobos, Eva: *See—*
Molnar, Gyorgy; Tetenyi, Peter; Dobos, Eva; and Bernath, Jeno , 4,569,914, Cl. 435-240.000.

Dr. Ing. h.c.F. Porsche Aktiengesellschaft: *See—*
Rauser, Michael; Lange, Sven; and Singer, Norbert, 4,569,551, Cl. 296-1.00S.

Dr. Johannes Heidenhain GmbH: *See—*
Tute, Rainer, 4,569,138, Cl. 33-125.00R.

Dr. L. Zambeletti S.p.A.: *See—*
Bergamaschi, Mario; Gervasi, Gian B.; Vecchietti, Vittorio; and Signorini, Massimo, 4,570,013, Cl. 560-102.000.

Dr. Weusthoff GmbH: *See—*
Sluzallek, Rolf, 4,569,487, Cl. 242-55.000.

Dodgen Industries, Inc.: *See—*
Dodgen, John N., 4,569,554, Cl. 296-156.000.

Dodgen, John N., to Dodgen Industries, Inc. Van body structure. 4,569,554, Cl. 296-156.000.

Dodwell, Richard C.: *See—*
Stockton, James R.; and Dodwell, Richard C., 4,569,947, Cl. 514-724.000.

Doerges, Eugen, to Richard Kablitz GmbH & Co. KG. Inclined furnace grate with at least one movable grate bar. 4,569,437, Cl. 198-773.000.

Doig, Robert C.: *See—*
Allen, Bruce S.; Dunalvey, Michael R.; King, Bruce A.; DuPrie, Harold J.; Hudnall, Richard E.; Lapidus, Stanely N.; Gilbert, Daniel R.; Carlson, Anne M.; Thakrar, Kiran; Doig, Robert C.; Kimerer, Brian S.; Sirois, Andrew F.; Poirer, Bruce A.; Hunt, Philip G.; Dziezanowski, Joseph J.; Bromberg, Michael A.; Brown, Michael; and Friedel, Seymour A., 4,570,217, Cl. 364-188.000.

Dolejs, Charles A.; Schumann, Gary M.; and Schick, David L., to UOP Inc. Axial multiport rotary valve. 4,569,371, Cl. 137-625.470.

Dong, Walter; and Petty, Walter L., to Shell Oil Company. Cyanohydrination catalyst. 4,569,793, Cl. 260-112.50R.

Dorr-Oliver Incorporated: *See—*
Klinkowski, Peter R., 4,569,739, Cl. 204-180.100.

Dorumsgaard, John A.; and Amerson, Roger H., to Methods, Inc. Load/unload apparatus for disc-like workpieces. 4,569,625, Cl. 414-416.000.

Douglas, Terence A.: *See—*
Kinghorn, John R.; Fisher, Raymond J.; and Douglas, Terence A., 4,570,154, Cl. 340-365.00S.

Dow Chemical Company, The: *See—*
Beale, Alvin F., Jr., 4,569,765, Cl. 210-673.000.
Brenner, John W., 4,569,949, Cl. 521-56.000.
Esneault, Calvin P.; Meiske, Larry A.; and Fuentes, Ricardo, Jr., 4,569,975, Cl. 526-138.000.
Hagans, Patrick L., 4,569,699, Cl. 148-6.200.
Lee, Do I.; Kawamura, Takayuki; and Stevens, Edwin F., 4,569,964, Cl. 524-460.000.
Madison, Norman L., 4,569,989, Cl. 528-386.000.
McKinley, Mark J., 4,569,768, Cl. 210-727.000.
Nelson, Donald L., 4,569,951, Cl. 521-167.000.
So, Ying-Hung, 4,570,011, Cl. 560-8.000.

Doyle, Michael J. Solenoid. 4,569,504, Cl. 251-129.150.

Draeger, Brigitte: *See—*
Maier, Josef; Gloger, Manfred; and Draeger, Brigitte, 4,569,917, Cl. 436-71.000.

Dragan, William B. Bulk cartridge for packaging and dispensing a dental material. 4,569,662, Cl. 433-89.000.

Draper Development Corporation Pty., Ltd.: *See—*
Draper, Keith R., 4,569,643, Cl. 417-536.000.

Draper, Keith R., to Draper Development Corporation Pty., Ltd. Compact diaphragm pump for artesian bores. 4,569,643, Cl. 417-536.000.

Drejza, John E.; and Galatha, Matthew J., to International Business Machines Corporation. Multi-function document transport system for printers. 4,569,610, Cl. 400-599.000.

Dresser Industries, Inc.: *See—*
Anderson, Gerald L.; and Frair, Phillip E., 4,569,542, Cl. 285-337.000.
Ippolito, Rodolfo M., 4,569,601, Cl. 384-95.000.

Drexler, Jerome, to Drexler Technology Corporation. Optical data retrieval system using multi-spectral light sources. 4,570,252, Cl. 369-109.000.

Drexler Technology Corporation: *See—*
Drexler, Jerome, 4,570,252, Cl. 369-109.000.

Driscoll, Michael M., to United States of America, Air Force. Low noise multiple crystal-controlled oscillator. 4,570,132, Cl. 331-56.000.

Duane, Michael P.: *See—*
Baglee, David A.; Smayling, Michael C.; Duane, Michael P.; and Itoh, Mamoru, 4,569,117, Cl. 29-571.000.

Duff-Barclay, Ian: *See—*
Ashcombe, Geoffrey T.; Duff-Barclay, Ian; and Morant, Clive, 4,569,114, Cl. 29-525.000.

Duhl, David N.; and Nguyen-Dinh, Xuan, to United Technologies Corporation. Corrosion resistant nickel base superalloys containing manganese. 4,569,824, Cl. 420-448.000.

Duipmans, Hendricus J.: *See—*
Nicolai, Haayo; and Duipmans, Hendricus J., 4,570,109, Cl. 315-362.000.

Dumaitre, Bernard: *See—*
Cornu, Pierre-Jean; Perrin, Claude; Dumaitre, Bernard; and Streichenberger, Gilles, 4,569,933, Cl. 514-237.000.

Dunalvey, Michael R.: *See—*
Allen, Bruce S.; Dunalvey, Michael R.; King, Bruce A.; DuPrie, Harold J.; Hudnall, Richard E.; Lapidus, Stanely N.; Gilbert, Daniel R.; Carlson, Anne M.; Thakrar, Kiran; Doig, Robert C.; Kimerer, Brian S.; Sirois, Andrew F.; Poirer, Bruce A.; Hunt, Philip G.; Dziezanowski, Joseph J.; Bromberg, Michael A.; Brown, Michael; and Friedel, Seymour A., 4,570,217, Cl. 364-188.000.

Dunham, Myrl G.; and Naves, David G., to Fruit Growers Express Company. Railway car for transporting liquids. 4,569,292, Cl. 105-358.000.

Dunski, Neil; Bazzi, Ali A.; and Buehler, Henry J., to Mallinckrodt, Inc. Isocyanurate esters of thioamidophenols and polyolefin polymeric compositions stabilized therewith. 4,569,959, Cl. 524-101.000.

Duperray, Gerard; and Hilaire, Michel, to Compagnie Generale d'Electricite, S.A. Method of preparing a porous metal body. 4,569,821, Cl. 419-2.000.

Du Pont de Nemours, E. I., and Company: *See—*
Baker, Geraldine L.; and Schmidt, William K., 4,569,937, Cl. 514-282.000.
Bruner, Harold S., Jr.; and D'Amore, Michael B., 4,570,016, Cl. 560-204.000.
Frankenburg, Peter E.; and Lauterbach, Herbert G., 4,569,088, Cl. 2-81.000.
Kasper, William W.; Quon, Willard L.; and Van Domelen, Timothy D., 4,569,990, Cl. 528-408.000.
Levitt, George, 4,569,995, Cl. 544-212.000.

DuPrie, Harold J.: *See—*
Allen, Bruce S.; Dunalvey, Michael R.; King, Bruce A.; DuPrie, Harold J.; Hudnall, Richard E.; Lapidus, Stanely N.; Gilbert, Daniel R.; Carlson, Anne M.; Thakrar, Kiran; Doig, Robert C.; Kimerer, Brian S.; Sirois, Andrew F.; Poirer, Bruce A.; Hunt, Philip G.; Dziezanowski, Joseph J.; Bromberg, Michael A.; Brown, Michael; and Friedel, Seymour A., 4,570,217, Cl. 364-188.000.

Dusch, Albert, to Pfaff Industriemaschinen GmbH. Needle bar detachable drive and stroke adjusting mechanism. 4,569,297, Cl. 112-221.000.

Dussault, Jean-Paul. Method of assembling a universal emergency brake system on a vehicle. 4,569,112, Cl. 29-402.080.

Dvivedi, Nitin N.; and Schmidt, Paul A., to Unitek Corporation. Palladium dental alloy. 4,569,825, Cl. 420-464.000.

Dwyer, Anthony F. Slurry pump. 4,569,642, Cl. 417-516.000.

Dynex/Rivett Inc.: *See—*
Anderson, Gerald C.; and Frank, Kenneth F., 4,569,273, Cl. 91-447.000.

Dziezanowski, Joseph J.: *See—*
Allen, Bruce S.; Dunalvey, Michael R.; King, Bruce A.; DuPrie, Harold J.; Hudnall, Richard E.; Lapidus, Stanely N.; Gilbert, Daniel R.; Carlson, Anne M.; Thakrar, Kiran; Doig, Robert C.;

Kimerer, Brian S.; Sirois, Andrew F.; Poirer, Bruce A.; Hunt, Philip G.; Dziezanowski, Joseph J.; Bromberg, Michael A.; Brown, Michael; and Friedel, Seymour A., 4,570,217, Cl. 364-188.000.

E M I-Varian Limited: *See—*
Green, Michael C., 4,570,099, Cl. 313-346.00R.

Easom Engineering & Manufacturing Corp.: *See—*
Obra, Bart R., 4,569,240, Cl. 74-394.000.

Eastman Kodak Company: *See—*
Agostinelli, John A., 4,569,573, Cl. 350-320.000.
Daniels, Steven D.; Stoneham, Jeffrey R.; and Erickson, John K., 4,570,203, Cl. 362-16.000.
Lees, Roger T., 4,570,179, Cl. 358-50.000.

Eaton Corporation: *See—*
Bridges, Robert B.; Brubaker, John R.; and Hastings, Jerome K., 4,570,143, Cl. 337-75.000.
Bridges, Robert B.; Brubaker, John R.; Hastings, Jerome K.; and Kroll, John W., 4,570,144, Cl. 337-88.000.
Harper, Joseph F. B., 4,569,252, Cl. 74-785.000.
Holmes, Russell C., 4,569,255, Cl. 74-866.000.
Kenny, Andrew A.; and Sokalski, Robert G., 4,569,425, Cl. 192-3.00T.
Kroll, John W., 4,570,139, Cl. 335-187.000.
Nellums, Richard A., 4,569,250, Cl. 74-650.000.
Soeters, Raymond A., Jr., 4,569,646, Cl. 418-75.000.
Swedberg, Nils E., 4,569,644, Cl. 418-61.00B.

Ebi, Masashi, to Pacific Engineering Company, Ltd. Time delay fuse. 4,570,147, Cl. 337-166.000.

Echevarria, Angel M.; and Echevarria, Michael A. Cellular waterbed component and method of manufacture. 4,569,706, Cl. 156-69.000.

Echevarria, Michael A.: *See—*
Echevarria, Angel M.; and Echevarria, Michael A., 4,569,706, Cl. 156-69.000.

Echols, Marvin, to Superior I.D. Tube Cleaners Incorporated. Tube cleaners. 4,569,097, Cl. 15-104.06R.

Economics Laboratory, Inc.: *See—*
Fernholz, Peter J.; Copeland, James L.; and Penttila, Richard C., 4,569,780, Cl. 252-90.000.
Fernholz, Peter J.; Copeland, James L.; and Penttila, Richard C., 4,569,781, Cl. 252-92.000.

Economy Forms Corporation: *See—*
McCracken, Robert G., 4,569,501, Cl. 249-209.000.

Edwards, Charles C. Sacral fixation device. 4,569,338, Cl. 128-69.000.

Edwards, Dean B.; and Rippel, Wally E., to California Institute of Technology. Silicon controlled rectifier polyphase bridge inverter commutated with gate-turn-off thyristor. 4,570,212, Cl. 363-138.000.

Edwards, Harper, McNew and Company: *See—*
Edwards, John W.; Harper, Daniel R.; and McNew, Quinton B., 4,569,561, Cl. 305-40.000.

Edwards, John W.; Harper, Daniel R.; and McNew, Quinton B., to Edwards, Harper, McNew and Company. Endless drive system. 4,569,561, Cl. 305-40.000.

Eguchi, Ken: *See—*
Matsuda, Hiroshi; Haruta, Masahiro; Eguchi, Ken; Nishimura, Yukuo; Hirai, Yutaka; and Nakagiri, Takashi, 4,569,855, Cl. 427-35.000.

Egyt Gyogyszervegyeszeti Gyar: *See—*
Budai, Zoltan; Benko , Pal; Ratz nee Simonek, Ildiko ; Rakoczy nee Pinter, Eva; Magyar, Karoly; Kelemen, Jozsef; and Mandi, Attila, 4,570,002, Cl. 548-495.000.

Ehm, Karl; and Lausch, Wolfram, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Test apparatus in which extremely high test pressures can be generated in hollow bodies in a fraction of a second. 4,569,225, Cl. 73-49.400.

Eickmann, Karl. Axial piston machine having a control flow fluid line passing through a medial shaft portion. 4,569,630, Cl. 416-157.00R.

Eidt, Clarence M., Jr.; Aldridge, Clyde L.; and Bearden, Roby, Jr., to Exxon Research and Engineering Co. Combination coking and hydroconversion process. 4,569,751, Cl. 208-53.000.

Eisenzimmer, George W., to Goodyear Tire & Rubber Company, The. Heavy duty hose coupling and method for manufacture of hose-coupling combination. 4,569,541, Cl. 285-149.000.

Eitrheim, John K.: *See—*
Carter, Ernest A.; Eitrheim, John K.; and Wood, Dorothy M., 4,570,239, Cl. 365-203.000.

Electricity Council, The: *See—*
Lloyd, Harold; and Slinn, David S. L., 4,570,043, Cl. 200-150.00A.

Electro-Nite Co.: *See—*
Cassidy, John E., 4,569,237, Cl. 73-864.580.

Eli Lilly and Company: *See—*
Frank, Bruce H.; and Pekar, Allen H., 4,569,791, Cl. 260-112.50R.
Frank, Bruce H.; and Pekar, Allen H., 4,569,792, Cl. 260-112.50R.
Molloy, Bryan B.; and Steinberg, Mitchell I., 4,569,801, Cl. 260-501.210.
Smith, Michele C.; and Pidgeon, Charles, 4,569,794, Cl. 260-113.000.

Elkin, Yitzchak: *See—*
Alper, Yekutiel; Sagi, Yitzchak; Michai, Gabi; Antler, Aharon; and Elkin, Yitzchak, 4,569,188, Cl. 56-327.00R.

Elkind, Solomon A.: *See—*
Karpov, Alexandr V.; Kivaev, Anatoly A.; Elkind, Solomon A.; Orlov, Garri N.; Lukin, Nikolai I.; Gashnev, Mikhail S.; Ososkov, Gennady A.; Prikhodko, Valentin I.; and Zavyalov, Vladimir F., 4,569,576, Cl. 351-212.000.

Elliott, Stephen R.: *See—*
Gronert, Steven A.; Love, Dale; and Elliott, Stephen R., 4,569,533, Cl. 280-163.000.

Elliott, William H., to Miller Sales & Engineering, Inc. Pinch valve. 4,569,502, Cl. 251-8.000.

Ellis, James R.: *See—*
Wilson, James A.; and Ellis, James R., 4,569,309, Cl. 119-99.000.

Ellis, John P. Sealed barrier container. 4,569,377, Cl. 141-98.000.

Elmec Corporation: *See—*
Kameya, Kazuo, 4,570,135, Cl. 333-138.000.
Kameya, Kazuo, 4,570,136, Cl. 333-161.000.

Elmer, Michael T., to Scott Equipment Company. Meter leveling saddle. 4,569,497, Cl. 248-230.000.

Elscint, Inc.: *See—*
Shimoni, Yair; Netter, Zvi; and Crawford, Carl R., 4,570,224, Cl. 364-414.000.
Sohval, A. Robert; Cooperstein, Gerald; Fleischer, David; Goldstein, Shyke A.; and Hearn, David R., 4,570,106, Cl. 315-111.810.

Else, Robert F., to Britax (Wingard) Limited. Anchorage means for vehicle safety belts. 4,569,537, Cl. 280-808.000.

Endo, Junji: *See—*
Arai, Tohru; and Endo, Junji, 4,569,862, Cl. 427-255.000.

Endo, Katsusuke: *See—*
Inagaki, Yoshio; and Endo, Katsusuke, 4,569,899, Cl. 430-232.000.

Energy Conversion Devices, Inc.: *See—*
Tsu, Raphael; Ovshinsky, Stanford R.; Hernandez, Jesus; and Martin, Denis, 4,569,697, Cl. 148-1.500.

Engel, Dieter; Rinno, Helmut; and Zimmerschied, Klaus, to Hoechst Aktiengesellschaft. Crotonate-containing copolymers, processes for their preparation and their use as thickeners in aqueous systems and as sizing agents. 4,569,965, Cl. 524-544.000.

Engel, Herman J. Electrical adapter for use in connection with fluorescent lamps. 4,570,105, Cl. 315-58.000.

Engelhard Corporation: *See—*
Martins, Evon, 4,569,770, Cl. 252-8.50B.
Moore, Andrew S., 4,569,754, Cl. 208-91.000.

Engineered Abrasives, Inc.: *See—*
Wern, Michael J.; and Wern, Henry E., 4,569,159, Cl. 51-410.000.

Enterkin, Dennis R., to Enterkin Manufacturing Co., Inc. Automatic stud driving machine with pilot hole pre-drilling capability. 4,569,116, Cl. 29-564.200.

Enterkin Manufacturing Co., Inc.: *See—*
Enterkin, Dennis R., 4,569,116, Cl. 29-564.200.

Erickson, John K.: *See—*
Daniels, Steven D.; Stoneham, Jeffrey R.; and Erickson, John K., 4,570,203, Cl. 362-16.000.

Ermanski, Albert G., to Wright Line Inc. Copy holder. 4,569,498, Cl. 248-441.100.

Ernst, Horst M.: *See—*
Brandenstein, Manfred; Ernst, Horst M.; Walter, Lothar; and Friedrich, Wolfgang, 4,569,429, Cl. 192-98.000.

Esanu, Andre , to Societe de Conseils de Recherches et d'Applications Scientifiques. Diuretic, antihypertensive and antihistaminic 7-carboxymethoxy-furo-(3,4-c)-pyridine derivatives. 4,569,938, Cl. 514-302.000.

Esanu, Andre , to Societe de Conseils de Recherches et d'Applications Scientifiques. Diuretic 6-vinyl-furo-(3,4-c)-pyridine derivatives. 4,569,939, Cl. 514-302.000.

Escaravage, Gerard, to Aciers et Outillage Peugeot. Latch structure, in particular for an automobile vehicle. 4,569,544, Cl. 292-216.000.

Eschem Inc.: *See—*
Werber, Gerhardt P., 4,569,977, Cl. 526-204.000.

Eseault, Calvin P.; Meiske, Larry A.; and Fuentes, Ricardo, Jr., to Dow Chemical Company, The. Polymerization of olefins in presence of a catalyst prepared from organomagnesium compound, carbon dioxide compound, reducing halide source and transition metal compound. 4,569,975, Cl. 526-138.000.

Essilor International Cie Generale d'Optique: *See—*
Boudet, Jean, 4,569,807, Cl. 264-2.200.

Eto, Yasushi: *See—*
Tani, Tatsuo; Sawata, Sinji; Tanaka, Tadayoshi; Sakuta, Koichi; Nagata, Yuuji; Eto, Yasushi; Adachi, Makoto; and Matsurra, Yasunori, 4,569,331, Cl. 126-435.000.

European Atomic Energy Community (EURATOM): *See—*
Vansant, Etienne; De Bievre, Paul; Peeters, Guido J.; Thijs, Anita; and Verhaert, Ingrid, 4,569,683, Cl. 55-58.000.

Extra-Ministerial Bureau of Ministry of International Trade and Industry: *See—*
Ono, Hiroshi; Hashimoto, Masao; Sugiyama, Eiiti; Fujiwara, Kenji; and Yoshida, Kenji, 4,569,948, Cl. 518-700.000.

Exxon Research and Engineering Co.: *See—*
Aldridge, Clyde L.; and Bearden, Roby, Jr., 4,569,752, Cl. 208-53.000.
Baker, Charles L., Jr.; and Puente-Duany, Rafael J., 4,569,682, Cl. 55-6.000.
Boucher, Heather A.; and Cody, Ian A., 4,570,027, Cl. 585-455.000.
Brownawell, Darrell W.; Gutierrez, Antonio; Brois, Stanley J.; Jacques, Donald F.; Behelfer, Gary L.; Ferrell, Thomas M.; and Ilnyckyj, Stephan, 4,569,750, Cl. 208-48.0AA.
Eidt, Clarence M., Jr.; Aldridge, Clyde L.; and Bearden, Roby, Jr., 4,569,751, Cl. 208-53.000.
Ratcliffe, Charles T.; Tromp, Petrus J.; and Wachs, Israel E., 4,570,020, Cl. 568-70.000.
Rossi, Albert, 4,569,679, Cl. 44-62.000.
Yang, Tai-Cheng; Rao, Krishna K.; and Huang, I-Der, 4,569,925, Cl. 502-209.000.

Ezawa, Nobuyasu: *See—*
Goto, Nobutaka; and Ezawa, Nobuyasu, 4,569,729, Cl. 204-23.000.

Fabrica de Productos Quimicos y Farmaceuticos Abello, S.A.: *See—*
Gil, M. Carmen G.; Parra, Vicente G.; Alonso, Felix S.; and Cebada, Tomas T., 4,569,999, Cl. 546-275.000.

Facet Enterprises, Incorporated: *See—*
Sekella, Thomas C.; and Seager, Kenneth F., Sr., 4,569,426, Cl. 192-18.00B.

Falk, Ernst; Hiltebrandt, Siegfried; and Knoesel, Johann, to Richard Wolf GmbH. Tool having a handle with an interchangeable insert portion. 4,569,131, Cl. 30-251.000.

Falk, Theodore J.; and Morris, Lawrence E., to Greatbatch Enterprises, Inc. Low power electromagnetic pump. 4,569,641, Cl. 417-417.000.

Fanti, Roy. Dot game device. 4,569,528, Cl. 273-267.000.

Fanuc Limited: *See—*
Nakashima, Seiichiro; Torii, Nobutoshi; and Ozaki, Hitoshi, 4,569,549, Cl. 294-88.000.

Farrell, Robert L.: *See—*
Tetrick, Raymond S.; Beaston, John; Farrell, Robert L.; Sarabi, Alireza; Balachandran, Sudarshan; Jacks, Edwin L., Jr.; and Kassel, Steven D., 4,570,220, Cl. 364-200.000.

Faublas, Serge: *See—*
Pinede, Edouard; Faublas, Serge; and Stevens, Peter F., 4,570,035, Cl. 179-99.0LS.

Fauss, Rudolf: *See—*
Findeisen, Kurt; and Fauss, Rudolf, 4,570,009, Cl. 556-415.000.

Fayerman, Peter; Shaffer, Elwood; and James, Paul, Jr., to Baldwin Hardware Corporation. Door handle mount. 4,569,547, Cl. 292-347.000.

Feder, Joseph: *See—*
Weingarten, Harold I.; and Feder, Joseph, 4,569,907, Cl. 435-23.000.

Feist, Wolfgang M., to Raytheon Company. Method of forming isolated device regions by selective successive etching of composite masking layers and semiconductor material prior to ion implantation. 4,569,698, Cl. 148-1.500.

Feldt, Earl C.; and Angell, Robert C., to JSJ Corporation. Drop-in type automotive transmission shifter. 4,569,245, Cl. 74-473.00P.

Feliks, James J.; and Culpepper, Will L., to Mead Corporation, The. Self-adjusting packaging machine. 4,569,185, Cl. 53-580.000.

Felix, Raymond A., to Stauffer Chemical Company. Method for preparation of N-phosphonomethylglycine. 4,569,802, Cl. 260-502.50F.

Feng, You-Ching. Inertial air cleaner. 4,569,687, Cl. 55-345.000.

Fenyes, Jozsef: *See—*
Spiewok, Leonhard; and Fenyes, Jozsef, 4,569,761, Cl. 210-380.100.

Ferag AG: *See—*
Baltisberger, Erich, 4,569,488, Cl. 242-59.000.

Ferco s.r.l.: *See—*
Ferri, Beniamino; and Caimi, Giovanni, 4,569,305, Cl. 118-211.000.

Fernandes, Peter M.: *See—*
Koths, Kirston E.; Halenbeck, Robert F.; and Fernandes, Peter M., 4,569,910, Cl. 435-105.000.

Fernholz, Peter J.; Copeland, James L.; and Penttila, Richard C., to Economics Laboratory, Inc. Cast detergent-containing article and method of making and using. 4,569,780, Cl. 252-90.000.

Fernholz, Peter J.; Copeland, James L.; and Penttila, Richard C., to Economics Laboratory, Inc. Cast detergent-containing article and method of using. 4,569,781, Cl. 252-92.000.

Ferrari, Leonard A., to University of California, The Regents of the. Sound attenuation measurement system. 4,569,353, Cl. 128-660.000.

Ferrell, Thomas M.: *See—*
Brownawell, Darrell W.; Gutierrez, Antonio; Brois, Stanley J.; Jacques, Donald F.; Behelfer, Gary L.; Ferrell, Thomas M.; and Ilnyckyj, Stephan, 4,569,750, Cl. 208-48.0AA.

Ferri, Beniamino; and Caimi, Giovanni, to Ferco s.r.l. Apparatus to provide the application of glue on preselected zones of printed circuit boards. 4,569,305, Cl. 118-211.000.

Ferris, David S.; Gulino, Rosario; and Mons, Robert F., to Westinghouse Electric Corp. Laminar flow underwater vehicle. 4,569,300, Cl. 114-20.00R.

Ferris, Donald L.; Niebanck, Charles F.; Campbell, Thomas G.; and Olsen, Eric G., to United Technologies Corporation. Helicopter gimbal rotor. 4,569,629, Cl. 416-134.00A.

Ferroni, C. Paul; Linton, Jonathan L.; and Schmitt, Donald J., to Therm-O-Disc, Incorporated. Snap disc condition sensor and method for producing the same. 4,570,148, Cl. 337-354.000.

Fetouh, Mohamed A., to General Motors Corporation. Method of making a split bearing assembly. 4,569,109, Cl. 29-156.50A.

Fey, Edward G.: *See—*
Penman, Sheldon; and Fey, Edward G., 4,569,916, Cl. 436-64.000.

F'Geppert, Erwin, to United States of America, Army. Torque sensor. 4,569,234, Cl. 73-862.190.

F'Geppert, Erwin, to United States of America, Army. Shaft coupling device. 4,569,427, Cl. 192-67.00R.

Fichte, Rudolf; Breuer, Friedrich; Hahn, Reinhard; and Retelsdorf, Hans-Joachim, to GfE Gesellschaft fur Elektrometallurgie mbH. Method of making ferroboron and ferroborosilicon alloys and the alloys made by this method. 4,569,691, Cl. 75-10.00R.

Fichtel & Sachs AG: *See—*
Raab, Harald; Gobel, Hilmar; and Schierling, Bernhard, 4,569,430, Cl. 192-106.200.

Fidler, Raymond E., Jr. Flexible frame and tent. 4,569,362, Cl. 135-104.000.

Fiessinger, Francois: *See—*
Ben Aim, Roger; Bourdiol, Daniel; Fiessinger, Francois; and Rovel, Jean-Marie, 4,569,759, Cl. 210-304.000.

Findeisen, Kurt; and Fauss, Rudolf, to Bayer Aktiengesellschaft. Process for preparing dimethylallyl dicyanide. 4,570,009, Cl. 556-415.000.

Firebaugh, William H. Tone arm. 4,570,253, Cl. 369-255.000.

Firestone, Raymond A. Sealing means for a vacuum distillation apparatus. 4,569,724, Cl. 202-205.000.

Fischer, Kurt; and Weiner, Helmut, to Bison-Werke Bahre & Greten GmbH & Co. KG. Grinding machine and method for flat, board-shaped workpieces. 4,569,155, Cl. 51-138.000.

Fisher, Raymond J.: *See—*
Kinghorn, John R.; Fisher, Raymond J.; and Douglas, Terence A., 4,570,154, Cl. 340-365.00S.

Fleetwood Enterprises, Inc.: *See—*
Hermann, Thomas J., 4,569,093, Cl. 5-47.000.

Fleischer, David: *See—*
Sohval, A. Robert; Cooperstein, Gerald; Fleischer, David; Goldstein, Shyke A.; and Hearn, David R., 4,570,106, Cl. 315-111.810.

Fleishman, Gregg. Portable furniture. 4,569,496, Cl. 248-165.000.

Flemming, Robert J., Jr., to United Technologies Corporation. Airfoil section for a rotor blade of a rotorcraft. 4,569,633, Cl. 416-228.000.

Fliervoet, Johannes H. M.: *See—*
Lambot, Honore J.; Fliervoet, Johannes H. M.; and Kramer, Pieter, 4,569,710, Cl. 156-172.000.

Florence, Judit K.: *See—*
Yan, Johnson K.; and Florence, Judit K., 4,570,233, Cl. 364-522.000.

FMC Corporation: *See—*
Kassai, Denes P., 4,569,096, Cl. 15-83.000.

Foley-Belsaw Company: *See—*
Kravets, Mordko L., 4,569,263, Cl. 83-19.000.

Folger, James D. Golf club swing training device. 4,569,525, Cl. 273-186.00A.

Forbus, Thomas R., Jr., to Mobil Oil Corporation. Polyglycol lubricants comprising trifluoromethane sulfonate. 4,569,774, Cl. 252-33.000.

Ford, Eric H.; and Stayton, Stephen B., to Texas Instruments Incorporated. Laser boresight alignment mechanism for integrated laser/-FLIR rangefinder. 4,569,591, Cl. 356-153.000.

Ford Motor Company: *See—*
Weber, Gottfried, 4,569,126, Cl. 29-707.000.

Forgione, Peter S.: *See—*
Singh, Balwant; Forgione, Peter S.; and Chang, Laurence W., 4,570,012, Cl. 560-25.000.

Forno, Mario; Gibellino, Gianfranco; and Saterini, Mario, to Officine Meccaniche Giovanni Cerutti S.p.A. Device for shifting a compensator roller in a printing press. 4,569,285, Cl. 101-248.000.

Forsythe, Bobbie G.; and Burkmire, Charles R., to Dana Corporation. Actuator for friction coupling. 4,569,428, Cl. 192-70.000.

Fortescue, Peter, to GA Technologies Inc. Nuclear reactor core and fuel element therefor. 4,569,820, Cl. 376-427.000.

Foss, George D.: *See—*
Burguette, Mario D.; and Foss, George D., 4,569,962, Cl. 522-74.000.

Fourcadier, Chantal: *See—*
Grollier, Jean-Francois; Allec, Josiane; Fourcadier, Chantal; Rosenbaum, Georges; and Darmenton, Patrick, 4,569,839, Cl. 424-74.000.

Fourrey, Francois, to Cycles Peugeot. Slide element employing balls and slide structure including said element. 4,569,563, Cl. 308-6.00R.

Fractionation Research, Inc.: *See—*
Keller, George J.; and Yanagi, Takashi, 4,569,364, Cl. 137-244.000.

Fragala, Anthony R.: *See—*
Dempsey, Russell M.; Coker, Thomas G.; LaConti, Anthony B.; and Fragala, Anthony R., 4,569,735, Cl. 204-98.000.

Frair, Phillip E.: *See—*
Anderson, Gerald L.; and Frair, Phillip E., 4,569,542, Cl. 285-337.000.

Framatome & Cie: *See—*
Namand, Henri; and Gemigniani, Francois, 4,569,365, Cl. 137-554.000.

Frank, Bruce H.; and Pekar, Allen H., to Eli Lilly and Company. Anti-diabetic compounds. 4,569,791, Cl. 260-112.50R.

Frank, Bruce H.; and Pekar, Allen H., to Eli Lilly and Company. Anti-diabetic compounds. 4,569,792, Cl. 260-112.50R.

Frank, Kenneth F.: *See—*
Anderson, Gerald C.; and Frank, Kenneth F., 4,569,273, Cl. 91-447.000.

Franken, Adrianus J. J.: *See—*
De Bie, Johannes H.; and Franken, Adrianus J. J., 4,570,063, Cl. 250-227.000.

Frankenburg, Peter E.; and Lauterbach, Herbert G., to Du Pont de Nemours, E. I., and Company. Foundry workers' protective garment. 4,569,088, Cl. 2-81.000.

Frasier, Clint W.: *See—*
Herkenhoff, Earl F.; Frasier, Clint W.; and Ostrander, William J., 4,570,246, Cl. 367-68.000.

Freeman, Earl R.: *See—*
Sweatman, Ronald E.; Freeman, Earl R.; and Gottschling, John, 4,569,394, Cl. 166-280.000.

Freese, Robert P.; Johnson, Leslie H.; Rinehart, Thomas A.; and Gardner, Richard N., to Minnesota Mining and Manufacturing Company. Multi-layer amorphous magneto optical recording medium. 4,569,881, Cl. 428-213.000.

Frenken, Hans: *See—*
Koepke, Gunther; Frenken, Hans; Bussmann, Heinrich; and Browatzki, Kurt, 4,569,863, Cl. 427-402.000.

Frentzel-Beyme, Johannes, to Palitex Project-Company GmbH. Two-for-one yarn twisting spindle assembly having no balloon limitor. 4,569,189, Cl. 57-58.830.

Frentzel, Herman E., to Arneson Products, Inc. Low pressure pool cleaner system. 4,569,361, Cl. 134-167.00R.

Frey, George R.; Dickey, Ronald K.; Bleakley, Daryl A.; and Willison, John E., to Joy Manufacturing Company. Cable tension control device. 4,569,489, Cl. 242-86.510.

Freye, Theodor; and Hollmann, Bernd, to Claas OHG. Round bales of agricultural biade crops. 4,569,439, Cl. 206-83.500.

Fricke, Gunter: *See—*
Zentgraf, Helmut; Fricke, Gunter; Geisler, Iring; Balzer, Heinrich; Burghardt, Hans; and Maikranz, Fritz, 4,569,432, Cl. 193-32.000.

Friedel, Seymour A.: *See—*
Allen, Bruce S.; Dunalvey, Michael R.; King, Bruce A.; DuPrie, Harold J.; Hudnall, Richard E.; Lapidus, Stanely N.; Gilbert, Daniel R.; Carlson, Anne M.; Thakrar, Kiran; Doig, Robert C.; Kimerer, Brian S.; Sirois, Andrew F.; Poirer, Bruce A.; Hunt, Philip G.; Dziezanowski, Joseph J.; Bromberg, Michael A.; Brown, Michael; and Friedel, Seymour A., 4,570,217, Cl. 364-188.000.

Friederich, Ernst: *See—*
Pohlmann, Klaus E.; Vetter, Heinz; and Friederich, Ernst, 4,569,875, Cl. 428-119.000.

Friedrich, Wolfgang: *See—*
Brandenstein, Manfred; Ernst, Horst M.; Walter, Lothar; and Friedrich, Wolfgang, 4,569,429, Cl. 192-98.000.

Frihart, Charles R.; and Veazey, Richard L., to Union Camp Corporation. Poly(ester-amide) hot-melt adhesive. 4,569,985, Cl. 528-291.000.

Frihart, Charles R.; and Veazey, Richard L., to Union Camp Corporation. Poly(ester-amide) hot-melt adhesive. 4,569,987, Cl. 528-339.300.

Frisbie, Jeffrey S., to Advanced Cardiovascular Systems, Inc. Catheter introducing device, assembly and method. 4,569,347, Cl. 128-344.000.

Fritz Gegauf Aktiengesellschaft Bernina-Nahmaschinenfabrik: *See—*
Vogel, Peter, 4,569,299, Cl. 112-315.000.

Fruit Growers Express Company: *See—*
Dunham, Myrl G.; and Naves, David G., 4,569,292, Cl. 105-358.000.

Fuchs, Richard W. Ignition system test/diagnostic instrument. 4,570,124, Cl. 324-401.000.

Fuentes, Ricardo, Jr.: *See—*
Eaneault, Calvin P.; Meiske, Larry A.; and Fuentes, Ricardo, Jr., 4,569,975, Cl. 526-138.000.

Fuji Electric Company Ltd.: *See—*
Umemoto, Yoshiyuki; Iijima, Masao; Miyagi, Masahide; and Muramatsu, Yoshihisa, 4,570,030, Cl. 136-244.000.
Yamamura, Tatsuo, 4,570,181, Cl. 358-160.000.

Fuji Jukogyo Kabushiki Kaisha: *See—*
Suzuki, Tsunehiko, 4,569,316, Cl. 123-192.00R.

Fuji Photo Film Co., Ltd.: *See—*
Arai, Noboru; Ohta, Takahiro; and Inuiya, Masafumi, 4,570,185, Cl. 358-227.000.
Hashiue, Masakazu; and Ochiai, Koji, 4,569,903, Cl. 430-350.000.
Inagaki, Yoshio; and Endo, Katsusuke, 4,569,899, Cl. 430-232.000.
Miyoshi, Takahito; Masuyama, Kenichi; Dezawa, Shin-ichiro; Okutu, Toshimitu; Nasu, Norio; Aoki, Nobuo; and Fujiyama, Masaaki, 4,569,856, Cl. 427-128.000.
Mukunoki, Yasuo; Yamaguchi, Jiro; and Yoneyama, Masakazu, 4,569,905, Cl. 430-546.000.
Okutsu, Eiich; Watase, Kazumi; Inagaki, Yoshio; and Hirano, Shigeo, 4,569,904, Cl. 430-434.000.
Sato, Masamichi, 4,569,581, Cl. 355-3.0BE.
Tabei, Masatoshi, 4,570,070, Cl. 250-372.000.
Takagi, Yoshihiro, 4,569,900, Cl. 430-232.000.

Fuji Photo Optical Co., Ltd.: *See—*
Ohshiro, Susumu, 4,569,334, Cl. 128-6.000.

Fuji Trailer Manufacturing Co., Ltd.: *See—*
Minagawa, Isao; and Minagawa, Toshio, 4,569,400, Cl. 172-21.000.

Fuji Xerox Co., Ltd.: *See—*
Hamano, Toshihisa; Itoh, Hisao; and Nakamura, Takeshi, 4,570,076, Cl. 250-578.000.
Kurata, Masami, 4,570,186, Cl. 358-282.000.

Fujii, Setsuro; Yaegashi, Takashi; Nakayama, Toyoo; Sakurai, Yojiro; Nunomura, Shigeki; and Okutome, Toshiyuki, to Torii & Co. Ltd. Amidine compound, process for producing same and anti-complement agent comprising same. 4,570,006, Cl. 549-442.000.

Fujii, Takayoshi: *See—*
Yoshikumi, Chikao; Ohmura, Yoshio; Hirose, Fumio; Ikuzawa, Masanori; Matsunaga, Kenichi; Fujii, Takayoshi; Ohhara, Minoru; and Ando, Takao, 4,569,842, Cl. 514-25.000.

Fujimura, Akira; and Tomobe, Norio, to Honda Giken Kogyo Kabushiki Kaisha. Secondary intake air supply system for internal combustion engines. 4,569,318, Cl. 123-327.000.

Fujino, Kiyoharu, to Mitsubishi Monsanto Chemical Company. Production of thermoplastic resin. 4,569,991, Cl. 528-492.000.

Fujitsu Limited: *See—*
Iijima, Nobuo, 4,570,059, Cl. 250-201.000.
Nagashima, Setsuo, 4,569,745, Cl. 204-298.000.
Nozaki, Shigeki; Nakano, Tomio; and Kabashima, Katsuhiko, 4,570,088, Cl. 307-481.000.
Tanizaki, Akinori; Ando, Noboru; Terayama, Satoshi; and Nakao, Kunimichi, 4,569,326, Cl. 125-13.00R.

Fujiwara, Kenji: *See—*
Ono, Hiroshi; Hashimoto, Masao; Sugiyama, Eiiti; Fujiwara, Kenji; and Yoshida, Kenji, 4,569,948, Cl. 518-700.000.

Fujiyama, Masaaki: *See—*
Miyoshi, Takahito; Masuyama, Kenichi; Dezawa, Shin-ichiro; Okutu, Toshimitu; Nasu, Norio; Aoki, Nobuo; and Fujiyama, Masaaki, 4,569,856, Cl. 427-128.000.

Fukuda, Hirosuke: *See—*
Seno, Taiko; Okubo, Yasuto; Kawamura, Masao; Akutsu, Seiichi; and Fukuda, Hirosuke, 4,569,909, Cl. 435-89.000.

Fukuiri, Masaru: *See—*
Higashi, Haruki; Waki, Kouichirou; Fukuiri, Masaru; and Yukitomo, Kazuo, 4,569,253, Cl. 74-866.000.

Fukumoto, Sakuo: *See—*
Manda, Yasutake; Miyabayashi, Tadao; and Fukumoto, Sakuo, 4,570,211, Cl. 363-23.000.

Fukumoto, Takaaki; Mukogawa, Yasukazu; Hama, Masaharu; and Yanagi, Motonori, to Mitsubishi Denki Kabushiki Kaisha. Device for measuring the absolute value of the density of salts in atmosphere. 4,569,224, Cl. 73-32.00R.

Fukushima, Hirotaka, to Kabushiki Kaisha Daikin Seisakusho. Damper disc. 4,569,668, Cl. 464-68.000.

Fukuta, Toshiaki: *See—*
Taki, Yoshihiro; Fukuta, Toshiaki; Akado, Hajime; Miyakawa, Susumu; and Nishio, Yoshitaka, 4,569,813, Cl. 264-259.000.

Fukuzawa, Keiji: *See—*
Tsurumaru, Shinobu; Ishigaki, Yoshio; Ouchi, Koji; Yoshikawa, Takashi; Fukuzawa, Keiji; Imai, Kazuhiro; Taguchi, Yorimichi; and Tsuchiya, Masayoshi, 4,570,165, Cl. 343-726.000.

Fulks, Kent B. Programmable exercise system. 4,569,518, Cl. 272-129.000.

Fuller Company: *See—*
Cohen, Sidney M., 4,569,831, Cl. 423-171.000.
Romanchik, Robert E.; and Short, James C., 4,569,596, Cl. 366-107.000.

Fulmer, Keith H., to Allied Corporation. Height sensing proportioning valve. 4,569,559, Cl. 303-6.00C.

Fulton, Robert W. Augmented speaker enclosure. 4,569,414, Cl. 181-156.000.

Furing, Kurt: *See—*
Popp, Franz-Wolfgang; and Furing, Kurt, 4,569,818, Cl. 376-272.000.

Futamase, Tsuyoshi; and Kato, Mitsumi, to Nippon Gakki Seizo Kabushiki Kaisha. Modulation effect device for use in electronic musical instrument. 4,569,268, Cl. 84-1.240.

GA Technologies Inc.: *See—*
Creedon, Richard L., 4,569,539, Cl. 285-18.000.
Fortescue, Peter, 4,569,820, Cl. 376-427.000.

Gabritsos, George C.; and Marshall, Trevor J., Jr., to CBS Inc. Optical sound-reproducing apparatus. 4,570,250, Cl. 369-97.000.

Gac, John V.: *See—*
Bloom, Robert D.; Gac, John V.; and Kozol, Eugene T., deceased, 4,570,110, Cl. 318-313.000.

Gadeken, Larry L., to Halliburton Company. Method and apparatus for formation logging using position sensitive neutron detectors. 4,570,067, Cl. 250-266.000.

Gager, Dennis J. On-board electronic oil contamination detector for vehicle engines. 4,570,069, Cl. 250-343.000.

Gagliardi, Joseph M.: *See—*
Kerwin, Donald J., 4,569,087, Cl. 2-69.000.

Gaiani, Robert, to Ratier-Figeac. Ball-type screw/nut systems and a process for producing them. 4,569,241, Cl. 74-424.80R.

Gakei Electric Works Co., Ltd.: *See—*
Nishizawa, Minoru, 4,569,828, Cl. 422-249.000.

Galant, Jean-Claude, to Regie Nationale des Usines Renault. Plunger hay baler. 4,569,282, Cl. 100-189.000.

Galatha, Matthew J.: *See—*
Drejza, John E.; and Galatha, Matthew J., 4,569,610, Cl. 400-599.000.

Gallagher, Joseph W.: *See—*
Goldman, Gerald L.; Gallagher, Joseph W.; and Merlack, William A., 4,569,615, Cl. 404-65.000.

Game Time, Inc.: *See—*
Shannon, William H.; and Sutton, Wesley D., Jr., 4,569,113, Cl. 29-446.000.

Gamma-Delta Games, Inc.: *See—*
Hamilton, Clarence Q., 4,569,526, Cl. 273-242.000.

Garaschenko, Vyacheslav I.: *See—*
Sandulyak, Alexandr V.; Garaschenko, Vyacheslav I.; Sandulyak, Vladimir V.; and Korkhov, Oleg J., 4,569,758, Cl. 210-222.000.

Garcia, Florentino. Hand held sure grip slingshot including a method and apparatus for its manufacture. 4,569,324, Cl. 124-20.00R.

Gard, George E.: *See—*
Arnold, Marlene R.; and Gard, George E., 4,569,222, Cl. 73-9.000.

Gardellini, Giovanni: *See—*
Bonfiglioli, Silverio; Triolo, Innocenzo; and Gardellini, Giovanni, 4,569,321, Cl. 123-438.000.

Gardner, Richard N.: *See—*
Freese, Robert P.; Johnson, Leslie H.; Rinehart, Thomas A.; and Gardner, Richard N., 4,569,881, Cl. 428-213.000.

Garich, Walter E.: *See—*
McGovney, William E.; and Garich, Walter E., 4,569,168, Cl. 52-122.100.

Gartner, Karl, to Yoshida Kogyo K.K. Joint structure for two adjacent thermally-insulated window units. 4,569,170, Cl. 52-204.000.

Garton, Lance M.: *See—*
West, Jesse R.; and Garton, Lance M., 4,569,834, Cl. 423-460.000.

Gas Research Institute: *See—*
Shukla, Kailash C.; and Hurley, James R., 4,569,328, Cl. 126-39.00J.

Gashnev, Mikhail S.: *See—*
Karpov, Alexandr V.; Kivaev, Anatoly A.; Elkind, Solomon A.; Orlov, Garri N.; Lukin, Nikolai I.; Gashnev, Mikhail S.; Ososkov, Gennady A.; Prikhodko, Valentin I.; and Zavyalov, Vladimir F., 4,569,576, Cl. 351-212.000.

Gateway Scientific, Inc.: *See—*
Skarman, John S.; and Tenhulzen, Neal L., 4,570,155, Cl. 340-531.000.

Gaudfrin, Guy. Belt filter equipped with an air suction device. 4,569,762, Cl. 210-401.000.

Gaudino, Piero, to Officine Gaudino di P. Gaudino & C.S. A.S. Ring spinning or twisting machine having an automatic cop-removal device. 4,569,191, Cl. 57-276.000.

Geier, Rudolf, to Didier Engineering GmbH. Method of making a staple-fiber band. 4,569,811, Cl. 264-143.000.

Geisler, Iring: *See—*
Zentgraf, Helmut; Fricke, Gunter; Geisler, Iring; Balzer, Heinrich; Burghardt, Hans; and Maikranz, Fritz, 4,569,432, Cl. 193-32.000.

Gelardi, Anthony L.; Gelardi, Paul J.; and MacLeod, Robert B., Jr., to Shape Inc. Tape cassette pressure flap assembly. 4,569,492, Cl. 242-199.000.

Gelardi, Paul J.: *See—*
Gelardi, Anthony L.; Gelardi, Paul J.; and MacLeod, Robert B., Jr., 4,569,492, Cl. 242-199.000.

Gemigniani, Francois: *See—*
Namand, Henri; and Gemigniani, Francois, 4,569,365, Cl. 137-554.000.

Gemmell-Murdoch, Andrew, to Murdoch Logging Industries Pty. Ltd. Tree harvester. 4,569,379, Cl. 144-3.00D.

General Electric Company: *See—*
Ades, Adrian R.; and Schmidt, George S., 4,570,053, Cl. 219-413.000.
Anthony, Thomas R.; Houston, Douglas E.; and Loughran, James A., 4,570,173, Cl. 357-20.000.
Baliga, Bantval J.; and Wessels, Bruce W., 4,569,118, Cl. 29-571.000.
Carnes, Ronald C.; and Miller-Jones, Stockton M., 4,569,231, Cl. 73-626.000.
Giles, Walter B.; and Lipstein, Norman J., 4,569,194, Cl. 60-39.020.
Johnson, Kenneth O., 4,569,195, Cl. 60-39.300.
Klappert, Willi, 4,570,141, Cl. 336-213.000.
Kosmatka, Walter J., 4,570,210, Cl. 362-396.000.
Kramer, Larry J., 4,569,661, Cl. 432-253.000.
Kuhn, Donald H.; Nelson, Conrad E.; Younger, Cousby, Jr.; and Otteni, Gerald A., 4,570,166, Cl. 343-872.000.
Noe, Raymond J., 4,569,867, Cl. 428-35.000.
Sippel, Theodore W.; and Steele, Douglas S., 4,570,071, Cl. 250-374.000.
Tyrell, John A.; and Mark, Victor, 4,569,973, Cl. 525-437.000.
Wehrli, Felix W.; and MacFall, James R., 4,570,119, Cl. 324-306.000.

General Motors Corporation: *See—*
Fetouh, Mohamed A., 4,569,109, Cl. 29-156.50A.
Goforth, William R., 4,569,557, Cl. 297-341.000.

General Research of Electronics, Inc.: *See—*
Imazeki, Kazuyoshi; Tanaka, Toshiyuki; and Hayashibara, Fumio, 4,570,160, Cl. 340-789.000.

Geo. A. Hormel & Co.: *See—*
Tribbett, Kenneth E., 4,569,101, Cl. 17-41.000.

Georgia Tech. Research Institute: *See—*
Matteson, Michael J., 4,569,226, Cl. 73-64.400.

Gervasi, Gian B.: *See—*
Bergamaschi, Mario; Gervasi, Gian B.; Vecchietti, Vittorio; and Signorini, Massimo, 4,570,013, Cl. 560-102.000.

GfE Gesellschaft fur Elektrometallurgie mbH: *See—*
Fichte, Rudolf; Breuer, Friedrich; Hahn, Reinhard; and Retelsdorf, Hans-Joachim, 4,569,691, Cl. 75-10.00R.

Giampetruzzi, Jerry F.; and Martin, Owen C. Playhouse. 4,569,664, Cl. 446-110.000.

Giangiulio, Clayton E.: *See—*
D'Ambro, Dominic; and Giangiulio, Clayton E., 4,569,280, Cl. 99-538.000.

Gibbs, Thomas T. Game board with slides and cards. 4,569,529, Cl. 273-274.000.

Gibellino, Gianfranco: *See—*
Forno, Mario; Gibellino, Gianfranco; and Saterini, Mario, 4,569,285, Cl. 101-248.000.

Gibson, Charles A.; and Crandall, John W., to Union Carbide Corporation. Method of preparing polyethylene polyamines having improved color. 4,570,019, Cl. 564-498.000.

Gibson, Rodney W., to U.S. Philips Corporation. FSK Demodulator with concurrent carrier and clock synchronization. 4,570,125, Cl. 329-50.000.

Gielow, Robert L.; and Paul, James C., to Pullman Standard Inc. Air flow guide structure for open top railway car. 4,569,289, Cl. 105-2.00R.

Gil, M. Carmen G.; Parra, Vicente G.; Alonso, Felix S.; and Cebada, Tomas T., to Fabrica de Productos Quimicos y Farmaceuticos Abello, S.A. 2-Substituted-3-sulfonamide-pyridine derivatives. 4,569,999, Cl. 546-275.000.

Gilbert, Daniel R.: *See—*
Allen, Bruce S.; Dunalvey, Michael R.; King, Bruce A.; DuPrie, Harold J.; Hudnall, Richard E.; Lapidus, Stanely N.; Gilbert, Daniel R.; Carlson, Anne M.; Thakrar, Kiran; Doig, Robert C.; Kimerer, Brian S.; Sirois, Andrew F.; Poirer, Bruce A.; Hunt, Philip G.; Dziezanowski, Joseph J.; Bromberg, Michael A.; Brown, Michael; and Friedel, Seymour A., 4,570,217, Cl. 364-188.000.

Giles, Walter B.; and Lipstein, Norman J., to General Electric Company. Integrated coal-fired gas turbine power plant. 4,569,194, Cl. 60-39.020.

Gill, Jagroop S. Reclamation process for sewage scum. 4,569,767, Cl. 210-718.000.

Gillberg-LaForce, Gunilla E.; and DeMartino, Ronald N., to Celanese Corporation. Process for the surface modification of polyester material and the polyester material so modified. 4,569,974, Cl. 525-437.000.

Gillingham, Gary D.: *See—*
Chapman, John R.; and Gillingham, Gary D., 4,569,243, Cl. 74-470.000.

Gilmore, William J., to Acco Babcock Inc. Twisted cable assembly and a method of making the same. 4,569,190, Cl. 57-201.000.

Giorgetti, Paolo; Romani, Franco; and Strino, Enrico, to Perugina S.p.A. Confectionary product and process for producing the same. 4,569,848, Cl. 426-94.000.

Globe Manufacturing Co.: *See—*
LaRue, Robert A., 4,569,212, Cl. 66-196.000.

Gloger, Manfred: *See—*
Maier, Josef; Gloger, Manfred; and Draeger, Brigitte, 4,569,917, Cl. 436-71.000.

Glucksman, Dov Z. Hair curling roller. 4,569,360, Cl. 132-33.00R.

Gobel, Hilmar: *See—*
Raab, Harald; Gobel, Hilmar; and Schierling, Bernhard, 4,569,430, Cl. 192-106.200.

Goettel, Richard J. Self tapping duct fitting and method of use. 4,569,110, Cl. 29-157.00R.

Goetz, Norbert: *See—*
Schirmer, Ulrich; Goetz, Norbert; and Wuerzer, Bruno, 4,569,689, Cl. 71-88.000.

Goforth, William R., to General Motors Corporation. Easy entry seat adjuster. 4,569,557, Cl. 297-341.000.

Gohbara, Masatoshi: *See—*
Nakatani, Kiyoshi; Numata, Satoshi; Inoue, Tsuneo; Kodaka, Kenji; Ishii, Tsutomu; Toyama, Teruhiko; Tachibana, Hajime; Udagawa, Takatoshi; and Gohbara, Masatoshi, 4,570,005, Cl. 549-435.000.

Goldberg, Jacqueline: *See—*
Lauer, Leonard; and Goldberg, Jacqueline, 4,569,597, Cl. 366-228.000.

Golder, Louis, to United States of America, Air Force. Blind-mating, positionally adjustable electrical connection device. 4,569,565, Cl. 339-64.00R.

Goldman, Gerald L.; Gallagher, Joseph W.; and Merlack, William A., to Columbia Chase Corporation. Expansion joint structures. 4,569,615, Cl. 404-65.000.

Goldmann, Louis H., to United States of America, Energy. Dump assembly. 4,569,623, Cl. 414-217.000.

Goldstein, Shyke A.: *See—*
Sohval, A. Robert; Cooperstein, Gerald; Fleischer, David; Goldstein, Shyke A.; and Hearn, David R., 4,570,106, Cl. 315-111.810.

Gonen, Amos: *See—*
Spector, Yechiel; Gonen, Amos; and Raviv, Shimon, 4,569,399, Cl. 169-66.000.

Good, Johann. Vise, particularly a machine vise. 4,569,509, Cl. 269-32.000.

Goodfellow, Anthony G.: *See—*
Sumner, Anthony J. M.; and Goodfellow, Anthony G., 4,569,711, Cl. 156-244.110.

Goodyear Tire & Rubber Company, The: *See—*
Eisenzimmer, George W., 4,569,541, Cl. 285-149.000.
Maxey, Frank S., deceased; and Mowdood, Syed K., 4,569,382, Cl. 152-548.000.
Woelfel, James A., 4,569,957, Cl. 523-466.000.

Gordon, Donald W. Exercise structure and ball game. 4,569,515, Cl. 272-65.000.

Gordon, Robert T. Cancer treatment by intracellular hyperthermia. 4,569,836, Cl. 424-1.100.

Gormley, Daniel E. Optical micrometry of skin surfaces. 4,569,358, Cl. 128-774.000.

Gortsema, Frank P.; and Lok, Brent M., to Union Carbide Corporation. Modification of aluminophosphate molecular sieves by treatment with a silicon tetrafluoride gas mixture. 4,569,833, Cl. 423-305.000.

Gossel, Michael: *See—*
Rebel, Burghard; and Gossel, Michael, 4,570,236, Cl. 364-900.000.

Goto, Nobutaka; and Ezawa, Nobuyasu, to Chlorine Engineers Corp., Ltd.; and Tanaka Kikinzoku Kogyo K.K. Electrolyzing method and electrolytic cell employing fluidized bed. 4,569,729, Cl. 204-23.000.

Gottschling, John: *See—*
Sweatman, Ronald E.; Freeman, Earl R.; and Gottschling, John, 4,569,394, Cl. 166-280.000.

Gover, Thomas G.: *See—*
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Gower Corporation: *See—*
Parrott, Robert C.; and Meadors, Smith A., 4,569,451, Cl. 211-191.000.

Gracen, Vernon E.; Sisco, Paul; and Bouthyette, Pierre, to Agrigenetics Research Associates Limited; and Cornell Research Foundation. LBN Cytoplasm. 4,569,152, Cl. 47-58.000.

Frenken, Hans: *See—*
Koepke, Gunther; Frenken, Hans; Bussmann, Heinrich; and Browatzki, Kurt, 4,569,863, Cl. 427-402.000.

Frentzel-Beyme, Johannes, to Palitex Project-Company GmbH. Two-for-one yarn twisting spindle assembly having no balloon limitor. 4,569,189, Cl. 57-58.830.

Frentzel, Herman E., to Arneson Products, Inc. Low pressure pool cleaner system. 4,569,361, Cl. 134-167.00R.

Frey, George R.; Dickey, Ronald K.; Bleakley, Daryl A.; and Willison, John E., to Joy Manufacturing Company. Cable tension control device. 4,569,489, Cl. 242-86.510.

Freye, Theodor; and Hollmann, Bernd, to Claas OHG. Round bales of agricultural blade crops. 4,569,439, Cl. 206-83.500.

Fricke, Gunter: *See—*
Zentgraf, Helmut; Fricke, Gunter; Geisler, Iring; Balzer, Heinrich; Burghardt, Hans; and Maikranz, Fritz, 4,569,432, Cl. 193-32.000.

Friedel, Seymour A.: *See—*
Allen, Bruce S.; Dunalvey, Michael R.; King, Bruce A.; DuPrie, Harold J.; Hudnall, Richard E.; Lapidus, Stanely N.; Gilbert, Daniel R.; Carlson, Anne M.; Thakrar, Kiran; Doig, Robert C.; Kimerer, Brian S.; Sirois, Andrew F.; Poirer, Bruce A.; Hunt, Philip G.; Dziezanowski, Joseph J.; Bromberg, Michael A.; Brown, Michael; and Friedel, Seymour A., 4,570,217, Cl. 364-188.000.

Friederich, Ernst: *See—*
Pohlmann, Klaus E.; Vetter, Heinz; and Friederich, Ernst, 4,569,875, Cl. 428-119.000.

Friedrich, Wolfgang: *See—*
Brandenstein, Manfred; Ernst, Horst M.; Walter, Lothar; and Friedrich, Wolfgang, 4,569,429, Cl. 192-98.000.

Frihart, Charles R.; and Veazey, Richard L., to Union Camp Corporation. Poly(ester-amide) hot-melt adhesive. 4,569,985, Cl. 528-291.000.

Frihart, Charles R.; and Veazey, Richard L., to Union Camp Corporation. Poly(ester-amide) hot-melt adhesive. 4,569,987, Cl. 528-339.300.

Frisbie, Jeffrey S., to Advanced Cardiovascular Systems, Inc. Catheter introducing device, assembly and method. 4,569,347, Cl. 128-344.000.

Fritz Gegauf Aktiengesellschaft Bernina-Nahmaschinenfabrik: *See—*
Vogel, Peter, 4,569,299, Cl. 112-315.000.

Fruit Growers Express Company: *See—*
Dunham, Myrl G.; and Naves, David G., 4,569,292, Cl. 105-358.000.

Fuchs, Richard W. Ignition system test/diagnostic instrument. 4,570,124, Cl. 324-401.000.

Fuentes, Ricardo, Jr.: *See—*
Esneault, Calvin P.; Meiske, Larry A.; and Fuentes, Ricardo, Jr., 4,569,975, Cl. 526-138.000.

Fuji Electric Company Ltd.: *See—*
Umemoto, Yoshiyuki; Iijima, Masao; Miyagi, Masahide; and Muramatsu, Yoshihisa, 4,570,030, Cl. 136-244.000.
Yamamura, Tatsuo, 4,570,181, Cl. 358-160.000.

Fuji Jukogyo Kabushiki Kaisha: *See—*
Suzuki, Tsunehiko, 4,569,316, Cl. 123-192.00R.

Fuji Photo Film Co., Ltd.: *See—*
Arai, Noboru; Ohta, Takahiro; and Inuiya, Masafumi, 4,570,185, Cl. 358-227.000.
Hashiue, Masakazu; and Ochiai, Koji, 4,569,903, Cl. 430-350.000.
Inagaki, Yoshio; and Endo, Katsusuke, 4,569,899, Cl. 430-232.000.
Miyoshi, Takahito; Masuyama, Kenichi; Dezawa, Shin-ichiro; Okutu, Toshimitu; Nasu, Norio; Aoki, Nobuo; and Fujiyama, Masaaki, 4,569,856, Cl. 427-128.000.
Mukunoki, Yasuo; Yamaguchi, Jiro; and Yoneyama, Masakazu, 4,569,905, Cl. 430-546.000.
Okutsu, Eiich; Watase, Kazumi; Inagaki, Yoshio; and Hirano, Shigeo, 4,569,904, Cl. 430-434.000.
Sato, Masamichi, 4,569,581, Cl. 355-3.0BE.
Tabei, Masatoshi, 4,570,070, Cl. 250-372.000.
Takagi, Yoshihiro, 4,569,900, Cl. 430-232.000.

Fuji Photo Optical Co., Ltd.: *See—*
Ohshiro, Susumu, 4,569,334, Cl. 128-6.000.

Fuji Trailer Manufacturing Co., Ltd.: *See—*
Minagawa, Isao; and Minagawa, Toshio, 4,569,400, Cl. 172-21.000.

Fuji Xerox Co., Ltd.: *See—*
Hamano, Toshihisa; Itoh, Hisao; and Nakamura, Takeshi, 4,570,076, Cl. 250-578.000.
Kurata, Masami, 4,570,186, Cl. 358-282.000.

Fujii, Setsuro; Yaegashi, Takashi; Nakayama, Toyoo; Sakurai, Yojiro; Nunomura, Shigeki; and Okutome, Toshiyuki, to Torii & Co. Ltd. Amidine compound, process for producing same and anti-complement agent comprising same. 4,570,006, Cl. 549-442.000.

Fujii, Takayoshi: *See—*
Yoshikumi, Chikao; Ohmura, Yoshio; Hirose, Fumio; Ikuzawa, Masanori; Matsunaga, Kenichi; Fujii, Takayoshi; Ohhara, Minoru; and Ando, Takao, 4,569,842, Cl. 514-25.000.

Fujimura, Akira; and Tomobe, Norio, to Honda Giken Kogyo Kabushiki Kaisha. Secondary intake air supply system for internal combustion engines. 4,569,318, Cl. 123-327.000.

Fujino, Kiyoharu, to Mitsubishi Monsanto Chemical Company. Production of thermoplastic resin. 4,569,991, Cl. 528-492.000.

Fujitsu Limited: *See—*
Iijima, Nobuo, 4,570,059, Cl. 250-201.000.
Nagashima, Setsuo, 4,569,745, Cl. 204-298.000.
Nozaki, Shigeki; Nakano, Tomio; and Kabashima, Katsuhiko, 4,570,088, Cl. 307-481.000.
Tanizaki, Akinori; Ando, Noboru; Terayama, Satoshi; and Nakao, Kunimichi, 4,569,326, Cl. 125-13.00R.

Fujiwara, Kenji: *See—*
Ono, Hiroshi; Hashimoto, Masao; Sugiyama, Eiiti; Fujiwara, Kenji; and Yoshida, Kenji, 4,569,948, Cl. 518-700.000.

Fujiyama, Masaaki: *See—*
Miyoshi, Takahito; Masuyama, Kenichi; Dezawa, Shin-ichiro; Okutu, Toshimitu; Nasu, Norio; Aoki, Nobuo; and Fujiyama, Masaaki, 4,569,856, Cl. 427-128.000.

Fukuda, Hirosuke: *See—*
Seno, Taiko; Okubo, Yasuto; Kawamura, Masao; Akutsu, Seiichi; and Fukuda, Hirosuke, 4,569,909, Cl. 435-89.000.

Fukuiri, Masaru: *See—*
Higashi, Haruki; Waki, Kouichirou; Fukuiri, Masaru; and Yukitomo, Kazuo, 4,569,253, Cl. 74-866.000.

Fukumoto, Sakuo: *See—*
Manda, Yasutake; Miyabayashi, Tadao; and Fukumoto, Sakuo, 4,570,211, Cl. 363-23.000.

Fukumoto, Takaaki; Mukogawa, Yasukazu; Hama, Masaharu; and Yanagi, Motonori, to Mitsubishi Denki Kabushiki Kaisha. Device for measuring the absolute value of the density of salts in atmosphere. 4,569,224, Cl. 73-32.00R.

Fukushima, Hirotaka, to Kabushiki Kaisha Daikin Seisakusho. Damper disc. 4,569,668, Cl. 464-68.000.

Fukuta, Toshiaki: *See—*
Taki, Yoshihiro; Fukuta, Toshiaki; Akado, Hajime; Miyakawa, Susumu; and Nishio, Yoshitaka, 4,569,813, Cl. 264-259.000.

Fukuzawa, Keiji: *See—*
Tsurumaru, Shinobu; Ishigaki, Yoshio; Ouchi, Koji; Yoshikawa, Takashi; Fukuzawa, Keiji; Imai, Kazuhiro; Taguchi, Yorimichi; and Tsuchiya, Masayoshi, 4,570,165, Cl. 343-726.000.

Fulks, Kent B. Programmable exercise system. 4,569,518, Cl. 272-129.000.

Fuller Company: *See—*
Cohen, Sidney M., 4,569,831, Cl. 423-171.000.
Romanchik, Robert E.; and Short, James C., 4,569,596, Cl. 366-107.000.

Fulmer, Keith H., to Allied Corporation. Height sensing proportioning valve. 4,569,559, Cl. 303-6.00C.

Fulton, Robert W. Augmented speaker enclosure. 4,569,414, Cl. 181-156.000.

Furing, Kurt: *See—*
Popp, Franz-Wolfgang; and Furing, Kurt, 4,569,818, Cl. 376-272.000.

Futamase, Tsuyoshi; and Kato, Mitsumi, to Nippon Gakki Seizo Kabushiki Kaisha. Modulation effect device for use in electronic musical instrument. 4,569,268, Cl. 84-1.240.

GA Technologies Inc.: *See—*
Creedon, Richard L., 4,569,539, Cl. 285-18.000.
Fortescue, Peter, 4,569,820, Cl. 376-427.000.

Gabritsos, George C.; and Marshall, Trevor J., Jr., to CBS Inc. Optical sound-reproducing apparatus. 4,570,250, Cl. 369-97.000.

Gac, John V.: *See—*
Bloom, Robert D.; Gac, John V.; and Kozol, Eugene T., deceased, 4,570,110, Cl. 318-313.000.

Gadeken, Larry L., to Halliburton Company. Method and apparatus for formation logging using position sensitive neutron detectors. 4,570,067, Cl. 250-266.000.

Gager, Dennis J. On-board electronic oil contamination detector for vehicle engines. 4,570,069, Cl. 250-343.000.

Gagliardi, Joseph M.: *See—*
Kerwin, Donald J., 4,569,087, Cl. 2-69.000.

Gaiani, Robert, to Ratier-Figeac. Ball-type screw/nut systems and a process for producing them. 4,569,241, Cl. 74-424.80R.

Gakei Electric Works Co., Ltd.: *See—*
Nishizawa, Minoru, 4,569,828, Cl. 422-249.000.

Galant, Jean-Claude, to Regie Nationale des Usines Renault. Plunger hay baler. 4,569,282, Cl. 100-189.000.

Galatha, Matthew J.: *See—*
Drejza, John E.; and Galatha, Matthew J., 4,569,610, Cl. 400-599.000.

Gallagher, Joseph W.: *See—*
Goldman, Gerald L.; Gallagher, Joseph W.; and Merlack, William A., 4,569,615, Cl. 404-65.000.

Game Time, Inc.: *See—*
Shannon, William H.; and Sutton, Wesley D., Jr., 4,569,113, Cl. 29-446.000.

Gamma-Delta Games, Inc.: *See—*
Hamilton, Clarence Q., 4,569,526, Cl. 273-242.000.

Garaschenko, Vyacheslav I.: *See—*
Sandulyak, Alexandr V.; Garaschenko, Vyacheslav I.; Sandulyak, Vladimir V.; and Korkhov, Oleg J., 4,569,758, Cl. 210-222.000.

Garcia, Florentino. Hand held sure grip slingshot including a method and apparatus for its manufacture. 4,569,324, Cl. 124-20.00R.

Gard, George E.: *See—*
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Gardellini, Giovanni: *See—*
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Gardner, Richard N.: *See—*
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Garich, Walter E.: *See—*
McGovney, William E.; and Garich, Walter E., 4,569,168, Cl. 52-122.100.

Gartner, Karl, to Yoshida Kogyo K.K. Joint structure for two adjacent thermally-insulated window units. 4,569,170, Cl. 52-204.000.

Garton, Lance M.: *See—*
West, Jesse R.; and Garton, Lance M., 4,569,834, Cl. 423-460.000.

Gas Research Institute: *See—*
Shukla, Kailash C.; and Hurley, James R., 4,569,328, Cl. 126-39.00J.

Gashnev, Mikhail S.: *See—*
Karpov, Alexandr V.; Kivaev, Anatoly A.; Elkind, Solomon A.; Orlov, Garri N.; Lukin, Nikolai I.; Gashnev, Mikhail S.; Ososkov, Gennady A.; Prikhodko, Valentin I.; and Zavyalov, Vladimir F., 4,569,576, Cl. 351-212.000.

Gateway Scientific, Inc.: *See—*
Skarman, John S.; and Tenhulzen, Neal L., 4,570,155, Cl. 340-531.000.

Gaudfrin, Guy. Belt filter equipped with an air suction device. 4,569,762, Cl. 210-401.000.

Gaudino, Piero, to Officine Gaudino di P. Gaudino & C.S. A.S. Ring spinning or twisting machine having an automatic cop-removal device. 4,569,191, Cl. 57-276.000.

Geier, Rudolf, to Didier Engineering GmbH. Method of making a staple-fiber band. 4,569,811, Cl. 264-143.000.

Geisler, Iring: *See—*
Zentgraf, Helmut; Fricke, Gunter; Geisler, Iring; Balzer, Heinrich; Burghardt, Hans; and Maikranz, Fritz, 4,569,432, Cl. 193-32.000.

Gelardi, Anthony L.; Gelardi, Paul J.; and MacLeod, Robert B., Jr., to Shape Inc. Tape cassette pressure flap assembly. 4,569,492, Cl. 242-199.000.

Gelardi, Paul J.: *See—*
Gelardi, Anthony L.; Gelardi, Paul J.; and MacLeod, Robert B., Jr., 4,569,492, Cl. 242-199.000.

Gemigniani, Francois: *See—*
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Gemmell-Murdoch, Andrew, to Murdoch Logging Industries Pty. Ltd. Tree harvester. 4,569,379, Cl. 144-3.00D.

General Electric Company: *See—*
Ades, Adrian R.; and Schmidt, George S., 4,570,053, Cl. 219-413.000.
Anthony, Thomas R.; Houston, Douglas E.; and Loughran, James A., 4,570,173, Cl. 357-20.000.
Baliga, Bantval J.; and Wessels, Bruce W., 4,569,118, Cl. 29-571.000.
Carnes, Ronald C.; and Miller-Jones, Stockton M., 4,569,231, Cl. 73-626.000.
Giles, Walter B.; and Lipstein, Norman J., 4,569,194, Cl. 60-39.020.
Johnson, Kenneth O., 4,569,195, Cl. 60-39.300.
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Kosmatka, Walter J., 4,570,210, Cl. 362-396.000.
Kramer, Larry J., 4,569,661, Cl. 432-253.000.
Kuhn, Donald H.; Nelson, Conrad E.; Younger, Cousby, Jr.; and Otteni, Gerald A., 4,570,166, Cl. 343-872.000.
Noe, Raymond J., 4,569,867, Cl. 428-35.000.
Sippel, Theodore W.; and Steele, Douglas S., 4,570,071, Cl. 250-374.000.
Tyrell, John A.; and Mark, Victor, 4,569,973, Cl. 525-437.000.
Wehrli, Felix W.; and MacFall, James R., 4,570,119, Cl. 324-306.000.

General Motors Corporation: *See—*
Fetouh, Mohamed A., 4,569,109, Cl. 29-156.50A.
Goforth, William R., 4,569,557, Cl. 297-341.000.

General Research of Electronics, Inc.: *See—*
Imazeki, Kazuyoshi; Tanaka, Toshiyuki; and Hayashibara, Fumio, 4,570,160, Cl. 340-789.000.

Geo. A. Hormel & Co.: *See—*
Tribbett, Kenneth E., 4,569,101, Cl. 17-41.000.

Georgia Tech. Research Institute: *See—*
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Gervasi, Gian B.: *See—*
Bergamaschi, Mario; Gervasi, Gian B.; Vecchietti, Vittorio; and Signorini, Massimo, 4,570,013, Cl. 560-102.000.

GfE Gesellschaft fur Elektrometallurgie mbH: *See—*
Fichte, Rudolf; Breuer, Friedrich; Hahn, Reinhard; and Retelsdorf, Hans-Joachim, 4,569,691, Cl. 75-10.00R.

Giampetruzzi, Jerry F.; and Martin, Owen C. Playhouse. 4,569,664, Cl. 446-110.000.

Giangiulio, Clayton E.: *See—*
D'Ambro, Dominic; and Giangiulio, Clayton E., 4,569,280, Cl. 99-538.000.

Gibbs, Thomas T. Game board with slides and cards. 4,569,529, Cl. 273-274.000.

Gibellino, Gianfranco: *See—*
Forno, Mario; Gibellino, Gianfranco; and Saterini, Mario, 4,569,285, Cl. 101-248.000.

Gibson, Charles A.; and Crandall, John W., to Union Carbide Corporation. Method of preparing polyethylene polyamines having improved color. 4,570,019, Cl. 564-498.000.

Gibson, Rodney W., to U.S. Philips Corporation. FSK Demodulator with concurrent carrier and clock synchronization. 4,570,125, Cl. 329-50.000.

Gielow, Robert L.; and Paul, James C., to Pullman Standard Inc. Air flow guide structure for open top railway car. 4,569,289, Cl. 105-2.00R.

Gil, M. Carmen G.; Parra, Vicente G.; Alonso, Felix S.; and Cebada, Tomas T., to Fabrica de Productos Quimicos y Farmaceuticos Abello, S.A. 2-Substituted-3-sulfonamide-pyridine derivatives. 4,569,999, Cl. 546-275.000.

Gilbert, Daniel R.: *See—*
Allen, Bruce S.; Dunalvey, Michael R.; King, Bruce A.; DuPrie, Harold J.; Hudnall, Richard E.; Lapidus, Stanely N.; Gilbert, Daniel R.; Carlson, Anne M.; Thakrar, Kiran; Doig, Robert C.; Kimerer, Brian S.; Sirois, Andrew F.; Poirer, Bruce A.; Hunt, Philip G.; Dziezanowski, Joseph J.; Bromberg, Michael A.; Brown, Michael; and Friedel, Seymour A., 4,570,217, Cl. 364-188.000.

Giles, Walter B.; and Lipstein, Norman J., to General Electric Company. Integrated coal-fired gas turbine power plant. 4,569,194, Cl. 60-39.020.

Gill, Jagroop S. Reclamation process for sewage scum. 4,569,767, Cl. 210-718.000.

Gillberg-LaForce, Gunilla E.; and DeMartino, Ronald N., to Celanese Corporation. Process for the surface modification of polyester material and the polyester material so modified. 4,569,974, Cl. 525-437.000.

Gillingham, Gary D.: *See—*
Chapman, John R.; and Gillingham, Gary D., 4,569,243, Cl. 74-470.000.

Gilmore, William J., to Acco Babcock Inc. Twisted cable assembly and a method of making the same. 4,569,190, Cl. 57-201.000.

Giorgetti, Paolo; Romani, Franco; and Strino, Enrico, to Perugina S.p.A. Confectionary product and process for producing the same. 4,569,848, Cl. 426-94.000.

Globe Manufacturing Co.: *See—*
LaRue, Robert A., 4,569,212, Cl. 66-196.000.

Gloger, Manfred: *See—*
Maier, Josef; Gloger, Manfred; and Draeger, Brigitte, 4,569,917, Cl. 436-71.000.

Glucksman, Dov Z. Hair curling roller. 4,569,360, Cl. 132-33.00R.

Gobel, Hilmar: *See—*
Raab, Harald; Gobel, Hilmar; and Schierling, Bernhard, 4,569,430, Cl. 192-106.200.

Goettel, Richard J. Self tapping duct fitting and method of use. 4,569,110, Cl. 29-157.00R.

Goetz, Norbert: *See—*
Schirmer, Ulrich; Goetz, Norbert; and Wuerzer, Bruno, 4,569,689, Cl. 71-88.000.

Goforth, William R., to General Motors Corporation. Easy entry seat adjuster. 4,569,557, Cl. 297-341.000.

Gohbara, Masatoshi: *See—*
Nakatani, Kiyoshi; Numata, Satoshi; Inoue, Tsuneo; Kodaka, Kenji; Ishii, Tsutomu; Toyama, Teruhiko; Tachibana, Hajime; Udagawa, Takatoshi; and Gohbara, Masatoshi, 4,570,005, Cl. 549-435.000.

Goldberg, Jacqueline: *See—*
Lauer, Leonard; and Goldberg, Jacqueline, 4,569,597, Cl. 366-228.000.

Golder, Louis, to United States of America, Air Force. Blind-mating, positionally adjustable electrical connection device. 4,569,565, Cl. 339-64.00R.

Goldman, Gerald L.; Gallagher, Joseph W.; and Merlack, William A., to Columbia Chase Corporation. Expansion joint structures. 4,569,615, Cl. 404-65.000.

Goldmann, Louis H., to United States of America, Energy. Dump assembly. 4,569,623, Cl. 414-217.000.

Goldstein, Shyke A.: *See—*
Sohval, A. Robert; Cooperstein, Gerald; Fleischer, David; Goldstein, Shyke A.; and Hearn, David R., 4,570,106, Cl. 315-111.810.

Gonen, Amos: *See—*
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Good, Johann. Vise, particularly a machine vise. 4,569,509, Cl. 269-32.000.

Goodfellow, Anthony G.: *See—*
Sumner, Anthony J. M.; and Goodfellow, Anthony G., 4,569,711, Cl. 156-244.110.

Goodyear Tire & Rubber Company, The: *See—*
Eisenzimmer, George W., 4,569,541, Cl. 285-149.000.
Maxey, Frank S., deceased; and Mowdood, Syed K., 4,569,382, Cl. 152-548.000.
Woelfel, James A., 4,569,957, Cl. 523-466.000.

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Gordon, Robert T. Cancer treatment by intracellular hyperthermia. 4,569,836, Cl. 424-1.100.

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Gortsema, Frank P.; and Lok, Brent M., to Union Carbide Corporation. Modification of aluminophosphate molecular sieves by treatment with a silicon tetrafluoride gas mixture. 4,569,833, Cl. 423-305.000.

Gossel, Michael: *See—*
Rebel, Burghard; and Gossel, Michael, 4,570,236, Cl. 364-900.000.

Goto, Nobutaka; and Ezawa, Nobuyasu, to Chlorine Engineers Corp., Ltd.; and Tanaka Kikinzoku Kogyo K.K. Electrolyzing method and electrolytic cell employing fluidized bed. 4,569,729, Cl. 204-23.000.

Gottschling, John: *See—*
Sweatman, Ronald E.; Freeman, Earl R.; and Gottschling, John, 4,569,394, Cl. 166-280.000.

Gover, Thomas G.: *See—*
Howard, James M.; and Gover, Thomas G., 4,569,546, Cl. 292-336.300.

Gower Corporation: *See—*
Parrott, Robert C.; and Meadors, Smith A., 4,569,451, Cl. 211-191.000.

Gracen, Vernon E.; Sisco, Paul; and Bouthyette, Pierre, to Agrigenetics Research Associates Limited; and Cornell Research Foundation. LBN Cytoplasm. 4,569,152, Cl. 47-58.000.

Graham, Charles H., to C/H Research Associates. Expandable storage system. 4,569,448, Cl. 211-74.000.

Graham Family Trust: *See—*
Graham, Merrill E., Jr., 4,569,389, Cl. 165-104.120.

Graham, Merrill E., Jr., to Graham Family Trust. Laser-hydrogen heating element. 4,569,389, Cl. 165-104.120.

Grandy, Kenneth N.: *See—*
Hartmann, Udo; Stoller, Mark W.; and Grandy, Kenneth N., 4,569,545, Cl. 292-281.000.

Gray, Earl E.; and Timm, Alton T., to Matthews and Thorp. Portable hydraulic scale. 4,569,407, Cl. 177-208.000.

Gray Engineering Group Inc., The: *See—*
Hume, Ross G.; and Leitch, James K., 4,569,805, Cl. 261-122.000.

Gray, Leslie M., III, to Airflow Research and Manufacturing Corp. High strength fan. 4,569,631, Cl. 416-189.000.

Gray, Leslie M., III, to Airflow Research and Manufacturing Corp. Back-skewed fan. 4,569,632, Cl. 416-189.000.

Gray Tool Company: *See—*
Karr, Michael A., Jr., 4,569,503, Cl. 251-14.000.

Greatbatch Enterprises, Inc.: *See—*
Falk, Theodore J.; and Morris, Lawrence E., 4,569,641, Cl. 417-417.000.

Green, Michael C., to E M I-Varian Limited. Thermionic electron emitters. 4,570,099, Cl. 313-346.00R.

Greenwood, Christopher J., to Leyland Vehicles Limited. Driveline for a track-laying vehicle with continuously variable steering and propulsion transmissions. 4,569,251, Cl. 74-691.000.

Grelle, Peter F.; and Urs, Venkataramaraj S., to Olin Corporation. Plastic cartridge case. 4,569,288, Cl. 102-466.000.

Grevisse, Louis, to Societe M.T.E. Articulated bogie. 4,569,291, Cl. 105-193.000.

Gries, Heinz: *See—*
Niedballa, Ulrich; and Gries, Heinz, 4,570,007, Cl. 549-451.000.

Griffin, William R.; and Heller, Lawrence G., to International Business Machines Corporation. Clocked differential cascode voltage switch logic systems. 4,570,084, Cl. 307-452.000.

Griffith, Ronald C., to Pennwalt Corporation. Dibenzo[b,d]pyranyloxyaminopropanols. 4,569,994, Cl. 544-150.000.

Grindel, David R.; and Trudgen, Gary A., to International Business Machines Corporation. Input controller circuit apparatus for phase lock loop voltage controlled oscillator. 4,570,130, Cl. 331-8.000.

Grispino, Edward J.: *See—*
Riddell, George; and Grispino, Edward J., 4,569,312, Cl. 122-504.200.

Gristina, Nicholas. Hot plate fuel vaporizer. 4,569,322, Cl. 123-568.000.

Grogler, Gerhard; Hess, Heinrich; Kopp, Richard; and Rasshofer, Werner, to Bayer Aktiengesellschaft. Process for the production of polyurea-elastomers and corresponding elastomers having an idealized segment structure. 4,569,982, Cl. 528-73.000.

Grollier, Jean-Francois; Allec, Josiane; Fourcadier, Chantal; Rosenbaum, Georges; and Darmenton, Patrick, to L'Oreal. Cosmetic compositions for the treatment of the hair and skin contain in the form of a powder particles resulting from the pulverization of at least one plant substance and a cohesion agent. 4,569,839, Cl. 424-74.000.

Gronert, Steven A.; Love, Dale; and Elliott, Stephen R., to Coachmen Industries, Inc. Van step. 4,569,533, Cl. 280-163.000.

Gropl, Edmund: *See—*
Haidlen, Gotz; and Gropl, Edmund, 4,569,368, Cl. 137-625.280.

Gross, Robert. Machine for making earth blocks. 4,569,649, Cl. 425-344.000.

Grosso, Donald S., to Teleco Oilfield Services Inc. Electrode array for measurement of borehole resistivity. 4,570,123, Cl. 324-369.000.

Groves, James D., to Minnesota Mining and Manufacturing Company. Moisture-resistant hot-tackifying acrylic adhesive tape. 4,569,879, Cl. 428-198.000.

Growdon, John H.; and Wurtman, Richard J., to Massachusetts Institute of Technology. Cytidyl diphosphocholine-drug composition. 4,569,929, Cl. 514-78.000.

Gruebl, Ernst: *See—*
Aufderharr, Erhard; Gruebl, Ernst; and Pfaff, Siegfried, 4,569,760, Cl. 210-372.000.

Grumman Aerospace Corporation: *See—*
Burhans, Walter R., Jr., 4,569,493, Cl. 244-76.00R.

Gruzling, Josip, to Seatronics Technologies Ltd. Barge dagger skegs. 4,569,302, Cl. 114-63.000.

GTE Products Corporation: *See—*
Melanson, Lionel J.; and Bucherati, Frank, 4,570,046, Cl. 219-68.000.

Gudmestad, Ove T.; and Hovland, Martin T., to Den Norske Stats Oljeselskap A.S. Procedure for draining off shallow gas from the seabed and an arrangement for execution of the procedure. 4,569,618, Cl. 405-258.000.

Guiliano, John A. Apparatus for and method of desoldering and removing an integrated circuit from a mounting member and for cleaning the same. 4,569,473, Cl. 228-264.000.

Guillet, James E.; and Heskins, Michael, to Allied Corporation. Poly(N-benzyl acrylamide) polymer containing negative photoresist compositions. 4,569,901, Cl. 430-270.000.

Gulf Research & Development Company: *See—*
Wright, Charles H., 4,569,749, Cl. 208-10.000.

Gulf & Western Manufacturing Company: *See—*
Tomczak, Lawrence W.; and Osladil, Anthony J., 4,570,118, Cl. 324-208.000.

Gulino, Rosario: *See—*
Ferris, David S.; Gulino, Rosario; and Mons, Robert F., 4,569,300, Cl. 114-20.00R.

Gunnarsson, Lars: *See—*
Stroede, Ake; and Gunnarsson, Lars, 4,570,108, Cl. 315-360.000.

Gutierrez, Antonio: *See—*
Brownawell, Darrell W.; Gutierrez, Antonio; Brois, Stanley J.; Jacques, Donald F.; Behelfer, Gary L.; Ferrell, Thomas M.; and Ilnyckyj, Stephan, 4,569,750, Cl. 208-48.0AA.

Gutman, Gustav, to Minnesota Mining and Manufacturing Company. Fog suppressant for photothermographic imaging compositions. 4,569,906, Cl. 430-607.000.

Gutsmann, Rolf D.: *See—*
Demmer, Walter H.; Gutsmann, Rolf D.; Bergs, Norbert A.; Heinemann, Ingolf B.; and Warmuth, Otto L., 4,570,126, Cl. 329-107.000.

Gyogyhoveny Kutato Intezet: *See—*
Molnar, Gyorgy; Tetenyi, Peter; Dobos, Eva; and Bernath, Jeno , 4,569,914, Cl. 435-240.000.

Hacoba Textilmaschinen GmbH & Co KG: *See—*
Kohlen, Karl-Heinz; and Vieten, Rolf, 4,569,543, Cl. 289-2.000.

Hagans, Patrick L., to Dow Chemical Company, The. Method for providing a corrosion resistant coating for magnesium containing materials. 4,569,699, Cl. 148-6.200.

Haginomori, Eiichi: *See—*
Yanabu, Satoru; Nishiwaki, Susumu; and Haginomori, Eiichi, 4,570,042, Cl. 200-148.00R.

Haglund, Lennart; and Johansson, Sigvard, to AB Stil-Industri. Device in locks for vehicle safety belts. 4,569,535, Cl. 280-801.000.

Hahn, Reinhard: *See—*
Fichte, Rudolf; Breuer, Friedrich; Hahn, Reinhard; and Retelsdorf, Hans-Joachim, 4,569,691, Cl. 75-10.00R.

Haidlen, Gotz; and Gropl, Edmund, to Hartmann Foerdertechnik GmbH. Apparatus for providing a link between two suction promoting lines. 4,569,368, Cl. 137-625.280.

Hakanson, John D.; and Niles, Gerald J., to Minnesota Mining & Manufacturing Company. Static reduction in magnetic recording cassettes. 4,570,197, Cl. 360-132.000.

Haldex AB: *See—*
Ahlberg, Krister, 4,570,228, Cl. 364-467.000.

Haldipur, Gaurang B., to KRW Energy Systems Inc. Fluidization and solids recirculation process for a fluidized bed gasifier. 4,569,681, Cl. 48-206.000.

Halenbeck, Robert F.: *See—*
Koths, Kirston E.; Halenbeck, Robert F.; and Fernandes, Peter M., 4,569,910, Cl. 435-105.000.
Koths, Kirston E.; and Halenbeck, Robert F., 4,569,913, Cl. 435-190.000.

Hall, Laurance D.; and Sukumar, Subramaniam, to University of British Columbia, The. N.M.R. Imaging. 4,570,120, Cl. 324-309.000.

Halliburton Company: *See—*
Brisco, David P., 4,569,396, Cl. 166-305.100.
Gadeken, Larry L., 4,570,067, Cl. 250-266.000.

Halpin, Nace E.: *See—*
Lyon, John P.; and Halpin, Nace E., 4,569,723, Cl. 159-48.100.

Hama, Masaharu: *See—*
Fukumoto, Takaaki; Mukogawa, Yasukazu; Hama, Masaharu; and Yanagi, Motonori, 4,569,224, Cl. 73-32.00R.

Hamano, Hisanori: *See—*
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Hamano, Toshihisa; Itoh, Hisao; and Nakamura, Takeshi, to Fuji Xerox Co., Ltd. Photoelectric converting device with position-related conversion efficiency. 4,570,076, Cl. 250-578.000.

Hamashima, Yoshio: *See—*
Narisada, Masayuki; Watanabe, Fumihiko; and Hamashima, Yoshio, 4,569,993, Cl. 544-90.000.

Hamilton, Alfred S.: *See—*
Bohannon, William D., Jr.; Brent, Herbert E.; Hamilton, Alfred S.; and Kinard, Michael D., 4,569,704, Cl. 156-48.000.

Hamilton, Clarence Q., to Gamma-Delta Games, Inc. Vectorial and Mancala-like games, apparatus and methods. 4,569,526, Cl. 273-242.000.

Hanisch, Wolf: *See—*
Koths, Kirston; Thomson, James; Kunitani, Michael; Wilson, Kenneth; and Hanisch, Wolf, 4,569,790, Cl. 260-112.00R.

Hanna, David W.: *See—*
Meier, Johann H.; and Hanna, David W., 4,569,605, Cl. 400-124.000.

Hanna, Marie R.: *See—*
Boden, Richard M.; Hanna, Marie R.; and Tyszkiewicz, Theodore J., 4,570,008, Cl. 549-462.000.

Hannibal, Alan J.; and Parr, Charles H., to Lord Corporation. Flexible coupling. 4,569,667, Cl. 464-51.000.

Hannibal, Billy B.; and Jacoby, Thomas A., to Tecumseh Products Company. Oil distribution system for a compressor. 4,569,639, Cl. 417-368.000.

Hanson, Lawrence G., to Burroughs Corporation. Automatically adaptable radix conversion system for use with variable length input numbers. 4,570,056, Cl. 235-311.000.

Hara, Atsushi; Horiuchi, Takao; Yamada, Kunio; Takahashi, Sadayuki; and Nakamura, Keiji, to NEC Corporation. Electromechanical translation device comprising an electrostrictive driver of a stacked ceramic capacitor type. 4,570,096, Cl. 310-328.000.

Harada, Susumu; and Hasegawa, Sakuro, to Nitto Boseki Co., Ltd. Process for producing a polymer of an inorganic acid salt of monoallylamine. 4,569,979, Cl. 526-218.100.

Haraguchi, Toshio: *See—*
Tanaka, Yoshito; and Haraguchi, Toshio, 4,569,708, Cl. 156-91.000.

Haramoto, Kunihiko, to Shin-Daiwa Kogyo K.K. Quick setting vise. 4,569,510, Cl. 269-181.000.

Hardee, Kim C.: *See—*
Sud, Rahul; and Hardee, Kim C., 4,570,243, Cl. 365-227.000.
Sud, Rahul; and Hardee, Kim C., 4,570,244, Cl. 365-230.000.

Harding, Henry W. Paint roller washing shield. 4,569,099, Cl. 15-248.00A.

Hareng, Michel: *See—*
Le Pesant, Jean P.; Hareng, Michel; Mourey, Bruno; and Perbet, Jean N., 4,569,575, Cl. 350-355.000.

Harigane, Kotaro; and Takahashi, Tomokazu, to TDK Corporation. Apparatus for automatically mounting electronic circuit element on printed circuit board.=4,569,550, Cl. 294-104.000.

Harker, John H.; and Boesen, Thomas E., to International Telephone and Telegraph Corporation. Pump with resiliently mounted impeller. 4,569,638, Cl. 417-365.000.

Harmon, William A.: *See—*
Van Doorn, Donald W.; Hawkins, James B.; Harmon, William A.; McKenzie, Terry L.; and Beeland, William D., 4,569,264, Cl. 83-100.000.

Harper, Daniel R.: *See—*
Edwards, John W.; Harper, Daniel R.; and McNew, Quinton B., 4,569,561, Cl. 305-40.000.

Harper, Joseph F. B., to Eaton Corporation. Change gear planetary transmission. 4,569,252, Cl. 74-785.000.

Harris, Hubert; and Smith, Durward A., to Auburn Research Foundation. Method for thermally blasting outer coverings from food products. 4,569,850, Cl. 426-482.000.

Harsco Corporation: *See—*
Hulswitt, Charles E.; and Beam, Donald D., 4,569,391, Cl. 165-166.000.

Hart, Lawrence D.; and Hart, Melville D., Jr. Self-powered lift. 4,569,094, Cl. 5-81.00R.

Hart, Melville D., Jr.: *See—*
Hart, Lawrence D.; and Hart, Melville D., Jr., 4,569,094, Cl. 5-81.00R.

Hartmann, Achim; and Schonherr, Dietrich W., to Kronos Titan-GmbH. Device for the cooling of hot gaseous solids suspensions. 4,569,387, Cl. 165-47.000.

Hartmann Foerdertechnik GmbH: *See—*
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Hartmann, Udo; Stoller, Mark W.; and Grandy, Kenneth N., to Master Lock Company. Laminated hasp. 4,569,545, Cl. 292-281.000.

Hartung, Sigurd: *See—*
Petruck, Gerd-Michael; Wambach, Raimund; Wissner, Adolf; and Hartung, Sigurd, 4,570,023, Cl. 570-210.000.

Haruta, Masahiro: *See—*
Matsuda, Hiroshi; Haruta, Masahiro; Eguchi, Ken; Nishimura, Yukuo; Hirai, Yutaka; and Nakagiri, Takashi, 4,569,855, Cl. 427-35.000.

Haruta, Ryo: *See—*
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Harvey Hubbell Incorporated: *See—*
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Harvey, Nathan A.: *See—*
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Hascoet, Martial E.: *See—*
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Hase, Christian: *See—*
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Hasegawa, Sakuro: *See—*
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Hasegawa, Yuzo: *See—*
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Hashimoto, Masao: *See—*
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Hashiue, Masakazu; and Ochiai, Koji, to Fuji Photo Film Co., Ltd. Optical recording medium. 4,569,903, Cl. 430-350.000.

Hasslinger, Russell, to Velcro USA Inc. Catheter tube holder strap. 4,569,348, Cl. 604-179.000.

Hastings, Jerome K.: *See—*
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Bridges, Robert B.; Brubaker, John R.; Hastings, Jerome K.; and Kroll, John W., 4,570,144, Cl. 337-88.000.

Hatakeyama, Yoshiharu; and Kozuka, Shinichi, to Yoshida Industry Co., Ltd. Bottle closure. 4,569,457, Cl. 215-364.000.

Hatanaka, Masato: *See—*
Sato, Hiroki; Hatanaka, Masato; Ohhoshi, Toshio; and Tanaka, Sakae, 4,570,100, Cl. 313-422.000.

Hatco Chemical Corporation: *See—*
Wan, K. Ming; Chen, Mary S.; and Chen, Clay T., 4,570,015, Cl. 560-163.000.

Havassy, Alan C., to AT&T Technologies, Inc. Method and apparatus for automatically handling and identifying semiconductor wafers. 4,570,058, Cl. 235-479.000.

Hawkins, James B.: *See—*
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Hayakawa, Toshiro; Miyauchi, Nobuyuki; Yano, Seiki; and Suyama, Takahiro, to Sharp Kabushiki Kaisha. Method for the production of semiconductor lasers. 4,569,721, Cl. 156-649.000.

Hayashi, Yoshimasa, to Nissan Motor Co., Ltd. Cylinder block of engine. 4,569,317, Cl. 123-195.00R.

Hayashibara, Fumio: *See—*
Imazeki, Kazuyoshi; Tanaka, Toshiyuki; and Hayashibara, Fumio, 4,570,160, Cl. 340-789.000.

Hearn, David R.: *See—*
Sohval, A. Robert; Cooperstein, Gerald; Fleischer, David; Goldstein, Shyke A.; and Hearn, David R., 4,570,106, Cl. 315-111.810.

Heaton, Harry H., III: *See—*
Petrofsky, Jerrold S.; Phillips, Chandler A.; and Heaton, Harry H., III, 4,569,352, Cl. 128-423.00W.

Hecht, Joachim; Loedige, Wilfried; Rohde, Friedrich; Rudat, Gerhard; Wiggershaus, Fred; and Winter, Klaus-Juergen, to Mannesmann AG. Carriage. 4,569,290, Cl. 105-154.000.

Hedgepeth, John M.; and Adams, Louis R., to Astro Research Corporation. Rigid diagonal deployable lattice column. 4,569,176, Cl. 52-645.000.

Hedman, Jan E.: *See—*
Ingemansson, Bengt-Erik; Bjork, Bertil E.; Hedman, Jan E.; Knutsson, Knut G.; and Larsson, Nils H. I., 4,569,471, Cl. 228-176.000.

Hefner, Werner: *See—*
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Heim, Barry B., to Motorola, Inc. Integrated voltage regulator. 4,570,114, Cl. 323-313.000.

Heinemann, Ingolf B.: *See—*
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Heins, Royal D.: *See—*
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Helios Research Corp.: *See—*
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Heller, Lawrence G.: *See—*
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Hemodynamics Technology, Inc.: *See—*
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Hendrickson, Carol E.: *See—*
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Hendrickson, Richard T.; and Myers, Lawrence R., to Allied Corporation. Brake actuation assembly and method of assembly. 4,569,201, Cl. 60-547.100.

Hendrickson, William A.: *See—*
Willett, Stephen J.; Chou, Hsin H.; Hendrickson, Carol E.; and Hendrickson, William A., 4,569,895, Cl. 430-70.000.

Hengesbach, Robert W. Sand blasting apparatus with liquid aspiration control. 4,569,160, Cl. 51-427.000.

Henkel Kommanditgesellschaft auf Aktien: *See—*
Disch, Karlheinz; Kiewert, Eva; Weichbrodt, Maria; and Hase, Christian, 4,569,782, Cl. 252-106.000.
Oezelli, Riza N.; and Lippert, Hartmut, 4,569,961, Cl. 524-186.000.

Henry, Daryl E.: *See—*
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Henry, Kenneth E., to Henry, Kenneth M.; Henry, Daryl E.; and Henry, Kevin S. Pliers-type hand tool. 4,569,260, Cl. 81-378.000.

Henry, Kenneth M.: *See—*
Henry, Kenneth E., 4,569,260, Cl. 81-378.000.

Henry, Kevin S.: *See—*
Henry, Kenneth E., 4,569,260, Cl. 81-378.000.

Henry, Raymond; Carballes, Jean C.; and Mesquida, Guy, to Thomson-CSF. Light emitting diode with surface emission. 4,570,172, Cl. 357-17.000.

Heraeus Quarzschmelze GmbH: *See—*
Schulke, Karl-Albert, 4,569,452, Cl. 206-454.000.

Herkenhoff, Earl F.; Frasier, Clint W.; and Ostrander, William J., to Chevron Research Company. Method for the interpretation of statistically-related seismic records to yield valuable characteristics, such as gas-bearing potential and lithology of strata. 4,570,246, Cl. 367-68.000.

Hermann C. Starck Berlin: *See—*
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Hermann, Thomas J., to Fleetwood Enterprises, Inc. Seat structure. 4,569,093, Cl. 5-47.000.

Hermann Wangner GmbH & Co. KG: *See—*
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Hernandez, Jesus: *See—*
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Herzog, Rolf: *See—*
Sasse, H. Rainer; Conrad, Karl-Hermann; Herzog, Rolf; Klein, Hans; and Meier, Bert, 4,569,971, Cl. 525-109.000.

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Hess, Charles H. Collar unthreader. 4,569,257, Cl. 81-53.200.

Hess, Heinrich: *See—*
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Hetherwick, James L.: *See—*
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Hexcel Corporation: *See—*
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Heyn, Klaus: *See—*
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Higashi, Haruki; Waki, Kouichirou; Fukuiri, Masaru; and Yukitomo, Kazuo, to Mazda Motor Corporation. Kickdown control for a motor vehicle automatic transmission with two stage kickdown. 4,569,253, Cl. 74-866.000.
Higgins, Ivan P., to BICC plc. Tube cutting device. 4,569,129, Cl. 30-90.400.
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Hill, Roy A., to Cooper Industries, Inc. Cutting tool with quick-adjusting pivot assembly and adjusting method. 4,569,132, Cl. 30-251.000.
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Hirano, Mikio: *See—*
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Hirano, Shigeo: *See—*
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Hirano, Yasutaka, to Mitsubishi Denki Kabushiki Kaisha. Traction machine for an elevator. 4,569,423, Cl. 187-20.000.
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Hirose, Yuichi: *See—*
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Hiruma, Yutaka; and Okita, Akira, to Tokyo Road Engineering Co., Ltd. Cleaning apparatus and method utilizing pressurized water. 4,569,482, Cl. 239-296.000.
Hisaki, Hiroshi; Nakano, Yasuhiro; Takahashi, Naohiko; and Inoue, Yuichi, to Nippon Zeon Co., Ltd. Adhesive composition for bonding fibers to rubber. 4,569,963, Cl. 524-458.000.
Hitachi Cable, Ltd.: *See—*
Nagatsuma, Kazuyuki; Matsumura, Hiroyoshi; Katsuyama, Toshio; and Suganuma, Tsuneo, 4,570,064, Cl. 250-231.00R.
Hitachi Heating Appliances Co., Ltd.: *See—*
Takahashi, Hisae; Yoshinaga, Tatsuro; and Mitomo, Akio, 4,570,207, Cl. 362-152.000.
Hitachi Kidenkogyo Kabushiki Kaisha: *See—*
Tsumura, Toshihiro; Kamei, Shigeki; Waratani, Hiroji; and Takahashi, Akira, 4,570,060, Cl. 250-203.00R.
Tsumura, Toshihiro; Kamei, Shigeki; and Takahashi, Akira, 4,570,062, Cl. 250-225.000.
Hitachi, Ltd.: *See—*
Horiuchi, Susumu; Hirano, Mikio; and Saito, Toru, 4,569,787, Cl. 252-632.000.
Kimura, Chikara; and Yada, Keiji, 4,570,072, Cl. 250-396.0ML.
Kobayashi, Masaharu; Arai, Takao; and Noda, Tsutomu, 4,570,153, Cl. 340-347.0AD.
Miyao, Masanobu; Ohkura, Makoto; Takemoto, Iwao; Warabisako, Terunori; Mukai, Kiichiro; Haruta, Ryo; Nishioka, Yasushiro; Kimura, Shinichiro; and Tokuyama, Takashi, 4,570,175, Cl. 357-23.700.
Nagatsuma, Kazuyuki; Matsumura, Hiroyoshi; Katsuyama, Toshio; and Suganuma, Tsuneo, 4,570,064, Cl. 250-231.00R.
Nishida, Isao; Sasaki, Koji; Nakano, Seizo; Takeuchi, Shigetaka; and Takahashi, Takeshi, 4,570,202, Cl. 361-333.000.
Osada, Hisajiro; and Hiratsuka, Yutaka, 4,569,592, Cl. 356-318.000.
Sakairi, Minoru; and Kambara, Hideki, 4,570,068, Cl. 250-288.000.
Shibukawa, Masaru; Nakamura, Hideo; and Matsubara, Kiyoshi, 4,570,219, Cl. 364-200.000.
Teruaki, Ueno, 4,570,140, Cl. 335-212.000.
Hobson, John A. Thrust line wheel alignment apparatus and method. 4,569,140, Cl. 33-203.180.
Hoechst Aktiengesellschaft: *See—*
Engel, Dieter; Rinno, Helmut; and Zimmerschied, Klaus, 4,569,965, Cl. 524-544.000.
Hoechst-Roussel Pharmaceuticals Inc.: *See—*
Kosley, Raymond W., Jr.; and Cherill, Robert J., 4,569,998, Cl. 546-225.000.
Hoefelmeyer, Henry L.: *See—*
Rawlings, Richard M.; and Hoefelmeyer, Henry L., 4,569,203, Cl. 62-6.000.
Hoerbiger Ventilwerke Aktiengesellschaft: *See—*
Bauer, Friedrich; and Rein, Karl, 4,569,636, Cl. 417-295.000.
Hoffbeck, Larry W. Christmas tree stand. 4,569,151, Cl. 47-40.500.
Hoffman, Frederick M. Stiff leg attachment for wrecker. 4,569,422, Cl. 188-7.000.
Hoganas AB: *See—*
Olsen, Erik T.; and Blom, Ingvar G. A., 4,569,659, Cl. 432-119.000.
Hojo, Akimichi: *See—*
Terada, Toshiyuki; Toyoda, Nobuyuki; Hojo, Akimichi; and Kamei, Kiyoho, 4,569,119, Cl. 29-571.000.
Hok, Bertil: *See—*
Brogardh, Torgny; Hok, Bertil; and Ovren, Christer, 4,569,570, Cl. 350-96.340.
Holland Hitch Company: *See—*
Wilson, James A.; and Ellis, James R., 4,569,309, Cl. 119-99.000.
Hollaway, Leonard C.: *See—*
Baker, Stephen; Hollaway, Leonard C.; and Terrell, Christopher E., 4,569,165, Cl. 52-81.000.
Holliday, Richard L.: *See—*
Spiker, Quentin B.; Holliday, Richard L.; and Bottenberg, Warren D., 4,569,187, Cl. 56-202.000.
Holling, Gerd, to Christian Miesen Fahrzeug-und Karosseriewerk GmbH. Safety belt system for a patient stretcher. 4,569,095, Cl. 5-82.00R.
Hollmann, Bernd: *See—*
Freye, Theodor; and Hollmann, Bernd, 4,569,439, Cl. 206-83.500.
Holly, James D.: *See—*
Rubin, Sol R.; Marcus, John S.; and Holly, James D., 4,569,259, Cl. 81-121.100.
Holmes, Russell C., to Eaton Corporation. Automatic transmission controls with off-highway mode. 4,569,255, Cl. 74-866.000.
Holster, Peter L., to U.S. Philips Corporation. Method and device for manufacturing an information carrier of a synthetic material having a laminated structure. 4,569,806, Cl. 264-1.300.
Holt, Timothy L., to Bird Electronic Corporation. Modular field strength instrument. 4,570,117, Cl. 324-72.000.
Holtje, Bruce E., to Savin Corporation. Copy sheet decelerator for electrophotographic copier. 4,569,514, Cl. 271-314.000.
Honda Giken Kogyo Kabushiki Kaisha: *See—*
Fujimura, Akira; and Tomobe, Norio, 4,569,318, Cl. 123-327.000.
Yashima, Michio; Iwai, Shigeru; and Hirose, Masashi, 4,570,078, Cl. 307-10.00R.
Honda, Noriyuki, to Meinan Machinery Works, Inc. Plywood manufacturing method and apparatus. 4,569,715, Cl. 156-495.000.
Honeywell Inc.: *See—*
Castleman, Bruce W., 4,570,073, Cl. 250-432.00R.
Schuetz, James A., 4,569,742, Cl. 204-192.00F.
Honma, Hiroshi: *See—*
Adachi, Yukio; Honma, Hiroshi; and Ohkouchi, Satoshi, 4,569,604, Cl. 400-124.000.
Hood, Michael, to University of California, The Regents of the. Drag bit construction. 4,569,558, Cl. 299-81.000.
Hoogovens Groep B.V.: *See—*
de Graaf, Jan A., 4,569,508, Cl. 266-275.000.
Hopfe, Helmut W.; and Roberson, Hershel, to Smith Meter, Inc. Flow prover with seal monitor. 4,569,220, Cl. 73-3.000.
Hoppe, Axel: *See—*
Albrecht, Wolf-Wigand; Hoppe, Axel; Papp, Uwe; and Wolf, Rudiger, 4,569,693, Cl. 75-252.000.
Hori, Takeshi, to Sony Corporation. Video recording and/or reproducing apparatus with edit control circuit. 4,570,192, Cl. 360-14.200.
Horii, Kenichi: *See—*
Miki, Toshio; Toda, Yoshihide; and Horii, Kenichi, 4,569,603, Cl. 384-585.000.
Horii, Taichi; and Ohbuchi, Yasutsugu, to Kabushiki Kaisha Maki Seisakusho. Conveyor system for sorting small articles. 4,569,434, Cl. 198-365.000.
Horiuchi, Susumu; Hirano, Mikio; and Saito, Toru, to Hitachi, Ltd. Process and apparatus for treating radioactive waste. 4,569,787, Cl. 252-632.000.
Horiuchi, Takao: *See—*
Hara, Atsushi; Horiuchi, Takao; Yamada, Kunio; Takahashi, Sadayuki; and Nakamura, Keiji, 4,570,096, Cl. 310-328.000.

Horsley, Larry L. Mounting for electrical outlet box. 4,569,458, Cl. 220-3.600.
Hoshi, Kouroku; and Noro, Shoji, to Asahi Kasei Kogyo Kabushiki Kaisha. Foam and process for producing same. 4,569,950, Cl. 521-88.000.
Hosler, Peter: *See—*
McGinley, Thomas J.; and Hosler, Peter, 4,569,755, Cl. 208-326.000.
Hotchkiss-Brandt Sogeme H.B.S.: *See—*
Bergerioux, Jean-Marcel; and Allio, Roland, 4,569,512, Cl. 271-103.000.
Hotta, Yoshio: *See—*
Masaki, Yuichi; and Hotta, Yoshio, 4,569,574, Cl. 350-334.000.
House of Lloyd, Inc.: *See—*
McGovney, William E., 4,569,435, Cl. 198-502.100.
House, Roy F., to Venture Innovations, Inc. Process for making organophilic humate derivatives. 4,569,799, Cl. 260-501.150.
Houston, Douglas E.: *See—*
Anthony, Thomas R.; Houston, Douglas E.; and Loughran, James A., 4,570,173, Cl. 357-20.000.
Hovland, Martin T.: *See—*
Gudmestad, Ove T.; and Hovland, Martin T., 4,569,618, Cl. 405-258.000.
Howa Kogyo Kabushiki Kaisha: *See—*
Yamada, Yoshiharu; Nishikawa, Hirotaka; and Yokoyama, Hachirou, 4,569,192, Cl. 57-317.000.
Howard, James M.; and Gover, Thomas G., to Maddak, Inc. Pedal operated door opener. 4,569,546, Cl. 292-336.300.
Hoyes, Brian G., to Qume Corporation. Printer apparatus. 4,569,606, Cl. 400-144.200.
Hsia, Chung H.: *See—*
Wright, Bernard S.; Owen, Hartley; and Hsia, Chung H., 4,569,827, Cl. 422-190.000.
Hu, Anny. Rapid advancing and retracting mechanism for clamping device. 4,569,242, Cl. 74-424.80A.
Huang, Ho-Chung; and Matarese, Ralph J., to United States of America, Army. Vertical MESFET with air spaced gate electrode. 4,570,174, Cl. 357-22.000.
Huang, I-Der: *See—*
Yang, Tai-Cheng; Rao, Krishna K.; and Huang, I-Der, 4,569,925, Cl. 502-209.000.
Huber, William J.; and Barry, William E. High voltage fuse. 4,570,146, Cl. 337-158.000.
Huberts, John T.: *See—*
Chidzey, John A.; and Huberts, John T., 4,570,054, Cl. 219-490.000.
Hubner, Hans J. Method of and apparatus for multiple detector measurement of an environmental parameter. 4,569,223, Cl. 73-23.000.
Hubsch, Henry: *See—*
Kramer, Rolf; Ahlborn, Gunter; Schneider, Felix; Neuser, Ernst; Hubsch, Henry; Kampmann, Gerhard; and Wagener, Paul-Werner, 4,569,293, Cl. 105-377.000.
Hudnall, Richard E.: *See—*
Allen, Bruce S.; Dunalvey, Michael R.; King, Bruce A.; DuPrie, Harold J.; Hudnall, Richard E.; Lapidus, Stanely N.; Gilbert, Daniel R.; Carlson, Anne M.; Thakrar, Kiran; Doig, Robert C.; Kimerer, Brian S.; Sirois, Andrew F.; Poirer, Bruce A.; Hunt, Philip G.; Dziezanowski, Joseph J.; Bromberg, Michael A.; Brown, Michael; and Friedel, Seymour A., 4,570,217, Cl. 364-188.000.
Huff, Curtis: *See—*
Breen, David T.; Burghdurf, Howard F., Jr.; and Huff, Curtis, 4,570,229, Cl. 364-476.000.
Hug, Paul, to Storage Technology Partners. Coupling arm for transmitting linear motion. 4,569,248, Cl. 74-581.000.
Hughes Aircraft Company: *See—*
Rensch, David B.; and Chen, John Y., 4,569,124, Cl. 29-591.000.
Hughes Tool Company: *See—*
Carpenter, Robert B., 4,569,395, Cl. 166-293.000.
Sweatman, Ronald E.; Freeman, Earl R.; and Gottschling, John, 4,569,394, Cl. 166-280.000.
Hulls, Leonard R., to Numonics Corporation. Polyphase digitizer. 4,570,033, Cl. 178-19.000.
Hulswitt, Charles E.; and Beam, Donald D., to Harsco Corporation. Compact heat exchanger. 4,569,391, Cl. 165-166.000.
Hultquist, David, to Balboa Construction Co., Inc. Method for constructing buildings and building structures. 4,569,173, Cl. 52-293.000.
Hume, Ross G.; and Leitch, James K., to Gray Engineering Group Inc., The. Apparatus for the submerged introduction of a fluid into a body of liquid. 4,569,805, Cl. 261-122.000.
Hung, William M., to Hilton-Davis Chemical Co., The. Electrochromic marking systems. 4,570,171, Cl. 346-218.000.
Hunt, Philip G.: *See—*
Allen, Bruce S.; Dunalvey, Michael R.; King, Bruce A.; DuPrie, Harold J.; Hudnall, Richard E.; Lapidus, Stanely N.; Gilbert, Daniel R.; Carlson, Anne M.; Thakrar, Kiran; Doig, Robert C.; Kimerer, Brian S.; Sirois, Andrew F.; Poirer, Bruce A.; Hunt, Philip G.; Dziezanowski, Joseph J.; Bromberg, Michael A.; Brown, Michael; and Friedel, Seymour A., 4,570,217, Cl. 364-188.000.
Hurley, James R.: *See—*
Shukla, Kailash C.; and Hurley, James R., 4,569,328, Cl. 126-39.00J.
Husqvarna Aktiebolag: *See—*
Lindh, Per A. L.; and Skogward, Kenneth O. E., 4,569,298, Cl. 112-278.000.
Hutchinson, Martin A., to Varian Associates, Inc. Magnetron sputter device using the same pole piece for coupling separate confining magnetic fields to separate targets subject to separate discharges. 4,569,746, Cl. 204-298.000.
Hydril Company: *See—*
Peterman, Charles P., 4,569,392, Cl. 166-242.000.
Hydroacoustics Inc.: *See—*
Bouyoucos, John V.; and Selsam, Roger L., 4,569,412, Cl. 181-119.000.
Hyltoft, Hans C., to Mercante International A/S. Processing stations for an electrophotographic information printer. 4,569,582, Cl. 355-3.00R.
Hyperion Corporation: *See—*
Melton, Jack D.; McKinney, Collin J.; and Reimund, James A., 4,570,152, Cl. 340-58.000.
Ibbott, Jack K. Electrostatic air cleaner. 4,569,684, Cl. 55-138.000.
Ichikawa, Souji, to Mitutoyo Mfg. Co., Ltd. Linear scale type displacement measuring device and main scale attaching method thereof. 4,569,137, Cl. 33-125.00R.
Ichiyanagi, Toshikazu, to Canon Kabushiki Kaisha. Still video cameras. 4,570,188, Cl. 358-335.000.
Ido, Tadashi: *See—*
Kubo, Osamu; Ido, Tadashi; Nomura, Tutomu; and Inomata, Koichiro, 4,569,775, Cl. 252-62.590.
Igawa, Tatsuya: *See—*
Sato, Morio; and Igawa, Tatsuya, 4,569,283, Cl. 101-114.000.
Iijima, Masao: *See—*
Umemoto, Yoshiyuki; Iijima, Masao; Miyagi, Masahide; and Muramatsu, Yoshihisa, 4,570,030, Cl. 136-244.000.
Iijima, Nobuo, to Fujitsu Limited. Automatic lens focus with respect to the surface of a workpiece. 4,570,059, Cl. 250-201.000.
Ikegai Tekko Kabushiki Kaisha: *See—*
Unno, Keizo; Yamamoto, Tamotsu; and Shimizu, Hitoshi, 4,569,115, Cl. 29-558.000.
Ikemoto, Kazuhito: *See—*
Katayama, Nobuaki; Ikemoto, Kazuhito; and Ohta, Yoshio, 4,569,246, Cl. 74-473.00R.
Ikura, Hiroshi: *See—*
Suzuki, Yoshiki; Ikura, Hiroshi; Noguchi, Toshihide; Izumizawa, Katsunori; and Kinoshita, Shiro, deceased, 4,569,837, Cl. 424-28.000.
Ikuzawa, Masanori: *See—*
Yoshikumi, Chikao; Ohmura, Yoshio; Hirose, Fumio; Ikuzawa, Masanori; Matsunaga, Kenichi; Fujii, Takayoshi; Ohhara, Minoru; and Ando, Takao, 4,569,842, Cl. 514-25.000.
Ilardi, Joseph M.: *See—*
Schmitkons, Thomas A.; Samuels, George J.; and Ilardi, Joseph M., 4,569,720, Cl. 156-646.000.
Ilnyckyj, Stephan: *See—*
Brownawell, Darrell W.; Gutierrez, Antonio; Brois, Stanley J.; Jacques, Donald F.; Behelfer, Gary L.; Ferrell, Thomas M.; and Ilnyckyj, Stephan, 4,569,750, Cl. 208-48.0AA.
Imai, Kazuhiro: *See—*
Tsurumaru, Shinobu; Ishigaki, Yoshio; Ouchi, Koji; Yoshikawa, Takashi; Fukuzawa, Keiji; Imai, Kazuhiro; Taguchi, Yorimichi; and Tsuchiya, Masayoshi, 4,570,165, Cl. 343-726.000.
Imazeki, Kazuyoshi; Tanaka, Toshiyuki; and Hayashibara, Fumio, to General Research of Electronics, Inc. Signal encoding and decoding system for driving a remote display. 4,570,160, Cl. 340-789.000.
Imokawa, Genji: *See—*
Yoshizuka, Naonobu; Takeuchi, Eijiro; and Imokawa, Genji, 4,569,931, Cl. 514-182.000.
Imperial Chemical Industries, PLC: *See—*
Jones, Derrick F.; and Oldham, Keith, 4,570,000, Cl. 514-237.000.
Inagaki, Yoshio; and Endo, Katsusuke, to Fuji Photo Film Co., Ltd. Photographic element for silver salt diffusion transfer process. 4,569,899, Cl. 430-232.000.
Inagaki, Yoshio: *See—*
Okutsu, Eiich; Watase, Kazumi; Inagaki, Yoshio; and Hirano, Shigeo, 4,569,904, Cl. 430-434.000.
Ineichen, Kurt; and Ledergerber, Remy, to Weber AG, Fabrik Elektrotechnischer Artikel und Apparate. Pushbutton-actuated excess-current switch. 4,570,142, Cl. 337-66.000.
Infusaid Corporation: *See—*
Prosl, Frank R.; and Szymanski, Joseph J., 4,569,675, Cl. 604-175.000.
Ingemansson, Bengt-Erik; Bjork, Bertil E.; Hedman, Jan E.; Knutsson, Knut G.; and Larsson, Nils H. I., to AB Volvo. Container through which a gas flows, preferably a muffler, with fiberglass filling and method and apparatus for filling the same. 4,569,471, Cl. 228-176.000.
Inghirami, Fabio. Packaging of shirt-type garment. 4,569,441, Cl. 206-292.000.
Inmont Corporation: *See—*
Cowles, Richard A., 4,569,887, Cl. 428-423.100.
Inmos Corporation: *See—*
Sud, Rahul; and Hardee, Kim C., 4,570,243, Cl. 365-227.000.
Sud, Rahul; and Hardee, Kim C., 4,570,244, Cl. 365-230.000.
Inomata, Koichiro: *See—*
Kubo, Osamu; Ido, Tadashi; Nomura, Tutomu; and Inomata, Koichiro, 4,569,775, Cl. 252-62.590.
Inoue, Kazuo, to Nippon Mektron Ltd. High capacitance laminated buss and method of manufacture. 4,570,031, Cl. 174-72.00B.
Inoue, Shinichi: *See—*
Pringle, Frank E.; and Inoue, Shinichi, 4,569,406, Cl. 177-25.000.
Inoue, Shosaku: *See—*
Ishida, Matsuhiko; and Inoue, Shosaku, 4,569,433, Cl. 198-333.000.

Inoue, Tsuneo: *See*—
Nakatani, Kiyoshi; Numata, Satoshi; Inoue, Tsuneo; Kodaka, Kenji; Ishii, Tsutomu; Toyama, Teruhiko; Tachibana, Hajime; Udagawa, Takatoshi; and Gohbara, Masatoshi, 4,570,005, Cl. 549-435.000.

Inoue, Yuichi: *See*—
Hisaki, Hiroshi; Nakano, Yasuhiro; Takahashi, Naohiko; and Inoue, Yuichi, 4,569,963, Cl. 524-458.000.

Inria Institut National de Recherche en Informatique et Automatique: *See*—
Kryze, Georges, 4,570,183, Cl. 358-184.000.

Insalaco, Robert W.: *See*—
Phillips, Earl G.; Insalaco, Robert W.; and Booth, William M., III, 4,569,674, Cl. 604-119.000.

Institut Cerac S.A.: *See*—
Ljung, Erik A., 4,570,213, Cl. 363-138.000.

Institut de la Filtration et des Techniques Separatives Foulayronnes: *See*—
Ben Aim, Roger; Bourdiol, Daniel; Fiessinger, Francois; and Rovel, Jean-Marie, 4,569,759, Cl. 210-304.000.

Institute of Gas Technology: *See*—
Sandstrom, William A.; Patel, Jitendra G.; and Bush, John R., 4,569,696, Cl. 134-2.000.

Institutul National de Motoare Termice: *See*—
Milu, Petre, 4,569,314, Cl. 123-58.00R.

Intel Corporation: *See*—
Tetrick, Raymond S.; Beaston, John; Farrell, Robert L.; Sarabi, Alireza; Balachandran, Sudarshan; Jacks, Edwin L., Jr.; and Kassel, Steven D., 4,570,220, Cl. 364-200.000.

Intercontinentale Ziegra-Eismaschinen GmbH: *See*—
Strauss, Friedhelm, 4,569,209, Cl. 62-320.000.

International Business Machines Corporation: *See*—
Arzubi, Luis M., 4,570,241, Cl. 365-205.000.
Baier, Heinz; Kopp, Peter; Schneiderhan, Martin; Reimann, Hans-Peter; Rosch, Hans; and Pfeffer, Erwin, 4,570,180, Cl. 358-106.000.
Bayer, Thomas; Kraus, Georg; Kuenzel, Ulrich; Renz, Gisela; and Schaefer, Rolf, 4,569,743, Cl. 204-192.00R.
Bloom, Robert D.; Gac, John V.; and Kozol, Eugene T., deceased, 4,570,110, Cl. 318-313.000.
Bode, James W.; and Montegari, Frank A., 4,570,086, Cl. 307-458.000.
Buscaglia, Carl U.; and Knepper, Lawrence E., 4,570,090, Cl. 307-530.000.
Cooper, Larry T.; and Primmer, Kenneth R., 4,570,061, Cl. 250-222.100.
Criscimagna, Tony N.; and Martin, William J., 4,570,159, Cl. 340-776.000.
Di Stefano, Thomas H.; and Bakoglu, Halil B., 4,570,191, Cl. 360-77.000.
Drejza, John E.; and Galatha, Matthew J., 4,569,610, Cl. 400-599.000.
Griffin, William R.; and Heller, Lawrence G., 4,570,084, Cl. 307-452.000.
Grindel, David R.; and Trudgen, Gary A., 4,570,130, Cl. 331-8.000.
Kummer, David A.; Saenz, Jesus A.; and Trynosky, Stephen W., 4,570,161, Cl. 340-799.000.
Maley, Gerald A.; and Westcott, Douglas W., 4,570,082, Cl. 307-443.000.
Meier, Johann H.; and Hanna, David W., 4,569,605, Cl. 400-124.000.
Neer, Jay H., 4,569,468, Cl. 226-74.000.

International Flavors & Fragrances Inc.: *See*—
Boden, Richard M.; Hanna, Marie R.; and Tyszkiewicz, Theodore J., 4,570,008, Cl. 549-462.000.
Wiegers, Wilhelmus J.; and Sprecker, Mark A., 4,569,771, Cl. 252-8.600.

International Paper Company: *See*—
Cassidy, Benjamin J., 4,569,475, Cl. 229-44.0CB.

International Standard Electric Corporation: *See*—
Auch, Wilfried; and Schlemper, Eberhard, 4,569,593, Cl. 356-350.000.

International Telephone and Telegraph Corporation: *See*—
Harker, John H.; and Boesen, Thomas E., 4,569,638, Cl. 417-365.000.
West, Michael D.; and Channell, Andrew W., 4,569,366, Cl. 137-556.300.

Interox America: *See*—
Walton, John R.; and Rutz, Jeffrey A., 4,569,769, Cl. 210-759.000.

Inui, Masaki; and Yasui, Yasuyoshi, to Toyota Jidosha Kabushiki Kaisha. Detent mechanism in manual transmission. 4,569,247, Cl. 74-475.000.

Inuiya, Masafumi: *See*—
Arai, Noboru; Ohta, Takahiro; and Inuiya, Masafumi, 4,570,185, Cl. 358-227.000.

Ippolito, Rodolfo M., to Dresser Industries, Inc. Wound wire bearing. 4,569,601, Cl. 384-95.000.

Ishibashi, Takao: *See*—
Yamakawa, Michihiro; Akatsuka, Takao; Kawaguchi, Masao; Nakano, Jiro; and Ishibashi, Takao, 4,569,748, Cl. 204-429.000.

Ishida, Matsuhiko; and Inoue, Shosaku, to Mitsubishi Denki Kabushiki Kaisha. Escalator system with a drop-down step. 4,569,433, Cl. 198-333.000.

Ishigaki, Yoshio: *See*—
Tsurumaru, Shinobu; Ishigaki, Yoshio; Ouchi, Koji; Yoshikawa, Takashi; Fukuzawa, Keiji; Imai, Kazuhiro; Taguchi, Yorimichi; and Tsuchiya, Masayoshi, 4,570,165, Cl. 343-726.000.

Ishiguro, Osamu, to Alps Electric Co., Ltd. Direction indicator. 4,570,041, Cl. 200-61.540.

Ishii, Tetsuo; and Mitani, Tatsuro, to Kabushiki Kaisha Toshiba. Method of manufacturing a semiconductor device utilizing simultaneous diffusion from an ion implanted polysilicon layer. 4,569,123, Cl. 29-578.000.

Ishii, Tetsuo, to Mitsubishi Denki Kabushiki Kaisha. Data transmission on equipment including a plurality of data stations connected by a common transmission line. 4,570,259, Cl. 370-86.000.

Ishii, Tsutomu: *See*—
Nakatani, Kiyoshi; Numata, Satoshi; Inoue, Tsuneo; Kodaka, Kenji; Ishii, Tsutomu; Toyama, Teruhiko; Tachibana, Hajime; Udagawa, Takatoshi; and Gohbara, Masatoshi, 4,570,005, Cl. 549-435.000.

Ishijima, Koji: *See*—
Asami, Kazutomo; Wada, Fumio; Ishijima, Koji; and Sato, Yutaka, 4,569,645, Cl. 418-63.000.

Ishimaru, Takenori: *See*—
Okazaki, Hisayoshi; Ohta, Kazuhiko; and Ishimaru, Takenori, 4,569,943, Cl. 514-562.000.

Ishimoto, Zenichi, to Nikko Co., Ltd. Driving apparatus useful in a movable toy. 4,570,092, Cl. 310-12.000.

Ishiwari, Kazuo: *See*—
Ohmori, Akira; and Ishiwari, Kazuo, 4,569,871, Cl. 428-64.000.

Ito, Kiyoshi; and Omori, Tamotsu, to Komori Printing Machinery Co., Ltd. Varnish coater for printed product. 4,569,306, Cl. 118-249.000.

Ito, Susumu: *See*—
Sugitani, Hiroshi; Ito, Susumu; and Kobayashi, Junichi, 4,570,167, Cl. 346-140.00R.

Itoh, Hiroshi; Hiramatsu, Shigeki; and Takada, Mitsuru, to Toyota Jidosha Kabushiki Kaisha. Method for controlling an engine installed with continuously variable transmission. 4,569,254, Cl. 74-866.000.

Itoh, Hisao: *See*—
Hamano, Toshihisa; Itoh, Hisao; and Nakamura, Takeshi, 4,570,076, Cl. 250-578.000.

Itoh, Mamoru: *See*—
Baglee, David A.; Smayling, Michael C.; Duane, Michael P.; and Itoh, Mamoru, 4,569,117, Cl. 29-571.000.

ITW Fastex Italia S.p.A.: *See*—
Lovato, Attilio, 4,569,106, Cl. 24-615.000.

Iwahashi, Seitoro: *See*—
Miura, Masatsugu; Ohta, Takao; Hirase, Kiyoto; and Iwahashi, Seitoro, 4,570,215, Cl. 364-140.000.

Iwai, Shigeru: *See*—
Yashima, Michio; Iwai, Shigeru; and Hirose, Masashi, 4,570,078, Cl. 307-10.00R.

Iwasaki, Motokazu: *See*—
Kimura, Hideo; Tabuchi, Masahiro; and Iwasaki, Motokazu, 4,569,343, Cl. 128-155.000.

Iwatani, Shirou: *See*—
Morishita, Mitsuharu; Kouge, Shinichi; Iwatani, Shirou; and Sasaki, Katsuhiro, 4,570,199, Cl. 361-18.000.

Izumizawa, Katsunori: *See*—
Suzuki, Yoshiki; Ikura, Hiroshi; Noguchi, Toshihide; Izumizawa, Katsunori; and Kinoshita, Shiro, deceased, 4,569,837, Cl. 424-28.000.

J. P. Tool Limited: *See*—
Newton, Douglas, 4,569,619, Cl. 407-15.000.

Jabalee, Walter J. Solution for cleansing a cooling system. 4,569,779, Cl. 252-80.000.

Jacks, Edwin L., Jr.: *See*—
Tetrick, Raymond S.; Beaston, John; Farrell, Robert L.; Sarabi, Alireza; Balachandran, Sudarshan; Jacks, Edwin L., Jr.; and Kassel, Steven D., 4,570,220, Cl. 364-200.000.

Jackson, Roy J.: *See*—
Breitigam, Walter V.; and Jackson, Roy J., 4,569,956, Cl. 523-402.000.

Jacobs, Donald H. Radio synchronized clock. 4,569,598, Cl. 368-47.000.

Jacobs, Timothy W.: *See*—
Perez, Steven R.; Bertrand, Jacques C.; Jacobs, Timothy W.; Sommers, Raymond L.; and Vianco, George W., Jr., 4,569,896, Cl. 430-106.600.

Jacoby, Thomas A.: *See*—
Hannibal, Billy B.; and Jacoby, Thomas A., 4,569,639, Cl. 417-368.000.

Jacques, Donald F.: *See*—
Brownawell, Darrell W.; Gutierrez, Antonio; Brois, Stanley J.; Jacques, Donald F.; Behelfer, Gary L.; Ferrell, Thomas M.; and Ilnyckyj, Stephan, 4,569,750, Cl. 208-48.0AA.

Jakobsen, Kjell M.; and Nilsson, Claes T., to PLM AB. Tubular object of polyethylene terephthalate or similar thermoplastic material. 4,569,866, Cl. 428-35.000.

James, Larry S. Heat pump heating and cooling system. 4,569,207, Cl. 62-235.100.

James, Paul, Jr.: *See*—
Fayerman, Peter; Shaffer, Elwood; and James, Paul, Jr., 4,569,547, Cl. 292-347.000.

Jamieson, James L.: *See*—
Kitchen, Barry J.; Annand, Clark; Jamieson, James L.; and Marschke, Ronald J., 4,569,236, Cl. 73-863.310.

Janssen, Eduard J. P.; and Notelteirs, Victor R., to U.S. Philips Corporation. Electric lamp having a fuse in a feed-through molding. 4,570,104, Cl. 315-50.000.

Jarvis, Eugene P.: *See*—
Bleich, Charles R.; Jarvis, Eugene P.; and Smolucha, Walter E., 4,570,158, Cl. 340-727.000.

Jarvis, William J. Putter club. 4,569,523, Cl. 273-164.000.

Jennekens, Matheus H. G.: *See*—
Calis, Gijsbertus H. M.; and Jennekens, Matheus H. G., 4,569,677, Cl. 23-301.000.

Jennings, Frederick R.: *See*—
Buschor, Josef J.; and Jennings, Frederick R., 4,569,474, Cl. 229-37.00R.

Jeppson, Morris R. Conveyorized microwave heating chamber with dielectric wall structure. 4,570,045, Cl. 219-10.55A.

Jette, Paul, to Q-Val Incorporated. Flying spot scanner system. 4,570,074, Cl. 250-563.000.

Jew, Kevin G.: *See*—
Stacy, William T.; Lim, Sheldon C. P.; and Jew, Kevin G., 4,569,120, Cl. 29-574.000.

Johansson, Sigvard: *See*—
Haglund, Lennart; and Johansson, Sigvard, 4,569,535, Cl. 280-801.000.

John D. Brush & Co., Inc.: *See*—
Beattie, Patrick J.; and Harvey, Nathan A., 4,569,294, Cl. 109-45.000.

Johnson, Kenneth O., to General Electric Company. Fluid injection gas turbine engine and method for operating. 4,569,195, Cl. 60-39.300.

Johnson, Leslie H.: *See*—
Freese, Robert P.; Johnson, Leslie H.; Rinehart, Thomas A.; and Gardner, Richard N., 4,569,881, Cl. 428-213.000.

Johnson, Marvin M.: *See*—
Nowack, Gerhard P.; and Johnson, Marvin M., 4,570,025, Cl. 585-259.000.

Johnson, Michael D., to Becton, Dickinson and Company. Method of making foamed slip resistant surfaces. 4,569,707, Cl. 156-78.000.

Johnson, Michael J.; and Hilburn, Hugh C., to Sperry Corporation. Halo generator for CRT display symbols. 4,570,182, Cl. 358-183.000.

Johnson, Paul E.: *See*—
Klees, Gary W.; and Johnson, Paul E., 4,569,199, Cl. 60-226.100.

Jones, David A., to Mars, Inc. Microencapsulation process, microcapsules and use thereof. 4,569,844, Cl. 426-2.000.

Jones, Derrick F.; and Oldham, Keith, to Imperial Chemical Industries, PLC. Nitrogen heterocycles. 4,570,000, Cl. 514-237.000.

Jones, Ronald B.: *See*—
Woudenberg, John D.; and Jones, Ronald B., 4,569,495, Cl. 248-160.000.

Jones, Thomas R.: *See*—
Knudson, Milburn I., Jr.; and Jones, Thomas R., 4,569,923, Cl. 501-148.000.

Jones, William J.; and Mendelson, Robert A., to Monsanto Company. Polyblends of styrene-maleic anhydride-methyl methylacrylate terpolymers/acrylonitrile-butadiene-styrene polymers and polycarbonates. 4,569,969, Cl. 525-67.000.

Joy Manufacturing Company: *See*—
Frey, George R.; Dickey, Ronald K.; Bleakley, Daryl A.; and Willison, John E., 4,569,489, Cl. 242-86.510.

JSJ Corporation: *See*—
Feldt, Earl C.; and Angell, Robert C., 4,569,245, Cl. 74-473.00P.

Juillard, Yves, to Societe Alsacienne de Construction de Materiel Textile. Device for stopping the cloth takeup regulator in a weaving loom. 4,569,374, Cl. 139-304.000.

Kabashima, Katsuhiko: *See*—
Nozaki, Shigeki; Nakano, Tomio; and Kabashima, Katsuhiko, 4,570,088, Cl. 307-481.000.

Kabushiki Kaisha Daikin Seisakusho: *See*—
Abe, Minoru; and Rikitake, Tetuo, 4,569,459, Cl. 220-293.000.
Fukushima, Hirotaka, 4,569,668, Cl. 464-68.000.

Kabushiki Kaisha Kobe Seiko Sho: *See*—
Mine, Hisanobu, 4,569,386, Cl. 164-476.000.

Kabushiki Kaisha Kotobuki: *See*—
Suzuki, Fumihiko, 4,569,162, Cl. 52-9.000.

Kabushiki Kaisha Maki Seisakusho: *See*—
Horii, Taichi; and Ohbuchi, Yasutsugu, 4,569,434, Cl. 198-365.000.

Kabushiki Kaisha Marunaka Seisakusho: *See*—
Kobayashi, Isamu, 4,569,134, Cl. 30-347.000.

Kabushiki Kaisha Nagaoka: *See*—
Kawabe, Hirokazu, 4,569,098, Cl. 15-114.000.

Kabushiki Kaisha Suwa Seikosha: *See*—
Misawa, Toshiyuki; and Asakawa, Tatsushi, 4,570,115, Cl. 323-313.000.

Kabushiki Kaisha Toshiba: *See*—
Dempou, Kazuo; Niida, Hideo; and Yokoyama, Kunio, 4,569,205, Cl. 62-155.000.
Ishii, Tetsuo; and Mitani, Tatsuro, 4,569,123, Cl. 29-578.000.
Mitani, Akio; and Ariga, Takao, 4,569,206, Cl. 62-156.000.
Sato, Hirokazu, 4,570,111, Cl. 318-338.000.
Shiratori, Masayuki; Sakai, Tadashi; Katsura, Masaki; and Takikawa, Osamu, 4,569,826, Cl. 422-90.000.
Terada, Toshiyuki; Toyoda, Nobuyuki; Hojo, Akimichi; and Kamei, Kiyoho, 4,569,119, Cl. 29-571.000.
Watanabe, Junji, 4,569,608, Cl. 400-208.000.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See*—
Anahara, Meiji; Omori, Hiroshi; and Seiki, Kazuo, 4,569,193, Cl. 57-328.000.

Kabushiki Kaisha Toyota Chuo Kenkyusho: *See*—
Arai, Tohru; and Endo, Junji, 4,569,862, Cl. 427-255.000.

Kadin, Saul B., to Pfizer Inc. N,3-Disubstituted 2-oxindole-1-carboxamides as analgesic and antiinflammatory agents. 4,569,942, Cl. 514-414.000.

Kafri, Oded: *See*—
Karny, Ziv; Kafri, Oded; and Keren, Eliezer, 4,569,590, Cl. 356-128.000.

Kaga, Sumihiro: *See*—
Osada, Masahiko; Kuno, Akira; Yamada, Takashi; Kaga, Sumihiro; Shimamoto, Mamoru; and Tanahashi, Toshitaka, 4,570,200, Cl. 361-212.000.

Kaiser, Donald B.: *See*—
McDonie, Arthur F.; and Kaiser, Donald B., 4,570,102, Cl. 313-533.000.

Kaiya, Nobuo: *See*—
Sasaki, Shosaku; and Kaiya, Nobuo, 4,569,980, Cl. 528-14.000.

Kajita, Yasuyuki: *See*—
Oshima, Junji; Kajita, Yasuyuki; and Yamada, Minoru, 4,569,986, Cl. 528-298.000.

Kali und Salz AG: *See*—
Zentgraf, Helmut; Fricke, Gunter; Geisler, Iring; Balzer, Heinrich; Burghardt, Hans; and Maikranz, Fritz, 4,569,432, Cl. 193-32.000.

Kalyanaraman, Palaiyur S., to Rohm and Haas Company. Negative photoresist compositions with polyglutarimide polymer. 4,569,897, Cl. 430-197.000.

Kambara, Hideki: *See*—
Sakairi, Minoru; and Kambara, Hideki, 4,570,068, Cl. 250-288.000.

Kamei, Kiyoho: *See*—
Terada, Toshiyuki; Toyoda, Nobuyuki; Hojo, Akimichi; and Kamei, Kiyoho, 4,569,119, Cl. 29-571.000.

Kamei, Shigeki: *See*—
Tsumura, Toshihiro; Kamei, Shigeki; Waratani, Hiroji; and Takahashi, Akira, 4,570,060, Cl. 250-203.00R.
Tsumura, Toshihiro; Kamei, Shigeki; and Takahashi, Akira, 4,570,062, Cl. 250-225.000.

Kameya, Kazuo, to Elmec Corporation. Delay line. 4,570,135, Cl. 333-138.000.

Kameya, Kazuo, to Elmec Corporation. Electromagnetic delay line. 4,570,136, Cl. 333-161.000.

Kaminstein, Bernard. Dispenser for automatically advancing a length of web. 4,569,467, Cl. 225-106.000.

Kampmann, Gerhard: *See*—
Kramer, Rolf; Ahlborn, Gunter; Schneider, Felix; Neuser, Ernst; Hubsch, Henry; Kampmann, Gerhard; and Wagener, Paul-Werner, 4,569,293, Cl. 105-377.000.

Kanda, Hiroshi: *See*—
Ohzeki, Masanao; Murata, Takashi; and Kanda, Hiroshi, 4,569,846, Cl. 426-40.000.

Kanegafuchi Chemical Industry Co., Ltd.: *See*—
Shimizu, Isamu; and Yamaguchi, Minori, 4,569,891, Cl. 430-57.000.

Kangas, John R. Dual-positional camera mounting apparatus. 4,569,579, Cl. 354-293.000.

Kantor, Martin: *See*—
Auerbach, Joseph; and Kantor, Martin, 4,570,001, Cl. 548-483.000.

Kao Corporation: *See*—
Yoshizuka, Naonobu; Takeuchi, Eijiro; and Imokawa, Genji, 4,569,931, Cl. 514-182.000.

Karny, Ziv; Kafri, Oded; and Keren, Eliezer, to State of Israel, Atomic Energy Commission, The. Method and apparatus for measuring the index of refraction of fluids. 4,569,590, Cl. 356-128.000.

Karpov, Alexandr V.; Kivaev, Anatoly A.; Elkind, Solomon A.; Orlov, Garri N.; Lukin, Nikolai I.; Gashnev, Mikhail S.; Ososkov, Gennady A.; Prikhodko, Valentin I.; and Zavyalov, Vladimir F., to Moskovsky Nauchno-Issledovatelsky Institut Glaznykh Boleznei Imeni Gelmgoltsa. Method and device for determining cornea surface topography. 4,569,576, Cl. 351-212.000.

Karr, Michael A., Jr., to Gray Tool Company. Valve with remote and manual actuation means. 4,569,503, Cl. 251-14.000.

Karrer, Friedrich, to Ciba Geigy Corporation. Polyalkylpiperidine compounds. 4,569,997, Cl. 546-19.000.

Kasamatsu, Norikazu; Matsukawa, Masao; and Mishima, Masaru, to Sanyo-Kokusaku Pulp Co., Ltd. Heat-sensitive recording materials. 4,570,169, Cl. 346-200.000.

Kasper, William W.; Quon, Willard L.; and Van Domelen, Timothy D., to Du Pont de Nemours, E. I., and Company. Process for preparing poly(tetramethylene ether) glycol. 4,569,990, Cl. 528-408.000.

Kassai, Denes P., to FMC Corporation. Sweeper with hydraulically driven components. 4,569,096, Cl. 15-83.000.

Kassel, Steven D.: *See*—
Tetrick, Raymond S.; Beaston, John; Farrell, Robert L.; Sarabi, Alireza; Balachandran, Sudarshan; Jacks, Edwin L., Jr.; and Kassel, Steven D., 4,570,220, Cl. 364-200.000.

Kataoka, Hiroyuki; Yamada, Masanori; and Suzuki, Nobuyuki, to Canon Kabushiki Kaisha. Flash photographing system. 4,569,580, Cl. 354-415.000.

Katayama, Nobuaki; Ikemoto, Kazuhito; and Ohta, Yoshio, to Toyota Jidosha Kogyo Kabushiki Kaisha. Shift lever of a transmission for an automobile. 4,569,246, Cl. 74-473.00R.

Kato, Hisaaki; and Sakai, Shoji, to Murata Kikai Kabushiki Kaisha. Apron for a draft apparatus. 4,569,104, Cl. 19-244.000.

Kato, Mitsumi: *See*—
Futamase, Tsuyoshi; and Kato, Mitsumi, 4,569,268, Cl. 84-1.240.

Katsura, Masaki: *See*—
Shiratori, Masayuki; Sakai, Tadashi; Katsura, Masaki; and Takikawa, Osamu, 4,569,826, Cl. 422-90.000.

Katsuragi, Noboru: *See*—
Shimizu, Hideharu; Katsuragi, Noboru; and Nakano, Kazuhiro, 4,569,656, Cl. 431-325.000.
Katsuyama, Toshio: *See*—
Nagatsuma, Kazuyuki; Matsumura, Hiroyoshi; Katsuyama, Toshio; and Suganuma, Tsuneo, 4,570,064, Cl. 250-231.00R.
Kauffman, John C., to Phelps Dodge Industries, Inc. Spool package. 4,569,491, Cl. 242-118.410.
Kaufman, Mico H.: *See*—
Charette, Jacqueline M.; and Kaufman, Mico H., 4,569,655, Cl. 431-290.000.
Kawabe, Hirokazu, to Kabushiki Kaisha Nagaoka. Disc-cleaning device. 4,569,098, Cl. 15-114.000.
Kawaguchi, Masao: *See*—
Yamakawa, Michihiro; Akatsuka, Takao; Kawaguchi, Masao; Nakano, Jiro; and Ishibashi, Takao, 4,569,748, Cl. 204-429.000.
Kawai, Yoshio: *See*—
Osawa, Hiroshi; Kurashima, Isao; and Kawai, Yoshio, 4,570,039, Cl. 200-5.00A.
Kawamura, Masao: *See*—
Seno, Taiko; Okubo, Yasuto; Kawamura, Masao; Akutsu, Seiichi; and Fukuda, Hirosuke, 4,569,909, Cl. 435-89.000.
Kawamura, Takayuki: *See*—
Lee, Do I.; Kawamura, Takayuki; and Stevens, Edwin F., 4,569,964, Cl. 524-460.000.
Kawasaki Steel Corporation: *See*—
Matsuda, Akira; Komoda, Akira; Yoshihara, Takahisa; and Miyachi, Kazuaki, 4,569,731, Cl. 204-28.000.
Kawashima, Hitoshi; and Tsujimoto, Yoshikazu, to Toyo Tire & Rubber Co., Ltd. Slitter for steel belt. 4,569,265, Cl. 83-368.000.
Keddie, Alicia H.: *See*—
Radovich, David A.; and Keddie, Alicia H., 4,569,952, Cl. 521-167.000.
Kedem, Abraham: *See*—
Kedem, Ora; and Kedem, Abraham, 4,569,747, Cl. 204-301.000.
Kedem, Ora; and Kedem, Abraham, to Yeda Research and Development Co., Ltd. Modular electrodialysis device. 4,569,747, Cl. 204-301.000.
Kelemen, Jozsef: *See*—
Budai, Zoltan; Benko , Pal; Ratz nee Simonek, Ildiko ; Rakoczy nee Pinter, Eva; Magyar, Karoly; Kelemen, Jozsef; and Mandi, Attila, 4,570,002, Cl. 548-495.000.
Keller, George J.; and Yanagi, Takashi, to Fractionation Research, Inc. Variable flow self-cleaning liquid distribution element and liquid distribution assembly employing a plurality of such elements. 4,569,364, Cl. 137-244.000.
Kelley, John L., to Kelley-Perry, Incorporated. Method and apparatus for feeding a product including fines. 4,569,446, Cl. 209-660.000.
Kelley-Perry, Incorporated: *See*—
Kelley, John L., 4,569,446, Cl. 209-660.000.
Kelsey-Hayes Company: *See*—
Reikowski, Harold J.; and Hetherwick, James L., 4,569,713, Cl. 156-433.000.
Kemp, Wallace W. Hook positioner and rig. 4,569,148, Cl. 43-43.100.
Kendall Company, The: *See*—
Zimmerman, William D.; and Temin, Samuel C., 4,569,976, Cl. 526-204.000.
Kenny, Andrew A.; and Sokalski, Robert G., to Eaton Corporation. Vehicular engine idle speed and cruise control system. 4,569,425, Cl. 192-3.00T.
Kerdoncuff, Guy P.; and Provendier, Jacques H., to Societe Anonyme de Telecommunications. Digital receiver of multifrequency signals with frequency recognition device. 4,570,235, Cl. 364-724.000.
Keren, Eliezer: *See*—
Karny, Ziv; Kafri, Oded; and Keren, Eliezer, 4,569,590, Cl. 356-128.000.
Kerk, Klaus: *See*—
Buchmuller, Hans-Peter; Kerk, Klaus; and Kolbe, Klaus, 4,569,166, Cl. 52-86.000.
Kerwin, Donald J., to Gagliardi, Joseph M., a part interest. Athletic garments for the insulation of heat radiating from and application of a cooling medium to the limb of a body. 4,569,087, Cl. 2-69.000.
Keyworth, Donald A.; and McFarland, Cecil G., to Petro-Tex Chemical Corporation. Production of isobutene from methyl tertiary butyl ether. 4,570,026, Cl. 585-312.000.
Kidde, Inc.: *See*—
Sterner, Russell L., 4,569,454, Cl. 212-259.000.
Kieser, Jorg; and Neusch, Michael, to Leybold-Heraeus GmbH. Method of producing amorphous carbon coatings on substrates by plasma deposition. 4,569,738, Cl. 204-173.000.
Kiewert, Eva: *See*—
Disch, Karlheinz; Kiewert, Eva; Weichbrodt, Maria; and Hase, Christian, 4,569,782, Cl. 252-106.000.
Kilian & Co., GmbH: *See*—
Kramer, Hans, 4,569,650, Cl. 425-405.00R.
Killer, Eric, to BBC Brown, Boveri & Co., Ltd. Method for continuous coating of a solid electrolyte with a catalytically active material. 4,569,730, Cl. 204-24.000.
Kim, Raymond K., to Babcock & Wilcox Company, The. Reaction mass flowmeter. 4,569,232, Cl. 73-861.040.
Kim, Tuk M. Method of treatment during withdrawal from drug dependency. 4,569,843, Cl. 424-195.100.
Kim, Young H.: *See*—
Lee, Woo K.; and Kim, Young H., 4,569,417, Cl. 182-5.000.
Kimerer, Brian S.: *See*—
Allen, Bruce S.; Dunalvey, Michael R.; King, Bruce A.; DuPrie, Harold J.; Hudnall, Richard E.; Lapidus, Stanely N.; Gilbert, Daniel R.; Carlson, Anne M.; Thakrar, Kiran; Doig, Robert C.; Kimerer, Brian S.; Sirois, Andrew F.; Poirer, Bruce A.; Hunt, Philip G.; Dziezanowski, Joseph J.; Bromberg, Michael A.; Brown, Michael; and Friedel, Seymour A., 4,570,217, Cl. 364-188.000.
Kimura, Chikara; and Yada, Keiji, to Hitachi, Ltd. Electromagnetic lens polepiece structure. 4,570,072, Cl. 250-396.0ML.
Kimura, Hideo; Tabuchi, Masahiro; and Iwasaki, Motokazu, to Carl Freudenberg, Firma. Skin application medicament. 4,569,343, Cl. 128-155.000.
Kimura, Shinichiro: *See*—
Miyao, Masanobu; Ohkura, Makoto; Takemoto, Iwao; Warabisako, Terunori; Mukai, Kiichiro; Haruta, Ryo; Nishioka, Yasushiro; Kimura, Shinichiro; and Tokuyama, Takashi, 4,570,175, Cl. 357-23.700.
Kinard, Michael D.: *See*—
Bohannon, William D., Jr.; Brent, Herbert E.; Hamilton, Alfred S.; and Kinard, Michael D., 4,569,704, Cl. 156-48.000.
King, Bruce A.: *See*—
Allen, Bruce S.; Dunalvey, Michael R.; King, Bruce A.; DuPrie, Harold J.; Hudnall, Richard E.; Lapidus, Stanely N.; Gilbert, Daniel R.; Carlson, Anne M.; Thakrar, Kiran; Doig, Robert C.; Kimerer, Brian S.; Sirois, Andrew F.; Poirer, Bruce A.; Hunt, Philip G.; Dziezanowski, Joseph J.; Bromberg, Michael A.; Brown, Michael; and Friedel, Seymour A., 4,570,217, Cl. 364-188.000.
Kinghorn, John R.; Fisher, Raymond J.; and Douglas, Terence A., to U.S. Philips Corporation. Data entry keyboard apparatus. 4,570,154, Cl. 340-365.00S.
Kinoshita, Kimiko, Atsuhiro Kinoshita, heirs: *See*—
Suzuki, Yoshiki; Ikura, Hiroshi; Noguchi, Toshihide; Izumizawa, Katsunori; and Kinoshita, Shiro, deceased, 4,569,837, Cl. 424-28.000.
Kinoshita, Shiro, deceased: *See*—
Suzuki, Yoshiki; Ikura, Hiroshi; Noguchi, Toshihide; Izumizawa, Katsunori; and Kinoshita, Shiro, deceased, 4,569,837, Cl. 424-28.000.
Kit, Saul, to Baylor College of Medicine; and NovaGene, Ltd. Thymidine kinase-negative temperature resistant bovine herpesvirus-1 mutant as a vaccine against infectious bovine rhinotracheitis. 4,569,840, Cl. 424-89.000.
Kitagawa, Masaru: *See*—
Ohgami, Nobutoshi; Kitagawa, Masaru; Nishizawa, Hisao; and Saita, Masakazu, 4,569,717, Cl. 156-626.000.
Kitamori, Teruaki: *See*—
Morii, Yoshihiro; Kitamori, Teruaki; and Morisawa, Masanori, 4,570,093, Cl. 310-46.000.
Kitamura, Kazuhiko: *See*—
Takakura, Yoshinari; and Kitamura, Kazuhiko, 4,569,803, Cl. 261-65.000.
Kitchen, Barry J.; Annand, Clark; Jamieson, James L.; and Marschke, Ronald J., to Ahern, Michael John. Biological fluid sampler. 4,569,236, Cl. 73-863.310.
Kitoh, Akihiko, to Victor Company of Japan, Limited. Tape reproducing apparatus having automatic search mode. 4,570,190, Cl. 360-73.0UC.
Kitteringham, John; and Slingsby, Brian P., to Smith Kline & French Laboratories Limited. Process for preparing substituted pyrimidinones. 4,569,996, Cl. 544-320.000.
Kivaev, Anatoly A.: *See*—
Karpov, Alexandr V.; Kivaev, Anatoly A.; Elkind, Solomon A.; Orlov, Garri N.; Lukin, Nikolai I.; Gashnev, Mikhail S.; Ososkov, Gennady A.; Prikhodko, Valentin I.; and Zavyalov, Vladimir F., 4,569,576, Cl. 351-212.000.
Klappert, Willi, to General Electric Company. Wound core for an electric transformer. 4,570,141, Cl. 336-213.000.
Kleeman, Eugene. Tire deflation mechanism. 4,569,363, Cl. 137-230.000.
Klees, Gary W.; and Johnson, Paul E., to Boeing Company, The. Turboprop engine and method of operating the same. 4,569,199, Cl. 60-226.100.
Klein, Hans: *See*—
Sasse, H. Rainer; Conrad, Karl-Hermann; Herzog, Rolf; Klein, Hans; and Meier, Bert, 4,569,971, Cl. 525-109.000.
Klein, Max. Water treatment system. 4,569,756, Cl. 210-193.000.
Kley France: *See*—
Robert, Brieuc, 4,569,507, Cl. 254-246.000.
Klingel, Hans, to Trumpf GmbH & Co. Multitool punch mechanism. 4,569,267, Cl. 83-552.000.
Klingler, Knud: *See*—
Michels, Hartwig; and Klingler, Knud, 4,569,410, Cl. 180-125.000.
Klingner, Joachim: *See*—
Kuchenthal, Gunther; and Klingner, Joachim, 4,569,686, Cl. 55-238.000.
Klinkowski, Peter R., to Dorr-Oliver Incorporated. Electrofilter using an improved electrode assembly. 4,569,739, Cl. 204-180.100.
Kloster Speedsteel Aktiebolag: *See*—
Westin, Leif, 4,569,823, Cl. 419-23.000.
Kluth, Heinz. Stair climbing wheelchair. 4,569,409, Cl. 180-8.200.
Knepper, Lawrence E.: *See*—
Buscaglia, Carl U.; and Knepper, Lawrence E., 4,570,090, Cl. 307-530.000.
Knoesel, Johann: *See*—
Falk, Ernst; Hiltebrandt, Siegfried; and Knoesel, Johann, 4,569,131, Cl. 30-251.000.

Knowlton, Bryce H.; and Ruscetta, Anthony. Radiator assembly. 4,569,390, Cl. 165-149.000.
Knudson, Milburn I., Jr.; and Jones, Thomas R., to Southern Clay Products, Inc. Process for manufacturing organoclays having enhanced gelling properties. 4,569,923, Cl. 501-148.000.
Knutsson, Knut G.: *See*—
Ingemansson, Bengt-Erik; Bjork, Bertil E.; Hedman, Jan E.; Knutsson, Knut G.; and Larsson, Nils H. I., 4,569,471, Cl. 228-176.000.
Koala Technologies Corporation: *See*—
Thornburg, David D.; and White, George M., III, 4,570,149, Cl. 338-114.000.
Kobayashi, Isamu, to Kabushiki Kaisha Marunaka Seisakusho. Trimming cord for cutter. 4,569,134, Cl. 30-347.000.
Kobayashi, Junichi: *See*—
Sugitani, Hiroshi; Ito, Susumu; and Kobayashi, Junichi, 4,570,167, Cl. 346-140.00R.
Kobayashi, Kazuhiko: *See*—
Kosegaki, Kimiho; Takeshita, Ryushiro; and Kobayashi, Kazuhiko, 4,569,736, Cl. 523-105.000.
Kobayashi, Masaharu; Arai, Takao; and Noda, Tsutomu, to Hitachi, Ltd. Signal conversion apparatus for use in PCM signal processing system. 4,570,153, Cl. 340-347.0AD.
Kobayashi, Seiki: *See*—
Yamaguchi, Katsuhiko; Kobayashi, Seiki; Miyake, Yasufumi; and Tsumura, Akio, 4,569,885, Cl. 428-339.000.
Kobayashi, Toshiaki; and Sakamoto, Noriaki, to Sharp Kabushiki Kaisha. Induction heating and fixing device for a copying machine. 4,570,044, Cl. 219-10.49A.
Kodaira, Makoto, to Uro Denski Kogyo, K.K. Infrared intrusion alarm system capable of preventing false signals. 4,570,157, Cl. 340-567.000.
Kodaka, Kenji: *See*—
Nakatani, Kiyoshi; Numata, Satoshi; Inoue, Tsuneo; Kodaka, Kenji; Ishii, Tsutomu; Toyama, Teruhiko; Tachibana, Hajime; Udagawa, Takatoshi; and Gohbara, Masatoshi, 4,570,005, Cl. 549-435.000.
Koepke, Gunther; Frenken, Hans; Bussmann, Heinrich; and Browatzki, Kurt, to Agfa-Gevaert Aktiengesellschaft. Process for the multiple coating of moving objects or webs. 4,569,863, Cl. 427-402.000.
Kohlen, Karl-Heinz; and Vieten, Rolf, to Hacoba Textilmaschinen GmbH & Co KG. Yarn knotter especially for yarn spooling machines. 4,569,543, Cl. 289-2.000.
Kohler, Gernot: *See*—
Naarmann, Herbert; Nickl, Johann; and Kohler, Gernot, 4,569,734, Cl. 204-78.000.
Koiso, Fumihiro: *See*—
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Kolbe, Klaus: *See*—
Buchmuller, Hans-Peter; Kerk, Klaus; and Kolbe, Klaus, 4,569,166, Cl. 52-86.000.
Koller, Philip A.; and Waldman, Roy. Serving utensil with integral scraper. 4,569,130, Cl. 30-128.000.
Kolwicz, Kevin D., to AT&T Bell Laboratories. CMOS Cell array with transistor isolation. 4,570,176, Cl. 357-42.000.
Komoda, Akira: *See*—
Matsuda, Akira; Komoda, Akira; Yoshihara, Takahisa; and Miyachi, Kazuaki, 4,569,731, Cl. 204-28.000.
Komori Printing Machinery Co., Ltd.: *See*—
Ito, Kiyoshi; and Omori, Tamotsu, 4,569,306, Cl. 118-249.000.
Komoriya, Kiyoshi: *See*—
Tachi, Susumu; and Komoriya, Kiyoshi, 4,570,227, Cl. 364-444.000.
Konagaya, Yoshiaki: *See*—
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Kondo, Kazuyoshi: *See*—
Hiraishi, Shigetoshi; and Kondo, Kazuyoshi, 4,570,170, Cl. 346-209.000.
Kondo, Tetsuya; and Kosugi, Yoshihiro, to Sony Corporation. Carrier chrominance signal separating circuit. 4,570,177, Cl. 358-31.000.
Konoike, Toshiro: *See*—
Aoki, Tsutomu; Takahashi, Hiromi; Konoike, Toshiro; Tsuji, Teruji; and Nagata, Wataru, 4,570,018, Cl. 564-1.000.
Kool, Eric T.; and Uebele, Curtis E., to Standard Oil Company, The. Hydrogen sulfide and mercaptan scavenger. 4,569,766, Cl. 210-690.000.
Kopich, Leonard F. Hood for video terminals. 4,569,572, Cl. 350-276.00R.
Kopp, Peter: *See*—
Baier, Heinz; Kopp, Peter; Schneiderhan, Martin; Reimann, Hans-Peter; Rosch, Hans; and Pfeffer, Erwin, 4,570,180, Cl. 358-106.000.
Kopp, Richard: *See*—
Grogler, Gerhard; Hess, Heinrich; Kopp, Richard; and Rasshofer, Werner, 4,569,982, Cl. 528-73.000.
Korkhov, Oleg J.: *See*—
Sandulyak, Alexandr V.; Garaschenko, Vyacheslav I.; Sandulyak, Vladimir V.; and Korkhov, Oleg J., 4,569,758, Cl. 210-222.000.
Kornreich, Wayne D.; Anderson, Harry A.; Porter, John S.; and Rivier, Jean E. F., to Salk Institute for Biological Studies, The. Synthesis of N-substituted peptide amides. 4,569,967, Cl. 525-54.110.
Kosegaki, Kimiho; Takeshita, Ryushiro; and Kobayashi, Kazuhiko, to Terumo Kabushiki Kaisha. Medical instruments made from a polyolefin composition which has been sterilized with gamma irradiation. 4,569,736, Cl. 523-105.000.
Kosley, Raymond W., Jr.; and Cherill, Robert J., to Hoechst-Roussel Pharmaceuticals Inc. Intermediates for spiro[2H-1,4-benzodioxepin-3(5H)4'-piperidine and -3'-pyrrolidine] compounds. 4,569,998, Cl. 546-225.000.
Kosmatka, Walter J., to General Electric Company. Vehicle lamp unit and method for an improved supporting arrangement of its light source. 4,570,210, Cl. 362-396.000.
Kosonen, Pentti: *See*—
Schmidt, Bertil; and Kosonen, Pentti, 4,569,617, Cl. 405-251.000.
Kosugi, Akikazu: *See*—
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Kosugi, Yoshihiro: *See*—
Kondo, Tetsuya; and Kosugi, Yoshihiro, 4,570,177, Cl. 358-31.000.
Koths, Kirston; Thomson, James; Kunitani, Michael; Wilson, Kenneth; and Hanisch, Wolf, to Cetus Corporation. Process for recovering microbially produced interleukin-2 and purified recombinant interleukin-2 compositions. 4,569,790, Cl. 260-112.00R.
Koths, Kirston E.; Halenbeck, Robert F.; and Fernandes, Peter M., to Cetus Corporation. Methods and reagents for pyranosone production. 4,569,910, Cl. 435-105.000.
Koths, Kirston E.; and Halenbeck, Robert F., to Cetus Corporation. *P. obtusus* pyranose-2-oxidase preparation. 4,569,913, Cl. 435-190.000.
Kouge, Shinichi: *See*—
Morishita, Mitsuharu; and Kouge, Shinichi, 4,569,411, Cl. 180-142.000.
Morishita, Mitsuharu; Kouge, Shinichi; Iwatani, Shirou; and Sasaki, Katsuhiro, 4,570,199, Cl. 361-18.000.
Kovacs, Jozsef. Prefabricated plastered panels for housing. 4,569,178, Cl. 52-745.000.
Kovats, William S.; and Pratt, Charles T., to AT&T Technologies, Inc. Apparatus for measuring the thickness of disc-like articles. 4,569,445, Cl. 209-539.000.
Koyama, Shigeo, to Mita Industrial Co., Ltd. Paper supply system of copying machine. 4,569,586, Cl. 355-72.000.
Koyo Seiko Company Limited: *See*—
Miki, Toshio; Toda, Yoshihide; and Horii, Kenichi, 4,569,603, Cl. 384-585.000.
Kozol, Eleanor, executrix: *See*—
Bloom, Robert D.; Gac, John V.; and Kozol, Eugene T., deceased, 4,570,110, Cl. 318-313.000.
Kozol, Eugene T., deceased: *See*—
Bloom, Robert D.; Gac, John V.; and Kozol, Eugene T., deceased, 4,570,110, Cl. 318-313.000.
Kozuka, Shinichi: *See*—
Hatakeyama, Yoshiharu; and Kozuka, Shinichi, 4,569,457, Cl. 215-364.000.
Krall, Thomas J., to Owens-Illinois, Inc. Blow molding apparatus. 4,569,651, Cl. 425-532.000.
Kramer, Hans, to Kilian & Co., GmbH. Tablet press. 4,569,650, Cl. 425-405.00R.
Kramer, Larry J., to General Electric Company. Furnace construction. 4,569,661, Cl. 432-253.000.
Kramer, Pieter: *See*—
Lambot, Honore J.; Fliervoet, Johannes H. M.; and Kramer, Pieter, 4,569,710, Cl. 156-172.000.
Kramer, Rolf; Ahlborn, Gunter; Schneider, Felix; Neuser, Ernst; Hubsch, Henry; Kampmann, Gerhard; and Wagener, Paul-Werner, to Waggon Union GmbH. Freight car construction. 4,569,293, Cl. 105-377.000.
Kraus, Georg: *See*—
Bayer, Thomas; Kraus, Georg; Kuenzel, Ulrich; Renz, Gisela; and Schaefer, Rolf, 4,569,743, Cl. 204-192.00R.
Krauss-Maffei A.G.: *See*—
Aufderharr, Erhard; Gruebl, Ernst; and Pfaff, Siegfried, 4,569,760, Cl. 210-372.000.
Kravets, Mordko L., to Foley-Belsaw Company. Method and apparatus for fine shearing. 4,569,263, Cl. 83-19.000.
Kreicas, Leonard: *See*—
Muller, Peter; Mustacchi, Henry; and Kreicas, Leonard, 4,569,888, Cl. 428-481.000.
Kreitlow, David B.: *See*—
Sjordal, Thomas R.; and Kreitlow, David B., 4,570,168, Cl. 346-145.000.
Kress, Hans-Jurgen: *See*—
Paul, Winfried; Kress, Hans-Jurgen; Stix, Wolfgang; Lindner, Christian; Neuray, Dieter; and Nouvertne, Werner, 4,569,970, Cl. 525-67.000.
Kroll, John W., to Eaton Corporation. Thin-film magnetically operated micromechanical electric switching device. 4,570,139, Cl. 335-187.000.
Kroll, John W.: *See*—
Bridges, Robert B.; Brubaker, John R.; Hastings, Jerome K.; and Kroll, John W., 4,570,144, Cl. 337-88.000.
Kronos Titan-GmbH: *See*—
Hartmann, Achim; and Schonherr, Dietrich W., 4,569,387, Cl. 165-47.000.
KRW Energy Systems Inc.: *See*—
Haldipur, Gaurang B., 4,569,681, Cl. 48-206.000.
Kryze, Georges, to Inria Institut National de Recherche en Informatique et Automatique. Method and apparatus for measuring pulses of charge. 4,570,183, Cl. 358-184.000.
Kubo, Jun, to Nissan Motor Company, Limited. Anti-skid brake control system including fluid pump and driver circuit therefor. 4,569,560, Cl. 303-116.000.
Kubo, Osamu; Ido, Tadashi; Nomura, Tutomu; and Inomata, Koichiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Method for manufactur-

ing a magnetic powder for high density magnetic recording. 4,569,775, Cl. 252-62.590.
Kuchenthal, Gunther; and Klingner, Joachim, to Werner & Pfleiderer. Apparatus for paint mist removal. 4,569,686, Cl. 55-238.000.
Kuenzel, Ulrich: *See—*
Bayer, Thomas; Kraus, Georg; Kuenzel, Ulrich; Renz, Gisela; and Schaefer, Rolf, 4,569,743, Cl. 204-192.00R.
Kuhn, Donald H.; Nelson, Conrad E.; Younger, Cousby, Jr.; and Otteni, Gerald A., to General Electric Company. RF-Transparent shield structures. 4,570,166, Cl. 343-872.000.
Kuhr, Albert F.; and Wendt, Alan C., to United States Gypsum Company. Base trim system for partition corners. 4,569,171, Cl. 52-242.000.
Kulprathipanja, Santi; and Chang, Chin-Hsiung, to UOP Inc. Process for separating isoprene. 4,570,029, Cl. 585-829.000.
Kummer, David A.; Saenz, Jesus A.; and Trynosky, Stephen W., to International Business Machines Corporation. Raster scan digital display system. 4,570,161, Cl. 340-799.000.
Kunitani, Michael: *See—*
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Kuno, Akira: *See—*
Osada, Masahiko; Kuno, Akira; Yamada, Takashi; Kaga, Sumihiro; Shimamoto, Mamoru; and Tanahashi, Toshitaka, 4,570,200, Cl. 361-212.000.
Kurashima, Isao: *See—*
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Kurata, Masami, to Fuji Xerox Co., Ltd. Binary transformation method. 4,570,186, Cl. 358-282.000.
Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
Yoshikumi, Chikao; Ohmura, Yoshio; Hirose, Fumio; Ikuzawa, Masanori; Matsunaga, Kenichi; Fujii, Takayoshi; Ohhara, Minoru; and Ando, Takao, 4,569,842, Cl. 514-25.000.
Kurschner, Lloyd F. Bookmark. 4,569,538, Cl. 281-42.000.
Kushida, Hideo; Kosugi, Akikazu; and Nagayama, Hiromi, to Yoshino Kogyosho Co., Ltd. Saturated polyester bottle-shaped container with hard coating and method of fabricating the same. 4,569,869, Cl. 428-35.000.
Kuwakado, Satosi: *See—*
Tsuge, Noboru; Taguchi, Masahiro; Onimaru, Sadahisa; and Kuwakado, Satosi, 4,569,536, Cl. 280-807.000.
Kuznetz, Lawrence. Sportswear fabric for cold climates. 4,569,874, Cl. 428-109.000.
Kyozuka, Shigeyuki, to Nihon Kohden Corporation. Method and apparatus for detecting fetal heart rate by autocorrelation. 4,569,356, Cl. 128-698.000.
Kytta, Oswald O., to Allied Corporation. Connection for closing a servomotor. 4,569,276, Cl. 92-98.00D.
LaConti, Anthony B.: *See—*
Dempsey, Russell M.; Coker, Thomas G.; LaConti, Anthony B.; and Fragala, Anthony R., 4,569,735, Cl. 204-98.000.
Lagasse, Normand L.: *See—*
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Lagow, Richard J.; and Lin, Wen-Huey, to Board of Regents, University of Texas System, The. Perfluoro crown ethers. 4,570,004, Cl. 549-352.000.
Lamb, Carl W. Control apparatus for tidal turbine. 4,569,200, Cl. 60-398.000.
Lambert, Cary L.: *See—*
Schiff, Peter; and Lambert, Cary L., 4,569,332, Cl. 128-1.00D.
Lambert, John M.: *See—*
Blattler, Walter A.; Lambert, John M.; and Senter, Peter D., 4,569,789, Cl. 260-112.00R.
Lambley, Ian G., to British Shipbuilders (Engineering and Technical Services), Ltd. Waste heat recovery system driven alternators and auxiliary drive systems therefor. 4,570,077, Cl. 290-4.00R.
Lambot, Honore J.; Fliervoet, Johannes H. M.; and Kramer, Pieter, to Societe Anonyme Diamant Boart; and Wavin B.V. Process for manufacturing the inner tube element for a double tube coring apparatus. 4,569,710, Cl. 156-172.000.
Landaeus, Kjell; and Borg, Bertil. Method of controlling impact force and shock interval in drop hammers. 4,569,402, Cl. 173-126.000.
Lane, Jack D.: *See—*
Williams, Virgil R.; Williams, James M., Jr.; and Lane, Jack D., 4,569,860, Cl. 427-230.000.
Lange, Sven: *See—*
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Lapidus, Stanely N.: *See—*
Allen, Bruce S.; Dunalvey, Michael R.; King, Bruce A.; DuPrie, Harold J.; Hudnall, Richard E.; Lapidus, Stanely N.; Gilbert, Daniel R.; Carlson, Anne M.; Thakrar, Kiran; Doig, Robert C.; Kimerer, Brian S.; Sirois, Andrew F.; Poirer, Bruce A.; Hunt, Philip G.; Dziezanowski, Joseph J.; Bromberg, Michael A.; Brown, Michael; and Friedel, Seymour A., 4,570,217, Cl. 364-188.000.
Larsson, Nils H. I.: *See—*
Ingemansson, Bengt-Erik; Bjork, Bertil E.; Hedman, Jan E.; Knutsson, Knut G.; and Larsson, Nils H. I., 4,569,471, Cl. 228-176.000.
LaRue, Robert A., to Globe Manufacturing Co. Knit yarn package. 4,569,212, Cl. 66-196.000.
Laser, Vadim: *See—*
Chadima, George E., Jr.; and Laser, Vadim, 4,570,057, Cl. 235-472.000.
Laspeyres, Marc, to Solaronics Vaneecke. Plate with alveolar radiating face for radiant burner. 4,569,657, Cl. 431-326.000.
Lauer, Leonard; and Goldberg, Jacqueline, to United Utensils Company, Inc. Solids blending apparatus. 4,569,597, Cl. 366-228.000.
Laufhutte, Dieter, to Carl Still GmbH & Co. KG, Firma. Method and apparatus for desulfurizing coke oven gases. 4,569,832, Cl. 423-234.000.
Lausch, Wolfram: *See—*
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Lauterbach, Herbert G.: *See—*
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Laycak, John F.: *See—*
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Le-Jo Enterprises, Inc.: *See—*
D'Ambro, Dominic; and Giangiulio, Clayton E., 4,569,280, Cl. 99-538.000.
Lectrolarm Custom Systems, Inc.: *See—*
Smith, William V., 4,570,163, Cl. 340-825.770.
Ledergerber, Remy: *See—*
Ineichen, Kurt; and Ledergerber, Remy, 4,570,142, Cl. 337-66.000.
Ledvina, Timothy J., to Borg-Warner Corporation. Metal chain-belt. 4,569,671, Cl. 474-201.000.
Lee, Do I.; Kawamura, Takayuki; and Stevens, Edwin F., to Dow Chemical Company, The. Heat/light stable interpenetrating polymer network latexes. 4,569,964, Cl. 524-460.000.
Lee, E. Stewart: *See—*
Boulton, Peter I. P.; Lee, E. Stewart; and Davidson, William E., 4,570,162, Cl. 340-825.500.
Lee, Woo K.; and Kim, Young H. Buckled belt for the emergency escape. 4,569,417, Cl. 182-5.000.
Lee, Yong J. Lighting control device. 4,570,107, Cl. 315-200.00R.
Lees, Roger T., to Eastman Kodak Company. Film scanner with improved response to scattered light. 4,570,179, Cl. 358-50.000.
Legue, Norris R.; and Shapiro, Myron, to Synthetic Surfaces, Inc. Adhesive consisting essentially of a ricinoleate urethane polyol and a chlorinated polyvinyl chloride. 4,569,972, Cl. 525-129.000.
Lehman, James F. Table structure. 4,569,555, Cl. 297-141.000.
Leib, Ronald J.: *See—*
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Leifeld & Lemke Machinenfabrik GmbH & Co.: *See—*
Leuvering, Hans, 4,569,182, Cl. 53-456.000.
Leitch, James K.: *See—*
Hume, Ross G.; and Leitch, James K., 4,569,805, Cl. 261-122.000.
Le Maitre, Richard B. C., to Aeci Limited. Coating apparatus. 4,569,304, Cl. 118-122.000.
Le Pesant, Jean P.; Hareng, Michel; Mourey, Bruno; and Perbet, Jean N., to Thomson-CSF. Electrodes for a device operating by electrically controlled fluid displacement. 4,569,575, Cl. 350-355.000.
Lerat, Bernard: *See—*
Asty, Michel; Lerat, Bernard; Saglio, Robert; and Viard, Jacky, 4,569,230, Cl. 73-623.000.
Leu, Lei-Kuang, to Mobil Oil Corporation. Magnetic exploration with reduction of magnetic data to the equator. 4,570,122, Cl. 324-345.000.
Leuvering, Hans, to Leifeld & Lemke Machinenfabrik GmbH & Co. Method of and apparatus for packaging. 4,569,182, Cl. 53-456.000.
LeVeen, Harry H. Treatment with dialdehydes. 4,569,946, Cl. 514-693.000.
Lever Brothers Company: *See—*
De Laat, Cornelis I.; Segers, Jacobus C.; and Spits, Albert J., 4,569,796, Cl. 260-425.000.
Levey, Gustave S., to Speeflo Manufacturing Corporation. Surge controlled air-hydraulic material sprayer. 4,569,480, Cl. 239-135.000.
Levitt, George, to Du Pont de Nemours, E. I., and Company. Sulfamoyl chlorides. 4,569,995, Cl. 544-212.000.
Leybold-Heraeus GmbH: *See—*
Kieser, Jorg; and Neusch, Michael, 4,569,738, Cl. 204-173.000.
Leyland Vehicles Limited: *See—*
Greenwood, Christopher J., 4,569,251, Cl. 74-691.000.
Liebetruth, Reiner, to Siemens Aktiengesellschaft. Tomographic x-ray apparatus for the production of transverse layer images. 4,570,263, Cl. 378-20.000.
Liebetruth, Reiner, to Siemens Aktiengesellschaft. Tomographic X-ray apparatus for the production of transverse layer images. 4,570,264, Cl. 378-20.000.
Lim, Drahoslav; and Morris, Peter C., to Barnes-Hind, Inc. Surface modification of hydrophilic contact lenses. 4,569,858, Cl. 427-164.000.
Lim, Sheldon C. P.; Ridley, Douglas F.; Raza, Saiyed A.; and Conner, George W., to Signetics Corporation. Method of fabricating a programmable read-only memory cell incorporating an antifuse utilizing deposition of amorphous semiconductor layer. 4,569,121, Cl. 29-574.000.
Lim, Sheldon C. P.: *See—*
Stacy, William T.; Lim, Sheldon C. P.; and Jew, Kevin G., 4,569,120, Cl. 29-574.000.
Lim, T. T.: *See—*
Chong, T. S.; Chong, F. C.; Ng, C. K.; and Lim, T. T., 4,569,814, Cl. 264-279.000.
Lin, Wen-Huey: *See—*
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Lindh, Per A. L.; and Skogward, Kenneth O. E., to Husqvarna Aktiebolag. Signal arrangement in a sewing machine. 4,569,298, Cl. 112-278.000.

Lindner, Alfred; Broellos, Klaus; Sandrock, Gerhard; Volkamer, Klaus; and Hefner, Werner, to BASF Aktiengesellschaft. Separation of a C_4-hydrocarbon mixture essentially containing n-butenes and butanes. 4,569,725, Cl. 203-38.000.
Lindner, Christian: *See—*
Paul, Winfried; Kress, Hans-Jurgen; Stix, Wolfgang; Lindner, Christian; Neuray, Dieter; and Nouvertne, Werner, 4,569,970, Cl. 525-67.000.
Lingstaedt, Ernst L., to SGS-ATES Deutschland Halbleiter Bauelemente GmbH. PLL circuit with selectable current charging. 4,570,131, Cl. 331-36.00C.
Linton, Jonathan L.: *See—*
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Linton, Steven C.; and Moellering, Edgar E., to Monarch Marking Systems, Inc. Rotary member control. 4,570,113, Cl. 318-612.000.
Lippert, Hartmut: *See—*
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Lipstein, Norman J.: *See—*
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Liu, Shih-Tung, to Chevron Research Company. *Erwinia herbicola* strain that inhibits pathogenic plant bacteria. 4,569,841, Cl. 424-93.000.
Ljung, Erik A., to Institut Cerac S.A. Static converter switch with fast recovery freewheel diode. 4,570,213, Cl. 363-138.000.
Llinares, Vincent, Jr., to Combustion Engineering, Inc. Method of firing a pulverized coal-fired furnace. 4,569,311, Cl. 122-449.000.
Lloyd, Harold; and Slinn, David S. L., to Electricity Council, The. Dielectric fluids and apparatus incorporating such fluids. 4,570,043, Cl. 200-150.00A.
Lloyd, William A.: *See—*
St. John, Robert P.; and Lloyd, William A., 4,569,584, Cl. 355-14.00R.
Lode, Tenny D. High density digital data recording system. 4,570,189, Cl. 360-50.000.
Lodge-Cottrell Limited: *See—*
Cottrell, Terence B. F., 4,569,685, Cl. 55-148.000.
Lodrini, Albert C. Finger ring and insert therefor. 4,569,211, Cl. 63-15.600.
Loedige, Wilfried: *See—*
Hecht, Joachim; Loedige, Wilfried; Rohde, Friedrich; Rudat, Gerhard; Wiggershaus, Fred; and Winter, Klaus-Juergen, 4,569,290, Cl. 105-154.000.
Loeffler, Hans-Peter; Seufert, Walter; and Adolphi, Heinrich, to BASF Aktiengesellschaft. 2-Fluorophenyl(di)thiophosphates and their use in pest control. 4,569,930, Cl. 514-147.000.
Lok, Brent M.: *See—*
Gortsema, Frank P.; and Lok, Brent M., 4,569,833, Cl. 423-305.000.
Long, Dennis L. Modular unit adapted for medical use. 4,569,163, Cl. 52-36.000.
Lord Corporation: *See—*
Hannibal, Alan J.; and Parr, Charles H., 4,569,667, Cl. 464-51.000.
L'Oreal: *See—*
Grollier, Jean-Francois; Allec, Josiane; Fourcadier, Chantal; Rosenbaum, Georges; and Darmenton, Patrick, 4,569,839, Cl. 424-74.000.
Loring, Martha T. Method and apparatus for gratifying excessive oral needs. 4,569,136, Cl. 131-273.000.
Loughran, James A.: *See—*
Anthony, Thomas R.; Houston, Douglas E.; and Loughran, James A., 4,570,173, Cl. 357-20.000.
Lovato, Attilio, to ITW Fastex Italia S.p.A. Buckle of the snap closure type having the two parts engageable by snap action identical to one another. 4,569,106, Cl. 24-615.000.
Love, Dale: *See—*
Gronert, Steven A.; Love, Dale; and Elliott, Stephen R., 4,569,533, Cl. 280-163.000.
Lowrance, Arlen J.; and Lowrance, Constance A. Submersible fishing aid. 4,569,146, Cl. 43-4.000.
Lowrance, Constance A.: *See—*
Lowrance, Arlen J.; and Lowrance, Constance A., 4,569,146, Cl. 43-4.000.
Lowther, Frank: *See—*
Voelz, Frederick L.; and Lowther, Frank, 4,570,028, Cl. 585-540.000.
Lucas Industries Ltd.: *See—*
Walker, Michael J.; and Bagnall, Jeffry A., 4,570,247, Cl. 367-93.000.
Lucas Industries Public Limited Company: *See—*
Reynolds, Desmond H. J., 4,569,271, Cl. 91-25.000.
Luck, Oliver W. Portable boxing exerciser. 4,569,401, Cl. 272-73.000.
Lukin, Nikolai I.: *See—*
Karpov, Alexandr V.; Kivaev, Anatoly A.; Elkind, Solomon A.; Orlov, Garri N.; Lukin, Nikolai I.; Gashnev, Mikhail S.; Ososkov, Gennady A.; Prikhodko, Valentin I.; and Zavyalov, Vladimir F., 4,569,576, Cl. 351-212.000.
Lummus Industries, Inc.: *See—*
Van Doorn, Donald W.; Hawkins, James B.; Harmon, William A.; McKenzie, Terry L.; and Beeland, William D., 4,569,264, Cl. 83-100.000.
Lundgren, Bengt, to SKF Nova AB. Device comprising an angular contact bearing. 4,569,602, Cl. 384-499.000.
Lundy, Joseph R., to Lundy Research Laboratories, Inc. Method and apparatus for characterizing the unknown state of a physical system. 4,570,225, Cl. 364-417.000.
Lundy Research Laboratories, Inc.: *See—*
Lundy, Joseph R., 4,570,225, Cl. 364-417.000.
Lurssen, Klaus: *See—*
Schroder, Rolf; and Lurssen, Klaus, 4,570,014, Cl. 560-124.000.
Lynch, John: *See—*
Bleckmann, Gerhard; and Lynch, John, 4,569,286, Cl. 101-382.00R.
Lynch, Michael A., to permaTek, Inc. Book turn-around and stack accumulator apparatus. 4,569,620, Cl. 412-21.000.
Lyon, John P.; and Halpin, Nace E. Salt recovery from aluminum black dross. 4,569,723, Cl. 159-48.100.
M.A.N.-Roland Druckmaschinen Aktiengesellschaft: *See—*
Ehm, Karl; and Lausch, Wolfram, 4,569,225, Cl. 73-49.400.
M.C.L. Co., Ltd.: *See—*
Sasaki, Nobuyoshi, 4,569,385, Cl. 164-166.000.
Mabotex: *See—*
Marion, Louis; and Borel, Andre , 4,569,672, Cl. 493-359.000.
MacFall, James R.: *See—*
Wehrli, Felix W.; and MacFall, James R., 4,570,119, Cl. 324-306.000.
Macier, James E.: *See—*
Breckenfeld, Paul W.; Broughton, George L.; Macier, James E.; and Calamia, David C., 4,569,415, Cl. 181-229.000.
MacLeod, Robert B., Jr.: *See—*
Gelardi, Anthony L.; Gelardi, Paul J.; and MacLeod, Robert B., Jr., 4,569,492, Cl. 242-199.000.
Maddak, Inc.: *See—*
Howard, James M.; and Gover, Thomas G., 4,569,546, Cl. 292-336.300.
Madison, Norman L., to Dow Chemical Company, The. Method of inhibiting microbial activity with certain bioactive sulfone polymers. 4,569,989, Cl. 528-386.000.
Madray, Herbert R. Leveling device. 4,569,169, Cl. 52-126.100.
Maeda, Akio; Aonuma, Mitsuyoshi; and Muranishi, Masahiko, to Nippon Zeon Co Ltd. Scorch-inhibited elastomeric composition. 4,569,958, Cl. 524-100.000.
Magyar, Karoly: *See—*
Budai, Zoltan; Benko , Pal; Ratz nee Simonek, Ildiko ; Rakoczy nee Pinter, Eva; Magyar, Karoly; Kelemen, Jozsef; and Mandi, Attila, 4,570,002, Cl. 548-495.000.
Maher, John W., to Motorola, Inc. Distributed fault isolation and recovery system and method. 4,570,261, Cl. 371-16.000.
Maier, Josef; Gloger, Manfred; and Draeger, Brigitte, to Boehringer Mannheim GmbH. Method for the direct determination of the lipid content of blood beta-lipoproteins. 4,569,917, Cl. 436-71.000.
Maikranz, Fritz: *See—*
Zentgraf, Helmut; Fricke, Gunter; Geisler, Iring; Balzer, Heinrich; Burghardt, Hans; and Maikranz, Fritz, 4,569,432, Cl. 193-32.000.
Maillefer, Charles E., to Maillefer S.A. Screw extruder for plastics. 4,569,595, Cl. 366-88.000.
Maillefer S.A.: *See—*
Maillefer, Charles E., 4,569,595, Cl. 366-88.000.
Makino, Kuniyasu: *See—*
Watanabe, Tomoyoshi; Hasegawa, Yuzo; and Makino, Kuniyasu, 4,569,611, Cl. 400-624.000.
Maley, Gerald A.; and Westcott, Douglas W., to International Business Machines Corporation. Single clocked latch circuit. 4,570,082, Cl. 307-443.000.
Malissin, Roland; and Monlouis, Claude, to Thomson CSF. Optical read/write head for recording and playback of an optical disk and an optical device associated with said optical head. 4,570,249, Cl. 369-45.000.
Mallinckrodt, Inc.: *See—*
Dunski, Neil; Bazzi, Ali A.; and Buehler, Henry J., 4,569,959, Cl. 524-101.000.
Manda, Yasutake; Miyabayashi, Tadao; and Fukumoto, Sakuo, to Tokyo Electric Co. Ltd. Power supply circuit for driving a motor. 4,570,211, Cl. 363-23.000.
Mandi, Attila: *See—*
Budai, Zoltan; Benko , Pal; Ratz nee Simonek, Ildiko ; Rakoczy nee Pinter, Eva; Magyar, Karoly; Kelemen, Jozsef; and Mandi, Attila, 4,570,002, Cl. 548-495.000.
Manes, Michael R., to Aspen Laboratories, Inc. High output electrosurgical unit. 4,569,345, Cl. 128-303.140.
Mannesmann AG: *See—*
Hecht, Joachim; Loedige, Wilfried; Rohde, Friedrich; Rudat, Gerhard; Wiggershaus, Fred; and Winter, Klaus-Juergen, 4,569,290, Cl. 105-154.000.
Mantell, Myron E. Failure sensing diaphragm for a diaphragm pump. 4,569,634, Cl. 417-63.000.
Marcus, John S.: *See—*
Rubin, Sol R.; Marcus, John S.; and Holly, James D., 4,569,259, Cl. 81-121.100.
Margulis, Howard. Minimal weight fishing lure producing oscillatory motion, and utilizing interchangeable parts. 4,569,147, Cl. 43-26.200.
Marion, Louis; and Borel, Andre , to Mabotex. Automatic cutting, folding and packing machine for sheets of flexible material which are usually paid out in rolled up webs. 4,569,672, Cl. 493-359.000.
Mark, David F.; and Creasey, Abla A., to Cetus Corporation. Multiclass hybrid interferons. 4,569,908, Cl. 435-70.000.
Mark, Victor: *See—*
Tyrell, John A.; and Mark, Victor, 4,569,973, Cl. 525-437.000.
Marketing Displays, Inc.: *See—*
Seely, James R., 4,569,499, Cl. 248-624.000.
Marks, Larry, to Prince Corporation. Visor mounting assembly. 4,569,552, Cl. 296-97.00K.

Marler Haley ExpoSystems Limited: *See*—
Bannister, Brian C., 4,569,143, Cl. 40-603.000.
Marley, Robert R.: *See*—
Seelbach, Walter C.; and Marley, Robert R., 4,570,240, Cl. 365-204.000.
Mars, Inc.: *See*—
Jones, David A., 4,569,844, Cl. 426-2.000.
Marschke, Ronald J.: *See*—
Kitchen, Barry J.; Annand, Clark; Jamieson, James L.; and Marschke, Ronald J., 4,569,236, Cl. 73-863.310.
Marshall, Trevor J., Jr.: *See*—
Gabritsos, George C.; and Marshall, Trevor J., Jr., 4,570,250, Cl. 369-97.000.
Martens, Theodorus G. J. A., to U.S. Philips Corporation. Apparatus for sorting data words on the basis of the values of associated parameters. 4,570,221, Cl. 364-200.000.
Martin, Denis: *See*—
Tsu, Raphael; Ovshinsky, Stanford R.; Hernandez, Jesus; and Martin, Denis, 4,569,697, Cl. 148-1.500.
Martin, Owen C.: *See*—
Giampetruzzi, Jerry F.; and Martin, Owen C., 4,569,664, Cl. 446-110.000.
Martin Paul, Inc.: *See*—
Belokin, Martin P., 4,569,462, Cl. 222-180.000.
Martin, William J.: *See*—
Criscimagna, Tony N.; and Martin, William J., 4,570,159, Cl. 340-776.000.
Martins, Evon, to Engelhard Corporation. Barium compound-containing thickening agent and drilling fluids made therefrom. 4,569,770, Cl. 252-8.50B.
Martorano, Joseph A.; and Bell, Robert J., to Sigmatron Nova, Inc. Speedometer display of simulated analog needle and odometer on electroluminescent panel. 4,570,151, Cl. 340-52.00R.
Maruchi, Sachio: *See*—
Shibano, Tomishi; Ozawa, Hironori; and Maruchi, Sachio, 4,569,712, Cl. 156-244.140.
Marvin Glass & Associates: *See*—
Rosenwinkel, Donald A.; Breslow, Jeffrey D.; and Zaruba, John V., 4,569,527, Cl. 273-251.000.
Marzaroli, Vincenzo: *See*—
Russo, Luigi; and Marzaroli, Vincenzo, 4,569,180, Cl. 53-201.000.
Masaki, Yuichi; and Hotta, Yoshio, to Canon Kabushiki Kaisha. Optical modulation device with masking structure and method of driving the same. 4,569,574, Cl. 350-334.000.
Maschinenfabrik Sulzer-Ruti AG: *See*—
Vogel, Rudolf, 4,569,373, Cl. 139-25.000.
Massachusetts Institute of Technology: *See*—
Growdon, John H.; and Wurtman, Richard J., 4,569,929, Cl. 514-78.000.
Penman, Sheldon; and Fey, Edward G., 4,569,916, Cl. 436-64.000.
Master Lock Company: *See*—
Hartmann, Udo; Stoller, Mark W.; and Grandy, Kenneth N., 4,569,545, Cl. 292-281.000.
Masterson, Jon A., to Wallboard Tool Company, Inc. Adjustable leg for stilts and the like. 4,569,516, Cl. 272-70.100.
Masuda, Shunichi, to Canon Kabushiki Kaisha. Image forming apparatus. 4,569,585, Cl. 355-14.00R.
Masuyama, Kenichi: *See*—
Miyoshi, Takahito; Masuyama, Kenichi; Dezawa, Shin-ichiro; Okutu, Toshimitu; Nasu, Norio; Aoki, Nobuo; and Fujiyama, Masaaki, 4,569,856, Cl. 427-128.000.
Matarese, Ralph J.: *See*—
Huang, Ho-Chung; and Matarese, Ralph J., 4,570,174, Cl. 357-22.000.
Material Sales, Inc.: *See*—
Woudenberg, John D.; and Jones, Ronald B., 4,569,495, Cl. 248-160.000.
Matheron, Gerard; Migny, Philippe; and Placais, Bernard, to Commissariat a l'Energie Atomique. Josephson diode logic device. 4,570,087, Cl. 307-462.000.
Matsubara, Kiyoshi: *See*—
Shibukawa, Masaru; Nakamura, Hideo; and Matsubara, Kiyoshi, 4,570,219, Cl. 364-200.000.
Matsuda, Akira; Komoda, Akira; Yoshihara, Takahisa; and Miyachi, Kazuaki, to Kawasaki Steel Corporation. Production of Zn-Ni alloy plated steel strips. 4,569,731, Cl. 204-28.000.
Matsuda, Hiroshi; Haruta, Masahiro; Eguchi, Ken; Nishimura, Yukuo; Hirai, Yutaka; and Nakagiri, Takashi, to Canon Kabushiki Kaisha. Method of forming deposition film. 4,569,855, Cl. 427-35.000.
Matsui, Susumu; Sato, Takako T.; and Nakajima, Kazuo, to Takara Shuzo Co., Ltd. Production of bilirubin oxidase. 4,569,912, Cl. 435-189.000.
Matsukawa, Masao: *See*—
Kasamatsu, Norikazu; Matsukawa, Masao; and Mishima, Masaru, 4,570,169, Cl. 346-200.000.
Matsumoto, Kenji; and Suzuki, Yasuo, to Bridgestone Tire Company Limited. Pneumatic tires having a high resistance to cut growth. 4,569,381, Cl. 152-548.000.
Matsumura, Hiroyoshi: *See*—
Nagatsuma, Kazuyuki; Matsumura, Hiroyoshi; Katsuyama, Toshio; and Suganuma, Tsuneo, 4,570,064, Cl. 250-231.00R.
Matsunaga, Kenichi: *See*—
Yoshikumi, Chikao; Ohmura, Yoshio; Hirose, Fumio; Ikuzawa, Masanori; Matsunaga, Kenichi; Fujii, Takayoshi; Ohhara, Minoru; and Ando, Takao, 4,569,842, Cl. 514-25.000.
Matsurra, Yasunori: *See*—
Tani, Tatsuo; Sawata, Sinji; Tanaka, Tadayoshi; Sakuta, Koichi; Nagata, Yuuji; Eto, Yasushi; Adachi, Makoto; and Matsurra, Yasunori, 4,569,331, Cl. 126-435.000.
Matsushita Electric Industrial Co., Ltd.: *See*—
Morii, Yoshihiro; Kitamori, Teruaki; and Morisawa, Masanori, 4,570,093, Cl. 310-46.000.
Morimura, Atsushi; and Tanaka, Hiromichi, 4,570,178, Cl. 358-44.000.
Shimizu, Hideharu; Katsuragi, Noboru; and Nakano, Kazuhiro, 4,569,656, Cl. 431-325.000.
Matsushita Electric Works, Ltd.: *See*—
Motoyama, Masanori; and Nishikawa, Toyotaka, 4,570,138, Cl. 335-80.000.
Matteson, Michael J., to Georgia Tech. Research Institute. Automated interfacial tensiometer. 4,569,226, Cl. 73-64.400.
Matthews and Thorp: *See*—
Gray, Earl E.; and Timm, Alton T., 4,569,407, Cl. 177-208.000.
Mattox, Ernest M.; and Van Noord, Andrew J., to Portable Isokinetics, Inc. Shoulder exercising apparatus. 4,569,519, Cl. 272-131.000.
Maury, Alvaro; and Parrillo, Louis C., to AT&T Bell Laboratories. Ethylene glycol etch for processes using metal silicides. 4,569,722, Cl. 156-657.000.
Maxey, Frank S., deceased (by Maxey, Gertrude, legal representative); and Mowdood, Syed K., to Goodyear Tire & Rubber Company, The. Composite of rubber and metal reinforcement therefor. 4,569,382, Cl. 152-548.000.
Maxey, Gertrude, legal representative: *See*—
Maxey, Frank S., deceased; and Mowdood, Syed K., 4,569,382, Cl. 152-548.000.
Mazda Motor Corporation: *See*—
Higashi, Haruki; Waki, Kouichirou; Fukuiri, Masaru; and Yukitomo, Kazuo, 4,569,253, Cl. 74-866.000.
McCarthy, Richard O., to Taslitt, Rena. Extendable key operator. 4,569,215, Cl. 70-456.00R.
McCord, James W. Vapor generating and recovery apparatus for vaporizing and condensing at least two liquid components having different vaporizing temperatures. 4,569,727, Cl. 203-87.000.
McCormick, James B., to Pelam, Inc. Apparatus for preparing and embedding tissue samples for histological examination. 4,569,647, Cl. 425-117.000.
McCoy, Bobby G.: *See*—
McDuff, George L.; and McCoy, Bobby G., 4,569,303, Cl. 114-227.000.
McCracken, Robert G., to Economy Forms Corporation. Cambered truss header for a shoring structure. 4,569,501, Cl. 249-209.000.
McCracken, Ronald A., to Wang Laboratories, Inc. Exchange switch. 4,570,258, Cl. 370-58.000.
McDonie, Arthur F.; and Kaiser, Donald B., to RCA Corporation. Photomultiplier tube having an electron multiplier cage assembly with uniform transverse spacing. 4,570,102, Cl. 313-533.000.
McDuff, George L.; and McCoy, Bobby G. Ship fluid cargo salvage diaper. 4,569,303, Cl. 114-227.000.
McEvoy, John C.; Bliss, George N.; and Thomas, Leslie P., to Diamond Automations, Inc. Egg processing system. 4,569,444, Cl. 209-510.000.
McFarland, Cecil G.: *See*—
Keyworth, Donald A.; and McFarland, Cecil G., 4,570,026, Cl. 585-312.000.
McGinley, Thomas J.; and Hosler, Peter, to Sun Refining and Marketing Company. Extraction of aromatics with N-cyclohexyl-2-pyrrolidone. 4,569,755, Cl. 208-326.000.
McGivern, Gerald P.: *See*—
O'Neill, James J.; Treanor, John P. G.; and McGivern, Gerald P., 4,569,308, Cl. 119-82.000.
McGovney, William E.; and Garich, Walter E., to P J Repair Service, Inc. Self-elevating substructure for a portable oil derrick. 4,569,168, Cl. 52-122.100.
McGovney, William E., to House of Lloyd, Inc. Power-driven conveyor. 4,569,435, Cl. 198-502.100.
McIntosh, Arthur M., to Borg-Warner Corporation. Variable pulley accessory drive. 4,569,670, Cl. 474-16.000.
McIntyre, Frederic S., to Acumeter Laboratories, Inc. Roll coating applicator and adhesive coatings and the like and process of coating. 4,569,864, Cl. 427-428.000.
McKee, Kari L. Plastic material spring coil teething aid article. 4,569,349, Cl. 128-359.000.
McKenzie, Terry L.: *See*—
Van Doorn, Donald W.; Hawkins, James B.; Harmon, William A.; McKenzie, Terry L.; and Beeland, William D., 4,569,264, Cl. 83-100.000.
McKeough, David T.: *See*—
Piccirilli, Robert M.; McKeough, David T.; and Chang, Wen-Hsuan, 4,569,966, Cl. 524-589.000.
McKinley, Mark J., to Dow Chemical Company, The. Flocculation of suspended solids from aqueous media. 4,569,768, Cl. 210-727.000.
McKinney, Collin J.: *See*—
Melton, Jack D.; McKinney, Collin J.; and Reimund, James A., 4,570,152, Cl. 340-58.000.
McMills, Corey J., to Raychem Corporation. Electrically heat-recoverable assembly. 4,570,055, Cl. 219-541.000.
McNew, Quinton B.: *See*—
Edwards, John W.; Harper, Daniel R.; and McNew, Quinton B., 4,569,561, Cl. 305-40.000.
Mead Corporation, The: *See*—
Feliks, James J.; and Culpepper, Will L., 4,569,185, Cl. 53-580.000.

Meadors, Smith A.: *See*—
Parrott, Robert C.; and Meadors, Smith A., 4,569,451, Cl. 211-191.000.
Meadows, Roger D.: *See*—
Bryan, James S.; and Meadows, Roger D., 4,569,477, Cl. 238-349.000.
Mehnert, Walter: *See*—
Bolkow, Ludwig; Mehnert, Walter; and Chaborski, Hoiko, 4,569,599, Cl. 368-120.000.
Meier, Bert: *See*—
Sasse, H. Rainer; Conrad, Karl-Hermann; Herzog, Rolf; Klein, Hans; and Meier, Bert, 4,569,971, Cl. 525-109.000.
Meier, Johann H.; and Hanna, David W., to International Business Machines Corporation. Wire driving armature for dot printer. 4,569,605, Cl. 400-124.000.
Meinan Machinery Works, Inc.: *See*—
Honda, Noriyuki, 4,569,715, Cl. 156-495.000.
Meiske, Larry A.: *See*—
Esneault, Calvin P.; Meiske, Larry A.; and Fuentes, Ricardo, Jr., 4,569,975, Cl. 526-138.000.
Melanson, Lionel J.; and Bucherati, Frank, to GTE Products Corporation. Method of processing PTC heater. 4,570,046, Cl. 219-68.000.
Melcher, Roy L.: *See*—
Ruger, William B.; and Melcher, Roy L., 4,569,145, Cl. 42-16.000.
Melton, Jack D.; McKinney, Collin J.; and Reimund, James A., to Hyperion Corporation. Magnetic tire monitor system. 4,570,152, Cl. 340-58.000.
Mendelson, Robert A.: *See*—
Jones, William J.; and Mendelson, Robert A., 4,569,969, Cl. 525-67.000.
Menniti, Pietro: *See*—
Storti, Sandro; and Menniti, Pietro, 4,570,198, Cl. 361-20.000.
Mercante International A/S: *See*—
Hyltoft, Hans C., 4,569,582, Cl. 355-3.00R.
Merlack, William A.: *See*—
Goldman, Gerald L.; Gallagher, Joseph W.; and Merlack, William A., 4,569,615, Cl. 404-65.000.
Mesquida, Guy: *See*—
Henry, Raymond; Carballes, Jean C.; and Mesquida, Guy, 4,570,172, Cl. 357-17.000.
Metallgesellschaft Aktiengesellschaft: *See*—
Ottow, Manfred, 4,569,436, Cl. 198-771.000.
Metallisations et Traitements Optiques MTO: *See*—
Bel, Roger P.; and Hascoet, Martial E., 4,569,333, Cl. 128-4.000.
Methods, Inc.: *See*—
Dorumsgaard, John A.; and Amerson, Roger H., 4,569,625, Cl. 414-416.000.
Michai, Gabi: *See*—
Alper, Yekutiel; Sagi, Yitzchak; Michai, Gabi; Antler, Aharon; and Elkin, Yitzchak, 4,569,188, Cl. 56-327.00R.
Michels, Hartwig; and Klingler, Knud. Apparatus for carrying and transporting loads. 4,569,410, Cl. 180-125.000.
Microdot Inc.: *See*—
Berecz, Imre, 4,569,628, Cl. 414-739.000.
Migny, Philippe: *See*—
Matheron, Gerard; Migny, Philippe; and Placais, Bernard, 4,570,087, Cl. 307-462.000.
Miki, Toshio; Toda, Yoshihide; and Horii, Kenichi, to Koyo Seiko Company Limited. Mounting device for antifriction bearing. 4,569,603, Cl. 384-585.000.
Milberger, Lionel J.; Baron, Donald; and Berner, Paul C., to Vetco Offshore, Inc. Mudline casing hanger. 4,569,404, Cl. 175-208.000.
Milberger, Walter E., to United States of America, Air Force. High power high voltage linear amplifier apparatus. 4,570,129, Cl. 330-277.000.
Miller, Albert S. Insulating window panel. 4,569,872, Cl. 428-71.000.
Miller, Bill; and Bouk, Jerry H. Agricultural tool bar and chemical applicator. 4,569,296, Cl. 111-7.000.
Miller, Darrell G.; and Miller, Presley W. Steering control for trolling motor. 4,569,663, Cl. 440-7.000.
Miller-Jones, Stockton M.: *See*—
Carnes, Ronald C.; and Miller-Jones, Stockton M., 4,569,231, Cl. 73-626.000.
Miller, Philip A.; Mullins, Richard M.; and Bucko, Robert J., to Olin Corporation. Water-based hydraulic fluid compositions containing selected two-component anti-wear agents. 4,569,778, Cl. 252-77.000.
Miller, Philip R.; and Mullins, Richard M., to Olin Corporation. Water-based hydraulic fluid compositions containing selected two-component anti-wear agents. 4,569,776, Cl. 252-77.000.
Miller, Philip R.; and Mullins, Richard M., to Olin Corporation. Water-based hydraulic fluid compositions containing selected two-component anti-wear agents. 4,569,777, Cl. 252-77.000.
Miller, Presley W.: *See*—
Miller, Darrell G.; and Miller, Presley W., 4,569,663, Cl. 440-7.000.
Miller Sales & Engineering, Inc.: *See*—
Elliott, William H., 4,569,502, Cl. 251-8.000.
Mills, David, to Rolls-Royce Limited. Dissolving ceramic materials. 4,569,384, Cl. 164-131.000.
Milo, George T.: *See*—
Waddington, Clive; Lagasse, Normand L.; Milo, George T.; and Van Kamerik, John G., 4,569,196, Cl. 60-39.080.
Milu, Petre, to Institutul National de Motoare Termice. Two-stroke axial pistons engines. 4,569,314, Cl. 123-58.00R.
Minagawa, Isao; and Minagawa, Toshio, to Fuji Trailer Manufacturing Co., Ltd. Driller for use in rice field. 4,569,400, Cl. 172-21.000.
Minagawa, Toshio: *See*—
Minagawa, Isao; and Minagawa, Toshio, 4,569,400, Cl. 172-21.000.
Mine, Hisanobu, to Kabushiki Kaisha Kobe Seiko Sho. Method of manufacturing a cylindrical billet. 4,569,386, Cl. 164-476.000.
Mine Safety Appliances Company: *See*—
Caimi, Frank M., 4,570,204, Cl. 362-17.000.
Ministry of International Trade & Industry: *See*—
Tachi, Susumu; and Komoriya, Kiyoshi, 4,570,227, Cl. 364-444.000.
Minna, John D.: *See*—
Mulshine, James L.; and Minna, John D., 4,569,788, Cl. 260-112.00R.
Minnesota Mining and Manufacturing Company: *See*—
Blake, Frederick D., 4,569,960, Cl. 524-145.000.
Burguette, Mario D.; and Foss, George D., 4,569,962, Cl. 522-74.000.
Freese, Robert P.; Johnson, Leslie H.; Rinehart, Thomas A.; and Gardner, Richard N., 4,569,881, Cl. 428-213.000.
Groves, James D., 4,569,879, Cl. 428-198.000.
Gutman, Gustav, 4,569,906, Cl. 430-607.000.
Hakanson, John D.; and Niles, Gerald J., 4,570,197, Cl. 360-132.000.
Mongeon, Douglas R.; and Skwor, Edward P., 4,569,469, Cl. 227-19.000.
Tollefson, Richard J.; Berg, James G.; and Hinderaker, Philip D., 4,569,877, Cl. 428-141.000.
Tung, Chi F.; and Coderre, James C., 4,569,857, Cl. 427-163.000.
West, Robert C.; and Wolff, Andrew R., 4,569,953, Cl. 522-6.000.
Willett, Stephen J.; Chou, Hsin H.; Hendrickson, Carol E.; and Hendrickson, William A., 4,569,895, Cl. 430-70.000.
Mirkarimi, Seyed A. Infant crawler. 4,569,532, Cl. 280-87.02W.
Misawa, Toshiyuki; and Asakawa, Tatsushi, to Kabushiki Kaisha Suwa Seikosha. Voltage regulator for liquid crystal display. 4,570,115, Cl. 323-313.000.
Mishima, Masaru: *See*—
Kasamatsu, Norikazu; Matsukawa, Masao; and Mishima, Masaru, 4,570,169, Cl. 346-200.000.
Mita Industrial Co., Ltd.: *See*—
Koyama, Shigeo, 4,569,586, Cl. 355-72.000.
Miyoshi, Yoshitake; Takahashi, Ichirou; Okada, Takehiko; and Yamamoto, Haruo, 4,569,587, Cl. 355-72.000.
Mitani, Akio; and Ariga, Takao, to Kabushiki Kaisha Toshiba. Indirect cooling refrigerator with freezing and storage chambers and a forced air circulating path. 4,569,206, Cl. 62-156.000.
Mitani, Tatsuro: *See*—
Ishii, Tetsuo; and Mitani, Tatsuro, 4,569,123, Cl. 29-578.000.
Mitchell, Peter W. D., to Union Camp Corporation. Preparation of terpinen-4-ols. 4,570,022, Cl. 568-827.000.
Mito, Yoshio: *See*—
Nakamura, Kazuharu; Mito, Yoshio; and Nakanishi, Yutaka, 4,569,652, Cl. 431-201.000.
Mitomo, Akio: *See*—
Takahashi, Hisae; Yoshinaga, Tatsuro; and Mitomo, Akio, 4,570,207, Cl. 362-152.000.
Mitsubishi Denki Kabushiki Kaisha: *See*—
Asami, Kazutomo; Wada, Fumio; Ishijima, Koji; and Sato, Yutaka, 4,569,645, Cl. 418-63.000.
Fukumoto, Takaaki; Mukogawa, Yasukazu; Hama, Masaharu; and Yanagi, Motonori, 4,569,224, Cl. 73-32.00R.
Hirano, Yasutaka, 4,569,423, Cl. 187-20.000.
Ishida, Matsuhiko; and Inoue, Shosaku, 4,569,433, Cl. 198-333.000.
Ishii, Tetsuo, 4,570,259, Cl. 370-86.000.
Morishita, Mitsuharu; and Kouge, Shinichi, 4,569,411, Cl. 180-142.000.
Morishita, Mitsuharu; Kouge, Shinichi; Iwatani, Shirou; and Sasaki, Katsuhiro, 4,570,199, Cl. 361-18.000.
Nagayoshi, Hiromi; and Hamano, Hisanori, 4,570,237, Cl. 365-95.000.
Mitsubishi Jukogyo Kabushiki Kaisha: *See*—
Watabe, Shin, 4,569,476, Cl. 236-47.000.
Mitsubishi Monsanto Chemical Company: *See*—
Fujino, Kiyoharu, 4,569,991, Cl. 528-492.000.
Mitsubishi Nuclear Fuel Co. Ltd.: *See*—
Miwa, Nobuo, 4,570,051, Cl. 219-137.00R.
Mitsubishi Paper Mills, Ltd.: *See*—
Hiraishi, Shigetoshi; and Kondo, Kazuyoshi, 4,570,170, Cl. 346-209.000.
Mitsui Kensetsu Kabushiki Kaisha: *See*—
Takahashi, Yoshiyuki; and Koiso, Fumihiro, 4,569,616, Cl. 405-150.000.
Mitsui Petrochemical Industries, Ltd.: *See*—
Mizui, Kinya; Takeda, Masami; Ozaki, Yoshimi; and Tomita, Ryosuke, 4,570,024, Cl. 585-24.000.
Mitsui SRC Development Co., Ltd.: *See*—
Wright, Charles H., 4,569,749, Cl. 208-10.000.
Mitsuitoatsu Chemicals Inc.: *See*—
Nakatani, Kiyoshi; Numata, Satoshi; Inoue, Tsuneo; Kodaka, Kenji; Ishii, Tsutomu; Toyama, Teruhiko; Tachibana, Hajime; Udagawa, Takatoshi; and Gohbara, Masatoshi, 4,570,005, Cl. 549-435.000.
Mitutoyo Mfg. Co., Ltd.: *See*—
Ichikawa, Souji, 4,569,137, Cl. 33-125.00R.
Miura, Masatsugu; Ohta, Takao; Hirase, Kiyoto; and Iwahashi, Seitoro, to Omron Tateisi Electronics Co. Input/output device for programmable controller. 4,570,215, Cl. 364-140.000.

Miura, Toshikatsu: *See—*
Nishiyama, Yukio; Yamamoto, Kazuhiko; Sanada, Munehiko; Okada, Yukio; and Miura, Toshikatsu, 4,569,880, Cl. 428-212.000.

Miwa, Nobuo, to Mitsubishi Nuclear Fuel Co. Ltd. Enclosing a gas in a nuclear reactor fuel rod. 4,570,051, Cl. 219-137.00R.

Miyabayashi, Tadao: *See—*
Manda, Yasutake; Miyabayashi, Tadao; and Fukumoto, Sakuo, 4,570,211, Cl. 363-23.000.

Miyachi, Kazuaki: *See—*
Matsuda, Akira; Komoda, Akira; Yoshihara, Takahisa; and Miyachi, Kazuaki, 4,569,731, Cl. 204-28.000.

Miyagi, Masahide: *See—*
Umemoto, Yoshiyuki; Iijima, Masao; Miyagi, Masahide; and Muramatsu, Yoshihisa, 4,570,030, Cl. 136-244.000.

Miyakawa, Susumu: *See—*
Taki, Yoshihiro; Fukuta, Toshiaki; Akado, Hajime; Miyakawa, Susumu; and Nishio, Yoshitaka, 4,569,813, Cl. 264-259.000.

Miyake, Yasufumi: *See—*
Yamaguchi, Katsuhiko; Kobayashi, Seiki; Miyake, Yasufumi; and Tsumura, Akio, 4,569,885, Cl. 428-339.000.

Miyao, Masanobu; Ohkura, Makoto; Takemoto, Iwao; Warabisako, Terunori; Mukai, Kiichiro; Haruta, Ryo; Nishioka, Yasushiro; Kimura, Shinichiro; and Tokuyama, Takashi, to Hitachi, Ltd. Three-dimensional semiconductor device with thin film monocrystalline member contacting substrate at a plurality of locations. 4,570,175, Cl. 357-23.700.

Miyata, Tsutomu: *See—*
Noda, Minoru; Miyata, Tsutomu; Yamashita, Yoshihiro; and Ohmura, Kenji, 4,569,624, Cl. 414-225.000.

Miyauchi, Nobuyuki: *See—*
Hayakawa, Toshiro; Miyauchi, Nobuyuki; Yano, Seiki; and Suyama, Takahiro, 4,569,721, Cl. 156-649.000.

Miyoshi, Takahito; Masuyama, Kenichi; Dezawa, Shin-ichiro; Okutu, Toshimitu; Nasu, Norio; Aoki, Nobuo; and Fujiyama, Masaaki, to Fuji Photo Film Co., Ltd. Method for preparing magnetic recording medium. 4,569,856, Cl. 427-128.000.

Miyoshi, Yoshitake; Takahashi, Ichirou; Okada, Takehiko; and Yamamoto, Haruo, to Mita Industrial Co., Ltd. Paper supply system of copying machine and a paper supply cassette. 4,569,587, Cl. 355-72.000.

Mizui, Kinya; Takeda, Masami; Ozaki, Yoshimi; and Tomita, Ryosuke, to Mitsui Petrochemical Industries, Ltd. Novel substituted aromatic hydrocarbons, processes for production thereof, and use thereof. 4,570,024, Cl. 585-24.000.

Mobay Chemical Corporation: *See—*
Radovich, David A.; and Keddie, Alicia H., 4,569,952, Cl. 521-167.000.

Mobil Oil Corporation: *See—*
Forbus, Thomas R., Jr., 4,569,774, Cl. 252-33.000.
Leu, Lei-Kuang, 4,570,122, Cl. 324-345.000.
Wright, Bernard S.; Owen, Hartley; and Hsia, Chung H., 4,569,827, Cl. 422-190.000.

Moellering, Edgar E.: *See—*
Linton, Steven C.; and Moellering, Edgar E., 4,570,113, Cl. 318-612.000.

Molex Incorporated: *See—*
Triner, Irvin R., 4,569,566, Cl. 339-99.00R.

Molins PLC: *See—*
Nowers, John R.; and Williams, Robert E., 4,569,359, Cl. 131-281.000.

Molloy, Bryan B.; and Steinberg, Mitchell I., to Eli Lilly and Company. Alkylsulfonamidophenylalkylamines. 4,569,801, Cl. 260-501.210.

Molnar, Gyorgy; Tetenyi, Peter; Dobos, Eva; and Bernath, Jeno , to Gyogynoveny Kutato Intezet. Process for the sterile micropropagation of plant material. 4,569,914, Cl. 435-240.000.

Monarch Marking Systems, Inc.: *See—*
Linton, Steven C.; and Moellering, Edgar E., 4,570,113, Cl. 318-612.000.

Mongeon, Douglas R.; and Skwor, Edward P., to Minnesota Mining and Manufacturing Company. Bone stapler cartridge. 4,569,469, Cl. 227-19.000.

Monlouis, Claude: *See—*
Malissin, Roland; and Monlouis, Claude, 4,570,249, Cl. 369-45.000.

Mons, Robert F.: *See—*
Ferris, David S.; Gulino, Rosario; and Mons, Robert F., 4,569,300, Cl. 114-20.00R.

Monsanto Company: *See—*
Jones, William J.; and Mendelson, Robert A., 4,569,969, Cl. 525-67.000.
Weingarten, Harold I.; and Feder, Joseph, 4,569,907, Cl. 435-23.000.

Montegari, Frank A.: *See—*
Bode, James W.; and Montegari, Frank A., 4,570,086, Cl. 307-458.000.

Monticelli, Dennis M., to National Semiconductor Corporation. Class AB output circuit with large swing. 4,570,128, Cl. 330-267.000.

Moore, Andrew S., to Engelhard Corporation. Selective vaporization process. 4,569,754, Cl. 208-91.000.

Moore, Foster L., to Champion International Corporation. Adapter skirt for static aerator mixer. 4,569,757, Cl. 210-220.000.

Moore, Robert E., to Adamantech, Inc. Preparation of a gel having gas transporting capability. 4,569,784, Cl. 252-315.100.

Moore, Robert T.; and Takahashi, Yoshihiro, to Xertex Corporation. Sulfur dioxide analysis system. 4,569,918, Cl. 436-122.000.

Morabit, Vincent D. Chain saw tip stabilizing device for use with an antikickback device. 4,569,135, Cl. 30-371.000.

Moran, Daniel B.; Powell, Dennis W.; and Albright, Jay D., to American Cyanamid Company. Imidazo[1,2-b]pyridazines. 4,569,934, Cl. 514-248.000.

Morant, Clive: *See—*
Ashcombe, Geoffrey T.; Duff-Barclay, Ian; and Morant, Clive, 4,569,114, Cl. 29-525.000.

Mori, Motoaki; Hirose, Yuichi; and Yamaguchi, Hisao, to Nichiro Kogyo Co., Ltd. Band-returning and tightening apparatus for a band type strapping machine. 4,569,186, Cl. 53-589.000.

Morii, Yoshihiro; Kitamori, Teruaki; and Morisawa, Masanori, to Matsushita Electric Industrial Co., Ltd. Direct-current motor with two drive magnets. 4,570,093, Cl. 310-46.000.

Morimura, Atsushi; and Tanaka, Hiromichi, to Matsushita Electric Industrial Co., Ltd. Solid state color imaging apparatus. 4,570,178, Cl. 358-44.000.

Morisawa, Masanori: *See—*
Morii, Yoshihiro; Kitamori, Teruaki; and Morisawa, Masanori, 4,570,093, Cl. 310-46.000.

Morishita, Mitsuharu; and Kouge, Shinichi, to Mitsubishi Denki Kabushiki Kaisha. Power steering control apparatus. 4,569,411, Cl. 180-142.000.

Morishita, Mitsuharu; Kouge, Shinichi; Iwatani, Shirou; and Sasaki, Katsuhiro, to Mitsubishi Denki Kabushiki Kaisha. Protection circuit for voltage regulator of vehicle mounted generator. 4,570,199, Cl. 361-18.000.

Morris, Debra L.: *See—*
Barrall, Jeffery L.; Leib, Ronald J.; and Morris, Debra L., 4,569,878, Cl. 428-182.000.

Morris, Henrietta K., to Surgikos, Inc. Split sheet surgical drape. 4,569,341, Cl. 128-132.00D.

Morris, Joe F. Staircase carpet laying tool. 4,569,261, Cl. 81-488.000.

Morris, Lawrence E.: *See—*
Falk, Theodore J.; and Morris, Lawrence E., 4,569,641, Cl. 417-417.000.

Morris, Peter C.: *See—*
Lim, Drahoslav; and Morris, Peter C., 4,569,858, Cl. 427-164.000.

Moskovsky Nauchno-Issledovatelsky Institut Glaznykh Boleznei Imeni Gelmgoltsa: *See—*
Karpov, Alexandr V.; Kivaev, Anatoly A.; Elkind, Solomon A.; Orlov, Garri N.; Lukin, Nikolai I.; Gashnev, Mikhail S.; Ososkov, Gennady A.; Prikhodko, Valentin I.; and Zavyalov, Vladimir F., 4,569,576, Cl. 351-212.000.

Motorola, Inc.: *See—*
Birrittella, Mark S., 4,570,238, Cl. 365-189.000.
Carter, Ernest A.; Eitrheim, John K.; and Wood, Dorothy M., 4,570,239, Cl. 365-203.000.
Chong, T. S.; Chong, F. C.; Ng, C. K.; and Lim, T. T., 4,569,814, Cl. 264-279.000.
DiSilvestro, Raymond F., 4,570,137, Cl. 333-219.000.
Heim, Barry B., 4,570,114, Cl. 323-313.000.
Maher, John W., 4,570,261, Cl. 371-16.000.
Seelbach, Walter C.; and Marley, Robert R., 4,570,240, Cl. 365-204.000.
Thro, Stuart W., 4,570,265, Cl. 455-52.000.

Motoyama, Masanori; and Nishikawa, Toyotaka, to Matsushita Electric Works, Ltd. Balanced armature type relay. 4,570,138, Cl. 335-80.000.

Mourey, Bruno: *See—*
Le Pesant, Jean P.; Hareng, Michel; Mourey, Bruno; and Perbet, Jean N., 4,569,575, Cl. 350-355.000.

Mouton, Pierre C., to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "S.N.E.C.M.A.". Process and device for reducing the self-heating of the fuel in a turbojet engine fuel system. 4,569,202, Cl. 60-734.000.

Mowdood, Syed K.: *See—*
Maxey, Frank S., deceased; and Mowdood, Syed K., 4,569,382, Cl. 152-548.000.

Muccitelli, John A., to Betz Laboratories, Inc. Hydroquinone catalyzed oxygen scavenger and methods of use thereof. 4,569,783, Cl. 252-188.280.

Mueller, Alvin W., to Mueller-Perry Co., Inc. Composite baseball bat having swaged spar and plastic foam covering. 4,569,521, Cl. 273-72.00A.

Mueller-Perry Co., Inc.: *See—*
Mueller, Alvin W., 4,569,521, Cl. 273-72.00A.

Mukai, Kiichiro: *See—*
Miyao, Masanobu; Ohkura, Makoto; Takemoto, Iwao; Warabisako, Terunori; Mukai, Kiichiro; Haruta, Ryo; Nishioka, Yasushiro; Kimura, Shinichiro; and Tokuyama, Takashi, 4,570,175, Cl. 357-23.700.

Mukogawa, Yasukazu: *See—*
Fukumoto, Takaaki; Mukogawa, Yasukazu; Hama, Masaharu; and Yanagi, Motonori, 4,569,224, Cl. 73-32.00R.

Mukunoki, Yasuo; Yamaguchi, Jiro; and Yoneyama, Masakazu, to Fuji Photo Film Co., Ltd. Silver halide photographic light-sensitive material. 4,569,905, Cl. 430-546.000.

Muller, Louis F., to Davstar Industries, Inc. Disposable urine specimen collecting device. 4,569,090, Cl. 4-144.200.

Muller, Peter; Mustacchi, Henry; and Kreicas, Leonard, to Andrews Paper & Chemical Co., Inc. Transparentized paper sheet. 4,569,888, Cl. 428-481.000.

Mullins, Richard M.: *See—*
Miller, Philip A.; Mullins, Richard M.; and Bucko, Robert J., 4,569,778, Cl. 252-77.000.
Miller, Philip R.; and Mullins, Richard M., 4,569,776, Cl. 252-77.000.

Miller, Philip R.; and Mullins, Richard M., 4,569,777, Cl. 252-77.000.

Mulshine, James L.; and Minna, John D., to United States of America, Health and Human Services. Monoclonal antibodies against non small cell lung cancer. 4,569,788, Cl. 260-112.00R.

Mumford, Van E.; and Sasmor, Louis, to Cordis Corporation. System for detecting pacer mediated tachycardia. 4,569,350, Cl. 128-697.000.

Munscher, Gerhard: *See—*
Toth, Tibor; and Munscher, Gerhard, 4,569,919, Cl. 436-533.000.

Muramatsu, Yoshihisa: *See—*
Umemoto, Yoshiyuki; Iijima, Masao; Miyagi, Masahide; and Muramatsu, Yoshihisa, 4,570,030, Cl. 136-244.000.

Muranishi, Masahiko: *See—*
Maeda, Akio; Aonuma, Mitsuyoshi; and Muranishi, Masahiko, 4,569,958, Cl. 524-100.000.

Murata Kikai Kabushiki Kaisha: *See—*
Kato, Hisaaki; and Sakai, Shoji, 4,569,104, Cl. 19-244.000.

Murata, Takashi: *See—*
Ohzeki, Masanao; Murata, Takashi; and Kanda, Hiroshi, 4,569,846, Cl. 426-40.000.

Murdoch Logging Industries Pty. Ltd.: *See—*
Gemmell-Murdoch, Andrew, 4,569,379, Cl. 144-3.00D.

Murphy, Betty J.: *See—*
Smith, James A.; and Murphy, Betty J., 4,569,861, Cl. 427-244.000.

Murphy, Declan S., to Atara Corporation. Large bubble flow generator-interface for liquid circulating device. 4,569,804, Cl. 261-77.000.

Mustacchi, Henry: *See—*
Muller, Peter; Mustacchi, Henry; and Kreicas, Leonard, 4,569,888, Cl. 428-481.000.

Mutou, Yoshihiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Apparatus for jointing plate materials. 4,569,111, Cl. 29-283.500.

Myers, Lawrence R.: *See—*
Hendrickson, Richard T.; and Myers, Lawrence R., 4,569,201, Cl. 60-547.100.

N. A. Woodworth Company: *See—*
Cross, Kenneth O., 4,569,530, Cl. 279-123.000.

N. V. Bekaert S.A.: *See—*
Crommelynck, Roger; and Quartier, Eddy, 4,569,709, Cl. 156-95.000.

Naarmann, Herbert; Nickl, Johann; and Kohler, Gernot, to BASF Aktiengesellschaft. Preparation of polypyrroles, and films obtained by this method. 4,569,734, Cl. 204-78.000.

Nagami, Akira, to Nippon Electric Co., Ltd. Dynamic random-access memory. 4,570,242, Cl. 365-222.000.

Nagano, Katsumi, to Tokyo Shibaura Denki Kabushiki Kaisha. Pulse frequency multiplier. 4,570,089, Cl. 307-529.000.

Nagashima, Setsuo, to Fujitsu Limited. Sputtering apparatus. 4,569,745, Cl. 204-298.000.

Nagata, Wataru: *See—*
Aoki, Tsutomu; Takahashi, Hiromi; Konoike, Toshiro; Tsuji, Teruji; and Nagata, Wataru, 4,570,018, Cl. 564-1.000.

Nagata, Yuuji: *See—*
Tani, Tatsuo; Sawata, Sinji; Tanaka, Tadayoshi; Sakuta, Koichi; Nagata, Yuuji; Eto, Yasushi; Adachi, Makoto; and Matsurra, Yasunori, 4,569,331, Cl. 126-435.000.

Nagatsuma, Kazuyuki; Matsumura, Hiroyoshi; Katsuyama, Toshio; and Suganuma, Tsuneo, to Hitachi, Ltd.; and Hitachi Cable, Ltd. Optical D.C. electric-field measuring apparatus with optic sensing means exhibiting both electrooptic and photoelectric effects. 4,570,064, Cl. 250-231.00R.

Nagayama, Hiromi: *See—*
Kushida, Hideo; Kosugi, Akikazu; and Nagayama, Hiromi, 4,569,869, Cl. 428-35.000.

Nagayoshi, Hiromi; and Hamano, Hisanori, to Mitsubishi Denki Kabushiki Kaisha. Microprocessor. 4,570,237, Cl. 365-95.000.

Nakagawa, Akira: *See—*
Yokota, Tsuneshi; and Nakagawa, Akira, 4,570,251, Cl. 369-100.000.

Nakagiri, Takashi: *See—*
Matsuda, Hiroshi; Haruta, Masahiro; Eguchi, Ken; Nishimura, Yukuo; Hirai, Yutaka; and Nakagiri, Takashi, 4,569,855, Cl. 427-35.000.

Nakaizumi, Kazuo, to Nippon Electric Co., Ltd. Digital circuit. 4,570,083, Cl. 307-443.000.

Nakajima, Kazuo: *See—*
Matsui, Susumu; Sato, Takako T.; and Nakajima, Kazuo, 4,569,912, Cl. 435-189.000.

Nakakita, Shoji, to NEC Corporation. Multi-layered substrate having a fine wiring structure for LSI or VLSI circuits. 4,569,876, Cl. 428-131.000.

Nakamura, Hideo: *See—*
Shibukawa, Masaru; Nakamura, Hideo; and Matsubara, Kiyoshi, 4,570,219, Cl. 364-200.000.

Nakamura, Kazuharu; Mito, Yoshio; and Nakanishi, Yutaka, to Toyotomi Kogyo Co., Ltd. Combustion cylinder construction for oil space heater. 4,569,652, Cl. 431-201.000.

Nakamura, Keiji: *See—*
Hara, Atsushi; Horiuchi, Takao; Yamada, Kunio; Takahashi, Sadayuki; and Nakamura, Keiji, 4,570,096, Cl. 310-328.000.

Nakamura, Takeshi: *See—*
Hamano, Toshihisa; Itoh, Hisao; and Nakamura, Takeshi, 4,570,076, Cl. 250-578.000.

Nakanishi, Yutaka: *See—*
Nakamura, Kazuharu; Mito, Yoshio; and Nakanishi, Yutaka, 4,569,652, Cl. 431-201.000.

Nakano, Jiro: *See—*
Yamakawa, Michihiro; Akatsuka, Takao; Kawaguchi, Masao; Nakano, Jiro; and Ishibashi, Takao, 4,569,748, Cl. 204-429.000.

Nakano, Kazuhiro: *See—*
Shimizu, Hideharu; Katsuragi, Noboru; and Nakano, Kazuhiro, 4,569,656, Cl. 431-325.000.

Nakano, Seizo: *See—*
Nishida, Isao; Sasaki, Koji; Nakano, Seizo; Takeuchi, Shigetaka; and Takahashi, Takeshi, 4,570,202, Cl. 361-333.000.

Nakano, Tomio: *See—*
Nozaki, Shigeki; Nakano, Tomio; and Kabashima, Katsuhiko, 4,570,088, Cl. 307-481.000.

Nakano, Yasuhiro: *See—*
Hisaki, Hiroshi; Nakano, Yasuhiro; Takahashi, Naohiko; and Inoue, Yuichi, 4,569,963, Cl. 524-458.000.

Nakao, Kunimichi: *See—*
Tanizaki, Akinori; Ando, Noboru; Terayama, Satoshi; and Nakao, Kunimichi, 4,569,326, Cl. 125-13.00R.

Nakashima, Seiichiro; Torii, Nobutoshi; and Ozaki, Hitoshi, to Fanuc Limited. Robot hand for industrial robots. 4,569,549, Cl. 294-88.000.

Nakatani, Kiyoshi; Numata, Satoshi; Inoue, Tsuneo; Kodaka, Kenji; Ishii, Tsutomu; Toyama, Teruhiko; Tachibana, Hajime; Udagawa, Takatoshi; and Gohbara, Masatoshi, to Mitsuitoatsu Chemicals Inc. Process for the preparation of 2-arylpropyl ether or thioether derivatives. 4,570,005, Cl. 549-435.000.

Nakayama, Toyoo: *See—*
Fujii, Setsuro; Yaegashi, Takashi; Nakayama, Toyoo; Sakurai, Yojiro; Nunomura, Shigeki; and Okutome, Toshiyuki, 4,570,006, Cl. 549-442.000.

Nalbandyan, Grigor A.: *See—*
Nalbandyan, Nikolaes A.; Nalbandyan, Grigor A.; and Nalbandyan, Harutyun G., 4,569,534, Cl. 280-742.000.

Nalbandyan, Harutyun G.: *See—*
Nalbandyan, Nikolaes A.; Nalbandyan, Grigor A.; and Nalbandyan, Harutyun G., 4,569,534, Cl. 280-742.000.

Nalbandyan, Nikolaes A.; Nalbandyan, Grigor A.; and Nalbandyan, Harutyun G. Passenger restraint system. 4,569,534, Cl. 280-742.000.

Namand, Henri; and Gemigniani, Francois, to Framatome & Cie; and S.A. Sebim. Device for detecting the operation of a valve. 4,569,365, Cl. 137-554.000.

Nanda, Vinod K.: *See—*
Taylor, Henry D.; and Nanda, Vinod K., 4,569,272, Cl. 91-420.000.

Narisada, Masayuki; Watanabe, Fumihiko; and Hamashima, Yoshio, to Shionogi & Co., Ltd. Malonyloxacephemcarboxylic acid derivatives. 4,569,993, Cl. 544-90.000.

Nasu, Norio: *See—*
Miyoshi, Takahito; Masuyama, Kenichi; Dezawa, Shin-ichiro; Okutu, Toshimitu; Nasu, Norio; Aoki, Nobuo; and Fujiyama, Masaaki, 4,569,856, Cl. 427-128.000.

National Instrument Company Inc.: *See—*
Bergandy, Wieslaw, 4,569,378, Cl. 141-266.000.

National Research Development Corporation: *See—*
Capaccio, Giancarlo; and Ward, Ian M., 4,569,983, Cl. 528-230.000.
Wilson, Alan D.; and Crisp, Stephen, 4,569,954, Cl. 523-116.000.

National Semiconductor Corporation: *See—*
Monticelli, Dennis M., 4,570,128, Cl. 330-267.000.

Naves, David G.: *See—*
Dunham, Myrl G.; and Naves, David G., 4,569,292, Cl. 105-358.000.

Neal, Delbert E.: *See—*
Threlkel, Charles O.; and Neal, Delbert E., 4,569,219, Cl. 72-381.000.

NEC Corporation: *See—*
Hara, Atsushi; Horiuchi, Takao; Yamada, Kunio; Takahashi, Sadayuki; and Nakamura, Keiji, 4,570,096, Cl. 310-328.000.
Nakakita, Shoji, 4,569,876, Cl. 428-131.000.
Tanimoto, Yoshio; and Atobe, Masaaki, 4,570,127, Cl. 330-137.000.
Uchikawa, Tadao, 4,570,095, Cl. 310-328.000.
Yamashita, Hiromi; and Wada, Toshio, 4,569,695, Cl. 134-1.000.

Neer, Jay H., to International Business Machines Corporation. Continuous forms feed tractor with multiple cut forms chutes. 4,569,468, Cl. 226-74.000.

Nellums, Richard A., to Eaton Corporation. Positive drive with torque responsive dampener. 4,569,250, Cl. 74-650.000.

Nelson, Conrad E.: *See—*
Kuhn, Donald H.; Nelson, Conrad E.; Younger, Cousby, Jr.; and Otteni, Gerald A., 4,570,166, Cl. 343-872.000.

Nelson, Donald L., to Dow Chemical Company, The. Polymers prepared by reaction of a polyisocyanate with a secondary amine terminated adduct of a primary amine compound and a polyepoxide. 4,569,951, Cl. 521-167.000.

Nesse, Gary E. Jacket/vest. 4,569,089, Cl. 2-108.000.

Nestec S.A.: *See—*
Cabi-Akman, Robert; Simond, Remy; and Sprenger, Arthur, 4,569,594, Cl. 356-408.000.

Netter, Zvi: *See—*
Shimoni, Yair; Netter, Zvi; and Crawford, Carl R., 4,570,224, Cl. 364-414.000.

Neufeld, Gordon R., to University of Pennsylvania. Lung water computer system. 4,569,589, Cl. 356-39.000.

Neuray, Dieter: *See—*
Paul, Winfried; Kress, Hans-Jurgen; Stix, Wolfgang; Lindner, Christian; Neuray, Dieter; and Nouvertne, Werner, 4,569,970, Cl. 525-67.000.

Neusch, Michael: *See—*
Kieser, Jorg; and Neusch, Michael, 4,569,738, Cl. 204-173.000.

Neuser, Ernst: *See—*
Kramer, Rolf; Ahlborn, Gunter; Schneider, Felix; Neuser, Ernst; Hubsch, Henry; Kampmann, Gerhard; and Wagener, Paul-Werner, 4,569,293, Cl. 105-377.000.

Newton, Douglas, to J. P. Tool Limited. Machine tool cutter. 4,569,619, Cl. 407-15.000.

Ng, C. K.: *See—*
Chong, T. S.; Chong, F. C.; Ng, C. K.; and Lim, T. T., 4,569,814, Cl. 264-279.000.

Nguyen-Dinh, Xuan: *See—*
Duhl, David N.; and Nguyen-Dinh, Xuan, 4,569,824, Cl. 420-448.000.

Nichiro Kogyo Co., Ltd.: *See—*
Mori, Motoaki; Hirose, Yuichi; and Yamaguchi, Hisao, 4,569,186, Cl. 53-589.000.

Nicholas, John J., Jr., to Systematics General Corp. Self-contained secured work station. 4,570,156, Cl. 340-547.000.

Nickl, Johann: *See—*
Naarmann, Herbert; Nickl, Johann; and Kohler, Gernot, 4,569,734, Cl. 204-78.000.

Nicodemus, Carl D., to Helios Research Corp. Hydrokinetic amplifier. 4,569,635, Cl. 417-196.000.

Nicolai, Haayo; and Duipmans, Hendricus J., to U.S. Philips Corporation. Irradiation device. 4,570,109, Cl. 315-362.000.

Niebanck, Charles F.: *See—*
Ferris, Donald L.; Niebanck, Charles F.; Campbell, Thomas G.; and Olsen, Eric G., 4,569,629, Cl. 416-134.00A.

Niedballa, Ulrich; and Gries, Heinz, to Shering Aktiengesellschaft. 2-Amino-1-(1,2-dioxolan-4-yl)ethanol compounds, their preparation and use. 4,570,007, Cl. 549-451.000.

Nieh, Edward C. Y., to Texaco, Inc. Amphoteric surface active monomers. 4,569,798, Cl. 260-501.130.

Nihon Kohden Corporation: *See—*
Kyozuka, Shigeyuki, 4,569,356, Cl. 128-698.000.

Niida, Hideo: *See—*
Dempou, Kazuo; Niida, Hideo; and Yokoyama, Kunio, 4,569,205, Cl. 62-155.000.

Nikko Co., Ltd.: *See—*
Ishimoto, Zenichi, 4,570,092, Cl. 310-12.000.

Niles, Gerald J.: *See—*
Hakanson, John D.; and Niles, Gerald J., 4,570,197, Cl. 360-132.000.

Nilsson, Claes T.: *See—*
Jakobsen, Kjell M.; and Nilsson, Claes T., 4,569,866, Cl. 428-35.000.

Nippon Electric Co., Ltd.: *See—*
Nagami, Akira, 4,570,242, Cl. 365-222.000.
Nakaizumi, Kazuo, 4,570,083, Cl. 307-443.000.
Oguchi, Tetsuji, 4,570,222, Cl. 364-200.000.

Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Futamase, Tsuyoshi; and Kato, Mitsumi, 4,569,268, Cl. 84-1.240.
Tamaru, Takuya, 4,570,256, Cl. 369-271.000.

Nippon Mektron Ltd.: *See—*
Inoue, Kazuo, 4,570,031, Cl. 174-72.00B.

Nippon Notion Kogyo Co., Ltd.: *See—*
Tanaka, Akira, 4,569,470, Cl. 227-119.000.

Nippon Sanso K.K.: *See—*
Suwa, Toshio; and Konagaya, Yoshiaki, 4,569,479, Cl. 239-79.000.

Nippon Soken, Inc.: *See—*
Tomita, Masahiro; and Yasuda, Eturo, 4,570,098, Cl. 310-346.000.

Nippon Telegraph & Telephone Public Corporation: *See—*
Shikano, Kiyohiro, 4,570,232, Cl. 364-513.500.

Nippon Zeon Co Ltd: *See—*
Maeda, Akio; Aonuma, Mitsuyoshi; and Muranishi, Masahiko, 4,569,958, Cl. 524-100.000.

Nippon Zeon Co., Ltd.: *See—*
Hisaki, Hiroshi; Nakano, Yasuhiro; Takahashi, Naohiko; and Inoue, Yuichi, 4,569,963, Cl. 524-458.000.

Nippondenso Co., Ltd.: *See—*
Osada, Masahiko; Kuno, Akira; Yamada, Takashi; Kaga, Sumihiro; Shimamoto, Mamoru; and Tanahashi, Toshitaka, 4,570,200, Cl. 361-212.000.
Taki, Yoshihiro; Fukuta, Toshiaki; Akado, Hajime; Miyakawa, Susumu; and Nishio, Yoshitaka, 4,569,813, Cl. 264-259.000.
Yamakawa, Michihiro; Akatsuka, Takao; Kawaguchi, Masao; Nakano, Jiro; and Ishibashi, Takao, 4,569,748, Cl. 204-429.000.

Nishida, Isao; Sasaki, Koji; Nakano, Seizo; Takeuchi, Shigetaka; and Takahashi, Takeshi, to Hitachi, Ltd. Gas-insulated switchgear equipment. 4,570,202, Cl. 361-333.000.

Nishikawa, Hirotaka: *See—*
Yamada, Yoshiharu; Nishikawa, Hirotaka; and Yokoyama, Hachirou, 4,569,192, Cl. 57-317.000.

Nishikawa, Toyotaka: *See—*
Motoyama, Masanori; and Nishikawa, Toyotaka, 4,570,138, Cl. 335-80.000.

Nishimura, Yukuo: *See—*
Matsuda, Hiroshi; Haruta, Masahiro; Eguchi, Ken; Nishimura, Yukuo; Hirai, Yutaka; and Nakagiri, Takashi, 4,569,855, Cl. 427-35.000.

Nishio, Yoshitaka: *See—*
Taki, Yoshihiro; Fukuta, Toshiaki; Akado, Hajime; Miyakawa, Susumu; and Nishio, Yoshitaka, 4,569,813, Cl. 264-259.000.

Nishioka, Yasuhiro: *See—*
Miyao, Masanobu; Ohkura, Makoto; Takemoto, Iwao; Warabisako, Terunori; Mukai, Kiichiro; Haruta, Ryo; Nishioka, Yasuhiro; Kimura, Shinichiro; and Tokuyama, Takashi, 4,570,175, Cl. 357-23.700.

Nishiura, Yozo: *See—*
Nishiwaki, Yoshikazu; and Nishiura, Yozo, 4,569,588, Cl. 356-28.500.

Nishiwaki, Susumu: *See—*
Yanabu, Satoru; Nishiwaki, Susumu; and Haginomori, Eiichi, 4,570,042, Cl. 200-148.00R.

Nishiwaki, Yoshikazu; and Nishiura, Yozo, to Sumitomo Electric Industries Ltd. Light frequency change detecting method and apparatus. 4,569,588, Cl. 356-28.500.

Nishiyama, Yukio; Yamamoto, Kazuhiko; Sanada, Munehiko; Okada, Yukio; and Miura, Toshikatsu, to Nitto Electric Industrial Co. Ltd.; and Nissan Motor Company, Limited. Reinforcing adhesive sheet. 4,569,880, Cl. 428-212.000.

Nishizawa, Hisao: *See—*
Ohgami, Nobutoshi; Kitagawa, Masaru; Nishizawa, Hisao; and Saita, Masakazu, 4,569,717, Cl. 156-626.000.

Nishizawa, Minoru, to Gakei Electric Works Co., Ltd. Crystal pulling apparatus for making single crystals of compound semiconductors containing a volatile component. 4,569,828, Cl. 422-249.000.

Nissan Motor Co., Ltd.: *See—*
Hayashi, Yoshimasa, 4,569,317, Cl. 123-195.00R.
Kubo, Jun, 4,569,560, Cl. 303-116.000.
Nishiyama, Yukio; Yamamoto, Kazuhiko; Sanada, Munehiko; Okada, Yukio; and Miura, Toshikatsu, 4,569,880, Cl. 428-212.000.

Nisshin Oil Mills, Ltd.: *See—*
Ohzeki, Masanao; Murata, Takashi; and Kanda, Hiroshi, 4,569,846, Cl. 426-40.000.

Nitto Boseki Co., Ltd.: *See—*
Harada, Susumu; and Hasegawa, Sakuro, 4,569,979, Cl. 526-218.100.

Nitto Electric Industrial Co. Ltd.: *See—*
Nishiyama, Yukio; Yamamoto, Kazuhiko; Sanada, Munehiko; Okada, Yukio; and Miura, Toshikatsu, 4,569,880, Cl. 428-212.000.
Yamaguchi, Katsuhiko; Kobayashi, Seiki; Miyake, Yasufumi; and Tsumura, Akio, 4,569,885, Cl. 428-339.000.

Nobu, Habuo, to Toyota Jidosha Kabushiki Kaisha. Cooling water path for an internal combustion engine. 4,569,313, Cl. 123-41.740.

Noda, Minoru; Miyata, Tsutomu; Yamashita, Yoshihiro; and Ohmura, Kenji. Linear transfer device for wafery works. 4,569,624, Cl. 414-225.000.

Noda, Tsutomu: *See—*
Kobayashi, Masaharu; Arai, Takao; and Noda, Tsutomu, 4,570,153, Cl. 340-347.0AD.

Nodes, Franz, to Vogelbusch Gesellschaft mbH. Process for the batch-wise preparation of vinegar. 4,569,845, Cl. 426-17.000.

Noe, Raymond J., to General Electric Company. Lamp glass envelope. 4,569,867, Cl. 428-35.000.

Noguchi, Toshihide: *See—*
Suzuki, Yoshiki; Ikura, Hiroshi; Noguchi, Toshihide; Izumizawa, Katsunori; and Kinoshita, Shiro, deceased, 4,569,837, Cl. 424-28.000.

Nomura, Tutomu: *See—*
Kubo, Osamu; Ido, Tadashi; Nomura, Tutomu; and Inomata, Koichiro, 4,569,775, Cl. 252-62.590.

Norand Corporation: *See—*
Chadima, George E., Jr.; and Laser, Vadim, 4,570,057, Cl. 235-472.000.

Nordic Forge, Inc.: *See—*
Berns, Anthony J.; and Peterson, Hensel B., 4,569,408, Cl. 177-257.000.

Noro, Shoji: *See—*
Hoshi, Kouroku; and Noro, Shoji, 4,569,950, Cl. 521-88.000.

North American Philips Corporation: *See—*
Spidell, Edward T., 4,570,184, Cl. 358-217.000.

Northern Telecom Limited: *See—*
Charlebois, Leonard J.; and Dick, Kevin H., 4,570,032, Cl. 174-84.00R.

Notelteirs, Victor R.: *See—*
Janssen, Eduard J. P.; and Notelteirs, Victor R., 4,570,104, Cl. 315-50.000.

Nouvertne, Werner: *See—*
Paul, Winfried; Kress, Hans-Jurgen; Stix, Wolfgang; Lindner, Christian; Neuray, Dieter; and Nouvertne, Werner, 4,569,970, Cl. 525-67.000.

NovaGene, Ltd.: *See—*
Kit, Saul, 4,569,840, Cl. 424-89.000.

Novarini, Augusto. Fire escape and extinction system. 4,569,418, Cl. 182-51.000.

Novation, Inc.: *See—*
Serrano, Art, 4,570,034, Cl. 179-84.00A.

Nowack, Gerhard P.; and Johnson, Marvin M., to Phillips Petroleum Company. Preparation of alkenes and cycloalkenes. 4,570,025, Cl. 585-259.000.

Nowers, John R.; and Williams, Robert E., to Molins PLC. Method and apparatus for ventilated cigarette manufacture. 4,569,359, Cl. 131-281.000.

Nozaki, Shigeki; Nakano, Tomio; and Kabashima, Katsuhiko, to Fujitsu Limited. Semiconductor device for pulling down output terminal voltage. 4,570,088, Cl. 307-481.000.

Numata, Satoshi: *See—*
Nakatani, Kiyoshi; Numata, Satoshi; Inoue, Tsuneo; Kodaka, Kenji; Ishii, Tsutomu; Toyama, Teruhiko; Tachibana, Hajime; Udagawa, Takatoshi; and Gohbara, Masatoshi, 4,570,005, Cl. 549-435.000.

Numonics Corporation: *See—*
Hulls, Leonard R., 4,570,033, Cl. 178-19.000.

Nunomura, Shigeki: *See—*
Fujii, Setsuro; Yaegashi, Takashi; Nakayama, Toyoo; Sakurai, Yojiro; Nunomura, Shigeki; and Okutome, Toshiyuki, 4,570,006, Cl. 549-442.000.

N.V. Raychem S.A.: *See—*
De Blauwe, Francis J. A. M. C.; and Selleslags, Frank K. A., 4,569,868, Cl. 428-35.000.

Oberdorfer, Guido. Apparatus for cleaning objects by spraying. 4,569,483, Cl. 239-305.000.

Obra, Bart R., to Easom Engineering & Manufacturing Corp. Motion generating mechanism. 4,569,240, Cl. 74-394.000.

Ochiai, Koji: *See—*
Hashiue, Masakazu; and Ochiai, Koji, 4,569,903, Cl. 430-350.000.

Ochii, Kiyofumi: *See—*
Yasuda, Hiroshi; and Ochii, Kiyofumi, 4,570,091, Cl. 307-583.000.

Oezelli, Riza N.; and Lippert, Hartmut, to Henkel Kommanditgesellschaft auf Aktien. Polyurethane lacquers containing nitroso-aromatics. 4,569,961, Cl. 524-186.000.

O'Farrell, George T. Stereo sport belt. 4,569,465, Cl. 224-224.000.

Officine Gaudino di P. Gaudino & C.S. A.S.: *See—*
Gaudino, Piero, 4,569,191, Cl. 57-276.000.

Officine Meccaniche Giovanni Cerutti S.p.A.: *See—*
Forno, Mario; Gibellino, Gianfranco; and Saterini, Mario, 4,569,285, Cl. 101-248.000.

Oguchi, Tetsuji, to Nippon Electric Co., Ltd. Information processor having information correcting function. 4,570,222, Cl. 364-200.000.

Oh, Kye H., to AT&T Bell Laboratories. Technique for doping from a polysilicon transfer layer. 4,569,701, Cl. 148-188.000.

Ohbuchi, Yasutsugu: *See—*
Horii, Taichi; and Ohbuchi, Yasutsugu, 4,569,434, Cl. 198-365.000.

Ohgami, Nobutoshi; Kitagawa, Masaru; Nishizawa, Hisao; and Saita, Masakazu, to Dainippon Screen Mfg. Co., Ltd. Method of surface treatment. 4,569,717, Cl. 156-626.000.

Ohhara, Minoru: *See—*
Yoshikumi, Chikao; Ohmura, Yoshio; Hirose, Fumio; Ikuzawa, Masanori; Matsunaga, Kenichi; Fujii, Takayoshi; Ohhara, Minoru; and Ando, Takao, 4,569,842, Cl. 514-25.000.

Ohhoshi, Toshio: *See—*
Sato, Hiroki; Hatanaka, Masato; Ohhoshi, Toshio; and Tanaka, Sakae, 4,570,100, Cl. 313-422.000.

Ohira, Keigo: *See—*
Omori, Mamoru; and Ohira, Keigo, 4,569,921, Cl. 501-88.000.

Ohkouchi, Satoshi: *See—*
Adachi, Yukio; Honma, Hiroshi; and Ohkouchi, Satoshi, 4,569,604, Cl. 400-124.000.

Ohkura, Makoto: *See—*
Miyao, Masanobu; Ohkura, Makoto; Takemoto, Iwao; Warabisako, Terunori; Mukai, Kiichiro; Haruta, Ryo; Nishioka, Yasushiro; Kimura, Shinichiro; and Tokuyama, Takashi, 4,570,175, Cl. 357-23.700.

Ohmori, Akira; and Ishiwari, Kazuo, to Daikin Kogyo Co., Ltd. Material for optical disks. 4,569,871, Cl. 428-64.000.

Ohmura, Kenji: *See—*
Noda, Minoru; Miyata, Tsutomu; Yamashita, Yoshihiro; and Ohmura, Kenji, 4,569,624, Cl. 414-225.000.

Ohmura, Yoshio: *See—*
Yoshikumi, Chikao; Ohmura, Yoshio; Hirose, Fumio; Ikuzawa, Masanori; Matsunaga, Kenichi; Fujii, Takayoshi; Ohhara, Minoru; and Ando, Takao, 4,569,842, Cl. 514-25.000.

Ohno, Shigeru: *See—*
Saitoh, Keishi; Ohnuki, Yukihiko; and Ohno, Shigeru, 4,569,893, Cl. 430-57.000.

Ohnuki, Yukihiko: *See—*
Saitoh, Keishi; Ohnuki, Yukihiko; and Ohno, Shigeru, 4,569,893, Cl. 430-57.000.

Ohshiro, Susumu, to Fuji Photo Optical Co., Ltd. Apparatus for restoring the light transmittance of an image-transmitting optical fiber bundle used in a fiber optic endoscope. 4,569,334, Cl. 128-6.000.

Ohta, Kazuhiko: *See—*
Okazaki, Hisayoshi; Ohta, Kazuhiko; and Ishimaru, Takenori, 4,569,943, Cl. 514-562.000.

Ohta, Takahiro: *See—*
Arai, Noboru; Ohta, Takahiro; and Inuiya, Masafumi, 4,570,185, Cl. 358-227.000.

Ohta, Takao: *See—*
Miura, Masatsugu; Ohta, Takao; Hirase, Kiyoto; and Iwahashi, Seitoro, 4,570,215, Cl. 364-140.000.

Ohta, Yoshio: *See—*
Katayama, Nobuaki; Ikemoto, Kazuhito; and Ohta, Yoshio, 4,569,246, Cl. 74-473.00R.

Ohzeki, Masanao; Murata, Takashi; and Kanda, Hiroshi, to Nisshin Oil Mills, Ltd. Process for preparing foods by lactic fermentation. 4,569,846, Cl. 426-40.000.

Okada, Takehiko: *See—*
Miyoshi, Yoshitake; Takahashi, Ichirou; Okada, Takehiko; and Yamamoto, Haruo, 4,569,587, Cl. 355-72.000.

Okada, Yukio: *See—*
Nishiyama, Yukio; Yamamoto, Kazuhiko; Sanada, Munehiko; Okada, Yukio; and Miura, Toshikatsu, 4,569,880, Cl. 428-212.000.

Okazaki, Hisayoshi; Ohta, Kazuhiko; and Ishimaru, Takenori, to Takeda Chemical Industries, Ltd. Physiologically active substance P-23924, its production and use. 4,569,943, Cl. 514-562.000.

Okita, Akira: *See—*
Hiruma, Yutaka; and Okita, Akira, 4,569,482, Cl. 239-296.000.

Okubo, Yasuto: *See—*
Seno, Taiko; Okubo, Yasuto; Kawamura, Masao; Akutsu, Seiichi; and Fukuda, Hirosuke, 4,569,909, Cl. 435-89.000.

Okumura, Shuji, to Aisin Seiki Kabushiki Kaisha. Oil separator. 4,569,323, Cl. 123-572.000.

Okutome, Toshiyuki: *See—*
Fujii, Setsuro; Yaegashi, Takashi; Nakayama, Toyoo; Sakurai, Yojiro; Nunomura, Shigeki; and Okutome, Toshiyuki, 4,570,006, Cl. 549-442.000.

Okutsu, Eiich; Watase, Kazumi; Inagaki, Yoshio; and Hirano, Shigeo, to Fuji Photo Film Co., Ltd. Developing method. 4,569,904, Cl. 430-434.000.

Okutu, Toshimitu: *See—*
Miyoshi, Takahito; Masuyama, Kenichi; Dezawa, Shin-ichiro; Okutu, Toshimitu; Nasu, Norio; Aoki, Nobuo; and Fujiyama, Masaaki, 4,569,856, Cl. 427-128.000.

Oldham, Keith: *See—*
Jones, Derrick F.; and Oldham, Keith, 4,570,000, Cl. 514-237.000.

Olin Corporation: *See—*
Ashok, Sankaranarayanan; and Breedis, John F., 4,569,702, Cl. 148-414.000.
Butt, Sheldon H., 4,569,692, Cl. 75-235.000.
Grelle, Peter F.; and Urs, Venkataramaraj S., 4,569,288, Cl. 102-466.000.
Miller, Philip A.; Mullins, Richard M.; and Bucko, Robert J., 4,569,778, Cl. 252-77.000.
Miller, Philip R.; and Mullins, Richard M., 4,569,776, Cl. 252-77.000.
Miller, Philip R.; and Mullins, Richard M., 4,569,777, Cl. 252-77.000.

Olsen, Eric G.: *See—*
Ferris, Donald L.; Niebanck, Charles F.; Campbell, Thomas G.; and Olsen, Eric G., 4,569,629, Cl. 416-134.00A.

Olsen, Erik T.; and Blom, Ingvar G. A., to Hoganas AB. Refractory lining for a furnace. 4,569,659, Cl. 432-119.000.

Olson, Gene H.; and Quy, Dennis A., to Rosemount Inc. Communication system with slot time error detection. 4,570,257, Cl. 370-85.000.

Omori, Hiroshi: *See—*
Anahara, Meiji; Omori, Hiroshi; and Seiki, Kazuo, 4,569,193, Cl. 57-328.000.

Omori, Mamoru; and Ohira, Keigo. Sintered silicon carbide molding and process for production thereof. 4,569,921, Cl. 501-88.000.

Omori, Tamotsu: *See—*
Ito, Kiyoshi; and Omori, Tamotsu, 4,569,306, Cl. 118-249.000.

Omron Tateisi Electronics Co.: *See—*
Miura, Masatsugu; Ohta, Takao; Hirase, Kiyoto; and Iwahashi, Seitoro, 4,570,215, Cl. 364-140.000.

O'Neill, James J.; Treanor, John P. G.; and McGivern, Gerald P., to Tamnaharry Developments Limited. Collecting apparatus primarily for catching and elevating for example live birds in a deep litter or open house situation. 4,569,308, Cl. 119-82.000.

Onimaru, Sadahisa: *See—*
Tsuge, Noboru; Taguchi, Masahiro; Onimaru, Sadahisa; and Kuwakado, Satosi, 4,569,536, Cl. 280-807.000.

Ono, Hiroshi; Hashimoto, Masao; Sugiyama, Eiiti; Fujiwara, Kenji; and Yoshida, Kenji, to Agency of Industrial Science and Technology; and Extra-Ministerial Bureau of Ministry of International Trade and Industry. Preparation process of acetic acid. 4,569,948, Cl. 518-700.000.

Ono, Yoshio; and Sano, Tetsuo, to Dainippon Screen Seizo Kabushiki Kaisha. Method for scanning and recording a plurality of original pictures simultaneously. 4,570,187, Cl. 358-287.000.

Opie, Thomas R., to Rohm and Haas Company. Process for the preparation of 4-hydroxy-6-methyl-2-pyrone. 4,570,003, Cl. 549-292.000.

Orban, Joseph N. Power driven stud tensioning device. 4,569,258, Cl. 81-57.380.

Oriot, Yves; and Charmey, Robert, to ATOCHEM. Apparatus and methods for immersed-head cutting of thermoplastics. 4,569,810, Cl. 264-142.000.

Orlov, Garri N.: *See—*
Karpov, Alexandr V.; Kivaev, Anatoly A.; Elkind, Solomon A.; Orlov, Garri N.; Lukin, Nikolai I.; Gashnev, Mikhail S.; Ososkov, Gennady A.; Prikhodko, Valentin I.; and Zavyalov, Vladimir F., 4,569,576, Cl. 351-212.000.

Oronzio de Nora Impianti Elletrochimici, S.p.A.: *See—*
Dempsey, Russell M.; Coker, Thomas G.; LaConti, Anthony B.; and Fragala, Anthony R., 4,569,735, Cl. 204-98.000.

Orr, Alexander F.; and Clifford, David R., to Shell Oil Company. N-Formyl-3-carboxyazetidine and its use for sterilizing the male parts of wheat plants. 4,569,688, Cl. 71-88.000.

Orr, Don, to Berkley-Small, Inc. Single copy newspaper dispensing machine. 4,569,461, Cl. 221-1.000.

Osada, Hisajiro; and Hiratsuka, Yutaka, to Hitachi, Ltd. Plasma monitor. 4,569,592, Cl. 356-318.000.

Osada, Masahiko; Kuno, Akira; Yamada, Takashi; Kaga, Sumihiro; Shimamoto, Mamoru; and Tanahashi, Toshitaka, to Nippondenso Co., Ltd. Static discharge device. 4,570,200, Cl. 361-212.000.

Osawa, Hiroshi; Kurashima, Isao; and Kawai, Yoshio, to Casio Computer Co., Ltd. Keyswitch structure. 4,570,039, Cl. 200-5.00A.

Oshima, Junji; Kajita, Yasuyuki; and Yamada, Minoru, to Takeda Chemical Industries, Ltd. Process for producing halogen-containing unsaturated polyester. 4,569,986, Cl. 528-298.000.

Oshima, Yasushi, to Yamato Scale Company, Limited. Dispersion feeder for combination weighing machine. 4,569,405, Cl. 177-25.000.

Osladil, Anthony J.: *See—*
Tomczak, Lawrence W.; and Osladil, Anthony J., 4,570,118, Cl. 324-208.000.
Ososkov, Gennady A.: *See—*
Karpov, Alexandr V.; Kivaev, Anatoly A.; Elkind, Solomon A.; Orlov, Garri N.; Lukin, Nikolai I.; Gashnev, Mikhail S.; Ososkov, Gennady A.; Prikhodko, Valentin I.; and Zavyalov, Vladimir F., 4,569,576, Cl. 351-212.000.
Ostrander, William J.: *See—*
Herkenhoff, Earl F.; Frasier, Clint W.; and Ostrander, William J., 4,570,246, Cl. 367-68.000.
Ott, Lesley E.; and Cork, William H., to AGA, A.B. Method and apparatus for simultaneously cooling and conveying a food substance. 4,569,204, Cl. 62-63.000.
Otteni, Gerald A.: *See—*
Kuhn, Donald H.; Nelson, Conrad E.; Younger, Cousby, Jr.; and Otteni, Gerald A., 4,570,166, Cl. 343-872.000.
Ottinger, Jim A., to Tex-Ark Joist Company. Bridging system for steel joists. 4,569,177, Cl. 52-650.000.
Ottow, Manfred, to Metallgesellschaft Aktiengesellschaft. Apparatus for conveying particulate solids. 4,569,436, Cl. 198-771.000.
Ouchi, Koji: *See—*
Tsurumaru, Shinobu; Ishigaki, Yoshio; Ouchi, Koji; Yoshikawa, Takashi; Fukuzawa, Keiji; Imai, Kazuhiro; Taguchi, Yorimichi; and Tsuchiya, Masayoshi, 4,570,165, Cl. 343-726.000.
Oustad, Maynard A., to AMCA International. Loading and unloading crane and method of operation therefor. 4,569,453, Cl. 212-191.000.
Outboard Marine Corporation: *See—*
Breckenfeld, Paul W.; Broughton, George L.; Macier, James E.; and Calamia, David C., 4,569,415, Cl. 181-229.000.
Ovren, Christer: *See—*
Brogardh, Torgny; Hok, Bertil; and Ovren, Christer, 4,569,570, Cl. 350-96.340.
Ovshinsky, Stanford R.: *See—*
Tsu, Raphael; Ovshinsky, Stanford R.; Hernandez, Jesus; and Martin, Denis, 4,569,697, Cl. 148-1.500.
Owen, Hartley: *See—*
Wright, Bernard S.; Owen, Hartley; and Hsia, Chung H., 4,569,827, Cl. 422-190.000.
Owens-Corning Fiberglas Corporation: *See—*
Uffner, William E.; and Patil, Bhalchandra B., 4,569,968, Cl. 525-54.500.
Owens-Illinois, Inc.: *See—*
Krall, Thomas J., 4,569,651, Cl. 425-532.000.
Oxytechnik GmbH: *See—*
Albert, Hans-Joachim; and Bohm, August, 4,570,049, Cl. 219-124.340.
Ozaki, Hitoshi: *See—*
Nakashima, Seiichiro; Torii, Nobutoshi; and Ozaki, Hitoshi, 4,569,549, Cl. 294-88.000.
Ozaki, Yoshimi: *See—*
Mizui, Kinya; Takeda, Masami; Ozaki, Yoshimi; and Tomita, Ryosuke, 4,570,024, Cl. 585-24.000.
Ozawa, Hironori: *See—*
Shibano, Tomishi; Ozawa, Hironori; and Maruchi, Sachio, 4,569,712, Cl. 156-244.140.
Ozin, Geoffrey A.; and Andrews, Mark P. Metal carbon catalyst preparation. 4,569,924, Cl. 502-184.000.
P J Repair Service, Inc.: *See—*
McGovney, William E.; and Garich, Walter E., 4,569,168, Cl. 52-122.100.
Pacific Engineering Company, Ltd.: *See—*
Ebi, Masashi, 4,570,147, Cl. 337-166.000.
Padovani, Francois A.: *See—*
Shukla, Vishwa; and Padovani, Francois A., 4,570,097, Cl. 310-338.000.
Pagels, Louis T.: *See—*
Weiler, Gerhard H.; and Pagels, Louis T., 4,569,456, Cl. 215-251.000.
Pakulak, Jack M., Jr.; and Cragin, Susan E., to United States of America, Navy. Super small-scale cookoff bomb. 4,569,287, Cl. 102-293.000.
Palermiti, Frank M.: *See—*
Snyder, Donald E., Jr.; Watters, Donald J.; and Palermiti, Frank M., 4,569,609, Cl. 400-241.400.
Palitex Project-Company GmbH: *See—*
Frentzel-Beyme, Johannes, 4,569,189, Cl. 57-58.830.
Palmer, Darrel, to Ballard Medical Products. Aspirating/ventilating apparatus and method. 4,569,344, Cl. 128-207.160.
Papp, Uwe: *See—*
Albrecht, Wolf-Wigand; Hoppe, Axel; Papp, Uwe; and Wolf, Rudiger, 4,569,693, Cl. 75-252.000.
Parr, Charles H.: *See—*
Hannibal, Alan J.; and Parr, Charles H., 4,569,667, Cl. 464-51.000.
Parra, Vicente G.: *See—*
Gil, M. Carmen G.; Parra, Vicente G.; Alonso, Felix S.; and Cebada, Tomas T., 4,569,999, Cl. 546-275.000.
Parrillo, Louis C.: *See—*
Maury, Alvaro; and Parrillo, Louis C., 4,569,722, Cl. 156-657.000.
Parrott, Robert C.; and Meadors, Smith A., to Gower Corporation. Connector structure for tubular marginal constructions. 4,569,451, Cl. 211-191.000.
Patel, Jitendra G.: *See—*
Sandstrom, William A.; Patel, Jitendra G.; and Bush, John R., 4,569,696, Cl. 134-2.000.
Pater, Ruth H.: *See—*
Scola, Daniel A.; and Pater, Ruth H., 4,569,988, Cl. 528-353.000.
Patil, Bhalchandra B.: *See—*
Uffner, William E.; and Patil, Bhalchandra B., 4,569,968, Cl. 525-54.500.
Paul, James C.: *See—*
Gielow, Robert L.; and Paul, James C., 4,569,289, Cl. 105-2.00R.
Paul, Winfried; Kress, Hans-Jurgen; Stix, Wolfgang; Lindner, Christian; Neuray, Dieter; and Nouvertne, Werner, to Bayer Aktiengesellschaft. Thermoplastic moulding compositions based on polysiloxane/polycarbonate block copolymers. 4,569,970, Cl. 525-67.000.
Peeters, Guido J.: *See—*
Vansant, Etienne; De Bievre, Paul; Peeters, Guido J.; Thijs, Anita; and Verhaert, Ingrid, 4,569,683, Cl. 55-58.000.
Pekar, Allen H.: *See—*
Frank, Bruce H.; and Pekar, Allen H., 4,569,791, Cl. 260-112.50R.
Frank, Bruce H.; and Pekar, Allen H., 4,569,792, Cl. 260-112.50R.
Pelam, Inc.: *See—*
McCormick, James B., 4,569,647, Cl. 425-117.000.
Pellegrino, Raymond W. Controlled dispensing apparatus. 4,569,463, Cl. 222-187.000.
Pemberton Sintermatic S.A.: *See—*
Treharne, Timothy J., 4,569,102, Cl. 17-41.000.
Penman, Sheldon; and Fey, Edward G., to Massachusetts Institute of Technology. Assay for tumor promoting agents. 4,569,916, Cl. 436-64.000.
Pennwalt Corporation: *See—*
Barber, Leonard A., 4,569,978, Cl. 526-206.000.
Breen, David T.; Burghdurf, Howard F., Jr.; and Huff, Curtis, 4,570,229, Cl. 364-476.000.
Griffith, Ronald C., 4,569,994, Cl. 544-150.000.
Shipman, Douglas L., 4,569,161, Cl. 51-436.000.
Penttila, Richard C.: *See—*
Fernholz, Peter J.; Copeland, James L.; and Penttila, Richard C., 4,569,780, Cl. 252-90.000.
Fernholz, Peter J.; Copeland, James L.; and Penttila, Richard C., 4,569,781, Cl. 252-92.000.
Pepper, Edward. Method of making a seamless punch. 4,569,256, Cl. 76-107.00C.
Perbet, Jean N.: *See—*
Le Pesant, Jean P.; Hareng, Michel; Mourey, Bruno; and Perbet, Jean N., 4,569,575, Cl. 350-355.000.
Perez, Steven R.; Bertrand, Jacques C.; Jacobs, Timothy W.; Sommers, Raymond L.; and Vianco, George W., Jr., to Xerox Corporation. Resistive single component developer composition. 4,569,896, Cl. 430-106.600.
permaTek, Inc.: *See—*
Lynch, Michael A., 4,569,620, Cl. 412-21.000.
Perrin, Claude: *See—*
Cornu, Pierre-Jean; Perrin, Claude; Dumaitre, Bernard; and Streichenberger, Gilles, 4,569,933, Cl. 514-237.000.
Perugina S.p.A.: *See—*
Giorgetti, Paolo; Romani, Franco; and Strino, Enrico, 4,569,848, Cl. 426-94.000.
Peterman, Charles P., to Hydril Company. Well bore control line with sealed strength member. 4,569,392, Cl. 166-242.000.
Peterson, Hensel B.: *See—*
Berns, Anthony J.; and Peterson, Hensel B., 4,569,408, Cl. 177-257.000.
Peterson, Kenneth S.: *See—*
Ramachandran, Pallassana N.; and Peterson, Kenneth S., 4,569,773, Cl. 252-8.700.
Petro, John D., to Commercial Shearing, Inc. Hydraulic valve inlet unloaders. 4,569,367, Cl. 137-596.130.
Petro-Tex Chemical Corporation: *See—*
Keyworth, Donald A.; and McFarland, Cecil G., 4,570,026, Cl. 585-312.000.
Petrofsky, Jerrold S.; Phillips, Chandler A.; and Heaton, Harry H., III, to Wright State University. Feedback control system for walking. 4,569,352, Cl. 128-423.00W.
Petrolite Corporation: *See—*
Bellos, Thomas J., 4,569,785, Cl. 252-344.000.
Quinlan, Patrick M., 4,569,992, Cl. 544-58.200.
Petruck, Gerd-Michael; Wambach, Raimund; Wissner, Adolf; and Hartung, Sigurd, to Bayer Aktiengesellschaft. Process for the preparation of trichlorobenzenes. 4,570,023, Cl. 570-210.000.
Pettersson, Birger. Solar-energy collector that is protected against corrosion. 4,569,330, Cl. 126-418.000.
Petty, Walter L.: *See—*
Dong, Walter; and Petty, Walter L., 4,569,793, Cl. 260-112.50R.
Pfaff Industriemaschinen GmbH: *See—*
Dusch, Albert, 4,569,297, Cl. 112-221.000.
Pfaff, Siegfried: *See—*
Aufderharr, Erhard; Gruebl, Ernst; and Pfaff, Siegfried, 4,569,760, Cl. 210-372.000.
Pfeffer, Erwin: *See—*
Baier, Heinz; Kopp, Peter; Schneiderhan, Martin; Reimann, Hans-Peter; Rosch, Hans; and Pfeffer, Erwin, 4,570,180, Cl. 358-106.000.
Pfizer Inc.: *See—*
Kadin, Saul B., 4,569,942, Cl. 514-414.000.
Phatak, Ramkrishna G., to United States of America, Energy. Air blast type coal slurry fuel injector. 4,569,484, Cl. 239-410.000.
Phelps Dodge Industries, Inc.: *See—*
Kauffman, John C., 4,569,491, Cl. 242-118.410.

Phillips, Chandler A.: *See—*
Petrofsky, Jerrold S.; Phillips, Chandler A.; and Heaton, Harry H., III, 4,569,352, Cl. 128-423.00W.
Phillips, Earl G.; Insalaco, Robert W.; and Booth, William M., III, to Stryker Corporation. Continuous vacuum wound drainage system. 4,569,674, Cl. 604-119.000.
Phillips Petroleum Company: *See—*
Bruning, Donald D.; and Wier, Donald R., 4,569,393, Cl. 166-270.000.
Nowack, Gerhard P.; and Johnson, Marvin M., 4,570,025, Cl. 585-259.000.
Piccirilli, Robert M.; McKeough, David T.; and Chang, Wen-Hsuan, to PPG Industries, Inc. Polymeric microparticles. 4,569,966, Cl. 524-589.000.
Pickett, Wiley J.; and Boye, Albert A. Lubricating method and system for use in cable pulling. 4,569,420, Cl. 184-15.100.
Pidgeon, Charles: *See—*
Smith, Michele C.; and Pidgeon, Charles, 4,569,794, Cl. 260-113.000.
Pillot, Bernard, to Societe a Responsabilite Limitee International Diffusion Consommateur I.D.C. Elevator device for wheelchair and wheelchair incorporating same. 4,569,556, Cl. 297-316.000.
Pilot Man-Nen-Hitsu Kabushiki Kaisha: *See—*
Sato, Morio; and Igawa, Tatsuya, 4,569,283, Cl. 101-114.000.
Pinede, Edouard; Faublas, Serge; and Stevens, Peter F., to PKS/Communications, Inc. Programmable key telephone system. 4,570,035, Cl. 179-99.0LS.
Pinkhasov, Eduard, to Wedtech Corp. Silicon melting and evaporation apparatus for high purity applications. 4,569,307, Cl. 118-726.000.
Pinkhasov, Eduard, to Wedtech Corp. Method of treating rock to recover metal, oxygen, and water. 4,569,733, Cl. 204-60.000.
Pionke, Lawrence J.: *See—*
Baker, Robert L.; Chin, Lester P.; Courtois, James A.; Pionke, Lawrence J.; Sharp, Ralph M.; and Willcox, Peter S., 4,569,218, Cl. 72-342.000.
Pittz, Eugene P.: *See—*
Smerbeck, Richard V.; and Pittz, Eugene P., 4,569,944, Cl. 514-680.000.
PKS/Communications, Inc.: *See—*
Pinede, Edouard; Faublas, Serge; and Stevens, Peter F., 4,570,035, Cl. 179-99.0LS.
Placais, Bernard: *See—*
Matheron, Gerard; Migny, Philippe; and Placais, Bernard, 4,570,087, Cl. 307-462.000.
Placek, Anna, executrix: *See—*
Placek, Vladimir, deceased, 4,569,865, Cl. 428-31.000.
Placek, Vladimir, deceased (by Placek, Anna, executrix), to Susan Shoe Industries Limited. Bumper fascia and process to bond ionomers to metal. 4,569,865, Cl. 428-31.000.
Plasma Materials, Inc.: *See—*
Poole, John W., 4,570,048, Cl. 219-121.0PP.
Plasma Physics Corporation: *See—*
Coleman, John H., 4,569,719, Cl. 156-643.000.
Platt, Stephen A., to S. A. Platt, Inc. Sequential variable pitch coiler. 4,569,216, Cl. 72-138.000.
Plessey Overseas Limited: *See—*
Stewart, William J., 4,569,569, Cl. 350-96.190.
PLM AB: *See—*
Jakobsen, Kjell M.; and Nilsson, Claes T., 4,569,866, Cl. 428-35.000.
Pneumatic Scale Corporation: *See—*
Buschor, Josef J.; and Jennings, Frederick R., 4,569,474, Cl. 229-37.00R.
Pogrzeba, Hans-Joachim: *See—*
Adrian, Fritz; Dankow, Boris; Heyn, Klaus; and Pogrzeba, Hans-Joachim, 4,569,197, Cl. 60-39.020.
Pohl, Herbert A. Cellular spin resonance spectrometer. 4,569,741, Cl. 204-186.000.
Pohlmann, Klaus E.; Vetter, Heinz; and Friederich, Ernst, to Rohm GmbH Chemische Fabrik. Multilayer web panel and a process for its manufacture. 4,569,875, Cl. 428-119.000.
Poirer, Bruce A.: *See—*
Allen, Bruce S.; Dunalvey, Michael R.; King, Bruce A.; DuPrie, Harold J.; Hudnall, Richard E.; Lapidus, Stanely N.; Gilbert, Daniel R.; Carlson, Anne M.; Thakrar, Kiran; Doig, Robert C.; Kimerer, Brian S.; Sirois, Andrew F.; Poirer, Bruce A.; Hunt, Philip G.; Dziezanowski, Joseph J.; Bromberg, Michael A.; Brown, Michael; and Friedel, Seymour A., 4,570,217, Cl. 364-188.000.
Poirier, James W., to United States Surgical Corporation. Safety apparatus for surgical occluding and cutting device. 4,569,346, Cl. 128-305.000.
Polaroid Corporation: *See—*
Cottrell, F. Richard, 4,569,898, Cl. 430-207.000.
Stella, Joseph A.; and Wright, Joseph B., 4,569,578, Cl. 354-76.000.
Pomeroy, William F., to Texfi Industries, Inc. Method of forming a warp beam for a textile loom. 4,569,107, Cl. 28-184.000.
Poole, John W., to Plasma Materials, Inc. Plasma jet torch having gas vortex in its nozzle for arc constriction. 4,570,048, Cl. 219-121.0PP.
Popp, Franz-Wolfgang; and Furing, Kurt, to Deutsche Gesellschaft fur Wiederaufarbeitung von Kernbrennstoffen mbH. Container for storing radioactive material. 4,569,818, Cl. 376-272.000.
Portable Isokinetics, Inc.: *See—*
Mattox, Ernest M.; and Van Noord, Andrew J., 4,569,519, Cl. 272-131.000.
Porter, John S.: *See—*
Kornreich, Wayne D.; Anderson, Harry A.; Porter, John S.; and Rivier, Jean E. F., 4,569,967, Cl. 525-54.110.
Post, Marvin W. Bricklayer's speed lead with reversible clip means. 4,569,179, Cl. 52-747.000.
Poutrait-Morin: *See—*
Brunet, Patrice, 4,569,275, Cl. 92-58.100.
Powell, Dennis W.: *See—*
Moran, Daniel B.; Powell, Dennis W.; and Albright, Jay D., 4,569,934, Cl. 514-248.000.
PPG Industries, Inc.: *See—*
Piccirilli, Robert M.; McKeough, David T.; and Chang, Wen-Hsuan, 4,569,966, Cl. 524-589.000.
Pratt, Charles T.: *See—*
Kovats, William S.; and Pratt, Charles T., 4,569,445, Cl. 209-539.000.
Preniczny, Robert B.; and Anderson, Bruce W., to Allied Corporation. Brake temperature sensor. 4,569,600, Cl. 374-131.000.
Presto Lock, Inc.: *See—*
Scelba, Stephen S., 4,569,213, Cl. 70-84.000.
Prikhodko, Valentin I.: *See—*
Karpov, Alexandr V.; Kivaev, Anatoly A.; Elkind, Solomon A.; Orlov, Garri N.; Lukin, Nikolai I.; Gashnev, Mikhail S.; Ososkov, Gennady A.; Prikhodko, Valentin I.; and Zavyalov, Vladimir F., 4,569,576, Cl. 351-212.000.
Primmer, Kenneth R.: *See—*
Cooper, Larry T.; and Primmer, Kenneth R., 4,570,061, Cl. 250-222.100.
Prince Corporation: *See—*
Marks, Larry, 4,569,552, Cl. 296-97.00K.
Pringle, Frank E.; and Inoue, Shinichi, to Yamato Scale Company, Limited. Combination weighing machine having volume confining function. 4,569,406, Cl. 177-25.000.
Pringle, Ronald E., to Camco, Incorporated. Subsurface well safety valve. 4,569,398, Cl. 166-321.000.
Procter & Gamble Company, The: *See—*
Strobel, Rudolf G., 4,569,853, Cl. 426-599.000.
Properzi, Giulio. Apparatus for converting rod stock or wire rod into wire. 4,569,217, Cl. 72-206.000.
Prosl, Frank R.; and Szymanski, Joseph J., to Infusaid Corporation. Transcutaneous infusion system. 4,569,675, Cl. 604-175.000.
Provendier, Jacques H.: *See—*
Kerdoncuff, Guy P.; and Provendier, Jacques H., 4,570,235, Cl. 364-724.000.
Pryor, Timothy R. Robotic compensation systems. 4,570,065, Cl. 250-231.00R.
Przybyszewski, John S.; and Claing, Richard G., to United Technologies Corporation. Polished overlay coatings with enhanced durability. 4,569,889, Cl. 428-612.000.
PTX-Pentronix, Inc.: *See—*
DeSantis, Raymond P., 4,569,183, Cl. 53-534.000.
Puente-Duany, Rafael J.: *See—*
Baker, Charles L., Jr.; and Puente-Duany, Rafael J., 4,569,682, Cl. 55-6.000.
Pugh, John H., to Cincinnati Milacron Inc. Strand laying head. 4,569,716, Cl. 156-510.000.
Pullman Standard Inc.: *See—*
Gielow, Robert L.; and Paul, James C., 4,569,289, Cl. 105-2.00R.
Purkapile, Emerson J., to Scott & Fetzer Company, The. Vacuum device. 4,569,100, Cl. 15-327.00F.
Pyburn, Robert M. Utility container for catamaran sailboats. 4,569,301, Cl. 114-61.000.
Q-Val Incorporated: *See—*
Jette, Paul, 4,570,074, Cl. 250-563.000.
Qualey, Terryl K.: *See—*
Roeker, David C., 4,569,431, Cl. 192-131.00R.
Quartier, Eddy: *See—*
Crommelynck, Roger; and Quartier, Eddy, 4,569,709, Cl. 156-95.000.
Quijano C., Miguel. Golf clubs. 4,569,524, Cl. 273-173.000.
Quinlan, Patrick M., to Petrolite Corporation. Quaternary ammonium derivatives of 1,4 thiazine sulfonic acids. 4,569,992, Cl. 544-58.200.
Qume Corporation: *See—*
Hoyes, Brian G., 4,569,606, Cl. 400-144.200.
Quon, Willard L.: *See—*
Kasper, William W.; Quon, Willard L.; and Van Domelen, Timothy D., 4,569,990, Cl. 528-403.000.
Quy, Dennis A.: *See—*
Olson, Gene H.; and Quy, Dennis A., 4,570,257, Cl. 370-85.000.
Raab, Harald; Gobel, Hilmar; and Schierling, Bernhard, to Fichtel & Sachs AG. Clutch disc for a motor vehicle friction clutch. 4,569,430, Cl. 192-106.200.
Racek, Alfred: *See—*
Becker, Franz J.; and Racek, Alfred, 4,569,653, Cl. 431-253.000.
Radovich, David A.; and Keddie, Alicia H., to Mobay Chemical Corporation. Flexible polyurethane foams having improved load bearing characteristics and mixtures useful therein. 4,569,952, Cl. 521-167.000.
Rakoczy nee Pinter, Eva: *See—*
Budai, Zoltan; Benko, Pal; Ratz nee Simonek, Ildiko; Rakoczy nee Pinter, Eva; Magyar, Karoly; Kelemen, Jozsef; and Mandi, Attila, 4,570,002, Cl. 548-495.000.
Ramachandran, Pallassana N.; and Peterson, Kenneth S., to Colgate Palmolive Co. Particulate fabric softening detergent composition. 4,569,773, Cl. 252-8.700.

Rao, Krishna K.: *See*—
Yang, Tai-Cheng; Rao, Krishna K.; and Huang, I-Der, 4,569,925, Cl. 502-209.000.

Rasshofer, Werner: *See*—
Grogler, Gerhard; Hess, Heinrich; Kopp, Richard; and Rasshofer, Werner, 4,569,982, Cl. 528-73.000.

Ratanapupech, Pisant: *See*—
Berg, Lloyd; and Ratanapupech, Pisant, 4,569,726, Cl. 203-56.000.

Ratcliffe, Charles T.; Tromp, Petrus J.; and Wachs, Israel E., to Exxon Research and Engineering Co. Production of methanethiol from H_2S and CO. 4,570,020, Cl. 568-70.000.

Ratier-Figeac: *See*—
Gaiani, Robert, 4,569,241, Cl. 74-424.80R.

Ratz nee Simonek, Ildiko : *See*—
Budai, Zoltan; Benko , Pal; Ratz nee Simonek, Ildiko ; Rakoczy nee Pinter, Eva; Magyar, Karoly; Kelemen, Jozsef; and Mandi, Attila, 4,570,002, Cl. 548-495.000.

Raudat, John L., to Standard-Knapp, Inc. Case feed for continuous motion packer. 4,569,181, Cl. 53-251.000.

Rauser, Michael; Lange, Sven; and Singer, Norbert, to Dr. Ing. h.c.F. Porsche Aktiengesellschaft. Panel member for an underside of an automotive vehicle, especially a passenger car. 4,569,551, Cl. 296-1.00S.

Raviv, Shimon: *See*—
Spector, Yechiel; Gonen, Amos; and Raviv, Shimon, 4,569,399, Cl. 169-66.000.

Rawlings, Richard M.; and Hoefelmeyer, Henry L., to Texas Instruments Incorporated. Cryogenic cooler. 4,569,203, Cl. 62-6.000.

Raychem Corporation: *See*—
McMills, Corey J., 4,570,055, Cl. 219-541.000.

Raytheon Company: *See*—
Feist, Wolfgang M., 4,569,698, Cl. 148-1.500.

Raza, Saiyed A.: *See*—
Lim, Sheldon C. P.; Ridley, Douglas F.; Raza, Saiyed A.; and Conner, George W., 4,569,121, Cl. 29-574.000.

RCA Corporation: *See*—
Campbell, Francis J., 4,570,101, Cl. 313-461.000.
McDonie, Arthur F.; and Kaiser, Donald B., 4,570,102, Cl. 313-533.000.
Whitley, George J., 4,569,127, Cl. 29-741.000.
Woodward, Oakley M., 4,570,134, Cl. 333-123.000.

Rebel, Burghard; and Gossel, Michael, to Akademie der Wissenschaften der DDR. Multi-dimensional parallel storage device. 4,570,236, Cl. 364-900.000.

Redfield, James W., to Commodore Business Machines Inc. Self booting logical AND circuit. 4,570,085, Cl. 307-453.000.

Regie Nationale des Usines Renault: *See*—
Aussedat, Francis, 4,570,226, Cl. 364-442.000.
Galant, Jean-Claude, 4,569,282, Cl. 100-189.000.

Reidinger, Michael J., to Tru-Lyte Systems, Inc. Amplifier assembly for electromagnetic radiation, preferably in the actinic spectrum. 4,569,571, Cl. 350-96.240.

Reikowski, Harold J.; and Hetherwick, James L., to Kelsey-Hayes Company. Apparatus for making fiber reinforced armatures. 4,569,713, Cl. 156-433.000.

Reimann, Hans-Peter: *See*—
Baier, Heinz; Kopp, Peter; Schneiderhan, Martin; Reimann, Hans-Peter; Rosch, Hans; and Pfeffer, Erwin, 4,570,180, Cl. 358-106.000.

Reimund, James A.: *See*—
Melton, Jack D.; McKinney, Collin J.; and Reimund, James A., 4,570,152, Cl. 340-58.000.

Rein, Karl: *See*—
Bauer, Friedrich; and Rein, Karl, 4,569,636, Cl. 417-295.000.

Reinke Manufacturing Co., Inc.: *See*—
Davis, John E.; Zielke, Terry L.; and Coash, Ronald J., 4,569,481, Cl. 239-177.200.

Remond, Pierre: *See*—
Volland, Michel; Remond, Pierre; and Boyer, Roland, 4,569,376, Cl. 139-435.000.

Rengo Co., Ltd.: *See*—
Tokuno, Masateru, 4,569,714, Cl. 156-471.000.

Renjilian, Armen, to Albany International Corp. Paper machine clothing. 4,569,883, Cl. 428-234.000.

Rensch, David B.; and Chen, John Y., to Hughes Aircraft Company. Method for forming thin conducting lines by ion implantation and preferential etching. 4,569,124, Cl. 29-591.000.

Rensing, Hans: *See*—
Swinkels, Godefridus M.; Sadan, Abraham; Rockandel, Michael A.; and Rensing, Hans, 4,569,676, Cl. 23-295.00S.

Rentz, Edward J.: *See*—
Rentz, Robert I.; and Rentz, Edward J., 4,569,815, Cl. 264-323.000.

Rentz, Robert I.; and Rentz, Edward J. Method and device for simultaneously propelling and forming impressions with a flowable material. 4,569,815, Cl. 264-323.000.

Renz, Gisela: *See*—
Bayer, Thomas; Kraus, Georg; Kuenzel, Ulrich; Renz, Gisela; and Schaefer, Rolf, 4,569,743, Cl. 204-192.00R.

Retelsdorf, Hans-Joachim: *See*—
Fichte, Rudolf; Breuer, Friedrich; Hahn, Reinhard; and Retelsdorf, Hans-Joachim, 4,569,691, Cl. 75-10.00R.

Revlon, Inc.: *See*—
Sheffler, Robert J., 4,569,438, Cl. 206-37.000.

Reynolds, Darcie F. Cooking implement. 4,569,278, Cl. 99-394.000.

Reynolds, Desmond H. J., to Lucas Industries Public Limited Company. Hydraulic boosters for vehicle hydraulic systems. 4,569,271, Cl. 91-25.000.

Rheinische Braunkohlenwerke AG: *See*—
Bellgardt, Dieter; Bauer, Werner; Werther, Joachim; and Ritter, Gunter, 4,569,228, Cl. 73-432.00R.

Rheinmetall G.m.b.H.: *See*—
Breuer, Heinz G., 4,569,269, Cl. 89-24.000.

Richard Kablitz GmbH & Co. KG: *See*—
Doerges, Eugen, 4,569,437, Cl. 198-773.000.

Richard Wolf GmbH: *See*—
Falk, Ernst; Hiltebrandt, Siegfried; and Knoesel, Johann, 4,569,131, Cl. 30-251.000.

Richardson-Vicks Inc.: *See*—
Dhabhar, Dadi J., 4,569,955, Cl. 523-120.000.

Ricoh Company, Ltd.: *See*—
Takemoto, Takeshi, 4,569,607, Cl. 400-167.000.

Riddell, George; and Grispino, Edward J. Hot water tank warning system. 4,569,312, Cl. 122-504.200.

Ridley, Douglas F.: *See*—
Lim, Sheldon C. P.; Ridley, Douglas F.; Raza, Saiyed A.; and Conner, George W., 4,569,121, Cl. 29-574.000.

Riederer, Emil; Zahn, Karl-Ludwig; and Bencker, Rudolf, to SKW Trostberg Aktiengesellschaft. Self-cleaning rotating drum. 4,569,648, Cl. 425-222.000.

Riehle, Dennis R., to Cincinnati Milacron Inc. Flagging apparatus and machine equipped therewith. 4,569,157, Cl. 51-165.750.

Rikitake, Tetuo: *See*—
Abe, Minoru; and Rikitake, Tetuo, 4,569,459, Cl. 220-293.000.

Rinehart, Thomas A.: *See*—
Freese, Robert P.; Johnson, Leslie H.; Rinehart, Thomas A.; and Gardner, Richard N., 4,569,881, Cl. 428-213.000.

Ring, David B., to Cetus Corporation. *P. obtusus* strain. 4,569,915, Cl. 435-254.000.

Rinkewich, Isaac. Timer-controlled valve particularly for irrigation. 4,569,369, Cl. 137-624.120.

Rinno, Helmut: *See*—
Engel, Dieter; Rinno, Helmut; and Zimmerschied, Klaus, 4,569,965, Cl. 524-544.000.

Rippel, Wally E.: *See*—
Edwards, Dean B.; and Rippel, Wally E., 4,570,212, Cl. 363-138.000.

Ritter, Gunter: *See*—
Bellgardt, Dieter; Bauer, Werner; Werther, Joachim; and Ritter, Gunter, 4,569,228, Cl. 73-432.00R.

Rivier, Jean E. F.; and Vale, Wylie W., Jr., to Salk Institute For Biological Studies, The. GnRH Antagonists IV. 4,569,927, Cl. 514-15.000.

Rivier, Jean E. F.: *See*—
Kornreich, Wayne D.; Anderson, Harry A.; Porter, John S.; and Rivier, Jean E. F., 4,569,967, Cl. 525-54.110.

Robbins, Earl H. Composite wood panel. 4,569,873, Cl. 428-106.000.

Roberson, Hershel: *See*—
Hopfe, Helmut W.; and Roberson, Hershel, 4,569,220, Cl. 73-3.000.

Robert Bosch GmbH: *See*—
Adolph, Dietrich, 4,569,227, Cl. 73-119.00A.

Robert, Brieuc, to Kley France. Traction block for linear winch. 4,569,507, Cl. 254-246.000.

Robson, Thomas; and Thompson, Aubrey E., to Burroughs Corporation. Electrostatic charge probe for electrophotographic apparatus. 4,569,583, Cl. 355-14.0CH.

Roccaforte, Harry I., to Champion International Corporation. Carton with tamper-proof pouring spout. 4,569,443, Cl. 206-626.000.

Rockandel, Michael A.: *See*—
Swinkels, Godefridus M.; Sadan, Abraham; Rockandel, Michael A.; and Rensing, Hans, 4,569,676, Cl. 23-295.00S.

Rockwell International Corporation: *See*—
Carter, Robert C., 4,570,164, Cl. 343-706.000.

Roeker, David C., to Qualey, Terryl K., a part interest. Dual hand control. 4,569,431, Cl. 192-131.00R.

Rohde, Friedrich: *See*—
Hecht, Joachim; Loedige, Wilfried; Rohde, Friedrich; Rudat, Gerhard; Wiggershaus, Fred; and Winter, Klaus-Juergen, 4,569,290, Cl. 105-154.000.

Rohm GmbH: *See*—
Buchmuller, Hans-Peter; Kerk, Klaus; and Kolbe, Klaus, 4,569,166, Cl. 52-86.000.

Rohm GmbH Chemische Fabrik: *See*—
Pohlmann, Klaus E.; Vetter, Heinz; and Friederich, Ernst, 4,569,875, Cl. 428-119.000.

Rohm and Haas Company: *See*—
Kalyanaraman, Palaiyur S., 4,569,897, Cl. 430-197.000.
Opie, Thomas R., 4,570,003, Cl. 549-292.000.

Rolls-Royce Limited: *See*—
Mills, David, 4,569,384, Cl. 164-131.000.

Romanchik, Robert E.; and Short, James C., to Fuller Company. Pneumatic conveying and material blending apparatus and method. 4,569,596, Cl. 366-107.000.

Romani, Franco: *See*—
Giorgetti, Paolo; Romani, Franco; and Strino, Enrico, 4,569,848, Cl. 426-94.000.

Rosaen, Lars, to Universal Flow Monitors. Flow meter indicating device. 4,569,233, Cl. 73-861.420.

Rosch, Hans: *See*—
Baier, Heinz; Kopp, Peter; Schneiderhan, Martin; Reimann, Hans-Peter; Rosch, Hans; and Pfeffer, Erwin, 4,570,180, Cl. 358-106.000.

Rosemount Inc.: *See*—
Olson, Gene H.; and Quy, Dennis A., 4,570,257, Cl. 370-85.000.

Rosenbaum, Georges: *See*—
Grollier, Jean-Francois; Allec, Josiane; Fourcadier, Chantal; Rosenbaum, Georges; and Darmenton, Patrick, 4,569,839, Cl. 424-74.000.

Rosenberg, E. William; and Belew, Patricia W., to University of Tennessee Research Corp. Topical treatment of psoriasis with imidazole antibiotics. 4,569,935, Cl. 514-252.000.

Rosenwinkel, Donald A.; Breslow, Jeffrey D.; and Zaruba, John V., to Marvin Glass & Associates. Treasure game with separable, changeable surfaces. 4,569,527, Cl. 273-251.000.

Rossi, Albert, to Exxon Research & Engineering Co. Additive concentrates for distillate fuels. 4,569,679, Cl. 44-62.000.

Roussel Uclaf: *See*—
Tessier, Jean; Teche, Andre ; and Demoute, Jean-Pierre, 4,569,928, Cl. 514-66.000.

Rovel, Jean-Marie: *See*—
Ben Aim, Roger; Bourdiol, Daniel; Fiessinger, Francois; and Rovel, Jean-Marie, 4,569,759, Cl. 210-304.000.

Rubin, Sol R.; Marcus, John S.; and Holly, James D. Automobile wheel cover locking bolt and wrench combination. 4,569,259, Cl. 81-121.100.

Rudat, Gerhard: *See*—
Hecht, Joachim; Loedige, Wilfried; Rohde, Friedrich; Rudat, Gerhard; Wiggershaus, Fred; and Winter, Klaus-Juergen, 4,569,290, Cl. 105-154.000.

Ruger, William B.; and Melcher, Roy L., to Sturm, Ruger & Company, Inc. Inactivating selector arrangement for bolt action firearms. 4,569,145, Cl. 42-16.000.

Ruhrgas Aktiengesellschaft: *See*—
Barthel, Gunter, 4,569,890, Cl. 429-17.000.

Ruhrkohle AG: *See*—
Wright, Charles H., 4,569,749, Cl. 208-10.000.

Ruscetta, Anthony: *See*—
Knowlton, Bryce H.; and Ruscetta, Anthony, 4,569,390, Cl. 165-149.000.

Russo, Luigi; and Marzaroli, Vincenzo. System for reversing the sequential position of the operative units in automatic packaging machinery. 4,569,180, Cl. 53-201.000.

Rutgerswerke Aktiengesellschaft: *See*—
Sasse, H. Rainer; Conrad, Karl-Hermann; Herzog, Rolf; Klein, Hans; and Meier, Bert, 4,569,971, Cl. 525-109.000.

Rutz, Jeffrey A.: *See*—
Walton, John R.; and Rutz, Jeffrey A., 4,569,769, Cl. 210-759.000.

S. A. Platt, Inc.: *See*—
Platt, Stephen A., 4,569,216, Cl. 72-138.000.

Sadan, Abraham: *See*—
Swinkels, Godefridus M.; Sadan, Abraham; Rockandel, Michael A.; and Rensing, Hans, 4,569,676, Cl. 23-295.00S.

Saenz, Jesus A.: *See*—
Kummer, David A.; Saenz, Jesus A.; and Trynosky, Stephen W., 4,570,161, Cl. 340-799.000.

Sagi, Yitzchak: *See*—
Alper, Yekutiel; Sagi, Yitzchak; Michai, Gabi; Antler, Aharon; and Elkin, Yitzchak, 4,569,188, Cl. 56-327.00R.

Saglio, Robert: *See*—
Asty, Michel; Lerat, Bernard; Saglio, Robert; and Viard, Jacky, 4,569,230, Cl. 73-623.000.

St. John, Robert P.; and Lloyd, William A., to Xerox Corporation. Color electrographic recording apparatus. 4,569,584, Cl. 355-14.00R.

Saita, Masakazu: *See*—
Ohgami, Nobutoshi; Kitagawa, Masaru; Nishizawa, Hisao; and Saita, Masakazu, 4,569,717, Cl. 156-626.000.

Saito, Tamio, to Tokyo Shibaura Denki Kabushiki Kaisha. Method for manufacturing multilayer circuit substrate. 4,569,902, Cl. 430-313.000.

Saito, Toru: *See*—
Horiuchi, Susumu; Hirano, Mikio; and Saito, Toru, 4,569,787, Cl. 252-632.000.

Saito, Yukio: *See*—
Shimaoka, Motohiro; and Saito, Yukio, 4,570,195, Cl. 360-97.000.
Shimaoka, Motohiro; and Saito, Yukio, 4,570,196, Cl. 360-97.000.

Saitoh, Keishi, to Canon Kabushiki Kaisha. Photoconductive member with amorphous silicon germanium regions and containing oxygen. 4,569,892, Cl. 430-57.000.

Saitoh, Keishi; Ohnuki, Yukihiko; and Ohno, Shigeru, to Canon Kabushiki Kaisha. Amorphous matrix of silicon and germanium having controlled conductivity. 4,569,893, Cl. 430-57.000.

Saitoh, Keishi; and Arao, Kozo, to Canon Kabushiki Kaisha. Photoconductive member comprising germanium atoms. 4,569,894, Cl. 430-63.000.

Sakai, Shoji: *See*—
Kato, Hisaaki; and Sakai, Shoji, 4,569,104, Cl. 19-244.000.

Sakai, Tadashi: *See*—
Shiratori, Masayuki; Sakai, Tadashi; Katsura, Masaki; and Takikawa, Osamu, 4,569,826, Cl. 422-90.000.

Sakairi, Minoru; and Kambara, Hideki, to Hitachi, Ltd. Interface for liquid chromatograph and mass spectrometer. 4,570,068, Cl. 250-288.000.

Sakamoto, Noriaki: *See*—
Kobayashi, Toshiaki; and Sakamoto, Noriaki, 4,570,044, Cl. 219-10.49A.

Sakata, Hiroshi, to Anderson, W. Scott. Method of increasing the efficiency of a liquid hydrocarbon fuel. 4,569,737, Cl. 585-899.000.

Sakata, Sumio T., to Boeing Company, The. Pitch control of swept wing aircraft. 4,569,494, Cl. 244-199.000.

Sakurai, Yojiro: *See*—
Fujii, Setsuro; Yaegashi, Takashi; Nakayama, Toyoo; Sakurai, Yojiro; Nunomura, Shigeki; and Okutome, Toshiyuki, 4,570,006, Cl. 549-442.000.

Sakuta, Koichi: *See*—
Tani, Tatsuo; Sawata, Sinji; Tanaka, Tadayoshi; Sakuta, Koichi; Nagata, Yuuji; Eto, Yasushi; Adachi, Makoto; and Matsurra, Yasunori, 4,569,331, Cl. 126-435.000.

Salk Institute for Biological Studies, The: *See*—
Kornreich, Wayne D.; Anderson, Harry A.; Porter, John S.; and Rivier, Jean E. F., 4,569,967, Cl. 525-54.110.
Rivier, Jean E. F.; and Vale, Wylie W., Jr., 4,569,927, Cl. 514-15.000.

Samuels, George J.: *See*—
Schmitkons, Thomas A.; Samuels, George J.; and Ilardi, Joseph M., 4,569,720, Cl. 156-646.000.

Sanada, Munehiko: *See*—
Nishiyama, Yukio; Yamamoto, Kazuhiko; Sanada, Munehiko; Okada, Yukio; and Miura, Toshikatsu, 4,569,880, Cl. 428-212.000.

Sandone, Frank P., Jr: *See*—
Zandman, Felix; and Sandone, Frank P., Jr, 4,570,150, Cl. 338-329.000.

Sandrock, Gerhard: *See*—
Lindner, Alfred; Broellos, Klaus; Sandrock, Gerhard; Volkamer, Klaus; and Hefner, Werner, 4,569,725, Cl. 203-38.000.

Sandstedt, Gary O. Restaurant or retail vending facility. 4,569,421, Cl. 186-39.000.

Sandstrom, William A.; Patel, Jitendra G.; and Bush, John R., to Institute of Gas Technology. Process for thermal and pneumatic treatment of granular solids. 4,569,696, Cl. 134-2.000.

Sandulyak, Alexandr V.; Garaschenko, Vyacheslav I.; Sandulyak, Vladimir V.; and Korkhov, Oleg J., to Ukrainsky Institut Inzhenerov Vodnogo Khozyaistva. Separator for magnetic removal of solid particles from fluid media. 4,569,758, Cl. 210-222.000.

Sandulyak, Vladimir V.: *See*—
Sandulyak, Alexandr V.; Garaschenko, Vyacheslav I.; Sandulyak, Vladimir V.; and Korkhov, Oleg J., 4,569,758, Cl. 210-222.000.

Sano, Tetsuo: *See*—
Ono, Yoshio; and Sano, Tetsuo, 4,570,187, Cl. 358-287.000.

Santiago, Elias. Vandal-resistant switch assembly. 4,570,040, Cl. 200-52.00R.

Sanyo-Kokusaku Pulp Co., Ltd.: *See*—
Kasamatsu, Norikazu; Matsukawa, Masao; and Mishima, Masaru, 4,570,169, Cl. 346-200.000.
Shibano, Tomishi; Ozawa, Hironori; and Maruchi, Sachio, 4,569,712, Cl. 156-244.140.

Sanz, Ernst; Steger, Jean-Pierre; and Thie, Werner, to Sanz, Ernst. Method for cardiogoniometry. 4,569,357, Cl. 128-699.000.

Sarabi, Alireza: *See*—
Tetrick, Raymond S.; Beaston, John; Farrell, Robert L.; Sarabi, Alireza; Balachandran, Sudarshan; Jacks, Edwin L., Jr.; and Kassel, Steven D., 4,570,220, Cl. 364-200.000.

Sasaki, Katsuhiro: *See*—
Morishita, Mitsuharu; Kouge, Shinichi; Iwatani, Shirou; and Sasaki, Katsuhiro, 4,570,199, Cl. 361-18.000.

Sasaki, Koji: *See*—
Nishida, Isao; Sasaki, Koji; Nakano, Seizo; Takeuchi, Shigetaka; and Takahashi, Takeshi, 4,570,202, Cl. 361-333.000.

Sasaki, Nobuyoshi, to M.C.L. Co., Ltd. System for the preparation of ceramic shell molds. 4,569,385, Cl. 164-166.000.

Sasaki, Shosaku; and Kaiya, Nobuo, to Toray Silicone Company, Limited. Releasable film forming compositions. 4,569,980, Cl. 528-14.000.

Sasmor, Louis: *See*—
Mumford, Van E.; and Sasmor, Louis, 4,569,350, Cl. 128-697.000.

Sasse, H. Rainer; Conrad, Karl-Hermann; Herzog, Rolf; Klein, Hans; and Meier, Bert, to Rutgerswerke Aktiengesellschaft. Hardeners for epoxy resins. 4,569,971, Cl. 525-109.000.

Sassmannshausen, Knut O. Portable light, such as a flashlight, searchlight, lantern or the like and method of production thereof. 4,570,208, Cl. 362-188.000.

Satchell, Fred E., to Sherwood Medical Company. Collection device with phase partitioning means. 4,569,764, Cl. 210-511.000.

Saterini, Mario: *See*—
Forno, Mario; Gibellino, Gianfranco; and Saterini, Mario, 4,569,285, Cl. 101-248.000.

Sato, Hirokazu, to Kabushiki Kaisha Toshiba. Firing angle control system. 4,570,111, Cl. 318-338.000.

Sato, Hiroki; Hatanaka, Masato; Ohhoshi, Toshio; and Tanaka, Sakae, to Sony Corporation. Flat-type cathode ray tube having electrostatic and electromagnetic deflection systems. 4,570,100, Cl. 313-422.000.

Sato, Masamichi, to Fuji Photo Film Co., Ltd. Small electrophotographic copying machine with transparent film. 4,569,581, Cl. 355-3.0BE.

Sato, Mitsuya; and Shimoda, Isamu, to Canon Kabushiki Kaisha. Method of and apparatus for controlling a fluid bearing. 4,569,562, Cl. 308-5.00R.

Sato, Morio; and Igawa, Tatsuya, to Pilot Man-Nen-Hitsu Kabushiki Kaisha. Stencil material set and stencil duplicator set. 4,569,283, Cl. 101-114.000.

Sato, Takako T.: *See*—
Matsui, Susumu; Sato, Takako T.; and Nakajima, Kazuo, 4,569,912, Cl. 435-189.000.

Sato, Yutaka: *See—*
Asami, Kazutomo; Wada, Fumio; Ishijima, Koji; and Sato, Yutaka, 4,569,645, Cl. 418-63.000.
Saurer Diederichs (Societe Anonyme): *See—*
Volland, Michel; Remond, Pierre; and Boyer, Roland, 4,569,376, Cl. 139-435.000.
Savin Corporation: *See—*
Holtje, Bruce E., 4,569,514, Cl. 271-314.000.
Sawata, Sinji: *See—*
Tani, Tatsuo; Sawata, Sinji; Tanaka, Tadayoshi; Sakuta, Koichi; Nagata, Yuuji; Eto, Yasushi; Adachi, Makoto; and Matsurra, Yasunori, 4,569,331, Cl. 126-435.000.
Scelba, Stephen S., to Presto Lock, Inc. Compartment closure assembly with latching apparatus having combination lock. 4,569,213, Cl. 70-84.000.
Schaefer, Rolf: *See—*
Bayer, Thomas; Kraus, Georg; Kuenzel, Ulrich; Renz, Gisela; and Schaefer, Rolf, 4,569,743, Cl. 204-192.00R.
Schatteman, Etienne A., to Staar S.A. Disc player having self-actuated magnetic clamping device. 4,570,194, Cl. 360-97.000.
Schering Corporation: *See—*
Blythin, David J., 4,569,936, Cl. 514-267.000.
Schick, David L.: *See—*
Dolejs, Charles A.; Schumann, Gary M.; and Schick, David L., 4,569,371, Cl. 137-625.470.
Schiemann, Wolfram. Method of manufacturing a canister. 4,569,816, Cl. 264-513.000.
Schierling, Bernhard: *See—*
Raab, Harald; Gobel, Hilmar; and Schierling, Bernhard, 4,569,430, Cl. 192-106.200.
Schiff, Peter; and Lambert, Cary L., to Schiff, Peter. Method and apparatus for treating a heart patient through the coordinating efforts of balloon pumping and dispensing catheters. 4,569,332, Cl. 128-1.00D.
Schirmer, Ulrich; Goetz, Norbert; and Wuerzer, Bruno, to BASF Aktiengesellschaft. Aniline derivatives and their use for controlling undesirable plant growth. 4,569,689, Cl. 71-88.000.
Schlag, Edward W.; von Weyssenhoff, Hanns; and Selzle, Heinrich. Method and device for producing molecular beams. 4,570,066, Cl. 250-251.000.
Schlemper, Eberhard: *See—*
Auch, Wilfried; and Schlemper, Eberhard, 4,569,593, Cl. 356-350.000.
Schmidt, Bertil; and Kosonen, Pentti, to Aktiebolaget Gustavsberg. Pile construction. 4,569,617, Cl. 405-251.000.
Schmidt, Friedrich W., to Sharpoint, Inc. Depth limited cutter. 4,569,133, Cl. 30-293.000.
Schmidt, George S.: *See—*
Ade., Adrian R.; and Schmidt, George S., 4,570,053, Cl. 219-413.000.
Schmidt, Paul A.: *See—*
Dvivedi, Nitin N.; and Schmidt, Paul A., 4,569,825, Cl. 420-464.000.
Schmidt, Willi J.: *See—*
Antl, Jurgen; Schmidt, Willi J.; and Wredenhagen, Hartmut, 4,569,125, Cl. 29-596.000.
Schmidt, William K.: *See—*
Baker, Geraldine L.; and Schmidt, William K., 4,569,937, Cl. 514-282.000.
Schmitkons, Thomas A.; Samuels, George J.; and Ilardi, Joseph M., to Allied Corporation. Copper etching system. 4,569,720, Cl. 156-646.000.
Schmitt, Donald J.: *See—*
Ferroni, C. Paul; Linton, Jonathan L.; and Schmitt, Donald J., 4,570,148, Cl. 337-354.000.
Schneider, Felix: *See—*
Kramer, Rolf; Ahlborn, Gunter; Schneider, Felix; Neuser, Ernst; Hubsch, Henry; Kampmann, Gerhard; and Wagener, Paul-Werner, 4,569,293, Cl. 105-377.000.
Schneiderhan, Martin: *See—*
Baier, Heinz; Kopp, Peter; Schneiderhan, Martin; Reimann, Hans-Peter; Rosch, Hans; and Pfeffer, Erwin, 4,570,180, Cl. 358-106.000.
Schoen, Neil C. Particle beam accelerators. 4,570,103, Cl. 315-5.410.
Scholes, Gary; and van Helden, Robert, to Shell Oil Company. Arylsulphonyl azetidine compounds, their preparation and their use as intermediates. 4,569,795, Cl. 260-239.00A.
Schonherr, Dietrich W.: *See—*
Hartmann, Achim; and Schonherr, Dietrich W., 4,569,387, Cl. 165-47.000.
Schroder, Rolf; and Lurssen, Klaus, to Bayer Aktiengesellschaft. Cycloalkanecarboxylic acid compounds. 4,570,014, Cl. 560-124.000.
Schuetz, James A., to Honeywell Inc. Reactively sputtered chrome silicon nitride resistors. 4,569,742, Cl. 204-192.00F.
Schulke, Karl-Albert, to Heraeus Quarzschmelze GmbH. Silica glass tray made for wafers. 4,569,452, Cl. 206-454.000.
Schultz, George A. Method for toasting a bakery product. 4,569,851, Cl. 426-496.000.
Schumann, Gary M.: *See—*
Dolejs, Charles A.; Schumann, Gary M.; and Schick, David L., 4,569,371, Cl. 137-625.470.
Schwab, Leonard M. Closed loop-hook and elastic band fastener. 4,569,108, Cl. 24-17.00R.
Schwartzman, Gilbert; and Buschemeyer, Sally Q. Liquid applicator and valve therefor. 4,569,612, Cl. 401-206.000.
Science Union et Cie: *See—*
Auerbach, Joseph; and Kantor, Martin, 4,570,001, Cl. 548-483.000.
SCM Corporation: *See—*
Andrews, Todd A., 4,569,847, Cl. 426-94.000.
Scola, Daniel A.; and Pater, Ruth H., to United Technologies Corporation. Polyimides of 4,4'-(hexafluoroisopropylidene)bis(o-phthalic anhydride) and aliphatic diamines. 4,569,988, Cl. 528-353.000.
Scott Equipment Company: *See—*
Elmer, Michael T., 4,569,497, Cl. 248-230.000.
Scott & Fetzer Company, The: *See—*
Purkapile, Emerson J., 4,569,100, Cl. 15-327.00F.
SDS Biotech Corporation: *See—*
Cryberg, Richard L.; and Bimber, Russell M., 4,570,021, Cl. 568-388.000.
Seager, Kenneth F., Sr.: *See—*
Sekella, Thomas C.; and Seager, Kenneth F., Sr., 4,569,426, Cl. 192-18.00B.
Sears, Daniel: *See—*
Conkle, James P.; Sears, Daniel; and Hicks, James A., 4,569,235, Cl. 73-863.030.
Seatronics Technologies Ltd.: *See—*
Gruzling, Josip, 4,569,302, Cl. 114-63.000.
Seelbach, Walter C.; and Marley, Robert R., to Motorola, Inc. AC Transient driver for memory cells. 4,570,240, Cl. 365-204.000.
Seely, James R., to Marketing Displays, Inc. Deflectable sign and stand. 4,569,499, Cl. 248-624.000.
Segers, Jacobus C.: *See—*
De Laat, Cornelis I.; Segers, Jacobus C.; and Spits, Albert J., 4,569,796, Cl. 260-425.000.
Seiki, Kazuo: *See—*
Anahara, Meiji; Omori, Hiroshi; and Seiki, Kazuo, 4,569,193, Cl. 57-328.000.
Seitetsu Kagaku Co., Ltd.: *See—*
Seno, Taiko; Okubo, Yasuto; Kawamura, Masao; Akutsu, Seiichi; and Fukuda, Hirosuke, 4,569,909, Cl. 435-89.000.
Sekella, Thomas C.; and Seager, Kenneth F., Sr., to Facet Enterprises, Incorporated. Clutch and brake assembly. 4,569,426, Cl. 192-18.00B.
Selleslags, Frank K. A.: *See—*
De Blauwe, Francis J. A. M. C.; and Selleslags, Frank K. A., 4,569,868, Cl. 428-35.000.
Selsam, Roger L.: *See—*
Bouyoucos, John V.; and Selsam, Roger L., 4,569,412, Cl. 181-119.000.
Selzle, Heinrich: *See—*
Schlag, Edward W.; von Weyssenhoff, Hanns; and Selzle, Heinrich, 4,570,066, Cl. 250-251.000.
Seno, Taiko; Okubo, Yasuto; Kawamura, Masao; Akutsu, Seiichi; and Fukuda, Hirosuke, to Seitetsu Kagaku Co., Ltd. Process for preparing uridine diphosphate-N-acetylgalactosamine. 4,569,909, Cl. 435-89.000.
Sensing, Wylie W.; and Watkins, Ray V., to Sureway Products, Inc. Disposable mouse trap. 4,569,149, Cl. 43-61.000.
Senter, Peter D.: *See—*
Blattler, Walter A.; Lambert, John M.; and Senter, Peter D., 4,569,789, Cl. 260-112.00R.
Sentry Electric Corp.: *See—*
Wittlin, Seymour I., 4,570,209, Cl. 362-231.000.
Serrano, Art, to Novation, Inc. Phone line ring signal detection circuit. 4,570,034, Cl. 179-84.00A.
Seufert, Walter: *See—*
Loeffler, Hans-Peter; Seufert, Walter; and Adolphi, Heinrich, 4,569,930, Cl. 514-147.000.
SGS-ATES Componenti Elettronici S.p.A.: *See—*
Storti, Sandro; and Menniti, Pietro, 4,570,198, Cl. 361-20.000.
SGS-ATES Deutschland Halbleiter Bauelemente GmbH: *See—*
Lingstaedt, Ernst L., 4,570,131, Cl. 331-36.00C.
Shaffer, Elwood: *See—*
Fayerman, Peter; Shaffer, Elwood; and James, Paul, Jr., 4,569,547, Cl. 292-347.000.
Shannon, William H.; and Sutton, Wesley D., Jr., to Game Time, Inc. Method of making seat for recreational swing set. 4,569,113, Cl. 29-446.000.
Shape Inc.: *See—*
Gelardi, Anthony L.; Gelardi, Paul J.; and MacLeod, Robert B., Jr., 4,569,492, Cl. 242-199.000.
Shapiro, Jerrold M.; and Teich, Jonathan M., to Boston University. Method and apparatus for measuring natural retinal fluorescence. 4,569,354, Cl. 128-665.000.
Shapiro, Myron: *See—*
Legue, Norris R.; and Shapiro, Myron, 4,569,972, Cl. 525-129.000.
Sharp Kabushiki Kaisha: *See—*
Hayakawa, Toshiro; Miyauchi, Nobuyuki; Yano, Seiki; and Suyama, Takahiro, 4,569,721, Cl. 156-649.000.
Kobayashi, Toshiaki; and Sakamoto, Noriaki, 4,570,044, Cl. 219-10.49A.
Yoshimoto, Taketoshi, 4,570,223, Cl. 364-405.000.
Sharp, Ralph M.: *See—*
Baker, Robert L.; Chin, Lester P.; Courtois, James A.; Pionke, Lawrence J.; Sharp, Ralph M.; and Willcox, Peter S., 4,569,218, Cl. 72-342.000.
Sharpoint, Inc.: *See—*
Schmidt, Friedrich W., 4,569,133, Cl. 30-293.000.
Shaw, Merle C. Multi-layer liquid sampler. 4,569,238, Cl. 73-864.650.
Sheffler, Robert J., to Revlon, Inc. Container having fluid-tight seal. 4,569,438, Cl. 206-37.000.

Shell Oil Company: *See—*
Breitigam, Walter V.; and Jackson, Roy J., 4,569,956, Cl. 523-402.000.
Dong, Walter; and Petty, Walter L., 4,569,793, Cl. 260-112.50R.
Orr, Alexander F.; and Clifford, David R., 4,569,688, Cl. 71-88.000.
Scholes, Gary; and van Helden, Robert, 4,569,795, Cl. 260-239.00A.
Stoutamire, Donald W., 4,570,017, Cl. 562-496.000.
Sherex Chemical Company, Inc.: *See—*
Stockton, James R.; and Dodwell, Richard C., 4,569,947, Cl. 514-724.000.
Shering Aktiengesellschaft: *See—*
Niedballa, Ulrich; and Gries, Heinz, 4,570,007, Cl. 549-451.000.
Sherwood Medical Company: *See—*
Satchell, Fred E., 4,569,764, Cl. 210-511.000.
Shibano, Tomishi; Ozawa, Hironori; and Maruchi, Sachio, to Sanyo Kokusaku Pulp Co., Ltd. Process for producing support for use in formation of polyurethan films. 4,569,712, Cl. 156-244.140.
Shibukawa, Masaru; Nakamura, Hideo; and Matsubara, Kiyoshi, to Hitachi, Ltd. CMOS Circuit with reduced power dissipation and a digital data processor using the same. 4,570,219, Cl. 364-200.000.
Shih, Hung-Dah, to Texas Instruments Incorporated. MBE Source bakeout system. 4,569,829, Cl. 422-247.000.
Shikano, Kiyohiro, to Nippon Telegraph & Telephone Public Corporation. Speech recognition apparatus. 4,570,232, Cl. 364-513.500.
Shimamoto, Mamoru: *See—*
Osada, Masahiko; Kuno, Akira; Yamada, Takashi; Kaga, Sumihiro; Shimamoto, Mamoru; and Tanahashi, Toshitaka, 4,570,200, Cl. 361-212.000.
Shimano Industrial Company Limited: *See—*
Shimano, Keizo, 4,569,249, Cl. 74-594.400.
Shimano, Keizo, to Shimano Industrial Company Limited. Pedal for a bicycle. 4,569,249, Cl. 74-594.400.
Shimaoka, Motohiro; and Saito, Yukio, to Alps Electric Co., Ltd. Cartridge loading apparatus with a cartridge insertion click member. 4,570,195, Cl. 360-97.000.
Shimaoka, Motohiro; and Saito, Yukio, to Alps Electric Co., Ltd. Cartridge loading apparatus with retractable eject button. 4,570,196, Cl. 360-97.000.
Shimizu, Hideharu; Katsuragi, Noboru; and Nakano, Kazuhiro, to Matsushita Electric Industrial Co., Ltd. Wick for liquid fuel burners. 4,569,656, Cl. 431-325.000.
Shimizu, Hitoshi: *See—*
Unno, Keizo; Yamamoto, Tamotsu; and Shimizu, Hitoshi, 4,569,115, Cl. 29-558.000.
Shimizu, Isamu; and Yamaguchi, Minori, to Kanegafuchi Chemical Industry Co., Ltd. Photoconductive material. 4,569,891, Cl. 430-57.000.
Shimoda, Isamu: *See—*
Sato, Mitsuya; and Shimoda, Isamu, 4,569,562, Cl. 308-5.00R.
Shimoni, Yair; Netter, Zvi; and Crawford, Carl R., to Elscint, Inc. Combining rebinned and unrebinned parallel ray data with unequal lateral spacing to create tomograph images. 4,570,224, Cl. 364-414.000.
Shin-Daiwa Kogyo K.K.: *See—*
Haramoto, Kunihiko, 4,569,510, Cl. 269-181.000.
Shinko Kosen Kogyo Kabushiki Kaisha: *See—*
Tanaka, Yoshito; and Haraguchi, Toshio, 4,569,708, Cl. 156-91.000.
Shinmi, Hideo, to Toray Silicone Company, Ltd. Jointed, reinforced, elastomer-coated fabric material. 4,569,870, Cl. 428-57.000.
Shiojiri, Shosaku, to West Electric Company, Ltd. Strobe apparatus. 4,570,205, Cl. 362-18.000.
Shionogi & Co., Ltd.: *See—*
Aoki, Tsutomu; Takahashi, Hiromi; Konoike, Toshiro; Tsuji, Teruji; and Nagata, Wataru, 4,570,018, Cl. 564-1.000.
Narisada, Masayuki; Watanabe, Fumihiko; and Hamashima, Yoshio, 4,569,993, Cl. 544-90.000.
Shipman, Douglas L., to Pennwalt Corporation. Pneumatic powder metering apparatus with improved powder throttling mechanism. 4,569,161, Cl. 51-436.000.
Shiratori, Masayuki; Sakai, Tadashi; Katsura, Masaki; and Takikawa, Osamu, to Kabushiki Kaisha Toshiba. Gas detecting element. 4,569,826, Cl. 422-90.000.
Shirley, James G.; Applegate, Merlin J.; and Brouwer, Floyd, to Sound Off Safety Systems, Inc. Linear actuator release mechanism and electronic cruise control based thereon. 4,569,239, Cl. 74-89.150.
Sho-Bond Construction Co., Ltd.: *See—*
Takahashi, Hisae; Yoshinaga, Tatsuro; and Mitomo, Akio, 4,570,207, Cl. 362-152.000.
Short, James C.: *See—*
Romanchik, Robert E.; and Short, James C., 4,569,596, Cl. 366-107.000.
Shukla, Kailash C.; and Hurley, James R., to Gas Research Institute. Efficient, low emissions gas range cooktop. 4,569,328, Cl. 126-39.00J.
Shukla, Vishwa; and Padovani, Francois A., to Texas Instruments Incorporated. Electrical connections for a piezoelectric pressure transmitter for an internal combustion engine. 4,570,097, Cl. 310-338.000.
Shutt, Joseph A.: *See—*
Yardley, Robert; Cameron, Ewen R.; Shutt, Joseph A.; and Walter, Andrew G. N., 4,570,112, Cl. 318-602.000.
Siemens Aktiengesellschaft: *See—*
Liebetruth, Reiner, 4,570,263, Cl. 378-20.000.
Liebetruth, Reiner, 4,570,264, Cl. 378-20.000.
Siemon Company, The: *See—*
Thomas, Stephen M., 4,569,128, Cl. 29-751.000.
Sigmatron Nova, Inc.: *See—*
Martorano, Joseph A.; and Bell, Robert J., 4,570,151, Cl. 340-52.00R.
Signetics Corporation: *See—*
Lim, Sheldon C. P.; Ridley, Douglas F.; Raza, Saiyed A.; and Conner, George W., 4,569,121, Cl. 29-574.000.
Stacy, William T.; Lim, Sheldon C. P.; and Jew, Kevin G., 4,569,120, Cl. 29-574.000.
Signorini, Massimo: *See—*
Bergamaschi, Mario; Gervasi, Gian B.; Vecchietti, Vittorio; and Signorini, Massimo, 4,570,013, Cl. 560-102.000.
Simond, Remy: *See—*
Cabi-Akman, Robert; Simond, Remy; and Sprenger, Arthur, 4,569,594, Cl. 356-408.000.
Simpson, Charles H. Method for removing pyritic, organic and elemental sulfur from coal. 4,569,678, Cl. 44-1.0SR.
Simunovic, Sergio N. Robotic manipulator. 4,569,627, Cl. 414-735.000.
Singer Company, The: *See—*
Yan, Johnson K.; and Florence, Judit K., 4,570,233, Cl. 364-522.000.
Singer, Norbert: *See—*
Rauser, Michael; Lange, Sven; and Singer, Norbert, 4,569,551, Cl. 296-1.00S.
Singh, Balwant; Forgione, Peter S.; and Chang, Laurence W., to American Cyanamid Co. Urethanes from tertiary aralkyl diols. 4,570,012, Cl. 560-25.000.
Sippel, Theodore W.; and Steele, Douglas S., to General Electric Company. Ionization detector. 4,570,071, Cl. 250-374.000.
Sirois, Andrew F.: *See—*
Allen, Bruce S.; Dunalvey, Michael R.; King, Bruce A.; DuPrie, Harold J.; Hudnall, Richard E.; Lapidus, Stanely N.; Gilbert, Daniel R.; Carlson, Anne M.; Thakrar, Kiran; Doig, Robert C.; Kimerer, Brian S.; Sirois, Andrew F.; Poirer, Bruce A.; Hunt, Philip G.; Dziezanowski, Joseph J.; Bromberg, Michael A.; Brown, Michael; and Friedel, Seymour A., 4,570,217, Cl. 364-188.000.
Sisco, Paul: *See—*
Gracen, Vernon E.; Sisco, Paul; and Bouthyette, Pierre, 4,569,152, Cl. 47-58.000.
Sjogren, Borje; and Berglund, Jan, to Wicanders AB. Method of and an apparatus for manufacturing a ring-pull bottle cap. 4,569,621, Cl. 413-14.000.
Sjordal, Thomas R.; and Kreitlow, David B., to Tektronix, Inc. Two-dimensional ink jet adjustment mechanism. 4,570,168, Cl. 346-145.000.
Skarman, John S.; and Tenhulzen, Neal L., to Gateway Scientific, Inc. Smoke alarm activated light. 4,570,155, Cl. 340-531.000.
SKF Kugellagerfabriken GmbH: *See—*
Brandenstein, Manfred; Ernst, Horst M.; Walter, Lothar; and Friedrich, Wolfgang, 4,569,429, Cl. 192-98.000.
SKF Nova AB: *See—*
Lundgren, Bengt, 4,569,602, Cl. 384-499.000.
Skogward, Kenneth O. E.: *See—*
Lindh, Per A. L.; and Skogward, Kenneth O. E., 4,569,298, Cl. 112-278.000.
Skoog, Kurt, to Stubinen Utveckling AB. Process and a means for burning solid fuels, preferably coal, turf or the like, in pulverized form. 4,569,295, Cl. 110-347.000.
SKW Trostberg Aktiengesellschaft: *See—*
Riederer, Emil; Zahn, Karl-Ludwig; and Bencker, Rudolf, 4,569,648, Cl. 425-222.000.
Skwor, Edward P.: *See—*
Mongeon, Douglas R.; and Skwor, Edward P., 4,569,469, Cl. 227-19.000.
Slingsby, Brian P.: *See—*
Kitteringham, John; and Slingsby, Brian P., 4,569,996, Cl. 544-320.000.
Slinn, David S. L.: *See—*
Lloyd, Harold; and Slinn, David S. L., 4,570,043, Cl. 200-150.00A.
Sluzallek, Rolf, to Dr. Weusthoff GmbH. Band storing machine. 4,569,487, Cl. 242-55.000.
Smali, Luigi. Glass repair method and apparatus. 4,569,808, Cl. 264-36.000.
Smayling, Michael C.: *See—*
Baglee, David A.; Smayling, Michael C.; Duane, Michael P.; and Itoh, Mamoru, 4,569,117, Cl. 29-571.000.
Smerbeck, Richard V.; and Pittz, Eugene P., to Warner-Lambert Company. Dibenzosuberone as a non-steroidal anti-inflammatory compound and compositions thereof. 4,569,944, Cl. 514-680.000.
Smith, Durward A.: *See—*
Harris, Hubert; and Smith, Durward A., 4,569,850, Cl. 426-482.000.
Smith, Jack L. Push-pull swing. 4,569,517, Cl. 272-87.000.
Smith, James A.; and Murphy, Betty J., to Creative Products Resource Associates, Ltd. Composite foam-textile cleaning pad. 4,569,861, Cl. 427-244.000.
Smith-Johannsen, Robert, to Blasch Precision Ceramics, Inc. Preparation of inorganic particle slurries. 4,569,920, Cl. 501-1.000.
Smith Kline & French Laboratories Limited: *See—*
Kitteringham, John; and Slingsby, Brian P., 4,569,996, Cl. 544-320.000.
Smith, Marvin M. Electrical thermal storage heat sink for space heater. 4,570,052, Cl. 219-378.000.
Smith Meter, Inc.: *See—*
Hopfe, Helmut W.; and Roberson, Hershel, 4,569,220, Cl. 73-3.000.
Smith, Michele C.; and Pidgeon, Charles, to Eli Lilly and Company. Process for purifying proteins and compounds useful in such process. 4,569,794, Cl. 260-113.000.

Smith, William V., to Lectrolarm Custom Systems, Inc. Video camera control system. 4,570,163, Cl. 340-825.770.

Smolucha, Walter E.: *See—*
Bleich, Charles R.; Jarvis, Eugene P.; and Smolucha, Walter E., 4,570,158, Cl. 340-727.000.

Snook, August M., Jr. Portable electro-pneumatic calibrator. 4,569,221, Cl. 73-4.00R.

Snyder, Donald E., Jr.; Watters, Donald J.; and Palermiti, Frank M., to Burroughs Corporation. Print ribbon comprising a frictional back layer. 4,569,609, Cl. 400-241.400.

Snyder, Donald M., to Virginia Chemicals Inc. Production of isoxanthate salts and dithiocarbonate diesters. 4,569,797, Cl. 260-455.00B.

So, Ying-Hung, to Dow Chemical Company, The. Preparation of cyclobutene substituted aromatic hydrocarbons. 4,570,011, Cl. 560-8.000.

Societa Impianti Termoelettrici Industriali S.p.A: *See—*
Bossetti, Renato, 4,569,660, Cl. 432-148.000.

Societe a Responsabilite Limitee International Diffusion Consommateur I.D.C: *See—*
Pillot, Bernard, 4,569,556, Cl. 297-316.000.

Societe Alsacienne de Construction de Materiel Textile: *See—*
Juillard, Yves, 4,569,374, Cl. 139-304.000.

Societe Anonyme de Telecommunications: *See—*
Albagnac, Rene D. M., 4,569,210, Cl. 62-514.0JT.
Kerdoncuff, Guy P.; and Provendier, Jacques H., 4,570,235, Cl. 364-724.000.

Societe Anonyme Diamant Boart: *See—*
Lambot, Honore J.; Flievoet, Johannes H. M.; and Kramer, Pieter, 4,569,710, Cl. 156-172.000.

S.A. Sebim: *See—*
Namand, Henri; and Gemigniani, Francois, 4,569,365, Cl. 137-554.000.

Societe de Conseils de Recherches et d'Applications Scientifiques: *See—*
Esanu, Andre , 4,569,938, Cl. 514-302.000.
Esanu, Andre , 4,569,939, Cl. 514-302.000.

Societe Lyonnaise des Eaux et de l'Eclairage: *See—*
Ben Aim, Roger; Bourdiol, Daniel; Fiessinger, Francois; and Rovel, Jean-Marie, 4,569,759, Cl. 210-304.000.

Societe M.T.E.: *See—*
Grevisse, Louis, 4,569,291, Cl. 105-193.000.

Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "S.N.E.C.M.A.": *See—*
Mouton, Pierre C., 4,569,202, Cl. 60-734.000.

Soeters, Raymond A., Jr., to Eaton Corporation. Supercharger carry-over venting means. 4,569,646, Cl. 418-75.000.

Sohval, A. Robert; Cooperstein, Gerald; Fleischer, David; Goldstein, Shyke A.; and Hearn, David R., to Elscint, Inc. Plasma electron source for cold-cathode discharge device or the like. 4,570,106, Cl. 315-111.810.

Sokalski, Robert G.: *See—*
Kenny, Andrew A.; and Sokalski, Robert G., 4;569,425, Cl. 192-3.00T.

Solaronics Vaneecke: *See—*
Laspeyres, Marc, 4,569,657, Cl. 431-326.000.

Sommers, Raymond L.: *See—*
Perez, Steven R.; Bertrand, Jacques C.; Jacobs, Timothy W.; Sommers, Raymond L.; and Vianco, George W., Jr., 4,569,896, Cl. 430-106.600.

Sony Corporation: *See—*
Hori, Takeshi, 4,570,192, Cl. 360-14.200.
Kondo, Tetsuya; and Kosugi, Yoshihiro, 4,570,177, Cl. 358-31.000.
Sato, Hiroki; Hatanaka, Masato; Ohhoshi, Toshio; and Tanaka, Sakae, 4,570,100, Cl. 313-422.000.
Tsurumaru, Shinobu; Ishigaki, Yoshio; Ouchi, Koji; Yoshikawa, Takashi; Fukuzawa, Keiji; Imai, Kazuhiro; Taguchi, Yorimichi; and Tsuchiya, Masayoshi, 4,570,165, Cl. 343-726.000.

Sound Off Safety Systems, Inc.: *See—*
Shirley, James G.; Applegate, Merlin J.; and Brouwer, Floyd, 4,569,239, Cl. 74-89.150.

Southern Clay Products, Inc.: *See—*
Knudson, Milburn I., Jr.; and Jones, Thomas R., 4,569,923, Cl. 501-148.000.

Spector, Yechiel; Gonen, Amos; and Raviv, Shimon, to Spectronix Ltd. Safety enclosure. 4,569,399, Cl. 169-66.000.

Spectronix Ltd.: *See—*
Spector, Yechiel; Gonen, Amos; and Raviv, Shimon, 4,569,399, Cl. 169-66.000.

Speeflo Manufacturing Corporation: *See—*
Levey, Gustave S., 4,569,480, Cl. 239-135.000.

Spencer, David W., to Walt Disney Productions. Photographic animation transfer process. 4,569,577, Cl. 352-87.000.

Sperry Corporation: *See—*
Johnson, Michael J.; and Hilburn, Hugh C., 4,570,182, Cl. 358-183.000.

Speth, Adolph P.; Anderson, David L.; and Clayton, Charles W., to Chrysler Corporation. Sliding door track guiding mechanism. 4,569,553, Cl. 296-155.000.

Spidell, Edward T., to North American Philips Corporation. Optimization of vidicon bias lighting. 4,570,184, Cl. 358-217.000.

Spiero, Richard C., to U.S. Philips Corporation. Optical end-of-tape detection device. 4,570,075, Cl. 250-570.000.

Spiewok, Leonhard; and Fenyes, Jozsef, to Sulzer-Escher Wyss AG. Centrifuge sieve and method of producing the same. 4,569,761, Cl. 210-380.100.

Spiker, Quentin B.; Holliday, Richard L.; and Bottenberg, Warren D., to BMB Company, Inc. Grass and leaf catching apparatus. 4,569,187, Cl. 56-202.000.

Spits, Albert J.: *See—*
De Laat, Cornelis I.; Segers, Jacobus C.; and Spits, Albert J., 4,569,796, Cl. 260-425.000.

Spitz, Rodney D.; and Valk, Donald R., to Corodova Chemical Company of Michigan. Solid polyamine-based fluid loss control additives. 4,569,694, Cl. 106-314.000.

Sprecker, Mark A.: *See—*
Wiegers, Wilhelmus J.; and Sprecker, Mark A., 4,569,771, Cl. 252-8.600.

Sprenger, Arthur: *See—*
Cabi-Akman, Robert; Simond, Remy; and Sprenger, Arthur, 4,569,594, Cl. 356-408.000.

Staar S.A.: *See—*
Agostini, Louis P. C., 4,570,254, Cl. 369-270.000.
Schatteman, Etienne A., 4,570,194, Cl. 360-97.000.

Stacy, William T.; Lim, Sheldon C. P.; and Jew, Kevin G., to Signetics Corporation. Method of fabricating a programmable read-only memory cell incorporating an antifuse utilizing ion implantation. 4,569,120, Cl. 29-574.000.

STAEG AG: *See—*
Adrian, Fritz; Dankow, Boris; Heyn, Klaus; and Pogrzeba, Hans-Joachim, 4,569,197, Cl. 60-39.020.

Standard-Knapp, Inc.: *See—*
Raudat, John L., 4,569,181, Cl. 53-251.000.

Standard Oil Company, The: *See—*
Kool, Eric T.; and Uebele, Curtis E., 4,569,766, Cl. 210-690.000.

Standard Oil Company (Indiana): *See—*
Baggett, John W., 4,569,809, Cl. 264-40.100.

Stanley, Keith D.; and White, Kenneth B., to Akzona Incorporated. Quaternary ammonium salts useful as fabric softeners. 4,569,800, Cl. 260-501.150.

Staples, Wesley. Modular housing construction system and product. 4,569,167, Cl. 52-90.000.

Starling, John M. Drive units for effecting torque-transmission via a non-rotating sealing tube. 4,569,669, Cl. 464-175.000.

State of Israel, Atomic Energy Commission, The: *See—*
Karny, Ziv; Kafri, Oded; and Keren, Eliezer, 4,569,590, Cl. 356-128.000.

State of Israel, Ministry of Agriculture: *See—*
Alper, Yekutiel; Sagi, Yitzchak; Michai, Gabi; Antler, Aharon; and Elkin, Yitzchak, 4,569,188, Cl. 56-327.00R.

Stauffer Chemical Company: *See—*
Felix, Raymond A., 4,569,802, Cl. 260-502.50F.

Stayton, Stephen B.: *See—*
Ford, Eric H.; and Stayton, Stephen B., 4,569,591, Cl. 356-153.000.

Steele, Douglas S.: *See—*
Sippel, Theodore W.; and Steele, Douglas S., 4,570,071, Cl. 250-374.000.

Steger, Jean-Pierre: *See—*
Sanz, Ernst; Steger, Jean-Pierre; and Thie, Werner, 4,569,357, Cl. 128-699.000.

Steiger, Thomas W., to Cosden Technology, Inc. Carrier for bottles and the like. 4,569,440, Cl. 206-159.000.

Steinberg, Mitchell I.: *See—*
Molloy, Bryan B.; and Steinberg, Mitchell I., 4,569,801, Cl. 260-501.210.

Stella, Joseph A.; and Wright, Joseph B., to Polaroid Corporation. Disk camera having disk carrying peel-apart film units. 4,569,578, Cl. 354-76.000.

Sterner, Russell L., to Kidde, Inc. Attachment jib for cranes. 4,569,454, Cl. 212-259.000.

Stevens, Edwin F.: *See—*
Lee, Do I.; Kawamura, Takayuki; and Stevens, Edwin F., 4,569,964, Cl. 524-460.000.

Stevens, Peter F.: *See—*
Pinede, Edouard; Faublas, Serge; and Stevens, Peter F., 4,570,035, Cl. 179-99.0LS.

Stevenson, Donald F. M.: *See—*
Campbell, Alexander C.; and Stevenson, Donald F. M., 4,569,945, Cl. 514-681.000.

Stewart, William J., to Plessey Overseas Limited. Optical coupling devices. 4,569,569, Cl. 350-96.190.

Stiglich, Nicholas M. Cooking apparatus for pasta and the like. 4,569,277, Cl. 99-330.000.

Stinesen, Bernardus J.: *See—*
van Alem, Antonius A. M.; and Stinesen, Bernardus J., 4,570,255, Cl. 369-270.000.

Stix, Wolfgang: *See—*
Paul, Winfried; Kress, Hans-Jurgen; Stix, Wolfgang; Lindner, Christian; Neuray, Dieter; and Nouvertne, Werner, 4,569,970, Cl. 525-67.000.

Stockton, James R.; and Dodwell, Richard C., to Sherex Chemical Company, Inc. β-Branched alcohol mosquito control agent. 4,569,947, Cl. 514-724.000.

Stokoe, Ridley, to Aerial Access Equipment Limited. Access equipment. 4,569,416, Cl. 182-2.000.

Stoller, Mark W.: *See—*
Hartmann, Udo; Stoller, Mark W.; and Grandy, Kenneth N., 4,569,545, Cl. 292-281.000.

Stoltz, Denyse: *See—*
Stoltz, Gerard, 4,569,419, Cl. 182-160.000.

Stoltz, Gerard, to Stoltz, Denyse, a part interest. Foldable stepladder. 4,569,419, Cl. 182-160.000.

Stoneham, Jeffrey R.: *See—*
Daniels, Steven D.; Stoneham, Jeffrey R.; and Erickson, John K., 4,570,203, Cl. 362-16.000.

Storage Technology Partners: *See—*
Hug, Paul, 4,569,248, Cl. 74-581.000.

Storti, Sandro; and Menniti, Pietro, to SGS-ATES Componenti Elettronici S.p.A. Low voltage alternator having short circuit protection. 4,570,198, Cl. 361-20.000.

Stoutamire, Donald W., to Shell Oil Company. Preparation of optically-active (mixed) anhydrides and acids. 4,570,017, Cl. 562-496.000.

Strauss, Friedhelm, to Intercontinentale Ziegra-Eismaschinen GmbH. Device for making fragmented ice. 4,569,209, Cl. 62-320.000.

Streichenberger, Gilles: *See—*
Cornu, Pierre-Jean; Perrin, Claude; Dumaitre, Bernard; and Streichenberger, Gilles, 4,569,933, Cl. 514-237.000.

Strino, Enrico: *See—*
Giorgetti, Paolo; Romani, Franco; and Strino, Enrico, 4,569,848, Cl. 426-94.000.

Strobel, Rudolf G., to Procter & Gamble Company, The. Grapefruit juice concentrate. 4,569,853, Cl. 426-599.000.

Stroede, Ake; and Gunnarsson, Lars. Protection device for electrical incandescent lamps. 4,570,108, Cl. 315-360.000.

Strombeck, Leo. Machine for erecting, filling and closing cartons. 4,569,184, Cl. 53-564.000.

Stromberg-Carlson Corporation: *See—*
Basehore, Paul M., 4,570,260, Cl. 370-110.200.

Stryker Corporation: *See—*
Phillips, Earl G.; Insalaco, Robert W.; and Booth, William M., III, 4,569,674, Cl. 604-119.000.

Stuber, Fred A.; and Temme, George H., to Upjohn Company, The. Product. 4,570,010, Cl. 556-475.000.

Stubinen Utveckling AB: *See—*
Skoog, Kurt, 4,569,295, Cl. 110-347.000.

Stump, Lee E., to Timesavers, Inc. Single spring fluid cylinder with motion buffer. 4,569,274, Cl. 92-9.000.

Sturm, Ruger & Company, Inc.: *See—*
Ruger, William B.; and Melcher, Roy L., 4,569,145, Cl. 42-16.000.

Sud, Rahul; and Hardee, Kim C., to Inmos Corporation. Low power I/O scheme for semiconductor memories. 4,570,243, Cl. 365-227.000.

Sud, Rahul; and Hardee, Kim C., to Inmos Corporation. Bootstrap driver for a static RAM. 4,570,244, Cl. 365-230.000.

Suganuma, Tsuneo: *See—*
Nagatsuma, Kazuyuki; Matsumura, Hiroyoshi; Katsuyama, Toshio; and Suganuma, Tsuneo, 4,570,064, Cl. 250-231.00R.

Sugitani, Hiroshi; Ito, Susumu; and Kobayashi, Junichi, to Canon Kabushiki Kaisha. Ink jet recording head. 4,570,167, Cl. 346-140.00R.

Sugiyama, Eiiti: *See—*
Ono, Hiroshi; Hashimoto, Masao; Sugiyama, Eiiti; Fujiwara, Kenji; and Yoshida, Kenji, 4,569,948, Cl. 518-700.000.

Suh, John T.; Chung, Rack H., deceased (by Chung, Betsy Y., executrix); Wang, Nai-Yi; and Barton, Jeffrey N., to USV Pharmaceutical Corp. Method of using phenyl-alkylene-2-pyridyl derivatives to increase cardiac contractility in a mammal. 4,569,941, Cl. 514-317.000.

Sukumar, Subramaniam: *See—*
Hall, Laurance D.; and Sukumar, Subramaniam, 4,570,120, Cl. 324-309.000.

Sulpetro Limited: *See—*
Zaharko, Russell J., 4,569,859, Cl. 427-215.000.

Sulzer-Escher Wyss AG: *See—*
Spiewok, Leonhard; and Fenyes, Jozsef, 4,569,761, Cl. 210-380.100.

Sumitomo Electric Industries Ltd.: *See—*
Nishiwaki, Yoshikazu; and Nishiura, Yozo, 4,569,588, Cl. 356-28.500.
Tsuno, Koichi, 4,569,335, Cl. 128-6.000.

Sumitomo Light Metal Industries, Ltd.: *See—*
Baba, Yoshio; Uno, Teruo; and Yoshida, Hideo, 4,569,703, Cl. 148-417.000.

Sumner, Anthony J. M.; and Goodfellow, Anthony G., to W&A Bates Ltd. Manufacture of elastomeric material coponents. 4,569,711, Cl. 156-244.110.

Sun Refining and Marketing Company: *See—*
McGinley, Thomas J.; and Hosler, Peter, 4,569,755, Cl. 208-326.000.

Sundstrand Corporation: *See—*
Chapman, John R.; and Gillingham, Gary D., 4,569,243, Cl. 74-470.000.
Trommer, William C., 4,570,094, Cl. 310-68.00R.

Superior I.D. Tube Cleaners Incorporated: *See—*
Echols, Marvin, 4,569,097, Cl. 15-104.06R.

Sureway Products, Inc.: *See—*
Sensing, Wylie W.; and Watkins, Ray V., 4,569,149, Cl. 43-61.000.

Surgikos, Inc.: *See—*
Morris, Henrietta K., 4,569,341, Cl. 128-132.00D.

Susan Shoe Industries Limited: *See—*
Placek, Vladimir, deceased, 4,569,865, Cl. 428-31.000.

Sutton, Wesley D., Jr.: *See—*
Shannon, William H.; and Sutton, Wesley D., Jr., 4,569,113, Cl. 29-446.000.

Suwa, Toshio; and Konagaya, Yoshiaki, to Nippon Sanso K.K. Burner for powder spray coating. 4,569,479, Cl. 239-79.000.

Suyama, Takahiro: *See—*
Hayakawa, Toshiro; Miyauchi, Nobuyuki; Yano, Seiki; and Suyama, Takahiro, 4,569,721, Cl. 156-649.000.

Suzuki, Fumihiko, to Kabushiki Kaisha Kotobuki. Apparatus for turning up and down seats for a telescopic seating system. 4,569,162, Cl. 52-9.000.

Suzuki, Keiichiro, to Asahi Glass Company Ltd. Silicon carbide-aluminum nitride sintered article and process for its production. 4,569,922, Cl. 501-89.000.

Suzuki, Nobuyuki: *See—*
Kataoka, Hiroyuki; Yamada, Masanori; and Suzuki, Nobuyuki, 4,569,580, Cl. 354-415.000.

Suzuki, Tsunehiko, to Fuji Jukogyo Kabushiki Kaisha. Balancer structure for three-cylinder engines. 4,569,316, Cl. 123-192.00R.

Suzuki, Yasuo: *See—*
Matsumoto, Kenji; and Suzuki, Yasuo, 4,569,381, Cl. 152-548.000.

Suzuki, Yoshiki; Ikura, Hiroshi; Noguchi, Toshihide; Izumizawa, Katsunori; and Kinoshita, Shiro, deceased (by Kinoshita, Kimiko, Atsuhiro Kinoshita, heirs), to Teijin Limited. Pharmaceutical preparation for remedy of periodontal disease and process for production thereof. 4,569,837, Cl. 424-28.000.

Svanberg, Bjorn, to Z-Lyften Produktion AB. Combined elevating platform and mounting device for a tailgate elevator and platform and support member for such a combination. 4,569,626, Cl. 414-557.000.

Swanson, Eric J., to AT&T Bell Laboratories. Corrected sample-and-hold circuit. 4,570,080, Cl. 307-353.000.

Sweatman, Ronald E.; Freeman, Earl R.; and Gottschling, John, to Hughes Tool Company. Method and apparatus for increasing the concentration of proppant in well stimulation techniques. 4,569,394, Cl. 166-280.000.

Swedberg, Nils E., to Eaton Corporation. Low speed high torque motor with gear reduction. 4,569,644, Cl. 418-61.00B.

Swinkels, Godefridus M.; Sadan, Abraham; Rockandel, Michael A.; and Rensing, Hans, to Cominco Ltd. Separation and purification of salts in a non-convective solar pond. 4,569,676, Cl. 23-295.00S.

Synthetic Surfaces, Inc.: *See—*
Legue, Norris R.; and Shapiro, Myron, 4,569,972, Cl. 525-129.000.

Systematics General Corp.: *See—*
Nicholas, John J., Jr., 4,570,156, Cl. 340-547.000.

Szabo, Sandor; and Usadel, Klaus H., to Brigham and Women's Hospital. Stimulation of phagocytosis with somatostatin. 4,569,926, Cl. 514-14.000.

Szilagyi, Elsie. Eradication of phreatophytes and preservation of ground water. 4,569,153, Cl. 47-58.000.

Szush, John J., Jr. Tool holder. 4,569,262, Cl. 82-36.00R.

Szymanski, Joseph J.: *See—*
Prosl, Frank R.; and Szymanski, Joseph J., 4,569,675, Cl. 604-175.000.

Tabei, Masatoshi, to Fuji Photo Film Co., Ltd. Ion-beam monitor. 4,570,070, Cl. 250-372.000.

Tabuchi, Masahiro: *See—*
Kimura, Hideo; Tabuchi, Masahiro; and Iwasaki, Motokazu, 4,569,343, Cl. 128-155.000.

Tachi, Susumu; and Komoriya, Kiyoshi, to Agency of Industrial Science & Technology; and Ministry of International Trade & Industry. Portable map display apparatus. 4,570,227, Cl. 364-444.000.

Tachibana, Hajime: *See—*
Nakatani, Kiyoshi; Numata, Satoshi; Inoue, Tsuneo; Kodaka, Kenji; Ishii, Tsutomu; Toyama, Teruhiko; Tachibana, Hajime; Udagawa, Takatoshi; and Gohbara, Masatoshi, 4,570,005, Cl. 549-435.000.

Tacke, Peter, to Bayer Aktiengesellschaft. Interphase process for the production of fully aromatic polyester carbonate from alkali salt of aromatic dicarboxylic acid and bis-chlorocarbonic ester of diphenol. 4,569,984, Cl. 528-271.000.

Taguchi, Masahiro: *See—*
Tsuge, Noboru; Taguchi, Masahiro; Onimaru, Sadahisa; and Kuwakado, Satosi, 4,569,536, Cl. 280-807.000.

Taguchi, Yorimichi: *See—*
Tsurumaru, Shinobu; Ishigaki, Yoshio; Ouchi, Koji; Yoshikawa, Takashi; Fukuzawa, Keiji; Imai, Kazuhiro; Taguchi, Yorimichi; and Tsuchiya, Masayoshi, 4,570,165, Cl. 343-726.000.

Takada, Mitsuru: *See—*
Itoh, Hiroshi; Hiramatsu, Shigeki; and Takada, Mitsuru, 4,569,254, Cl. 74-866.000.

Takagi, Yoshihiro, to Fuji Photo Film Co., Ltd. Image receiving material for silver salt diffusion transfer process. 4,569,900, Cl. 430-232.000.

Takahashi, Akira: *See—*
Tsumura, Toshihiro; Kamei, Shigeki; Waratani, Hiroji; and Takahashi, Akira, 4,570,060, Cl. 250-203.00R.
Tsumura, Toshihiro; Kamei, Shigeki; and Takahashi, Akira, 4,570,062, Cl. 250-225.000.

Takahashi, Hiromi: *See—*
Aoki, Tsutomu; Takahashi, Hiromi; Konoike, Toshiro; Tsuji, Teruji; and Nagata, Wataru, 4,570,018, Cl. 564-1.000.

Takahashi, Hisae; Yoshinaga, Tatsuro; and Mitomo, Akio, to Sho-Bond Construction Co., Ltd.; and Hitachi Heating Appliances Co., Ltd. Luminous indicating device. 4,570,207, Cl. 362-152.000.

Takahashi, Ichirou: *See—*
Miyoshi, Yoshitake; Takahashi, Ichirou; Okada, Takehiko; and Yamamoto, Haruo, 4,569,587, Cl. 355-72.000.

Takahashi, Naohiko: *See—*
Hisaki, Hiroshi; Nakano, Yasuhiro; Takahashi, Naohiko; and Inoue, Yuichi, 4,569,963, Cl. 524-458.000.

Takahashi, Sadayuki: *See—*
Hara, Atsushi; Horiuchi, Takao; Yamada, Kunio; Takahashi, Sadayuki; and Nakamura, Keiji, 4,570,096, Cl. 310-328.000.

Takahashi, Takeshi: *See—*
Nishida, Isao; Sasaki, Koji; Nakano, Seizo; Takeuchi, Shigetaka; and Takahashi, Takeshi, 4,570,202, Cl. 361-333.000.
Takahashi, Tomokazu: *See—*
Harigane, Kotaro; and Takahashi, Tomokazu, 4,569,550, Cl. 294-104.000.
Takahashi, Yoshihiro: *See—*
Moore, Robert T.; and Takahashi, Yoshihiro, 4,569,918, Cl. 436-122.000.
Takahashi, Yoshinobu; and Yokoi, Masanori, to Toyota Jidosha Kabushiki Kaisha. Method for coating by use of electrode. 4,569,740, Cl. 204-181.700.
Takahashi, Yoshiyuki; and Koiso, Fumihiro, to Mitsui Kensetsu Kabushiki Kaisha. Driving process of enlarged tunnel. 4,569,616, Cl. 405-150.000.
Takakura, Yoshinari; and Kitamura, Kazuhiko, to Aisin Seiki Kabushiki Kaisha. Dash pot device. 4,569,803, Cl. 261-65.000.
Takara Shuzo Co., Ltd.: *See—*
Matsui, Susumu; Sato, Takako T.; and Nakajima, Kazuo, 4,569,912, Cl. 435-189.000.
Takeda Chemical Industries, Ltd.: *See—*
Okazaki, Hisayoshi; Ohta, Kazuhiko; and Ishimaru, Takenori, 4,569,943, Cl. 514-562.000.
Oshima, Junji; Kajita, Yasuyuki; and Yamada, Minoru, 4,569,986, Cl. 528-298.000.
Takeda, Masami: *See—*
Mizui, Kinya; Takeda, Masami; Ozaki, Yoshimi; and Tomita, Ryosuke, 4,570,024, Cl. 585-24.000.
Takefman, Earl, to Charan Industries Inc. Infant bib. 4,569,086, Cl. 2-49.00R.
Takemoto, Iwao: *See—*
Miyao, Masanobu; Ohkura, Makoto; Takemoto, Iwao; Warabisako, Terunori; Mukai, Kiichiro; Haruta, Ryo; Nishioka, Yasushiro; Kimura, Shinichiro; and Tokuyama, Takashi, 4,570,175, Cl. 357-23.700.
Takemoto, Takeshi, to Ricoh Company, Ltd. Printing hammer rebound control. 4,569,607, Cl. 400-167.000.
Takeshita, Ryushiro: *See—*
Kosegaki, Kimiho; Takeshita, Ryushiro; and Kobayashi, Kazuhiko, 4,569,736, Cl. 523-105.000.
Takeuchi, Eijiro: *See—*
Yoshizuka, Naonobu; Takeuchi, Eijiro; and Imokawa, Genji, 4,569,931, Cl. 514-182.000.
Takeuchi, Shigetaka: *See—*
Nishida, Isao; Sasaki, Koji; Nakano, Seizo; Takeuchi, Shigetaka; and Takahashi, Takeshi, 4,570,202, Cl. 361-333.000.
Taki, Yoshihiro; Fukuta, Toshiaki; Akado, Hajime; Miyakawa, Susumu; and Nishio, Yoshitaka, to Nippondenso Co., Ltd. Method of manufacturing a filter device. 4,569,813, Cl. 264-259.000.
Takikawa, Osamu: *See—*
Shiratori, Masayuki; Sakai, Tadashi; Katsura, Masaki; and Takikawa, Osamu, 4,569,826, Cl. 422-90.000.
Tamaru, Takuya, to Nippon Gakki Seizo Kabushiki Kaisha. Disc centering device for use in a disc player. 4,570,256, Cl. 369-271.000.
Tamnaharry Developments Limited: *See—*
O'Neill, James J.; Treanor, John P. G.; and McGivern, Gerald P., 4,569,308, Cl. 119-82.000.
Tanahashi, Toshitaka: *See—*
Osada, Masahiko; Kuno, Akira; Yamada, Takashi; Kaga, Sumihiro; Shimamoto, Mamoru; and Tanahashi, Toshitaka, 4,570,200, Cl. 361-212.000.
Tanaka, Akira, to Nippon Notion Kogyo Co., Ltd. Button orienting and placing apparatus. 4,569,470, Cl. 227-119.000.
Tanaka, Hiromichi: *See—*
Morimura, Atsushi; and Tanaka, Hiromichi, 4,570,178, Cl. 358-44.000.
Tanaka Kikinzoku Kogyo K.K.: *See—*
Goto, Nobutaka; and Ezawa, Nobuyasu, 4,569,729, Cl. 204-23.000.
Tanaka, Sakae: *See—*
Sato, Hiroki; Hatanaka, Masato; Ohhoshi, Toshio; and Tanaka, Sakae, 4,570,100, Cl. 313-422.000.
Tanaka, Shigeru, to Tokyo Shibaura Denki Kabushiki Kaisha. Reactive power control cycloconverter. 4,570,214, Cl. 363-160.000.
Tanaka, Tadayoshi: *See—*
Tani, Tatsuo; Sawata, Sinji; Tanaka, Tadayoshi; Sakuta, Koichi; Nagata, Yuuji; Eto, Yasushi; Adachi, Makoto; and Matsurra, Yasunori, 4,569,331, Cl. 126-435.000.
Tanaka, Toshiyuki: *See—*
Imazeki, Kazuyoshi; Tanaka, Toshiyuki; and Hayashibara, Fumio, 4,570,160, Cl. 340-789.000.
Tanaka, Yoshito; and Haraguchi, Toshio, to Shinko Kosen Kogyo Kabushiki Kaisha. Method for covering cables with sheaths for corrosion protection and/or aesthetics. 4,569,708, Cl. 156-91.000.
Tang, Pei C., to University of Health Sciences/The Chicago Medical School. Apparatus and method for stimulating micturition and certain muscles in paraplegic mammals. 4,569,351, Cl. 128-419.00E.
Tani, Tatsuo; Sawata, Sinji; Tanaka, Tadayoshi; Sakuta, Koichi; Nagata, Yuuji; Eto, Yasushi; Adachi, Makoto; and Matsurra, Yasunori, to Tokyo Shibaura Denki Kabushiki Kaisha. Solar heat powered plant. 4,569,331, Cl. 126-435.000.
Tanimoto, Yoshio; and Atobe, Masaaki, to NEC Corporation. Automatic gain control circuit for burst signal communication system. 4,570,127, Cl. 330-137.000.
Tanizaki, Akinori; Ando, Noboru; Terayama, Satoshi; and Nakao, Kunimichi, to Fujitsu Limited. Dicing apparatus. 4,569,326, Cl. 125-13.00R.
Taslitt, Rena: *See—*
McCarthy, Richard O., 4,569,215, Cl. 70-456.00R.
Taurinskas, David. Crab leg knife. 4,569,103, Cl. 17-73.000.
Taylor, Henry D.; and Nanda, Vinod K., to Vickers, Incorporated. Power transmission. 4,569,272, Cl. 91-420.000.
Taylor, James L., Jr. Brake shoe construction. 4,569,424, Cl. 188-250.00G.
TDK Corporation: *See—*
Harigane, Kotaro; and Takahashi, Tomokazu, 4,569,550, Cl. 294-104.000.
Teche, Andre : *See—*
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Technion, Incorporated: *See—*
Cann, Gordon L., 4,569,198, Cl. 60-203.100.
Tecumseh Products Company: *See—*
Hannibal, Billy B.; and Jacoby, Thomas A., 4,569,639, Cl. 417-368.000.
Tedd, David C.; and Williams, John B., to Thorn EMI Instruments Limited. Instrument for measuring electrical resistance or reactance. 4,570,116, Cl. 324-57.00R.
Teich, Jonathan M.: *See—*
Shapiro, Jerrold M.; and Teich, Jonathan M., 4,569,354, Cl. 128-665.000.
Teijin Limited: *See—*
Suzuki, Yoshiki; Ikura, Hiroshi; Noguchi, Toshihide; Izumizawa, Katsunori; and Kinoshita, Shiro, deceased, 4,569,837, Cl. 424-28.000.
Tektronix, Inc.: *See—*
Sjordal, Thomas R.; and Kreitlow, David B., 4,570,168, Cl. 346-145.000.
Teleco Oilfield Services Inc.: *See—*
Grosso, Donald S., 4,570,123, Cl. 324-369.000.
Temin, Samuel C.: *See—*
Zimmerman, William D.; and Temin, Samuel C., 4,569,976, Cl. 526-204.000.
Temme, George H.: *See—*
Stuber, Fred A.; and Temme, George H., 4,570,010, Cl. 556-475.000.
Tenhulzen, Neal L.: *See—*
Skarman, John S.; and Tenhulzen, Neal L., 4,570,155, Cl. 340-531.000.
Terada, Toshiyuki; Toyoda, Nobuyuki; Hojo, Akimichi; and Kamei, Kiyoho, to Kabushiki Kaisha Toshiba. Manufacturing method of Schottky gate FET. 4,569,119, Cl. 29-571.000.
Terayama, Satoshi: *See—*
Tanizaki, Akinori; Ando, Noboru; Terayama, Satoshi; and Nakao, Kunimichi, 4,569,326, Cl. 125-13.00R.
Terrell, Buford E.: *See—*
Barbknecht, Gary D.; and Terrell, Buford E., 4,570,262, Cl. 371-20.000.
Terrell, Christopher E.: *See—*
Baker, Stephen; Hollaway, Leonard C.; and Terrell, Christopher E., 4,569,165, Cl. 52-81.000.
Teruaki, Ueno, to Hitachi, Ltd. Magnet assembly for adjusting the running path of the electron beam of color picture tube. 4,570,140, Cl. 335-212.000.
Terumo Kabushiki Kaisha: *See—*
Kosegaki, Kimiho; Takeshita, Ryushiro; and Kobayashi, Kazuhiko, 4,569,736, Cl. 523-105.000.
Tesi, Julius M., to Battelle Development Corporation. Bacterial barrier for indwelling catheters and other medical devices. 4,569,673, Cl. 604-20.000.
Tessier, Jean; Teche, Andre ; and Demoute, Jean-Pierre, to Roussel Uclaf. Anti-parasitic esters. 4,569,928, Cl. 514-66.000.
Tetenyi, Peter: *See—*
Molnar, Gyorgy; Tetenyi, Peter; Dobos, Eva; and Bernath, Jeno , 4,569,914, Cl. 435-240.000.
Tetrick, Raymond S.; Beaston, John; Farrell, Robert L.; Sarabi, Alireza; Balachandran, Sudarshan; Jacks, Edwin L., Jr.; and Kassel, Steven D., to Intel Corporation. High speed parallel bus and data transfer method. 4,570,220, Cl. 364-200.000.
Tex-Ark Joist Company: *See—*
Ottinger, Jim A., 4,569,177, Cl. 52-650.000.
Texaco, Inc.: *See—*
Nieh, Edward C. Y., 4,569,798, Cl. 260-501.130.
Texas Instruments Incorporated: *See—*
Baglee, David A.; Smayling, Michael C.; Duane, Michael P.; and Itoh, Mamoru, 4,569,117, Cl. 29-571.000.
Ford, Eric H.; and Stayton, Stephen B., 4,569,591, Cl. 356-153.000.
Rawlings, Richard M.; and Hoefelmeyer, Henry L., 4,569,203, Cl. 62-6.000.
Shih, Hung-Dah, 4,569,829, Cl. 422-247.000.
Shukla, Vishwa; and Padovani, Francois A., 4,570,097, Cl. 310-338.000.
Texfi Industries, Inc.: *See—*
Pomeroy, William F., 4,569,107, Cl. 28-184.000.
Thakrar, Kiran: *See—*
Allen, Bruce S.; Dunalvey, Michael R.; King, Bruce A.; DuPrie, Harold J.; Hudnall, Richard E.; Lapidus, Stanely N.; Gilbert, Daniel R.; Carlson, Anne M.; Thakrar, Kiran; Doig, Robert C.; Kimerer, Brian S.; Sirois, Andrew F.; Poirer, Bruce A.; Hunt, Philip G.; Dziezanowski, Joseph J.; Bromberg, Michael A.; Brown, Michael; and Friedel, Seymour A., 4,570,217, Cl. 364-188.000.

Therm-O-Disc, Incorporated: *See—*
Ferroni, C. Paul; Linton, Jonathan L.; and Schmitt, Donald J., 4,570,148, Cl. 337-354.000.
Thermal-Barrier Products, Inc.: *See—*
Bayer, Michael S., 4,569,154, Cl. 49-504.000.
Thibeault, Paul R.: *See—*
Darling, Scott L.; and Thibeault, Paul R., 4,569,680, Cl. 48-77.000.
Thie, Werner: *See—*
Sanz, Ernst; Steger, Jean-Pierre; and Thie, Werner, 4,569,357, Cl. 128-699.000.
Thigpen, Ben B., to Western Geophysical Company of America. Constant tensioner for a seismic marine cable. 4,570,245, Cl. 367-15.000.
Thijs, Anita: *See—*
Vansant, Etienne; De Bievre, Paul; Peeters, Guido J.; Thijs, Anita; and Verhaert, Ingrid, 4,569,683, Cl. 55-58.000.
Thoma, Frank, to Daimler-Benz Aktiengesellschaft. Air-compressing injection internal combustion engine, especially for passenger motor vehicles. 4,569,319, Cl. 123-357.000.
Thomas, Leslie P.: *See—*
McEvoy, John C.; Bliss, George N.; and Thomas, Leslie P., 4,569,444, Cl. 209-510.000.
Thomas, Ralph D. Snap on device for hardcover ring binder. 4,569,613, Cl. 402-80.00R.
Thomas, Stephen M., to Siemon Company, The. Telephone equipment installation tool. 4,569,128, Cl. 29-751.000.
Thompson, Aubrey E.: *See—*
Robson, Thomas; and Thompson, Aubrey E., 4,569,583, Cl. 355-14.0CH.
Thomson-CSF: *See—*
Henry, Raymond; Carballes, Jean C.; and Mesquida, Guy, 4,570,172, Cl. 357-17.000.
Le Pesant, Jean P.; Hareng, Michel; Mourey, Bruno; and Perbet, Jean N., 4,569,575, Cl. 350-355.000.
Malissin, Roland; and Monlouis, Claude, 4,570,249, Cl. 369-45.000.
Thomson, James: *See—*
Koths, Kirston; Thomson, James; Kunitani, Michael; Wilson, Kenneth; and Hanisch, Wolf, 4,569,790, Cl. 260-112.00R.
Thorn EMI Instruments Limited: *See—*
Tedd, David C.; and Williams, John B., 4,570,116, Cl. 324-57.00R.
Thornburg, David D.; and White, George M., III, to Koala Technologies Corporation. Simplified touch tablet data device. 4,570,149, Cl. 338-114.000.
Threlkel, Charles O.; and Neal, Delbert E. Cable bending device. 4,569,219, Cl. 72-381.000.
Thro, Stuart W., to Motorola, Inc. Random frequency offsetting apparatus for multi-transmitter simulcast radio communications systems. 4,570,265, Cl. 455-52.000.
Thurber, Russell. Handgun safety device. 4,569,144, Cl. 42-1.0LP.
Tibaldi, Giovanni. Method and plant to recover chromium salts from tannery reflux water. 4,569,830, Cl. 423-55.000.
Tiegel Manufacturing Company: *See—*
Wegner, Paul C., 4,569,854, Cl. 427-58.000.
Timari, Jali. Automatic hand firearm. 4,569,270, Cl. 89-199.000.
Timesavers, Inc.: *See—*
Stump, Lee E., 4,569,274, Cl. 92-9.000.
Timm, Alton T.: *See—*
Gray, Earl E.; and Timm, Alton T., 4,569,407, Cl. 177-208.000.
Tinelli, Frank. Sanitary cover for telephones and the like. 4,570,038, Cl. 179-185.000.
Toda, Yoshihide: *See—*
Miki, Toshio; Toda, Yoshihide; and Horii, Kenichi, 4,569,603, Cl. 384-585.000.
Tokuno, Masateru, to Rengo Co., Ltd. Single facer having rapid roll changing means. 4,569,714, Cl. 156-471.000.
Tokuyama, Takashi: *See—*
Miyao, Masanobu; Ohkura, Makoto; Takemoto, Iwao; Warabisako, Terunori; Mukai, Kiichiro; Haruta, Ryo; Nishioka, Yasushiro; Kimura, Shinichiro; and Tokuyama, Takashi, 4,570,175, Cl. 357-23.700.
Tokyo Electric Co. Ltd.: *See—*
Manda, Yasutake; Miyabayashi, Tadao; and Fukumoto, Sakuo, 4,570,211, Cl. 363-23.000.
Tokyo Road Engineering Co., Ltd.: *See—*
Hiruma, Yutaka; and Okita, Akira, 4,569,482, Cl. 239-296.000.
Tokyo Seibaura Denki Kabushiki Kaisha: *See—*
Yokota, Tsuneshi; and Nakagawa, Akira, 4,570,251, Cl. 369-100.000.
Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Adachi, Yukio; Honma, Hiroshi; and Ohkouchi, Satoshi, 4,569,604, Cl. 400-124.000.
Kubo, Osamu; Ido, Tadashi; Nomura, Tutomu; and Inomata, Koichiro, 4,569,775, Cl. 252-62.590.
Mutou, Yoshihiro, 4,569,111, Cl. 29-283.500.
Nagano, Katsumi, 4,570,089, Cl. 307-529.000.
Saito, Tamio, 4,569,902, Cl. 430-313.000.
Tanaka, Shigeru, 4,570,214, Cl. 363-160.000.
Tani, Tatsuo; Sawata, Sinji; Tanaka, Tadayoshi; Sakuta, Koichi; Nagata, Yuuji; Eto, Yasushi; Adachi, Makoto; and Matsurra, Yasunori, 4,569,331, Cl. 126-435.000.
Toyama, Masaharu, 4,569,700, Cl. 148-174.000.
Yanabu, Satoru; Nishiwaki, Susumu; and Haginomori, Eiichi, 4,570,042, Cl. 200-148.00R.
Yasuda, Hiroshi; and Ochii, Kiyofumi, 4,570,091, Cl. 307-583.000.
Tollefson, Richard J.; Berg, James G.; and Hinderaker, Philip D., to Minnesota Mining and Manufacturing Company. Sheet material adapted to provide long-lived stable adhesive-bonded electrical connections. 4,569,877, Cl. 428-141.000.
Tomczak, Lawrence W.; and Osladil, Anthony J., to Gulf & Western Manufacturing Company. Angular position transducer including permanent magnets and Hall Effect device. 4,570,118, Cl. 324-208.000.
Tomita, Masahiro; and Yasuda, Eturo, to Nippon Soken, Inc. Temperature compensated stack of piezoelectric elements. 4,570,098, Cl. 310-346.000.
Tomita, Ryosuke: *See—*
Mizui, Kinya; Takeda, Masami; Ozaki, Yoshimi; and Tomita, Ryosuke, 4,570,024, Cl. 585-24.000.
Tomobe, Norio: *See—*
Fujimura, Akira; and Tomobe, Norio, 4,569,318, Cl. 123-327.000.
Toray Silicone Company, Limited: *See—*
Sasaki, Shosaku; and Kaiya, Nobuo, 4,569,980, Cl. 528-14.000.
Shinmi, Hideo, 4,569,870, Cl. 428-57.000.
Torii & Co. Ltd.: *See—*
Fujii, Setsuro; Yaegashi, Takashi; Nakayama, Toyoo; Sakurai, Yojiro; Nunomura, Shigeki; and Okutome, Toshiyuki, 4,570,006, Cl. 549-442.000.
Torii, Nobutoshi: *See—*
Nakashima, Seiichiro; Torii, Nobutoshi; and Ozaki, Hitoshi, 4,569,549, Cl. 294-88.000.
Toro Company, The: *See—*
Walto, Joseph J., 4,569,485, Cl. 239-456.000.
Toth, Tibor; and Munscher, Gerhard, to Behringwerke Aktiengesellschaft. Immunologic latex agglutination process. 4,569,919, Cl. 436-533.000.
Toyama, Masaharu, to Tokyo Shibaura Denki Kabushiki Kaisha. Method of manufacturing a stacked semiconductor device. 4,569,700, Cl. 148-174.000.
Toyama, Teruhiko: *See—*
Nakatani, Kiyoshi; Numata, Satoshi; Inoue, Tsuneo; Kodaka, Kenji; Ishii, Tsutomu; Toyama, Teruhiko; Tachibana, Hajime; Udagawa, Takatoshi; and Gohbara, Masatoshi, 4,570,005, Cl. 549-435.000.
Toyo Tire & Rubber Co., Ltd.: *See—*
Kawashima, Hitoshi; and Tsujimoto, Yoshikazu, 4,569,265, Cl. 83-368.000.
Toyoda, Nobuyuki: *See—*
Terada, Toshiyuki; Toyoda, Nobuyuki; Hojo, Akimichi; and Kamei, Kiyoho, 4,569,119, Cl. 29-571.000.
Toyota Jidosha Kabushiki Kaisha: *See—*
Inui, Masaki; and Yasui, Yasuyoshi, 4,569,247, Cl. 74-475.000.
Itoh, Hiroshi; Hiramatsu, Shigeki; and Takada, Mitsuru, 4,569,254, Cl. 74-866.000.
Nobu, Habuo, 4,569,313, Cl. 123-41.740.
Takahashi, Yoshinobu; and Yokoi, Masanori, 4,569,740, Cl. 204-181.700.
Yamakawa, Michihiro; Akatsuka, Takao; Kawaguchi, Masao; Nakano, Jiro; and Ishibashi, Takao, 4,569,748, Cl. 204-429.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Katayama, Nobuaki; Ikemoto, Kazuhito; and Ohta, Yoshio, 4,569,246, Cl. 74-473.00R.
Toyotomi Kogyo Co., Ltd.: *See—*
Nakamura, Kazuharu; Mito, Yoshio; and Nakanishi, Yutaka, 4,569,652, Cl. 431-201.000.
Treanor, John P. G.: *See—*
O'Neill, James J.; Treanor, John P. G.; and McGivern, Gerald P., 4,569,308, Cl. 119-82.000.
Treharne, Timothy J., to Pemberton Sintermatic S.A. Pump nozzles. 4,569,102, Cl. 17-41.000.
Tribbett, Kenneth E., to Geo. A. Hormel & Co. Dual extrusion apparatus. 4,569,101, Cl. 17-41.000.
Triner, Irvin R., to Molex Incorporated. Plug and receptacle connector assembly. 4,569,566, Cl. 339-99.00R.
Triolo, Innocenzo: *See—*
Bonfiglioli, Silverio; Triolo, Innocenzo; and Gardellini, Giovanni, 4,569,321, Cl. 123-438.000.
Trommer, William C., to Sundstrand Corporation. Rotating rectifier assembly. 4,570,094, Cl. 310-68.00R.
Tromp, Petrus J.: *See—*
Ratcliffe, Charles T.; Tromp, Petrus J.; and Wachs, Israel E., 4,570,020, Cl. 568-70.000.
Tru-Lyte Systems, Inc.: *See—*
Reidinger, Michael J., 4,569,571, Cl. 350-96.240.
Trudgen, Gary A.: *See—*
Grindel, David R.; and Trudgen, Gary A., 4,570,130, Cl. 331-8.000.
Trumpf GmbH & Co.: *See—*
Klingel, Hans, 4,569,267, Cl. 83-552.000.
Trynosky, Stephen W.: *See—*
Kummer, David A.; Saenz, Jesus A.; and Trynosky, Stephen W., 4,570,161, Cl. 340-799.000.
Tsu, Raphael; Ovshinsky, Stanford R.; Hernandez, Jesus; and Martin, Denis, to Energy Conversion Devices, Inc. Method of forming photovoltaic quality amorphous alloys by passivating defect states. 4,569,697, Cl. 148-1.500.
Tsuchiya, Masayoshi: *See—*
Tsurumaru, Shinobu; Ishigaki, Yoshio; Ouchi, Koji; Yoshikawa, Takashi; Fukuzawa, Keiji; Imai, Kazuhiro; Taguchi, Yorimichi; and Tsuchiya, Masayoshi, 4,570,165, Cl. 343-726.000.
Tsuda, Yoshihisa, to UOP Inc. Method of making aspartic acid and purifying aspartase. 4,569,911, Cl. 435-109.000.
Tsuge, Noboru; Taguchi, Masahiro; Onimaru, Sadahisa; and Kuwakado, Satosi. Seat belt system. 4,569,536, Cl. 280-807.000.

Tsuji, Teruji: *See—*
Aoki, Tsutomu; Takahashi, Hiromi; Konoike, Toshiro; Tsuji, Teruji; and Nagata, Wataru, 4,570,018, Cl. 564-1.000.
Tsujimoto, Yoshikazu: *See—*
Kawashima, Hitoshi; and Tsujimoto, Yoshikazu, 4,569,265, Cl. 83-368.000.
Tsumura, Akio: *See—*
Yamaguchi, Katsuhiko; Kobayashi, Seiki; Miyake, Yasufumi; and Tsumura, Akio, 4,569,885, Cl. 428-339.000.
Tsumura, Toshihiro; Kamei, Shigeki; Waratani, Hiroji; and Takahashi, Akira, to Hitachi Kidenkogyo Kabushiki Kaisha; and Yagiantena Kabushiki Kaisha. Follow-up guidance and information transfer system for a moving object on the ground using the light beam. 4,570,060, Cl. 250-203.00R.
Tsumura, Toshihiro; Kamei, Shigeki; and Takahashi, Akira, to Hitachi Kidenkogyo Kabushiki Kaisha; and Yagiantena Kabushiki Kaisha. System for optically transferring information between a moving object and a fixed position. 4,570,062, Cl. 250-225.000.
Tsuno, Koichi, to Sumitomo Electric Industries, Ltd. Fiberscope. 4,569,335, Cl. 128-6.000.
Tsurumaru, Shinobu; Ishigaki, Yoshio; Ouchi, Koji; Yoshikawa, Takashi; Fukuzawa, Keiji; Imai, Kazuhiro; Taguchi, Yorimichi; and Tsuchiya, Masayoshi, to Sony Corporation. Adjustable loop and dipole antenna. 4,570,165, Cl. 343-726.000.
Tuckey, Charles H., to Walbro Corporation. In-tank fuel pump assembly. 4,569,637, Cl. 417-360.000.
Tung, Chi F.; and Coderre, James C., to Minnesota Mining and Manufacturing Company. Retroreflective sheeting. 4,569,857, Cl. 427-163.000.
Tute, Rainer, to Dr. Johannes Heidenhain GmbH. Error correction system for length or angle measuring instrument. 4,569,138, Cl. 33-125.00R.
Tyrell, John A.; and Mark, Victor, to General Electric Company. Copolyetheresters from caprolactone. 4,569,973, Cl. 525-437.000.
Tyszkiewicz, Theodore J.: *See—*
Boden, Richard M.; Hanna, Marie R.; and Tyszkiewicz, Theodore J., 4,570,008, Cl. 549-462.000.
Ube Industries, Ltd.: *See—*
Deguchi, Ryuichi, 4,569,786, Cl. 252-503.000.
Uchikawa, Tadao, to NEC Corporation. Mechanical amplification mechanism combined with piezoelectric elements. 4,570,095, Cl. 310-328.000.
Udagawa, Takatoshi: *See—*
Nakatani, Kiyoshi; Numata, Satoshi; Inoue, Tsuneo; Kodaka, Kenji; Ishii, Tsutomu; Toyama, Teruhiko; Tachibana, Hajime; Udagawa, Takatoshi; and Gohbara, Masatoshi, 4,570,005, Cl. 549-435.000.
Uebele, Curtis E.: *See—*
Kool, Eric T.; and Uebele, Curtis E., 4,569,766, Cl. 210-690.000.
Uffner, William E.; and Patil, Bhalchandra B., to Owens-Corning Fiberglas Corporation. Joint sealing compound. 4,569,968, Cl. 525-54.500.
Ukrainsky Institut Inzhenerov Vodnogo Khozyaistva: *See—*
Sandulyak, Alexandr V.; Garaschenko, Vyacheslav I.; Sandulyak, Vladimir V.; and Korkhov, Oleg J., 4,569,758, Cl. 210-222.000.
Umemoto, Yoshiyuki; Iijima, Masao; Miyagi, Masahide; and Muramatsu, Yoshihisa, to Fuji Electric Company Ltd. Solar cell device. 4,570,030, Cl. 136-244.000.
Underwood, Richard H., to Westinghouse Electric Corp. Miniature fission chamber and signal cable assembly. 4,569,817, Cl. 376-154.000.
Uneek Cap and Door, Inc.: *See—*
Wentzel, Harold G., 4,569,383, Cl. 160-201.000.
Unie van Kunstmestfabrieken B.V.: *See—*
Calis, Gijsbertus H. M.; and Jennekens, Matheus H. G., 4,569,677, Cl. 23-301.000.
Union Camp Corporation: *See—*
Frihart, Charles R.; and Veazey, Richard L., 4,569,985, Cl. 528-291.000.
Frihart, Charles R.; and Veazey, Richard L., 4,569,987, Cl. 528-339.300.
Mitchell, Peter W. D., 4,570,022, Cl. 568-827.000.
Union Carbide Corporation: *See—*
Gibson, Charles A.; and Crandall, John W., 4,570,019, Cl. 564-498.000.
Gortsema, Frank P.; and Lok, Brent M., 4,569,833, Cl. 423-305.000.
Uniroyal, Inc.: *See—*
Brouwer, Walter G.; Bell, Allyn R.; Blem, Allen R.; and Davis, Robert A., 4,569,690, Cl. 71-90.000.
Uniroyal, Ltd.: *See—*
Brouwer, Walter G.; Bell, Allyn R.; Blem, Allen R.; and Davis, Robert A., 4,569,690, Cl. 71-90.000.
United States Gypsum Company: *See—*
Kuhr, Albert F.; and Wendt, Alan C., 4,569,171, Cl. 52-242.000.
United States of America
Air Force: *See—*
Conkle, James P.; Sears, Daniel; and Hicks, James A., 4,569,235, Cl. 73-863.030.
Davari, Bijan; and Das, Pankaj K., 4,569,728, Cl. 204-15.000.
Driscoll, Michael M., 4,570,132, Cl. 331-56.000.
Golder, Louis, 4,569,565, Cl. 339-64.00R.
Milberger, Walter E., 4,570,129, Cl. 330-277.000.
Army: *See—*
F'Geppert, Erwin, 4,569,234, Cl. 73-862.190.
F'Geppert, Erwin, 4,569,427, Cl. 192-67.00R.
Huang, Ho-Chung; and Matarese, Ralph J., 4,570,174, Cl. 357-22.000.
Energy: *See—*
Goldmann, Louis H., 4,569,623, Cl. 414-217.000.
Phatak, Ramkrishna G., 4,569,484, Cl. 239-410.000.
Health and Human Services: *See—*
Mulshine, James L.; and Minna, John D., 4,569,788, Cl. 260-112.00R.
Navy: *See—*
Assard, Gerald L., 4,570,248, Cl. 367-149.000.
Divecha, Amarnath P.; and Wilson, Roger E., 4,569,886, Cl. 428-379.000.
Pakulak, Jack M., Jr.; and Cragin, Susan E., 4,569,287, Cl. 102-293.000.
U.S. Philips Corporation: *See—*
De Bie, Johannes H.; and Franken, Adrianus J. J., 4,570,063, Cl. 250-227.000.
Demmer, Walter H.; Gutsmann, Rolf D.; Bergs, Norbert A.; Heinemann, Ingolf B.; and Warmuth, Otto L., 4,570,126, Cl. 329-107.000.
Gibson, Rodney W., 4,570,125, Cl. 329-50.000.
Holster, Peter L., 4,569,806, Cl. 264-1.300.
Janssen, Eduard J. P.; and Notelteirs, Victor R., 4,570,104, Cl. 315-50.000.
Kinghorn, John R.; Fisher, Raymond J.; and Douglas, Terence A., 4,570,154, Cl. 340-365.00S.
Martens, Theodorus G. J. A., 4,570,221, Cl. 364-200.000.
Nicolai, Haayo; and Duipmans, Hendricus J., 4,570,109, Cl. 315-362.000.
Spiero, Richard C., 4,570,075, Cl. 250-570.000.
van Alem, Antonius A. M.; and Stinesen, Bernardus J., 4,570,255, Cl. 369-270.000.
Virdee, Nirmal S., 4,570,036, Cl. 179-170.200.
United States Steel Corporation: *See—*
Wilson, James H.; and Laycak, John F., 4,570,230, Cl. 364-477.000.
United States Surgical Corporation: *See—*
Poirier, James W., 4,569,346, Cl. 128-305.000.
United Technologies Corporation: *See—*
Duhl, David N.; and Nguyen-Dinh, Xuan, 4,569,824, Cl. 420-448.000.
Ferris, Donald L.; Niebanck, Charles F.; Campbell, Thomas G.; and Olsen, Eric G., 4,569,629, Cl. 416-134.00A.
Flemming, Robert J., Jr., 4,569,633, Cl. 416-228.000.
Przybyszewski, John S.; and Claing, Richard G., 4,569,889, Cl. 428-612.000.
Scola, Daniel A.; and Pater, Ruth H., 4,569,988, Cl. 528-353.000.
United Utensils Company, Inc.: *See—*
Lauer, Leonard; and Goldberg, Jacqueline, 4,569,597, Cl. 366-228.000.
Unitek Corporation: *See—*
Dvivedi, Nitin N.; and Schmidt, Paul A., 4,569,825, Cl. 420-464.000.
Universal Consolidated Methods, Inc.: *See—*
Yoder, Ronald L., 4,569,156, Cl. 51-163.100.
Universal Flow Monitors: *See—*
Rosaen, Lars, 4,569,233, Cl. 73-861.420.
University of British Columbia, The: *See—*
Hall, Laurance D.; and Sukumar, Subramaniam, 4,570,120, Cl. 324-309.000.
University of California, The Regents of the: *See—*
Ferrari, Leonard A., 4,569,353, Cl. 128-660.000.
Hood, Michael, 4,569,558, Cl. 299-81.000.
University of Health Sciences/The Chicago Medical School: *See—*
Tang, Pei C., 4,569,351, Cl. 128-419.00E.
University of Northern Iowa Foundations: *See—*
Bergquist, Barton L.; and Chang, James C., 4,569,932, Cl. 514-185.000.
University of Pennsylvania: *See—*
Neufeld, Gordon R., 4,569,589, Cl. 356-39.000.
University of Surrey: *See—*
Baker, Stephen; Hollaway, Leonard C.; and Terrell, Christopher E., 4,569,165, Cl. 52-81.000.
University of Tennessee Research Corp.: *See—*
Rosenberg, E. William; and Belew, Patricia W., 4,569,935, Cl. 514-252.000.
University of Toronto Innovations Foundation, The: *See—*
Boulton, Peter I. P.; Lee, E. Stewart; and Davidson, William E., 4,570,162, Cl. 340-825.500.
Uno, Keizo; Yamamoto, Tamotsu; and Shimizu, Hitoshi, to Ikegai Tekko Kabushiki Kaisha. Method and apparatus for controlling the depth of cut in the radial direction of a rotary cutting tool in a machine tool. 4,569,115, Cl. 29-558.000.
Uno, Teruo: *See—*
Baba, Yoshio; Uno, Teruo; and Yoshida, Hideo, 4,569,703, Cl. 148-417.000.
UOP Inc.: *See—*
Dolejs, Charles A.; Schumann, Gary M.; and Schick, David L., 4,569,371, Cl. 137-625.470.
Kulprathipanja, Santi; and Chang, Chin-Hsiung, 4,570,029, Cl. 585-829.000.
Tsuda, Yoshihisa, 4,569,911, Cl. 435-109.000.
Upjohn Company, The: *See—*
Stuber, Fred A.; and Temme, George H., 4,570,010, Cl. 556-475.000.
Uro Denski Kogyo, K.K.: *See—*
Kodaira, Makoto, 4,570,157, Cl. 340-567.000.

Urs, Venkataramaraj S.: *See—*
Grelle, Peter F.; and Urs, Venkataramaraj S., 4,569,288, Cl. 102-466.000.
Usadel, Klaus H.: *See—*
Szabo, Sandor; and Usadel, Klaus H., 4,569,926, Cl. 514-14.000.
USM Corporation: *See—*
Yardley, Robert; Cameron, Ewen R.; Shutt, Joseph A.; and Walter, Andrew G. N., 4,570,112, Cl. 318-602.000.
USV Pharmaceutical Corp.: *See—*
Suh, John T.; Chung, Rack H., deceased; Wang, Nai-Yi; and Barton, Jeffrey N., 4,569,941, Cl. 514-317.000.
Vaders, Dennis H., to Weyerhaeuser Company. Remotely releasable choker. 4,569,548, Cl. 294-82.140.
Vale, Wylie W., Jr.: *See—*
Rivier, Jean E. F.; and Vale, Wylie W., Jr., 4,569,927, Cl. 514-15.000.
Valk, Donald R.: *See—*
Spitz, Rodney D.; and Valk, Donald R., 4,569,694, Cl. 106-314.000.
van Alem, Antonius A. M.; and Stinesen, Bernardus J., to U.S. Philips Corporation. Disc-record player with pressure means for pressing a disc onto a turntable. 4,570,255, Cl. 369-270.000.
Van Domelen, Timothy D.: *See—*
Kasper, William W.; Quon, Willard L.; and Van Domelen, Timothy D., 4,569,990, Cl. 528-408.000.
Van Doorn, Donald W.; Hawkins, James B.; Harmon, William A.; McKenzie, Terry L.; and Beeland, William D., to Lummus Industries, Inc. Apparatus for cutting elongated material into shorter lengths. 4,569,264, Cl. 83-100.000.
van Helden, Robert: *See—*
Scholes, Gary; and van Helden, Robert, 4,569,795, Cl. 260-239.00A.
Van Kamerik, John G.: *See—*
Waddington, Clive; Lagasse, Normand L.; Milo, George T.; and Van Kamerik, John G., 4,569,196, Cl. 60-39.080.
Van Noord, Andrew J.: *See—*
Mattox, Ernest M.; and Van Noord, Andrew J., 4,569,519, Cl. 272-131.000.
Vansant, Etienne; De Bievre, Paul; Peeters, Guido J.; Thijs, Anita; and Verhaert, Ingrid, to European Atomic Energy Community (EURATOM). Method of encapsulating gases, vapors, complexes and ions in solids. 4,569,683, Cl. 55-58.000.
Varian Associates, Inc.: *See—*
Chidzey, John A.; and Huberts, John T., 4,570,054, Cl. 219-490.000.
Davis, Charles A., 4,570,079, Cl. 307-311.000.
Hutchinson, Martin A., 4,569,746, Cl. 204-298.000.
Vassalotti, Michael, to Automation Industries, Inc. Self-contained stud tensioner and tightener device. 4,569,506, Cl. 254-29.00A.
VDO Adolf Schindling AG: *See—*
Collonia, Harald, 4,569,320, Cl. 123-399.000.
Veal, Leo D.; and Castle, William R., to Arc Controls, Inc. Arc welding control system. 4,570,050, Cl. 219-130.310.
Veazey, Richard L.: *See—*
Frihart, Charles R.; and Veazey, Richard L., 4,569,985, Cl. 528-291.000.
Frihart, Charles R.; and Veazey, Richard L., 4,569,987, Cl. 528-339.300.
Vecchietti, Vittorio: *See—*
Bergamaschi, Mario; Gervasi, Gian B.; Vecchietti, Vittorio; and Signorini, Massimo, 4,570,013, Cl. 560-102.000.
Velcro USA Inc.: *See—*
Hasslinger, Russell, 4,569,348, Cl. 604-179.000.
Velten, S. Dean. Collapsible folding barbecue unit. 4,569,327, Cl. 126-25.00A.
Venture Innovations, Inc.: *See—*
House, Roy F., 4,569,799, Cl. 260-501.150.
Verhaert, Ingrid: *See—*
Vansant, Etienne; De Bievre, Paul; Peeters, Guido J.; Thijs, Anita; and Verhaert, Ingrid, 4,569,683, Cl. 55-58.000.
Vetco Offshore, Inc.: *See—*
Milberger, Lionel J.; Baron, Donald; and Berner, Paul C., 4,569,404, Cl. 175-208.000.
Vetter, Heinz: *See—*
Pohlmann, Klaus E.; Vetter, Heinz; and Friederich, Ernst, 4,569,875, Cl. 428-119.000.
Vianco, George W., Jr.: *See—*
Perez, Steven R.; Bertrand, Jacques C.; Jacobs, Timothy W.; Sommers, Raymond L.; and Vianco, George W., Jr., 4,569,896, Cl. 430-106.600.
Viard, Jacky: *See—*
Asty, Michel; Lerat, Bernard; Saglio, Robert; and Viard, Jacky, 4,569,230, Cl. 73-623.000.
Vickers, Incorporated: *See—*
Taylor, Henry D.; and Nanda, Vinod K., 4,569,272, Cl. 91-420.000.
Victor Company of Japan, Limited: *See—*
Kitoh, Akihiko, 4,570,190, Cl. 360-73.0UC.
Vieten, Rolf: *See—*
Kohlen, Karl-Heinz; and Vieten, Rolf, 4,569,543, Cl. 289-2.000.
Villa, Joseph, to Buildex Incorporated. Pressure relief port. 4,569,208, Cl. 62-273.000.
Vince, Albert E. Heel member. 4,569,141, Cl. 36-35.00R.
Virdee, Nirmal S., to U.S. Philips Corporation. Digital duplex communication system. 4,570,036, Cl. 179-170.200.
Virginia Chemicals Inc.: *See—*
Snyder, Donald M., 4,569,797, Cl. 260-455.00B.
Vishay Intertechnology, Inc.: *See—*
Zandman, Felix; and Sandone, Frank P., Jr, 4,570,150, Cl. 338-329.000.
Vislosky, John. Submerged automatic arc welder. 4,570,047, Cl. 219-73.000.
Voelz, Frederick L.; and Lowther, Frank, to Atlantic Richfield Company. Process for producing acetylene using a homogeneous mixture. 4,570,028, Cl. 585-540.000.
Vogel, Peter, to Fritz Gegauf Aktiengesellschaft Bernina-Nahmaschinenfabrik. Stitch length and width adjusting linkage. 4,569,299, Cl. 112-315.000.
Vogel, Rudolf, to Maschinenfabrik Sulzer-Ruti AG. Terrycloth weaving machine. 4,569,373, Cl. 139-25.000.
Vogelbusch Gesellschaft mbH: *See—*
Nodes, Franz, 4,569,845, Cl. 426-17.000.
Volkamer, Klaus: *See—*
Lindner, Alfred; Broellos, Klaus; Sandrock, Gerhard; Volkamer, Klaus; and Hefner, Werner, 4,569,725, Cl. 203-38.000.
Volland, Michel; Remond, Pierre; and Boyer, Roland, to Saurer Diederichs (Societe Anonyme). Reed with incorporated confiner for shuttleless loom with pneumatic weft insertion. 4,569,376, Cl. 139-435.000.
von Nostitz, Frauke H. F. Dental impression tray and process for the use thereof. 4,569,342, Cl. 128-136.000.
von Weyssenhoff, Hanns: *See—*
Schlag, Edward W.; von Weyssenhoff, Hanns; and Selzle, Heinrich, 4,570,066, Cl. 250-251.000.
W&A Bates Ltd.: *See—*
Sumner, Anthony J. M.; and Goodfellow, Anthony G., 4,569,711, Cl. 156-244.110.
Wachs, Israel E.: *See—*
Ratcliffe, Charles T.; Tromp, Petrus J.; and Wachs, Israel E., 4,570,020, Cl. 568-70.000.
Wada, Fumio: *See—*
Asami, Kazutomo; Wada, Fumio; Ishijima, Koji; and Sato, Yutaka, 4,569,645, Cl. 418-63.000.
Wada, Toshio: *See—*
Yamashita, Hiromi; and Wada, Toshio, 4,569,695, Cl. 134-1.000.
Waddington, Clive; Lagasse, Normand L.; Milo, George T.; and Van Kamerik, John G., to Avco Corporation. Lubrication system. 4,569,196, Cl. 60-39.080.
Wagener, Paul-Werner: *See—*
Kramer, Rolf; Ahlborn, Gunter; Schneider, Felix; Neuser, Ernst; Hubsch, Henry; Kampmann, Gerhard; and Wagener, Paul-Werner, 4,569,293, Cl. 105-377.000.
Waggon Union GmbH: *See—*
Kramer, Rolf; Ahlborn, Gunter; Schneider, Felix; Neuser, Ernst; Hubsch, Henry; Kampmann, Gerhard; and Wagener, Paul-Werner, 4,569,293, Cl. 105-377.000.
Wakeling, Fitzgerald, to Beecham Group p.l.c. Circumference measuring device. 4,569,139, Cl. 33-179.000.
Waki, Kouichirou: *See—*
Higashi, Haruki; Waki, Kouichirou; Fukuiri, Masaru; and Yukitomo, Kazuo, 4,569,253, Cl. 74-866.000.
Walbro Corporation: *See—*
Tuckey, Charles H., 4,569,637, Cl. 417-360.000.
Waldman, Roy: *See—*
Koller, Philip A.; and Waldman, Roy, 4,569,130, Cl. 30-128.000.
Walker, Charles T. Anodic assembly for electroplating. 4,569,744, Cl. 204-284.000.
Walker, Michael J.; and Bagnall, Jeffry A., to Lucas Industries Ltd. Dual-band ultrasonic motion detector. 4,570,247, Cl. 367-93.000.
Wallboard Tool Company, Inc.: *See—*
Masterson, Jon A., 4,569,516, Cl. 272-70.100.
Walt Disney Productions: *See—*
Spencer, David W., 4,569,577, Cl. 352-87.000.
Walter, Andrew G. N.: *See—*
Yardley, Robert; Cameron, Ewen R.; Shutt, Joseph A.; and Walter, Andrew G. N., 4,570,112, Cl. 318-602.000.
Walter, Lothar: *See—*
Brandenstein, Manfred; Ernst, Horst M.; Walter, Lothar; and Friedrich, Wolfgang, 4,569,429, Cl. 192-98.000.
Walters, Paul W.: *See—*
Busch, Lloyd E.; Walters, Paul W.; and Zandona, Oliver J., 4,569,753, Cl. 208-73.000.
Walto, Joseph J., to Toro Company, The. Mist emitter. 4,569,485, Cl. 239-456.000.
Walton, John R.; and Rutz, Jeffrey A., to Interox America. Wastewater treatment. 4,569,769, Cl. 210-759.000.
Wamac-Idab AB: *See—*
Backman, Ralf, 4,569,513, Cl. 271-189.000.
Wambach, Raimund: *See—*
Petruck, Gerd-Michael; Wambach, Raimund; Wissner, Adolf; and Hartung, Sigurd, 4,570,023, Cl. 570-210.000.
Wan, K. Ming; Chen, Mary S.; and Chen, Clay T., to Hatco Chemical Corporation. Preparation of large crystals of N-benzyloxycarbonyl-L-aspartic acid. 4,570,015, Cl. 560-163.000.
Wang Laboratories, Inc.: *See—*
McCracken, Ronald A., 4,570,258, Cl. 370-58.000.
Wang, Nai-Yi: *See—*
Suh, John T.; Chung, Rack H., deceased; Wang, Nai-Yi; and Barton, Jeffrey N., 4,569,941, Cl. 514-317.000.
Warabisako, Terunori: *See—*
Miyao, Masanobu; Ohkura, Makoto; Takemoto, Iwao; Warabisako, Terunori; Mukai, Kiichiro; Haruta, Ryo; Nishioka, Yasushiro; Kimura, Shinichiro; and Tokuyama, Takashi, 4,570,175, Cl. 357-23.700.

Waratani, Hiroji: *See*—
Tsumura, Toshihiro; Kamei, Shigeki; Waratani, Hiroji; and Takahashi, Akira, 4,570,060, Cl. 250-203.00R.
Ward, Ian M.: *See*—
Capaccio, Giancarlo; and Ward, Ian M., 4,569,983, Cl. 528-230.000.
Warmuth, Otto L.: *See*—
Demmer, Walter H.; Gutsmann, Rolf D.; Bergs, Norbert A.; Heinemann, Ingolf B.; and Warmuth, Otto L., 4,570,126, Cl. 329-107.000.
Warner-Lambert Company: *See*—
Smerbeck, Richard V.; and Pittz, Eugene P., 4,569,944, Cl. 514-680.000.
Yang, Robert K., 4,569,852, Cl. 426-534.000.
Wassilieff, Victor. Sealing and distributing device for containers of fluids. 4,569,464, Cl. 222-529.000.
Watabe, Shin, to Mitsubishi Jukogyo Kabushiki Kaisha. Method for controlling a temperature. 4,569,476, Cl. 236-47.000.
Watanabe, Fumihiko: *See*—
Narisada, Masayuki; Watanabe, Fumihiko; and Hamashima, Yoshio, 4,569,993, Cl. 544-90.000.
Watanabe, Junji, to Kabushiki Kaisha Toshiba. Printing apparatus with automatically interchangeable ribbon cartridges. 4,569,608, Cl. 400-208.000.
Watanabe, Tomoyoshi; Hasegawa, Yuzo; and Makino, Kuniyasu, to Brother Kogyo Kabushiki Kaisha. Typewriter with automatic paper loading apparatus. 4,569,611, Cl. 400-624.000.
Watase, Hideo. Thermoplastic synthetic resin-covered metal wire. 4,569,882, Cl. 428-216.000.
Watase, Kazumi: *See*—
Okutsu, Eiich; Watase, Kazumi; Inagaki, Yoshio; and Hirano, Shigeo, 4,569,904, Cl. 430-434.000.
Watkins, Ray V.: *See*—
Sensing, Wylie W.; and Watkins, Ray V., 4,569,149, Cl. 43-61.000.
Watters, Donald J.: *See*—
Snyder, Donald E., Jr.; Watters, Donald J.; and Palermiti, Frank M., 4,569,609, Cl. 400-241.400.
Watts, Eric A., to Beecham Group P.L.C. Certain 5-N-mono- or disubstituted sulfamoyl benzamides having use in treatment of emesis, impaired gastro-intestinal motility disorders and central nervous system disorders. 4,569,940, Cl. 514-304.000.
Wavin B.V.: *See*—
Lambot, Honore J.; Fliervoet, Johannes H. M.; and Kramer, Pieter, 4,569,710, Cl. 156-172.000.
Webber, Louis A. Fishing rod holster. 4,569,466, Cl. 224-253.000.
Weber AG, Fabrik Elektrotechnischer Artikel und Apparate: *See*—
Ineichen, Kurt; and Ledergerber, Remy, 4,570,142, Cl. 337-66.000.
Weber, Gottfried, to Ford Motor Company. Apparatus for press fitting machine parts. 4,569,126, Cl. 29-707.000.
Weber S.p.A.: *See*—
Bonfiglioli, Silverio; Triolo, Innocenzo; and Gardellini, Giovanni, 4,569,321, Cl. 123-438.000.
Wedtech Corp.: *See*—
Pinkhasov, Eduard, 4,569,307, Cl. 118-726.000.
Pinkhasov, Eduard, 4,569,733, Cl. 204-60.000.
Wegner, Paul C., to Tiegel Manufacturing Company. Process for preparing negative plates for use in a dry charge battery. 4,569,854, Cl. 427-58.000.
Wehrli, Felix W.; and MacFall, James R., to General Electric Company. Method for visualization of in-plane fluid flow by proton NMR imaging. 4,570,119, Cl. 324-306.000.
Weichbrodt, Maria: *See*—
Disch, Karlheinz; Kiewert, Eva; Weichbrodt, Maria; and Hase, Christian, 4,569,782, Cl. 252-106.000.
Weider Health & Fitness: *See*—
Weider, Joseph, 4,569,105, Cl. 24-488.000.
Weider, Joseph, to Weider Health & Fitness. Clip on collar for dumbells and barbells. 4,569,105, Cl. 24-488.000.
Weiler, Gerhard H.; and Pagels, Louis T., to Automatic Liquid Packaging, Inc. Sealed container with replaceable plug insert. 4,569,456, Cl. 215-251.000.
Weinand, Guy A.; Botman, Jean-Pierre P. A.; and Busch, Rainer, to Hexcel Corporation. Sheet material, process for its production and its use in the production of a composite structure. 4,569,884, Cl. 428-245.000.
Weinar, Roger N. Interior corner construction for wallboard, ceiling and partition panel assemblies, and backer clips therefor. 4,569,172, Cl. 52-281.000.
Weiner, Helmut: *See*—
Fischer, Kurt; and Weiner, Helmut, 4,569,155, Cl. 51-138.000.
Weingarten, Harold I.; and Feder, Joseph, to Monsanto Company. Thiopeptolide substrates for vertebrate collagenase. 4,569,907, Cl. 435-23.000.
Weitman, Jacob. Apparatus for the treatment of a contaminated gas of elevated temperature. 4,569,388, Cl. 165-94.000.
Wendt, Alan C.: *See*—
Kuhr, Albert F.; and Wendt, Alan C., 4,569,171, Cl. 52-242.000.
Wentzel, Harold G., to Uneek Cap and Door, Inc. Sectional door and components thereof. 4,569,383, Cl. 160-201.000.
Wenzel, Wolfgang; and Dieterich, Dieter, to Bayer Aktiengesellschaft. Solid, water-dispersible plastics precursors containing isocyanate groups, a process for the production of aqueous plastics dispersions using such plastics precursors. 4,569,981, Cl. 528-67.000.
Werber, Gerhardt P., to Eschem Inc. Anaerobic adhesives. 4,569,977, Cl. 526-204.000.
Wern, Henry E.: *See*—
Wern, Michael J.; and Wern, Henry E., 4,569,159, Cl. 51-410.000.
Wern, Michael J.; and Wern, Henry E., to Engineered Abrasives, Inc. Abrasives distributor. 4,569,159, Cl. 51-410.000.
Werner & Pfleiderer: *See*—
Kuchenthal, Gunther; and Klingner, Joachim, 4,569,686, Cl. 55-238.000.
Werther, Joachim: *See*—
Bellgardt, Dieter; Bauer, Werner; Werther, Joachim; and Ritter, Gunter, 4,569,228, Cl. 73-432.00R.
Werwath, Karl W.; and DeGraff, Jon S., to Beltone Electronics Corporation. Process for making a hearing aid vent. 4,569,812, Cl. 264-222.000.
Wessels, Bruce W.: *See*—
Baliga, Bantval J.; and Wessels, Bruce W., 4,569,118, Cl. 29-571.000.
West Electric Company, Ltd.: *See*—
Shiojiri, Shosaku, 4,570,205, Cl. 362-18.000.
West, Jesse R.; and Garton, Lance M., to Continental Carbon Company. Carbon black pellets having enhanced dispersion properties. 4,569,834, Cl. 423-460.000.
West, Michael D.; and Channell, Andrew W., to International Telephone and Telegraph Corporation. Position indicator for rising stem valve. 4,569,366, Cl. 137-556.300.
West, Robert C.; and Wolff, Andrew R., to Minnesota Mining and Manufacturing Company. Photoactivated polymerization of vinyl monomers by polysilanes. 4,569,953, Cl. 522-6.000.
Westcott, Douglas W.: *See*—
Maley, Gerald A.; and Westcott, Douglas W., 4,570,082, Cl. 307-443.000.
Western Geophysical Company of America: *See*—
Thigpen, Ben B., 4,570,245, Cl. 367-15.000.
Westin, Leif, to Kloster Speedsteel Aktiebolag. Powder metallurgical method. 4,569,823, Cl. 419-23.000.
Westinghouse Electric Corp.: *See*—
Baldwin, Gary D., 4,570,081, Cl. 307-426.000.
Ferris, David S.; Gulino, Rosario; and Mons, Robert F., 4,569,300, Cl. 114-20.00R.
Underwood, Richard H., 4,569,817, Cl. 376-154.000.
Weyerhaeuser Company: *See*—
Vaders, Dennis H., 4,569,548, Cl. 294-82.140.
Wheeler, Jude. Rehabilitative training device. 4,569,336, Cl. 128-25.00B.
White, George M., III: *See*—
Thornburg, David D.; and White, George M., III, 4,570,149, Cl. 338-114.000.
White, Kenneth B.: *See*—
Stanley, Keith D.; and White, Kenneth B., 4,569,800, Cl. 260-501.150.
Whitley, George J., to RCA Corporation. Apparatus for securing a component to a printed circuit board. 4,569,127, Cl. 29-741.000.
Wicanders AB: *See*—
Sjogren, Borje; and Berglund; Jan, 4,569,621, Cl. 413-14.000.
Wiegers, Wilhelmus J.; and Sprecker, Mark A., to International Flavors & Fragrances Inc. Use of mixture comprising acetric or propionic acid esters of ortho methyl phenyl isopropanol and specified perfume compounds in augmenting or enhancing the aroma of a detergent or fabric softening article. 4,569,771, Cl. 252-8.600.
Wier, Donald R.: *See*—
Bruning, Donald D.; and Wier, Donald R., 4,569,393, Cl. 166-270.000.
Wiggershaus, Fred: *See*—
Hecht, Joachim; Loedige, Wilfried; Rohde, Friedrich; Rudat, Gerhard; Wiggershaus, Fred; and Winter, Klaus-Juergen, 4,569,290, Cl. 105-154.000.
Wiggins, Christopher N.; and Wood, Roger H., to Baker Perkins Holdings, Plc. Tunnel ovens. 4,569,658, Cl. 432-47.000.
Willcox, Peter S.: *See*—
Baker, Robert L.; Chin, Lester P.; Courtois, James A.; Pionke, Lawrence J.; Sharp, Ralph M.; and Willcox, Peter S., 4,569,218, Cl. 72-342.000.
Willett, Stephen J.; Chou, Hsin H.; Hendrickson, Carol E.; and Hendrickson, William A., to Minnesota Mining and Manufacturing Company. Charge transfer media and process for making thereof. 4,569,895, Cl. 430-70.000.
Williams Contracting, Inc.: *See*—
Williams, Virgil R.; Williams, James M., Jr.; and Lane, Jack D., 4,569,860, Cl. 427-230.000.
Williams Electronics, Inc.: *See*—
Bleich, Charles R.; Jarvis, Eugene P.; and Smolucha, Walter E., 4,570,158, Cl. 340-727.000.
Williams, James M., Jr.: *See*—
Williams, Virgil R.; Williams, James M., Jr.; and Lane, Jack D., 4,569,860, Cl. 427-230.000.
Williams, John B.: *See*—
Tedd, David C.; and Williams, John B., 4,570,116, Cl. 324-57.00R.
Williams, Robert E.: *See*—
Nowers, John R.; and Williams, Robert E., 4,569,359, Cl. 131-281.000.
Williams, Virgil R.; Williams, James M., Jr.; and Lane, Jack D., to Williams Contracting, Inc. System for refurbishing the inside surface of a chamber. 4,569,860, Cl. 427-230.000.
Willison, John E.: *See*—
Frey, George R.; Dickey, Ronald K.; Bleakley, Daryl A.; and Willison, John E., 4,569,489, Cl. 242-86.510.
Wilson, Alan D.; and Crisp, Stephen, to National Research Development Corporation. Dental cement composition comprising poly(carboxylic acid) and chelating agent. 4,569,954, Cl. 523-116.000.

Wilson, James A.; and Ellis, James R., to Holland Hitch Company. Portable stock handling unit. 4,569,309, Cl. 119-99.000.
Wilson, James H.; and Laycak, John F., to United States Steel Corporation. Method of measuring and controlling the level of liquid in a container. 4,570,230, Cl. 364-477.000.
Wilson, Kenneth: *See*—
Koths, Kirston; Thomson, James; Kunitani, Michael; Wilson, Kenneth; and Hanisch, Wolf, 4,569,790, Cl. 260-112.00R.
Wilson, Roger E.: *See*—
Divecha, Amarnath P.; and Wilson, Roger E., 4,569,886, Cl. 428-379.000.
Winter, Klaus-Juergen: *See*—
Hecht, Joachim; Loedige, Wilfried; Rohde, Friedrich; Rudat, Gerhard; Wiggershaus, Fred; and Winter, Klaus-Juergen, 4,569,290, Cl. 105-154.000.
Wissner, Adolf: *See*—
Petruck, Gerd-Michael; Warnbach, Raimund; Wissner, Adolf; and Hartung, Sigurd, 4,570,023, Cl. 570-210.000.
Witczak, Stanley, to AM International. Sheet handling mechanism for duplicating machine with duplexing capability. 4,569,284, Cl. 101-183.000.
Witt, Robert L., to Best Industries, Inc. Balanced double cage choke valve. 4,569,370, Cl. 137-625.300.
Wittlin, Seymour I., to Sentry Electric Corp. Indoor lighting arrangement employing high intensity discharge light sources. 4,570,209, Cl. 362-231.000.
Woelfel, James A., to Goodyear Tire & Rubber Company, The. Molding composition. 4,569,957, Cl. 523-466.000.
Wolf, Rudiger: *See*—
Albrecht, Wolf-Wigand; Hoppe, Axel; Papp, Uwe; and Wolf, Rudiger, 4,569,693, Cl. 75-252.000.
Wolf, Tobin. Combat action figures. 4,569,666, Cl. 446-308.000.
Wolff, Andrew R.: *See*—
West, Robert C.; and Wolff, Andrew R., 4,569,953, Cl. 522-6.000.
Wood, Dorothy M.: *See*—
Carter, Ernest A.; Eitrheim, John K.; and Wood, Dorothy M., 4,570,239, Cl. 365-203.000.
Wood, Roger H.: *See*—
Wiggins, Christopher N.; and Wood, Roger H., 4,569,658, Cl. 432-47.000.
Woods, David R. Apparatus for unscrewing jar lids and crushing aluminum cans. 4,569,281, Cl. 100-103.000.
Woodward, Oakley M., to RCA Corporation. Compact hybrid providing quadrature phase relation between two outputs. 4,570,134, Cl. 333-123.000.
Woudenberg, John D.; and Jones, Ronald B., to Material Sales, Inc. Support for traffic control device. 4,569,495, Cl. 248-160.000.
Wredenhagen, Hartmut: *See*—
Antl, Jurgen; Schmidt, Willi J.; and Wredenhagen, Hartmut, 4,569,125, Cl. 29-596.000.
Wright, Bernard S.; Owen, Hartley; and Hsia, Chung H., to Mobil Oil Corporation. Multistage system for producing hydrocarbons. 4,569,827, Cl. 422-190.000.
Wright, Charles H., to Gulf Research & Development Company; Mitsui SRC Development Co., Ltd.; and Ruhrkohle AG, a part interest. Coal liquefaction process. 4,569,749, Cl. 208-10.000.
Wright, Joseph B.: *See*—
Stella, Joseph A.; and Wright, Joseph B., 4,569,578, Cl. 354-76.000.
Wright Line Inc.: *See*—
Ermanski, Albert G., 4,569,498, Cl. 248-441.100.
Wright State University: *See*—
Petrofsky, Jerrold S.; Phillips, Chandler A.; and Heaton, Harry H., III, 4,569,352, Cl. 128-423.00W.
Wuerzer, Bruno: *See*—
Schirmer, Ulrich; Goetz, Norbert; and Wuerzer, Bruno, 4,569,689, Cl. 71-88.000.
Wurtman, Richard J.: *See*—
Growdon, John H.; and Wurtman, Richard J., 4,569,929, Cl. 514-78.000.
Xerox Corporation: *See*—
Perez, Steven R.; Bertrand, Jacques C.; Jacobs, Timothy W.; Sommers, Raymond L.; and Vianco, George W., Jr., 4,569,896, Cl. 430-106.600.
St. John, Robert P.; and Lloyd, William A., 4,569,584, Cl. 355-14.00R.
Xertex Corporation: *See*—
Moore, Robert T.; and Takahashi, Yoshihiro, 4,569,918, Cl. 436-122.000.
Yada, Keiji: *See*—
Kimura, Chikara; and Yada, Keiji, 4,570,072, Cl. 250-396.0ML.
Yaegashi, Takashi: *See*—
Fujii, Setsuro; Yaegashi, Takashi; Nakayama, Toyoo; Sakurai, Yojiro; Nunomura, Shigeki; and Okutome, Toshiyuki, 4,570,006, Cl. 549-442.000.
Yagiantena Kabushiki Kaisha: *See*—
Tsumura, Toshihiro; Kamei, Shigeki; Waratani, Hiroji; and Takahashi, Akira, 4,570,060, Cl. 250-203.00R.
Tsumura, Toshihiro; Kamei, Shigeki; and Takahashi, Akira, 4,570,062, Cl. 250-225.000.
Yamada, Kunio: *See*—
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Yamada, Masanori: *See*—
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Yamada, Minoru: *See*—
Oshima, Junji; Kajita, Yasuyuki; and Yamada, Minoru, 4,569,986, Cl. 528-298.000.
Yamada, Takashi: *See*—
Osada, Masahiko; Kuno, Akira; Yamada, Takashi; Kaga, Sumihiro; Shimamoto, Mamoru; and Tanahashi, Toshitaka, 4,570,200, Cl. 361-212.000.
Yamada, Yoshiharu; Nishikawa, Hirotaka; and Yokoyama, Hachirou, to Howa Kogyo Kabushiki Kaisha; and Daiichi Bouseki Kabushiki Kaisha. Apparatus for producing special yarns. 4,569,192, Cl. 57-317.000.
Yamaguchi, Hisao: *See*—
Mori, Motoaki; Hirose, Yuichi; and Yamaguchi, Hisao, 4,569,186, Cl. 53-589.000.
Yamaguchi, Jiro: *See*—
Mukunoki, Yasuo; Yamaguchi, Jiro; and Yoneyama, Masakazu, 4,569,905, Cl. 430-546.000.
Yamaguchi, Katsuhiko; Kobayashi, Seiki; Miyake, Yasufumi; and Tsumura, Akio, to Nitto Electric Industrial Company, Limited. Polyester film for forming printed circuit. 4,569,885, Cl. 428-339.000.
Yamaguchi, Minori: *See*—
Shimizu, Isamu; and Yamaguchi, Minori, 4,569,891, Cl. 430-57.000.
Yamakawa, Michihiro; Akatsuka, Takao; Kawaguchi, Masao; Nakano, Jiro; and Ishibashi, Takao, to Nippondenso Co., Ltd.; and Toyota Jidosha Kabushiki Kaisha. Oxygen sensor. 4,569,748, Cl. 204-429.000.
Yamamoto, Haruo: *See*—
Miyoshi, Yoshitake; Takahashi, Ichirou; Okada, Takehiko; and Yamamoto, Haruo, 4,569,587, Cl. 355-72.000.
Yamamoto, Kazuhiko: *See*—
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Yamamoto, Tamotsu: *See*—
Unno, Keizo; Yamamoto, Tamotsu; and Shimizu, Hitoshi, 4,569,115, Cl. 29-558.000.
Yamamura, Tatsuo, to Fuji Electric Company, Ltd. Characteristic extracting apparatus. 4,570,181, Cl. 358-160.000.
Yamane, Jimmie F. Thumb insert for a bowling ball. 4,569,520, Cl. 273-63.00A.
Yamashita, Hiromi; and Wada, Toshio, to NEC Corporation. Method of cleaning a photo-mask. 4,569,695, Cl. 134-1.000.
Yamashita, Shinichi, to Canon Kabushiki Kaisha. Video signal processing device including emphasis and/or de-emphasis circuit. 4,570,193, Cl. 360-33.100.
Yamashita, Yoshihiro: *See*—
Noda, Minoru; Miyata, Tsutomu; Yamashita, Yoshihiro; and Ohmura, Kenji, 4,569,624, Cl. 414-225.000.
Yamato Scale Company, Limited: *See*—
Oshima, Yasushi, 4,569,405, Cl. 177-25.000.
Pringle, Frank E.; and Inoue, Shinichi, 4,569,406, Cl. 177-25.000.
Yamauchi, Yukio. Coupling. 4,569,614, Cl. 403-352.000.
Yan, Johnson K.; and Florence, Judit K., to Singer Company, The. Modular digital image generator. 4,570,233, Cl. 364-522.000.
Yanabu, Satoru; Nishiwaki, Susumu; and Haginomori, Eiichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Gas-insulated switching apparatus. 4,570,042, Cl. 200-148.00R.
Yanagi, Motonori: *See*—
Fukumoto, Takaaki; Mukogawa, Yasukazu; Hama, Masaharu; and Yanagi, Motonori, 4,569,224, Cl. 73-32.00R.
Yanagi, Takashi: *See*—
Keller, George J.; and Yanagi, Takashi, 4,569,364, Cl. 137-244.000.
Yang, Robert K., to Warner-Lambert Company. Maintenance of flavor intensity in pressed tablets. 4,569,852, Cl. 426-534.000.
Yang, Tai-Cheng; Rao, Krishna K.; and Huang, I-Der, to Exxon Research & Engineering Co. Process for preparing a vanadium phosphorus oxygen catalyst composition by an organic solution method. 4,569,925, Cl. 502-209.000.
Yang, Yaw-Kuen. Push button security lock. 4,569,214, Cl. 70-298.000.
Yano, Seiki: *See*—
Hayakawa, Toshiro; Miyauchi, Nobuyuki; Yano, Seiki; and Suyama, Takahiro, 4,569,721, Cl. 156-649.000.
Yardley, Robert; Cameron, Ewen R.; Shutt, Joseph A.; and Walter, Andrew G. N., to USM Corporation. Control circuit for numerically controlled motor. 4,570,112, Cl. 318-602.000.
Yashima, Michio; Iwai, Shigeru; and Hirose, Masashi, to Honda Giken Kogyo Kabushiki Kaisha. Switch assembly for a motor vehicle. 4,570,078, Cl. 307-10.00R.
Yasuda, Eturo: *See*—
Tomita, Masahiro; and Yasuda, Eturo, 4,570,098, Cl. 310-346.000.
Yasuda, Hiroshi; and Ochii, Kiyofumi, to Tokyo Shibaura Denki Kabushiki Kaisha. Output buffer circuit. 4,570,091, Cl. 307-583.000.
Yasui, Yasuyoshi: *See*—
Inui, Masaki; and Yasui, Yasuyoshi, 4,569,247, Cl. 74-475.000.
Yeda Research and Development Co., Ltd.: *See*—
Kedem, Ora; and Kedem, Abraham, 4,569,747, Cl. 204-301.000.
Yoder, Ronald L., to Universal Consolidated Methods, Inc. Vibratory finishing apparatus. 4,569,156, Cl. 51-163.100.
Yokoi, Masanori: *See*—
Takahashi, Yoshinobu; and Yokoi, Masanori, 4,569,740, Cl. 204-181.700.
Yokota, Tsuneshi; and Nakagawa, Akira, to Tokyo Seibaura Denki Kabushiki Kaisha. Overlay recording prevention device for optical disc apparatus. 4,570,251, Cl. 369-100.000.
Yokoyama, Hachirou: *See*—
Yamada, Yoshiharu; Nishikawa, Hirotaka; and Yokoyama, Hachirou, 4,569,192, Cl. 57-317.000.

Yokoyama, Kunio: *See*—
Dempou, Kazuo; Niida, Hideo; and Yokoyama, Kunio, 4,569,205, Cl. 62-155.000.
Yoneyama, Masakazu: *See*—
Mukunoki, Yasuo; Yamaguchi, Jiro; and Yoneyama, Masakazu, 4,569,905, Cl. 430-546.000.
Yoshida, Hideo: *See*—
Baba, Yoshio; Uno, Teruo; and Yoshida, Hideo, 4,569,703, Cl. 148-417.000.
Yoshida Industry Co., Ltd.: *See*—
Hatakeyama, Yoshiharu; and Kozuka, Shinichi, 4,569,457, Cl. 215-364.000.
Yoshida, Kenji: *See*—
Ono, Hiroshi; Hashimoto, Masao; Sugiyama, Eiiti; Fujiwara, Kenji; and Yoshida, Kenji, 4,569,948, Cl. 518-700.000.
Yoshida Kogyo K.K.: *See*—
Gartner, Karl, 4,569,170, Cl. 52-204.000.
Yoshihara, Takahisa: *See*—
Matsuda, Akira; Komoda, Akira; Yoshihara, Takahisa; and Miyachi, Kazuaki, 4,569,731, Cl. 204-28.000.
Yoshikawa, Takashi: *See*—
Tsurumaru, Shinobu; Ishigaki, Yoshio; Ouchi, Koji; Yoshikawa, Takashi; Fukuzawa, Keiji; Imai. Kazuhiro; Taguchi, Yorimichi; and Tsuchiya, Masayoshi, 4,570,165, Cl. 343-726.000.
Yoshikumi, Chikao; Ohmura, Yoshio; Hirose, Fumio; Ikuzawa, Masanori; Matsunaga, Kenichi; Fujii, Takayoshi; Ohhara, Minoru; and Ando, Takao, to Kureha Kagaku Kogyo Kabushiki Kaisha. Pharmaceutical composition containing a derivative of para-aminobenzoic acid as an active ingredient. 4,569,842, Cl. 514-25.000.
Yoshimoto, Taketoshi, to Sharp Kabushiki Kaisha. Cash register control system for authorization of selected operator functions. 4,570,223, Cl. 364-405.000.
Yoshinaga, Tatsuro: *See*—
Takahashi, Hisae; Yoshinaga, Tatsuro; and Mitomo, Akio, 4,570,207, Cl. 362-152.000.
Yoshino Kogyosho Co., Ltd.: *See*—
Kushida, Hideo; Kosugi, Akikazu; and Nagayama, Hiromi, 4,569,869, Cl. 428-35.000.
Yoshizuka, Naonobu; Takeuchi, Eijiro; and Imokawa, Genji, to Kao Corporation. Sebum secretion accelerator. 4,569,931, Cl. 514-182.000.
Younger, Cousby, Jr.: *See*—
Kuhn, Donald H.; Nelson, Conrad E.; Younger, Cousby, Jr.; and Otteni, Gerald A., 4,570,166, Cl. 343-872.000.
Yukitomo, Kazuo: *See*—
Higashi, Haruki; Waki, Kouichirou; Fukuiri, Masaru; and Yukitomo, Kazuo, 4,569,253, Cl. 74-866.000.
Z-Lyften Produktion AB: *See*—
Svanberg, Bjorn, 4,569,626, Cl. 414-557.000.
Zaharko, Russell J., to Sulpetro Limited. Process for forming prill for sulphur and bentonite. 4,569,859, Cl. 427-215.000.
Zahn, Karl-Ludwig: *See*—
Riederer, Emil; Zahn, Karl-Ludwig; and Bencker, Rudolf, 4,569,648, Cl. 425-222.000.
Zandman, Felix; and Sandone, Frank P., Jr, to Vishay Intertechnology, Inc. Precision resistor and method of making same. 4,570,150, Cl. 338-329.000.
Zandona, Oliver J.: *See*—
Busch, Lloyd E.; Walters, Paul W.; and Zandona, Oliver J., 4,569,753, Cl. 208-73.000.
Zaruba, John V.: *See*—
Rosenwinkel, Donald A.; Breslow, Jeffrey D.; and Zaruba, John V., 4,569,527, Cl. 273-251.000.
Zavyalov, Vladimir F.: *See*—
Karpov, Alexandr V.; Kivaev, Anatoly A.; Elkind, Solomon A.; Orlov, Garri N.; Lukin, Nikolai I.; Gashnev, Mikhail S.; Ososkov, Gennady A.; Prikhodko, Valentin I.; and Zavyalov, Vladimir F., 4,569,576, Cl. 351-212.000.
Zentgraf, Helmut; Fricke, Gunter; Geisler, Iring; Balzer, Heinrich; Burghardt, Hans; and Maikranz, Fritz, to Kali und Salz AG. Arrangement for feeding of a fine-particle material to electrostatic free-fall cutter. 4,569,432, Cl. 193-32.000.
Zettl, Friedrich. Apparatus for automatically soldering jewelry chains. 4,569,472, Cl. 228-192.000.
Zielke, Terry L.: *See*—
Davis, John E.; Zielke, Terry L.; and Coash, Ronald J., 4,569,481, Cl. 239-177.200.
Zimmerman, William D.; and Temin, Samuel C., to Kendall Company, The. Redox cure system for acrylic adhesive compositions. 4,569,976, Cl. 526-204.000.
Zimmern, Bernard. Device for high pressure compression. 4,569,640, Cl. 417-382.000.
Zimmerschied, Klaus: *See*—
Engel, Dieter; Rinno, Helmut; and Zimmerschied, Klaus, 4,569,965, Cl. 524-544.000.
Zucchini, Michael R. Computer terminal connector. 4,569,567, Cl. 339-154.00A.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 11TH DAY OF FEBRUARY, 1986

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Asahi Kogaku Kogyo Kabushiki Kaisha: *See*—
Kawasaki, Masahiro, Re. 32,080, Cl. 354-410.000.
Halcon SD Group, Inc., The: *See*—
Khoobiar, Sargis, Re. 32,082, Cl. 568-476.000.
Kawasaki, Masahiro, to Asahi Kogaku Kogyo Kabushiki Kaisha. Method and apparatus for transmission of information in a photographic camera. Re. 32,080, Cl. 354-410.000.
Khoobiar, Sargis, to Halcon SD Group, Inc., The. Conversion of isobutane to methacrolein. Re. 32,082, Cl. 568-476.000.
Soros, Paul. Shipside cargo conveyance device. Re. 32,081, Cl. 414-139.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Akzona Incorporated: *See*—
Reck, Richard A., B1 4,237,064, Cl. 260-459.00A.
Armco Steel Corporation: *See*—
Evans, Ralph E.; and Blower, Howard E., B1 3,714,786, Cl. 405-49.000.
ARNCO: *See*—
Wyman, Ransome J.; and Gupta, Laxmi C., B1 4,081,429, Cl. 528-48.000.
Balfour, Beatty & Company Limited: *See*—
Milne, James, B1 4,060,953, Cl. 52-743.000.
Becton, Dickinson and Company: *See*—
Lynn, Robert W., B1 4,283,495, Cl. 435-240.000.
Bleher, Fritz: *See*—
Wandel, Hermann; and Bleher, Fritz, B1 4,157,276, Cl. 162-348.000.
Blower, Howard E.: *See*—
Evans, Ralph E.; and Blower, Howard E., B1 3,714,786, Cl. 405-49.000.
Buropatent AG: *See*—
Schmidt, Siegfried, B1 4,497,254, Cl. 104-1.00R.
Coburn Manufacturing Company, Inc.: *See*—
Stith, Joe D., B1 3,732,647, Cl. 51-54.000.
Cowles, David W. Photographic film identification system. B1 3,987,467, 2-11-86, Cl. 354-105.000.
Evans, Ralph E.; and Blower, Howard E., to Armco Steel Corporation. Drainage culvert. B1 3,714,786, 2-11-86, Cl. 405-49.000.
GAF Corporation: *See*—
Prater, J. Lewis; and Hedworth, Robert L., B1 4,117,248, Cl. 568-855.000.
Gallucci, Gus: *See*—
Messineo, Luigi; and Scarpin, Mauro, B1 4,396,600, Cl. 424-88.000.
Gallucci, Michael, Jr.: *See*—
Messineo, Luigi; and Scarpin, Mauro, B1 4,396,600, Cl. 424-88.000.
Gallucci, Mike: *See*—
Messineo, Luigi; and Scarpin, Mauro, B1 4,396,600, Cl. 424-88.000.
Gotaverken Arendal AB: *See*—
Liden, Hadar, B1 4,436,050, Cl. 114-265.000.
Gupta, Laxmi C.: *See*—
Wyman, Ransome J.; and Gupta, Laxmi C., B1 4,081,429, Cl. 528-48.000.
Hedworth, Robert L.: *See*—
Prater, J. Lewis; and Hedworth, Robert L., B1 4,117,248, Cl. 568-855.000.
Kuypers, Harold A., to Scovill Inc. Snap-in tire valve. B1 4,411,302, 2-11-86, Cl. 152-427.000.
Liden, Hadar, to Gotaverken Arendal AB. Semi-submersible vessel. B1 4,436,050, 2-11-86, Cl. 114-265.000.
Lower, Don: *See*—
Messineo, Luigi; and Scarpin, Mauro, B1 4,396,600, Cl. 424-88.000.
Lynn, Robert W., to Becton, Dickinson and Company. Roller bottle. B1 4,283,495, 2-11-86, Cl. 435-240.000.
Matsumoto, Fumio: *See*—
Yoshida, Masayuki; Matsumoto, Fumio; and Otsuka, Shigeharu, B1 4,481,555, Cl. 361-155.000.
Messineo, Luigi; and Scarpin, Mauro, to Gallucci, Gus; Gallucci, Mike; Gallucci, Michael, Jr.; and Lower, Don, part interest to each. Adult schistosome worm-derived antigenic substance and method of obtaining same. B1 4,396,600, 2-11-86, Cl. 424-88.000.
Milne, James, to Balfour, Beatty & Company Limited. Artificial and natural structures. B1 4,060,953, 2-11-86, Cl. 52-743.000.
Mitsubishi Denki Kabushiki Kaisha: *See*—
Yoshida, Masayuki; Matsumoto, Fumio; and Otsuka, Shigeharu, B1 4,481,555, Cl. 361-155.000.
Morton Thiokol, Inc.: *See*—
Weisfeld, Lewis B., B1 3,640,950, Cl. 524-181.000.
Otsuka, Shigeharu: *See*—
Yoshida, Masayuki; Matsumoto, Fumio; and Otsuka, Shigeharu, B1 4,481,555, Cl. 361-155.000.
Palatinus, Anthony C. Independent sideband transmission system. B1 3,217,256, 2-11-86, Cl. 455-109.000.
Prater, J. Lewis; and Hedworth, Robert L., to GAF Corporation. Continuous, low pressure ethynylation process for the production of butynediol. B1 4,117,248, 2-11-86, Cl. 568-855.000.
Reck, Richard A., to Akzona Incorporated. Process for preparing quaternary ammonium compositions. B1 4,237,064, 2-11-86, Cl. 260-459.00A.
Scarpin, Mauro: *See*—
Messineo, Luigi; and Scarpin, Mauro, B1 4,396,600, Cl. 424-88.000.
Schmidt, Siegfried, to Buropatent AG. Isolating device for an opening traversed by conveyor cars. B1 4,497,254, 2-11-86, Cl. 104-1.00R.
Scovill Inc.: *See*—
Kuypers, Harold A., B1 4,411,302, Cl. 152-427.000.
Stith, Joe D., to Coburn Manufacturing Company, Inc. Polisher-finer machine. B1 3,732,647, 2-11-86, Cl. 51-54.000.
Wandel, Hermann; and Bleher, Fritz, to Wangner, Hermann. Paper machine fabric in an atlas binding. B1 4,157,276, 2-11-86, Cl. 162-348.000.
Wangner, Hermann: *See*—
Wandel, Hermann; and Bleher, Fritz, B1 4,157,276, Cl. 162-348.000.
Weisfeld, Lewis B., to Morton Thiokol, Inc. Halogenated resins stabilized with novel compositions. B1 3,640,950, 2-11-86, Cl. 524-181.000.
Wyman, Ransome J.; and Gupta, Laxmi C., to ARNCO. Heat-stabilized polyurethane elastomer. B1 4,081,429, 2-11-86, Cl. 528-48.000.
Yoshida, Masayuki; Matsumoto, Fumio; and Otsuka, Shigeharu, to Mitsubishi Denki Kabushiki Kaisha. Electromagnetic contact device. B1 4,481,555, 2-11-86, Cl. 361-155.000.

LIST OF DESIGN PATENTEES

Acriform Engineering, Inc.: *See—*
Burgess, John D.; and Taylor, Thomas E., 282,564, Cl. D23-55.000.
Allia: *See—*
Tuduri, Gerard, 282,565, Cl. D23-58.000.
Allied Corporation: *See—*
Schmidt, John C.; and Fafaul, Eugene F., 282,531, Cl. D10-46.000.
Alsup, James D., Jr.: *See—*
Case, Robert; Bartlett, Randall N.; and Alsup, James D., Jr., 282,571, Cl. D24-4.000.
Case, Robert; Kennedy, Joe H.; Bartlett, Randall N.; and Alsup, James D., Jr., 282,574, Cl. D24-4.000.
Case, Robert; Kennedy, Joe H.; Bartlett, Randall N.; and Alsup, James D., Jr., 282,575, Cl. D24-4.000.
American Tourister, Inc.: *See—*
Bomes, Harvey; Pulichino, John; Barber, Jack; and Migliore, John, 282,505, Cl. D3-48.000.
Bomes, Harvey; Pulichino, John; Migliore, John; and Barber, Jack, 282,506, Cl. D3-48.000.
Bomes, Harvey; Pulichino, John; Migliore, John; and Barber, Jack, 282,507, Cl. D3-71.000.
Bomes, Harvey; Pulichino, John; Barber, Jack; and Migliore, John, 282,508, Cl. D3-71.000.
Aqua-Leisure Industries, Inc.: *See—*
Fireman, Simon C., 282,500, Cl. D2-234.000.
Ariss, Angela: *See—*
Usem, Ruth; DeBuhr, Constance; and Ariss, Angela, 282,591, Cl. D28-59.000.
Usem, Ruth; DeBuhr, Constance; and Ariss, Angela, 282,592, Cl. D28-59.000.
Arken, Inc.: *See—*
Seely, James R., 282,512, Cl. D6-409.000.
Armitage, Ralph T. Switch plate. 282,524, 2-11-86, Cl. D8-353.000.
Baird Manufacturing Company: *See—*
Looney, Raymond H., 282,562, Cl. D23-21.000.
Baker, Frank C., III: *See—*
Humphreys, Lynn R.; Barone, David; Baker, Frank C., III; Bowers, Ty S.; and Jamieson, John E., 282,578, Cl. D24-21.000.
Barber, Jack: *See—*
Bomes, Harvey; Pulichino, John; Barber, Jack; and Migliore, John, 282,505, Cl. D3-48.000.
Bomes, Harvey; Pulichino, John; Migliore, John; and Barber, Jack, 282,506, Cl. D3-48.000.
Bomes, Harvey; Pulichino, John; Migliore, John; and Barber, Jack, 282,507, Cl. D3-71.000.
Bomes, Harvey; Pulichino, John; Barber, Jack; and Migliore, John, 282,508, Cl. D3-71.000.
Barone, David: *See—*
Humphreys, Lynn R.; Barone, David; Baker, Frank C., III; Bowers, Ty S.; and Jamieson, John E., 282,578, Cl. D24-21.000.
Bartlett, Randall N.; and Case, Robert, to Syntex (U.S.A.) Inc. Operatory module for a health treatment facility. 282,572, 2-11-86, Cl. D24-4.000.
Bartlett, Randall N.: *See—*
Case, Robert; Bartlett, Randall N.; and Alsup, James D., Jr., 282,571, Cl. D24-4.000.
Case, Robert; Kennedy, Joe H.; Bartlett, Randall N.; and Alsup, James D., Jr., 282,574, Cl. D24-4.000.
Case, Robert; Kennedy, Joe H.; Bartlett, Randall N.; and Alsup, James D., Jr., 282,575, Cl. D24-4.000.
Pride, James R.; Demaree, Harold L.; Case, Robert; and Bartlett, Randall N., 282,573, Cl. D24-4.000.
Baum, Elliot I., to QT&T, Inc. Two piece telephone. 282,543, 2-11-86, Cl. D14-53.000.
Bausch & Lomb Incorporated: *See—*
Hoogesteger, Paul A., 282,576, Cl. D24-9.000.
Beene, Charles B. Cover for bathtub spout. 282,563, 2-11-86, Cl. D23-36.000.
Bomes, Harvey; Pulichino, John; Barber, Jack; and Migliore, John, to American Tourister, Inc. Soft-sided shoulder bag. 282,505, 2-11-86, Cl. D3-48.000.
Bomes, Harvey; Pulichino, John; Migliore, John; and Barber, Jack, to American Tourister, Inc. Shoulder tote. 282,506, 2-11-86, Cl. D3-48.000.
Bomes, Harvey; Pulichino, John; Migliore, John; and Barber, Jack, to American Tourister, Inc. Suitcase. 282,507, 2-11-86, Cl. D3-71.000.
Bomes, Harvey; Pulichino, John; Barber, Jack; and Migliore, John, to American Tourister, Inc. Soft-sided carry-on luggage. 282,508, 2-11-86, Cl. D3-71.000.
Bowers, Ty S.: *See—*
Humphreys, Lynn R.; Barone, David; Baker, Frank C., III; Bowers, Ty S.; and Jamieson, John E., 282,578, Cl. D24-21.000.
Britt, William J.: *See—*
Wilson, Daniel C.; and Britt, William J., 282,526, Cl. D9-375.000.
Brown, Jeffrey C., to John Fluke Mfg. Co., Inc. Multimeter. 282,532, 2-11-86, Cl. D10-78.000.
Bulgari, Marina, to Marina B. Creation S.A. Necklace. 282,533, 2-11-86, Cl. D11-3.000.
Burgess, John D.; and Taylor, Thomas E., to Acriform Engineering, Inc. Combined bathtub and skirt. 282,564, 2-11-86, Cl. D23-55.000.
Canon Kabushiki Kaisha: *See—*
Nibley, Richard, 282,550, Cl. D18-1.000.
Nibley, Richard; and Haranishi, Noriaki, 282,551, Cl. D18-1.000.
Case, Robert; Bartlett, Randall N.; and Alsup, James D., Jr., to Syntex (U.S.A.) Inc. Operatory module for a health treatment facility. 282,571, 2-11-86, Cl. D24-4.000.
Case, Robert; Kennedy, Joe H.; Bartlett, Randall N.; and Alsup, James D., Jr., to Syntex (U.S.A.) Inc. Operatory module for a health treatment facility. 282,574, 2-11-86, Cl. D24-4.000.
Case, Robert; Kennedy, Joe H.; Bartlett, Randall N.; and Alsup, James D., Jr., to Syntex (U.S.A.) Inc. Operatory module for a health treatment facility. 282,575, 2-11-86, Cl. D24-4.000.
Case, Robert: *See—*
Bartlett, Randall N.; and Case, Robert, 282,572, Cl. D24-4.000.
Pride, James R.; Demaree, Harold L.; Case, Robert; and Bartlett, Randall N., 282,573, Cl. D24-4.000.
Chong, Wing-Fong, to Playmates Industrial Co., Ltd. Combined doll with toy walker. 282,554, 2-11-86, Cl. D21-150.000.
Clairol Incorporated: *See—*
Pereira, Joseph J.; Pirrello, John A.; and Huntington, Terrance L., 282,529, Cl. D9-404.000.
Clason, Eise W., to U.S. Philips Corporation. Loudspeaker. 282,539, 2-11-86, Cl. D14-33.000.
Clason, Eise W., to U.S. Philips Corporation. Loudspeaker. 282,540, 2-11-86, Cl. D14-34.000.
Cragun, Gale S. Fire intensifier. 282,566, 2-11-86, Cl. D23-90.100.
Crick, Eustace L. Child's play pool. 282,557, 2-11-86, Cl. D21-252.000.
Daimler-Benz Aktiengesellschaft: *See—*
Pfeiffer, Peter; and Leschke, Harald, 282,536, Cl. D12-181.000.
Darr, Richard C.: *See—*
Larson, Craig A.; Darr, Richard C.; and Young, William C., 282,527, Cl. D9-376.000.
DeBuhr, Constance: *See—*
Usem, Ruth; DeBuhr, Constance; and Ariss, Angela, 282,591, Cl. D28-59.000.
Usem, Ruth; DeBuhr, Constance; and Ariss, Angela, 282,592, Cl. D28-59.000.
Demaree, Harold L.: *See—*
Pride, James R.; Demaree, Harold L.; Case, Robert; and Bartlett, Randall N., 282,573, Cl. D24-4.000.
Diffrient, Niels, to Knoll International, Inc. Chair. 282,510, 2-11-86, Cl. D6-366.000.
Dow Chemical Company, The: *See—*
Wilson, Daniel C.; and Britt, William J., 282,526, Cl. D9-375.000.
Electrix, Inc.: *See—*
Shwisha, Haim, 282,587, Cl. D26-60.000.
ESPE Fabrik pharmazeutischer Praeparate GmbH: *See—*
Neumeister, Alexander, 282,577, Cl. D24-10.000.
Fafaul, Eugene F.: *See—*
Schmidt, John C.; and Fafaul, Eugene F., 282,531, Cl. D10-46.000.
Fireman, Simon C., to Aqua-Leisure Industries, Inc. Swimmer's goggles. 282,500, 2-11-86, Cl. D2-234.000.
Freezinhot Bottle Company Limited: *See—*
Hung, Kung C., 282,583, Cl. D26-40.000.
Hung, Kung C., 282,584, Cl. D26-42.000.
Garcia, George L.; and Kopp, Robert G., to Suncast Corporation. Umbrella table. 282,514, 2-11-86, Cl. D6-48.00D.
Garcia, George L.: *See—*
Kopp, Robert G.; and Garcia, George L., 282,511, Cl. D6-38.00D.
Gatton, James W. Timing device for fishing rods. 282,559, 2-11-86, Cl. D22-23.000.
Greene & Kellogg, Inc.: *See—*
McCombs, Norman R., 282,547, Cl. D15-199.000.
Haranishi, Noriaki: *See—*
Nibley, Richard; and Haranishi, Noriaki, 282,551, Cl. D18-1.000.
Hitachi, Ltd.: *See—*
Wada, Hiromi; Tsuchihashi, Shuhei; and Miyamoto, Yoshimi, 282,515, Cl. D6-601.000.
Hoogesteger, Paul A., to Bausch & Lomb Incorporated. Contact lens disinfector. 282,576, 2-11-86, Cl. D24-9.000.
Horvath, L. James; and Korn, William W., to K-S-H, Inc. Light transmitting panel. 282,589, 2-11-86, Cl. D26-122.000.
Hoskinson, Marlin J.: *See—*
Samson, George W.; Lorincz, Eugene; and Hoskinson, Marlin J., 282,525, Cl. D8-373.000.
Humphreys, Lynn R.; Barone, David; Baker, Frank C., III; Bowers, Ty S.; and Jamieson, John E., to Organon Teknika Corporation. Processor for a portable recirculatory hemodialysis unit. 282,578, 2-11-86, Cl. D24-21.000.
Hung, Kung C., to Freezinhot Bottle Company Limited. Torch. 282,583, 2-11-86, Cl. D26-40.000.
Hung, Kung C., to Freezinhot Bottle Company Limited. Fluorescent lantern. 282,584, 2-11-86, Cl. D26-42.000.
Huntington, Terrance L.: *See—*
Pereira, Joseph J.; Pirrello, John A.; and Huntington, Terrance L., 282,529, Cl. D9-404.000.
Inagi, Toshihiro; Saito, Tsutae; and Nogami, Kazutoshi, to Kanda Tsushin Kogyo Co., Ltd. Telephone. 282,545, 2-11-86, Cl. D14-58.000.
Intermatic Incorporated: *See—*
Waltman, Charles T., 282,530, Cl. D10-40.000.
ITW Limited: *See—*
Meeks, Alan M. G., 282,522, Cl. D8-71.000.

Jamieson, John E.: *See—*
Humphreys, Lynn R.; Barone, David; Baker, Frank C., III; Bowers, Ty S.; and Jamieson, John E., 282,578, Cl. D24-21.000.
John Fluke Mfg. Co., Inc.: *See—*
Brown, Jeffrey C., 282,532, Cl. D10-78.000.
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1.24 4,569,268

CLASS 89
24 4,569,269
199 4,569,270

CLASS 91
25 4,569,271
420 4,569,272
447 4,569,273

CLASS 92
9 4,569,274
58.1 4,569,275
98 D 4,569,276

CLASS 99
330 4,569,277
394 4,569,278
450 4,569,279
538 4,569,280

CLASS 100
103 4,569,281
189 4,569,282

CLASS 101
114 4,569,283
183 4,569,284
248 4,569,285
382 R 4,569,286

CLASS 102
293 4,569,287
466 4,569,288

CLASS 104
1 R B1 4,497,254

CLASS 105
2 R 4,569,289
154 4,569,290
193 4,569,291
358 4,569,292
377 4,569,293

CLASS 106
314 4,569,694

CLASS 109
45 4,569,294

CLASS 110
347 4,569,295

CLASS 111
7 4,569,296

CLASS 112
221 4,569,297
278 4,569,298
315 4,569,299

CLASS 114
20 R 4,569,300
61 4,569,301
63 4,569,302
227 4,569,303
265 B1 4,436,050

CLASS 118
122 4,569,304
211 4,569,305
249 4,569,306
726 4,569,307

CLASS 119
82 4,569,308
99 4,569,309

CLASS 122
24 4,569,310
449 4,569,311
504.2 4,569,312

CLASS 123
41.74 4,569,313
58 R 4,569,314
179 SE 4,569,315
192 R 4,569,316
195 R 4,569,317
327 4,569,318
357 4,569,319
399 4,569,320
438 4,569,321
568 4,569,322
572 4,569,323

CLASS 124
20 R 4,569,324
41 A 4,569,325

CLASS 125
13 R 4,569,326

CLASS 126
25 A 4,569,327
39 J 4,569,328
92 B 4,569,329
418 4,569,330
435 4,569,331

CLASS 128
1 D 4,569,332
4 4,569,333
6 4,569,334
4,569,335
25 B 4,569,336
32 4,569,337
69 4,569,338
74 4,569,339
75 4,569,340
132 D 4,569,341
136 4,569,342
155 4,569,343
207.16 4,569,344
303.14 4,569,345
305 4,569,346
344 4,569,347
359 4,569,349
419 E 4,569,351
423 W 4,569,352
660 4,569,353
665 4,569,354
691 4,569,355
697 4,569,350
698 4,569,356
699 4,569,357
774 4,569,358

CLASS 131
273 4,569,136
281 4,569,359

CLASS 132
33 R 4,569,360

CLASS 134
1 4,569,695
2 4,569,696
167 R 4,569,361

CLASS 135
104 4,569,362

CLASS 136
244 4,570,030

CLASS 137
230 4,569,363
244 4,569,364
554 4,569,365
556.3 4,569,366
596.13 4,569,367
624.12 4,569,369
625.28 4,569,368
625.3 4,569,370
625.47 4,569,371
625.66 4,569,372

CLASS 139
25 4,569,373
304 4,569,374
383 A 4,569,375
435 4,569,376

CLASS 141
98 4,569,377
266 4,569,378

CLASS 144
3 D 4,569,379
172 4,569,380

CLASS 148
1.5 4,569,697
4,569,698
6.2 4,569,699
174 4,569,700
188 4,569,701
414 4,569,702
417 4,569,703

CLASS 152
427 B1 4,411,302
548 4,569,381
4,569,382

CLASS 156
48 4,569,704
52 4,569,705
69 4,569,706
78 4,569,707
91 4,569,708
95 4,569,709
172 4,569,710
244.11 4,569,711
244.14 4,569,712
433 4,569,713
471 4,569,714
495 4,569,715
510 4,569,716
626 4,569,717
643 4,569,718
4,569,719
646 4,569,720
649 4,569,721
657 4,569,722

CLASS 159
48.1 4,569,723

CLASS 160
201 4,569,383

CLASS 162
348 B1 4,157,276

CLASS 164
131 4,569,384
166 4,569,385
476 4,569,386

CLASS 165
47 4,569,387
94 4,569,388
104.12 4,569,389
149 4,569,390
166 4,569,391

CLASS 166
242 4,569,392
270 4,569,393
280 4,569,394
293 4,569,395
305.1 4,569,396
321 4,569,397
4,569,398

CLASS 169
66 4,569,399

CLASS 172
21 4,569,400

CLASS 173
126 4,569,402

CLASS 174
72 B 4,570,031
84 R 4,570,032

CLASS 175
4 4,569,403
208 4,569,404

CLASS 177
25 4,569,405
4,569,406
208 4,569,407
257 4,569,408

CLASS 178
19 4,570,033

CLASS 179
84 A 4,570,034
99 LS 4,570,035
170.2 4,570,036
175 4,570,037
185 4,570,038

CLASS 180
8.2 4,569,409
125 4,569,410
142 4,569,411

CLASS 181

119	4,569,412
131	4,569,413
156	4,569,414
229	4,569,415
2	4,569,416
5	4,569,417
51	4,569,418
160	4,569,419
15.1	4,569,420
39	4,569,421
20	4,569,423
7	4,569,422
250 G	4,569,424
3 T	4,569,425
18 B	4,569,426
67 R	4,569,427
70	4,569,428
98	4,569,429
106.2	4,569,430
131 R	4,569,431
32	4,569,432
333	4,569,433
365	4,569,434
502.1	4,569,435
771	4,569,436
773	4,569,437
5 A	4,570,039
52 R	4,570,040
61.54	4,570,041
148 R	4,570,042
150 A	4,570,043
205	4,569,724
38	4,569,725
56	4,569,726
87	4,569,727
15	4,569,728
23	4,569,729
24	4,569,730
28	4,569,731
60	4,569,733
78	4,569,734
98	4,569,735
173	4,569,738
180.1	4,569,739
181.7	4,569,740
186	4,569,741
192 F	4,569,742
192 R	4,569,743
284	4,569,744
298	4,569,745
	4,569,746
301	4,569,747
429	4,569,748
37	4,569,438
83.5	4,569,439
159	4,569,440
292	4,569,441
454	4,569,452
469	4,569,442
626	4,569,443
10	4,569,749
48 AA	4,569,750
53	4,569,751
	4,569,752
73	4,569,753
91	4,569,754
326	4,569,755
510	4,569,444
539	4,569,445
660	4,569,446
193	4,569,756
220	4,569,757
222	4,569,758
304	4,569,759
372	4,569,760
380.1	4,569,761
401	4,569,762
497.1	4,569,763
511	4,569,764
673	4,569,765
690	4,569,766
718	4,569,767
727	4,569,768
759	4,569,769
42	4,569,447
74	4,569,448
86	4,569,449
96	4,569,450
191	4,569,451
251	4,569,456
364	4,569,457
10.49 A	4,570,044
10.55 A	4,570,045
68	4,570,046
73	4,570,047
121 PP	4,570,048
124.34	4,570,049
130.31	4,570,050
137 R	4,570,051
378	4,570,052
413	4,570,053
490	4,570,054
541	4,570,055
3.6	4,569,458
293	4,569,459
375	4,569,460
1	4,569,461
180	4,569,462
187	4,569,463
529	4,569,464
224	4,569,465
253	4,569,466
106	4,569,467
74	4,569,468
19	4,569,469
119	4,569,470
176	4,569,471
192	4,569,472
264	4,569,473
37 R	4,569,474
44 CB	4,569,475
47	4,569,476
349	4,569,477
	4,569,478
79	4,569,479
135	4,569,480
177.2	4,569,481
296	4,569,482
305	4,569,483
410	4,569,484
456	4,569,485
655	4,569,486
55	4,569,487
59	4,569,488
86.51	4,569,489
107	4,569,490
118.41	4,569,491
199	4,569,492
76 R	4,569,493
199	4,569,494
160	4,569,495
165	4,569,496
230	4,569,497
441.1	4,569,498
624	4,569,499
123	4,569,500
209	4,569,501
201	4,570,059
203 R	4,570,060
222.1	4,570,061
225	4,570,062
227	4,570,063
231 R	4,570,064
	4,570,065
251	4,570,066
266	4,570,067
288	4,570,068
343	4,570,069
372	4,570,070
374	4,570,071
396 ML	4,570,072
432 R	4,570,073
563	4,570,074
570	4,570,075
578	4,570,076
8	4,569,502
14	4,569,503
129.15	4,569,504
8.5 B	4,569,770
8.6	4,569,771
	4,569,772
8.7	4,569,773
33	4,569,774
62.59	4,569,775
77	4,569,776
	4,569,777
	4,569,778
80	4,569,779
90	4,569,780
92	4,569,781
106	4,569,782
188.28	4,569,783
315.1	4,569,784
344	4,569,785
503	4,569,786
632	4,569,787
28	4,569,505
29 A	4,569,506
246	4,569,507
112 R	4,569,788
	4,569,789
	4,569,790
112.5 R	4,569,791
	4,569,792
	4,569,793
113	4,569,794
239 A	4,569,795
425	4,569,796
455 B	4,569,797
459 A	B1 4,237,064
501.13	4,569,798
501.15	4,569,799
	4,569,800
501.21	4,569,801
502.5 F	4,569,802
65	4,569,803
77	4,569,804
122	4,569,805
1.3	4,569,806
2.2	4,569,807
36	4,569,808
40.1	4,569,809
142	4,569,810
143	4,569,811
222	4,569,812
259	4,569,813
279	4,569,814
323	4,569,815
513	4,569,816
275	4,569,508
32	4,569,509
181	4,569,510
276	4,569,511

CLASS 271

103	4,569,512
189	4,569,513
314	4,569,514
65	4,569,515
70.1	4,569,516
73	4,569,401
87	4,569,517
129	4,569,518
131	4,569,519
63 A	4,569,520
72 A	4,569,521
86 C	4,569,522
164	4,569,523
173	4,569,524
186 A	4,569,525
242	4,569,526
251	4,569,527
267	4,569,528
274	4,569,529
123	4,569,530
30	4,569,531
87.02 W	4,569,532
163	4,569,533
742	4,569,534
801	4,569,535
807	4,569,536
808	4,569,537
42	4,569,538

CLASS 285

18	4,569,539
93	4,569,540
149	4,569,541
337	4,569,542
2	4,569,543

CLASS 290

4 R	4,570,077

CLASS 292

216	4,569,544
281	4,569,545
336.3	4,569,546
347	4,569,547
82.14	4,569,548
88	4,569,549
104	4,569,550

CLASS 296

1 S	4,569,551
97 K	4,569,552
155	4,569,553
156	4,569,554
141	4,569,555
316	4,569,556
341	4,569,557
81	4,569,558
6 C	4,569,559
116	4,569,560
40	4,569,561
10 R	4,570,078
311	4,570,079
353	4,570,080
426	4,570,081
443	4,570,082
	4,570,083
452	4,570,084
453	4,570,085
458	4,570,086
462	4,570,087
481	4,570,088
529	4,570,089
530	4,570,090
583	4,570,091
5 R	4,569,562
6 R	4,569,563
12	4,570,092
46	4,570,093
68 R	4,570,094
328	4,570,095
	4,570,096
338	4,570,097
346	4,570,098
259	4,569,564

CLASS 313

346 R	4,570,099
422	4,570,100
461	4,570,101
533	4,570,102
5.41	4,570,103
50	4,570,104
58	4,570,105
111.81	4,570,106
200 R	4,570,107
360	4,570,108
362	4,570,109
313	4,570,110
338	4,570,111
602	4,570,112
612	4,570,113
313	4,570,114
	4,570,115
57 R	4,570,116
72	4,570,117
208	4,570,118
306	4,570,119
309	4,570,120
345	4,570,122
369	4,570,123
401	4,570,124
50	4,570,125
107	4,570,126
137	4,570,127
267	4,570,128
277	4,570,129
8	4,570,130
36 C	4,570,131
56	4,570,132
81 A	4,570,133
123	4,570,134
138	4,570,135
161	4,570,136
219	4,570,137
80	4,570,138
187	4,570,139
212	4,570,140
213	4,570,141
66	4,570,142
75	4,570,143
88	4,570,144
113	4,570,145
158	4,570,146
166	4,570,147
354	4,570,148
114	4,570,149
329	4,570,150
64 R	4,569,565
99 R	4,569,566
154 A	4,569,567
	4,569,568
52 R	4,570,151
58	4,570,152
347 AD	4,570,153
347 C	4,570,121
365 S	4,570,154
531	4,570,155
547	4,570,156
567	4,570,157
727	4,570,158
776	4,570,159
789	4,570,160
799	4,570,161
825.5	4,570,162
825.77	4,570,163
706	4,570,164
726	4,570,165
872	4,570,166
140 R	4,570,167
145	4,570,168
200	4,570,169
209	4,570,170
218	4,570,171
96.19	4,569,569
96.24	4,569,571
96.34	4,569,570
276 R	4,569,572
320	4,569,573
334	4,569,574
355	4,569,575
212	4,569,576
87	4,569,577
76	4,569,578
105	B1 3,987,467
293	4,569,579
410	Re.32,080
415	4,569,580
3 BE	4,569,581
3 R	4,569,582
14 CH	4,569,583
14 R	4,569,584
	4,569,585
72	4,569,586
	4,569,587
28.5	4,569,588
39	4,569,589
128	4,569,590
153	4,569,591
318	4,569,592
350	4,569,593
408	4,569,594
31	4,570,177
44	4,570,178
50	4,570,179
106	4,570,180
160	4,570,181
183	4,570,182
184	4,570,183
217	4,570,184
227	4,570,185
282	4,570,186
287	4,570,187
335	4,570,188
14.2	4,570,192
33.1	4,570,193
50	4,570,189
73 UC	4,570,190
77	4,570,191
97	4,570,194
	4,570,195
	4,570,196
132	4,570,197
17	4,570,172
20	4,570,173
22	4,570,174
23.7	4,570,175
42	4,570,176
18	4,570,199
20	4,570,198
155	B1 4,481,555
212	4,570,200
323	4,570,201
333	4,570,202
16	4,570,203
17	4,570,204
18	4,570,205
103	4,570,206
152	4,570,207
188	4,570,208
231	4,570,209
396	4,570,210
23	4,570,211
138	4,570,212
	4,570,213
160	4,570,214
140	4,570,215

143	4,570,216
188	4,570,217
200	4,570,218
	4,570,219
	4,570,220
	4,570,221
	4,570,222
405	4,570,223
414	4,570,224
417	4,570,225
442	4,570,226
444	4,570,227
467	4,570,228
476	4,570,229
477	4,570,230
492	4,570,231
513.5	4,570,232
522	4,570,233
550	4,570,234
724	4,570,235
900	4,570,236

CLASS 365

95	4,570,237
189	4,570,238
203	4,570,239
204	4,570,240
205	4,570,241
222	4,570,242
227	4,570,243
230	4,570,244
88	4,569,595
107	4,569,596
228	4,569,597

CLASS 367

15	4,570,245
68	4,570,246
93	4,570,247
149	4,570,248

CLASS 368

47	4,569,598
120	4,569,599

CLASS 369

45	4,570,249
97	4,570,250
100	4,570,251
109	4,570,252
255	4,570,253
270	4,570,254
	4,570,255
271	4,570,256

CLASS 370

58	4,570,258
85	4,570,257
86	4,570,259
110.2	4,570,260

CLASS 371

16	4,570,261
20	4,570,262

CLASS 374

131	4,569,600

CLASS 376

154	4,569,817
272	4,569,818
273	4,569,819
427	4,569,820

CLASS 378

20	4,570,263
	4,570,264

CLASS 384

95	4,569,601
499	4,569,602
585	4,569,603

CLASS 400

124	4,569,604
	4,569,605
144.2	4,569,606
167	4,569,607
208	4,569,608
241.4	4,569,609
599	4,569,610
624	4,569,611

CLASS 401

206	4,569,612

CLASS 402

80 R	4,569,613

CLASS 403

352	4,569,614

CLASS 404

65	4,569,615

CLASS 405

49	B1 3,714,786
150	4,569,616
251	4,569,617
258	4,569,618

CLASS 407

15	4,569,619

CLASS 412

21	4,569,620

CLASS 413

14	4,569,621

CLASS 414

45	4,569,622
139	Re.32,081
217	4,569,623
225	4,569,624
416	4,569,625
557	4,569,626
735	4,569,627
739	4,569,628

CLASS 416

134 A	4,569,629
157 R	4,569,630
189	4,569,631
	4,569,632
228	4,569,633

CLASS 417

63	4,569,634
196	4,569,635
295	4,569,636
360	4,569,637
365	4,569,638
368	4,569,639
382	4,569,640
417	4,569,641
516	4,569,642
536	4,569,643

CLASS 418

61 B	4,569,644
63	4,569,645
75	4,569,646

CLASS 419

2	4,569,821
23	4,569,822
	4,569,823

CLASS 420

448	4,569,824
464	4,569,825

CLASS 422

90	4,569,826
190	4,569,827
247	4,569,829
249	4,569,828

CLASS 423

.55	4,569,830
171	4,569,831
234	4,569,832
305	4,569,833
445	4,569,835
460	4,569,834

CLASS 424

1.1	4,569,836
28	4,569,837
49	4,569,838
74	4,569,839
88	B1 4,396,600
89	4,569,840
93	4,569,841
195.1	4,569,843

CLASS 425

117	4,569,647
222	4,569,648
344	4,569,649
405 R	4,569,650
532	4,569,651

CLASS 426

2	4,569,844
17	4,569,845
40	4,569,846
94	4,569,847
	4,569,848
275	4,569,849
482	4,569,850
496	4,569,851
534	4,569,852
599	4,569,853

CLASS 427

35	4,569,855
58	4,569,854
128	4,569,856
163	4,569,857
164	4,569,858
215	4,569,859
230	4,569,860
244	4,569,861
255	4,569,862
402	4,569,863
428	4,569,864

CLASS 428

31	4,569,865
35	4,569,866
	4,569,867
	4,569,868
	4,569,869
57	4,569,870
64	4,569,871
71	4,569,872
106	4,569,873
109	4,569,874
119	4,569,875
131	4,569,876
141	4,569,877
182	4,569,878
198	4,569,879
212	4,569,880
213	4,569,881
216	4,569,882
234	4,569,883
245	4,569,884
339	4,569,885
379	4,569,886
423.1	4,569,887
481	4,569,888
612	4,569,889

CLASS 429

17	4,569,890

CLASS 430

57	4,569,891
	4,569,892
	4,569,893
63	4,569,894
70	4,569,895
106.6	4,569,896
197	4,569,897
207	4,569,898
232	4,569,899
	4,569,900
270	4,569,901
313	4,569,902
350	4,569,903
434	4,569,904
546	4,569,905
607	4,569,906

CLASS 431

201	4,569,652
253	4,569,653
255	4,569,654
290	4,569,655
325	4,569,656
326	4,569,657

CLASS 432

47	4,569,658
119	4,569,659
148	4,569,660
253	4,569,661
89	4,569,662

CLASS 435

23	4,569,907
70	4,569,908
89	4,569,909
105	4,569,910
109	4,569,911
189	4,569,912
190	4,569,913
240	4,569,914
	B1 4,283,495
254	4,569,915

CLASS 436

64	4,569,916
71	4,569,917
122	4,569,918
533	4,569,919

CLASS 440

7	4,569,663

CLASS 446

110	4,569,664
114	4,569,665
308	4,569,666

CLASS 455

52	4,570,265
109	B1 3,217,256

CLASS 464

51	4,569,667
68	4,569,668
175	4,569,669

CLASS 474

16	4,569,670
201	4,569,671

CLASS 493

359	4,569,672

CLASS 501

1	4,569,920
88	4,569,921
89	4,569,922
148	4,569,923

CLASS 502

184	4,569,924
209	4,569,925

CLASS 514

14	4,569,926
15	4,569,927
25	4,569,842
66	4,569,928
78	4,569,929
147	4,569,930
182	4,569,931
185	4,569,932
237	4,569,933
	4,570,000
248	4,569,934
252	4,569,935
267	4,569,936
282	4,569,937
302	4,569,938
	4,569,939
304	4,569,940
317	4,569,941
414	4,569,942
562	4,569,943
680	4,569,944
681	4,569,945
693	4,569,946
724	4,569,947

CLASS 518

700	4,569,948

CLASS 521

56	4,569,949
88	4,569,950
167	4,569,951
	4,569,952

CLASS 522

6	4,569,953
74	4,569,962

CLASS 523

105	4,569,736
116	4,569,954
120	4,569,955
402	4,569,956
466	4,569,957

CLASS 524

100	4,569,958
101	4,569,959
145	4,569,960
181	B1 3,640,950
186	4,569,961
458	4,569,963
460	4,569,964
544	4,569,965
589	4,569,966

CLASS 525

54.11	4,569,967
54.5	4,569,968
67	4,569,969
	4,569,970
109	4,569,971
129	4,569,972
437	4,569,973
	4,569,974

CLASS 526

138	4,569,975
204	4,569,976
	4,569,977
206	4,569,978
218.1	4,569,979

CLASS 528

14	4,569,980
48	B1 4,081,429
67	4,569,981
73	4,569,982
230	4,569,983
271	4,569,984
291	4,569,985
298	4,569,986
339.3	4,569,987
353	4,569,988
386	4,569,989
408	4,569,990
492	4,569,991

CLASS 544

58.2	4,569,992
90	4,569,993
150	4,569,994
212	4,569,995
320	4,569,996

CLASS 546

19	4,569,997
225	4,569,998
275	4,569,999

CLASS 548

483	4,570,001
495	4,570,002

CLASS 549

292	4,570,003
352	4,570,004
435	4,570,005
442	4,570,006
451	4,570,007
462	4,570,008

CLASS 556

415	4,570,009
475	4,570,010

CLASS 560

8	4,570,011
25	4,570,012
102	4,570,013
124	4,570,014
163	4,570,015
204	4,570,016

CLASS 562

496	4,570,017

CLASS 564

1	4,570,018
498	4,570,019

CLASS 568

70	4,570,020
388	4,570,021
476	Re.32,082
827	4,570,022
855	B1 4,117,248

CLASS 570

210	4,570,023

CLASS 585

24	4,570,024
259	4,570,025
312	4,570,026
455	4,570,027
540	4,570,028
829	4,570,029
899	4,569,737

CLASS 604

20	4,569,673
119	4,569,674
175	4,569,675
179	4,569,348

CLASSIFICATION OF DESIGNS

D2—	234	282,500	D7—	16	282,516		78	282,532		199	282,547		55	282,564		33	282,580
	275	282,501		99	282,517	D11—	3	282,533	D16—	123	282,548		58	282,565		68	282,581
	318	282,502		102	282,518		117	282,534	D18—	1	282,550		90.1	282,566	D26—	28	282,582
D3—	38	282,503		334	282,519	D12—	181	282,535			282,551		122	282,567		40	282,583
		282,504		360	282,520			282,536		4	282,552			282,568		42	282,584
	48	282,505	D8—	39	282,521		187	282,537	D19—	49	282,553		123	282,569			282,585
		282,506		71	282,522	D13—	13	282,538	D21—	150	282,554			282,570		46	282,586
	71	282,507		80	282,523	D14—	11	282,549		217	282,555	D24—	4	282,571		60	282,587
		282,508		353	282,524		33	282,539		219	282,556			282,572		63	282,588
	76	282,509		373	282,525		34	282,540		252	282,557			282,573		122	282,589
D6—	38 D	282,511	D9—	375	282,526		52	282,541	D22—	14	282,558			282,574	D28—	20	282,590
	48 D	282,514		376	282,527		53	282,542		23	282,559			282,575		59	282,591
	366	282,510		403	282,528			282,543		28	282,560		9	282,576			282,592
	409	282,512		404	282,529			282,544	D23—	3	282,561		10	282,577	D29—	7	282,593
	426	282,513	D10—	40	282,530		58	282,545		21	282,562		21	282,578	D34—	21	282,594
	601	282,515		46	282,531	D15—	9	282,546		36	282,563		32	282,579			282,595

CLASSIFICATION OF PLANTS

P.—	20	5,658		54	5,659		74	5,660		78	5,661						

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

01 :	4,569,113		4,569,520		4,569,345		4,569,522		4,570,158		4,569,498
	4,569,850		4,569,525		4,570,061		4,569,561		4,570,261		4,569,528
	4,570,050		4,569,532		4,570,121		4,569,583		4,570,265		4,569,578
04 :	4,569,110		4,569,534		4,570,189		4,569,649		4,237,064		4,569,627
	4,569,495		4,569,539		4,570,243		4,570,073	18 :	4,569,116		4,569,631
	4,569,502		4,569,558		4,570,244		4,570,161		4,569,156		4,569,632
	4,569,511		4,569,564	09 :	Re.32,081		4,570,204		4,569,201		4,569,655
	4,569,678		4,569,577		4,569,128		4,570,260		4,569,276		4,569,675
	4,570,114		4,569,584		4,569,181	13 :	4,569,132		4,569,339		4,569,698
	4,570,137		4,569,606		4,569,196		4,569,136		4,569,491		4,569,735
	4,570,182		4,569,628		4,569,211		4,569,185		4,569,559		4,569,756
	4,570,238		4,569,706		4,569,311		4,569,226		4,569,600		4,569,789
	4,570,240		4,569,746		4,569,346		4,569,264		4,569,791		4,569,864
05 :	4,569,261		4,569,790		4,569,506		4,569,380		4,569,792		4,569,898
	4,569,310		4,569,802		4,569,567		4,569,458		4,569,794		4,569,916
06 :	4,569,087		4,569,819		4,569,629		4,569,704		4,569,801		4,569,926
	4,569,090		4,569,820		4,569,633		4,569,860		4,569,973		4,569,929
	4,569,093		4,569,822		4,569,662	17 :	4,569,100		4,570,028		4,569,969
	4,569,096		4,569,825		4,569,680		4,569,153		4,570,052		4,569,976
	4,569,105		4,569,841		4,569,702		4,569,159	19 :	4,569,408		4,570,033
	4,569,120		4,569,843		4,569,739		4,569,171		4,569,461		4,570,079
	4,569,121		4,569,847		4,569,776		4,569,184		4,569,501		4,570,097
	4,569,122		4,569,854		4,569,777		4,569,218		4,569,554		4,570,106
	4,569,124		4,569,858		4,569,778		4,569,243		4,569,932	26 :	4,569,109
	4,569,164		4,569,908		4,569,824		4,569,284		4,570,057		4,569,150
	4,569,173		4,569,910		4,569,889		4,569,288	20 :	4,569,187		4,569,163
	4,569,176		4,569,913		4,569,941		4,569,349		4,569,329		4,569,183
	4,569,198		4,569,915		4,569,942		4,569,351		4,569,749		4,569,190
	4,569,231		4,569,918		4,569,955		4,569,362	21 :	4,569,727		4,569,216
	4,569,238		4,569,927		4,569,988		4,569,366		4,569,753		4,569,233
	4,569,248		4,569,967		4,570,010		4,569,371		4,117,248		4,569,234
	4,569,256		4,570,017		4,570,012		4,569,377	22 :	4,569,262		4,569,240
	4,569,257		4,570,034		4,570,035		4,569,415		4,569,303		4,569,245
	4,569,259		4,570,038		4,570,074		4,569,425		4,569,322		4,569,250
	4,569,279		4,570,045		4,570,123		4,569,443		4,569,325		4,569,255
	4,569,287		4,570,055		4,570,124		4,569,445		4,569,752		4,569,272
	4,569,347		4,570,056		4,570,248		4,569,456		4,569,799		4,569,289
	4,569,353		4,570,099	10 :	4,569,088		4,569,527		4,569,975		4,569,363
	4,569,355		4,570,103		4,569,755		4,569,555	23 :	4,569,492		4,569,383
	4,569,358		4,570,128		4,569,784		4,569,566		4,570,046		4,569,424
	4,569,361		4,570,133		4,569,990		4,569,613	24 :	4,569,207		4,569,427
	4,569,364		4,570,149		4,569,995		4,569,638		4,569,300		4,569,444
	4,569,389		4,570,151		4,570,016		4,569,647		4,569,338		4,569,499
	4,569,390		4,570,155	12 :	4,569,147		4,569,670		4,569,378		4,569,519
	4,569,401		4,570,212		4,569,148		4,569,692		4,569,788		4,569,523
	4,569,413		4,570,233		4,569,167		4,569,696		4,570,081		4,569,530
	4,569,466		4,570,246		4,569,169		4,569,800		4,570,129		4,569,533
	4,569,469		4,570,252		4,569,239		4,569,812		4,570,132		4,569,552
	4,569,474		4,570,253		4,569,312		4,569,836	25 :	4,569,108		4,569,553
	4,569,496		3,987,467		4,569,336		4,569,911		4,569,212		4,569,557
	4,569,504		4,081,429		4,569,350		4,569,977		4,569,328		4,569,572
	4,569,515		4,283,495		4,569,440		4,570,029		4,569,354		4,569,637
	4,569,516	08 :	4,569,130		4,569,468		4,570,094		4,569,360		4,569,639

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34 : Re.32,082
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39 : 4,569,154
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42 : 4,569,127
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4,570,230
43 : 4,570,040
44 : 4,570,184
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47 : 4,569,149
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4,570,262
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48 : 4,569,094
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PLANT PATENTS

06 : 5,658

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48 : 5,659

U.S. GOVERNMENT PRINTING OFFICE : O—1986

Vol. 1064 Number 2

OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

March 11, 1986

Route to:

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Patent
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Office

PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

OFFICIAL GAZETTE of the
UNITED STATES PATENT AND TRADEMARK OFFICE
March 11, 1986 Volume 1064 Number 2

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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.
THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.
GENERAL INFORMATION concerning PATENTS.
GENERAL INFORMATION concerning TRADEMARKS.

COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.50 each; PLANT PATENTS in color, $6.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1052 O.G. 52 on Mar. 26, 1985.

For use of the European Patent Office as Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Certain domestic fees for international applications have been changed effective Oct. 5, 1985 in the rule change notice titled "Revision of Patent Fees" published at 1057 O.G. 24 on Aug. 20, 1985.

The Search fee of the European Patent Office has been changed as of Feb. 9, 1986 and is announced in the *Official Gazette* at 1061 O.G. 30 on Dec. 31, 1985.

International PCT fees have been changed effective Jan. 1, 1986 and were announced in the *PCT Gazette* on Oct. 24, 1985 and in the *Official Gazette* at 1061 O.G. 30 on Dec. 31, 1985.

The current schedule of PCT fees is as follows:

Transmittal fee:	170.00
Search Fee	
U.S. Patent and Trademark Office as Searching Authority	
—No corresponding prior U.S. national application filed	420.00
—Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
if paid before Feb. 9, 1986	750.00
if paid on or after Feb. 9, 1986	830.00
International fees	
Basic fee (first 30 pages):	
if paid before Jan. 1, 1986	280.00
if paid on or after Jan. 1, 1986	325.00
Basic Supplemental fee (for each page over 30):	
if paid before Jan. 1, 1986	6.00
if paid on or after Jan. 1, 1986	6.00
Designation fee for the first 10 national or regional offices:	
if paid before Jan. 1, 1986	70.00
if paid on or after Jan. 1, 1986	80.00
Designation fee for 11th and subsequent designations	No charge

DONALD J. QUIGG,
Assistant Secretary and Commissioner of Patents and Trademarks.

Dec. 17, 1985.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), as amended effective Oct. 5, 1985. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on Mar. 8, 1983, for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,375,702 through 4,376,311
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), as amended effective Oct. 5, 1985, which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 225.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:
By a small entity (§1.9(f)) . . . . . $ 225.00
By other than a small entity . . . . . $ 450.00"

The amounts of the surcharges as amended effective Oct. 5, 1985, are set forth in 37 CFR 1.20 (k) and (l) which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . . $ 110.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:
By a small entity (§1.9(f)) . . . . . $ 55.00
By other than a small entity . . . . . $ 110.00"

Section 1.20 paragraph (m) as amended as a result of enactment of Public Law 98-622 effective Nov. 8, 1984, is reproduced below:

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . . . $ 500.00"

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED DECEMBER 22, 1985 DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
4,306,962	06/231,819	12/22/81
4,307,160	06/217,269	12/22/81
4,307,203	06/247,808	12/22/81
4,306,354	06/218,860	12/22/81

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

4,162,610, Re. S.N. 718,473, Filed Apr. 1, 1985, Cl. 368/41, ELECTRONIC CALENDAR AND DIARY, Alfred B. Levine, Owner of Record: *Kyocera Corp., Yamashina-Ku Kyoto, Japan,* Attorney or Agent: W. Robert Spensley, et al., Ex. Gp.: 217

4,327,742, Re. S.N. 817,987, Filed Jan. 13, 1986, Cl. 128/736, APPARATUS FOR DETECTING TEMPERATURE VARIATIONS OVER SELECTED REGIONS OF LIVING TISSUE, AND METHOD THEREOF, Phillip H. Meyers, et al., Owner of Record: *E-Z-Em Co., Inc., Westbury, N.Y.,* Attorney or Agent: Lloyd McAulay, Ex. Gp.: 335

4,357,320, Re. S.N. 797,170, Filed Nov. 12, 1985, Cl. 435/235, INFECTIOUS BRONCHITIS VIRUS STRAIN, Peter Apontoweil, et al., Owner of Record: *Gist-Brocades N.V., Delft, The Netherlands,* Attorney or Agent: Charles A. Muserlian, Ex. Gp.: 128

4,423,324, Re. S.N. 813,880, Filed Dec. 24, 1985, Cl. 250/281, APPARATUS FOR DETECTING MEGATIVE IONS, George C. Stafford, Owner of Record: *Inventor,* Attorney or Agent: Paul D. Flehr, et al., Ex. Gp.: 256

4,426,019, Re. S.N. 819,425, Filed Jan. 16, 1986, Cl. 222/28, MEMBRANE SEAL AND KNIFE COMBINATION FOR A POST-MIX BEVERAGE DISPENSING SYSTEM, Jason K. Sedam, Attorney or Agent: Coca-Cola Co., Atlanta, Ga., Attorney or Agent: Terrell C. Birch, Ex. Gp.: 311

4,426,728, Re. S.N. 819,162, Filed Jan. 15, 1986, Cl. 381/15, MULTIPLE SYSTEM AM STEREO RECEIVER AND PILOT SIGNAL DETECTOR, Leonard R. Kehn, Owner of Record: *Inventor,* Attorney or Agent: Edward A. Onders, Ex. Gp.: 261

4,432,449, Re. S.N. 814,323, Filed Dec. 30, 1985, Cl. 198/777, LOG CUTTING DEVICE HAVING LOG SHIFTING MEANS, Leslie A. Neff, Owner of Record: *Inventor,* Attorney or Agent: Gordon D. Schmidt, Ex. Gp.: 317

4,462,720, Re. S.N. 791,539, Filed Oct. 25, 1985, Cl. 406/84, AIR TABLE SYSTEM, Ronald A. Lenhart, Owner of Record: *Precision Metal Fabricators, Inc., Lakewood, Colo.,* Attorney or Agent: Gary D. Fields, et al., Ex. Gp.: 313

4,472,474, Re. S.N. 801,716, Filed Oct. 28, 1985, Cl. 428/195, ELECTRICALLY CONDUCTIVE LAMINATE, Gene E. Grosheim, et al., Owner of Record: *Formica Corp., Wayne, N.J.,* Attorney or Agent: Frank M. Van Riet, Ex. Gp.: 154

4,505,697, Re. S.N. 819,578, Filed Dec. 17, 1985, Cl. 429/161, UNDERFLOW CONCENTRATION CONTROL FOR NOZZLE CENTRIFUGES, Chie-Ying Lee, et al., Owner of Record: *Alfa-Laval, Inc., Poughkeepsie, N.Y.,* Attorney or Agent: Richard Whiting, et al., Ex. Gp.: 114

4,505,892, Re. S.N. 797,256, Filed Nov. 12, 1985, Cl. 424/89, INFECTIOUS BRONCHITIS VACCINE FOR POULTRY, Peter Apontoweil, et al., Owner of Record: *Gist-Brocades N.V., Delft, The Netherlands,* Attorney or Agent: Charles A. Muserlian, Ex. Gp.: 128

4,519,599, Re. S.N. 811,523, Filed Dec. 20, 1985, Cl. 270/53, METHOD AND APPARATUS FOR TANDEM STITCHING OF BOOKS IN A BINDERY LINE, Theodore W. Mayer, Owner of Record: *R. R. Donnelley & Sons Co., Chicago, Ill.,* Attorney or Agent: Ernest A. Wegner, et al., Ex. Gp.: 337

4,534,973, Re. S.N. 819,096, Filed Jan. 15, 1986, Cl. 514/162, PHARMACEUTICAL COMPOSITIONS, Miwon S. Kim, Owner of Record: *Carter-Wallace, Inc., New York, N.Y.,* Attorney or Agent: Kevin B. Clarke, Ex. Gp.: 125

4,550,015, Re. S.N. 799,479, Filed Nov. 19, 1985, Cl. 423/445, VITREOUS CARBON AND PROCESS FOR PREPARATION THEREOF, Louis L. Korb, et al., Owner of Record: *Plastics Engineering Co., Sheboygan, Wis.,* Attorney or Agent: Walter J. Monacelli, Ex. Gp.: 118

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

3,376,966, Reexam. No. 90/000,935, Requested: Jan. 10, 1986, Cl. 141/392, QUICK-CONNECT VENT TUBE STRUCTURE, Anthony Dichiara, Owner of Record: *Patentee, Queens, N.Y.,* Attorney or Agent: None, Ex. Gp.: 240, Requester: A & L Simonazzi, S.P.A., Parma, Italy,

3,483,767, Reexam. No. 90/000,943, Requested: Jan. 27, 1986, Cl. 74/395, APPARATUS FOR ANGULARLY POSTIONING A SPINDLE, John J. Schachte, Owner of Record: *Kearney & Trecker Corp., West Allis, Wis.,* Attorney or Agent: Quarles & Brady, Ex. Gp.: 350, Requester: Owner

3,688,504, Reexam. No. 90/000,944, Requested: Jan. 28, 1986, Cl. 60/226, BYPASS VALVE CONTROL, Charles A. Hutchinson, Owner of Record: *General Electric Co., Cincinnati, Ohio,* Attorney or Agent: Derek P. Lawrence, Ex. Gp.: 340, Requester: Owner

3,767,884, Reexam. No. 90/000,945, Requested: Jan. 29, 1986, Cl. 299/10.550, ENERGY SEAL FOR HIGH FREQUENCY APPARATUS, John M. Osepchuk, et al., Owner of Record: *Raytheon Co., Lexington, Mass.,* Attorney or Agent: None, Ex. Gp.: 350, Requester: G. E. Co., Louisville, Ky.

3,900,094, Reexam. No. 90/000,941, Requested: Jan. 21, 1986, Cl. 400/124 MATRIX PRINTER WITH OVERLAPPING PRINT DOTS, Raymond B. Larson,

et al., Owner of Record: *Eaton Corp., Cleveland, Ohio,* Attorney or Agent: Watts, Hoffman, et al., Ex. Gp.: 330, Requester: Owner

3,910,296, Reexam. No. 90/000,947, Requested: Feb. 3, 1986, Cl. 134/2, METHOD FOR REMOVING PROTEINACEOUS DEPOSITS FROM CONTACT LENSES, Hampar L. Karageozian, Owner of Record: *Allergan Cribbean, Hormiqueros, Puerto Rico,* Attorney or Agent: Martin A. Voet, Ex. Gp.: 130, Requester: Seidel, Gonda, et al., Philadelphia, Pa.

3,958,888, Reexam. No. 90/000,932, Requested: Jan. 6, 1986, Cl. 273/177R, CLAMPING ASSEMBLY, Ralph Mullenberg, Owner of Record: *Patentee, Hulchrath, Dex.,* Attorney or Agent: Bacon & Thomas, Ex. Gp.: 330, Requester: Michael J. Striker, New York, N.Y.

4,048,306, Reexam. No. 90/000,949, Requested: Feb. 4, 1986, Cl. 514/29, ALDEHYDE-ERYTHROMYCYLAMINE CONDENSATION PRODUCTS, Roland Maier, et al., Owner of Record: *Boehringer Ingelheim Intl. GMBH, Ingelheim AM Rhein, Dex.,* Attorney or Agent: Hammond & Littell, Ex. Gp.: 120, Requester: Owner

4,124,899, Reexam. No. 90/000,934, Requested: Jan. 9, 1986, Cl. 364/716, PROGRAMMABLE ARRAY LOGIC CIRCUIT, John M. Birkner, et al., Owner of Record: *Monolithic Memories, Inc., Sunnyvale, Calif.,* Attorney or Agent: Skjerven, Morrill, et al., Ex. Gp.: 230, Requester: Altera Corp., Santa Clara, Calif.

4,157,728, Reexam. No. 90/000,936, Requested: Jan. 13, 1986, Cl. 164/452, PROCESS FOR DIRECT CHILL CASTING OF METALS, Ryota Mitamura, et al., Owner of Record: *Showa Aluminum Industries K.K., Tokyo, Japan,* Attorney or Agent: Armstrong, Nikaido, et al., Ex. Gp.: 320, Requester: Christopher Duffy, Seattle, Wash.

4,175,774, Reexam. No. 90/000,938, Requested: Jan. 14, 1986, Cl. 283/6, NON-COPYING PRINTED DOCUMENT AND METHOD OF PRINTING SAME, Gerald A. Tonges, et al., Owner of Record: *Bedinghaus Business Forms, Inc., Cincinnati, Ohio,* Attorney or Agent: Wood, Herron, et al., Ex. Gp.: 320, Requester: Owner

4,246,142, Reexam. No. 90/000,939, Requested: Jan. 17, 1986, Cl. 252/511, VULCANIZABLE SEMI-CONDUCTIVE COMPOSITIONS, Lucio Ongchin, Owner of Record: *Union Carbide Corp., New York, N.Y.,* Attorney or Agent: None, Ex. Gp.: 220, Requester: Robbins & Laramie, Washington, D.C.

4,275,974, Reexam. No. 90/000,942, Requested: Jan. 23, 1986, Cl. 405/225, INFLATION AND GROUT SYSTEM, Lloyd C. Knox, et al., Owner of Record: *Halliburton Co., Duncan, Okla.,* Attorney or Agent: James R. Duzan, Ex. Gp.: 350, Requester: LTV Energy Products Co., Arlington, Tex.

4,286,425, Reexam. No. 90/000,933, Requested: Jan. 6, 1986, Cl. 56/307, CUTTER FINGER FOR CUTTER BAR MOWERS, Gustav Schumacher, et al., Owner of Record: *Patentee, Eichelhardt, Dex.,* Attorney or Agent: Steinberg & Raskin, Ex. Gp.: 330, Requester: Michael J. Striker, New York, N.Y.

4,329,624, Reexam. No. 90/000,937, Requested: Jan. 13, 1986, Cl. 315/151, COMPUTER TYPE ELECTRONIC PHOTOFLASH, Akio Kamon, et al., Owner of Record: *Kabushika Kaisha Sunpack, Tokyo, Japan,* Attorney or Agent: Neuman, Williams, et al., Ex. Gp.: 260, Requester: Vivitar Corp., Santa Monica, Calif.

4,366,093, Reexam. No. 90/000,940, Requested: Jan. 17, 1986, Cl. 502/439, CYLINDRICAL MOLDED CATALYST, Ken Shiozaki, et al., Owner of Record: *Kanegafuchi Kagaku Kogyo K.K., Osaka, Japan,* Attorney or Agent: Armstrong, Nikaido, et al., Ex. Gp.: 110, Requester: Owner

4,454,267, Reexam. No. 90/000,946, Requested: Jan. 30, 1986, Cl. 524/43, LIGHTWEIGHT JOINT COMPOUND, Terrance L. Williams, Owner of Record: *U.S. Gypsum Co., Chicago, Ill.,* Attorney or Agent: Samuel Kurlandsky, Ex. Gp.: 150, Requester: Owner

4,457,490, Reexam. No. 90/000,948, Requested: Feb. 4, 1986, Cl. 251/174, HIGH TEMPERATURE VALVES AND SEAT THEREFOR, William B. Scobie, Owner of Record: *Keystone International, Inc., Houston, Tex.,* Attorney or Agent: C. James Bushman, Ex. Gp.: 340, Requester: Owner

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Reinstatement of Patent Attorneys and Agents to Practice Before the U.S. Patent and Trademark Office

Any person whose name has been removed from the register of attorneys and agents pursuant to 37 CFR 10.11(b), or its predecessor, 37 CFR 1.347; or whose name has been endorsed as inactive on the register pursuant to 37 CFR 10.6(d), or its predecessor, 37 CFR 1.341(f), may request reinstatement on the register. However, where the person seeks reinstatement to the register five (5) or more years after his or her name was either removed pursuant to 37 CFR 10.11(b), or its predecessor; or endorsed as inactive pursuant to 37 CFR 10.6(d), or its predecessor; or where other circumstances indicate that the person whose name was removed from or endorsed as inactive on the register may no longer be qualified for registration, that person will be required to again meet the requirements of 37 CFR 10.7 [formerly 37 CFR 1.341(c)], including taking and passing the examination under §10.7(b) before reinstatement is granted.

Those persons who show that they continue to possess the legal qualifications necessary to render applicants for patent valuable service despite the lapse of five or more years will not be required to take the examination. The legal qualifications include knowledge and proficiency in current patent law and Patent and Trademark Office procedure, an ability to draft acceptable patent claims, and familiarity with current patent practice as well as patent statutes and regulations. In appropriate circumstances, any person whose name was removed from or endorsed as inactive on the register may be required to establish to the satisfaction of the Director of Enrollment and Discipline that he or she is of good moral character and repute pursuant to §10.7 regardless of the period his or her name was removed from or endorsed inactive on the register.

CAMERON K. WEIFFENBACH,
Office of Enrollment and Discipline.

John Shaunfield
Service by Publication

In accordance with 37 C.F.R. 1.47(a) (Rules of Practice in Patent Cases), notice is hereby given of the filing on June 1, 1982 of an application for patent entitled Monitoring Torque In Tubular Goods on behalf of John Shaunfield, whose last known address is 842 Glenville Dr., Richardson, Tex. 75081. The application was made in compliance with 37 C.F.R. 1.47(a) and 35 U.S.C. 116 by Darrell L. Vincent without execution by the said John Shaunfield. Notice of the filing directed to the above noted address has been returned undelivered.

Any action to be taken by the said John Shaunfield in connection with the said application must be taken within thirty (30) days of the publication of this notice.

RENE D. TEGTMEYER,
Assistant Commissioner for Patents.

PATENT NOTICES

Certificates of Correction for the Week of Mar. 11, 1986

D. 281,100	4,521,335	4,543,178	4,553,969
4,197,602	4,521,900	4,544,042	4,554,870
4,215,119	4,522,159	4,545,368	4,554,939
4,325,067	4,522,464	4,545,539	4,555,027
4,373,452	4,523,594	4,546,124	4,555,342
4,401,526	4,523,894	4,546,192	4,555,512
4,404,115	4,524,043	4,546,656	4,555,784
4,421,015	4,526,320	4,547,113	4,556,224
4,421,310	4,526,480	4,547,281	4,556,249
4,440,907	4,528,407	4,547,309	4,556,309
4,448,966	4,528,464	4,547,780	4,556,451
4,459,290	4,532,930	4,548,342	4,556,645
4,463,269	4,535,384	4,548,579	4,556,650
4,467,694	4,535,406	4,548,936	4,556,865
4,472,778	4,536,109	4,549,282	4,556,889
4,477,964	4,537,721	4,550,079	4,556,948
4,482,531	4,537,722	4,550,563	4,556,985
4,485,546	4,537,768	4,550,856	4,557,202
4,488,911	4,538,062	4,551,265	4,558,217
4,492,371	4,538,077	4,551,329	4,558,605
4,492,664	4,538,151	4,551,467	4,558,886
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4,492,982	4,538,667	4,551,578	4,559,039
4,494,726	4,538,904	4,551,718	4,560,564
4,501,498	4,539,394	4,551,819	4,560,579
4,511,830	4,539,812	4,552,413	4,560,819
4,512,655	4,541,386	4,552,436	4,561,498
4,513,297	4,541,492	4,552,455	4,561,940
4,514,061	4,541,812	4,552,501	4,562,298
4,515,478	4,542,387	4,552,843	4,563,062
4,517,195	4,542,421	4,552,958	4,564,687
4,519,755	4,542,907	4,553,260	
4,521,097	4,543,059	4,553,436	

Disclaimers

3,512,603.—*Peter R. Crewe* and *Michael Ivan Manning,* Yeovil, Somerset, England. FLEXIBLE HULLS, Patent dated May 19, 1970. Disclaimer filed Jan. 9, 1986, by the assignee, *British Hovercraft Corp. Ltd.*

Hereby enters this disclaimer to claims 1 through 7 of said patent.

4,352,882.—*Lucien G. Maury,* Wilmington, Del. PRODUCTION OF XANTHAN GUM BY EMULSION FERMENTATION. Patent dated Oct. 5, 1982. Disclaimer filed Dec. 18, 1985, by the assignee, *Kelco Biospecialties Ltd.*

Hereby enters this disclaimer to claim 2 of said patent.

4,405,832.—*Jack C. Sondermeyer,* Meridian, Miss. CIRCUIT FOR DISTORTING AN AUDIO SIGNAL. Patent dated Sept. 20, 1983. Disclaimer filed Jan. 10, 1986, by the assignee, *Peavey Electronics Corp.*

Hereby enters this disclaimer to claims 1 and 2 of said patent.

4,504,467.—*R. Michael Molloy,* Danville and *Manuel Debono,* Indianapolis, Ind. GLYCOPEPTIDE DERIVATIVES. Patent dated Mar. 12, 1985. Disclaimer filed Jan. 14, 1986, by the assignee, *Eli Lilly and Co.*

Hereby enters this disclaimer to claim 12 of said patent.

4,527,287.—*Akio Aoki,* Osaka, Japan. BASEBALL GLOVE OR MITT. Patent dated July 9, 1985. Disclaimer filed Jan. 21, 1986, by the assignee, *Figgie International, Inc.*

Hereby enters this disclaimer to claims 1–5, 8–9, 12–16 and 19 of said patent.

4,548,598.—*Felix Theeuwes,* Los Altos, Calif. PARENTERAL AGENT DISPENSING EQUIPMENT. Patent dated Oct. 22, 1985. Disclaimer filed Dec. 20, 1985, by the assignee, *Alza Corp.*

The term of this patent subsequent to Mar. 27, 2001, has been disclaimed.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

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Arkansas	Little Rock: Arkansas State Library	(501) 371-2090
California	Los Angeles Public Library	(213) 612-3273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale: Patent Information Clearinghouse*	(408) 730-7290
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware Library	(302) 451-2238
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	Miami-Dade Public Library	(305) 375-2665
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
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	Springfield: Illinois State Library	(217) 782-5430
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Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
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	St. Louis Public Library	(314) 241-2288 Ext. 390
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	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
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	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
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	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
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Virginia	Richmond: Virginia Commonwealth University Library	(804) 257-1104
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3247

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*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF February 1, 1986

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	6-15-84
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	2-15-84
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	4-12-84
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	3-01-85
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG, Director	3-02-84
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	8-11-83
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	11-21-83
PACKAGES, CLEANING, TEXTILES, AND GEOMETRICAL INSTRUMENTS, GROUP 240—E. E. KUBASIEWICZ, Director	6-15-84
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	3-28-83
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	8-30-83
DESIGN, GROUP 290—K. L. CAGE, Director	4-15-83
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	7-12-83
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	7-26-84
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	3-30-83
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	10-19-83
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	1-07-85

Expiration of patents: The patents within the range of numbers indicated below expire during February 1986, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,425,060 to 3,426,359, inclusive

Plant Patents ..... Numbers 2,861 to 2,869 inclusive

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 32,091

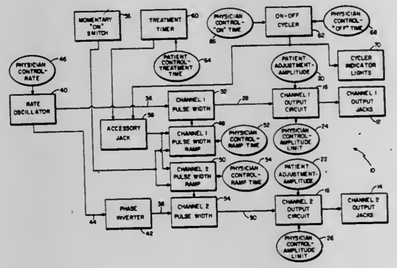
NEUROMUSCULAR STIMULATOR

David J. Stanton, Anoka, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Original No. 4,392,496, dated Jul. 12, 1983, Ser. No. 243,558, Mar. 13, 1981. Application for reissue Oct. 24, 1983, Ser. No. 544,892

Int. Cl.⁴ A61N *1/36*

U.S. Cl. 128—423 W **22 Claims**



13. A muscle stimulator comprising, in combination:

oscillator means for producing a periodic output signal at a predetermined repetition rate;

rate control means coupled to said oscillator means for altering the repetition rate of said oscillator means;

treatment timer means for generating a first logic signal after a predetermined treatment time interval;

treatment timer control means coupled to said treatment timer means for establishing the predetermined treatment time of said treatment timer means;

cycler means for repetitively producing a second logic signal which remains at a first logic level for a predetermined "on" time interval and a second logic level for a predetermined "off" time interval;

first cycler control means coupled to said cycler means for setting the predetermined "on" time interval of said cycler means;

second cycler control means coupled to said cycler means for setting the predetermined "off" time interval of said cycler means;

external switch means;

plug means operatively connected to said external switch means;

accessory jack means constructed and arranged for receiving said plug means and for providing a third logic signal when said plug means is inserted in said jack means and said external switch means is in a particular condition or when said plug is not inserted in said jack;

momentary contact switch means for producing a fourth logic signal when said momentary contact switch means is actuated;

first and second ramp generator circuit means connected to receive said first, second, third and fourth logic signals and for producing first and second output ramp signals changing from a first to a second level at first and second predetermined rates, subsequent to receipt of either of said first, second, third or fourth logic signals;

first and second ramp generator control means coupled respectively to said first and second ramp generator circuit means for independently altering the rate of change of the output ramp signals of said first and second ramp generator circuit means;

first pulse width circuit means coupled to receive the ramp signal from said first ramp generator circuit means and to receive the periodic output signal from said oscillator means and for producing a fixed amplitude pulse signal having a pulse width increasing at a rate proportional to the rate of change of the ramp signal from said first ramp generator circuit means at the predetermined repetition rate of said oscillator means until the output signal of said first ramp generator circuit means reaches the second level and the pulse width of the pulse signal reaches a predetermined pulse width;

second pulse width circuit means coupled to receive the ramp signal from said second ramp generator circuit means and to receive the periodic output signal of said oscillator means and for producing a fixed amplitude pulse signal having a pulse width increasing at the rate of change of said ramp from said second ramp generator circuit means at the predetermined repetition rate of said oscillator means until the output signal of said second ramp generator circuit means reaches the second level and the pulse width of the pulse signal reaches a predetermined pulse width;

first and second output circuit means connected to receive the pulse outputs of said first and second pulse width circuit means respectively and for producing a balanced biphasic constant current output signal; and

first and second output circuit control means for adjusting the current amplitude of the output pulses of said first and second output circuits respectively.

PLANT PATENTS

GRANTED MARCH 11, 1986

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,683

ROSE PLANT-MEIFOTA VARIETY

Marie L. Meilland, Antibes, France, assignor to The Conard-Pyle Company, West Grove, Pa.

Filed Jan. 16, 1984, Ser. No. 571,202
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—18 1 Claim

1. A new and distinct variety of Hybrid Tea rose plant, substantially as herein shown and described, characterized particularly by

(a) an exceptionally vigorous upright growth habit,

(b) the abundant formation of fully double blossoms having an attractive form which are of a dark salmon pink coloration, and

(c) a very rapid growth rate which renders it well adapted for greenhouse cultivation.

5,684

ROSE PLANT JACAVE

William A. Warriner, Tustin, Calif., assignor to Jackson & Perkins Company, Medford, Oreg.

Filed Nov. 7, 1983, Ser. No. 549,299
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—22 1 Claim

1. A new and distinct variety of rose plant of the floribunda class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its vigorous plant producing fragrant, lavender flowers suitable for culture in greenhouse conditions for production of cut flowers.

5,685

POMEGRANATE TREE

Benjamin Y. Kamada, 24627 E. Adams, Orange Cove, Calif. 93646

Filed Aug. 29, 1983, Ser. No. 527,085
Int. Cl.[4] A01H *5/03*
U.S. Cl. Plt.—33 1 Claim

1. A new and distinct variety of pomegranate tree substantially as illustrated and described which is characterized by its bearing of early maturing fruit which ripens about one week to ten days earlier than the fruit of the patented pomegranate tree U.S. Plant Pat. No. 2,723 commonly known as the Early Red. The new variety most nearly resembles said previously patented pomegranate tree U.S. Plant Pat. No. 2,723 but is distinguished from it by its earlier ripening fruit and in some cases by fruit slightly smaller in size and having a more uniformly red skin.

5,686

BLACKBERRY-SHAWNEE CULTIVAR

James N. Moore, Fayetteville, Ark., assignor to University of Arkansas Agricultural Experiment Station, Fayetteville, Ark.

Filed Jul. 5, 1984, Ser. No. 628,143
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—46 1 Claim

1. A new and distinct variety of blackberry, substantially as illustrated and described, characterized by its late ripening, large fruits, high productivity and very erect cane growth habit.

5,687

ZELKOVA TREE

Chester J. Halka, Englishtown, N.J., assignor to J. Frank Schmidt & Son Co., Boring, Oreg.

Filed Jul. 9, 1984, Ser. No. 629,117
Int. Cl.[4] A01H *5/12*
U.S. Cl. Plt.—51 1 Claim

1. A new and distinct variety of Japanese zelkova tree, substantially as herein shown and described, characterized particularly as to novelty by its rapid rate of growth, large foliage, long arching branches, yellow autumn color of its foliage and autumn changes which occur somewhat earlier than similar changes in other Japanese zelkova varieties.

5,688

ORCHID-SLC, HAZEL BOYD, VARIETY JOHN GERMASKE

John Germaske, 9395 SW. 77 Ave., Miami, Fla. 33156

Filed Aug. 23, 1984, Ser. No. 643,634
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—68 1 Claim

1. A new and distinctive variety of orchard plant substantially as herein described and illustrated and distinguished from its parent and other orchids by its combination of matchless rare brilliant red coloring, the color of the back of the sepals turning to orange at maturity, large size of the flowers, superior lasting quality and vigorous reliable blooming.

5,689

DIGITARIA DIDACTYLA GRASS PLANT

Hubert F. Whiting, 2644 Via Alicia, Fallbrook, Calif. 92028

Filed May 14, 1984, Ser. No. 609,869
Int. Cl.[4] A01H *5/12*
U.S. Cl. Plt.—88 1 Claim

1. A new variety of Digitaria Didactyla grass plant herein shown and described by a dark green color as defined by the ISCC-NBS Centroid color chart; this new variety produces a more uniform smoother finer textured surface; the anthers are a dark red as defined by the ISCC-NBS Centroid color chart; the stigmas are of a deep purplish pink as defined by the ISCC-NBS Centroid color chart.

PATENTS

GRANTED MAR. 11, 1986

ERRATA

For CLASS	See PATENT NO.
128–419	4,574,437
141–010	4,574,720
165–144	4,574,868
181–145	4,574,906
128–402	4,575,097
623–006	4,575,373
623–006	4,575,374
005–414	4,575,377
368–276	4,575,838

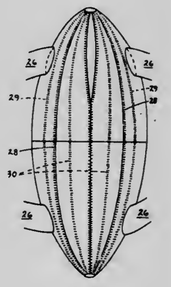
PATENTS

GRANTED MARCH 11, 1986

GENERAL AND MECHANICAL

4,574,396
Patent Not Issued For This Number

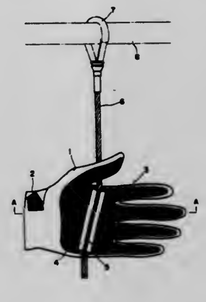
4,574,397
ARTICLE USED AS GARMENT AND SLEEPING BAG
David G. Dennard, 55 Conestee St., Asheville, N.C. 28801
Filed Aug. 22, 1983, Ser. No. 525,275
Int. Cl.[4] A41D *15/04;* A45F *4/00*
U.S. Cl. 2—69.5 **14 Claims**



1. An article fitted with sleeves that extend from closable openings in the article to enable the article to serve alternatively as a garment in which the wearer may walk about or as a sleeping bag, said article comprising: a plurality of sections made of flexible material joined to form a bag having one or more closable openings therein; sleeves associated with said bag; and means adjusting the size of said bag by enveloping one or more of said sections thereof, said bag also being foldable within itself to form a jacket or vest of a predetermined size.

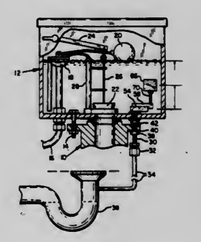
4,574,398
ESCAPE GLOVES
Kazuya Endo, and Hiroko Ito, both of No. 22-3, Motoshiro-cho, Fujimiya-shi, Shizuoka-ken, Japan
Filed Mar. 18, 1985, Ser. No. 712,533
Int. Cl.[4] A41D *19/00*
U.S. Cl. 2—159 **7 Claims**

1. An escape glove comprising a palm portion having a heat-insulating sheet layer and a wear-resistant elastic guide member attached thereto, said elastic guide member having a lateral groove therein proportioned to receive an escape rope



therein, said elastic member being located substantially at the center of said heat-insulating sheet layer.

4,574,399
FLUSHING, TOILET TANK-FED, PRIMER VALVE FOR SEWER LINE DRAIN TRAPS
Richard N. Sullivan, 7911 SE. 82nd Sp. 40, Portland, Oreg. 97266
Filed Feb. 13, 1985, Ser. No. 701,487
Int. Cl.[4] E03C *1/24;* F16K *13/00, 13/10*
U.S. Cl. 4—206 **6 Claims**



1. A sewer drain trap primer valve for use in conjunction with a flushing toilet tank or like installation including a tank containing water of fluctuating level, the valve comprising:

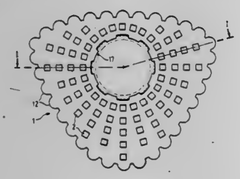
(a) a pipe penetrating the lower portion of the tank and providing a port at its inner end,

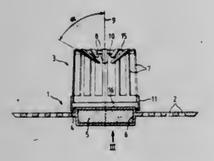
(b) conduit means connecting the outer end of the pipe to the trap,

(c) seal means sealing the joint between the pipe and tank against leakage of water,

(d) and float-operated valve means associated with the port and operative to discharge a small amount of water through the valve means with changes in level of the water in the tank.

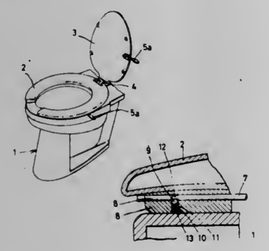
4,574,400
DIRT TRAP FOR FLUSH BASINS
Wolfgang Annowsky, Erlenstrasse 82, Wollerau, Switzerland
Filed Nov. 26, 1984, Ser. No. 674,787
Claims priority, application Fed. Rep. of Germany, Dec. 1, 1983, 8334567[U]
Int. Cl.⁴ E03D *9/02*
U.S. Cl. 4—222.1 **12 Claims**





1. A dirt trap for flush basins of the type having a water drain comprising
a base plate having a plurality of openings therethrough, said base plate being positionable over the water drain in a generally horizontal position;
a basket mounted on said base plate for receiving a body of fragrant material, said basket having a plurality of individual arms extending upwardly away from said plate; and
an interconnecting ring joining said arms together, said ring being spaced upwardly from said base plate, the ends of said arms defining a central passage through which a body of fragrant material can be inserted into the basket.

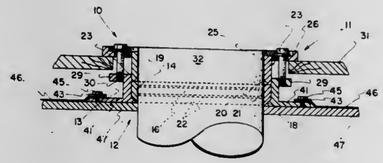
4,574,401
TOILET BOWL
Kenji Nakajima, 3-5, 6-chome, Nagayoshidedo, Hirano-ku, Osaka, Japan
Filed Jan. 24, 1984, Ser. No. 574,176
Claims priority, application Japan, Jan. 24, 1983, 58-9773[U]; Nov. 30, 1983, 58-186625[U]
Int. Cl.⁴ A47K *13/10*
U.S. Cl. 4—251 **1 Claim**



1. A toilet bowl, comprising:
a bowl body having a rear portion;
a seat being mounted on the bowl body and having an underside;
a lid being mounted on the seat and having an underside;
hinge means, being secured to the rear portion of the bowl body, for swinging the set and the lid away from the bowl body;
a first underbed being secured to the underside of the seat;
a second underbed being secured to the underside of the lid and being positioned directly above the first underbed;
first bore means extending completely laterally through the first underbed;
second bore means extending completely laterally through the second underbed;
first handle means, removably secured in the first bore means, for swinging either the seat alone or the seat and the lid together away from the bowl body;
second handle means, removably secured in the second bore means, for swinging the lid alone away from the seat and the bowl body;
first means, arranged in the first underbed, for removably securing the first handle means in the first bore means;
second means, arranged in the second underbed, for removably securing the second handle means in the second bore means;
wherein said first securing means includes
a first annular groove in the first handle means;
a vertically oriented first hole in communication with the first bore means;
a first ball detent movable in the first hole and engageable with the first annular groove;
a first spring means, arranged in the first hole, for forcing the first ball detent into engagement with the first annular groove; and
a first stopper means, arranged in the first hole, for retaining the first spring means in the first hole; and
wherein said second securing means includes
a second annular groove in the second handle means;
a vertically oriented second hole in communication with the second bore means;
a second ball detent movable in the second hole and engageable with the second annular groove;
a second spring means, arranged in the second hole, for forcing the second ball detent into engagement with the second annular groove; and
a second stopper means, arranged in the second hole, for retaining the second spring means in the second hole.

4,574,402
TWO PIECE CLOSET RING WITH MOISTURE MEMBRANE CLAMPING ARRANGEMENT
Theodore C. Brown, Sr., 601 Beaver Dam Rd., Raleigh, N.C. 27606
Continuation-in-part of Ser. No. 380,554, May 21, 1982, Pat. No. 4,502,166. This application Jan. 31, 1985, Ser. No. 696,914
Int. Cl.⁴ E03C *11/00*
U.S. Cl. 4—252 R **7 Claims**

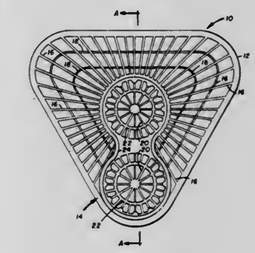
1. An improved closet ring for use in conjunction with a pipe-type means comprising: a first section including a ring-like portion having a generally flat lower surface and an outwardly projecting closet flange disposed adjacent to a floor; a second section including a ring-like portion so sized as to telescopically receive at least a portion of said ring-like portion of said first section, said ring-like portion of said second section including a beveled, flat-in-cross-section, interiorly projecting shoulder coming to a point at its lower extremity; said pipe type means disposed adjacent to and interiorly of said telescoped first and second sections; a gasket means formed from a neoprene type resilient material and having a generally flat upper surface with a groove-like depression formed therein, said upper surface of said gasket being disposed generally juxtaposed to said flat lower surface of said first section, said gasket having at least two inwardly projecting sealing ribs lying juxtaposed to a portion of said pipe means, has an exterior lying juxtaposed to at least a portion of the interior of said ring portion of said second section, and has a lower, flat-in-cross-



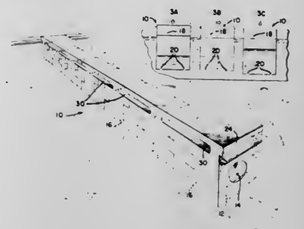
section, beveled portion coming to a point at its lower extremity lying juxtaposed to said flat beveled shoulder of said second section; means for creating telescopic pressure between said first and said second sections whereby said gasket will be force by said flat surface and said beveled shoulder into sealing contact with said pipe disposed interiorly of said section; and a clamping flange outwardly projecting from the lower portion of said second section, said clamping flange being disposed adjacent a horizontal surface beneath said floor; a clamping ring; means for securing said clamping ring juxtaposed to one side of said clamping flange; and a waterproof membrane clamped between said clamping ring and said clamping flange whereby a waterproof lining is formed between said floor and said horizontal surface.

4,574,403
URINAL SCREEN AND DEODORANT CAKE HOLDER
Ronald J. Dintemann, Valley Cottage, N.Y., and John J. Barlics, Edison, N.J., assignors to Compuguide Chemical Corporation, Englewood Cliffs, N.J.
Filed Nov. 17, 1983, Ser. No. 552,618
Int. Cl.⁴ E03D *13/00*
U.S. Cl. 4—309 **22 Claims**

1. A deodorant cake holding device comprising:
a urinal screen having a base portion which is capable of supporting two deodorant cakes:
a securing means attached to said base portion comprising a securing lip and
a retainer box of substantially figure-eight shape having a waist portion, capable of holding and separating the said two deodorant cakes and having an engaging lip for engaging said securing lip, said engaging lip being deformable by pressure upon both sides of said waist portion of said retainer box, said box being attached to said base portion via said securing means wherein the securing lip and engaging lips are substantially figure-eight shaped, said retainer box being removable from and replaceable in said securing lip by pressing together the sides of said box at the waist of said figure-eight.



4,574,404
AIRLIFT BULKHEAD
Robert G. Stark, Sr., 735 NE. 198th St., Seattle, Wash. 98155
Filed Feb. 21, 1984, Ser. No. 581,919
Int. Cl.⁴ E04H *3/18*
U.S. Cl. 4—505 **14 Claims**



1. A movable, submersible, elongated bulkhead for use in a swimming pool, comprising:
a pair of spaced air chambers each having an outwardly facing end, said chambers provided with a valve communicating with the interior of said air chambers for passing air into and out of the chambers and with a water inlet;
at least one core of buoyant material positioned between and substantially equidistant from each of said air chambers;
a pair of compartments positioned adjacent to the outwardly facing ends of said air chambers, each of said compart-

ments having an opening providing for the free ingress and egress of water into and out of said compartment; and

means for selectively controlling the quantity of air and water within said chambers by passing air through said valve to displace water within the chambers.

11. A method of moving along the length of a swimming pool a transversely extending bulkhead adapted to rest on a surface of the pool, said bulkhead having at least one air chamber positioned towards each end of said bulkhead, and means for selectively controlling the quantity of air and water within said chambers, comprising the steps of:

increasing the buoyancy of said bulkhead by forcibly displacing the water contained in said chambers initially while the bulkhead is resting on the surface of the pool;

shifting the bulkhead to a new spaced position within the pool; and

decreasing the buoyancy of said bulkhead to again rest the bulkhead on a surface of the pool by having water reenter said chambers.

4,574,405

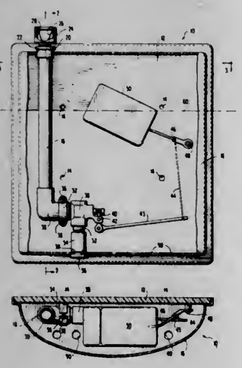
WATER LEVEL CONTROL DEVICE

Joseph Tams, 23016 Jacobson Rd., Brooksville, Fla. 33512

Filed Apr. 26, 1984, Ser. No. 604,287

Int. Cl.⁴ E04H *3/18*

U.S. Cl. 4—508 **4 Claims**



1. A water level control device comprising housing means, mounting means for adjustably and detachably mounting said housing means in a swimming pool adjacent the desired water level and float controlled valve means mounted in said housing means, said float controlled valve means having water inlet means extending outwardly of said housing means for connection to an external water supply and water outlet means extending outwardly of said housing means for discharging water from said valve means directly into the swimming pool to prevent turbulence within said housing means, said housing means having restricted water inlet apertures disposed adjacent the bottom of the housing means to provide for the flow of water into the housing means.

4,574,406

TUB COMFORTER

Bernard Sutton, and George Spector, both of 233 Broadway Rm 3615, New York, N.Y. 10007

Filed Apr. 2, 1984, Ser. No. 595,955

Int. Cl.⁴ A47K *3/022, 3/12*

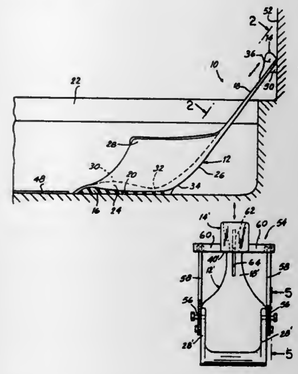
U.S. Cl. 4—559 **5 Claims**

1. A tub comforter which comprises:

a. a contoured shaped seat and back adapted to provide comfort and support to back, arms, buttock and thighs of a human body;

b. a soft head support adjustably affixed on said back seat to provide comfort and support to the head and neck of a person; and

c. a base pad affixed to the underside of said seat so that when said seat is placed into a bathtub said base pad will provide frictional support to said seat and keep said seat from slipping; and



d. said seat being elevated in front and recessed rearwardly forming a cup for the buttock and support for the thighs preventing the user from sliding forward; said pad being similarly contoured to fit said seat and providing a flat bottom;

e. said back extending at an incline to one end of said seat, said back being contoured to shape of the human back for support thereon; and

f. a pair of arms each said arm joined to said back and said seat.

4,574,407

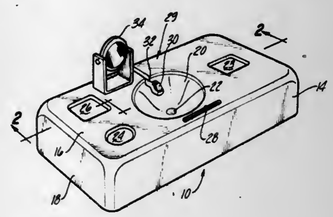
PORTABLE BEAUTY BASIN VANITY

Nicholas A. Didia, 4061 Waterwheel La., Bloomfield Hills, Mich. 48013

Filed Jul. 2, 1984, Ser. No. 627,206

Int. Cl.⁴ A47K *3/00*

U.S. Cl. 4—559 **11 Claims**



1. A portable beauty basin vanity for use in any location, said vanity comprised of: a body portion having a deck, side walls and end walls to form an inverted cup-shaped body, said deck surface equipped with a centrally located basin having an aperture therethrough and equipped with a stopper means to selectively retain water within the basin and allow an operator to empty used wash water and refill the basin with clean water, said deck surface further equipped with various recesses along its surface to store and dispense various creams, lotions, soaps and a washcloth, a detachable water spray apparatus for dispensing water where desired, said water spray apparatus having a spray head attachment at one end and means detachably securable at said other end to a water source, said spray head detachably secured to said deck portion in close proximity to said basin by attachment means whereby said operator may dispense water into said basin as desired; and a mirror means attached to said deck surface to aid the operator in application of said creams, lotions or in washing, whereby said beauty basin vanity may be provided with various creams, lotions, soaps and wash cloths and used in any location convenient to aid said operator in maintaining personal hygiene and in the application of said creams and lotions.

4,574,408

LIFTING DEVICE FOR USE IN A BATH TUB

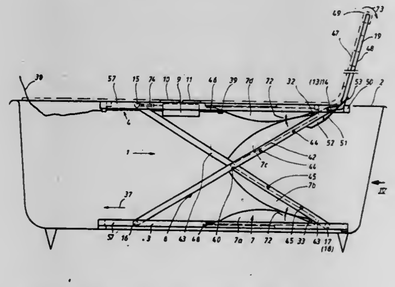
Wolfgang Dentler, Leutkirch-Merazhofen, Fed. Rep. of Germany (7970), and Peter Endres, Ringweg 14, Isny/Neutrauchburg, Fed. Rep. of Germany (7972)

Filed Oct. 10, 1984, Ser. No. 659,263

Claims priority, application Fed. Rep. of Germany, Oct. 14, 1983, 3337536

Int. Cl.⁴ A47K *3/12*

U.S. Cl. 4—560 **7 Claims**



1. A lifting device for use in a bath tub comprising a lower frame lying on the base of the bath tub, an upper frame parallel to the lower frame and adjustable in height, a supporting plate fixed to the upper frame, between the lower frame and the upper frame also a pantograph type frame adjustable in height by means of a lifting hose supported between the lower frame and the upper frame, characterized by a pantograph type frame (6,76) consists of two interconnected slewing frames (42,43,82,83) pivotable upon the center axle (40), between the slewing frames, and a Z-shaped lifting hose (7,80) sectionally fastened in such a manner that the horizontal hose sections (*7a,7d*) form a cusp with the corresponding adjacent inclined hose sections (*7b,7c*).

4,574,409

BATH SEAT

E. Maye McAffrey, 1101 Loftin Dr., Midwest City, Okla. 73130

Filed Apr. 29, 1985, Ser. No. 728,474

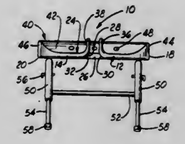
Int. Cl.⁴ A47K *3/12*

U.S. Cl. 4—579 **10 Claims**

1. A bath seat adapted to be placed in a bathtub with a bathtub floor so an individual can sit on the bath seat for bathing; comprising:

a seat having an outer peripheral surface and an upper surface forming a seating area adapted so an individual can sit on such seating area, and having a central exposure opening extending through a central portion of the seating area and having a front exposure opening extending through the outer peripheral surface, and the front exposure opening extending a distance through a portion of the seating area and intersecting the central exposure opening, the central exposure opening being positioned so the buttocks area of an individual is exposed when an individual is seated on the seating area and the front exposure opening positioned so the genital area of an individual is exposed when the individual is seated on the seating area, the front exposure opening forming a first edge and a second edge in the seat, the first edge being spaced a distance from the second edge and the first and the second edges each having a portion intersecting the outer peripheral surface of the seat and a portion intersecting the central exposure opening;

a first lip connected to the seating area generally adjacent the first edge, the first lip extending a distance generally along the first edge and extending a distance generally upwardly from the seating area;



a second lip connected to the seating area generally adjacent the second edge, the second lip extending a distance generally along the second edge and extending a distance generally upwardly from the seating area, the first lip being positioned and shaped to engage a portion of the inside thigh of the right leg of an individual when seated on the seating area and the second lip being positioned and shaped to engage a portion of the inside thigh of the left leg of an individual when seated on the seating area and the first and the second lips cooperating to hold the individual's legs in a separated, spaced apart position to facilitate the exposure of the individual's genital area; and

means for supporting the seat in the bathtub so the seating area is elevated a distance above the bathtub floor.

4,574,410

DEVICE FOR HANDLING PEOPLE

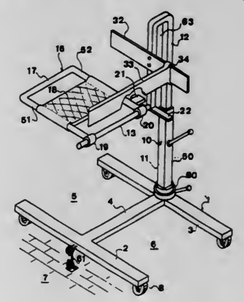
Dieter Lassmann, Lormes/Ursigny; Rémy Vialla, Paris, and Léo Jouk, Le Pre Saint-Gervais, all of France, assignors to Etablissements Jouk, France

Filed Jun. 20, 1984, Ser. No. 622,806

Claims priority, application France, Jun. 23, 1983, 83 10369; Dec. 9, 1983, 83 19735

Int. Cl.⁴ A61G *7/08, 7/10*

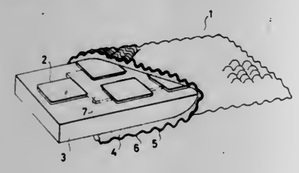
U.S. Cl. 5—81 R **18 Claims**



1. A device for handling people comprising:

a base (1) defining a first plane (9),
a support (10) fixed on said base (1), said support (10) being composed of a foot (11) and support means (12), said foot (11) and said support means (12) being situated substantially perpendicular to the first plane (9) and forming a second plane (14),
a seat (16),
means for fixing said seat on said support means respectively in two like positions on opposite sides of said second plane (14) and substantially parallel to said first plane (9), said support means being fixed on said base such that said base contains at least two support portions (30,31) situated on either side of said second plane (14) and that, on the one hand, the support portions have a surface area which is at least equal to the surface area of said seat (16) on a same side of said second plane (14) and, on the other hand, the projection of the surface area of said seat is made and is contained within these two said support portions (5, 6), characterized by the fact that said device contains a slide bar (32) which operatively engages and is fixed to said support means and at least one back slidably (33) positioned on said slide bar (32).

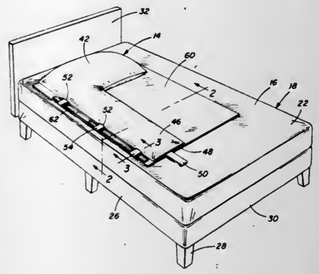
4,574,411
PILLOW
Toshizo Yagi, Kodairashi, Japan, assignor to Japan Life Co. Ltd., Tokyo, Japan
Filed Oct. 12, 1983, Ser. No. 540,909
Int. Cl.[4] A47C *20/02*
U.S. Cl. 5—434 7 Claims



1. An improved pillow, comprising a core formed of cushion material having attached to its surface a plurality of ceramic tiles, said core being inserted into a hollow body having permeability and elasticity, said hollow body being formed of a flexible plastic foam the outer surface of which is harder than the remainder of said flexible foam, said ceramic tiles being maintained in position on the surface of said core via at least one spacer comprising a plate having a shape corresponding to at least one space between the ceramic tiles, said at least one spacer being located on said core between adjacent ceramic tiles.

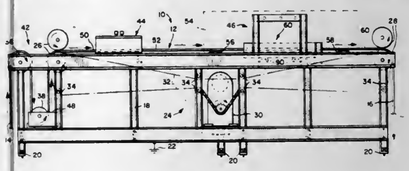
4,574,412
L-SHAPED ANCHORED PILLOW
Homer H. Smith, 90 Arden Park, Detroit, Mich. 48202
Filed Jun. 11, 1984, Ser. No. 619,189
Int. Cl.[4] A47G *9/00*
U.S. Cl. 5—436 4 Claims

1. A pillow for providing support for the head and longitudinal portion of a person using the pillow comprising a cushioned pillow member of L-shaped configuration having a relatively short lateral leg portion adapted to support the head and neck area of a person using the pillow and an elongated leg portion substantially perpendicular to the lateral leg portion adapted to extend along, engage and support an elongated portion of the body of a person using the pillow, and a pillowcase of corresponding shape and configuration covering the pillow, said pillowcase including an open end enabling insertion of the pillow, said pillow including a plurality of anchoring tabs projecting from one edge thereof, said pillowcase having a plurality of corresponding openings receiving the tabs, and means engaged with the tabs for securing the pillow in place on a supporting surface, said means securing the pillow in place on a supporting surface including an anchoring sheet underlying the pillow and projecting therefrom so that a person using the pillow will be disposed on the sheet for anchoring the sheet on a supporting surface, said sheet including a fastening strip along one edge thereof, said tabs on the pillow including fastening means associated with the fastening strip to releasably secure the pillow in position on the anchoring sheet,



said anchoring tabs being positioned along the outer edge of the elongated leg portion of the pillow with their being three anchoring tabs and three corresponding openings in the pillowcase, the end of the pillowcase receiving the end of the elongated leg portion of the pillow remote from the lateral leg portion being open and said pillow including a tab on the end of the elongated leg portion extending through the opening in the end of the pillowcase receiving the end of the elongated leg portion of the pillow.

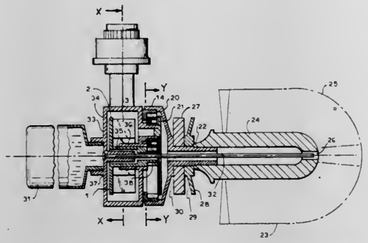
4,574,413
METHODS AND APPARATUS FOR EMPLOYING ELECTRICAL CONDUCTIVITY FOR FIXING DYE TO CARPETS
David L. Otting; Billy J. Otting, both of LaFayette, and Robert B. Putney, Kensington, all of Ga., assignors to Otting International, Inc., LaFayette, Ga.
Continuation of Ser. No. 521,390, Aug. 8, 1983, abandoned. This application Mar. 14, 1985, Ser. No. 712,338
Int. Cl.[4] D06P *5/20*
U.S. Cl. 8—149.1 43 Claims



1. A method for fixing to wet carpet dye applied in liquid form to the carpet, said method comprising physically and electrically contacting the wet carpet with electrodes in order to establish a conductive path, and passing through the wet carpet by means of the electrodes an electric current of sufficient magnitude to cause heating of the carpet and dye to a temperature sufficient to fix the dye to the carpet.

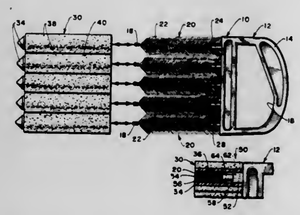
17. Apparatus for fixing to wet carpet dye applied in liquid form to the carpet, said apparatus comprising at least a pair of electrodes disposed for physically and electrically contacting the wet carpet in order to establish a conductive path and arranged for connection to an electric power source so as to pass through the wet carpet an electric current of sufficient magnitude to cause heating of the carpet and dye to a temperature sufficient to fix the dye to the carpet.

4,574,414
KITCHEN APPLIANCE
Sam Zhadanov, 2944 W. 5th St., Brooklyn, N.Y. 11224
Filed Oct. 1, 1984, Ser. No. 656,276
Int. Cl.[4] A47L *15/00;* A46B *13/06*
U.S. Cl. 15—74 14 Claims



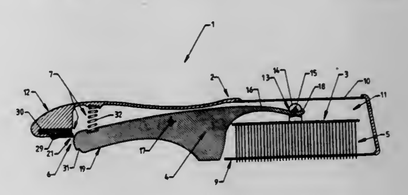
1. A kitchen appliance for dish washing and the like, comprising a housing having a generally cylindrical portion; means forming a water inlet opening for said housing; a rotor having an axis and mounted within said cylindrical portion of said housing eccentrically with respect to the same, said rotor including a base having a plurality of blades mounted thereon, said blades being so positioned that they are rotated by the force of water exiting said inlet opening, said blades extending substantially radially of said rotor having a gap between the inner end of each blade and said axis of said rotor providing means for dissipation of water under pressure thereinto; a brush member connected with said rotor for rotation therewith; means forming a first outlet opening which is smaller and through which a smaller portion of water exits to said brush member to be mixed with a soap; means forming a second outlet opening which is greater and through which a greater portion of water exits for rinsing a dish or the like after washing with said brush member; and soap supplying means including a soap container and a soap supplying element extending through said brush member.

4,574,415
CONVERTIBLE BLIND CLEANER
Frank Vitonis, 530 W. Wilson, Costa Mesa, Calif. 92627
Filed Jan. 7, 1985, Ser. No. 689,169
Int. Cl.[4] A47L *13/12*
U.S. Cl. 15—114 4 Claims



1. A cleaning and dusting assembly for venetian blinds and the like comprising: a brush frame having a rigid handle; a multiplicity of elongated, finger-like dusting brushes mounted in said frame and extending longitudinally therefrom, said dusting brushes being constituted by a plurality of brush filaments; a plurality of cleaning adapters mounted in operative relationship with said brushes, said cleaning adapters having elongated bores therein for receiving said brushes, each of said adapters including an elongated core member having a cleaning sleeve thereupon, said core member providing said bore for the reception of a respective brush; and detent means on said frame engageable with the inner extremity of each of said core members to maintain said adapters in overlying relationship with said filaments.

4,574,416
RETRACTABLE BRUSHES
John W. Stewart, and Anne M. Stewart, both of 23 Matata Pl., Tokoroa, New Zealand
Filed Jul. 31, 1984, Ser. No. 636,366
Claims priority, application New Zealand, Aug. 2, 1983, 205107
Int. Cl.[4] A46B *9/10*
U.S. Cl. 15—169 3 Claims

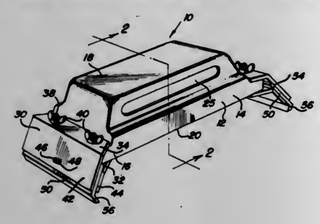


1. A brush with retractable bristles which comprises:
a body;
a bristle mounting member disposed within the body for the bristles;
a positional support member which is pivotally mounted with respect to the body and comprises an arm with a driving end which is connected to the bristle mounting member and a free end to which pressure can be applied for the purpose of moving the bristle mounting member reciprocally within the body;
a biasing means to actuate said positional support member to withdraw the bristles in relation to the body for the purpose of cleaning the bristles; and,
means to secure the positional support member in a position where the bristles extend from the body, said means comprising a reciprocal catch slidably mounted with respect to the brush body, a biasing means which biases the catch against the free end of the positional support member and one or more indentations in the free end of the positional support member which are engageable by the biased catch when the catch is aligned with an indentation by depression of the free end of the positional support member.

4,574,417
SCRAPER
Peter L. Magnasco, 3052 Colonial Way, #11, San Jose, Calif. 95128
Filed Oct. 30, 1984, Ser. No. 667,114
Int. Cl.[4] A47L *13/08*
U.S. Cl. 15—236 R 8 Claims

1. A scraper for controlled scraping of various different surfaces, said scraper including a horizontally elongated body having end portions and top and bottom sides, a pair of blade members, blade support means at opposite end portions of said body supporting said blade members therefrom with said blade members oppositely downwardly and outwardly inclined from said end portions, said blade members including bevelled end edge surfaces substantially coplanar and horizontally disposed,

said blade members being substantially rigid but slightly flexive, said blade members including lower outer end portions



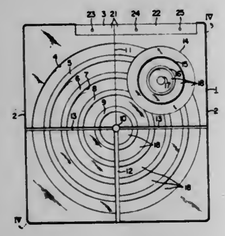
angled slightly inwardly and downwardly and upon which said bevelled end edge surfaces are disposed.

4,574,418

DISK CLEANING MAT

Izumi Yamaguchi, Ohmiya, Japan, assignor to Kabushiki Kaisha Nagaoka, Tokyo, Japan

Filed Jan. 18, 1985, Ser. No. 692,626
Claims priority, application Japan, Oct. 15, 1984, 59-215648
Int. Cl.⁴ G11B *3/58*
U.S. Cl. 15—268 **6 Claims**



1. A disk cleaning mat comprising: a mat body provided in the surface thereof with first, second and third annular recesses corresponding in size to an LP disk, EP disk and a compact disk, respectively, and grounding portions provided in respective recesses and electrically connected to the reverse side of said mat body.

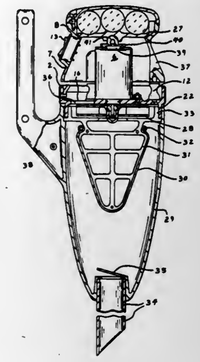
4,574,419

DEVICE FOR TREATMENT OF SURFACES, PARTICULARLY FOR CLEANING AND POLISHING

Franz Lex, Annenstrasse 6, Graz, Austria (A-8020)

Filed Nov. 9, 1983, Ser. No. 550,491
Claims priority, application Austria, Nov. 19, 1982, 4218/82
Int. Cl.⁴ A47L *5/24*
U.S. Cl. 15—328 **8 Claims**

1. A surface treatment device comprising
(a) a housing defining an air passage opening and having an axis, a closed end and an open end opposite to the closed end,
(1) a peripheral rim defining the open end of the housing,
(b) an electric motor extending through the open end into, and at least partly surrounded by, the housing, the electric motor having
(1) a rotatable axle coaxial with the housing axis,
(c) a coaxially arranged tool carrier defining an air passage opening adjacent the open housing end, the tool carrier being slightly spaced from the peripheral housing rim and extending transversely to he housing axis,
(d) means rigidly connecting the tool carrier to the housing of the electric motor,
(e) oscillation elements disposed along the peripheral housing rim and extending parallel to the housing axis and the



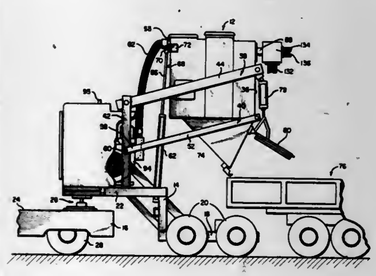
motor axle, the oscillation elements connecting the tool carrier to the housing for oscillatory movement in relation thereto, and
(f) a surface treatment attachment replaceably mounted on the tool carrier.

4,574,420

VERSATILE PARTICLE COLLECTOR APPARATUS

George T. Dupré, Barrington Hills, Ill., assignor to NFE International, Ltd., Bensenville, Ill.

Filed Feb. 24, 1984, Ser. No. 583,437
Int. Cl.⁴ E01H *1/08*
U.S. Cl. 15—331 **5 Claims**



1. A portable particle separator apparatus comprising:
a frame;
drive means connected to one end of said frame for moving said frame;
a particle separator, having an air inlet and an air outlet, for removing particles from an airstream coupled to said air inlet, said particle separator including a plurality of sequential particle separator stages wherein particles are removed from said airstream in traversing between said air inlet and said air outlet, said particle separator having a respective collection chamber for collecting said particles removed from said airstream by an associated particle separator stage;
means for enabling an airstream coupled to said particle separator air inlet to sequentially pass through said plurality of separator stages and exit through said air outlet;

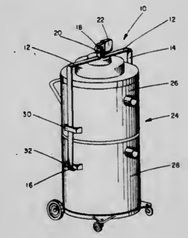
said particle separator including a hopper portion with a plurality of elongated interior collection sections each communicating with a respective collection chamber at one collection section end and extending downwardly transverse to a respective outlet section end such that the outlet section ends are in substantial vertical alignment, and pivotable door means for selecting sealing the outlet section ends during operation of said particle separator stages and for unsealing said outlet section ends to enable transfer of said collected particles from said hopper portion;
mounting means for mounting said particle separator on said frame with the substantially vertically aligned outlet section ends maintained within the vertical projection of said frame; and
said mounting means including lifting means movably connecting said particle separator to said frame for lifting said separator in substantially vertical alignment with respect to said frame while maintaining the substantially vertically aligned outlet section ends within the vertical projection of said frame to enable transfer of said removed particles from said collection chamber.

4,574,421

LOCKING BARS FOR VACUUM CLEANER

Harold L. Froese, 1509 Ousleydale Rd., Hartsville, S.C. 29550

Filed Oct. 29, 1984, Ser. No. 666,110
Int. Cl.⁴ A47L *9/00*
U.S. Cl. 15—339 **2 Claims**



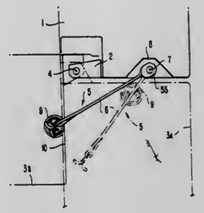
1. A vacuum cleaner locking bar assembly for particularly locking an industrial vacuum cleaner of the type having separable upper and lower containers diposed in a stacked relationship wherein each container includes a pair of handles aligned with the handles of the other container comprising: a pair of integrally formed rigid locking bars with each locking bar being rigid and of a generally L-shape and having a turned up lock end and a hook end for securing and locking said upper container to said lower container, each said locking bar further including a rigid restraining section disposed adjacent to said turned up lock end and forming a right angle therewith and a rigid hooking section disposed adjacent to said hook end and forming a rigid right angle with said restraining section, each locking bar further including a lock hole formed in the lock end of each of said locking bars, and wherein each hooking member extends interiorly through a respective handle on said upper container and wherein each hook end includes a hook member that extends exteriorly past a respective handle on said lower container and which hooks underneath and back through the same handle and wherein each restraining section extends over said upper container so that said turned up lock ends align and abut against each other such that said lock holes formed in the same align; and a padlock for interlocking said locking bars about said vacuum cleaner, said padlock extending through each lock hole and operative to couple said locking bars about said vacuum cleaner.

4,574,422

RESILIENTLY BIASED SHOES FOR MAINTAINING A VEHICLE DOOR IN AN OPEN POSITION

Jean P. Dieudonne, Fresse Sur Moselle, and Michel Steiner, Remiremont, both of France, assignors to Compagnie Industrielle de Mecanismes, France

Filed Aug. 6, 1984, Ser. No. 637,997
Int. Cl.⁴ E05F *5/08*
U.S. Cl. 16—85 **10 Claims**



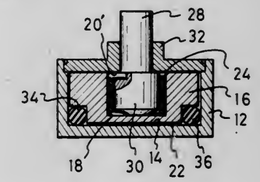
1. A device for maintaining a door attached to a stationary structure in an open position comprising:
(a) an arm attached to the stationary structure and extending into the door;
(b) a pair of opposed shoes spaced so as to define a guide path for the arm therebetween, the shoes slidably contacting at least a portion of the arm, the distance between the shoes being less than the maximum thickness of the arm such that the shoes are spread apart and move toward each other as the arm passes along the guide path;
(c) a generally cylindrical, resilient support structure attached to each of the shoes, the support structure having a support surface and being resiliently deformable when the shoes are moved away from each other; and,
(d) at least one coil spring disposed about the support structure such that the coils of the spring are in frictional contact with the support surface so as to exert a force thereon which opposes the spreading apart of the shoes.

4,574,423

ROTARY DAMPER HAVING A CLUTCH SPRING AND VISCOUS FLUID

Kenji Ito, Tochigi, and Masanori Watanabe, Toga, both of Japan, assignors to Fuji Seiki Kabushiki Kaisha, Japan

Filed Feb. 6, 1984, Ser. No. 577,007
Claims priority, application Japan, Feb. 9, 1983, 58-16727
Int. Cl.⁴ E05F *5/08*
U.S. Cl. 16—85 **1 Claim**



1. A rotary damper with a directional property, comprising:
a housing having a bottom;
a rotor rotatably received in said housing, said rotor having a circular recess formed on the upper surface thereof;
a viscous liquid interposed between the bottom of said housing and the lower surface of said rotor to apply a viscous resistance to said rotor;

a revolving shaft having a part thereof rotatably inserted in said recess of said rotor;

clutch means in the form of a coil spring fitted on said part of said revolving shaft in a manner to be interposed between said rotor and said revolving shaft through said recess and form a frictional contact with said revolving shaft;

a cutout formed in said part of said revolving shaft opposite to the upper end of said recess and having one end of said clutch spring securely supported therein; and

friction means comprising a rubber ring interposed between and mutually engaging an annular recess formed at the lower portion of the outer periphery of said rotor and the bottom of said housing.

4,574,424

HANDLE AND PULL-OUT PART ON CUPBOARDS AND SHELVES

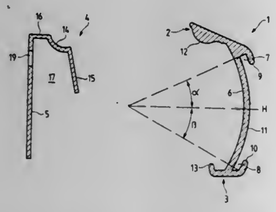
Anton Reis, Sulgen, Switzerland, assignor to Lista AG., Erlen, Switzerland

Filed Jul. 18, 1984, Ser. No. 631,873

Claims priority, application Switzerland, Jul. 19, 1983, 3948/83

Int. Cl.⁴ B65D *25/28*

U.S. Cl. 16—114 R **7 Claims**



1. A handle for use on and in combination with a pull-out such as a shelf comprising a gripping profile and a holder, said holder having a front wall, a spacing member and a flat leg section connected together with said spacing member by a concavely curved section, said front wall, said spacing member and said leg section forming a cavity therebetween, said leg section being shorter than the front wall and extending at an angle away from the front wall, said gripping profile having an upper edge and a lower edge, said upper edge being provided on the inside surface thereof with a bulge received in said concavely curved section for securing said gripping profile to said holder and said lower edge being provided on the inside surface thereof with a holding web that engages said leg section for securing said gripping profile to said holder wherein said lower edge of said gripping profile is gripped when said part is pulled out.

4,574,425

FLEXIBLE HINGE ASSEMBLY HAVING A SUBSTRATE SUPPORTING PORTION

Haruyuki Sugiura, Kariya, Japan, assignor to Kitagawa Industries Co., Ltd., Nagoya, Japan

Continuation of Ser. No. 542,701, Oct. 17, 1983, abandoned. This application May 17, 1985, Ser. No. 734,829

Claims priority, application Japan, Oct. 19, 1982, 57-158339

Int. Cl.⁴ E05D *1/02, 5/00*

U.S. Cl. 16—225 **8 Claims**

1. In an assembly of a hinge, a first substrate and a second substrate, the hinge for joining the first substrate and the second substrate at edges thereof in such a manner that said hinge is capable of opening and closing a space between said substrates, said substrates each having at least one hole at the vicinity of said edges, said hinges being used in pairs and comprising:

(a) a first mounting portion including,

a first plate,

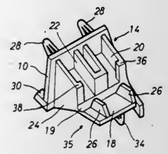
first protrusions projection from one surface of said first plate, said first protrusions having an arrowhead shape and being expandable after having been inserted in a hole of said first substrate,

a second plate extending angularly to said first plate,

a pair of first ribs extending angularly to both said first plate and said second plate, each of said first ribs being connected to said first plate and said second plate, said first ribs projecting from another surface of said first plate opposite said one surface,

at least one second rib projecting from said first plate between said first ribs, and

an extended portion extending from said another surface and being coplanar with at least one of said first ribs, said extended portion being connected to said second plate;



(b) a second mounting portion including,

a third plate,

at least two third ribs projecting from said third plate,

a second protrusion projecting from a surface of said third plate opposite a surface from which said third ribs project, said second protrusion having an arrowhead shape and being expandable after having been inserted in a hole of said second substrate;

(c) a first flexible portion bendably connecting said first mounting portion and said second mounting portion,

wherein said hinge is arranged such that said second rib comes in contact with said third plate and said third ribs reside in spaces between each of said first ribs and said second rib when said third plate is positioned parallel to said first plate, and said second substrate directly abuts and is supported by said extended portion when said third plate is swung into a position approximately angularly to said first plate to prevent further swing of said second substrate.

4,574,426

FLUSH DOOR HINGE FOR A CUT-OUT

Jonathon C. Pearson, Hope, England, assignor to Prospec International Limited, Great Britain

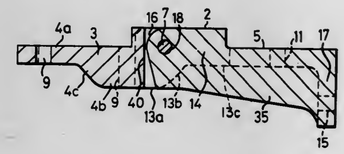
Continuation of Ser. No. 293,439, Aug. 17, 1981, abandoned, which is a continuation-in-part of Ser. No. 268,212, May 29, 1981, abandoned. This application Nov. 18, 1983, Ser. No. 553,159

Int. Cl.⁴ E05D *5/06*

U.S. Cl. 16—389 **9 Claims**

1. A door and hinge assembly comprising a first portion to be fitted to the door, a second portion to be fitted to a wall adjacent to the door, said second portion being pivotally connected to said first portion to allow rotation about a pivot axis spaced inwardly along the door from the edge of the door adjacent the wall, a third portion integral with said second portion and connectable to a wall support member extending at one side of the wall in a direction out of the plane of the wall, the hinge being mountable on said one side of the wall and door so as not to extend beyond the surfaces of the door and the wall on the other side of the wall, wherein the first portion of the hinge has

arms defining a bifurcated portion receiving a tongue extending from the second portion thereof, and wherein said hinge is adapted, so that when fitted, said bifurcated portion and the tongue together substantially fill a cut-out portion provided in the door and being substantially flush with the interior face of



the door, the cut-out portion extending inwardly from one vertical edge of the door, the tongue having a convex end which lies close to a corresponding straight surface of the first portion provided between the arms defining the bifurcated portion to allow movement of the door edge adjacent the wall out of the plane of the wall when the door is opened.

4,574,427

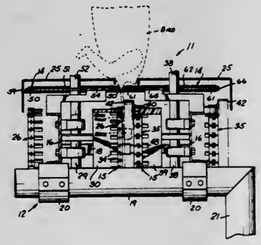
NECK PULLING AND CROPPING SYSTEM

Grover S. Harben, Jr., Edgewater Ave., and Julius A. Ellis, Rte. 8, Price Rd., both of Gainesville, Ga. 30501

Filed Jan. 3, 1984, Ser. No. 567,750

Int. Cl.⁴ A22C *21/00*

U.S. Cl. 17—11 **14 Claims**



1. A method of removing the necks from poultry comprising the steps of:

conveying the poultry along a processing path in a head lowermost position;

breaking the necks of the poultry while cutting an opening through the neck skin at its juncture with the body of the bird without severing the windpipe and esophagus;

inserting a removal member into the opening through the neck skin to engage that portion of the neck broken from the poultry carcass; and

displacing the removal member away from the poultry carcass to force the broken neck away from the poultry carcass and break the neck skin away from the poultry carcass while leaving the windpipe and esophagus attached to the poultry carcass.

4,574,428

POULTRY TRANSFERRING DEVICE

Cornelis Meyn, c/o P.O. Box 16, Oostzaan, Netherlands

Filed Jan. 16, 1984, Ser. No. 570,907

Int. Cl.⁴ A22C *21/00*

U.S. Cl. 17—11 **14 Claims**

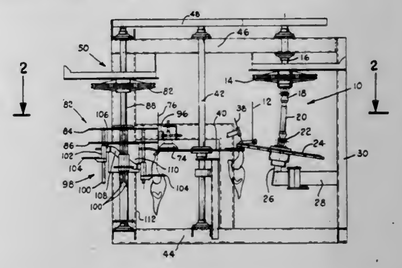
1. An apparatus for transferring fowl from one shackle carried on a first conveyor line to another shackle being carried on a second conveyor line, said fowl being carried on a conventional shackle with said legs of said fowl being carried in retaining members comprising:

a positioning means positioning said fowl in a predetermined position as said fowl is moved by said first conveyor;

a transfer wheel carried between said first conveyor line and said second conveyor line;

gripping means carried adjacent the periphery of said transfer wheel engaging said legs of said fowl carried on said first conveyor line transferring said fowl by its legs from said shackle of said first conveyor line to said transfer wheel;

means for rotating said transfer wheel moving said fowl from adjacent said first conveyor to adjacent said second conveyor line;



a shackle positioning means carried adjacent said second conveyor line advancing forward said another shackle carried by said second conveyor line to a receiving position adjacent said transfer wheel, said shackle positioning means acting to position and stabilize said another shackle as said fowl is moved from said transfer wheel to said another shackle while said another shackle is in said receiving position; and

means for disengaging said fowl from said gripping means carried on said transfer wheel and transferring said legs of said fowl into said another shackle carried on said second conveyor line.

4,574,429

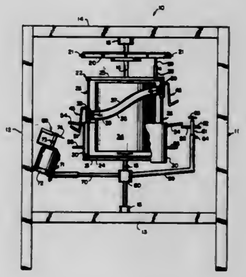
POULTRY HALVING METHOD AND APPARATUS

Jacobus E. Hazenbroek, Burg de Zeeuwstraat 52, Numansdorp, Netherlands

Filed Jul. 12, 1983, Ser. No. 513,005

Int. Cl.⁴ A22C *21/00*

U.S. Cl. 17—52 **12 Claims**

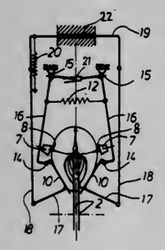


1. A method of cutting apart previously eviscerated poultry carcasses comprising the steps of

moving a V-shaped spreader tool into the cavity of a bird to spread the breast away from the back,

cutting behind the tool through the tissue extending from the breast to the back about the cavity,
withdrawing the tool from the bird, and
cutting through the backbone and a portion of the tissue about the backbone,
whereby the saddle and the breast of the bird remain attached only by the tissue at the backbone.

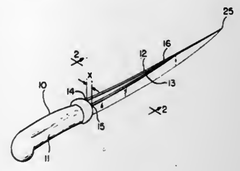
4,574,430
FISH GUIDING DEVICE
Franz Hartmann, Bad Oldesloe, Fed. Rep. of Germany, assignor to Nordischer Maschinenbau Rud. Baader GmbH + Co KG, Lubeck, Fed. Rep. of Germany
Filed Jun. 8, 1984, Ser. No. 618,895
Claims priority, application Fed. Rep. of Germany, Jun. 16, 1983, 3321727
Int. Cl.⁴ A22C *25/08*, *25/16*
U.S. Cl. 17—56 **1 Claim**



1. In a processing machine for processing fish having at least a backbone, fillet portions on both sides of said backbone, belly radii extending downwardly from said backbone and covered by said fillet portions, and outer flanks, processing means for cutting free said fillets from said belly radii of a fish, which means comprise
a. a pair of knife means arranged essentially parallel to each other,
b. a guiding device positioned in the region of said knife means for supporting the flanks of the fish and comprising guiding elements which are mounted to be pushed apart synchronously in a counter-direction to each other by said fish and
c. conveyor means for moving the fish past said processing tools in a conveying direction,
wherein
d. said guiding elements are additionally mounted pivotally about axes aligned essentially parallel to said conveying direction of said fish, and
e. means are provided for synchronising the pivoting movement of said guide elements in a counter-direction to each other.

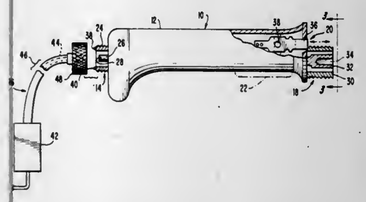
4,574,431
KNIFE FOR FILLETING FISH
Larry J. Colling, 9931 18th Ave. W. #28, Everett, Wash. 98204
Filed Nov. 19, 1984, Ser. No. 672,889
Int. Cl.⁴ A22C *25/16*
U.S. Cl. 17—66 **12 Claims**

1. A knife comprising:
a handle,
a first blade having a side, a length Y and a first juncture with said handle,
a second blade having a side, an end, a length Z, and a second juncture with said handle,
the ratio of said length Z and said length y being a fraction,
said second blade being essentially identical to said first blade but truncated to produce said length Z,
said first and said second blades extending from said handle said side by said side and with said first juncture a distance X from said second juncture,
said distance X being in the range of ⅛ inch to 1 inch,



said end of said second blade being attached to said first blade.

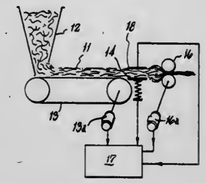
4,574,432
MULTI-PURPOSE POWER TOOL
Lionel C. Jacob, 3805 Warren Ct., Mobile, Ala. 36608
Filed Dec. 27, 1983, Ser. No. 565,695
Int. Cl.⁴ A22B *5/08*; A22C *21/02*, *25/02*
U.S. Cl. 17—67 **5 Claims**



1. A fish and game dressing power tool comprising:
an elongated handle shaped externally to be grasped and manipulated with one hand, said handle defining a generally cylindrical drive housing having first and second ends;
a rotary input coupling presented at said first end of said housing for connection to a rotatable power input shaft;
a rotatable drive shaft extending within said housing to said second end thereof and connected for direct rotation with said rotary input coupling;
a rotary tool driving coupling connected to said drive shaft and presented at said second end of said housing;
a pair of reciprocable blade mounting clips also presented at said second end of said housing;
means within said housing for converting rotation of said drive shaft to out-of-phase reciprocation of said blade mounting clips; and
means for alternatively mounting reciprocable knife blades and rotatable dressing tools at said second end of said handle defined housing.

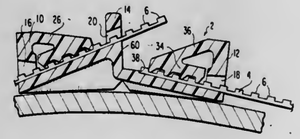
4,574,433
FIBRE METERING ARRANGEMENT
David Brunnschweiler, Blackburn, England, assignor to Haigh Chadwick Limited, West Yorkshire, England
Filed Mar. 20, 1984, Ser. No. 591,483
Claims priority, application United Kingdom, Apr. 19, 1983, 8310566; Sep. 20, 1983, 8325095
Int. Cl.⁴ D01H *5/38*
U.S. Cl. 19—105 **27 Claims**

1. A fibre metering arrangement comprising a supply conveyor conveying fibre in a delivery direction to a delivery end thereof, a non-conveying weighplate positioned downstream from said delivery end, whereby said supply conveyor carries fibre to said weighplate, and a roller arrangement downstream from said weighplate for removing fibre from said weighplate, said roller arrangement being spaced from said weighplate by



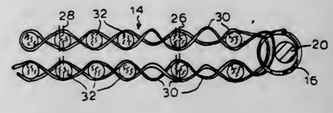
a distance sufficient to prevent fibre from accumulating over said weighplate.

4,574,434
BANDING SYSTEM AND COMPONENTS THEREOF
James T. Shupe, and T. Wayne March, both of Chattanooga, Tenn., assignors to Shupe & March Manufacturing, Inc., Chattanooga, Tenn.
Filed Aug. 20, 1984, Ser. No. 642,287
Int. Cl.⁴ B65D *63/00*
U.S. Cl. 24—16 PB **20 Claims**



1. A clip for a banding system in which the clip holds a loop formed of any selected length of band around flexible ductwork, electrical cables or other objects, said clip comprising:
a body having first band engaging means and second band engaging means,
said first band engaging means being capable of receiving a first band portion which is inserted longitudinally therein in one direction, and being operable to engage the first band portion and prevent its withdrawal from the body in an opposite direction,
said second band engaging means being capable of receiving a second band portion which is inserted longitudinally therein in one direction, and being operable to engage the second band portion and prevent its withdrawal from the body in an opposite direction,
at least one of said band engaging means having a band-receiving gap with opposed surfaces for engaging opposed faces of a band inserted in the gap, at least one of said surfaces having tooth means formed therein for engaging teeth in a band, means for providing a resilient biasing force which is operable to engage said tooth means of the clip with the teeth of a band inserted in the gap,
said body having an open side for simplifying the configuration of dies used for injection molding of the clip, said open side providing access to said gap in a direction which is lateral to a band inserted in the gap to permit forcible enlargement of the gap and convenient disengagement of the clip to release the band when desired.

4,574,435
SEAM CONSTRUCTION FOR PAPERMACHINE CLOTHING
William A. Luciano, Clifton Park, and Mary Cosciani, Glenmont, both of N.Y., assignors to Albany International Corp., Albany, N.Y.
Filed Mar. 12, 1985, Ser. No. 710,841
Int. Cl.⁴ D03D *25/00*; F16G *3/02*
U.S. Cl. 24—33 C **8 Claims**



1. A spiral seam construction joining the two ends of a flat, woven papermaker's felt having a fabric body comprising interwoven lengthwise and crosswise yarns, said lengthwise yarns being flat monofilaments of a synthetic, polymeric resin, which comprises;
(A) a first end of the body, having a first outer border at the terminus of the first end and on a plane parallel to the crosswise yarns, and a first inner border spaced inwardly of the first outer border on a plane parallel to the plane of the first outer border;
(B) a second end of the body, having a second outer border at the terminus of the second end and on a plane parallel to the crosswise yarns, and a second inner border spaced inwardly of the second outer border on a plane parallel to the plane of the second outer border;
each of said first and second ends also having first and second lateral side margins extending along the side edges of the body from the terminus to the respective inner borders on a plane parallel to the lengthwise yarns;
the first lateral side margin of the first end being spaced apart from the second lateral side margin of the first end and the first lateral side margin of the second end being spaced apart from the second lateral side margin of the second end;
each of said first and second ends also having an opening therein located between inner and outer borders and extending from first to second lateral side margins, said opening having a central axis parallel to the crosswise yarns;
the number of lengthwise yarns per inch of fabric body in the lateral side margins being a lesser number than the number of lengthwise yarns per inch in the fabric body between first and second lateral side margins;
each of said first and second ends being folded upon themselves around the central axis of the opening placing the inner border of each end in abutting contact with the outer border of each end;
(C) means for securing the fold;
(D) a first spiral coil of a polymeric resin monofilament mounted in the window of the first end and secured therein by the fold of the first end;
(E) a second spiral coil of a polymeric resin monofilament mounted in the window of the second end and secured therein by the fold of the second end;
the helices of the first and second spiral coils being interleafed with each other to form a pin receiving channel;
(F) a pin inserted in the pin receiving channel whereby the first end is removably joined to the second end; and
(G) resin coating means for stabilizing the seam construction, on the yarns of the first and second ends.

4,574,436

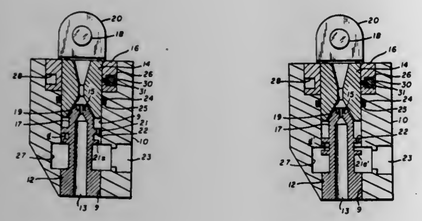
YARN TEXTURING JET

Robert E. Cullen, Jr., Kennett Square, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 668,441, Nov. 4, 1984, abandoned. This application Apr. 29, 1985, Ser. No. 728,518

Int. Cl.⁴ D02G *1/16*; D02J *1/02*

U.S. Cl. 28—254 **3 Claims**



1. In a yarn texturing jet including a body having yarn inlet and outlet ends connected by a central bore, means for introducing pressurized gas through a gas inlet into said bore between said ends, a venturi located in said bore at said outlet end, and a yarn guiding element sealing off said bore at the yarn inlet end of the body, said element having a passage therethrough for guiding yarn from the yarn inlet of the body past the gas inlet through the exit end of said element to the venturi, said element having a first cylindrical flange thereon approximating the diameter of said bore, said first flange being located in the bore downstream from said gas inlet, there being an orifice in said first flange in communication with said gas inlet for directing pressurized gas from said gas inlet into said venturi, the improvement comprising: a second cylindrical flange fixed on said element a distance upstream from the first flange within said bore and downstream of the gas inlet, said second flange having a diameter less than the first flange.

3. In a yarn texturing jet including a body having yarn inlet and outlet ends connected by a central bore, means for introducing pressurized gas through a gas inlet into said bore through a plenum located between said ends, a venturi located in said bore at said outlet end, and a yarn guiding element sealing off said bore at the yarn inlet end of the body, said element having a passage therethrough for guiding yarn from the yarn inlet of the body past the gas inlet through the exit end of said element to the venturi, said element having a first cylindrical flange thereon approximating the diameter of said bore, said first flange being located in the bore downstream from said gas inlet, there being an orifice in said first flange in communication with said gas inlet for directing pressurized gas from said gas inlet into said venturi, the improvement comprising: a second cylindrical flange fixed on said element a distance upstream from the first flange within said plenum, said second flange having a diameter equal to the first flange.

4,574,437

METHODS AND DEVICE FOR TERMINATING TACHYCARDIA

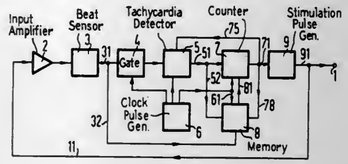
Christer H. A. Segerstad, Järfälla, and Hans Vallin, Västerhaninge, both of Sweden, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Continuation of Ser. No. 446,673, Dec. 3, 1982, abandoned. This application May 23, 1985, Ser. No. 736,990

Claims priority, application Sweden, Dec. 4, 1981, 8107269

Int. Cl.⁴ A61N *1/36*

U.S. Cl. 128—419 PG **11 Claims**



1. A device for terminating tachycardia in a heart comprising:

a detector means for detecting tachycardia and for generating an output signal upon the detection thereof;

a measuring means for measuring the interval between successive tachycardia heartbeats;

a delay generating means connected to said detector means and said measuring means, said delay generating means having an arithmetic means for deriving a plurality of different delay times from said interval, a shortest of said delay times being at least equal to the refractory period of said heart and successively derived delay times being increasingly longer by increasingly longer amounts, and having a counter means for determining said refractory period and a scanner means for scanning said delay times beginning with said shortest period; and

an output means connected to said counter means for generating at least one stimulation pulse for supply to said heart at the end of each scanned delay time.

4,574,438

METHOD OF MAKING PRESSURE-SENSITIVE TRANSDUCER

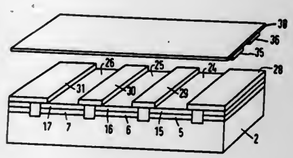
Heinrich Diepers, Hoechstadt, and Herbert Schewe, Herzogenaurach, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Division of Ser. No. 536,408, Sep. 27, 1983, Pat. No. 4,495,434. This application Dec. 11, 1984, Ser. No. 680,420

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1982, 3236098

Int. Cl.⁴ H04R *17/00*

U.S. Cl. 29—25.35 **2 Claims**



1. Process for making a pressure-sensitive transducer arrangement comprising the steps of:

(a) covering the surface of a substrate with a metal layer;

(b) covering said metal layer with a dielectric layer formed of a piezoelectric material;

(c) cutting grooves in said metal and dielectric layers cown to the substrate to create separate strip-shaped regions, the metal strips of which form column conductors;

(d) filling said grooves with an electrically insulating material;

(e) providing clearance spacers on the free surface of the strip-shaped regions; and

(f) superimposing row electrodes over the clearance spacers thereby forming empty spaces at the crosspoints of the column and row electrodes, respectively.

4,574,439

DEEP BORING MACHINE

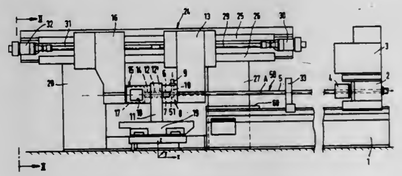
Richard Weiblen, Münsingen-Dottingen, Fed. Rep. of Germany, assignor to TBT Tiefbohrtechnik GmbH & Co. KG, Fed. Rep. of Germany

Filed Sep. 11, 1984, Ser. No. 649,344

Claims priority, application Fed. Rep. of Germany, Jul. 24, 1984, 3427212

Int. Cl.⁴ B23B *7/14*

U.S. Cl. 29—27 A **6 Claims**



1. A deep boring machine, comprising:

a machine bed;

a spindle unit including a spindle shaft, said spindle unit being horizontally displaceable on the machine bed;

a spindle drive for horizontally displacing the spindle unit on the machine bed;

a boring tool including a boring head attached to one end of the spindle shaft;

a jig bushing for guiding the boring head during initial boring of a workpiece;

a jig bushing holder on which the jig bushing is disposed, said jig bushing holder being displaceable in the direction of the spindle shaft;

guide means for guiding the displacement of the jig bushing holder, said guide means being disposed above and offset parallel to the spindle shaft and extending at least partly beyond the machine bed in the direction of the spindle shaft; and

a workpiece clamping table provided adjacent to the machine bed in the direction of the spindle shaft, said workpiece clamping table being adjustable independently of the machine bed.

4,574,440

MARKER SLEEVE APPLICATOR MACHINE

Gary J. Wirth, Milwaukee, and Robert F. Behlmer, Whitefish Bay, both of Wis., assignors to W. H. Brady Co., Milwaukee, Wis.

Filed Jul. 27, 1984, Ser. No. 635,340

Int. Cl.⁴ B23P *19/00*

U.S. Cl. 29—33 E **14 Claims**

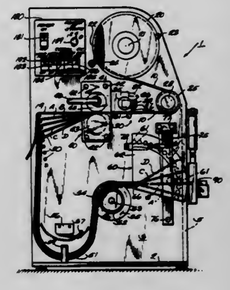
1. Apparatus for the application to an article of a marker sleeve from a strip comprising a plurality of flat tubular marker sleeves having opposed open ends and connected to one another along closed sides, the apparatus comprising, in combination:

(1) an application station including

(a) sleeve engagement means having a receiving position for receiving an endmost marker sleeve of the strip and a retaining position for retaining the marker sleeve,

(b) severing means for removing an endmost marker sleeve from the strip while retained by the sleeve engagement means in its retaining position, and

(c) opening means for opening a flat marker sleeve retained by the sleeve engagement means to a condition for insertion of an article through the opened marker sleeve;



(2) means for feeding the endmost marker sleeve of the strip of marker sleeves to the sleeve engagement means in its receiving position,

the sleeve engagement means thereafter assuming its retaining position following which the severing means and opening means operate to sever and open the marker sleeve, which cycle is repeated after removal of a marker sleeve from the sleeve engagement means.

4,574,441

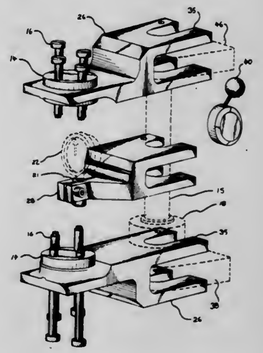
MULTIPLE STOP POSITION CONTROL APPARATUS FOR A MILLING MACHINE

Israel Kronfeld, 941 NE. 170th St., #210, N. Miami Beach, Fla. 33162

Filed Mar. 19, 1984, Ser. No. 591,111

Int. Cl.⁴ B23B *49/00*

U.S. Cl. 29—57 **6 Claims**



1. An improvement in a multiple-stop position control apparatus for selective height, depth, and workpiece platform control of tool-to-workpiece position, said apparatus detachably attachable to a milling machine tool carriage and to a screw shaft operably secured parallel to the position of travel of said carriage, said carriage including upper and lower casting lips,

said screw shaft including an adjustable nut threaded thereon, said shaft further including a carriage stop knob threaded on and aout said shaft and above said adjustable nut, wherein the inventive improvement comprises:

(a) an insertable lower stop platform for controlling depth of tool cut in a workpiece, said insertable lower stop platform having one fork-like end detachably attachable to said lower casting lip and securable thereonto by said adjustable nut, and said stop platform having a circular opening within its opposite end;

(b) a rotatable stop collar held within said circular opening of said stop platform and a plurality of stops adjustably held within said collar, said stops parallel to the direction of carriage travel;

(c) an insertable indicator platform having one fork-like end detachably attachable to said carriage stop knob, said indicator platform including indicator receiving means at its opposite end; and

(d) a plunger-type linear position indicator attachable within sad receiving means of said indicator platform, having the plunger thereof in linear alignment with a selected one stop of said plurality of stops in said rotatable stop collar, said selected stop reflecting the desired depth of travel of the milling tool within the workpiece,

whereby the extent of travel of said indicator platform relative to said stop platform may be verified by viewing the face of said indicator during its downward travel with said indicator platform.

4,574,442

SINGLE PASS BORING, SKIVING AND ROLLER BURNISHING TOOL

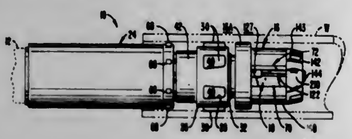
Lawrence C. Dickinson, deceased, late of Reno, Nev., and by Krestine Corbin, administrator, 532-4 Woodside Oaks, Sacramento, Calif. 93825

Continuation-in-part of Ser. No. 401,580, Jul. 26, 1982, Pat. No. 4,509,885, which is a continuation-in-part of Ser. No. 301,503, Sep. 14, 1981, Pat. No. 4,425,693, which is a continuation-in-part of Ser. No. 205,026, Nov. 7, 1980, Pat. No. 4,380,851, which is a continuation-in-part of Ser. No. 183,664, Sep. 2, 1980, Pat. No. 4,367,576. This application Sep. 14, 1984, Ser. No. 650,933

The portion of the term of this patent subsequent to Jan. 11, 2000, has been disclaimed.

Int. Cl.⁴ B24B *39/00, 39/02*

U.S. Cl. 29—90 R **4 Claims**



1. A boring, skiving and roller burnishing tool for mounting drive tube assembly and a frustoconical outer surface tapering radially outward in the axially forward direction;

a plurality of frustoconically tapered rollers each having a large end and a small end and being arranged about said outer surface with the small ends of said rollers facing forward to that the surface portion of each roller furthest from the central axis of the roller race is generally parallel to said central axis;

a roller cage having a plurality of slots, said roller cage circumscribing and being spaced apart from the roller race so that said slots and said roller race together define a plurality of cavities for receiving individual rollers;

a roller pusher having (1) a forward extension for directly engaging the rear surfaces of individual rollers when the pusher is moved forwardly relative to the roller race to push the rollers forward and cause the rollers to translate radially outward along the tapered surface of the roller cage, and (2) a lip for directly engaging the roller cage when the pusher is moved rearwardly relative to the roller race to draw the rollers rearward and allow the rollers to translate radially inward;

means for biasing said roller pusher in said forward direction with a preselected force so that the force exerted upon said internal surface of said hole remains constant over a range of sizes of said hole; and

means for retracting the roller pusher when the axial force is reduced to draw the roller cage rearwardly so that the rollers move radially inward and the tool can be withdrawn from the workpiece.

4,574,443

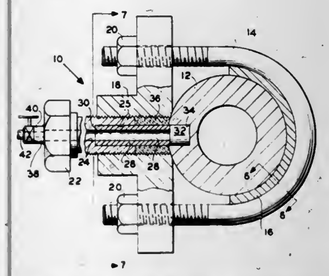
PIPE PUNCH DEVICE

Steven R. Persak, Linden, and John Hudak, Jr., Basking Ridge, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Jun. 21, 1984, Ser. No. 623,003

Int. Cl.⁴ F16K *41/04*

U.S. Cl. 29—157.1 R **11 Claims**



means to advance the end of said pin against the punch to cause said punch to penetrate the wall of said fluid containing member.

4,574,444

METHOD FOR THE JOINING OF TUBULAR PARTS IN A HEAT EXCHANGER AND TOOL FOR PRACTICING THE METHOD

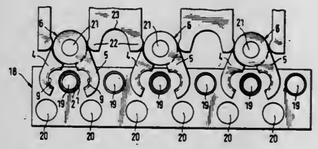
Bohumil Humpolik, Ludwigsburg, Fed. Rep. of Germany, assignor to Sueddeutsche Kuehlerfabrik, Julius Fr. Behr GmbH & Co. KG, Stuttgart, Fed. Rep. of Germany

Filed Aug. 12, 1983, Ser. No. 522,702

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1982, 3232297

Int. Cl.⁴ B21D *53/08*

U.S. Cl. 29—157.3 C **2 Claims**



1. A method for joining a plurality of closely spaced inner and outer tubular parts of a heat exchanger wherein either the plurality of inner tubular parts or the plurality of outer tubular parts are positioned in the same heat exchanger element, comprising the steps of:

(a) inserting said inner tubular parts into said outer tubular parts, thereby defining a plurality of first sections of said inner parts not surrounded by said outer parts, a plurality of joint regions in which one of said inner parts is surrounded by one of said outer parts, a plurality of first transitions between said first sections and said joint regions, a plurality of second sections of said outer parts which do not surround said inner parts, and a plurality of second transitions between said joint regions and said second sections;

(b) radially or tangentially moving a plurality of pressure elements to a position for annularly surrounding a plurality of said tubular parts, each pressure element having a conical pressure surface defined by a first opening having a larger diameter, a second opening having a smaller diameter, and a conical surface therebetween which extends substantially the entire length of the pressure element wherein said pressure elements are connected together to function simultaneously;

(c) closing said plurality of pressure elements to annularly

4,574,445

METHOD AND APPARATUS FOR MANUFACTURING A NOZZLE PLATE FOR INK-JET PRINTERS

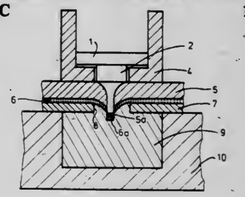
Horst Bentin; Michael Döring; Horst Kronenberg, all of Hamburg, and Werner Jeglinski, Bönningstedt, all of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 23, 1984, Ser. No. 633,745

Claims priority, application Fed. Rep. of Germany, Jul. 23, 1983, 3326580

Int. Cl.⁴ B21D *53/00, 31/02;* B23P *17/02*

U.S. Cl. 29—157 C **10 Claims**



1. A method of manufacturing a nozzle plate for an ink-jet printer, including

aligning a pressing and punching tool having dimensions corresponding to the internal dimensions of a nozzle to be formed, opposite a pressing die having a circular aperture and a press mold formed by a cushion which is an elastic block, and

in a single operation, using the tool to locally press the plate into the circular aperture, and then punching through the plate into the elastic block during further pressing of the tool,

wherein the improvement comprises the steps of providing a metal foil made of an isotropic material which is harder than said plate,

positioning the metal foil tightly against that side of the plate which is remote from the tool,

pressing and punching the foil through the circular aperture together with the plate during said single operation.

4,574,446

METHOD AND A DEVICE FOR ENABLING RAPID ATTENUATION AND SUBSEQUENT SECURING OF SPOKES TO BE MOUNTED IN A SPOKE WHEEL

Roland Kaufeldt, deceased, late of Tyreso, Sweden, and by Per-Ola Persson, executor, Stockholm, Sweden, assignors to Monark-Crescent AB Fack, Varberg, Sweden

Filed Oct. 9, 1984, Ser. No. 658,617

Claims priority, application Sweden, Oct. 13, 1983, 8305622

Int. Cl.⁴ B21K *1/34*

U.S. Cl. 29—159.02 **7 Claims**

said screw shaft including an adjustable nut threaded thereon, said shaft further including a carriage stop knob threaded on and aout said shaft and above said adjustable nut, wherein the inventive improvement comprises:

(a) an insertable lower stop platform for controlling depth of tool cut in a workpiece, said insertable lower stop platform having one fork-like end detachably attachable to said lower casting lip and securable thereonto by said adjustable nut, and said stop platform having a circular opening within its opposite end;

(b) a rotatable stop collar held within said circular opening of said stop platform and a plurality of stops adjustably held within said collar, said stops parallel to the direction of carriage travel;

(c) an insertable indicator platform having one fork-like end detachably attachable to said carriage stop knob, said indicator platform including indicator receiving means at its opposite end; and

(d) a plunger-type linear position indicator attachable within sad receiving means of said indicator platform, having the plunger thereof in linear alignment with a selected one stop of said plurality of stops in said rotatable stop collar, said selected stop reflecting the desired depth of travel of the milling tool within the workpiece,

whereby the extent of travel of said indicator platform relative to said stop platform may be verified by viewing the face of said indicator during its downward travel with said indicator platform.

4,574,442

SINGLE PASS BORING, SKIVING AND ROLLER BURNISHING TOOL

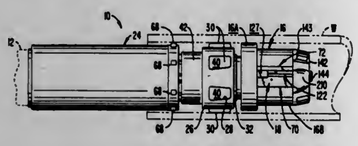
Lawrence C. Dickinson, deceased, late of Reno, Nev., and by Krestine Corbin, administrator, 532-4 Woodside Oaks, Sacramento, Calif. 93825

Continuation-in-part of Ser. No. 401,580, Jul. 26, 1982, Pat. No. 4,509,885, which is a continuation-in-part of Ser. No. 301,503, Sep. 14, 1981, Pat. No. 4,425,693, which is a continuation-in-part of Ser. No. 205,026, Nov. 7, 1980, Pat. No. 4,380,851, which is a continuation-in-part of Ser. No. 183,664, Sep. 2, 1980, Pat. No. 4,367,576. This application Sep. 14, 1984, Ser. No. 650,933

The portion of the term of this patent subsequent to Jan. 11, 2000, has been disclaimed.

Int. Cl.⁴ B24B *39/00, 39/02*

U.S. Cl. 29—90 R **4 Claims**



1. A boring, skiving and roller burnishing tool for mounting on a rotatable drive member to bore, skive and burnish the interior of a cylinder or other workpiece, said tool comprising:

an elongate drive tube assembly having means for attachment to the drive member;

a means for boring the cylinder attached to the drive tube at the forward end thereof, said means for boring including a plurality of cutting blades oriented to remove material from the cylinder to a preselected diameter as the tool is rotated;

a means for skiving the cylinder attached to the drive tube rearward of the boring means and including at least one retractable knife capable of removing materie' from the cylinder at a diameter greater than the preselected diameter as the tool is rotated; and

a means for burnishing the cylinder attached to the drive tube rearward of the skiving means, said burnishing means comprising:

a roller race having a central axis coincident with that of the drive tube assembly and a frustoconical outer surface tapering radially outward in the axially forward direction;

a plurality of frustoconically tapered rollers each having a large end and a small end and being arranged about said outer surface with the small ends of said rollers facing forward to that the surface portion of each roller furthest from the central axis of the roller race is generally parallel to said central axis;

a roller cage having a plurality of slots, said roller cage circumscribing and being spaced apart from the roller race so that said slots and said roller race together define a plurality of cavities for receiving individual rollers;

a roller pusher having (1) a forward extension for directly engaging the rear surfaces of individual rollers when the pusher is moved forwardly relative to the roller race to push the rollers forward and cause the rollers to translate radially outward along the tapered surface of the roller cage, and (2) a lip for directly engaging the roller cage when the pusher is moved rearwardly relative to the roller race to draw the rollers rearward and allow the rollers to translate radially inward;

means for biasing said roller pusher in said forward direction with a preselected force so that the force exerted upon said internal surface of said hole remains constant over a range of sizes of said hole; and

means for retracting the roller pusher when the axial force is reduced to draw the roller cage rearwardly so that the rollers move radially inward and the tool can be withdrawn from the workpiece.

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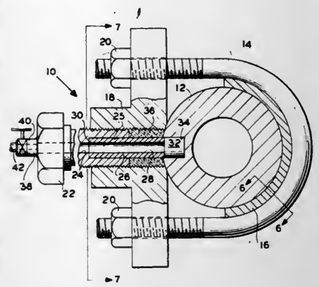
PIPE PUNCH DEVICE

Steven R. Persak, Linden, and John Hudak, Jr., Basking Ridge, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Jun. 21, 1984, Ser. No. 623,003

Int. Cl.⁴ F16K *41/04*

U.S. Cl. 29—157.1 R **11 Claims**



11. An improved method for forming a hole in a fluid containing member comprising the steps of:

attaching a threaded receiver means to said fluid containing member;

threading a drill jig bushing into said receiver means;

drilling a cylindrical recess partially through the wall thickness of said fluid containing member;

removing said drill jig bushing from said receiver means;

wrapping a ribbon seal packing material about the protruding end of a rotatable hollow pin member located in a threaded penetrator bolt;

inserting a cylindrical punch in said cylindrical recess;

threading said penetrator bolt into said receiver means to thereby compress said packing material about said pin member and against the outer wall of said fluid containing member surrounding said cylindrical recess; and

further threading said penetrator bolt into said receiver means to advance the end of said pin against the punch to cause said punch to penetrate the wall of said fluid containing member.

4,574,444

METHOD FOR THE JOINING OF TUBULAR PARTS IN A HEAT EXCHANGER AND TOOL FOR PRACTICING THE METHOD

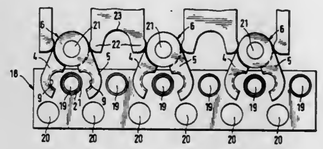
Bohumil Humpolik, Ludwigsburg, Fed. Rep. of Germany, assignor to Suddeutsche Kuehlerfabrik, Julius Fr. Behr GmbH & Co. KG, Stuttgart, Fed. Rep. of Germany

Filed Aug. 12, 1983, Ser. No. 522,702

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1982, 3232297

Int. Cl.⁴ B21D *53/08*

U.S. Cl. 29—157.3 C **2 Claims**



1. A method for joining a plurality of closely spaced inner and outer tubular parts of a heat exchanger wherein either the plurality of inner tubular parts or the plurality of outer tubular parts are positioned in the same heat exchanger element, comprising the steps of:

(a) inserting said inner tubular parts into said outer tubular parts, thereby defining a plurality of first sections of said inner parts not surrounded by said outer parts, a plurality of joint regions in which one of said inner parts is surrounded by one of said outer parts, a plurality of first transitions between said first sections and said joint regions, a plurality of second sections of said outer parts which do not surround said inner parts, and a plurality of second transitions between said joint regions and said second sections;

(b) radially or tangentially moving a plurality of pressure elements to a position for annularly surrounding a plurality of said tubular parts, each pressure element having a conical pressure surface defined by a first opening having a larger diameter, a second opening having a smaller diameter, and a conical surface therebetween which extends substantially the entire length of the pressure element wherein said pressure elements are connected together to function simultaneously;

(c) closing said plurality of pressure elements to annularly surround the first sections of said plurality of inner parts and the first transitions thereof with said pressure elements, wherein said first openings are positioned substantially at said first transition;

(d) axially moving said plurality of pressure elements toward and along said joint regions so that the openings with the smaller diameter are moved along substantially the entire length of the joint regions whereby the conical pressure surfaces effect a radially inward plastic deformation of said outer part along each of said joint regions and an at least partial elastic deformation of said inner part along each of said joint regions; and

(e) opening each said pressure element and moving it away from said tubular parts after said step of axially moving said pressure element, wherein each pressure element is moved past each said joint region and first transition before being opened.

4,574,445

METHOD AND APPARATUS FOR MANUFACTURING A NOZZLE PLATE FOR INK-JET PRINTERS

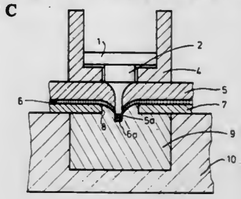
Horst Bentin; Michael Döring; Horst Kronenberg, all of Hamburg, and Werner Jeglinski, Bönningstedt, all of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 23, 1984, Ser. No. 633,745

Claims priority, application Fed. Rep. of Germany, Jul. 23, 1983, 3326580

Int. Cl.⁴ B21D *53/00, 31/02;* B23P *17/02*

U.S. Cl. 29—157 C **10 Claims**



1. A method of manufacturing a nozzle plate for an ink-jet printer, including

aligning a pressing and punching tool having dimensions corresponding to the internal dimensions of a nozzle to be formed, opposite a pressing die having a circular aperture and a press mold formed by a cushion which is an elastic block, and

in a single operation, using the tool to locally press the plate into the circular aperture, and then punching through the plate into the elastic block during further pressing of the tool,

wherein the improvement comprises the steps of providing a metal foil made of an isotropic material which is harder than said plate,

positioning the metal foil tightly against that side of the plate which is remote from the tool,

pressing and punching the foil through the circular aperture together with the plate during said single operation.

4,574,446

METHOD AND A DEVICE FOR ENABLING RAPID ATTENUATION AND SUBSEQUENT SECURING OF SPOKES TO BE MOUNTED IN A SPOKE WHEEL

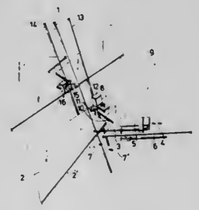
Roland Kaufeldt, deceased, late of Tyreso, Sweden, and by Per-Ola Persson, executor, Stockholm, Sweden, assignors to Monark-Crescent AB Fack, Varberg, Sweden

Filed Oct. 9, 1984, Ser. No. 658,617

Claims priority, application Sweden, Oct. 13, 1983, 8305622

Int. Cl.⁴ B21K *1/34*

U.S. Cl. 29—159.02 **7 Claims**



1. A method of attenuating an oscillating movement and clamping in a predetermined position the free end of at least one spoke which after having been introduced through a spoke aperture at the bottom of a spoke hub depends freely under the influence of gravity, comprising

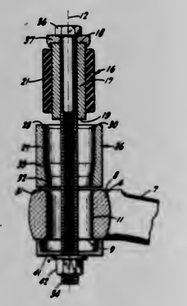
(a) guiding said free end of the spoke into a slot which includes an energy attenuating structure so that said free end of the spoke exits from the slot with a continued attenuated movement,
(b) intercepting said exiting free end of said spoke by a magnet, and
(c) guiding the intercepted free end of said spoke to a securing device for clamping said free end of said spoke in an intended position.

4,574,447

DEVICE FOR INSERTING A BUSHING INTO A SOCKET

Walter L. Bailey, 8120 Donnawood Way, Orangevale, Calif. 95662

Filed Feb. 19, 1985, Ser. No. 702,805
Int. Cl.[4] B23P *19/04*
U.S. Cl. 29—234 **1 Claim**



1. A device for inserting a metal-elastomer cylindrical bushing axially into a smaller cylindrical socket comprising a body having a bore therethrough and adapted to be disposed with one end thereof against and in alignment with said socket and with the other end thereof against and in alignment with said bushing, means including the wall of said body bore defining the frustum of a cone converging toward said socket end, a threaded bolt adapted to extend axially through said aligned bushing and said body and said socket, means on said bolt and engaging one of said bushing and said socket, and a nut engaging said threaded bolt and engaging the other of said bushing and said socket for moving said elastomer of said bushing axially through said cone and said bushing into said socket.

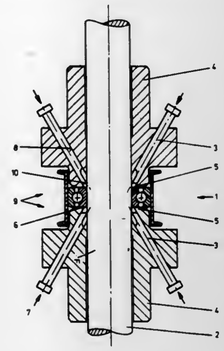
4,574,448

APPARATUS FOR FASTENING MACHINE ELEMENT TO A SHAFT

Manfred Brandenstein, Eussenheim; Willi Gössmann, Niederwerrn; Gebhard Pape, Schweinfurt; Klaus Huttner, Heidenfeld, and Wilfried Ludwig, Sennfeld, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Jul. 10, 1984, Ser. No. 629,430
Claims priority, application Fed. Rep. of Germany, Jul. 22, 1983, 3326491
Int. Cl.[4] B23Q *1/00, 3/00, 7/04*
U.S. Cl. 29—283.5 **1 Claim**

1. An apparatus for affixing a machine element to a shaft comprising two axially moveable substantially annular work tool holders mountable on the shaft on both sides of the machine element, each work tool holder having at least one diametrically opposite pair of displaceable stamping tools and means for guiding the respective stamping tools for movement



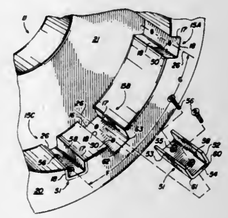
in a direction at an angle to the central axis of the apparatus or shaft.

4,574,449

METHOD FOR RETROFITTING CLUTCH HOUSING

Harley E. Wussow, P.O. Box 270, Prescott, Ariz. 86302

Filed Apr. 8, 1985, Ser. No. 721,273
Int. Cl.[4] B23P *7/00, 19/04;* **F16D** *47/02*
U.S. Cl. 29—402.06 **1 Claim**



1. A method for retrofitting a transmission clutch apparatus, said apparatus including
a generally cylindrical hollow housing having a cylindrical inner wall circumscribing an imaginary longitudinal axis, said inner wall having a plurality of spaced apart generally U-shaped grooves formed therein, each groove having a bottom surface and a pair of side surfaces upwardly depending from said bottom surface, said bottom surface of each groove being generally parallel to said imaginary longitudinal axis,
at least one plate disposed in said hollow housing and having a circular outer edge with a plurality of radially outwardly projecting spaced-apart U-shaped tangs attached thereto, each of said U-shaped grooves of said housing being shaped and dimensioned and spaced along said inner wall such that
each of said grooves receives one of said radial tangs,
said side surfaces diverge away from one another and from a radial imaginary plane passing through said longitudinal axis and said bottom surface,
only certain of said tangs contact said side walls of said U-shaped grooves at one time during operation of said apparatus, said simultaneous contact of only certain of said radial tangs with said walls of said U-shaped grooves increasing the rate of wear of said contacted grooves,

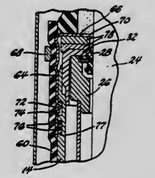
said method comprising the steps of
(a) disassembling said transmission clutch apparatus;
(b) machining said U-shaped grooves to
(i) enlarge each of said grooves to receive U-shaped inserts having inner side walls and an inner bottom wall,
(ii) true the shape of each of said U-shaped grooves such that said side walls thereof are generally parallel to said radial imaginary plane, and
(iii) adjust the spacing between said grooves such that when said inserts are secured therein the spacing between said inserts corresponds to the spacing between said radial tangs on said periphery of said circular plate when said plate is installed in said housing, said correspondence between said insert spacing and tang spacing insuring that said radial tangs will each generally simultaneously contact at least one of said side walls of each of said inserts during operation of said apparatus; and,
(c) inserting and securing one of said U-shaped inserts in each of said machined U-shaped grooves; and,
(d) assembling said clutch transmission apparatus with said circular plate in said clutch housing and said tangs projecting into and positioned in said U-shaped inserts.

4,574,450

METHOD OF SERVICING A VEHICLE SUSPENSION UNIT WITH REPLACEMENT AIR SPRING

Wayne V. Fannin, Xenia, and James M. Pees, Dayton, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 597,967, Apr. 9, 1984, Pat. No. 4,534,545, which is a continuation of Ser. No. 324,490, Nov. 21, 1981, abandoned. This application Apr. 12, 1985, Ser. No. 722,705
Int. Cl.[4] B23P *7/00;* **F16F** *9/04;* **F16J** *15/50*
U.S. Cl. 29—402.08 **2 Claims**



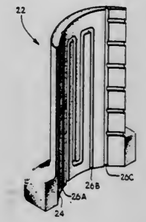
1. A method of servicing an air spring suspension strut having a hydraulic shock absorber with outer fluid reservoir tube and having a worn cylindrical air sleeve of rubber-like material with one end contacting and directly connected by first encircling clamp means to said reservoir tube and the other end contacting and directly connected to a dust tube of the strut by second encircling clamp means, the dust tube being removably connected to an upper end of a reciprocally movable piston rod of the shock absorber and cooperating with the air sleeve to form a chamber to receive pressurized air and provide a pneumatic spring between sprung and unsprung vehicle components comprising the steps of removing the dust tube from the piston rod and the worn air sleeve from direct engagement with said reservoir tube of the strut, axially moving a replacement air sleeve and an upper thin walled sheet metal cylindrical fitting secured in an air-tight manner thereto as a unit over the reservoir tube until the fitting positively locks axially to said reservoir tube and in an air-tight manner directly onto the reservoir tube, reinstalling the dust tube to the strut, extending the lower end of the replacement air sleeve around the lower end of the dust tube, clamping the lower end of the air sleeve to the outer lower end of said dust tube in an air-tight manner to complete the air sleeve replacement so that the replacement air sleeve has contiguous and direct contact with said reservoir tube and so that the interior of the air sleeve can be subsequently charged with pressurized air.

4,574,451

METHOD FOR PRODUCING AN ARTICLE WITH A FLUID PASSAGE

Russell W. Smashey, Loveland, and Lewis J. Stoffer, Cincinnati, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Dec. 22, 1982, Ser. No. 452,242
Int. Cl.[4] B22D *23/00, 29/00;* **B23P** *17/00;* **B22C** *9/02*
U.S. Cl. 29—423 **11 Claims**



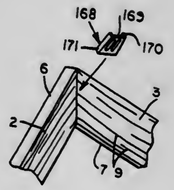
1. In a method for producing an article which includes a fluid passage, the steps of:
(a) providing a mandrel including a work surface;
(b) deposition a first material on the work surface by low pressure plasma deposition to provide a first member having an inner surface in contact with the work surface;
(c) separating the first member and the mandrel;
(d) generating in the inner surface of the first member a groove of a selected configuration of at least a portion of the fluid passage;
(e) depositing a sacrificial material in the groove;
(f) applying a cover material over the sacrificial material and over at least that portion of the inner surface adjacent the sacrificial material to provide a preform; and then
(g) removing the sacrificial material to provide at least a portion of the fluid passage.

4,574,452

METHOD OF FASTENING METERED JOINTS OF A WOODEN PICTURE FRAME

Gary D. Kennedy, and Joseph G. Maher, both of Atlanta, Ga., assignors to Kentec, Inc., Decatur, Ga.

Division of Ser. No. 357,425, Mar. 12, 1982, which is a continuation of Ser. No. 169,371, Jul. 16, 1980. This application Dec. 20, 1983, Ser. No. 549,622
Int. Cl.[4] B23P *11/00*
U.S. Cl. 29—432 **3 Claims**



1. A method of fastening mitered joints of picture frames of the like having elongated wooden frame elements with the grain of the wood extending along the length of the frame elements and with the frame elements having angled end surfaces, comprising the steps of positioning frame elements in angled relationship with respect to each other with their end surfaces in flat abutment with each other and forming a plurality of mitered joints with the grain of each frame element

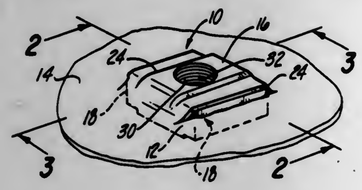
generally oriented at an angle with respect to the grain of adjacent frame elements to form a closed frame having a front surface, a back surface, and inner and outer edge surfaces, and as the frame elements are positioned in abutment with each other, clamping adjacent frame elements in their angled relationship and inserting a fastener into the clamped frame elements about the mitered joint through the previously uncut grain of the frame elements, the fastener having a central web and side flanges along opposite sides of the central web with the side flanges straddling the end surfaces of the frame elements, and wherein the step of inserting the fastener into the frame elements comprises orienting the central web and side flanges of the fastener at an angle sloped from the back and outer edge surfaces of the frame toward the front and inner surfaces of the frame and as the fastener is inserted cutting across the wood grain with the side flanges of the fastener and tending to gather the wood grain with the side flanges as the fastener is inserted into the frame elements.

4,574,453

SELF-ATTACHING FASTENER AND METHOD OF SECURING SAME TO SHEET MATERIAL

Edwin G. Sawdon, St. Clair, Mich., assignor to BTM Corporation, Marysville, Mich.

Continuation of Ser. No. 607,949, May 7, 1984, abandoned, which is a division of Ser. No. 373,621, Apr. 30, 1982, abandoned. This application Dec. 5, 1984, Ser. No. 678,367
Int. Cl.⁴ B23P *11/00, 19/00*
U.S. Cl. 29—432 **35 Claims**



1. A method of securing a fastener to sheet material utilizing first and second relatively movable die means, said fastener having at least one face and two opposite sides, each of said sides having an edge thereon, said method comprising the steps of:

(a) positioning said fastener and said sheet material between said first and second die means;

(b) forcibly pressing said fastener into said sheet material so that said first die means and said edges of said fastener coact to shear a portion of said sheet material along said sides of said fastener;

(c) deforming said sheet material between said sheared portions to form an integral support strap therebetween in an offset position relative to the remainder of said sheet material; and

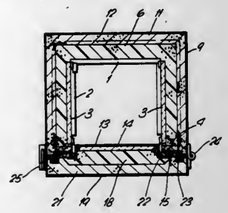
(d) deforming a portion of said fastener adjacent at least one of said sheared portions to form protrusions on at least one of said sides in engagement with said adjacent sheared portion.

4,574,454

METHOD OF CONSTRUCTING FIRE RESISTANT ENCLOSURES

George W. Dyson, Albrighton, England, assignor to Chubb & Son's Lock and Safe Company Limited, Feltham, England

Filed Jan. 14, 1985, Ser. No. 691,021
Claims priority, application United Kingdom, Jan. 14, 1984, 8400990
Int. Cl.⁴ B23P *3/00;* **E05G** *1/00;* **B29C** *5/00;* **B28B** *1/50*
U.S. Cl. 29—434 **11 Claims**



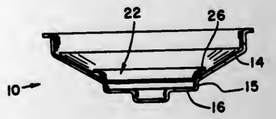
11. A method of constructing a fire-resistant enclosure for the protection of temperature-sensitive articles, which comprises constructing the body of said fire-resistant enclosure by the successive steps of providing an open box-like structure to constitute an internal skin of the body, applying to at least some of the external surface of said structure a layer of phase-change material, applying to the external surface of the assembly of said structure and phase-change material a layer of thermally-insulative material, and applying to the external surface of the assembly of said structure, phase-change material and thermally-insulative material a layer of water-bearing material, whereby the finished body comprises successive layers of said phase-change, thermally-insulative and water-bearing materials built upon said structure; constructing a door for said fire-resistant enclosure by the successive steps of providing a face structure to constitute an internal face of the door, applying to at least part of the external surface of said face structure a layer of phase-change material, applying to the external surface of the assembly of said face structure and phase-change material layer of thermally-insulative material, and applying to the external surface of the assembly of said face structure, phase-change material and thermally-insulative material a layer of water-bearing material, whereby the finished door comprises successive layers of said phase-change, thermally-insulative and water-bearing materials built upon said face structure; and uniting said body and door.

4,574,455

METHOD OF MANUFACTURING A SHELL WITH AN INTEGRAL REINFORCING PLATE

Oswald O. Kytta, South Bend, Ind., assignor to Allied Corporation, Morristown, N.J.

Filed Sep. 4, 1984, Ser. No. 647,293
Int. Cl.⁴ B23P *9/00*
U.S. Cl. 29—445 **8 Claims**



1. A method of manufacturing a shell for a housing of a vacuum brake booster comprising the steps of:

shaping a piece of relatively thin metal material into a member with substan . .y conical body having a rectangular cup-shaped end section and a transitional surface between said rectangular end section and said conical body;

placing a central opening in said rectangular end section;

placing a rectangular plate having a peripheral flange in said conical body, said conical body allowing said rectangular plate to be aligned with said end section; and

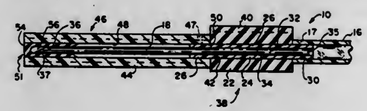
striking said rectangular plate with a force while supporting said cup-shaped end section to force said plate into frictional engagement with said cup-shaped end section and to form said flange into a shape substantially identical with the transitional surface between said rectangular end and conical body, said shaped flange and end section uniformly distributing any reaction forces produced in the resulting brake booster into said conical body.

4,574,456

METHOD OF MANUFACTURING A SUPPORT ASSEMBLY

Emil H. Soika, Mundelein, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Division of Ser. No. 326,739, Dec. 2, 1981, Pat. No. 4,413,992. This application Sep. 7, 1983, Ser. No. 517,547
Int. Cl.⁴ B23P *11/02*
U.S. Cl. 29—451 **12 Claims**



1. A method of manufacturing a support assembly for cannula having an operative end, said method comprising steps of

fabricating a first member having a bore and a uniform cross-sectional shape,

fabricating a second member having a generally uniform cross-sectional shape with opposite ends and a bore extending therebetween which accommodates the cannula,

inserting the second member into the bore of the first member with at least one end of the second member extending outwardly of the first member,

securing the cannula with the bore of the second member so that the operative end of the cannula is supported in an outwardly exposed position beyond the end of the second member opposite to the first mentioned second member end, and

subsequent to said fabrication, insertion and steps, joining a fluid conduit to the first mentioned second end.

4,574,457

METHOD FOR FORMING A PRECISION SURFACE OF LARGE AREA

Francis H. Farnum, III, Portland, Me., assignor to Gabriel Electronics Incorporated, Scarborough, Me.

Filed Jul. 25, 1984, Ser. No. 634,448
Int. Cl.⁴ B21D *35/00*
U.S. Cl. 29—469.5 **7 Claims**

1. The method of precision forming a large area sheet to produce a surface contour of predetermined compound curvature comprising the steps of:

adjusting the length of an array of incrementally spaced support posts over an area to define the locus of said surface contour;

enclosing said array within a housing having a base supporting said posts and continuous peripheral side walls which are approximately the same height as said posts adjacent said side walls with a continuous top surface sealing contact thereon;

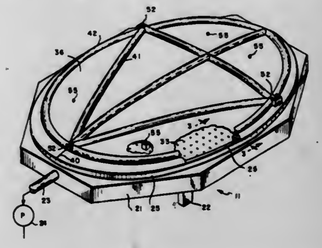
locating said sheet on the tops of said posts with its periphery engaging said sealing contact to make an airtight enclosure;

applying vacuum pressure within said housing to draw said sheet into intimate contact with the tops of said posts over said area and engagement with said sealing means;

locating on the exposed back surface of said sheet a framework which after assembly and bonding to said sheet provides sufficient rigidity to maintain contour;

adhering said exposed surface to said framework at the positions of proximate contact with a bonding material that fills the spaces therebetween and rigidly connects said sheet to said framework; and

releasing said vacuum to remove said sheet and framework as a unit with said surface contour on said sheet maintained by the rigidity of said framework bonded to said back surface.

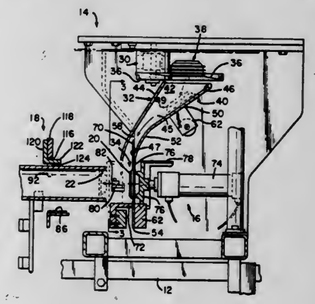


4,574,458

ROLL-CAPPING MACHINE AND METHOD

Frank Elsner, Jr., and Robert E. Molison, both of Hanover, Pa., assignors to Elsner Engineering Works, Inc., Hanover, Pa.

Filed Jul. 5, 1984, Ser. No. 627,819
Int. Cl.⁴ B23P *19/02, 21/00, 19/00*
U.S. Cl. 29—525 **26 Claims**



18. The method of applying a cap to an end of a roll including the steps of:

(a) Rotating and translating a roll along a conveyor path between a downstream moving conveyor belt and a fixed hold down bar spaced from the conveyor belt;

(b) Locating the roll in a stationary roll capping position by moving the roll away from the belt and into the bar;

(c) Applying a cap to one end of the located roll; and

(d) Returning the capped roll to between the belt and bar for continued rotation and translation along the conveyor path.

4,574,459

EXTRUSION DIE MANUFACTURE

Donald C. Peters, Savona, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Continuation-in-part of Ser. No. 564,687, Dec. 23, 1983, abandoned. This application Nov. 5, 1984, Ser. No. 666,911

Int. Cl.⁴ B29F *3/04*; B23P *15/16*

U.S. Cl. 29—527.4 **6 Claims**

1. A method for forming an extrusion die suitable for fabricating a ceramic honeycomb monolith structure having separated walls of predetermined thicknesses in parallel relationship to the longitudinal axis of said structure by forming slots in the die, and then applying a uniform coating selected from the group of iron boride, chromium carbide, aluminum oxide, titanium carbide, titanium nitride, and titanium carbonitride to the slot-defining surfaces of the die through chemical vapor deposition, that coating ranging in thickness up to about 30 microns and being controlled in thickness to ±1 micron.

4,574,460

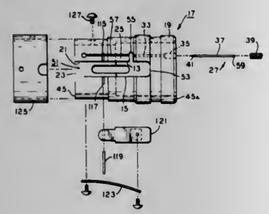
METHOD OF RELEASABLY SECURING A STATOR, METHOD OF RELEASABLY SECURING A CLAMPING DEVICE, METHOD OF ADJUSTING A WEDGE ANGLE, CLAMPING DEVICE, AND WEDGE DEVICE

Eugene C. Bair, Holland, Mich., assignor to General Electric Company, Fort Wayne, Ind.

Filed Jul. 5, 1984, Ser. No. 627,824

Int. Cl.⁴ B23Q *7/00*; B23B *5/22*

U.S. Cl. 29—559 **45 Claims**



1. A method of releasably securing a stator for a dynamoelectric machine against axial displacement on an arbor therefor, the arbor including a stop thereon, a generally annular cylindric sleeve having a pair of opposite circumferential surfaces and with a flange extending beyond the outer circumferential surface, the stator including a core having a pair of opposite end faces with a generally axial bore interposed therebetween, and a clamping device for gripping the arbor and including resiliently urged means for exerting a force on the core, the method comprising the steps of:

arranging the core and the sleeve generally in coaxial relation and engaging at least a part of the outer circumferential surface of the sleeve with the bore of the core;

seating one of the opposite end faces of the core against the flange on the sleeve;

placing the sleeve generally in coaxial relation with the arbor when the sleeve and the core are in the coaxial relation thereof and engaging the inner circumferential surface of the sleeve about the arbor;

abutting one of the opposite end portions on the sleeve with the stop on the arbor and retaining thereby the stator against axial displacement in one direction on the arbor;

disposing the clamping device about the arbor generally adjacent the other of the opposite end portions of the sleeve and engaging the resiliently urged means with the other of the opposite end faces of the core generally about the bore therein; and

biasing the resiliently urged means between the other opposite end faces of the core and the clamping device thereby to maintain the one opposite end face of the core seated against the flange on the sleeve and the one opposite end portion of the sleeve abutted with the stop on the arbor and gripping the clamping device in place about the arbor thereby to retain the core against axial displacement in another direction opposite the one direction on the arbor.

4,574,461

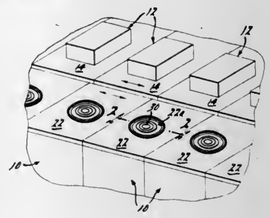
WORKPIECE HOLDER

James A. Repella, Berkley, Mich., assignor to Microdot Inc., Darien, Conn.

Filed Jul. 26, 1984, Ser. No. 634,604

Int. Cl.⁴ B23Q *3/06*; B23B *31/10*

U.S. Cl. 29—564 **4 Claims**



2. A retainer module for receiving an annular seal and transfering it successively to a plurality of work stations for successive work operations by work devices positioned at the work stations, said module comprising:

A. a cylindrical cup-shaped upwardly opening casing;

B. a retainer ring of elastomeric material positioned on the upper annular edge of said casing and having an internal diameter slightly less than the external diameter of a seal, whereby a seal positioned within said ring will be frictionally retained therein;

C. a plug member positioned coaxially within said retainer ring at the upper face of said module for coaction with the inner periphery of a seal frictionally retained within said retainer ring; and

D. means positioned within said casing beneath a seal retained within said retainer ring and operative to engage the underside of the seal and raise the seal above said upper face of said module;

E. said casing including a post centrally upstanding from the base of the casing;

F. said plug member being secured coaxially to the upper end of said post;

G. said raising means comprising an annular piston positioned in the annular space between said post and the side wall portion of said casing; and

H. said module includes conduit means for routing air under pressure to the underside of said piston to raise the piston and thereby raise the seal.

4,574,462

SENSOR FOR CUT-CLINCH HEAD ASSEMBLY

Rodney P. Jackson, Auburn, N.H., assignor to USM Corporation, Farmington, Conn.

Filed Jul. 30, 1984, Ser. No. 635,629

Int. Cl.⁴ H05K *3/30*; B21F *11/00*

U.S. Cl. 29—566.3 **2 Claims**

1. A head assembly for cutting and clinching the lead wires of an electrical component which extend down through openings in a printed circuit board, comprising:

a. a fixed knife mounted on the head assembly and adapted to be positioned below a printed circuit board to receive the lead wire extending through an opening in the board;

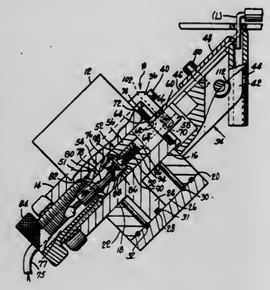
b. a movable knife slidably mounted on said head assembly and adapted to be moved into cutting relationship with said fixed knife;

c. drive means for moving said movable knife, including a piston having a central passageway with an opening toward said movable knife;

d. a movable knife carrier slidably disposed in said passageway opening and having an opening disposed toward said movable knife;

e. a guide bushing positioned in said passageway and having a recess and an opening;

f. a compression spring positioned in said bushing recess and between said carrier and said guide bushing to bias said carrier away from said guide bushings;



g. electrical contact means positioned in said guide bushing opening and said carrier opening;

h. said carrier being movable by the movable knife when engaging the lead wire to compress said spring and engage said contact means to sense the presence of a lead wire;

i. said electrical contact means includes a ball plunger threaded into said carrier opening to close said carrier opening and encase said electrical contact means in said piston passageway, said ball plunger being accessible from the exterior of said head assembly and adjustable to vary the opening of said contact means.

4,574,463

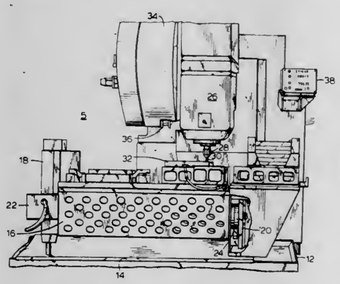
ADJUSTABLE TORQUE DRIVING TOOL FOR AUTOMATED MACHINING CENTERS

Kenneth J. Palfery, Toronto; John S. Malcolm, Schomberg; Angel Kocev, Toronto, and Kenrick B. Maharaj, Brampton, all of Canada, assignors to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Dec. 14, 1984, Ser. No. 681,792

Int. Cl.⁴ B23Q *3/157*

U.S. Cl. 29—568 **3 Claims**



1. An automatic machining center having an adjustable torque driving tool, comprising;

(a) a frame;

(b) a movable worktable means connected to the frame for supporting a workpiece and movable longitudinally and latitudinally to position the workpiece at a desired point in a horizontal plane;

(c) a rotatable spindle means connected to the frame in a disposition of vertical movement thereon for supporting and rotating a cutting tool at a predetermined speed rate to machine the workpiece;

(d) a tool changing means connected to the frame for storing cutting tools and exchanging the cutting tool supported in the rotatable spindle means with one of a multitude of different cutting tools stored therein;

(e) an adjustable torque driving tool configured to be stored in the tool changing means and rotated by the rotatable spindle means such that the adjustable torque driving tool is released from the rotatable spindle means when a preselected torque is applied;

(f) a programmable control means disposed to control the movable worktable means, the rotatable spindle means, the tool changing means, and the adjustable torque driving tool for automatic attachment and detachment of the workpiece from the movable worktable means during machining operations.

4,574,464

AUTOMATIC TOOL CHANGING MECHANISM FOR MACHINE TOOLS

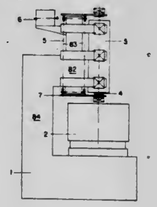
Attilio Lodetti; Hansueli Blaser; Brenno Medici, all of Losone, and Arno Sieg, Locarno, all of Switzerland, assignors to AG fur Industrielle Elektronik AGIE, Losone, Switzerland

Filed Sep. 20, 1983, Ser. No. 534,047

Claims priority, application Switzerland, Sep. 22, 1982, 5606/82

Int. Cl.⁴ B23Q *3/155*

U.S. Cl. 29—568 **6 Claims**



1. In a machine such as a spark erosion machine or the like, the combination comprising a C-shaped frame of upper and lower arms interconnected by an intermediate arm; a tool mounting head supportably connected to said upper arm of said C-shaped frame; said frame having a table disposed on the lower arm of said C-shaped frame; said tool mounting head including a tool engaging member which is axially extensible from a retracted position in the tool mounting head toward said table; a tool magazine for releasably carrying a plurality of tools in spaced relation; said tool magazine being supportably mounted on the frame upper arm and including at least one transfer means for carrying and transferring a tool from said magazine to said tool engaging member; said magazine also including a flexible support means supporting said transfer means; the tools on said transfer means being arranged for movement over said table in a plane including the axis of said tool engaging member; said flexible support means encompassing said upper arm of said C-shaped frame in such manner whereby said flexible support means is located between said tool-engaging member and said tool mounting head on one side, and the intermediate arm of said C-shaped frame on the other; each of said tool transfer means comprising a first flat, elongate portion attached to said flexible support means and a second portion for releasably engaging a tool and extending from said first portion a distance adequate to locate a tool

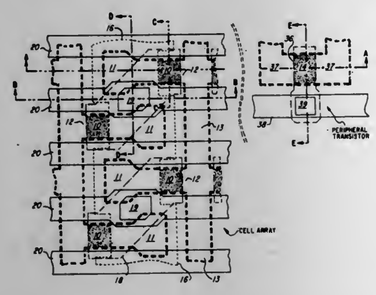
carried thereby adjacent said tool engaging member located in said tool mounting head.

4,574,465

DIFFERING FIELD OXIDE THICKNESSES IN DYNAMIC MEMORY DEVICE

G. R. Mohan Rao, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 13, 1982, Ser. No. 367,837
Int. Cl.⁴ H01L *21/22, 21/265*
U.S. Cl. 29—571 **18 Claims**



1. A method of making a dynamic semiconductor memory device at a face of a silicon body, including forming an array of one-transistor cells in a cell array area of said face and forming circuits in a peripheral area of said face, comprising the steps of:

masking said face of the silicon body to expose first field areas of said cell array area and second field areas of said peripheral area, and to cover transistor and capacitor areas, in the cell array area and peripheral area;

implanting channel-stop impurity into both said first and second field areas,

growing field oxide to a first thickness in said first and second field areas by exposing said face to an oxidizing atmosphere at high temperature;

masking said face with an oxidation mask to expose said second field areas and to cover said first field areas;

growing field oxide to a second thickness in said second field areas by exposing said face to an oxidizing atmosphere at high temperature;

said field oxide in both said first and second field areas having channel-stop regions beneath the field oxide, said channel-stop regions being of the same conductivity type as said body,

thereafter forming polycrystalline silicon electrodes in said transistor and capacitor areas to provide capacitors and transistor gates of memory cells and transistor gates of peripheral transistors.

4,574,466

HIGH QUALITY GATE OXIDES FOR VLSI DEVICES

George F. Hagner, Chandler, and Kothandaraman Ravindhran, Mesa, both of Ariz., assignors to GTE Communication Systems Corporation, Phoenix, Ariz.

Filed Dec. 10, 1984, Ser. No. 680,109
Int. Cl.⁴ H01L *21/306*
U.S. Cl. 29—571 **2 Claims**

1. A method of forming a gate oxide layer for a CMOS device, the method comprising the steps of:

(a) growing a predetermined thickness of sacrificial oxide on a semiconductor surface,

(b) performing an immediate wet chemical oxide strip of predetermined portions of the sacrificial layer,

(c) establishing a flow consisting essentially of approximately 9 liters per minute nitrogen and 0.36 liters per minute oxygen during a temperature ramp from 700 to 950 degrees Centigrade,

(d) at 950 degrees Centigrade, causing the nitrogen flow to cease and the oxygen flow to increase to 9 liters per minute, and

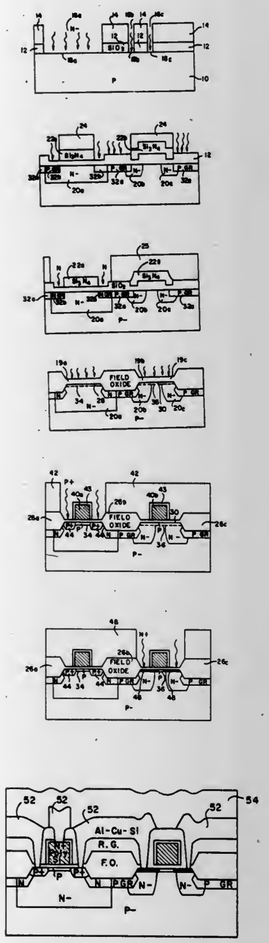
(e) downwardly ramping temperature from 950 to 900 degrees Centigrade.

4,574,467

N- WELL CMOS PROCESS ON A P SUBSTRATE WITH DOUBLE FIELD GUARD RINGS AND A PMOS BURIED CHANNEL

Mark A. Halfacre, Horsham; David S. Pan, Doylestown, and Wing K. Huie, North Wales, all of Pa., assignors to Solid State Scientific, Inc., Willow Grove, Pa.

Filed Aug. 31, 1983, Ser. No. 528,095
Int. Cl.⁴ H01L *21/265, 21/76*
U.S. Cl. 29—571. **3 Claims**



1. A method of fabricating complimentary P-channel and N-channel insulated gate field effect transistors in a P-conductivity type substrate which comprises the steps of:

(a) forming a first masking layer over said substrate with a first opening to define the surface of said P-channel transistor, and a second and third opening at the surface areas at which a source and drain of said N-channel transistor is to be formed;

(b) simultaneously introducing impurities into said substrate through said first, second and third openings to form a deep N-conductivity type well region in which said P-channel transistor is to be formed and to form deep N-conductivity type well regions in which respectively said source and drain of said N-channel transistor is to be formed;

(c) removing said first masking layer;

(d) growing a gate oxide layer over the substrate region at which said N-channel transistor is to be formed;

(e) forming a conductive gate over a central portion of said N-channel transistor region; and

(f) implanating N-type impurities through said gate oxide on either side of said gate into said source and drain areas to form said source and drain of said N-type transistor which are substantially more heavily doped and shallower than said corresponding underlying N-type wells.

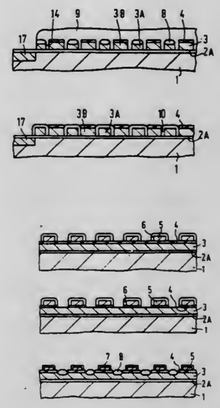
4,574,468

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE HAVING NARROW COPLANAR SILICON ELECTRODES

Jan W. Slotboom; Henricus G. R. Maas; Johannes A. Appels, and Francois M. Klaassen, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 4, 1984, Ser. No. 657,631
Claims priority, application Netherlands, Jan. 25, 1984, 8400224
Int. Cl.⁴ H01L *21/90*
U.S. Cl. 29—571 **6 Claims**

1. A method of manufacturing a semiconductor device comprising a plurality of adjacent narrow and closely spaced coplanar silicon electrodes, in which on an electrically insulating layer there are deposited successively a first silicon layer, an oxidation-preventing layer and a second silicon layer, after which the second silicon layer is etched in a pattern comprising a plurality of parallel silicon strips whereupon this silicon pattern is partly oxidized and the uncovered parts of the oxidation-preventing layer are then removed by etching, after which the oxide present is etched away, the second silicon layer and the uncovered parts of the first silicon layer are thermally oxidized, the uncovered parts of the oxidation-preventing layer are removed by selective etching and a pattern comprising parallel silicon electrodes separated by grooves is formed by etching away the subjacent parts of the first silicon layer, characterized in that at least two of the so formed silicon electrodes which are covered by the oxidation-preventing layer are interconnected by means of a part of the first silicon layer, in that this connection is interrupted by a masking and etching step, in that the uncovered parts of the first silicon layer are thermally oxidized until the grooves are filled at least in part with oxide, and in that by selectively locally etching the



oxidation-preventing layer contact windows are formed on the underlying silicon electrodes.

4,574,469

PROCESS FOR SELF-ALIGNED BURIED LAYER, CHANNEL-STOP, AND ISOLATION

Sal Mastroianni, Tempe; Carroll Casteel, and Terry S. Hulseweh, both of Mesa, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 14, 1984, Ser. No. 650,964
Int. Cl.⁴ H01L *21/76, 21/223, 21/31, 21/74*
U.S. Cl. 29—576 W **14 Claims**

1. A process for fabricating semiconductor devices comprising:

providing a semiconductor substrate of a first conductivity type;

forming an initial polycrystalline semiconductor layer on said substrate;

providing an oxidation resistant masking layer on said polycrystalline layer having open portions penetrating to and exposing first portions of said polycrystalline layer and closed portions covering protected regions of said polycrystalline layer;

converting to first insulating dielectric regions said first portions of said polycrystalline layer exposed in said open portions;

removing a portion of said masking layer to expose second portions of said polycrystalline layer between a pair of said first insulating dielectric regions, leaving third portions of said polycrystalline layer protected under said masking layer;

doping first portions of said substrate underlying said second portions of said polycrystalline layer;

converting said second portions of said polycrystalline layer to second insulating dielectric regions;

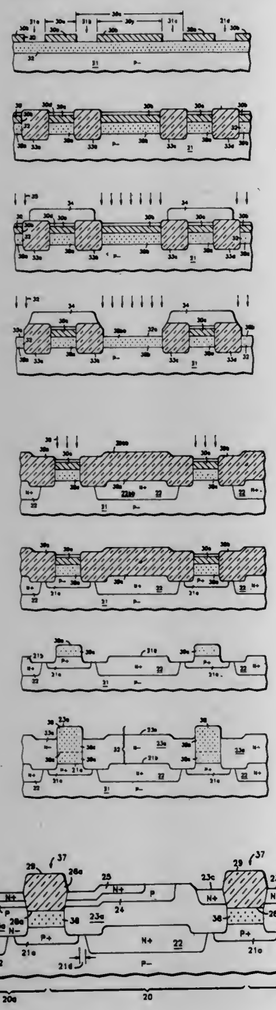
doping said third portions of said polycrystalline layer with a dopant of said first conductivity type without further masking steps;

removing said first and second portions of said insulating dielectric regions and any remaining portions of said masking layer;

forming epitaxial regions of semiconductor material above said first portions of said substrate in contact with and separated by third portions of said polycrystalline layer;

forming a further polycrystalline region above at least part

of said third portion of said polycrystalline layer and in contact with said epitaxial regions; and



converting a part of said further polycrystalline region to a dielectric isolation region separating said epitaxial regions and not penetrating to said substrate.

4,574,470

SEMICONDUCTOR CHIP MOUNTING SYSTEM

Roy J. Burt, Sunnyvale, Calif., assignor to Trilogy Computer Development Partners, Ltd., Cupertino, Calif.

Filed Mar. 19, 1984, Ser. No. 590,652
Int. Cl.[4] H01L *21/58*
U.S. Cl. 29—590 **11 Claims**

1. A method of preparing the back face of a silicon semiconductor chip for soldering comprising the steps of:

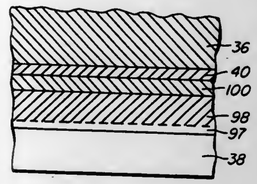
metallizing the back face of the semiconductor chip with a first gold layer;

thereafter metallizing the first gold layer with a second nickel-vanadium layer;

thereafter metallizing the second nickel-vanadium layer with a third gold layer; and

thereafter heat treating the metallized semiconductor chip to cause the first gold layer to react with the silicon of the semiconductor chip, the second metal layer preventing diffusion of silicon through the third gold metal layer where it could form silicon dioxide at the surface.

9. A method of preparing the back face of a silicon semiconductor chip for attachment to a mounting surface comprising the steps of:



forming a reaction layer of gold reacted to the silicon;

forming a barrier layer of nickel-vanadium overlying the reaction layer;

heat treating the semiconductor chip to form an alloy between the gold and the nickel-vanadium;

forming a wetable surface layer overlying the barrier layer; and

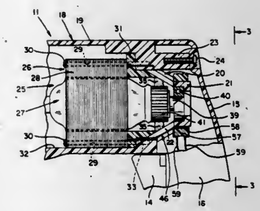
securing the mounting surface to the barrier layer utilizing a low temperature solder layer having a melting/freezing temperature of about 160° C., the wetable layer being leached into the solder.

4,574,471

METHODS OF ASSEMBLING COMPONENTS OF AN ELECTRIC MOTOR

John E. Dibbern, Jr., Street, and Gregory E. Moores, Reisterstown, both of Md., assignors to Black & Decker Inc., Newark, Del.

Division of Ser. No. 480,781, Mar. 31, 1983, Pat. No. 4,523,116.
This application Jul. 31, 1984, Ser. No. 636,163
Int. Cl.[4] H02K *15/14*
U.S. Cl. 29—596 **6 Claims**



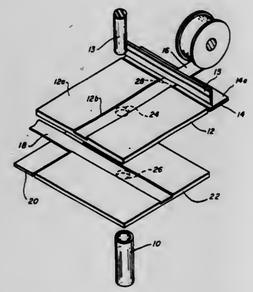
1. The method of assembling an electric motor, comprising the steps of: providing a field case having an open forward position and a rearward bearing boss, providing a plurality of contact elements having respective forward and rearward ends, mounting the contact elements on the field case adjacent to the rearward bearing boss, providing a field subassembly having a plurality of terminals thereon, inserting the field subassembly into the field case through the open forward portion thereof so that the terminals on the field subsassembly engage the forward ends of the respective contact elements, securing the field subassembly within the field case, providing a second subassembly having contact means, and mounting said second subassembly on the rearward bearing boss so that the contact means engage the rearward end of at least one of the contact elements on the field case.

4,574,472

METHOD AND APPARATUS FOR INSERTING ELECTRODES INTO THE CONTAINER OF AN ELECTROCHEMICAL CELL

James Epstein, Sharon, and Nikola Marincic, Winchester, both of Mass., assignors to Battery Engineering, Inc., Hyde Park, Mass.

Filed Sep. 4, 1979, Ser. No. 71,882
Int. Cl.[4] H01M *2/06*
U.S. Cl. 29—623.1 **18 Claims**



1. A method for inserting electrode material into the container of an electrochemical cell comprising the steps of:

forming a strip of electrode material into a generally U-shaped structure;

inserting the U-shaped structure, base first, into an open-ended cell so that the leading base contacts the interior end wall of the container;

pressing the base and interior end wall into contact; and

spreading the legs of the U-shaped structure into contact with respective adjacent walls of the container interior.

11. Apparatus for inserting electrode material into the container of an electrochemical cell comprising:

a first member having a through-hole;

means for supporting a first strip of electrode material in a first direction with an overlying portion across the through-hole;

means for pushing the strip through the hole in a second direction generally perpendicular to said first direction so that the strip enters the container as a generally U-shaped structure with the overlying portion of the strip preceding the strip segments remote from the hole, said pushing means being a mandril sized to pass through said through-hole, and positioned generally concentrically with said through-hole so that the supported strip lies therebetween, said mandril being operable in said second direction to push the strip through said through-hole and into the container, the leading portion of the mandril being formed from an elastomeric material and including:

means for sufficiently pressing the mandril against the interior base of the cell to cause expansion of the elastomeric material,

the dimension of the expanded elastomeric material being such that the electrode material interjacent the mandril and container wall is pressed into contact with the wall;

means for so operating the mandril;

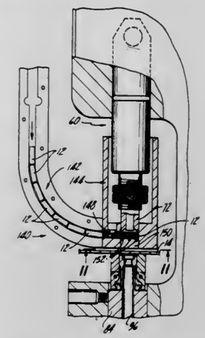
means for supporting a container to receive the electrode material subsequent to its passing through the hole.

4,574,473

SELF-ATTACHING FASTENER AND APPARATUS FOR SECURING SAME TO SHEET MATERIAL

Edwin G. Sawdon, Marysville, Mich., assignor to BTM Corporation, Marysville, Mich.

Continuation of Ser. No. 373,621, Apr. 30, 1982, abandoned.
This application Dec. 5, 1984, Ser. No. 678,368
Int. Cl.[4] B23P *19/00, 11/00*
U.S. Cl. 29—798 **33 Claims**



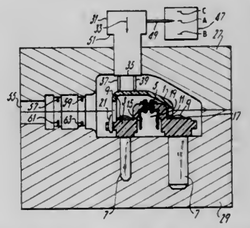
1. An apparatus for securing a fastener to sheet material, said fastener having at least two spaced apart sides, each of said sides having an edge portion thereon, said apparatus comprising: a pair of relatively movable die means having forming surfaces thereon; means for forcibly moving said relatively movable die means toward one another; cutting means coacting with said edge portions for shearing spaced apart portions of said sheet material along said edge portions of said fastener sides to form an integral strap portion therebetween in said sheet material; said forming surfaces being configured to deform said spaced apart fastener sides generally outwardly into engagement with said spaced apart sheared portions of said sheet material when said die means are moved toward each other.

4,574,474

METHOD AND APPARATUS FOR MOLDING AN ELECTRICAL PLUG WITH INTERNAL PROTECTIVE CAP

Jack K. Langham, Croydon, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 6, 1984, Ser. No. 597,761
Claims priority, application United Kingdom, May 20, 1983, 8313983
Int. Cl.[4] H01R *43/00*; B23P *19/00*
U.S. Cl. 29—858 **7 Claims**



1. A method of manufacturing an electrical plug of the type comprising an insulative base having a plurality of conductive

contact members extending therethrough from a front side to a rear side of the base, electrical connections being made at the rear side between the contact members and respective conductors of an electrical cable, said method comprising the steps of:

(a) placing in a predefined position on the rear side of the base an insulative cap extending over at least two of the electrical connections, said cap having a portion extending a predetermined height above said rear side when it is in said predefined position;

(b) enclosing the base and the cap in a mold cavity at a location where said portion of the cap will contact a movable portion of a position detection means for indicating whether the cap is in the predefined position;

(c) if the cap is detected in the predefined position, filling the cavity with insulative molding material for encapsulating at least the rear side of the base along with the electrical connections, the cap and the conductors; and if the cap is not detected in the predefined position, not injecting insulative molding material into the cavity.

7. A molding apparatus for manufacturing an electrical plug of the type comprising an insulative base having a plurality of conductive contact members extending therethrough from a front side to a rear side of the base, electrical connections being made at the rear side between the contact members and respective conductors of an electrical cable, said apparatus comprising:

(a) a mold having a cavity for containing the plug and an insulative cap placed in a predefined position on the rear side of the base, said insulative cap extending over at least two of said electrical connections, said cap having a portion extending a predetermined height above said rear side when it is in said predefined position;

(b) a position detection means including a movable portion disposed in the mold in a location where said portion of the position detection means will contact said portion of the insulative cap, said position detecting means indicating whether the cap is in the predefined position; and

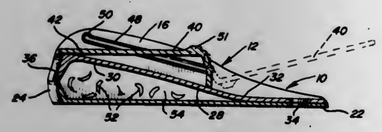
(c) means operatively associated with said position detection means responsive to an indication that the cap is in the predefined position for filling the cavity with insulative molding material for encapsulating at least the rear side of the base along with the electrical connections, the cap and the conductors.

4,574,475

NAIL CLIPPER WITH CUT NAIL RETAINING MEANS

Jong B. Lee, Edmonton, Canada, assignor to James M. Greentree, Alberta, Canada, a part interest

Filed Aug. 29, 1984, Ser. No. 645,662
Int. Cl.⁴ A45D *29/02*
U.S. Cl. 30—28 **9 Claims**



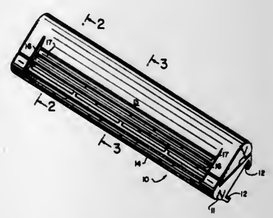
1. A nail clipper including a first elongated upwardly opening channel member having front and rear ends, said channel member having front and rear ends, said channel member including a pair of generally parallel elongated opposite side flanges interconnected along their lower marginal edge portions by a generally horizontal bight portion extending therebetween, the front end of said bight portion including an upwardly projecting and transversely extending first cutting blade portion, an elongated spring arm generally paralleling said channel member, having front and rear ends and constructed of stiff but resilient material, means anchoring said spring arm rear end to the rear end of said bight portion with the front end of said spring arm spaced above and opposing the front end of said bight portion, said spring arm front end including a transversely extending second cutting blade portion depending downwardly therefrom, said front end of said spring arm being statically disposed in an elevated position with said second cutting blade portion opposing and spaced above said first cutting blade portion, said spring arm front end being downwardly displaceable, upon flexing of said spring arm, to a position with said first and second cutting blade portions disposed in opposing cooperative cutting relation, convertible lever means, said lever means and flanges including coacting means pivotally mounting said lever betweens said flanges for oscillation relative to said channel member about an axis extending transversely of said lever means and channel member and for shifting of said axis longitudinally of said channel member between forward and rearward limit positions thereon, said lever means comprising a generally L-shaped lever including relatively angulated long and short arms, said axis being fixed relative to said lever and extending transversely of said short arm centrally intermediate the opposite ends thereof, said lever when in said forward limit position, being disposed with the free end of said long arm projecting rearwardly and being operative as a second class lever to depress the front end of said spring arm into position with said first and second cutting blade portions in cooperative cutting relation and, when in said rear limit position, being swingable about said axis past a center vertical position to a position with the free end of said long arm projecting forwardly and said lever operative as a first class lever, with the free ends of said long and short arms engaged with and spring arm, to maintain said front end of said spring arm displaced toward said first cutting blade portion with said first and second cutting blade portions at least closely opposing each other and said channel member and spring arm defining a substantially closed area between said flanges and between said bight portion and spring arm for containing nail cuttings.

4,574,476

RAZOR BLADE ASSEMBLY

Ernest A. Ortiz, Cheshire, Conn., assignor to Warner-Lambert Company, Morris Plains, N.J.

Continuation of Ser. No. 424,813, Sep. 27, 1982, abandoned. This application Feb. 13, 1985, Ser. No. 701,330
Int. Cl.⁴ B26B *21/22*
U.S. Cl. 30—47 **2 Claims**



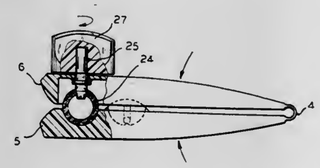
1. A wet shaving device having at least two single edge blades comprising a support element including a guard bar, a segmented flat blade spacer means hinged to the support element, said spacer means being grouped to define a first set of flat spacer segments and a second set of flat spacer segments, the spacer segments of the first set being disposed alternately with respect to the spacer segments of the second set, each spacer segment having a top side and a bottom side, a first blade fixed to the top side of the first set of flat spacer segments and a second blade fixed to the bottom side of the second set of spacer segments so that the first set of flat spacer segments and the first blade are free to pivot as a unit independently of the unit defined by the second set of spacer segments and the second blade.

4,574,477

HOLE CUTTER FOR PLASTIC TUBING

Jack L. Lemkin, Cincinnati; Eugene A. Zilber, and Carl A. Peterson, both of Columbus, all of Ohio, assignors to The O.M. Scott & Sons Company, Marysville, Ohio

Filed Aug. 6, 1984, Ser. No. 638,059
Int. Cl.⁴ B23D *21/10*; B26F *1/36*
U.S. Cl. 30—92 **4 Claims**



1. A hole cutter for plastic tubing comprising:

a pair of opposed members pivotally joined at one end thereof by an integral pivot and facing each other at the opposite free ends thereof, said opposed members being pivotally adjustable to an open and closed position,

means between said opposed members limiting the separation between the free ends thereof in the open position, said limiting means being spaced between said integral pivot and said free ends and comprising aligned projections extending toward each other from each of said opposed members, said limiting means permitting adjustment of said opposed members between open and closed position but restricting separation beyond said open position,

the free ends of said opposed members having complimentary shaped recesses therein at the extremity of the free ends thereof adapted in closed position to form a tube-shaped opening for gripping a tube therebetween, and

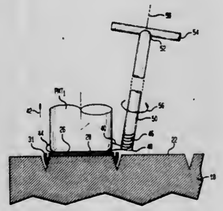
a hollow cylindrical cutting blade rotatably mounted on the free end of one of said opposed members, the cutting edge of said blade extending through said free end into the tube-shaped opening, said blade adapted upon rotation to cut a hole in tube gripped in said cutter.

4,574,478

METHOD AND DEVICE FOR DEMOUNTING IN A RADIATION DETECTOR A PHOTOMULTIPLIER TUBE

Dennis E. Persyk, Barrington, and Everett W. Stoub, Villa Park, both of Ill., assignors to Siemens Gammasonics, Inc., Des Plaines, Ill.

Filed May 24, 1983, Ser. No. 497,484
Int. Cl.⁴ B26B *27/00*
U.S. Cl. 30—116 **9 Claims**



1. A device for demounting in a radiation detector a photomultiplier tube which is bonded with its scintillation crystal assembly by means of an elastic light transparent adhesive, comprising:

(a) a music wire of about 0.01 to 0.03 inch diameter which forms a noose between its wire ends, said noose being provided for being placed around the bond; and

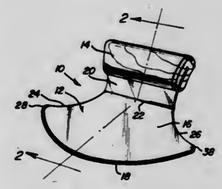
(b) twisting means connected with both wire ends for twisting them such that the noose becomes smaller thereby sharing the bond.

4,574,479

PIZZA CUTTER

Hugh D. Gramann, 211 Chestnut Ridge Dr., Harland, Wis. 53029

Filed Jun. 15, 1984, Ser. No. 621,242
Int. Cl.⁴ A47J *43/28*
U.S. Cl. 30—142 **1 Claim**



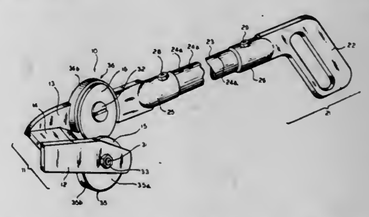
1. A cutting and serving implement for pizza or other pies and the like comprising a blade having a planar body portion with a sharpened arcuate cutting edge, and a handle portion extending from the body portion opposite the cutting edge at an obtuse angle for facilitating cutting of a pizza or the like by downward pressure applied on the handle portion accompanied by a rocking motion of the implement on the cutting edge, and lifting of a cut slice of the pizza or the like by insertion of the body portion under the slice, the handle portion of the blade being bent up from the body portion, at an obtuse angle of about 135 degrees, about a bend line, the width of the body portion from an apex point of the cutting edge to the bend line being greater than the width of the handle portion from the bend line to a terminal edge of the handle portion, the implement having an elongate handle attachment on said terminal edge of the handle portion, the handle attachment extending substantially in parallel with the the bend line, and the blade having concave sides adjacent the cutting edge providing narrow corners at opposite ends of the cutting edge to allow cutting of a pizza or the like up to an edge of a pan in which the pizza or the like is prepared.

4,574,480

ROTARY SHEAR CUTTER

Lawrence M. Dunn, Northbrook, Ill., assignor to Ronald L. Rusch, Lincolnshire, Ill. and Grodon L. Jacobson, Bernardsville, N.J.

Filed Sep. 6, 1983, Ser. No. 529,396
Int. Cl.⁴ B26B *13/00, 13/06, 19/14*
U.S. Cl. 30—240 **9 Claims**



1. In a portable hand-powered apparatus for shearing of sheet stock, said apparatus comprising: a cutting head frame having an upper frame member and a lower frame member, said lower frame member being connected with said upper frame member; a pair of rotatable cutting wheels, each said wheel having a cutting edge formed about its outer periphery;

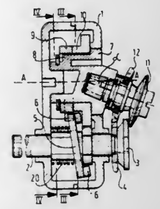
means for mounting one of said cutting wheels to said upper frame member and the other said cutting wheel to said lower frame member, said mounting means being adapted to hold said cutting wheels proximate to each other in fixed, spatial relationship with said cutting edges vertically overlapping and slightly laterally offset to shear said sheet stock as said stock contacts said cutting wheels; and a handle; the improvement comprising coupling means respectively on said cutting head frame and handle; connecting means of substantially constant cross section removably connectable between said coupling means of said cutting head frame and handle, said coupling means of said cutting head frame and handle being of the same size to receive either end of said connector means; said connecting means having a plurality of attaching means comprising many anchoring apertures spaced longitudinally along said connecting means; said connecting means being severable at various selected severance points along the length to adjust the length thereof and leave new endmost anchoring apertures at the remaining ends of said connecting means; and retaining means adapted to releasably connect each end of said connecting means respectively to the coupling means of said cutting head frame and said handle through the endmost of said anchoring aperture means.

4,574,481
MOTOR ASSEMBLY FOR CARRYING ON THE BACK
C. G. Folke Ericsson, Sibyllegatan 4E, S+752 31 Uppsala, Sweden
PCT No. PCT/SE83/00123, § 371 Date Dec. 2, 1983, § 102(e) Date Dec. 2, 1983, PCT Pub. No. WO83/03334, PCT Pub. Date Oct. 13, 1983
PCT Filed Mar. 30, 1983, Ser. No. 567,855
Claims priority, application Sweden, Apr. 2, 1982, 8202135
Int. Cl.⁴ B27B *17/00*; A01M *21/00*
U.S. Cl. 30—296 R **13 Claims**



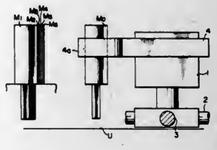
1. A portable motor driven tool comprising, in combination,
a motor assembly including a motor and means for attaching same to a human carrier for transporting the motor;
a tool means drivingly connected to the motor for actuation thereof and manipulable under the control of the carrier to convert the motor energy to useful work, e.g., cutting;
a movable aerodynamic lift force producing means separate from the tool means, said lift force producing means connected to the motor and actuatable by the motor simultaneously with the tool means, said lift producing means being arranged to generate sufficient maximum lifting thrust during operation of the motor to counterbalance at least in part the weight of the motor but insufficient maximum lifting thrust to levitate the motor and human carrier.

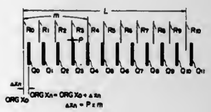
4,574,482
TIN OPENER
Adriaan van der Wouden, Dorpstraat 25, 4851 CJ Ulvenhout, Netherlands
Filed Jun. 14, 1983, Ser. No. 504,316
Claims priority, application Netherlands, Jun. 17, 1982, 8202461
Int. Cl.⁴ B67B *7/54*
U.S. Cl. 30—422 **3 Claims**



1. A tin opener comprising a housing, a drive shaft rotatably arranged therein for transport wheel located outside of said housing, a body arranged in said housing so as to be rotatable about a second shaft parallel to said drive shaft for supporting a cutting wheel freely rotatable about a third shaft, which is set at a prescribed angle to said second shaft, transmission members arranged in said housing, said transmission members being designed in the form of a radially directed slot in the body and a first lug moved by said drive shaft along a circular path and being displaceable laterally with respect to said shaft such that said lug upon entering into the slot displaces said body through the arc, said body being provided with a ramp juxtapositioned to said slot and said first lug being arranged on a non-rotatable cam disc displaceable with respect to said drive shaft.

4,574,483
MEASUREMENT OF DEGREE OF OFFSET OF ATTACHMENT POSITION OF DRAFTING PEN IN COORDINATE PLOTTER
Tsutomu Senju, Osaka, Japan, assignor to Dainippon Screen Mfg. Co., Japan
Filed Apr. 19, 1985, Ser. No. 725,091
Int. Cl.⁴ G01D *15/16*
U.S. Cl. 33—18.1 **1 Claim**



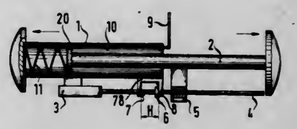


1. A method for measuring the offset of the attachment position of one of plural drafting pens in a coordinate plotter in which the plural drafting pens are replaceably attached to a drafting head movable relative to drawing paper, which comprises:
drawing, with a drafting pen which has been chosen as a standard from the plural drafting pens and is different from said one of the plural drafting pens, main scale line segments dividing a predetermined distance from a reference line equally into +n divisions;
drawing, from the position of the reference line and with said one of the plural drafting pen, auxiliary scale line segments dividing the predetermined distance equally into n±1 divisions while causing the auxiliary scale line segments to overlap partly with the main scale line segments; and
counting a position, where either one of the main scale line segments is coincided with either one of the auxiliary scale line segments, in terms of the number of the main scale line segments or auxiliary scale line segments from the reference line, thereby to detect the relative offset between the drafting pen chosen as the standard and said one of the plural drafting pens.

4,574,484
PATTERNGRAPH APPARATUS
Edwardo R. Borda, 2701 Common St., Lake Charles, La. 70601
Filed Nov. 23, 1984, Ser. No. 674,498
Int. Cl.⁴ B43L *11/00*
U.S. Cl. 33—27.11 **1 Claim**

1. A patterngraph apparatus, comprising, in combination, a base, a first pin mounted upon said base, a drive wheel rotatably supported at its center on said pin, a turntable rotatably supported at its center, upon a second pin mounted upon said base, an annular groove around said drive wheel and around said turntable, an endless belt in both said grooves transmitting rotational movement therebetween, a plurality of upwardly projecting pins upon said turntable, a sheet of paper having a plurality of openings receiving said projecting pins for removable securement of said paper upon said turntable; an elongated arm having a longitudinally extending, irregularly curved slot being pivotally rocked about a screw stationarily mounted upon said base, said screw being received through said arm slot, an eccentrically mounted pin upon said drive wheel being also received through said arm slot, an "L"-shaped guide rod, a plurality of holes along said arm selectively receiving a bent-down end of said guide rod; a guide rod rest pivotally mounted upon said base, a row of notches upon said guide rod rest selectively supporting an opposite end of said guide rod, a guide rod plate supported on said guide rod, a pen-holding member extending transversely to said guide rod, being adjustably securable to said guide rod plate, and a pen upon an end of said pen-holding member for drawing a pattern upon said sheet of paper, when said drive wheel is rotated.

4,574,485
BORE-INSERTABLE APPARATUS FOR STATIONARY MEASUREMENT OF BORE-WIDTH CHANGES IN GEOLOGICAL FORMATIONS
Ferdinand Kreutz; Jürgen Keck, both of Jülich, and Johann Bölingen, Aachen, all of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich Gesellschaft mit beschränkter Haftung, Jülich, Fed. Rep. of Germany
Filed Jan. 14, 1985, Ser. No. 691,458
Claims priority, application Fed. Rep. of Germany, Jan. 12, 1984, 3400833
Int. Cl.⁴ G01B *7/02*
U.S. Cl. 33—143 L **3 Claims**



1. Apparatus for stationary measurement of changes of diameter in a rock bore into which said apparatus is insertable comprising two parts respectively applicable to opposite sides of said bore, capable of relative displacement with respect to each other, elastic means for urging said parts respectively against said opposite sides of said bore, and electrical displacement sensing means including portions thereof respectively connected to said two parts, and further comprising:
portions of said two relatively displaceable parts (1,2) so shaped and disposed that relative displacement of said parts takes place by movement of a portion of one of them into or out of a portion of the other;
a portion of said electrical displacement sensing means constituted as a rod (4) aligned parallel to the direction of said relative displacement of said two apparatus parts and held for movement in another portion (3) of said electrical displacement sensing means which is affixed to a first one (1) of said two apparatus parts, friction coupling means (5) being fixed on the second (2) of said apparatus parts for holding said rod (4) and permitting lengthwise movement thereof only after the friction of said coupling is overcome, and
means for limiting the extent of lengthwise displacement of said rod (4) relative to said portion of said electrical sensing means which is affixed to said first apparatus part.

4,574,486
TOP READING RULE USING BLADES WITH DIRECTIONAL ARROWS
Mark A. Drechsler, Southington, Conn., assignor to The Stanley Works, New Britain, Conn.
Filed Jun. 29, 1984, Ser. No. 626,140
Int. Cl.⁴ G01B *3/10*
U.S. Cl. 33—138 **10 Claims**

1. A top reading rule comprising:
A. a casing having side walls, top wall, bottom wall, front wall and rear wall defining an enclosure, said casing having a window in its top wall and a blade aperture adjacent the base of its front wall;
B. a rule blade coiled in said enclosure of said casing and having an outer end portion extending outwardly of said aperture and an intermediate portion extending within said enclosure inwardly along said bottom wall, upwardly along said rear wall and along said top wall under said window, said rule blade having a first set of measuring indicia on the face of said blade disposed upwardly as it extends outwardly of said aperture and a second set of measuring indicia on the other face thereof exposed as said blade extends under said window, said measuring indicia on said second set being offset from the outer end of said blade a distance equal to the

at various selected severance points along the length to adjust the length thereof and leave new endmost anchoring apertures at the remaining ends of said connecting means; and retaining means adapted to releasably connect each end of said connecting means respectively to the coupling means of said cutting head frame and said handle through the endmost of said anchoring aperture means.

4,574,481

MOTOR ASSEMBLY FOR CARRYING ON THE BACK

C. G. Folke Ericsson, Sibyllegatan 4E, S+752 31 Uppsala, Sweden

PCT No. PCT/SE83/00123, § 371 Date Dec. 2, 1983, § 102(e) Date Dec. 2, 1983, PCT Pub. No. WO83/03334, PCT Pub. Date Oct. 13, 1983

PCT Filed Mar. 30, 1983, Ser. No. 567,855

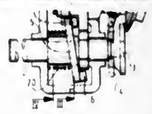
Claims priority, application Sweden, Apr. 2, 1982, 8202135

Int. Cl.[4] B27B *17/00;* A01M *21/00*

U.S. Cl. 30—296 R 13 Claims



1. A portable motor driven tool comprising, in combination,
a motor assembly including a motor and means for attaching same to a human carrier for transporting the motor;
a tool means drivingly connected to the motor for actuation thereof and manipulable under the control of the carrier to convert the motor energy to useful work, e.g., cutting;
a movable aerodynamic lift force producing means separate from the tool means, said lift force producing means connected to the motor and actuatable by the motor simultaneously with the tool means, said lift producing means being arranged to generate sufficient maximum lifting thrust during operation of the motor to counterbalance at least in part the weight of the motor but insufficient maximum lifting thrust to levitate the motor and human carrier.



1. A tin opener comprising a housing, a drive shaft rotatably arranged therein for transport wheel located outside of said housing, a body arranged in said housing so as to be rotatable about a second shaft parallel to said drive shaft for supporting a cutting wheel freely rotatable about a third shaft, which is set at a prescribed angle to said second shaft, transmission members arranged in said housing, said transmission members being designed in the form of a radially directed slot in the body and a first lug moved by said drive shaft along a circular path and being displaceable laterally with respect to said shaft such that said lug upon entering into the slot displaces said body through the arc, said body being provided with a ramp juxtapositioned to said slot and said first lug being arranged on a non-rotatable cam disc displaceable with respect to said drive shaft.

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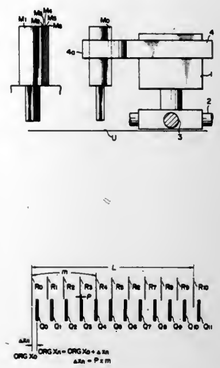
MEASUREMENT OF DEGREE OF OFFSET OF ATTACHMENT POSITION OF DRAFTING PEN IN COORDINATE PLOTTER

Tsutomu Senju, Osaka, Japan, assignor to Dainippon Screen Mfg. Co., Japan

Filed Apr. 19, 1985, Ser. No. 725,091

Int. Cl.[4] G01D *15/16*

U.S. Cl. 33—18.1 1 Claim



1. A method for measuring the offset of the attachment position of one of plural drafting pens in a coordinate plotter in which the plural drafting pens are replaceably attached to a segments or auxiliary scale line segments from the reference line, thereby to detect the relative offset between the drafting pen chosen as the standard and said one of the plural drafting pens.

4,574,484

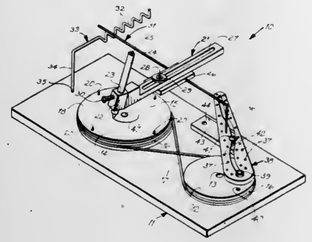
PATTERNGRAPH APPARATUS

Edwardo R. Borda, 2701 Common St., Lake Charles, La. 70601

Filed Nov. 23, 1984, Ser. No. 674,498

Int. Cl.[4] B43L *11/00*

U.S. Cl. 33—27.11 1 Claim



1. A patterngraph apparatus, comprising, in combination, a base, a first pin mounted upon said base, a drive wheel rotatably supported at its center on said pin, a turntable rotatably supported at its center, upon a second pin mounted upon said base, an annular groove around said drive wheel and around said turntable, an endless belt in both said grooves transmitting rotational movement therebetween, a plurality of upwardly projecting pins upon said turntable, a sheet of paper having a plurality of openings receiving said projecting pins for removable securement of said paper upon said turntable; an elongated arm having a longitudinally extending, irregularly curved slot being pivotally rocked about a screw stationarily mounted upon said base, said screw being received through said arm slot, an eccentrically mounted pin upon said drive wheel being also received through said arm slot, an "L"-shaped guide rod, a plurality of holes along said arm selectively receiving a bent-down end of said guide rod; a guide rod rest pivotally mounted upon said base, a row of notches upon said guide rod rest selectively supporting an opposite end of said guide rod, a guide rod plate supported on said guide rod, a pen-holding member extending transversely to said guide rod, being adjustably securable to said guide rod plate, and a pen upon an end of said pen-holding member for drawing a pattern upon said sheet of paper, when said drive wheel is rotated.



1. Apparatus for stationary measurement of changes of diameter in a rock bore into which said apparatus is insertable comprising two parts respectively applicable to opposite sides of said bore, capable of relative displacement with respect to each other, elastic means for urging said parts respectively against said opposite sides of said bore, and electrical displacement sensing means including portions thereof respectively connected to said two parts, and further comprising:
portions of said two relatively displaceable parts (1,2) so shaped and disposed that relative displacement of said parts takes place by movement of a portion of one of them into or out of a portion of the other;
a portion of said electrical displacement sensing means constituted as a rod (4) aligned parallel to the direction of said relative displacement of said two apparatus parts and held for movement in another portion (3) of said electrical displacement sensing means which is affixed to a first one (1) of said two apparatus parts, friction coupling means (5) being fixed on the second (2) of said apparatus parts for holding said rod (4) and permitting lengthwise movement thereof only after the friction of said coupling is overcome, and
means for limiting the extent of lengthwise displacement of said rod (4) relative to said portion of said electrical sensing means which is affixed to said first apparatus part.

4,574,486

TOP READING RULE USING BLADES WITH DIRECTIONAL ARROWS

Mark A. Drechsler, Southington, Conn., assignor to The Stanley Works, New Britain, Conn.

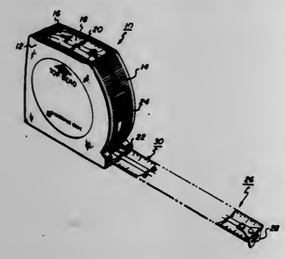
Filed Jun. 29, 1984, Ser. No. 626,140

Int. Cl.[4] G01B *3/10*

U.S. Cl. 33—138 10 Claims

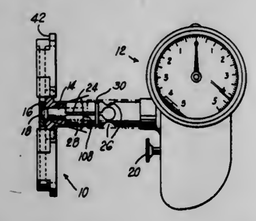
1. A top reading rule comprising:
A. a casing having side walls, top wall, bottom wall, front wall and rear wall defining an enclosure, said casing having a window in its top wall and a blade aperture adjacent the base of its front wall;
B. a rule blade coiled in said enclosure of said casing and having an outer end portion extending outwardly of said aperture and an intermediate portion extending within said enclosure inwardly along said bottom wall, upwardly along said rear wall and along said top wall under said window, said rule blade having a first set of measuring indicia on the face of said blade disposed upwardly as it extends outwardly of said aperture and a second set of measuring indicia on the other face thereof exposed as said blade extends under said window, said measuring indicia on said second set being offset from the outer end of said blade a distance equal to the

length of said intermediate portion from said front wall to an indicium at said window minus the length of said bottom wall, whereby the distance between the outer end of the extended rule blade and the rear edge of the rule casing may be read at the point of registry of said blade visible through said casing window with said indicium at said window, said other face of said blade having a background of first color, said indicia of said second set being of a second color and including parallel graduations and numbers along the sides thereof, said numbers being disposed oppositely to facilitate viewing from either side of said blade, said indicia of said



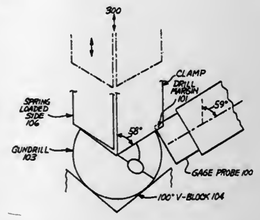
second set further including a centrally disposed, longitudinally extending band of a color distinct from said first color, and directional pointers spaced at intervals along the length of said band and disposed within the width of said band, said directional pointers being of a color distinct from that of said band and indicating the direction of increasing numbers, said intervals being of a length less than the length of said window to ensure that at least one of said pointers is always visible in said window to permit ready determination of the value of intermediate graduations between numbers along the length of said rule between numbers.

4,574,487
EFFECTIVE DIAMETER GAGES
Franklin Meyer, Jr., P.O. Box 1, Forestdale, R.I. 02324
Continuation-in-part of Ser. No. 370,253, Apr. 20, 1982, abandoned. This application May 14, 1984, Ser. No. 609,729
Int. Cl.⁴ G01B *5/12*
U.S. Cl. 33—178 R **6 Claims**



4. A gage head assembly adapted to being coupled to an amplifying and indicating device for measuring the effective interior diameter of a relatively flexible workpiece and displaying its size on a graduated dial, comprising a generally cylindrical gage head formed of two generally equal parts by a slot, each part including a portion of a socket, a hollow stem formed with spring hinges from which the equal parts depend, an elongated plunger slidable within the stem and formed with one end adapted to relay diameter information to the workpiece of the amplifying and indicating device and the other end tapered and pressed into the socket to amplify the degree of separation of gage head parts thereby causing the workpiece closely to embrace the entire outer periphery of the gage head parts, the included angle of the taper including a factor for translating a circumference measurement of the workpiece resulting from the embracement of the gage head parts by the workpiece into an effective diameter, resilient means pressing the plunger into the socket to urge the parts away from each other at the slot, spring means on the stem urging the parts closer together when the plunger is withdrawn from the socket, the parts each including a flank portion adjacent the slot for restraining the workpiece against radial contraction under the influence of a measuring force extending the workpiece in a direction generally normal to the slot.

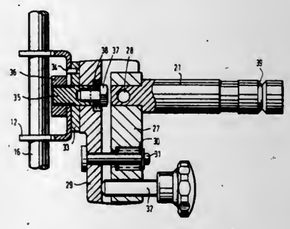
4,574,488
GUNDRILL DIAMETER GAGE AND METHOD
Paul E. Faville, and David A. Yousko, both of Renton, Wash., assignors to The Boeing Company, Seattle, Wash.
Filed Jan. 27, 1984, Ser. No. 574,768
Int. Cl.⁴ G01B *5/08*
U.S. Cl. 33—201 **5 Claims**



3. In combination in a gundrill diameter gage apparatus having a V-block:

clamping means having a first flat side for holding the gundrill in said V-block, said gundrill having a drill flute and drill margin, said clamping means having a first side and a second spring loaded side, said second spring loaded side being shaped to provide rotation of the gundrill upon engagement therewith so that the face of said drill flute which is adjacent to said drill margin is disposed flat against said first flat side of said clamping means.

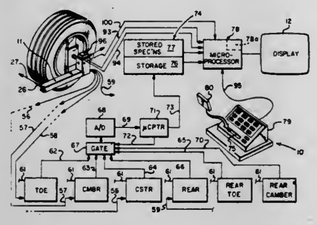
4,574,489
WHEEL ALIGNMENT GAUGE
Peter S. K. Grossart, Braunston, Nr Daventry, England, assignor to V L Churchill Limited, Daventry, England
Filed Apr. 1, 1985, Ser. No. 718,437
Claims priority, application United Kingdom, Apr. 4, 1984, 8408619
Int. Cl.⁴ G01B *5/255*
U.S. Cl. 33—203.18 **3 Claims**



1. A wheel alignment gauge, for use in comparing the relative angular position of a vehicle wheel with another part of the vehicle, including locating means for locating the gauge to a predetermined plane of the wheel, near to a plane normal to

the axle of the wheel, indicator means rotatable around a first axis approximately parallel to said axle, wherein the improvement comprises a first body rotatable on the locating means about a second axis normal to the predetermined plane, a second body adjustably rotatable on the first body about a third axis parallel to the predetermined plane, the indicator means being pivoted to the second body about said first axis, whereby said first axis is brought parallel to or coincident with the wheel axle.

4,574,490
WHEEL ALIGNMENT SYSTEM WITH BALL JOINT WEAR MONITOR AND METHOD
Donald B. Curchod, Menlo Park, Calif., assignor to Dynabal Corporation, Palo Alto, Calif.
Continuation-in-part of Ser. No. 600,257, Apr. 13, 1984, abandoned. This application Feb. 7, 1985, Ser. No. 699,357
Int. Cl.⁴ G01B *7/315*
U.S. Cl. 33—203.18 **18 Claims**



1. In a wheel alignment system for a vehicle of a type having a laterally spaced pair of steerable wheels and a laterally spaced pair of unsteerable wheels generally following the steerable wheels, said system including means for displaying on a screen a diagrammatic pictorial representation of the vehicle chassis including all four wheels and a plurality of pictorial diagrams shown in immediate association with each said wheel to respectively display pictorially the status of a corresponding plurality of alignment parameters for each wheel, the last named means displaying an indicator disposed in association with each pictorial diagram for a given wheel, each of said indicators being movable between and beyond upper and lower limits indicated on the screen to show diagrammatically the status of a wheel alignment parameter to be within proper limits or not, said limits being defined to correspond to the vehicle alignment specifications, means for sensing the status of the wheel alignment parameters, and means controlling the analog position of each of said indicators with respect to the limits associated therewith and in response to adjustments made to a wheel associated with the indicator, the last named means displaying digital values associated with the lower and upper limits and of the status of the parameter which is sensed.

4,574,491
LEVEL WITH AUDIO INDICATOR
Russell W. Vining, 1123 E. Broadway, Bradley, Ill. 60915
Filed Jul. 27, 1984, Ser. No. 635,146
Int. Cl.⁴ G01C *9/06*
U.S. Cl. 33—366 **2 Claims**



1. A level having a means for generating an audio indication when said level is exactly horizontally or vertically disposed, comprising:

a vertically disposed mercury switch having continuous end-face metallizations at opposing ends thereof,

a first spring retaining clip securing said vertically disposed switch to a first inner portion at a first end of said level,

a horizontally disposed mercury switch having continuous end-face metallizations at opposing ends thereof,

a second spring retaining clip securing said horizontally disposed switch to a second inner portion at said first end of said level,

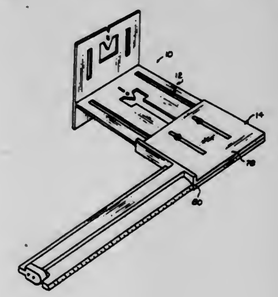
an audio indicator mounted in a second opposite end of said level,

an electrical circuit connected to said audio indicator and having first and second branches thereof electrically connected to respective ones of said vertically disposed switch and said horizontally disposed switch,

a battery mounted in said second end of said level and electrically connected to said circuit, and

a manually operable switch in said circuit being operable to connect alternate ones of said branches to said battery and to disconnect both of said branches from said battery.

4,574,492
COMBINATION LAYOUT TOOL AND SQUARE
Tony Miller, 3266 Bozeman St., Sacramento, Calif. 95838
Filed Feb. 15, 1983, Ser. No. 466,571
Int. Cl.⁴ B43L *7/00*
U.S. Cl. 33—427 **19 Claims**



1. A construction layout tool comprising:

(a) an elongated, rectangular plate having two opposing logitudinal edges, two opposing transverse edges, and two opposing planar surfaces, said rectangular plate having first indicia marking a centerline located equidistant between said longitudinal edges, and provided with a central slot through said plate and aligned with said first indicia; and

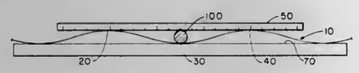
(b) a rectangular endpiece attached to a first transverse edge of said plate, said endpiece and said plate being substantially at right angles to each other, where a first portion of said endpiece extends away from a first planar surface of said plate for approximately twice the thickness of a standard 2×4, and where a second portion of said endpiece extends away from a second planar surface of said plate for approximately the thickness of a standard 2×4; wherein said first portion of said endpiece is provided with a central aperture having an edge located half way between said first planar surface and the edge of said first portion most distal from said first planar surface.

4,574,493

SYSTEM FOR MEASURING FLATNESS OF ROLLED ALUMINUM CONTAINER SHEET

Steven L. Woolsey, Newburgh, Ind., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Jan. 14, 1985, Ser. No. 691,408
Int. Cl.[4] G01B *3/46, 5/00*
U.S. Cl. 33—501 **7 Claims**



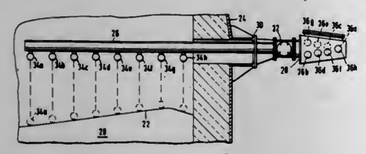
1. A system for rapidly determining the flatness of a rolled sheet of aluminum which comprises placing a ruled lightweight straight edge across the sheet with portions of said straight edge in contact with adjacent high points on said sheet; measuring the distance between said high points; inserting between said straight edge and the low point on said sheet between said high points, a gauge having continuous measuring means comprising a conically shaped device tapering to a point, with said gauge being inserted until both surfaces are in contact with the conical side of said gauge; and determining the thickness of said gauge at the point of contact to determine the distance between said surfaces.

4,574,494

DEVICE FOR DETERMINING THE PROFILE OF THE CHARGING SURFACE OF A SHAFT FURNACE

Pierre Mailliet, Howald; Emile Lonardi, Bascharage; Henri Radoux, Bereldange, and Victor Kremer, Luxembourg, all of Luxembourg, assignors to Paul Wurth S.A., Luxembourg

Filed Sep. 7, 1984, Ser. No. 648,543
Claims priority, application Luxembourg, Sep. 7, 1983, 84992
Int. Cl.[4] G01B *5/20*
U.S. Cl. 33—552 **35 Claims**



1. An apparatus for determining the profile of the charging surface of a shaft furnace including:

supporting arm means, said supporting arm means being adapted to suspend above the charging surface and comprising a substantically closed sleeve having a plurality of orifices along the length thereof, said orifices being disposed over the charging surface;

control unit means, said control unit means adapted to be located external of the shaft furnace and comprising a plurality of winding drums, each drum having driving means associated therewith;

a plurality of cable guide tube means, each of said cable guide tube means located substantially within said sleeve and communicating between one of said orifices and said control unit means;

a plurality of level probe means, each of said level probe means including a weight;

a plurality of cable means, each of said cable means connected at one end thereof to one of said level probe means and at the other end thereof to one of said winding drums, each of said cable means being located within one of said guide tube means;

said driving means adapted to actuate said winding drum to raise or lower said probe onto said charging surface;

means for measuring the winding or unwinding of said cable means from said drum; and

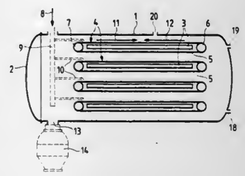
cooling circuit means located in said supporting arm.

4,574,495

METHOD AND DRYING PLANT FOR DRYING A MATERIAL IN BATCH OPERATION

Stephan Brander, Würenlingen, Switzerland, assignor to Zschokke Wartmann AG, Switzerland

PCT No. PCT/CH83/00091, § 371 Date Apr. 11, 1984, § 102(e) Date Apr. 11, 1984, PCT Pub. No. WO84/00805, PCT Pub. Date Mar. 1, 1984
PCT Filed Jul. 27, 1983, Ser. No. 604,617
Claims priority, application Switzerland, Aug. 23, 1982, 5006/82
Int. Cl.[4] F26B *3/04*
U.S. Cl. 34—15 **5 Claims**



1. A method of drying material in a batch operation, comprising the steps of:

conveying material to be dried into a closed drying space having heating means and onto a conveyor belt in the drying space;

moving the conveyor belt in a first direction to distribute the material on the conveyor belt;

stopping movement of the conveyor belt and maintaining the conveyor belt stationary during a discontinous drying stage when the material is being dried on the conveyor belt by heat from the heating means; and

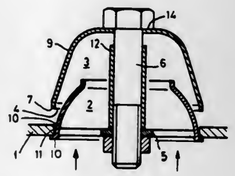
after the drying stage, moving the conveyor belt in a second direction, opposite to the first direction, with dried material thereon to discharge the dried material from the conveyor belt.

4,574,496

RING-GAP NOZZLE AND ITS APPLICATION IN A FLUIDIZED BED DRYER

Franz Sedlacek, Weingarten, Fed. Rep. of Germany, assignor to Escher Wyss GmbH, Ravensburg, Fed. Rep. of Germany

Continuation of Ser. No. 509,025, Jun. 29, 1983, abandoned. This application Jun. 19, 1985, Ser. No. 746,007
Claims priority, application Switzerland, Aug. 30, 1982, 5134/82
Int. Cl.[4] F26B *17/00*
U.S. Cl. 34—57 A **3 Claims**



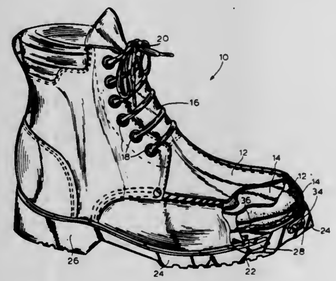
1. A ring-gap nozzle assembly adapted to fit into a bore extending through the bottom plate of a fluidized bed and to distribute a fluid over the plate, the nozzle assembly comprising upper and lower coaxial, dish-shaped pressed parts interconnected in nesting relationship by a central connecting member carried by a clamp provided on the lower part, the lower part fitting the bore in the bottom plate and having an outturned flange adapted to abut the lower side of the bottom plate, and the upper part having a larger diameter than that bore, whereby movement of the assembly in opposite directions axially of the bore is positively limited by contact of the upper part and the flange with the upper and lower sides, respectively, of the bottom plate, the pressed parts and the connecting member bounding an annular flow path comprising an axial inlet portion through which fluid enters the assembly from below the bottom plate and a deflection space in which fluid delivered through the axial portion is deflected and directed radially outward to an unobstructed ring gap through which fluid exits from the assembly, at least that portion of the flow path including the deflection space having a flow area which decreases continuously in the direction of fluid flow, the upper and lower pressed parts being spaced apart by a sleeve surrounding the connecting members and arranged between the clamp and the upper pressed part, the sleeve being provided with an arched wall extending from the connection member to the inner wall of the upper pressed part and bounding a portion of the deflection space.

4,574,497

SAFETY SHOE HAVING IMPROVED SOLE CONSTRUCTION

Frank J. Jindra, Endicott, N.Y., assignor to Endicott Johnson Corporation, Endicott, N.Y.

Filed Jan. 23, 1985, Ser. No. 693,290
Int. Cl.[4] A43C *13/14*
U.S. Cl. 36—77 R **5 Claims**



1. In a safety shoe of the type having a shoe upper with a toe portion having a safety box toe cap of strong, rigid material disposed inside the toe portion and formed with a lower edge of generally U-shaped configuration, the improvement comprising:

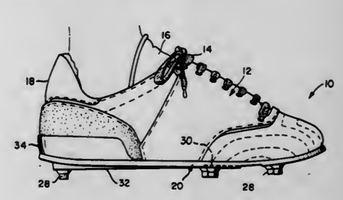
an outer sole of a relatively soft, yielding, resilient and flexible material secured adjacent its peripheral edges to the shoe upper and formed with a toe portion adjacent its forward end above which the lower edge of the safety box toe cap is disposed and a supporting plate formed of a relatively rigid polymer material embedded in and surrounded by the material of the outer sole, said supporting plate being of generally U-shaped configuration similar to the lower edge of the cap and being in registry therewith so that when a force is applied to or through the said safety box toe cap additional support for the cap is provided by said supporting plate.

4,574,498

SOLE FOR ATHLETIC SHOE

Edward J. Norton, Kingston, N.H.; Ronald L. Clay, W. Boxford, and Zenon O. Smotrycz, Woburn, both of Mass., assignors to New Balance Athletic Shoe, Inc., Boston, Mass.

Filed Feb. 1, 1983, Ser. No. 462,967
Int. Cl.[4] A43B *5/00*
U.S. Cl. 36—114 **6 Claims**



1. Footwear including an upper, a sole, and a plurality of cleats mounted on the sole and extending downwardly from the sole adapting the footwear to field sports, and wherein the improvement comprises a sole including a base layer and an outer layer, said outer layer providing a surface for mounting each cleat and comprised of two separate sections, one extending from the heel portion along a lateral and medial side of the arch and the other extending from the toe portion of the sole to an area of said sole of reduced thickness, said area of reduced thickness being disposed between opposing regions of said sections and extending to the lateral and medial sides to follow generally an off-center alignment of the heads of the metatarsal bones in the front of the ankle and arch of the foot, thereby imparting to said sole along said off-center alignment a capability of flex with less resistance, a pair of spines, each spine extending between a cleat in said heel portion and a cleat in the forefoot at the ball portion, along one of the medial and lateral sides of the sole to introduce a flex and torsional rigidity to the longitudinal arch and full instep of the foot, and a control device within a region extending from the heel portion upwardly of the sole and forwardly toward the toe portion along the lateral and medial sides of the sole, said control device formed as a wall having a height throughout its length sufficient to confine the heel, provide support and rigidity of the foot in a neutral plane throughout a normal range of motion of the foot and provide a surface at least for partial securement of said upper to said sole.

4,574,499

FASTENING AND LOCKING DEVICE STRUCTURE, PARTICULARLY FOR SKI BOOTS

Icaro Olivieri, Westmount, Canada, assignor to Gaber Italia S.p.A., Montebelluna, Italy

Filed Dec. 19, 1983, Ser. No. 562,617
Claims priority, application Italy, Feb. 16, 1983, 30633/83[U]
Int. Cl.[4] A43B *5/04*
U.S. Cl. 36—117 **8 Claims**

1. A fastening and locking device structure particularly for ski boots comprising a hollow frusto-conical element enclosing a ski boot shell at a middle region thereof and being extended at a top region into a tongue, lugs fixedly connected with said frusto-conical element and having, at a heel region of a ski boot, a tension lever device, said hollow frusto-conical element defining lower wings extending under a boot sole, a width regulating device for said frusto-conical element connecting to each other said wings, said frusto-conical element being movable on said ski boot shell, said tension lever device being

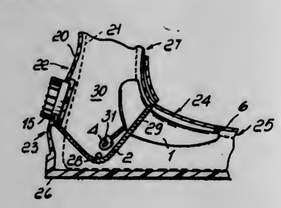
adapted to move said hollow frusto-conical element on said ski boot shell, towards said heel region of said ski boot, for fastening said ski boot and simultaneously exerting pressure on a foot instep.



4,574,500
FOOT RETAINING DEVICE PARTICULARLY FOR SKI BOOTS

Giuseppe Aldinio, Treviso; Giorgio Baggio, S. Martino di Lupari, and Mariano Sartor, Montebelluna, all of Italy, assignors to Nordica S.p.A., Montebelluna, Italy

Filed Jul. 5, 1983, Ser. No. 510,748
Claims priority, application Italy, Jul. 22, 1982, 22497/82[U]
Int. Cl.⁴ A43B *5/04*; A43C *11/00*
U.S. Cl. 36—119 **2 Claims**

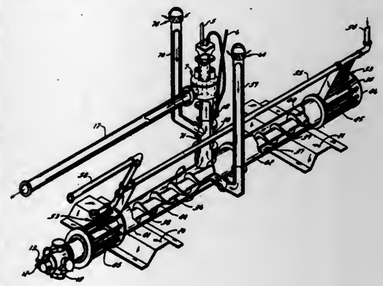


1. A foot retaining device for ski boots having a longitudinal extension, an outer shell including an instep portion of the boot, a leg portion, a front portion and side portions thereof, the device comprising a pressure element arranged inside to said outer shell at the area of said instep portion thereof, said pressure element conforming to the shape of the instep and having one end portion facing the leg portion of the boot and another end portion facing the front portion of the boot and an intermediate portion between said one end portion and said another end portion, hinge means on said shell near said another end portion of said pressure element for hingedly connecting said pressure element to said shell at said another end portion thereof, said hinge means defining an axis of rotation extending transverse to the longitudinal extension of the ski boot, a winding reel mechanism attached on said shell and having at least one actuate portion thereof arranged at the outside of said shell, a cable-like member embracing said pressure element at said intermediate portion thereof and connected with at least one end thereof to said winding reel mechanism, guide means for said cable-like member, thereby to displace said pressure element inwardly with respect to said shell upon actuation of said winding reel mechanism.

4,574,501
IN-PLACE UNDERWATER DREDGING APPARATUS OF THE CRATER SINK TYPE

Albert H. Sloan, 201 Kean Rd., Ft. Lauderdale, Fla. 33314

Filed Jan. 7, 1985, Ser. No. 689,189
Int. Cl.⁴ E02B *3/02*; E02F *3/88*
U.S. Cl. 37—58 **9 Claims**



1. Underwater dredging apparatus for dredging solid material from an underwater area by pumping a mixture of water and solids from the area and discharging the mixture at a remote location to thereby clear and deepen the area, said apparatus comprising,

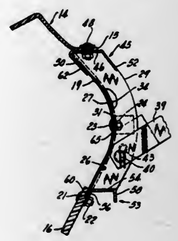
a generally vertically upstanding pipe having a hydraulically driven pump adjacent its upper end, and said upstanding pipe having a lower end located beneath the surface of the water, said pump having a discharge conduit for conducting said mixture to a remote location,

and tubular auger means including a tube and an auger screw rotatably mounted therein and extending generally horizontally and laterally outwardly from the lower end of said upstanding pipe and in direct and positive material delivering communication therewith; a variable speed hydraulic motor connected with said auger screw for rotatably driving said auger screw to deliver and meter material at a selected rate directly and positively into said upstanding pipe whereby said pump draws said mixture upwardly through said upstanding pipe and discharges it through said discharge conduit to said remote location.

4,574,502
TRANSPARENT PLOW BLADE

James R. Blau, 13220 W. Burlawn Ct., Brookfield, Wis. 53003

Continuation of Ser. No. 660,111, Oct. 12, 1984, abandoned.
This application Sep. 9, 1985, Ser. No. 773,600
Int. Cl.⁴ E01H *5/06*
U.S. Cl. 37—266 **8 Claims**

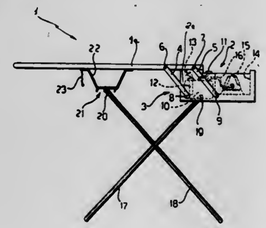


1. In combination, a motor vehicle having a plow attached to the front end thereof and being capable of being placed in a plowing or a non-plowing transport position, said plow comprising a framework presenting a forwardly extending configuration suitable for plowing and a plow face member attached to said framework, said plow face member being transparent to visible light over substantially all of its surface to thereby permit passage of vehicle lighting therethrough when said plow is in its plowing or non-plowing transport position.

4,574,503
IRONING BOARD SUPPORT FOR IRON AND AUXILIARY STEAM GENERATOR

Carlo Bertani, Montechiarugolo, Italy, assignor to AL-PI S.r.l., Milan and B e B S.r.l., Montechiarugolo, both of, Italy

Filed Jun. 5, 1984, Ser. No. 617,487
Claims priority, application Italy, Jul. 7, 1983, 22304/83[U]; Jul. 7, 1983, 22305/83[U]; Jul. 7, 1983, 22306/83[U]
Int. Cl.⁴ D06F *81/02*
U.S. Cl. 38—77.6 **7 Claims**



1. An ironing apparatus comprising a steam iron, a steam boiler, an ironing table having at least an ironing board, collapsible legs supporting said board, and a housing suitable to receive said iron, means for supporting said boiler under said ironing board, said ironing table comprises a box-shaped body suitable to define at least a housing for said iron and means for securing said body to said working board in an underneath position with respect to the same, wherein said body is supported in a removable manner by said ironing board by means of an articulated quadrilateral linkage comprising at least two connecting rods articulated, at one end thereof, to said body and, at the other end thereof, to the ironing board, said body being movable about said linkage from a first use position in which it protrudes from said board to a second retracted position in which it is disposed under the same board, wherein said steam boiler is formed in one of said collapsible legs, said iron adapted to be accommodated in said housing of said body being in flow communication with said boiler through a steam passage duct extending from said collapsible leg defining said boiler.

4,574,504
STORAGE CONTAINER

Lance F. Holmer, 38615 Gainsborough, Mt. Clemens, Mich. 48044

Filed Jun. 1, 1984, Ser. No. 616,195
Int. Cl.⁴ G09F *3/18*
U.S. Cl. 40—19 **5 Claims**

1. A container for storing one or more sheets of drawings depicting the construction and/or operation of piece of equipment, the container comprising:

an elongated tubular member having first and second ends with an opening formed at the first end;

a cover receivable on the first end of the tubular member to enclose the first end of the tubular member;

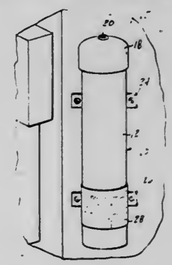
locking means mounted on the cover and rotatable between a first unlocked position enabling removal of the cover from the tubular member and a second locked position locking the cover on the first end of the tubular member;

key means removably insertable into the locking means for rotating the locking means between the first and second position;

a post attached to and depending from the cover and receivable within the tubular member when the cover is mounted on the first end of tubular member;

means formed on the post, for securing an edge of the drawing thereto such that the drawing may be rolled about the post and inserted into the tubular member with the post;

means for mounting the tubular member on the predetermined equipment with which the drawings is associated;



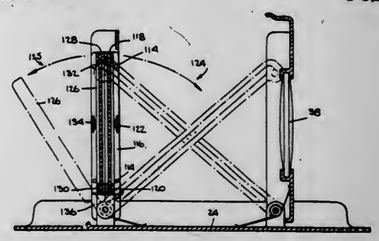
a plurality of L-shaped slots formed in the tubular member adjacent to the first end of the tubular member; and

a plurality of radially extending feet attached to the locking means and rotatable therewith, the feet being selectively engagable in the slots of the tubular member to selectively lock the cover to the tubular member when the locking means is rotated to the first locked position while the cap and post remain in a stationary position within the tubular member and to enable release of the cover from the tubular member upon rotation of the locking means to the second unlocked position.

4,574,505
IDENTIFICATION LOCKET

Rudolph J. Chiodo, West Hempstead, N.Y., assignor to Dimedco, Garden City, N.Y.

Continuation of Ser. No. 456,714, Jan. 10, 1983, Pat. No. 4,468,874. This application Jul. 23, 1984, Ser. No. 633,296
The portion of the term of this patent subsequent to Sep. 4, 2001, has been disclaimed.
Int. Cl.⁴ G02B *27/04*
U.S. Cl. 40—365 **1 Claim**



1. An identification locket for storing and displacing miniature transparent transcripts of identification information, said locket comprising:

(a) a case having a back and a cover, the cover being mounted on a first shaft positioned adjacent one end of said back for rotation between a closed position wherein the cover is parallel to said back and is positioned between the one end and the other end of said back, and an open position wherein the cover is perpendicular to said back;

(b) a magnifying lens mounted in said cover;

(c) a frame mounted on a second shaft positioned adjacent the other end of said back for rotation between a closed position wherein the cover is parallel to said back and between the ends of said back, and an open position wherein the cover is perpendicular to said back, wherein said frame is enveloped between the back and said cover when said frame and cover are in the closed position, said frame having a pair of parallel edge flanges and a wall therebetween, the flanges having detent means and the wall having an opening;

(d) a first retainer for releasably holding in a predetermined position therein a first transparent transcript, said first retainer being removably held to said frame by the detent means and rotatable independent of said frame about the second shaft between the closed position of said frame and the open position of said frame;

(e) a second retainer for releasably holding in a predetermined position therein a second transparent transcript, said second retainer being removably held to said frame by said detent means and rotatable independent of said frame and said second retainer about the second shaft between the closed position of said frame, the open position of said frame, and a third position parallel to the back of said casing and opposite to the closed position, wherein said first and second retainer abut each other and both are perpendicular to said back when said first and second retainer are in the open position, and wherein said first and second transparent transcripts are displayed simultaneously and parallel to said magnifying lens when said first and second retainer are in the open position, said first transparent transcript is displayed when said first retainer is in the open position and said second retainer is in the third position, said second transparent transcript is displayed when said second retainer is in the open position and said first retainer is in the closed position, and neither said first nor said second transparent transcripts are displayed when said first and second retainers are in the closed position;

(f) first spring means for urging said cover toward the open position; and

(g) second spring means for urging said frame toward the open position.

4,574,506

TENSIONING OF FLEXIBLE SHEETS ACROSS FRAMES

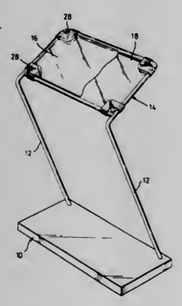
James N. Morgan, London, England, assignor to Marler Haley Exposystems Limited, England

Filed Feb. 22, 1984, Ser. No. 582,630

Claims priority, application United Kingdom, Feb. 22, 1983, 8304915

Int. Cl.⁴ G09F *17/00*

U.S. Cl. 40—603 **7 Claims**



1. A device for supporting a flexible sheet in tension comprising:

a planar peripheral frame bounding a space, said frame comprising a series of elongate side members;

a plurality of tensioning devices carried by the frame, each tensioning device having at least one passage therethrough for receiving at least one of said side members, said tensioning device including a hollow casing having a wall extending parallel with and adjacent to the plane of said peripheral frame, an elongate slot in said wall extending from near said passage receiving said side member towards the middle of the frame and away from said passage;

a movable sheet engaging element slidable within said slot, said sheet engaging element having an outer part projectng from said wall of said casing for engagement with a sheet to be supported, said outer part having a surface engaging the outer surface of said wall, said sheet engaging element further having a stem extending freely through said slot and an enlarged root portion within said casing which is wider than said slot and cooperates with the inner surface of said wall to hold said sheet engaging element captive in said slot while allowing free movement of the sheet engaging element along said slot towards and away from the middle of said space;

a spring fixed within said casing, said spring including a coil portion and an end portion projecting radially from said coil portion, said tensioning device including a boss fixed with respect to said casing and receiving said coil portion to form a pivotal axis for quasi-pivotal movement of said end portion for tensioning and untensioning said spring, said quasi-pivotal movement being in a plane parallel with said wall, said enlarged root portion of said sheet-engaging element having a groove therearound in which said end portion locates, said end portion, in a relatively unstressed state of said spring engaging a side of said root portion when said sheet engaging element is positioned adjacent said frame within said slot, said leg portion, in a relatively stessed state of said spring, engaging a cam surface on the bottom of said groove in said root portion when said sheet engaging element is positioned towards the middle of said space within said slot whereby force from said spring substantially laterally of the slot so that, in the absence of externally applied forces, said sheet engaging element is retained against movement along said slot;

said sheet engaging elements of said tensioning devices movable within said slot against said spring from a position nearer the middle of the space, where a sheet will not be in tension, to a position away from the middle of the space, where a sheet is held in tension by the aggregate effect of the spring bias of said springs on said sheet.

4,574,507

STREET SIGN ADAPTOR UNIT AND ASSEMBLY INCLUDING THE SAME

Paul G. Elliott, 117 Railroad Ave., Donaldsonville, La. 70346

Continuation-in-part of Ser. No. 330,962, Dec. 15, 1981, Pat. No. 4,425,728. This application Jan. 10, 1984, Ser. No. 569,797

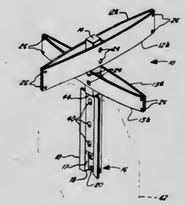
The portion of the term of this patent subsequent to Jan. 17, 2001, has been disclaimed.

Int. Cl.⁴ G09F *15/00*

U.S. Cl. 40—607 **3 Claims**

1. A street sign adaptor unit for use in placement of street signs identifying intersecting streets and adaptable to both perforate metal posts of trapezoidal cross-section and cylindrical hollow metal posts, said adaptor unit comprising a lower portion having a trapezoidal cross-section for fitment within the trapezoidal cross-section of said perforate metal posts or within the top portion of said cylindrical hollow metal posts, said lower portion having means in register with the perforations of said trapezoidal cross-section perforate metal post whereby said unit is attachable to said trapezoidal cross-section perforate post and an upper portion of approximately square cross-section and being greater in area than said lower portion

so that at the juncture of the said upper portion and said lower portion said upper portion extends over the largest parallel side



of the trapezoidal cross-section of the lower portion forming a shoulder suitable for retaining a wedge used in fixing said adaptor unit in said cylindrical metal post.

4,574,508

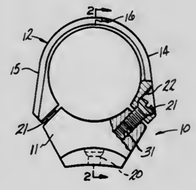
TELESCOPE SIGHT MOUNT

Cecil J. Ross, El Paso, Tex., assignor to Omark Industries, Portland, Oreg.

Filed Jul. 14, 1983, Ser. No. 513,881

Int. Cl.⁴ F41G *1/38*

U.S. Cl. 42—1 ST **27 Claims**



1. A telescopic sight mount having a center line midway between the top and the bottom of the sight mount removably fastenable to a firearm receiver for retaining a telescopic sight comprising in combination:

a. a base portion connectable to the firearm receiver;

b. fastening means for selectively fastening the base portion to the firearm receiver;

c. cap means flexibly connected together at a joint above the center line of the sight mount and connectable to the base portion, the cap means comprising a first part and a second part connectable to the base portion at a point below the center line of the sight mount, and the joint connects the first part and the second part above the center line of the sight and is dovetailed so that the first part flexibly interlocks with the second part along first obliquely angles surfaces on the first part and second obliquely angles surfaces on the second part; and

d. tightening means for connecting the cap means to the base portion at a point below the center line of the sight mount.

4,574,509

AMBIDEXTROUS CARTRIDGE MAGAZINE RETAINING CATCH FOR SELF LOADING FIRE ARMS

David E. Smith, 5 Park Ave., Telscombe Cliffs, Sussex, England

Filed Mar. 26, 1984, Ser. No. 593,408

Claims priority, application United Kingdom, Mar. 28, 1983, 8308420

Int. Cl.⁴ F41C *25/06*

U.S. Cl. 42—7 **4 Claims**

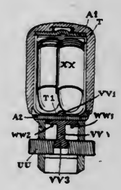
1. A self-loading fire arm comprising manually releasable means for holding a box magazine within an enclosed well in the frame of the fire arm in a position to allow cartridges to be sequentially fed from the magazine into the barrel breech chamber of the fire arm, said means comprising

an aperture in the front wall of the magazine;

a catch pivotally movable within a slot-shaped opening in the wall of said well adjacent the front wall of the magazine from a central position in which the catch engages in said aperture to hold the magazine in the well to either of two extreme positions in which the catch is withdrawn from said aperture, thereby freeing said magazine;

separately movable spring elements urging said catch towards said aperture; and

a double-ended plunger mounted for axial movement transversely in the fire arm frame, and movable from either side of the fire arm to move said catch from the central position to a respective one of said extreme positions against spring loading provided by a respective one of said spring elements, and thereby to withdraw said catch from said aperture, said catch comprising



a nose portion adapted to engage in said aperture,

a tail portion adapted to engage in an aperture in said plunger and to be moveable therewith, and

a transverse bridge portion on the side of which remote from the well said spring elements are located to urge said nose portion towards said aperture, whereby movement of said plunger to either extreme position thereof causes pivotal movement of said catch to free said nose portion from said aperture against the pressure exerted by a respective one of said spring elements.

4,574,510

BARREL LOCKING MECHANISM FOR BREAK-OPEN-ACTION GUN

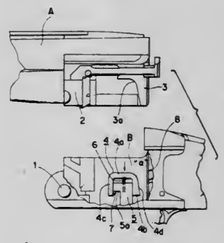
Tadahiro Nishikawa, Nangoku, Japan, assignor to Kabushiki Kaisha Miroku Seisakusho, Kochi, Japan

Filed Mar. 28, 1984, Ser. No. 594,115

Claims priority, application Japan, Mar. 30, 1983, 58-52512

Int. Cl.⁴ F41C *11/08*

U.S. Cl. 42—40 **17 Claims**

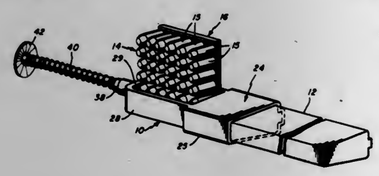


1. A barrel locking mechanism for a break-open gun having a barrel portion pivotally connected to a mechanical portion, including a breech face, by a pin assembly, said barrel locking mechanism comprising:

(a) a lug secured to the barrel portion of the gun, said lug including a first contact surface;

(b) stationary receiver means secured to the mechanical portion of the gun;
(c) movable receiver means slidably mounted upon said stationary receiver means and including a second contact surface adapted for engaging said first contact surface;
(d) resilient means operably associated with said stationary receiver means and said movable receiver means for biasing said movable receiver means so that said contact surfaces engage when the barrel portion is pivoted into a locked position with the mechanical portion; and,
(e) said contact surfaces being angularly disposed relative to said breech face for assuring contact therebetween.

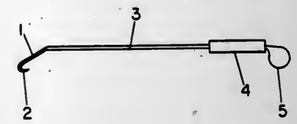
4,574,511
AMMUNITION LOADING DEVICE
Frank Csongor, 15 Morgan St., Wenham, Mass. 01984, assignor to Frank Csongor, Rye, N.H.
Filed Jan. 5, 1984, Ser. No. 568,379
Int. Cl.⁴ F42B *39/06*
U.S. Cl. 42—87 **12 Claims**



1. Apparatus for rapid loading of ammunition into a magazine, comprising;
a housing having one end open to be received by the magazine and positioned relative to the magazine to enable passage of a row of rounds of the ammunition from the housing into the magazine,
said housing having an intermediate section adjacent said one end and having means defining a receiving port into which the ammunition is disposed,
said housing intermediate section having a bottom wall defining a means for limiting the position of the ammunition so as to align the ammunition with the magazine,
said housing intermediate section further having upright wall means extending from said bottom wall to define the receiving port of dimension comparable to the row length and round length,
in combination with support pad means for a plurality of rows of rounds of ammunition adapted to be loaded into the housing receiving port,
said housing bottom wall having a longitudinally extending slot extending along one side of the bottom wall and adapted to receive the support pad means as the rows of rounds are extracted therefrom,
and plunger means supported at the housing remote from the open end thereof for contacting at the base of a round and driving the ammunition through the open end of the housing into the magazine including means for biasing the plunger means to a retracted position.

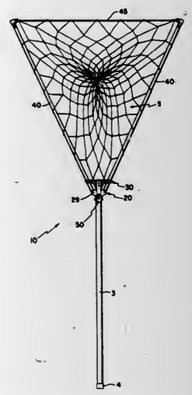
4,574,512
GAFF
Paul L. Hahn, 150 Iris St., Broomfield, Colo. 80020
Filed May 16, 1983, Ser. No. 495,048
Int. Cl.⁴ A01K *97/14, 97/01*
U.S. Cl. 43—5 **1 Claim**

1. An improved fish gaffing device comprising an elongate shaft with a handle at one end and a hook assembly at the shaft's opposite end, wherein the improvement comprises: said hook assembly including two shaft members rigidly secured to said elongate shaft, said two shaft members angled from said elongate shaft so as to lie in a single plane angled between 25°-35° from the longitudinal axis of said elongate shaft and extending away from the handle end of the elongate shaft, said two shaft members further extending in a direction angled away from each other symmetrically about the longitudinal



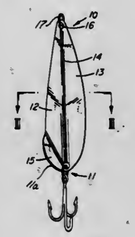
axis of said elongate shaft an an angle of 12°-16° from said longitudinal axis, said two shaft members each having formed integrally at their ends, single hook portions curved through an arc of 180° with pointed end portions lying in a plane parallel to but spaced from said single plane.

4,574,513
COLLAPSIBLE NET ASSEMBLY
John F. Wearing, 3467 Williamsburg, Boise, Id. 83706
Filed Feb. 11, 1985, Ser. No. 700,491
Int. Cl.⁴ A01K *77/00*
U.S. Cl. 43—12 **7 Claims**



1. Collapsible net apparatus comprising:
a handle;
a T-member provided with a pair of laterally spaced openings, said T-member affixed to one end of said handle;
a slide member slidably engaging said handle;
a pair of rigid arms, one end of each of said arms pivotally engaging said slide member and movable therewith, each of said arms slidably received within a respective opening of said T-member for divergent extension of said arms for operation and convergent retraction of said arms for storage, and each of said arms including a hook mounted on the end opposite said pivot end and extending toward said pivot for gathering arm engaging strands of a net during retraction of said arms;
latch means for holding said arms in an extended position for operation;
support means connected between opposing ends of said arms for supporting a net; and
a net engaging said T-member, said arms, and said support means.

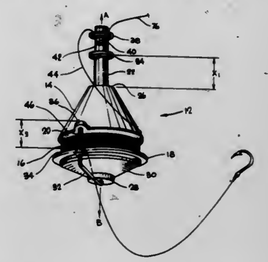
4,574,514
FISHING LURE
Charles W. Kingston, Pineshores Rd., Goulais River, Ont. K0A 1E0, Canada
Filed May 16, 1983, Ser. No. 494,892
Int. Cl.⁴ A01K *85/00*
U.S. Cl. 43—42.5 **3 Claims**



1. A fish lure comprising
(a) a generally drop-shaped plate-like body having a narrow pointed leading end portion and a relatively wide rounded trailing end portion, said trailing end portion having a single continuous convex uninterrupted edge (*11a*);
(b) line securement means adjacent said leading end portion of the body for securing the lure to a fishing line; and
(c) hook securement means adjacent said trailing end portion of the body for securing a hook to the lure;
(d) said body having a generally V-shaped cross-sectional configuration defining first and second non-symmetrical longitudinally extending wings of unequal widths, respectively, disposed on opposite sides of a longitudinally extending generally straight ridge section extending the entire length of said body from said leading end portion to said trailing end portion, said ridge section being generally coincident with a line of intersection of two imaginary planes perpendicular to each other;
(e) said first wing being generally planar throughout its entire length and width;
(f) the forward end portion of said second wing being generally planar throughout a substantial extent of the length of said second wing, the convex uninterrupted edge of the trailing end portion of said second wing being bent away from the plane of said forward end portion to define a spoiler section.

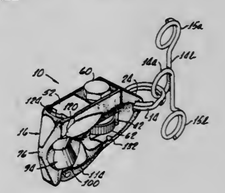
4,574,515
FISHING BOBBER
Donald R. Garner, 760 Carla St., Livermore, Calif. 94550
Filed Mar. 23, 1984, Ser. No. 592,524
The portion of the term of this patent subsequent to Sep. 27, 2000, has been disclaimed.
Int. Cl.⁴ A01K *93/00*
U.S. Cl. 43—43.11 **5 Claims**

1. A line release bobber comprising,
an elongated buoyant cone, the base of said cone forming a recessed spool, said cone having a central hollow bore,
a plunger set in said bore, of greater length than said bore, having travel limiting members at each end outside the bore, the plunger having an upper portion defining a slot,
a wire clip attached to one end of said plunger, having one end bent so as to bridge the spool area, forming a releasable line retention member at one end of said bobber, said member being released by means of the travel limiting members of the plunger, said wire clip being rotatably attached to said plunger, thereby allowing rotation of said wire and said cone about said plunger, and



a resilient ring movably disposed over the slot in the upper portion of said plunger, thereby forming a fixed line retention member.

4,574,516
FISHING CLIP
William D. Shedd, Mission Viejo, and Robert C. Eschbach, Newport Beach, both of Calif., assignors to AFTCO Mfg. Co., Inc., Irvine, Calif.
Continuation of Ser. No. 559,342, Dec. 8, 1983, which is a continuation-in-part of Ser. No. 229,713, Sep. 8, 1981, Pat. No. 4,428,142. This application Sep. 11, 1985, Ser. No. 775,029
Int. Cl.⁴ A01K *97/00*
U.S. Cl. 43—43.12 **12 Claims**

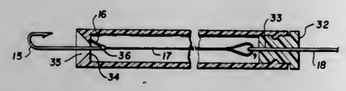


1. A releasable clip for holding a fishing line comprising
a clip body,
means on the body for securing it to a support,
a releasable arm pivoted to said body for motion between a first position in which a portion of said arm adjacent said body is spaced from the body to define a line receiving cavity closed at opposite ends of said arm, and a second position in which one end of said arm is away from said body, whereby the force exerted by a tensioned line extending through said cavity tends to pivot said arm away from said body, and
means for retaining said arm in said first position comprising
a recess formed in an outer edge of said body and opening outwardly and forwardly toward said arm,
a latch link in said recess and having a latch end extending from said recess beyond said body and toward said arm, said latch link being pivoted to said body with said recess,
means for resiliently pressing said latch link into said recess, and
interengaging cam means on said arm and said latch end for releasably latching said arm to said latch link.

4,574,517
DEVICE FOR LANDING BIG FISH ON A LIGHT TEST LEADER

Ralph D. Burkeen, 402 Highmoor St., Round Lake Park, Ill. 60073

Filed Jul. 27, 1983, Ser. No. 517,660
Int. Cl.[4] A01K *91/00*
U.S. Cl. 43—44.98 **3 Claims**

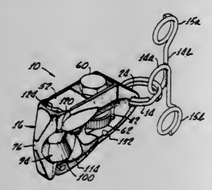


1. In a fish hook rig assembly having a heavy line coupled to a light leader carrying a fishing hook with a mechanism for increasing the hook to line test strength of the leader in response to the weight of a fish, the improvement comprising,
a connector link assembly comprising a hollow tube of a length corresponding to the leader, attached within said tube near one end to one end, of the heavy line,
friction means substantially closing said one end of said tube for continuously frictionally holding the line to permit a loop to be held in the heavy line within the connector link along its length with a frictional force that is overcome by said weight of a fish to allow said heavy line to slip within said friction means to move the connector link from an initial inactive position to a final reinforcing position,
a leader connection loop in the leader end remote from the hook, threaded over the heavy line to ride on its loop and thereby permit the leader to move back and forth within the connector link in response to the varying length of the heavy line loop within the link,
and means detenting the hook and connector link together when the heavy line loop is pulled through the friction means to move the shank portion of the hook into the connector link.

4,574,518
FISHING CLIP

William D. Shedd, Mission Viejo, and Robert C. Eschbach, Newport Beach, both of Calif., assignors to AFTCO Mfg. Co., Inc., Irvine, Calif.

Continuation-in-part of Ser. No. 299,713, Sep. 8, 1981, Pat. No. 4,428,142. This application Dec. 8, 1983, Ser. No. 559,342
The portion of the term of this patent subsequent to Jan. 31, 2001, has been disclaimed.
Int. Cl.[4] A01K *91/00*
U.S. Cl. 43—43.12 **6 Claims**

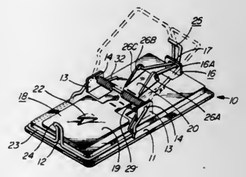


1. A releasable roller clip comprising
a body,
an elongated roller journaled to said body about a roller axis extending in a first direction,
means for pivotally connecting said roller at one end thereof to said body for motion about a pivot axis angulated relative to said roller axis between a first position in which a roller surface is adjacent to but spaced from said body and a second position in which said roller is pivoted away from said body,
means for resting motion of said roller from said first position with a predetermined amount of resistive force,
means for preventing a fishing line entrained over said roller from moving past the end of the roller, thereby preventing such fishing line from being caught between the end of the roller and said means for pivotally connecting, and
means for connecting said body to a support,
said means for pivotally connecting comprising an arm pivoted to said body, said roller being journaled on said arm, said means for preventing a fishing line from moving past the end comprising shroud means on said body overlying at least one end of the roller in said first position, and extending from said body to the roller diameter that is parallel to said pivot axis.

4,574,519
MOUSE TRAP

James L. Eckebrecht, 1384 Tyandaga Park Dr., Burlington, Ontario, Canada

Filed Sep. 28, 1983, Ser. No. 536,765
Int. Cl.[4] A01M *23/28*
U.S. Cl. 43—81 **3 Claims**

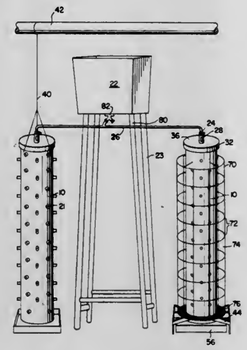


1. A mousetrap comprising:
(a) a base;
(b) first transversely extending fulcrum means associated with said base;
(c) a sensing platform pivotally mounted with respect to said first, transversely-extending fulcrum means about a pivot axis which is coincident with said first, transversely, extending fulcrum means, said sensing platform being a first class lever, and being provided with a rearward extension;
(d) second longitudinally oriented fulcrum means upstanding from said base proximate to the rear end of the base;
(e) a spring loaded garrot wire rotatably mounted between a pair of oppositely facing pivot points and adapted to be oscillatably movable between a spring-released, tripped position, extending rearwardly of the base; and
(f) a spring catch holding means acting as an inverted first class lever, said spring catch holding means comprising a linkage including a longitudinally extending portion pivotally secured to said rearward extension of said sensing platform said longitudinally extending portion being in the form of two spaced apart segments of a wire, the free ends thereof being pivotally joined to respective spaced apart ears on said readward extension of said sensing platform, and an angular portion upstanding from said longitudinally extending portion and terminating in a holding means, said angular portion being the form of spaced apart extensions of said segments of said wire, said spaced apart extensions meeting at an arcuate forwardly angularly projecting nose portion, said linkage being retained by, and pivotal about, a fixed fulcrum element disposed at the juncture of said longitudinally extending portion and said angular portion, whereby said longitudinally extending portion of said linkage is adapted to lie beneath the garrot wire when the garrot wire is in its spring-loaded position, and whereby said holding means of said linkage to said garrot wire is disposed outboard of said fulcrum whereby downward movement of said sensing platform as a rodent approaches said bait causes said forward end of said lever to be rotated in a clockwise direction by the end of said rearward extension of said sensing platform, thereby to rotate the holding means in a clockwise direction, thereby to release said garrot wire and to trip the trap.

4,574,520
GRAVITY FEED HYDROPONIC SYSTEM

James M. Arledge, 3100 Cypress St., West Monroe, La. 71291

Continuation-in-part of Ser. No. 519,259, Sep. 21, 1983, abandoned, and Ser. No. 519,260, Oct. 24, 1983, abandoned. This application Oct. 22, 1984, Ser. No. 663,400
Int. Cl.[4] A01G *31/00*
U.S. Cl. 47—59 **20 Claims**



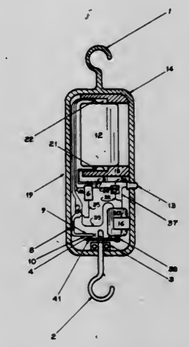
1. A system for hydroponically growing plants in a vertical array comprising:
(a) a vertical cylindrical column adapted to contain an inert support material, the column including top and bottom openings and a plurality of side apertures;
(b) a nutrient reservoir for positioning above the column and adapted to contain a nutrient solution;
(c) means for controlling introduction of nutrient solution into the column and for restricting evaporation of nutrient solution through the top opening of the column, the means including: a cap having a passageway therethrough, the cap being adapted to cover the top opening of the column; an adjustable valve for controlling the rate of introduction of nutrient solution into the column, the valve being mounted on the cap by means including a hollow pipe at least a portion of which pipe is transparent, the pipe connecting the valve with the passageway in the cap, the valve being adjustable to control regularly timed drips of nutrient solution into the column, the pipe permitting unrestricted passage of nutrient solution from the valve through the passageway in the cap to permit accurate timing of the drips of nutrient solution, the pipe and the cap supporting the valve above the top opening of the column for gravity feed of nutrient solution into the column, the transparent portion of the pipe permitting visual inspection of the rate of introduction of nutrient solution from the valve into the column; and conduit means connecting the valve to the nutrient reservoir.

4,574,521
LOW-POWER INTERMITTENT HANGING PLANTER ROTATOR

Stephen D. Landy, 700 Cathedral St., Apt. 3M, Baltimore, Md. 21201

Filed Feb. 13, 1985, Ser. No. 701,075
Int. Cl.[4] A01G *9/02*
U.S. Cl. 47—67 **12 Claims**

1. Hanging planter rotator apparatus comprising:
a. an electric motor;
b. an electric power supply;
c. an electric circuit connecting said motor to said power supply;
d. switch means connected to said electric circuit in series with said power supply and said motor for starting and stopping said motor;
e. an electric timing device;
f. an electric circuit connecting said timing device to said power supply;
g. an electric circuit connecting said timing device to said switch means to control closing of said switch means upon signal from said timing device;
h. a housing for housing of said apparatus;
i. securing means for attaching said housing to a stationary support;



j. attachment means for attaching a hanging planter to said apparatus;
k. output means associated with said motor and said attachment means for rotating said attachment means upon operation of said motor;
l. detection means for detecting when proper amount of rotation of said attachment means has occurred;
m. an electric circuit connecting said detection means to said power supply;
n. electric circuit means connecting said detection means to said timing device and said switch means for resetting said timing device and opening of said switch means upon signal of said detection means whereby said apparatus will automatically periodically partially rotate attachment means with respect to said housing.

4,574,522
ROOT CONTROL BAG

Ralph E. Reiger, 4131 N. Portland, Oklahoma City, Okla. 73112, and Carl E. Whitcomb, Rte. 3, Box 251 F, Stillwater, Okla. 74074

Filed Apr. 20, 1983, Ser. No. 486,984
Int. Cl.[4] A01G *9/02, 23/04*
U.S. Cl. 47—78 **17 Claims**

11. A root pruning nursery stock container with plant com-

prising a nonwoven, porous, needled fiber bonded fabric bag formed of staple synthetic fibers operatively capable of pruning plant roots and inducing root branching when said roots penetrate said fabric bag, a plant and growing media.

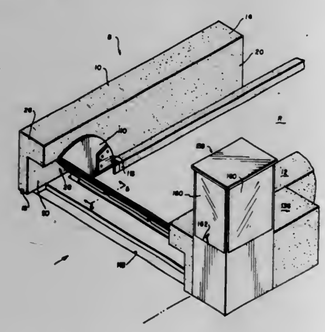


4,574,523

VEHICLE BARRICADE OR MAXIMUM SECURITY BARRIER

Ralph G. Nasatka, 8405 Dangerfield Pl., Clinton, Md. 20735

Filed Mar. 27, 1984, Ser. No. 593,884
Int. Cl.⁴ E01F *13/00*
U.S. Cl. 49—49 **17 Claims**



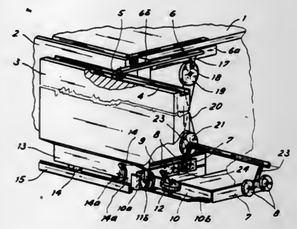
1. A vehicle barricade for roadways or the like, comprising:
(a) first and second spaced generally parallel wall means contiguously disposed along opposite sides of said roadway for providing a checkpoint therebetween;
(b) shaft receiving means secured in said roadway generally along the surface thereof and extending generally transversely between said wall means;
(c) shaft means cooperatively associated with said shaft receiving means and adapted for pivoting on an axis;
(d) barrier plate means secured to said shaft means and pivotal therewith between a first generally horizontal position and a second angularly disposed position, said first position adapted for permitting vehicle passage through said checkpoint and said second position adapted for preventing vehicle passage through said checkpoint by engagement of said barrier plate means with a vehicle;
(e) said shaft receiving means includes means cooperating with said shaft means for preventing removal of said shaft means therefrom;
(f) each of said wall means includes an angularly disposed portion adapted for engaging and supporting a portion of said barrier plate means when in said second position;
(g) means associated with said barrier plate means for pivoting said barrier plate means between said first and second position;
(h) said means cooperating with said shaft means for preventing removal includes a plurality of fingers extending angularly from said shaft receiving means; and,
(i) said barrier plate means has a plurality of apertures therethrough, each of said apertures is aligned with one of said fingers whereby said fingers extend through said apertures when said barrier plate means is in said second position for thereby preventing removal of said shaft means.

4,574,524

APPARATUS FOR OPENING ALIGNED SLIDING DOORS OF FURNITURE

Massimo Bonetti, Padua; Giuseppe Manente, Venezia-Mestre, and Abramo Mion, Mirano-Zianigo, all of Italy, assignors to KAIROS S.n.c. di Bonetti M, Manente G. e Mion A., Mirano-Zianiga, Italy

Filed Sep. 4, 1984, Ser. No. 647,136
Claims priority, application Italy, Sep. 6, 1983, 41601 A/83
Int. Cl.⁴ E05D *15/20*
U.S. Cl. 49—130 **10 Claims**



1. Apparatus for opening aligned sliding leaves of furniture, comprising an item of furniture with at least two sliding leaves which are aligned in the closed position, wherein the or each sliding leaf comprises an upper track for receiving a roller, a slide guide fixedly secured to or integral with said item of furniture and having a movable part movable in a direction substantially perpendicular to the plane of the leaf and provided with a first roller having a vertical axis received in said upper track and an engagement member, such as a pin, a first pulley coupled to said movable part by said engagement member, a second pulley in a lower part of said item of furniture, an inextensible, flexible element connecting said first and second pulleys, a horizontal shaft extending across the width of said door leaf for supporting said second pulley, an arm extending from each end of said shaft acting upon lateral trolley members supported by pairs of rollers sliding in guides rigidly secured to said item of furniture, said trolleys carrying a substantially U-section member, second rollers having a horizontal axis and third rollers, having a vertical axis and a support member rigidly connecting said second and third rollers to said door leaf whereby said second and third rollers can run in said U-section member, fourth rollers mounted on a support member and arranged, when the leaf is moved perpendicular to said plane and in a direction away from the item of furniture, to cooperate with a horizontal lower track mounted parallel to the front surface of the item of furniture.

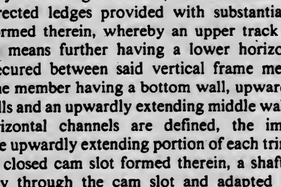
4,574,525

DEVICE FOR OPERATING A SWIVELING BODY ELEMENT

Xavier Le Borgne, Saint Brice Sous Foret, and Marc Limonne, Neuilly Plaisance, both of France, assignors to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Apr. 5, 1984, Ser. No. 597,086
Claims priority, application France, Apr. 6, 1983, 83 05582
Int. Cl.⁴ E05F *11/00*; F41H *5/22*
U.S. Cl. 49—324 **6 Claims**

1. In a body defining a control or observation post and having an opening and a mobile element rotatably mounted on said body and movable into a position for sealing said opening, a device for operating said mobile element, said device comprising:
a pivot pin having one end fixed to said mobile element and a second end extending into said body, whereby said pivot pin is rotatably mounted in said body;
a control element connected to said second end of said pivot pin;



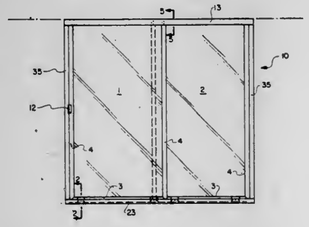
a gripping element pivotally connected to said control element via a connecting pin, said gripping element and control element together defining a locking handle; and
means for interlocking said control element and said pivot pin.

4,574,526

SLIDING CLOSURE

Edwin A. Lindquist, 525 "S" St., P.O. Box 957, Sacramento, Calif. 95804

Filed Feb. 10, 1984, Ser. No. 579,124
Int. Cl.⁴ E05D *13/00*
U.S. Cl. 49—411 **3 Claims**



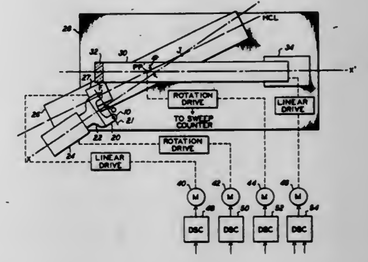
1. In a sliding shower door assembly having two laterally movable panels of substantially planar rectangular configuration, having at least two vertically oriented trim pieces disposed on opposite ends of the said panels, each trim piece having a portion extending upwardly beyond the top edge of said panel, said assembly further having a frame means for supporting said sliding panels thereon and including substantially parallel vertical frame members, an upper horizontal frame member secured between said vertical frame membera, the upper frame member having a top wall and further having downwardly extending sidewalls, the sidewalls having inwardly directed ledges provided with substantially curved recesses formed therein, whereby an upper track is defined, said frame means further having a lower horizontal frame member secured between said vertical frame members, the lower frame member having a bottom wall, upwardly extending sidewalls and an upwardly extending middle wall, whereby lower horizontal channels are defined, the improvement wherein the upwardly extending portion of each trim piece has a diagonal closed cam slot formed therein, a shaft extending transversely through the cam slot and adapted for limited sliding movement therein, and an antifriction roller carried on an end of the shaft and disposed within the upper track, thereby accommodating any misalignment, bowing or warping in the shower door assembly.

4,574,527

TORIC LENS GENERATING

Robert S. Craxton, 7 Alvin Pl., Rochester, N.Y. 14607

Filed Oct. 5, 1984, Ser. No. 658,343
Int. Cl.⁴ B24B *13/00*
U.S. Cl. 51—33 W **12 Claims**



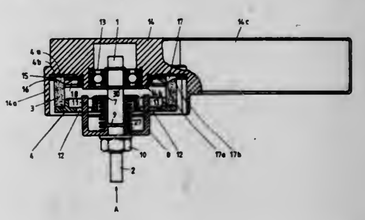
1. The method of generating toric surfaces having base and cross curvatures of different radius with the aid of a cutter unit having a cutter wheel which sweeps about an axis perpendicular to the axis of the lens, which comprises the steps of sweeping said cutter wheel about said perpendicular axis a plurality of times to make a plurality of cuts, changing the location of said cutter wheel with respect to said surface being generated prior to each cut after the first of said cuts to reduce the elliptical error in different portions of said cross curve during each of said subsequent cuts whereby to provide a toric surface in which the elliptical error is minimized wherein said location changing step is carried out by changing the angle at which said wheel is inclined to produce cross curves of different powers in a lens desired to have said toric surface, and separating said cutter wheel and said lens on each subsequent cut to prevent increasing the error in the cross curve in any portion thereof which is cut during a preceding one of said plurality of cuts.

4,574,528

APPARATUS FOR GRINDING TWIST DRILLS

Raimund A. Wurscher, Vienna, Austria, assignor to Intermedium AG, Kussnacht am Rigi, Switzerland

Filed Feb. 11, 1985, Ser. No. 700,508
Claims priority, application Austria, Feb. 14, 1984, 463/84
Int. Cl.⁴ B24B *7/00*
U.S. Cl. 51—128 **6 Claims**



1. In apparatus for grinding twist drills having two clearance surfaces and two helical flutes associated with respective ones of said clearance surfaces, comprising
a rotatable drive shaft,
a grinding wheel, which has an annular grinding surface and is mounted on said shaft and axially movable thereon and is coupled to said shaft for rotation thereby,

a drill-guiding structure axially spaced apart from said grinding surface, and

spring means urging said grinding wheel toward said drill-guiding structure,

said drill-guiding structure defining a plurality of peripherally spaced apart guiding passages which are different in diameter and open at one end which is spaced from and faces said grinding surface and at the opposite end and are adapted each to receive a twist drill in a position in which one clearance surface of said twist drill contacts said grinding surface in a portion thereof which is axially aligned with said guiding passage,

said drill-guiding structure comprising in axial alignment with each of said guiding passages near said one end thereof at least one guiding projection, which is adapted to extend into one of said flutes of a twist drill extending through said guiding passage,

said drill-guiding structure comprising drill stop means which have stop surface portions which are axially aligned with and face respective ones of said guiding passages and are engageable by the other clearance surface of a twist drill extending through the associated guiding passage to limit the advance of said twist drill toward said grinding surface,

the improvement residing in that the grinding wheel has associated with it at least one abutment which is made of a material that has a higher hardness than the grinding wheel, e.g., of a hard metal or cermet, such as cemented carbides, and said abutment is located in the drill-guiding structure and has an abutment surface that is parallel to and engageable by the grinding surface and arranged to limit the spring-urged movement of the grinding surface in an end position in which said grinding surface is closer to the guide projections than the drill stop means.

4,574,529

APPARATUS FOR GRINDING TWIST DRILLS

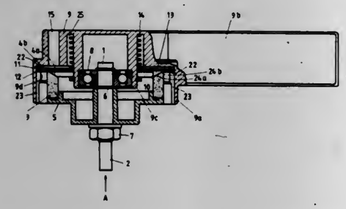
Raimund A. Wurscher, Vienna, Austria, assignor to Intermedium AG, Kussnacht am Rigi, Switzerland

Filed Feb. 11, 1985, Ser. No. 700,546

Claims priority, application Austria, Feb. 14, 1984, 464/84

Int. Cl.[4] B24B *7/00*

U.S. Cl. 51—128 **7 Claims**



1. In apparatus for grinding twist drills having clearance surfaces and helical flutes associated with respective ones of said clearance surfaces, comprising

a rotatable drive shaft,

a grinding wheel, which has an annular grinding surface and is rigidly secured to said shaft,

a drill-guiding body, which is axially spaced apart from said grinding surface at a fixed distance therefrom and defines plurality of peripherally spaced apart guiding passages which are different in diameter and open at one end which is spaced from and faces said grinding surface and at the opposite end and are adapted each to receive a twist drill in a position in which one clearance surface of said twist drill contacts said grinding surface in a portion thereof which is axially aligned with said guiding passage, and

a guide projection carrier, which is disposed between said drill-guiding body and said guiding surface and comprises in axial alignment with each of said guiding passages at least one guide projection, which is adapted to extend into one of said flutes of a twist drill extending through said guiding passage,

the improvement residing in that

said guide projection carrier is axially movably mounted between said drill-guiding body and said grinding surface,

spring means are provided for axially urging said guide projection carrier toward said grinding surface, and

at least one abutment consisting of a material which has a higher hardness than said grinding wheel at said grindind surface is secured to said guide projection carrier and has an abutment surface which faces and is parallel to said grinding surface and is engageable by the latter to limit the axial movement of said guide projection carrier toward said grinding surface.

4,574,530

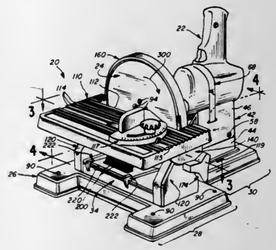
DRILL POWERED WET OR DRY ABRASIVE APPARATUS

Milton E. Handler, Northbrook; Richard Sylvan, Glenview, and Herbert Baisch, Palatine, all of Ill., assignors to Hirsh Company, Skokie, Ill.

Filed Mar. 9, 1984, Ser. No. 587,823

Int. Cl.[4] B24B *41/00, 27/02*

U.S. Cl. 51—166 TS **14 Claims**



1. Apparatus for mounting a portable power drill with a rotatable abrasive disk for abrading the surface of a workpiece, said apparatus comprising:

a base;

drill holding means for holding said drill in a position fixed on said base with said abrasive disk oriented to accommodate rotation of said disk at a work station defined adjacent said disk;

a workpiece support table for being carried by said base and for supporting the workpiece in contact with said disk at a rear edge of said table;

said base including at least one support column having a rear lug and a front lug, said rear lug being located closer to said drill holding means than is said front lug and; and

said support table including at least one base engaging wall, said base engaging wall including an arcuate channel for receiving said front and rear lugs, said base engaging wall defining a rear opening to said channel for accommodating entry of said rear lug into said channel and defining a front opening to said channel for accommodating entry of said front lug into said channel whereby said table may be mounted to said base with said lugs entering through said openings and received in said channel in interlocking relation.

4,574,531

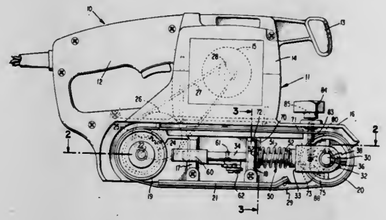
SELF CORRECTING BELT TRACKING MECHANISM

Ronald C. McCurry, Seneca, S.C., assignor to The Singer Company, Stamford, Conn.

Filed Apr. 26, 1985, Ser. No. 727,943

Int. Cl.[4] B24B *23/06, 21/18*

U.S. Cl. 51—170 EB **4 Claims**



1. In a portable electric belt sander having a frame, an electric motor carried in said frame, a driven belt roller journaled on an axis fixed in said frame and having drive connections to said motor, an idler belt roller carried on said frame in spaced relation to said driven belt roller, said rollers being adapted to accommodate thereon an endless sanding belt, a self correcting belt tracking mechanism comprising: a yoke assembly including a cylindrical shaft having a bifurcate yoke fixed at one extremity, means journaling said idler belt roller on an axis extending transversely of said cylindrical shaft in said bifurcate yoke extremity, means slidably journaling said cylindrical shaft in said frame on an axis perpendicular to said driven belt roller axis; spring means arranged to act between said frame and said yoke to tension a sanding belt accommodated on said rollers, and separate spring means acting between said frame and said yoke and arranged each to urge said yoke with said idler roller journaled transversely therein to turn in an opposite direction about the axis of said cylindrical shaft.

4,574,532

PROTECTIVE-HOOD FASTENING FOR PORTABLE ANGLED GRINDERS

Egon Häberle, Stuttgart, and Bernd Schwarz, Esslingen, both of Fed. Rep. of Germany, assignors to C. & E. Fein GmbH & Co., Stuttgart, Fed. Rep. of Germany

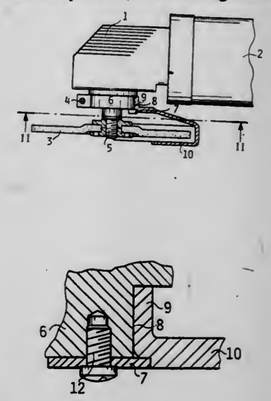
Filed Oct. 15, 1984, Ser. No. 660,898

Claims priority, application Fed. Rep. of Germany, Oct. 27, 1983, 3338917

Int. Cl.[4] B24B *55/04*

U.S. Cl. 51—268 **11 Claims**

1. Protective-hood fastening arrangement for portable angled grinders comprising: a protective hood; a gear housing and a spindle collar on said gear housing; tensioning strap means and screw means for attaching said protective hood to said spindle collar; said protective hood being releasable from said spindle collar; securing means, said strap means having an inner surface resting against an outer surface of said collar with said securing means at a face of the spindle collar, said securing means extending over the outside diameter of said collar and inside diameter of said strap means; said securing means comprising a snap-in lever pivoting on the face of the spindle collar.



4,574,533

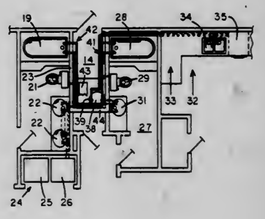
PORTABLE HOME

Floyd E. Bigelow, Jr., 10802 Pine Bayou, Houston, Tex. 77024; Floyd E. Bigelow, III, 7903 Midland Forest, Houston, Tex. 77088, and William H. Bigelow, 6903 Oakwood Grove, Houston, Tex. 77040

Filed Feb. 6, 1984, Ser. No. 577,269

Int. Cl.[4] B65D *85/00;* **E04H** *1/02;* **A47K** *3/16*

U.S. Cl. 52—34 **3 Claims**



1. A dwelling comprising:

a living room and a plurality of bedrooms;

a utility core having a door opening through an exterior wall on one side of the dwelling;

first and second bathrooms on opposite sides of the core;

said first and second bathrooms having a wall provided by said exterior wall;

each bathroom including a toilet, at least one lavatory, and a bathing fixture;

a main sewer line in said core;

a first branch sewer line extending from the main sewer line to the toilet, lavatory, and bathing fixture of said first bathroom;

a second branch sewer line extending from the main sewer line to the toilet, lavatory, and bathing fixture of said second bathroom;

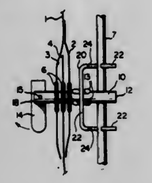
a clothes washing machine drain adjacent and connected to said first branch sewer line;

a kitchen on said exterior wall next to said second bathroom and having a kitchen sink; and

a sewer line extending along said exterior wall through said

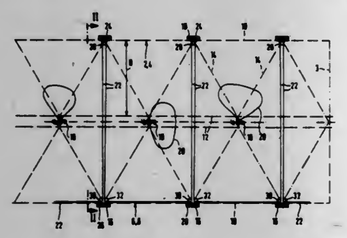
second bathroom and connecting said sink to said main sewer line.

4,574,534
TENSION ENCLOSURE SYSTEM
Patrick H. Beaton, Box 51 Site 2 R.R. #8, Calgary, Alberta, Canada (T2J 2T9)
Filed Feb. 15, 1985, Ser. No. 702,334
Claims priority, application Canada, Feb. 14, 1984, 447363
Int. Cl.⁴ E04B *1/12*
U.S. Cl. 52—63 **4 Claims**



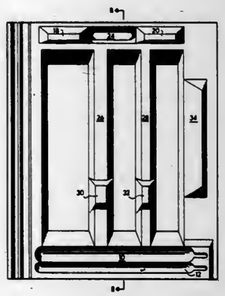
1. A connector for releasably connecting a protective cover to a building or other structure, the cover being formed by cables connected to the structure in parallel spaced apart vertical rows, panels for stretching between adjacent cables and grommets in the side edges of said panels, said connector comprising rod means for insertion through said grommet means; lever means rotatable on one end of said rod means for rotation around an axis perpendicular to the longitudinal axis of said rod means between a grommet insertion position in which the rod means and lever means are substantially aligned, and a locked position in which the rod means and lever means are at a right angle to each other; and substantially C-shaped cable clamp means on the other end of said rod means, said cable clamp means including web means mounted in and projecting perpendicular to said rod means on each side thereof, arm means on each end of said web means extending towards said other end of said rod means, and slot means in one side of each said arm means, said slot means being inclined towards said other end of said rod means and being sufficiently deep that one said cable means can be inserted through said slot means and retained therein by said rod means.

4,574,535
MAST-TYPE THREE-DIMENSIONAL FRAMEWORK STRUCTURE
Arno R. E. K. Pabsch, Brunswick, Fed. Rep. of Germany, assignor to Deutsche Forschungs- und Versuchsanstalt für Luft- und Raumfahrt e.V., Cologne, Fed. Rep. of Germany
Filed Apr. 10, 1985, Ser. No. 721,692
Claims priority, application Fed. Rep. of Germany, Apr. 14, 1984, 3414220
Int. Cl.⁴ E04H *12/10, 12/18*
U.S. Cl. 52—118 **8 Claims**



1. A mast-type, three-dimensional framework structure of uniform rectangular section having four diagonally-braced frames forming the sides of the framework structure, comprising four separate diagonally-braced frames manufactured from tubes and tubular joints; hinged connections interconnecting longitudinal members of said frames, whereby said frames can be folded flat in such a way that two adjacent diagonally-braced frames lie, in each case, flat on top of the two opposite diagonally-braced frames; fixed lengths of cables fitted between said longitudinal members of the flat frameworks, which cables, when the structure is unfolded, form a stay in one of the diagonals of respective frames, and, between the other longitudinal members, low friction cable deflectors and a tensioning cable so arranged that when said structure is unfolded, said tensioning cable forms a stay in the other diagonal of respective frames, said tensioning cable between the points of deflection always extending along at least one of said longitudinal members.

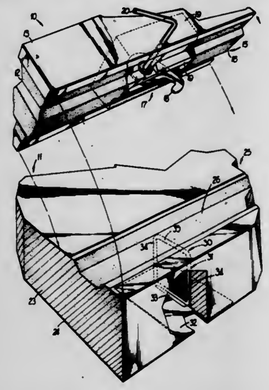
4,574,536
ROOF TILE
Barry H. Bamber, Broughshane, Northern Ireland; George C. Brookhart, Jr., and Alan H. Sabatino, both of Littleton, Colo., assignors to Oldcastle, Inc., Los Angeles, Calif.
Filed Sep. 25, 1981, Ser. No. 305,405
Int. Cl.⁴ E04D *3/362*
U.S. Cl. 52—125.3 **20 Claims**



1. A roof tile having a substantially flat top side and bottom side and having a head end and a tail end and provided with at least one batten lug protruding from the bottom side and located near an edge at the tile head end and provided with at least one stacking lug protruding from the bottom side and located between the batten lug and an edge at the tile tail end, the thicness of the tile at the tile tail end edge being substantially thinner than the thickness of the tile measured from the surface of the top thereof to the tip of the stacking lug, the thickness of the tile measured from the surface of the tope side thereof to the tip of the batten lug being substantially equal to the thickness of the tile measured from the surface of the top side thereof to the tip of the stacking lug, such that when a plurality of such tiles are stacked one on top of another with the head ends thereof positioned along one side of the stack and the tail ends thereof positioned along another side of the stack, and plane in which the lowermost tileis generally oriented is substantially parallel to the plane in which the uppermost tile is generally oriented.

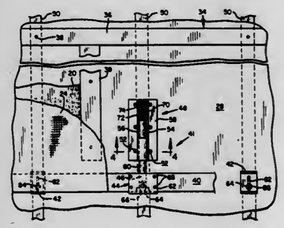
4,574,537
INSULATED PANEL AND METHOD OF CONSTRUCTING SAME
Steven R. Krieger, 150 S. Atlanta St., Roswell, Ga. 30025
Filed Jun. 13, 1985, Ser. No. 744,243
Int. Cl.⁴ F16B *2/18;* E04C *1/30*
U.S. Cl. 52—127.9 **8 Claims**

1. An insulated panel adapted to be interlocked with an adjacent panel that has a pivotable locking hook, and with said insulated panel comprising a block of insulation and a lock bar mounted to a plate with said plate set flush against one side of said block and with said lock bar embedded within said block



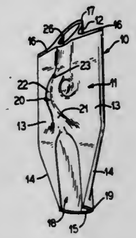
adjacent the opposite side of said block, whereby the adjacent panel may be interlocked with the insulated panel by pivoting the locking hook into the block of insulation and into locking engagement with the embedded lock bar.

4,574,538
METHOD AND APPARATUS FOR MOUNTING ACOUSTIC FABRIC
Michael J. Grant, Mt. Angel, Oreg.
Filed Mar. 15, 1985, Ser. No. 712,358
Int. Cl.⁴ E04B *1/82*
U.S. Cl. 52—144 **13 Claims**



1. An acoustic fabric-mounting system comprising:
a first elongated member and means for affixing said member to a wall;
a second elongated member spaced apart from said first member;
a fabric sheet connected to and extending between the first and second members;
means defining a first hole extending through the second member parallel to the wall;
a third member, including means defining a second hole of a predetermined depth aligned with the first hole, and means for mounting the third member to the wall;
a bolt extending through the first hole into the second hole;
means for retaining the bolt in the first hole;
means for interengaging the bolt and said means defining the second hole;
means defining a thread within one of the first or second holes for threading the bolt in and out, thereby altering a spacing between the first and second members so as to stretch the fabric.

4,574,539
GROUND ANCHOR WITH SCOOP CHANNEL DISCHARGING TO GROOVE FORMING RIDGE
Robert F. Deike, Cheyenne, Wyo., assignor to Construction Robotics, Inc., Chicago, Ill.
Filed Oct. 12, 1984, Ser. No. 660,294
Int. Cl.⁴ E02D *5/80*
U.S. Cl. 52—163 **16 Claims**

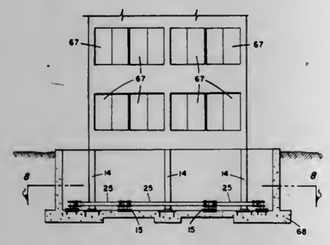


1. An anchor for driving edgewise into the ground by an impact rod carrying an anchor line therewith which rotates the anchor to a flat position in the ground when tensioned which comprises an elongated plate-like member having a longitudinal central body portion with leading and trailing ends, an open top rod receiving socket in the traling end of said body portion, an open front channel at the leading end of said body portion, wings extending laterally from said body portion along the length thereof having tapered leading ends converging to the open front of the channel and trailing ends forwardly of the top of the socket leaving a portion of the socket projecting therebeyond, a raised longitudinal ridge on said body portion with a transverse eye therethrough, an anchor line having an end swingably looped in said eye, said channel discharging to said raised ridge, said ridge forming a groove in the ground alongside a driving rod bottomed in the socket for receiving said anchor line as the member is driven edgewise into the ground, said portion of the socket projecting beyond the wings being inclined longitudinally toward the trailing ends of the wings, and cutting edges on the wing ends and inclined socket portion whereby removal of the rod from the socket when the anchor has reached a desired depth in the ground and tensioning of the anchor line will rotate the member to its flat position to resist being pulled out of the ground.

4,574,540
STRUCTURAL SUPPORT SYSTEM FOR MINIMIZING THE EFFECTS OF EARTHQUAKES ON BUILDINGS AND THE LIKE
Jgi-Jiang Shiau, 3010 Persimmon Pl., Fullerton, Calif. 92635
Filed Oct. 17, 1983, Ser. No. 542,463
Int. Cl.⁴ E02D *27/34*
U.S. Cl. 52—167 **13 Claims**

1. An improved building support system for minimizing the effects of strong seismic shocks to building structures having support columns transmitted through the earth to the foundation of the building structure, by laterally isolating the building base support structures from earth movements comprising:
(a) a first set of sliding bearing plates operably coupled to the base of the support columns of the building structure;
(b) a second set of sliding bearing plates fixedly mounted to the foundation and disposed in complementary sliding relationship to the first set of sliding bearing plates;
(c) a plurality of flexural members each fixedly coupled intermediately thereof to the support columns;
(d) a plurality of mounting posts pivotally coupled to the

ends of each flexural member, and resting on the building foundation, each of said mounting posts being moveably disposed along the longitudinal axis of the flexural members to which the mounting posts are secured;



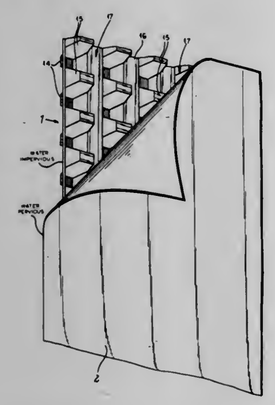
(e) means for restricting the movement of said mounting posts to displacement along the longitudinal axis of said flexural member affixed thereto, whereby said improvement building support system provides a means for permitting system movement without failure of the support system.

4,574,541

FOUNDATION-DRAINAGE PANEL

Heinz P. Raidt, Dortmund; Dieter Jablonka, and Klaus Urban, both of Herdecke, all of Fed. Rep. of Germany, assignors to Ewald Dörken GmbH & Co. KG, Herdecke, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 397,105, Jul. 12, 1982, abandoned. This application May 31, 1984, Ser. No. 616,005
Claims priority, application Fed. Rep. of Germany, Jul. 10, 1981, 3127265
Int. Cl.⁴ E02D *19/00, 31/02;* **E02B** *11/00*
U.S. Cl. 52—169.5 **9 Claims**



1. In combination with a vertical foundation wall, a construction element for draining said vertical foundation wall, the element comprising:

an integral and substantially water-impervious panel of generally uniform thickness and lying generally in a central plane and formed with respective arrays of inner and outer bumps generally uniformly distributed over the panel to opposite sides of the central plane and having respective bases defining inner and outer planes flanking and offset respectively horizontally inwardly and horizontally outwardly from the central plane, the outer bumps forming outwardly open outer flow channels on the outer face, the panel being applied to the vertical foundation wall with only the bases of the inner bumps bearing against the wall at the inner plane at vertically and horizontally offset locations thereon and the outer channels vertical and opening outward away from the wall, the inner bumps and outer bumps being offset to one other parallel to the planes in two perpendicular directions, the channels communicating also in these two directions, the element being sufficiently flexible that it can be rolled up; and

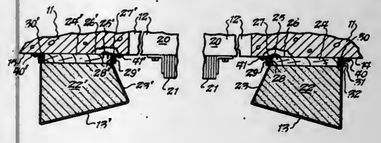
a water-pervious and rigid filter sheet overlying the panel at the outer plane, engaging the panel only at horizontally and vertically spaced locations at the bases of the outer bumps and outwardly closing the channels, whereby water can filter through the sheet and flow down the channels.

4,574,542

DOCK SEAL CONSTRUCTION

Joseph P. H. Kleynjans, Coraopolis, Pa., assignor to Flexion, Inc., Pittsburgh, Pa.

Filed Dec. 12, 1984, Ser. No. 682,273
Int. Cl.⁴ E04H *9/14, 14/00*
U.S. Cl. 52—173 DS **10 Claims**



1. In a building having a door opening and side wall portions located outside of and to the sides of said door opening, a dock seal construction for sealing the space between the rear of the sides of a truck and said side wall portions, comprising a pair of elongated pad members each having a longitudinal axis, means for securing one of said elongated pad members to each of said side wall portions proximate said door opening with said longitudinal axes being substantially parallel to each other, each of said elongated pad members having a resilient flexible core with a periphery, each of said pad members having first and second sides extending outwardly from its respective side wall portion and each having a third side intersecting said first and second sides and spaced from its respective side wall portion and extending at a slant toward said door opening so as to intersect the rear of the sides of a truck at an acute angle when said pads are in an unstressed condition.

4,574,543

TRUCK BAY DOOR APPARATUS

Robert J. Crosson, 2209 Long Lake Rd., New Brighton, Minn. 55112

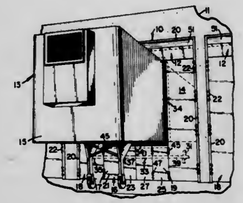
Filed Aug. 11, 1983, Ser. No. 522,399
Int. Cl.⁴ E06B *7/23*
U.S. Cl. 52—173 DS **13 Claims**

1. A door apparatus in operative connection to a wall of a building suitably housing a truck body assembly, wherein the truck body assembly includes a body and wheels rotatably supporting the body; the height of the truck body assembly is greater than the height of the body and width of the truck body assembly is at least as great as the width of the body; and the wall of the building forms an opening such that when the truck body assembly is positioned in the opening a horizontal sub-opening is formed by virtue of the difference between the height of the opening and the height of the body and a vertical sub-opening is formed by virtue of the difference between the width of the opening and the width of the body, and wherein said door apparatus comprises:

(a) horizontal sealing means substantially obstructing the horizontal sub-opening;

(b) vertical sealing means substantially obstructing the vertical sub-opening;

(c) first means operatively connecting said horizontal sealing means to the wall of the building; and



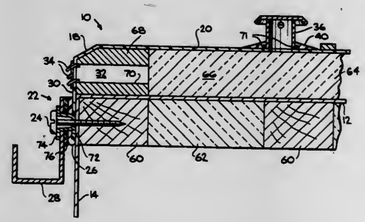
(d) second means operatively connecting said vertical sealing means to the wall of the building, wherein said first connecting means permits movement of said horizontal sealing means to admit the wheels of the truck body assembly.

4,574,544

INSULATING ROOF SYSTEM FOR MANUFACTURED HOMES AND COMMERCIAL STRUCTURES

William P. Harris, Sr., 6361 Nancy Ridge Dr., San Diego, Calif. 92121

Filed Apr. 24, 1984, Ser. No. 603,506
Int. Cl.⁴ E04B *7/00*
U.S. Cl. 52—199 **13 Claims**



1. An insulating roof system for manufactured homes and commercial structures comprising,

a base for supporting an insulating roof system, said base being supported by a plurality of sidewalls and having an interior framing member beneath the perimeter of said base, said base being a weatherproofed vapor barrier for protecting the integrity of the insulating roof system,

a layer of flexible insulation in mechanical communication with said base for providing insulation from the temperature extremes of the elements, said layer of flexible insulation extending partway to said perimeter of said base,

a non-insulating rigid support means mounted atop and in contact with the perimeter of said base for providing structural support to the insulating roof system and for serving as a boundary for containing said layer of flexible insulation,

an insulation vent means contained within the insulating roof system for the escape of vapor pressure and condensation resident within said layer of flexible insulation, said insulation vent means comprising a plurality of side vents, each side vent having a vent shaft housed within said non-insulating rigid support means,

a weatherproof membrane means disposed upon said layer of flexible insulation and said non-insulating rigid support means for sealing the insulating roof system, and

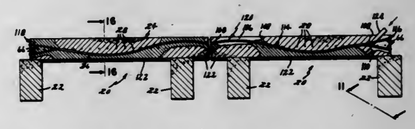
a fastening means for securing a plurality of terminal ends of said weatherproof membrane means at said interior framing member beneath said perimeter of said base.

4,574,545

METHOD FOR INSTALLING OR REPLACING TENDONS IN PRESTRESSED CONCRETE SLABS

Gordon H. Reigstad, North St. Paul; A. Norris Breivik, South St. Paul, and Hanley S. Reigstad, Sunburg, all of Minn., assignors to Breivik-Reigstad, Inc., St. Paul, Minn.

Filed Mar. 30, 1984, Ser. No. 595,285
Int. Cl.⁴ E04C *5/08*
U.S. Cl. 52—223 R **17 Claims**



1. A method for repairing a structurally defective prestressed concrete slab, comprising the steps of:

(a) relieving substantially all stress in an original tendon;

(b) removing some original concrete along said original tendon while leaving the other original concrete along said original tendon and removing said original tendon from said slab;

(c) installing a new tendon in space in said slab vacated by said original tendon;

(d) installing new concrete around said new tendon to replace any original concrete removed in removing said original tendon; and

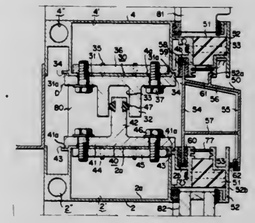
(e) stressing said new tendon thereby again prestressing said previously structurally defective slab.

4,574,546

APPARATUS FOR CONNECTING UPPER AND LOWER UNITS IN A UNIT TYPE CURTAIN WALL

Karl Gartner, Gundelfingen, Fed. Rep. of Germany, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Filed Aug. 1, 1983, Ser. No. 519,206
Int. Cl.⁴ E04H *1/00*
U.S. Cl. 52—235 **8 Claims**



1. In a unit type curtain wall assembly having a plurality of standardized curtain wall units arrayed in rows and columns, the improvement comprising a plurality of horizontally spaced apart couplings between every two vertically adjoining curtain wall units, each coupling having a female member attached to either of the upper and lower curtain wall units and a male member attached to the other of the upper and lower curtain wall units, the female and male members being freely disposed separate of one another, the female member defining a groove extending in a vertical plane containing the curtain wall assembly, the male member having a tongue slidably engaged in the

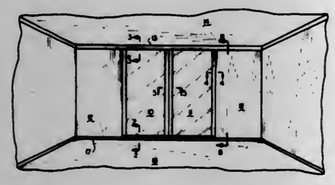
groove in the female member, whereby the vertically adjoining curtain wall units are relatively displaceable in their own plane while being restrained from relative displacement out of the plane, and a stringcourse sealingly mounted between every two vertically adjoining curtain wall units and disposed exteriorly of the couplings for rainproofing the same between the curtain wall units.

4,574,547

WINDOW SYSTEM FOR DEMOUNTABLE WALLS

Robert J. Menchetti, North Olmsted; Robert H. Safran, Sheffield, and Gale E. Sauer, North Olmsted, all of Ohio, assignors to Donn, Incorporated, Westlake, Ohio

Filed Jul. 2, 1984, Ser. No. 627,555
Int. Cl.⁴ E04B *2/58*
U.S. Cl. 52—238.1 **10 Claims**



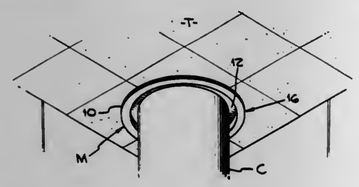
1. A demountable partition system extending between a floor and a ceiling, comprising floor and ceiling tracks respectively mounted on said floor and ceiling, studs extending between said tracks, wall panels supported by said tracks and studsk, and a floor-to-ceiling window providing top, side, and bottom framing means, said side framing means connecting with adjacent studs and partially enclosing said adjacent studs, said connection causing said adjacent studs to strengthen said side framing means, said top framing means connected with and being supported by said ceiling track, said bottom framing means including adjusting means for adjusting the height of said window with respect to said floor, and base trim following said floor and removably connected to said bottom framing means, said base trim enclosing and obscuring said adjusting means and accommodating variations in spacing between said bottom framing means and said floor by providing a uniform spacing between said floor and the lower edge of the exposed portion of glass even when said bottom framing means is inclined relative to said floor.

4,574,548

COLUMN REGLET

Thomas G. Tupman, Newport Beach, Calif., assignor to Fry Reglet Corporation, Alhambra, Calif.

Filed Feb. 15, 1984, Ser. No. 580,380
Int. Cl.⁴ E04B *1/00*; E04F *13/06*
U.S. Cl. 52—255 **8 Claims**



4. In a building structure having a vertically extending, substantially cylindrical column, the combination therewith of:

a. a spacer ring made of flexible material surrounding said column;

b. a grounding member surrounding the spacer ring, and made of resilient material bendable to a curved configuration to conform to the radius of the column and said spacer ring, said grounding member having a simple cross sectional configuration to facilitate bending thereof;

c. a clamping band holding the grounding member and the spacer ring to the column;

d. said grounding member having a distal part projecting axially beyond said spacer ring to form therewith an annular channel or reveal, said grounding member having a radial flange projecting from said distal part; and

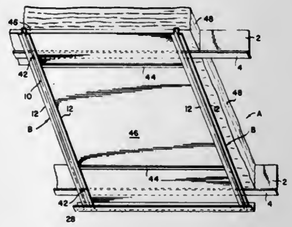
e. ceiling tile cut to rest on said flange.

4,574,549

ADJUSTABLE ROOF INSULATION SYSTEM

J. L. Holcombe, Colleyville, Tex., assignor to Mizell Bros. Co., Atlanta, Ga.

Filed Apr. 3, 1985, Ser. No. 719,298
Int. Cl.⁴ E04B *1/74*
U.S. Cl. 52—404 **7 Claims**



1. An adjustable insulation system for metal buildings or the like in which beams serve as the support for a metal roof sheet, comprising:

(a) a series of parallel spaced support units secured to said beams, each comprising a longitudinally extending first member and a longitudinally extending second member,

(b) said first and said second members being longitudinally adjustable relative to each other,

(c) said first and said second members each having one end supported by said beams and their other ends in contact engagement,

(d) said first and said second members having substantially the same cross-sectional configuration and in mating contact engagement at said other ends,

(e) means for securing said other ends in adjustable relation,

(f) said means having a partial wrap-around configuration for securing said other ends against vertical displacement,

(g) means for connecting said beams to said first and said second members to prevent lateral displacement of said members on said beams,

(h) said first members having substantial length relative to said second members,

(i) said securing means being substantially shorter in length than said second members, and

(j) insulation positioned and supported by said first and said second members.

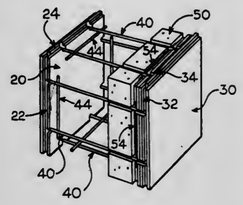
4,574,550

BUILDING WALL AND INSULATION ASSEMBLY

Jack Maschhoff, P.O. Box 187, Hazel Park, Mich. 48030-0187

Filed May 21, 1984, Ser. No. 612,710
Int. Cl.⁴ E04B *1/80*
U.S. Cl. 52—405 **2 Claims**

1. In combination, a modular structure composed of spaced parallel panels which are assembled in situ with rigid rod grids spanning the space between said panels interlocked with the edges of the panels and recessed and lying within the planar geometric confines of said panels, and preformed insulation lodging against an inner surface of a least one of said panels in said space comprising a form sustaining block of insulation



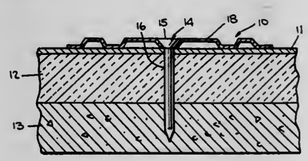
dimensioned and conforming to the planar dimensions of said panels and having edge grooves transverse to the planes of said panels and receiving portions of said rigid rod grids and positioning block against said one of said panels.

4,574,551

LOAD-BEARING PLATE

Louis N. Giannuzzi, 4 Shelter Dr., Cos Cob, Conn. 06807

Filed May 23, 1984, Ser. No. 613,255
Int. Cl.⁴ E04B *1/38*; E04C *5/00*
U.S. Cl. 52—512 **5 Claims**



1. A square load-bearing plate in combination with a hammer-drivable anchor bolt to firmly secure a layer of thermal insulation or other material to a roof or other rigid surface to prevent the layer from being detached therefrom, said bolt having a head engageable by the head of the hammer and a shank penetrating said layer and intering said roof, said plate comprising:

A. a countersunk center hole for receiving the shank of the bolt whose head rests in the hole when the shank is driven into the roof;

B. a raised hub embossed in the plate to surround the hole, said hub having a flat area large enough to catch the head of the hammer to prevent overdrive of the bolt into the roof; and

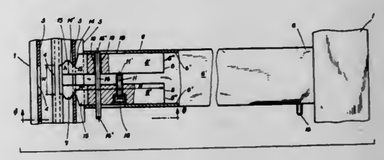
C. a reinforcing pattern embossed in the plate to resist flexure thereof, said pattern being constituted by a four-sided marginal frame adjacent the edges of the plate, said frame having a flat undersurface which abuts the exposed surface of the layer, a star formed by radial spokes extending from the hub to the corners of the frame, and a cross formed by short ribs extending from the hub to the midpoints of the sides of the frame, the ribs in combination with the spokes and the sides of the frame creating a symmetrical array of triangular trusses.

4,574,552

SUPPORT FRAME

Bernd Korth, Weil am Rhein, Fed. Rep. of Germany, assignor to Protoned B.V, Amsterdam, Netherlands

Filed Sep. 21, 1982, Ser. No. 421,013
Claims priority, application Switzerland, Oct. 30, 1981, 6962/81
Int. Cl.⁴ F16B *7/04*
U.S. Cl. 52—645 **4 Claims**



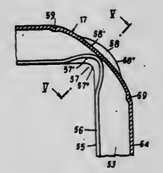
1. A supporting frame comprising support or column elements and cross-beams, said cross-beams being built in between two column elements located opposite each other in one plane, the cross-beams, at least at their ends, being provided with a cavity for receiving expanding elements guided to move in a longitudinal and transverse direction, said expanding elements being spaceable from each other by being displaceable longitudinally and laterally between a parking position and a clamping position, and are further brought in pairs into and out of engagement with said support or column elements, said expanding elements having a head piece comprising clamping means which may be pushed into said cavity, and may be forced apart by means of a tightening screw which is operable from the outside of said cross-beam, characterized by at least one guide pin fixed in one of the expanding elements and one guide pin slidably movable in the other of the expanding elements for parallel guidance and coupling of said expanding elements, whereby at least one guide pin engages by means of elongated holes into the corresponding sides of said cross-beam so that the route of the longitudinal travel of said expanding elements is defined by the end limitations of said elongated holes and there is achieved a frictional engagement between said cross-beam end and the surface of said column element.

4,574,553

SPACER FRAME AND METHOD FOR BENDING HOLLOW SHAPED BAR PORTIONS TO FORM SPACER FRAMES FOR INSULATING GLASS

Peter Lisec, Bahnhofstrasse 34, Amstetten-Hausmening, Austria

Division of Ser. No. 445,832, Nov. 30, 1982. This application Jan. 7, 1985, Ser. No. 689,581
Claims priority, application Austria, Jan. 21, 1982, 21682; Apr. 5, 1982, 135482
Int. Cl.⁴ E04C *2/38*
U.S. Cl. 52—658 **4 Claims**



1. Spacer frame for insulating glass made of a hollow profiled bar, the cross section of which includes two sidewalls adjacent to the glass panes, an outer wall defining the outer periphery of the frame, as well as an inner wall defining the inner periphery of the frame, this profiled bar being bent in the frame corners so that the sidewalls extend essentially in parallel

to each other, the outer and inner walls (57', 58') being indented, in the frame corners (57), toward the longitudinal axis of the hollow profiled bar (17), in such a way that in the plane of symmetry of the frame the radius of curvature of the inner wall (57') is larger than the radius of curvature of the inner edge (57") of the sidewalls (53), and the radius of curvature of the outer wall (58') is larger than the radius of curvature of the outer edge (58") of the sidewalls (53); the radii of curvature decreasing from the plane of symmetry of the frame toward the edges (57", 58") of the lateral faces (53), substantially continuously to the radius of curvature of the respective edge (57", 58").

4,574,554

SURFACING METHOD AND APPARATUS

Gary L. Gentry, 413 via Corta, Palos Verdes Estates, Calif. 90274

Filed May 31, 1983, Ser. No. 499,226
Int. Cl.⁴ E04G *21/00*
U.S. Cl. 52—741 **2 Claims**



1. The method of surfacing a
base support to a desired surface contour comprising the steps of:
securing a plurality of stud structures to a base support which is to be surfaced to a desired surface contour, with each of the stud structures comprising a base with an upstanding stud and a cuttable extension tube engaged on the stud and extending upward therefrom above the desired surface;
defining an imaginary reference surface at a known position above the desired surface contour;
cutting the extension tubes at the level of the desired surface contour with a clipper assembly which has a target lying on the reference surface and a clipper at a predetermined distance therefrom at the desired surface contour;
removing the extension tubes;
measuring the extension tubes;
calculating the amount of material required to fill from the base support surface to the desired surface contour;
replacing the extension tubes in their original positions so that the measuring can take place away from the base support; and
placing material on the base support to the level of the desired surface contour defined by the cut tops of the extension tubes.

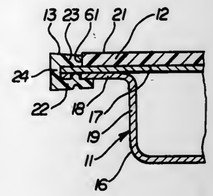
4,574,555

ACCESS FLOOR PANEL WITH EDGE TRIM

Steven D. Cline, Baltimore, Md., assignor to Donn Incorporated, Westlake, Ohio

Filed Oct. 19, 1983, Ser. No. 543,508
Int. Cl.⁴ E04C *2/54*
U.S. Cl. 52—785 **4 Claims**

1. A panel assembly for use in an access floor system comprising a substantially flat, rectangular main body having a periphery formed by four side edges and with four corners at the intersection of such edges, trim channel elements carried on the periphery of the main body and each extending in a respective longitudinal direction, said channel elements being formed of an organic plastic material, said channel elements having ends and mid-lengths between the ends and having an identical original cross section, the cross section having the general form of a C with opposed, spaced top and bottom flanges and an intermediate web, the four peripheral edges of the main body each being received in a space between the flanges of a respective channel element, ends of the channel elements abutting at the corners of the main body and being mutually welded together, the main body edges having mid-lengths away from the corners and providing recesses at their mid-lengths and the bottom flanges at their mid-lengths having associated local projections disposed in corresponding body recesses, each of said bottom flange local projections being



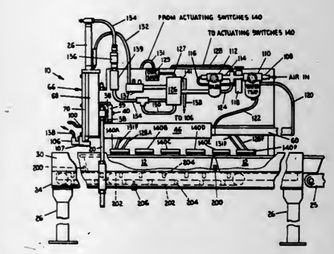
limited in its extent in the longitudinal direction of the channel element to a dimension small in comparison to a length of such channel element, each of said local projections being plastically deformed in its corresponding body recess subsequent to assembly of its respective channel element on the body edge whereby the mid-lengths of said channel elements are fixed relative to said main body, with the channel elements locked onto the main body and forming a panel boundary of precise size regardless of dimensional variation in the manufacture of the main body and channel elements.

4,574,556

LABEL INSERTING APPARATUS

Ludwig Schmidt, Whitehall; Richard K. Hughes, Jr., Montague, and Charles A. Nordlund, Whitehall, all of Mich., assignors to International Master Products Corporation, Montague, Mich.

Filed Jun. 13, 1983, Ser. No. 503,566
Int. Cl.⁴ B27F *7/02*
U.S. Cl. 53—69 **12 Claims**



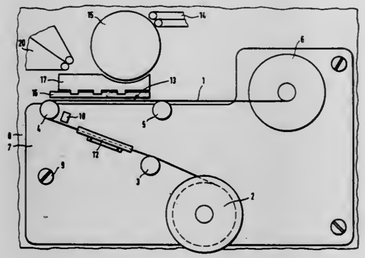
1. Label inserting apparatus for automatically inserting identification labels formed of a flexible non-metallic sheet material into plant containers containing soil comprising:
conveying means for carrying a series of plant containers along a predetermined path;
storage means for holding a plurality of labels in a stack above the path in position to be inserted into the containers as they pass under the labels;
insertion means for inserting labels one at a time into the plant containers by gripping the outermost label on the stack and sliding the label out of the stack and into the plant container as it passes under the labels adjacent the label; and
control means for causing a label to be inserted in each plant container as it passes by the insertion means.

4,574,557

APPARATUS FOR STORING SHEETS

Markus Haberstroh, Landsberg, and Paul Schaefer, Neufahrn, both of Fed. Rep. of Germany, assignors to GAO Gesellschaft fur Automation und Organisation mbH, Fed. Rep. of Germany

Filed Dec. 13, 1983, Ser. No. 560,842
Claims priority, application Fed. Rep. of Germany, Dec. 29, 1982, 3248523
Int. Cl.⁴ B65B *63/04*
U.S. Cl. 53—118 **8 Claims**



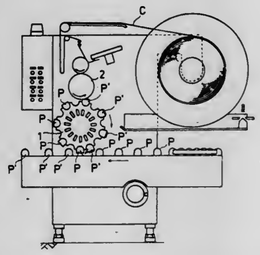
1. An apparatus for storing sheets comprising a supply roller; a storage roller; a storage band; the storage band being unwound from the supply roller and wound onto the storage roller along a path disposed between the rollers for enclosing the sheets between layers of the resulting winding, wherein the storage band defines a horizontally extending deposit table means along the path for receiving the sheets and being of sufficient length to accommodate sheets deposited thereon; at least two transport systems terminating at said deposit table means for transporting at least two distinct sheets to said deposit table means for deposit on said storage band; interruption means for interrupting the winding movement of the storage band while two distinct sheets are being deposited on the storage band from said two transport systems and continuing the winding after the distinct sheets have been deposited on the winding band.

4,574,558

APPARATUS FOR THE APPLICATION OF WRAPPED ARTICLES TO PACKAGE CONTAINERS

Yoshikazu Utsumi, Kyoto, Japan, assignor to Tetra Pak International Aktiebolag, Alle Lund, Sweden

Filed Dec. 22, 1983, Ser. No. 565,013
Claims priority, application Japan, Dec. 24, 1982, 57-232089; Dec. 29, 1982, 57-234782
Int. Cl.⁴ B32B *31/00*
U.S. Cl. 53—128 **5 Claims**



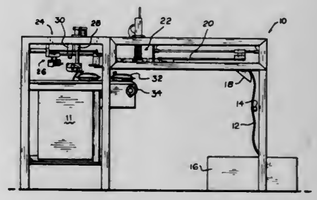
1. An apparatus for the application of wrapped elongated articles such as drinking straws or spoons on package containers, said apparatus comprising a feeding device by means of which a continuous band of the wrapped articles are supplied in a controlled way, a cutting device by means of which one by one of the wrapped articles are separated from said band of articles, a transferring and sealing device by means of which the separated articles are transferred to and sealed to the surface of the said package containers, a package carrier wheel or bucket wheel by means of which the packages are brought in position for the application of said articles to the package and a conveyor by means of which the packages are conveyed to and away from said carrier wheel, characterized in that the said carrier wheel is provided with an odd number of compartments each of which are adapted to receive one of the said packaging containers, said compartments being provided with one or more suction holes or suction cups connectable to a vacuum generating device, and that said carrier wheel or bucket wheel is adapted to cooperate with the said conveyor in such a way that the containers moving against the carrier wheel are caught by the carrier wheel and by means of suction force kepts in one of the said compartments for one full turn of the wheel during which turn said articles are applied to the surface of the packaging containers, and that the packaging containers provided with said articles thereafter are released from the carrier wheel and placed on the conveyor by means of which the containers are transported away from the carrier wheel.

4,574,559

FLEXIBLE BAG AUTOMATIC FILLING AND CAPPING APPARATUS

Christopher C. Rutter, 21063 Cabot Blvd., Hayward, Calif. 94545, and Robert G. Pongrass, 122 Ocean St., Woolhara 2025, New South Wales, Australia

Filed Jan. 4, 1985, Ser. No. 689,079
Int. Cl.⁴ B65B *31/06, 7/28;* B67B *1/00*
U.S. Cl. 53—266 R **19 Claims**



1. Apparatus for filling and capping flexible containers supplied to an input ramp in said apparatus each container having at the leading end thereof an attached tubular fitment extending from a surface thereof, said apparatus including:
conveying means for engaging the tubular fitment of the container and for advancing said fitment a predetermined distance along said ramp and into engagement with a fitment gripper;
a multi-position elevator having at least one vertically moveable shaft adjacent the axis of said ramp;
elevator gripper means coupled to said vertically moveable elevator shaft, said elevator gripper means for grasping the exterior of said fitment for removal thereof from said fitment gripper; and
a container filling the tube vertically coaxial with the open tubular fitment held in said elevator gripper means and positioned to engage said fitment upon the raising of said multi-position elevator to its top position.

4,574,560

APPARATUS FOR CLOSING FILLED SACKS

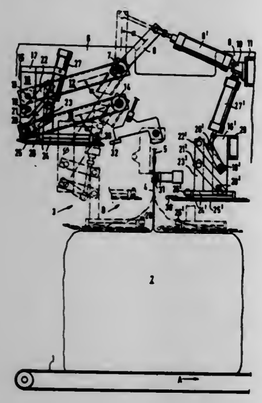
Konrad Tetenborg, and Helmut Hüwelmann, both of Lengerich, Fed. Rep. of Germany, assignors to Windmoller & Holscher, Lengerich, Fed. Rep. of Germany

Filed Apr. 25, 1985, Ser. No. 727,102

Claims priority, application Fed. Rep. of Germany, Apr. 26, 1984, 3415604

Int. Cl.⁴ B65B *51/14*

U.S. Cl. 53—373 **7 Claims**



1. Apparatus for closing filled sacks, preferably large sacks, which consist at least in part of thermoplastic material, comprising a feeder for feeding the filled sacks into a closing station, which feeder preferably comprises a roller conveyor or a belt conveyor, also comprising means for holding the top end portion of the sack above the contents of the sack, pressure-applying bars, which are parallel to each other and adapted to be lowered onto the contents of the sack on both sides of the sack end portion, which is held taut, which pressure-applying bars when in a lower position define between them a gap for the passage of the sack between said bars, and closing means provided above the pressure-applying bars, characterized in that the closing means welding bars and backing bars, which engage the sack end portion between the end-holding means and the pressure-applying bars and are disposed on opposite sides of said sack end portion, that of the pressure-applying bars which is disposed on the trailing side of the sack is provided with adhesive discharge nozzles directed toward the upper wall portion of the sack in contact with the contents of the sack, and that of said pressure-applying bars which is disposed on the leading side of the sack comprises a folding edge or folding rod, which faces the end of the sack and when the end seam weld has been formed and the welding and backing bars have released the sack and the conveyor has subsequently been restarted said folding edge or folding rod causes the end portion of the sack to be folded down onto and forced against the flattened upper portion of the trailing wall of the sack.

4,574,561

APPARATUS AND METHOD FOR SEALING THE COVER SIDE FLAPS OF CARTONS

Mark A. Dirico, Marshfield, Mass., assignor to Hub Folding Box Co., Inc., Mansfield, Mass.

Continuation of Ser. No. 374,069, May 3, 1982, abandoned. This application Jan. 31, 1985, Ser. No. 696,653

Int. Cl.⁴ B65B *7/26, 51/02*

U.S. Cl. 53—376 **1 Claim**

1. Apparatus for downfolding, adhering and pressing the side-wise extending cover flaps of a plurality of erected, filled cartons, having their cover panel and cover front flap closed, said apparatus having a main frame and comprising:

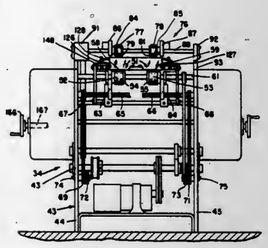
a pair of untimed, lower carrier belts extending along a horizontal path through said apparatus, said path including a carton feed zone, a side flap adhesive zone, a side flap downfold zone, a downfolded flap compression zone and a carton discharge zone;

a pair of untimed upper carrier belts extending along said path through said zones, at a spaced distance above, and in parallelism with, said untimed lower carrier belts, said upper and lower belts being spaced apart a predetermined distance to receive therebetween said cartons in vertical orientation with the bottoms thereof supported on said lower belts, their cover panels underlying said upper belts and their cover flaps extending horizontally side-wise from their cover panels;

a pair of glue pots each having a driven applicator roll and each mounted on an opposite side of said side flap adhesive zone, along said path, each said roll being positioned to apply a band of adhesive to the underface of one of said cover side flaps as said cartons pass through said zone;

a pair of elongated flap hold down bars each engaging the upper face of one of said side flaps during roll application of adhesive to the under face thereof;

a sub-frame mounted for vertical movement relative to said



main frame to accommodate cartons of various heights, said sub-frame supporting said untimed upper carrier belts;

means for mounting said glue pots for independent movement laterally and vertically relative to said main frame and sub-frame;

mechanism for moving said sub-frame, vertically and mechanism for moving said glue pots laterally and vertically;

power means, to drive said apparatus including means to operably connect said power means to said upper and lower pairs of carrier belts to drive said belt and continuously advance said cartons through said zones in untimed, spaced relation, individually and successively along said path, front panel leading, means to operably connect said power means to the glue rolls of said glue pots to drive said rolls, said belt and glue pot connecting means including idler sprockets carried on axles adjustably mounted on said main frame to permit the glue pot mounting means and the sub-frame to be raised and lowered independently of each other relative the main frame;

fold down bars on each opposite side of said side flap down fold zone to fold down said flaps; and

compression rolls, on each opposite side of said compression zone, each mounted to individually and resiliently press the adjacent side flaps against its carton as the carton is advanced through said zone.

4,574,562

RECIPROCATING FOLDER FOR PACKAGING MACHINES

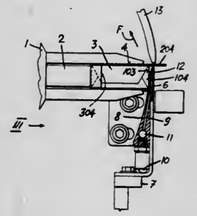
Roberto Cavazza, Bologna, Italy, assignor to SASIB S.p.A., Bologna, Italy

Filed May 2, 1985, Ser. No. 729,899

Claims priority, application Italy, May 3, 1984, 12505 A/84

Int. Cl.⁴ B65B *49/08, 49/16*

U.S. Cl. 53—381 R **10 Claims**



1. A reciprocating folder for use in packaging machines, for folding, on one side (**103**) of an article (**3**) to be packaged, an edge (**104**) of a sheet (**4**) or slip of wrapping material, consisting of a substantially flat blade (**6**) or fin folder, which is movable parallel and close to the article side onto which the edge (**104**) of the sheet (**4**) or slip is to be folded, means for moving said folder (**6**) from a starting position in a forward stroke by which it folds the edge (**104**) of the sheet (**4**) or slip on said side (**103**) of the article (**3**), and for moving said folder in a return stroke back to said starting position, characterized by one or more blowing nozzles (**9,109**) having outlets positioned between said folder and said side of the article to generate an air layer between the folder (**6**) and the folded edge (**104**) of the sheet (**4**) or slip during the return stroke of said folder.

4,574,563

METHOD AND APPARATUS FOR PRODUCING PHOTOGRAPHIC FILM

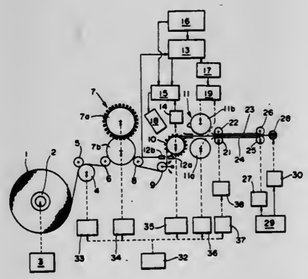
Shigehisa Shimizu, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 23, 1984, Ser. No. 573,128

Claims priority, application Japan, Jan. 22, 1983, 58-9160

Int. Cl.⁴ B65B *25/14*

U.S. Cl. 53—430 **15 Claims**



1. In a method for producing photographic film strips, comprising the steps of withdrawing a photographic film strip from a supply thereof, perforating the withdrawn photographic film strip, applying characters to said photographic film strip as latent images, and then cutting said film strip into sized film strips; the improvement comprising the steps of:

selecting a length of strip to be cut, detecting the advanced length of said photographic film strip, emitting a signal responsive to the detection of said advanced length, and controlling the steps of character application and cutting responsive to said signal.

4,574,564

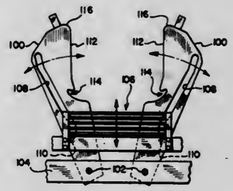
METHOD AND APPARATUS FOR WRAPPING MACHINE

Andrew L. Pester, Belle Mead, N.J., assignor to Hobart Corporation, Troy, Ohio

Filed Aug. 10, 1984, Ser. No. 639,962

Int. Cl.⁴ B65B *59/02*

U.S. Cl. 53—441 **11 Claims**



1. In a wrapping machine for wrapping film sheets about an extended range of package sizes, a method for wrapping oversized packages which exceed the largest size package of said extended range in a standard width film sheet comprising the following steps:

conveying an oversized package to a package elevator;

securing a film sheet in a plane above said package;

elevating said oversized package into said film sheet and through the plane initially defined by said film sheet;

moving said underfolders, each comprising a curvilinear folding edge, and a rear underfolder into engagement with said film sheet to thereby fold first and second opposed sides of said film sheet beneath said package with a third side being folded to overlap the edges of said first and second opposed sides of said film sheet;

maintaining a standard spacing between said side underfolders from a rounded distal end of said folding edges to a rear end of said folding edges;

expanding the standard spacing between said side underfolders at the rear end of said folding edges adjacent to the rear of said oversized package to delay the side infolding at the rear of said oversized package such that the infolded edges of the third side of said film sheet is adjacent the rear corners of said oversized package when said rear underfolder engages said third side to place the edges of said third side nearer the sides of said package and ensure that the edges of said third side of said film sheet overlap the edges of said first and second opposed sides of said film sheet; and

ejecting said package from said wrapping machine to fold the remaining fourth side of said film sheet onto the underside of said package whereby the underside of said package is entirely covered by the overlapped edges of the underfolded sides of said film sheet.

4,574,565

METHOD AND MACHINE FOR PACKING CONTINUOUSLY MOVING ARTICLES WITH A STRIP OF HEAT-SHRINKABLE MATERIAL

Mario Gambetti, Via Rugginenta 485, 40014 Crevalcore (Bologna), Italy

Filed Feb. 13, 1984, Ser. No. 579,702

Claims priority, application Italy, Feb. 23, 1983, 3349 A/83

Int. Cl.⁴ B65B *11/20, 41/02, 53/02*

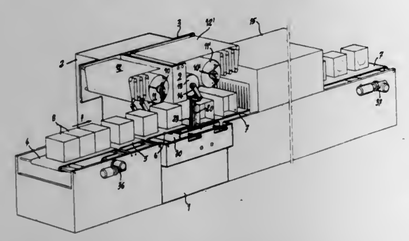
U.S. Cl. 53—442 **13 Claims**

1. A method of wrapping a box-shaped article comprising the steps of:

(a) advancing said article along a first conveyor in a travel direction to entrain a web of heat-shrinkable wrapping

material spanned across a gap between an end of said first conveyor and an end of a second conveyor juxtaposed with said end of said first conveyor, whereby said web lies upon a leading face and upper and lower faces of said article while transferring said article to said second conveyor;

(b) while continuing to displace said article in said travel direction, shifting said ends jointly in an opposite direction thereto and carrying said material onto substantially the entire upper and lower faces of said article;



(c) while continuing to displace said article in said travel direction, feeding said web along a rear face of said article and following the motion of said article with the fed web;

(d) thereafter moving said ends relative to said article in said travel direction to overlap a trailing end of said web onto the web portion previously carried onto said lower face of said article; and

(e) thereafter displacing said article into a tunnel oven whereby said material is heat-shrunk to adhere to the faces of said article.

4,574,566

WRAPPING MACHINE AND METHOD

Fred W. Eaves, Clayton, Wis.; Timothy S. Matt, Bay Village, Ohio; Wayne D. Sommer, Amery, Wis., and James B. Wensink, Westlake, Ohio, assignors to Doboy Packaging Machinery, Inc., New Richmond, Wis.

Filed Jan. 14, 1985, Ser. No. 691,501

Int. Cl.⁴ B65B *9/20, 57/08, 57/16*

U.S. Cl. 53—450 **18 Claims**



1. A horizontal wrapping machine for wrapping products in packages formed from a continuous film of packaging material, comprising:

a former for shaping a continuous film of packaging material drawn past the former into a continuous tube;

film drive means for drawing the continuous film of packaging material past the former and past a cutting and sealing station;

product infeed means, responsive to a product infeed rate control signal, for feeding products to be packaged into the former and the continuous tube of packaging material at a velocity dependent upon the product infeed velocity control signal;

means for cutting and sealing the continuous tube of packaging material as each product moves past the cutting and sealing station;

means for measuring the film velocity; and

microprocessor means coupled to receive signals proportional to film velocity from said means for measuring the film velocity, said microprocessor means being programmed to compute the product infeed rate control signal from said received signals proportional to film velocity and coupled to provide said product rate control signal to said product infeed means.

4,574,567

HARVESTERS

Peter Morellini, P.O. Box 88, Ingham, Queensland 4850, Australia

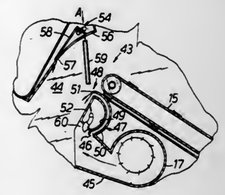
PCT No. PCT/AU83/00041, § 371 Date Dec. 7, 1983, § 102(e) Date Dec. 7, 1983, PCT Pub. No. WO83/03519, PCT Pub. Date Oct. 27, 1983

PCT Filed Apr. 8, 1983, Ser. No. 562,585

Claims priority, application Australia, Apr. 8, 1982, PF3548

Int. Cl.⁴ A01D *45/10;* **B65G** *53/44, 53/48*

U.S. Cl. 56—16.5 **7 Claims**



1. A cane harvester of the type including a cutter mechanism for cutting harvested cane stalks into billets, an endless conveyor assembly arranged to receive said billets and associated trash and leaves from said cutter mechanism, said conveyor assembly extending upwardly and rearwardly from said cutter mechanism, a passageway extending downwardly from the upper end of said conveyor assembly through which said billets, trash and leaves pass from said upper end of said conveyor assembly, and forced air producing means for directing a first flow of forced air across said passageway for separating said trash and leaves from said billets and wherein the improvement comprises means for producing a secondary flow of forced air, an air outlet into said passageway adjacent said upper end of said conveyor assembly and communicating with said secondary air flow producing means, said outlet being directed downwardly whereby to direct said secondary flow of air generally along said passageway to reduce build up of trash and leaves adjacent said upper end of said conveyor assembly and assist in the passage of said billets trash and leaves along said passageway and into said first flow of air.

4,574,568

COLLECTING BOX FOR A GARDEN TOOL

Alan Trelford, Mytchett, England, assignor to Black & Decker, Newark, Del.

Filed Aug. 28, 1984, Ser. No. 644,986

Claims priority, application United Kingdom, Sep. 1, 1983, 8323420

Int. Cl.⁴ A01D *34/12*

U.S. Cl. 56—202 **20 Claims**

1. A collecting box for a garden tool, comprising;

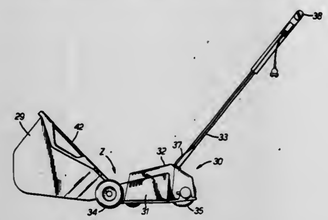
a body of the collecting box, the body being selfsupporting;

a pair of fastening members, one for each side of said body, said fastening members being attached or attachable to said body;

said fastening members being arranged to extend along the sides of said body;

channels provided on the sides of said body to receive said fastening members;

each fastening member being in the form of a tube; and



the respective channel being interrupted or diverted between its ends to provide a free space around a portion of the tube to allow the tube to be gripped as a handle.

4,574,569

RAKING APPARATUS

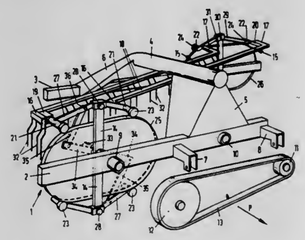
Robertus A. J. J. Zweegers, Geldrop, Netherlands, assignor to Verenigde Bedrijven van Thiel (Van Thiel United) B.V., Netherlands

Filed Dec. 14, 1984, Ser. No. 681,823

Claims priority, application Netherlands, Dec. 15, 1983, 8304325

Int. Cl.⁴ A01D *78/04*

U.S. Cl. 56—376 **9 Claims**



1. An apparatus for displacing material lying on the ground transversely to the direction of travel, in particular a raking apparatus for mown crops, such as hay, comprising at least two endless draw members operative in upright planes with working surfaces oriented transversely to the direction of travel, said draw members being arranged in tandem and mutually laterally offset relationship relative to the direction of travel and being interconnected by linkages, each linkage including an intermediate bar extending at least partially in an oblique direction relative to the direction of travel each intermediate bar being provided an end bar on each end oriented parallel to the direction of travel and at a right angle to the working surfaces of the draw members, said intermediate bars being connected rotatably to the draw members, both said end bars and the intermediate bars being provided with downwardly directed rake tines, the draw members being arranged such that the rake tines perform a translation motion at least over the greater part of their path of movement.

4,574,570

APPARATUS FOR UNTWISTING A MULTI-PLY YARN OVER A PREDETERMINED PORTION THEREOF

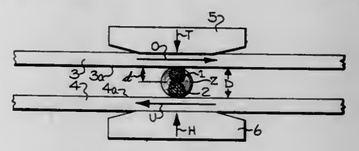
Gustav Franzen, Willich, Fed. Rep. of Germany, assignor to Palitex Project Company-GmbH, Krefeld, Fed. Rep. of Germany

Filed Dec. 7, 1984, Ser. No. 679,230

Claims priority, application Fed. Rep. of Germany, Dec. 15, 1983, 3345403

Int. Cl.⁴ D01H *7/00*

U.S. Cl. 57—1 UN **13 Claims**



1. An apparatus for untwisting a multi-ply yarn over a predetermined portion of the length thereof, comprising a fixed clamping device for holding the multi-ply yarn at one end of the predetermined portion of its length, and means for untwisting the yarn positioned at the other end of the predetermined portion of its length, said untwisting means having two mutually facing contact surfaces between which the multi-ply yarn is guided and whose mutual spacing is greater, at least along a line transversely of the longitudinal direction of the multi-ply yarn, than the thickness of each of the two individual yarns forming the multi-ply yarn and is smaller or equal to the thickness of the multi-ply yarn, said contact surfaces being movable relative to one another in mutually opposite directions with the retention of their mutual spacing over at least the distance necessary for fully untwisting the predetermined portion of the length of the multi-ply yarn, taking into account the diameter of the multiply yarn.

4,574,571

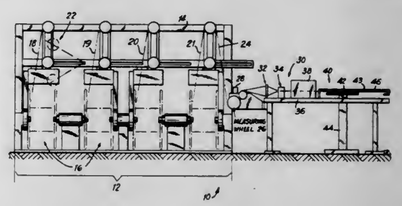
APPARATUS FOR AND METHOD OF MANUFACTURING TAPED PRODUCTS WITH DOUBLE TWIST EQUIPMENT

Walter F. Thompson, Willowdale, Canada, assignor to Ceeco Machinery Manufacturing, Ltd., Concord, Canada

Filed Aug. 8, 1984, Ser. No. 638,880

Int. Cl.⁴ D07B *3/10, 7/14*

U.S. Cl. 57—3 **28 Claims**



1. Apparatus for manufacturing a taped product and having a machine center line comprising;

(a) payoff means for paying off at least one continuous filament of material;

(b) positioning means for substantially fixing the position of said at least one continuous filament relative to said machine center line;

(c) a double twist machine downstream from said positioning means for receiving said at least one continuous filament and imparting a double twist thereto;

(d) pre-twisting means between said positioning means and said double twist machine for engaging said at least one

continuous filament and imparting a predetermined transitory twist thereto between said positioning and said pre-twisting means;

(e) tape applying means for dispensing and applying at least one continuous tape to said at least one continuous filament between said positioning and said pre-twisting means; and

(f) control means for controlling the rotation speed of said pre-twisting means relative to the rotation speed of said double twist machine to thereby control the tape tension on the taped product

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4,574,572

APPARATUS FOR MAKING A YARN

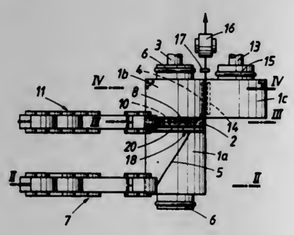
Ernst Fehrer, Auf der Gugl 28, A-4020 Linz, Austria

Filed Jun. 25, 1985, Ser. No. 748,741

Claims priority, application Austria, Jul. 5, 1984, 2160/84; Jul. 12, 1984, 2246/84

Int. Cl.⁴ D01H *1/135, 7/885, 5/28;* D02G *3/36*

U.S. Cl. 57—5 **12 Claims**



1. In apparatus for making a yarn, comprising

a drawing frame for supplying a drawn roving,

twisting and winding means for twisting said drawn roving and for winding covering fibers around said drawn roving so as to form a yarn,

fiber supply means for supplying covering fibers to said twisting and winding means, and

means for withdrawing said yarn from said twisting and winding means,

the improvement residing in that

said twisting and winding means comprise two coaxial, axially spaced apart twisting members consisting of a receiving twisting member for receiving said drawn roving from said drawing frame and a delivering twisting member for delivering said yarn to said withdrawing means,

said fiber supply means comprise a fiber supply ring, which is disposed between and coaxial to said twisting members, and means for sucking air from a portion of the periphery of said fiber supply ring to define on said fiber supply ring a fiber feeding surface for feeding said covering fibers to said roving between said twisting members,

drive means are provided for driving said twisting members to rotate in a predetermined sense and for driving said supply ring to rotate in the same sense as said twisting members at a different speed, and

the arrangement is such that said yarn is formed on said twisting members on a substantially helical line of yarn formation extending on the receiving twisting member and via said supply line to said delivering twisting member and having a hand in said predetermined sense.

4,574,573

PNEUMATIC SPLICER FOR TEXTILE YARNS

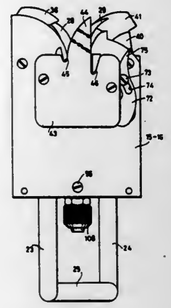
Gianfranco Guzzoni, Puegnago, Italy, assignor to Mesdan S.p.A., Salo, Italy

Filed Sep. 19, 1984, Ser. No. 652,068

Claims priority, application Italy, Oct. 7, 1983, 23191/83[U]

Int. Cl.⁴ B65H *69/06;* D01H *15/00;* D02J *1/08*

U.S. Cl. 57—22 **9 Claims**



1. Apparatus for joining the ends of textile yarns by means of compressed air comprising: a body; means on said body defining a blending chamber for receiving the ends of yarns to be joined, said chamber having a longitudinal axis, opposite open ends coaxial with said axis and a longitudinal yarn entry slit extending parallel to said axis, said body having two spaced-apart outside faces which are perpendicular to the longitudinal axis of the blending chamber; a closure cap mounted for movement between positions in which it closes and opens said longitudinal entry slit; clamping means adjacent said slit operable to clamp the ends of yarn; cutting and introducing means adjacent said slit operable to cut yarn ends and to introduce yarns into said slit; pretreatment nozzles adjacent said ends of said chamber; first and second valve means within said body for introducing compressed air from a source thereof into said chamber and into said pretreatment nozzles, respectively; a wall spaced apart from each of said outside faces of said body; guide means on said walls and on said outside faces of said body for positioning the yarns to be joined inside said chamber; a driving plate located between each of said outside faces and the respective wall and means mounting each driving plate for linear reciprocating movement in directions parallel to said walls; and driving connections between said driving plates and said closure cap, said clamping means, said cutting and introducing means and said first and second valve means for operating the same during reciprocating movement of said plates.

4,574,574

TENSION REGULATOR FOR A STRANDING MACHINE

Hans Knaak, Aachen, Fed. Rep. of Germany, assignor to Stolberger Maschinenfabrik GmbH & Co. KG, Stolberg, Fed. Rep. of Germany

Filed Dec. 4, 1984, Ser. No. 678,214

Claims priority, application Fed. Rep. of Germany, Dec. 10, 1983, 3344731

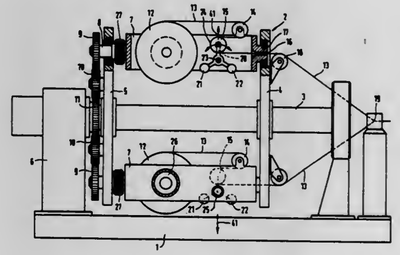
Int. Cl.⁴ D07B *3/06;* H01B *13/02*

U.S. Cl. 57—59 **10 Claims**

1. In a stranding machine including a plurality of reels on which filament to be stranded is wound; means for stranding together, with a stranding speed, the filaments taken off the reels; a separate, rpm-controllable motor operatively connected with each said reel; rpm control means operatively connected to each reel motor for controlling the reel rpm with respect to the stranding speed to determine the tension of the filament running from the reel; a separate compensating roller associated with each reel; the filament running from each reel being at least partially trained about a respective said compensating roller; a separate support component carrying a respective said compensating roller and being displaceable in opposite first and second directions; each said support component being operatively coupled to the respective said rpm control means for controlling the rpm of the respective said reel drive motor as a function of displacement of said support component; said filament, as it runs about the compensating roller, exerting a force on said support component, urging said support component in said first direction; and a force exerting assembly operatively connected with each said support component for exerting a force on said support component in said second direction; the improvement wherein said force exerting assembly comprises

(a) an electromagnetic slip clutch including

(1) a stator winding;



(2) a rotor cooperating with said stator winding;

(3) motor means for rotating said rotor for generating by said rotor a rotating electromagnetic field in an energized state of said stator winding;

(4) an armature exposed to a torque derived from said rotating electromagnetic field; said armature being connected to said support component for exerting thereon said force acting in said second direction as a function of the magnitude of said torque;

(b) current supply means for applying current to said stator winding and

(c) current control means connected to said current supply means for setting the intensity of the current applied to said stator winding for determining the strength of said electromagnetic field.

4,574,575

TWO-FOR-ONE TWISTING SPINDLE

Gustav Franzen, Willich, Fed. Rep. of Germany, assignor to Palitex Project-Company GmbH, Krefeld, Fed. Rep. of Germany

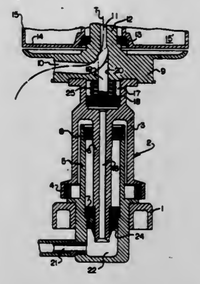
Filed Aug. 20, 1984, Ser. No. 642,167

Claims priority, application Fed. Rep. of Germany, Aug. 24, 1983, 3330523

Int. Cl.⁴ D01H *13/16, 7/86*

U.S. Cl. 57—80 **5 Claims**

1. In a spindle assembly of a two-for-one twister textile thread processing machine including a driven rotor mechanism defining a vertically-extending thread passageway extending coaxially of said spindle assembly and a horizontally-extending thread passageway extending radially of said spindle assembly from said vertically-extending thread passageway to define a juncture therewith for the flow of thread through said passageways during processing in and said spindle assembly; the combination therewith of air-operated means for being selectively moved vertically and coaxially of said spindle assembly into said juncture of said thread passageways upon the breakage of thread during processing in said spindle assembly and counter means in said juncture of said passageways and cooperating



with said air-operated means for preventing further flow of the thread through said passageways.

4,574,576

TENSION DEVICE

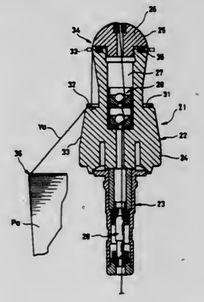
Teiji Nakahara, Uji; Toshinori Shibao, and Kazuyuki Fujiwara, both of Kameoka, all of Japan, assignors to Murata Kikai Kabushiki Kaisha, Japan

Filed Sep. 1, 1983, Ser. No. 528,118

Claims priority, application Japan, Sep. 7, 1982, 57-136244[U]

Int. Cl.⁴ D01H *7/86, 13/10;* B65H *59/10*

U.S. Cl. 57—58.86 **16 Claims**



1. A tenser device for a twisting machine, comprising:

a lower tenser part, adapted to fit vertically within and to be supported by a package mounted on said twisting machine;

an upper tenser part, adapted to fit vertically over and to be supported by said lower tenser part, said upper tenser part being formed to have a base portion as a lower portion thereof, and a head portion vertically extending above said base portion;

a shoulder formed on an outer circumferential surface of said base portion at its uppermost elevation where said base portion and said head portion abut;

a metallic ring, configured to freely pass downwardly over said head portion so as to be capable of resting on said shoulder; and

an annular magnet embedded within said head portion substantially at an uppermost vertical extent of said head portion;

whereby a yarn unwound from said package is passed generally upwardly between said ring and said shoulder, thereby applying tension to the yarn;

said magnet providing a magnetic field, interacting with said ring, of a strength sufficient to preclude said ring from

falling from said head portion, when said tenser device is vertically inverted, by the weight of said ring acting under gravity.

4,574,577

DRIVING ARRANGEMENT FOR A SPINNING ROTOR OF AN OPEN-END SPINNING MACHINE

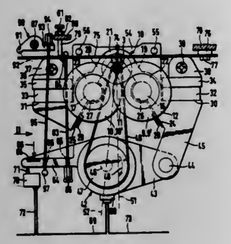
Josef Derichs, Monchen-Gladbach, and Fritz Stahlecker, Josef-Neidhart-Strasse 18, 7347 Bad Überkingen, both of Fed. Rep. of Germany, assignors to Hans Stahlecker; Fritz Stahlecker and W. Schlafhorst & Co., all of, Fed. Rep. of Germany

Filed Jan. 17, 1985, Ser. No. 692,106

Claims priority, application Fed. Rep. of Germany, Jan. 17, 1984, 3401315

Int. Cl.⁴ D01H *1/135, 1/241, 1/244, 7/22*

U.S. Cl. 57—100 **20 Claims**



1. An arrangement for disposing and driving a spinning rotor shaft of an open end spinning unit, comprising

rotor shaft bearing means for rotatably supporting the rotor shaft including supporting disk means forming a wedge-shaped gap support engaging the rotor shaft,

continuous drive belt means looping around the rotor shaft,

electric motor drive means including a driving pulley for driving the drive belt means, and

electric motor support means for supporting the electric motor in an area opposite the rotor shaft support side of the wedge-shaped gap, said electric motor support means including guide means for movably guiding the electric motor between belt tightening and loosening positions in an area adjacent to a plane through the wedge shaped gap support.

4,574,578

SYNTHETIC YARN AND YARN-LIKE STRUCTURES AND A METHOD FOR THEIR PRODUCTION

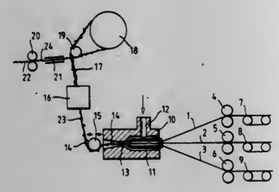
Alexander Scott, Paisley, Scotland, assignor to J&P Coats Limited, Glasgow, Scotland

Filed Apr. 13, 1984, Ser. No. 600,040

Claims priority, application United Kingdom, Apr. 14, 1983, 8310072

Int. Cl.⁴ D02G *3/30, 3/34*

U.S. Cl. 57—246 **6 Claims**



6. Yarn comprising at least two multifilament strands intermingled with one another, the filaments of at least one strand presenting a series of bud-like projections constituted by tightened loops which inhibit relative movement of the filaments in which the intermingled strands have superimposed on the intermingled structure a twist which has an angular orientation which is varying and is on average smaller than the range of angular orientation of twist known throughout the art as normal for the particular gauge and type of the yarn.

4,574,579

ONE PROCESS TWIST AND PLY TWIST YARN SPINNING

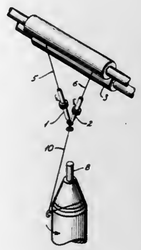
Sing N. Chao, 7 Lane 101, Kienkwo South Rd., Sec. 1, Taipei, Taiwan, Taiwan

Filed Feb. 6, 1984, Ser. No. 577,512

Claims priority, application United Kingdom, Feb. 7, 1983, 8303290

Int. Cl.⁴ D02G *3/28*

U.S. Cl. 57—328 **6 Claims**



1. A process for producing a twist and ply twist yarn from two drafted and separated fiber strands delivered from the front rollers on the draft system of a spinning machine comprising:

(1) inducing a false twist on each of the strands to produce thereon a twist in one direction above the point where the false twist is induced and a twist in the opposite direction therebelow;

(2) removing the twist in the strands below the point where the false twist is induced to form twisted strands; and

(3) twisting the two strands together to form a two ply twisted yarn having the same twist direction and twist intensity.

4,574,580

NIP TYPE FALSE TWISTING APPARATUS

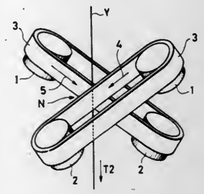
Yoshiyasu Maeda, Nara, Japan, assignor to Murata Kikai Kabushiki Kaisha, Japan

Filed Mar. 13, 1984, Ser. No. 589,139

Claims priority, application Japan, Mar. 16, 1983, 58-45204

Int. Cl.⁴ D02G *1/04;* **D01H** *7/92*

U.S. Cl. 57—336 **3 Claims**



1. A nip type false twisting apparatus for false twisting a yarn nipped between the two endless belts intersecting each other in contact relationship along respective surfaces thereof, said surfaces being in contact under a pressure of 100 g to 250 g,

said apparatus comprising: a rubber layer covering said intersecting sufaces of each of said belts, said layer having a resilient elasticity of 30% to 55%, whereby tension on said yarn is maintained below 100 g and the amount of belt abrasion is maintained below 2.0 mg.

4,574,581

FIBER FEED ARRANGEMENT FOR FRICTION SPINNING

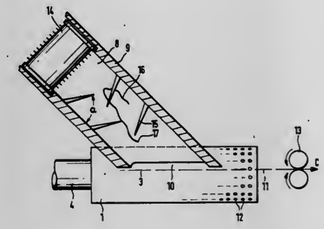
Fritz Stahlecker, Josef-Neidhart-Strasse 18, 7347 Bad Überkingen, Fed. Rep. of Germany, assignor to Fritz Stahlecker and Hans Stahlecker, both of, Fed. Rep. of Germany

Filed Jul. 2, 1984, Ser. No. 626,930

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1983, 3324001

Int. Cl.⁴ D01H *7/882, 7/892*

U.S. Cl. 57—401 **23 Claims**



1. An arrangement for open-end friction spinning of yarn comprising:

drivable friction surface means defining a yarn formation zone,

fiber inlet and opening device means for opening up fiber slivers into separate fibers and imparting a flight speed to the separate fibers,

fiber feed channel means for guidably feeding the fibers from the fiber inlet and opening device means to the yarn formation zone,

yarn withdrawal means for withdrawing formed yarn from the yarn formation zone at a yarn withdrawal speed, and

fiber speed reducing means disposed in the fiber feed channel means downstream of the fiber inlet and opening device means and upstream of the yarn formation zone for reducing the flight speed of separate fibers in the fiber feed channel means and for more closely matching the flight speed of the separate fibers to the yarn withdrawal speed.

4,574,582

SPINNING DEVICE

Josef Derichs, Monchen-Gladbach, Fed. Rep. of Germany, assignor to W. Schlafhorst & Co., Monchen-Gladbach, Fed. Rep. of Germany

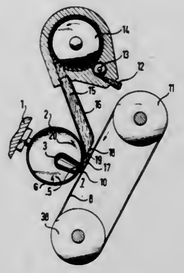
Filed Mar. 23, 1984, Ser. No. 593,036

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1983, 3311141

Int. Cl.⁴ D01H *7/882, 1/135*

U.S. Cl. 57—401 **8 Claims**

1. Spinning device for producing an at least partially twisted spun thread formed of spinning fibers, comprising a perforated drum having a given axis of rotation about which said drum rotates in a given direction, a suction device disposed at least partially in said drum having at least one suction opening formed therein extended substantially parallel to said given axis of said drum, means disposed opposite said at least one suction opening outside said drum for forming a wedge-shaped path for the spinning fibers, means for conducting flying spinning fibers to said wedge-shaped path, and means for withdrawing a spun thread in a thread withdrawal direction substantially parallel to said axis of said drum, said wedge-shaped path forming means including an endless transport belt moving in a direction opposite said given direction and transverse to said thread withdrawal direction at a distance from said drum during spinning.



4,574,583

OPENING ROLLER ARRANGEMENT

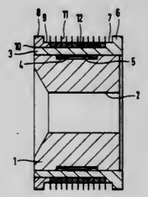
Fritz Stahlecker, Bad Überkingen; Rolf Griesinger, Göppingen-Faurndau, and Gerhard Fetzer, Süssen, all of Fed. Rep. of Germany, assignors to Hans Stahlecker & Fritz Stahlecker, Fed. Rep. of Germany

Filed Jun. 11, 1984, Ser. No. 619,126

Claims priority, application Fed. Rep. of Germany, Jun. 11, 1983, 3321236

Int. Cl.⁴ D01H *7/895;* **D01G** *19/10*

U.S. Cl. 57—408 **24 Claims**



1. An opening roller assembly comprising:

a cylindrical support part;

a plurality of toothed rings and intermediate rings arranged alternately on the cylindrical support part, the toothed rings being made of spring steel or the like, the intermediate rings being made of material that is more easily plastically deformable than is the material of the toothed rings;

said rings exhibiting a wave shaped pattern around the circumference of the cylindrical support part;

and axial stop means clampingly engaging the rings therebetween with the intermediate rings being plastically deformed to form a smooth connection with the toothed rings.

4,574,584

METHOD OF OPERATION FOR A GAS TURBINE ENGINE

Edward J. Hovan, Manchester, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Division of Ser. No. 564,996, Dec. 23, 1983. This application May 28, 1985, Ser. No. 738,630

Int. Cl.⁴ F02C *7/12*

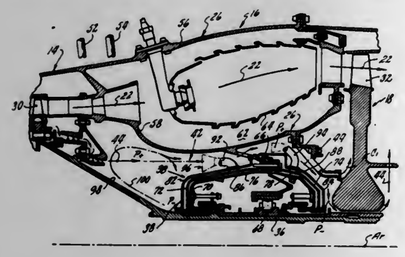
U.S. Cl. 60—39.02 **5 Claims**

1. A method for operating gas turbine engine having a compression section, a turbine section, an annular flow path for working medium gases which extends through the sections of

the engine, a rotor assembly and a stator assembly, the engine further including a bearing housing which defines a bearing compartment in an inner cavity of the engine, a bearing disposed in the bearing compartment for supporting the rotor assembly, sealing means which extends from the housing into proximity with the rotor assembly, and a buffer region adjacent the sealing means, the improvement which comprises:

flowing cooling air from the compression section through the inner cavity at pressures in excess of two-hundred pounds per square inch to the turbine section of the engine for cooling rotor blades in the turbine section;

pressurizing the bearing compartment to a pressure in excess of one-hundred pounds per square inch to establish a difference in pressure across the sealing means which is less than a predetermined amount;



flowing a lubricant to the bearing compartment and flowing a lubricant and air mixture from the bearing compartment at a flow rate which establishes a quench time characteristic for the lubricant and air mixture in the compartment;

pressurizing buffer air in a region of the engine;

flowing the pressurized buffer air to a buffer region adjacent the sealing means at a static pressure which is greater than the static pressure of the cooling air in the inner cavity adjacent the buffer region and greater than the static pressure of the bearing compartment under normal operative conditions;

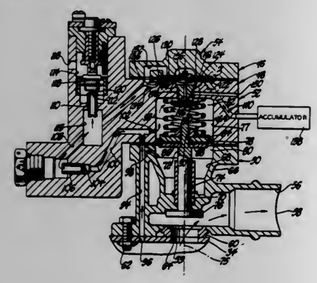
cooling the buffer air before the buffer air reaches the buffer air region to a temperature which establishes an autoignition time characteristic for the buffer air as the air passes through the sealing means into the bearing compartment which is greater than said quench time characteristic.

4,574,585

COMPRESSOR BLEED VALVE

Francis E. Conn, Plainfield, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 8, 1985, Ser. No. 699,596
Int. Cl.⁴ F02C *9/18*
U.S. Cl. 60—39.29 **6 Claims**



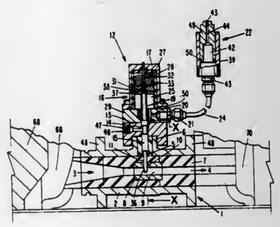
1. In combination with a compressor supplying compressed air at a compressor discharge pressure proportional to the speed of a rotor of said compressor, a bleed valve comprising, a valve body defining a bleed passage operative to bleed air compressed by said compressor to a lower pressure, a valve on said body movable between a closed position blocking said bleed passage and a plurality of open positions defining corresponding bleed flow rate through said bleed passage, spring means exerting a spring force on said valve biasing said valve to said closed position, means on said body defining a first chamber and a second chamber each supplied with air at said compressor discharge pressure, acceleration regulator valve means connected to said first chamber and to said compressor operative to regulate an acceleration servo pressure in said first chamber inversely proportional to the rate of acceleration of said rotor whenever said acceleration rate exceeds a predetermined maximum rate, actuating means connected to said valve and to said first and said second chambers operative to exert on said valve against said spring force a net pressure force exceeding said spring force and proportional to the difference between said acceleration servo pressure and said compressor discharge pressure whereby said valve is moved to one of said open positions defining a bleed flow rate proportional to the amount by which said rotor acceleration rate exceeds said predetermined maximum rate, and deceleration regulator valve means connected to said first chamber and to said compressor operative in response to deceleration of said rotor at rates above a predetermined minimum rate to exhaust said first chamber and establish therein for a predetermined duration after the onset of said rotor deceleration a deceleration servo pressure below said compressor discharge pressure, said actuating means exerting on said valve against said spring force a net pressure force exceeding said spring force proportional to the difference between said deceleration servo pressure and said compressor discharge pressure whereby said valve is moved to said open position for said predetermined duration.

4,574,586

SELF COMPENSATING DUCTED ROCKET MOTOR FUEL NOZZLE AND METHOD FOR REGULATING FUEL GENERATION

Leslie P. Gabrysch, Hewitt, Tex., assignor to Hercules Incorporated, Wilmington, Del.

Filed Feb. 16, 1984, Ser. No. 580,580
Int. Cl.⁴ F02K *9/56*
U.S. Cl. 60—254 **9 Claims**



1. A continuous automatic temperature sensitive hydraulic/-mechanical control choke regulating device comprising, in combination,

(A) an insulated flow section adapted for feedably connecting a fuel gas generating chamber having a body of solid fuel therein, with a secondary combustion chamber within a ducted rocket motor, said insulated flow section having inlet and outlet fuel gas flow ports and a regulator port arranged intermediate said gas flow ports, all being common to a throat section within said flow section;

(B) a stem section endwise secured to the insulated flow section at said regulator port and comprised of

(a) a bellows assembly comprising a fluid-activated bellows,

(b) blocking means slidably reciprocally mounted within said stem section and at least partially insertable through said regulator port into said throat section without completely blocking gas flow,

(c) linking means connecting the fluid-activated bellows within said bellows assembly to said blocking means, for imparting movement to said blocking means, and

(d) biasing means mounted within said stem section in opposition to expansion of said fluid-activated bellows and withdrawing movement of said blocking means from said throat section; and

(C) temperature sensing means comprising a fluid receptacle containing hydraulic fluid, said temperature sensing means being

(a) externally arranged with respect to said stem section and flowably secured to said bellows by fluid connecting means, or

(b) coincident with said bellows, said temperature sensing means being thermally responsive to the ambient temperature of the body of solid fuel in said fuel gas generating chamber;

whereby increasing fuel grain temperature within said solid fuel effects expansion of hydraulic fluid and said bellows directly, or indirectly by fluid flow through said fluid connecting means, causing withdrawal movement of said blocking means by said linking means, in opposition to said biasing means, potentially lowering fuel gas pressure within said gas generating chamber with slower constant generation of fuel gas; the opposite effect being achieved upon a drop in ambient fuel grain temperature, favoring volume contraction of said hydraulic fluid with corresponding direct or indirect contraction of said bellows in favor of said biasing means, causing increased insertion of the blocking means into the throat section with corresponding potential increase in gas pressure within said fuel gas generating chamber and corresponding potential increase in constant generation of generated fuel gas.

4,574,587

Patent Not Issued For This Number

4,574,588

AUTOMOBILE EXHAUST PURIFYING SYSTEM

Nobuhiro Hayama, Hiroshima; Takeshi Yoshimura, and Yoshitaka Tanikawa, both of Higashihiroshima, all of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Jan. 18, 1985, Ser. No. 692,623
Claims priority, application Japan, Jan. 20, 1984, 59-8944
Int. Cl.⁴ F02B *75/10*
U.S. Cl. 60—284 **5 Claims**

1. An exhaust purifying system for an automobile internal combustion engine which comprises, in combination:

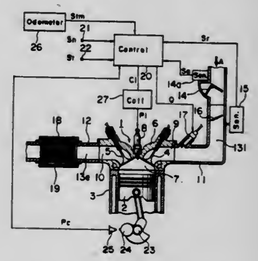
a catalytic converter disposed on an exhaust system of the engine and having a catalyst;

a temperature detecting means for detecting a signal indicative of the temperature of the catalyst;

a total engine operating hour detecting means for detecting a signal indicative of the total operating hour over which the engine has been operated;

a spark timing control means for controlling the spark timing to retard when said temperature detecting means detects that the temperature of the catalyst is lower than a predetermined value;

a retard time correcting means for increasing the amount of control performed by the spark timing control means with



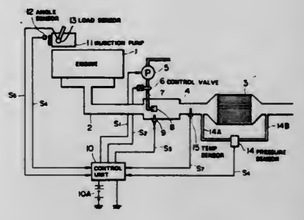
increase within a predetermined range detected by said total engine operating hour detecting means.

4,574,589

EXHAUST PARTICLE REMOVING SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Yoji Hasegawa, Yokohama, and Naomi Tokura, Yokosuka, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Dec. 19, 1983, Ser. No. 563,274
Claims priority, application Japan, Dec. 24, 1982, 57-195151
Int. Cl.⁴ F01N *3/02*
U.S. Cl. 60—286 **6 Claims**



1. An exhaust particle removing system for an internal combustion engine, comprising:

(a) an exhaust passage extending from the engine for conducting exhaust from the engine;

(b) a filter disposed in the exhaust passage for filtering particles out of the exhaust;

(c) a burner disposed in the exhaust passage at a point upstream of the filter for burning off the particles retained by the filter;

(d) a pressure sensor for sensing the pressure across the filter and generating a signal indicative thereof;

(e) an engine condition sensor for sensing an operating condition of the engine and generating a signal indicative thereof;

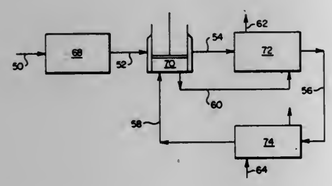
(f) means for generating a primary reference signal on the basis of the engine operating condition signal;

(g) means for sampling the pressure signal when the pressure sensor is subject to a zero pressure difference;

(h) means for storing the sampled pressure signal;

(i) means for correcting the primary reference signal on the basis of the stored pressure signal and generating a secondary reference signal reflecting the correction;
(j) means for comparing the pressure signal to the secondary reference signal and generating a signal reflecting the result of the comparison; and
(k) means for activating the burner on the basis of the comparison signal.

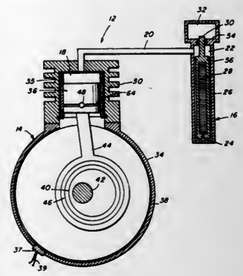
4,574,590
HIGH TEMPERATURE ENGINE AND SEAL
Dedger Jones, 885 Freeway Dr. North, Columbus, Ohio 43229
Continuation-in-part of Ser. No. 447,267, Dec. 6, 1982, Pat. No. 4,485,628. This application Sep. 10, 1984, Ser. No. 648,580
The portion of the term of this patent subsequent to Dec. 4, 2001, has been disclaimed.
Int. Cl.⁴ F01K *13/00*
U.S. Cl. 60—676 **18 Claims**



1. An apparatus for sealing a cylinder of the type having a closed end and an open end and an interior surface therebetween to a movable piston of the type having a face end and a rod end, said piston being movable over a specific length of said cylinder, comprising: an extension skirt located substantially on the perimeter of the rod end of said piston and extending away from the face end of said piston said skirt extension having an exterior surface in close proximity to the interior surface of said cylinder, an elastomeric pressure seal retained in the interior surface of said cylinder, contacting the exterior surface of said extension skirt at a point spaced apart from the face end of said piston at least a distance adequate to prevent heat at the surface of the piston face end from being excessively transferred by conduction to said pressure seal.

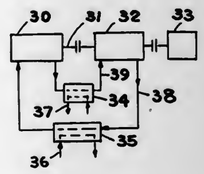
4,574,591
CLEARANCE SEALS AND PISTON FOR CRYOGENIC REFRIGERATOR COMPRESSORS
Peter K. Bertsch, Pepperell, Mass., assignor to Helix Technology Corporation, Waltham, Mass.
Filed Aug. 29, 1983, Ser. No. 527,215
Int. Cl.⁴ F25B *9/00*
U.S. Cl. 62—6 **12 Claims**

1. In a cryogenic refrigerator, an assembly comprising:
a piston housing;
a sleeve positioned to float within said housing and having a flexible seal between the sleeve and housing to permit transverse movement relative to the housing, the sleeve comprising ceramic and being a substantial peak to peak pressure variation at one end of the sleeve and a relatively constant pressure at the other end of the sleeve; and



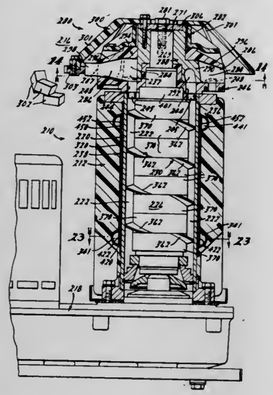
a piston comprising ceramic positioned within said sleeve for axial reciprocation.

4,574,592
HEAT PUMP WITH LIQUID-GAS WORKING FLUID
Michael Eskeli, 10332 Desdemona, Dallas, Tex. 75228
Filed Jan. 9, 1984, Ser. No. 569,565
Int. Cl.⁴ F25B *1/00*
U.S. Cl. 62—114 **5 Claims**



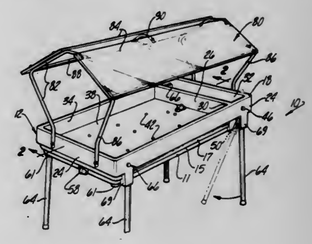
1. A thermodynamic method of pumping heat comprising:
a. compressing a working fluid with accompanying pressure and temperature increase and the use of work;
b. removing heat from said working fluid downstream of the compression;
c. expanding said working fluid with accompanying (temperature and) pressure reduction and the recovery of work subsequent to the heat removal;
d. providing as said working fluid a fluid mixture comprising a compressible gas and a liquid where said gas and liquid are different fluids, and wherein the function of said liquid is to cool said gas during compression and to heat said gas during expansion, and further, wherein approximately the same fluid mixture passes passes through the expansion and compression steps, and also, wherein the amount of liquid in the gas-liquid mixture is less than what is required to maintain a constant fluid temperature during compression thus providing for the temperature increase during the compression;
e. providing a non-flow positive displacement process for said working fluid during the compression and expansion steps.

4,574,593
ICE MAKING APPARATUS
Kenneth L. Nelson, Albert Lea, Minn., assignor to King Seeley Thermos Co., Prospect Heights, Ill.
Continuation-in-part of Ser. No. 570,610, Jan. 13, 1984. This application Jan. 24, 1985, Ser. No. 694,612
Int. Cl.⁴ F25C *1/14*
U.S. Cl. 62—320 **8 Claims**



1. An ice-making apparatus comprising:
a refrigeration system including a combination evaporator and ice-forming assembly adapted to receive ice make-up water communicated thereto and to produce relatively wet and loosely associated ice particles from said ice make-up water, said combination evaporator and ice-forming assembly further including an outlet end thereon through which said wet and loosely associated ice particles are forcibly urged by said combination evaporator and ice-forming assembly;
a first interchangeable head assembly removably connectable to said combination evaporator and ice-forming assembly, said first head assembly including compression means in communication with said outlet end for forcibly compressing quantities of said wet and loosely associated ice particles in order to remove at least a portion of the unfrozen water therefrom and form relatively dry and loosely associated flaked ice particles, said compression means including means for discharging said flaked ice particles from said first head assembly; and
a second interchangeable head assembly preselectively interchangeable with said first head assembly and removably connectable to said combination evaporator and ice-forming assembly, said second head assembly including compacting means in communication with said outlet end for forcibly compressing quantities of said wet and loosely associated ice particles in order to remove at least a substantial portion of the unfrozen water therefrom and to compact said wet and loosely associated ice particles into substantially monolithic relatively hard compacted ice, means for discharging said compacted ice from said second head assembly in a substantially continuous elongated form having a predetermined cross-section, and breaker means for breaking said elongated compacted ice form into discrete compacted ice pieces of a preselected length and having substantially the same cross-section as said discharged elongated compacted ice form, said breaker means including at least one breaker member removably attached thereto and adjustment means for preselectively altering the position of said breaker member relative to said compacted ice form discharge means, said ice making apparatus thereby being preselectively adaptable to produce either relatively dry loosely associated flaked ice particles or discrete compacted ice pieces of preselected lengths by preselectively connecting either said first or second head assembly to said combination evaporator and ice-forming assembly and by preselectively adjusting the position of said ice breaker member of said second head assembly.

4,574,594
PORTABLE ICE TABLE WITH FRICTIONALLY ENGAGEABLE LEG LOCKING MECHANISM
Jesse K. Simmons, and Maralyne J. Simmons, both of 4030 Sleeth Rd., Milford, Mich. 48042
Filed Apr. 1, 1985, Ser. No. 718,158
Int. Cl.⁴ F25D *3/08*
U.S. Cl. 62—457 **25 Claims**

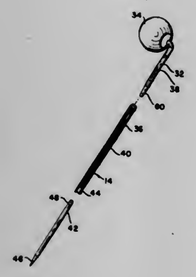


1. A portable ice table comprising:
a platform having an outer insulating surface, a bottom, a vertical wall extending upward from said bottom and having an inner surface, and a dividing member with opposite ends secured to the inner surface and extending vertically from said bottom of said platform;
wherein said platform further includes a handle, a recessed dry storage compartment and a recessed ice storage compartment separated from said dry storage compartment by said dividing member and having an upper section for storing ice, a manually removable perforated ice supporting member and a lower section;
wherein said upper section is disposed above said lower section with said ice supporting member disposed therebetween;
wherein said ice supporting member includes a plurality of openings between said upper and lower sections;
wherein said lower section includes at least one positioning member to support said ice supporting member between said upper and lower section;
wherein said lower section includes means to store and drain water from said ice storage compartment;
a plurality of supporting members fixedly secured to said platform and extending downwardly therefrom; and
a plurality of support legs pivotably secured to said platform wherein said support legs include a locking ring to lockingly engage said legs in a supporting or a non-supporting position, said locking ring comprising:
a substantially rectangular peripheral configuration with a planar front surface, a pair of side surfaces, and a rear surface having at least one groove disposed parallel to the axis of said locking ring; and
a throughbore offset from the center of said locking ring wherein said throughbore conforms to the cross-sectional shape of said support leg.

4,574,595
JEWELRY MOUNTING CONSTRUCTION

Leonardo Moody, 1845 Prairie Ave., Downers Grove, Ill. 60515

Continuation of Ser. No. 460,284, Jan. 24, 1983, abandoned. This application Apr. 30, 1985, Ser. No. 728,444
Int. Cl.[4] A44C *7/00, 1/00*
U.S. Cl. 63—12 2 Claims



1. An improved jewelry mounting construction for adapting a pierced-ear earring for use as a stickpin, the earring being of the kind having an earring-post comprised of a generally linear shaft pointed at one end and affixed at the remaining end to a decorative item, the construction comprising, in combination:

means for receiving the pierced-ear earring post comprising a post receptacle defining a generally cylindrical bore with a longitudinal axis compatible with the earring post and adapted for slidable insertion and removal of the earring post in and out of the bore at one end of said receptacle,

means for frictionally affixing the earring post within the post receptacle bore to restrain sliding insertion and removal of the earring post and attach the post within the bore, the means comprising a segment of compressible material inserted into the earring post receptacle bore and affixed longitudinally along a portion of the bore's inner surface so that insertion of the earring post into the bore compresses the compressible material and forces the post against both the compressible material and the bore's inner surface;

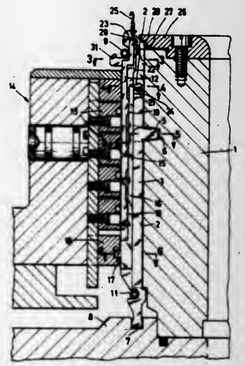
a generally linear pin mateable with said bore at the other end of said receptacle, said pin having a longitudinal axis and upper and lower longitudinal ends, the lower end tapering generally to a point for insertion of the pin through a puncturable material and retention of the pin in that material, the upper end being adapted for rigid attachment to the earring post receptable with the pin's axis corresponding to the bore's axis, the pin, being of sufficient length to support the post-receptacle at a distance from the lower tapered end and to attach the pin in the puncturable material when inserted into that material; and

means for fixedly connecting the earring-post receptacle onto the elongated pin, whereby a pierced-ear earring having a decorative attachment may be inserted by its earring post into the earring post receptacle and the elongated post receptacle and the elongated pin may be inserted into and restrained within clothing so that a pierced-ear earring may be used as a stickpin.

4,574,596
STITCH-FORMING MACHINE

Werner Engelfried, Sindelfingen, and Gerhard Müller, Esslingen, both of Fed. Rep. of Germany, assignors to Terrot Strickmaschinen GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 6, 1984, Ser. No. 617,682
Claims priority, application Fed. Rep. of Germany, Jun. 14, 1983, 3321385
Int. Cl.[4] D04B *15/06, 15/14*
U.S. Cl. 66—104 4 Claims



1. A stitch-forming machine comprising needles guided on a needle support means for longitudinal displacement and controlled by needle cams and also comprising holding-down and knocking-over sinkers which are displaceable between the needles in the region of their heads and are moved by sinker cams in the longitudinal and transverse directions relative to said needle support means, characterised in that

a. the sinkers are composed of a push sinker (16) adapted for displacement solely in the longitudinal direction and a holding-down and knocking-over sinker (22) pivotally connected to said push sinker and adapted for displacement in both the longitudinal and transverse directions, that

b. the needles (12) and push sinkers (16) are commonly guided between webs (3) on the needle support means (1), said needles thereby resting against the backs of said push sinkers, that

c. the pivot connection between the push sinker (16) on the one hand and the holding-down and knocking-over sinker (22) on the other hand is designed and arranged such that said holding-down and knocking-over sinker is disposed between the needles in the region of their heads, that

d. a sinker cam in the form of an annular control claw (26) is detachably mounted on the needle cylinder for controlling the holding-down and knocking-over sinker (22), that

e. the webs (3) are detachably secured within grooves (2) of the needle support means (1), that

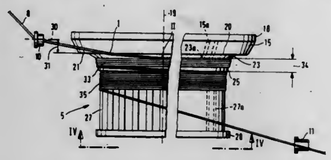
f. the webs (3) have inclined control surfaces (29) for controlling the holding-down and knocking-over sinkers (22), and that

g. the holding-down and knocking-over sinkers (22) are laterally guided and supported in said grooves (2) accommodating the webs (3), the webs (3) being correspondingly recessed in the area of the sinkers (22) to form a space for the pivoting movement of the sinkers (22).

4,574,597
YARN FEEDING APPARATUS, PARTICULARLY FOR KNITTING MACHINES

Alfred Buck, Rottenburg, and Erich Roser, Bermatingen, both of Fed. Rep. of Germany, assignors to Memminger GmbH, Freudenstadt, Fed. Rep. of Germany

Filed Jul. 19, 1984, Ser. No. 632,403
Claims priority, application Fed. Rep. of Germany, Jul. 20, 1983, 3326099
Int. Cl.[4] D04B *15/48*
U.S. Cl. 66—125 R 19 Claims



1. Yarn feeding apparatus, particularly for knitting machines, having:

a driven storage drum (5) having a plurality of axially adjacent yarn storage or yarn loop accepting surfaces;

a yarn supply guide element (10) and a yarn draw-off guide element (11) to guide yarn to and from the drum,

comprising

a first circumferential conical surface (15),

the yarn supply guide element (10) being oriented to supply yarn (8) at said first surface and located at least at the axial level, or height, of said first conical surface;

a second conical surface (23) essentially adjoining the first conical surface, extending radially inwardly, and having a cone angle substantially greater than that of the first conical surface;

a third conical surface (25) essentially adjoining the second conical surface, and having a cone angle which is substantially smaller than the cone angle of the second conical surface (23), and an axial length dimensioned to receive a few adjacently located yarn loops thereon,

whereby the third conical surface will form a yarn support surface which tapers radially inwardly to form an intermediate yarn loop storage zone (33) on the drum;

and an essentially cylindrical circumferential surface (27) essentially adjoining the third conical surface and having an axial length dimensioned to receive the yarn storage loops (35) to be wound on the yarn storage drum (5),

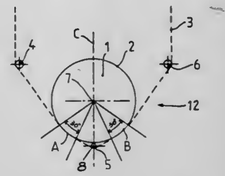
the yarn draw-off guide element (11) being positioned to draw off yarn stored on the storage drum on the essentially cylindrical circumferential surface (27) for supply of yarn to a feed of a textile machine.

4,574,598
DEVICE FOR MEASURING THE LENGTH OF YARN ABSORBED BY A TEXTILE MACHINE

Jean-Pierre Matthelié, La Chapelle Saint-Luc, France, assignor to Institut Textile de France, France and Centexbel, Belgium

Filed Jun. 19, 1985, Ser. No. 746,560
Claims priority, application France, Jun. 26, 1984, 84 10068
Int. Cl.[4] D05B *15/44*
U.S. Cl. 66—146 3 Claims

1. Improved device for measuring the length of yarn absorbed by a textile machine, comprising a rotating member driven by the yarn during displacement thereof, as well as three fixed guides over which the yarn passes, positioned near the rotating member so that the yarn is in contact with the

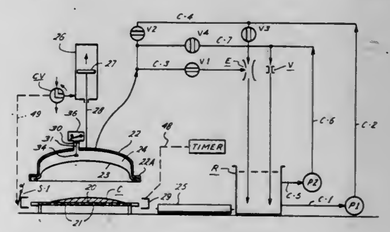


rotating member along two substantially equal arcs of low value.

4,574,599
APPARATUS FOR PRESSING LIQUID FROM CLOTH GOODS

Norvin L. Pellerin, New Orleans, La., assignor to Pallerin Milnor Corporation, Kenner, La.

Filed Dec. 6, 1984, Ser. No. 678,837
Int. Cl.[4] D06F *47/06*
U.S. Cl. 68—242 6 Claims



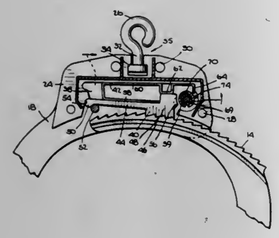
1. Apparatus for use in pressing liquids from cloth goods, comprising a support having a porous surface on which a batch of goods may be received, a concave pressure vessel having a flexible membrane across its open end to form a pressure chamber therein, means supporting the vessel with the membrane facing the surface and for movement toward and away from the surface, means including pump means and conduit means connecting with the vessel for alternately supplying liquid under pressure to the chamber in order to press liquid from a batch of goods on the surface to form it into a cake, when the vessel and membrane have been moved to and held in a position over the batch, and applying suction to the pressure chamber to remove liquid therefrom and withdraw the membrane to a position in which it is adapted to fit over another batch of goods on the surface, following pressing of the first-mentioned batch into a cake and removal of the cake from the surface, but nevertheless spaced from the closed end of the vessel so that the membrane is not sucked into the connection of the conduit means therewith, means for selectively locking and unlocking said vessel with respect to said surface so as to respectively hold the membrane in or release the membrane from its position over a batch, and means responsive to movement of the membrane into said withdrawn position for stopping the application of suction to the chamber and maintaining said membrane in said withdrawn position in preparation for returning said vessel to a position over said another batch.

4,574,600

HANDCUFF AND LOCK THEREFOR

Warren Moffett, East Longmeadow, Mass., assignor to Bangor Punta Corporation, Greenwich, Conn.

Filed Nov. 2, 1983, Ser. No. 548,259
Int. Cl.⁴ E05B *75/00*
U.S. Cl. 70—16 **2 Claims**



1. A handcuff comprising:

generally arcuate front and back cheeks spaced one from the other and carrying a lock assembly therebetween at one end,

a generally arcuate jaw having teeth at one end,

means for pivotally coupling said cheeks and said jaw one to the other at their respective opposite ends to enable relative pivotal movement of said cheeks and said jaw toward and away from one another between handcuff closed and open positions, respectively,

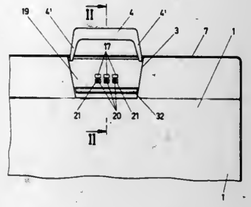
said lock assembly including a bolt between said cheeks having teeth and pivotal between a locking position with its teeth engaging the teeth carried by said jaw to prevent relative movement of said cheeks and said jaw away from one another toward the handcuff open position and an unlocking position with its teeth spaced from the teeth carried by said jaw to enable relative movement of said cheeks and said jaw away from one another toward the handcuff open position, and a bolt spring carried by said lock assembly having a portion engageable with said bolt to bias said bolt for movement toward its locking position, one of said cheeks having an opening through a wall thereof for receiving the end of a key, a generally cylindrical bushing disposed in said opening with its inner end terminating short of the other of said cheeks, an axially extending slot in said bushing for receiving a key having a lateral projection thereon, a pin secured to said other cheek and extending therefrom into said bushing, said pin being spaced from said bushing to define an annular space therebetween for receiving the key, said bolt having a bolt end with a shoulder engageable by the lateral projection of the key for displacing the bolt from its locked position toward its unlocked position upon rotation of the key, said shoulder being located in the space between said cheeks and between the inner end of said bushing and said one cheek, the remaining portion of said bolt end between the inner end of said bushing and the other of said cheeks being recessed away from said bushing and said bushing slot being angularly displaced from the location of said shoulder thereby preventing direct access to said shoulder through said key opening.

4,574,601

CLOSURE FOR VALISES OR THE LIKE WHICH IS PROVIDED WITH A PERMUTATION LOCK

Otto Werk, Langa, Denmark, and Rudi H. Düringer, Wuppertal, Fed. Rep. of Germany, assignors to Cavalet ApS, Korsor, Denmark

Filed Aug. 1, 1984, Ser. No. 636,875
Claims priority, application Fed. Rep. of Germany, Aug. 5, 1983, 3328284
Int. Cl.⁴ E05B *65/62*
U.S. Cl. 70—70 **11 Claims**



1. In a closure for a valise and the like, with hook latches on both sides of a central combination lock, the latches being displaceable by manual actuation into a release position, this displacement being blocked, when the combination of the lock is not properly set, by a blocking part of the combination lock which is displaceable into the release position by spring action, the improvement comprising:

a swing yoke surrounding the combination lock in U shape and having a central section and U-yoke arms with ends, each said end, respectively, having a pivot point,

a manually actuatable single push key adjacent the combination lock, said single push key comprising said central section of said swing yoke,

angle levers, each of said angle levers having a first arm and a second arm, each said first arm forming a hook swing latch, and

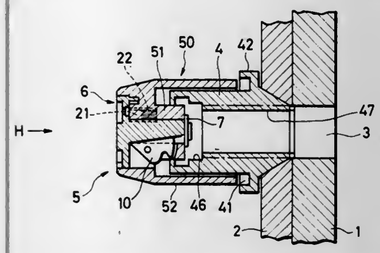
respective ones of said U-yoke arms, adjacent said pivot point, operatively acting upon said second arm of a respective said angle lever.

4,574,602

WHEEL LOCKING DEVICE FOR AUTOMOBILE

Mitsuru Furuse, Minami-ashigara, Japan, assignor to Taka-Ai Co., Ltd., Tokyo, Japan

Filed Sep. 26, 1983, Ser. No. 535,872
Claims priority, application Japan, Mar. 29, 1983, 58-53287
Int. Cl.⁴ F16B *41/00*
U.S. Cl. 70—232 **4 Claims**



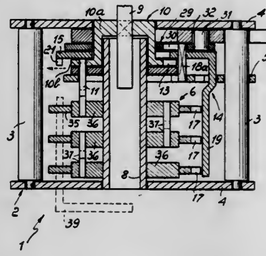
1. A wheel locking device for an automobile comprising a wheel lock external sleeve having a head and a rear, and a rotor receiving part at its head and a cylindrical shell at its rear, a rotor rotatably engaged in said rotor receiving part, wherein said rotor includes both a head face having a key face engagement recess, and a rotary shaft, a latch engaged in the rotary shaft of said rotor, and a wheel nut fitted inside said wheel lock external sleeve, wherein said nut includes a rimmed head part, said wheel lock external sleeve having fine slots in the rotor receiving part formed at the head thereof, said fine slots containing small cylindrical magnets and springs which urge the magnets in the direction of the head thereof, said wheel lock external sleeve also having an arcuate groove on the head thereof for containing a rotor pushing spring, and further having a latch engagement groove at one side of the rotor receiving part for holding said latch therein; said rotor having engagement holes, into each of which said small cylindrical magnets are engaged so as to integrate said wheel lock external sleeve and the rotor with each other, said rotor also having an arcuate projection along the periphery of the head of the rotor that fits into the arcuate groove formed on the head of said wheel lock external sleeve, wherein said rotor further includes a tapered groove into which said latch is partially engaged and fitted; said wheel nut having a flange throughout the rimmed head part thereof which is engageable with said latch for locking said wheel lock external sleeve to the nut.

4,574,603

DIAL-TYPE COMBINATION LOCK

Giancarlo Parma, Lainate, Italy, assignor to SERCAS s.r.l., Polverigi, Italy

Filed Jul. 17, 1984, Ser. No. 631,777
Claims priority, application Italy, Jul. 29, 1983, 22360 A/83
Int. Cl.⁴ E05B *37/08*
U.S. Cl. 70—303 A **11 Claims**



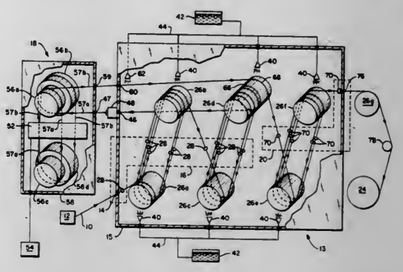
1. A dial-type combination lock comprising, on a stationary supporting frame, a bolt element connected to external closure elements controlled by the lock itself, a driver element manually turnable from the outside and having a drive seat at one edge thereof, a plurality of rotatable coaxial combination dials operatively connected together and to said driver element, as well as having edge seats adapted to be moved into mutual alignment relationship, and a stud engangeable with said seats and adapted to transmit the movements of said driver element to said bolt element, said stud being movable from a released position to a working position whereat said stud engages with all of said seats, characterized in that said stud includes a base portion extending parallel to said dials and arranged to be rotatable coaxially therewith and hooking members adapted for insertion in said seats and projecting from said base portion in a transverse direction to the plane of lay thereof, and in that guide elements are provided in said stationary frame to impart to said hooking members linear oscillations in a radial direction to said dials, as said stud is moved from said released position into said working position.

4,574,604

PROCESS AND APPARATUS FOR HIGH SPEED FABRICATION OF COPPER WIRE

Ralph A. Vogel, Three Rivers, Mich., and Keith E. Caudill, Fort Wayne, Ind., assignors to Essex Group, Inc., Ft. Wayne, Ind.

Filed Nov. 13, 1984, Ser. No. 671,275
Int. Cl.⁴ B21B *9/00*
U.S. Cl. 72—38 **8 Claims**



1. A process for continuous high speed fabrication of wire, comprising the steps of:

(a) passing a continuous length of wire at a constant speed through a first die set to reduce the wire diameter to form an intermediate diameter wire;

(b) applying a lubricant to the wire while it passes through the first die set;

(c) wrapping the lubricated intermediate diameter wire on a capstan which rotates at a speed which is faster than said constant speed of the wire to form a first wrap of wire;

(d) passing the lubricated wire of the first wrap at said constant speed from the capstan through an annealer;

(e) annealing the intermediate diameter wire in a non-oxidizing atmosphere within the annealer;

(f) quenching the annealed intermediate diameter wire;

(g) wrapping the quenched annealed intermediate diameter wire on said capstan to form a second wrap of wire, the number of turns in the first and second wraps selected to maintain low tensile forces on the wire within the annealer and to prevent significant elongation of the wire during said step of annealing, wherein said capstan pulls the wire through the annealer; and

(h) passing the wire of the second wrap at said constant speed from the capstan through a second die set to form the wire to a final diameter.

4,574,605

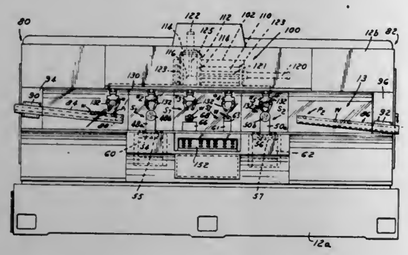
FORMING MACHINE WITH MULTIPLE WORK STATIONS

Ronald R. Stein, Sterling Heights, Mich., assignor to Ex-Cell-O Corporation, Troy, Mich.

Filed Aug. 29, 1984, Ser. No. 645,372
Int. Cl.⁴ B21D *17/04*
U.S. Cl. 72—88 **12 Claims**

1. A machine for forming workparts comprising a base, a first work station for rotatably supporting a first workpart and a second work station for rotatably supporting a second workpart with the first and second work stations being spaced apart in a direction on said base, first and second pairs of spaced, facing forming tools spaced apart in said direction on the base to cooperate with the respective first and second work stations and slidable substantially simultaneously in said direction in engagement with the respective first and second workparts rotatably supported at the respective work stations to form

same, means for substantially simultaneously sliding the first and second pairs of forming tools, and workpart transfer means



for positioning the first and second workparts at the respective work stations.

4,574,606

ADJUSTING THE ROLLS IN A ROLLING MILL WITH OBLIQUELY ORIENTED, CONICALLY CONTOURED ROLLS

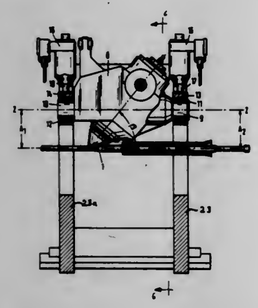
Karl H. Hauesler, Korschenbroich; Heinrich Steinbrecher, Meerbusch, and Walter vom Dorp, Moenchengladbach, all of Fed. Rep. of Germany, assignors to Mannesmann AG, Duesseldorf, Fed. Rep. of Germany

Filed Feb. 20, 1985, Ser. No. 703,607

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1984, 3406841

Int. Cl.⁴ B21B *13/00*

U.S. Cl. 72—100 **2 Claims**



1. Rolling mill with three obliquely positioned rolls having an overall conical contour of rolling and being arranged symmetrically in relation to a center, said rolls being off set in relation to each other by 120 degrees and have an oblique disposition in relation to the axis of rolling of a particular spreading angle, there being a roll stand; a mounting and adjusting arrangement comprising;

each roll being mounted in a roll mount for pivoting about an axis normally running parallel to the axis of the stock being rolled; and

means for varying the distance of said pivot axis in relation to said axis of rolling under maintaining of parallelism or under tilting in order to obtain a reorientation of the rolls vis-a-vis the periphery of rolled stock in engagement with rolls.

4,574,607

CAN END SEAMING TOOL

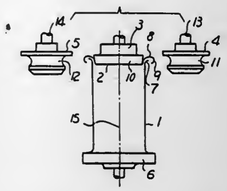
Kenichiro Akino, Sendai, and Akira Miura, Shimizu, both of Japan, assignors to Kyocera Corporation, Kyoto and Daiwa Can Company, Limited, Tokyo, both of, Japan

Filed Feb. 1, 1984, Ser. No. 575,847

Claims priority, application Japan, Feb. 3, 1983, 58-16800

Int. Cl.⁴ B21D *51/30*

U.S. Cl. 72—112 **16 Claims**



1. A can end seaming tool for use in seaming a can end to a can body and comprising a seaming chuck and a seaming roll, said seaming chuck being adapted to fit said can end while said seaming roll is adapted to simultaneously press and seam a curling portion of said can end and a flanging portion of said can body, and wherein the material of at least a body portion of said seaming chuck which frictionally contacts the can end and/or the material of at least a body portion of said seaming roll which frictionally contacts the can end consists essentially of a sintered cermet composed of 55 to 95 wt % of a TiC-TiN ceramic composition and 5 to 45 wt % of binding metal.

4,574,608

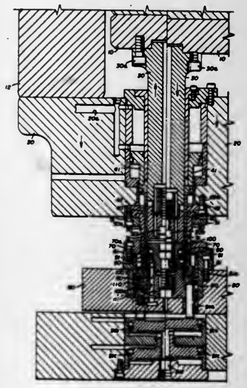
SINGLE STATION, IN-DIE CURLING OF CAN END CLOSURES

Joseph D. Bulso, Jr., Canton, and James A. McClung, North Canton, both of Ohio, assignors to Redicon Corporation, Canton, Ohio

Filed Feb. 4, 1985, Ser. No. 698,149

Int. Cl.⁴ B21D *22/00*

U.S. Cl. 72—348 **11 Claims**



7. Apparatus for forming the end panel of a metal container in a double acting press having inner and outer slides and a fixed base, comprising:

(A) a punch core carried by the inner slide of said press;

(B) a punch shell carried by the outer slide of said press;

(C) a die core carried by the fixed base of said press;

(D) a die core ring carried by the fixed base in concentric relationship with said die core;

(E) said punch shell being movable toward said fixed base to wipe the periphery of said end panel over the radius of said die core ring;

(F) said punch shell having a tapered area on its inner face extending radially inwardly from its distal end;

(G) said die core ring comprising inner and outer segments;

(H) said outer segment being movable relatively of said inner segment as said punch shell moves toward the fixed base of the press

(I) whereby a curl is inititated about the periphery of the end panel between the inner face of the punch shell and the outer face of the inner segment of the die core ring.

4,574,609

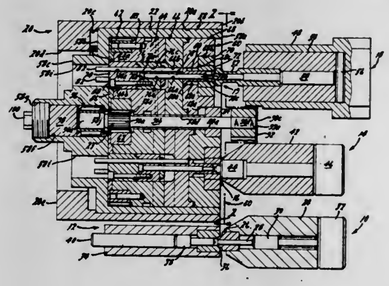
NUT FORMING APPARATUS

Imre Berecz, El Toro, Calif., assignor to Microdot Inc., Darien, Conn.

Filed Mar. 21, 1984, Ser. No. 591,801

Int. Cl.⁴ B21J *7/16, 13/08;* B21K *1/68*

U.S. Cl. 72—354 **3 Claims**



1. A forming and piercing apparatus comprising:

a housing;

a rotary block mounted in said housing for rotary movement about its central longitudinal axis and defining first and second parallel cylindrical bores extending parallel to said central axis and opening at diametrically opposed locations in a top face of said block;

a set of two cylindrical members located in each bore in said rotary block; said cylindrical members having aligned longitudinal axes coaxial with said cylindrical bores and having contiguous end faces forming an interface;

identical first and second dies respectively carried on a non-contiguous end face of the cylindrical member adjacent said top face; each of said dies having a bore coaxial with said cylindrical bore; an elongated piercing pin coaxially mounted in each die bore;

coacting ramp means at the interface of each set of cylindrical members operative in one position of relative rotation of said members to preclude movement of the cylindrical member adjacent said top face in a direction away from said top face in its respective bore and operative in another position of relative rotation of said members to allow such movement;

means operative to selectively rotate said rotary block between a first position, in which said first die is at a first die station and said second die is at a second die station, and a second position, in which said first die is at said second die station and said second die is at said first die station;

a first punch mounted for coaction with a die positioned at said first die station;

a second punch mounted for coaction with a die positioned at said second die station; and

means operative in response to rotation of said rotary block to move said cylindrical members into said one position of relative rotation when the associated die is moved to said first die station, whereby to allow said first punch to deliver a forming blow to a blank positioned at that die, and to move said cylindrical members into said other position of relative rotation when the associated die is moved to said second die station, whereby to allow the associated piercing pin to backpierce a blank positioned at that die upon rearward movement of that die in response to a forming blow delivered by said second punch.

4,574,610

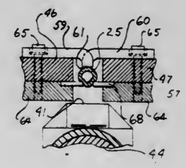
REFRIGERATION APPARATUS AND METHOD OF MAKING SAME

Warren L. Hull, Avon; Wesley C. Leedahl, St. Cloud, and Donald R. Notch, Kimball, all of Minn., assignors to White Consolidated Industries, Inc., Cleveland, Ohio

Division of Ser. No. 342,903, Jan. 26, 1982, Pat. No. 4,489,470. This application Aug. 17, 1984, Ser. No. 641,702

Int. Cl.⁴ B21D *53/06*

U.S. Cl. 72—367 **3 Claims**



1. The method of forming a welding projection on a length of refrigeration tubing having circular walls comprising crimping the tubing at two laterally aligned places by simultaneously impacting the tubing with a pair of punches contacting the wall of the tubing between the centerline and one side of the tubing to plastically deform the wall of said tubing and form a pair of circumferentially spaced, radially inward dimples in said tubing wall on said one side and to thereby form a projection on said tubing wall between said dimples extending radially beyond the axially adjacent tubing wall and with the tubing on the other side of said centerline remaining substantially undeformed.

4,574,611

DEVICE FOR BENDING METAL STOCK

Kenneth J. Hegemann, Rte. 1, Box 69, Newman Grove, Nebr. 68758

Filed Jun. 10, 1985, Ser. No. 743,042

Int. Cl.⁴ B21D *9/05*

U.S. Cl. 72—389 **11 Claims**

1. A device for bending metal stock, comprising:

a die block, including two plates, the lower portions of which are vertical and the upper portions of which are bent outwardly to a generally horizontal position, the exterior face of each bend in said plates being substantially an arc of a circle, and means for affixing the lower portions in parallel spaced-apart relation to form a slot therebetween and for affixing the upper portions in the same plane;

a vertical guide member affixed to each end of said die block;

a die blade, slidably mounted between said guide members for movement in a plane centered between the vertical portions of the plates of said die block; and

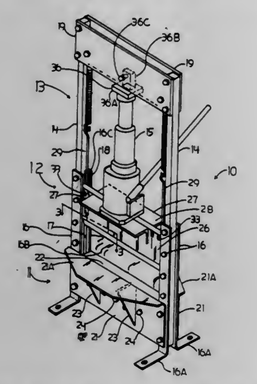
means for selectively powering said die blade towards said die block.

11. A die block of the type used with a die blade in bending metal stock, formed by a process comprising the steps of:

bending a first plate to an approximate right angle, the exterior face of the bend being substantially an arc of a circle;

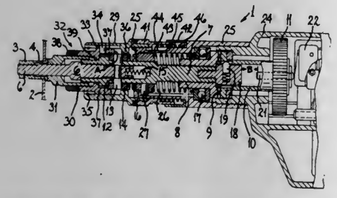
bending a second plate to an approximate right angle, the

exterior face of the bend being substantially an arc of a circle;
positioning said first plate with one leg parallel to a leg of said second plate and the other leg of said first plate in the same plane as the other leg of said second plate, said



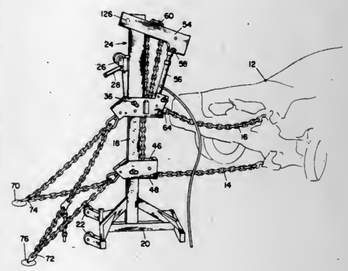
coplanar legs facing outwardly from the slot formed by said parallel legs;
inserting spacer means between said parallel legs; and
affixing the parallel legs of said plates together, with said spacer therebetween.

4,574,612
STROKE ADJUSTING MECHANISM OF BLIND NUT SETTING TOOL
Osamu Tanikawa, Toyohashi, Japan, assignor to USM Corporation, Farmington, Conn.
Filed May 21, 1984, Ser. No. 612,398
Claims priority, application Japan, May 27, 1983, 58-80002[U]
Int. Cl.⁴ B21J *15/36*
U.S. Cl. 72—391 **3 Claims**



1. A blind nut setting tool having a body, and comprising a mandrel having an externally threaded front end, a pulling rod connected to the rear end of said mandrel, said pulling rod having an externally threaded rear portion, a nut member threaded to said pulling rod rear portion, means to rotate said nut member, a cylindrical mast housing extending from the tool body and extending forwardly to enclose said nut member and said pulling rod, a cylindrical nose housing rotatably connected to said mast housing and enclosing said mandrel, a nose portion slidably disposed in said nose housing and rotatably supporting said mandrel, said mandrel being rotated by said nut member so that said mandrel is threaded into the blind nut until said nose portion contacts the blind nut, whereby rotation of said pulling rod and said mandrel ceases; additional rotation of said nut member causing said pulling rod and said mandrel to retract into said nose portion and said mast housing to set the blind nut, said rotatable connection of said nose housing to said mast housing being selectively adjustable to vary the depth of retraction of said pulling rod and said mandrel into said nose portion and said mast housing, said mast housing having indicia indicating the adjustment position of said nose housing to indicate the depth of retraction of said pulling rod and said mandrel, and means to lock said nose housing to said mast housing in various positions of adjustment.

4,574,613
VERSATILE LIGHTWEIGHT POWER POST
Michael E. Doughty, 4222 St. Clair Ave., Studio City, Calif. 91604
Filed May 4, 1984, Ser. No. 607,203
Int. Cl.⁴ B21D *1/12*
U.S. Cl. 72—447 **16 Claims**

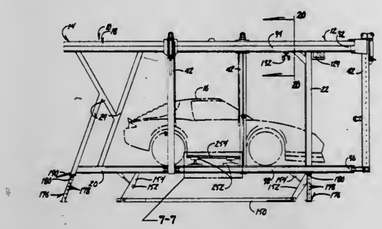


1. A versatile lightweight power post system for automobile repair comprising:
a hollow tubular main support post;
base means for holding said post erect;
an elongated power assembly of hollow construction movably mounted on said support post, said power assembly including a main pulley mounted toward the lower end thereof, a pulling arm pivotally mounted near the upper end thereof, hydraulic ram means coupled from the lower end of said power assembly outwardly from said post to a point on said pulling arm spaced well away from said post, and upper pulley means secured to said pulling arm for applying power to a chain extending over said main pulley;
a lower pulley slider assembly mounted on said post below said power assembly, and including a lower pulley;
first and second chain coupling means secured respectively to the lower end of said power assembly and to said lower pulley assembly, respectively, on the opposite side of said post from said pulleys; and
back chain means including a continuous chain for extending through said first and second chain coupling means and through couplings associated with each of a pair of floor anchor points, said continuous chain being free to shift position at three of said couplings, to provide equalized support to said post at both of the elevations along said post where said main pulley and said lower pulley are located.

4,574,614
APPARATUS FOR REPAIRING AND STRAIGHTENING VEHICLES
Carl R. Field, Des Moines, Iowa, assignor to Duz-Mor, Inc., Des Moines, Iowa
Filed Dec. 27, 1983, Ser. No. 565,979
Int. Cl.⁴ B21D *1/12*
U.S. Cl. 72—447 **19 Claims**

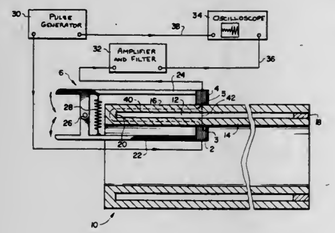
1. An apparatus for repairing and straightening vehicles, comprising:
a cage structure having forward and rearward ends and spaced apart opposite sides and including a vehicle support surface

arranged for supporting a vehicle at a position between said opposite sides of said cage structure, a plurality of towers carried by said support surface and movable about said support surface, and means on said towers for applying straightening forces to said vehicle; and
lifting means supported directly by a floor for level uniform raising and lowering of the entire cage structure, said lifting



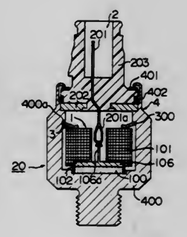
means including parallelogram linkage having a floor-engaging base member having forward and rearward ends and opposite sides, a plurality of arms each of which are pivotally connected at opposite ends to said support surface and to said base member adjacent one of the corners thereof, and a hydraulic cylinder connected to said linkage, said cylinder being extended to raise said structure and retracted to lower said structure.

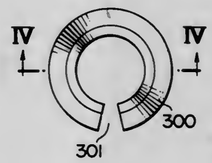
4,574,615
SONIC APPARATUS AND METHOD FOR DETECTING THE PRESENCE OF A GASEOUS SUBSTANCE IN A CLOSED SPACE
John R. Bower, Lynchburg, Va., and Charles W. Hammond, Lancaster, Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.
Filed Dec. 19, 1983, Ser. No. 562,558
Int. Cl.⁴ G01N *31/00*
U.S. Cl. 73—24 **19 Claims**



1. A method of detecting the presence of a gaseous substance within the space bounded by an enclosure comprising:
providing a sonic wave at a first point on the inner wall of said enclosure whereby at least a first portion of said sonic wave travels in the material of the enclosure and a second portion of said sonic wave may travel through a gaseous substance in the space;
selecting a second point on the outer wall of said enclosure which second point is separated from said first point by the space;
determining whether a second portion of said sonic wave traveling through a gaseous substance in the space arrives at said second point;
determining the length of time it takes for a sonic wave to travel through a gaseous substance in the space from said first point to said second point;
providing a path length for travel of said first portion of said sonic wave through the material such that the first portion will arrive at said second point at a later time than the time in which a second portion of said sonic wave which may travel through a gaseous substance in the space will arrive at said second point; and
determining whether a portion of said sonic wave arrives at said second point at said time in which a second portion of said sonic wave which may travel through a gaseous substance in the space is calculated to arrive at said second point.

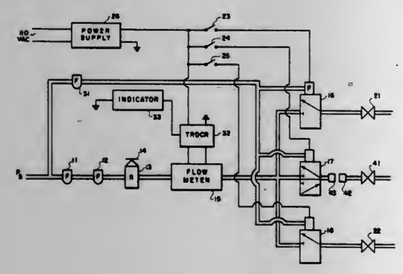
4,574,616
VIBRATION DETECTING APPARATUS
Kazuhiko Miura, Aichi; Takashi Hattori, Okazaki; Tadashi Ozaki, Gamagori, and Hiroaki Yamaguchi, Anjo, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan
Filed Mar. 30, 1984, Ser. No. 595,357
Claims priority, application Japan, Apr. 1, 1983, 58-58279
Int. Cl.⁴ G01L *23/22*
U.S. Cl. 73—35 **5 Claims**





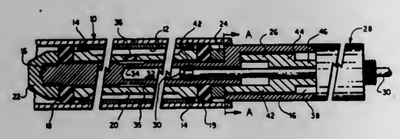
1. An apparatus of non-resonance type for detecting a vibration generated on an engine block of an internal combustion engine to which said detecting apparatus is mounted, said detecting apparatus comprising:
a housing having at one end thereof an opening;
detecting means including a piezoelectric element abutted to a wall portion at the other end of said housing;
a connector mounted to said opening of said housing to cover it, a signal from said piezoelectric element delivered out through an output pin provided in said connector; and
means for electrically connecting said detecting means with said output pin so as to transmit said signal from said piezoelectric element to said output pin,
wherein said detecting apparatus further comprises an initially conical annular spring disposed within said housing so as to bias said piezoelectric element, said spring has a circumferential discontinuous portion therein, and said spring engages at a peripheral edge portion thereof with engaging means provided on an inner peripheral wall of said housing.

4,574,617
FLOATING RESTRICTION STANDARDS SYSTEM
Frank W. Hetznecker, Buffalo Grove, and Frank P. Serritella, Wauconda, both of Ill., assignors to Honeywell Inc., Minneapolis, Minn.
Filed Aug. 21, 1980, Ser. No. 179,573
Int. Cl.[4] G01B *13/10*
U.S. Cl. 73—37.9 **20 Claims**



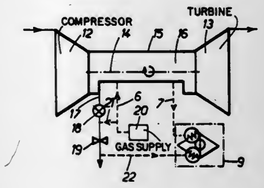
1. A pneumatic gaging system for determining the relative size of restrictions comprising:
sensing means for receiving pressure from a source of pneumatic pressure and for sensing flow rates;
maximum restriction standard means for establishing a maximum flow rate through said sensing means;
minimum restriction standard means for establishing a minimum flow rate through said sensing means;
test restriction terminal means for receiving a restriction under test so that a test flow rate can be established through said sensing means; and,
valving means for alternately connecting said maximum restriction standard means, said minimum restriction standard means and said test restriction terminal means to said sensing means, whereby said sensing means senses said maximum flow rate, said minimum flow rate and said test flow rate so that it can be determined if said test flow rate falls between said maximum and minimum flow rates.

4,574,618
LEAK DETECTION METHOD AND APPARATUS
Andrew J. Anthony, Tariffville, and Richard H. Young, Canton, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.
Filed May 21, 1984, Ser. No. 612,333
Int. Cl.[4] G01M *3/28*
U.S. Cl. 73—40.5 R **17 Claims**



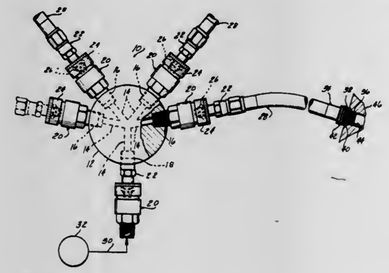
1. Apparatus for the non-destructive testing of the integrity of a tubular member without modification of such member comprising:
fluidic actuator means, said actuator means including a housing and having a reciprocal output member;
elongated push rod means operated by said actuator means output member;
means defining an extension of said actuator means housing, said extension defining means being coaxial with said push rod means, said extension defining means being of greater length than said push rod means and including:
a first generally tubular portion affixed at a first end thereof to said actuator means housing;
a second portion coaxial with said first portion, said second portion having a smaller diameter than said first portion; and
a third portion intermediate said first and second portions, said third portion interconnecting said first and second portions, said third portion being provided with at least a first aperture which extends between the interior of said first portion and the exterior of said second portion, said push rod means extending through said aperture;
stop means mounted on said extension defining means second portion at a position which is disposed away from said actuator means by a distance greater than the length of said push rod means;
first resilient seal means mounted on said extension defining means second portion in abutting relationship to said stop means, said first seal means expanding radially in response to a compressive force, said first seal means having a relaxed diameter which is less than the inner diameter of a tubular member to be tested, said first seal means being engaged by said push rod means to selectively cause compression thereof between said push rod means and said stop means; and
means for supplying a pressurized gas to the region of the tubular member to be tested, the test region being isolated from the remainer of the tubular member by compression of said first seal means.

4,574,619
METHOD FOR DETERMINING THE FLOW RATE OF AIR THROUGH A TURBINE-ENGINE LABYRINTH SEAL
Jean-Pierre J. E. Castellant, Chartrettes; Alain G. J. Habrard, Macherin, and Jacques E. Pidebois, Saint-Pierre Les Nemours, all of France, assignors to Societe Nationale d'Etude et de Construction de Meteurs d'Aviation, Paris, France
Filed Sep. 27, 1984, Ser. No. 655,061
Claims priority, application France, Oct. 5, 1983, 83 15844
Int. Cl.[4] G01M *3/28*
U.S. Cl. 73—40.7 **14 Claims**



1. A method of determining the air flow through a labyrinth seal in a turbine engine comprising the steps of:
(a) injecting an inert gas into the air flow at a plurality of locations downstream of the labyrinth seal;
(b) allowing the inert gas and air to form a homogeneous mixture;
(c) withdrawing a sample portion of the homogeneous mixture at a location downstream of the injection of the inert gas;
(d) analyzing the sample portion to determine the concentration of the inert gas; and,
(e) calculating the air flow through the labyrinth seal based upon the concentration of the inert gas in the sample.

4,574,620
FIXTURING AND PROCESS FOR PRESSURIZING ENGINE CYLINDERS
Arnold Cohl, 28770 Brooks La., Southfield, Mich. 48034
Filed Oct. 1, 1984, Ser. No. 656,589
Int. Cl.[4] G01M *3/26*
U.S. Cl. 73—47 **12 Claims**



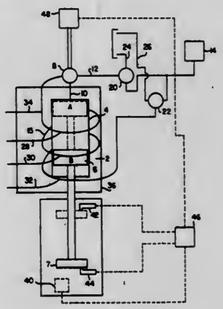
1. Fixturing for servicing internal combustion engines of the type having a plurality of engine cylinders, each provided with a threaded spark plug opening, said fixturing enabling simultaneous pressurizing of a plurality of engine cylinders for performing servicing of said engine, comprising:
a manifold body formed with a series of outlet ports and an inlet port, and also formed with a series of internal passages in communication with each of said inlet and outlet ports and with each other;
a series of quick disconnect pressure coupling-check valve assemblies received within each of said outlet ports, each assembly enabling connection of pressure hoses to a respective outlet port to establish fluid communication therewith, while closing off fluid communication of the associated outlet port with said internal passages upon removal of said pressure hose;
a corresponding series of pressure hoses each having a coupling fitting at one end matable with said quick connect pressure coupling-check valve assemblies, and each having a threaded fitting at the other end threadably engageable with an engine spark plug opening;
an inlet fitting installed in said inlet port enabling connection to a quick connect coupling for pressurizing said internal passages, whereby any number of said pressure hoses may be installed in respective spark plug openings to enable simultaneous pressurization of any number of engine cylinders, up to the total number of outlet ports.

4,574,621
COMBINATION VISCOSITY MEASURING DEVICE AND STIRRER
Viktor J. Jegers, Bloomington, Minn., assignor to Wagner Spray Tech Corporation, Minneapolis, Minn.
Filed Jun. 25, 1984, Ser. No. 623,968
Int. Cl.[4] G01N *11/00*
U.S. Cl. 73—54 **10 Claims**

1. A combination viscosity measuring device and stirrer for measuring the viscosity of and stirring a fluid comprising:
a handle portion adapted for gripping;
an elongated shank portion connected to said handle portion; and
a rigid flat stirring and measuring surface disposed within said shank portion having a tapered slot with a plurality of open span gradations therein of different span sizes at selected intervals along said slot, said surface being stiffened and having a width substantially less than its length for stirring said fluid as said shank portion is moved therethrough by said handle,
whereby said shank portion is moved through a fluid by a user gripping said handle portion for stirring said fluid and is subsequently removed from said fluid for permitting a web of said fluid to form across a number of said span gradations, a largest of said span gradations spanned by said fluid indicating the viscosity of said fluid.



4,574,622
VISCOMETER
James C. Hatfield, St. Albans, W. Va., assignor to Union Carbide Corporation, Danbury, Conn.
Filed Mar. 27, 1984, Ser. No. 593,962
Int. Cl.[4] G01N *11/04*
U.S. Cl. 73—55 **18 Claims**



1. An apparatus for measuring the viscosity of a sample liquid comprising a pump composed of a chamber with a piston disposed therein and being adapted to reciprocate within said chamber between an upper position and a lower position, means for reciprocating said piston between said upper position and said lower position, a three-way valve, a first conduit joined at opposite ends between said valve and said chamber, a second conduit with one end joined to said valve and with another end joinable to a reservoir, and a third conduit joined at opposite ends to said valve and said second conduit intermediate the ends thereof, said third conduit having at least one nonvertically disposed portion and at least two spaced pressure taps joined to said nonvertically disposed portion of said third conduit for connection with differential pressure detection means, said three-way valve being arranged to sequentially connect said first conduit and said second conduit when said piston is moving from said upper position to said lower position to feed said sample liquid from said reservoir into said chamber, then to connect said first conduit and said third conduit when said piston is moving from said lower position to said upper position to flow said liquid sample from said chamber into said third conduit; characterized in that said pressure

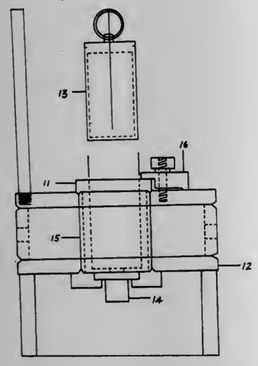
taps are located on the lower side of said nonvertically disposed portion of said third conduit, and that the piston reciprocating means further comprises means for delaying reciprocation until said three-way valve has repositioned so as to connect said first conduit with either said second or third conduit.

4,574,623

PROCESS AND APPARATUS FOR MEASURING THE FLOW CHARACTERISTICS OF A FLUSHED PIGMENT

John A. Neumann, Winamac, Ind., assignor to Sun Chemical Corporation, New York, N.Y.

Filed Sep. 28, 1984, Ser. No. 655,415
Int. Cl.[4] G01N *11/04*
U.S. Cl. 73—56 **14 Claims**



1. A process for measuring the flow properties of a non-powdered material and correlating them with actual production practice which comprises the steps of
(1) loading the material to be tested into a cylinder, the cylinder having an orifice in its base and a cut-off plate which stops the flow of the material through the orifice;
(2) placing a piston on top of the material in the cylinder, the piston weighing a known amount;
(3) pressing an indicator down onto the piston;
(4) pulling out the cut-off plate to permit the material to exit the cylinder and, at the same time,
(5) starting a timer;
(6) measuring the distance traversed by the piston in a given time; and
(7) comparing the distance with the distance traversed by a known standard material.

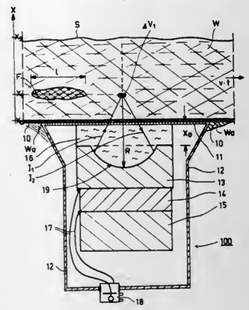
4,574,624

ULTRASONIC ECHO SOUNDING DEVICE FOR OBSERVING WEB FORMATION AND PULP SUSPENSION FLOW IN A PAPER MACHINE

Antti Lehtinen, Jyväskylä, and Seppo Lepistö, Palokka, both of Finland, assignors to Valmet Oy, Finland

Filed Jun. 22, 1984, Ser. No. 623,363
Claims priority, application Finland, Jul. 6, 1983, 832483
Int. Cl.[4] G01N *11/00, 29/02*
U.S. Cl. 73—63 **22 Claims**

1. A device for ultrasonic echo sounding for observation of the web formation, the pulp suspension flow on the wire part, and the head box of a paper machine, said device comprising a series of ultrasonic transceivers connected to the wall of the flow channel in the head box or to the forming wire or wires, said transceivers directing an ultrasonic field at the pulp suspension layer and detecting echo signals received from said pulp suspension layer, said transceivers operating as shaped acoustic transceivers, each having a focal point extending in the transverse direction of said pulp suspension flow and in the direction of thickness of said pulp suspension layer in a manner whereby information is provided concerning fibre bundles, air bubbles, variations in consistency, and concerning parameters



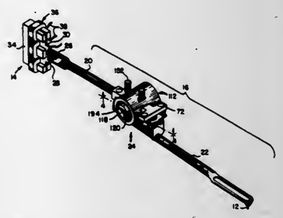
of said fibre bundles, air bubbles and variations in consistency and their variations in the substantially transverse direction of said pulp suspension flow and in the direction of thickness of said pulp suspension layer.

4,574,625

SURFACE FINISH, DISPLACEMENT AND CONTOUR SCANNER

Joseph S. Olasz, North Kingston, and William C. MacIndoe, West Warwick, both of R.I., assignors to Federal Products Corporation, Providence, R.I.

Filed Apr. 12, 1983, Ser. No. 484,183
Int. Cl.[4] G01B *5/28*
U.S. Cl. 73—105 **20 Claims**



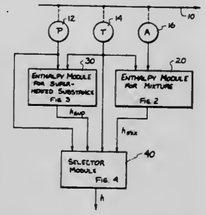
1. A surface finish, displacement and contour scanner comprising:
(a) a stylus;
(b) means for measuring the displacement of said stylus from a first position;
(c) means for supporting said stylus within said measuring means; and
(d) a magnetic attach-release mechanism incorporated in said supporting means and designed to allow for the separation of said stylus from said supporting means whenever said stylus meets a force which exceeds a predetermined value.

4,574,626

ENTHALPY MEASUREMENT FOR TWO PHASE SUBSTANCE

Azmi Kaya, Akron, and Marion A. Keyes, IV, Chagrin Falls, both of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Mar. 23, 1984, Ser. No. 592,499
Int. Cl.[4] G01K *17/00*; G01N *7/00, 9/00*
U.S. Cl. 73—112 **5 Claims**



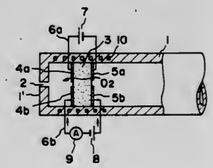
1. An enthalpy measuring arrangement for measuring the enthalpy of a substance which can be in a two-phase condition, comprising:
temperature measuring means for measuring the temperature of the substance, and establishing a signal indicative thereof;
temperature transmitting means for transmitting the signal corresponding to the measured temperature of the substance;
density measuring means for measuring the density of the substance, and establishing a signal indicative thereof;
density transmitting means for transmitting the signal corresponding to the measured density of the substance;
means for providing said substance to said temperature measuring means and said density measuring means, such that temperature and density can be measured;
a first enthalpy calculating module connected to said temperature transmitting means and to said density transmitting means for calculating the enthalpy of the substance in a two-phase condition as a function of the measured temperature, the measured density and table values for specific volume of the vapor portion of the substance, specific volume for the liquid portion of the substance, enthalpy of the vapor portion of the substance and enthalpy for the liquid portion of the substance, under known conditions.

4,574,627

AIR-FUEL RATIO DETECTOR AND METHOD OF MEASURING AIR-FUEL RATIO

Shigenori Sakurai; Takashi Kamo, and Tadayoshi Ikai, all of Aichi, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Feb. 3, 1984, Ser. No. 576,957
Claims priority, application Japan, Jul. 20, 1983, 58-132476
Int. Cl.[4] G01M *15/00*
U.S. Cl. 73—116 **8 Claims**



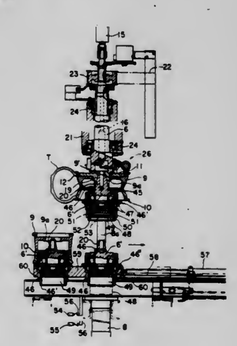
1. An air-fuel ratio detector for detecting oxygen density in exhaust gas emitted from an engine, comprising:
a DC constant-current supply and constant voltage supply;
a tubular body;
first and second partition members hermetically contacting an inner peripheral surface of said tubular body transversely of an axis of said tubular body, wherein at least said first partition member further comprises a solid electrolyte permeable to oxygen ions;
gas dispersion means communicating a space between said partition members with said exhaust gases for introducing gas to be detected and dispersing said gas into a space defined between said first and second partition members;
a first pair of electrodes separately mounted on opposite sides of said first partition member and connected to said DC constant-current supply for introducing oxygen ions by permeating into said space through said solid electrolyte;
a second pair of electrodes separately mounted on opposite sides of one of said first and second partition members and connected to said DC constant-voltage supply, and
means for measuring an air-fuel ratio in said gas based on a current generated between said second pair of electrodes.

4,574,628

AUTOMATIC RIM REPLACING MECHANISM FOR TIRE UNIFORMITY INSPECTING MACHINES

Yoshimata Maikuma, Kobe; Yasushi Nojiri, Fukushima, and Ryoichi Oda, Himeji, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho and Sumitomo Rubber Industries, Ltd., both of Kobe, Japan

Filed Aug. 30, 1984, Ser. No. 645,683
Claims priority, application Japan, Aug. 30, 1983, 58-159887; Oct. 1, 1983, 58-185619
Int. Cl.[4] G01M *17/02*
U.S. Cl. 73—146 **6 Claims**



1. An automatic rim replacing mechanism for tire uniformity inspecting machine, said rim replacing mechanism comprising:
an upper spindle provided with rotating means for rotation about an axis concentric with the axis of a tire to be inspected;
an upper rim releasably fixed to said upper spindle by a lock means;
a lower spindle detachably connectible to a lift member of a rim lifter movable up and down in the axial direction of said tire;
a lower rim assembled with and retained on said lower spindle;
coupling means fittingly engageable in concentric relation with the axis of said tire for releasably coupling said upper and lower spindles; and
rim retaining means provided on said lower rim for holding said upper rim thereon when released from said upper spindle.
3. An automatic rim replacing mechanism as set forth in

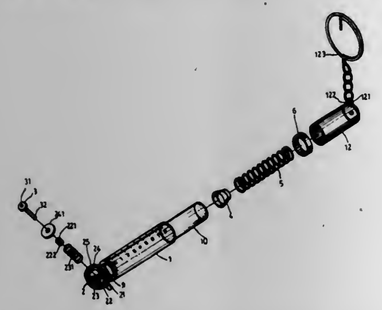
claim 1, wherein said lock means for said upper rim comprises: a rod movable up and down in an axial center bore of said upper spindle, and a collet chuck provided at the lower end of said rod for releasably holding a lock member provided on the part of said upper rim.

4,574,629

TIRE PRESSURE GAUGE HAVING ON-OFF MEANS AND BEING ASSEMBLED FROM THE TAIL END THEREOF

Hsi-Kuang Weng, No. 30, Lane Tsao Chung, Tsao Chung Li, Lu Kang Chen, Chang Hua Shien, Taiwan

Filed May 24, 1984, Ser. No. 613,895
Int. Cl.⁴ B60C *23/02*; G01L *7/16*
U.S. Cl. 73—146.8 **7 Claims**



1. A tire pressure gauge adapted to be assembled from its tail end, comprising a housing head to be pressed against a tire valve, air valve means slidably positioned within said housing head, pressure measuring means secured to said housing head, said pressure measuring means including a housing terminating in an inner cylinder, a coupling housing intimately engaging said inner cylinder and completing a pressure chamber with said housing, a scale associated with said housing, and a pressure member cooperatively engaged with said scale to provide an air pressure reading, and an on-off means for controlling air movement into and out of said pressure chamber.

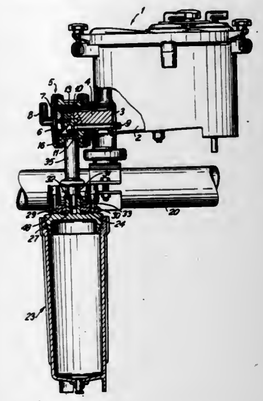
4,574,630

SAMPLER FOR A MILKING-SYSTEM VOLUMETER

Friedrich Icking, Oelde, and Friedrich Stolte, Halle, both of Fed. Rep. of Germany, assignors to Westfalia Separator AG, Oelde, Fed. Rep. of Germany

Filed Feb. 8, 1984, Ser. No. 578,249
Claims priority, application Fed. Rep. of Germany, Mar. 4, 1983, 3307665
Int. Cl.⁴ G01N *1/10*
U.S. Cl. 73—202 **10 Claims**

1. A sampler for use with a milking-system volumeter having a partial-vacuumized separation chamber with an outlet closed off by a valve piston and a measuring chamber, the sampler comprising means forming a nozzle bore in the valve piston that opens into the separation chamber and a nozzle channel following the nozzle bore and having a runoff opening at the end facing away from the nozzle bore, means for closing the runoff opening when the valve piston is closed and for opening the runoff opening when the valve piston is opened, a milk-collecting space, a line leading from the runoff opening to the milk-collecting space to deliver milk thereto when the valve piston is open, means slidably mounting the valve piston comprising a bushing having slot at the end facing away from the separation chamber in the vicinity of the runoff opening in the nozzle channel when the valve piston is open, a valve housing having a terminal cap blocking off an opening in one face of the nozzle channel and fastened at one side of the valve piston that faces away from the nozzle bore, a diaphragm tensioned inside the valve housing and attached to the cap, and a vessel enclosing the milk-collecting space and having a lid including



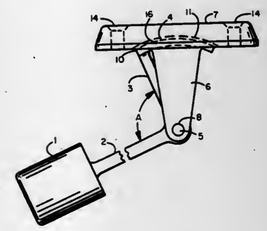
a stationary top on which a bottom is rotatably mounted, wherein the top has two connections and at least one control bore and the bottom at least two channels alignable into a milking position with the two connections.

4,574,631

LIQUID LEVEL MOLDED INDICATING GAGE PORTIONS

Stanley A. Johnson, Jr., 2575 Maple Hill Dr., Brookfield, Wis. 53005

Filed Aug. 12, 1985, Ser. No. 764,776
Int. Cl.⁴ G01F *23/32*; G01D *11/26*
U.S. Cl. 73—317 **11 Claims**



1. A liquid level indicating gage wherein the improvement comprises:
(a) two fixed arms consisting of
(1) upper arm section
(2) float arm section, consisting of an arm section and a float section extending therefrom, said float extending from the end of said float arm section
(b) said upper arm section having an indicating segment extending therefrom
(c) said arms mounted at an angle of 90° from each other
(d) a sight window having an arc therein
(e) leg mounts integrally molded to said sight window
(f) said indicating segment being an arc segment, said arc segment
(g) concentric to arc of said sight window and
(h) clearance between said concentric arcs

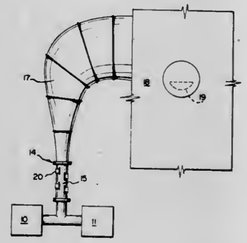
(i) and said two fixed arms having a pivot pin axle mounted in
(j) bearing holes of each of said leg mounts.

4,574,632

METHOD FOR GENERATING HIGH FREQUENCY HIGH LEVEL NOISE FIELDS USING LOW FREQUENCY EXCITATION OF AEROACOUSTIC NOISE

John H. Woolley, Ottawa; Robert Westley, Kanata, and Carl P. Swail, Ottawa, all of Canada, assignors to Canadian Patents and Development Limited-Societe Canadienne des Brevets et d'Exploitation Limitee, Ontario, Canada

Filed Oct. 10, 1984, Ser. No. 660,425
Claims priority, application Canada, Oct. 28, 1983, 439980
Int. Cl.⁴ G01N *29/00*
U.S. Cl. 73—571 **23 Claims**



1. A system for producing noise in a chamber comprising a tube means adapted for communicating with the inside of a chamber; at least one aeroacoustic high frequency high-level noise generator adapted for communication with said tube means; a low frequency high-level noise source operatively connected to said tube means and for interaction with said generator whereby, in operation, said at least one generator is excited by the generated low frequency noise to provide an output of non-linearly modulated noise.

16. A Hartmann-type noise generator comprising a tube; a slot cut out of said tube wall to provide an air gap between a nozzle section of the tube at one side of said gap and a reverberation cup formed in the tube on the other; said nozzle section and said cup being united by an uncut portion of the tube wall spanning said slot; and an adjustable tuning plug in said cup.

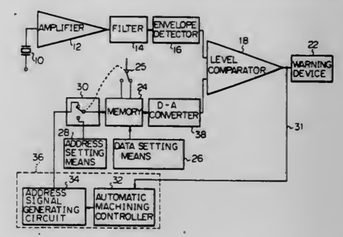
4,574,633

APPARATUS FOR DETECTING TOOL DAMAGE IN AUTOMATICALLY CONTROLLED MACHINE TOOL

Yasuhide Ohnuki, and Minoru Uchibori, both of Tokorozawa, Japan, assignors to Citizen Watch Company Limited, Tokyo, Japan

Filed Feb. 2, 1984, Ser. No. 576,235
Claims priority, application Japan, Feb. 4, 1983, 58-016233; Feb. 24, 1983, 58-028523
Int. Cl.⁴ G01H *1/00*; G01N *29/00*; G06F *15/46*
U.S. Cl. 73—587 **5 Claims**

1. An apparatus for generating warning indications of damage to a cutting tool fitted in a machine tool controlled by automatic machining control circuit means, comprising:
sensing means coupled to said machine tool for sensing acoustic emission generated by a machining operation thereof, to thereby produce an operation monitor signal whose amplitude is indicative of a level of said acoustic emission;
memory circuit means, and selector circuit means operable for setting said memory circuit means in a read operating mode and a write operating mode;
data setting means operable while said memory circuit means are functioning in said write operating mode for setting a plurality of discriminations data values into said memory circuit means, respectively corresponding to predetermined machining acoustic emission levels for each of a plurality of different machining conditions of said machine tool, and address setting means operable in said memory write mode for designating the addresses of memory locations in said memory circuit means into which said discrimination data values are respectively set by said data setting means;
address signal generating circuit means controlled by said automatic machining control circuit means for producing address signals corresponding to the address in said memory circuit means of a discrimination data value for a current machining condition of said machine tool, said address signals being input to said memory circuit means while said memory circuit means are functioning in said



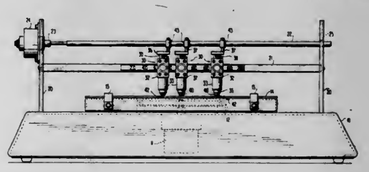
read operating mode, to designate output of a corresponding discrimination data value therefrom;
signal conversion means for converting said discrimination data value output from said memory circuit means into a discrimination signal;
comparator means for comparing the amplitudes of said operation monitor signal and said discrimination signal and for generating a damage indication signal when a predetermined amount of difference therebetween is attained, indicative of a condition of damage to said cutting tool, said damage indication signal being input to said automatic machining control circuit means, and said automatic machining control circuit means being responsive thereto for halting operation of said machine tool; and
warning signal generating circuit means responsive to said damage indication signal from said comparator means for generating a tool damage warning signal.

4,574,634

AUTOMATIC PAPER TESTING APPARATUS

Dominic A. Pappano, Cambridge, Mass., assignor to Westvaco Corporation, New York, N.Y.

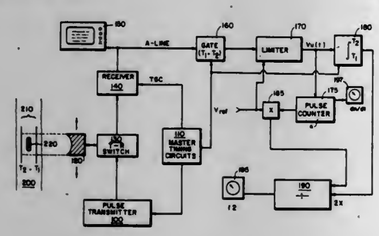
Filed Aug. 9, 1984, Ser. No. 639,085
Int. Cl.⁴ G01N *29/00*
U.S. Cl. 73—597 **5 Claims**



1. An apparatus for sonically determining the strength moduli of a sheet of paper comprising:
(a) a planar surface turntable for mounting a subject paper sample thereon, said turntable being rotatable about a central axis perpendicular to said planar surface and hav-

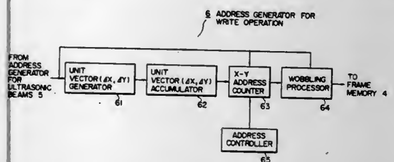
ing rotational stop positions at a point of angular origin, a point of rotation 45° away from said origin position and a rotational point 90° away from said origin position;
(b) a supporting base for said turntable;
(c) a pair of bracket arms projecting from said base on substantially opposite sides of said turntable;
(d) a slide beam secured between the distal ends of said brackets above said turntable;
(e) at least three sonic transducer units secured to said slide beam in parallel alignment therewith by suspension means, each of said transducer units having a directionally oriented sonic wave simulation stylus disposed thereon for selective engagement with the surface of a paper sample on said turntable, said suspension means comprising means to simultaneously disengage the styli of said transducers from said paper sample surface and to rotate said styli for angular displacement of said orientation direction.

4,574,635
MONITORING OF FREQUENCY SHIFT OF ULTRASOUND PULSES IN TISSUE
Pieter J. 't Hoen, Mission Viejo, Calif., assignor to North American Philips Corporation, New York, N.Y.
Filed Nov. 2, 1984, Ser. No. 667,925
Int. Cl.⁴ G01N *29/00*
U.S. Cl. 73—599 **3 Claims**



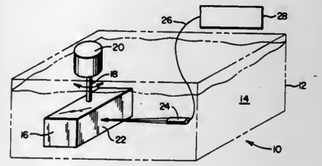
1. Apparatus for calculating the apparent frequency of ultrasound pulses-echoes in tissue in a region-of-interest in a body comprising:
means for directing pulses of ultrasound energy into the body and for detecting echoes from the region-of-interest of the energy in the form of an A-line signal;
means which gate the A-line signal and pass only portions of the A-line signal which represent echoes which originate in the region-of-interest;
limiter circuit means for converting the output of the means which gate the A-line signal into a train of pulses which have a value V_{ref} whenever the A-line signal has a value above zero and which have a zero value whenever the value of the A-line signal is at or below zero;
integrator means which integrate the train of pulses;
means which count the number of pulses in the train of pulses;
means which multiply the value V_{ref} by the output of the means which count the pulses; and
means for dividing the output of the means which multiply by the output of the integrator means and for displaying the resultant quotient as the value of the apparent center frequency of the echoes.

4,574,636
APPARATUS FOR EXAMINING AN OBJECT BY USING ULTRASONIC BEAMS
Nozomi Satake, Ootawara, Japan, assignor to Kabushiki Kaisha Toshiba, Japan
Filed May 24, 1984, Ser. No. 613,828
Claims priority, application Japan, May 26, 1983, 58-92676
Int. Cl.⁴ G01N *29/00*
U.S. Cl. 73—607 **5 Claims**



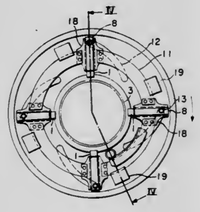
1. An apparatus for examining an object ultrasonically comprising:
(a) ultrasonic transducer means for directing ultrasonic beams in a sector toward said object and for receiving echoes of said ultrasonic beams reflected from said object to produce electronic echo signals;
(b) analog-to-digital converting means, coupled to said ultrasonic transducer means, for converting said echo signals into digital data at a sampling rate;
(c) memory means, coupled to said analog-to-digital converting means and, for temporarily storing each of said digital data into corresponding ones of a plurality of pixels, said plurality of pixels being arranged in a matrix of lines and columns corresponding to coordinates of said ultrasonic beams in said sector, and said pixels being uniquely identified by a line address and a column address;
(d) writing means, coupled to said memory means, for dithering said column addresses for said echo signals and for writing said digital data into said pixels of said memory means using said dithered addresses, wherein said address dithering includes changing said column addresses by a preset amount; and
(e) means, coupled to said memory means, for reading said data from said memory means and for displaying said data.

4,574,637
METHOD FOR MEASURING SURFACE AND NEAR SURFACE PROPERTIES OF MATERIALS
Laszlo Adler, 2850 Canterbury La., Upper Arlington, Ohio 43221; Dale W. Fitting, P.O. Box 013, 1405 Ann, Ann Arbor, Mich. 48109, and Michel de Billy, 38 Avenue Emile Zola, Paris 75015, France
Filed Aug. 3, 1984, Ser. No. 637,400
Int. Cl.⁴ G01N *29/00*
U.S. Cl. 73—629 **10 Claims**



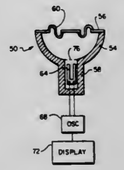
1. A method of measuring the properties of the surface layer of a specimen having said surface layer and a subsurface layer, said surface layer having at least one physical property the value of which differs from the same physical property of said subsurface layer, which method comprises:
a. disposing an ultrasonic transducer at a point spaced from said specimen;
b. causing said transducer to generate a pulse of ultrasound which impinges upon said surface layer of said specimen;
c. detecting, by means of said transducer, the backscattered pulse produced by said impingement of said pulse upon said surface layer;
d. repeating the steps (b) and (c) after varying the angle of incidence of the pulse of ultrasound, and detecting the local maximum of intensity of said backscattered pulse which occurs when said angle of incidence is approximately equal to the Rayleigh angle of said surface layer; and
e. measuring said angle of incidence at said local maximum of intensity.

4,574,638
DEVICE FOR DETECTING END-SHAPE OF STEEL TUBE
Yoshihiro Omae, and Tsugio Sekii, both of Kobe, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 14, 1983, Ser. No. 551,059
Claims priority, application Japan, Nov. 30, 1982, 57-211616
Int. Cl.⁴ G01M *29/00*
U.S. Cl. 73—637 **4 Claims**



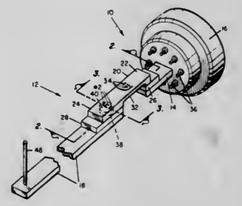
1. A device for detecting an end-shape of a steel tube, comprising:
a machine frame through which said steel tube is advanced;
a rotary cylinder journaled to said machine frame and which includes a flange having a slant groove formed therein;
bearing means interconnecting said machine frame and said rotary cylinder;
means operatively associated with said rotary cylinder for rotating said rotary cylinder with respect to said machine frame;
a plurality of detectors mounted on said machine frame so as to surround said steel tube upon being advanced through siad machine frame; and
a detector position changing mechanism operatively associated with each of said detectors for moving said detectors inwardly and outwardly in a diametrical direction of said steel tube and which includes an annular body, support means mounted on said annular body for supporting each of said detectors and cooperating with said groove formed in said flange of said rotary cylinder, and means operatively associated with said annular body for rotating said annular body so as to cause selective movement of said detectors inward and outward, via said means for supporting each of said detectors, in said diametrical direction of said steel tube.

4,574,639
PRESSURE FORCE MEASUREMENT APPARATUS AND METHOD
Roger W. Ward, Salt Lake City, Utah, assignor to Quartztronics, Inc., Salt Lake City, Utah
Filed Jun. 21, 1983, Ser. No. 506,314
Int. Cl.⁴ G01L *9/00*; G01N *9/00*
U.S. Cl. 73—702 **19 Claims**



10. A gas density/pressure transducer comprising
a generally rigid hollow housing formed with first and second chambers which are in communication with one another, and an opening formed on one side of the housing to communicate with the first chamber, said second chamber being smaller in volume than said first chamber,
a diaphragm disposed over said opening to move into and out of the first chamber to vary the volume in the housing as the external pressure varies,
a gas contained in the housing,
a vibratory element mounted in the second chamber,
means for causing the element to resonate at a frequency f, said frequency varying with variation in the density of the gas in the housing and thus in pressure, and
means for determining the frequency f.

4,574,640
INTEGRATED DUAL-RANGE PRESSURE TRANSDUCER
Roger L. Krechmery, Riverside, Calif., assignor to Bourns Instruments, Inc., Riverside, Calif.
Filed Nov. 29, 1984, Ser. No. 676,037
Int. Cl.⁴ G01L *9/06*
U.S. Cl. 73—721 **28 Claims**



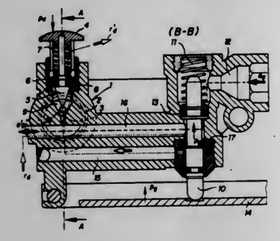
1. A pressure transducing device, comprising:
a beam element having a first region which is sensitive to stresses produced by flexing of the beam element and a second region which is relatively insensitive to such stresses;
a pressure-responsive diaphragm formed in said second region of said beam element;
first sensing means, disposed on said first region of said beam element, for sensing the stresses induced therein by the flexing of said beam element; and
second sensing means, disposed on said diaphragm, for sensing the stresses induced in said diaphragm in response to a pressure applied thereto.

4,574,641

APPARATUS FOR MEASURING FLUID PRESSURE

Guy Rosaz; Guy Maire, and Jean-Marie Badoz, all of Pontarlier, France, assignors to Schrader S.A., Pontarlier, France

Filed Jul. 1, 1983, Ser. No. 510,438
Claims priority, application France, Jul. 5, 1982, 82 11968
Int. Cl.[4] G01L *9/04*
U.S. Cl. 73—726 **30 Claims**



1. An apparatus for closing an electrical circuit in response to conditions in a fluid circuit wherein said apparatus comprises:

(a) an electrical circuit for actuating a sensor for measuring the pressure of said fluid in said fluid circuit when said electrical circuit is closed;

(b) means positioned in said fluid circuit for closing said electrical circuit when the pressure of said fluid in said circuit to be measured is at least as great as a predetermined threshold pressure and when the pressure of said fluid in said circuit is substantially stable; and

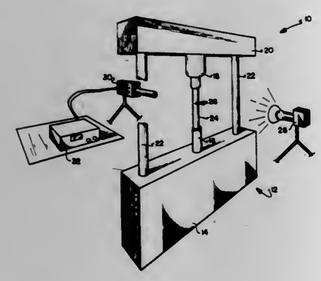
(c) means for lowering the pressure of said fluid in contact with said means in said fluid circuit below said predetermined threshold pressure when said fluid pressure in said fluid circuit is substantially unstable.

4,574,642

APPARATUS FOR AUTOMATED CRACK GROWTH RATE MEASUREMENT

Thomas S. Fleischman, North Canton, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Nov. 23, 1984, Ser. No. 674,437
Int. Cl.[4] G01N *21/88*
U.S. Cl. 73—799 **17 Claims**



1. Apparatus for monitoring the growth of a crack in a first edge of an elastic specimen, comprising:

first means for receiving and flexing the specimen;

second means in juxtaposition to said first means for optically viewing the specimen in an area including the crack and generating an output signal, said second means comprising a line scan camera and said output signal being a function of the contrast between light and dark in a scan line of said camera, said scan line extending beyond at least the first edge of the specimen; and

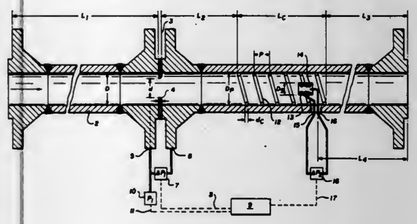
third means connected to said second means for collecting and storing data obtained from said output signal.

4,574,643

TWO PHASE FLOWMETER

Donald S. Scott, and Edward Rhodes, both of Waterloo, Canada, assignors to Alberta Oil Sands Technology and Research Authority, Edmonton, Canada

Filed Oct. 31, 1984, Ser. No. 666,805
Int. Cl.[4] G01F *1/74, 15/08*
U.S. Cl. 73—861.04 **8 Claims**



1. A flowmeter for measuring two different physical parameters of a gas and liquid mixture flow passing through a conduit, which measurements may be used to determine the individual gas and liquid flowrates, comprising:

means for causing a frictional or accelerational pressure change in the total flow and measuring such pressure change;

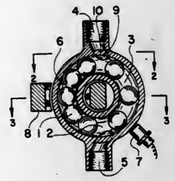
and means for separating the mixture into individual gas and liquid phase flows within the same conduit and measuring a pressure difference indicative of the velocity of the gas flow.

4,574,644

BALL BEARING FLOW METER AND PUMP

Hyok S. Lew, 7890 Oak St., Arvada, Colo. 80005, and Michael Stranahan, P.O. Box 15, Woody Creek, Colo. 81656

Filed Jun. 4, 1984, Ser. No. 617,375
Int. Cl.[4] G01F *3/00*; F04B *17/00, 19/00*
U.S. Cl. 73—861.05 **8 Claims**



1. A ball bearing pump-flow meter comprising in combination:

(a) a closed loop cavity having a circular cross section;

(b) a first port merging into said closed loop cavity;

(c) a second port merging into said closed loop cavity wherein said first and second ports merging into said closed loop cavity divides said closed loop cavity into a flow passage segment and a return-pass segment;

(d) a plurality of spherical balls having a diameter slightly smaller than the diameter of said circular cross section of said closed loop cavity, said plurality of spherical balls orbitably entrained in said closed loop cavity;

(e) a rotating magnetic field rotating about an axis substantially perpendicular to a plane including said closed loop cavity, wherein said rotating magnetic field produces a force on said plurality of spherical balls substantially tangential to said closed loop cavity in a direction from said first port to said second port in said flow passage segment of said closed loop cavity and in a direction from said second port to said first port in said return pass segment of said closed loop cavity, said force generating an orbiting movement of said plurality of spherical balls in a direction from said first port to said second port in said flow passage segment of said closed loop cavity and in a direction from said second port to said first port in said return-pass segment of said closed loop cavity;

(f) a stationary braking magnetic field included in said return-pass segment of said closed loop cavity adjacent to said second port, wherein said stationary braking magnetic field provides a force acting in a general direction from said first port to said second port in said return-pass segment of said closed loop cavity and provides a braking on said orbiting movement of said plurality of spherical balls moving from said second port to said first port in said return-pass segment of said closed loop cavity;

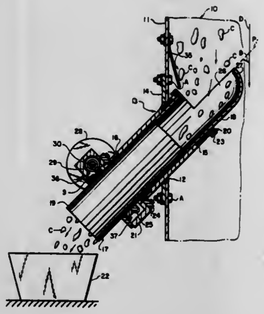
wherein said plurality of spherical balls under an acceleration in a vicinity of said first port draw the fluid from said first port into said flow passage segment of said closed loop cavity and said plurality of spherical balls under a deceleration in a vicinity of said second port force out the fluid from said flow passage segment of said closed loop cavity into said second port.

4,574,645

APPARATUS FOR SAMPLING PARTICULATE MATERIAL

James M. Allen, and Thomas B. Howard, both of Green Bay, Wis., assignors to James River-Norwalk, Inc., Norwalk, Conn.

Filed Aug. 9, 1984, Ser. No. 639,274
Int. Cl.[4] G01N *1/20*
U.S. Cl. 73—863.51 **7 Claims**



1. Apparatus for sampling irregularly shaped and sized particulate material as it moves in a flow path having a vertical component, comprising:

an open-ended tube extending at acute angularity with respect to the recited vertical component of the flow path of the material, one open end of the tube being in the path of flow at a level above the level of the other open end of the tube;

material-collecting means communicating with said other open end of said tube;

an extension on said one open end of the tube comprising a generally semi-cylindrical wall section coaxial with said tube and having a generally quarter-spherical section on its free end, said wall sections being cooperatively disposed to form a concave material-receiving probe surface to one side of said tube and a convex material-deflecting surface substantially coextensive with and facing oppositely from said probe surface; and

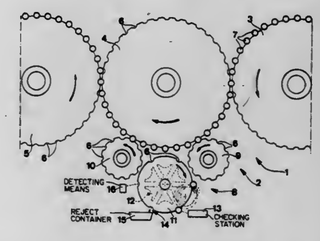
means for mounting said tube solely for rotation about its axis of curvature, selectively to position said extension to present said concave material-receiving probe surface upwardly for free passage of said material through said tube and delivery to said collecting means, or to position said extension to present said convex material deflecting surface upwardly thereby to deflect said material and prevent the recited delivery thereof.

4,574,646

METHOD FOR SAMPLING CIGARETTES ON A FILTER ASSEMBLY MACHINE

Riccardo Mattei, and Armando Neri, both of Bologna, Italy, assignors to G.D. Societá per Azioni, Bologna, Italy

Filed Aug. 17, 1984, Ser. No. 641,847
Claims priority, application Italy, Sep. 12, 1983, 3559 A/83
Int. Cl.[4] G01N *1/04*
U.S. Cl. 73—863.92 **6 Claims**



1. Method for sampling cigarettes (7) on a filter assembly machine (2), the said method being characterised by the fact that it comprises stages consisting in:

picking a first cigarette (7), by means of first conveying means (9), out of a cigarette carrying recess (6) at a first point on a line (1) feeding the cigarette (7) through the said machine (2);

feeding the said first cigarette (7), by means of the said first conveying means (9), to second conveying means (11 or 18) travelling in preset manner through at least one cigarette (7) checking station (13 or 22, 23);

withdrawing a further cigarette (7) for inspection off the said line (1) at the said first point; and

feeding the said first cigarette (7), by means of third conveying means (10), back on to the said conveyor line (1) at a second point on the line (1), downstream from the said first point in the travelling direction of the said line (1);

the said further withdrawal and the said feedback of the said first cigarette (7) being timed in relation to each other in such a manner that the recess (6) left empty on the said line (1) following the said further withdrawal occupies the said second point when the said first cigarette (7) is fed back on to the said line (1).

4,574,647

AIR CONVEYING MEANS FOR GAS ANALYSIS TEST TUBES

Werner Molt, Berlin, Fed. Rep. of Germany, assignor to Auergesellschaft GmbH, Berlin, Fed. Rep. of Germany

Filed Aug. 20, 1984, Ser. No. 642,234
Claims priority, application Fed. Rep. of Germany, Aug. 22, 1983, 3330578
Int. Cl.[4] G01N *1/14*
U.S. Cl. 73—864.34 **10 Claims**

1. An air conveyor for gas test tubes used in the detection of foreign gases or suspended matter in air comprising an instrument body having a channel and at one end a sealing element

for connecting the gas test tube to said conveyor and at said other end a suction element; a base plate to which said suction element is mounted and having an air outlet valve therethrough and in communication with said suction element; counter ring means mounted to and rotatable about said body,



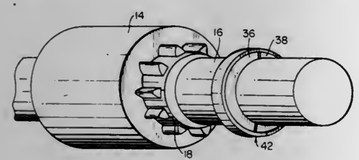
said ring means including a spring-loaded locking element; a control rod connected to said base plate and positioned for guided movement in said channel, said control rod being arrestable when said suction element is empty and releasable to initiate a suction stroke of said suction element by rotation of such counter ring.

4,574,648

PINION GEAR RETAINER ASSEMBLY FOR A STARTER MOTOR OF AN INTERNAL COMBUSTION ENGINE

Robert J. Debello, 304 Saddle River Rd., Saddle Brook, N.J. 07662

Filed Jan. 13, 1984, Ser. No. 570,705
Int. Cl.⁴ F02N *15/06*
U.S. Cl. 74—7 A **6 Claims**



1. In a starter motor for an internal combustion engine, the starter motor being of the type including a shaft having a distal end, a pinion gear slidably mounted on said shaft and a clutch assembly engageable with said pinion gear and slidably mounted on said shaft, said starter motor comprising:

a circumferential groove formed in said distal end of said shaft;

split ring means positioned in said groove for resisting an impact force from said pinion gear as the latter slides on said shaft, and including first and second part-annular ring means positioned in said groove to form a circular configuration having a combined angular extent of approxiately 360°; and

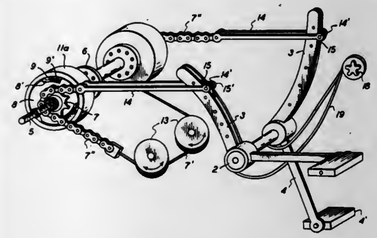
retaining ring means positioned on said shaft in a snug fitting, abutting and surrounding relation to said split ring means for holding said split ring means in said groove without compressing said split ring means.

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PROPULSION AND SPEED CHANGE MECHANISM FOR LEVER PROPELLED BICYCLES

Man T. Seol, Dae Jeon, Rep. of Korea, assignor to B. D. Yim, Rochester, N.Y.

Filed Feb. 2, 1983, Ser. No. 463,085
Claims priority, application Rep. of Korea, Oct. 3, 1982, 1982-1880
Int. Cl.⁴ B62M *1/04*
U.S. Cl. 74—138 **22 Claims**



1. A propulsion mechanism for a lever propelled bicycle having a frame with a main shaft portion and a rear shaft portion disposed rearwardly of said main shaft portion on said frame, said mechanism comprising a pair of propulsion levers for receiving pedals, a pair of arms, a journal, said journal, said levers and said arms being a one piece assembly with one of said pair of levers and one of said pair of arms spaced from the other of said pair of levers and the other of said pair of arms, said one piece assemble being pivotally mounted on said main shaft portion, a rear axle attached to said rear shaft portion, a rear wheel hub journaled on said rear axle, a pair of chain gears spaced from each other and journaled on said rear axle, a pair of one-way clutches connecting said chain gears to said rear wheel hub, a chain entrained on said chain gears, and means connecting said chain to said arms to execute see-saw motion as said levers and arms are oscillated upwardly and downwardly by force supplied to said pedals said pair of one-way clutches allowing free counterclockwise rotation of said rear wheel hub, and each one-way clutch comprising a drum having a latch and pawl in the shape of the Greek Letter lambda, a notch in said rear wheel hub for releasably receiving said latch and a free wheel means having a drum engaging element therein disposed inside said drum, said free wheel means being rotatably mounted on said rear axle and being releasably engagable with said rear wheel hub.

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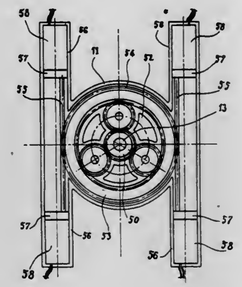
FORCE LIMITING GEAR REDUCER FOR LIFTING PINION OF SELF-ELEVATING PLATFORM

Francois Durand, Antibes, France, and Auguste Smulders, Geneva, Switzerland, assignors to Engrenages et Reducteurs and Citroen Messian Durand, both of, France, part interest to each

Continuation-in-part of Ser. No. 250,145, Apr. 2, 1981, Pat. No. 4,480,491. This application Aug. 22, 1984, Ser. No. 643,013
Claims priority, application France, Nov. 10, 1980, 80 24386
Int. Cl.⁴ F16H *57/10, 57/00, 1/04*; E02B *17/08*
U.S. Cl. 74—411.5 **3 Claims**

1. A force limiting gear reducer for a lifting pinion of a self-elevating platform, comprising a gear reducer divided in two parts, a first of said parts being directly connected to a pinion shaft and pinion support and a second of said parts comprising a prime reducer with brake and motor connected to an input shaft of the first reducer, a reaction member on the prime reducer in the form of a geared wheel meshing with a pair of guided racks on opposite sides thereof, which are axially connected each to at least one hydraulic cylinder, and means to control the oil pressure in the hydraulic cylinders, said geared wheel being both internally and externally toothed,

said external teeth being in mesh with said pair of racks, and said internal teeth meshing with a plurality of planet gears all



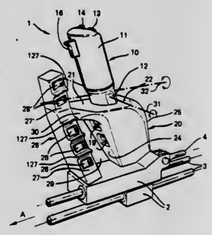
of which planet gears are in mesh with a sun gear on said input shaft.

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CONTROL STICK UNIT

Lennart Nordström, Linkoping, Sweden, assignor to Saab-Scania Aktiebolag, Linkoping, Sweden

Filed May 31, 1983, Ser. No. 498,857
Claims priority, application Sweden, Jun. 1, 1982, 8203351
Int. Cl.⁴ G05G *9/04, 13/00*
U.S. Cl. 74—471 XY **13 Claims**



1. A control device actuatable by one hand for controlling each of a plurality of functions, comprising:

A. a base member confined to movement in a pair of opposite directions and having

(1) connection means thereon through which one of said functions is controlled by movement of the base member in said opposite directions,

(2) a butt portion on which there are

(a) a substantially upwardly facing surface upon which the lower edge of a hand can rest in an upper gripping position and

(b) a rear surface which extends downward from said upwardly facing surface to be wholly below the same, said rear surface being engageable by the palm of a hand in a lower gripping position, and

(3) a stick supporting portion projecting above said upwardly facing surface and which can be embraced by the lower portion of a hand that is in said upper gripping position; and

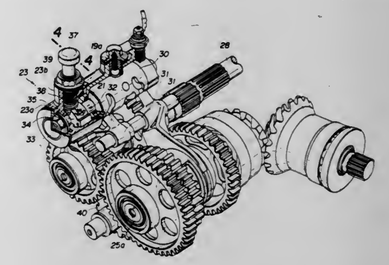
B. a stick member projecting substantially upward from said stick supporting portion to be embraced by an upper portion of a hand in said upper gripping position, said stick member being swingable relative to the stick supporting portion about at least one axis that extends substantially transversely to the length of the stick member and is near the top of said stick supporting portion.

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TRANSMISSION FOR USE IN MOTOR VEHICLES

Takashi Shichinohe, Tokyo; Masahiro Imaizumi; Ryoichi Ikejima, both of Saitama, and Yoshio Oka, Saitama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 9, 1984, Ser. No. 639,283
Claims priority, application Japan, Aug. 8, 1983, 58-143635
Int. Cl.⁴ G05G *5/06*
U.S. Cl. 74—474 **6 Claims**



1. A motor vehicle transmission comprising a casing, a shift spindle having one end thereof projecting from said casing and being rotatable for causing shifting of said transmission, a control lever coupled to said shift spindle for rotatably actuating said shift spindle, and means for limiting shifting operation of said control lever said shift limiting means comprising:

a cam means fixed to said casing about said shift spindle and formed with a peripheral cam surface having a plurality of cam areas, said cam areas comprising at least one recess area;

said control lever being formed with a base portion surrounding said cam means and an arm portion extending radially outwardly from said base portion;

a shaft member axially slidably fitted in said arm portion; and

spring means urging one end of said shaft member against said peripheral cam surface of said cam means, whereby when said control lever is shifted to a position where said one end of said shaft member rests on said recess area of said cam surface it will remain in that position and cannot be accidentally removed therefrom when subjected to undue force.

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PAD HOLDER MECHANISM FOR STEERING WHEELS

Tetsushi Hiramitsu, Kasugai; Hiroshi Sugita, Ichinomiya, and Satoshi Ono, Inazawa, all of Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Filed Jan. 24, 1984, Ser. No. 573,350
Claims priority, application Japan, Jan. 24, 1983, 58-9758
Int. Cl.⁴ G05G *11/00*
U.S. Cl. 74—484 R **7 Claims**

1. A pad holder mechanism for use in a steering wheel, comprising:

(a) a steering shaft;

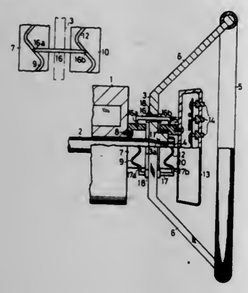
(b) a boss plate mounted on said steering shaft;

(c) a steering column and a pad positioned one on each side of said boss plate in an axial direction of said steering shaft;

(d) a pair of circular guide members mounted respectively on said steering shaft and said pad against movement in said axial direction of said steering shaft;

(e) continuous cam elements endlessly formed respectively on said guide members and displaced in said axial direc-

tion throughout circumferential extents of said guide members; and



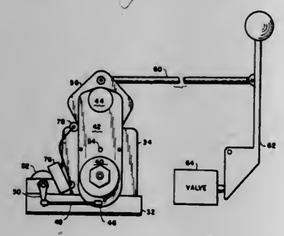
(f) at least one coacting member movably mounted on said boss plate and having opposite ends movable in phase along said cam elements, respectively.

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SELECTIVELY ENGAGEABLE LINEAR POWER ACTUATOR

Edward E. Griffiths, 3200 Polaris St. #23, Las Vegas, Nev. 89102

Filed Jan. 30, 1984, Ser. No. 575,057
Int. Cl.⁴ G05G *11/00*; F16H *51/00*
U.S. Cl. 74—625 **6 Claims**



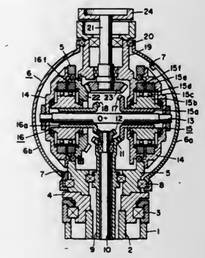
1. A remotely controlled linear power actuator with selective disengagement means for permitting free manual movement of the actuator, said linear actuator comprising:
- an electrical motor having its output shaft connected to a gear assembly for reducing the output speed of said motor;
- closed loop servo circuitry controlled by a remotely located operator and controlling the rotation of said motor;
- an adjustable friction slip clutch coupled to the output shaft of said gear assembly;
- an elongated drive plate having first and second ends and an outer face and an inner face, a point substantially on the center line and near the first end of said plate being connected to the output of said slip clutch, said plate being rotatable about the output axis of said clutch;
- a substantially diamond shaped second drive plate having first and second opposite points and two opposite side points, said second drive plate being in a plane substantially parallel with the plane of said elongated drive plate and having the first point of said diamond coupled by pivot means to the inner face of said elongated drive plate at a point on the longitudinal center line of said elongated plate between said first and second ends;
- an output shaft pivotally connected to said second drive plate adjacent the second point of said diamond, said shaft being positioned substantially perpendicular to the axis formed between said first and second diamond points; and
- interlocking means between the inner face of said elongated plate and said diamond shaped plate and controllable from a remote location for selectively connecting said plates against rotation around said pivot pin, said interlocking means including a remotely controlled solenoid mounted on the outer face of said elongated drive plate and having an armature bore aligned with an opening through said drive plate and substantially on the longitudinal center line of said of said elongated drive plate and upon an arc centered on said pivot means and formed between the two side points of the diamond shape of said second drive plate, the electrical actuation of said solenoid driving an interconnector ball in the bore of said solenoid into said opening and an indentation in said arc.

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WRIST MECHANISM FOR INDUSTRIAL ROBOT

Kaoru Kimura; Shunji Sato; Junichiro Ogawa, all of Kitakyushu, and Mitsuyoshi Nakano, Munakata, all of Japan, assignors to Kabushiki Kaisha Yasakawa Denki Seisakusho, Kitakyushi, Japan

Filed Jul. 16, 1984, Ser. No. 630,952
Int. Cl.⁴ F16H *37/00*
U.S. Cl. 74—665 A **4 Claims**



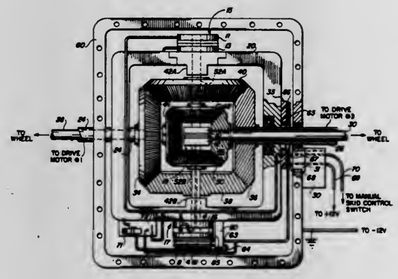
1. In an industrial robot in which a tool is mounted on the end of an arm through a wrist mechanism, said wrist mechanism for an industrial robot comprising:
- a first input shaft rotating at a reduced speed for rotating the whole wrist;
- a second input shaft for tilting the wrist portion;
- a third input shaft for rotating said tool; said first, second, and third input shafts being mounted within said arm and the axes thereof being aligned in the same shaft axis line;
- a speed reduction shaft whose axis is perpendicular to said same shaft axis line;
- differential speed reduction devices mounted about opposite ends of said speed reduction shaft respectively; and
- a tilting shaft for a wrist and a tool rotation shaft, the axes of both shafts disposed concentrically with each other passing through an intersection point between the axes of said input shafts and said speed reduction shaft; said speed reduction shaft, differential speed reduction devices, tilting shaft, and tool rotation shaft being mounted within a wrist cover;
- wherein said second input shaft and tilting shaft are coupled to one of said differential speed reduction devices and said third input shaft and tool rotation shaft are coupled to the other of said differential speed reduction devices; said wrist cover is divided obliquely and is formed to have a spherical shape and to be rotatable along a division plane; and one of the divided wrist covers is mounted rotatably on a wrist seat and the other of the divided wrist covers has said tilting shaft and tool rotation shaft mounted thereon.

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ANTI-SKID APPARATUS

Milton E. H. McCarthy, deceased, late of Ormond Beach, Fla., and by Helen McCarthy, representative, 359 Warwick Ave., Ormond Beach, Fla. 32074

Filed Mar. 12, 1984, Ser. No. 588,557
Int. Cl.⁴ F16H *37/08*
U.S. Cl. 74—665 M **10 Claims**



1. In a vehicle drive system having a double differential in a housing, said differential driven by a first drive motor and a second drive motor, the first motor driving a first bevel gear and the second motor driving a second bevel gear, a first pair of pinion gears differentially driven by the first and second bevel gears, a spider assembly for supporting said pair of pinion gears, a second pair of pinion gears supported by the spider assembly, a third bevel gear connected to a first output shaft, said first shaft connected to a first vehicle drive wheel, a fourth bevel gear connected to a second output shaft, said second shaft connected to a second vehicle drive wheel, and the third and fourth bevel gears driven by the second pair of pinion gears, an anti-skid apparatus comprising:
- first electric clutch means disposed on said spider assembly and connected to one of said second pair of pinion gears, second electric clutch means disposed on said spider assembly and connected to the other one of said second pair of pinion gears, and third electric clutch means disposed between and connected to said second pair of pinion gears, said first, second and third clutch means for selectively preventing said second pair of pinion gears from rotating independently and with respect to said spider assembly;
- an electrical switch external to said housing;
- slip ring means disposed on said spider assembly and electrically connected to said first, second and third electrical clutch means; and
- brush means disposed in said housing and contacting said slip ring means, said brush means connected to said external switch;
- whereby operation of said switch connects said electric clutch means to a source of electrical power to thereby lock said second pinion gears to said spider assembly for forcing said first and second output shafts to rotate at the same speed.

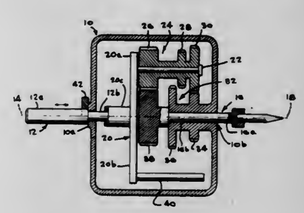
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MOTOR OPERATED HAND TOOL FOR TIGHTENING AND LOOSENING THREADED FASTENERS AND THE LIKE

Khaled R. Asfar, Yarmouk University, Irbid, Jordan

Filed Nov. 30, 1983, Ser. No. 557,230
Int. Cl.⁴ F16H *3/56, 57/10*
U.S. Cl. 74—766 **6 Claims**

1. A motor operated hand tool for tightening and loosening threaded fasteners and the like, comprising:
- (a) a housing having opposed input and output ends;
- (b) an input spindle slidably, rotatably mounted in said input end of said housing, said input spindle having an outside end outside said housing, an inside end inside said housing, and an axis of rotation, said outside end adapted to be driven by a motor rotating in a fixed, first direction;
- (c) an output spindle rotatably mounted in said output end of said housing, said output spindle having an inside end inside said housing and an outside end outside said housing, and an axis of rotation colinear with said axis of rotation of said input spindle;
- (d) a stationary compound sun gear set fixedly mounted inside said housing at said output end coaxial with said output spindle;
- (e) a driven sun gear fixedly mounted to said inside end of said output spindle and having an axis of rotation colinear with said axis of rotation of said output spindle; and
- (f) a rotatable compound planetary gear set rotatably coupled to said inside end of said input spindle and having an axis of rotation offset from and parallel to said axis of rotation of said input spindle, said rotatable compound planetary gear set comprising first and second gears, said rotatable compound gear set and said input spindle moveable together between a first position, wherein said first gear engages a third gear of said stationary compound sun gear set and said rotatable compound planetary gear set engages said driven sun gear to rotatively drive said output spindle in said first direction, and a second position, wherein said second gear of said compound planetary gear set engages a fourth gear of said stationary compound sun gear set and said rotatable compound planetary gear set engages said driven sun gear to rotatively drive said output spindle in a second direction opposite to said first direction, said housing being manually graspable to facilitate the selective disposition of said input spindle and said rotatable compound planetary gear set in one of said first and second positions.



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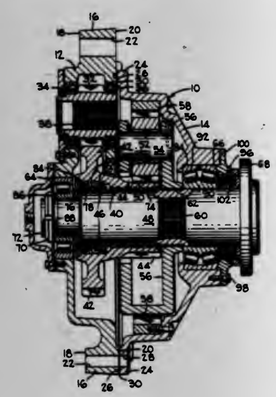
PLANETARY FINAL DRIVE

Seth C. Abbott, Lexington; James J. Connerley, Georgetown, and Arthur W. Klok, Jr., Lexington, all of Ky., assignors to FMC Corporation, Chicago, Ill.

Filed Sep. 7, 1983, Ser. No. 530,150
Int. Cl.⁴ F16H *57/10*
U.S. Cl. 74—785 **1 Claim**

1. A planetary final drive comprising: a housing; a ring gear secured to said housing; inboard and outboard bearings, each of which has inner and outer races, mounted in said housing; and output shaft having a flange on one end and threaded at the other end rotatably mounted in said bearings; a planet carrier splined to said output shaft; a compound gear having a spur gear and a sun gear; a mounting bearing having an inner race carried by said shaft and an outer race axially centered with said spur gear and the sun gear cantilevered over said shaft; a plurality of planet gears rotatably mounted on said carrier and engaging said sun and ring gears; a tubular spacer positioned over said shaft and being continuously radially spaced inwardly from said compound gear, having its one end engaging

the inner race of said mounting bearing and its other end directly engaging said carrier adjacent its splined connection to said output shaft; a second spacer positioned on said shaft between and contacting the inner race of each of said inboard and mounting bearings; a third spacer positioned on said shaft between and contacting the inner race of said outboard bearing



and said flange; and a nut engageable with said threaded end; whereby when said nut is tightened on said threaded end, said inner race of said inboard bearing is forced against said second spacer which is forced against the inner race of said mounting bearing which is forced against said tubular spacer which is forced against said carrier to form a unitary structure and properly position said carrier relative to said compound gear.

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PRECISION DRIVE FOR POSITIONING SOLAR ENERGY APPARATUS

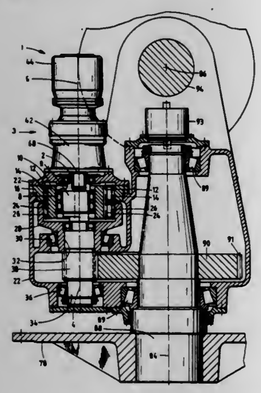
Heinrich Arndt, Augsburg, Fed. Rep. of Germany, assignor to Zahnraderfabrik Renk, A.G., Augsburg, Fed. Rep. of Germany

Filed Aug. 5, 1982, Ser. No. 405,551

Claims priority, application Fed. Rep. of Germany, Aug. 10, 1981, 3131612

Int. Cl.⁴ F16H *1/28, 37/06*

U.S. Cl. 74—804 **3 Claims**



1. A pair of precision drive trains drivable in opposite directions of rotation for positioning a solar energy collection apparatus by angular adjustment of such apparatus along a pair of perpendicular positioning axes, each drive train including electric motor means, a high transmission ratio primary stage gearing, the electric motor means drivingly engaging the primary stage gearing, the primary stage gearing comprising a harmonic drive, and a secondary stage gear train, the gear train comprising a monoplanetary gear being free of a sun gear and including a planet carrier, the harmonic drive being in driving engagement with the planet carrier, a planet gear, means rotatably mounting the planet gear to the planet carrier about an axis eccentric to the axis of the carrier, the carrier axis being parallel to the respective positioning axis associated with each drive train, an internal ring gear coaxial with the carrier axis, means fixing the ring gear against rotation, the planet gear including gearing means for engagement with the fixed ring gear, a further internal ring gear coaxial with the carrier axis and axially juxtaposed with the fixed ring gear, the further ring gear having a different number of teeth than the fixed ring gear, the planet gearing means comprising a pair of axially contiguous spur gear means, the contiguous spur gear means comprising parts of the same wide gear teeth, one of the spur gear means being in engagement with the fixed ring gear and the other spur gear means being in engagement with the further ring gear, rotation of the planet carrier causing rotation of the planet gear and rotation of the planet gear drivingly rotating the further ring gear by engagement of the planet gear gearing means with the further ring gear, the further ring gear comprising a driven element of the gear train, the planet gear, the spur gear means and the ring gears comprising precision machined gearings assembled for operation with the absence of lash, the secondary stage gear train being self locking in the presence of externally applied torque at the driven element, each gear train further including a pinion, means nonrotationally joining the pinion and the further ring gear, a spur gear, the pinion being in driving engagement with the spur gear, each spur gear being disposed coaxially to the respective positioning axis of each drive train, a casing, the casing carrying both drive trains, the fixed ring gear being fixed relative to the casing, the drive trains further including means for rotatably mounting the casing about one positioning axis and means drivingly interconnecting one drive train with the one positioning axis for rotation of the casing about the one positioning axis by operation of the one drive train, the other drive train further including means drivingly interconnecting the spur gear associated therewith and a driven part, and means mounting the driven part within the casing for rotation about the other positioning axis, the casing comprising two halves joined along a plane extending through the one positioning axis, the driven part coaxial with the other positioning axis being mounted substantially within the casing dividing plane.

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COMPONENT ASSEMBLY TABLE DRIVE

Naum M. Kaminsky, and Robert J. Sooy, both of Marblehead, Mass., assignors to USM Corporation, Farmington, Conn.

Filed Feb. 21, 1984, Ser. No. 581,970

Int. Cl.⁴ B23Q *17/00*

U.S. Cl. 74—822 **3 Claims**

1. A table adapted to support printed circuit boards for assembly of electrical components to the board, comprising:

a. a support plate having a circular opening;

b. a disc rotatably supported in said plate opening;

c. a drive mechanism for rotationally driving said disc;

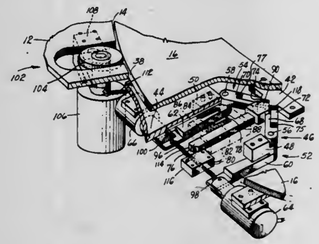
d. a latch mechanism responsive to a control means for locking said disc against rotation and releasing said disc for free rotational movement;

e. release means on said latch mechanism to cause actuation of said drive mechanism to rotate said table disc,

f. said latch mechanism being carried on said plate and includes a plunger positioned into and out of engagement with a block carried on said disc,

g. said latch mechanism having a pair of linkages positioned by solenoids to position said plunger,

h. said linkages including latch portions positionable against said block to stop the rotation of said disc, and



i. said linkages having surfaces coacting with said plunger to retract said plunger from said block.

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METHOD OF CONTROLLING A POWER TRANSMISSION DEVICE AND POWER TRANSMISSION DEVICE FOR CARRYING OUT SAID METHOD

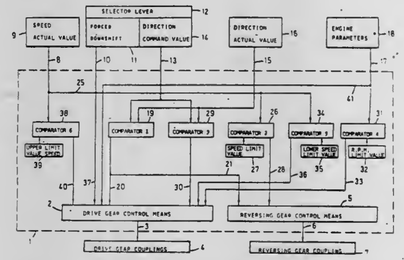
Hans-Jörgen Opperud; Sven A. L. Carlsson, and Hans G. Ericson, all of Eskilstuna, Sweden, assignors to Volvo BM AB, Eskilstuna, Sweden

Continuation of Ser. No. 304,631, Sep. 22, 1981, abandoned, which is a division of Ser. No. 162,675, Jun. 24, 1980, Pat. No. 4,419,909. This application Mar. 25, 1985, Ser. No. 715,765

Claims priority, application Sweden, Jun. 28, 1979, 79056958

Int. Cl.⁴ B60K *41/06*

U.S. Cl. 74—856 **1 Claim**



1. In a control system for controlling a power transmission device arranged between a driving engine and an output drive axle, and comprising a torque converter and a mechanical step gearbox, especially for vehicles such as wheeled loaders, said gearbox having on the one hand at least two drive gears for altering the torque transmitted to the drive axle, between which gears the shifting sequence can be controlled automatically dependent on engine parameters such as load and rotational speed, and on the other hand a reversing gear device for changing the rotational direction of the drive axle, the reversing of said gear device being controlled under the influence of a directional selector control manually actuated by the operator; the improvement in which the control system comprises an electrical control device having drive gear control means and reversing gear control means, which are joined to at least one of gear couplings and gear brakes operable by electric control and associated with the drive gears or the reversing gear for controlling the rotational speed and the direction of the drive axle; a sensor for the rotational speed of the drive axle or the speed of the vehicle connected to a comparator adapted to compare the actual speed value from the sensor with a predetermined speed limit value stored in memory means and, when the actual value is less than the limit value, to send a go-ahead signal to the drive gear control means; a forced downshift signal sender connected to the drive gear control means and adapted upon manual actuation by the operator to produce a forced downshift signal which, if the go-ahead signal is present, causes the drive gear control means to engage the lowest drive gear; the directional selector control being connected to the control device to supply it with a directional command value signal; and means whereby when the command value signal is changed to indicate the opposite direction, a reverse signal is sent to the reversing gear control means for changing over the reversing gear and at the same time to the drive gear control means for allowing deceleration to zero speed followed by a restarting procedure in which the next lowest gear is first caused to engage.

4,574,662

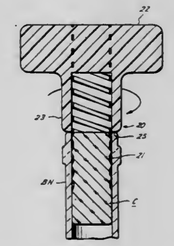
DEVICE FOR REMOVING A CORK OR OTHER RESILIENT STOPPER FROM THE NECK OF A BOTTLE

Marvin R. Jones, 414 Flintdale, Houston, Tex. 77024, assignor to Marvin R. Jones, Houston, Tex.

Filed Jan. 31, 1985, Ser. No. 696,757

Int. Cl.⁴ B67B *7/02*

U.S. Cl. 81—3.45 **8 Claims**



1. A device for use in removing a cork or other resilient stopper from the neck of a bottle, comprising helical spring means including at least one helical spring adapted to fit closely within the bottle neck and having a handle at one end by which the spring means may be rotated in one directional sense, as it is inserted and forced axially inwardly between the cork and neck, and then pulled axially outwardly, so as to remove the cork and spring means from the neck, said cork being removable from the spring means upon rotation of the handle in the opposite directional sense with respect to the cork.

4,574,663

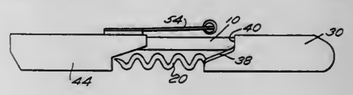
CORK EXTRACTOR

Bernard Delisle, Jr., P.O. Box 1185, Edgartown, Mass. 02539

Filed May 2, 1984, Ser. No. 606,384

Int. Cl.⁴ B67B *7/00*

U.S. Cl. 81—3.48 **4 Claims**



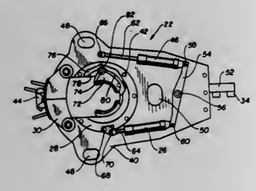
1. A cork extractor comprising an elongated body member, a corkscrew pivoted to the body member intermediate the ends thereof, a fulcrum member of U-section hinged to one end of

the body member and having a shoulder and a tapered knife portion, a cover telescopically encasing the cork screw and being longitudinally slidable away therefrom and retained on the body member to provide an extended handle.

4,574,664
POWERED BACK-UP TONGS

Vern Curry, Odessa, Tex., assignor to Eckel Manufacturing Co., Inc., Odessa, Tex.

Filed Jul. 23, 1984, Ser. No. 633,711
Int. Cl.⁴ B25B *17/00*
U.S. Cl. 81—57.34 19 Claims

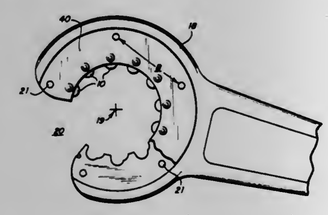


1. A back-up tong for securing a first tubular member against axial rotation in response to rotation of a second tubular member by a pipe-rotating device, said back-up tong comprising:
a frame member having a first opening for receiving said first tubular member;
a ring member fixedly interconnected with said frame member and having a plurality of cam surfaces on said ring member;
a cage plate assembly rotatable with respect to said ring member and having a second opening aligned with said first opening for receiving said first tubular member;
a plurality of heads carried by said cage plate assembly for being urged into engagement with said first tubular member by said cam surfaces upon rotation of said cage plate assembly;
a pivot bar rotatably mounted relative to said cage plate assembly;
a first fluid powered cylinder connected at one end to said pivot bar and connected at the other end to said frame member; and
a second fluid powered cylinder connected at one end to said pivot bar and connected at the other end to said rotatable cage plate assembly.

4,574,665
RATCHET WRENCH FOR ACCOMMODATING BOTH ENGLISH AND METRIC-SIZED WORKPIECES

Harry L. Blachly, 1705 Ravenwood, Arlington, Tex. 76013

Continuation-in-part of Ser. No. 354,937, Mar. 5, 1982, abandoned. This application Jun. 29, 1984, Ser. No. 626,287
Int. Cl.⁴ B25B *13/46*
U.S. Cl. 81—59.1 11 Claims

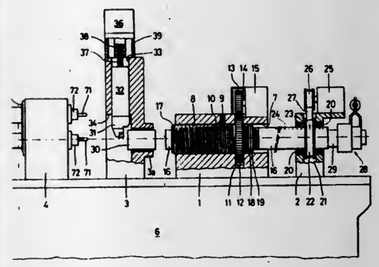


1. In a cam-lock wrench having an opening therein to engage a nut, and a plurality of spring-loaded, cylindrical cams eccentrically and pivotably attached about on inner periphery of the opening, said cams being arranged to grip the nut when the wrench is turned in the forward direction and to ratchet when turned in the reverse direction, the improvement comprising:
one end of each of said cams being provided with a planar bevel having a gripping surface thereon for engagement by the vertices of a nut to create an eccentric rotative action of the cams whereby oversized nuts may be inserted into said opening and the vertices thereof will engage the gripping surface of the planar bevel when said wrench is turned in the reverse direction and cause an eccentric rotative retraction of the cams, thereby permitting said nut to slip into said opening between said cams.

4,574,666
DEVICE FOR DRIVING A BAR WITH DIGITAL CONTROL UNIT IN AN AUTOMATIC LATHE

Harold Habegger, Sous-Graitery 10, CH-2738 Ct., Switzerland

PCT No. PCT/CH81/00117, § 371 Date Jun. 21, 1982, § 102(e) Date Jun. 21, 1982, PCT Pub. No. WO82/01334, PCT Pub. Date Apr. 29, 1982
Continuation of Ser. No. 663,820, Oct. 22, 1984, abandoned, which is a continuation of Ser. No. 602,267, Apr. 23, 1984, abandoned, which is a continuation of Ser. No. 395,015, Jun. 21, 1982, abandoned. This PCT application Oct. 20, 1981, Ser. No. 755,217
Claims priority, application Switzerland, Oct. 20, 1980, 80810318
Int. Cl.⁴ B23B *13/00, 29/12*
U.S. Cl. 82—2.5 7 Claims



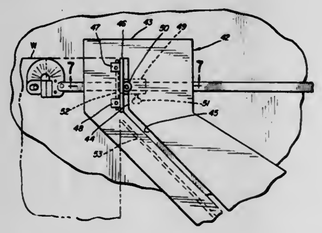
1. A numerically controlled automatic lathe comprising:
a spindle for rotationally driving a bar of stock;
a tool support;
a plurality of tool bores formed in said support and fanned-out at least approximately in the same plane perpendicular to an axis of said spindle along radii from the axis;
a plurality of tool sliders, each slider being mounted in one of said tool bores for radial movement between a rest position and an operational position;
a plurality of tools, each tool being mounted to one of said sliders;
a computer generating control pulses as a function of data fed to the computer;
a plurality of stepping motors on said support controlled by the control pulses, each motor having means connected to one of said sliders to move same;
a direct and dual-effect kinematic linkage mounted on said support and connecting each motor to the corresponding slider;
a plurality of adjuster bores formed in said support, each adjuster bore being substantially perpendicular to one of said tool bores;
a plurality of cylindrical sleeves, each sleeve being mounted rotationally in one of said adjuster bores;
a threaded internal bore in each said sleeve, each internal bore being substantially parallel to but offset from an axis of the corresponding sleeve;
a plurality of screws, each screw engaging the threads of one of said internal bores;
a plurality of shoes, each shoe being pivotally mounted at an end of one of said screws;
a longitudinal groove formed in a side of each tool slider, each said shoe engaging the groove in a corresponding said slider, whereby a rotational orientation of each slider is adjustable by adjusting a rotational orientation of the corresponding sleeve; and
means for holding each sleeve in a desired adjusted rotational position.

5. A numerically controlled automatic lathe comprising:
a spindle for rotationally driving a bar of stock;
a rigid support consisting essentially of a single block, said support having large faces substantially perpendicular to an axis of said spindle;
a cylindrical work area recess formed in said support substantially coaxial with the spindle axis;
a passageway for machined chips formed in a face of said block away from said spindle and opening from a bottom of said recess;
a first bore formed in said support substantially coaxial with the spindle axis on a side of said support toward said spindle;
a guiding bush mounted in said first bore coaxially with said spindle for supporting the bar, said guiding bush having a fore end of the bar progressively protruding therefrom during machining of a work piece at the fore end of the bar;
a plurality of tool bores formed in said support substantially parallel to said large faces and substantially perpendicular to the spindle axis, said bores extending from a periphery of said support through to said recess;
a plurality of tool sliders, each slider being mounted in one of said tool bores for radially reciprocal movement away from said recess towards a set position and towards said recess towards an operational position;
a plurality of tools, each tool being fixed to one of said sliders; and
a plurality of stepping motors on said support, each having means connected to one of said sliders to move same.

4,574,667
METHOD FOR CUTTING SHEET METAL

Robert E. Harris, 7317 W. 72nd St., Bridgeview, Ill. 60455

Filed May 23, 1983, Ser. No. 496,842
Int. Cl.⁴ B26D *3/00*
U.S. Cl. 83—49 1 Claim



1. A method for cutting shapes from sheet metal, said shapes being adaptable to cover pipe insulation at a T-joint intersections, utilizing and apparatus including a substantially flat workpiece support surface; a cutting means comprising opposable shearing members supported by means disposed below said support surface and positioned so that the shearing of said workpiece occurs at a point approximately level with said support surface; a guide bar disposed laterally from said cutting means and being approximately level with said support surface; and an attachable member for supporting said workpiece for movement relative to said cutting means, comprising means for selectively fixing a guide point along said guide bar having a projecting stud, a substantially flat plate containing a slot positioned such that said plate may be moved in sliding engagement with said stud, said slot having two straight sections oriented at approximately 112° with respect to each other, at the junction of which said plate may be rotated about said stud, and at least one means for clamping said workpiece to said plate,
by the cutting away of a rounded trapezoidal shape from each of two corners from a substantially rectangular sheet metal workpiece, said two corners defining a length wise edge of said rectangular workpiece, comprising the steps of:
(a) fixing said attachable support member to said support guide bar at a distance from the cutting means equal to the radius of the insulated pipe to be covered with said sheet metal;
(b) clamping said workpiece to said attachable support member, such that one of the lengthwise edges of said workpiece is parallel to the first section of said slot;
(c) moving said clamped workpiece against said cutting means to begin cutting same, such that said plate moves along said projecting stud for the length of the first section of said slot;
(d) rotating the workpiece against the cutting means, such that said plate rotates approximately 68° about said projecting stud;
(e) moving the clamped workpiece against the cutting means to continue cutting same, such that said plate moves along said projecting stud for the length of the second section of said slot;
(f) turning said sheet metal workpiece over and reclamping it to said attachable support member, such that the same edge of said workpiece as was initially parallel with said first slot section of said attachable support member is again parallel with said first slot section of said attachable support member;
(g) moving said clamped workpiece against said cutting means to begin cutting same, such that said plate moves along said projecting stud for the length of the first section of said slot;
(h) rotating the workpiece against the cutting means such that said plate rotates approximately 68° about said projecting stud; and
(i) moving the clamped workpiece agianst the cutting means to continue cutting same, such that said plate moves along said projecting stud for the length of the second section of said slot.

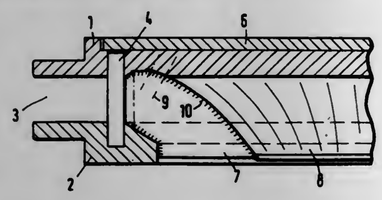
4,574,668
APPARATUS FOR CUTTING RIBBON- OR CORD-LIKE MATERIAL

Heinz Fleissner, Riehen, Switzerland, assignor to Vepa Aktiengesellschaft, Switzerland

Filed Oct. 14, 1983, Ser. No. 542,183
Claims priority, application Fed. Rep. of Germany, Sep. 3, 1983, 3331924
Int. Cl.⁴ D01G *1/04*
U.S. Cl. 83—346 15 Claims

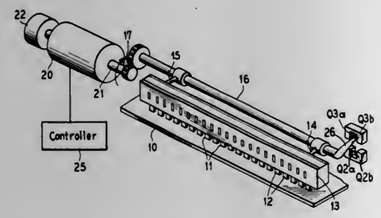
1. An apparatus for cutting ribbon- or cord-like material, especially for the production of staple fibers from synthetic fiber yarns, which comprises a knife cage around which the yarn is wound several times with at least two blade-supporting disks arranged axially one above the other and at a spacing of approximately the knife length by spacer elements provided in a radially inwardly oriented position, and a plurality of knife blades oriented radially outwardly with their cutting edges being held at a spacing corresponding to the desired staple lengths between the disks, the knife cage being adapted to be associated on the outside with a contact roller for obtaining a

radially inwardly acting cutting pressure on the wound-up yarns, said spacer elements comprising a plurality of radially oriented partitions that are positioned in the interior of the knife cage and that extend radially inwardly behind the knife



blades; said partitions being joined to the blade-supporting disks arranged axially one above the other to provide a stable knife cage; each partition at an edge associated with a knife blade tapering to the thickness of the blade.

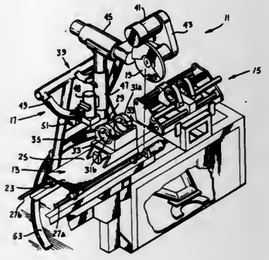
4,574,669
AUTOMATIC PUNCH
Alfredo J. Vercillo, Harwood Heights, and Roger M. Scharer, Des Plaines, both of Ill., assignors to General Binding Corporation, Northbrook, Ill.
Filed May 15, 1984, Ser. No. 610,482
Int. Cl.[4] B26F *1/02*
U.S. Cl. 83—399 **6 Claims**



1. Power sheet punching apparatus comprising motor means for rotating a punch drive shaft in a first direction of rotation to drive punch pins toward and through a lift of paper and in a reverse direction to withdraw the punch pins from the paper, first means responsive to manual actuation to start said motor in forward direction to initiate a punching cycle, flag means drivingly associated with said drive shaft and reflecting the instaneous position of the punch pins, first sensing means sensing the position of said flag means reflecting the condition of punch pins upon their passage completely through the paper, second means responsive to said first sensing means to stop forward energization of said motor, third means for thereupon energizing said motor to reverse direction to withdraw said pins to their at-rest home position, and fourth means bypassing said first sensing means to energize said third means to reverse said motor to return said pins to their rest position.

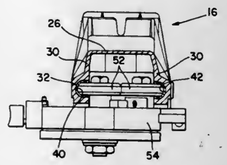
4,574,670
MULTIPLE ANGLE CUTTING APPARATUS
George W. Johnson, Smyrna, Ga., assignor to Lockheed Corporation, Burbank, Calif.
Filed Nov. 17, 1983, Ser. No. 552,692
Int. Cl.[4] B23D *45/14*; B27B *5/20*
U.S. Cl. 83—409 **5 Claims**

1. A compound angle disk cutting apparatus comprising:
(a) a stock feed and orienting mechanism for feeding and orienting a workpiece to be cut with respect to a point of cut;
(b) a cut piece handling mechanism for manipulating said workpiece;
(c) a cutting member capable of vertical motion along a vertical centerline which passes through said point of cut and angular motion with respect to said vertical centerline, the pivot of such motion being along a horizontal centerline which passed through said point of cut, said cutting member also being capable of transverse movement along said horizontal centerline; and
(d) a cutting member positioning mechanism for moving said



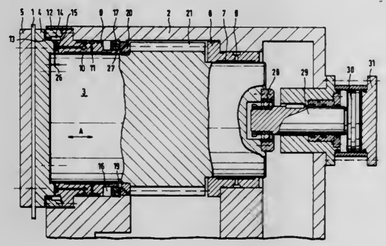
cutting member vertically along said vertical centerline about a pivot point located along the horizontal centerline which passes through said point of cut and transversely along said horizontal centerline whereby any engagement of said cutting member with said workpiece has a common centerpoint of cut, said point of cut being defined as the point of coincidence for the center of rotation of the workpiece, the pivot point for angular motion of said cutting member with respect to said vertical centerline and the said transverse motion of said cutting member along said horizontal centerline.

4,574,671
RADIAL ARM OF A RADIAL ARM SAW
Lorenzo E. Alessio, Lecco, Italy, assignor to Black & Decker Inc., Newark, Del.
Filed Jul. 20, 1984, Ser. No. 632,804
Claims priority, application Italy, Aug. 2, 1983, 22561/83[U]
Int. Cl.[4] B27B *5/29*
U.S. Cl. 83—471.2 **9 Claims**



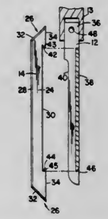
1. A radial arm for a radial arm saw, comprising:
an elongate arm comprising a lightweight metal casting of inverted U cross-section;
said arm having a top wall and two side walls extending downwardly;
guide means for supporting and guiding a saw unit along said elongate arm, said guide means comprising opposing longitudinal grooves in inner faces of said side walls of the elongate arm of inverted U cross-section and a metal strip pressed into each groove;
each of said metal strips being relatively elastically yieldable and being arcuately deformed in cross-section by engagement in the respective groove; and
said grooves being of semicircular cross-section and recessed below the inner faces of said side walls, longitudinal edges of the strips biting into walls of the grooves due to the deformed strips being elastically yieldable.

4,574,672
CUTTING APPARATUS
Karl H. Ehm, Am Alten Schacht 8, D-4100 Duisburg 17, and Roderich R. Orendi, Heltorfer Mark 15, D-4000 Dusseldorf 31, both of Fed. Rep. of Germany
Filed Nov. 14, 1984, Ser. No. 671,274
Claims priority, application Fed. Rep. of Germany, Nov. 14, 1983, 3341424
Int. Cl.[4] B23D *47/00*
U.S. Cl. 83—471.2 **6 Claims**



1. In a cutting apparatus comprising a bearing housing, a shaft for carrying a cutting tool, the shaft being supported in the bearing housing axially displaceably for the purposes of producing a return movement of the cutting tool after a cutting operation without contacting the material being cut, and a hydrostatic shaft bearing arrangement adapted to support the shaft radially and axially in the bearing housing and including: a bearing flange which is non-rotatably carried by the bearing housing therewithin and which has a radially inward surface and first and second ends facing in the axial direction of the bearing housing and which is provided on its inward surface and at its first end which is towards said cutting tool with a bearing pocket means having a capillary feed means communicating therewith, the bearing flange further having at its second end a portion of smaller outside diameter than the remainder of the bearing flange whereby said portion is spaced inwardly from the adjoining inside surface of the bearing housing thereby to define an annular cylinder; an annular piston axially slidably disposed in said annular cylinder and provided at a face which faces away from said bearing flange with a bearing pocket means having a capillary feed means leading thereto; and disposed on said shaft non-rotatably relative thereto at a position adjoining said annular piston a bearing ring having a face which faces towards said annular piston, the annular piston in the operative position of the cutting apparatus and the bearing ring being supported relative to each other under the effect of a hydraulic pressure in said annular cylinder, the improvement that the annular piston is guided with a small clearance in the annular cylinder and the annular piston in the operative position of the cutting apparatus bears with a radial portion of its face that faces towards said bearing ring against a shoulder projecting inwardly from the said inside surface of the bearing housing, the annular piston being of such a cross-sectional shape and elasticity that in the said operative position the annular piston is elastically tilted about its contact with said shoulder as a result of the applied hydraulic pressure in said annular cylinder, whereby the clearance between said annular piston and said annular cylinder is so reduced that the annular piston is capable of carrying shaft bearing forces in a radial direction, said face of said bearing ring which faces towards said annular piston being of a conical configuration such that in said operative tilted position of said annular piston said mutually facing faces of said piston and said bearing ring are at a uniform spacing.

4,574,673
STIFFENED CUTTING BLADE WITH REVERSIBLE REPLACEABLE EDGE MEMBER
David R. Pearl, 20 Hamlin Dr., West Hartford, Conn. 06117
Filed Mar. 25, 1985, Ser. No. 715,513
Int. Cl.[4] D06H *7/00*
U.S. Cl. 83—697 **13 Claims**



1. A stiffened cutting blade for use in a cutting apparatus of the type employing an elongated cantilevered cutting blade reciprocated along its longitudinal axis, said cutting blade comprising:
an elongated edge member insert having two generally parallel side faces, two longitudinally opposite end sections each having a rear edge, a longitudinally extending rear edge, said rear edge including said end section rear edges and a forwardly relieved edge portion extending between said two opposite end sections, and a longitudinally extending front edge sharpened along at least a portion of its length at both ends,
holder means for receiving and stiffening said edge member insert, said holder means having a driver attaching end and a longitudinally opposite piercing end and two spaced apart side portions each engaging a respective one of said side faces of said edge member insert and each having a longitudinally extending forward front edge located a distance rearwardly of said front edge of said edge member insert so that said insert front edge projects a substantial distance forwardly beyond said holder forward front edge along the lower length of said holder means and a one of said edge member insert end sections projecting downwardly beyond said holder means at said piercing end, and
means for releasably fixing said edge member insert to said holder to form them into a single unit;
said holder being made of a material and having a cross-sectional area larger than said insert cross-sectional area so that said holder is substantially stiffer than the material of said edge member insert and said edge member insert being made of a material substantially more suitable for a cutting edge than the material of said holder;
said holder means including a longitudinally extending spine portion located rearwardly of said edge member insert forwardly relieved edge portion and connecting said two side portions to one another along at least a portion of their length extending from said piercing end to said driver attaching end for a distance substantially equal to said insert rear edge forwardly relieved edge portion, said forwardly relieved edge portion receiving said spine, and said holder two side portions extending upwardly above the other of said edge member insert opposite end sections;
said means for releasably fixing said edge member insert to said holder means comprising a generally rearwardly and downwardly extending shoulder on said edge member insert defining the upper limit of said forwardly relieved edge portion and a generally rearwardly and upwardly

extending shoulder defining the lower limit of said forwardly relieved edge portion, and said spine having at its lower end a forwardly and downwardly extending shoulder, said shoulder of said spine being engageable with a one of said shoulders of said edge member insert when said insert is inserted in a first direction and with the other of said shoulders of said insert when inserted in a second direction when said insert and holder are in their normal assembled condition, and

means for moving said upwardly extending side portions toward one another and into mechanical engagement with said other of said edge member insert end sections when said edge member insert and said holder are in said assembled condition.

4,574,674

SHEARING MACHINE FOR CUTTING UP MISCELLANEOUS MATERIAL

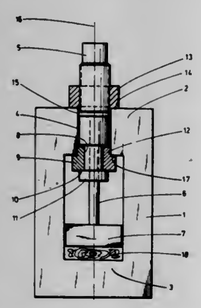
Helmut Marx, Düsseldorf, Fed. Rep. of Germany, assignor to Lindemann Maschinenfabrik GmbH, Düsseldorf, Fed. Rep. of Germany

Filed Mar. 23, 1984, Ser. No. 592,864

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1983, 3310894

Int. Cl.⁴ B26D *1/00*

U.S. Cl. 83—698 **11 Claims**



1. In a shearing machine for cutting up miscellaneous material, for example, metal scrap, waste, refuse, bars, rope, or the like, said shearing machine including a closed frame, said frame including a crosshead, a shearing blade carrier, means slidably guiding said carrier for reciprocating movement in said closed frame, and drive means for reciprocating said blade carrier, said drive means including a cylinder-piston assembly having an axis extending in the direction of the reciprocating movement of said carrier and fixing means fixing said cylinder-piston assembly in an opening through said crosshead, the improvement wherein said fixing means comprises that said crosshead having at least one first surface located around the opening therethrough and facing said blade carrier and a second surface located around the opening therethrough and facing in the opposite direction to said first surface, means defining a circumferential recess in the outside of said cylinder-piston asembly encircling the axis thereof, a divided ring fitting in said circumferential recess, and also fitting at least partly in said opening through said crosshead, said divided ring bearing against said at least one first surface of said crosshead to support said cylinder-piston assembly against reaction forces from said blade carrier towards said crosshead, and clamping means fixing said cylinder-piston assembly on said second surface of said crosshead, said clamping means bearing against said second surface of said crosshead with a prestressing force whereby said crosshead is prestressingly clamped between said divided ring and said clamping means.

4,574,675

BAND-SAW HAVING ADJUSTABLE GUIDE MEANS FOR THE BAND

Helge Hallström, Vellinge, Sweden, assignor to Northern Food-Line Machines K.S., Ronne, Denmark

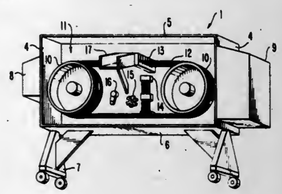
PCT No. PCT/SE83/00058, § 371 Date Oct. 19, 1983, § 102(e) Date Oct. 19, 1983, PCT Pub. No. WO83/02912, PCT Pub. Date Sep. 1, 1983

PCT Filed Feb. 21, 1983, Ser. No. 552,179

Claims priority, application Sweden, Feb. 19, 1982, 8201037

Int. Cl.⁴ B23D *55/08*

U.S. Cl. 83—804 **6 Claims**



1. A band saw for slicing a block of e.g. deep-frozen fish into several thin slices, comprising:

two drums over which at least two endless band saw blades are adapted to run;

an inclining means positioned between the drums for inclining the saw blades, said inclining means having a blade guiding unit including a block provided with bores, one for each saw blade, each said bore having a longitudinal axis parallel with the movement direction of the saw blades and receiving a respective one of said saw blades;

a cylinder positioned in each said bore, each said cylinder having inserts of a hard metal for positively guiding said saw blades, each of said cylinders being pivotable and securable in a predetermined position for inclining each saw blade to a predetermined angle relative to the axes of the drums; and

a washer secured to the block in association with each cylinder and in a predetermined angular position, each said washer having a planar surface, and each cylinder having a planar surface in cooperation with the planar surface on the associated washer in order to define the angular position of the cylinder.

4,574,676

CIRCULAR SAW BLADE

Röttger Jansen-Herfeld, Remscheld, Fed. Rep. of Germany, assignor to Firma Röttger Jansen-Herfeld, Remschied, Fed. Rep. of Germany

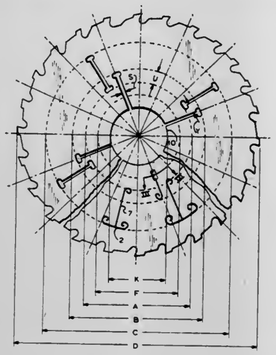
Filed Feb. 22, 1983, Ser. No. 468,306

Claims priority, application Fed. Rep. of Germany, Sep. 3, 1982, 3232778

Int. Cl.⁴ B27B *33/08*; B23D *61/02*

U.S. Cl. 83—835 **12 Claims**

1. A circular saw blade, comprising a circular body with two side faces and having an outer diameter (D), a central bore with a diameter (K), a peripheral edge provided with a plurality of cutting teeth, said blade body being formed with at least three inner radial slots extended outwardly radially from said central bore and circumferentially spaced from each other and with at least three outer radial slots extended outwardly radially towards said peripheral edge and also spaced circumferentially from each other, said inner radial slots terminating at a circumference having a first diameter (B), said outer radial slots extending between a circumference having a second diameter (A) and a circumference having a third diameter (C) exceeding said first diameter, said inner and outer slots being distributed circumferentially and radially in sets each including one inner slot and one outer slot, the outer slot in each set partially overlapping the inner slot in the same set in a radial direction to define a radial lap (U) therebetween and the outer slot in each set being circumferentially spaced from the inner slot in the same set to define a peripheral distance (V) therebetween, each of said slots having a width of not more than 2 mm



substantially along the entire length of the slot, the ratio of the length of said lap to said peripheral distance being greater than 1:1, said third diameter (C) being greater than 0.5 the sum of said outer diameter (D) and the diameter (K) of the central bore.

4,574,677

CUTTING APPARATUS FOR PLASTIC FOAM SOLIDS

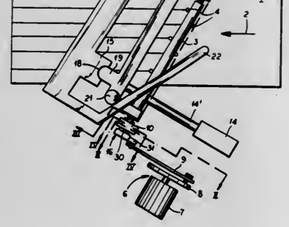
Siegmar Hühne, Wesel, Fed. Rep. of Germany, assignor to Münchow und Hühne Maschinenbaugesellschaft mbH, Duirburg, Fed. Rep. of Germany

Filed Jan. 17, 1985, Ser. No. 692,642

Claims priority, application Fed. Rep. of Germany, Jan. 20, 1984, 3401869

Int. Cl.⁴ B26F *3/12*; B26D *1/553*

U.S. Cl. 83—870 **11 Claims**



1. In a cutting apparatus for a body in which a cutting wire system has a plurality of substantially parallel cutting wires attached eccentrically to at least two parallel supporting rods, said rods being substantially perpendicular to said cutting wires and spaced from each other with clearance so that said body can be passed therebetween, the ends of said supporting rods being rotatably pivotable in a rod frame, and an oscillating drive connectable with said supporting rods so as to rotatably oscillate said supporting rods about their longitudinal axes, the improvement wherein:

said rod frame has an upper end swingable about an axis parallel to said cutting wires and removably supported in an upwardly open suspension recess provided in a frame support;

said rod frame is braced by a detachable strut with its lower end against at least one supporting abutment projecting from said frame support; and

a lower end of at least one of said supporting rods is connected by a radial plug-and-socket coupling with said oscillating drive.

4,574,678

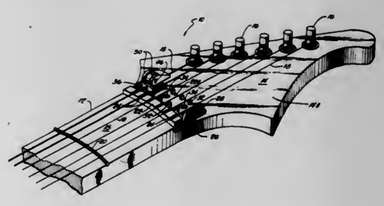
STRING LOCKING ASSEMBLY FOR A MUSICAL INSTRUMENT

William H. Edwards, 8890 56th St., Temple Terrace, Fla. 33617

Filed Jun. 29, 1984, Ser. No. 626,444

Int. Cl.⁴ G10D *3/12*

U.S. Cl. 84—314 N **9 Claims**



1. A string locking assembly for use on a musical instrument including a headstock, a string nut, tuning pegs supported upon said headstock, and a plurality of strings extending between the string nut and the tuning pegs, comprising:

(a) a baseplate adapted for secured mounting to the headstock of the instrument between the string nut and the tuning pegs, said baseplate including an outwardly disposed surface for contacting and supporting the strings;

(b) means mounted adjacent the string contact surface of said baseplate for separating the strings, said separating means being configured to allow passage of a wide range of string spacings through the assembly, from the string nut to the tuning pegs, without causing string stretching and detuning;

(c) a plurality of locking block means adapted to mount upon the support surface of the baseplate in overlying relationship to the strings for selectively applying a clamping force to the strings interposed between the baseplate and the locking block means, two opposite sidewalls of each of said locking block means extending substantially perpendicular to said strings and substantially in engagement with said string separating means so as to prevent rotation of said locking block means relative to said baseplate during clamping;

(d) cam action lock means for selectively providing pressure to urge said locking block means against said baseplate, said cam action lock means including a cam lever having an unlocked position to allow quick tuning of the guitar and a locked position to provide clamping pressure against the strings interposed between said locking block and said baseplate so as to prevent slippage of the strings over the string nut during play; and

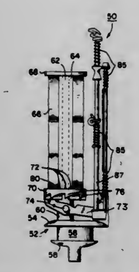
(e) means for selectively adjusting the distance between said baseplate and said lock means in said locked position to permit the clamping force to be adjustably controlled when clamping strings of different diameters.

4,574,679

RATCHET PLATE FOR CONVERSION OF A WIRE BRAIDER CARRIER TO A YARN BRAIDER CARRIER

Leroy G. Lasher, 1425 Hardy St., Levittown, Pa. 19067

Filed Dec. 20, 1983, Ser. No. 563,315
Int. Cl.[4] D04C *3/18*
U.S. Cl. 87—57 **8 Claims**



1. In a wire braider carrier of the kind having a base, a spindle having an upper end and a lower end, said lower end being attached to said base, a ratchet plate on said spindle having an upper face and a lower face with ratchets thereon, means for latching and de-latching said ratchet plate attached to the lower end of said spindle, means for engaging a means for storing elongated material attached to said ratchet plate, the improvement wherein said means for storing elongated material comprises a penetrable paper tube having a cross-sectional width with yarn thereon, means for penetrating said tube wherein said means for penetrating said tube comprises a plurality of pointed projections extending from said upper face, each said projection having a cross-section which is less than the cross-sectional width of said tube, said projections being adapted and disposed to penetrate an end of said tube.

4,574,680

ARRANGEMENT IN RECOILLESS WEAPONS

Joachim Nicodemus, Cologne, Fed. Rep. of Germany, assignor to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 611,505, May 17, 1984, abandoned, which is a continuation of Ser. No. 333,553, Dec. 22, 1981, abandoned. This application Apr. 11, 1985, Ser. No. 721,930
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1980, 3048597
Int. Cl.[4] F41F *3/02*
U.S. Cl. 89—1.701 **5 Claims**



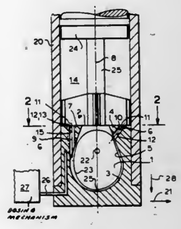
1. An arrangement for firing a projectile from a weapon with a firing barrel that is open at both ends, by a propellant charge tamped toward the rear with an inert, pulverulent compensating mass, characterized in that the projectile and the compensating mass are adapted to each other with respect to their mass and the distances to be traversed by each within the firing barrel in such a way that the compensating mass fully vacates the firing barrel only after the projectile vacates the firing barrel.

4,574,681

GUN BARREL WEAPON WITH LIQUID PROPELLANT CHARGE

Edwin Gundrum, Reiskirchen, and Karlheinz Reinelt, Hermannsburg, both of Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Duesseldorf, Fed. Rep. of Germany

Filed Mar. 31, 1983, Ser. No. 480,686
Claims priority, application Fed. Rep. of Germany, Mar. 31, 1982, 3211832
Int. Cl.[4] F41F *1/06*
U.S. Cl. 89—7 **6 Claims**



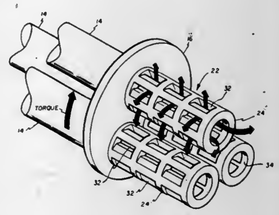
1. An improved gun barrel weapon having a liquid propellant charge chamber in axial alignment with a projectile chamber and the gun barrel of the weapon, said chamber having a substantially pear-shaped axial cross-section, a first region of said chamber which is remote from said projectile chamber being substantially semi-spherical in shape, and a second region of said chamber which adjoins said first region forming a constriction which is substantially frusto-conical in shape, said second region confronting the rear end of said projectile chamber, the improvement comprising, a housing in which said propellant chamber is mounted, a plurality of communication channels in said housing extending from said second frusto-conically shaped region to said projectile chamber and being disposed around said constriction, the inlet openings of said communicating channels being disposed on the surface of said frusto-conically shaped constriction.

4,574,682

TORQUE ASSIST DEVICE FOR A MULTI-BARREL WEAPON

Charles E. Hillman, Burlington, Vt., assignor to General Electric Company, Burlington, Vt.

Filed Jun. 1, 1984, Ser. No. 617,052
Int. Cl.[4] F41D *7/04*; B64D *7/02*
U.S. Cl. 89—12 **6 Claims**



5. A process of providing torque to a cluster of a plurality of gun barrels disposed in an annual row in a Gatling type gun, each barrel having a respective longitudinal axis and the cluster having a longitudinal axis of rotation, comprising:

providing a respective radial centrifugal flow, of the gun gas flowing through each respective gun barrel, adjacent its muzzle end;

deflecting said respective radial centrifugal flow of gun gas towards a tangential flow and absorbing energy nonsymmetrically from such deflection to generate a respective torque about the respective longitudinal axis of the gun barrel;

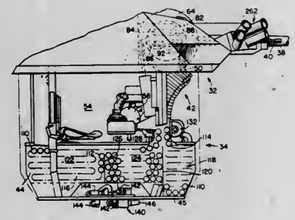
resolving the respective torques about the respective longitudinal axes of the gun barrels into a torque about the longitudinal axis of the cluster of gun barrels.

4,574,683

WEAPON SYSTEM

Richard S. LeBlanc, Mt. Clemens, Mich., assignor to General Motors Corporation, Detroit, Mich.

Continuation of Ser. No. 437,853, Oct. 29, 1982, abandoned. This application Dec. 13, 1984, Ser. No. 680,799
Int. Cl.[4] F41H *7/06*
U.S. Cl. 89—33.04 **1 Claim**



1. A weapon system for an armored vehicle comprising:

a turret rotatably positioned in the armored vehicle for rotation about a vertical axis, a basket assembly positioned below and depending from said turret,

a weapon assembly rotatable with said turret,

said weapon assembly including a main gun and a co-axially mounted machine gun both of which use linked ammunition,

an ammunition storage means for said linked ammunition and having a generally rectangular box-like shape positioned diametrically on said basket assembly with the longitudinal axis of said main gun and of said storage means being aligned in the same general vertical plane,

a pair of flexible feed chutes connected to said weapon assembly and to said storage means for feeding said linked ammunition from said storage means to said weapon assembly,

said vertical axis of rotation passing through said storage means,

a gunner's station positioned in said basket assembly on one side of said storage means,

a commander's station positioned in said main gun basket assembly on the other side of said storage means,

said storage means maintaining said linked ammunition in a generally horizontal position when stacked in said storage means,

said pair of feed chutes each including a forwarder means for initially feeding the linked ammunition to said main gun or returning the fed linked ammunition to said ammunition storage means,

said main gun being a dual feed gun utilizing alternatively a first linked ammunition or a second linked ammunition respectively fed to said main gun via said pair of feed chutes, said first linked ammunition comprising high explosive ammunition and said second linked ammunition comprising armor piercing ammunition,

said storage means including a first area for storing said first linked ammunition and a separate second area for storing said second linked ammunition,

said first area including a first compartment and a second compartment interconnected with said first compartment for storing said first linked ammunition,

said second area having a third compartment separate from said first and second compartment for storing said second linked ammunition,

one of said pair of feed chutes communicating with said second compartment,

said first linked ammunition being fed through said one of said pair of feed chutes to said main gun from said first compartment before being fed from said second compartment to said main gun,

the other of said pair of feed chutes communicating with said third compartment of said second area for feeding said second linked ammunition to said main gun,

a machine gun ammunition box position in said turret along one side thereof and opposite one side of said main gun, and

a machine gun feed chute for feeding ammunition links from said machine gun ammunition box to said machine gun.

4,574,684

SECURING AND EJECTOR DEVICE ON AMMUNITION-STOWAGE SYSTEMS WITH STORAGE TUBES

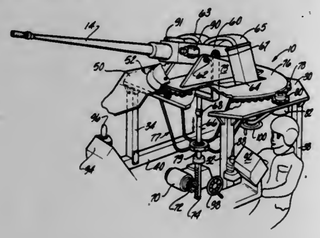
Reiner Linge, Kassel; Uwe Sprafke, Schauenburg, and Heinz-Jürgen Schlömer, Vellmar, all of Fed. Rep. of Germany, assignors to Wegmann & Co. GmbH, Kassel, Fed. Rep. of Germany

Filed Dec. 9, 1983, Ser. No. 560,023
Int. Cl.[4] F41C *25/00*; F42B *37/00*
U.S. Cl. 89—34 **1 Claim**



1. A device for securing ammunition in and ejecting ammunition from a storage tube having an open end wherein the ammunition is in the form of a shell having a base with an inner and an outer engaging surface, the device comprising: a slide bearing fixedly mountable on a storage tube at a distance from the open end of the tube; two parallel rods, each slidably mounted in the bearing at one end and having the other end disposed in the vicinity of the open end of the tube; a stop member connected to said other end of each and disposed in the path of a shell inserted into the rod open end of the tube, wherein the stop has an inner edge engageable with the inner engaging surface of a shell base being inserted in a tube; spring means disposed on each rod for urging the stop member away from the slide bearing; a hook; means pivotally mounting the hook for movement between a first position out of the path of movement of a shell inserted into the open end of a tube and a second position wherein the hook engages the outer engaging surface of a shell base and preventing longitudinal movement of the shell out of the tube in response to the urging of the spring means on the rods and thereby the stop member; second spring means urging the hook into the second position; a handle disposed on the hook for manually moving the hook from second position to the first position; and guide means disposed on the stop and the hook for maintaining the hook in the first position against the force of the second spring means until the stop is engaged by the inner engaging surface of a shell base and moved towards the slide bearing.

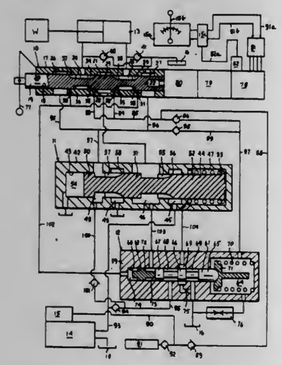
4,574,685
TURRET SYSTEM FOR LIGHTWEIGHT MILITARY VEHICLE
Steven L. Sanborn, Warren, and Martin J. Neumeyer, Utica, both of Mich., assignors to AM General Corporation, Detroit, Mich.
Continuation of Ser. No. 506,802, Jun. 22, 1983. This application May 20, 1985, Ser. No. 736,218
Int. Cl.⁴ F41F *21/08, 23/10*
U.S. Cl. 89—37.14 **45 Claims**



11. In a vehicle having a frame, the improvement comprising:

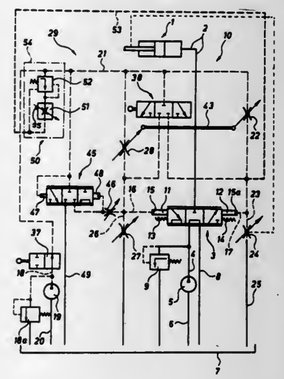
a platform, a weapon mounted to the platform, and a plurality of vertically extending stanchions connected at their upper ends to the platform and at their lower ends to the vehicle frame, with the stanchions including an outer casing, and an energy absorbing material filling the outer casing and being of different material than the outer casing material whereby said stanchions flex during firing of the weapon to thereby minimize the transfer of weapon impulse forces to the vehicle frame.

4,574,686
DIGITAL PROPORTIONAL SPOOL POSITION CONTROL OF COMPENSATED VALVES
Tadeusz Budzich, Moreland Hills, Ohio, assignor to Caterpillar Tractor Co., Peoria, Ill.
Continuation of Ser. No. 319,764, Nov. 9, 1981, abandoned. This application Aug. 6, 1984, Ser. No. 637,348
Int. Cl.⁴ F15B *21/02*
U.S. Cl. 91—35 **58 Claims**



1. A valve assembly having valve means operable to control by throttling fluid flow to and from a fluid motor subjected to an opposing or aiding load, linear step output means operable to actuate said valve means in discrete steps equal in number to a number of pulses in an intermittent pulse type control signal, intermittent pulse type control signal generating means having manual input control means operable to generate a number of pulses proportional to a manual input signal the number of said pulses being independent of the time taken in generation of said manual control signal, and intermittent pulse type control signal transmitting means interconnecting said intermittent pulse type control signal generating means and said linear step output means for actuating said valve means through a distance proportional to the magnitude of said manual input signal.

4,574,687
APPARATUS FOR POSITIONING AN ADJUSTING MEMBER
Wolfgang Kauss, Lohr-Wombach; Heinz Schulte, Markthelden-feld, and Kurt Wittich, Lohr/Main, all of Fed. Rep. of Germany, assignors to Mannesmann Rexroth GmbH, Fed. Rep. of Germany
Continuation of Ser. No. 515,065, Jul. 19, 1983, abandoned. This application Mar. 29, 1985, Ser. No. 717,541
Claims priority, application Fed. Rep. of Germany, Jul. 20, 1982, 3227060
Int. Cl.⁴ F15B *13/042*
U.S. Cl. 91—461 **9 Claims**



1. An apparatus for positioning an adjustable member as a function of a command signal and a controlled condition, especially for the positioning of a hoisting means on a tractor, the apparatus comprising:

an operating circuit having a bidirectional positionable valve with a valve slide and with first and second control devices for regulating flow of pressure medium from a supply tank to the adjustable member;

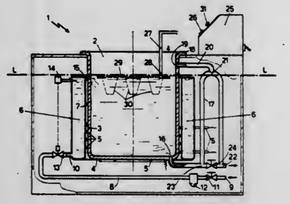
a control circuit connecting a control pressure medium source to said control devices for said positionable valve at first and second junctions, said control circuit having first and second adjustable throttles connected in series between said control pressure medium source and the supply tank, said first adjustable throttle being connected between the supply tank and said first junction, said second adjustable throttle being connected between said control pressure medium source and said first junction;

third and fourth throttles connected in series between said control pressure medium source and the supply tank, said third throttle being connected between the supply tank and said second junction, said fourth throttle being connected between said control pressure medium source and said second junction; and

a flow regulating valve connected in series between said control pressure medium source and said first junction, and in parallel relative to said second adjustable throttle, said flow regulating valve including an adjustable throttle and a pressure compensator connected in series to said adjustable throttle of said flow regulating valve;

whereby control pressure medium flows through said second adjustable throttle or said flow regulating valve when flowing from said control pressure medium source and said first junction.

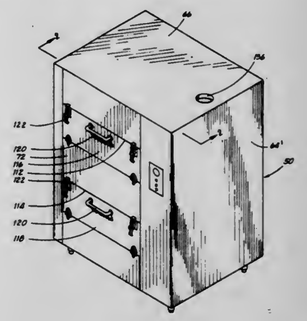
4,574,688
APPARATUS FOR COOKING FOOD
Giovanni Barbieri, via Marosticana n. 18, Dueville (Vicenza), Italy
Filed Mar. 26, 1985, Ser. No. 716,503
Claims priority, application Italy, Apr. 12, 1984, 84928 A/84
Int. Cl.⁴ A47J *27/18*
U.S. Cl. 99—330 **8 Claims**



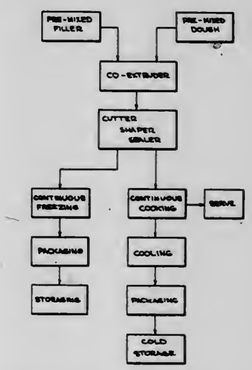
1. An apparatus for cooking food, particularly by temporarily dipping it into a liquid at high temperature, comprising a cooking vessel adapted to contain said liquid, as well as a heating means associated therewith, wherein an additional receptacle is provided which is located close to said cooking vessel and heating means in which said liquid, introduced through a feeding line is brought to the optimal temperature and thereafter sent through a connection duct to said cooking vessel, said cooking vessel being provided at its bottom with an opened discharge port to which a trap associated downstream with an evacuation pipe is connected, which trap is suitable to allow the level L of the liquid contained in said cooking vessel to be always at a predetermined value, said cooking vessel being also provided, close to its upper rim with a safety drain opening acting as an overflow to which a drain pipe associated downstream with a top of said trap is connected.

4,574,689
COMPACT BARBECUE OVEN
Michael L. Robertson, Marion, Ill., assignor to B. B. Robertson Company, Marion, Ill.
Continuation-in-part of Ser. No. 488,180, Apr. 25, 1983, Pat. No. 4,510,854. This application Apr. 12, 1985, Ser. No. 722,838
Int. Cl.⁴ A47J *37/04*
U.S. Cl. 99—337 **12 Claims**

1. A barbecue oven comprising: a cabinet including walls which enclose an oven chamber having upper and lower portions, some of the enclosing walls being upright; door means in at least one of the upright walls for providing access to the oven chamber; support means for supporting food in the upper portion of the oven chamber, the support means being accessible through the door means, so that food may be loaded onto or removed from the support means; a firebox located in the lower portion of the oven chamber generally directly below the support means and also being accessible through the door means, the firebox having at least one longitudinal wall and two end walls and a door that together enclose a space in which a fire is contained, the firebox door being in the longitudinal wall and being accessible through the door means so that a solid fuel may be loaded into the firebox, the firebox containing an aperture which opens into the oven chamber to enable smoke to pass from the firebox to the oven chamber, the firebox having its longitudinal wall and both of its end walls and its door spaced from all of the cabinet walls and from the door means such that air and smoke within the oven chamber may circulate past sides, ends, and bottom of the firebox, the firebox further having a sleeve which extends to one of the cabinet walls, the combustion which occurs in the firebox being the sole source of heat for the oven chamber; a burner mounted on the cabinet and being aligned with and directed into the sleeve on the firebox, the burner being capable of producing a flame which passes into the interior of the firebox to impinge on solid fuel in the firebox; and a baffle wall located in the oven chamber between the support means and the firebox, the baffle wall extending only partially across the oven chamber and being spaced from opposite upright walls of the oven chamber, so that air and smoke may circulate between the upper and lower portions of the oven chamber; and a fan located in the oven chamber for moving air and smoke between the upper and lower portions of the oven chamber and past the baffle wall as it does and for further causing air and smoke to circulate past the firebox.



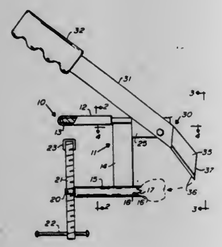
4,574,690
APPARATUS FOR FORMING WRAPPED FOOD PRODUCTS
Tsu T. Chiao, and Cherry C. Chiao, both of 2325 Holly Oak Dr., Danville, Calif. 94526
Filed Jul. 13, 1984, Ser. No. 630,377
Int. Cl.⁴ A47J *37/12*
U.S. Cl. 99—353 **2 Claims**



1. An apparatus for continuously producing a wrapped food product, comprising a filling food material surrounded by a moldable food material, said apparatus comprising:

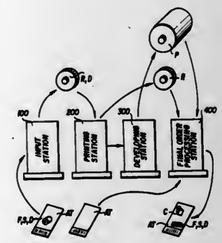
a double barrel extruder member having an inner elongated tubular barrel arranged substantially centrally within an elongated surrounding outer tubular barrel;
a first hopper adapted to supply said filling food material to said inner tubular barrel;
a second hopper adapted to supply said moldable food material to said surrounding outer tubular barrel; feeding means for continuously moving said food materials from each of said hoppers through each of said tubes respectively to an end of each of said tubular barrels to form a filled ribbon of food material;
means for continuously shaping, cutting and sealing said ribbon to form said wrapped food product, said shaping, cutting and sealing means being positioned adjacent said feeding means, and adapted to receive said ribbon of food material and continuously shape, cut and seal to form said wrapped food product; and
cooking means operatively connected to a moving means operatively associated with said shaping means, said cooking means comprising,
top, bottom and side wall members defining a cooking chamber housing a cooking solution,
an elongated entrance tube extending through said top wall member and into said chamber, said elongated entrance tube being adapted to receive a wrapped food product from said moving means and directing it to a bottom section of said chamber,
means for creating turbulence in said bottom section of said chamber,
means for introducing a heated cooking solution into said chamber, and
means for directing a cooked wrapped food product out of a top section of said chamber.

4,574,691
NUTCRACKER
Donald Hadley, Jr., 7671 Derby La., Cotati, Calif. 94928
Filed Mar. 7, 1984, Ser. No. 587,174
Int. Cl.[4] A23N *5/00*
U.S. Cl. 99—583 **7 Claims**



1. A nutcracker, comprising
a main frame having a tubular anvil with an annular end wall at one end for receiving an end portion of a nut, and an internally threaded member at its opposite end, said main frame also having a horizontal upper member parallel to said anvil and spaced therefrom, a vertical member connecting said upper member to said anvil and a pivot support portion opposite said horizontal upper member and connected to said vertical member,
vise means for securing said main frame to a horizontal support, said vise means comprising
a vertical threaded member connected to said anvil through said internally threaded member with a resilient cup at its upper end, said vertical threaded member being aligned perpendicular to said anvil, and with a handle at the lower end in a plane parallel to said anvil with said cup facing said horizontal upper member, said upper member having a resilient coating thereon, and
a lever arm pivoted to said pivot support portion of said main frame and having a handle portion extending thereabove and an angled portion therebelow with a blade-like member having a single narrow-edged blade-like portion facing and movable toward said annular end wall of said anvil.

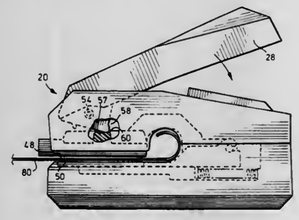
4,574,692
PROCESS AND APPARATUS FOR THE PREPARATION OF PHOTOGRAPHIC COPIES
Robert Wahli, Unterengstringen, Switzerland, assignor to GRETAG Aktiengesellschaft, Regensdorf, Switzerland
Filed Oct. 5, 1984, Ser. No. 658,367
Claims priority, application Switzerland, Oct. 5, 1983, 5402/83
Int. Cl.[4] G03B *27/32, 27/52*
U.S. Cl. 101—2 **11 Claims**



1. In the production of photographic prints according to a customer's order, a process for ensuring the correlation of the customer's order envelope, the corresponding film and the prints produced from the film, comprising the steps of:
identifying the order envelope and the film with a machine-readable control number prior to a printing operation;
reading the control number on the film by machine in a printing station and applying said control number, in a machine-readable form, to the order of prints produced from the film;
reading the control number, by machine, on each of the order envelope, film and print order and comparing the numbers to one another; and
initiating a corrective action if the compared numbers do not agree with one another.

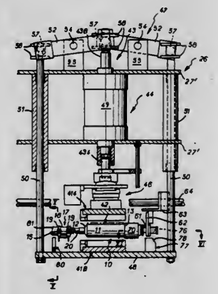
4,574,693
SEAL PRESS
Cameron Fink, Hearthside Pl. 3, London, Ontario, Canada (N5V 3N1); Robert W. Schram, 22 Ullswater Crescent, London, Ontario, Canada (N6G 3Y8), and Anthony Gentile, Apt. 200, 390 Princess Ave., London, Ontario, Canada (N6B 2A9)
Filed Jan. 31, 1985, Ser. No. 696,825
Claims priority, application Canada, Oct. 23, 1984,
Int. Cl.[4] B31F *1/07*
U.S. Cl. 101—3 SP **4 Claims**

1. A seal press for use in embossing paper with a desired pattern, the seal press comprising:
a housing;
a seal set including a die, a die counter, means locating the die and die counter relative to one another and pivot means permitting relative movement of the die and die counter to move the seal set between an open position and a closed position to emboss the paper;
retaining means coupling the seal set to the housing and permitting movement of the seal set between storage and operational positions, the die and die counter remaining within the housing as the seal set is moved between the storage and operational positions; and
a lever pivotally attached to the housing and having a cam surface engageable with the seal set to move the die about said pivot means when the seal set is in the operational position so that angular movement of the lever will cause



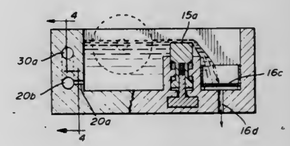
movement between the die and die counter to move the seal set into the closed position to emboss the paper, the lever being rendered inoperable by moving the seal set from the operational to the storage position, the seal set then being in the open position.

4,574,694
STAMPING MACHINES WITH COORDINATED MOVEMENT OF OPPOSING DIES
Jean-Louis Dubuit, Paris, France, assignor to Societe d'Esploitation des Machines Dubuit, Paris, France
Filed Sep. 28, 1984, Ser. No. 655,463
Claims priority, application France, Sep. 29, 1983, 83 15548
Int. Cl.[4] B44C *1/14*; B41F *17/24*
U.S. Cl. 101—11 **15 Claims**



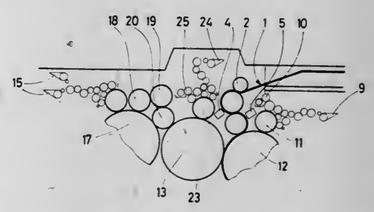
1. A stamping machine having at least one inprinting station of a gilding press type, said stamping machine comprising a frame, two die members mounted for movement in opposite directions on said frame for enclosing at least a portion of an article to be imprinted and applying a foil suitable for the desired impression, control means for controlling the displacement of said die members, said control means comprising a double-acting actuator, said double-acting actuator having a body and a piston rod, said actuator body being mounted on said frame, first means connecting said piston rod to one of said die members and motion reversing means connecting said piston rod to the other of the die members, the motion reversing means including two links pivotally connected to said piston rod at first end of said links and pivotally connected to respective supporting columns at second ends of said links, said supporting columns being fixed at a plate carrying said other die member, and each of said supporting columns being mounted for translatory movement relative to said frame.

4,574,695
PRESS DAMPENING ROLL FOUNTAIN
Garth S. Ryan, Longueuil, Canada, assignor to Mirachem Corporation Ltee/Ltd., Quebec, Canada
Filed Sep. 24, 1984, Ser. No. 653,581
Int. Cl.[4] B41F *7/32*
U.S. Cl. 101—148 **7 Claims**



1. An elongated fountain pan for receiving an elongated press dampening roll therein, comprising in combination:
(a) dampening solution inlet means in said pan in the form of a plurality of spaced apart dampening solution apertures extending lengthwise of the pan and accordingly lengthwise of the dampening roll whereby the dampening solution may enter the pan generally uniformly throughout its length and thus maintain a generally even temperature of the dampening throughout the length of the pan;
(b) control means in said pan for use in controlling the level of dampening solution within said pan, said control means comprising an elongated dam-wall extending lengthwise of said pan in spaced generally parallel relation to said plurality of dampening solution apertures whereby said dampening solution entering into said pan via said dampening solution apertures may travel a relatively short distance within said pan before exiting therefrom over said dam-wall, affording ready and thus efficient removal of contaminants from the dampening solution in said pan, and assisting in keeping the dampening solution in said pan at a relatively low operating aperture; and
(c) drain means in said pan remote from said inlet means, for use in removing said dampening solution following its passage over said dam-wall.

4,574,696
ROTARY PRESS FOR THE SIMULTANEOUS MULTICOLOR PRINTING ON BOTH SIDES OF A WEB OR SHEET
Gualtiero Giori, Lonay, Switzerland, assignor to De La Rue Giori S.A., Switzerland
Filed Jun. 21, 1984, Ser. No. 622,986
Claims priority, application Switzerland, Jul. 26, 1983, 4085/83
Int. Cl.[4] B41F *5/16*
U.S. Cl. 101—152 **3 Claims**



1. Rotary multicolor printing machine for the simultaneous printing of both sides of a paper in web or sheet form, more particularly for printing the safety background of fiduciary documents, which comprises a first blanket cylinder contact-

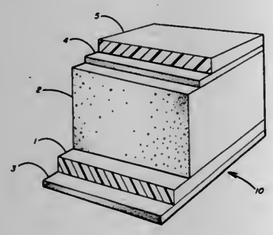
ing a plurality of offset plate cylinders each inked by an inking device in a different color the number of said offset plate cylinders corresponding to the number of colors and designs of the first image to be printed on one side of the paper, said first image consisting of superposed colors and designs, and comprising a second blanket cylinder operating as a color collecting cylinder contacting a plurality of selective color inking cylinders and a typographic plate cylinder, said typographic plate representing the complete design of the second image to be printed on the other side of the paper, said selective color inking cylinders, of which the number corresponds to the number of colors of said second image and wherein the relief areas correspond to the portions of this image to be colored in the different colors, being each inked by an inking unit in a different color and applying an image with juxtaposed colors to said collecting cylinder inking in turn said typographic plate cylinder, a third blanket cylinder, contacting said typographic plate cylinder and receiving therefrom the image with juxtaposed colors, being pressed against said first blanket cylinder, said paper passing between said first and third blanket cylinders so as to be printed simultaneously on both sides with said first and second images respectively further comprising an offset printing unit, of which the plate cylinder contacts the third blanket cylinder, for printing a main monochrome design.

4,574,697

SHEET MATERIAL FOR MOUNTING PRINTING PLATES

George F. Feeley, Downington, Pa., assignor to Norwood Industries, Inc., Malvern, Pa.

Continuation of Ser. No. 176,662, Aug. 11, 1980, abandoned.
This application Sep. 28, 1982, Ser. No. 425,666
Int. Cl.[4] B41N *1/12*
U.S. Cl. 101—401.1 13 Claims



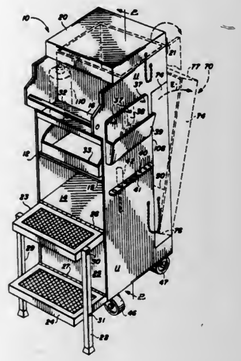
1. A sheet material for mounting flexible printing plates to the drum of a printing press comprising:
   a base film having a gauge of 1 to 5 mils;
   a flexible foam at a thickness of 10 to 20 mils uniformly coated on and adhered to said base film, said foam having at least 40 percent resilience according to ASTM D 2632-74;
   a pressure sensitive adhesive coated on said base film and said foam; and
   the cohesion of said base film and said foam, the adhesion of said base film to said foam, and the adhesion of said adhesive to the base film and said foam being greater than the adhesion of the adhesive to the flexible printing plate and the drum of a printing press; whereby when the sheet material is removed from the printing plate and the drum, the foam, the base film and the adhesive remain an integral sheet.

4,574,698

APPARATUS FOR SERVICING PRINTING PRESS

Frederick R. Mesker, 2391 Leroy St., Kingman, Ariz. 86401

Filed Jul. 13, 1984, Ser. No. 630,669
Int. Cl.[4] B41L *41/00*
U.S. Cl. 101—425 3 Claims



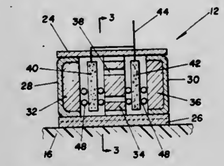
1. Apparatus for maintenancing the inking assembly of a printing press, said inking assembly including
   operatively associated rollers positioned on said assembly for transferring and dispensing ink to be applied to sheet material passing through said printing press, and
   an ink fountain for storing and dispensing to said rollers a supply of printing ink, said fountain being normally maintained on said inking assembly at a generally fixed height above the ground,
said apparatus including, in combination,
(a) a frame;
(b) at least one ink accumulation tray shaped and dimensioned to be removed from said apparatus and to be positioned adjacent to and scrape ink from one of said printing press ink assembly rollers positioned on said inking assembly;
(c) means for removably carrying and storing said ink accumulation tray on said frame;
(d) an ink knife having a handle and a blade;
(e) means for carrying and storing said ink knife on said frame, said ink knife storage means including a reservoir of cleaning fluid contacting at least a portion of said blade when said ink knife is carried on said frame by said ink knife storage means;
(f) a container of ink solvent fluid carried on said frame;
(g) a fluid tight cleaning sink having a bottom surface and pivotally carried on said frame for movement between at least two operative positions,
   a first normal operative storage position with said bottom surface generally vertically disposed, and
   a second operative position with said bottom surface generally horizontally disposed,
   said sink being utilized to receive fluid when said sink is in said second operative position;
(h) a container carried on said frame for receiving ink removed from the ink fountain of said printing press; and,
(i) a supply of fresh ink carried on said frame for the ink fountain of said printing press,
said frame being shaped, contoured and dimensioned and said ink container being positioned thereon such that said frame carried thereon can be positioned on the ground adjacent said ink fountain and ink can be scraped from said ink fountain directly into said ink container.

4,574,699

EXTENDIBLE WAFER IGNITER WITH PERFORATIONS ADJACENT THE FOOT PORTION

Christopher W. Bolieau, Brigham City, Utah, assignor to Thiokol Corporation, Chicago, Ill.

Filed Nov. 17, 1983, Ser. No. 552,650
Int. Cl.[4] F42B *15/10*
U.S. Cl. 102—202 10-Claims



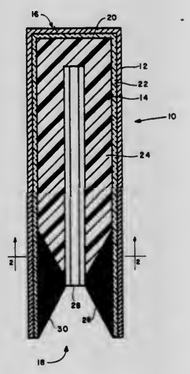
1. A wafer igniter for projecting a stream of flaming gases onto the surface of the propellant grain of a rocket motor thereby to ignite said propellant grain comprising,
   a cylindrical case, said case being closed at its ends and having an external foot that extends longitudinally of the case and being adapted to be bonded to the surface of the rocket motor propellant grain,
   at least one propellant wafer positioned in said cylindrical case with the axis thereof oriented substantially coincident with the axis of said case,
   at least one tube initiator positioned in said cylindrical case in spaced relation with said wafer propellant,
   said cylindrical case having a plurality of perforations in the periphery thereof, said perforations being in the quadrants of said case adjacent said foot whereby, upon actuation of said initiator and burning of said propellant wafer, flaming gases are projected in a stream from said perforations with a flow component in the direction of said foot.

4,574,700

SOLID ROCKET MOTOR WITH NOZZLE CONTAINING AROMATIC AMIDE FIBERS

Joseph W. Lewis, Edwards Air Force Base, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 15, 1984, Ser. No. 671,395
Int. Cl.[4] C06D *5/06*
U.S. Cl. 102—287 5 Claims



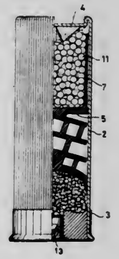
1. In a solid rocket motor comprising
   a. a rocket case having a closed first end and an open second end; and
   b. a centrally ported propellant grain comprising:
      i. a main portion consisting of a shaped and cured first propellant composition, and
      ii. a nozzle portion consisting of a shaped and cured second propellant composition;
      wherein said second composition has a lower burn rate than said first composition; and wherein said nozzle portion has a diverging exit cone in communication with the central port extending through said nozzle portion and into said main portion;
   the improvement which comprises a plurality of aromatic amide fibers homogeneously dispersed through said nozzle portion.

4,574,701

WAD FOR CARTRIDGES OF HUNTING AND SHOOTING ARMS

Pino Fiocchi, Lecco, Italy, assignor to Fiocchi Munizioni Spa, Italy

Filed Oct. 11, 1983, Ser. No. 540,506
Claims priority, application Italy, Oct. 12, 1982, 23152/82[U]
Int. Cl.[4] F42B *7/08*
U.S. Cl. 102—451 5 Claims



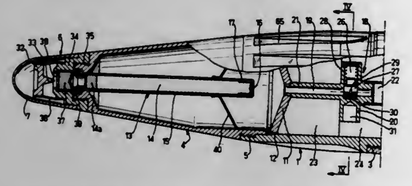
1. For use in a shotgun cartridge of the type for use in a shotgun for hunting or shooting, the cartridge having a substantially cylindrical envelope, an improved wad including a shot cup and a base cup for confining a propellant charge, characterized by the base cup being configured for expanding against the interior surfaces of the envelope and against inner surfaces of a barrel of the shotgun, a cushioning structure interposed between the shot cup and base cup, the cushioning structure comprising a vertical stack of disk-shaped tiles each of concave nature for providing a concavity opening toward the base cup, each such tile being of tile configuration formed by bending along one diameter, such diameter representing the top edge of the respective tile, the tiles being interconnected by walls outwardly inclined relative to the cartridge base and the tiles taking a substantially flattened configuration upon combustion of the propellant charge and for providing a diameter when flattened which is slightly greater than the inner diameter of the barrel, an axial rod interconnecting the base cup and a lower side of a bottom one of said stack of tiles, and means interconnecting an upper side of an upper one of said stack of tiles and the shot cup whereby upon firing, the tiles provide sealing action against inner surfaces of the barrel before emergence of the base cup from the envelope to prevent leakage of combustion gases.

4,574,702

ARMOUR-PIERCING HIGH-EXPLOSIVE PROJECTILE WITH CARTRIDGE

Francois Brandt, Chalet Le Caribou, 1884 Villars sur Ollon, Vaud, Switzerland

Filed Oct. 4, 1983, Ser. No. 539,030
Claims priority, application France, Oct. 8, 1982, 82 16942
Int. Cl.⁴ F42B *11/22*
U.S. Cl. 102—476 **24 Claims**



1. An armour-piercing high-explosive projectile comprising a body portion attached to a cartridge case, a nose portion including a nose fuse affixed to said body portion and means on said body portion for engaging a rifled gun barrel and stabilizing the gyration of said projectile after said projectile has been fired,

said body portion defining an inner chamber containing a secondary stabilized explosive material mounted about an empty duct having a forward end and a rearward open end, said inner chamber having its end closest to said nose portion defined by a slightly conical liner element forming a flat charge, said liner element having a central opening receiving said forward open end of said duct,

said rearward open end of said duct communicating with said secondary explosive material, centrifugal safety means within said duct for blocking passage of solid particles through said duct before firing of the projectile,

said nose portion enclosing along its longitudinal axis a hollow tubular sheath element having a forward open end and a rearward end fitted with a metal closing element, said hollow tubular sheath being fitted with a secondary stabilized explosive material in contact with said metal closing element and forming an explosive column, said explosive column being in axial alignment with said empty duct and having its rearward end near the forwrad end of said duct, said metal closing element having a concave surface facing said forward open end of said duct,

said nose fuse comprising a primer of primary explosive material within said tubular sheath whereby pieces of said metal closing element are thrown through said duct and impact said stabilized explosive material contained in said inner chamber causing said material to explode, said centrifugal safety means unblocking said duct due to centrifugal force applied to said safety means.

4,574,703

HIGH VELOCITY AMMUNITION SABOT

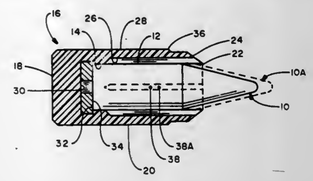
Henry J. Halverson, Collinsville, Ill., assignor to Olin Corporation, Stamford, Conn.

Filed Mar. 1, 1984, Ser. No. 585,327
Int. Cl.⁴ F42B *13/16*
U.S. Cl. 102—520 **11 Claims**

1. A small caliber spin stabilized, frangible discarding sabot projectile comprising:

a hard metallic armor-penetrator subcaliber core; and

a cylindrical sabot having a central recess in a front end thereof surrounding a rear portion of said penetrator and having a solid base portion behind said core, said sabot being made of a plastic material with an Izod impact strength of less than 12 ft. lbs./in. of notch when tested under ASTM Test Method D256, a compressive strength of at least 15,000 psi when tested under ASTM Test Method D695, a shear strength of at least 12,000 psi when tested under ASTM Test Method D732 and a tensile



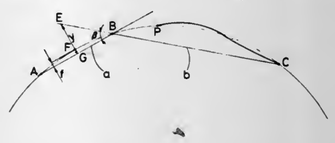
strength of at least 12,000 psi when tested under ASTM Test Method D1708.

4,574,704

APPARATUS FOR GUIDING A RAILROAD TRACK POSITIONING DEVICE

Ivo Cicin-Sain, Bussigny, Switzerland, assignor to Matisa Materiel Industriel S.A., Crissier, Switzerland

Filed Mar. 2, 1983, Ser. No. 471,243
Claims priority, application Switzerland, Mar. 24, 1982, 1800/82
Int. Cl.⁴ E01B *35/04, 33/06*
U.S. Cl. 104—8 **8 Claims**



4. In a railroad track renewal or maintenance machine having a forward portion running on old track before renewal or maintenance, a rear portion running on new or relayed track and an intermediate portion spanning an intermediate space where track is being layed or relayed, means for guiding railroad track positioning means which comprises,

means carried by said forward portion for locating a first arc of old track and a first chord of predetermined constant length subtending said first arc,

means for measuring the height of said arc on a first straight line perpendicular to said first chord at a point intermediate the ends of said first chord and for locating on a projection of said first straight line a first point spaced from said first chord by a distance "y" which is a function of said height, the length of said first chord and the length of a second chord of predetermined constant length,

means for projecting a beam of light rearwardly from said first point along a second line extending through a second point at the rear end of said first arc and said first chord, and

means carried by said rear portion for defining on said second line said second chord extending rearwardly from said second point and locating by its rear end a point in the desired position of track to be positioned in said intermediate space.

6. In a railroad track renewal or maintenance machine having a forward portion running on old track before renewal or maintenance, a rear portion running on new or relayed track and an intermediate portion spanning an intermediate space where track is being layed or relayed,

means for guiding railroad track positioning means which comprises;

means carried by said forward portion for locating a first arc of old track and a first chord subtending said first arc,

means on said forward portion for projecting a beam of light rearwardly from an emitter along a line extending rearwardly from the rear end of said first arc and said first chord and disposed at an angle β to said first chord and laying out on said line a second chord of predetermined length, the angle β being determined by the equation

$$\text{Tan } \beta = 2\ y/a$$

wherein

$$y = a(a+b)/4r$$

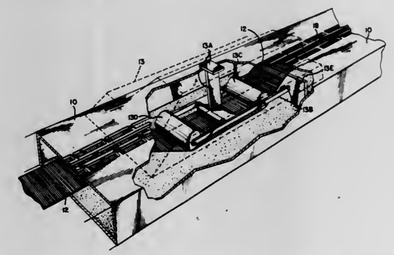
where "a" is the length of said first chord, "b" the length of said second chord and "r" is the radius of said first arc, the rear end of said second chord locating the rear end of a second arc on which the layed or relayed track is to be located.

4,574,705

PRESSURIZED AIR VEHICLE TRANSPORTATION SYSTEM

Emil H. von Winckelmann, 7731 Amestoy St., Van Nuys, Calif. 91406

Filed Feb. 27, 1984, Ser. No. 583,982
Int. Cl.⁴ B60V *3/04*; B61B *13/12*
U.S. Cl. 104—23 FS **5 Claims**



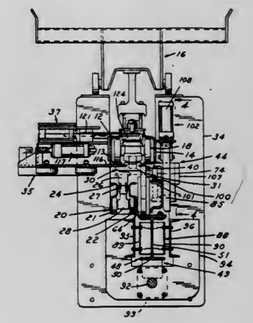
1. A transportation system comprising: a longitudinal duct carrying a pressurized air; a grating mounted on the top side of the duct through which the pressurized air in the duct may escape, said grating having a longitudinal slot therein; a belt positioned in the duct and extending along the underside of the grating from one end of the grating to the other to be forced against the grating by the pressurized air in the duct normally to prevent the escape of pressurized air through the grating; a vehicle positioned on the top side of the duct to be supported on an air cushion on top of said grating; an arm mounted on the vehicle and depending downwardly therefrom and extending through said slot into the interior of the duct; a vane-like member positioned in the interior of the duct to be interposed in said pressurized air; means mounting the vane-like member on the lower end of said arm in position to extend across the interior of the duct interposed in said pressurized air to be propelled along the duct by pressure differentials in said pressurized air so as to cause the vehicle to move along the top of the duct; and a carriage mounted within the duct on the lower end of said arm and having roller means engaging the top surface of the belt to move the portion of the belt underlying the vehicle downwardly from the underside of the grating as the vehicle is so moved along the top of the duct to permit pressurized air to escape through the grating to create said pressure differentials in the interior of the duct and to create said air cushion for supporting the vehicle.

4,574,706

CONVEYOR SYSTEM WITH ALTERNATIVE CARRIER PROPULSION

Clarence A. Dehne, Farmington Hills, Mich., assignor to Jervis B. Webb Company, Farmington Hills, Mich.

Filed Sep. 13, 1984, Ser. No. 650,818
Int. Cl.⁴ B61B *13/12*; B65G *37/00*
U.S. Cl. 104—162 **20 Claims**



11. In a conveyor system having a carrier track and carriers each including a driving trolley supported on the carrier track, each driving trolley having a driving dog movable between an extended position and a retracted position, the improvement comprising:

primary and secondary propelling means selectively operable for forwarding carriers along at least a portion of said carrier track;

said primary propelling means including primary pushers, said driving dog in said extended position being drivingly engageable by one of said primary pushers and being non-engageable by said primary pushers in said retracted position; and,

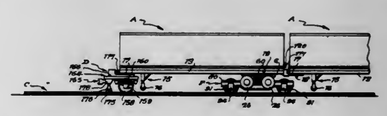
said secondary propelling means including at least one secondary pusher movable between a driving position and a non-driving position, said driving dog in said retracted position being drivingly engageable by said secondary pusher in said driving position and said driving dog in said extended position being non-engageable by said secondary pusher in said non-driving position.

4,574,707

CONVERTIBLE HIGHWAY RAILROAD VEHICLE

Albert F. Hickman, Eden, N.Y., assignor to A. F. Hickman Associates, Inc., Trumansburg, N.Y.

Continuation-in-part of Ser. No. 239,503, Mar. 2, 1981, Pat. No. 4,397,243. This application May 4, 1983, Ser. No. 491,602
Int. Cl.⁴ B60F *1/04*; B61F *13/00*
U.S. Cl. 105—159 **4 Claims**



1. A system for the combined transportation of a cargo by highway and railraod comprising a pair of containers for carrying said cargo, a pair of first axle means each permanently connected to one end of each container, rubber tired highway wheels supporting each of said first axle means during highway travel, a pair of second axle means, railroad wheels supporting each of said second axle means, interengaging means for selec-

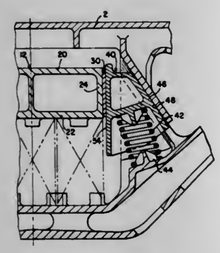
tively mounting and dismounting each of said first axle means on each of said second axle means, and means for detachably supporting the other end of each of said containers on the first axle means of the other of said containers, said interengaging means comprising a first frame means on said first axle means and having an under surface, a second frame means on said second axle means and having an upper surface, the under surface of said first frame means being in close face-to-face relation with the upper surface of said second frame means to provide a unitary highway and railroad frame structure, means restraining said first frame means against horizontal movement with reference to said second frame means, first stage spring means interposed between each of said first frame means and the container thereon and carrying the entire load between said container and said first axle means when said container is not mounted on said second axle means, and a second stage spring suspension interposed between each second frame and the container thereon and carrying only part of the load of said container when said first axle means is mounted on said second axle means with the remainder of the load of said container being carried by said first stage spring means, whereby said first and second stage spring means share the entire load of said container, said second stage spring means being permanently connected to its first frame means and being detached from the second frame means when its first frame means is detached from said second frame means.

4,574,708

DAMPING MECHANISM FOR A TRUCK ASSEMBLY

James E. Solomon, Lithopolis, Ohio, assignor to Buckeye International, Inc., Columbus, Ohio

Filed Jan. 3, 1984, Ser. No. 567,777
Int. Cl.⁴ B61F *5/04*
U.S. Cl. 105—193 **8 Claims**



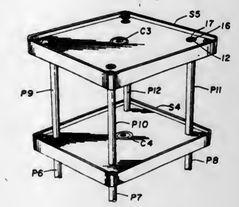
1. In a freight car truck assembly, the improvement comprising, in combination, a pair of spaced side frames supported on wheel assemblies, a bolster opening in each side frame, a bolster having its opposite ends received in respective side frame bolster openings, bolster spring means in each side frame supporting opposite ends of said bolster, each of said side frames having a pair of wedge pockets formed therein on opposite sides of the adjacent bolster end, a pair of friction damping wedges mounted in respective ones of said pockets in each of said side frames, first biasing means biasing said wedges upwardly in said pockets into engagement with opposite sides of said adjacent bolster end, and second biasing means biasing each of said wedges in its pocket toward the outside of the corresponding side frame.

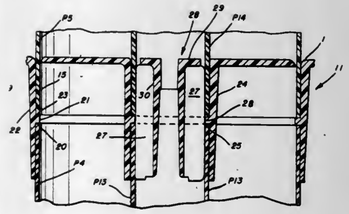
4,574,709

SHELF ELEMENT AND SUPPORT THEREFOR

Robert W. Lackey, Hickory, S.C., and James L. Gebhardt, Roswell, Ga., assignors to The Mead Corporation, Dayton, Ohio

Filed Dec. 5, 1983, Ser. No. 557,925
Int. Cl.⁴ A47B *3/00;* **A47F** *43/00*
U.S. Cl. 108—111 **14 Claims**





1. Support structure for a planar shelf element having an upper and a lower surface and comprising an aperture formed in said planar element, a support sleeve projecting downwardly from said lower surface of said planar element and having an inner surface at the upper end thereof disposed in substantial coincidence with said aperture, support means mounted on the inner surface of said support sleeve, closure means including a tubular element having an outer flange in the plane of said planar shelf element and disposed within said aperture and mounted on said support means for closing at least a substantial part of said aperture, to provide a substantially continuous upper surface, and mounting post means selectively received by said support structure so that when said mounting post means is not arranged to project upwardly from said shelf element a substantially continuous shelf upper surface is provided.

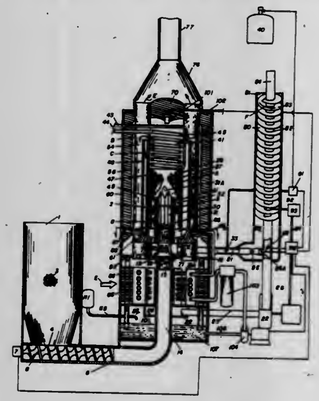
4,574,710

TURBO BURNER COAL POWERED TURBINE ENERGY SYSTEM

John D. Pickard, 9802 Longwood Cir., Louisville, Ky. 40223

Filed Nov. 26, 1984, Ser. No. 675,012
Int. Cl.⁴ F23B *7/00*
U.S. Cl. 110—234 **12 Claims**

1. A fuel burning device including fuel compression means to receive solid fuel and compress said solid fuel; die means to receive said compressed fuel from said compression means and form said compressed fuel into a selected shape fuel; burner casing means having an inlet to receive said selected shape fuel where said combustion chamber has a mean diameter greater than the diameter of said selected shape fuel whereby at least a portion of said selected shape fuel is exposed to an annular combustion chamber formed between said fuel shape and said burner casing; air supply means to supply air to said annular combustion chamber; second annular casing means disposed outwardly from said burner casing to form a second annular space therebetween; second air supply means to supply air to said second annular chamber; flow restricter means located adjacent the outlet of said burner casing whereby combustion gasses generated by combustion of said fuel shape flow through said restriction means at reduced pressure and increased velocity relative to the pressure of said supply air; first heat coil means located at said outlet of said restriction means whereby heat is transferred to said heat coil means from said combustion gasses emitted from said restriction and wherein said heat exchanger includes coil means having selected separation between adjacent coils whereby combustion gasses flow therebetween; generally tubular recycle casing means located outside said second annular casing to define annular recycle conduit therebetween whereby particulate matter emitted



through the said openings between adjacent coils of said heat exchange means flow downwardly through said annular recycle conduit to be admitted to be recycled by said second air supply means through said first annular area; tubular return casing means located outside said recycle casing means forming an annular area therebetween whereby gasses emitted from between the coils of said heat exchanger flow downwardly therethrough; scrubber means to receive gasses flowing through said annular means for removal of noxious material therefrom; and duct means including inlet means to receive air to be heated and outlet means to emit heated air extending upwardly through said first return annular area and said recycle area to receive heat from gasses said recycled gasses and said return exhaust gasses flowing therethrough.

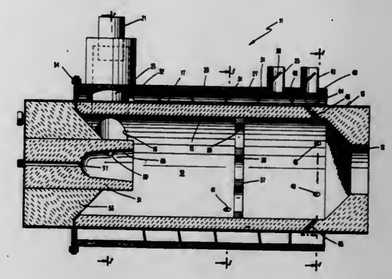
4,574,711

GRANULATED SOLID FUEL BURNER

J. Vernon Christian, 2160 Longreen Rd., Kingsport, Tenn. 37660

Filed May 31, 1983, Ser. No. 499,470
Int. Cl.⁴ F23D *1/00*
U.S. Cl. 110—264 **4 Claims**

1. A burner for use in burning granulated solid fuel comprising a head having a lateral inlet opening at one end and an outlet opening at its other end, a combustion chamber communicating said inlet and outlet openings, means defining a passageway communicating with said inlet opening, means for delivering granulated solid fuel to said passageway, means for delivering combustion air to said passageway to mix with said fuel prior to entering said combustion chamber including means defining a cavity surrounding said head and extending along a major portion of the combustion chamber and communicated at one end with said passageway, air inlet means communicated with the other end of said cavity, means in said cavity forming a spiral duct therein along substantially the entire length of said cavity and circumscribing the combustion chamber from said air inlet means to said air delivery means whereby combustion air entering said cavity from said air inlet means is caused to travel in a spiral path through said spiral



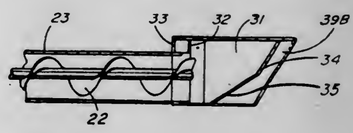
duct around said head and combustion chamber and to be preheated prior to entry into said passageway.

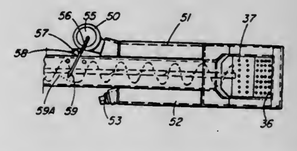
4,574,712

WOOD CHIP BURNING STOKER TYPE FURNACE

Emil J. David, P.O. Box 942, Station "F", Thunder Bay, Ontario, Canada (P7C 4X8)

Filed Aug. 27, 1984, Ser. No. 644,250
Int. Cl.⁴ F23K *3/10*
U.S. Cl. 110—288 **4 Claims**





1. A heater for use in burning particulate combustible material such as wood chips or the like comprising:

means for storing a supply of the particulate combustible material including a container having a cover removably mounted thereon and during use being sealed so as to provide a sealingly closed container:

means for feeding the particulate combustible material from the container to a burner in the heater comprising a first conveyor and a second conveyor for moving the particulate material along respective different flow paths from the container to a burner in the heater, a drop box between said first and second conveyor providing a contiguous flow path along the conveyor system for the particulate material and a normally closed one way flow valve means in said drop box preventing reverse flow through the drop box from said second to said first conveyor; and

a burner in the heater comprising an open top container for holding the particulate material during burning thereof and having at least some of the walls thereof perforated for flow of air through the perforations, said second conveyor means discharging into the open top container of the burner through a side wall thereof, such side wall

having perforations therein for use in directing combustion air into the container at least a portion of which flows in the direction of movement of the fuel supply into the container: wall means attached to and spaced from the container of the burner, such wall means and container providing effectively a double walled container with an air chamber therebetween: and first conduit means for providing an air flow path into the chamber of the double walled container.

4,574,713

PIN FOR HOLDING AND/OR COOLING OF CERAMIC COATINGS IN HOT REACTION CHAMBERS, AND METHOD OF MANUFACTURING THE SAME

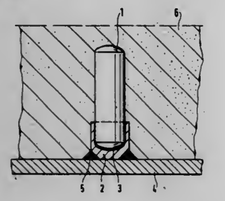
Klaus Köhnen, Mühlheim/Ruhr; Norbert Ullrich, and Reinhard Müller, both of Essen, all of Fed. Rep. of Germany, assignors to Krupp-Koppers GmbH, Essen, Fed. Rep. of Germany

Filed May 7, 1985, Ser. No. 731,484

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1984, 3423807

Int. Cl.[4] F23M *5/00*

U.S. Cl. 110—336 **2 Claims**



1. A pin for holding and/or cooling of a ceramic coating in hot reaction chambers, comprising a pin shaft composed of a material which is temperature-, corrosion-, erosion- and oxidation-resistant in reaction conditions in a hot reaction chamber; a pin cap composed of a material corresponding to the material of a wall of the hot reaction chamber; and means for connecting said pin shaft with said pin cap, said connecting means including a diffusion-welding produced seam interconnecting said pin shaft with said pin cap and forming therebetween a homogeneous material connection layer.

4,574,714

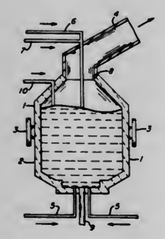
DESTRUCTION OF TOXIC CHEMICALS

Robert D. Bach, Wayne County, Mich., and Christopher J. Nagel, Cook County, Ill., assignors to United States Steel Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 669,420, Nov. 8, 1984. This application Jun. 10, 1985, Ser. No. 743,328

Int. Cl.[4] F23G *15/00*

U.S. Cl. 110—346 **21 Claims**



1. Method of destroying wastes including at least some organic wastes comprising (1) providing, in a furnace, a molten bath of metals and oxides of metals having free energies of oxidation, under the temperature and oxygen partial pressure conditions of the furnace, greater than that for the conversion of carbon to CO, (2) maintaining the molten bath at a viscosity no greater than 10 centipoise, and (3) continuously and conjointly introducing oxygen and organic waste into or onto said bath in a stoichiometric ratio of oxygen to the oxidizable portion of said organic waste of at least 1:1, to maintain an average residence time of said organic wastes in said furnace of at least about one-half second.

4,574,715

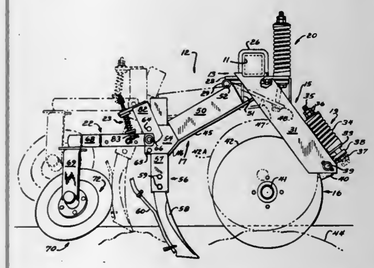
AGRICULTURAL FERTILIZER APPLICATOR

William J. Dietrich, Sr., Congerville; Cary L. Sizelove, Sr., Eureka, and Dean A. Knobloch, Goodfield, all of Ill., assignors to DMI, Inc., Goodfield, Ill.

Filed Nov. 15, 1984, Ser. No. 671,884

Int. Cl.[4] A01C *23/02*

U.S. Cl. 111—7 **6 Claims**



1. An improved attachment for applying fertilizer underground and adapted to be pulled by a tool bar drawn by a tractor comprising: tool bar mounting means adapted to be fixed to a single transverse tool bar: a coulter subframe secured to said tool bar mounting means and extending downwardly and forwardly thereof; a coulter assembly including a rotating coulter and an arm pivotally mounted to said coulter subframe adjacent the lower forward end thereof for pivotal movement between a lower use position and a raised clearing position and characterized in that the axis of rotation of said coulter travels generally vertically between said positions; a first spring cushion assembly mounted to said coulter subframe for biasing the coulter assembly to the use position while permitting the same to elevate to said clearing position by said generally vertical movement about said pivot mount; a knife subframe mounted to said tool bar mounting means and extending generally rearwardly thereof and including knife mounting means at a location above the axis of said coulter when both said colter and said knife are in their respective use positions; means for pivotally mounting said knife subframe to said tool bar mounting means for rotation about a transverse axis located above said coulter and rearwardly of the axis thereof for permitting said knife subframe to move between a lowered use position and a raised clearing position; and a knife assembly mounted to said knife mounting means on said knife subframe and characterized in that the lateral clearance between said knife and said coulter is no less than approximately 8 inches for both the use and clearing positions of said coulter; and a second cushion spring assembly carried by said mounting means for biasing said knife subframe to the use position.

4,574,716

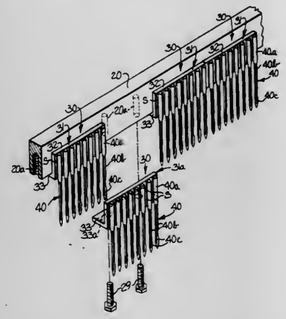
TUFTING MACHINE WITH MODULAR CONSTRUCTED NEEDLE BARS

Paul A. Czelusniak, Jr., Eden, N.C., assignor to Fieldcrest Mills, Inc., Eden, N.C.

Filed Dec. 4, 1984, Ser. No. 678,072

Int. Cl.[4] D05C *15/00*

U.S. Cl. 112—79 R **4 Claims**



1. A needle bar of modular construction for use in a tufting machine and comprising an elongate bar and a plurality of aligned modular units of tufting needles carried by said bar, each of said modular units comprising a mounting bracket having a first flange portion and a second flange portion arranged at right angles to each other, said flanges having inner and outer faces with the inner faces of the respective flanges being in engagement with said elongate bar, a plurality of tufting needles each having a shank portion and an opposing tapered end having a transversely arranged yarn receiving eye therein, said shank portions of said needles being juxtaposed to the outer face of said first flange, solder means securing said tufting needles to the outer face of said first flange portion in uniformly spaced-apart parallel relation with the eyes of said needles in alignment with each other, and fastener means cooperating with said second flange portions of said modular units for mounting the modular units on said elongate bar with the eyes of all of the tufting needles in alignment with each other and with all of the needles in uniformly spaced-apart parallel relation to each other.

4,574,717

WORKPIECE CLAMP FOR A SEWING DEVICE

Hubert Jünemann, and Samuel Römich, both of Bielefeld, Fed. Rep. of Germany, assignors to Kochs Adler AG, Bielefeld, Fed. Rep. of Germany

Filed Jan. 28, 1985, Ser. No. 695,446

Claims priority, application Fed. Rep. of Germany, Feb. 17, 1984, 3405721

Int. Cl.[4] D05B *21/00*

U.S. Cl. 112—121.12 **5 Claims**

1. A workpiece clamp for a sewing device for sewing together the margins of necktie workpiece cuts, said workpiece clamp comprising:

clamping plates movable connected to each other; and

lock means for releasably locking said clamping plates in positions for subsequently clamping one and both of said workpiece cuts;

said clamping plates including:

a lower plate having a profile with a tip and two lateral corners,

an upper plate formed substantially in accordance with said profile, and

an intermediate plate formed substantially in accordance with said profile,

said lower and said intermediate plates being formed for clampably receiving a first workpiece cut,

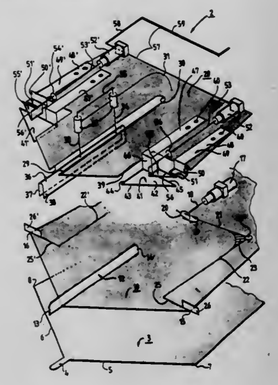
said intermediate and said upper plates being formed for clampably receiving a second workpiece cut,

said intermediate plate including:

a central web means projecting on the side of said intermediate plate contacting said second workpiece cut, and

lateral web means each associated to one of said corners,

said upper plate including:



a central recess coacting with said central web means in said clamping position of said upper plate and said intermediate plate for forming a center fold in said clamped second workpiece cut,

lateral folding elements each coacting with said lateral web means in said clamping position of said upper plate and said intermediate plate for forming corner folds in said clamped second workpiece cut, and

folding means each associated with one of said corners and operably provided for folding over said formed corner folds in a common direction.

4,574,718

SEWING MACHINE HEAD INCLUDING A ROTARY HOUSING

Hans Scholl, Oerlinghausen-Lipperreihe, and Jochen Fischer, Detmold, both of Fed. Rep. of Germany, assignors to Kochs Adler, AG, Fed. Rep. of Germany

Filed Oct. 2, 1984, Ser. No. 657,025

Claims priority, application Fed. Rep. of Germany, Oct. 8, 1983, 3336683

Int. Cl.[4] D05B *21/00*

U.S. Cl. 112—121.12 **6 Claims**

1. A sewing device having:

a sewing head;

a feeding means for producing a two-axis-relative-movement between said sewing head and a workpiece to be sewn;

a drive means connected to said sewing head and said feeding means;

said sewing head having:

a housing rotatably arranged at said sewing head about an axis of rotation, said housing having therein;

crank means operable by said drive means, a bearing frame displaceably fastened to said housing,

gear means to impart jogging movements to said bearing frame

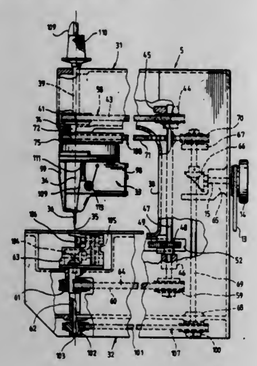
a needle bar longitudinally displaceably received in said bearing frame

link means drivingly connecting said crank means with

said needle bar as to superpose a reciprocating motion with said jogging movements resulting in a needle-feed-movement, wherein said reciprocating needle bar is joggingly driven laterally relative to said axis of rotation, and

a thread take-up means handling thread;

a bearing including a hook, said bearing being rotatably arranged about said axis of rotation,



transmitting means for equiangularly rotating said housing and said bearing, and

a control including a drive for rotating said housing and said bearing, said housing further having:

a first drive connection for connecting said crank means to said jogging means and

a second drive connection for connecting said crank means to said thread take-up means.

4,574,719

OPTOELECTRONIC SCANNER FOR SEWING MACHINE

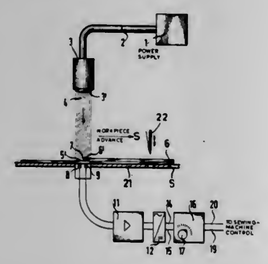
Siegmund Balke, Spenge, Fed. Rep. of Germany, assignor to Durkoppwerke GmbH, Bielefeld, Fed. Rep. of Germany

Filed Jun. 27, 1984, Ser. No. 625,119

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1983, 3323214

Int. Cl.⁴ D05B *35/00*

U.S. Cl. 112—272 **9 Claims**



9. In an optoelectronic scanner for a sewing machine for the precise determination of thickness differences of movable multilayer fabric workpieces in which a transmitter sends electromechanic radiation through the workpiece to fall upon a plurality of ferroelectric sensors so that signals are generated corresponding to the transmitted electromagnetic radiation and are fed to an amplifier, the improvement wherein:

the transmitter is disposed above said workpiece and is provided with an aspherical lens from which said electromagnetic radiation is emitted;

said photoelectric sensors are optoelectronic sensors of which at least two are provided below a transport path for the workpiece opposite said transmitter;

outputs from said optoelectronic sensors are applied to two identically constructed radiation/frequency converters;

respective but identical rectifiers are connected to output sides of each of said converters; and

output voltages from said rectifiers are applied to an adjustable window discriminator having a potentiometer for setting the window width thereof.

4,574,720

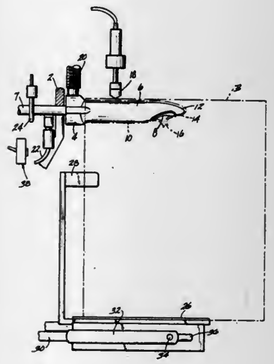
METHOD AND APPARATUS FOR FILLING VALVED BAGS

J. George Lepisto, Middletown, Ohio, assignor to Champion International Corporation, Stamford, Conn.

Filed Sep. 6, 1984, Ser. No. 648,785

Int. Cl.⁴ B65B *1/04*

U.S. Cl. 141—10 **5 Claims**



5. A method for filling a bag of the type having a filling sleeve, said method comprising the steps of:

(a) inserting a filling nozzle into said filling sleeve of said bag so as to bring a delivery port on said nozzle into alignment with an entry port on said sleeve;

(b) drawing a first vacuum between said filling nozzle and said filling sleeve to form a seal line wherein said sleeve is in sealing engagement with said nozzle along a line spaced outwardly from and completely surrounding said delivery port and said entry port;

(c) impelling a pulverulent product through said nozzle, said delivery port and said entry port into the interior of said bag to fill said bag with said product;

(d) releasing said first vacuum;

(e) partially withdrawing said nozzle from said filling sleeve;

(f) drawing a second vacuum in said nozzle to suck product deposited in said filling sleeve out of said filling sleeve through said nozzle; and

(g) completely withdrawing said nozzle from said filling sleeve while maintaining said second vacuum.

4,574,721

ASSEMBLY FOR HOLDING CARGO

Chung Min Chien, No. 69, Kou Jung Rd., I-Lan, Taiwan

Filed Dec. 12, 1984, Ser. No. 680,943

Int. Cl.⁴ B63B *3/00, 11/00*

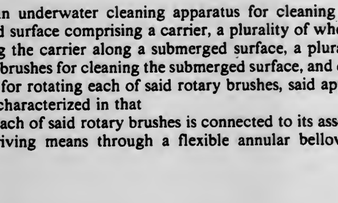
U.S. Cl. 114—72 **14 Claims**

1. In a ship including a hull of semicircular cross-section, an assembly for holding cargo mounted on the ship, cargo pipes for sending cargo into or out of said assembly and gas pipes for sending gases into or out of said assembly, said assembly comprising:

a cylindrical tank mounted for rotation about a horizontal axis in said hull and having two closed ends and an inside torque partition member dividing said tank into a lower compartment and an upper compartment; said torque partition member producing a torque during loading and unloading the liquid cargo;

rotating rail means provided around the periphery of said rotatable tank;

support rail means mounted on said hull for supporting said rotating rail means;



means for locking said tank against movement; and

two connecting means for respectively connecting said two compartments to said cargo pipe and said gas pipe attached to two closed ends of said tank, each of said means including a double pipe assembly which has an outer pipe and an inside pipe with an annular space therebetween, and has its first end attached to the closed end for rotation together with said tank, the annular space between said outer pipe and said inside pipe used for the flow of the gas, and said inside pipe used for the flow of the liquid cargo, said double pipe assembly having its second end movably connected with said cargo pipe and gas pipe in a gas-tight relationship.

4,574,722

UNDERWATER CLEANING APPARATUS

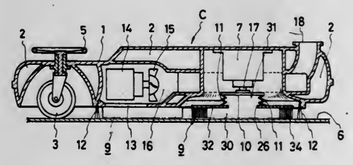
Ryoji Orita; Shiro Shimatani, and Hitoshi Okamoto, all of Tamano, Japan, assignors to Mitsui Engineering & Shipbuilding Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 535,959, Sep. 23, 1983, abandoned. This application Apr. 5, 1985, Ser. No. 720,457

Claims priority, application Japan, Oct. 6, 1982, 57-151924[U]; Mar. 31, 1983, 58-56580

Int. Cl.⁴ B63B *59/10*

U.S. Cl. 114—222 **4 Claims**



1. An underwater cleaning apparatus for cleaning a submerged surface comprising a carrier, a plurality of wheels for moving the carrier along a submerged surface, a plurality of rotary brushes for cleaning the submerged surface, and driving means for rotating each of said rotary brushes, said apparatus being characterized in that

(a) each of said rotary brushes is connected to its associated driving means through a flexible annular bellows-type wall expandable towards and away from said submerged surface to define a reduced pressure chamber at the central axial region of said rotary brush, and

(b) said plurality of rotary brushes are as a whole surrounded by an annular brush secured to said carrier.

4,574,723

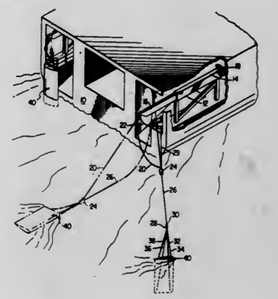
PARAVANE HANDLING SYSTEM

Michael J. Chiles, Victoria, and Harvey M. Babb, Goliad, both of Tex., assignors to VMW Industries, Inc., Victoria, Tex.

Filed Jan. 14, 1985, Ser. No. 691,289

Int. Cl.⁴ B63B *21/04*

U.S. Cl. 114—253 **13 Claims**



1. A deployment system for deploying a seismic cable from a vessel comprising:

a paravane connected to the seismic cable;

said paravane being coupled to the seismic cable through a hitching device connected at one end to the seismic cable and coupled to said paravane by a plurality of paravane cable lines;

direction control means onboard the vessel, said direction control means being selectively operable to transmit direction signals to said paravane;

receiving means located on said paravane for receiving said direction signals; and

paravane control means coupled to said receiving means and responsive to said direction signals to cause movement of the paravane in accordance therewith; and

generator means coupled to the paravane and operable to provide power to said paravane control means.

4,574,724

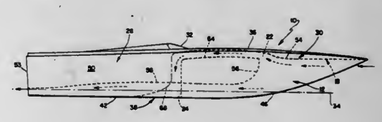
BOAT-HULL CONSTRUCTION

Peter R. Stolper, Newport, R.I., assignor to David L. DelNero, Cranston, R.I., a part interest

Filed May 17, 1984, Ser. No. 611,202

Int. Cl.⁴ B63B *1/38*

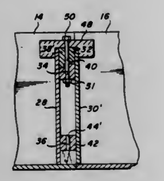
U.S. Cl. 114—271 **11 Claims**



1. A boat-hull construction comprising a pair of transversely spaced, longitudinally extending hull sections and a longitudinally extending connecting section between said hull sections, said connecting section cooperating with said hull sections to define a tunnel therebetween which extends longitudinally through said hull construction from the fore end thereof to the aft end thereof, said tunnel having an enlarged forwardly

facing forward portion which is operative for receiving and compressing air therein when said hull construction is underway in a forward direction, said hull sections having exit ports in downwardly facing portions thereof, said exit ports being submerged when said hull construction is underway in a forward direction and operating in a planing condition, and duct means for withdrawing a portion of said compressed air from said forward portion and for exiting it in substantially uniform sheets through said exit ports so that it passes longitudinally along the undersides of said hull sections.

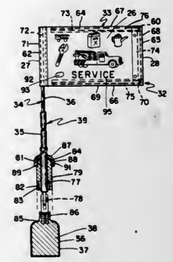
4,574,725
COLLAPSIBLE BOAT
Dennis Dowd, R.R. 2, Box 218A, Sioux City, Iowa 50312
Filed Jul. 2, 1984, Ser. No. 626,940
Int. Cl.[4] B63B *7/04*
U.S. Cl. 114—352 **5 Claims**



1. In a collapsible boat comprising a bow section, a plurality of sections and a stern section, said sections adapted to be stacked in a nested assembly for transportation, means on each section for securing said sections in end-to-end relation to form a rigid, leak proof boat the improvement comprising a plurality of sections, each of said sections having side walls and end walls, each of said plurality of sections having a first L-shaped bar extending laterally on one end adjacent top thereof from side wall to side wall, a first rectangular bar extending laterally of said one end adjacent the bottom thereof, a plurality of bores extending vertically through said first L-shaped bar, a plurality of pins extending upwardly from said first rectangular bar, the other end of said section having a second L-shaped bar extending laterally and adjacent the top thereof, a second rectangular bar extending laterally adjacent the bottom of said section, a plurality of vertically extending bores through said second L-shaped bar and said second rectangularly shaped bar, said plurality of sections being assembled in such a manner that said first L-shaped bar on one section interlocks with said second L-shaped bar on an adjacent section and said first rectangular bar having pins thereon of an adjacent section with the pins extending into said second rectangular bar bores so that the sidewalls and bottom of one section is tightly engaged with the sidewalls and the bottom of an adjacent section.

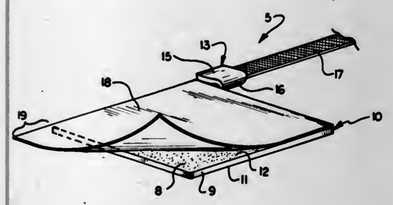
4,574,726
PORTABLE TEMPORARY EMERGENCY DISTRESS SIGNAL
Jeremiah F. Sullivan, 28 A Railroad St., Apt. 13, Methuen, Mass. 01844
Filed Jul. 17, 1984, Ser. No. 631,597
Int. Cl.[4] G09F *21/04, 7/04, 17/00*
U.S. Cl. 116—28 R **1 Claim**

1. A portable, temporary, emergency, distress signal capable of being carried in the dash compartment of an automobile but removable therefrom and expandable for attachment to the top or side of the automobile when stranded, said distress signal comprising:
- a flag staff formed of an upper rod telescopable within a lower rod, said upper rod having an upper portion and said lower rod having a lower portion;
- a rectangular distress flag, of limp material, having four side edges, each side edge having a hollow seam, each of said hollow seams terminates in an opening, one of said seams encircling the upper portion of said upper rod;
- a three section, jointed frame rod, insertable in said openings of said seams to maintain said limp flag in unfurled condition when in use;
- a base having a lower portion formed by a permanent magnet and an upper portion threadedly attached to the lower portion of said lower rod, said upper portion of said base having external threads therearound;
- a pivot joint in the lower portion of said lower rod, proximate the upper portion of said base;
- a cylindrical lock sleeve around said lower portion of said



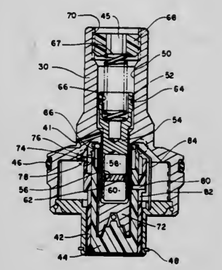
lower rod and adapted to slide over said pivot joint to make said joint inoperative, said lock having a lower portion with internal threads engageable with the external threads on the upper portion of said base to maintain said pivot joint in inoperative position;
- a lock stop affixed to said lower rod, at a spaced distance above said pivot joint, said lock stop having internal threads;
- and said cylindrical lock having an upper portion with external threads engageable with the internal threads of said lock stop to maintain said lock in inoperative position thereby enabling said pivot joint to pivot and said distress signal to be attached to the side of a vehicle.

4,574,727
BOOKMARK
Robert P. Martin, Jr., c/o Martin Sheet Metal, Inc. 7108 Madison Ave., Cleveland, Ohio 44102
Filed Aug. 11, 1983, Ser. No. 522,028
Int. Cl.[4] B42D *9/00*
U.S. Cl. 116—234 **6 Claims**



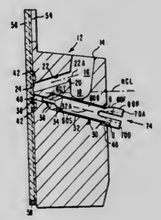
6. A bookmark to be manually secured to a cover of a book by a user comprised of:
- flat anchor sheet means having a front face and a back face, the back face being treated with pressure sensitive adhesive, and having an integral marker tail which extends for a length from the anchor sheet means and which is similarly treated with said pressure sensitive adhesive;
- a release back sheet which releasably adheres to the pressure sensitive adhesive of the anchor sheet means and is removed before the bookmark is secured to the book; said release back sheet being removable by peeling said release back sheet from the anchor sheet means for purposes of affixing the anchor sheet means to a book with the pressure sensitive adhesive;
- the flat anchor sheet means and release back sheet being blanked from laminated composite sheet stock;
- the release back sheet including a release tab extending integrally for a length from the release back sheet, said release tab being free of the anchor sheet means and having a free length corresponding to the length of the extension of the marker tail from the anchor sheet means; and
- elongate, flexible marker means secured adjacent one end thereof to the pressure sensitive adhesive of the marker tail, said marker means being adapted to be placed between the pages of the book;
- the release tab originally being releaseably adhered to a marker tail of an adjacent book mark blanked from said laminated composite sheet stock and, when separated from said adjacent marker tail, allows the pressure sensitive adhesive of said adjacent bookmark marker tail to secure an elongate marker means and said tab functions as a free element for grasping and peeling said release back sheet from said anchor sheet means.

4,574,728
FILTER DIFFERENTIAL PRESSURE IMPENDING AND BYPASS INDICATOR
George B. Barnard, Jr., Newbury Park, Calif., assignor to Purolator Technologies Inc., Newbury Park, Calif.
Filed Jun. 7, 1984, Ser. No. 618,100
Int. Cl.[4] G01L *19/12;* **B01D** *35/14*
U.S. Cl. 116—267 **14 Claims**



1. Differential pressure detector providing dual indication of differing pressure differentials comprising:
- pressure detecting means;
- means for coupling sources of fluid pressure to opposite sides of said pressure detecting means for generating forces on said pressure detecting means proportional to differences in pressure between said sources for moving said pressure detecting means responsive to said force differences;
- means for biasing said pressure detecting means to establish a force threshold level below which said pressure detecting means will not move;
- first permanent magnet means including two spaced apart permanent magnets tandemly disposed with north poles oriented in the same direction carried by said pressure detecting means for movement with said pressure detecting means responsive to forces exceeding said threshold level;
- first hollow indicator means for providing a signal responsive to a first difference in pressure in excess of said threshold levels;
- second hollow indicator means for providing a signal responsive to an increase in the difference in pressure beyond said first difference, said first hollow indicator means being concentrically disposed relative said second hollow indicator means;
- second and third permanent magnet means carried by said first and second hollow indicator means respectively and having north poles oriented in the same direction as said first permanent magnet means, said second and third permanent magnet means each being disposed concentrically about and substantially surrounding said first permanent magnet means;
- said first, second and third permanent magnet means being magnetically coupled together for moving said first and second hollow indicators to provide said signals as said first permanent magnet means moves relative to said second and third permanent magnet means.

4,574,729
CHAMBER BLOCK FOR A CYTOCENTRIFUGE HAVING CENTRIFUGAL FORCE RESPONSIVE SUPERNATANT WITHDRAWAL MEANS
John R. Wells, Culver City, Calif., assignor to E. I. Du Pont de Nemours & Co., Wilmington, Del.
Filed Aug. 6, 1984, Ser. No. 637,782
Int. Cl.[4] B05C *11/08*
U.S. Cl. 118—52 **4 Claims**



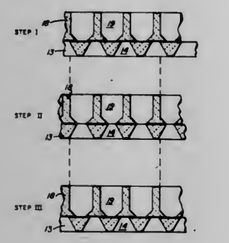
3. A chamber block for a cytocentrifuge comprising:
- a body portion having an inlet channel adapted to receive a sample of cells suspended in a supernatant and an outlet channel terminating in an outlet orifice through which the cells and supernatant pass toward a deposition surface;
- the body portion having a recess therein, the recess being sized to receive and support a plug of absorbent material;
- a plug of absorbent material insertable within the recess to a first, retracted, position, the plug being movable with respect to the block from the first, retracted, to a second, protruding, position; and
- a restraining arrangement positioned with respect to the block and the plug to restrain movement of the plug past the retracted position, the restraining arrangement being mounted to the plug and comprises an array of tines resiliently connected to the plug, the tines flaring to a point beyond the basic dimension of the plug and which, in the first position, abuts against the body of the block, the tines being deflectable inwardly of the plug in response to a circumferentially induced insertion force to move the plug past the retracted to the protruding position as the plug and block are rotated at a predetermined rotational speed.

4,574,730

MELT DISPENSING LIQUID PHASE EPITAXY BOAT

Mikelis N. Svilans, Kanata, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Feb. 27, 1984, Ser. No. 583,985
Int. Cl.⁴ H01L *21/208*
U.S. Cl. 118—412 **1 Claim**



1. A melt dispensing liquid phase epitaxy boat particularly for epitaxially growing multilayer structures, the boat comprising:

(a) a substate holder having a recess for holding a substrate;

(b) a growth-melt holder contiguous said substrate holder, the growth-melt holder having a plurality of growth-melt bins spaced therein;

(c) a supply-melt holder contiguous said growth-melt holder, the supply-melt holder having a plurality of supply-melt reservoirs having spacing corresponding to the spacing of the growth-melt bins in said growth-melt holder, the supply-melt reservoirs being several times larger in volume than said growth-melt bins;

(d) said supply-melt reservoirs each tapering downwardly to a bottom opening and the growth-melt bins each tapering upwardly to a top opening;

said supply-melt holder and the growth-melt holder being relatively slidable between a position in which the supply-melt reservoir bottom openings are aligned with the growth-melt bin top openings to permit dispensation of supply-melt of different composition from the spaced supply-melt reservoirs to respective growth-melt bins, and a position in which the supply-melt bottom reservoirs are blocked from the growth-melt bin top openings thereby to cut off fluid communication between the reservoirs and the respective growth-melt bins, the growth-melt holder and the substrate holder being relatively slidable to bring the substrate into alignment with openings at the bottom of successive growth-melt bins whereby successive layers of varied composition can be epitaxially grown.

4,574,731

DISPOSABLE SPRAY SHIELD

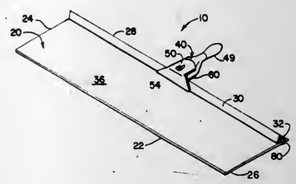
Keith A. Stevens, 2833 Stanford Rd.; Daniel R. Stevens, 2841 Stanford Rd., and Howard Stevens, Jr., 2731 Stanford Rd., all of Ft. Collins, Colo. 80525

Filed Dec. 31, 1984, Ser. No. 687,831
Int. Cl.⁴ B05C *11/00*
U.S. Cl. 118—504 **14 Claims**

10. Disposable spray shield apparatus, fabricated by the method comprising the steps of:

defining three parallel lines adjacent a side of a planar, semi-rigid sheet, said parallel lines defining three adjacent panels of approximately equal width;

bending said planar sheet on said lines to form a three-dimensional structural rib having a cross-section in the shape of an equilateral triangle, with the first panel laying on the top surface of the planar sheet, the second panel extending upwardly and rearwardly from the planar sheet at a 120° angle to the apex of the triangle and the third panel extending from the apex downwardly and rearwardly to join said planar sheet; and



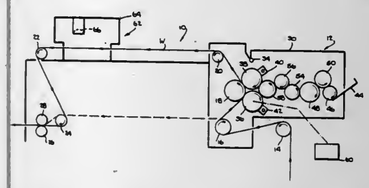
clamping the panels of the rib in this equilateral triangular configuration.

4,574,732

OVERVARNISH UNIT

William G. Verwey, Phoenix, Md., and John C. Hovekamp, Burton, Ohio, assignors to Feco Engineered Systems, Inc., Cleveland, Ohio

Continuation of Ser. No. 491,715, May 5, 1983, abandoned. This application May 29, 1984, Ser. No. 616,862
Int. Cl.⁴ B05C *1/08, 11/00*
U.S. Cl. 118—642 **6 Claims**



1. An overvarnish unit for varnishing a web comprising:

a press assembly having a rotatable impression cylinder for receiving a web driven at a predetermined linear speed,

one or more form rollers in contact with the web on said impression cylinder,

a varnish fountain,

a fountain roller in contact with the fountain for receiving varnish therefrom,

a plurality of willing rollers positioned in serial rolling contact with each other for transferring varnish from the fountain roller to the one or more form rollers and for milling the varnish as it is being transferred so as to reduce the viscosity of the varnish for ease of deposition on the web, and

means for driving said one or more form rollers at a peripheral speed different than the linear speed of the web over the impression cylinder enabling the varnish to be smeared onto the web.

4,574,733

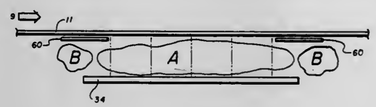
SUBSTRATE SHIELD FOR PREVENTING THE DEPOSITION OF NONHOMOGENEOUS FILMS

Prem Nath, Rochester, and Kevin R. Hoffman, Sterling Heights, both of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Filed Sep. 16, 1982, Ser. No. 418,859
Int. Cl.⁴ C23C *13/10*
U.S. Cl. 118—718 **7 Claims**

1. In glow discharge deposition apparatus wherein semiconductor layers are deposited onto a substrate, the deposition apparatus comprising at least one dedicated deposition chamber which includes: substrate support means; at least one cathode spaced from the substrate support means; means for introducing process gases between the substrate support means and the cathode; and means for energizing the at least one cathode to develop an electrodynamic field in which the process gases are disassociated into a plasma, the field comprising a central substantially uniform region separating a pair of nonuniform regions; the improvement comprising, in combination:

shielding means adapted to substantially prevent nonhomogeneous semiconductor films formed by the nonuniform electrodynamic fields from being deposited onto the substrate, whereby only the substantially homogeneous semiconductor film formed by the central uniform electrodynamic field is deposited onto the substrate.



4,574,734

UNIVERSAL ANIMAL ACTIVITY MONITORING SYSTEM

Ramakant H. Mandalaywala, and Bogdan J. Zaleski, both of Columbus, Ohio, assignors to Omnitech Electronics, Inc., Columbus, Ohio

Filed May 25, 1984, Ser. No. 614,063
Int. Cl.⁴ A01K *29/00*
U.S. Cl. 119—1 **10 Claims**

1. An improved animal activity monitor of the type wherein the position of an animal within an enclosure of substantially rectangular walls defining an arena is detected by an array of transversely oriented sets of parallel light beams above a floor of said arena to be broken by an enclosed animal, each beam being radiated from a light source and directed toward an associated detector, wherein the improvement comprises:

an insert means of transparent walls for transmitting said light beams through the walls, some of said walls being oriented parallel to each of said sets of parallel beams, said transparent walls subdividing the arena into subarenas, each of said subarenas being laterally offset horizontally and longitudinally from the other subarenas so that each of said light beams intersects only a single subarena,

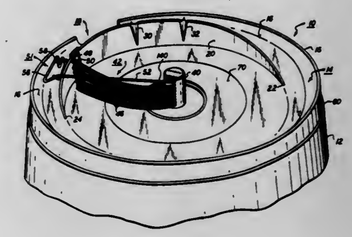
whereby animals are placed in subarenas that are in staggered and diagonally apart relationship.

4,574,735

ELECTRONIC LITTER SYSTEM

Donald G. Hohenstein, 1901 Westside Dr., Rochester, N.Y. 14624

Filed Mar. 5, 1984, Ser. No. 586,032
Int. Cl.⁴ A01K *29/00*
U.S. Cl. 119—1 **9 Claims**



1. A litter system comprising:

a chamber adapted to contain a quantity of particulate litter;

a rake disposed within said chamber;

a means for moving said rake through said chamber;

a container for receiving waste;

a means for directing waste away from said chamber to said container; and

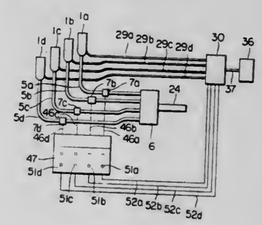
means for rotating said container to tumble the contents thereof.

4,574,736

MILKING APPARATUS

Tadaaki Tanaka, Tokorozawa; Tadahiro Ibuki; Yoshiaki Nakamura, both of Sayama, and Masaichi Yamamoto, Tokyo, all of Japan, assignors to Eisai Co., Ltd, Tokyo, Japan

Filed Sep. 20, 1984, Ser. No. 652,795
Claims priority, application Japan, Sep. 26, 1983, 58-178945
Int. Cl.⁴ A01J *5/14*
U.S. Cl. 119—14.08 **4 Claims**



1. A milking apparatus utilizing teat cups capped on individual teats, said apparatus comprising:

sets of electrodes for detecting milk flows sucked by each individual teat cup;

pressure transmitting tubes for transmitting air pressure to pressure chambers of each said respective teat cup;

air pressure means responsive to actuation of change-over means to supply atmospheric pressure and vacuum periodically and alternately to each said transmitting tube;

counting means for counting times for non-detection of the milk flows by each of said set of electrodes;

control means for actuating said change-over valve means to supply only atmospheric pressure to said transmitting tubes of an individual cup when the counted times of said counting means reach or exceed a predetermined time of said individual cup,

said change-over valve means responsive to said air pressure

means comprises a valve body for each cup disposed between said transmitting tube and an atmosphere passage as well as a vacuum passage, and a solenoid for selectively moving each said valve body to either an atmosphere position through which said transmitting tube is in communication with said atmosphere passage or a vacuum position through which said transmitting tube is in communication with said vacuum passage, and said control means comprises a counting circuit responsive to an "absence of milk" signal from each of said electrodes to count a duration time of said "absence of milk" signal and deliver an output signal representative of counted time, and a dispatching circuit responsive to the output signal of said counting circuit to compare a received signal with a predetermined time and deliver a halt signal to any solenoid when the received signal from its connected electrodes coincides with or exceeds said predetermined time, whereby said solenoid causes said valve body to halt at said atmosphere position by receiving said halt signal.

4,574,737

STRUCTURE FOR HOUSING ANIMALS

Joseph C. Bugeja, 103 Beames Ave., Rooty Hill, New South Wales, Australia (2766)

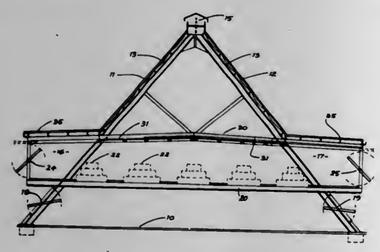
PCT No. PCT/AU83/00174, § 371 Date Aug. 1, 1984, § 102(e) Date Aug. 1, 1984, PCT Pub. No. WO84/02254, PCT Pub. Date Jun. 21, 1984

PCT Filed Nov. 30, 1983, Ser. No. 638,455

Claims priority, application Australia, Dec. 8, 1982, PF7169; Mar. 21, 1983, 12657/83

Int. Cl.⁴ A01K *1/00*

U.S. Cl. 119—16 **12 Claims**



1. A structure for housing animals such as poultry, said structure being of A-frame design and having a base, and opposite sides inclined towards an apex at which there is provided an opening, said structure having therein an area for accommodating cages for housing said animals; a ceiling situated above and near the cages, said ceiling being adapted to be opened to allow the flow of air from below the ceiling to the opening at the apex of said structure, and closed to generally retain air within said structure below the ceiling; and air vents at the base of said opposite sides.

4,574,738

FEED CONTAINER FOR PET BIRDS

Kazutoshi Tominaga, Higashi Osakashi, Japan, assignor to Kabushiki Kaisha Tominaga Jyushikogyosho, Higashi Osakashi, Japan

Filed Oct. 23, 1984, Ser. No. 663,884

Claims priority, application Japan, Oct. 27, 1983, 58-202001

Int. Cl.⁴ A01K *39/01*

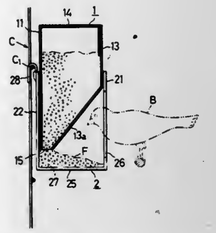
U.S. Cl. 119—18 **6 Claims**

1. A disposable assembly for containing and dispensing feed to pet animals, such as birds and the like, comprising:

a first container having walls defining a generally closed space for holding feed, said first container having a sloped side wall portion disposed opposite to a straight wall, said first container having an opening disposed where said sloped wall terminates adjacent to said straight wall, said opening adapted to allow feed to drop therethrough;

a second container having walls, including a front wall defining an aperture, and a bottom, which define an enclosure into which said first container is slidably and interchangeably insertable in a first position and a second position, said enclosure adapted to fit closely around said first container on all sides;

means adjacent the bottom of said second container for allowing said first container to rest within said second container with a space between said opening and said bottom of said second container;



said assembly providing a closed shipping and storage package for animal feed when said first container is inserted into said second container in said first position wherein said straight wall is disposed adjacent to, and closes off, said aperture and said bottom closes off said opening; and

said assembly providing an animal feeder when said first container is inserted into said second container in said second position wherein said sloped wall is disposed adjacent to said aperture, said aperture thereby remaining open so that an animal can gain access through the aperture, to the feed flowing from said first container into said second container.

4,574,739

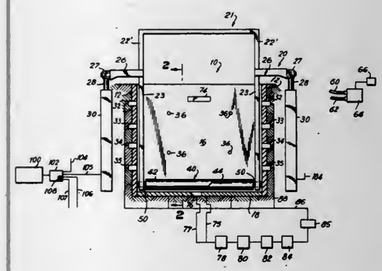
HORSE EXERCISING DEVICE

Lucien P. Fontaine, Bedford, and Angelo Leonaggeo, Jr., Bedford Hills, both of N.Y., assignors to Swim-Mill, Inc., Camarillo, Calif.

Filed Jul. 24, 1981, Ser. No. 286,503

Int. Cl.⁴ A61D *11/00*

U.S. Cl. 119—29 **16 Claims**



16. Apparatus for exercising and massaging a horse comprising:

(a) a tank for containing a pool of water and having a pair of spaced apart upstanding side wall;

(b) hydraulic elevator means for selectively positioning the horse at one of a plurality of locations within said pool of water between said side walls, said elevator having a treadmill on which the horse stands;

(c) means for driving said treadmill to force the horse to walk on the treadmill at selected speeds;

(d) a plurality of spaced-apart nozzles in each of said side walls; and

(e) means for injecting water into said pool under pressure from selected ones of said nozzles to provide turbulence in said pool for massaging those portions of the body of the horse situated in said tank between said side walls.

4,574,740

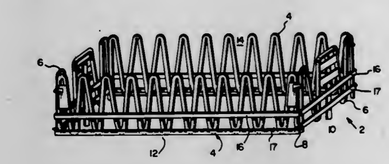
LIVESTOCK FEEDER

Sam C. J. Koebel, P.O. Box 638, Jasper, Alberta, Canada (T0E 1E0)

Filed Nov. 7, 1984, Ser. No. 669,233

Int. Cl.⁴ A01K *1/10*

U.S. Cl. 119—60 **6 Claims**



1. A livestock feeder for hay bales, stacks and the like, comprising fence-like sides and ends hinged to each other at their meeting corners to normally form a rectangle, a vertical post secured centrally to each end in such a manner as to permit pivoting movement of that end on the post about its axis, in operation the sides and ends to be supported by these two posts so that animals feeding along the sides of the feeder on feed therein bear against the sides to move the sides progressively inwardly towards each other, the ends pivoting in similar fashion about the posts and the sides collapsing in parallel fashion towards each other, as the animals consume feed near the sides and progressively seek feed closer to the center of the feeder.

4,574,741

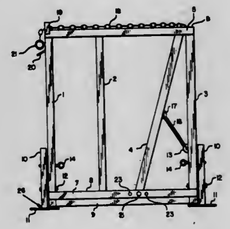
PORTABLE VEHICLE MOUNTED STANCHION

Bob Mahler, P.O. Box 393, Falls City, Oreg. 97344

Filed Jan. 9, 1984, Ser. No. 569,318

Int. Cl.⁴ A61D *3/00*

U.S. Cl. 119—98 **1 Claim**



1. A portable vehicle mounted stanchion comprising:

a main stanchion frame of at least two vertical support members fixably attached to at least two horizontal support members;

a vertical adjustable arm pivotably attached to said main stanchion frame where said vertical adjustment arm can be adjusted to pivot about a plurality of arm adjustment holes;

a pull chain fixably attached to said vertical adjustable arm and removeably attachable at a plurality of positions to a chain catch;

a tension spring fixably attached to said main stanchion frame and said vertical adjustment arm;

at least one mounting bracket of a horizontal base fixably attached to a vertical upright, where said horizontal base has bolt holes for securing said at least one mounting bracket, where said vertical upright has vertical adjustment holes, and where said main stanchion frame is adjustably and pivotably attachable to said vertical upright of said at least one mounting bracket by alignment of said vertical adjustment holes of said vertical upright with pivot holes of said vertical support member.

4,574,742

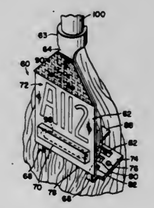
LIVESTOCK TAIL DATA INDICATOR

Charles Morgan, Jr., Rte. 1, College Grove, Tenn. 37046

Filed Oct. 15, 1984, Ser. No. 661,139

Int. Cl.⁴ A01K *13/00, 29/00*

U.S. Cl. 119—156 **20 Claims**



1. A livestock treatment tail data indicator comprising a tag which has at one end thereof a first fastener adapted to encircle a tail, at the other end thereof a second fastener having two substantially parallel plastic members which have at least one opening therebetween in a plane therewith and are joined together by plastic hinges substantially perpendicular thereto and integral therewith, said members being adapted to be folded and held together by means of studs on one of said members which fit into holes on the other so as to secure hairs of the bushy end of said tail therebetween and sufficient space on the face of said indicator for visibly placing treatment data thereon in addition to other identification.

4,574,743

HEAT GENERATOR FOR HEATING A FLUID BY HEAT EXCHANGE THROUGH A FLUIDIZED BED AND A PROCESS FOR IMPLEMENTING SAME

Guy Claus, St Genis Laval, France, assignor to Elf France, France

Filed Feb. 9, 1984, Ser. No. 578,515

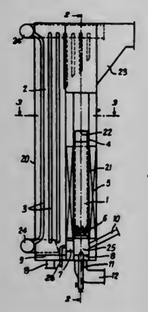
Claims priority, application France, Feb. 21, 1983, 83 02773

Int. Cl.⁴ F22B *1/00*

U.S. Cl. 122—4 D **17 Claims**

1. A heat generator for heating a fluid by heat exchange through a fluidized bed of inert particles which circulate in the same enclosure between a first zone, where they accumulate a part of the heat released by the combustion and a second dense fluidized bed zone (2) having a distribution grid (9) and fluidization air supply means (13) and containing fluid circulation tubes (3) in contact with the fluidized bed, characterized in that the first zone comprises a combustion zone (1) formed by a vertical duct (21) provided with a refractory stack (6) and comprising above the stack an opening (22) formed in the wall of the duct for overflowing the solids towards the dense fluid-

ized bed zone (2), said vertical duct comprising a premix and ignition chamber (25) having means for supplying with air (12),



fuel (10,11) and inert recycling particles coming from the dense fluidized bed zone (2).

4,574,744

WASTE HEAT BOILER SYSTEM, AND METHOD OF GENERATING SUPERHEATED HIGH PRESSURE STEAM

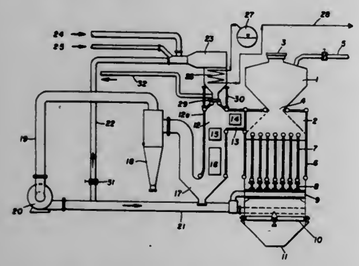
Kurt Lorenz, Hattingen; Horst Dungs, Herne; Gerd Nashan, Oberhausen; Dieter Breidenbach, Waltrop, and Josef Volmark, Bochum, all of Fed. Rep. of Germany, assignors to Firma Carl Still GmbH & Co. KG, Fed. Rep. of Germany

Filed Dec. 20, 1984, Ser. No. 683,935

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1983, 3346618

Int. Cl.⁴ F22D *1/00*

U.S. Cl. 122—7 R **4 Claims**



1. A waste heat boiler system associated with dry process of cooling coke using cooling gases in a dry coke cooling vessel, comprising a vertically elongated waste heat boiler having vapor generating tubes and an upper portion with an inlet from the dry coke cooling vessel for receiving gases which are heated by the cooling of the coke in the vessel, said waste heat boiler having a lower portion with an exhaust line connection, said dry coke cooling vessel having an upper connection connected to said inlet of said waste heat boiler and a lower inlet for cooling gases and means for circulating exhaust gases from said exhaust line connection of said waste heat boiler back to said lower inlet of said cooling vessel for circulating the gases through hot coke in said vessel, a superheater mounted over said waste heat boiler and having a connection to said waste heat boiler, a valve in said superheater connection for controlling a flow of gases from said superheater to said upper portion of said boiler, a separate combustion chamber having its own burner associated with said superheater, and means for supplying air and a portion of the exhaust gases to said combustion chamber burner.

4,574,745

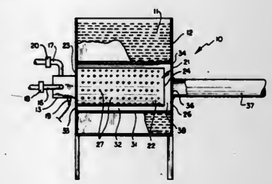
COMPACT PULSE COMBUSTION BURNER WITH ENHANCED HEAT TRANSFER

Frank E. Belles, Cleveland, Ohio, assignor to American Gas Association, Cleveland, Ohio

Filed Jul. 23, 1984, Ser. No. 633,218

Int. Cl.⁴ F22B *31/00*

U.S. Cl. 122—24 **6 Claims**



1. A pulse combustion burner comprising a combustion chamber, inlet means for admitting a combustible gaseous mixture into the chamber and restricting reverse flow therethrough, means for igniting the gaseous mixture, a wall forming the combustion chamber, the combustion chamber wall having a multitude of spaced apertures, the combustion chamber wall restricting flow of gases from said combustion chamber to passage through said apertures, a heat exchanger wall spaced from said combustion chamber wall and forming therewith passage means for receiving gases passing through said apertures, an exhaust conduit of predetermined cross section in communication with said passage means for receiving gases passing through said apertures, the collective area of said apertures being generally matched to the cross-sectional area of the exhaust conduit, said heat exchanger wall having heat transfer surface means arranged in close proximity to the path of combustion products passing through said apertures whereby jets of gas passing through such apertures create a high degree of turbulence and resulting high heat transfer rate at said heat transfer surface means.

4,574,746

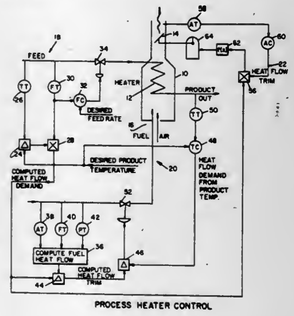
PROCESS HEATER CONTROL

Marion A. Keyes, IV, Chagrin Falls, and Robert E. Pocock, Highland Hts., both of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Nov. 14, 1984, Ser. No. 671,524

Int. Cl.⁴ F22B *37/42;* **F22D** *5/00*

U.S. Cl. 122—448 S **5 Claims**



PROCESS HEATER CONTROL

1. A method for controlling combustion in a process heater comprising the steps of computing a heat flow required to produce a desired final product temperature, controlling the position of the heater stack damper as a function of the computed heat flow, calculating the total heat flow of the fuel to the heater, comparing the calculated heat flow with the required heat flow, and trimming the fuel flow to the heater as a function of the difference between the calculated heat flow and the required heat flow.

4,574,747

COOLING SYSTEM FOR AUTOMOTIVE ENGINE

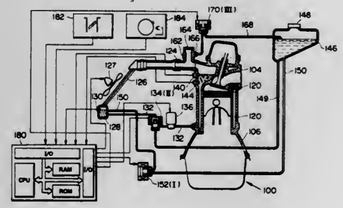
Yoshinori Hirano, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Nov. 30, 1984, Ser. No. 676,937

Claims priority, application Japan, Dec. 2, 1983, 58-228146

Int. Cl.⁴ F01P *33/00*

U.S. Cl. 123—41.27 **6 Claims**



1. A cooling system for an internal combustion engine comprising:
- a coolant jacket formed about structure of said engine subject to high heat flux, said coolant jacket being arranged to receive coolant in liquid form and discharge same in gaseous form;
- a radiator;
- a first conduit leading from said radiator for introducing liquid coolant from said radiator into said coolant jacket;
- a second conduit leading from said coolant jacket to said radiator through which gaseous coolant is transferred from said coolant jacket to said radiator for condensation therein;
- a coolant reservoir;
- a sensor responsive to one of the temperature and pressure within said coolant jacket;
- a third conduit leading from said radiator to said reservoir, said third conduit being arranged to communicate with said reservoir in a manner to define a vapor trap;
- a valve arrangement which controls said third conduit; and
- first means responsive to said sensor for operating said valve arrangement in a manner to open said third conduit when said sensor indicates an overheat condition of said system and permit gaseous coolant to vent through said third conduit to said reservoir, said gaseous coolant being released into said reservoir in a manner to bubble through liquid coolant stored therein.

4,574,748

AIR INTAKE DEVICE OF AN INTERNAL COMBUSTION ENGINE

Tokuta Inoue, Mishima; Kiyohiko Oishi, Susono; Takamitsu Okamoto, Susono, and Keiso Takeda, Susono, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

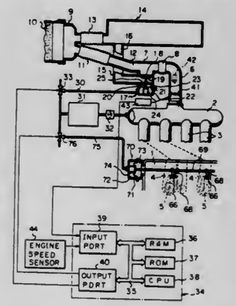
Filed Sep. 13, 1984, Ser. No. 650,072

Claims priority, application Japan, Feb. 6, 1984, 59-18459

Int. Cl.⁴ F02B *27/00;* **F02M** *7/00*

U.S. Cl. 123—52 MB **30 Claims**

1. An air intake device of an internal combustion engine having an air cleaner, a cylinder head, a combustion chamber and an intake valve, said device comprising:
- a main air intake passage interconnecting the air cleaner to the combustion chamber and containing a throttle valve therein;
- an auxiliary air intake passage having a first end and a second end which are connected to the air cleaner and said main air intake passage, respectively, said auxiliary air intake passage having an equivalent pipe length which is substantially equal to that of said main air intake passage;
- an air pulsation control valve arranged in the second end of said auxiliary air intake passage for controlling communication between said second end of the auxiliary air intake passage and the main intake passage, said communication occurring at a location upstream of said throttle valve;
- first actuating means for actuating said air pulsation control valve in response to engine load and speed to selectively open said air pulsation control valve when the engine load exceeds a predetermined first load and the engine speed is within a predetermined first speed range and to selectively close said air pulsation control valve when the engine speed is within a predetermined second range;



- an intake port formed in the cylinder head and forming a part of said main air intake passage, said intake port having a helical portion which is formed around the intake valve and has a helix terminating portion, an inlet passage portion tangentially connected to said helical portion, and a bypass passage branched off from said inlet passage portion and connected to said helical portion at said helix terminating portion;
- a flow path control valve arranged in said bypass passage for controlling flow through the bypass passage; and
- second actuating means for actuating said flow path control valve in response to the engine load to open said flow path control valve when the engine load exceeds a predetermined second load not larger than said predetermined first load and to close said flow path control valve when the engine load is lower than said predetermined second load.

4,574,749

COUNTERBALANCED PISTON ROTARY MACHINE

Guy Negre, Vinon/Verdon, France, assignor to Elf France, Paris, France

Filed Apr. 19, 1984, Ser. No. 601,985

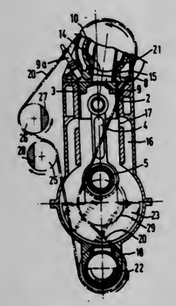
Claims priority, application France, Apr. 21, 1983, 83 06611

Int. Cl.⁴ F01L *7/00;* **F02B** *75/06*

U.S. Cl. 123—80 R **6 Claims**

1. An inertia force balancing system for a reciprocating piston engine comprising at least one cylinder having a piston moving axially therein, said piston connected to a crankshaft by means of a connecting rod and a crankpin, the crankshaft having an unbalanced mass fixed on the crankshaft opposite the crankpin for balancing primary inertia forces, said engine having at least one intake rotating distributor and at least one exhaust rotating distributor arranged in communication with each cylinder, the rotating distributors being driven at an angular speed equal to that of the crankshaft but in an opposite direction by a kinetic coupling to the crankshaft, each rotating distributor comprising an auxiliary balance mass for complementary balancing of the primary inertia forces of the engine

wherein the auxiliary balance masses are disposed on the rotating distributors in such a way that each of said balancing masses is in its lowest position when the piston is at TDC, in its highest position when the piston is at BDC, at a rightmost position when the crankshaft unbalanced mass is at its leftmost



position and at a leftmost position when the crankshaft unbalanced mass is at its rightmost position and wherein a plane joining the axis of rotation of the intake distributor to the axis of rotation of the exhaust distributor passes substantially through the axis of rotation of the crankshaft.

4,574,750

SELF-CONTAINED HYDRAULIC LIFTER

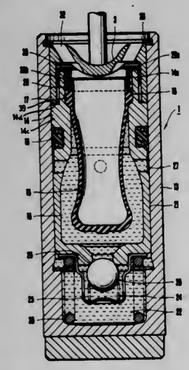
Hisashi Kodama, Nagoya; Katsujiro Sato, Toyota; Tetsuomi Tamura, Toyota; Toru Hamamoto, Toyota, and Kazuharu Yamada, Toyota, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan

Filed Aug. 8, 1983, Ser. No. 521,408

Claims priority, application Japan, Aug. 13, 1982, 57-122964[U]; Aug. 13, 1982, 57-122966[U]; Aug. 13, 1982, 57-122967[U]

Int. Cl.⁴ F01L *1/24*

U.S. Cl. 123—90.58 **5 Claims**



1. A self-contained hydraulic lifter for internal combustion engines comprising:
- a cylindrical body having a push rod seat of cap-like shape slidably inserted into the upper portion of the body;
- a plunger inserted into the body and vertically slidable along with the push rod seat, said plunger being in contact with the lower end of said push rod seat only at a shoulder portion formed on the outer circumference of the plunger, the entirety of an internal vertical side surface of said push rod seat being separated from the outer surface of the plunger by a gap formed therebetween, and the bottom of said plunger being in contact with a spring arranged at the bottom of said cylindrical body;
- a diaphragm arranged in said plunger, an upper circumferential portion of said diaphragm being pressfitted to the upper opening of said plunger;
- a reservoir formed in said plunger by the inner peripheral wall of the plunger and the outer peripheral surface of the diaphragm, the bottom of the reservoir communicating with a pressure chamber at the bottom of said cylindrical body through a check valve, with oil being sealed in the reservoir and the pressure chamber;
- a cylindrical metal ring embedded in the upper circumferential portion of said diaphragm; and
- a stopper member fixed to the upper end of the plunger, said stopper member being separated from said push rod seat by a gap and being in contact with the upper end of the metal ring.

4,574,751

INLET PORT FOR INTERNAL COMBUSTION ENGINE

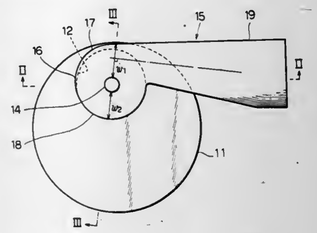
Katsuhiko Sugiyama; Hiromitsu Kawazoe, and Yoshinori Idota, all of Aichi, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Japan

Filed Aug. 7, 1984, Ser. No. 638,616

Claims priority, application Japan, Aug. 19, 1983, 58-151874; Nov. 4, 1983, 58-207964

Int. Cl.⁴ F01L *3/00*

U.S. Cl. 123—188 M **7 Claims**



1. An internal combustion engine comprising:
- a cylinder chamber having an end face;
- an inlet hole in said end face having a center axis in off-center relation to said cylinder chamber;
- a non-helical inlet valve positioned in said inlet hole and having a valve stem having a peripheral surface;
- an inlet passage comprising a swirl generating section which has a ceiling and is connected to said inlet hole and surrounds said inlet valve at an end section thereof and an introducing section having a center line and comprising the remaining portion of said inlet passage;
- a first distance between the peripheral surface of said valve stem of said inlet valve and the wall surface of said swirl generating section as measured in a plane perpendicular to said center line of said introducing section and a plane parallel to the inlet hole and the outside part on the wall side of said cylinder chamber being larger than a second distance measured in the same planes at the inside part on the center side of said cylinder chamber;
- said introducing section being connected to the outside part of the swirl generating section;
- wherein the ratio of the first distance to the second distance is not less than 1.1 or more than 2.8;
- wherein the height from the inlet hole to said ceiling of the swirl generating section is greatest at the wider outside part and progressively decreases from the wider outside part to the narrower inside part around the valve stem; and
- wherein the average rate of reduction of said height is not less than 0% and not more than 0.18% of the inlet hole diameter for each degree around the valve stem.

4,574,752

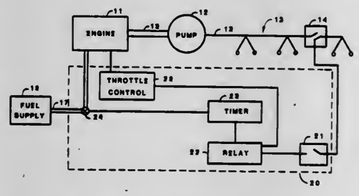
INTERNAL COMBUSTION ENGINE SHUTDOWN DEVICE

Marvion E. Reichert, Jr., P.O. Box 391, Elm Creek, Nebr. 68836, and William D. Simmerman, Elm Creek, Nebr., assignors to Marvion E. Reichert, Jr., Elm Creek, Nebr.

Filed Oct. 15, 1984, Ser. No. 660,703

Int. Cl.⁴ F02B *77/08*

U.S. Cl. 123—198 DB **12 Claims**



1. An internal combustion engine shutdown device for the controlled stopping of an internal combustion engine upon the receipt of a signal, the engine of the type having an ignition system, a fuel supply in fluid communication with the engine and an engine speed control; the device comprising:
- a relay means for relaying the signal;
- a timing means for determining a pre-set time period;
- a throttle control means for controlling said engine speed control; and
- an engine stopping means for stopping the engine wherein said relay means is operably connected to said timing means and to said throttle control means and wherein said timing means is operably connected to said engine stopping means and wherein said throttle control means is operably connected to said engine speed control.

12. A method for the controlled stopping of an internal combustion engine upon the receipt of a signal, the engine of the type having a fuel supply in fluid communication with the engine and an engine speed control; the method comprising the steps of:
- providing a relay means for relaying the signal;
- a timing means for determining a pre-set time period; a throttle control means for controlling said engine speed control; and an engine stopping means for stopping the engine wherein said relay means is operably connected to said timing means and to said throttle control means and wherein said timing means is operably connected to said engine stopping means and wherein said throttle control means is operably connected to said engine speed control;
- relaying the signal by the relay means to the timing means to start the timing means;
- relaying the signal to the throttle control means to reduce the engine speed by slowing said engine speed control;
- delaying a pre-set period of time by use of the timing means; and
- stopping the engine by activating said engine stopping means.

4,574,753

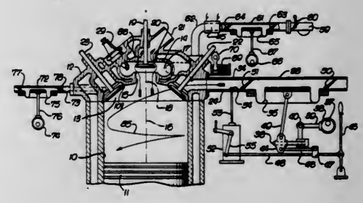
METHOD FOR OPERATING A TWO CYCLE ENGINE WITH DYNAMIC STRATIFICATION

Ernest A. von Seggern, 1051 E. Angeleno Ave., Burbank, Calif. 91501

Division of Ser. No. 522,543, Aug. 10, 1983, Pat. No. 4,543,928, which is a continuation of Ser. No. 159,146, Jun. 13, 1980, abandoned. This application Apr. 1, 1985, Ser. No. 718,696

Int. Cl.⁴ F02B *19/08, 31/00*

U.S. Cl. 123—262 **4 Claims**



1. In an internal combustion engine, a method for stratifying exhaust gas, excess air and fuel-air mixture in the combustion space of said engine, comprising the steps of:
- directing a body of the exhaust gas so that it flows linearly along a predetermined linear axis;
- directing a body of air so that it circulates around said body of exhaust gas in an enclosing spiral flow;
- directing a body of the fuel-air mixture to flow in a circular path around said exhaust gas and body of air in the form of a toroidal body coaxial with said exhaust gas and with its circular axis normal to said predetermined linear axis; and
- directing at least a portion of said enclosing body of air to spread out radially and flow around said fuel-air mixture in a spiral flow that encloses said fuel-air mixture and separates it from said exhaust gas;
- whereby said exhaust gas, air, and fuel-air mixture are separated from each other in a dynamic triple stratification.

4,574,754

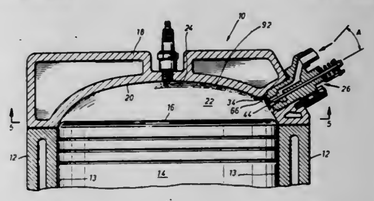
STRATIFIED CHARGE COMBUSTION SYSTEM AND METHOD FOR GASEOUS FUEL INTERNAL COMBUSTION ENGINES

Warren A. Rhoades, Jr., 4007 Crow Valley Dr., Missouri City, Tex. 77459

Continuation-in-part of Ser. No. 408,411, Aug. 16, 1982, abandoned. This application Oct. 11, 1984, Ser. No. 659,679

Int. Cl.⁴ F02B *23/08*

U.S. Cl. 123—298 **22 Claims**



1. A stratified charge combustion system for use in a gaseous fuel internal combustion engine comprising:
- (a) a combustion chamber defined by the fixed inside surface of a cylindrical lining and the inside surfaces of opposed combustion chamber ends, at least one of the opposed ends being a piston positioned in the cylindrical lining to move reciprocatingly along the longitudinal axis of the lining;

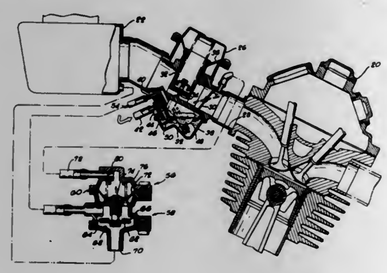
(b) an ignition source mounted in the combustion chamber immediately adjacent a fixed inside surface;
(c) a gaseous fuel injection valve assembly in communication with the combustion chamber and in spaced relationship from the ignition source with a portion of the inside surfaces extending between the fuel injection valve assembly and the ignition source, the fuel valve assembly defining an entry port for the entrance of gaseous fuel, the entry port being recessed outside of a fixed inside surface, the entry port being sized and shaped to inject gaseous fuel in an arc of about 180° or less around the axis of the fuel valve generally toward the ignition source;
(d) means for pressuring the gaseous fuel prior to injection; and
(e) a curved transitional surface extending from the entry port toward the portion of the inside surfaces extending between the fuel injection valve assembly and the ignition source, the curved transitional surface curving away from the direction of the entry port, the curved transitional surface having a curvature for the particular direction and configuration of the entry port, for the particular configuration of the portion of the inside surfaces extending between the injection valve assembly and the ignition source, the particular arrangement of the fuel injection valve assembly in the combustion chamber, and for the particular pressure of the gaseous fuel to produce the Coanda Effect in the injected gaseous fuel flow after it passes through the entry port and follows the curved transitional surface under the Coanda Effect as the curved transitional surface curves away from the direction of the entry port, and also to produce a flow of the gaseous fuel that clings to and follows the particular configuration of the inside surfaces to the ignition source.

4,574,755

AIR/FUEL RATIO CONTROL DEVICE FOR A CARBURETOR

Toshihiko Sato, and Shigeru Doi, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 7, 1983, Ser. No. 549,751
Claims priority, application Japan, Nov. 8, 1982, 57-195550; Nov. 12, 1982, 57-198469
Int. Cl.⁴ F02M *5/08*
U.S. Cl. 123—320 **17 Claims**



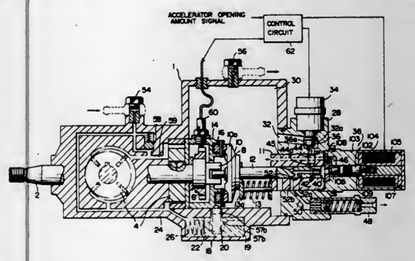
1. A fuel supply system for a carburetor of an engine, comprising
a sealed float chamber;
fuel inlet means to said float chamber for supplying fuel thereto;
fuel jet passage means for delivering fuel from said float chamber for carburetion;
an air vent passage from said float chamber;
a control valve in said vent passage; and
a valve controller responsive to a selected level of engine intake vacuum to close said control valve.

4,574,756

DIESEL FUEL INJECTION PUMP WITH SIGNAL ROTOR GIVING REFERENCE POSITION AND ROTATION POSITION SIGNALS

Yoshiyasu Ito; Fumiaki Kobayashi, and Hideo Miyagi, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Sep. 13, 1984, Ser. No. 650,180
Claims priority, application Japan, Dec. 9, 1983, 58-232574
Int. Cl.⁴ F02M *39/00*
U.S. Cl. 123—357 **3 Claims**



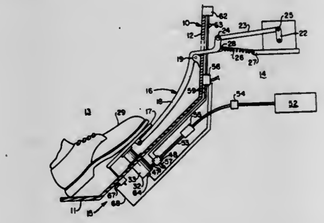
1. A distribution type fuel injection system for an internal combustion engine having a crankshaft and a plurality of cylinders, the fuel injection system comprising:
an input shaft mounted for rotation in a predetermined phase relationship with said crankshaft;
a housing having a bore formed therein coaxial with said input shaft;
a plunger slidably arranged in said bore, the plunger having a first end which defines a high pressure chamber in said bore, and a second end which is rotationally engaged with said input shaft while being free to move axially with respect thereto;
a combination of a cam plate and a cam follower incorporated between said input shaft and said plunger to drive said plunger in a first axial direction to reduce the size of said high pressure chamber in a first group of certain spaced rotational phases of said input shaft and a spring which biases said plunger in a second axial direction opposite to said first axial direction to increase the size of said high pressure chamber in a second group of certain spaced rotational phases, each rotational phase of said second group being located between corresponding two adjacent ones of said first group of rotational phases;
means for communicating said high pressure chamber with a source of fuel when said plunger is moving in said second axial direction and for communicating said high pressure chamber with successive ones of said plurality of cylinders when said plunger is moving in said first axial direction;
a solenoid valve which selectively vents said high pressure chamber according to selective energization and deenergization thereof to control the amount of fuel supplied to respective ones of said plurality of cylinders;
a signal rotor fixed to said input shaft for rotation therewith, said signal rotor having a plurality of signal generating means circumferentially spaced around a circular portion thereof, the spacing including a plurality of first spaces, each of said first spaces represents a predetermined unit rotational angle of said crankshaft;
a signal pickup means for detecting each of said signal generating means as it passes a predetermined location adjacent to said circular portion of the signal rotor;
an electronic calculating means for calculating an amount of fuel to be injected for each fuel injection according to engine rotational speed and accelerator pedal opening amount, the calculating means determining a rotational angle of said crankshaft during which said solenoid valve is closed to perform a fuel injection to a preselected cylinder, dividing said rotational angle amount by said unit rotational angle to provide a quotient in the form of an integer and a fractional remainder, calculating a unit time in each period of fuel injection for said crankshaft to rotate through said unit rotational angle according to engine rotational speed and said first space, and multiplying said unit time by said remainder to provide a fractional time amount;
an electronic processing means for providing a start signal upon detection by said signal pickup means of a predetermined one of said signal generating means corresponding to said preselected cylinder, for counting down from the numerical value of said integer each time a subsequent signal generating means is detected by said signal pickup means until the counting down is completed, for adding said fractional time amount, and for then providing an end signal; and
an electrical power circuit for selectively energizing and deenergizing said solenoid valve according to said start signal and said end signal so as to stop venting of said high pressure chamber from the delivery of said start signal to the delivery of said end signal.

4,574,757

BEHAVIORAL FUEL-SAVING METHOD FOR A MOTOR VEHICLE

Richard E. Schulman, Kalamazoo, Mich., and William C. Breen, Akron, Ohio, assignors to Deaccelerator Corporation, Kalamazoo, Mich., by said William C. Breen

Division of Ser. No. 970,384, Dec. 18, 1978, Pat. No. 4,270,501. This application Jul. 28, 1980, Ser. No. 173,168
Int. Cl.⁴ F02D *31/00*
U.S. Cl. 123—396 **7 Claims**



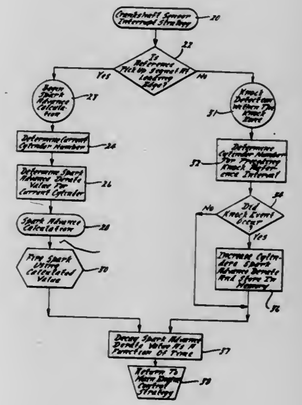
1. A method of conserving energy in the operation of a powered vehicle in which the fuel supplied is controlled by depressing and releasing a foot pedal member comprising applying a predetermined resistance to depression of said pedal member at a first predetermined velocity, increasing the resistance to depression of said pedal member by predetermined increments in response to increases in vehicle velocity between a first predetermined resistance at said first predetermined velocity and a larger predetermined resistance at a higher second predetermined velocity so as to differentially increase the effort required by the operator to attain higher velocities and decreasing the resistance to depression of said pedal member by predetermined increments in response to decreases in vehicle velocities between said higher second predetermined velocity and said first predetermined velocity to differentially decrease the effort required by the operator at lower velocities so that the operator is constrained to reduce the occurrence and duration of vehicle operation at velocities over said first predetermined velocity or speed limit, and removal of said predetermined resistance to depression of said pedal member at said first predetermined velocity.

4,574,758

INDIVIDUAL CYLINDER SPARK DERATION

Martin G. Yagley, Sterling Heights, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Jun. 29, 1984, Ser. No. 626,184
Int. Cl.⁴ F02P *5/04*
U.S. Cl. 123—425 **2 Claims**



1. In a spark ignited internal combustion engine, means responsive to the occurrence of engine knock comprising:
means for sensing engine knock and converting same into a corresponding electrical knock signal;
means for sensing engine speed and converting same into a corresponding electrical pulsed signal with leading and trailing edges for each pulse;
storage means for storing a spark advance derate value for each cylinder and for storing a predetermined spark advance relationship;
comparing means to discriminate between the leading and trailing edges of the pulses;
means to determine the current cylinder number and the preceding cylinder number in the firing order;
means to calculate spark advance according to the predetermined spark advance relationship for each cylinder utilizing the corresponding spark derate value if the pulse is at the leading edge;
means for firing the spark to the corresponding cylinder using the calculated spark advance value;
means for defining a knock zone for each cylinder;
means for detecting the presence of a knock signal within the knock zone;
means for deciding whether a knock signal was present within the knock zone for the preceding cylinder number; and
means for increasing the spark advance derate value for the preceding cylinder and updating the stored value for the corresponding cylinder if the knock signal was present during the knock zone;
the means responsive to the occurrence of engine knock further comprising means to decay a cylinder's stored spark advance derate value as a function of time.

4,574,759

FUEL INJECTION PUMP

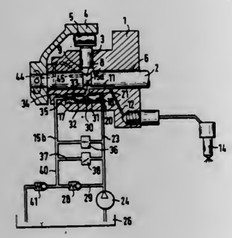
Jean Leblanc, Lyons, France, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Division of Ser. No. 385,950, Jun. 7, 1982, abandoned. This application Nov. 13, 1984, Ser. No. 670,140

Claims priority, application Fed. Rep. of Germany, Jun. 23, 1981, 3124500

Int. Cl.⁴ F02M *39/00*

U.S. Cl. 123—450 **6 Claims**



1. In a fuel injection pump having at least one pump work chamber enclosed by a pump piston in a pump cylinder, fuel distributing means for connecting the pump work chamber with at least one fuel injection location and fuel supply means for connecting the pump work chamber with a fuel supply in order to establish the fuel injection quantity wherein the fuel supply means includes a fuel supply line of the pump work chamber, a fuel supply pump for supplying fuel to the fuel supply line, a pressure control means for adjusting the supply pressure of the fuel supply pump, a valve disposed in the fuel supply line, and an electric control means for controlling the actuation of the valve, the improvement wherein:

the valve comprising a piston slide stressed by a restoring spring, a first end face of the piston slide defining a first pressure chamber which is continuously exposed to the supply pressure of the fuel supply pump and the piston slide having a control edge for controlling the passage of the fuel supply line to the pump work chamber;

the electric control means includes first and second electrically actuatable valves disposed in parallel lines for connecting the fuel supply line with the supply side of the fuel supply pump;

the pressure control means comprises a first pressure control valve for relieving pressure in the fuel supply line downstream of the two electrically actuatable valves;

wherein the fuel distributing means comprises a distributor rotating within a distributor cylinder connected with the at least one pump work chamber, the distributor having a circumferential surface defining a distributor groove and an annular groove for establishing communication between the distributor groove and the pump work chamber, wherein by means of which rotating distributor the pump work chamber is connected via the distributor groove one after another with individual injection lines leading to respective injection locations during the supply stroke of at least one pump piston;

the piston slide of the valve is disposed in a cylinder inside the distributor;

the piston slide with its control edge controls connecting bores between the annular groove on the distributor and the cylinder inside the distributor;

the cylinder inside the distributor downstream of the control edge communicates continuously with the fuel supply line; and

the first pressure chamber enclosed by the first end face of the piston slide in the cylinder communicates continuously with the supply side of the fuel supply pump.

4,574,760

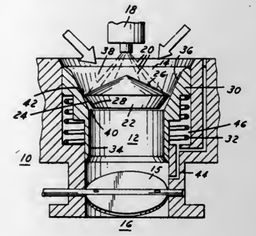
FUEL INJECTION THROTTLE BODY

Colin Jones, Trenton, and William J. Clemens, Plymouth, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jan. 7, 1985, Ser. No. 689,361

Int. Cl.⁴ F02M *9/14*

U.S. Cl. 123—472 **8 Claims**



1. An engine air/fuel throttling body having an induction passage open at an air inlet end and connected to the engine intake manifold at the opposite end, a throttle valve mounted for a rotatable movement across the passage to control flow therethrough, a fuel injector mounted above the air inlet for the spray of fuel thereinto, and a variable flow area, convergent-divergent (C-D) plug and nozzle assembly in the passage beneath the injector for increasing the air velocity to atomize the fuel, the assembly including a plug member having a fuel deflecting surface beneath the injector and a nozzle member surrounding and cooperating with the plug member defining a minimum cross-sectional throat area therebetween, the C-D flow area increasing the velocity of the air at the throat area to shear the fuel from the adjacent plug surface to thereby atomize the fuel, one of the members being movable relative to the other by the air flow thereagainst at higher engine air flow rates and alternatively by engine vacuum at lower engine air flow rates to a self-regulating position providing essentially a constant air velocity to the air flowing through the throat area.

4,574,761

ELECTRONIC FUEL INJECTION CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE

Shigenori Isomura; Toshio Kondo; Akio Kobayashi, and Takehiro Kikuchi, all of Kariya, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Dec. 10, 1984, Ser. No. 680,046

Claims priority, application Japan, Dec. 8, 1983, 58-231866

Int. Cl.⁴ F02D *41/00*

U.S. Cl. 123—478 **7 Claims**

1. An electronic fuel injection control system for an internal combustion engine, comprising;

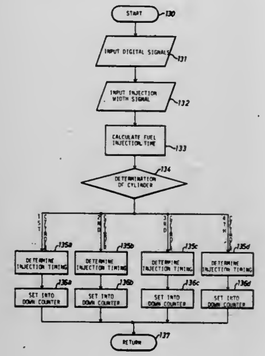
first detecting means for detecting a predetermined rotational angle of the engine crankshaft and for producing an angular signal with a time period in inverse proportion to the rotational speed of the engine;

second detecting means for detecting the quantity of air drawn into the engine and for producing an air quantity signal indicative of the detected air quantity;

first integration means responsive to said angular signal for integrating the first half of the time period of said angular signal and for producing a first integration signal indicative of a resultant value of the integration;

hold means for holding the value of said first integration signal upon lapse of the first half of said time period and for producing a hold signal of the hold value and maintaining it for the second half of said time period and the first half of the time period of the following angular signal;

second integration means responsive to said angular signal for integrating the value of said air quantity signal at each start of the first and second halves of said time period and for producing a second integration signal indicative of a resultant value of the integration of the value of said air quantity signal; and



means for determining a fuel injection time based on the time required for arrival of the value of said second integration signal to the level of said hold signal after each start of the first and second halves of said time period.

4,574,762

DEVICE FOR TEMPERATURE RESPONSIVE SWITCHING OF OVERFLOW FUEL QUANTITIES OF A DIESEL FUEL INJECTION PUMP

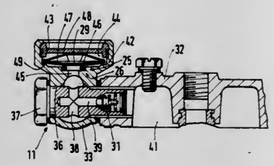
Willi Müller, Sulz-Sigm; Hans Schacht, Stuttgart; Erich Scholz, Neuhausen, and Max Straubel, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 6, 1984, Ser. No. 679,013

Claims priority, application Fed. Rep. of Germany, Dec. 15, 1983, 3345391

Int. Cl.⁴ F02M *39/00*

U.S. Cl. 123—510 **11 Claims**



1. A device for temperature responsive switching of an overflow fuel quantity of a diesel fuel injection pump to a fuel tank or a filter of a fuel supply system, comprising a housing having a cover, an inlet, an outlet, and a fuel return opening; a feeding conduit connecting said inlet to an overflow outlet of the fuel injection pump; a fuel return conduit connecting the full return opening with the fuel tank; an outlet conduit connecting said outlet to an inlet of the filter; a control member for switching the fuel overflow quantity; temperature-responsive means integrated in said cover and operated for actuating said control member, said temperature-responsive actuating means being formed by a bimetallic element arranged so that it is surrounded only by the overflow fuel quantity from the fuel injection pump; a pressure control valve opening in a direction toward said filter and blocking said outlet; and a venting throttle which maintains said feeding conduit in continual communication with said fuel return conduit, said control member being connected in series between said feeding conduit and said fuel return conduit and being positioned in parallel with the venting throttle, said bimetallic element being formed by a snapping bimetallic disc which also performs a function of said control member; said housing having a valve seat with which said disc cooperates.

4,574,763

DUAL FUEL CARBURETION SYSTEM AND METHOD

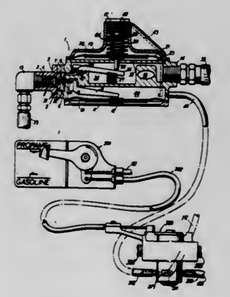
John E. Hallberg, Peachtree City, Ga., assignor to Petrosystems International, Inc., Nashville, Tenn.

PCT. No. PCT/US82/00216, § 371 Date Oct. 27, 1982, § 102(e) Date Oct. 27, 1982

PCT filed, Ser. No. 514,774

Int. Cl.⁴ F02B *43/00*

U.S. Cl. 123—527 **42 Claims**



1. Apparatus for mixing air with a gaseous fuel for application to a combustion chamber comprising:

a mixing chamber having an air passageway adapted for fluid communication with a source of air, a fuel inlet aperture adapted for fluid communication with a source of a gaseous fuel, and an outlet aperture adapted for fluid communication with a combustion chamber;

air valve means for restricting the passage of air from said air passageway to said chamber outlet aperture responsively to engine venturi vacuum, said air valve means including a piston slidable in a cylinder and having an axial passage in fluid communication with said fuel inlet aperture; and

fuel valve means located within said axial passage for restricting the passage of gaseous fuel from said fuel inlet aperture to said chamber outlet aperture responsively to movement of said air valve means.

4,574,764

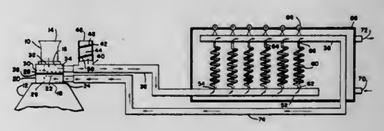
FUEL VAPORIZATION METHOD AND APPARATUS

John L. Earle, 69-536 Crestview Dr., Desert Hot Springs, Calif. 92240

Continuation of Ser. No. 371,345, Apr. 23, 1982, abandoned. This application May 15, 1985, Ser. No. 734,190

Int. Cl.⁴ F02M *31/00*

U.S. Cl. 123—545 **9 Claims**



1. Fuel vaporizing apparatus for use with an internal combustion engine having an intake manifold and a down draft carburetor which supplies mixtures of air and volatile liquid fuel comprising

passageway means disposed within a heat exchanger for

guiding carburetor air-fuel mixtures in a flow direction substantially opposite the flow of the carburetor,

first conduit means for communicating air-fuel mixtures from the carburetor to a lower inlet means in the heat exchanger,

second conduit means for communicating vaporized air-fuel mixtures from an upper outlet means in the heat exchanger to the intake manifold, the passageway means comprising one or more tubes, the lower inlet means comprising a manifold having an inlet connected to the first conduit means and plural outlets connected to the lower ends of the plural passageways,

the upper outlet means comprising a manifold having plural inlets connected to upper ends of the one or more tubes and an outlet connected to the second conduit means,

mounting means mounted between the intake manifold and the carburetor, having a first passageway extending therethrough from a side inlet opening in communication with the upper outlet means to a bottom outlet opening in communication with the interior of the intake manifold and a second passageway extending therethrough from a top inlet opening in communication with the interior of the carburetor to a side outlet opening in communication with the lower inlet means, all air-fuel mixtures communicated from the carburetor to the intake manifold passing through the passageway means, and

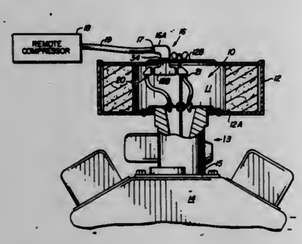
means for supplying heat to the heat exchanger for heating the passageway means.

4,574,765

SUPPLEMENTAL AIR INJECTION METHOD AND DEVICES FOR CARBURETORS OF INTERNAL COMBUSTION ENGINES

Lavan E. Coberley, Phoenix, Ariz., assignor to Donald E. Goorhouse, Lauderhill, Fla.

Filed Nov. 30, 1984, Ser. No. 676,881
Int. Cl.⁴ F02M *23/00*
U.S. Cl. 123—585 **6 Claims**



1. A supplemental air injection means for carburetors of internal combustion engines comprising:

a coupling provided with an air inlet port for receiving air under pressure and at least one air outlet port for exhausting said air under pressure,

a nozzle means comprising a hose connected at one end to said outlet port and a nozzle at the other end of said hose for selectively directing the air under pressure issuing therefrom, and

clamp means for selectively positioning said nozzle for directing air under pressure issuing therefrom into the venturi of a carburetor of the associated engine,

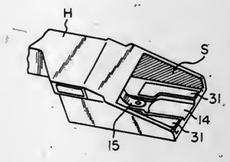
said clamp means comprising an apertured strip of metal for mounting in an associated air filter of the associated engine for supporting and selectively positioning said nozzle means.

4,574,766

JOINT STRUCTURE OF A TAKE-DOWN TYPE ARCHERY BOWS

Tadao Izuta, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Japan

Filed Aug. 2, 1982, Ser. No. 404,291
Claims priority, application Japan, Aug. 6, 1981, 56-117220[U]
Int. Cl.⁴ F41B *5/00*
U.S. Cl. 124—23 R **4 Claims**



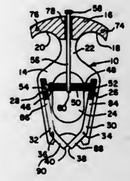
1. A take-down type archery bow comprising a handle riser having a socket with a two position support at each end thereof, said socket having an open end and longitudinal and transverse axis, and a pair of limbs with each limb having a plug end, each limb being releasably secured within each said socket of said handle riser by said two position support, said two position support comprising a pair of flat spacer means for engaging the plug end of each said bow limb, said spacer means being of predetermined thickness detachably secured to the rear inner wall of each said socket in surface contact with an opposing side of said plug end of each said limb, each said limb being movable within each said socket relative to said transverse axis, the angular position of said limb with respect to the longitudinal axis of said handle riser being adjustable by the replacement of said spacer means with ones having a different thickness, said spacer means include two spacers spaced apart near the mouth of said socket in substantially parallel relationship to provide a first position support for said limb, and holding means being positioned near the bottom of said socket along said rear inner wall thereof, said holding means adapted for releasably engaging the plug end of said limb for releasably securing said limb within said socket and providing said second position support, each said limb being removable from said socket along said longitudinal axis while said spacer means remain detachably secured to said rear inner wall.

4,574,767

BOW TRIGGER MECHANISM

Matthew R. Gazzara, 345 S. White Horse Pike, Hammonton, N.J. 08037

Filed Mar. 30, 1984, Ser. No. 595,465
Int. Cl.⁴ F41C *19/00*
U.S. Cl. 124—35 A **6 Claims**



1. A bow trigger mechanism comprising

a frame means to support a pair of first and second jaws in operating relationship,

the frame means terminating rearwardly in an operating handle, the frame means being provided with an operating opening therethrough;

a pair of first and second jaws secured to the frame means for pivotal movement of at least one of the jaws relative to the frame means,

the jaws being configured to define respective rearward extensions and respective bowstring contacting portions;

biasing means positioned at least partly within the operating opening to pivot at least one of the jaws,

the biasing means being movable from an initial linear configuration to a second non-linear configuration,

the biasing means terminating in a first end and in a second end, the first end biasing against a rearward portion of the first jaw and the second end biasing against a portion of the rearward extension of the second jaw,

the biasing means comprising a coil spring having a plurality of circular coils arranged in side-by-side juxtaposition, the adjacent coils continuously contacting each other when the biasing means is in either its linear configuration or its non-linear configuration;

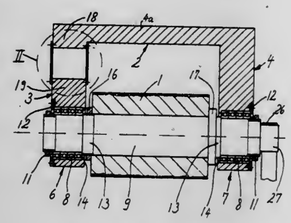
whereby movement of the biasing means from the initial linear position to the second non-linear position causes at least one of the jaws to pivot relative to the frame means to cause a clearance opening between the bowstring contacting portions of the jaws for bowstring passage purposes.

4,574,768

SUPPORT FOR ROTARY MATERIAL REMOVING TOOLS IN GRINDING MACHINES

Reinhard Janutta, Geesthacht, Fed. Rep. of Germany, assignor to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

Filed Jul. 2, 1984, Ser. No. 626,670
Claims priority, application Fed. Rep. of Germany, Jul. 6, 1983, 3324322
Int. Cl.⁴ B24B *53/14*
U.S. Cl. 125—11 CD **8 Claims**



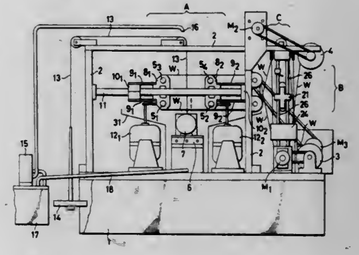
1. A support for a material removing tool, such as a dressing tool for grinding wheels, comprising a shaft; first and second bearings surrounding spaced-apart portions of said shaft; and a housing for said bearings, said housing including first and second sections respectively receiving said first and second bearings and a yieldable compensating device for temperature-induced changes in the length of said shaft, including a plurality of leaf springs extending substantially radially of said shaft and connecting said sections to one another for movement axially of said shaft but against appreciable movement radially of said shaft.

4,574,769

MULTI-WIRE VIBRATORY CUTTING METHOD AND APPARATUS

Ken-ichi Ishikawa, 2-66-2, Nukatani, Kanazawa-shi, Ishikawa-ken, Japan

Filed Feb. 15, 1985, Ser. No. 701,944
Claims priority, application Japan, Feb. 18, 1984, 59-29060; Feb. 18, 1984, 59-29061
Int. Cl.⁴ B28D *1/08*
U.S. Cl. 125—16 R **10 Claims**



1. A multi-wire type cutting method of stretching and lapping a continuous wire many times around four multi-grooved blocks disposed at the vartexes of a rectangle, bringing the lower horizontal parallel stretching lines of the wire into a pressed contact with an object which is to be processed and is made of a hard and brittle material, and reciprocating the contact parts of the wire lines while applying an abrasive grain suspension to the contact parts and thus carrying out cutting work on the object, comprising the steps of: feeding an unused portion of the wire gradually to the contact parts while gradually moving a used portion of said wire away from the contact parts during the periodic reciprocating motion of the wire lines; applying a low frequency vibration in the cutting direction either to the wire lines or to the object at the contact parts with the amplitude of said vibration arranged to be greater than the degree of deflection of the wire lines which takes place when said wire lines are pressed into contact with said object.

4,574,770

COOKING GRILL GREASE CATCHER

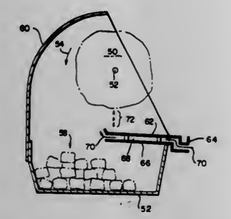
L. Paul Wells, Billings, Mont., assignor to Roger Wells, Billings, Mont., a part interest

Filed Aug. 14, 1984, Ser. No. 640,796
Int. Cl.⁴ A47J *37/00, 27/00*
U.S. Cl. 126—25 R **9 Claims**

1. Cooking apparatus comprising grease-catching means for catching grease from cooking food, shielding means beneath said grease-catching means for shielding a bottom surface of said grease-catching means from direct radiation from a source of radiant energy, said shielding means being spaced from said bottom surface to provide an air gap which permits the free

flow of air through said air gap to cool said grease-catching means, and cool air supply means for supplying cool air from





a region remote from said source of radiant energy and beyond an exterior wall of said apparatus to one end of said air gap.

4,574,771

COOKING GRILL

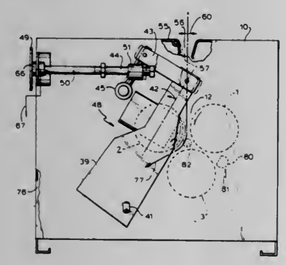
Peter Gutekunst, Buchen-Bödigheim, Fed. Rep. of Germany, assignor to Gutekunst Köchengeräte GmbH, Buchen-Bödigheim, Fed. Rep. of Germany

Filed Apr. 20, 1983, Ser. No. 486,923

Claims priority, application Fed. Rep. of Germany, Apr. 21, 1982, 3214684

Int. Cl.[4] A47J *37/00*; F24C *3/00*

U.S. Cl. 126—41 R **13 Claims**



1. A grill, particularly for grilling steaks, comprising two heated inlet rolls and a third heated roll, said rolls being parallel to one another and defining an elongated passage having a substantially vertical inlet section defined by said inlet rolls and a second section inclined with reference to said inlet section and defined by said third roll with one of said inlet rolls; means for driving said rolls at the same peripheral speed and in a direction to advance an item to be grilled frist through the inlet section and thereupon through the second section of said passage, said driving means being arranged to rotate said inlet rolls in the opposite directions; means for moving said one inlet roll substantially at right angles to the axes of said rolls to thereby adjust the width of both sections of said passage; a cover disposed at a level above said inlet rolls and having an inlet opening for admission of items to be grilled into the inlet section of said passage; and means for adjusting the effective width of said inlet opening in synchronism with the adjustment of the width of said passsage.

4,574,772

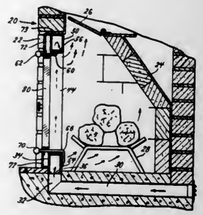
AIR DISTRIBUTING DEVICE

Vernon Nagel, R.R. 2, Box 78K, Herrin, Ill. 62948

Continuation of Ser. No. 628,120, Jul. 9, 1984, abandoned, which is a continuation of Ser. No. 350,270, Feb. 19, 1982, abandoned. This application Feb. 21, 1985, Ser. No. 704,072

Int. Cl.[4] F24B *1/18*

U.S. Cl. 126—120 **5 Claims**



1. An aspiration-type air distributing device, for a fireplace which is equipped with a conduit that has an outlet adjacent said fireplace to permit outside air to be aspirated to and into said fireplace at pressures below ambient pressure, a first metal air-guiding section that is disposable adjacent the bottom of the fireplace opening and that has at least one air outlet port, said metal air-guiding section having an elongated slot in the bottom thereof that is disposable in register with said outlet of said conduit and that is adapted to receive outside air which is freely aspirated inwardly through said conduit, said elongated slot having a length which is many times greater than the largest transverse dimension of said outlet of said conduit so said outlet of said conduit can be disposed in any one of a number of positions along the length of said elongated slot and yet supply outside air to said metal air-guiding section, said bottom of said air-guiding section being adapted to coact with said bottom of said fireplace opening to effectively close said slot at points which are displaced from said outlet of said conduit, said air outlet port being positioned to permit outside air that successively passes through said conduit and said metal air-guiding section and said air outlet port to be aspirated into the lower area of said fireplace, a second metal air-guiding section that is disposable adjacent the top of said fireplace opening and that has at least one air outlet port, a generally-vertical air-conducting metal section that is port-free and hence air-tight and that extends to and communicates with said second metal air-guiding section and which communicates with said first metal air-guiding section, and that is adapted to receive outside air which is freely aspirated inwardly through said conduit, said generally-vertical air-conducting section conducting outside air to said second metal air-guiding section with no loss of air, said air outlet port of said second metal air-guiding section being positioned to permit outside air that successively passes through said conduit and said generally-vertical air-conducting section and said second metal air-guiding section and said air outlet port of said second metal air-guiding section to be aspirated into the upper area of said fireplace, and adjustable means which can vary the amount of outside air that can pass successively through said conduit and the first said metal air-guiding section and said air outlet port of said first said metal air-guiding section to be aspirated into said lower area of said fireplace and which can vary the amount of outside air that can pass successively through said generally-vertical air-conducting section and said second said metal air-guiding section to be aspirated into said upper area of said fireplace.

4,574,773

FIREPLACE HEARTH

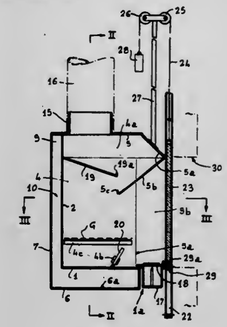
Artine Moughamian, Saint Baudille de la Tour, FR - 38118 Hieres-sur-Amby, France

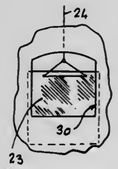
Filed Aug. 7, 1984, Ser. No. 638,588

Claims priority, application France, Aug. 9, 1983, 83 13239

Int. Cl.[4] F24B *7/00*

U.S. Cl. 126—121 **4 Claims**





1. An improved fireplace hearth for burning fuel on a grid and delivering smoke upwardly through a flue, the hearth having a base wall and a back wall and side walls and having a top wall which communicates with said flue, and the hearth having an open front wall and having door means selectively moveable between an open position and a closed position in which the door means closes the open front of the hearth, the improvements comprising:

(a) a first deflection screen in the hearth which extends thereacross between the side walls, the first screen being located above the grid and spaced below the top wall and extending obliquely downwardly from the open front wall and terminating at a first terminal edge located near the center of the hearth;

(b) a second deflection screen in the hearth which extends thereacross between the side walls, the second screen being located above the first screen and being spaced below the top wall and extending obliquely downwardly from the back wall and terminating at a second terminal edge located above the first terminal edge and in spaced relationship with respect thereto; and

(c) the first and second screens defining an enlarged hood located above the grate and below the top wall and extending from the front to the rear wall between the side walls which hood is enclosed except for a smoke passage defined by said vertically spaced terminal edges and by the flue, the height of the hood being large as compared with the vertical spacing of said terminal edges.

4,574,774

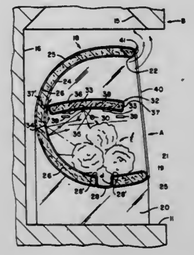
FIREPLACE ACCESSORY

Harold D. Wells, 14015 Margaux La., Chesterfield, Mo. 63017

Filed Oct. 9, 1984, Ser. No. 658,662

Int. Cl.[4] F23H *13/00*

U.S. Cl. 126—164 **11 Claims**



1. A combustion efficiency and ignition improvement device for enhancing combustion of fuel such as wood, carbonaceous fuel, or the like, said device comprising a housing constructed of relatively thin, heat absorbing material, means supporting said housing in an elevated position, said housing including a first generally C-shaped member having a generally vertically extending, curved, back portion and generally horizontally extending, curved, upper and lower portions, each of said upper and lower portions having a forward end and a rearward end, said lower portion being substantially subjacent said upper portion and being adapted to support fuel to be burned beneath said upper portion, said back portion being integral with and connecting said rearward ends of said upper and lower portions, said housing further including a forward opening adjacent and between said forward ends of said upper and lower portions, said back portion with said upper and lower portions defining a smooth, continuous, C-shaped interior surface for absorbing heat from fuel being burned and focusing and radiating heat forwardly through said forward opening and towards the fuel being burned on said lower portion, and heat insulating material positioned along substantially the full outer periphery of said first C-shaped member.

4,574,775

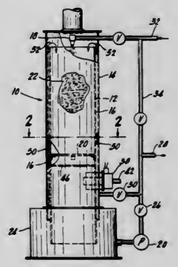
DIRECT CONTACT WATER HEATER

William C. Lutzen, Brookfield; Gerald A. Roszak, Brown Deer, and Karen L. Gadomski, New Berlin, all of Wis., assignors to Ludell Manufacturing Company, Milwaukee, Wis.

Filed Mar. 21, 1985, Ser. No. 714,688

Int. Cl.[4] F24H *1/10*

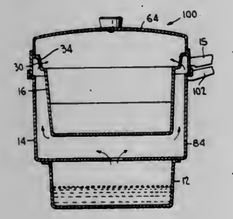
U.S. Cl. 126—359 **7 Claims**



1. A direct contact water heater having a vertically oriented open-ended column, a plurality of heat exchange bodies dis-

posed in the upper end of said column, a spraying device disposed above said heat exchange bodies for discharging water to be heated downwardly thereon, said column being curvilinear in horizontal cross section, a burner extending into said column below said heat exchange bodies and generally tangential to the curvilinear inner surface thereof, shield means disposed in said column and between said burner and said bodies, said shield means covering a portion of the burner flame generated by said nozzle, there being a substantial open area between said column and said shield means so that heated combustion products and water are permitted to flow around said shield means.

4,574,776
COOKING UTENSIL
Jerry Hidle, Panama City, Fla., assignor to Panhandle Industries, Inc., Panama City, Fla.
Filed Jun. 5, 1984, Ser. No. 617,530
Int. Cl.[4] F24D *1/00*
U.S. Cl. 126—369 **2 Claims**



1. A cooking utensil comprising, an outer vessel having a generally upstanding side wall of generally cylindrical configuration and a generally planar bottom wall having at least one aperture therein, an annular outwardly extending ledge at the upper end of said side wall, an outwardly extending handle mounted on said side wall, an inner vessel having a side wall and a bottom wall respectively spaced inwardly of said side wall and bottom walls of said outer vessel to define an annular space between said side and bottom walls, an outwardly extending handle on said inner vessel, an annular upstanding wall on said inner vessel supported on said ledge and forming an extension of said side wall of said outer vessel, said annular wall being spaced outwardly of said side wall of said inner vessel to define an annular space in communication with the annular space therewith between said side walls, an annular outwardly extending flange interconnecting an upper end of said side wall of said inner vessel with said annular wall, said flange having at least one opening therein for establishing communication between said annular spaces and the interior of said inner vessel, and said flange joining said annular wall below the upper edge thereof to define an annular lip for positioning a lid over said inner vessel when the cooking untensil is employed as a steamer. and wherein said flange has an annular bend at said upper end of said side wall of said inner vessel, inwardly of said at least one opening therein, to define a ledge for positioning another lid over said inner vessel.

4,574,777
FRYING PAN
Rainer Bohl, Schondorf, and Dorothee Hiller, Stuttgart, both of Fed. Rep. of Germany, assignors to Fissler GmbH, Idar-Oberstein, Fed. Rep. of Germany
Continuation-in-part of Ser. No. 385,726, Jul. 31, 1984, Pat. No. 4,462,388. This application Jul. 27, 1984, Ser. No. 635,232
Int. Cl.[4] A47J *27/00*
U.S. Cl. 126—390 **15 Claims**

1. A frying pan comprising:

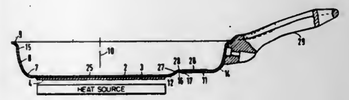
an upward-facing pan border surrounding a pan bottom to define a pan body;

said pan bottom including an upper side divided into a frying surface and at least one depositing surface having a smaller surface area than said frying surface, and a bottom side to which is attached a bottom plate to provide a sole stand surface for supporting said frying pan over a heat source to provide heat to said frying surface and indirectly to said at least one depositing surface, said at least one depositing surface disposed outside said source of heat;

said at least one depositing surface disposed inside said pan border adjacent to said pan border and outside the border of said bottom plate;

said at least one depositing surface being supported by said frying surface and raised with respect to the frying surface plane and being spaced, in top plan view, outside of said stand surface periphery;

said at least one depositing surface being inclined downwardly a few angular degrees towards said pan bottom;

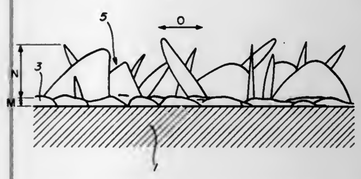


connecting means disposed between a peripheral portion of said frying surface and an adjacent peripheral portion of said at least one depositing surface so that food to be fried can pass from said one depositing surface over said connecting means onto said frying surface and back again over said connecting means onto said at least one depositing surface, said connecting means forming a step;

said at least one depositing surface continuously decreasing in width as it extends from said connecting means as measured between opposite sides of said pan border;

said pan bottom and said bottom plate being comprised of materials of a thickness and exhibiting such thermal conductivity that the temperature differential resulting from heat migrating from said frying surface to said at least one depositing surface which exists between the highest temperature of the frying surface and the highest temperature of said at least one depositing surface at thermodynamic equilibrium during use of said frying pan is at least 50° C.

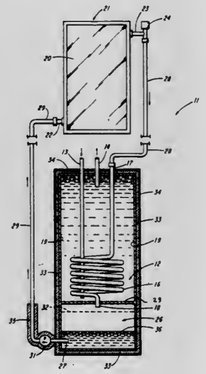
4,574,778
PREPARING SELECTIVE SURFACES FOR SOLAR COLLECTORS BY DRY OXIDATION AND SELECTIVE SURFACES SO OBTAINED
Guy Raynaud; Francois Morin, both of Longueuil, and Louis Brossard, Ste-Julie, all of Canada, assignors to Hydro-Quebec, Quebec, Canada
Filed Mar. 19, 1984, Ser. No. 590,646
Int. Cl.[4] F24J *2/00*
U.S. Cl. 126—417 **11 Claims**



1. Process for the preparation of selective surfaces for photothermal solar collectors comprising cold rolling nickel at 99.5% purity into plates of about 200 μm thickness, subjecting these plates to an initial treatment in an oven, said treatment

including a rapid heating in air at a temperature of about 1000° C. to 1100° C. followed by oxidation for about 5 minutes at said temperature, reducing the oxidized nickel plates in an atmosphere of argon containing about 1% hydrogen, said atmosphere of argon being introduced into the furnace at a flow of about 20 cc/min. for about 1 hour, rapidly decreasing the temperature of the furnace to a temperature of about 820° C. and introducing pure and dry oxygen into the furnace for about 10 minutes, so as to flush away all hydrogen, stopping the flow of oxygen, rapidly cooling the plates to room temperature thereby obtaining the selective surfaces desired.

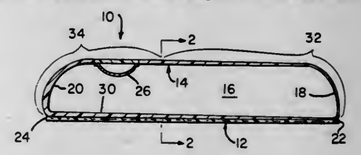
4,574,779
SOLAR WATER HEATING SYSTEM
Patrick S. Hayes, 55 Hunter Dr., Oroville, Calif. 95965
Filed Oct. 10, 1984, Ser. No. 659,461
Int. Cl.[4] F24J *2/30*
U.S. Cl. 126—435 **4 Claims**

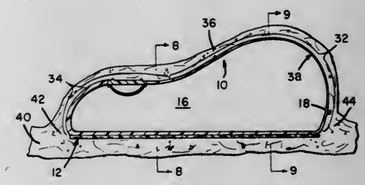


1. An active solar water heating system comprising:
(a) a water storage tank,
(b) a heat exchanger disposed within said storage tank at a predetermined elevation and having an inlet and an outlet,
(c) a solar energy collection unit located above said predetermined elevation and having an inlet and an outlet,
(d) a draindown tank located below said heat exchanger and sharing a common solid wall with said storage tank,
(e) means for conducting fluid from said heat exchanger to said draindown tank,
(f) a drain in said draindown tank,
(g) a first conduit connecting said outlet of said solar energy collector and the inlet of said heat exchanger,
(h) a second conduit connecting said drain and said inlet of said solar energy collector,
(i) and a pump in said second conduit for pumping liquid from said drain through said solar collection unit and from said solar collection unit through said first conduit and said heat exchanger to said draindown tank.

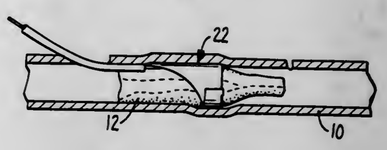
4,574,780
TISSUE EXPANDER AND METHOD
Ernest K. Manders, 1 Timberline Pl., Hummelstown, Pa. 17036
Filed Nov. 13, 1984, Ser. No. 670,623
Int. Cl.[4] A61B *19/00*
U.S. Cl. 128—1 R **46 Claims**

1. A soft tissue expander device comprising a flexible base and an expandable cover joined to the periphery of the base to define a fluid tight chamber between the cover and base, a fluid injection port communicating with the interior of the chamber for admitting fluid into the chamber to expand the cover, the cover including a first limited expansion portion expandable by initial fluid injected through the port and into the chamber from a collapsed position overlying the base to a taut position a distance above the base and a differential expansion portion adjacent said limited expansion portion expandable by said initial injected fluid from a collapsed position overlying the base said distance above the base, said limited expansion portion including limiting means preventing further expansion of such portion beyond said taut position by fluid injected into the chamber in addition to the initial injected fluid and said differential expansion portion including expansion means permitting further expansion of such portion beyond said distance whereby upon implantation of the base and collapsed cover beneath a soft tissue layer of skin and subcutaneous tissue injection of fluid through the port and into the cavity first expands both the first and second cover portions together with the tissue overlying such portions said distance above the base and then expands the second cover portion together with the tissue overlying the second cover portion only beyond said distance to form a differentially expanded tissue flap.





4,574,781
ENDARTERECTOMY PROCESS
Albert K. Chin, Stanford, Calif., assignor to Thomas J. Fogarty, Palo Alto, Calif.
Division of Ser. No. 73,252, Sep. 2, 1979, Pat. No. 4,315,511. This application Sep. 24, 1981, Ser. No. 305,114
Int. Cl.[4] A61B *17/32*
U.S. Cl. 128—1 R **2 Claims**



1. A method for excising arteriosclerotic occlusions from arteries comprising longitudinally positioning a flexible wire along a fixed path within an artery between an occlusion and the undiseased layers of said artery, attaching a radially compressible and expansible annular knife having overlapped end portions to said wire in a position to excise said occlusion, the wire-connected end of said knife being the leading end of said knife and having a cutting edge which extends cicumferentially and longitudinally of the knife and through a full 360° of

its periphery and pulling said wire along said path to excisingly traverse said occlusion with said cutting edge of said knife while maintaining the end portions of said knife in overlapped relation.

4,574,782
RADIO FREQUENCY-INDUCED HYPERTHERMIA FOR TUMOR THERAPY

Nicholas F. Borrelli, Elmira; Albert A. Luderer, Corning; Gerald R. Mansfield, Painted Post, all of N.Y., and Joseph N. Panzarino, Northboro, Mass., assignors to Corning Glass Works, Corning, N.Y.

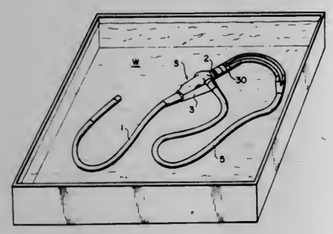
Continuation-in-part of Ser. No. 321,469, Nov. 16, 1981, abandoned. This application Nov. 21, 1983, Ser. No. 553,376
Int. Cl.[4] A61B *17/52*
U.S. Cl. 128—1.3 11 Claims

1. In a method for reducing the mass of a tumor in animal tissue through localized, magnetically-coupled, RF-induced hyperthermia comprising the steps of:
(a) implanting a particulate material into the tumor and/or into normal tissue immediately adjacent to the tumor, which material is essentially non-toxic to, and inert to or compatible with normal animal tissue, and which has incorporated therewithin ferromagnetic particles; and
(b) applying a magnetic field to subject said material to essentially only hysteresis heating to raise the temperature of said tumor to between about 41°–44° C.;
the improvement which comprises:
applying a magnetic field to said material of at least about 20, but less than 200 oersteds, at a frequency greater than 10 kilohertz and ranging up to about 600 kilohertz, the particles incorporated within said material being of such size, composition, concentration, and ferromagnetic properties to develop a heating value up to about one watt/gram of said material, such that nerve and muscle response of said animal to the induced emf is minimized.

4,574,783
ENDOSCOPE

Sakamoto Kazuhiro, Kita-saitama; Oshiro Susumu, Iwatsuki, and Morioka Masaharu, Ageo, all of Japan, assignors to Fuji Photo Optical Co., Ltd., Saitama, Japan

Filed Nov. 14, 1984, Ser. No. 671,186
Claims priority, application Japan, Nov. 14, 1983, 58-213584
Int. Cl.[4] A61B *1/06*
U.S. Cl. 128—4 5 Claims

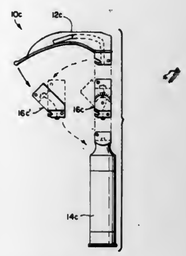


1. An endoscope wherein:
said endoscope comprises an insertable portion to be inserted into a portion to be observed, a manual control portion secured thereto with the proximal end of said insertable portion, an ocular portion provided on said manual control portion, and a connecting portion secured at one end thereof to said manual control section and provided at the other end thereof with a connector detachably connected to an external apparatus; and
said connector, when detached from said external apparatus, is water-tightly connectible to said ocular portion.

4,574,784
LARYNGOSCOPE

David J. Soloway, 22 Alice Ave., Merrick, N.Y. 11566

Filed Sep. 4, 1984, Ser. No. 647,188
Int. Cl.[4] A61B *1/06*
U.S. Cl. 128—11 18 Claims

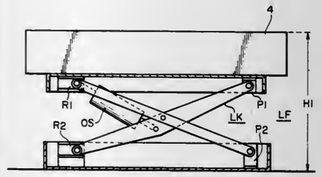


1. An improved laryngoscope of the type having a hook-on fitting handle and a hook-on fitting blade wherein the improvement comprises a hook-on fitting angle adjustable adapter connected between said handle and said blade so that various angle arrangements can be formed by said blade with respect to said handle, said hook-on fitting angle adjustable adapter comprising a lower half having a slot therein, an upper half having an arm extending into said slot of said lower half, and an adjustable device to capture said arm so that said upper half can pivot around said lower half.

4,574,785
DEVICE FOR CONTROLLING THE RAISING AND LOWERING MOVEMENT OF A FLUIDIZED BED

Hitoshi Yamamoto, Kanagawa, Japan, assignor to Fuji Electric Company Ltd., Japan

Filed May 29, 1984, Ser. No. 614,940
Claims priority, application Japan, May 27, 1983, 58-93763
Int. Cl.[4] A47C *27/08*
U.S. Cl. 128—24 R 4 Claims

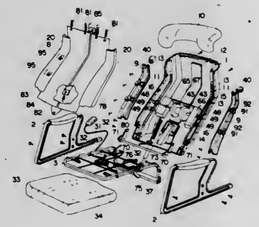


1. A device for controlling the raising and lowering of a fluidized bed for supporting a human body on a bed of particles floating and flowing with air under pressure, comprising:
a drive unit for vertically raising and lowering the bed;
control means for issuing a vertical movement command to said drive unit;
vertical movement control means for controlling operations of said drive unit in response to the vertical movement command from said control means;
flow control means for controlling flowing movement of air in said bed;
means for issuing a flow stop command to said flow control means when said vertical movement command is generated by said control means and for issuing a flow start command to said flow control means when generation of said vertical movement command is stopped; and
means for inhibiting the vertical movement command applied from said control means to said vertical movement control means during a predetermined interval of time after the vertical movement command has been generated until said bed of particles stops its flowing movement.

4,574,786
MASSAGE APPARATUS

Kouichi Hashimoto, Shiga; Teruhisa Innami, Hikone; Ken Kakino, Hikone, and Yukio Yamamura, Hikone, all of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Mar. 1, 1984, Ser. No. 585,047
Claims priority, application Japan, Apr. 25, 1983, 58-72539
Int. Cl.[4] A61H *15/00*
U.S. Cl. 128—52 6 Claims

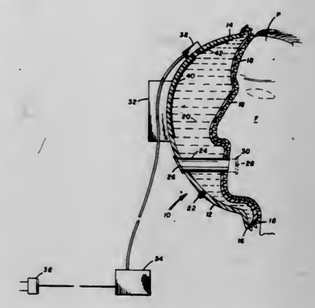


1. A massage apparatus comprising:
a boxlike base member made of plastic material having contoured bottom and side walls extending forwardly from respective lateral sides thereof to form an open front;
racks formed integral with said respective side walls of said base member, each of said racks extending longitudinally along said base member;
rail members located at each lateral side of said base member walls forming first and second opposite guide paths over said racks;
a front cover spreading over said open front of said base member so as to define therebetween a mounting space, said front cover being fastened to said base member to form an enclosure by means of side cushions secured to said respective lateral sides of said base member, each of said side cushions extending longitudinally on said base member with one part thereof projecting inwardly into the front opening of said base member and having a cushioning material thereon, side edge portions of said front cover being secured respectively onto the innermost portions of said inwardly projecting parts of said side cushions; said front cover and base member forming a backrest of a chair;
massaging assembly positioned in said mounting space having first and second guide rollers located in said guide paths, and movable in a lengthwise direction upon said base member, wherein a massaging action is applied by said massaging assembly through said front cover to the back of the body of a user lying on said front cover, said massaging assembly including a gear box enclosing a gear train;
pinions coupled to said gear box for cooperating with said massaging assembly lengthwise along said base member, each of said pinion members being in meshing engagement with each one of said racks, such that said massaging assembly is movably carried in said enclosure while being retained in said guide paths; and
a motor mounted on said gear box for selectively driving said massaging assembly, said motor capable of driving said massaging assembly along said racks in said lengthwise direction enclosed by said boxlike base member and front cover and applying massaging action to the body of said user through said gear train.

4,574,787
ACUPRESSURE APPARATUS

H. Barry Jacobs, 11607 Foxclove Rd., Reston, Va. 22091

Filed Aug. 13, 1982, Ser. No. 408,003
Int. Cl.[4] A61H *7/00*
U.S. Cl. 128—64 19 Claims

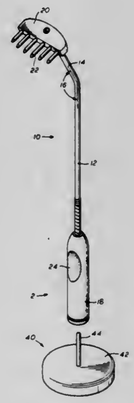


1. An acupressure apparatus for applying vibrational pressure substantially evenly to a plurality of preselected points on a shaped portion of a living body comprising:
a rigid housing;
a flexible membrane fixedly secured to said housing so as to form an enclosed chamber between said housing and said flexible membrane for containing a liquid when disposed within said chamber;
a plurality of protrusions carried by said flexible membrane for contacting said preselected points when in proximity thereto; and
means for exciting said liquid with vibrational energy, the exciting of said liquid causing said plurality of protrusions to exert said vibrational pressure on said preselected points.

4,574,788
FACILE BACK SCRATCHER

Ben L. Jordan, 4327 Simsbrook, Houston, Tex. 77045

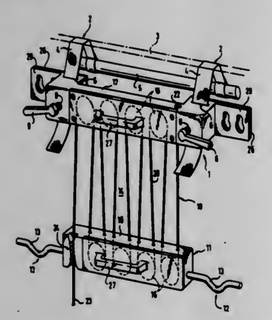
Filed Oct. 15, 1984, Ser. No. 660,638
Int. Cl.[4] A61H *7/00*
U.S. Cl. 128—67 15 Claims



1. A back scratcher comprising:
an elongated rod having an axial portion with a first free end

and a canted portion with a second free end, said portions meeting at an obtuse angle;
a handle attached about said first end and positionally fixed in relation thereto, said handle being graspable by the hand;
a scratcher head attached to said second end and positionally fixed in relation thereto;
a plurality of tines extending from said scratcher head in a direction parallel to the plane defined by said axial and canted portions, said tines presenting an arcuate ridge for engaging a concave portion of the back; and
depression means formed on said handle for receiving the thumb when said handle is grasped by the hand, whereby said tines are aligned to engage the back when the back scratcher is placed over the shoulder.

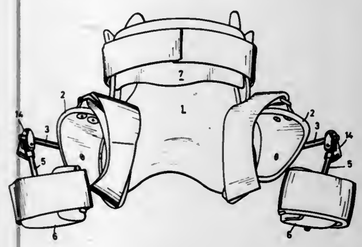
4,574,789
GRAVITY RELIEF APPARATUS
Helmut Forster, Greppenstrasse 77, 8031 Alling, Fed. Rep. of Germany
Filed May 24, 1984, Ser. No. 613,965
Claims priority, application Fed. Rep. of Germany, Jun. 27, 1983, 3323138
Int. Cl.[4] A61H *1/02*; A63B *21/12*; B66D *3/06, 3/10*
U.S. Cl. 128—75 **21 Claims**



1. Apparatus for relief of the intervertebral discs and for stretching of the lumbar vertebrae and the hip joints by means of gravity, comprising: a support element for suspension from a door, a wall or the like; a suspension device for suspending a person in an inverted position; a cable line means connecting the suspension device to the support element and having at a free end a lifting line; and a coupling device on the suspension device for coupling of leg engaging means, said suspension device including a clamp means adapted to receive the free end of the cable line means to maintain the suspension device in a locked position relative to the support element whereby the user is maintained in at least a partially inverted position.

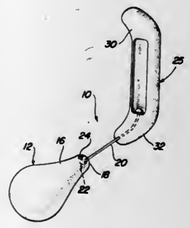
4,574,790
ORTHOPEDIC DEVICE FOR TREATING HIP DYSPLASIA AND HIP DISLOCATION
Ulf Wellershaus, Duderstadt, Fed. Rep. of Germany, assignor to Otto Bock Orthopädische Industrie KG, Duderstadt, Fed. Rep. of Germany
Filed Nov. 9, 1983, Ser. No. 550,594
Claims priority, application Fed. Rep. of Germany, Jul. 9, 1983, 8319895[U]
Int. Cl.[4] A61F *5/02*
U.S. Cl. 128—78 **4 Claims**

1. An orthopedic device for treating hip dysplasia and hip dislocation, comprising a pelvis-supporting portion; two upper shank guide bars laterally extended from said pelvis-supporting portion and carrying upper shank supports, respectively, said upper shank guide bars having ends pivotally connected to said pelvis-supporting portion in the regions of natural hip joints of a patient and being adjustable with respect to said pelvis-supporting portion in any desired angular position; each of said upper shank supports being pivotable about the longitudinal axis of the respective upper shank guide bar and arrestable thereon in any desired position; joint means for connecting said ends to said pelvis-supporting portion; and two lower shank guide bars connected respectively to said upper shank guide bars and carrying two respective lower shank supports, the pelvis-supporting portion including two angularly extending



projections extending in the regions of natural hip joints, said joint means each including rotative means being rotatable only about an axis extended perpendicularly to said respective projection and being arrestable in any desired rotation position, and a curved guide connected to said rotative means and spaced therefrom at a distance which varies over the length of the guide, the end of the respective upper shank guide bar being displaceably guided in said curved guide and adpated to be arrested in any desired position with respect thereto.

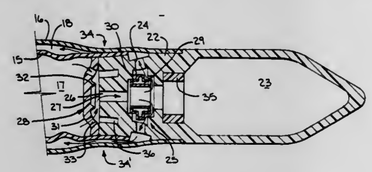
4,574,791
MUSCLE-TONING DEVICE
Milton J. R. Mitchener, 1305 1/2 N. McCadden Pl., Hollywood, Calif. 90028
Filed Jan. 27, 1984, Ser. No. 574,470
Int. Cl.[4] A61F *5/00*
U.S. Cl. 128—79 **9 Claims**



1. A muscle-toning device comprising:
a vaginal-insert member adapted to be disposed within the female vaginal cavity, so as to be subjected to the contracting and relaxing of the surrounding muscles thereof;
said vaginal-insert member including an enlarged, bulbous, body member having an elongated neck portion, wherein said bulbous body and said neck portion thereof define a pear-shaped configuration;
a support means interconnected to said vaginal-insert member, and adapted to be disposed adjacent the exterior of said vaginal cavity in a substantially fixed manner; and
a stretchable connecting means interconnecting said vaginal-insert body with said support means, whereby said vaginal-insert member is adapted to freely reciprocate within said vaginal cavity, without affecting movement of said support means;

wherein said support means comprises an elongated body member, one end thereof being attached to said stretchable connecting means.

4,574,792
PENILE ERECTILE SYSTEM
Robert E. Trick, Racine, Wis., assignor to Medical Engineering Corporation, Racine, Wis.
Continuation-in-part of Ser. No. 305,048, Sep. 24, 1981, Pat. No. 4,369,771, and a continuation-in-part of Ser. No. 426,566, Sep. 29, 1982, Pat. No. 4,457,335. This application Jun. 26, 1984, Ser. No. 624,624
Int. Cl.[4] A61F *5/00*
U.S. Cl. 128—79 **6 Claims**

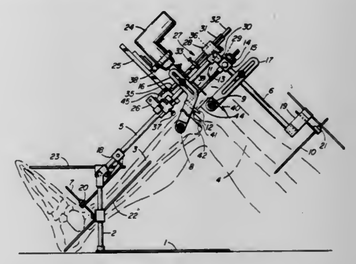


1. A penile implant comprising an elongated unitary body having a tip at one end, an anchoring stem at the other end, an intermediate portion having a pressure chamber, a reservoir for fluid for pressurizing the pressure chamber, and pump and valve means within the body for transferring fluid from the reservoir to the pressure chamber to pressurize it and make it rigid and for releasing the pressure in said pressure chamber, said pump and valve means comprising:
(a) a pump having a pumping chamber;
(b) a deformable valve housing positioned between and separating said pumping chamber from said pressure chamber and said reservoir;
(c) an inlet passage in said housing leading from the reservoir to the pumping chamber;
(d) an inlet valve controling flow through said inlet passage, said inlet valve opening when the pressure in the reservoir exceeds that in the pumping chamber or the housing is deformed;
(e) an outlet passage in said housing leading from the pumping chamber to the pressure chamber; and
(f) an outlet valve controlling flow through said outlet passage, said outlet passage being normally closed but opening when pressure in the pumping chamber exceeds that in the pressure chamber or the housing is deformed.

4,574,793
STABILIZED, CATALYZED WATER ACTIVATED POLYURETHANE SYSTEMS
Kyu-Wang Lee, Danville; Winston L. Hedges, Dublin, and Kenneth S. Baron, San Ramon, all of Calif., assignors to Hexcel Corporation, San Francisco, Calif.
Filed Aug. 21, 1984, Ser. No. 642,773
Int. Cl.[4] A61F *5/04*
U.S. Cl. 128—90 **21 Claims**

1. A polyurethane prepolymer system consisting essentially of an isocyanate-terminated polyurethane prepolymer reaction product of a polyol and a diisocyanate and a tertiary amine catalyst selected from the group consisting of bis(2-dimethylaminoethyl)ether, dimorphilinodiethylether, bis(2,6-dimethylmorpholino) diethylether and mixtures thereof, further consisting essentially of methane sulfonic acid in an amount effective as a shelf life stabilizer therefor.

4,574,794
ORTHOPAEDIC BONE CUTTING JIG AND ALIGNMENT DEVICE
Theodore D. Cooke, Kingston; Gerald A. B. Saunders, Sydenham, and David Siu, Kingston, all of Canada, assignors to Queen's University at Kingston, Kingston, Canada
Filed Jun. 1, 1984, Ser. No. 616,068
Int. Cl.[4] A61F *5/04*
U.S. Cl. 128—92 H **4 Claims**



1. A jig for mounting an orthopaedic bone cutting device comprising:
a base;
a frame adjustably mounted on said base and comprising first and second pairs of spaced parallel bars mounted perpendicular to each other at adjacent ends of the respective bars;
means to adjustably and releasably secure each of a patient's tibia and femur to said frame in anatomical and planar parallel alignment with a respective one of said first and second pairs of parallel bars;
planar bed means releasably mounted on either pair of said parallel bars for sliding movement therealong and extending perpendicularly thereto;
means to releasably lock said bed means to the selected said parallel bars at any selected position thereon; and
means slidably mounted on said bed means for movement perpendicular to said selected pair of parallel bars, adapted to receive and releasably secure thereto said orthopaedic bone cutting device.

4,574,795
COMPRESSION NAIL ASSEMBLY
Jawdat Georges, Kehl, Fed. Rep. of Germany, assignor to MECRON medizinische Produkte GmbH, Berlin, Fed. Rep. of Germany
Filed Dec. 22, 1983, Ser. No. 564,504
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1982, 8236698[U]
Int. Cl.[4] A61F *5/04*
U.S. Cl. 128—92 BC **4 Claims**

1. A compression nail assembly for engagement with an

element fixed to a bone for placing bone parts on either side of a fracture in compression, comprising:

a tightening sleeve; and



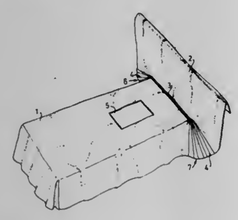
a tightening mandrel configured for insertion into said sleeve and having an end portion shaped in the form of a hook for engagement with the element.

4,574,796

SURGICAL SHEET

Thomas Lundström, Göteborg, and Carl-Otto Hanssen, Kullavik, both of Sweden, assignors to Molnlycke AB, Göteborg, Sweden

Filed Oct. 16, 1984, Ser. No. 663,042
Claims priority, application Sweden, Oct. 28, 1983, 8305946
Int. Cl.⁴ A61F *13/00*
U.S. Cl. 128—132 D **1 Claim**



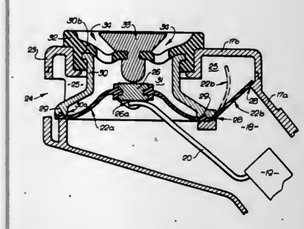
1. A surgical sheet having a patient-covering first sheet-part and a second sheet-part which is joined with the fist sheet-part and which is intended to be placed over an anesthesis arch, characterized in that the two sheet-parts are substantially of rectangular shape and preferably of mutually the same width, and are both formed in one and the same sheet length with a portion of said sheet as a transition region located therebetween; in that the transition region is provided with mutually parallel folds of said sheet which are gathered and joined together at a central part of said transition region, whereby parts of the sheet located within said transition region and on both sides of the central part can swing out in a fan-like fashion in a manner to form substantially vertical screening partition walls on both sides of an operating table when the sheet is in use, these walls extending from edge regions of the first sheet-part hanging down on both sides of said table to the second sheet-part extending vertically upwards over the anesthesis arch.

4,574,797

DIAPHRAGM AND EXHAUST VALVE FOR SECOND STAGE REGULATOR

Tony Christianson, P.O. Box 3700, Manhattan Beach, Calif. 90266

Filed May 9, 1983, Ser. No. 492,992
Int. Cl.⁴ A62B *7/04*
U.S. Cl. 128—204.26 **7 Claims**



1. In a second stage regulator for a self-contained underwater breathing apparatus of the type including a housing having an inlet adapted to be connected to a source of gas and a mouthpiece outlet adapted to be connected to a mouthpiece, and valve means mounted in said housing valve for controlling the flow of breathable gas from said inlet to said mouthpiece outlet, the improvement comprising:

a wall mounted in and separating the interior of said housing into an interior chamber containing said valve means and communicating to said mouthpiece outlet and a region communicating to the exterior of said regulator, said wall having two adjacent, closely spaced openings therewithin;

a unitary diaphragm member adapted to overlay said separating wall, said diaphragm member having:

a generally conical diaphragm section overlying a first of said spaced openings, and

an exhaust valve flap portion overlying the second of said openings and being flexible away from said interior chamber to uncover said second opening, thereby to permit the exhaust of exhaled gases from said interior chamber via said region to the exterior of said regulator,

linkage means connected between said valve means and said diaphragm section whereby a decrease in pressure in said interior chamber caused by inhalation moves said diaphragm section and linkage means and actuates said valve in response thereto,

a rigid, generally convex diaphragm wall member situated within said region and having a first divergent end portion mounted to clamp said unitary diaphragm member to said separating wall about the periphery of said conical diaphragm section and an opposite convergent end portion, said convex wall member permitting movement of said diaphragm in response to inhalation pressure, and

an outer wall member connected between said convex wall member adjacent the convergent end portion thereof and said housing, said convex wall member and said outer wall member separating said region into two chambers, each wall member having openings communicating each chamber separately to the exterior of said regulator, exhaust gases flowing through one of said chambers, said diaphragm being exposed to the external ambient environment via the other of said chambers.

4,574,798

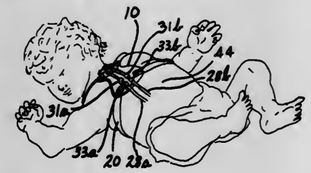
SURGICAL APPLIANCE SUPPORT

William G. Heitzman, 1853 Melville Cir., Brunswick, Ohio 44212

Filed Dec. 12, 1983, Ser. No. 560,336
Int. Cl.⁴ A61M *16/00*
U.S. Cl. 128—205.22 **5 Claims**

1. An appliance for use on a tracheotomy patient comprising

a plate-like base comprising means contoured to lie upon a patient's chest or corresponding back portion, means for stably supporting said base on said chest or back portion, tube means for supplying preselected gas or gases, tube support means on said base removably retaining said tube means on said base,



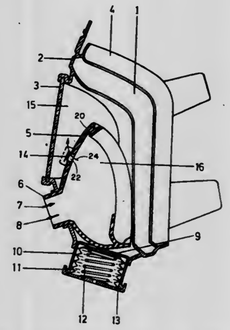
chamber means mounted on said base connector to said tube means effective to receive said preselected gas or gases therein from said tube means, trachea tube means adapted to be inserted into the trachea of a patient connected to said chamber means for directing the gas or gases in said chamber to the trachea of the patient.

4,574,799

GAS MASK CONSTRUCTION

Ernst Warncke, Lübeck, Fed. Rep. of Germany, assignor to Drägerwerk Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 13, 1983, Ser. No. 503,503
Claims priority, application Fed. Rep. of Germany, Aug. 20, 1982, 3230939
Int. Cl.⁴ A62B *7/00*
U.S. Cl. 128—206.24 **3 Claims**



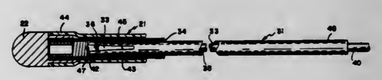
1. A gas mask comprising an outer full mask having a front wall adapted to overlie the wearer's face with an opening therethrough, and an inner half mask having a tubular connecting piece portion supported in and extending through the opening of the full mask adapted to be connected to a respirator for inhaling and exhaling therethrough, said half mask being of a size to overlie the nose, mouth and chin of the wearer, said half mask being spaced from the interior of said full mask and defining an interspace therebetween which may be maintained under positive pressure, said half mask having a wall portion within said full mask and having an opening therethrough and defining a passage between the interspace and the interior of said half mask, a check valve mounted in said passage which opens upon an exhalation in a direction from the interior of said half mask toward the interspace, said full mask having a tubular wall portion below said half mask a cylinder mounted in said tubular wall portion defining a leakage compensation passage extending to the exterior of said full mask, a cover closing a portion of the passage and overlying the outer end of said cylinder and having a hole therein, said cylinder defining an opening at the opposite end thereof, a bellows mounted in said cylinder dividing said passage into first and second chambers, said bellows having an interior wall defining said first chamber communicating with said hole and having an exterior surface communicating with said interspace via said opening, said bellows being expandable and contractible in accordance with the variations of pressure in the interspace and the exterior, and spring means biasing said bellows to an expanded condition toward said opening, said check valve being openable during exhalation to pressurize the interspace and to contract the bellows and being closeable on inhalation, said bellows acting to expand by the force of said spring so as to provide an increase in the pressure between said half mask and said full mask to seal the wearer's face around the full mask.

4,574,800

IMPLANTED LEAD EXTRACTOR

Charles A. Peers-Trevarton, Coral Springs, Fla., assignor to Cordis Corporation, Miami, Fla.

Filed Dec. 7, 1984, Ser. No. 679,566
Int. Cl.⁴ A61B *17/50*
U.S. Cl. 128—303 R **17 Claims**



11. A method for extracting an implanted cardiac pacing lead assembly and the like which has an elongated lead shaft that has a distally located remote electrode implanted within a cardiac passageway, comprising the steps of:

providing an extractor assembly having a pliable elongated tubular member and an elongated line member slidably mounted coaxially within a lumen thereof and extending proximally of the elongated tubular member, the elongated line member also protruding distally of the elongated tubular member and including distal protrusion means;

inserting the extractor assembly, protrusion means first, into and through a lumen of an implanted cardiac pacing lead assembly and the like until the protrusion means generally engages a distal end of the cardiac pacing lead lumen;

holding the elongated tubular member generally stationary while manipulating the proximal end of the elongated line member in order to impart a generally radially directed wedging force onto the generally distal end of the cardiac pacing lead lumen;

pulling the extractor assembly in a proximal direction to thereby transmit a pulling force directly onto the distal end portion of the cardiac pacing lead to thereby dislodge the implanted distal tip; and

thereafter withdrawing the cardiac pacing lead assembly and lead extractor assembly from the patient.

4,574,801

ELECTROSURGICAL UNIT WITH REGULATED OUTPUT

Michael R. Manes, Littleton, Colo., assignor to Aspen Laboratories, Inc., Englewood, Colo.

Filed Feb. 29, 1984, Ser. No. 584,954
Int. Cl.⁴ A61B *17/39*
U.S. Cl. 128—303.14 **5 Claims**

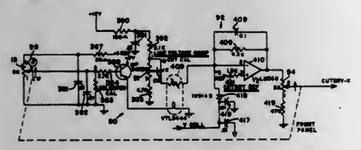
1. An electrosurgical unit comprising:

a. a power source;

b. feedforward means responsive to voltage fluctuations at said power source for producing a regulation signal, said feedforward means including an optoisolator;

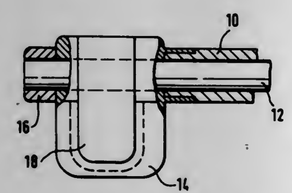
c. amplifier means responsive to said regulation signal for

producing an electrosurgical output signal that is substatially independent of the voltage fluctuations of said power source;



d. means for controlling the power level of said amplifier means and the lamp brightness of said optoisolator; and
e. means connecting the photo-resistor of said optoisolator to said power source and also to said amplifier means.

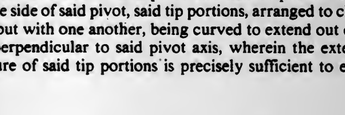
4,574,802
SURGICAL INSTRUMENT FOR CUTTING TISSUE, IN PARTICULAR CARTILAGE
Reinhold Straub, Schramberg, and Eugen Eberhard, Mülheim, both of Fed. Rep. of Germany, assignors to Ewald Hensler, Immendingen, Fed. Rep. of Germany
Filed Feb. 1, 1984, Ser. No. 575,992
Claims priority, application Fed. Rep. of Germany, Feb. 2, 1983, 3303335
Int. Cl.[4] A61F *17/32*
U.S. Cl. 128—305 **4 Claims**



1. A surgical instrument for cutting tissue, in particular cartilage, having a jaw part comprising a stationary U-shaped curette, which is secured to a tube connected to a handle part, its U legs being oriented toward the axis of the tube, and a cutting part movable into an open inner face of the curette, the cutting part being secured on a rotating rod that is disposed coaxially in the tube and is rotatable; the improvement including a sleeve and wherein said rotating rod protrudes axially beyond said cutting part and is supported in said sleeve, which is in axial alignment with the tube and is provided on that leg of the U of the curette remote from the tube.

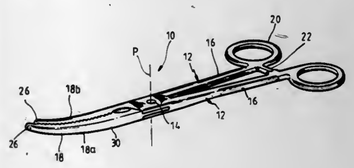
4,574,803
TISSUE CUTTER
Karl Storz, Postfach 400, Mittlestrasse 8, Tuttlingen, Fed. Rep. of Germany
Continuation of Ser. No. 4,815, Jan. 19, 1979, abandoned. This application Feb. 17, 1981, Ser. No. 234,474
Int. Cl.[4] A61B *17/32*
U.S. Cl. 128—305 **6 Claims**

1. A tissue cutter for surgical purposes, said tissue cutter having a proximal and a distal end, and comprising:
a support;
an outer tube mounted to said support having a central axis, an internal axially extending passage, and a first cutter blade at its distal end;
an operating rod in said passage and axially reciprocable therein;
a second cutter blade carried by said operating rod and reciprocable thereby, whereby in one axial position of said rod said second cutter blade projects distally beyond said first cutter blade, and in another axial position it is drawn into said passage, having made a close tissue-cutting pass through said first cutter blade so as to cut tissue disposed between them;
a stripper rod in said passage and axially reciprocable therein, said stripper rod being adapted to be moved into said outer tube when said second cutter blade is moved into said outer tube, and selectively to remain in said outer tube when said second cutter blade is moved out of said outer tube;
a stripper carried by said stripper rod and its distal end, adapted either to be outside of said outer tube or to be inside of said outer tube when said first cutter blade is outside said tube and to move tissue cut by said blades into said passage;
bias means biasing said stripper rod toward a position where said stripper is outside of said outer tube;



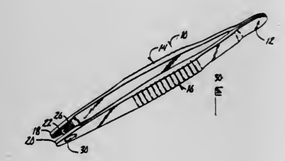
releasable latch means for restraining said stripper rod with said stripper inside said outer tube in opposition to said bias means; and
handle means pivotally mounted to said support for reciprocating said operating rod, said operating rod and stripper rod occupying less than the total cross-section of said passage near its distal end, whereby to receive plural cuttings of tissue, whereby when said operating rod is moved toward the proximal end and the cutters pass one another, a tissue cutting is moved into said outer tube by said stripper, and said stripper rod is latched so that the stripper is inside said outer tube, after which said handle means can be moved to permit said first cutter to return to its most distal position, release of said latch means enabling said stripper rod to be moved abruptly by said bias means in the distal direction to leave said tissue cutting inside said outer tube at a location spaced from said distal end of said outer tube as a consequence of the inertia of said tissue cutting.

4,574,804
OPTIC NERVE CLAMP
Badrudin Kurwa, Galveston, Tex., assignor to Board of Regents, The University of Texas System, Austin, Tex.
Filed Feb. 27, 1984, Ser. No. 583,764
Int. Cl.[4] A61B *17/28*
U.S. Cl. 128—322 **9 Claims**



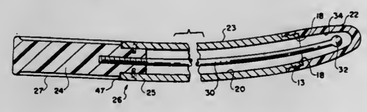
1. An optic nerve clamp comprising a pair of clamping jaws connected at a pivot for relative movement about a pivot axis extending through said pivot, each of said jaws having a tip portion on one side of said pivot and handle portion on the opposite side of said pivot, said tip portions, arranged to clampingly abut with one another, being curved to extend out of the plane perpendicular to said pivot axis, wherein the extent of curvature of said tip portions is precisely sufficient to enable access to the optic nerve from around the side of the eyeball, one of said tip portions being shorter than the other such that the ends of said tip portions are offset along the length of said tip portions, each of said jaws having an inner surface that abuts with the inner surface of the other jaw when said jaws clampingly abut, each of said jaws having an outer surface opposite its inner surface, the outer surface of the shorter tip portion being offset transversely to the length of said tip portions from the portion of the inner surface of the longer tip portion that extends beyond the end of said shorter tip portion.

4,574,805
INSTRUMENT FOR SKIN SURGERY AND METHOD FOR USING SAME
Seth P. Lerner, Coralville, Iowa, assignor to University of Iowa Research Foundation, Iowa City, Iowa
Filed Oct. 17, 1983, Ser. No. 542,278
Int. Cl.[4] A61B *17/08*
U.S. Cl. 128—334 R **6 Claims**



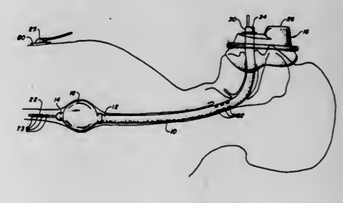
1. An instrument for skin surgery comprising:
a Y-shaped member having a central handle portion and first and second diverging leg members, each commencing at said handle portion and diverging downwardly and outwardly therefrom to terminate in a distal end, said distal ends of said first and second leg members being yieldably movable from a normal first position wherein said distal ends are spaced from one another to a second position wherein said distal ends are in engagement with one another;
said distal ends each including a substantially flat surface, said flat surfaces being presented toward one another so as to engage one another when said leg members are in said first position;
hook means fixed on said frst leg member adjacent said distal end thereof and spaced inwardly from said distal end, and said hook means extending toward said second leg member and thence upwardly to a point, said point extending generally toward said handle portion.

4,574,806
TUNNELLING DEVICE FOR PERIPHERAL VASCULAR RECONSTRUCTION
Brian D. McCarthy, Miami, Fla., assignor to Cordis Corporation, Miami, Fla.
Filed Oct. 1, 1984, Ser. No. 656,798
Int. Cl.[4] A61B *17/11*
U.S. Cl. 128—334 R **19 Claims**



1. A tunnelling device for use in the placement of a peripheral cardiovascular graft in a living body comprising: a hollow curved conduit forming portion having a distal end, a proximal end and an interior lumen; a hollow bullet shaped nose section releasably engageable with said distal end of said conduit forming portion; a handle which is releasably locked to the proximal end of said conduit forming portion; and a stylet which is fixed to and extends distally from said handle, said stylet being received within and through said lumen of said conduit forming portion and terminating at a position within said nose section.

4,574,807
METHOD AND APPARATUS FOR PACING THE HEART EMPLOYING EXTERNAL AND INTERNAL ELECTRODES
Carl Hewson, Old Ocean St., Marshfield, Mass. 02050, and Paul F. Ridolpho, 1424 Tomasito St., NE., Albuquerque, N. Mex. 87112
Filed Mar. 2, 1984, Ser. No. 585,761
Int. Cl.[4] A61N *1/36*
U.S. Cl. 128—419 PG **13 Claims**

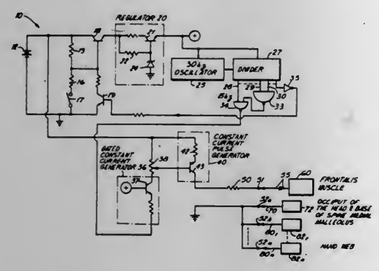


1. A method of pacing the heart of a patient to promote continuous heart function at a prescribed rate comprising the steps of:
inserting a tubular member into the esophagus of the patient,
inserting a first electrode through the member into the lower third of the patient's esophagus,
placing an ECG-type electrode on the patient's body over the sternum and in contact with the patient's skin,
providing a pulse circuit with a low voltage d.c. source for producing a pacing current within the approximate range of 75 to 150 milliamps and within the approximate rate of 70 to 100 pulses per minute,
and connecting the circuit to the electrodes to cause the pulsing current to flow between the electrodes and through the heart for pacing the heart.

4,574,808
APPARATUS AND METHOD FOR RELIEVING SYMPTOMS OF MULTIPLE SCLEROSIS
Saul Liss, and Bernard Liss, both of Glen Rock, N.J., assignors to Pain Suppression Labs, Inc., Dlmwood Park, N.J.
Continuation-in-part of Ser. No. 569,476, Jan. 9, 1984, Pat. No. 4,550,733. This application Apr. 26, 1984, Ser. No. 604,139
The portion of the term of this patent subsequent to Nov. 5, 2002, has been disclaimed.
Int. Cl.[4] A61N *1/00*
U.S. Cl. 128—419 R **6 Claims**

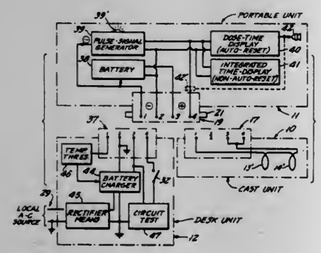
1. A method for relieving pain an deleterious symptoms associated with multiple sclerosis including the steps of securing a first electrode on the frontalis muscle of a subject's head,

securing a second electrode to the occiput of the patient's head, and supplying an electrical wave comprising a high frequency



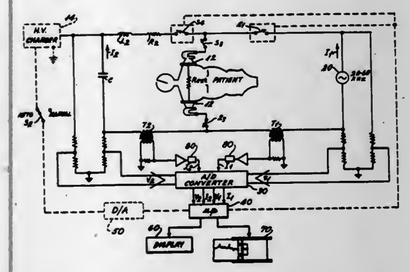
electrical wave bearing a low frequency amplitude modulation to said first and said electrodes.

4,574,809
PORTABLE NON-INVASIVE ELECTROMAGNETIC THERAPY EQUIPMENT
Roger J. Talish, Fairfield; William E. Parr, Denville, and Steven J. Zavros, Morristown, all of N.J., assignors to Electro-Biology, Inc., Fairfield, N.J.
Filed Jun. 29, 1984, Ser. No. 626,340
Int. Cl.[4] A61N *1/40*
U.S. Cl. 128—419 F **16 Claims**



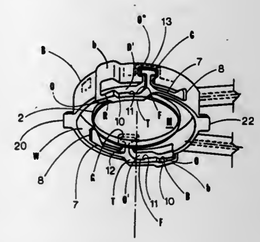
1. Electromagnetic body-treatment apparatus for surgically non-invasive modification of the growth, repair and maintenance behavior of living tissues and cells by a specific and selective change in electrical environment, comprising a unitary coil insert for an orthopedic cast or the like, said insert including in interconnecting relationship a multiturn electrical coil and a combined electrical and mechanical connector fitting, said insert being embedable in such cast or the like with said connector fitting exposed; a self-contained portable signal-generator unit containing a rechargeable battery, said signal-generator unit having a complemental fitting for selective mating attachment to said connector fitting for simultaneously establishing structurally supportive mounting of said signal-generator unit on said coil insert and electrical connection thereto, and said signal-generator unit including a signal generator connected to said battery for supplying electrical-excitation pulse signals to said multiturn coil when said complemental fitting is attached to said connector fitting; and a charging unit having a mating fitting complemental to said complemental fitting for selective mating attachment to said complemental fitting of said signal-generator unit for simultaneously establishing structurally supportive mounting of said signal-generator unit on said charging unit and electrical connection thereto, said charging unit operating to supply electrical charging-current to said battery when said complemental fitting and said mating fitting are attached.

4,574,810
AUTOMATIC THRESHOLD DEFIBRILLATOR
Bruce B. Lerman, 112 Turtle Creek Rd., Apt. #9, Charlottesville, Va. 22901
Filed Oct. 5, 1984, Ser. No. 657,949
Int. Cl.[4] A61B *5/05*; A61N *1/36*
U.S. Cl. 128—419 D **11 Claims**



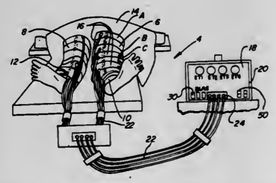
1. A method of determining an optimum threshold level of peak defibrillation current to be applied to the chest of a particular patient by means of a defibrillator in order to correct ventricular fibrillation, and comprising the steps of:
(a) applying a low amplitude exploration current from electrodes forming part of said defibrillator to said chest and sensing voltage developed thereby across said electrodes;
(b) calculating transthoracic resistance from said exploration current and response voltage; and
(c) multiplying said transthoracic resistance by an ampere per ohm factor, the resulting amperage being the level of peak current to be applied to the patient for defibrillation.

4,574,811
PRESSURE DOME
Thomas P. Stephens, Boxford, Mass., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Mar. 21, 1984, Ser. No. 591,724
Int. Cl.[4] A61B *5/02*
U.S. Cl. 128—675 **4 Claims**



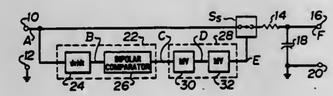
1. A pressure dome comprising
a base having means defining a cavity that has a circular opening in a plane on one side of said base,
a membrane closing said circular opening,
ports extending through said base that communicate with said cavity,
a plurality of tongues depending from said one side of said base, said tongues being generally parallel to said membrane, spaced from it along the axis of said circular opening, and located at a radial distance from the axis of said circular opening that is greater than the radius of said circular opening,
stop means for each tongue, each stop means being comprised of a neck having one end joined to a intermediate point along the tongue and a head joined to said neck, the head having a greater dimension circumferentially with respect to said axis than said neck, and the configuration of said neck and head being such that said head is axially closer to the plane of said circular opening than said tongue, and
means joined to said base for forming at least one surface that is spaced from said head and between said head and said tongue so that movement of said tongue by a given amount in a direction away from said membrane causes said head to bear against said surface and thus limit the movement of said tongue.

4,574,812
ARTERIAL THROMBUS DETECTION SYSTEM AND METHOD
Edward J. Arkans, Sunland, Calif., assignor to The Kendall Company, Walpole, Mass.
Filed Apr. 18, 1984, Ser. No. 601,722
Int. Cl.[4] A61B *5/02*
U.S. Cl. 128—691 **20 Claims**



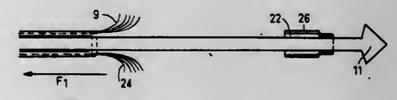
1. An arterial thrombus detection system, comprising:
means for sensing the passage of an arterial pulse past at least three selected locations spaced along the length of a patient's limb;
means responsive to the sensing means to determine the time elapsed for passage of the pulse between different pairs of said selected locations; and
means for displaying a relationship between elapsed times of different pairs of selected locations which is indicative of a possible arterial thrombus of the limb.

4,574,813
PACE PULSE SIGNAL CONDITIONING CIRCUIT
Richard J. Regan, Beverly, Mass., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Nov. 14, 1983, Ser. No. 551,628
Int. Cl.[4] A61B *5/04*
U.S. Cl. 128—697 **15 Claims**



9. Apparatus for processing EKG waves which may contain pace pulses, comprising
an input having a pair of terminals between which an EKG signal may be applied,
an output having a pair of terminals between which the processed EKG signal is to appear,
a capacitor direct-current-coupled between the terminals of said output,
a normally conductive signal switch and resistive means connected in series between one of said input terminals and one of said output terminals,
means coupled to the terminals of said input for producing a signal indicating the presence of a pace pulse between the terminals of said input, and
signal switch control means responsive to said signal for making said signal switch nonconductive during at least a portion of a pace pulse and for a given time thereafter,
the time constant of said resistive means and said capacitor being such as to integrate a pace pulse during the portion of it occurring when the signal switch is conductive.

4,574,814
SLIDING COAXIAL PROBE FOR A PACEMAKER
Jacques Buffet, Le Raincy, France, assignor to Cardiofrance-Compagnie Francaise d'Electrocardiologie, France
Filed Jul. 8, 1982, Ser. No. 396,397
Claims priority, application France, Jul. 31, 1981, 81 14944
Int. Cl.[4] A61N *1/05*
U.S. Cl. 128—786 **7 Claims**



1. A cardiac probe having a longitudinal axis comprising:
internal and external conductors arranged coaxially and being separated from each other by an annular space so as to permit the longitudinal sliding of one with respect to the other, at least one of said conductors being in the form of a plurality of electrically conducting fibers;
a first electrical and mechanical connection located at one end of the two conductors and being adapted to be connected to a cardiac stimulator;
second and third electrical and mechanical connections at the other end of said internal and external conductors, respectively, said second and third connections being longitudinally spaced from each other such that the internal conductor extends beyond the external conductor, said internal and external conductors also being adapted to be connected to the auricle and the ventricle of a heart, respectively, via said second and third connections; and
unidirectional means for locking the internal and external conductors with respect to each other to prevent the sliding thereof beyond a certain distance, said unidirectional means including a ring rigidly fixed to one of the conductors and engaging the other at a certain sliding distance, such engagement further preventing the fibers from diverging from the axis of the probe and the absence of such engagement allowing the fibers to diverge and form a resiliently deformable feather-duster array adapted for contacting the heart as one of said second and third connections.

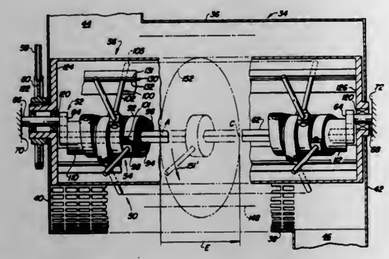
4,574,815
ROTOR FOR AN AXIAL FLOW ROTARY SEPARATOR
Neil L. West, Bettendorf, Iowa, and Bernard F. Vogelaar, Moline, Ill., assignors to Deere & Company, Moline, Ill.
Filed Aug. 29, 1984, Ser. No. 646,393
Int. Cl.[4] A01F *7/06*
U.S. Cl. 130—27 T **19 Claims**

1. An axial flow rotary separator for receiving, processing and forwarding crop material comprising:
a tubular, generally cylindrical casing having an inside surface and a central longitudinal axis;

an elongated support extending within the casing and offset from the longitudinal axis of the casing;

a plurality of crop material engaging elements, each element including a single elongated finger;

means for axially spacing the crop-engaging elements on the support and means for journalling the elements individually on the support so that each element is rotatable about the support in a selected plane of rotation oblique to the longitudinal axis of the casing, the planes of all adjacent elements of the plurality being parallel one to another;



first drive means extending within the casing for engaging some of the crop-engaging elements and drivably rotating them in a first array about the support, said drive means engaging each element at a first point of contact; and

second drive means for engaging others of the crop-engaging elements and drivably rotating them in a second array about the support, said second drive means engaging each element of said second array at a second point of contact, said first and second points of contact normally being spaced apart circumferentially.

4,574,816

METHOD AND APPARATUS FOR FORMING A FILLER OF FIBROUS MATERIAL

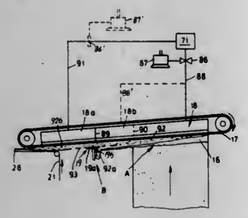
Willy Rudszinat, Dassendorf, Fed. Rep. of Germany, assignor to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

Filed Jan. 30, 1984, Ser. No. 575,167

Claims priority, application Fed. Rep. of Germany, Feb. 4, 1983, 3303776; Dec. 16, 1983, 3345608

Int. Cl.⁴ A24C *5/18*

U.S. Cl. 131—84.4 **31 Claims**



1. A method of forming a filler of fibrous material, such as tobacco, comprising the steps of continuously feeding fibrous material at a variable rate and with a surplus above that which is required in the filler into a first portion of an elongated path to build up a stream and moving the thus obtained stream in a predetermined direction along said path whereby the surplus extends beyond a fixed plane; removing the surplus which extends beyond said plane in a second portion of said path downstream of said first portion, as considered in said direction, to thus convert the stream into a filler; monitoring the density of the filler; and varying the rate of feed of fibrous material into the first portion of said path, including increasing the rate of feed when the monitored density of the filler decreases and reducing the rate of feed when the monitored density of the filler increases.

4,574,817

CORK KNIFE CLEANING APPARATUS

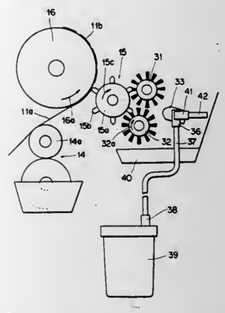
Minoru Suzuki, Tokyo, and Masahiro Tamaribuchi, Fukuoka, both of Japan, assignors to The Japan Tobacco & Salt Public Corporation, Tokyo, Japan

Filed Feb. 24, 1984, Ser. No. 583,580

Claims priority, application Japan, Apr. 5, 1983, 58-58606

Int. Cl.⁴ A24C *5/56, 5/58;* B26D *7/08*

U.S. Cl. 131—94 **7 Claims**



1. A cork knife cleaning apparatus for cigarette filter attaching machine in a cork paper cutting apparatus comprising

a rotating drum which has a plurality of, cork knives projecting from circumferential portions thereof;

a suction drum for receiving a continuous tape of paper therearound and arranged in facing relation to said rotating drum to work with said rotating drum such that said two drums have axes parallel to each other, each knife pressing against said rotating drum to cut said continuous tape of paper into a plurality of pieces of paper;

a pair of brush rolls for cleaning blades of said cork knives, said brush rolls being arranged in facing relation to said rotating drum such that said four drums have axes parallel to each other;

oil injecting means for injecting oil against said two brush rolls; and

compressed air supply means connected to said oil injecting means such that oil is atomized to be sprayed against said cork knives.

4,574,818

DEVICE FOR TRANSFERRING ROD-LIKE ARTICLES

Loris Pagnoni, Bologna, Italy, assignor to Sasib S.p.A., Bologna, Italy

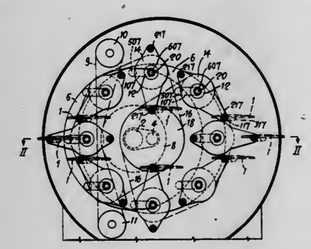
Filed Jul. 27, 1982, Ser. No. 402,341

Claims priority, application Italy, Jul. 28, 1981, 12597 A/81

Int. Cl.⁴ A24C *5/35, 5/32, 5/33*

U.S. Cl. 131—282 **6 Claims**

1. A device for transferring rod-like articles, from a longitudinal rectilinear supply path along which the rod-like articles move in their axial direction in alignment with respect to one another, to a subsequent path which is transverse to the supply path and along which the rod-like articles move in a direction transverse to their axes, said device having at least one pneumatic pick-up head which is adapted to carry at least one rod-like article parallel with respect to the rectilinear supply path, said at least one pneumatic pick-up head being moved along a closed circuit path which is elliptical and which has its major axis parallel to the longitudinal rectilinear supply path, said elliptical path being substantially tangent to said rectilinear supply path at a pick-up zone where said at least one pneumatic pick-up head takes up due to suction said at least one rod-like article, said elliptical path being contained in a plane tangent to the subsequent transverse path at a delivery zone where said at least one pneumatic pick-up head deposits the at least one rod-like article on the subsequent transverse path, comprising: two fixed shafts which are parallel and spaced apart; two main rotary elements which face each other and are rotatably mounted on said two fixed shafts; drive means for rotating one of said main rotary elements; first coupling means for coupling said main rotary elements with each other, said first coupling means including at least one pair of main double cranks each having of an arm integral with two opposed crank pins which rotatably engage the two main rotary elements facing each other, so as to form a first rotary system of the articulated parallelogram type, the arms of the main double cranks always being maintained parallel to one another, a



crank pin of at least one main double crank being an extending crank pin which extends beyond the respective main rotary element; a terminating pin mounted in an eccentric position on said extending crank pin, said terminating pin and extending crank pin having axes which form a pair of orbiting axes that are parallel and spaced apart from each other; a pair of secondary rotary elements mounted for rotation about said orbiting axes; and second coupling means for coupling said secondary rotary elements, said second coupling means including at least one pair of secondary double cranks so as to form a second rotary system of the articulated parallelogram type, only one secondary double crank having a crank pin which extends beyond one of said pair of secondary rotary elements so as to form an extension, wherein said at least one pneumatic pick-up head is mounted on said extension, and wherein the other of said pair of secondary rotary elements is driven into rotation and is coupled in such a manner to the fixed main shaft around which it orbits, so as to rotate upon rotation of the main rotary elements.

4,574,819

PROCESS FOR INCREASING THE FILLING POWER OF TOBACCO

Norman B. Rainer, and Dean M. Siwiec, both of Richmond, Va., assignors to Philip Morris Incorporated, New York, N.Y.

Filed Mar. 26, 1984, Ser. No. 593,452

Int. Cl.⁴ A24B *3/18, 15/30*

U.S. Cl. 131—291 **6 Claims**

1. A process for increasing the filling power of cut tobacco comprising:

treating the tobacco with a supersaturated aqueous calcium citrate solution in an amount effective to provide 0.5 to 6% citrate residue based on the tobacco and then heating the tobacco to drive off excess moisture.

4,574,820

BUCCAL END DEVICE FOR A SMOKING ROD

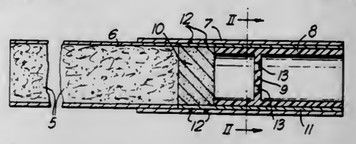
William Pinkerton, Belfast, and Sherman J. A. Hawthorne, Larne, both of Northern Ireland, assignors to Gallaher Limited, England

Filed Apr. 6, 1984, Ser. No. 597,486

Claims priority, application United Kingdom, Apr. 7, 1983, 8309451

Int. Cl.⁴ A24D *3/04*

U.S. Cl. 131—339 **12 Claims**



1. A device for the buccal end of a smoking rod having associated therewith ventilating means for introducing ventilating air, said device comprising a tubular core having upstream and downstream ends and adapted, in use, to be connected at said upstream end thereof to a buccal end of a smoking rod, whereby smoke from said smoking rod and ventilating air are drawn through said core by the smoker; said core being provided, partway along the interior thereof, with a transverse cross wall having a plurality of constricting orifices formed therethrough, the widths of said orifices being sufficiently small as to provide a desired high pressure drop in said end device, the number of said orifices being such as to provide the desired aggregate flow through said end device, each of said orifices having an entrance nearer to said upstream end of said core and an exit nearer to said downstream end of said core; wherein the width of each of said orifices at said entrance differs from the width at said exit; the minimum width of each of said orifices is greater than the axial length of said orifices; and a clear void exists at least 1 mm in the direction from said entrance of each of said orifices toward said upstream end of said core and from said exit of each of said orifices towards said downstream end of said core.

4,574,821

EXPANDED WRAPPER AND SMOKING ARTICLES INCLUDING SAME

Eugene B. Fischer, Chester, and A. Clifton Lilly, Richmond, both of Va., assignors to Philip Morris Incorporated, New York, N.Y.

Filed Mar. 22, 1984, Ser. No. 592,070

Int. Cl.⁴ A24D *1/02*

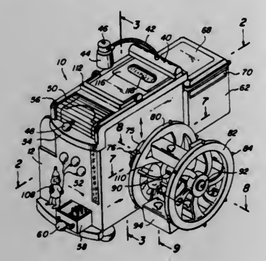
U.S. Cl. 131—365 **18 Claims**



9. A smoking article, comprising:

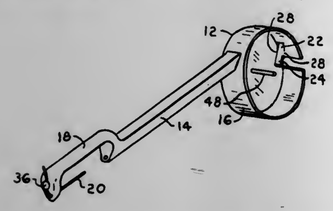
a column of smoking material; an expanded wrapper enclosing the column, the wrapper comprising a layer of sheet material and cellular stiffening means attached to the surface of the sheet material, which cellular stiffening means substantially precludes gas flow longitudinally through the wrapper.

4,574,822
AMUSEMENT AND TOILETRY DISPENSER FOR BABIES
Jonathan Helinsky, 198 Woodward Ave., Staten Island, N.Y. 10314
Filed May 30, 1984, Ser. No. 615,465
Int. Cl.⁴ A45D *40/00*
U.S. Cl. 132—79 R **12 Claims**



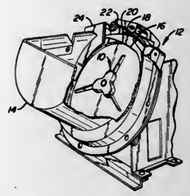
1. An amusement and toiletry dispenser, comprising in combination:
(a) a main housing rectangular parallelepiped in shape with integral diaper dispenser;
(b) an amusement type ferris wheel which is attached to one of the side panels of said main housing;
(c) a towlette dispenser which is attached to an end panel of said main housing;
(d) a tissue dispenser and associated bottle rack with roll-top bottle rack cover which are jointly attached to the side panel of said main housing opposite to said amusement type ferris wheel; and,
(e) a lamp mounted to the top panel of said main housing.

4,574,823
DENTAL FLOSS INSTRUMENT
Michael B. Uriss, 3516 - 170th Ct., Hammond, Ind. 46323
Filed May 16, 1983, Ser. No. 494,803
Int. Cl.⁴ A61C *15/00*
U.S. Cl. 132—92 R **13 Claims**



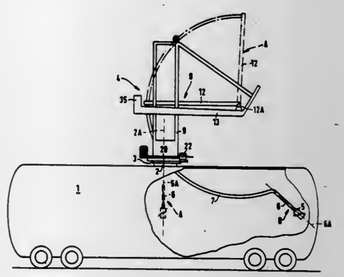
1. A device for dispensing and holding dental floss comprising:
a container having a circular perimeter, said perimeter having an aperture and a hole therein;
a lever member in said aperture, one end of said lever member extending interior of said container, and the other end of said lever member extending exterior of said container;
a pivot member connecting said lever and said perimeter of said container, said pivot member being flexible for allowing said lever member to pivot relative to said container;
an elongated member extending from said perimeter of said container, said elongated member adjacent the distal end thereof being looped to provide a space longitudinally therebetween; and
a spool having a rim, said spool being concentrically positioned in said container so that said rim of said spool is aligned with said one end of said lever, said pivot movement of said lever engaging and disengaging said rim to selectively permit rotation of said spool.

4,574,824
AGITATOR FOR COIN HOPPER
Craig A. Paulsen, and Raymond G. Bryan, both of Reno, Nev., assignors to IGT, Reno, Nev.
Filed Jul. 10, 1984, Ser. No. 628,943
Int. Cl.⁴ G07D *9/04*
U.S. Cl. 133—4 R **10 Claims**



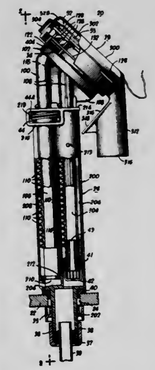
1. A coin hopper comprising a rotatable pinwheel adapted to position coins along a peripheral portion of the wheel;
a hub constructed of a material having a flexible surface and mounted to the pinwheel, and a plurality of elongated, longitudinally resilient blades extending from the hub towards the peripheral portion and having a relatively hard, low friction surface, the blades being oriented transversely to the pinwheel and having a height greater than the thickness of the coins, whereby the blades agitate the coins in the hopper during rotation of the pinwheel to facilitate the positioning of the coins on the peripheral portion of the pinwheel.

4,574,825
TANK CLEANING APPARATUS
Josef Haug, Rangendingen, Fed. Rep. of Germany, assignor to Uraca Pumpenfabrik GmbH & Co. KG, Bad Urach, Fed. Rep. of Germany
Filed Feb. 24, 1984, Ser. No. 583,389
Claims priority, application Fed. Rep. of Germany, Mar. 5, 1983, 8306381[U]
Int. Cl.⁴ B08B *3/02, 9/08*
U.S. Cl. 134—167 R **27 Claims**



1. Apparatus for cleaning the inside of a large railroad car tank or the like having a tank access opening, said apparatus comprising:
cleaning sprayhead means including spray nozzle means for accommodating spraying of cleaning fluid against the inside wall surfaces of a tank to be cleaned,
holding bar means supportably holding the sprayhead means, and
carrier frame means detachably mountable to the tank at the tank access opening, said carrier frame means supportably carrying the holding bar means, and
moving means for moving the holding bar means relative to the carrier frame means,
wherein said holding bar means includes a C-shaped section and wherein the carrier frame means includes holding bar guide means for supporting and guiding movement of the C-shaped section of the holding bar means along a curved path after said carrier frame means is mounted to said tank with corresponding movement of the sprayhead means to different cleaning positions inside the tank being cleaned.

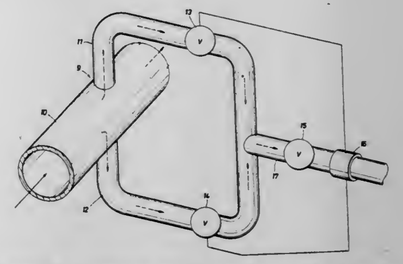
4,574,826
ADJUSTABLE VACUUM BREAKER FILL VALVE
Dwight N. Johnson, Vista, Calif., assignor to Masco Corporation, Taylor, Mich.
Filed Sep. 28, 1983, Ser. No. 536,778
Int. Cl.⁴ F16K *31/34*
U.S. Cl. 137—2 **13 Claims**



11. A method for controlling a tank filling valve comprising the steps of:
applying increasing pressure to a control chamber at a first side of a diaphragm as liquid level rises in the tank;
venting a vent chamber to atmosphere at the second side of the diaphragm;
closing the valve when the diaphragm moves away from the control chamber;
opening the valve when the diaphragm moves toward the control chamber; and
delaying closing of the valve by applying a temporary loading pressure higher than atmospheric pressure against the second side of the diaphragm when the valve is open.

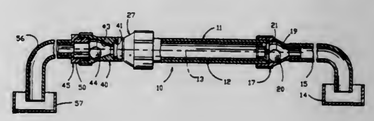
4,574,827
METHOD AND APPARATUS FOR SPLITTING TWO-PHASE FLOW AT PIPE TEES
A. Riza Konak, Calgary, Canada, assignor to Exxon Production Research Co., Houston, Tex.
Continuation of Ser. No. 536,939, Sep. 29, 1983, Pat. No. 4,522,218. This application Dec. 14, 1984, Ser. No. 681,763
Int. Cl.⁴ F17D *3/00*
U.S. Cl. 137—89 **3 Claims**

1. An apparatus for diversion of a stream of a flowing fluid having at least one gas phase and at least one liquid phase from a pipeline into a branch line said pipeline extending past the point of said diversion, said apparatus comprises:
(a) means for withdrawing a first portion of said fluid from said pipeline in a generally upward and radially outward direction relative to said pipeline, and at a first flow rate;
(b) means for simultaneously withdrawing a second portion of said fluid from said pipeline in a generally downward and radially outward direction relative to said pipeline, and at a second flow rate;
(c) means for combining said first and second portions into said branch line; and



(d) means for regulating said first and second flow rates so that said first and second portions combine to form said stream of fluid in said branch line at a predetermined, desired quality.

4,574,828
HAND HELD AND HAND OPERATED PUMPING AND SIPHONING DEVICE
William B. Brumfield, Richmond, Ky., assignor to SI-FLO, Inc., Richmond, Ky.
Filed Apr. 22, 1985, Ser. No. 725,907
Int. Cl.⁴ F04F *10/00*
U.S. Cl. 137—149 **20 Claims**



1. A hand held and hand operated device for pumping or siphoning a liquid including:
a first hollow tube;
a second hollow tube telescopingly received within said first hollow tube to enable reciprocating movement therebetween, said first and second hollow tubes having a single longitudinal axis;
sealing means to form a seal between said first and second hollow tubes and to maintain the seal during reciprocating movement between said first and second hollow tubes;
each of said first and second hollow tubes having a conical valve seat adjacent its distal end, each of said conical valve seats having the same angle relative to the longitudinal axis of said first and second hollow tubes, each of said conical valve seats having its center on the longitudinal axis of said first and second hollow tubes;
a ball valve cooperating with each of said conical valve seats;
means to limit the movement of each of said ball valves away from said conical valve seat with which said ball valve cooperates;
each of said ball valves engaging said conical valve seat with which it cooperates so as to be responsive to pressure differentials when said first and second hollow tubes are disposed with the longitudinal axis at an angle to the horizontal greater than the angle of each of said conical valve seats to the longitudinal axis of said first and second hollow tubes so that said device functions as a pump for

pumping a liquid from a source during reciprocating movement between said first and second hollow tubes with one of said first and second hollow tubes communicating with a source of liquid;

and each of said ball valves being removed from engagement with said conical valve seat with which it cooperates when said first and second hollow tubes are disposed with the longitudinal axis at an angle to the horizontal less than the angle of each of said conical valve seats to the longitudinal axis of said first and second hollow tubes so that said device functions as a siphon for siphoning a liquid from the source after flow of liquid has been started through said first and second hollow tubes by using said device as a pump.

4,574,829

AUTOMATIC DRAIN VALVE

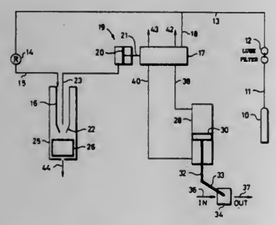
Ernie W. Cummings, Concord, and Nick Valk, Greeneville, both of Tenn., assignors to Drain-All, Inc., Louisville, Tenn.

Continuation-in-part of Ser. No. 299,966, Sep. 8, 1981, Pat. No. 4,444,217. This application Apr. 24, 1984, Ser. No. 603,520

The portion of the term of this patent subsequent to Apr. 24, 2001, has been disclaimed.

Int. Cl.⁴ F16K *31/34*

U.S. Cl. 137—195 **9 Claims**



1. An automatic drain valve system for filter traps used in the accumulation of condensables and foreign materials present in a pneumatic system, which comprises:

a reservoir for collecting said condensables and foreign material, said reservoir including a top housing and a base plate, said reservoir being provided with an inlet and an outlet for flow-through communication with said pneumatic system;

a vertical cylinder mounting within said reservoir, said cylinder having an upper end portion defining a cavity, said cavity being sealed against communication with said reservoir;

a pilot valve mounted axially within said cavity of said cylinder, said pilot valve comprising a sensor tube, a fixed annular seat at a first end of said sensor tube and an axially moving valve plug cooperating with said seat;

an annular buoyant float respondable to liquid in said reservoir surrounding said cylinder and slidable along said cylinder from a low position to a high position;

an annular magnet of one polarity mounted in said float proximate said cylinder;

a second magnet mounted in said valve plug having a magnetic coupling with said annular magnet from said low position to said high position of said float, said second magnet normally having a polarity opposite the polarity of said annular magnet;

a drain valve for said reservoir mounted external to said reservoir, said drain valve having an inlet and an outlet, said inlet communicating with said outlet of said reservoir;

a pneumatic valve operator externally mounted on said reservoir and attached to said drain valve for the opening and closing of said drain valve; and

pneumatic means connected between said pilot valve and said valve operator whereby said valve operator quickly opens said drain valve when said float reaches said high position and quickly closes said drain valve when said float reaches said low position, said pneumatic means comprising a first conduit connecting said cavity of said cylinder in fluid communication with a source of filtered air and a second conduit connecting said sensor tube in fluid communication with said pneumatic valve operator.

4,574,830

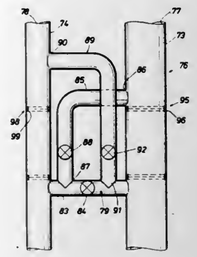
APPARATUS FOR PIGGING HYDROCARBON PRODUCT FLOWLINES

Wynn P. Rickey, Houston; Deborah H. Dobson, Cypress, and Roger W. Huffaker, Houston, all of Tex., assignors to Exxon Production Research Co., Houston, Tex.

Division of Ser. No. 586,927, Mar. 7, 1984, Pat. No. 4,528,041. This application Apr. 19, 1985, Ser. No. 725,187

Int. Cl.⁴ B08B *9/04, 9/06;* F16K *11/00*

U.S. Cl. 137—242 **8 Claims**



1. An apparatus for use with a first and second pig to clean debris from the interior surface of a first and second flowline, said apparatus comprising:

a crossover flowline disposed between and in fluid communication with the first and second flowlines;

a crossover valve disposed in the crossover flowline;

a first bypass flowline having a first end in fluid communication with the first flowline and a second end in fluid communication with the crossover flowline;

a first bypass valve disposed in the first bypass flowline;

a second bypass flowline having a first end in fluid communication with the second flowline and a second end in fluid communication with the crossover flowline; and

a second bypass valve disposed in the second bypass flowline, whereby upon selective actuation of the crossover and bypass valves, the first pig may be pumped into and out of the first flowline and the second pig may be pumped into and out of the second flowline to clean both flowlines, both bypass flowlines, and the crossover flowline of debris.

4,574,831

APPARATUS FOR SECURING A MANUALLY OPERABLE SETTING ELEMENT AGAINST ROTATION

Peter E. Jacobsen, Sonderborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

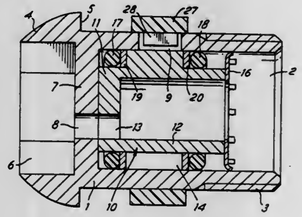
Filed Mar. 11, 1983, Ser. No. 474,713

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1982, 3211189

Int. Cl.⁴ F17D *1/00*

U.S. Cl. 137—382.5 **5 Claims**

1. A tamper-proof adjustable control unit, comprising, a housing having a bore, a rotatably adjustable operating element rotatably mounted in said bore, said operating element presenting different control values for different circumferential settings thereof, a circumferentially extending aperture in said housing spaced axially between the ends of said operating element, setting means on said operating element accessible only through said aperture for rotating said operating element to a desired circumferential setting, strap means surrounding said housing and covering said circumferentially extending aperture, said strap means having permanently connectable



ends to prevent removal thereof without being subject to destruction, and two inwardly extending projections on said strap means which engage the opposite ends of said circumferentially extending aperture to prevent lateral displacement of said strap means.

4,574,832

FLOAT LEVEL ADJUSTMENT MEANS

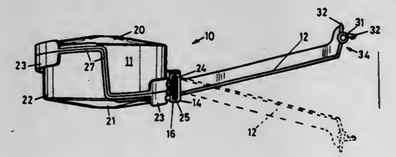
Peter S. Wright, St. Mary's, Australia, assignor to F. F. Seeley Nominees Pty. Ltd., St. Mary's, Australia

Filed Jul. 30, 1985, Ser. No. 760,702

Claims priority, application Australia, Aug. 1, 1984, PG6334

Int. Cl.⁴ F16K *31/18, 33/00*

U.S. Cl. 137—426 **5 Claims**



1. Level adjustment means for a valve float assembly comprising a float and a float arm comprising:

a circular float side wall, a flange outstanding radially from, and extending helically at least partway around the side wall, axially extending support surfaces on the flange,

and a float arm having flange engaging surfaces at one end and valve engaging means at the other,

the flange engaging surfaces of the arm slidably engaging said flange support surfaces of the float so that, upon rotation of the float relative to the float arm, the float arm is adjustably positioned along the flange support surfaces and thereby moves the float in an axial direction with respect to the float arm to define different fluid levels.

4,574,833

EXCESS FLOW CONTROL DEVICE

Craig S. Custer, 1430 NE. 28th Ct., Pompano Beach, Fla. 33064

Filed Jun. 6, 1984, Ser. No. 617,882

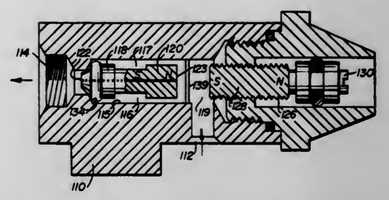
Int. Cl.⁴ F16K *17/28*

U.S. Cl. 137—498 **6 Claims**

1. An excess flow control device including a housing, a fluid inlet passage therein, and a fluid outlet passage in communication with said fluid inlet passasge, the fluid control device comprising:

(a) a reciprocating valve capable of permitting, limiting or precluding communication between said inlet and outlet passasges, said valve comprising a ferromagnetic armature capable of receiving an axis of magnetic polarity substantially co-linear with its axis of reciprocation, said magnetic axis generally corresponding to the longitudinal center of a chamber within said housing, said chamber having a greater radius than the radius of said valve, in which said valve may reciprocate, said valve having a flow-responsive rear radial end face disposed within a region of communication between said inlet and outlet passages, said valve occupying at least a part of said region of inlet-outlet communication, said valve further having a front end face capable of closing said fluid outlet passage when said valve is reciprocated in the direction of said outlet passage;

(b) bias and calibration means disposed within said housing and disposed co-linearly and distal-proximately to said reciprocating valve, near said rear radial end face thereof, and opposite to said flow-responsive rear end face of said



valve, said bias and calibration means having an axis of magnetic polarity substantially co-linear with said magnetic axis of said reciprocating valve in which the magnetic polarities of said reciprocating valve and of said bias means define an attraction mode with respect to each other; and

(c) means for changing the axial distal-proximate position of said bias means relative to said reciprocating valve to thereby calibrate the degree of attraction between bias means and said valve and to further thereby define the geometry of that part of the region of inlet-outlet communication that passes between said flow-responsive rear radial end face of said valve and said bias means,

whereby the rate or pressure of flow through the inlet or outlet passage causing closure may be calibrated by a distal-proximate adjustment of said bias means relative to said flow-responsive rear end face.

4,574,834

PASSAGE MEANS FOR HYDRAULIC UNIT

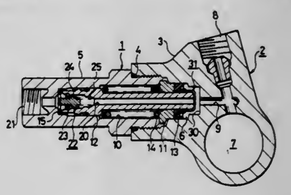
Hidehumi Inoue, Ohmiya, Japan, assignor to Jidosha Kiki Co., Ltd., Tokyo, Japan

Filed Jul. 11, 1984, Ser. No. 630,452

Claims priority, application Japan, Jul. 25, 1983, 58-115265[U]

Int. Cl.⁴ B60T *8/26, 11/34*

U.S. Cl. 137—505.25 **7 Claims**



6. Passage means for hydraulic unit including a plunger slidably fitted in a housing, an output chamber and an input chamber defined within the housing on the opposite sides of the plunger, a flow path formed within the housing and open-

ing into the input chamber in alignment with the plunger, the plunger including an increased diameter portion disposed toward the output chamber and having an increased area of pressure-responsive surface and a reduced diameter portion disposed toward the input chamber and having a reduced area of pressure-responsive surface, a spring effective for normally maintaining the plunger at its non-operative position, a passage providing a communication between the input and the output chamber, and a check valve disposed within the passage and operative to open the passage in the non-operative position of the plunger and to close the passage when the plunger is operated; the passage means comprising a cap fitted over the end of the plunger which is located adjacent to the input chamber, the cap being formed with a communication path which maintains a communication between the input chamber and the flow path, the cap comprising a cylindrical portion fitted over the plunger, a wall extending radially inward from one end of the cylindrical portion, and a communication hole formed to extend through the wall and forming part of the communication path, the cylindrical portion being formed with a radially inward bulge which is a press fit around the plunger and thereby secures the cap to the plunger, said bulge also defining a clearance between said cylindrical portion and plunger and thereby forming said communication passage between said cap and plunger.

4,574,835

VALVE COMPONENT

David G. Williams, South Wirral, Great Britain, assignor to The Metallic Valve Company Limited, Birkenhead, England

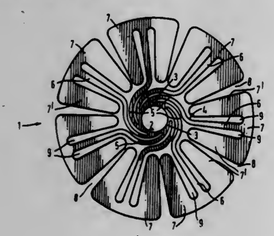
PCT No. PCT/GB84/00045, § 371 Date Oct. 19, 1984, § 102(e) Date Oct. 19, 1984, PCT Pub. No. WO84/03343, PCT Pub. Date Aug. 30, 1984

PCT Filed Feb. 17, 1984, Ser. No. 667,477

Claims priority, application United Kingdom, Feb. 22, 1983, 8304811

Int. Cl.⁴ F16K *15/14*

U.S. Cl. 137—512.15 **10 Claims**





1. A valve plate for a plate-type non-return valve comprising a central circular hub portion having a plurality of resiliently flexible guide arms extending therefrom and each connecting in a peripheral region of the plate with an associated one of a plurality of separate valve closure portions; each said guide arm having a curved portion in a central region of the plate extending from said hub portion at continuously increasing radial distance and leading to a radially extending portion which joins the valve closure portion in an outer peripheral region; each said closure portion being separated from adjacent closure portions by a radially extending slot and having main closure portions on each side of said generally radially extending portion.

4,574,836

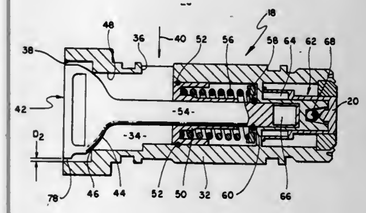
BYPASS VALVE WITH INDICATOR

George B. Barnard, Jr., Newbury Park, Calif., assignor to Purolator Technologies Inc., Newbury Park, Calif.

Filed Nov. 15, 1984, Ser. No. 671,543

Int. Cl.⁴ F16K *37/00*

U.S. Cl. 137—553 **1 Claim**



1. In a bypass valve useful in a filter assembly and operable responsive to a predetermined fluid pressure differential having:

a body defining a chamber having an inlet and an outlet port, means for applying fluid under pressure to said inlet and outlet ports,

valve means disposed within said outlet port and including a poppet and seat normally sealed and blocking fluid flow through said chamber when said pressure differential is below said predetermined differential, and a bypass indicator carrying a first permanent magnet thereon and retained in a non-bypass indicating position by attraction of a second permanent magnet carried by said valve means when said poppet and seat are normally sealed, the improvement comprising:

first and second surfaces defined by said poppet and first and second surfaces defined by said body, said first surfaces when in mutual engagement seal to block fluid flow;

a first area, defined by said poppet and said seat, exposed to the fluid pressure differential and operative to initially move said poppet away from said seat to break said seal and allow fluid flow between said inlet and outlet ports when said predetermined differential pressure is reached;

a second area, defined by said poppet and said body, exposed to the fluid pressure differential after said seal is broken, said second area being larger than said first area, and operative to rapidly move said poppet to an open position to allow said fluid to flow and quickly relieve said pressure differential;

said second surfaces being disposed in opposed relationship and defining a restricted orifice therebetween, said second surface on said poppet having a predetermined length such that said restricted orifice is maintained for a predetermined stroke of said poppet in said body prior to its travel to said open position;

said bypass indicator moving from its non-bypass indicating position to a bypass indicating position only when said poppet has moved through its predetermined stroke where said first and second permanent magnets magnetically repell each other, and

mechanical lock means for preventing said bypass indicator from returning to the non-bypass indicating position in the absence of said pressure differential without first being removed from said filter assembly.

4,574,837

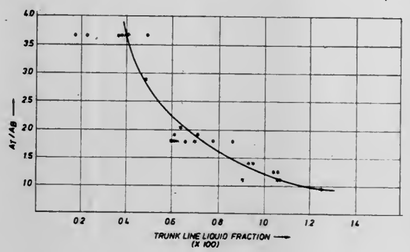
METHOD AND APPARATUS FOR SPLITTING TWO-PHASE GAS-LIQUID FLOWS HAVING A KNOWN FLOW PROFILE

Mohamed A. Aggour, Kingwood, Tex., and Frans Greebe, Calgary, Canada, assignors to Exxon Production Research Co., Houston, Tex.

Filed Sep. 29, 1983, Ser. No. 536,940

Int. Cl.⁴ F16L *41/08*

U.S. Cl. 137—561 A **8 Claims**



1. An apparatus for diverting a stream of a flowing fluid into a branch pipeline from a substantially horizontal trunk pipeline having an upper wall and a lower wall, while maintaining quality in said branch pipeline substantially equal to quality in said trunk pipeline, said fluid comprising two fluid phases and having a known flow profile, the apparatus which comprises:

(a) a section in said trunk pipeline having a first plurality of apertures through said upper wall of said trunk pipeline and a second plurality of apertures through said lower wall of said trunk pipeline, said apertures being sized and spaced circumferentially about said pipeline based upon said known flow profile, said first plurality of apertures having a total cross-sectional area greater than the total cross-sectional area of said second plurality of apertures;

(b) a housing surrounding said section to form an annular chamber; and

(c) a conduit attached to said housing to allow fluid to flow from said chamber into said branch pipeline.

4,574,838

MEANS FOR SAVING ENERGY IN A HYDRAULIC CIRCUIT

Erkki Mänttäri, Jyväskylä, Finland, and Juha Ilmoniemi, Leighton Field North, Australia, assignors to Valmet Oy, Finland

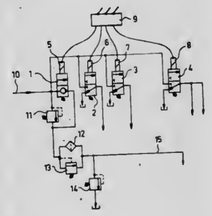
PCT No. PCT/FI83/00024, § 371 Date Nov. 3, 1983, § 102(e) Date Nov. 3, 1983, PCT Pub. No. WO83/03285, PCT Pub. Date Sep. 29, 1983

PCT Filed Mar. 15, 1983, Ser. No. 557,170

Claims priority, application Finland, Mar. 16, 1982, 820900

Int. Cl.⁴ F15B *13/06*

U.S. Cl. 137—596.12 **2 Claims**



1. In a hydraulic circuit in which working fluid is supplied to activate at least one function, including a function control valve communicating with the working fluid for controlling the supply of working fluid to a respective function, the improvement comprising:

a free circulation valve connected into the hydraulic circuit communicating with the working fluid;

a plurality of solenoid means for opening and closing said free circulation and function control valves, each solenoid means being associated with a respective one of said valves;

said solenoid means associated with said free circulation valve functioning to close said free circulation valve when current thereto is interrupted;

solenoid control switching means for actuating selected ones of said functions by opening said solenoid means associated therewith, for interrupting current to said solenoid means associated with said free circulation valve thereby closing the latter to prevent working fluid from passing therethrough when at least one of said function control valves is open and for supplying current to said solenoid means associated with said free circulation valve thereby opening the same to permit working fluid to pass therethrough only when all of said function control valves are closed; and

wherein said hydraulic circuit further includes a pressure regulating valve communicating with the working fluid and wherein said free circulation valve is connected in said hydraulic circuit in parallel with said pressure regulating valve to permit the working fluid to bypass said pressure regulating valve when said free circulation valve is open.

4,574,839

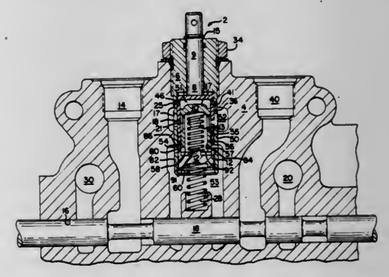
DIRECTIONAL CONTROL VALVE WITH INTEGRAL FLOW CONTROL VALVE

Rudolph E. Yeh, Elmhurst, and Joseph L. Zagotta, Orland Park, both of Ill., assignors to J. I. Case Company, Racine, Wis.

Filed Apr. 19, 1984, Ser. No. 601,780

Int. Cl.⁴ F16K *17/50*

U.S. Cl. 137—614.16 **14 Claims**



1. A directional flow control valve with pressure compensation comprising:

a housing including a first longitudinal bore, first and second cylinder supply and exhaust passages intersecting with said longitudinal bore, a first chamber intersecting with a second chamber, a third chamber, and a pressurized fluid supply bore intersecting with said first, second and third chambers;

a valve spool slideably mounted within said longitudinal bore for selective fluid communication between said third chamber and said cylinder supply passages;

sleeve means mounted within said pressurized fluid supply bore, said sleeve having at least one first radial orifice intersecting with said first chamber, and at least one second radial orifice intersecting with said second chamber,

and wherein said first and second radial orifices being generally spaced axially apart from one another;

a sleeve valve insert mounted within said sleeve, said sleeve valve insert having a generally axial bore, and said sleeve valve insert having at least one first radial orifice and at least one second radial orifice, said sleeve valve insert second radial orifice being capable of being placed in selective alignment with said sleeve second radial orifice by displacement of said sleeve valve insert within said sleeve;

a piston mounted within said sleeve valve insert having a first radial orifice and an axial bore intersecting with said piston first radial orifice providing fluid communication between said second chamber and said third chamber, and wherein said piston being capable of axial movement in response to the pressure levels within said sleeve valve insert and said third chamber;

a piston valve seat means located within said third chamber, said piston valve seat means and said piston forming a variable orifice between said piston axial bore and said third chamber;

said second chamber comprising an annular groove in said housing surrounding said fluid pressurized fluid supply bore, and wherein said sleeve has an outside diameter and wherein said first chamber comprises an annular landing on the outside diameter of said sleeve, said annular landing intersecting with said second chamber;

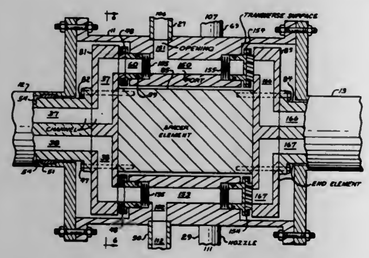
piston biasing means biasing said piston away from said piston valve seat.

4,574,840

MULTIPORT AXIAL VALVE WITH BALANCED ROTOR

Gary M. Schumann; Charles A. Dolejs, both of Arlington Heights, and David L. Schick, Mt. Prospect, all of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Dec. 28, 1984, Ser. No. 687,350
Int. Cl.[4] F16K *11/06*
U.S. Cl. 137—625.15 **9 Claims**



1. An axial multiport rotary valve for accomplishing the simultaneous interconnection of a plurality of conduits in accordance with a previously determined cycle, where any conduit communicates, by means of the valve, with no more than one other conduit at any one valve index position, comprising:

(a) a stator assembly having a hollow interior and being comprised of a central element, a first end element, and a second end element, each of said elements having a cylindrical exterior form, the central element having first and second interior transverse surfaces, each transverse surface being perpendicular to an axis of rotation, which axis of rotation is the longitudinal axis of both the stator assembly and a rotor assembly, the central element having a plurality of internal ports, each port extending from one of the transverse surfaces toward the other transverse surface and being parallel to the axis of rotation, where the intersections of the ports with each transverse surface are arranged in a circle centered on the axis of rotation, and the central element having a plurality of openings, where each opening extends from a port to the exterior surface of the stator central element;

(b) said rotor assembly comprised of a spacer element, a first end element, and a second end element, where the spacer element is rigidly connected between the end elements, which rotor assembly is located substantially inside the hollow interior of the stator assembly such that a first annular volume is formed between said first rotor end element and said first stator end element, a second annular volume is formed between said second rotor end element and said second stator end element, a first transverse volume is formed between said first transverse surface of said central stator element and an end surface of the first rotor end element, and a second transverse volume is formed between said surface of said second transverse central stator element and an end surface of the second rotor end element, each of said rotor element end surfaces being parallel to said central stator element transverse surfaces, which rotor assembly rotates about said axis of rotation to various valve index positions in accordance with said previously determined cycle, and which rotor assembly has a plurality of interior channels;

(c) a plurality of nozzles for connection of said conduits to the valve, the nozzles being located on the stator assembly and providing fluid paths between conduits and said annular volumes inside the stator assembly and between conduits and said central stator element openings;

(d) means in said annular volumes for definition of fluid passages which communicate with said interior channels of the rotor assembly, such that fluid passes between said rotor end element nozzles and said rotor channels via said annular volume fluid passage means;

(e) port sealing means for preventing flow through only one end of each of said central stator element ports; and

(f) means in said transverse volumes for definition of fluid passages which communicate between said interior channels of the rotor assembly and the ends of said ports which are not equipped with said port sealing means, such that fluid passes between said central stator element nozzles and said rotor channels via said central stator element openings, at least a portion of said ports, and said transverse volume fluid passages, thereby completing fluid paths so that different pairs of nozzles communicate at each valve index position, in accordance with said previously determined cycle.

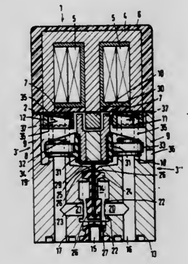
4,574,841

ROCKER LEVER SOLENOID VALVE

Klaus Hügler, Schorndorf, Fed. Rep. of Germany, assignor to J. Lorch Gesellschaft & Co. KG, Waldenbuch, Fed. Rep. of Germany

Filed Sep. 20, 1984, Ser. No. 652,616
Claims priority, application Fed. Rep. of Germany, Sep. 21, 1983, 3334160
Int. Cl.[4] F16K *11/02*
U.S. Cl. 137—625.44 **11 Claims**

1. A solenoid-operated pressure-fluid valve for reversible control of both supply and exhaust functions of a double-acting fluid-pressure device, said valve comprising a valve body having an inlet port communicating with an inlet chamber and an exhaust outlet port communicating with an outlet chamber, said chambers having a communicating passage therebetween, a rocker arm fulcrummed in said communicating passage and flexibly sealed therein to preclude fluid flow in said communicating passage, said body having first and second control-port connections for connection to the respective control ports of the double-acting device, first and second valve-seat formations in the respective chambers in one direction of lateral offset from said rocker arm and communicating with said first control port, third and fourth valve-seat formations in the respective chambers in the opposite direction of lateral offset from said rocker arm, and communicating with said second control port, a first pair of valve members carried by said arm within the inlet chamber and positioned to coact with the respective valve seats in the inlet chamber in accordance with rocker-arm pivotal position, a second pair of valve members carried by said arm within the outlet chamber and positioned to coact with the respective valve seats in the outlet chamber in accordance with rocker-arm pivotal position; said first control port being open to said inlet chamber and closed to said outlet chamber for one rocker-arm pivoted position, while said



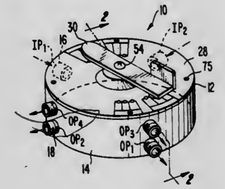
second control port is closed to said inlet chamber and open to said outlet chamber for said one rocker-arm position; said first control port being closed to said inlet chamber and open to said outlet chamber for a second rocker-arm pivoted position, while said second control port is open to said inlet chamber and closed to said outlet chamber for said second rocker-arm pivoted position; and means including a solenoid actuator for actuating said rocker arm from one to the other of its said positions.

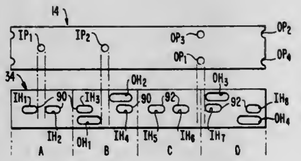
4,574,842

WATER DISTRIBUTION VALVE

Adolfo O. Córdova, Avda. R.S. Pena 943, Buenos Aires, Argentina (1035)

Filed Oct. 20, 1983, Ser. No. 544,409
Int. Cl.[4] F16K *11/07, 11/00*
U.S. Cl. 137—625.46 **12 Claims**





1. A rotary valve comprising:

a box having a cylindrical box wall, defining a first internal space therein, having a longitudinal axis and a plurality of ports in said box wall peripherally of said longitudinal axis opening into said space, said plurality of ports including first and second inlet ports and n outlet ports, n being an integer greater than 1; and

a cup having a cylindrical cup wall, mounted in said first internal space in said box for rotation about said longitudinal axis such that said cup wall rotates in sliding contact with said box wall;

said cup wall defining therein a second internal space within said first internal space, and having a plurality of holes opening into said second internal space, said plurality of holes including 2n inlet holes forming n pairs of first and second inlet holes, one pair for and associated with each outlet port, and n outlet holes, one outlet hole for and associated with each outlet port, said plurality of holes and said plurality of ports being located and shaped such that there are n sets of angularly spaced first, second and third successive angular positions of said cup about said axis relative to said box, one set for and associated with each outlet port, and for any one of said outlet ports successive rotation of said cup to the first, second and third successive angular positions of the associated set:

radially aligns in turn said first inlet port with the first inlet hole of the associated pair, said first and second of said inlet ports respectively with the first and second inlet holes of said associated pair, and said second inlet port with the second inlet hole of said associated pair, and

concurrently and continuously during the rotation from said first angular position to said third angular position radially aligns the associated outlet hole with said any one of said outlet ports;

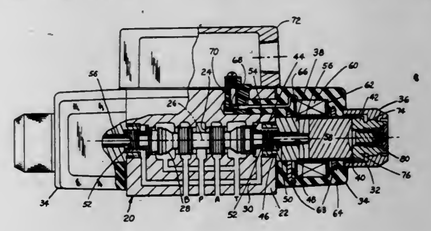
whereby any one of a first fluid directed to said first inlet port, a second fluid directed to said second inlet port and both the first fluid and the second fluid respectively concurrently directed to said first inlet port and said second inlet port are directed into said second interior space and out any one of said outlet ports by rotating said cup to a corresponding one of said angular positions, and no drop in total cross-sectional area of overlap of said any one of said outlet ports and the associated pair of outlet holes occurs during said rotation between said first and said third angular positions of the associated set.

4,574,843

SOLENOID VALVE OVERRIDE CARTRIDGE

Ronald L. Loup, Clarkston, and Curtis H. Day, Manchester, both of Mich., assignors to Double A Products Co., Manchester, Mich.

Filed May 26, 1983, Ser. No. 498,273
Int. Cl.[4] F15B *13/43*
U.S. Cl. 137—625.65 **39 Claims**



1. In a solenoid actuated fluid control valve comprising a spool bore within which a spool is shiftable to control fluid flow through the valve, electro-mechanical means including electrically operable solenoid means for shifting said spool within said spool bore in accordance with the condition of energization of said solenoid means, and a mechanical override for shifting said spool within said spool bore independent of said electro-mechanical means, the improvement which comprises a separate body containing said mechanical override, and means on the valve and said separate body separably

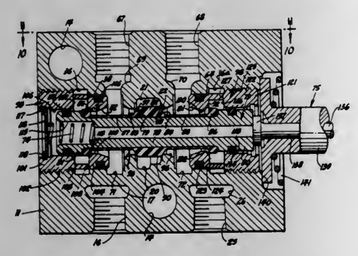
mounting said separate body on the valve, the separable mounting of said separate body on the valve being constructed and arranged so as to affect neither the operation of said spool by said electro-mechanical means with said separate body and override removed from the valve nor the control of fluid flow through the valve by said spool with said separate body override removed from the valve.

4,574,844

FOUR-WAY POPPET VALVE

James A. Neff, Bloomfield Township, Oakland County, and Richard A. Fagerlie, Union Lake, both of Mich., assignors to MAC Valves, Inc., Wixom, Mich.

Filed Nov. 13, 1984, Ser. No. 671,083
Int. Cl.⁴ F15B *13/044*
U.S. Cl. 137—625.65 **8 Claims**



1. A four-way poppet valve, characterized by:
(a) a valve body having a valve spool bore of a predetermined diameter formed longitudinally therethrough;
(b) an annular pressurized air supply chamber formed in said valve body around said valve spool bore, and communicating therewith, and having an annular poppet valve seat formed at each longitudinal side thereof at the point of communication with the valve spool bore;
(c) a poppet valve spool movably mounted in said valve spool bore and provided with a poppet valve element formed around the periphery thereof at a longitudinal central position, and having a diameter larger than the predetermined diameter of the valve spool bore and said poppet valve element having a poppet valve face formed on each of the opposite longitudinal peripheral sides thereof for alternate seating on the annular poppet valve seats formed at each longitudinal side of said pressurized air supply chamber;
(d) a pressurized air inlet port in said body and connected by passageway means to said pressurized air supply chamber;
(e) an annular cylinder chamber formed in said valve body, around said valve spool bore, on each longitudinal outer side of the annular pressurized air supply chamber and spaced longitudinally apart therefrom;
(f) an annular exhaust chamber formed in said valve body, around said valve bore, on the longitudinal outward side of each of said cylinder chambers, and spaced longitudinally apart therefrom;
(g) exhaust port means formed in said body and connected by passageway means to the exhaust chambers;
(h) a pair of cylinder ports formed in said body, and each of said cylinder ports being connected by passageway means to one of the annular cylinder chambers;
(i) a first bushing having an axial bore with a diameter smaller than the predetermined diameter of the valve spool bore and being adjustably mounted in one end of said valve body, and being telescopically mounted over one end of said poppet valve spool, and having a first outer end, annular poppet valve seat formed therein and around said valve spool and facing longitudinally outward;
(j) a second bushing having an axial bore with a diameter smaller than the predetermined diameter of the valve spool bore and being adjustably mounted in the other end of said valve body, and being telescopically mounted over the other end of the poppet valve spool, and having a second outer end, annular poppet valve seat formed therein and around said valve spool and facing longitudinally outward;
(k) a first poppet valve element having a diameter identical to the predetermined diameter of the valve spool bore and being mounted around the periphery of said one end of said poppet valve spool and having a poppet valve face disposed longitudinally inward, and a second poppet valve element having a diameter identical to the predetermined diameter of the valve spool bore and being mounted around the periphery of said other end of the poppet valve spool and having a poppet valve face disposed longitudinally inward, for alternative seating engagement with said first and second outer end poppet valve seats, respectively;
(l) a biasing means operatively mounted with said first bushing and engagable with said one end of the poppet valve spool for normally moving it into, and maintaining it in, a first operative position with the first poppet valve element on the one end of the poppet valve spool in seating engagement on the first outer end poppet valve seat on said first bushing, and with a first one of the poppet valve faces on the central positioned poppet valve element on the valve spool in seating engagement on a first one of the poppet valve seats formed at the longitudinal sides of the annular pressurized air supply chamber, so as to allow pressurized air from the annular pressurized air supply chamber to flow through the valve spool bore and into one of the annular cylinder chambers and out the connected cylinder port, and for simultaneously exhausting air entering into the other cylinder port and through the valve spool bore and into one of the annular exhaust chambers and out the exhaust port means; and,
(m) a power means operatively mounted on the valve body and directly engagable with the other end of the poppet valve spool for moving the valve spool from said first operative position longitudinally to a second operative position, against the bias of said biasing means, with the second poppet valve element on the other end of the valve spool in seating engagement on the second outer end poppet valve seat on said second bushing, and with the other one of the poppet valve faces on the central positioned poppet valve element on the valve spool in seating engagement on the other one of the valve seats formed at the longitudinal sides of the annular pressurized air supply chamber, so as to allow pressurized air from the annular pressurized air supply chamber to flow through the valve spool bore into the other annular cylinder chamber, and for simultaneously exhausting air entering into the first cylinder port and through the valve spool bore and into the other annular exhaust chamber and out the exhaust port means.

4,574,845

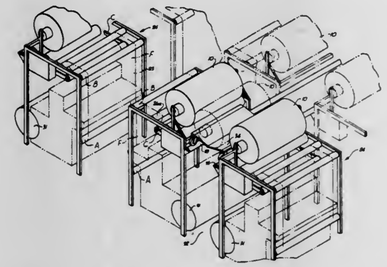
CLOTH ROLL OVERHEAD TAKEUP APPARATUS AND METHOD

William J. Alexander, III, 41 W. Golden Strip Dr., Mauldin, S.C. 29662

Division of Ser. No. 454,702, Dec. 30, 1982, abandoned. This application Apr. 17, 1985, Ser. No. 724,022
Int. Cl.⁴ D03J *1/00*
U.S. Cl. 139—1 R **3 Claims**

1. An overhead loom takeup assembly comprising:
a plurality of looms having an aisle extending along adjacent warp beams;
a pair of spaced transverse driven rolls supporting a cloth roll above each loom;
a transverse guide means above said looms receiving an upward run of said cloth from said looms;

means forming a run of said cloth extending from said transverse guide means to said transverse driven rolls;
opposed tracks carried by adjacent looms extending along respective aisles above said looms; and



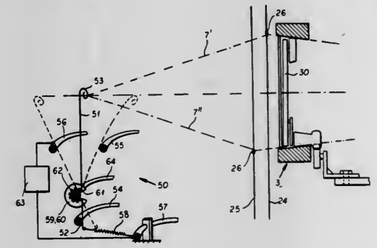
a cart carried by said rails for receiving said cloth rolls upon doffing.

4,574,846

ARRANGEMENT FOR TENSION CONTROL AND SUPERVISION OF INDIVIDUAL WARP THREADS ON A LOOM, PARTICULARLY A CIRCULAR LOOM

Franz X. Huemer, Sonnenuhrgasse 4, 1060 Vienna, Austria

Filed Mar. 7, 1984, Ser. No. 587,168
Claims priority, application Switzerland, Mar. 16, 1983, 1448/83
Int. Cl.⁴ D03D *51/28*
U.S. Cl. 139—353 **5 Claims**



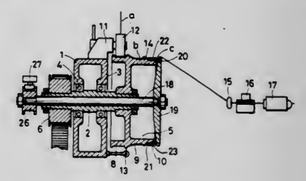
1. Arrangement for tension control and supervision of individual warp threads on a loom comprising:
a two-armed movable lever, which is swivel-supported on the loom and which is held by a warp thread, said thread being found in a stretched state,
a yarn guiding eyelet through which said warp thread is guided, said eyelet located on the end of one of said movable lever arms,
a restoring spring means, which means engages on the lever arm that is free of said eyelet, said spring menas capable of compensating for the alternating tension on the warp thread,
an electric circuit being closed when said movable lever is brought into signal position as a result of the unstretched or missing warp thread,
said movable lever arm comprises a spring wire,
the eyelet-free lever arm standing in the regulating position of the movable lever on a stop,
the lever arm with the eyelet bending under increasing tension in the direction of withdrawal of the warp thread,
a further stop being disposed in the deflection path of the arm carrying the eyelet, in order to vary the deflection characteristics thereof, and
said two-arm movable lever being seated on a pivot shaft by way of a collar with terminal flanges, said flanges being interfacial and in the shape of a disc, the clearance approximately corresponding to the strength of said spring wire.

4,574,847

ROTARY DRUM TYPE WEFT STORAGE APPARATUS

Hiroyasu Matsumoto, Ishikawa, Japan, assignor to Tagawa Kikai Co., Ltd., Kanazawa, Japan

Filed Jan. 16, 1985, Ser. No. 691,898
Claims priority, application Japan, Jan. 20, 1984, 59-9313
Int. Cl.⁴ D03D *47/36*
U.S. Cl. 139—452 **7 Claims**



1. A rotary drum type weft storage apparatus for a shuttleless weaving machine of the type wherein a weft yarn from a yarn supply source is wound up onto and stored on a rotating yarn storing drum, characterized in that it comprises a holding drum provided on a yarn releasing side of said yarn storing drum, a ring loosely fitted on an outer periphery of said holding drum, said holding drum having at a portion thereof adjacent said yarn storing drum a larger diameter portion for retaining said ring, a retaining member for retaining said ring, said retaining member being mounted in opposing relationship to said larger diameter portion of said holding drum for relative motion in an axial direction of said holding drum, and a reciprocal driving mechanism for moving said retaining member into and out of engagement with said larger diameter portion of said holding drum, whereby said retaining member is moved to said larger diameter portion of said holding drum so that the weft yarn passing between said holding drum and said ring may be gripped to allow winding and storing of the weft yarn whereas said retaining member is moved away from said larger diameter portion so that the weft yarn may be released.

4,574,848

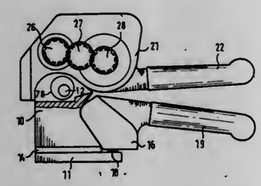
DEVICE FOR TENSIONING A STRAPPING BAND POSITIONED AROUND A PACKAGE

Gerd Bartzick, Gevelsberg; Gerd Bühne, Schwelm, and Jürgen Werk, Wuppertal, all of Fed. Rep. of Germany, assignors to Hoesch Werke Aktiengesellschaft, Dortmund, Fed. Rep. of Germany

Filed Aug. 3, 1983, Ser. No. 519,835
Claims priority, application Fed. Rep. of Germany, Aug. 11, 1982, 3229869
Int. Cl.⁴ B21F *9/02*
U.S. Cl. 140—93.2 **10 Claims**

1. Apparatus for tensioning a strapping band obtained from a supply reel and positioned around a package, for fastening the overlapping ends of the band together with a sleeveless connection, and for cutting off the length of strap not utilized in wrapping the package and leading from the supply reel, comprising: a housing with a base plate applied to the package and containing the bottom half of a tool fastening the ends of the band together, said tool having an upper half sliding up and down in the housing; motorized drive means connected to said tool for shifting said tool into operating position; said housing having a slot above the base plate, the ends of the strapping

band being introduced through said slot from a side between two halves of the tool that fastens them together; tensioning means with a tensioning wheel above said base plate and engaging top of the overlapping ends of the strapping band and being rotated by said motorized drive means in a tensioning direction, said motorized drive means for the upper half of said band-fastening tool and also for said tensioning wheel comprising a single motor that when first rotating in one direction drives said tensioning wheel for tensioning the strapping band, said motor thereafter reversing in direction of rotation upon a shift in gear depending on the tension in the band, and driving a shaft of said upper half of the band-fastening tool; gearshift means adjacent said motor for carrying out said gear shift and



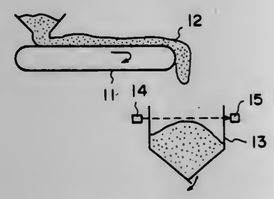
comprising: a pivoting lever and spring means connected to said pivoting lever, said pivoting lever being shiftable against the force of said spring means out of its initial position, a spring-loaded gearshift lever engaged by said pivoting lever through a set screw, said gearshift means being activated by a reaction force of said drive means; an arm on said pivoting lever; a gear with internal teeth in said drive means and having a recess in its outer surface engaging said arm on said pivoting lever, said gear with internal teeth executing substantially small angular displacements to reduce actuation of said arm; valve means for controlling said motor, only part of a reaction force acting on said arm of said pivoting lever being used for switching said valve means to maintain thereby switching of said valve means substantially constant.

4,574,849

APPARATUS AND METHOD FOR CONTROLLING SUPPLY OF ARTICLES

Masao Fukuda, Shiga, Japan, assignor to Kabushiki Kaisha Ishida Koki Seisakusho, Kyoto, Japan

Filed Mar. 15, 1984, Ser. No. 589,698
Claims priority, application Japan, Mar. 15, 1983, 58-42940
Int. Cl.⁴ G05D *9/12*
U.S. Cl. 141—1 **8 Claims**



5. A method of controlling the supply of a product to a pooling unit from a supply device, comprising steps of:

(a) sensing whether the product has been supplied to a preset level of the pooling unit;

(b) measuring a first time period from the start of supply of the product to the pooling unit until the preset level is sensed as being attained;

(c) calculating and measuring a second time period, based on the first time period, while the product is supplied to the pooling unit; and

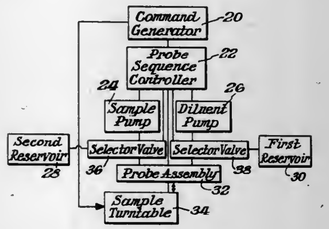
(d) halting supply of the product to the pooling unit in response to the expiration of the second time period.

4,574,850

METHOD OF AND APPARATUS FOR DISPENSING LIQUID

James E. Davis, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 17, 1985, Ser. No. 692,409
Int. Cl.⁴ B65B *3/04*
U.S. Cl. 141—9 **12 Claims**



9. A method for accurately aspirating and dispensing small samples of a first liquid using a probe having inner and outer coaxially disposed conduits defining a coaxial region comprising the steps of:

aspirating the first liquid into the inner conduit;

flushing the annular space between the conduits with a second liquid miscible with the first liquid to remove the first liquid from the entire exterior of the inner conduit and establish a controlled interface between the first and second liquids;

dispensing a predetermined quantity of the first liquid from the inner conduit into the second liquid in the annular space; and

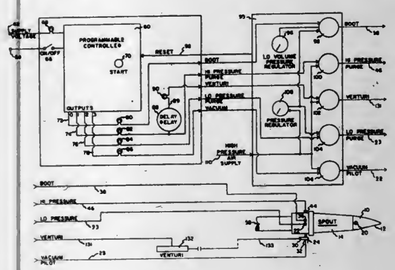
flushing the annular space with a predetermined quantity of the second liquid thereby precisely dispensing the first liquid.

4,574,851

APPARATUS FOR FILLING A VALVE BAG

J. George Lepisto, Middletown, Ohio, assignor to Champion International Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 424,893, Sep. 28, 1982, Pat. No. 4,498,511. This application Jul. 16, 1984, Ser. No. 631,186
The portion of the term of this patent subsequent to Sep. 18, 2001, has been disclaimed.
Int. Cl.⁴ B65B *1/18*
U.S. Cl. 141—68 **4 Claims**



1. A system for controlling the filling of a valve bag with particulate material, said bag including a generally tubular

filling valve, said system being used with a source of pressurized air and a filling nozzle dimensioned to fit in the filling valve, said system comprising:

a supply air manifold;

means for coupling said supply air manifold to the source of pressurized air;

a valve controller means for operating in sequence a first valve means, a second valve means and a third valve means;

said first valve means coupled to said supply air manifold and adapted to be sequentially opened and closed by said valve controller for providing a high pressure blast of air into the filling nozzle after a valve bag has been filled to clear remaining particulate material from said nozzle;

said second valve means coupled to said supply air manifold and adapted to be sequentially opened and closed by said valve controller after said first valve means has been closed for providing a low pressure blast of air into the filling valve externally of the filling nozzle, to suspend particulate material accumulated in the filling valve; and

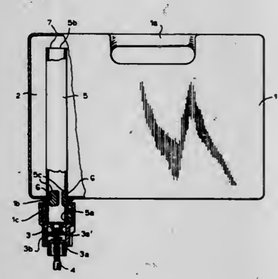
said third valve means coupled to said supply air manifold and adapted to be sequentially opened and closed by said valve controller after said second valve means has been closed for providing a vacumm for introduction into the filling nozzle to remove the suspended particulate material from said filling valve as the nozzle is removed therefrom.

4,574,852

FEEDPIPE FOR A REFILLING CONTAINER

Adolf Fleck, Unterhaching; Alfons Kastl, Munich; Rudolf Loistl; Klaus Lehnert, both of Unterhaching, and Ernst Widemann, Dachau, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed May 25, 1984, Ser. No. 614,729
Claims priority, application Fed. Rep. of Germany, Jun. 10, 1983, 3321047
Int. Cl.⁴ B65B *3/04*
U.S. Cl. 141—286 **5 Claims**



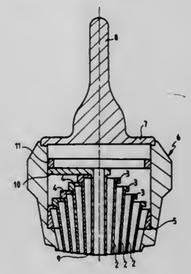
1. A feedpipe for a refilling container, preferably for filling a wet-developing apparatus for a photographic film base with a developer or regenerate liquid contained in the container, the feedpipe comprising a pipe extended substantially within the container and having an upper end and a lower portion extending outwardly of the container; a valve member positioned on said lower portion outside the container, said pipe being open at said upper end and having at said lower portion a plurality of radial holes through which the liquid is discharged from the container; said radial holes being positioned near said valve member; and meshed elements inserted in said radial holes for preventing air from flowing through the feedpipe into the liquid in the container.

4,574,853

JET DIVIDER DEVICE FOR A FILLING HEAD

A. Jean-Jacques Graffin, La Ferte Bernard, France, assignor to Serac S.A., La Ferte Bernard, France

Filed Jun. 18, 1984, Ser. No. 621,627
Claims priority, application France, Jun. 24, 1983, 83 10508
Int. Cl.⁴ B65B *1/04*
U.S. Cl. 141—286 **7 Claims**



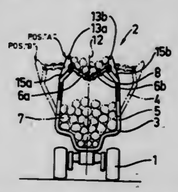
1. A jet divider for a filling head comprising a plurality of annularly shaped flow divider members, each having a diameter that is greater than the next radially inwardly disposed said member, said members each being concentrically disposed relative to one another about a central axis, each said member having a first edge and a collar means on said respective upper edge, each said member having a second edge spaced from said respective first edge so that, when flow is presented to said jet divider generally parallel to said central axis and impinging on said collar means and flowing toward said second edges, said collar means will divert the flow at least partially from the generally inward direction to present accumulation of material across adjacent said collar means.

4,574,854

BUNDLE LIMBING DEVICE

Thore Lindblom, Alfta, and Haldo Karlin, Söderhamn, both of Sweden, assignors to Osa AB, Alfta, Sweden

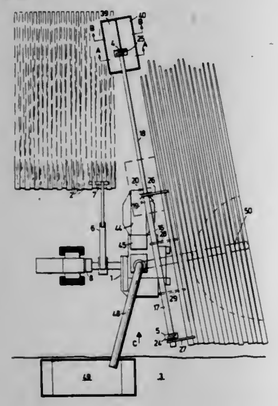
Filed Aug. 14, 1984, Ser. No. 640,773
Claims priority, application Sweden, Aug. 26, 1983, 8304633
Int. Cl.⁴ B27L *1/00*
U.S. Cl. 144—2 Z **12 Claims**



7. Mobile apparatus for removing limbs from a bundle of tree trunks comprising a bed formed by a series of mutually parallel rolls, each roll carrying along its length a plurality of flanges having limbing edges and being alternately inclined toward each other in such a manner that the edges border on each other from one inclined flange to the other, means for synchronously rotating the rolls to thereby remove branches, said bed being divided into two halves, the rolls in each bed half having their ends mounted in a front and a rear bearing beam, respectively, the beams being secured to the ends of front and rear upwards extending swinging arms which carry the bearing beams and which are pivoted for swinging movement at locations below the beams, the disposition of the beams relative to the arms and the pivot locations of the arms being such that in one position of the arms the beams meet each other to form a bed for receiving a bundle of tree trunks from above and an-

other position in which the beams are spaced from each other so that limbed trunks can be deposited in a load space below the beams.

4,574,855
TREE PROCESSING MACHINE
Karl-Gunnar Jörgensen, Sollentuna, and Leif Magnusson, Järfälla, both of Sweden, assignors to Teknikgruppen AB, Sollentuna, Sweden
Filed Apr. 13, 1984, Ser. No. 599,793
Claims priority, application Sweden, Apr. 15, 1983, 8302122
Int. Cl.[4] B27L *1/00*
U.S. Cl. 144—2 Z 8 Claims

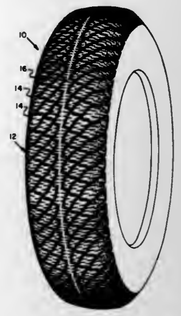


1. A machine for processing trees, comprising limbing tools, holding tools and a feed-in crane, where one holding tool and one limbing tool are mounted for movement relative to each other, wherein said holding tool and said limbing tool each comprise upward opening grappling claw means; elongate support means mounting the holding tool and the limbing tool for movement along a path defining a limbing path between a first end position whereat said holding and limbing tools are located close to each other, in which first position the tools are disposed for receiving at least one tree from a separate feed-in crane; said elongate support means which mounts said holding and limbing tools providing means enabling movement of both of said holding tool from said first position to spaced apart second end positions of each of said tools and back to said first position, movement of said tools away from each other resulting in that said at least one tree received in said tools when at said first end position, will be limbed; at least two unloading arms are mounted on said support means spaced apart along said limbing path defined by the movement of the tools, and means, which mount said unloading arms on said support means, enable pivotal movement between a first position, located below the level of the tools, where they serve as limbed tree carrying arms, and to a second position where said unloading arms are located above the level of said tools in order, by means of said pivotal movement, to lift limbed trees and move them laterally to a stem stack.

4,574,856
TREAD FOR A PNEUMATIC TIRE
Maurice Graas, Luxembourg, Luxembourg, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Jul. 18, 1984, Ser. No. 632,088
Int. Cl.[4] B60C *11/06*
U.S. Cl. 152—209 R 9 Claims

1. A pneumatic tire comprising a tread portion having independent projections defined by:

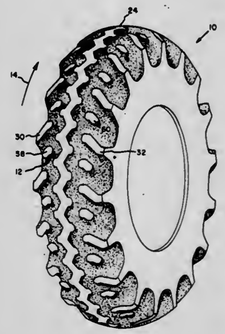
(a) first and second sets of circumferentially spaced apart primary zig-zag grooves, each primary zig-zag groove comprising a series of straight segments communicating with next adjacent segments and oriented at angular relationships with next adjacent segments, said segments having widths such that the primary zig-zag grooves remain open in a footprint of the tire, each groove of said first set of primary zig-zag grooves extending generally axially inwardly from a first axial edge of the tread but not intersecting a mid-circumferential plane of the tire, each groove of said second second set of primary zig-zag grooves extending generally axially inwardly from a second axial edge of the tread but not intersecting the mid-circumferential plane of the tire, each primary zig-zag groove having an axially inner end that is located an axial distance of not more than 15% of the tread width away from the mid-circumferential plane of the tire, each groove of said first and second sets of primary zig-zag grooves extending from the respective axial edge of the tread to the axially inner end of the groove in only one generally circumferential direction along its entire length, every other segment of each primary zig-zag groove being oriented at between 0° and 5° with respect to said mid-circumferential plane and the remaining segments of each primary zig-zag groove being oriented at angles of greater than 0° but no greater than 90° with respect to said mid-circumferential plane, the angular orientation of said remaining segments with respect to said mid-circumferential plane progressively decreasing as the axial distance between said remaining segments and said mid-circumferential plane decreases;



(b) first and second sets of circumferentially spaced apart secondary zig-zag grooves, each secondary zig-zag groove comprising a series of straight segments communicating with next adjacent segments and oriented at angular relationships with adjacent segments, said segments having widths such that the secondary zig-zag grooves remain open in a footprint of the tire, each groove of said first set of secondary zig-zag grooves having an axially innermost segment that intersects the axially innermost segment of one of the grooves of said first set of primary zig-zag grooves, each groove of said second set of secondary zig-zag grooves having an axially innermost segment that intersects the axially innermost segment of one of the grooves of said second set of primary zig-zag grooves, each secondary zig-zag groove extending generally axially outwardly from its axially innermost segment and intersecting four primary zig-zag grooves but not intersecting an axially edge of said tread, and portions of at least two segments of each secondary zig-zag groove being located between each pair of circumferentially next adjacent primary zig-zag grooves that the secondary zig-zag groove intersects; and

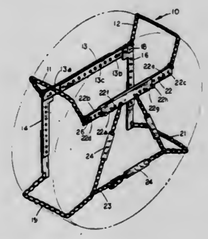
(c) a plurality of axially or generally axially extending narrow slits having widths such that said slits are closed in a footprint of the tire, each said narrow slit intersecting a vertex of a projecting angle of one of said primary zig-zag grooves, said slits not extending across the entire width of any indpendent projection or rib.

4,574,857
TRACTOR TIRE TREAD
Richard M. Beeghly; William P. Cundiff, both of Cumberland, Md.; William H. Legas, Garrett, Pa.; Lawrence B. Hurst, Jr., La Vale; Robert L. Crump, Cumberland, both of Md., and Robert E. Boore, Hyndman, Pa., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Nov. 5, 1984, Ser. No. 668,125
Int. Cl.[4] B60C *11/04, 11/11*
U.S. Cl. 152—209 B 8 Claims



1. A pneumatic tire comprising a directional type tread extending circumferentially about an axis of rotation of said tire, said tread comprising: (a) a continuous center rib extending circumferentially about said tread with about one-half of the center rib disposed on each side of a mid-circumferential plane of the tire, said center rib having an arc width that is in the range of 15% to 35% of the arc width of said tread, said center rib presenting on each side of the mid-circumferential plane a plurality of circumferentially spaced apart substantially axially oriented leading edges that are oriented substantially parallel to the axis of rotation of said tire, said leading edges of the center rib each having an arc width in the range of 2% to 5% of the arc width of said tread; and (b) first and second sets of circumferentially spaced apart traction lugs, each lug of said first set of traction lugs beginning at a first axial edge of the tread and extending to an axially inner end that is axially spaced apart from said center rib, the axially inner end of each said traction lug being located between 20% to 40% of the arc width of said tread from said first axial edge of said tread, each traction lug having a leading edge with a portion of said leading edge being oriented at an angle in the range of 20° to 60° with respect to the mid-circumferential plane ofthe tire and a lateral portion of each said leading edge being oriented substantially perpendicular to the mid-circumferential plane of said tire, said lateral portion of the leading edge of each traction lug being located on the axially innermost portion of each traction lug and having an arc width in the range of 5% to 12% of the arc width of said tread, each lug of the second set of traction lugs being similar to the lugs of the first set of traction lugs but opposite in hand and having a beginning at a second axial edge of the tread that is offset circumferentially of said tire with respect to the beginnings of the lugs of said first set of traction lugs; an axially oriented arc of said tread having a radius such that a footprint of the tire has a maximum axial width that is in the range of 40% to 80% of the arc width of said tread, and said center rib and traction lugs all have radially outer surfaces that will contact a hard ground surface in a footprint of the tire.

4,574,858
TIRE CHAIN DEVICE
Alan M. Anderson, 701 N. Shore Dr., Hastings, Nebr. 68901
Continuation-in-part of Ser. No. 498,458, May 26, 1983, Pat. No. 4,480,673. This application May 25, 1984, Ser. No. 614,316
The portion of the term of this patent subsequent to Nov. 6, 2001, has been disclaimed.
Int. Cl.[4] B60C *27/06;* G09F *7/00*
U.S. Cl. 152—216 11 Claims



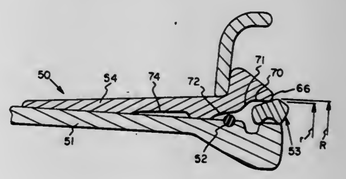
1. A tire chain device, comprising:

first connecting means connecting an end of each of a first pair of cross links in a spaced apart relationship;

two second connecting means connecting an end of a second pair of longer cross links to each end of said first connecting means at a point spaced away therefrom, wherein both said first and said second connecting means include a plurality of rigid straps adapted for pivoted attachment end to end, said attachment being limited to place the ends of the first and second connecting means radially outward from the rotational axis of the tire to the extent said ends do not exceed the radial outmost extent of the adjacent sidewall of the tire, said first and two second connecting means adapted for placement on the inside of a wheel; and

third connecting means connecting the second end of each of the first pair of cross links in spaced apart relationship, said third connecting means having means for removably attaching thereto a link of each of said second pair of cross links, said third connecting means adapted for placement on the outside of the wheel, whereby said first pair of cross links may initially rest atop the wheel while said second pair of cross links may be brought under the wheel and attached to said third connecting means.

4,574,859
RIM ASSEMBLY
William T. Smith, Uniontown, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Continuation of Ser. No. 458,240, Jan. 17, 1983, abandoned. This application May 14, 1985, Ser. No. 734,241
Int. Cl.[4] B60B *25/18*
U.S. Cl. 152—410 3 Claims



1. A rim assembly for mounting a pneumatic tire thereon, said rim assembly comprising:

(a) a cylindrical rim base having first and second axial ends

and a pair of annular grooves in an outer circumferential surface of said rim base near said first axial end;

(b) an annular sealing member, a first portion of said sealing member being located in the annular groove that is furthest away from the first axial end of said rim base and a second portion of said sealing member extending radially outwardly of the radially outer circumferential surface of said rim base;

(c) a split lock ring, said lock ring having a specified position such that a first portion of said lock ring is located in the annular groove that is closest to the first axial end of said rim base, a second portion of said lock ring extending radially outwardly of said rim base and axially outwardly of the annular groove that is closest to the first axial end of said rim base, said second portion having an axially inner surface for engaging a bead seat band and a radially outermost surface that has a predetermined radius when the lock ring is in said specified position; and

(d) a generally cylindrical bead seat band having first and second axial ends and radially inner and outer surfaces, said bead seat band being coaxial with and slidably mounted about said rim base such that the first axial end of the bead seat band is the nearest to the first axial end of said rim base, the radially inner surface of said bead seat band comprising:

(i) a first portion that is cylindrical, said first portion having a radius that is slightly larger than the predetermined radius of the radially outermost surface of the second portion of said lock ring, said first portion extending from the first axial end of said bead seat band for a predetermined axial length, said first portion being located radially outwardly of the radially outermost surface of the second portion of said lock ring when said lock ring is in said specified position;

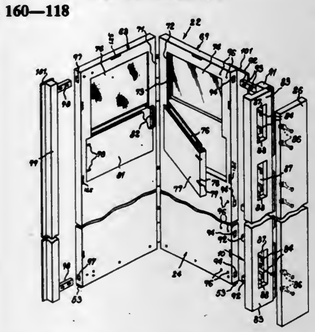
(ii) a second portion extending generally axially and radially inwardly from the axially inner end of said first portion and having a contour that is complementary to the axially inner surface of the second portion of said lock ring, said second portion engaging the axially inner surface of the second portion of said lock ring when said lock ring is in said specified position;

(iii) a third portion that is inclined generally axially and radially inwardly from the axially inner end of said second portion to a minimum radius, said minimum radius being only slightly larger than the radius of the outer circumferential surface of said rim base, said third portion engaging said sealing member to form an airtight seal when said lock ring is in said specified position; and

(iv) a fourth portion extending axially inwardly from the axially inner end of said third portion, said fourth portion being cylindrical and having said minimum radius;

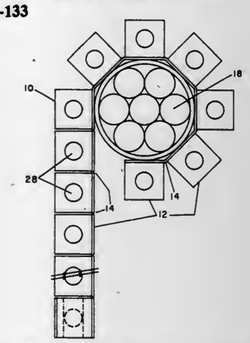
the axial length of the first portion of the radially inner surface of said bead seat band is measured from the first axial end of said bead seat band to an axially outer end of the second portion of the radially inner surface of the bead seat band, and when the bead seat band is slid axially inwardly so that the third portion of the radially inner surface of the bead seat band does not contact the sealing member said axial length is at least as great as the axial distance from the axially outermost end of the second portion of the radially inner surface of said bead seat band to the axially innermost point where said lock ring intersects a cylinder that is coaxial with said assembly when any part of said lock ring is displaced radially outwardly from said specified position, said cylinder having the same radius as the radius of the first portion of the radially inner surface of said bead seat band.

4,574,860
ADJUSTABLE STORM GARAGE DOOR
Otto Weiss, 22 Hunter St., Highland Mills, N.Y. 10930
Filed May 31, 1984, Ser. No. 615,593
Int. Cl.[4] E06B *3/48*
U.S. Cl. 160—118 **6 Claims**



1. A storm garage door comprising in combination, a pair of foldable doors, each of said foldable doors having a free edge portion and an attachable edge portion, means for removably securing said attachable edge portions to walls of a garage entrance, said removably securing means including a side jamb at each wall of said garage entrance, means for securing each of said side jambs to said walls, a supplemental side jamb at each of said walls, means on each of said side jambs and on each of said suplemental side jambs for removably securing each of said suplemental side jambs to each of said side jambs, said supplemental side jambs including spaced slots, plates movable in said slots, hooks mounted on said plates, guiding aligning said plates in said slots during reciprocal, vertical movement, said side jambs including eyes for mesh engagement with said hooks, adjustable means for interconnecting said attachable edge portions and said removably securing means, means for guiding said free edge portions during opening and closing of said foldable doors, a plurality of individual flexible sealing means at a bottom edge of each of said foldable doors, and means for adjusting said flexible sealing means to compensate for an uneven floor of the garage.

4,574,861
THERMAL SHADE
Chung-Rei Mao, Omaha, Nebr., assignor to InterNorth, Inc., Omaha, Nebr.
Filed Oct. 11, 1983, Ser. No. 540,434
Int. Cl.[4] E06B *9/08*
U.S. Cl. 160—133 **2 Claims**



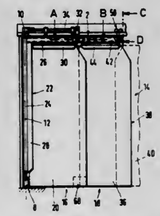
1. A thermal shade for limiting the amount of thermal energy which enters a structure through an opening therein, said shade comprising:

(a) a plurality of integrally formed elongated closed rectangular tubes which have a dead air space, are arranged in parallel relation to each other, and are connected by living hinges, and

(b) means for positioning said shade to limit the thermal energy entering said opening, wherein said positioning means is a guide means adapted to be slidably mounted in tracks adjacent said opening, and

wherein each of said tubes has an extended cover on the side opposite said opening and which extends beyond said tracks in close relation thereto to prevent air leaks therefrom.

4,574,862
FOLDING GATE
Gabriel Rejc, Moosburg, Fed. Rep. of Germany, assignor to EFAFLEX Transport-und Lager Technik GmbH, Bruckberg-Edlkofen, Fed. Rep. of Germany
Filed Apr. 20, 1983, Ser. No. 486,911
Claims priority, application Fed. Rep. of Germany, Apr. 21, 1982, 8211456[U]
Int. Cl.[4] E05D *15/26*
U.S. Cl. 160—199 **12 Claims**



1. A folding gate which is disposed in a gate opening comprising:

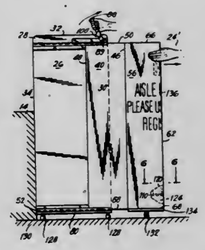
a substantially straight glide track arrangement means located at an upper limitation of the gate opening;

at least one gate wing pivotable about a vertical axis in a gate wing bearing, the gate wing comprising first and second rectangular segments, hinge means for movably connecting the segments, the first segment being supported directly by the gate wing bearing, the second segment carrying a first glide roller means at an end of an upper edge remote from the first segment, the first glide roller means being guided horizontally by the glide track arrangement means;

the first and second segments each including a panel and a carrier structure means for supporting the weight of the panel and to maintain the segments in associated bearings, the carrier structure means of the second segment comprising pivot arm means disposed at the upper edge of the second segment for suspending the second segment therefrom, the pivot arm means being connected at one end to the carrier structure means of the first segment for movement about a vertical axis and for a limited extent movement about a horizontal axis with respect to the first segment, another end of the pivot arm means carrying the first guide roller means and supported by the glide track arrangement means; the movement between the one end of the pivot arm means and the carrier structure means of the first segment is established by an intermediate piece including two pin bearings, one bearing pin extending in a vertical direction while the other bearing pin extends in a horizontal direction and the one pin bearing supporting the intermediate piece at the carrier structure means of the first segment while the other pin bearing supports the pivot arm means;

and a carriage means traversing the glide track arrangement means, the other end of the pivot arm means being in supportive suspension from the carriage means for tilting the carriage means in any desired direction with respect to the pivot arm means.

4,574,863
AISLE CLOSER APPARATUS
Larry Coleman, Wayne, and Fred Van Duyne, Ringwood, both of N.J., assignors to Melrose Displays, Inc., Passaic, N.J.
Filed Aug. 22, 1983, Ser. No. 524,980
Int. Cl.[4] A47F *10/00*
U.S. Cl. 160—216 **11 Claims**



1. An aisle closer apparatus for an aisle comprising, in combination: an adjacent support means having a substantially vertical surface and a substantially vertical side edge adjoining said aisle,

a substantially vertical first panel having opposed first and second side walls and substantially vertical first and second side edges,

a substantially vertical second panel having opposed inner and outer side walls and substantially vertical inner and outer side edges,

channel means connected to said support means for mounting said first panel relative to said substantially vertical surface wherein said first panel is in generally parallel relationship with respect to said support means, said first panel being slidably movable in said channel means between an unextended position and an extended position, wherein in said unextended position said first side wall of said first panel is facing and spaced proximate from said substantially vertical surface of said support means and said substantially vertical side edge of the support means and said substantially vertical first side edge of the first panel are in substantial alignment, and wherein in said extended position said substantially vertical first side edge is distantly positioned beyond said substantially vertical side edge of said support means,

means for inhibiting said first panel from moving from any of said unextended or extended positions; and

hinge means connecting said first and second panels including a foot activated hinge with orthogonal folding connected to said second side wall at said first side edge of said first panel and to said inner wall adjacent said inner edge of said second panel, said hinge upon activation by means of one's foot triggers a pair of normally right angle folded hinge plates which enables rotational movement of said second panel relative to said first panel between an unfolded position and a folded position and for releasably holding said first and second panels in said folded and said unfolded positions, and said foot activated hinge being a hinge member having a pair of vertical joints with first biasing means and having a pair of horizontal joints having second biasing means; said second biasing means maintaining said first and second panels in said unfolded position, and said first biasing means retaining said first and second panels in said folded position; wherein in said folded position said second side wall of the first panel and said inner wall of the second panel are substantially parallel and facing in spaced proximity and in said unfolded position said inner and outer side walls of said second panel are positioned lengthwise in planar relationship with said second and first side walls respectively of said first panel,

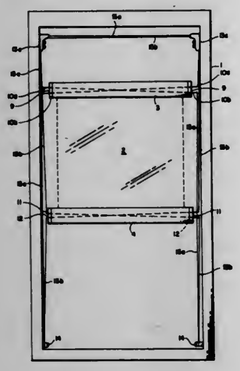
said apparatus being movable between an open position and a closed position, wherein in said open position said first panel is in said unextended position and said first and second panels are in said folded position, and in said closed position said first panel is in said extended position and said first and second panels are in said unfolded position.

4,574,864

VERTICALLY POSITIONING WINDOW SHADING SYSTEM

Brian H. Tse, G.P.O. Box 5577, Hong Kong, Hong Kong

Filed Sep. 13, 1984, Ser. No. 650,092
Int. Cl.⁴ A47G *5/02*
U.S. Cl. 160—259 **4 Claims**



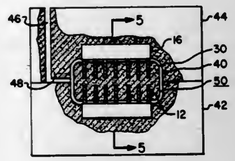
1. An improved vertically positioning window shading system for a window frame comprising:
a first upper hollow non-rotating horizontal roller;
a second lower hollow rotating roller parallel to said first roller;
a vertical screen having one of its parallel horizontal edges fixedly positioned upon said first roller and its opposite edge fixedly positioned on said second roller;
a first cord means having its ends fixedly positioned on opposite sides of the lower edge of a window frame;
said first cord means being disposed to suspend said first roller through its hollow center while permitting a vertical movement of translation of said first roller along said cord;
a second cord means having its ends fixedly positioned on the opposite sides of the lower edge of said window frame;
said second cord means being disposed to suspend said second roller through its hollow center while permitting a combined movement of rotation and translation of said second roller;
said first roller being equipped with caps at each end, each of said caps having a pair of holes positioned one above the other drilled through them;
said second roller being equipped with caps at each end, each of said caps having a hole drilled through it concentric to said roller;
said first cord means passing from one side of said lower edge of said window frame upwardly to the lower hole in the first end of said roller on the same side of said frame as said first end thence in turn through the lower of said holes in the first end of said first roller, thence through the interior of said first roller, thence through the upper of said holes in a second end of said first roller, thence vertically upwards to the top of said window frame to a first holding means positioned thereon, thence horizontally across the top of said window frame to a second holding member positioned thereon, thence vertically downward to the upper of said holes in said first end of said first roller, thence through the interior of said first roller, thence through the lower of said holes in said second end of said first roller, thence vertically downward to the opposite side of said lower edge;
said second cord means passing in turn from one side of said lower edge of said window in turn through the concentric hole in the first end of said second roller on the same side of said frame as said first end thence, through the interior of said second roller through the concentric hole in a second end of said second roller, thence vertically upwards to the top of said window frame to said first holding member, thence horizontally across the top of said window frame to said second holding member, thence vertically downwards to said concentric hole in said first end of said second roller, thence through the interior of said second roller through said concentric hole in said second end of said second roller, thence vertically downwards to the opposite side of said lower edge.

4,574,865

METHOD OF MAKING A FINNED CAST RECUPERATOR TUBE

Wayne S. Counterman, Wellsville, N.Y., assignor to The Air Preheater Company, Inc., Wellsville, N.Y.

Filed Nov. 5, 1984, Ser. No. 668,119
Int. Cl.⁴ B22D *19/00*
U.S. Cl. 164—11 **4 Claims**



1. A method of making a hollow metallic envelope having a desired interior surface shape enclosing an interior flow cavity and fin surface means extending into the interior cavity from the interior surface of the envelope, said method comprising the steps of:
a. forming a sand core about said fin surface means with portions of the said fin surface means protruding outwardly from the sand core, the sand core contoured about its exterior surface to provide the desired interior shape of the hollow metallic envelope;
b. forming a sand mold defining a cavity adapted to receive the sand core and contoured to provide a desired exterior surface shape for the metallic envelope;
c. placing the sand core within the sand mold in spaced relationship therewith so as to provide a clearance space therebetween into which the portions of said fin surface means protruding outwardly from the sand core extend; and
d. pouring a quantity of molten metal into the clearance space which upon cooling solidifies to form the hollow metallic envelope with said fin surface means being fused integrally therewith.

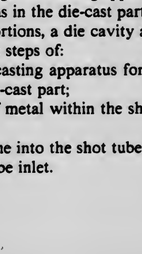
4,574,866

INVESTMENT CASTING USING HOLLOW METAL FORM

Leung Tom, 6524 Bruton Rd., Cartierville, Quebec, Canada

Continuation-in-part of Ser. No. 347,011, Feb. 8, 1982, abandoned. This application Oct. 26, 1984, Ser. No. 665,012
Int. Cl.⁴ B22C *7/00, 9/04*
U.S. Cl. 164—35 **7 Claims**

1. A method for use in investment casting comprising the steps of:
providing a hollow metal form;
applying a wax coating to the exterior surface and to the interior surface of the hollow metal form;
providing a pattern cluster having a plurality of wax patterns of articles to be cast attached with wax gates to said wax coated hollow metal form;
coating the pattern cluster with mold forming material to form a shell both interiorly and exteriorly of the hollow metal form;
induction heating the metal form to cause the metal form to heat to a temperature sufficient to melt the wax thereof and thereby form a mold comprising the shell;



removing the metal form to thereby leave a runner system for introduction of molten metal into the mold which minimizes the amount of metal employed in the runner system.

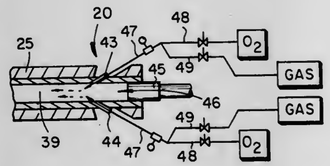
7. An investment casting set-up comprising a cylindrical metal form having interior and exterior surfaces with a first open end and a second opposed end and with at least one drainage aperture therein, a wax coating on both the interior and exterior surfaces of said metal form, at least one wax pattern of an article to be cast attached by a wax gate to the exterior of the wax covered metal form, and a coating of a mold forming material about both the exterior and interior surfaces of the metal form.

4,574,867

TRAPPED GAS REDUCTION IN DIE CASTINGS

William E. Thompson, Rte. 1, Box 89, Middletown, Ind. 47356

Filed Aug. 27, 1984, Ser. No. 644,524
Int. Cl.⁴ B22D *13/00*
U.S. Cl. 164—113 **5 Claims**



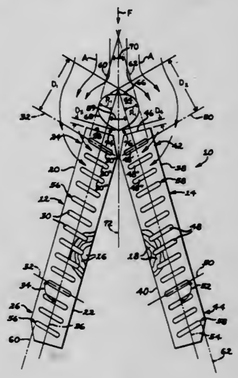
1. A method of using a die-casting apparatus for reducing the amount of trapped gas in the die-cast part, the apparatus having a pair of mold portions, a die cavity and a shot tube, said method including the steps of:
preparing the die-casting apparatus for receiving a shot of metal for the die-cast part;
placing the shot of metal within the shot tube by way of a shot tube inlet;
injecting a gas flame into the shot tube; and
closing the shot tube inlet.

4,574,868

FLOW DIRECTING ELEMENT FOR HEAT EXCHANGER

Gene A. Anders, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Oct. 2, 1981, Ser. No. 307,969
Int. Cl.⁴ F28F *9/26, 13/12;* F28D *1/04*
U.S. Cl. 165—144 **7 Claims**



1. A heat exchanger (10) for receiving a fluid stream (F), comprising:
a first core (12) having a plurality of tubes (30), said tubes (30) including a leading tube (30') and each having a leading edge (56) and each being elongated in cross section, said leading edges (56) defining a first plane (60), said leading tube (30') being upstream of the other tubes (30) in said fluid stream (F);
a second core (14) having a plurality of tubes (48) and being positioned in a "V" configuration with said first core (12), said tubes (48) of said second core (14) including a leading tube (48') and each having a leading edge (58) and being elongated in cross section, said leading edges (58) defining a second plane (62) intersecting said first plane (60), said intersecting first and second planes (60,62) defining a planar angle (70), said leading tube (48') of said second core (14) being upstream of the other tubes (48) of said second core (14) in said fluid stream (F); and
a flow control element (64) having a leading side (66) and a trailing side (68) and being positioned within said planar angle (70) and upstream and spaced a distance (D_3,D_4) from said first and second cores (12,14) in said fluid stream (F), said leading side (66) tangentially intersecting said first and second planes (60,62) and cooperating with said trailing side (68) to direct said fluid stream (F) onto and about said leading tubes (30',48') of said first and second cores (12,14) in a direction generally parallel to said leading tubes (30',48').

4,574,869

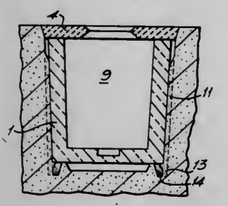
CASTING MOULD, AND CAVITY FORMER AND SLEEVE FOR USE THEREWITH

Gerd Trinkl, and Helmut Schopp, both of Borken, Fed. Rep. of Germany, assignors to Foseco International Limited, Birmingham, England

Division of Ser. No. 230,956, Jan. 22, 1981, Pat. No. 4,423,762. This application Aug. 19, 1983, Ser. No. 524,798
Int. Cl.⁴ B22C *9/02, 9/08*
U.S. Cl. 164—360 **10 Claims**

1. A metal casting mould of particulate material said mold having a mould cavity to produce said metal casting, and a riser cavity in communication with said mould cavity, said riser cavity having inserted therein a riser sleeve of exother-

mic, exothermic and heat-insulating, or heat-insulating material having an outside diameter taper such that the outside diameter of the riser sleeve adjacent the mould cavity is greater than the



outside diameter of the riser sleeve at the end remote from the mould cavity, said riser cavity having at least one inwardly projecting longitudinally extending rib-like formation of moulded particulate material which grips the riser sleeve.

4,574,870

METHOD AND APPARATUS FOR CONTROLLING A COUNTER-FLOW HEAT EXCHANGER

Jacob Weitman, Tryffelstigen 8, S-611 63 Nykoping, Sweden

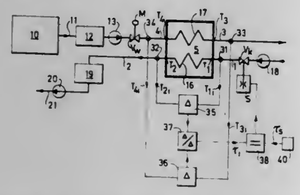
PCT No. PCT/SE81/00256, § 371 Date May 12, 1982, § 102(e) Date May 12, 1982, PCT Pub. No. WO82/01063, PCT Pub. Date Apr. 1, 1982

PCT Filed Sep. 11, 1981, Ser. No. 380,748

Claims priority, application Sweden, Sep. 12, 1980, 8006391

Int. Cl.⁴ F28F *27/00*

U.S. Cl. 165—1 **4 Claims**



1. A method of controlling the flow of one of the two fluids passing through a heat exchanger in counter current when the flow of the other fluid varies, comprising the steps of:

measuring the temperatures T_{1i}, T_{2i}, T_{3i} and T_{4i}, where T_{1i} is the inlet temperature and T_{2i} is the outlet temperature of said one fluid; and T_{3i} is the outlet temperature and T_{4i} is the inlet temperature of said other fluid;

forming the temperature relation

$$\tau_i = \frac{T_{4i} - T_{3i}}{T_{2i} - T_{1i}};$$

comparing τ_i with a predetermined temperature relation which corresponds to a condition of optimum effectiveness of the heat exchanger for the actual operational situation; and

controlling the fluid of said one flow in response to the result of said comparison in order to restore said predetermined temperature relation.

4,574,871

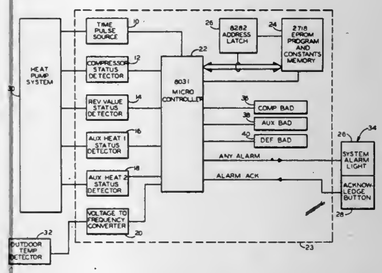
HEAT PUMP MONITOR APPARATUS FOR FAULT DETECTION IN A HEAT PUMP SYSTEM

David W. Parkinson, 106 Hollister Way, Burnt Hills, N.Y. 12027; Donald E. Bates, Box 323, Crooked St., R.D. 2, Broadalbin, N.Y. 12025, and Raymond F. Poteralski, 363 E. R.D. #5, Schenectady, N.Y. 12306

Filed May 7, 1984, Ser. No. 607,830

Int. Cl.⁴ F25B *13/00*; G10M *19/00*; G05D *23/00*

U.S. Cl. 165—1 **10 Claims**



6. Apparatus for monitoring a heat pump system used to maintain a preselected indoor temperature in an enclosed space having a known heat transfer rate, said system including a heat pump compressor, comprising:

means for sensing the actual run time for the heat pump compressor being monitored during a predetermined test time interval;

means for sensing an average outdoor temperature ambient to the enclosed space for the test time interval;

means for storing the expected run time for the compressor being monitored to maintain the preselected indoor temperature for the average outdoor temperature sensed and for the known heat transfer rate of the enclosure;

means for comparing the actual run time with the expected run time; and

means for automatically providing an indication when the actual run time exceeds the expected run time.

4,574,872

HEAT EXCHANGER APPARATUS

Nobuyuki Yano, Hirakata; Takuro Kotera, Kawanishi; Toshio Utagawa, Hirakata; Akira Aoki, Kasugai; Kazufumi Watanabe, Aichi, and Masao Wakai, Kasugai, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

PCT No. PCT/JP83/00392, § 371 Date Jul. 3, 1984, § 102(e) Date Jul. 3, 1984, PCT Pub. No. WO84/01817, PCT Pub. Date May 10, 1984

PCT Filed Nov. 2, 1983, Ser. No. 629,844

Claims priority, application Japan, Nov. 4, 1982, 57-194119; Nov. 4, 1982, 57-194120; Nov. 17, 1982, 57-202750; Dec. 17, 1982, 57-222780; Dec. 17, 1982, 57-222781; Jan. 11, 1983, 58-2437

Int. Cl.⁴ F28D *19/00*

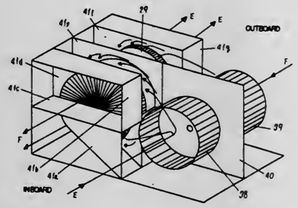
U.S. Cl. 165—8 **7 Claims**

1. A heat exchanger apparatus for exchanging heat between first and second air flows, comprising

a cylindrical-shaped rotary heat exchanger having first and second end surfaces, inner and outer peripheral portions and a longitudinal axis, said heat exchanger including first and second laminated elements alternately distributed in the circumferential direction around said axis;

separator means positioned at an end surface of said rotary heat exchanger for dividing each of said first and second air flows into first and second portions; and

flow passage means interposed between said separator means and said rotary heat exchanger for diverting the first portion of said first air flow through a first element of said rotary heat exchanger, the second portion of said first air flow through a second element of said heat exchanger, the first portion of said second air flow through a second element of said heat exchanger disposed adjacent the second element through which the second portion of said



first air flow passes, and the second portion of said second air flow through a first element of said heat exchanger disposed adjacent the first element through which the first portion of said first air flow passes, said flow passage means merging the first and second portions of said first air flow and the first and second portions of said second air flow after passage through said rotary heat exchanger.

4,574,873

AIR CONDITIONING APPARATUS FOR CARS

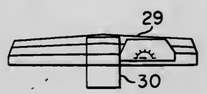
Hiroto Kawahira, and Mitsuo Yasuda, both of Shizuoka, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 15, 1984, Ser. No. 610,431

Claims priority, application Japan, Jun. 20, 1983, 58-110350

Int. Cl.⁴ B60H *3/04*

U.S. Cl. 165—42 **5 Claims**



1. An air conditioning apparatus for a vehicle comprising:

an air intake fan having internal and external air inlet ports and dampers for selecting one of said internal and external ports;

a heat exchanger for cooling and a heat exchanger for warming, both of said heat exchangers being arranged in series downstream of said air intake fan and in the direction substantially perpendicular to the direction of the air flow;

a by-pass route provided above and in parallel with the heat exchanger for warming;

an air mixing chamber formed downstream of said heat exchanger for warming and said by-pass route; and

an air blow-off port and a control damper for controlling a direction of the air flow provided downstream of the air mixing chamber,

wherein said air intake fan, said heat exchanger for cooling, said heat exchanger for warming, said by-pass route, said air mixing chamber, said air blow-off port, and said control damper are all installed in a single casing in the order as mentioned and in a longitudinal direction of said vehicle, wherein said casing is made separable between said air intake fan and said heat exchanger for cooling, wherein said casing includes means for removing and installing said heat exchanger for cooling from both the driver's seat and the next-to-driver's seat, and wherein said air intake fan is installed above a front deck portion enclosed by a cowl top outer panel and a cowl top inner panel of the engine room, and above said heat exchanger for cooling and a remaining portion of said apparatus is installed in the vehicle cabin and connected with said air intake fan.

4,574,874

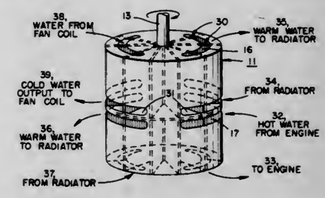
CHEMISORPTION AIR CONDITIONER

Melchor Duran, Babylon, N.Y., assignor to Pan Tech Management Corp., Babylon, N.Y.

Filed Apr. 7, 1983, Ser. No. 482,860

Int. Cl.⁴ B60H *1/06, 1/32*; F25B *15/00*

U.S. Cl. 165—43 **27 Claims**



1. A chemisorption apparatus for heating or cooling comprising:

(a) a housing in right cylindrical form divisible into temperature zones and having inlet and outlet apertures to said zones;

(b) a plurality of enclosed fins arrayed in a circle radially spaced from each other arranged coaxially with said housing, said array being movable through said temperature zones in a continuous thermal cycle, each of said fins having one part for containing an absorbent material and another part for containing a reactant material, said absorbent material being adapted to combine together with or to disassociate from said reactant material, depending on the temperatures applied to said parts of said fins as they are moved through said temperature zones;

(c) means for moving said array including a drive shaft to which said fins are mounted for rotation through the temperture zones of said housing; and

(d) horizontal dividers arranged between each pair of adjacent fins for dividing said housing into an upper part and a lower part, said dividers extending to the housing and being adapted in conjunction with said rotatable fin array to form upper and lower temperature zones through which the array of fins rotates, wherein the absorbent containing parts of the fins constitute the lower parts thereof which are rotated through the lower temperature zone of the housing.

4,574,875

HEAT EXCHANGER FOR GEOTHERMAL HEATING AND COOLING SYSTEMS

John P. Rawlings, and James R. Partin, both of Stillwater, Okla., assignors to Geo-Systems, Inc., Stillwater, Okla.

Filed Dec. 5, 1983, Ser. No. 558,025

Int. Cl.⁴ F28D *15/00*

U.S. Cl. 165—45 **2 Claims**

1. Apparatus for achieving heat exchange between a liquid medium and the earth in a vertical borehole in the earth, comprising:

a casing adapted to be positioned in a vertical borehole in the earth, the exterior surface of the casing being in thermal contact with the earth;

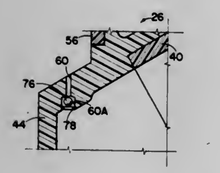
a cap closing the casing lower end;

a dip tube of external diameter smaller than the interior diame-

ter of said casing, the dip tube being positioned within said casing providing an annular area between the interior of said casing and the exterior of the dip tube, the bottom end of the dip tube being open and spaced above said cap;

a top manifold providing a first part connected to the upper end of said casing, a second part connected to the upper end of said dip tube, the second part having a vertical vent hole therein, a third part providing means to connect an outlet conduit, and a fourth part providing means to connect a supply conduit, the first and third parts and the second and fourth parts respectively communicating with each other





within the manifold whereby fluid may be passed from a supply conduit into said dip tube to flow downwardly to emerge within said casing adjacent the bottom thereof, and flow upwardly in said annular area within said casing into said top manifold and out said third part to an outlet conduit or in the opposite direction, the fluid exchanging heat with the earth as it flows in said casing, said manifold providing connection to the casing, dip tube, outlet conduit and supply conduit in a common vertical plane; and

means to close said hole to prevent the passage of fluid therethrough.

4,574,876

CONTAINER WITH TAPERED WALLS FOR HEATING OR COOLING FLUIDS

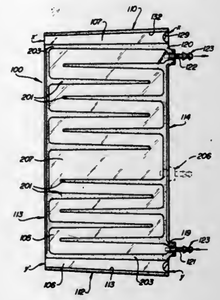
James D. Aid, St. Petersburg, Fla., assignor to Extracorporeal Medical Specialties, Inc., King of Prussia, Pa.

Continuation-in-part of Ser. No. 394,582, Jul. 2, 1982, which is a division of Ser. No. 262,162, May 11, 1981, abandoned. This application Sep. 29, 1983, Ser. No. 537,314

Int. Cl.⁴ F28F *21/06;* **F28B** *9/10*

U.S. Cl. 165—46 **4 Claims**

1. A flexible container means adapted to be received by a frame means, having a cross member from which extends a pair of substantially parallel arm elements, and in which a liquid may be stored or through which a liquid may be circulated, said container means comprising a pair of walls including two relatively thin, generally flexible sheets of a polymeric material, a top edge, a bottom edge, a centrally located compartment for containing said liquid, an elongated sleeve adjoining each top and bottom edge of said compartment for receiving said arm elements, inlet means for introducing said liquid into said compartment and outlet means for withdrawing said liquid from said compartment, each of said sleeves having an inner edge and an outer edge, the straight-line distance between the outer edges of said sleeves on one side of the container means being greater than the straight-line distance between the outer edges of said sleeves along the opposing side of said container



means, said container means further including means for dividing said compartment into a plurality of channels of substantially constant width for the flow of liquid therethrough, said means for dividing being tapered whereby any air bubbles entrapped within said compartment will flow with said liquid and be evacuated from said compartment upon withdrawal of said liquid through said outlet means.

4,574,877

CAN-TYPE EVAPORATIVE COOLING DEVICE FOR POWER SEMICONDUCTOR ELEMENTS

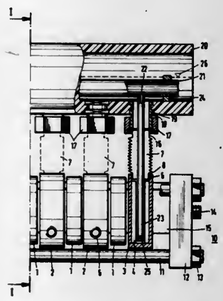
Erwin Klein, Heddesheim, Fed. Rep. of Germany, assignor to Brown, Boveri & Cie AG, Mannhein, Fed. Rep. of Germany

Filed Mar. 5, 1984, Ser. No. 585,982

Claims priority, application Fed. Rep. of Germany, Mar. 3, 1983, 3307703

Int. Cl.⁴ H01L *23/46*

U.S. Cl. 165—104.33 **2 Claims**



1. An evaporative cooling device for power semiconductor elements, comprising cooling cans alternatingly stacked with the semiconductor elements to form a column, said cooling cans having a bottom and having evaporator cavities formed therein for receiving electrically insulating cooling liquid evaporating during operation of the semiconductor elements, and a cooling circuit connected between said cooling cans and a recooler, said cooling circuit including horizontal vapor collecting lines formed of electrically insulating cast polyamide, vertical vapor lines in the form of metallic corrugated tubes connected from said cooling cans to said horizontal vapor collecting lines for conducting vapor generated in said cooling can through said horizontal vapor collecting lines to the recooler, nozzles cast into said horizontal vapor collecting lines, pipe thread coupling connections connecting said metallic corrugated tubes to said nozzles, horizontal condensate collecting lines disposed in said horizontal vapor collecting lines in the form of electrically insulating synthetic tubes having bores formed therein, and vertical condensate lines in the form of electrically insulating synthetic tubes disposed in said metallic corrugated tubes, locked in said bores formed in said horizontal condensate collecting lines and leading from said horizontal vapor collecting lines to a position just above said bottom of said cooling cans, said vertical condensate lines having lateral bores formed therein in said evaporator cavities for conducting condensate precipitated in the recooler through said horizontal condensate collecting lines to said cooling cans.

4,574,878

PLATE FIN HEAT EXCHANGER FOR SUPERHIGH PRESSURE SERVICE

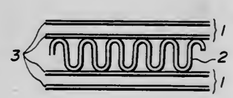
Yoshihiko Sugiyama; Teruo Uno; Hiroshi Irie, all of Nagoya; Teruo Kurachi, and Tetsuo Abiko, both of Amagasaki, all of Japan, assignors to Sumitomo Light Metal Industries, Ltd., Tokyo and Sumitomo Precision Products Co., Ltd., Amagasaki, both of, Japan

Filed Feb. 25, 1983, Ser. No. 469,549

Claims priority, application Japan, Mar. 10, 1982, 57-036506

Int. Cl.⁴ F28F *3/06, 21/08*

U.S. Cl. 165—134.1 **13 Claims**



1. In a brazed-plate-fin heat exchanger for use in a superhigh pressure service and comprising a corrugated fin disposed between two metal sheets and attached thereto by brazing, the improvement which comprises: said fins is made of an alloy consisting essentially of 0.3 to 1.0 wt.% Si, 0.05 to 0.25 wt.% Cu, 0.6 to 1.5 wt.% Mn, 0.45 to 0.9 wt.% Mg, up to 0.8 wt.% Fe, and balance being aluminum and impurities said alloy being free of calcium and tin.

4,574,879

MOUNTING PAD FOR SOLID-STATE DEVICES

David C. DeGree, Burnsville; Herbert J. Fick, and Bruce H. Juenger, both of Northfield, all of Minn., assignors to The Bergquist Company, Minneapolis, Minn.

Filed Feb. 29, 1984, Ser. No. 584,897

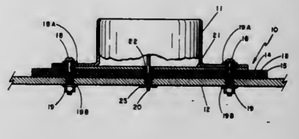
Int. Cl.⁴ F28F *3/00;* **B32B** *25/20, 33/00;* **H05K** *7/20*

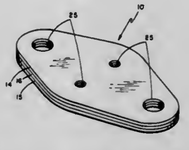
U.S. Cl. 165—185 **5 Claims**

1. A thermally conductive electrically insulative member for use as a chassis mounting barrier in combination with a solid-state electronic device, comprising:

(a) a laminate comprising at least three layers and including a pair of outer layers disposed on opposite sides of a center layer, with the center layer having properties distinguishable from those of the outer layers;

(b) said center layer comprising a film of polyimide (amide) filled with a quantity of a particulate solid selected from the group consisting of aluminum oxide and boron nitride and being included therein in an amount ranging from between about 10% and 50% by volume particulate solids, balance polyimide (amide) film;





(c) said outer layers consisting essentially of compounded silicone base rubber.

4,574,880

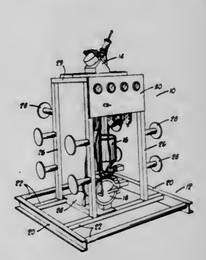
INJECTOR UNIT

Wayne A. Handke, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Jan. 23, 1984, Ser. No. 573,083

Int. Cl.⁴ E21B *34/02, 41/00*

U.S. Cl. 166—75.1 **8 Claims**



1. An injection unit for the metering and injection of tracer materials into fluids used in a hydraulic well fracturing operation of an earthen formation pentrated by a well bore, said fluid being pumped into said well bore and earthen formation by a pump means located on the surface of the earth, said injection unit comprising:

a base formed by side rails interconnected by crossmembers having an intermdiate member therebetween and a plurality of vertical members extending therefrom;

an enclosed hopper for containing said tracer materials therein associated with the base being mounted thereon;

a fluid reservoir for containing an amount of said fluid therein associated with the base being mounted thereon;

an injection pump for pumping a mixture of said tracer materials from the hopper and said fluid from the fluid reservoir to said pump means, the injection pump being mounted on the base;

a sight tube communicating with the enclosed hopper and the injection pump, the sight tube having an inlet and outlet;

a metering valve connnected to the hopper to control the flow of said tracer materials from the hopper;

a control valve to control the flow of the mixture of said tracer material from the hopper and said fluid from the fluid reservior from the injection pump, the control valve being connected to the outlet of the injection pump;

an eductor having the inlet thereof communicating with the

metering valve controlling the flow of said tracer materials from the hopper and the outlet thereof cimmunicating with the inlet of the sight tube; and

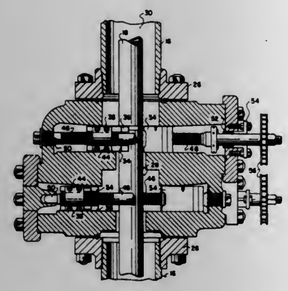
a suction manifold connected of the outlet of the sight tube, the outlet of the fluid reservoir and the inlet of the injection pump.

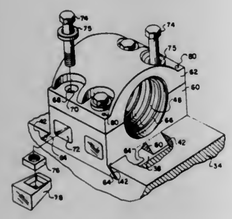
4,574,881

SPLIT NUT IN BLOWOUT PREVENTER

James W. Bednarz, 1025 W. Crosby, Slaton, Tex. 79364

Filed Feb. 12, 1985, Ser. No. 700,715
Int. Cl.[4] B32B *31/00*; G01M *1/00*
U.S. Cl. 166—75.1 **8 Claims**





1. An improved split nut for use in a blowout preventer on a well,

a. said well including

b. a well bore extending downward within the earth and having a bore bottom,

c. a well casing extending downward within the well bore,

d. a well head atop the casing above ground surface,

e. said blowout preventer being installed on the well head, and including

f. a preventer body having a preventer bore therethrough, fluidly connected to the well bore,

g. opposed carriages horizontally slidably mounted within said preventer body,

h. at least one pair of threaded actuating screws journaled within the preventer body adjacent the carriages and the preventer bore,

i. a slot in each carriage adjacent one of the actuating screws,

j. ears adjacent each of the slots, and

k. each of said split nuts having

l. a nut base,

m. a nut cap,

n. a threaded nut bore adapted to threadably receive the actuating screw therethrough,

o. nut flanges extending from each nut base, adapted to slidably engage the slot ears when the nut base is positioned in the slot,

p. the carriages having sealing surfaces such that when the carriages are moved together, by rotation of the actuation screws, they sealably block the preventer bore;

WHEREIN THE IMPROVED SPLIT NUT FURTHER COMPRISES:

q. cap holes in the nut cap on either side of the nut bore,

r. base holes in the nut base aligned with the cap holes,

s. recesses in the nut base associated with the base holes,

t. fastening nuts positioned within the recesses in alignment with the cap and base holes,

u. fastening bolts extending through the cap and base holes into the recesses, and

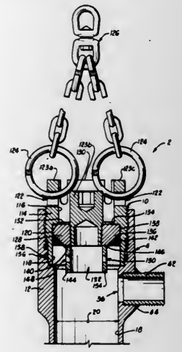
v. the fastening bolts threaded into the fastening nuts to fasten the cap and base together.

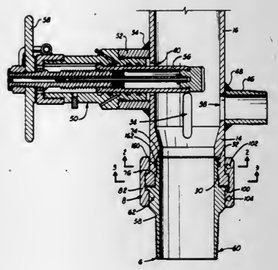
4,574,882

PLUG CONTAINER

David D. Szarka, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Oct. 29, 1984, Ser. No. 665,690
Int. Cl.[4] E21B *33/05*
U.S. Cl. 166—75.1 **11 Claims**





1. A plug container for holding a plug having an outer diameter, said plug container comprising:

housing means for receiving said plug, said housing means having first spline means associated with an end thereof and an open end opposite said first spline means;

casing adapter means for engaging with a casing, said casing adapter means having second spline means for coupling with said first spline means;

split ring container means for releasably connecting said first spline means with said second spline means; and

closure means for closing said open end, said closure means including:

a closed outer wall;

a central wall extending across said outer wall; and

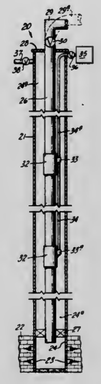
an interior wall extending from said central wall to an end surface of said interior wall, said end surface in abuttable association with said plug when said plug is received in said housing means, said interior wall having an opening defined therethrough so that the pressure within an interior region defined by said interior wall is equalized with the pressure adjacent the exterior of said interior wall.

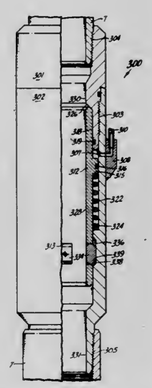
4,574,883

WELL TOOL STOPPING DEVICES, SYSTEMS AND METHODS

Albert W. Carroll, and Joseph L. Pearce, both of Dallas, Tex., assignors to Otis Engineering Corporation, Dallas, Tex.

Filed Nov. 24, 1982, Ser. No. 444,496
Int. Cl.[4] E21B *23/04, 23/08*
U.S. Cl. 166—255 **40 Claims**





1. A device for stopping well tools moving through a well flow conduit, comprising:

a. tubular housing means connectable in said well flow conduit in axial relation therewith and having an annular inclined cam shoulder therein and a lateral port in the wall thereof;

b. sleeve means in said housing movable longitudinally relative to said cam shoulder, said sleeve having a plurality of windows;

c. a plurality of tool stopping lugs carried in the windows of said sleeve means and movable radially between inner tool engaging and outer tool releasing positions;

d. resilient spring means having one end thereof supported by said housing means and the other end thereof engaged with and yieldably urging said sleeve means in a first direction to cause said lug means to move to one of said inner and outer positions;

e. pressure responsive means including a piston on said sleeve means and having a pressure responsive surface thereon for moving said sleeve in the opposite direction to cause said lug means to be moved to the other of said inner and outer tool engaging positions, said pressure responsive means being responsive to fluid pressure transmitted into said housing means from exterior thereof through said lateral port;

f. first resilient seal means sealing between said piston and said housing means below said lateral port;

g. second resilient seal means sealing between said sleeve means and said housing means above said lateral port, the difference between the areas sealed by said first and second seal means defining said pressure responsive surface of said piston; and

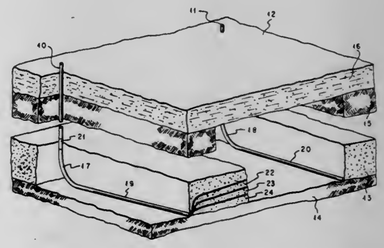
h. means on said sleeve means and said housing means coengageable to limit longitudinal movement of said sleeve means relative to said housing means.

4,574,884

DRAINHOLE AND DOWNHOLE HOT FLUID GENERATION OIL RECOVERY METHOD

Joseph H. Schmidt, Dallas, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Sep. 20, 1984, Ser. No. 652,556
Int. Cl.[4] E21B *43/24*
U.S. Cl. 166—263 **20 Claims**



1. A method for producing oil from an oil-bearing subsurface formation comprising:

(a) completing a first drainhole well wherein said first well has a horizontal interval extending into said formation from a vertical wellbore;

(b) completing a second drainhole well wherein said second well has a horizontal interval extending into said formation from a vertical wellbore, said first and second drainhole wells being spaced from each other with said horizontal intervals extending in the same direction and orientation and at substantially at the same depth whereby said horizontal intervals are parallel to each other in substantially the same horizontal plane;

(c) creating fluid pressure communication between said horizontal intervals of said first and second drainhole wells;

(d) producing oil from said formation during at least a part of step (a);

(e) injecting a combustion supporting gas, fuel and aqueous fluid into said first well;
(f) burning injected fuel downhole in said first well at a downhole point in a manner such that aqueous fluid injected into said first well is converted to hot aqueous fluid;
(g) passing the products of combustion and said hot aqueous fluid downward from the said downhole point directly into said horizontal interval to establish a horizontal line drive through the formation from said first well toward said second well; and
(h) producing oil from said second well.

4,574,885

AGENTS FOR PETROLEUM RECOVERY PROCESSES

Robert L. Horton, Chagrin Falls, Ohio, assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 27, 1984, Ser. No. 625,337
Int. Cl.[4] E21B *43/22*
U.S. Cl. 166—270 **16 Claims**

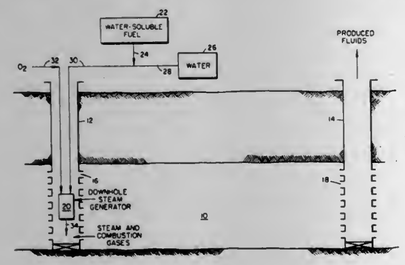
1. A method for reducing the adsorption of surfactants and organic polymers in formations treated with polyfunctional cationic polymers comprising treating said formation with water and low molecular weight polyfunctional anionic polymers in an amount sufficient to reduce the adsorption of said surfactant and said organic polymer.

4,574,886

STEAM DRIVE OIL RECOVERY METHOD UTILIZING A DOWNHOLE STEAM GENERATOR AND ANTI CLAY-SWELLING AGENT

Daniel N. Hopkins, Dallas, and Earl S. Snavely, Arlington, both of Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 573,094, Jan. 23, 1984, Pat. No. 4,522,263.
This application Oct. 22, 1984, Ser. No. 663,260
Int. Cl.[4] E21B *43/24*
U.S. Cl. 166—272 **25 Claims**



1. In a method of recovering viscous oil from a subterranean, permeable, viscous oil-containing formation, said formation being penetrated by at least one injection well and at least one spaced-apart production well, said wells in fluid communication with a substantial portion of the formation, comprising:
(a) injecting a stable hydrocarbon fuel-in-water emulsion containing an anti clay-swelling agent under pressure into a downhole steam generator in said injection well;
(b) injecting substantially pure oxygen into said steam generator under pressure via said injection well which contacts the pressurized hydrocarbon fuel-in-water emulsion containing an anti clay-swelling agent in the steam generator thereby effecting spontaneous combustion of said hydrocarbon fuel to generate a mixture of steam and combustion gases that pass through the formation, displacing oil and reducing the oil's viscosity; and
(c) recovering fluids including oil from the formation via the production well.

13. In a method for recovering viscous oil from a subterranean, permeable, viscous oil-containing formation, said formation being penetrated by at least one well, said well in fluid communication with a substantial portion of the formation, comprising:
(a) injecting a stable hydrocarbon fuel-in-water emulsion containing an anti clay-swelling agent under pressure into a downhole steam generator in said injection well;
(b) injecting substantially pure oxygen into said steam generator under pressure via said injection well which contacts the pressurized hydrocarbon fuel-in-water emulsion containing an anti clay-swelling agent in the steam generator thereby effecting spontaneous combustion of said hydrocarbon fuel to generate a mixture of steam and combustion gases that pass through the formation, displacing oil and reducing the oil's viscosity; and
(c) continuing injecting said pressurized mixture of hydrocarbon fuel-in-water emulsion and substantially pure oxygen for a predetermined period of time; and
(d) thereafter, discontinuing fluid injection of step (d) and opening said well to production so that fluids including oil are recovered from the formation.

4,574,887

METHOD FOR PREPARATION OF VISCOUS AQUEOUS LIQUIDS FOR WELLBORE INJECTION

Milton K. Abdo, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 18,692, Mar. 8, 1979, abandoned, which is a continuation of Ser. No. 608,869, Aug. 29, 1975, abandoned, which is a continuation-in-part of Ser. No. 495,385, May 17, 1983, abandoned. This application Sep. 19, 1984, Ser. No. 651,962
Int. Cl.[4] E21B *43/22*
U.S. Cl. 166—275 **30 Claims**

8. In a method of preparing a viscous aqueous liquid for introduction into a well penetrating the earth, the method comprising:
(a) incorporating a water-dispersible polysaccharide produced by addition of bacteria of the genus Xanthomonas on a carbohydrate into an aqueous liquid having a salinity within the range of 0–0.03 weight percent,
(b) incorporating trivalent metal ions selected from the group consisting of aluminum, chromium, and iron ions into said aqueous liquid in a concentration sufficient to effect complexing of said polysaccharide,
(c) subsequent to steps (a) and (b), adding an aqueous saline makeup solution to said aqueous liquid containing said polysaccharide and said trivalent metal ions to increase the salinity thereof to a value of at least 0.5 weight percent, and
(d) thereafter introducing said aqueous liquid into said well.

29. In the production of oil from a subterranean reservoir by the waterflooding technique in which an aqueous liquid comprising a polysaccharide produced by the action of bacteria of the genus Xanthomonas on a carbohydrate is introduced into a well penetrating the earth, the improvement which comprises:
using an aqueous polysaccharide solution made by prehydrating the polysaccharide in fresh water and then mixing this prehydrated solution with hard water, whereby the prehydration step yields a polysaccharide solution in hard water of higher viscosity than by hydrating directly in hard water.

4,574,888

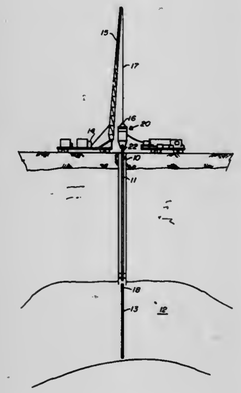
METHOD AND APPARATUS FOR REMOVING STUCK PORTIONS OF A DRILL STRING

Wayne V. Vogen, Oakland, Calif., assignor to URS Corporation, San Mateo, Calif.

Continuation-in-part of Ser. No. 505,254, Jun. 17, 1983, abandoned. This application Aug. 2, 1984, Ser. No. 637,385
Int. Cl.[4] E21B *31/107*
U.S. Cl. 166—301 **15 Claims**

1. A method for recovering a stuck element from deep in a well, comprising,

attaching the lower end of an elastic steel column to the upper end of the stuck element, the upper end of said column extending to the top of the well and thereabove,
attaching said upper end of said column to a reaction mass vertically thereabove through vertically mounted compression spring means and, in parallel therewith, a vertically mounted servo-controlled hydraulic cylinder-piston assembly,
sensing means for sensing the displacement of said upper end of said column relative to the earth in which the wall is located and developing therefrom a displacement signal,
applying a substantially constant upward load to said reaction mass, so that as said stuck element is gradually freed



the force applying said load is increased to keep said load constant,
reciprocating the piston of said hydraulic cylinder under servo control to apply vertical vibration to the upper end of said column, while developing an electrical, pressure-differential signal corresponding to the pressure across said cylinder-piston assembly,
adjusting said vertical vibration through said servo control in accordance with said displacement signal and said pressure differential signal, to seek and find an appropriate resonant frequency for said column in the range of ½ Hz to 25 Hz, and
maintaining said frequency at resonance.

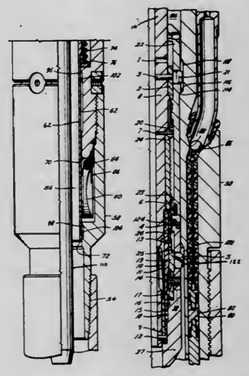
4,574,889

METHOD AND APPARATUS FOR LOCKING A SUBSURFACE SAFETY VALVE IN THE OPEN POSITION

Ronald E. Pringle, Houston, Tex., assignor to Camco, Incorporated, Houston, Tex.

Filed Mar. 11, 1985, Ser. No. 710,642
Int. Cl.[4] E21B *34/10, 23/00*
U.S. Cl. 166—386 **10 Claims**

1. A method of locking out a subsurface well safety valve in the open position in which the valve includes a housing having a bore and at least one downwardly directed shoulder adjacent the bore and a valve closure member in the bore moving between open and closed positions, a flow tube telescopically movable in the housing for controlling the movement of the valve closure member, and means for operating the flow tube comprising,
moving the flow tube toward its open position,
from the inside of the bore making an outward indentation in the flow tube whereby the indentation will engage a downwardly directed shoulder on the housing thereby



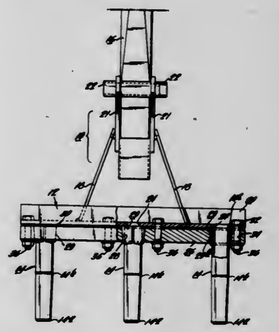
preventing the flow tube from moving to the closed position.

4,574,890

TINE HOLDER FOR TURF AERATING APPARATUS

Loren F. Hansen, and Mark E. Lamb, both of Lincoln, Nebr., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Jan. 14, 1985, Ser. No. 691,217
Int. Cl.[4] A01B *45/02; B60B 27/06*
U.S. Cl. 172—22 **12 Claims**



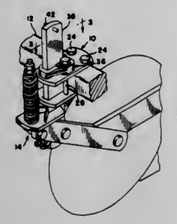
1. A mounting arrangement for securing the cylindrical upper end of a hollow turf aerating tine to a tine supporting member, said mounting arrangement comprising an aperture in said tine supporting member, a tine holding bar disposed in spaced relation to said tine supporting member, a tapered aperture in said tine holding bar aligned with said tine supporting member aperture, a split collet having a tapered outer surface disposed in said tine holding bar tapered aperture, the upper end of said tine being disposed in said split collet, the larger end of said collet and the upper end of said tine extending beyond said tine holding bar into engagement with said tine supporting member, and demountable attachment means for biasing said tine holding bar toward said tine supporting member to compress said collet and thereby clamp the tine against said tine supporting member in alignment with the aperture therein.

4,574,891

AGRICULTURAL TOOL CLAMP

Gerald E. Williamson, Macomb, Ill., assignor to Yetter Manufacturing Company, Colchester, Ill.

Filed Dec. 14, 1984, Ser. No. 682,281
Int. Cl.[4] A01B *35/20, 39/22*
U.S. Cl. 172—763 **4 Claims**



1. A clamp arrangement for mounting an agricultural tool to a tool bar adaptable to be carried by a motive power source, said clamp arrangement comprising:

an upper clamp plate with a plurality of mounting holes defined therein and a slot defined therein to receive a vertical support bar, said upper clamp plate adapted to overlie said tool bar;

a lower clamp plate substantially identical to said upper clamp plate adapted to be positioned underneath said tool bar;

a first set of fastening means extending through said corresponding mounting holes in said upper and lower clamp plates clamping said upper and lower clamp plates to said tool bar;

a vertical support bar, having an upper end and a lower end, extendable through said slots in said upper and lower clamp plates and dimensioned so as to define a clearance between the support bar and the slot in each of said clamp plates, said support bar having an agricultural tool dependent from its lower end;

a clamp member disposed adjacent to one of said clamp plates, having defined therein a slot adapted to receive said vertical support bar and a plurality of mounting holes corresponding to at least two of the mounting holes in said clamp plates;

a second set of fastening means extending through said clamp member and said upper and lower plates and providing limited vertical travel to said clamp member; and

a horizontally disposed set screw adapted to enter said slot of said clamp member to clamp the vertical support bar to the clamp member at a predetermined variable vertical position.

4,574,892

TUBING CONVEYED PERFORATING GUN ELECTRICAL DETONATOR

Larry L. Grigar, East Bernard, and Carl B. Miller, Houston, both of Tex., assignors to Halliburton Company, Duncan, Okla.

Filed Oct. 24, 1984, Ser. No. 664,126
Int. Cl.[4] E21B *23/00, 43/119*
U.S. Cl. 175—4.51 **13 Claims**

1. For use with a tubing conveyed perforating gun assembly which is positioned in a well at a specified depth and which includes shaped charges to be detonated, a detonator assembly run on a wireline in the tubing which comprises:

(a) an elongated body adapted to be passed into the tubing string supporting the tubing conveyed perforating gun assembly;

(b) positive lock means on said elongated body, said lock means being;

(1) inoperative during lowering in the tubing string;

(2) operative to a latching position relative to the tubing string on landing at a requisite depth in the tubing string;

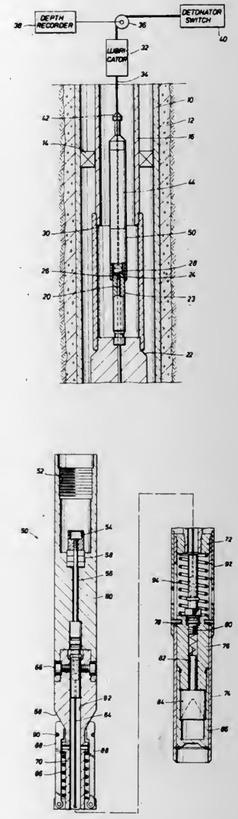
(3) said positive lock means being operated by relative weight exceeding a specified level acting thereon;

(4) wherein said lock means holds said elongated body at a specified elevation indefinitely until released;

(c) a detonator carried on said body for selective detonation to provide an operative detonation delivered to the perforated gun assembly on the tubing string; and

(d) detonation signal transfer means for delivery of a detonation signal under control of the operator at the surface of the well.

10. A method of detonating shaped charges in a well comprising the steps of:



(a) suspending a tubing conveyed perforating gun assembly in a well at a depth for perforation;

(b) lowering a wireline into the tubing to position a detonator in a wireline supported detonator assembly;

(c) landing the detonator on a registration surface in the tubing;

(d) pulling up on the wireline to temporarily lock said detonator above the registration surface and below tubing supported cooperative shoulder means wherein said detonator holds against the upward pull to assure proper positioning relative to said registration surface;

(e) transmitting a firing signal along the wireline to said detonator to initiate detonation at a location assured by registration on said registration surface; and

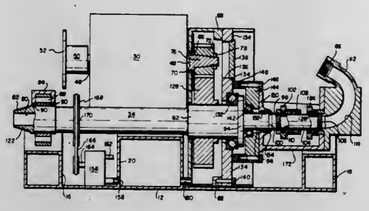
(f) firing the shaped charges by detonation of said detonator.

4,574,893

COMPACT POWER SWIVEL

Horace J. Young, 1100 Eighth Ave. SW., Suite 2603, Calgary, Alberta, Canada (T2P 3T9), and Robert F. Becker, 320 Silver Valley Rise NW., Calgary, Alberta, Canada (T3B 4B1)

Filed Aug. 27, 1984, Ser. No. 644,263
Int. Cl.[4] E21B *3/02*
U.S. Cl. 175—170 **24 Claims**



1. A compact displaceable power swivel for well drilling rigs and the like, comprising:

(a) a frame;

(b) mounting bracket means secured to said frame;

(c) quill means rotatable on an axis mounted to said bracket means;

(d) bull gear means coaxially disposed on said quill means for rotating said quill means;

(e) motor means mounted to said bracket means and including a shaft rotatable on an axis parallel to said quill means axis;

(f) spur gear means coaxially disposed on said shaft and rotatable therewith engaging said bull gear means for rotating said bull gear means and said quill means thereby;

(g) disc brake means mounted to said bracket means and cooperating with said shaft for controlling rotation of said shaft and said quill means thereby; and

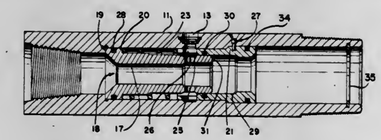
(h) thrust bearing means coaxially disposed on said quill means and associated with said bracket means for permitting free rotation of said quill means and for distributing to said bracket means forces associated with displacement of said swivel.

4,574,894

BALL ACTUABLE CIRCULATING DUMP VALVE

Reese Jadwin, Westminster, Calif., assignor to Smith International, Inc., Newport Beach, Calif.

Filed Jul. 12, 1985, Ser. No. 754,474
Int. Cl.[4] E21B *41/00*
U.S. Cl. 175—317 **10 Claims**



1. Drilling apparatus comprising:

a drill pipe housing having a port therein;

means providing a first abutment at a first point within said housing;

retaining sleeve means slidably mounted within said housing and having a first opening therein;

means for holding said retaining sleeve means in a first position wherein said first opening communicates with said port and responsive to a force of selected magnitude to release said retaining sleeve means;

means providing an abutting surface on said retaining sleeve means;

piston means mounted within said housing adjacent said abutment and having a second opening therein for communicating with said port, said piston means being slidable to a first position in response to fluid flow wherein said second opening no longer communicates with said port and to a second position wherein said piston means applies force to said abutting surface; and

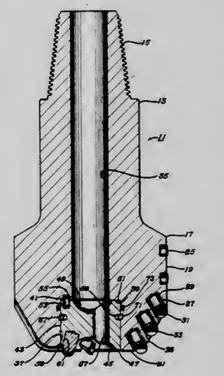
means for biasing said piston means in a position wherein said opening communicates with said port and yieldable to a force less than or equal to said selected force to enable said piston means to exert said selected force upon said retaining sleeve means.

4,574,895

SOLID HEAD BIT WITH TUNGSTEN CARBIDE CENTRAL CORE

George E. Dolezal, Friendswood, and Joseph L. Kelly, Jr., Houston, both of Tex., assignors to Hughes Tool Company - USA, Houston, Tex.

Continuation of Ser. No. 351,058, Feb. 22, 1982, abandoned. This application Dec. 29, 1983, Ser. No. 566,962
Int. Cl.[4] E21B *10/46, 10/62*
U.S. Cl. 175—329 **4 Claims**



1. An earth boring bit, comprising in combination:

a steel body having a face on its lower end that includes a circular central portion and a frusto-conical portion surrounding and extending upwardly from the central portion to a cylindrical sidewall portion at the periphery of the bit;

a drilling fluid passage extending axially through the bit and terminating in an outlet at the face;

a plurality of cutting elements secured within holes formed in the central portion and frusto-conical portion;

a core having a tungsten carbide composition and rigidly secured to the body in the outlet of the passage, the core being cylindrical and having a diameter less than one-half the diameter of the sidewall portion of the bit, the core having a nozzle passage offset from the axis of the bit and in communication with the drilling fluid passage;

resilient seal means located between the core and the outlet of the passage in the body for preventing leakage of drilling fluid around the core;

retaining means for axially retaining the core in the outlet of the passage in the body;

locking pin means located between the core and the body for

preventing rotation of the core with respect to the body and for orienting the core; and

at least one cutting element secured in the face of the core adjacent the nozzle passage, the composition of the core reducing drilling fluid erosion of the core in the vicinity of the cutting element that is located on the core.

4,574,896

MEASURING DEVICE FOR THE CONTINUOUS WEIGHT DETERMINATION OF MATERIAL STREAMS

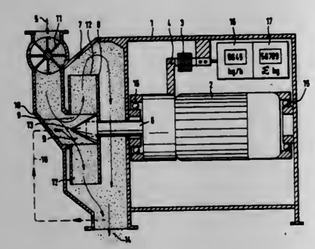
Claus Friedrich, Holzmühle, D-6304 Lollar, Fed. Rep. of Germany

Filed Dec. 20, 1984, Ser. No. 684,067

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1983, 3346145

Int. Cl.[4] G01G *11/14, 19/52*

U.S. Cl. 177—16 **12 Claims**



1. Measuring device for the continuous weight determination of material streams, particularly of loose materials such as granular foods or their grinding products, comprising an impeller wheel (8), a motor (2) driving said impeller wheel at a constant rotational velocity, and a charging device (10,11) supplying the material stream to said impeller wheel in the central range of said wheel, said wheel having guide vanes (12), and the resulting driving torque variations serving as a measure for the determination of the throughput volume,

wherein the guide vanes (12) of the impeller wheel (8) which extend from the outer perimeter towards the center, terminate short of the central supply range.

4,574,897

COMBINATORIAL WEIGHING APPARATUS

Kazukiyo Minamida, Shiga, and Yugo Fujitani, Ohtsu, both of Japan, assignors to Kabushiki Kaisha Ishida Koki Seisakusho, Kyoto, Japan

Continuation of Ser. No. 414,678, Sep. 3, 1982. This application Jun. 28, 1984, Ser. No. 625,853

Claims priority, application Japan, Sep. 4, 1981, 56-139980

The portion of the term of this patent subsequent to Aug. 28, 2001, has been disclaimed.

Int. Cl.[4] G01G *13/16, 19/22*

U.S. Cl. 177—25 **4 Claims**

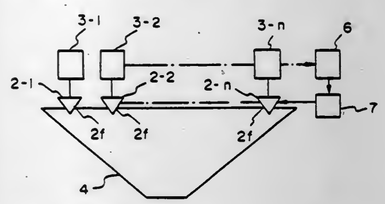
1. A combinatorial weighing system comprising:

means for supplying articles in a plurality of paths to provide a corresponding plurality of measured, individual batches of articles in the respective said plurality of paths, said supplying means including means for measuring the weight of each of said plurality of individual batches and producing a numerical value signal representative of the measured weight thereof and for retaining said plurality of measured article batches in the respective said paths;

means for storing the numerical value signals of said measured batches retained in each said path and identifying each said retained batch with the corresponding, stored numerical value signal;

means for selecting from said stored numerical value signals a specific combination of plural stored numerical values which provide a sum numerical value satisfying a predetermined condition;

means for selectively discharging the plural, retained article batches respectively identified by said selected, specific



combination of plural stored numerical values in time-sequenced intervals from the respective retaining means; and

means for collecting said selectively and sequentially discharged, plural article batches.

4,574,898

SCALE HAVING AN OVERLOAD PROTECTION MEANS FOR ATTACHING A PLATFORM TO A LOAD TRANSDUCER AND FOR PROTECTING AGAINST EXCESSIVE TORSION LOADS

Gerald C. Freeman, Darien, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Jun. 7, 1984, Ser. No. 618,276

Int. Cl.[4] G01G *23/02, 21/10*

U.S. Cl. 177—154 **21 Claims**

1. A scale comprising:

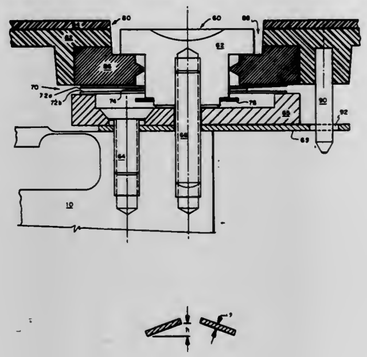
(a) a base;

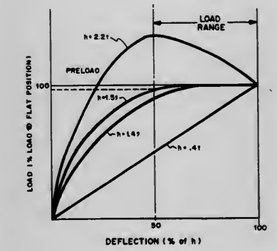
(b) load transducer means fixed to said base for generating a signal proportional to an applied load, said transducer means having a single point for the application of such load;

(c) a platform for receiving an object to be weighed;

(d) downstop means fixed relative to said base and extending around the periphery of said platform, the upper portion of said downstop means being spaced from the underside of said platform;

(e) overload protectin means for connecting said platform to said single point, for transferring axial loads to said transducer means through said single point, and for allowing said platform to pivot with respect to said transducer means about an axis in the plane of said platform in response to torsion loads greater than a predetermined torsion load, so that said torsion loads are transferred to said downstop means and said transducer means is protected from said torsion loads, said overload protection means being substantially rigid in response to axial loads and torsion loads less than said predetermined torision load, and sufficiently elastic in response to torsion loads greater than said predetermined load to prevent substantial torsion load build-up before said torision load is transferred to said downstop means and so that adjustment of said





spacing between said upper portion of said downstop means and said platform is not critical.

4,574,899

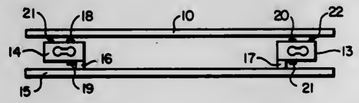
COMPENSATED MULTI-LOAD CELL SCALE

Neil C. Griffin, Columbus, Ohio, assignor to Reliance Electric Company, Cleveland, Ohio

Continuation of Ser. No. 408,830, Aug. 17, 1982, abandoned. This application Oct. 10, 1984, Ser. No. 659,851

Int. Cl.[4] G01G *9/00, 3/14*

U.S. Cl. 177—211 **22 Claims**



1. Weighing apparatus comprising a load receiving platform, N load cells supporting said platform, where N is at least four, each of said load cells having only two strain gages mounted thereon, said strain gages being connected in at least one electrical bridge circuit to provide a signal indicative of the magnitude of a load on the platform and compensating resistors connected in circuit with at least one strain gage of at least N−1 of the load cells to make the output of the bridge circuit substantially independent of the location of a load on the platform.

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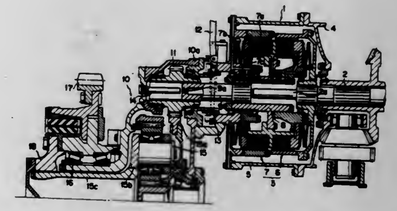
DRIVE MECHANISM FOR TRACK-TYPE VEHICLE

Hidekatsu Aoki, and Masami Hashimoto, both of Hirakata, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Feb. 1, 1984, Ser. No. 575,972

Int. Cl.[4] B62D *55/12*

U.S. Cl. 180—6.2 **3 Claims**



1. A drive mechanism for a track-type vehicle having a bevel gear case which forms a mounting support, a steering clutch and brake unit including a steering clutch and brack assembly, and a final drive unit including a final drive assembly, said drive mechanism comprising:

a first housing which houses said steering clutch and brake assembly and defines a first annular flange;

a second housing which houses said final drive assembly and defines a second annular flange engaging with said first annular flange;

a freely connectable and disconnectable connecting shaft mounted between said steering clutch and brake assembly and said final drive assembly for operatively connecting said assemblies;

a connecting and disconnecting means for said connecting shaft; and

an annular sealing sleeve for connecting said first annular flange and said second annular flange movably disposed between said flanges.

4,574,901

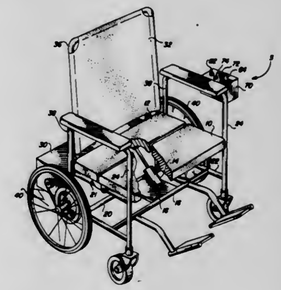
WHEELCHAIR SEAT

Albert W. Joyner, 3390 Fox Lake Rd., Titusville, Fla. 32780

Filed Mar. 25, 1985, Ser. No. 715,886

Int. Cl.[4] B60K *1/00*

U.S. Cl. 180—65.1 **14 Claims**



1. A seat for invalid chair comprising:

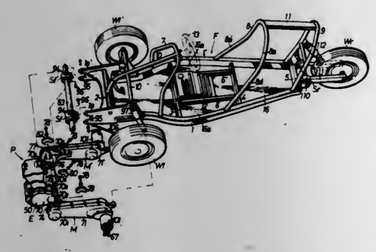
a framework;

a forward section of said seat attached to said framework for supporting the thighs of an occupant of said chair;

a rearward section of said seat for supporting the buttocks area of the occupant thereof;

actuating means attached to said rearward seat section for selectively moving said rearward seat portion from an up position in which the occupant is supported by said forward seat section and said rearward seat section to a down position in which said occupant is not supported by said rearward seat section, thereby permitting air flow to the buttocks area of the occupant and unrestricted blood flow through such buttocks area.

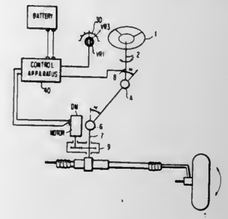
4,574,902
VEHICLES
Shoichiro Irimajiri, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 28, 1983, Ser. No. 566,148
Claims priority, application Japan, Dec. 29, 1982, 57-230294; Apr. 20, 1983, 58-69419
Int. Cl.⁴ B60K *17/30*
U.S. Cl. 180—72 **15 Claims**



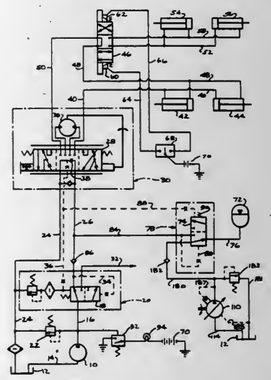
1. A vehicle in which a pair of driving wheels are disposed on the left and right sides of a vehicle body frame, said vehicle comprising a power unit composed of an engine, laterally extending drive means in driving connection to said engine, and a pair of transmission devices on each side of said vehicle extending longitudinally and in driving connection to said drive means with the driving wheels connected to the extending ends of each transmission device to individually transmit power from said engine to said driving wheels, a casing for the entire said power unit being formed into a rigid body, said casing supporting both the driving wheels and both said tansmission devices laterally outside the said body frame, and said casing being supported on said body frame to resiliently pivot about a lateral axis to allow resilient vertical movement of the driving wheels and said transmission devices.

4,574,903
MOTOR DRIVEN POWER STEERING SYSTEM
Akio Hashimoto, Kawasaki, and Tomio Yasuda, Kasukabe, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kawasaki City, Japan
Filed Nov. 30, 1983, Ser. No. 556,669
Claims priority, application Japan, Nov. 30, 1982, 57-209697
Int. Cl.⁴ B62D *5/04*
U.S. Cl. 180—79.1 **7 Claims**

1. A motor driven power steering system comprising:
a steering shaft;
an electric motor;
coupling means for coupling said steering shaft to said electric motor;
torque detecting means for detecting the steering torque applied to said steering shaft by a driver and producing a steering torque signal for responding to the steering torque applied by the driver;
control means connected to said torque detecting means for controlling the energization of said motor according to said steering torque signal from said torque detecting means; and
servo ratio setting means separate from said steering shaft and torque detecting means operable by said driver and connected to said control means for establishing the degree of power assistance provided by the energization of said motor.

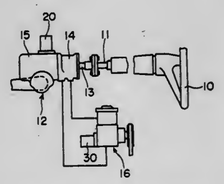


4,574,904
AUXILLIARY STEERING SYSTEM
Frederick R. Goode, Lexington, Ky., assignor to FMC Corporation, Chicago, Ill.
Continuation-in-part of Ser. No. 469,342, Feb. 24, 1983, abandoned. This application Feb. 3, 1984, Ser. No. 576,830
Int. Cl.⁴ B62D *5/06*
U.S. Cl. 180—133 **3 Claims**



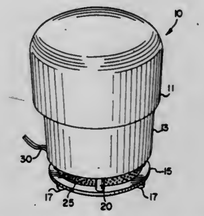
1. An auxiliary steering system for a mobile vehicle having at least one axle with steerable ground-engaging wheels; comprising:
a first engine-driven pump for supplying hydraulic fluid under pressure;
a first steering cylinder connected to said wheels to determine angular orientation thereof;
an operator-manipulated steering control unit interposed between said first pump and steering cylinder to control the flow of hydraulic fluid from said first pump to the steering cylinder;
an accumulator for storing energy needed for auxiliary steering;
a second engine-driven pump connected to supply hydraulic fluid to said accumulator;
a charge/discharge valve interposed between said second pump and said accumulator;
a charge conduit connected to said charge/discharge valve and the output of said first pump;
a first check valve in the output of said first pump upstream of the connection with said charge conduit; and
a second check valve interposed between said second pump and said charge/discharge valve.

4,574,905
STEERING FORCE CONTROLLING APPARATUS FOR POWER STEERING SYSTEM
Hiroaki Asano, Chiryu; Keiichi Nakamura, Kariya, and Yutaka Mori, Toyokawa, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan
Filed Nov. 15, 1983, Ser. No. 552,067
Claims priority, application Japan, Nov. 16, 1982, 57-200743
Int. Cl.⁴ B62D *5/08*
U.S. Cl. 180—142 **6 Claims**



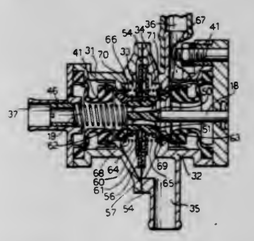
1. A steering force controlling apparatus for a power steering system having a power cylinder for controlling the direction of a vehicle wheel, a pump for supplying pressurized fluid and a servo valve operable by a steering torque manually applied to a steering wheel for controlling delivery of pressurized fluid from said pump to said power cylinder, said steering force controlling apparatus comprising:
a first solenoid-operated throttle valve for controlling the supply flow of said pressurized fluid from said pump to said servo valve in proportion to the magnitude of a first control current applied thereto;
a second solenoid-operated throttle valve for controlling the bypass flow of said pressurized fluid between opposite chamber of said power cylinder in proportion to the magnitude of a second control current applied thereto;
first and second detectors for respectively outputting first and second detection signals;
memory means for storing plural pairs of first and second characteristic maps, each of said first characteristic maps defining various first parameters respectively relating to various values of said first detection signal, and each of said second characteristic maps defining various second parameters respectively relating to various values of said second detection signal;
selector means operable for generating a selection signal to designate one pair of said plural pairs of said first and second characteristic maps;
control means responsive to said selection signal and said first and second detection signals for reading out from said memory means one of said various first parameters and one of said various second parameters which are defined in one pair of said first and second characteristic maps designated by said selection signal, based upon said first and second detection signals; and
drive means connected to said control means and said first and second solenoid-operated throttle valves for applying said first and second control currents of the magnitudes respectively corresponding to said readout one of said various first parameters and said readout one of said various second parameters, respectively to said first and second solenoid-operated throttle valves.

4,574,906
OUTDOOR SPEAKER
Jeffrey N. White, Stow, and Kenneth R. Reichel, Hudson, both of Ohio, assignors to Audio Technica U.S., Inc., Stow, Ohio
Filed Nov. 15, 1984, Ser. No. 671,590
Int. Cl.⁴ H05K *5/00*
U.S. Cl. 181—145 **7 Claims**



1. A speaker assembly for use outdoors, including a housing, at least two speaker cones, and a base,
said housing being impervious to moisture and generally resistant to the effects of weather,
said housing being secured in spaced relationship to a base, said base and said housing thereby defining a circumferential aperture for the passage of sound,
said speaker cones including a woofer speaker and a tweeter;
said woofer speaker mounted in the lower end of said housing thereby forming an internal chamber below said woofer speaker and between said housing and said base, said woofer speaker being positioned for the downward projection of sound;
said tweeter secured to said base coaxial and in close juxtaposition with said woofer speaker and positioned for the downward projection of sound through said internal chamber and out said circumferential apperture;
whereby sound from said woofer speaker and said tweeter emanates from said speaker assembly in an omnidirectional manner and free from distortion.

4,574,907
POWER-ASSISTED RACK-AND-PINION STEERING APPARATUS
Ettore Cordiano, Turin, Italy, assignor to Corint S.r.l., Turin, Italy
Filed Mar. 9, 1984, Ser. No. 587,773
Claims priority, application Italy, Mar. 9, 1983, 67269 A/83; Dec. 23, 1983, 68352 A/83
Int. Cl.⁴ B62D *5/06*
U.S. Cl. 180—148 **11 Claims**



1. A power-assisted rack-and-pinion steering apparatus, comprising
a casing,
a rack-engaging helical tooth pinion,
a shaft connected to said pinion,

a bearing rotatably supporting said shaft within a cylindrical cavity of the casing, said bearing being slidably mounted within said cylindrical cavity to allow axial displacements of the pinion,

a control valve having a movable member which is slidably mounted within an auxiliary cavity of the casing,

transmission means for transforming an axial displacement of the pinion into a displacement of said movable member of the control valve, said means including

a piston operatively connected to said bearing with respect to axial displacements of the latter,

a chamber of variable volume defined within said cylindrical cavity and facing said piston, said chamber being filled with a deformable and substantially incompressible material,

a push-rod operatively connected to said movable member of the control valve, having one end surface arranged so as to sense the pressure within said chamber of variable volume,

first spring means urging said bearing and said piston towards the chamber of variable volume,

second spring means urging said movable member and said push-rod towards the chamber of variable volume, and

auxiliary pre-stressed spring means for returning the movable member of said control valve to a central neutral position, against the friction forces existing in the whole apparatus, when the torque applied onto said pinion returns to zero, and for preventing said movable member from being displaced from said central neutral position when the torque applied to the pinion is below a predetermined value,

wherein said control valve is associated to a closed center air circuit, and wherein the movable member includes a central core and outer rim which is axially movable relative to said core and wherein the apparatus further includes a resiliently deformable diaphragm connecting said outer rim to the wall of the valve cavity and pre-stressed spring means for holding said outer rim in a fixed position relative to the central core when the difference of pressure acting onto the diaphragm faces is below a predetermined value, wherein the outer rim of the movable member is formed by the diaphragm itself by extending said diaphragm from the wall of the valve cavity up to the core and by stiffening by proper means a portion of the diaphragm in a position intermediate between the central core and the wall of the valve cavity.

4,574,908

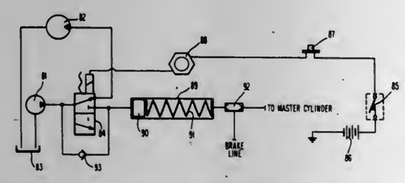
AUTOMATIC BRAKING SYSTEM FOR BACKING VEHICLES

Francis M. Brick, 3242 Lenape Dr., Dresher, Pa. 19025

Continuation-in-part of Ser. No. 444,693, Nov. 26, 1982, abandoned. This application Apr. 7, 1983, Ser. No. 482,983

Int. Cl.⁴ B60T *7/12*

U.S. Cl. 180—169 **6 Claims**



1. An automatic braking system for a backing vehicle, the vehicle having a hydraulically-operated braking apparatus and a hydraulically-operated power steering mechanism including a power steering pump and power steering fluid reservoir, comprising:

(a) ultrasonic sensing means for sensing the presence of an obstruction behind the vehicle,

(b) electrically-operated valve means connected to the sensing means, the valve means being spring-biased to assume a first position, while no signal is being received from the sensing means, the valve means in its first position providing a substantially unobstructed path for flow of power steering fluid from the reservoir, through the power steering mechanism and back to the reservoir, the valve means being capable of assuming a second position when a signal is received from the sensing means, the valve means in its second position being connected to divert the power steering fluid from the reservoir into the first end of a cylinder,

(c) the cylinder having a piston and a spring disposed within the cylinder, the second end of the cylinder being connected to the braking apparatus of the vehicle, the piston comprising means for dividing the interior of the cylinder into first and second regions, for containing the power steering fluid and the braking fluid respectively, wherein the fluids are kept separated from each other, wherein the spring causes the piston to move towards the first end of the cylinder when the valve means is in its first position, and wherein the piston is moved towards the second end of the cylinder when the valve means is in its second position for actuating the braking apparatus of the vehicle.

4,574,909

SUSPENSION SYSTEM FOR THE REAR WHEEL OF A MOTORCYCLE

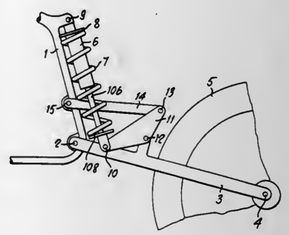
Valentino Ribi, Edificio Cenit, Panama, assignor to Diafil International S.A., Edificio Ford, Panama

Filed Aug. 23, 1983, Ser. No. 525,536

Claims priority, application Switzerland, Aug. 27, 1982, 5095/82

Int. Cl.⁴ B62K *25/12*

U.S. Cl. 180—227 **3 Claims**



1. An elastic rear wheel suspension for a motorcycle comprising

(a) a motorcycle frame (1);

(b) a fork (3) pivotally connected to said frame at a pivot point (2) for upward and downward movement relative thereto and rotatably supporting a rear wheel (4);

(c) a shock absorber having an upper end (6) and a lower end (106) and disposed between said frame and said fork for damping relative movement between said frame and said fork, the upper end of said shock absorber being pivotally connected to said frame at a pivot point (9) located at a higher level than the pivot point (2) of said fork to said frame;

(d) a two-armed shock absorber-supporting bell crank (11) pivotally mounted on said fork and having a forward end directed toward said frame and a rear end directed toward said rear wheel, the lower end of said shock absorber being pivotally connected to said fore end of said shock absorber-supporting bell crank; and

(e) a guide arm (14) having a forward end directed toward said frame and a rear end directed toward said rear wheel,

said rear end of said guide arm being pivotally connected to said rear end of said shock absorber-supporting bell crank, while the forward end of said guide arm is pivotally connected to said frame at a pivot point which is included between said pivot point of said fork to said frame and said pivot point of said upper end of said shock absorber to said frame.

4,574,910

TRANSMISSION FOR AGRICULTURAL TRACTORS

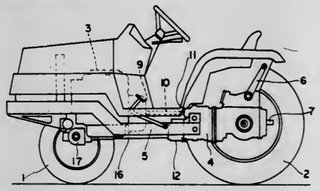
Hiroyuki Miki, Sakai; Mikio Kinoshita, Izumisano, and Tetsu Fukui, Sakai, all of Japan, assignors to Kubota, Ltd., Osaka, Japan

Filed Dec. 12, 1984, Ser. No. 680,868

Claims priority, application Japan, Dec. 16, 1983, 58-194794[U]

Int. Cl.⁴ B60K *17/34*

U.S. Cl. 180—249 **2 Claims**



1. A transmission for agricultural tractors comprising a main transmission part, and a speed increasing transmission part directly connected to said main transmission part and adapted to drive a right and left pair of dirigible front wheels at a greater average circumferential speed than a right and left pair of rear wheels, said main transmission part including an output shaft for driving the front wheels, and said speed increasing transmission part including an input shaft and an output shaft, wherein said speed increasing transmission part is disposed forwardly of said main transmission part such that said input shaft and said output shaft thereof are arranged coaxial with said output shaft of said main transmission part for driving the front wheels.

4,574,911

SEAT BELT BUCKLE EMERGENCY RELEASE SYSTEM

Lawrence A. North, Dunstable, England, assignor to General Motors Corporation, Detroit, Mich.

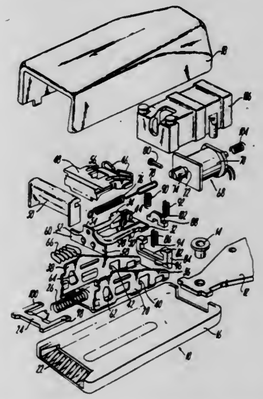
Filed Oct. 29, 1984, Ser. No. 666,158

Claims priority, application United Kingdom, Oct. 29, 1983, 8328962

Int. Cl.⁴ B60R *21/00*

U.S. Cl. 180—270 **7 Claims**

1. A seat belt buckle emergency release system for use in a motor vehicle, which system includes an automatic latch plate release mechanism, an impact sensing means, and a timing mechanism interposed between said release mechanism and said impact sensing means, whereby, when said system is installed in said motor vehicle and said motor vehicle sustains an impact of a predetermined magnitude, a latch plate engaged in said seat belt buckle is ejected automatically therefrom a predetermined short period of time after said impact, characterised in that the latch plate release mechanism comprises an electrically-operable actuator coupled to a manual release mechanism of the seat belt buckle, the impact sensing means includes two acceleration-responsive sensing means, one of which is responsive only to a predetermined high acceleration indicative of vehicle impact and the other of which is responsive to a predetermined acceleration substantially lower than said predetermined high acceleration and indicative of substantial vehicle movement, and the timing mechanism is incorporated in an electronic timing and actuator operation circuit connected between said sensing means and, when the system is installed in said motor vehicle, said actuator, so that, when said motor vehicle sustains said impact, the timing portion of the circuit is actuated by said one sensing means to produce a set short time delay period before an electrical signal is generated



by the actuator operation portion of the circuit to operate the actuator in the buckle, and any actuation of said other sensing means during said set short time delay period re-sets the timing portion to the starting point of said set short time delay period, whereby automatic ejection of said latch plate from said buckle will not occur before the vehicle has come to rest.

4,574,912

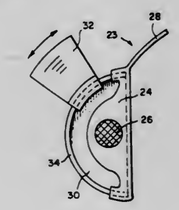
EAR MUFF HEARING AID

Gary E. Fuss, and George Spector, both of 233 Broadway Rm 3615, both of New York, N.Y. 10007

Filed Nov. 14, 1984, Ser. No. 671,207

Int. Cl.⁴ H04R *25/00*

U.S. Cl. 181—129 **6 Claims**



5. An acoustic device for amplifying sounds which comprises:

(a) a pair of relatively soft pads;

(b) a pair of earphones, each said earphones mounted within one of said pads;

(c) a head band adapted to fit about a listener's head, said pads being secured to said head band so that said head band may be positioned on said listener's head with said pads transversely in contact with said listener's head behind said ears and extending transversely outward whereby sounds can be transmitted from said earphones into said ears; and

(d) a pair of snap on cup shaped ear extenders, each said ear extenders removeably secured to said pads to extend transversely outward of said pads so that when said ear-

phones are deactivated sounds can be amplified and transmitted into said ears by said ear extenders.

4,574,913

MUFFLER WITH SPARK ARRESTING FUNCTION

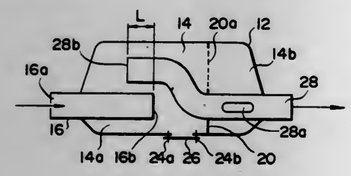
Masuo Fukuda, Omiya, Japan, assignor to Sankei Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 24, 1984, Ser. No. 664,349

Claims priority, application Japan, Nov. 11, 1983, 58-175016[U]; Nov. 11, 1983, 58-175017[U]

Int. Cl.⁴ F01N *3/02*

U.S. Cl. 181—231 **25 Claims**



1. A muffler having a function of arresting sparks, or carbon particles, which are contained in exhaust gases emanating from an instrument, comprising:

a generally tubular housing having an expansion chamber formed therein;

an inlet pipe having an exhaust gas inlet communicating with said instrument and an exhaust gas outlet open to said expansion chamber;

outlet pipe means having an exhaust gas outlet open to the atmosphere for conducting the exhaust gases from said expansion chamber to the atmosphere, said outlet pipe means having first and second inlets communicating with said expansion chamber;

a meshed member provided at said second inlet for arresting the sparks, or carbon particles, contained in the gases passing therethrough and directed to said second inlet;

said outlet pipe means being so disposed as to prevent said first inlet from receiving directly the exhaust gases which are blown from said exhaust gas outlet of said inlet pipe and do not pass through said meshed member;

said second inlet being disposed to receive the exhaust gases which passed through said meshed member from said exhaust gas outlet of said inlet pipe.

4,574,914

COMPACT, SOUND-ATTENUATING MUFFLER FOR HIGH-PERFORMANCE, INTERNAL COMBUSTION ENGINE

Ray T. Flugger, Santa Rosa, Calif., assignor to Flowmaster, Inc., Sonoma, Calif.

Filed Nov. 3, 1983, Ser. No. 548,304

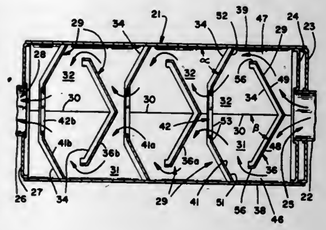
Int. Cl.⁴ F01N *1/08*

U.S. Cl. 181—268 **7 Claims**

1. A compact, sound-attenuating muffler for a high-performance, internal combustion engine or the like including a casing having an inlet opening formed for the flow of exhaust gases into said casing and an outlet opening formed for the discharge of gases from said casing, and partition means positioned in and supported from said casing including a divergently tapered first partition formed to deflect gases toward side walls of said casing, and a convergently tapered second partition positioned in and supported from said casing downstream of said first partition and formed with central opening means therein for convergence of gases from said side walls to said opening, wherein the improvement in said muffler comprises:

said casing being formed with a transverse cross-section having a width dimension substantially greater than the height dimension;

said first partition being an imperforate member formed to extend over the full height dimension of said casing and being formed to terminate short of the full width dimen-



sion of said casing to define a pair of openings proximate opposite side walls of said casing; and

said second partition being formed to extend across both the width and height dimensions of said casing and being imperforate intermediate said casing walls except for said central opening means.

4,574,915

SOUND BARRIERS

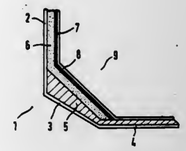
Heinemann Gahlaü, Celle; Manfred Hoffmann, Nienhof, and Klaus Wittenmayer, Uetze, all of Fed. Rep. of Germany, assignors to Dr. Alois Stankiewicz GmbH, Adelheidsdorf, Fed. Rep. of Germany

Filed Dec. 11, 1984, Ser. No. 680,575

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1983, 3346260

Int. Cl.⁴ E04B *1/82*

U.S. Cl. 181—290 **13 Claims**



1. A sound barrier for sound field interference on sound-emitting surface forming a front wall of a motor vehicle, wherein sound sources and at least one sound sink having a locally different distribution are associated with said sound-emitting surfaces, with a shaped sound-insulating cladding abutting said wall at said sound-emitting surface to interfere with the sound field, said shaped sound-insulating cladding including a sound-obstructing heavy layer and a resilient layer forming a mass/spring damping system in the area of said at least one sound sink, whereby said at least one sound sink is subjected to intensified sound absorption.

11. A method for sound field interference on the walls of sound-emitting surfaces that form the front wall of a passenger compartment of a motor vehicle, comprising the steps of locating on said sound-emitting surfaces, sound sources and sound sinks, said sound sources and sound sinks having locally different distributions over said sound-emitting surfaces; forming a sound-insulating covering in substantially the shape of said sound-emitting surfaces; arranging said sound-insulating covering against said sound-emitting surfaces for interferring with and deadening the sound field; wherein said step of forming said sound-insulating covering includes the steps of forming said covering of at least two layers, a first layer being a sound-obstructing heavy layer and a second layer being a resilient layer, and forming a sound-insulating mass/spring sound damping system by use of said first and second layers; and arranging said sound insulating mass/spring system at a location corresponding to a location of said sound sinks, and increasing dissipation of sound energy within the area of said sound sinks from the interior of the motor vehicle to the outside thereof.

4,574,916

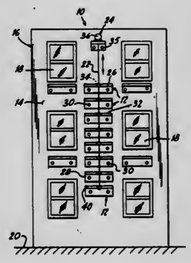
STEP TO SAFETY

John T. Hunt, and George Spector, both of 233 Broadway RM 3615, New York, N.Y. 10007

Filed Jun. 24, 1985, Ser. No. 748,162

Int. Cl.⁴ E06C *5/34*

U.S. Cl. 182—18 **7 Claims**



1. A safety step fire escape which comprises:

(a) a plurality of steps mounted in a vertical spaced relationship to an outside wall of a building adjacent windows of said building whereby said bottom step is elevated high enough from ground level so that a person can only climb down said fire escape;

(b) a descent cable extending through said steps to guide said person down said fire escape; and

(c) means for signaling, operable by movement of said descent cable from its normal position.

4,574,917

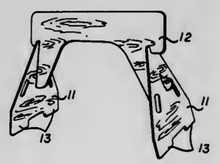
THREE-PIECE KNOCK-DOWN SAWHORSE

Evan D. Stoddard, 4225 Polk Ave., San Diego, Calif. 92105

Filed Mar. 21, 1985, Ser. No. 714,201

Int. Cl.⁴ F16M *11/00*

U.S. Cl. 182—151 **2 Claims**



1. A knock-down sawhorse comprising:

(A) a back panel having identical end sections; and

(B) a pair of identical, bilaterally symmetrical leg panels;

(1) each lateral edge of said back panel having first and second vertically-spaced tabs, which respectively define first and second downward-facing notches;

(2) each leg panel having a centrally-located upward-facing notch in its upper edge and a vertically-oriented slit vertically-spaced directly below said upward-facing notch;

(3) the distance between the bottom of said centrally-located notch and the bottom of said slit corresponding to the distance between the top of said first downward-facing notch and said second downward-facing notch at either edge of said back panel;

(4) said first and second downward-facing notches at one lateral edge of said back panel respectively interlocking with the upward-facing notch and slit of one of said leg panels when said sawhorse is assembled;

(5) the lower edges of said leg panels being parallel when said sawhorse is assembled; and

(6) wherein a section of each lateral edge between the first and second downward-facing notches at each end of said back panel is outwardly curved and the leg panels are stressed when said sawhorse is assembled.

4,574,918

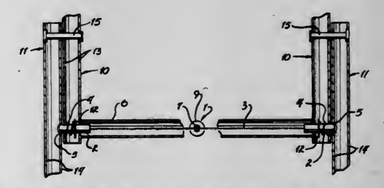
LADDER LOCKING MECHANISM

Salvador A. Marques, Barcelona, Spain, assignor to Andral Corporation, Williamsville, N.Y.

Continuation-in-part of Ser. No. 341,830, Jan. 22, 1982, Ser. No. 492,487, May 6, 1983, and Ser. No. 537,276, Sep. 29, 1983. This application Apr. 16, 1984, Ser. No. 600,804

Int. Cl.⁴ E06C *1/383*

U.S. Cl. 182—164 **7 Claims**



1. A U-shaped ladder module of a fold-up ladder wherein said ladder comprises a plurality of said Ushaped modules having diminishing upward size and connected to each other by hinges located in overlapping portions of said modules, said ladder modules comprising hinges and a locking mechanism, said locking mechanism comprising an external lock release means, latch means and aperture means said external lock release means adapted to be moved in such a way so as to position said latch means in either a locking or unlocking position in relation to said aperture means, said latch and said aperture each located in separate but adjacent modules of said ladder and adapted to mate when aligned and lock said modules in position, and wherein said locking mechanism located in each of said modules comprises two latches connected by a flexible connecting means, said latches in cooperation with a spring means and a lock release means, said release means adapted to be moved in such a way so as to move said latches away from said apertures.

4,574,919

TREE CLIMBING IMPLEMENT

Michael D. Clay, 6307 E. Oklahoma Pl., Tulsa, Okla. 74115

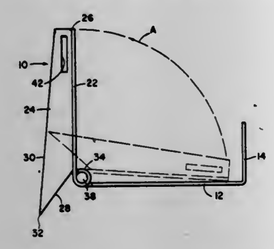
Filed Dec. 17, 1984, Ser. No. 682,306

Int. Cl.⁴ A63B *27/00*

U.S. Cl. 182—221 **2 Claims**

1. A tree climbing implement adapted to be secured to a boot of a wearer and comprising bracket means for transverse engagement across the bottom of the boot and spanning the width thereof, and V-shaped spike-like means hingedly secured to one end of the bracket means for rotation about an

axis that is transverse to the bracket and movable between an extended vertical position, with the spike-like means pointed



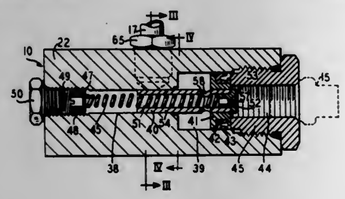
downward, and a collapsed horizontal position substantially parallel to the bracket means.

4,574,920

HYDROPNEUMATIC MONITORING DEVICE

James J. Callahan, Mentor, and James M. Hammell, Aurora, both of Ohio, assignors to Lubriquip - Houdaille, Inc., Warrensville Heights, Ohio

Filed Aug. 2, 1984, Ser. No. 636,989
Int. Cl.⁴ F16N *7/34*
U.S. Cl. 184—39.1 **19 Claims**



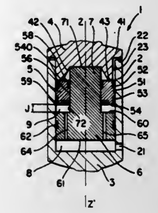
1. In a hydropneumatic monitoring device:
means providing a body having therein an air passage leading therefrom;
a hydraulic fluid passageway extending through said body and adapted to be connected at one end to a hydraulic fluid supply means and adapted to be connected at its opposite end to a point of use;
an elongate plunger bore in said body traversing said passageway and having at one end a piston cylinder which communicates at its inner end with said air passage and is adapted to receive air under pressure at its outer end;
a control plunger shiftably reciprocatable in said bore and having an outer end in said cylinder and having passageway-connecting means intermediate its length;
a reciprocatable piston in said cylinder shorter than said cylinder and operatively associated with said outer end of said plunger,
means for biasing said plunger with predetermined force longitudinally toward said outer end and for thereby locating said passageway-connecting means out of alignment with said passageway;
and means for metering said air under pressure through said piston to said passage and for effecting a predetermined air flow rate differential on opposite sides of said piston for limited driving of said piston in opposition to said biasing means and for thereby shifting said plunger for opening said passageway by aligning said passageway-connecting means with said passageway;
said biasing means being set to cooperate with said air flow rate differential to maintain said piston and plunger in substantially a state of open passageway equilibrium.

4,574,921

JACK FOR CROWN OR DISK BRAKES

Jean Gergele, St-Hyppolyte, France, assignor to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France

Continuation-in-part of Ser. No. 455,256, Jan. 3, 1983, abandoned. This application Sep. 25, 1984, Ser. No. 654,310
Claims priority, application France, Jan. 18, 1982, 82 00938
Int. Cl.⁴ F16D *65/54*
U.S. Cl. 188—71.8 **9 Claims**



1. A jack for crown or disk brakes provided with a spring for opening the brake clamp or yoke comprising an internally cylindrical body provided with a bottom and an inlet for pressurized hydraulic fluid, two pushers at least one of which is movable in axial direction and a first piston movable in axial direction with friction within the cylindrical body, characterized by the fact that
between this first piston and the movable pusher there is arranged a second piston which slides axially with friction within the cylindrical body;
the first piston has a cylindrical extension of a diameter less than that of the inside of the cylindrical body and has a passageway for the hydraulic fluid from one of its faces to the other;
a seal for closing the passageway of the first piston is arranged opposite the passageway so as to close the passageway when the jack is in braking position and to free the passageway when the jack is in position of rest, the stroke of the first piston between these two positions corresponding to the desired clearance between friction linings of the brake and the crown or disk;
the axial heights and the strokes of the two pistons in the cylindrical body are such as to provide a chamber for the hydraulic fluid on each of the faces of the first piston;
the extension of the first piston slides axially with friction within a guide;
the axial friction force of the second piston on the cylindrical body is more than the force of the opening spring; and
the axial friction force of the second piston on the cylindrical body is more than the sum of the axial friction force of the first piston on the cylindrical body and the axial friction force of the extension on its guide, whereby the axial displacement of the first piston occurs before the axial displacement of the second piston when said pistons are actuated by same pressure.

4,574,922

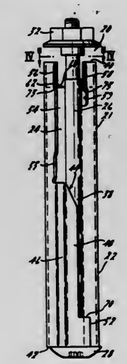
PIN ASSEMBLY FOR A CALIPER DISC BRAKE

James D. Varin, Royal Oak; H. Vincent Fromm, Madison Heights, and Henry W. McClelland, West Bloomfield, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Sep. 30, 1982, Ser. No. 430,296
Int. Cl.⁴ F16D *65/02*
U.S. Cl. 188—73.35 **9 Claims**

1. A disc brake assembly including a rotor, a torque member positioned adjacent the rotor, a caliper mounting friction elements for engagement with said rotor, and a pin assembly movably supporting said caliper on said torque member; the disc brake assembly characterized by:

said torque member and said caliper having opposing slots forming an aperture for receiving said pin assembly;
said pin assembly including:
a sleeve having a cylindrically shaped portion with an axially extending slit and being resiliently flexible in a radial direction from an unflexed first position to radially contracted second and third positions, said third position being radially smaller than said second position;
said sleeve sized to fit through said aperture when in said radially contracted second position;
said sleeve having axial positioning means for axially fixing said sleeve within said formed aperture;
said sleeve having anti-rotation means for preventing said sleeve from excessively rotating within said aperture, said anti-rotation means comprising a shoulder portion radially



extending from said cylindrically shaped portion of said sleeve and interposed between two walls defining, in part, said aperture;
said sleeve defining a bore substantially filled with an elastomeric material;
said elastomeric material resiliently resisting further radially inward movement of said sleeve from approximately said contracted second position of said sleeve to said contracted third position;
said caliper, when moving toward said torque member, decreasing the lateral dimensions of said aperture and forcing said sleeve to contract from said second position to said third position; and
said caliper abutting said torque member when said sleeve is radially contracted to said third position.

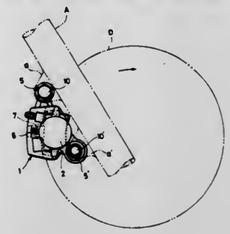
4,574,923

FLOATING DISK BRAKE

Shiro Nakajima, and Koki Fukudome, both of Hyogo, Japan, assignors to Sumitomo Electric Industries, Inc., Osaka, Japan

Filed Aug. 30, 1984, Ser. No. 645,929
Int. Cl.⁴ F16D *65/14*
U.S. Cl. 188—73.45 **5 Claims**

1. A floating disk brake for a vehicle having a brake rotor supported for rotation about an axis comprising a pair of brake pads, said brake pads each having a backing plate, a caliper, said caliper having torque receiving surfaces formed on both sides thereof corresponding to inner and outer sides of the brake rotor, side surfaces of said backing plates of said pad abutting against said torque receiving surfaces, and two slide bolts for slidably supporting said caliper from the associated vehicle body, said slide bolts having first end portions fixed relative to a member integral with the vehicle body and having cantilevered second end portions slidably inserted into respective bearing surfaces of said caliper, at least one of said bolts and the respective bearing surface of said caliper lying over said brake rotor with the center of engagement of the respective bearing surface of said caliper and said one of said slide



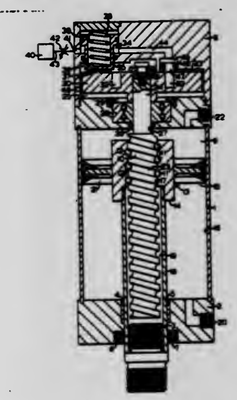
bolts being substantially coincident with the center of said brake rotor in an axial direction.

4,574,924

ROTARY SHAFT SPEED LIMITING ARRANGEMENT

Helmut Gottling, Isernhagen, Fed. Rep. of Germany, assignor to WABCO Westinghouse Steuerungstechnik GmbH, Hanover, Fed. Rep. of Germany

Filed Mar. 27, 1984, Ser. No. 593,760
Claims priority, application Fed. Rep. of Germany, Mar. 28, 1983, 3311307
Int. Cl.⁴ B60T *13/04*
U.S. Cl. 188—187 **18 Claims**



1. A fluid controlled arrangement for limiting the rotary speed of a shaft comprising:
(a) a brake disk fixedly secured to such shaft for rotational movement therewith;
(b) a brake piston housing disposed adjacent said brake disk;
(c) braking means partially disposed in said brake piston housing and extendable therefrom for frictionally contacting said brake disk and exerting a force to retard the rotational velocity of said brake disk;
(d) pressurizing means for controlling a flow of pressurized fluid into and a flow of pressurized fluid out of said brake piston housing, such pressurized fluid in said brake piston housing acting on said braking means; and
(e) said pressurizing means having an actuating means partially formed on said brake disk for varying one of such flows of pressurized fluid to control the fluid pressure in said brake piston housing, said actuating means including an exhaust valve partially formed on said brake disk and

partially formed in said brake piston housing, said exhaust valve having at least one disk pocket formed on said brake disk and in communication with said braking means, said braking means exerts such force to retard the rotational velocity of said brake disk, such braking means force being a function of the difference between a present shaft rotational velocity and a preselected shaft rotational velocity.

4,574,925

MOTOR AND GEARING CONTROLS FOR TORQUE CONVERTER LOCK-UP CLUTCH

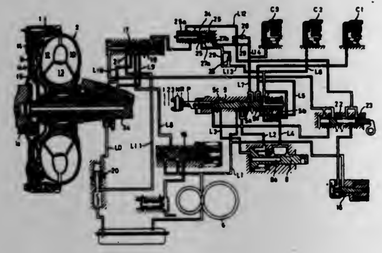
Sadanori Nishimura; Masaru Yamashita, and Hiroyuki Shimada, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 24, 1983, Ser. No. 526,118

Claims priority, application Japan, Sep. 4, 1982, 57-153377; Mar. 16, 1983, 58-42403

Int. Cl.⁴ B60K *41/22, 41/28;* F16H *47/06*

U.S. Cl. 192—3.31 **17 Claims**



1. A clutch operation control system for a torque converter clutch of a vehicle transmission with shifting means and plural drive trains selectively operated by fluid pressure engagement elements for shifting between drive trains, in which a control valve supplies fluid pressure to the clutch for operating the clutch and a vehicle speed related pressure signal is supplied to the control valve for causing actuation of the control valve to couple the clutch at elevated pressure of said speed related pressure signal, comprising, means for blocking the said speed related fluid pressure signal during shifting between drive trains including means separately responsive to the fluid pressures on each of at least two of the drive train pressure engagement elements to open the blocking means upon the fluid pressure on one of said drive train pressure engagement elements exceeding a predetermined level.

4,574,926

OIL COOLED AND FLUID PRESSURE OPERATED CLUTCH ASSEMBLY

John Bubak, 733 Sunnybeach, Pontiac, Mich. 48054

Filed Jun. 28, 1983, Ser. No. 508,406

Int. Cl.⁴ F16D *19/00*

U.S. Cl. 192—18 A **17 Claims**

1. An oil cooled and fluid pressure operated clutch assembly for use in a vehicle drive line, said clutch assembly being characterized by;

an encapsulating clutch housing, capable of containing oil, one end of the housing being secured to a rotatable component of a vehicle drive line for rotation therewith and an opposite end of the housing being provided with an aperture having an annular periphery;

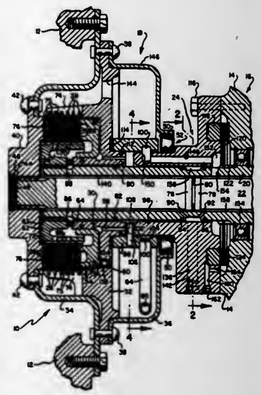
an output shaft extending through said aperture;

a non-rotatable support member having an annular portion extending through said aperture and being disposed about said output shaft;

sealing means operable to provide an oil seal between the periphery of the output shaft and the periphery of said aperture;

at least one axially movable clutch disk disposed within said clutch housing and connected with said output shaft for rotation therewith;

first fluid means including a piston chamber within said clutch housing, a piston within said piston chamber and axially movable between engaged and disengaged positions, said piston when in its engaged position causing said clutch disks to be held for rotation with said clutch hous-



ing, and first conduit means extending to the piston chamber through which fluid under pressure may be introduced to cause the piston to move to its engaged position;

second fluid means capable of introducing cooling oil into said clutch housing to be used for cooling said clutch disks, said second fluid means including second conduit means; and

scavenger means capable of scavenging the oil used for cooling the clutch disks and causing it to be removed from said clutch housing.

4,574,927

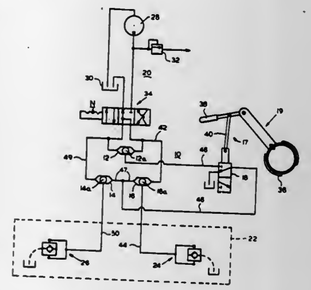
FORWARD AND REVERSE CLUTCH ENGAGEMENT PARKING BRAKE

Charles R. Sturtz, Jr., Stevensville, Mich., assignor to Clark Michigan Company, Buchanan, Mich.

Filed Dec. 19, 1983, Ser. No. 562,950

Int. Cl.⁴ B60K *41/28*

U.S. Cl. 192—4 C **11 Claims**



1. A supplemental brake apparatus for a vehicle having a

powershift transmission which includes forward and reverse operating modes, a hydraulically operated forward clutch which is selectively engaged to put the transmission in the forward operating mode, a hydraulically operated reverse clutch which is selectively engaged to put the transmission in the reverse operating mode, a parking brake, and an actuator for applying the parking brake, comprising hydraulic means responsive to the application of said parking brake for engaging said forward clutch and said reverse clutch simultaneously.

4,574,928

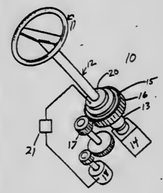
COUPLING WITH ONE-WAY PIVOTED PAWL CLUTCHES FOR DRIVE SHAFT AND SERVOMOTOR DRIVEN SHAFT

Peter Norton, 15612 Hilton, Southfield, Mich. 48075

Filed Sep. 19, 1983, Ser. No. 533,443

Int. Cl.⁴ F16D *41/04*

U.S. Cl. 192—48.92 **14 Claims**



1. In a drive transmitting coupling for coupling a control member and a drive transmitting member with a driven member said coupling being of the type comprising:

a lost motion means adapted to couple said control member with said driven member, a first one-way clutch for coupling said drive transmitting member with said driven member for transmitting driving effort in one direction, a second one-way clutch for coupling said drive transmitting member with said driven member for transmitting driving effort in the opposite direction, a first disengaging means for disengaging said first one-way clutch in response to movement of said control member in said opposite direction relative to said driven member, and a second disengaging means for disengaging the second one-way clutch in response to movement of said control member in said one direction relative to said driven member, the improvement wherein:

said first one-way clutch comprises a first set of pawls pivotally mounted on said driven member for driving engagement with said drive transmitting member,

and said second one-way clutch comprises a second set of pawls pivotally mounted on said driven member for driving engagement with said drive transmitting member,

said first and second sets of pawls being operatively coupled with said first and second disengaging means, respectively.

4,574,929

VISCOUS FLUID COUPLING

Masaharu Hayashi, Toyota; Kenji Hattori, Kariya, and Masato Itakura, Toyota, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Japan

Filed Apr. 13, 1984, Ser. No. 600,350

Claims priority, application Japan, Apr. 14, 1983, 58-64572

Int. Cl.⁴ F16D *31/08, 33/06*

U.S. Cl. 192—58 B **8 Claims**

1. A viscous fluid coupling, comprising:

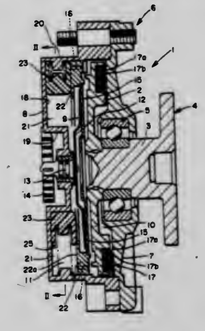
an input member rotatable about an axis and including rotor means;

an output member rotatable with respect to said input member about said axis and including housing means enclosing said rotor means and containing a viscous oil, said housing means including a casing portion and a cover plate portion, and said rotor being positioned axially between said casing portion and said cover plate portion;

partition wall means positioned in said housing means between said rotor means and said cover plate portion for dividing the space enclosed by said housing means into oil chamber means and working chamber means, said rotor means being located within said working chamber means, and said partition wall means including perforation means for allowing said viscous oil to flow from said oil chamber means to said working chamber means;

valve means associated with said perforation means and operable between an open position and a closed position for opening and closing said perforation means to respectively allow and prohibit flow of said viscous oil through said perforation means;

labyrinth means between said rotor means and said housing means in said working chamber means for transfer-



ring rotation of said rotor means to said housing means through said viscous oil in said working chamber means;

oil expelling passage means connecting said oil chamber means and said working chamber means radially outside of said perforation means for allowing said viscous oil to be pumped from said working chamber means to said oil chamber means by rotation of said rotor means; and

oil displacing block means positioned in said oil chamber means of said housing means, said oil displacing block means being biased in a radially inward position but moving radially outwardly along the inner surface of said cover plate portion under centrifugal force resulting from rotation of said output member, said radial movement of said oil displacing block means causing said viscous oil to flow from said oil chamber means to said working chamber means through said perforation means.

4,574,930

ELECTROMAGNETIC CLUTCH

Takatoshi Koitabashi, Annaka, Japan, assignor to Sanden Corporation, Japan

Filed Aug. 9, 1983, Ser. No. 521,555

Claims priority, application Japan, Aug. 9, 1982, 57-119856[U]

Int. Cl.⁴ F16D *27/07*

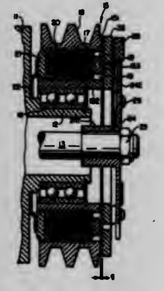
U.S. Cl. 192—84 C **5 Claims**

1. In an electromagnetic clutch including a first rotatable member having an axial end plate of magnetic material, a second rotatable member, an annular armature plate of magnetic material joined to said second rotatable member so that said annular armature plate is capable of limited axial movement, said annular armature plate facing said axial end plate of said first rotatable member with an axial gap therebetween, and an electromagnetic means associated with said axial end plate for attracting said armature plate to said axial end plate so that

rotation of said first rotatable member can be transmitted to said second rotatable member through said armature plate by the operation of said electromagnetic means, the improvement wherein:

said second rotatable member includes a drive shaft, and a hub fastened to said drive shaft;

said hub having an axially extending tubular member and a radially extending flange extending from said tubular member;



a plurality of U-shaped spring members coupling said radially extending flange to said armature plate;

a pair of opposing, spaced axial flanges disposed at each of said spring members; and

an elastic member fixed in the space between each pair of said opposed axial flanges so that force transferred to said drive shaft through said first rotatable member is reduced by compressive and twist deformation of said elastic member.

4,574,931

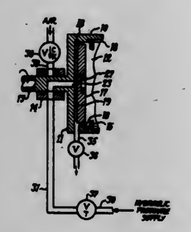
MINIMUM PURGE VOLUME HYDRAULIC CLUTCH ACTUATOR

Thomas A. Kowalczyk, Pittsfield, Mass., assignor to General Electric Company, Fairfield, Conn.

Filed Feb. 22, 1983, Ser. No. 468,638

Int. Cl.⁴ F16D *25/061*

U.S. Cl. 192—106 F **5 Claims**



5. In a hydraulically operated rotating disk clutch assembly wherein said clutch assembly is applied and released by the selective injection of hydraulic fluid under pressure by an apply valve through a feed line into a variable capacity cylinder to drive a pistonlike clutch pressure plate against other clutch elements, wherein said pressure plate rotates about its axis of translation as a result of motion transmitted by the clutch assembly, wherein there is a pressure release means allowing said hydraulic fluid to escape from said cylinder to reduce hydraulic pressure to permit said pressure plate to move away from said other clutch elements when the clutch is released and wherein centrifugal forces imparted to said hydraulic fluid by rotation of operative clutch elements could limit movement of said pressure plate away from said other clutch elements; the improvement wherein said pressure relief means comprises:

drain line conduit means communicating between the portion of said cylinder most subject to pressure build-up of hydraulic fluid as a result of centrifugal forces caused by rotation of said pressure plate and other clutch components when said clutch is released and the atmosphere;

pressure activated drain valve means interdicting said drain line for closing said drain line responsive to clutch application and opening said drain line except in response to clutch application;

separate vent line conduit means communicating between a portion of said cylinder subject to low relative pressure as a result of the pressure gradient created by centrifugal forces caused by rotation of said pressure plate and other clutch components when said clutch is released and the atmosphere; and

pressure activated relief valve means controlling said vent line for closing said vent line responsive to internal pressures higher than atmospheric pressure and opening said vent line under other conditions, said relief valve means being designed to stop the flow of hydraulic fluid into said vent line, when closed, proximate said cylinder;

whereby pressurized hydraulic fluid injected into said cylinder to apply said clutch closes both said drain and relief valves means against pressure losses, a pressure drop in said cylinder resulting from closure of said apply valve will cause said drain valve means to open to discharge hydraulic fluid and a pressure drop to near atmospheric pressure will cause said relief valve means to open permitting entrance of atmospheric air to complete evacuation of hydraulic fluid from said cylinder; and

said vent line, feed line, relief valve means, apply valve and cylinder are so located with respect to each other that gravitational forces will maintain hydraulic fluid in said feed line when said relief valve means is open.

4,574,932

TORSION DAMPING ASSEMBLY FOR AUTOMOTIVE CLUTCHES

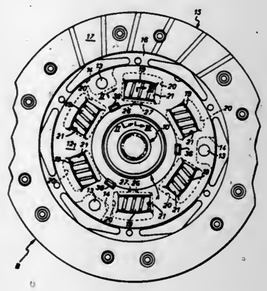
Dominique Després, Clichy, France, assignor to Valeo, Paris, France

Filed Mar. 14, 1983, Ser. No. 474,828

Claims priority, application France, Mar. 26, 1982, 82 05184

Int. Cl.⁴ F16D *3/14*

U.S. Cl. 192—106.2 **21 Claims**



1. A torsion damping assembly for an automotive friction clutch, said torsion damping assembly comprising at least two coaxial parts mounted for relative angular displacement within a predetermined range, resilient means interposed chordally between said coaxial parts, a friction washer means arranged in axial contact with a bearing component formed as part of one of said coaxial parts, axially acting resilient clamping means bearing against said bearing component located on one side thereof remote from said friction washer and urging said friction washer means toward said bearing component, snap-type detent means for axially interconnecting said resilient clamping means with a retaining washer located on the other side of said bearing component.

4,574,933

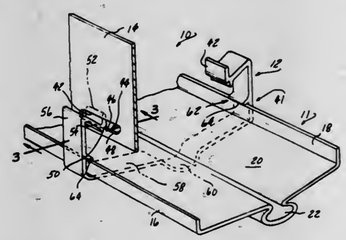
TROUGH FOR OPEN MODULAR CHUTE

John T. Leinenger, 7255 Bluewater, Clarkston, Mich. 48016

Filed Apr. 18, 1984, Ser. No. 601,674

Int. Cl.⁴ B65G *11/00, 13/00*

U.S. Cl. 193—1 **9 Claims**



1. In an open chute for conveying parts under gravity, the improvement comprising:

a trough attached to the chute for conveying liquids along a linear path under gravity and including:

a pair of spaced-apart walls;

a bottom wall integrel with said upright walls and extending therebetween; and

a recessed channel formed in said bottom wall;

a support means for securing said trough to the chute;

said support means comprising an opening formed in the chute, a bracket releasably engagable with said opening, and said trough resting on said bracket;

said bracket comprising a vertical flange releasably engagable with said opening, a lower end of said vertical flange resting on a lower edge of said opening, a lip extending downward from said vertical flange abutting the chute walls, an outward projecting arm integral with said vertical flange, said outward projecting arm extending downward at an outer end thereof to form a vertical wall, said vertical wall extending inward at a lower end to form a bottom wall, said bottom wall contoured to abut and support said trough;

means for releasably securing said trough to said bracket; and

wherein said bracket supports a trough wider than the chute.

4,574,934

NEWSPAPER DISPLAY MACHINE

Ronald C. Voegeli, 918 Gibbs Rd., Venice, Fla. 33595

Division of Ser. No. 530,787, Sep. 9, 1983, Pat. No. 4,506,776.

This application Jan. 30, 1985, Ser. No. 696,338

Int. Cl.⁴ G07F *5/00*

U.S. Cl. 194—248 **6 Claims**

1. A newspaper display machine comprising:

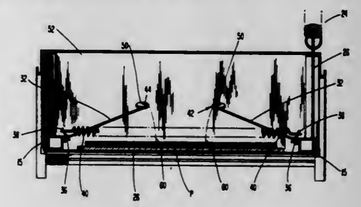
a container for housing a supply of newspapers,

an access door pivotably mounted at a front side of said container for rotation between open and closed positions about a generally horizontal axis disposed along a lower edge of said door, said door including a transparent window, means on said container and door for locking said door to said container in said closed position of said door, and for unlocking said door in response to the depositing of preselected coinage,

closure spring means for biasing said door toward its closed position,

said window having a vertical height and horizontal width sized to display the full height and full width dimensions of the display newspaper, said height defining a long dimension of said window and said width defining a short dimension of said window, and

holder means mounted on an inner side of said door and



biased for swinging movement about a vertical axis toward said window to press a display newspaper against said window, said holder means including a vertical height which extends parallel to said long dimension of said window and being greater than one-half of said long dimension of said window.

4,574,935

COIN CHECKING METHOD AND APPARATUS EMPLOYING WAVE TRAIN COMPARISON

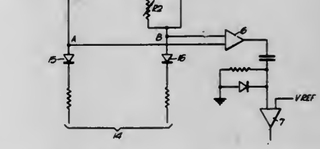
David Partridge, West Wickham, England, assignor to 501 Starpoint Electrics Limited, Surrey, England

Filed Mar. 20, 1984, Ser. No. 591,580

Claims priority, application United Kingdom, Mar. 21, 1983, 8307697; Jan. 3, 1984, 8400046

Int. Cl.⁴ G07F *3/02*

U.S. Cl. 194—319 **17 Claims**



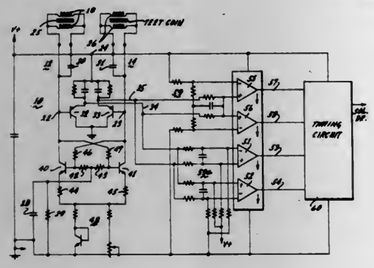
1. A method of checking a coin by passing it through a coil comprising the steps of: supplying direct current to a coil having a capacitor connected in parallel therewith; interrupting the supply of current to said coil when said coil is mid-way through said coil whereby to cause between said capacitor and said coil an oscillatory discharge comprising a first decaying wave train; supplying direct current to a comparison coil having a capacitor connected in parallel therewith; generating a reference wave train by simultaneously interrupting the supply of current to said comparison coil; comparing said first wave train with said reference wave train; determining whether the result of said comparison is above or below a predetermined datum and generating a corresponding signal if said result is below said datum.

4,574,936

COIN ACCEPTER/REJECTOR INCLUDING SYMMETRICAL DUAL FEEDBACK OSCILLATOR

Lance Klinger, 141 Del Medio Ave., Apt. 133, Mountain View, Calif. 94040, assignor to Lance Klinger, Mountain View, Calif.

Filed May 10, 1983, Ser. No. 493,322
Int. Cl.⁴ G07F *3/02*
U.S. Cl. 194—318 **32 Claims**



22. A coin testing device comprising:

oscillator means including symmetrical, dual feedback oscillator having a reference reactance and a sensing reactance; and

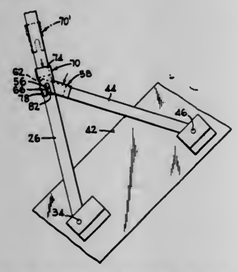
comparator means connected for deriving an output indicative of a predetermined relationship between the signals in said reference and said sensing reactances in the presence of a particular type of coin adjacent to said sensing reactance.

4,574,937

GUIDE AND HAND RAIL WITH LATCH

James M. Anderson, Windermere, and William C. Dean, Orange City, both of Fla., assignors to FMC Corporation, Chicago, Ill.

Filed Mar. 5, 1984, Ser. No. 586,521
Int. Cl.⁴ B65G *17/00*
U.S. Cl. 198—321 **2 Claims**



1. A rail for an aircraft belt loader having a belt conveyor including an exterior side wall, wherein the improvement comprises:

a plurality of posts each of which is pivotally connected at one end to the rail and at the other end to said side wall;

a first pin affixed to one of said posts and protruding on each side thereof;

a first support arm pivotally attached to said sidewall;

a first end member affixed to said first support arm and including a pair of extended side plates having slots engageable with said first pin to support said rail in a hand rail position;

stops secured to said side wall and positioned to engage said rail when lowered to a stowed position in which said posts and said rail are entirely within the silhouette of said conveyor;

a second pin affixed to one of said posts and protruding on each side thereof; and

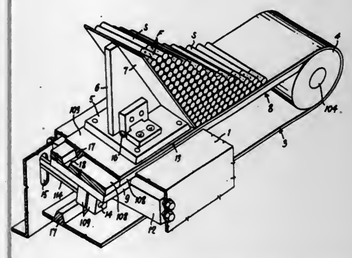
a second support arm pivotally attached to said side wall and having a slotted end for engagement with said second pin to position said rail intermediate its said stowed position and its said hand rail position.

4,574,938

BUFFER MAGAZINE FOR ROD-LIKE ARTICLES

Giancarlo Orlandi, Bologna, Italy, assignor to Sasib S.p.A., Bologna, Italy

Filed Dec. 22, 1983, Ser. No. 564,738
Claims priority, application Italy, Dec. 23, 1982, 12694 A/82
Int. Cl.⁴ B65G *1/00*
U.S. Cl. 198—347 **7 Claims**



1. In a buffer magazine for installations supplying rod-like articles, particularly supplying filter-tipped cigarettes from one or more cigarette-making machines to one or more packing machines, said buffer magazine including a reversible conveyor belt having a horizontal linear stretch carrying the cigarettes arranged crosswise thereto in superposed layers, and moving between two vertical side walls on a supporting table, said horizontal cigarette-carrying stretch of the belt having affixed thereto a transverse partition wall extending upwardly between the two side walls and moving, through corresponding movements of the conveyor belt, alternately away from the inlet of the magazine, located at one end of the cigarette-carrying stretch of the conveyor belt, to increase the capacity of the magazine and store cigarettes, and toward the inlet of the magazine to reduce the capacity of said magazine and return stored cigarettes, the improvement comprising: means for selectively inclining the supporting table (8) of the horizontal cigarette-carrying stretch (103) of the conveyor belt (3) with respect to the horizontal plane transversely to the longitudinal direction of said cigarette-carrying stretch (103) of the belt (3) in a direction opposite to the transverse inclination which the filter-tipped cigarettes tend to assume on said cigarette-carrying stretch (103) of the belt (3), so as to ensure an average compensation for said inclination.

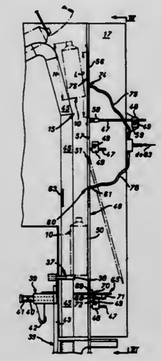
4,574,939

AUTOMATIC BOTTLE HANDLING APPARATUS

Jean-Louis Dubuit, 63 Rue du Chemin-Vert, 75011 Paris, France

Continuation of Ser. No. 377,071, May 11, 1982, abandoned. This application Jan. 7, 1985, Ser. No. 689,282
Claims priority, application France, May 13, 1981, 81 09493
Int. Cl.⁴ B65G *47/14, 47/24*
U.S. Cl. 198—396 **16 Claims**

1. An apparatus for automatic handling of hollow bodies, said apparatus comprising a plurality of conveyor channels having a conveyor extending to the respective upper ends of a corresponding plurality of drop chutes, a delivery conveyor disposed below and in vertical alignment with said plurality of drop chutes, and selective arresting means at the lower ends of said drop chutes for contacting each hollow body moving towards said delivery conveyor, said selective arresting means being of the yoke type and being engageable with the leading end of a correctly oriented hollow body to move out of the path of travel of the hollow body in the respective drop chute to said delivery conveyor and engageable with the leading end of an incorrectly oriented hollow body and to snare the same



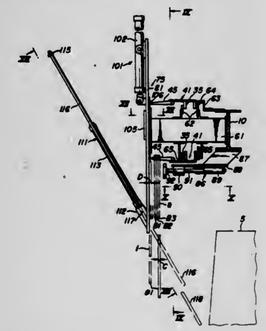
and indefinitely hold back the snared incorrectly oriented hollow body whereby all hollow bodies within the drop chute upstream of the snared hollow body will be held back.

4,574,940

TIRE BEAD WIRE SUPPLY APPARATUS

Norio Abe, Higashimurayama, Japan, assignor to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Feb. 29, 1984, Ser. No. 584,967
Claims priority, application Japan, Mar. 9, 1983, 58-38651
Int. Cl.⁴ B65G *39/00*
U.S. Cl. 198—468.6 **10 Claims**



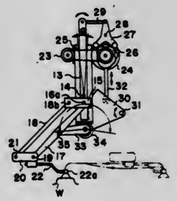
1. An apparatus for supplying bead wires for tires one to each of a plurality of treating means for the bead wires, said apparatus comprising; holding means for holding a plurality of bead wires, driving means for moving said holding means so as to pass in immediate front of each of said treating means in succession and stopping said holding means at said immediate front of each of said treating means and transferring means for receiving each of said bead wires from said holding means stopped a the immediate front of each of said treating means and transferring it to said each of said treating means, wherein said transferring means comprises abutment means fixed to the apparatus and substantially vertically extending for guiding one of said bead wires lowering downward into said treating means and adjustable in relative position to said holding means depending upon a width of bead wires to be transferred, pushing means for pushing the bead wires held by said holding means until the bead wire nearest to said abutment means abuts thereagainst, separating means for pushing downward the bead wire directly abutting against said abutment means therealong, and passing-through means including guide means extensible into an inside of said bead wire pushed by said separating means to guide the bead wire into the treating device.

4,574,941

WORKPIECE CONVEYING APPARATUS

Eiji Tsuge; Taminori Yanagisawa, both of Toyota; Takaharu Yamaguchi, Toyokawa, and Hiroshi Fukatsu, Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha and Taiho Seiki Kabushiki Kaisha, both of Toyota, Japan

Filed Apr. 13, 1984, Ser. No. 599,866
Claims priority, application Japan, Apr. 14, 1983, 58-065972
Int. Cl.⁴ B65G *25/02*
U.S. Cl. 198—468.2 **7 Claims**



1. A workpiece conveying apparatus for a working machine comprising:

a slider rail arranged vertically and in rocking manner around a pin on the body of the workpiece conveying apparatus having a rotating drive source;

a slider link fitted crossing at right angles to and slidably in said slider rail;

a parallel link consisting of the slider link, a slider arm, a lower slider link and a sub arm and being connected rotatably with each other;

a cam means for causing the slider rail to rock around said pin;

a rocking lever adapted to reciprocatively rock in synchronism with said rotating drive source and having its leading end portion contacted rotatably to a middle portion of said slider arm;

a driving means for the rocking lever; and

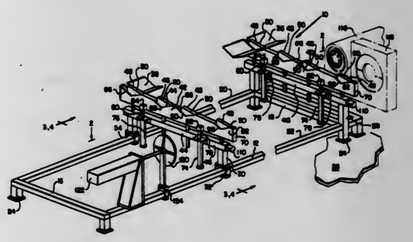
a workpiece holder attached to said lower slider link.

4,574,942

PIPE TRANSPORTING MACHINE

John H. Gordon, 855 Brandywine Rd., Downingtown, Pa. 19335

Filed Dec. 12, 1983, Ser. No. 560,319
Int. Cl.⁴ B65G *25/00*
U.S. Cl. 198—773 **15 Claims**



1. A pipe transporting machine comprising

a frame;

first and second indexing means mounted on the frame in spaced relationship to transversely move discrete lengths of pipe across the frame,

the first and second indexing means being provided with a plurality of transversely juxtaposed notches;

means to simultaneously vertically reciprocate the first and second indexing means relative to the frame to simultaneously reciprocally raise and lower each indexing means in unison between an upper position and a lower position;

a plurality of similar kicker means spaced along the first and second indexing means to control the transverse movement of the pipe across the frame,

the plurality of kicker means being stationary when the first and second indexing means are reciprocated,

the kicker means being adapted for vertical adjustment relative to the frame, said first and second indexing means being configured to permit each kicker means to project upwardly through a respective indexing means and one of the said notches when the first and second indexing means are reciprocated to their said lower positions; and

kicker height adjustment means operably secured to the frame to simultaneously adjust the height of a plurality of kicker means;

whereby the lengths of pipe will be individually indexed across the machine in spaced increments upon each vertical reciprocation of the first and second indexing means.

4,574,943

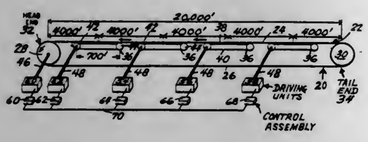
CONTROL SYSTEM FOR BOOSTER TYPE BELT CONVEYOR

Peter J. Green, Huntington, W. Va., assignor to Service Machine Company, Huntington, W. Va.

Filed Oct. 19, 1984, Ser. No. 662,830

Int. Cl.[4] B65G *43/00*

U.S. Cl. 198—810 **17 Claims**



1. In a booster type belt conveyor, a conveyor belt having conveying and return runs trained for orbital movement between driving and return end drums located respectively at head and tail ends of the belt conveyor, one or more intermediate booster belts having driving and return runs trained for orbital movement between driving and return end drums with the driving run of each booster belt in driving engagement with the conveying run, and a drum driving unit including electrical motor means for each driving drum, and improved electrical starting and control system comprising:

engageable and disengageable coupling means in each drum driving unit between the corresponding motor means and driving drum;

a plurality of control assemblies, one for each drum driving unit;

means in each control assembly for sensing a running condition of the corresponding motor means and generating a running condition signal in response thereto;

means for sequentially starting all of said motor means including means for starting a first one of said motor means and automatic means in said control assemblies for starting each of the remainder of said motor means in response to a running condition signal from a previously started motor means;

a coupling-controlling electrical loop common to all of said control assemblies;

a plurality of electrically energizable, coupling-actuating means in the loop, one in each said control assembly, each effective when energized to engage the corresponding coupling means;

means responsive to said running condition signal from the last of said motor means started, to connect said electrical loop to an electrical power source and thereby condition said loop to engage all of said couplings; and

a plurality of safety switch means in the loop, one in each said control assembly, each capable of responding to detection of an electrical or mechanical defect associated with the respective drum driving unit and control assembly to open the loop and disconnect all of said coupling-actuating means from the electrical power source, thereby simultaneously stopping said belt conveyor and all said booster conveyors on detection of such defect.

4,574,944

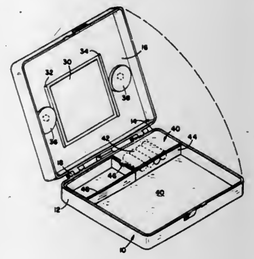
TRAY DEVICE FOR CONTACT LENSES

Frank A. Gregory, 3105 E. Skelly Dr., Ste. 301, Tulsa, Okla. 74105

Filed Jul. 30, 1984, Ser. No. 635,553

Int. Cl.[4] A45C *11/00, 15/04, 15/06;* A45D *33/00;* B65D *45/24*

U.S. Cl. 206—5.1 **1 Claim**



1. A total concept container for the use and care of contact lenses comprising:

a first and second housing portion;

a working area provided in one of the housing portions whereby the contact lenses may be inserted into and removed from an eye in spaced relation over the working area;

a mirror provided in the other housing portion for facilitating the visual inspection during the inserting and removing of the contact lens from the eye, the first and second housing portion being hingedly secured together;

stop means cooperating between the first and second housing portions for retaining one of the housing portions in a preselected angular orientation with respect to the other housing portion wherein the working area comprises a substantially flat planar surface having sidewalls provided around the outer periphery thereof for accumulating and confining any liquid dropped during the inserting and removing of the contact lenses from an eye, and wherein the planar surface is of a contrasting color and texture with respect to the contact lenses for facilitating the recovering of a contact lense from any position on the surface; and

lighting means secured to said other housing portion cooperating with said mirror for facilitating the use thereof.

4,574,945

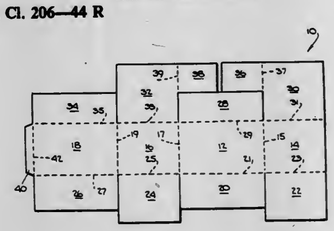
CONVERTIBLE SHIPPING CASE

Susan B. Giblin, Pompton Lakes, N.J., assignor to Lever Brothers Company, New York, N.Y.

Filed May 21, 1984, Ser. No. 612,940

Int. Cl.[4] B65D *90/04*

U.S. Cl. 206—44 R **6 Claims**



1. In a corrugated fiberboard blank for being folded into a product shipping case and converted subsequently to a product display case, said blank including a front panel, a first side panel, a first score line interconnecting said first side panel to said front panel, a second side panel, and a second score line interconnecting said second side panel to said front panel and extending parallel to said first score line, a back panel, a third score line interconnecting said back panel to said second side panel and extending parallel to said second score line, a front bottom flap, a fourth score line interconnecting said front bottom flap to said front panel and extending perpendicularly to said first score line, a first side bottom flap, a fifth score line interconnecting said first side bottom flap to said first side panel and extending colinearly with said fourth score line, a second side bottom flap, a sixth score line interconnecting said second side bottom flap to said second side panel and extending colinearly with said fifth score line, a back bottom flap, a seventh score line interconnecting said back bottom flap to said back panel and extending colinearly with said sixth score line, a front top flap, an eighth score line interconnecting said front top flap to said front panel and extending perpendicularly to said first score line, a first side top flap, a ninth score line interconnecting said first side top flap to said first side panel and extending colinearly with said eighth score line, a second side top flap, a tenth score line interconnecting said second side top flap to said second side panel, a back top flap, an eleventh score line interconnecting said back top flap to said back panel and extending colinearly with the tenth score line, each of said flaps being separated from and foldable independently of the others of said flaps relative to said panels, an improvement comprising: ear flap means separated from said front top flap and interconnected to at least one of said side top flaps, said first and second top flaps having free edges opposite said ninth and tenth score lines, respectively, said ear flap means having an edge means substantially aligned with said free edges said ear flap means having an edge opposite said edge means substantially coincident with the edge of said front top flap opposite said eighth score line and extending at least partially across said front top flap and being foldable relative to and independently of the one of said side top flaps to which said ear flap means is interconnected.

4,574,946

OPEN-FRONT CARTON FOR TOY VEHICLE

Hiroshi Hanazato, Tokyo, Japan, assignor to Buddy L Corp, New York, N.Y.

Filed Feb. 8, 1985, Ser. No. 699,932

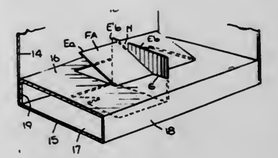
Int. Cl.[4] B65D *5/50, 85/00*

U.S. Cl. 206—45.19 **7 Claims**

1. A carton for packaging and displaying a toy vehicle having more than one set of wheels, said carton comprising:

A. a box-like structure having an open front, a back wall, a bottom wall and a platform elevated above the bottom wall to form a free space therebetween, the dimensions of the structure being such as to accommodate the vehicle in the chamber created above the platform, with the wheels thereof resting on the platform, the inner wheels being adjacent the back wall and the outer wheels adjacent the open front; and

B. an internal locking device to prevent unauthorized withdrawal of the vehicle from the chamber, said device being constituted by a major flap cut out of the platform to define a leading edge and a fold line both parallel to the back wall and a minor flap cut out of the bottom wall to define a leading edge and a fold line both at right angles to the back wall, the major flap having a transverse slot therein, whereby when the minor flap is folded into the free space it engages and raises the major flap and enters the slot therein to maintain the minor flap in an upstanding position, the major flap then resting on the minor flap at an acute angle relative to the platform to form a barrier behind the inner wheels to prevent withdrawal of the vehicle.



4,574,947

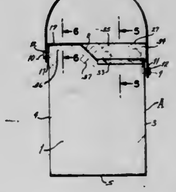
DISPENSING CONTAINER WITH DISPLAY COMPARTMENT

Alexander W. Hutchings, 12 Vicksburg Station, St. Charles, Mo. 63301

Filed Sep. 11, 1984, Ser. No. 649,438

Int. Cl.[4] B65D *85/00*

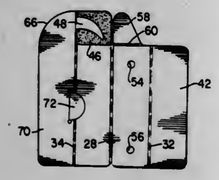
U.S. Cl. 206—45.34 **8 Claims**



1. A dispensing container having a front wall, a rear wall, end walls connecting said front and rear walls, and a bottom wall, said container being normally open to the top, the upper edges of the front, rear and end walls being configured to provide upper and lower horizontal portions with there being an intervening, interconnecting inclined portion, a closure member for closing the normally open top of said container having upper and lower horizontal planar portions with an intervening inclined planar portion complementary to the configuration of the upper and lower horizontal and inclined portions configured by the upper edges of said front, rear, and end walls for operative disposition thereon, a chamber-forming member having an upper wall, side walls depending therefrom and an outer end wall, said chamber forming member being normally open in its bottom portion and in its opposite or inner end portion, the edges at the inner ends of said last-mentioned side walls being complementary to the degree of inclination of

the inclined portion of said closure member, means for detachably engaging said chamber-forming member on said closure member for operatively cooperating therewith for effecting development of an enclosed chamber for article reception and display.

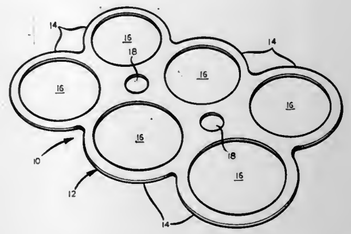
4,574,948
LINEAR FOLD ARMED SUTURE
Charles M. Huck, Pottersville, and Charles R. Ashley, Clinton, both of N.J., assignors to Howmedica, Inc., New York, N.Y.
Continuation of Ser. No. 241,107, Mar. 6, 1981, abandoned. This application Dec. 3, 1984, Ser. No. 676,602
Int. Cl.⁴ A61L *17/02*; B65D *75/04*
U.S. Cl. 206—63.3 **35 Claims**



1. A suture dispensing apparatus comprising:
a. at least one suture including at least one needle and strand secured to one end of the needle;
b. first panel means including pocket means retaining a first sharp-end portion of the needle in a snug fitting relationship, said pocket means being configured and dimensioned so as to permit selective withdrawal of said first sharp-end portion of the needle free of said pocket means, said first panel means having a first longitudinal score line extending across the second or remaining portion of the needle along a predetermined longitudinal axis such that the second or remaining portion of the needle is exposed free of said first panel means upon folding of said first panel means along said first longitudinal score line while said pocket means retains the first sharp-end portion of the needle; and
c. second panel means for retaining a major portion of the strand, said second panel means being foldably secured to said first panel means along respective longitudinal edges thereof parallel to said first score line and configured such that the strand can be withdrawn therefrom upon removal of the first sharp-end portion of the needle from said first panel means, said second panel means having a second longitudinal score line such that said second panel means encloses a portion of the strand upon folding of said second panel means back upon itself along said second score line, and said second panel means in said folded condition being capable of being folded over along its longitudinal edge so as to overlap a surface portion of said first panel means with said second longitudinal score line aligned with said first score line.

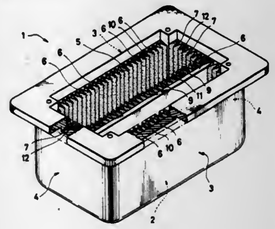
4,574,949
POLYMER COMPOSITION AND ARTICLES PREPARED FROM SAME
Roger R. Rhoads, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Jul. 6, 1984, Ser. No. 628,361
Int. Cl.⁴ B65D *75/00*; B32B *3/10*
U.S. Cl. 206—150 **2 Claims**

1. A composition of matter comprising:
a low density polyethylene resin admixed with,
(1) an amount of erucamide between 200 and 1500 parts per million based on the weight of the low density polyethylene resin, and



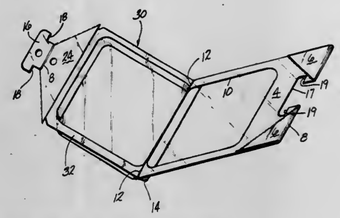
(2) an amount of oleamide between 50 and 500 parts per million based on the weight of the low density polyethylene resin.

4,574,950
WAFER BOX
Kiyohiko Koe; Jun Yamaguchi; Noboru Kubo, all of Hyogo; Hiroshi Matsumoto, Osaka; Mamoru Sugimoto, Osaka, and Keiji Fukumura, Osaka, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Japan
Filed Apr. 20, 1984, Ser. No. 602,590
Claims priority, application Japan, Apr. 25, 1983, 58-72701
Int. Cl.⁴ B65D *85/30, 5/48*
U.S. Cl. 206—334 **7 Claims**



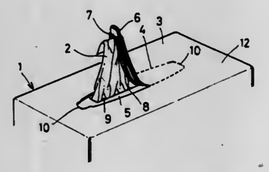
1. A wafer box comprising:
a wafer box body of a rectangular parallelpiped shape having a plurality of parallel wafer inserting grooves formed in inner side surfaces thereof extending in a vertical direction, a plurality of parallel fixing plate inserting grooves formed in inner end surfaces thereof extending in a vertical direction, and an open upper part;
at least one fixing plate having a plurality of wafer receiving grooves formed on at least one side thereof, both ends of said at least one plate being shaped so as to be detachably insertable into a selected pair of said fixing plate inserting grooves in said wafer box body;
first and second buffer members respectively received between said side surfaces of said wafer box body and said at least one fixing plate to support wafers received in said box from upper and lower sides thereof; and
a closure for covering said upper part.

4,574,951
RECLOSABLE PACKAGE
Sherry M. Weaver, Chicago, Ill., assignor to Champion International Corporation, Stamford, Conn.
Filed Dec. 17, 1984, Ser. No. 682,150
Int. Cl.⁴ B65D *75/70*
U.S. Cl. 206—461 **5 Claims**



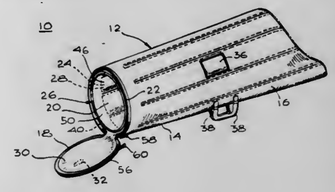
1. A reclosable package comprising:
(a) a paperboard member comprising a back wall, a hinge panel connected to a lower edge of said back wall along a fold line, and a hanger panel foldably connected to an upper edge of said back wall and folded down into overlapping relationship with an upper portion of said back wall;
(b) a tear-apart panel disposed within said hanger panel, said tear-apart panel being bounded laterally by rupturable cut score lines extending across said hanger panel to a lower free edge thereof; and
(c) a plastic blister connected to said paperboard member, said blister including a peripheral flange, a lower portion of said blister flange being non-releasably adhesively secured to said hinge panel, an upper portion of said blister flange being non-releasably adhesively secured to a lower margin of said tear-apart panel, and the remainder of said blister flange being peelably adhesively secured to said back wall of said paperboard member.

4,574,952
BOX CONTAINING FACIAL TISSUES
Toshimune Masui, 4-3, Okata, 3-chome, Kashiwara-shi, Osaka, Japan
Filed Sep. 26, 1984, Ser. No. 654,674
Claims priority, application Japan, Jul. 14, 1984, 59-106895[U]
Int. Cl.⁴ B65D *83/08, 65/28, 77/30*; B65H *3/00*
U.S. Cl. 206—494 **6 Claims**



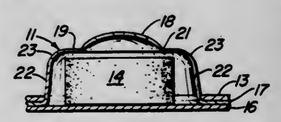
1. In a box containing a plurality of folded facial tissues stacked and intertwined with one another so as to be withdrawn one after another from said box, said box including a top wall having therein perforations defining a portion to be removed from said top wall to form an outlet for withdrawal of said tissues, and a sheet attached to the under surface of said top wall to span said outlet, said sheet having therein a slit through which said tissues may be withdrawn, the improvement comprising:
backing means mounted on the under surface of said portion for facilitating separation thereof along said perforations from said top wall; and
sticking means directed downwardly from said portion for sticking to the uppermost said tissue to ensure withdrawal thereof through said slit and said outlet upon removal of said portion from said top wall.

4,574,953
CONTAINER FOR FRAGILE ARTICLES
Oleg Garbuzov, 5873 Melrose Ave., Los Angeles, Calif. 90038
Filed Oct. 30, 1984, Ser. No. 666,482
Int. Cl.⁴ B65D *85/30*
U.S. Cl. 206—522 **5 Claims**



1. A container for one or more fragile articles; including:
an outer cover having a first size and a first outline shape related to the size and shape of said fragile articles, said outer cover including a plurality of compartments extending substantially throughout the extent of said outer cover;
an inflatable insert having an outline shape corresponding to said first outline shape and a size comparable to said first size and comprising a plurality of inflatable fingers sized and shaped to be received by said compartments in said outer cover, an inflatable end cover and a header pneumatically intercoupling said inflatable end cover and said inflatable fingers;
each of said inflatable fingers carrying a pusher pocket on the external surface thereof;
said outer cover including, in addition, an end flap, positioned to cover said end portion of said insert when said container is closed and an external pocket;
and a sliding fastener carried by said cover for selectively closing said container.

4,574,954
PILL DISPENSER
Grahame W. Reid, Novato, Calif., assignor to Medication Services Inc., San Rafael, Calif.
Filed Dec. 7, 1984, Ser. No. 679,567
Int. Cl.⁴ B65D *83/04, 85/56*
U.S. Cl. 206—531 **6 Claims**



1. In a bubble-type pill dispenser of the kind including at least one plastic pill-containing bubble closed at the back by a sheet of frangible material such that the bubble can be pushed inwardly and deformed to force the pill through the frangible material, the improvement comprising:
a peripheral plateau area in the front of the clear plastic bubble; and
a rounded blister extending convexly forward from the peripheral plateau area and integrally formed with the bubble, generally centrally located in the front of the

bubble and positioned to engage the contained pill when pushed inwardly, the blister meeting the peripheral plateau area in a sharp generally circular break line defining the periphery of the blister;

the plastic material of the bubble being thinner at the break line than in the blister;

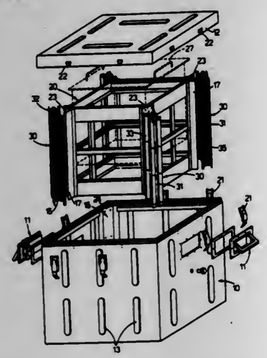
whereby the blister can be pushed inwardly by the finger or thumb of a user with relatively little force, causing it to pop into an inside-out configuration, bending along the break line, assisting in easily pushing the pill through the frangible material.

4,574,955

BOX LIKE CONTAINER INCLUDING A BASKET FOR RECEIVING A LOAD, SUPPORTED BY THE BOX BY MEANS OF SHOCK AND VIBRATION DAMPING MOUNTS SECURED THEREBETWEEN IN DEMONTABLE MANNER

Carlo Camossi, Gozzano, Italy, assignor to Cavoflex Ammortizzatori a cavo metallico s.r.l., Gozzano, Italy

Filed Sep. 28, 1984, Ser. No. 655,571
Int. Cl.⁴ B65D *81/02, 85/30*
U.S. Cl. 206—583 **4 Claims**



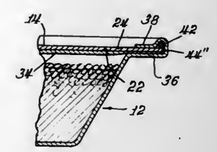
1. A container consisting of a box, in the inside of which is suspended a basket by means of mounts, said basket being designed to receive a load, characterised by the fact that the box (10) and the basket (20) have similar shaped so that a free space of a constant thickness is formed therebetween, while the suspension mounts (30, 30', . . .) are mounted between the box (10) and the basket (20) in corrispondence of the respective bisecting planes X—X of the inner solid angles formed between the wall surfaces and passing through the corners thereof, which are perpendicular to the entrance opening of the box (10, to be closed by a lid (12), said mounts (30, 30', . . .) having a constant height D, measured on the longitudinal center plane of each mount (30, 30', . . .), each mount (30, 30', . . .), comprising an outer saddle-like section (33, 33', . . .) and an inner saddle section (33, 33', . . .), between which at least one damping device (35, 35', . . .) is interconnected, comprising loops or turns of a helical coil, made of wire cable (15), and two pairs of strips or plates (36*a*, 36*b*), each strip pair locking the loops or turns of the cable in diametrally opposite points and being respectively connected to the respective sattle section (31, 31', . . . or 31', 33', . . .), in a disassemblable manner, said mounts (30, 30', . . .) including sattle sections (31, 31', . . . and 33, 33', . . .) of such a height that the sum of these heights and of that of the associated damping device or devices (35, 35', . . .) be always equal to D, so that any greater height of the damping devices will be compensated by a corresponding shorter height of the associated saddle sections.

4,574,956

FOOD CONTAINER AND COVER THEREFOR

Morris W. Kuchenbecker, Neenah, Wis., assignor to James River Corporation of Virginia, Richmond, Va.

Filed Feb. 6, 1984, Ser. No. 577,146
Int. Cl.⁴ B65D *3/26, 5/70*
U.S. Cl. 206—623 **18 Claims**



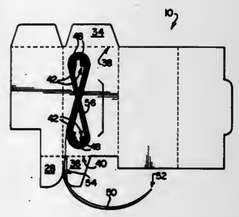
1. A cover for a container having a rim with a peripheral flange adapted to be bent back upon said rim to hold said cover in place, comprising a sheet of paperboard having a removable central portion surrounded by an annular rim portion, said rim portion comprising an inner, annular, continuously intact zone and an outer, annular, discontinuously intact zone, which comprises a plurality of discrete tabs projecting from the periphery of said inner zone, each of which tabs can be fixed substantially independently of other tabs and of said inner zone, said rim portion being permanently clamped between said rim and said peripheral flange, whereby inadvertent disruption of the removable central portion in the manufacturing or handling of the container is minimized, said tabs are substantially juxtaposed; in which said central portion is demarked by a pair of concentric half-cut scores, one of which is cut from the under surface and the other of which is cut from the outer surface; in which said central portion and said inner zone constitute a single imperforate sheet and in which said tabs are integral parts of said sheet; in which a pull tab is attached to said annular rim portion on a press score and in which said half-cut scores curve outwardly to the edges of the pull tab substantially at the ends of said press score, whereby said pull tab can be bent back onto the cover and held there when said flange is folded in to clamp the outer annular rim portion of the cover in place; and in which said press score is located essentially at the interface of said outer and inner zones.

4,574,957

PACKING OF SURGICAL NEEDLE

Michael J. Stead, Verwoerdburg, South Africa, assignor to Ethicon, Inc., Somerville, N.J.

Filed Jan. 25, 1985, Ser. No. 695,149
Claims priority, application South Africa, Mar. 30, 1984, 84/2430
Int. Cl.⁴ A61L *17/02*
U.S. Cl. 206—63.3 **4 Claims**



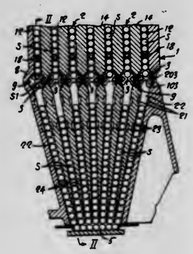
1. A suture envelope containing a curved needle having a blunt end and a pointed end with a suture attached to the blunt end of said needle, said needle having an outer curved surface and an inner curved surface, said envelop being rectangular in shape with a pair of longer side edges and a pair of shorter end edges, a slot extending along at least a portion of one of the shorter end edges, a pull tab extending through said slot, needle carrier means disposed in said envelope and attached to said pull tab, said needle being disposed on said carrier means with the outer curved surface of the needle adjacent one of the longer side edges of the envelope and the blunt end and pointed end of the needle adjacent the other longer side edge of the envelope, and cam means disposed in the envelope and engaging the outer curved surface of the needle whereby upon pulling the pull tab the needle is urged thorough the slot and the needle's orientation relative to the envelope is altered so that an end of the needle is free of the envelope and the pull tab.

4,574,958

CIGARETTE QUALITY CONTROL DEVICE

Renato Manservisi, Bologna, Italy, assignor to Sasib S.p.A., Bologna, Italy

Filed Aug. 2, 1983, Ser. No. 519,593
Claims priority, application Italy, Aug. 4, 1982, 12606 A/82
Int. Cl.⁴ B07C *5/00*
U.S. Cl. 209—535 **10 Claims**



1. A device for controlling the quality of at least one cigarette property as cigarettes move through a hopper to a cigarette-packing machine, the hopper having a plurality of downwardly extending cigarette-guiding channels that are set side by side, with each channel accommodating a single pile of cigarettes so as to allow them to slide downward toward an underlying chamber where cigarette batches consisting of at least one layer of cigarettes set side by side are formed for subsequent removal to the cigarette-packing machine, comprising:

a plurality of cigarette-inspection sensor means for checking said at least one cigarette property, each sensor means being disposed along a respective channel and being exposed, at at least one cigarette position in the respective channel, to at least one end of cigarettes moving through the respective channel;

a plurality of cigarette ejector means for discarding defective cigarettes, each ejector means corresponding to a respective channel; and

a plurality of rotary cigarette-transfer device means, each disposed in a respective channel and separating the respective channel into upper and lower sections, with the respective sensor means being located at the upper section, for transferring a cigarette from the upper section of a respective channel to the lower section thereof if the respective sensor means does not detect a defect in the cigarette and for transferring the cigarette to a respective intermediate position for removal by the respective ejector means if a defect is detected,

wherein each cigarette-transfer device means includes

a roller having at least one peripheral flute, each at least one peripheral flute being configured to accommodate one cigarette and being rotatable from a cigarette-receiving position in communication with the upper section of the respective channel, through the respective intermediate position in alignment with the respective ejector means, to a cigarette-delivery position in communication with the lower section of the respective channel, and

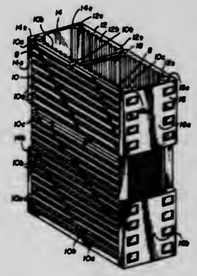
means for rotating the roller simultaneously with the rollers of all other cigarette-transfer device means and at a predetermined rhythm, with a roller which receives a non-defective cigarette being rotated from the cigarette-receiving position to the cigarette-delivery position and with a roller which receives a defective cigarette being rotated from the cigarette-receiving position and halting at the respective intermediate position before preceding to the cigarette-delivery position.

4,574,959

CARRIER RACK FOR ELECTRIC STORAGE BATTERY PLATES

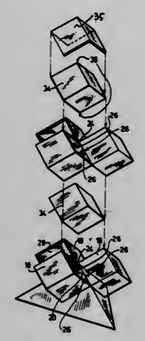
Ronald J. Hollett, Glendora, Calif., assignor to Concorde Battery Corp., West Covina, Calif.

Continuation of Ser. No. 401,964, Jul. 26, 1982. This application Dec. 27, 1983, Ser. No. 566,039
Int. Cl.⁴ A47G *19/08*
U.S. Cl. 211—41 **4 Claims**



1. A knock-down rectangular rack having an open top and an open bottom for containing and transporting a plurality of positive and negative storage battery plates having end lugs comprising: first and second side members and first and second end members intercoupled in a tongue-and-groove relationship to one another to form a rigid structure with said side members in mutually spaced and parallel relationship, and with said end members in mutually spaced and parallel relationship; a plurality of spaced and parallel vertical elongated members forming a plurality of vertical slots on the inner surface of each of said side members and a plurality of spaced and parallel horizontal elongated members integral with the vertical elongated members, said vertical elongated members serving to support said battery plates in spaced and parallel relationship, with each of said battery plates extending across the rack from one of the side members to the other, and with the lugs of the positive battery plates extending upwardly at one side of the rack and the lugs of the negative battery plates extending upwardly at the other side of the rack, said vertical and horizontal elongated members forming a multiplicity of openings therebetween in each of the side members; and a pair of elongated strip members, each having a series of teeth to be received in the openings in each of said side members at any selected level thereof, the strip members extending inwardly from the respective side members to provide a support for the battery plates at different levels within the rack.

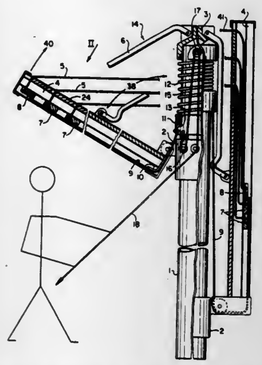
4,574,960
DISPLAY STAND
Edward R. Shikatani, Toronto, Canada, assignor to Don Watt + Associates Communications, Inc., Toronto, Canada
Filed Sep. 13, 1984, Ser. No. 650,129
Claims priority, application Canada, Mar. 16, 1984, 449755
Int. Cl.⁴ A47F *7/00*
U.S. Cl. 211—60.1 **17 Claims**



1. A display stand for articles comprising:
a base having three converging sides defining a pyramid converging to a first apex;
a first group of three cells interconnected to provide respective inside surface portions that at least partially conform to the shape of said converging sides and are each adapted to lie over at least a portion of a corresponding one of said converging sides, each of said cells having an inclined opening for receiving one or more of the articles;
one or more additional cell groups constructed in the same manner as the first group of cells; and
one or more spacers interspacing the first and additional groups; each of said spacers includes upper and lower opposing sets of three converging sides, the upper set of converging sides is received by the inside surface portions of the group of cells positioned above said each spacer and the lower set of converging sides has edges between adjacent converging sides resting upon surfaces of the cells of the group located below said each spacer.

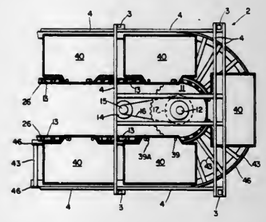
4,574,961
AIRING AND DRYING FRAME
Peter Keiels, Obernhof, and Dieter Patzold, Nassau, both of Fed. Rep. of Germany, assignors to Leifheit AG, Nassau/-Lahn, Fed. Rep. of Germany
Filed Oct. 31, 1983, Ser. No. 547,198
Claims priority, application European Pat. Off., Jan. 13, 1983, 83100226.6
Int. Cl.⁴ D06F *53/00*
U.S. Cl. 211—119.01 **19 Claims**

1. A frame for airing and drying articles comprising:
support means;
a plurality of arms extending from said support means;
hanging means extending from said arms for hanging the articles, said hanging means including at least one closed polygon rope which is connected to each of said arms at locations on said rope; and
retracting means connected to said arms and said support means for retracting said hanging means into said arms, said retracting means including at least one sliding element



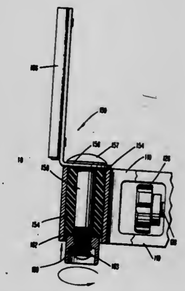
movably mounted in each of said arms and to which said locations are connected to constitute a first unit therewith.

4,574,962
STORAGE AND RETRIEVAL SYSTEM
Charles P. Tabler, and Theodore R. Devins, both of Hamilton, Ohio, assignors to Buckhorn Material Handling Group, Inc., Cincinnati, Ohio
Filed Apr. 25, 1983, Ser. No. 488,590
Int. Cl.⁴ A47F *5/02*
U.S. Cl. 211—122 **46 Claims**



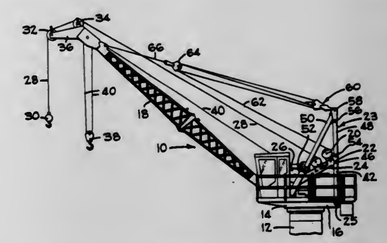
1. In a storage and retrieval system, comprising a rigid frame to be supported on a floor, said frame having a plurality of rigid upright columns and a plurality of beams rigidly interconnecting said columns, and
a plurality of endless horizontally traveling conveyor sections mounted on said frame, spaced vertically from one another, in vertically aligned relationship and being substantially identical to each other,
the improvement comprising each of said sections including:
at least one drive sprocket and at least another sprocket mounted in substantially the same plane for rotation about respective vertical axes, which are spaced from one another;
power means for selectively rotating said drive sprocket;
an endless drive chain drivingly engaging said sprockets and extending in a substantially horizontal plane along a closed conveying path;
means to guide said chain along said path between said sprockets;
an endless array of a plurality of undriven rollers mounted for rotation about horizontal axes generally perpendicular to said path, and said array extending around the entire path to the outside of said chain;
a plurality of generally horizontally extending trays drivingly connected to said chain at a corresponding plurality of positions spaced along said chain to extend outwardly from said chain and travel with said chain in said path, and said trays engaging and being supported on said rollers; and
a picking station to the outside of said path, a loading station to the outside of said path and spaced along said path from said picking station, so that the articles may be placed on said tray at said loading station, stored in its conveyor section, conveyed to said picking station, and removed from said trays at said picking station.

4,574,963
MEDICAL SERVICE COLUMN AND MOUNTING BRACKET
Eugene H. Fullenkamp, Batesville, and Cecil R. Lohrey, Brookville, both of Ind., assignors to Hill-Rom Company, Inc., Batesville, Ind.
Division of Ser. No. 462,682, Jan. 31, 1983, abandoned. This application May 23, 1984, Ser. No. 613,204
Int. Cl.⁴ A47B *47/00*
U.S. Cl. 211—190 **4 Claims**



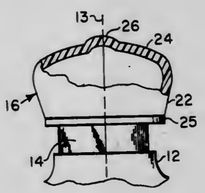
1. A mounting member movably attachable to a channel for mounting items in various positions of adjustment, said mounting member including a base and at least one locking slide receivable within said channel for sliding movement therealong, a first manual actuating means coupled to said slide to move the latter toward said base for frictionally engaging a wall of the channel under the urgings of said first actuating means to frictionally retain said mounting member in place, said channel including at least one enlargement forming an access zone for admitting said slide, further in combination with a mounting bracket having annular securing means formed of resilient material, said mounting member including a hollow open-ended socket defining a longitudinal cylindrical bore sized radially and longitudinally to receive said resilient securing means in a relaxed state of the latter to enable said bracket to be rotated about a longitudinal axis of said bore, and second actuating means for expanding said resilient securing means radially outwardly into frictional engagement with a wall of said bore to affix said bracket immovably to said mounting member solely by a radially expanded portion of said resilient securing means, said second actuating means including a manual actuator projecting beyond one open end of said socket so as to be accessible for manual actuation when said resilient securing means is disposed in said socket.

4,574,964
BREAKAWAY BAIL
Gerald P. Berger, Cedar Rapids, Iowa, assignor to FMC Corporation, Chicago, Ill.
Filed Jun. 29, 1983, Ser. No. 508,975
Int. Cl.⁴ B66C *15/00*
U.S. Cl. 212—149 **2 Claims**



1. An arrangement for assuring a preferred mode of failure for a crane mounted on a pedestal when subjected to an overload comprising:
an upper rotatably mounted on said pedestal;
a boom pivotally attached to said upper;
a pulley rotatably mounted on said boom;
a hoist winch mounted on said upper;
a first wire rope trained over said pulley and wound on said hoist winch;
a hook suspended from said first rope, the mounting of said upper on said pedestal being capable of withstanding a maximum design load moment applied to said hook;
a gantry secured to said upper;
a boom winch mounted on said upper;
a second wire rope wound on said boom winch and extending between said boom and said gantry to control the angle of said boom;
bushing means attached to tension plate means for pivotally attaching said tension plate means to said gantry;
a multiple sheave pulley attached to said plate means over which said second wire rope is trained; and said tension plate means having a reduced cross-sectional area which creates tension stresses sufficient to cause separate of said plate means at a load moment less than said design load moment.

4,574,965
CONTAINER WITH INTEGRALLY FORMED PIERCING SITE
Eugene J. Meierhoefer, Hackettstown, N.J., assignor to Health Care Concepts, Inc., Allamuchy, N.J.
Continuation-in-part of Ser. No. 615,214, May 30, 1984, Pat. No. 4,513,871. This application Apr. 12, 1985, Ser. No. 722,336
Int. Cl.⁴ B65D *41/42*
U.S. Cl. 215—32 **11 Claims**



1. A blow molded sealed container individually prepared from a single parison and of integral construction having a

non-coring and self-sealing piercing site for penetration by a steel or plastic needle comprising:

a. a main body for containing or receiving a liquid;

b. a hollow neck portion extending from and communicating with the interior of said main body;

c. hollow, fully enclosed main dome means formed on the opposite end of said neck portion communicating with the interior of said neck having a generally uniformly curved outwardly bulging shell of uniform thickness generally concentric with said neck, the outer surface of said shell having formed therein a needle penetration site consisting of a secondary dome located on the center line of said neck and smaller than the diameter of said curved shell; and

d. said container having a non-protruding mold seam passing through said main dome means, said seam on the outer surface of said dome means curving away from said secondary dome.

4,574,966

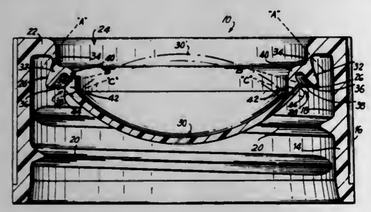
PLASTIC LINERLESS CLOSURE

Jeffrey Sandhaus, Rte. 9W, Sneden's Landing, Palisades, N.Y. 10964

Continuation-in-part of Ser. No. 549,477, Nov. 7, 1983, Pat. No. 4,550,841, which is a continuation-in-part of Ser. No. 441,546, Nov. 15, 1982, Pat. No. 4,479,585, which is a continuation-in-part of Ser. No. 399,237, Jul. 19, 1982, Pat. No. 4,442,945, which is a continuation-in-part of Ser. No. 335,216, Dec. 28, 1981, Pat. No. 4,413,742. This application Nov. 28, 1984, Ser. No. 675,603

Int. Cl.⁴ B65D *53/00*

U.S. Cl. 215—270 **17 Claims**



1. A closure for application to a neck of a container, said neck having a top, inner and outer surfaces, comprising:

a skirt; and,

a top, coupled to said skirt, including:

a displaceable sealing member adapted to engage said top surface of said neck with application of said closure to said neck;

an inner sealing region having an outwardly facing sealing surface adapted to be situated contiguous with said inner surface of said container neck with application of said closure to said container neck; and,

means, coupled to said sealing member and said inner sealing region, for urging said outwardly facing sealing surface outwardly against said inner surface of said container neck in response to displacement of said sealing member through engagement thereof with said top surface of said neck.

4,574,967

SEALING CAP FOR A SAFETY CONTAINER

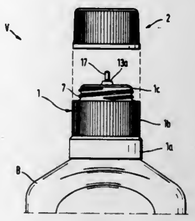
Wilhelm Schuster; Jürgen Stahl, and Lüdwig Scondo, all of Frankfurt am Main, Fed. Rep. of Germany, assignors to AHK Alkohol Handelskontor GmbH & Co. KG, Lippstadt, Fed. Rep. of Germany

Filed Oct. 9, 1984, Ser. No. 658,826

Claims priority, application Fed. Rep. of Germany, Oct. 12, 1983, 3337060

Int. Cl.⁴ B65D *41/08*

U.S. Cl. 215—276 **4 Claims**



1. A sealing cap particularly adapted for a container having a safety valve consisting of a conical valve supported by a cylindrical molding, controlled by a membrane and actuated by reducing the interior space of the interior of said container, the membrane having a central recess limited by a gasket through which a valve cone is inserted, said gasket bearing upon said valve cone and molded onto a cylindrical membrane carrier enclosing the upper edge region of the cylindrical section of the molding of the conical valve and resting by means of an outwardly projecting radial flange on an outwardly projecting radial collar of the molding of the valve support, said container further having an exterior thread situated on the neck thereof below the valve, and at least two retaining lugs situated on the neck thereof below said exterior threads,

said sealing cap consisting of separable top and bottom members

said bottom member having internal thread means interactable with the external thread means of said container; and inwardly projecting step above said internal thread means, said step situated to rest firmly on the upper side of the flange of the membrane support of the container; at least two detent tabs situated on the inner wall thereof and interactable with said retaining lugs; and external thread means interactable with internal thread means situated on said separable top member;

said separable top member being a cap having internal thread means interactable with said external thread means of said bottom member.

4,574,968

FREIGHT CONTAINER, IN PARTICULAR FOR AIR FREIGHT

Gerhard J. Mittelmann, Öhningen, Fed. Rep. of Germany, assignor to Swiss Aluminium Ltd., Chippis, Switzerland

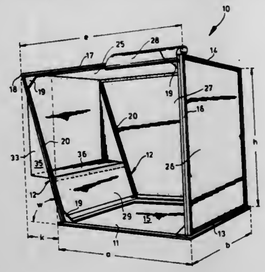
Filed Sep. 21, 1984, Ser. No. 653,054

Claims priority, application Fed. Rep. of Germany, Jul. 30, 1984, 3428053

Int. Cl.⁴ B65D *88/14*

U.S. Cl. 220—1.5 **8 Claims**

1. A freight container, in particular for air freight, which comprises: a bottom or base plate; a support frame structure which is arranged on said base plate and includes side frames and top members extending therebetween, wherein top members project beyond the base plate at one end of the container by an overhang dimension and wherein the side frames extending from the top members to the base plate at the overhang dimension are sloped or inclined toward the other end of the container opposite said one end and the side frames extending from the top members to the base plate at said other end spaced from the overhang dimension are substantially vertical; a covering which at least partially clads the support frame and includes side wall members delimited upwardly by a top member, wherein one of said side wall members has a support structure including a vertical side frame, a top member and an



inclined side frame, said container having another side wall member adjacent said one side wall member and sharing said inclined side frame, said another side wall member including a projection portion bounded by marginal portions, said projection portion having triangular side walls and a main surface extending parallel to the oppositely disposed wall of the freight container and including means for attaching said projection portion along the marginal portions to said container.

4,574,969

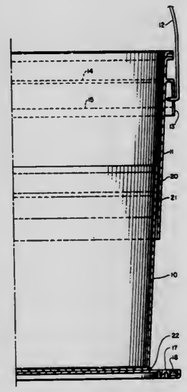
COLLAPSIBLE PAIL

Ralph E. Mays, 22903 Cerca Dr., Valencia, Calif. 91355

Filed Dec. 3, 1984, Ser. No. 677,741

Int. Cl.⁴ B65D *6/16, 8/24*

U.S. Cl. 220—8 **1 Claim**



1. A collapsible pail comprising the combination of:

a plurality of tapered sections coaxially disposed with respect to each other;

each of said pail sections having an upper portion and a lower portion arranged so that the lower portion of one section binds with the upper portion of another section so as to provide a maximum volume container;

sealing means disposed between adjacent and binding portions of said sections providing releasable frictional engagement therebetween;

said sections characterized as being nestable in one condition providing a low profile for storage purposes and extendable to another condition constituting said maximum volume container;

said lower portion of said other section includes a circular flange serving as a stop means limiting disassembly of said sections from said coaxial relationship and from each other;

said sealing means comprising a pair of annular spaced apart tapes of resilient composition characterized as being compressible to effect a waterproof seal between said adjacent and binding portions of said sections;

said tapered upper portion of said one section cooperates with said flange of said lower portion of said other section to combine said sections as a unit in either of said first and second conditions;

snap-lock means are cooperatively disposed between said lower portion of said other section and said flange whereby said flange is removably coupled to said lower portion of said other section;

said flange is removably connectable to said upper portion of one section constituting a lid therefor in either one of said aforementioned conditions; and

said flanged bottom of said other section is of greater dimension than the dimension of said other section so as to retain said sections together as a unit.

4,574,970

CAP FOR DRINKING CUPS

Helmut Schwarz, P.O. Box 1145, D-7972 I S N Y/Allgäu, Fed. Rep. of Germany

Filed Feb. 6, 1984, Ser. No. 577,347

Int. Cl.⁴ A47G *19/22*; B65D *47/06*

U.S. Cl. 220—90.4 **9 Claims**

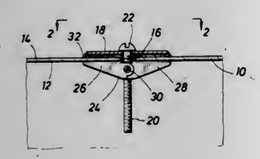


1. A cap for a drinking cup comprising:

(a) a peripheral wall, in cross-section, extending in a vertical plane, having attachment means at the lower part of said peripheral wall for attaching to a drinking cup;

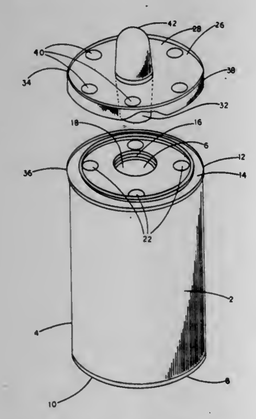
(b) a top wall transversely extending over the peripheral wall, said top wall extending in substantially one plane from one side of said peripheral wall and merging into a lip resting hutch at the opposing side of the top wall, said lip resting hutch comprising a depression below said plane spaced inwardly from said peripheral wall on the side thereof opposite said one side, said depression extending toward said opposite side and ascending upwardly above said plane and defining an extension offset radially outwardly from said vertical plane, said lip resting hutch including a discharge opening located in said depression adjacent to that part of said hutch ascending upwardly, said opening being spaced axially downwardly and radially inwardly from the uppermost edge of said extension.

4,574,971
SEALING ASSEMBLY FOR VESSELS
Clayborn T. Leonard, Rte. 3, Box 44C, Liberty, Tex. 77575
Filed Dec. 24, 1984, Ser. No. 685,845
Int. Cl.[4] B65D *53/00*
U.S. Cl. 220—235 5 Claims



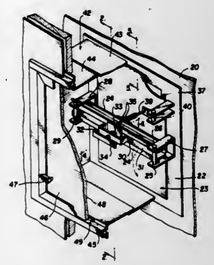
1. A sealing assembly for sealing holes, cracks and the like, in fluid containing vessels, comprising:
(a) a toggle bolt having a pair of toggle wings being collapsible to a dimension such that said toggle wings can be passed through a small hole in said vessels, said toggle wings being expandable to a position bringing elongated surface portions thereof into force transmitting engagement with the inner surface of said vessel on opposed sides of said small hole;
(b) a body of polymer sealing material covering a portion of the exterior surface of said vessel surrounding said small hole and closing said small hole, said polymer material being applied in a soft uncured state and curing to a hardened form and establishing sealing with said tank;
(c) a retainer plate engaging said body of polymer material; and
(d) said toggle bolt having an elongated threaded bolt portion forcing said retainer means and said stop means toward one another and thus forcing said retainer plate tightly against said polymer sealing material and forcing said polymer sealing material tightly against the external surface of said vessel.

4,574,972
PROTECTIVE CAP FOR DIESEL FUEL FILTER
Henry L. Saha, 583 Sharonway, Bolingbrook, Ill. 60439
Filed May 2, 1985, Ser. No. 730,004
Int. Cl.[4] B65D *53/18*
U.S. Cl. 220—254 8 Claims



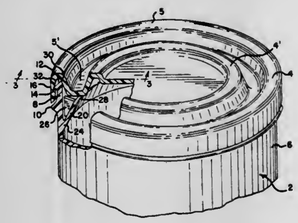
1. A protective cap for a diesel fuel filter, wherein said diesel fuel filter comprises a canister having a cavity, an open working end opening to said cavity, an annular body of filtering material positioned in said cavity surrounding a central downstream cavity, wherein said protective cap includes a cap disc having an upper surface and a lower surface, a sealing plug projecting from said lower surface having a cross-sectional dimension and configuration corresponding to that of the opening to said central downstream cavity to seal said downstream cavity from entry of diesel fuel therein when said sealing plug is seated in the said opening thereto, said cap disc overlying said working end of said canister and adjacent thereto when said sealing plug is seated in said opening to said central downstream cavity, said cap disc including cap disc aperture means positioned thereon to admit diesel fuel through said cap disc aperture means and into said canister at a location which is upstream from at least a portion of said filtering material, whereby diesel fuel passing through said cap disc aperture means must pass through at least a portion of said filtering material before filtering through into said central downstream cavity.

4,574,973
DOOR SYSTEM FOR PRECIPITATORS AND THE LIKE
Robert L. Lewis, Jr., Baxley, Ga., and J. Albert Hudson, Knoxville, Tenn., assignors to Environmental Products & Services Co., Inc., Skillman, N.J.
Filed May 7, 1985, Ser. No. 731,473
Int. Cl.[4] B65D *43/16, 43/18, 51/18*
U.S. Cl. 220—259 14 Claims



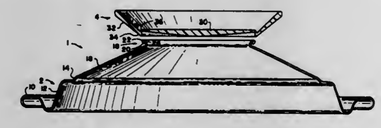
1. An entrance doorway for industrial equipment comprising a frame plate adapted for attachment to a casing wall of an industrial equipment unit adjacent to an access opening in such wall, an interior door plate hingedly mounted on the frame plate for horizontal swinging between a closed sealing position and an open position, a resilient gasket on and extending continuously around the perimeter of the door plate in opposing relationship to the frame plate, means connected with the interior door plate and being operable to exert pressure on the door plate substantially at its center to flex the door plate toward said casing wall and render it somewhat concave temporarily thereby compressing said gasket and forming a tight seal between the interior door plate and said frame plate, said means also being operable to relieve the pressure on said door plate whereby the door plate returns automatically to a normal flat state to break the seal between the door plate and frame plate, said means then being operable to pull the interior door plate to an open position, an adjustable length sleeve secured to said frame plate in surrounding relationship to the interior door plate and extending outwardly therefrom, and a thermally insulated exterior door panel removably held on said sleeve in spaced relationship to the interior door plate, there being a substantially dead air space within said sleeve and between the interior door plate and the exterior door panel.

4,574,974
CONTAINER HAVING A SNAP-ON LID
John W. von Holdt, 7430 N. Croname Rd., Niles, Ill. 60648
Filed Dec. 14, 1984, Ser. No. 681,883
Int. Cl.[4] B65D *41/16, 41/18*
U.S. Cl. 220—306 15 Claims



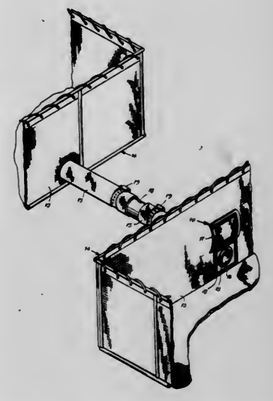
1. A molded plastic container comprising
a continuous wall having an annular lip defining the mouth of the container;
an inwardly and upwardly extending annular flange forming a pocket on said wall beneath said mouth; and
a plurality of reinforcing ribs integral within said pocket between said flange and said wall for increased strength of said mouth.

4,574,975
RESEALABLE CONTAINER CLOSURE
Robert L. Taylor, Chester; Danny R. Sink, and Daniel F. Cudzik, both of Richmond, all of Va., assignors to Reynolds Metals Company, Richmond, Va.
Continuation-in-part of Ser. No. 653,469, Sep. 20, 1984, abandoned, which is a continuation of Ser. No. 547,424, Oct. 31, 1983, abandoned. This application Oct. 4, 1984, Ser. No. 657,624
Int. Cl.[4] B65D *41/16, 41/18*
U.S. Cl. 220—306 47 Claims



1. A closure device for a can comprising a metallic end wall having an opening therethrough and a flexible closure element, said opening being substantially surrounded by a beaded flange means that flares outwardly relative to said opening, said beaded flange means including an exterior surface portion, said end wall including a wall portion surrounding said flange means with said wall portion extending at a selected angle relative to said exterior surface portion of said flange means,
said flexible closure element having a central panel, a lever portion and a connecting portion connecting said central panel with said lever portion, said lever portion being initially positioned in a first position, when said central panel is generally horizontally disposed, as a generally upwardly directed frustoconical skirt portion and having, as viewed in vertical cross-section, a nose at its connection with said connecting portion, said metallic end wall and said closure element being constructed and arranged such that, upon positioning said closure element over said opening of said metallic end wall and moving said lever portion to a second position including, when said central panel is generally horizontally disposed, moving said lever portion to a generally downwardly directed position, said nose portion will sealingly engage at least a continuous annular part of said exterior surface portion of said flange means, said closure element being out of contact with a major portion of the inner surface of said flange means,
said wall portion of said metallic end wall having a substantially frustoconical annular section extending outwardly from said flange means and said lever portion having a smooth surfaced section which intimately engages said substantially frustoconical annular section of said end wall when said lever portion is moved to said second position so as to substantially prevent ingress of dirt and the like between said lever portion in said second position and said annular section of said wall portion.

4,574,976
FOLDABLE TANK DRAIN STOP COVER
Wayne R. Hess, R.D. #2, A470, and James L. Raffenberger, R.D. #1, Box 339, both of Dallastown, Pa. 17313
Filed Dec. 20, 1984, Ser. No. 684,339
Int. Cl.[4] F16L *55/10*
U.S. Cl. 220—315 6 Claims



1. A combination comprised of a foldable tank designed to receive and temporarily retain a liquid medium, a discharge drain opening mounted within a lower side wall position of said foldable tank, a cooperative affixment means supportably assembled upon and peripherally encompassing said discharge drain opening, a flexible dump drain tube in communication with said discharge drain opening, and a foldable tank drain stop cover adapted to sealably occlude and releasably clear said discharge opening;
said foldable tank drain stop cover comprising a planar flexible flap of a geometrical configuration adapted to be received in said tank, said foldable tank drain stop cover further comprising a cooperative affixment means assembled upon and peripherally encompassing one planar side surface of said planar flexible flap for releasable attachment thereof to said cooperative affixment means supportably assembled upon said discharge drain opening, said foldable tank drain stop cover further comprising a handle means connectably assembled upon said planar flexible flap on the opposite planar side thereof to thereby facilitate placement and selective removal of said foldable tank drain stop cover in accomplishing occlusive covering and releasable opening of said discharge drain opening in effecting transfer of said liquid medium from said foldable tank to another foldable tank by an insertable interconnecting conduit means communicably joining the respective flexible dump drain tubes thereof.

4,574,977

DRIP TRAY FOR HIGH CHAIRS

Kurt Ellis, and Debbie K. Ellis, both of 2114 Gale Ave., Long Beach, Calif. 90801

Filed Feb. 4, 1983, Ser. No. 463,903
Int. Cl.⁴ F16N *31/00*
U.S. Cl. 220—403 **1 Claim**



1. A drip tray assembly adapted for use subjacent a high chair comprising:

a substantially circular, plastic pan of a plan form conformed to receive the legs of said chair having a vertical peripheral edge thereabout for containing any liquids deposited thereon, said peripheral edge including a plurality of attachment means deployed on the interior surface thereof, a spout for draining of liquids and a straight segment for alignment relative a wall;

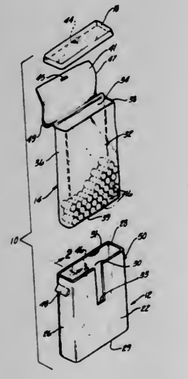
a cloth liner of towel-like wick characteristics conformed for receipt on the interior of said pan and including a plurality of engaging means aligned on the periphery thereof for releasable engagement with said attachment means, whereby any moisture dropped into said pan is absorbed in said liner for convenient removal thereof.

4,574,978

BEVERAGE CONTAINER CARRIER

Jeffrey M. Hodges, 1215 Beach Dr., Lake Orion, Mich. 48035

Filed Jun. 26, 1984, Ser. No. 624,730
Int. Cl.⁴ B65D *25/16*
U.S. Cl. 220—403 **6 Claims**



1. A beverage container carrier for transporting a plurality of similarly sized beverage containers each having a pair of opposing and generally flat ends, said carrier comprising:

a flexible open-topped pouch having a front wall, a back wall, two opposed side walls and a bottom wall, all of said walls having substantially fixed dimensions; a flap secured to said rear wall; and means for securing said flap over the top of said pouch and to said front wall of said pouch; and

a rigid-walled, open-topped housing dimensioned to slideably receive said pouch therein; said housing including a face adjacent said front wall of said pouch and an opening therethrough extending partially down said face and having a width less than that of said face, said securing means being operable through said opening;

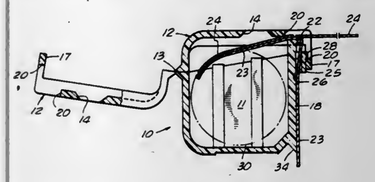
wherein said front wall and said back wall are spaced apart by said side walls and said bottom wall a distance substantially equal to the length of said beverage container and said side walls being spaced apart by said front wall and said back wall a distance substantially equal to an integral multiple of the diameter of said beverage containers, so that containers stacked on their sides in said pouch remain aligned in a uniform arrangement upon removal of said pouch from said housing.

4,574,979

DISPENSER FOR TAPE SUPPORTED LABELS

Edward J. Hackett, Scottsdale, Ariz., assignor to Walter Allen Plummer, III, Tustin, Calif.

Filed Mar. 8, 1984, Ser. No. 587,610
Int. Cl.⁴ B65H *5/28*
U.S. Cl. 221—73 **4 Claims**



1. A one-piece molded plastic dispenser for dispensing individual gummed labels from a row thereof lightly attached end-to-end to a respective one of a plurality of separate shroudless coils of tape and readily peelable therefrom, said dispenser comprising:

an open-topped container divided into a plurality of open-topped cells by imperforate partitions;

a separate cover for each of said cells having a rear end connected by a live hinge across the rear end of said cell and a flange at a front end of said cell extending downwardly along but spaced outwardly from a front wall of said container, each of said covers having an open tape feed channel opening downwardly along a inner side thereof and opening into a label-dispensing port through a front corner of said covers in an area embracing a top edge of the front wall of said container;

a tubular guard flange integral with said front wall underlying each of said downturned cover flanges and equipped with detent means for holding each of said covers closed; and

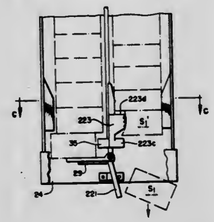
an unshrouded coil of tape in each of said cells each having a row of gummed labels attached thereto and imprinted with different symbols on each tape and with the leading end of each tape extending along a respective one of said tape feed channels, across the upper edge of the container front wall and then abruptly downwardly through said tubular guard flange whereby the manual advance of a selected one of said tapes is effective as the tape passes over the top edge of said front wall to progressively separate a label therefrom and dispense the same through said label-dispensing port in the associated one of said covers.

4,574,980

VENDING MACHINE DISPENSING MECHANISM

Akihito Kurosawa, and Osamu Anazawa, both of Maebashi, Japan, assignors to Sanden Corporation, Isesaki, Japan

Filed Jun. 11, 1984, Ser. No. 619,298
Claims priority, application Japan, Jun. 10, 1983, 58-102911
The portion of the term of this patent subsequent to Sep. 24, 2002, has been disclaimed.
Int. Cl.⁴ B65G *59/06*; B65H *3/44*
U.S. Cl. 221—116 **4 Claims**



1. In an article dispenser for dispensing articles from a vending machine including an article storage area in which the articles are held in two vertically adjacent columns in a stacked disposition above a bottom opening through which the lowermost articles are dispensed and dispensing mechanism to successively dispense the lowermost articles stacked in said storage area through said bottom opening, said dispensing mechanism including a rotatable shaft vertically extending within said storage area between the two vertically adjacent columns, a pair of doors pivotably supported within said storage area at the lower end of said rotatable shaft to essentially close the bottom opening leading from said storage area, control plate means fixed on the lower end of said rotatable shaft to contact with the underside surfaces of said doors for controlling the pivoting of each of said doors upon rotation of said rotatable shaft to selectively open and close said doors in successively dispensing the lowermost stacked article in the two vertically adjacent columns, and article holder means fixed on said rotatable shaft for holding all articles except the lowermost article in one of the vertical columns of articles in a stacked disposition during opening of the door associated with said one column by the action of said control plate means; the improvement comprising said article holder means having a holding surface portion radially projecting from said rotatable shaft to frictionally engage an article above the lowermost article, a projection at the lower end of said rotatable shaft adjacent to the lowermost article, and an article pushing member fixed on said rotatable shaft positioned on the opposte side of said shaft from said projection to act in pushing the lowermost article toward the outside of the bottom opening leading from said storage area.

4,574,981

APPARATUS FOR DISPENSING CANS AND THE LIKE

Harold Jewett, 149 High St., Sommersworth, N.H. 03878

Filed Mar. 5, 1984, Ser. No. 586,317
Int. Cl.⁴ B65G *59/00*
U.S. Cl. 221—283 **10 Claims**

1. Apparatus for dispensing cans and the like comprising a cylindrical tube having upper and lower portions and an interior diameter somewhat greater than the diameter of cans to be dispensed to allow movement of such cans along the center axis of the interior of the tube; a dispensing slot near the lower portion of the tube, said dispensing slot extending transverse to the center axis of the tube and being of sufficient dimension to allow a can to be removed therethrough from the tube; and stop means disposed within the interior of the tube opposite and rearward of the dispensing slot for contacting said can between its center of gravity and a rear edge thereof and for



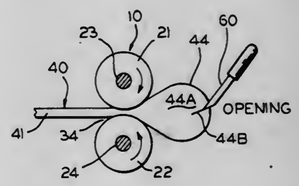
permitting said can to tilt forward into the dispensing slot and into engagement with edges of the slot.

4,574,982

METHOD OF RECOVERING INK REMAINING IN AN INK DRUM LINER

Michael J. Dehart, Jonesboro, Ark.; Warren C. Spitzner, Kansasville, Wis., and James M. Estes, Graymont, Ill., assignors to W. A. Krueger Co., Scottsdale, Ariz.

Filed Oct. 16, 1984, Ser. No. 661,315
Int. Cl.⁴ B67B *7/24*
U.S. Cl. 222—1 **15 Claims**



1. A method of recovering deposits of ink that remain in the ink drum liner of a substantially empty container, which comprises the steps of:

positioning a mouth end portion of said ink drum liner at a first open end of said liner proximate to a roller nip region of wringer assembly means;

inserting said mouth end portion of said liner into the roller means portion of said wringer assembly means;

said roller means comprising at least a pair of roller elements in operable biased communication relative to each other having a first entry side at said nip region, and an exit side opposite to said entry side;

rotating said roller means of said wringer assembly means while in engagement with said mouth end portion by drive means so as to draw said liner therethrough towards an exit side of said roller means while simultaneously urging said ink-deposits in said liner towards the closed end of said liner at a second opposite end, as a bulge on said entry side of said roller means;

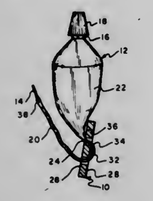
pulling said liner with gripping means, proximate said open mouth end so as to controllably guide said ink drum liner through said wringer assembly means;

opening the closed end of said liner proximate to said second end to enable release of said accumulated ink deposits and said bulge from said second end of said ink drum liner;

releasing the accumulated ink deposits from said ink drum

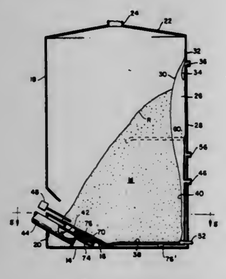
liner into collection means positioned below said opened second end of the ink drum liner; and
removing said ink drum liner from said wringer assembly means.

4,574,983
ACCUMULATOR DEVICE FOR A COLLAPSIBLE TUBE DISPENSER
Harry W. Fatkin, 113 Poplar Ave., Westville, N.J. 08093
Filed May 25, 1984, Ser. No. 613,910
Int. Cl.⁴ B67B *7/00*
U.S. Cl. 222—1 **2 Claims**



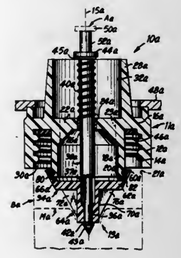
1. A method of accumulation and dispensing thickened flowable material from a collapsible tube with a closed end from an openable end with a closure over the open end comprising:
(a) threading the closed end of the partially dispensed collapsible tube through a slot in a body member having a first surface adjacent the open end of the tube and a second surface adjacent the closed end of the tube,
(b) pulling on the closed end at an angle away from the slot and against an edge of the slot and directing the closed end toward a second slot in the body member,
(c) threading the closed end of the tube into the second slot,
(d) pulling the closed end to take up all the slack of the tube between the two slots and form a reverse bend in the tube, and
(e) folding the body member back on the full portion of the tube and pressing the body member on the full portion of the tube to aid in dispensing the material from the tube.

4,574,984
MATERIAL-HANDLING AND DISCHARGE BIN OF THE TYPE HAVING A FLUID-EXPANDABLE FLEXIBLE MEMBRANE FOR DISCHARGE ASSISTANCE
Timothy C. Bonerb, East Amherst, N.Y., assignor to Vincent C. Bonerb, Boston, N.Y., a part interest
Filed Jun. 3, 1983, Ser. No. 500,821
Int. Cl.⁴ B65D *88/62*
U.S. Cl. 222—61 **20 Claims**



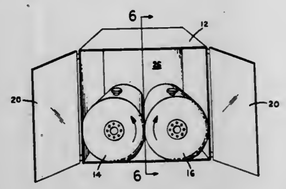
1. A material-handling and storage bin of the type having a fluid-expanded flexible membrane for assisting in gravity discharge of free-flowing granular material after such material partially discharges by action of gravity by rolling material into a conical area inside an angle of repose through cyclicly expanding the flexible membrane, the material discharging through a discharge opening where the membrane is secured to the bin, with improvements for assisting the flexible membrane in providing complete discharge on its expansion, the improvements comprising; a clamping ring providing a mating edge which secures the flexible membrane to the discharge opening in the bin, the mating edge including a plurality of lobes extending outwardly from a periphery of the clamping ring which precludes excessive folding and creasing of the flexible membrane on its expansion under pressure.

4,574,985
DISPENSING VALVE INCLUDING AN ELASTOMERIC SEAL DISPOSED BETWEEN PLASTIC PLUG AND VALVE SEAT MEMBERS
Donald J. Sykes, Upper Saddle River, N.J., assignor to Marpac Industries, Inc., Waldwick, N.J.
Filed Mar. 12, 1984, Ser. No. 588,195
Int. Cl.⁴ B65D *47/06*
U.S. Cl. 222—83.5 **10 Claims**



1. A dispensing valve for use on a supply bottle having an opening and containing fluid for a copier or printer, said valve having an axis and including a radially outer unit, a radially inner unit, and seal effecting means,
said outer unit including:
a cap for coupling the bottle at the opening thereof, said cap having a radially inner central spider portion with slots for passage of fluid therethrough and having a central bore for guiding the inner unit;
an axially outer sleeve mounted on the cap and coaxial with the spider, and enclosing an outer well for the fluid; and
an axially inner sleeve mounted on the cap and coaxial with the spider and having a coaxial valve seat disposed inside the bottle and adapted to engage the inner unit for sealing in the fluid; and
said inner unit includes:
a spindle journaled in the spider bore coaxial therewith;
a compliant plastic valve plug mounted on the spindle, coaxial therewith; and
a compression spring mounted on the spindle coaxial therewith for urging the plug against the valve seat;
said plug comprising:
a plug conical section having a conical surface, and
a rib section having a cylindrical portion fixedly connected to the spindle and having a plurality of peripherally spaced ribs for supporting the conical section and for use in rupturing a membrane inside the bottle,
said seal effecting means including:
annular groove means coaxial with said spindle and disposed between said valve seat and said conical surface;
an elastomer member composed of rubber-like material, disposed in said annular groove means,
whereby when said compression spring urges said plug against the valve seat said elastomer member is compressed in said annular groove means thereby effecting a seal, said annular groove means is disposed on a radially outer surface of said valve seat, and wherein said plug conical surface faces in a radially inward direction for engaging said elastomer member and for applying an axial force on said elastomer member for sealing and for applying a radial force on said elastomer member for preventing movement of said elastomer member out from said groove.

4,574,986
FLEXIBLE CONTAINER SYSTEM
Albert S. Baris, Suffern, and Peter J. Regna, Tuxedo Park, both of N.Y., assignors to Aero Tec Laboratories, Inc., Ramsey, N.J.
Filed Feb. 18, 1983, Ser. No. 467,910
Int. Cl.⁴ B65D *35/22*
U.S. Cl. 222—94 **4 Claims**



1. Flexible container means for shipping fluids within a rigid cargo container having walls with outer and inner surfaces defined by length, width and height dimensions comprising:
a first flexible container:
a second flexible container;
said first and second flexible containers having a longitudinal dimension and a transverse dimension, and wherein the sum of the transverse dimensions of said first and second flexible containers filled and unconstrained is the same or slightly greater than the width dimension of the rigid cargo container in which said first and second flexible containers are to be received, where said first and second flexible containers when filled are engaged in firm surface-to-surface contact with each other and with said rigid cargo container and further where said flexible containers act one upon the other in cog-like fashion to impart a counter-rotating force when said flexible containers experience a moment about their longitudinal dimensions;
a fill-discharge means mounted in one end of each of said first and second flexible containers;
a clean out means mounted in a second end of each of said first and second flexible containers; and
vent means mounted in each of said first and second flexible containers.

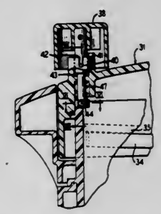
4,574,987
DISPENSER PACKAGE FOR SOFT-FROZEN COMESTIBLES
John F. Halligan, Riverside, Conn.; Violet R. Leone, Elmsford, N.Y., and Andrew T. Kostanecki, Darien, Conn., assignors to General Foods Corporation, White Plains, N.Y.
Filed May 1, 1984, Ser. No. 606,032
Int. Cl.⁴ B65D *35/08*; B67D *5/60*
U.S. Cl. 222—107 **13 Claims**

1. A container adapted to hold a soft-frozen extrudable comestible having a moisture content in excess of 30% by weight, said container being collapsible under hand pressure thereby forcing extrudable material contained therein through an orifice, said container being comprised of:
(a) a collapsible, cone-shaped body portion having an open top and a circular top edge, said body portion comprised of an external cone-shaped paper jacket and an internal, heat-sealable, cone-shaped liner, said liner being bonded to said external jacket over less than 20% of the surface area of the liner such that an insulating layer of air is present between the liner and jacket in the unbonded areas,
(b) a circular fitment sized to be received by and at least partially recessed within the body portion of said container, said fitment having a central aperture which functions as an extruder orifice and an upstanding rim around its periphery,



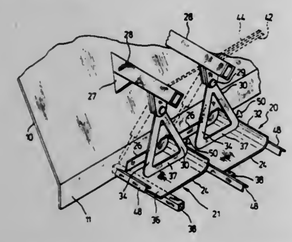
(c) an engagement between said upstanding rim and said body portion, which secures the fitment in place such that it is not dislodged during an extrusion process, said engagement being affected by folding the top edge of the body portion over the upstanding rim of the fitment, and heat sealing the said body portion to said cone-shaped liner of said rim, and
(d) a removable closure which extends across the aperture located in the fitment.

4,574,988
PRESSURE VESSEL FOR RECEIVING LIQUIDS
Rudolf Karliner, Minnetonka, Minn., assignor to J. Wagner GmbH, Fed. Rep. of Germany
Filed Feb. 17, 1984, Ser. No. 581,355
Claims priority, application Fed. Rep. of Germany, Feb. 18, 1983, 3305658
Int. Cl.⁴ B65D *51/16*
U.S. Cl. 222—396 **20 Claims**



1. A pressure vessel for storing and delivering liquid under pressure comprising a housing, a removable cover on said housing, seal means between said housing and said cover providing a liquid-tight and air-tight seal therebetween, locking elements extending between said cover and said housing and providing a bayonet-type lock therebetween, and a manually unlockable excess pressure valve in said cover, said valve comprising a valve housing, vent means formed in said valve housing, a valve stem in said valve housing having a valve seating face arranged to be seated against a valve seat in said cover, spring means urging said valve seating face into seated relation, and means permanently formed on at least one of said valve stem or said cover for locking said valve seating face in unseated relation against the action of said spring means.

4,574,989
SWING GATES
Charles D. Pole, Willowdale, Canada, assignor to Upper Lakes Shipping Ltd., Toronto, Canada
Filed Aug. 2, 1982, Ser. No. 404,544
Int. Cl.⁴ B65D 90/62, 90/64
U.S. Cl. 222—486 15 Claims



1. An apparatus for containing and discharging masses of particulate material prone to blocking in a hopper to form rat holes, arches or bridges, including an elongated hopper for positioning above an elongated conveyor belt extending in a substantially horizontal direction from an upstream end to a downstream end, said hopper having a discharge structure including opposed downwardly and inwardly sloping sides extending towards each other to terminate in elongated parallel margins defining between them an elongated discharge channel to overlie the conveyor, transverse spaced-apart members extending between the respective margins to divide the discharge channel into a series of outlets in the direction of travel of the belt, and gate means for each outlet for forming part of a floor to the hopper when closed and when opened to allow controlled discharge of the material from the outlet as it gravitates from the sloping sides, the gate means in each outlet comprising a plurality of gates arranged in series in the longitudinal direction of the discharge channel, each gate having a floor constructed to cover a discreet portion of an outlet and to cooperate with the floor of at least one other gate to close the entire outlet between adjacent spaced apart members, at least one gate of each plurality being a swing gate means for mounting the floor of the swing gate for arcuate movement in an upward and upstream direction about a horizontal axis elevated with respect to the level of the outlet and transverse to the longitudinal direction of the discharge channel, the means for mounting permitting the swing gate floor to move from a closed position to an open position within the hopper in which at least part of the swing gate floor extends over an immediately adjacent discreet portion of the outlet,

and power means, acting separately on each gate, whereby the gates may be forcibly moved individually back and forth between closed and open positions.

4,574,990
CARRIER AND BAG ATTACHMENT FOR FOLDING STOOLS
C. Steven Remis, 9033 Holly, Kansas City, Mo. 64114
Filed Jan. 30, 1984, Ser. No. 575,143
Int. Cl.⁴ A45F 5/00
U.S. Cl. 224—255 15 Claims

1. A carrier and bag attachment for a folding stool having a folded condition in which a pair of generally flat, rigid seat leaves are located on opposite sides of the stool and an unfolded condition in which the leaves cooperate to form a rigid horizontal seat for the stool supported on legs, said attachment comprising:

a flexible fabric body adapted to be applied to the stool to serve as a carrier therefor when the stool is in the folded condition;

a pair of opposite side portions of said fabric body substantially covering the leaves of the stool on the opposite sides thereof when said fabric body is applied thereto;

a connecting strip portion of said fabric body interconnecting said side portions thereof and spanning the distance between the leaves of the stool when said fabric body is applied thereto;

a compartment on each of said side portions of the fabric body for receiving and holding articles, each compartment being accessible when the fabric body is applied to the stool in the folded condition thereof;

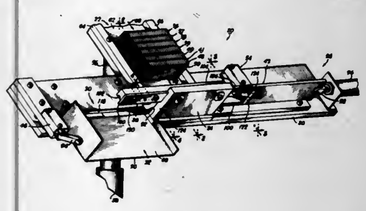
releasable fastening means having a fastened condition for connecting said side portions together at a location beneath the leaves in a manner to secure said fabric body on the stool in the folded condition thereof with said side portions covering the leaves and said connecting strip



portion spanning the leaves to thereby permit the stool to be carried in the folded condition by said fabric body, said fastening means being releasable to release said fabric body from the stool for complete removal therefrom to free the stool so that the stool can be set up in the unfolded condition for use with said fabric body completely detached from the stool; and

said compartments each being accessible to provide access to the articles in the compartments when said fabric body is applied to the stool in the folded condition thereof and said fastening means is in the fastened condition to secure said fabric body on the stool, said fabric body holding the stool in the folded condition thereof when said fastening means is in the fastened condition to thereby require removal of the fabric body from the stool before the stool can be set up in the folded condition.

4,574,991
FASTENER FEEDING APPARATUS
Elmer J. Thorsen, Jr., Wood Dale, Ill., assignor to Duo-Fast Corporation, Franklin Park, Ill.
Filed Dec. 31, 1984, Ser. No. 688,025
Int. Cl.⁴ B25C 7/00; B27F 7/38
U.S. Cl. 227—3 14 Claims



1. An apparatus for feeding a plurality of strips of staples to a fastener driving device, said plurality of strips of staples including first and second strips of staples nested together such that the legs of said first strip of staples extend in a direction opposite to the direction of the legs of said second strip of staples and one of the legs of each of the strips of staples is located in between the legs of the other strips of staples, said apparatus comprising:

an inclined receiving means for receiving at least said first and second strips of staples nested together,

a positioning means for positioning said first and second strips of staples together at the lower end of said receiving means,

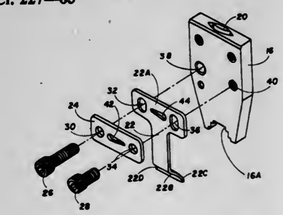
an inclined exit means to which said first and second strips of staples are supplied to be loaded to in fastener driving device during each loading cycle of said feeding apparatus,

pusher means for moving said first and second strips of staples from said positioning means toward said exit means,

holding means for selectively holding said second strip of staples so as to maintain said second strip of staples stationary while said pusher means moves said first strip of staples toward said exit means, said holding means being selectively disengaged from said second strip of staples such that said pusher means moves both said first and second strips of staples toward said exit means, and

tumbling means to orient said first and second strips of staples so that said first and second strips of staples are supplied through said exit means for loading into said fastener driving device in the same orientation.

4,574,992
CLINCHING TYPE STAPLER
Alfred D. Holman, Villa Park, Ill., assignor to Duo-Fast Corporation, Franklin Park, Ill.
Filed Aug. 24, 1984, Ser. No. 643,853
Int. Cl.⁴ B25C 5/04
U.S. Cl. 227—83 5 Claims



1. In a stapling tool of the type having both a nose structure defining a track through which a staple with spaced legs is driven and an anvil structure movable into and out of the track to engage and impart controllable curl to the staple legs as the staple is driven, the improvement comprising

a first anvil locating structure connected to the anvil structure and including a first opening,

a second anvil locating structure disposed adjacent said first anvil locating structure and including a second opening, said first and second openings being at least partially aligned with each other so that an adjusting instrument can be inserted into said first and second openings for varying the relative positions of the first and second anvil locating structures so as to vary the position of said anvil structure relative to said track, and

fastening means securing said first and second locating structures on the nose in different positions relative to each other.

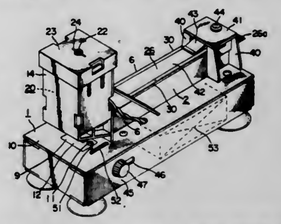
4,574,993
ELECTRIC STAPLER WITH SLIDING MAGAZINE COVER
Noboru Yamanoi, Sakura, Japan, assignor to Maruzen Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 15, 1984, Ser. No. 660,707
Claims priority, application Japan, Apr. 13, 1984, 59-74359
Int. Cl.⁴ B27F 7/17, 7/36
U.S. Cl. 227—131 2 Claims

1. A stapler comprising a main frame that defines an elongated staple container which is open at its top and has a downwardly opening staple outlet at its front and along which staples are guided to slide forwardly to said outlet, said main frame also having an upwardly facing surface beneath said staple container and near the front end thereof wherein there is a staple bending groove, a staple pushing blade movable edgewise up and down in the front portion of said staple container and whereby a staple can be driven downward through said outlet and into engagement with said staple bending groove, and a slider in said staple container for urging staples forwardly therein, said stapler being characterized by:

A. a first locking projection fixed on the rear upper end portion of said staple container;

B. a cover member for closing the open top of said staple container, said cover member being slidable forward and rearward on the staple container and

(1) having thereon a second locking projection which engages said first locking projection to confine the cover against rearward motion when the cover is in a



closed position and which is disengageable from said first locking projection by raising the rear end of the cover, and

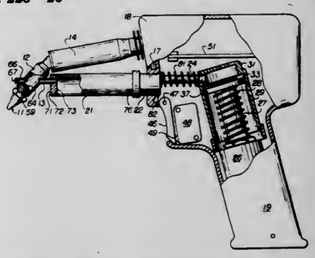
(2) having an abutment at a lower front end portion thereof against which the slider is engageable and which normally defines a front limit of sliding motion of the slider in the container;

C. a spring reacting between the cover member and the slider to bias the latter forward towards engagement with said abutment;

D. a resilient retainer fixed on the rear upper portion of the main frame for urging the rear end portion of the cover member downwardly; and

E. a solenoid having a plunger to which said staple pushing blade is affixed and whereby the staple pushing blade is driven downward against a yielding upward bias thereon.

4,574,994
HIGH SPEED DESOLDERING TOOL
George P. Rauchwerger, 147 Cromart Ct., Sunnyvale, Calif. 94087
Filed May 16, 1983, Ser. No. 495,046
Int. Cl.⁴ B23K 3/00
U.S. Cl. 228—20 9 Claims



1. In a desoldering tool of the type having a casing, a hollow tip supported by said casing, heating means for heating said tip, and vacuum drawing means in said casing, the improvement which comprises a solder collector tube having a distal and a proximal end, a distal seal for the distal end of said collector tube, a suction tube intercommunicating between the hollow in

said tip and said distal seal, a rear seal having means at its forward end to seal against the proximal end of said collector tube, a duct connected to said vacuum drawing means in slidable and sealing engagement with said rear seal and resilient means biasing said rear seal to seal against said collector tube and thereby biasing said collector tube to seal against said distal seal, whereby upon moving said rear seal away from said collector tube against the force of said resilient means the collector tube may be removed from said tool to clean out solder, a hollow holder for said tip, a clean-out tube for said holder and a cap for said clean-out tube.

4,574,995

METHOD FOR PROTECTING THE WALLS OF A FURNACE AT HIGH TEMPERATURE

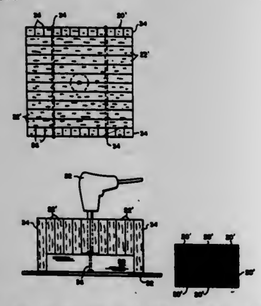
Robert A. Sauder; Gary R. Kendrick, both of Emporia, Kans., and John R. Mase, Anaheim, Calif., assignors to The Babcock & Wilcox Company, New Orleans, La.

Division of Ser. No. 257,997, Apr. 27, 1981, which is a continuation of Ser. No. 674,502, Apr. 7, 1976, abandoned, which is a continuation of Ser. No. 595,738, Jul. 14, 1975, Pat. No. 3,993,273, which is a continuation of Ser. No. 445,807, Feb. 25, 1974, abandoned, which is a division of Ser. No. 157,433, Jun. 28, 1971, Pat. No. 3,819,468. This application May 9, 1983, Ser. No. 492,676

The portion of the term of this patent subsequent to Nov. 23, 1993, has been disclaimed.

Int. Cl.⁴ F23M *5/00*

U.S. Cl. 228—140 **29 Claims**



1. A method for protecting the inside walls of a furnace, comprising the steps of:

constructing a plurality of insulating blocks, with each of the blocks having a first side defining a cold face and a second side remote from the first side and defining a hot face, the cold face being adapted for attachment to the inside wall of a furnace, the blocks being comprised of side-by-side strips of material composed of resilient insulating fibers, the fibers being randomly oriented within a plurality of planes substantially parallel to each other and generally perpendicular to the first side of the blocks, the cold face of each of the blocks including a supporting member accessible from the hot face by a displacement of the resilient fibers at the hot face; and

attaching the blocks to the furnace wall by arranging the blocks in such a manner that the strips of insulating fibers of a block are generally at right angles to the strips of adjacent blocks to minimize the occurrence of cracks resulting from high temperature heat shrinkage of the resilient insulating fibers.

4,574,996

MULTI-CELL CONTAINER

James A. Brian, San Antonio, Tex., assignor to Crown Zellerbach Corporation, San Francisco, Calif.

Filed Jun. 13, 1985, Ser. No. 744,183

Int. Cl.⁴ B65D *5/48, 5/46*

U.S. Cl. 229—27 **18 Claims**

1. A container comprising:

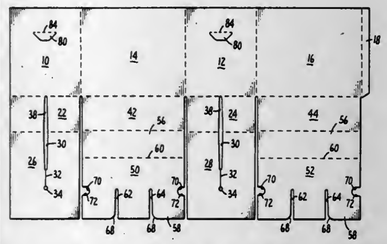
a pair of first opposed walls, each said first opposed wall having a hand hold flap therein;

a pair of second opposed walls connected to said pair of first opposed walls and defining a container interior therewith;

a first bottom flap connected to each first opposed wall and extending therefrom under said container interior;

a first divider panel connected to each first bottom flap and extending into said container interior, said first divider panels each having an aperture formed therein and an elongated slit communicating with said aperture and extending from said aperture;

a second bottom flap connected to each second opposed wall and extending therefrom under said container interior; and



a second divider panel connected to each second bottom flap and extending into said container interior, said second divider panels having notches formed at edges thereof and bearing surfaces at the location of said notches, said second divider panels being positioned in said first divider panel apertures and slits with said second divider panels abutting and in at least partial registry, said hand hold flaps being in registry with said notches when said second divider panels are positioned in said first divider panel apertures and slits, and said hand hold flaps positionable within said notches to bear against said second divider panel bearing surfaces, thereby facilitating lifting and carrying of said containers and providing at least partial support for the contents of said container.

4,574,997

KEEL AND LOCK FOR WRAPAROUND ARTICLE CARRIER

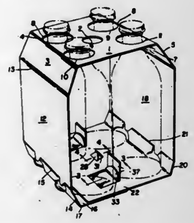
Tamio Ikeda, Tokyo, Japan, assignor to The Mead Corporation, Dayton, Ohio

Filed Feb. 4, 1985, Ser. No. 698,059

Claims priority, application Canada, May 10, 1984, 454088

Int. Cl.⁴ B65D *65/06*

U.S. Cl. 229—40 **5 Claims**



1. In an article carrier of the wraparound type formed from a blank of generally rectangular configuration and having lap panels at its ends which are overlapped and secured together in flat face contacting relation to form a tubular structure, an improved keel comprising a separating tab struck from the inner one of said lap panels to define an aperture therein and folded inwardly along a medial fold line into a position of substantially normal relation with said inner lap panel, a shouldered locking tab formed on the outer one of said lap panels and foldably joined thereto along a transverse fold line and disposed in substantially normal relation thereto and protruding through said aperture defined in said inner lap panel by said separating tab and in flat face contacting relation with said separating tab to form a two ply keel between adjacent articles in different rows, a retaining tab struck from the inner one of said lap panels to define a locking aperture therein and foldably joined to said inner lap panel along a fold line offset from and generally parallel with the fold line of said separating tab, and a punch lock having a base portion and a pair of shoulders and being struck from the outer one of said lap panels and protruding through said locking aperture with its base portion in engagement with the edge of said locking aperture remote from the fold line of said retaining tab and with its shoulders adjacent the inner surface of said lap panel, the end edge of said retaining tab being in engagement with said punch lock so as to hold said punch lock in propped angular relation to said lap panels.

4,574,998

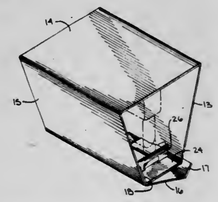
OPEN-ENDED CARTON AND CARTON BLANK

Paul P. Vavra, Kohler, Wis., assignor to Kohler Co., Kohler, Wis.

Filed Aug. 1, 1984, Ser. No. 636,686

Int. Cl.⁴ B65D *5/04*

U.S. Cl. 229—40 **4 Claims**



1. An open-ended shipping carton for an article, comprising:

a brace flap;

a tray panel suitable to extend across the base of the article from a first side to a second side, a side edge of said tray panel adjacent to the second side being connected to the brace flap;

a first side panel connected to a side edge of the tray panel adjacent to the first side, said first side panel being suitable to extend across the first side of the article from the base to the top of the article;

a top panel connected to the first side panel adjacent to a top edge of the first side panel, said top panel being suitable to extend across the top of the article from the first side to the second side;

a second side panel connected to a side edge of the top panel adjacent to the second side, said second side panel being suitable to extend across the second side of the article from the top to the base of the article;

a bottom panel that is suitable to extend under the bottom of the tray panel from the second side toward the first side, is connected to the second side panel adjacent to its bottom edge, and is secured so that the carton is suitable to fit around the top, first and second sides, and base of the article;

a pair of end retainers formed by cuts and fold lines in the tray panel which are suitable to be accordion-folded in a spaced apart manner so as to receive the base of the article between them; and

support means unitarily connecting the side edges of each of the end retainers to the brace flap and to the first side panel for assisting in holding the end retainers in an upright position to secure the base of the article between them.

4,574,999

CONTAINER

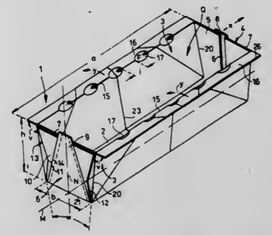
Franz Vossen, Radolfzell, Fed. Rep. of Germany, assignor to Meurer Nonfood Product GmbH, Radolfzell, Fed. Rep. of Germany

Filed Dec. 6, 1982, Ser. No. 446,977

Claims priority, application Fed. Rep. of Germany, Dec. 15, 1981, 3149645

Int. Cl.⁴ B65D *5/20*

U.S. Cl. 229—30 **12 Claims**



1. A baking pan comprising a blank of material of limited flexibility including a wall and an edge strip portion, said wall and edge strip portion initially being in coplanar arrangement in the plane of said blank, said edge strip portion being foldably connected to said wall along a bend line for bendable movement from its first position coplanar with said wall to a second position at an angle to said wall, and a plurality of stabilizing members disposed in spaced relation along said bend line and constituted by material partially in said wall and partially in said edge strip portion, said stabilizing members initially being in coplanar arrangement in the plane of the blank and having respective border lines by which said stabilizing members are connected to said wall and said edge strip portion, said border lines extending partly into said edge strip portion and partly into said wall such that when the edge strip portion is folded along said bend line said stabilizing members are deformed out of the planes of said wall and edge strip member to form recessed members to stabilize the pan at said bend line.

4,575,000

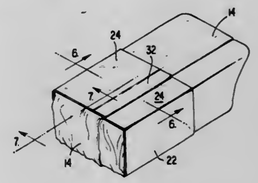
FOOD WRAPPER PACKAGE

Robert L. Gordon, Monroe, and Michael G. Bodary, Middletown, both of N.Y., assignors to International Paper Company, New York, N.Y.

Filed Nov. 9, 1984, Ser. No. 669,977

Int. Cl.⁴ B65D *75/38*

U.S. Cl. 229—87 F **11 Claims**



1. A wrapper for forming a food package, the package defined by a food article, such as a hamburger, wrapped by a wrapper, the wrapper including a generally rectangular blank formed of foldable, stiff and resilient sheet stock, such as paperboard, the blank having a central panel adapted to form the bottom of the package, a pair of first lateral panels each hinged at one respective end of the central panel and adapted to form

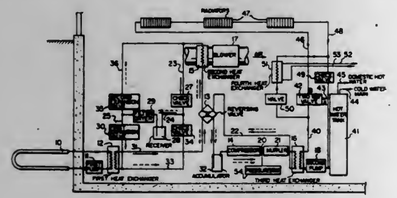
the sides of the package, a second pair of lateral panels each hinged to a respective end of a first lateral panel, the second lateral panels adapted to form the top of the package, means for joining the free ends of the second lateral panels, a flexible sheet, such as paper, secured to one surface of at least the central panel of said blank, said flexible sheet being of substantially the same length as said blank, the flexible sheet extending beyond the side edges of said blank, the flexible sheet being secured to said central panel along a zone narrower than the width of the central panel, whereby when the blank and flexible sheet are wrapped around a food product to thereby form a tube, and the rectangular blank is on the outside and the flexible sheet is on the inside of the tube and contacting the food product, the edges of the flexibe sheet can be folded to close the ends of the tube, thus covering the exposed portions of the food product and permitting the flexible sheet edges to be folded beneath the food product, between the food product and the central panel.

4,575,001

HEAT PUMP SYSTEM

Sven G. Oskarsson, Hudson, and Salvatore Santangelo, Laval, both of Canada, assignors to Cantherm Heating Ltd., Ville St. Laurent, Canada

Continuation of Ser. No. 563,967, Dec. 21, 1983, abandoned. This application May 29, 1985, Ser. No. 738,903
Claims priority, application Canada, Oct. 11, 1983, 438366
Int. Cl.[4] G05D *23/00*
U.S. Cl. 237—2 B **8 Claims**



1. A method of operating a heat pump system for a building space, said system comprising a refrigerant-charged circuit having a compressor, a reversing mechanism having two positions, two expansion devices, a first heat exchanger thermally linked to a heat source, a second heat exchanger thermally linked to a forced air system for the building space and having a blower, and a third heat exchanger thermally linked to a hot water system; said method comprising operating the system in each of three modes, namely

(a) in a space heating mode, carrying out the steps of operating the compressor and the blower and locating the reversing mechanism in a first one of its said positions to cause refrigerant to flow from the compressor serially through the third heat exchanger, the second heat exchanger to transfer heat to the forced air system, the first expansion device, the first heat exchanger to extract heat from the source, and back to the compressor,

(b) in a space cooling mode, carrying out the steps of operating the compressor and the blower and locating the reversing mechanism in the second of its said positions to cause refrigerant to flow from the compressor serially through the third heat exchanger, the first heat exchanger, the second expansion device and the second heat exchanger to extract heat from the forced air system and transfer said heat to at least one of the hot water system connected to the third heat exchanger and the source (now acting as a heat sink) connected to the first heat exchanger, back to the compressor, and

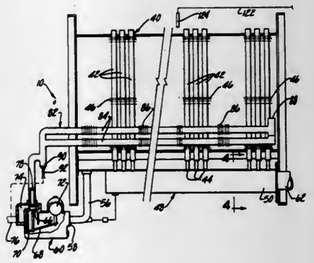
(c) in a water heating mode, carrying out the steps of operating the compressor while deenergizing the blower and locating the reversing mechanism in its first position to cause refrigerant to flow in vapor phase from the compressor to the third heat exchanger to be condensed therein to transfer heat to the hot water system, and then to flow in liquid phase serially through the second heat exchanger, the first expansion device and the first heat exchanger to extract heat from the source, and back to the compressor, to furnish hot water while the building space is neither heated nor cooled.

4,575,002

STEAM HEATING APPARATUS

Charles A. Strand, Sr., 21800 Morley, Dearborn, Mich. 48124

Filed Apr. 23, 1984, Ser. No. 602,909
Int. Cl.[4] B60H *1/00*
U.S. Cl. 237—5 **16 Claims**



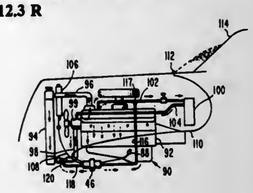
1. Steam heating apparatus comprising: an air passage conveying moving air, steam heating means disposed in said passage and having a steam inlet and a condensate outlet, a source of steam connected to said steam inlet, a steam trap connected to said condensate outlet for converting hot condensate under pressure to flash steam and delivering the condensate to a return conduit, a flash steam condensor receiving said flash steam and including auxiliary heat means positioned downstream of said air passage in heat transfer relationship to the air passing therethrough, said auxiliary heat means being in heat transfer relationship to the air in said passages to supplement the heat delivered to the air by said steam heating means.

4,575,003

FLUID HEATING ATTACHMENT FOR AUTOMOBILE ENGINE COOLING SYSTEMS

Roy E. Linker, and Matthew P. Linker, both of Titusville, N.J., assignors to Hotshot Auto Products Inc., Pennington, N.J.

Filed May 10, 1984, Ser. No. 609,051
Int. Cl.[4] B60H *1/02*
U.S. Cl. 237—12.3 R **3 Claims**



1. The combination, with an internal combustion engine having a cooling system and including a block of the type through which a liquid coolant is circulated during operation of said system, said block having upper and lower ends, a radiator mounted adjacent the block and also having upper and lower ends, a radiator inlet hose extending from the upper end of the block to the upper end of the radiator, a pump for circulating coolant through the block, a radiator outlet hose extending from the lower end of the radiator to the coolant pump, a passenger space heater, a space heater supply hose extending from the block to the space heater, a return hose extending from the space heater to the pump, and a windshield washer system including a washer fluid reservoir, washer fluid nozzle means, and a washer fluid supply line having inlet and outlet end portions connected to the reservoir and nozzle means respectively, of a device for warming the engine and prewarming the washer fluid when the engine is not running, and for also warming said washer fluid when the engine is running, comprising:

(a) a housing having a heating chamber and having an inlet and an outlet connected in communication with said chamber, the housing inlet and outlet being connected in communication with the radiator outlet hose and space heater supply hose, respectively, thus to connect the chamber in the cooling system as part of the flow path of coolant circulated through the system and thereby fill the chamber with the circulated coolant;

(b) a tubular conduit means for windshield washer fluid, supported within the chamber in position to be substantially wholly immersed in the coolant filling the chamber, whereby to heat the washer fluid by the transfer of heat from the circulated coolant to the washer fluid through the wall of the conduit, said conduit means including inflow and outflow ends projecting exteriorly of the chamber and respectively connected to the inlet and outlet end portions of the windshield washer fluid supply line to provide a heated supply of washer fluid for the spray head; and

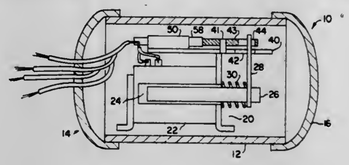
(c) heating means within the chamber for elevating the temperature of the coolant and the washer fluid therein, said heating means comprising an electrical heating element wholly immersed in the coolant within the chamber in laterally spaced relation to the conduit means and adapted for connection to a supply of house current, whereby the heater means when energized will be in heat-exchange relation to and will warm the coolant to initiate flow thereof by thermal circulation when the engine is not running, from the housing to the space heater supply hose and into the upper end of the block, and thereafter downwardly through the block to the lower end thereof to displace and force upwardly coolant that is of a lower temperature, whereby to cause the same to exit the block through the radiator outlet hose and thereafter return to the housing through the connection between the radiator outlet hose and the housing inlet.

4,575,004

SPRINKLER SYSTEM RETROFIT MECHANISM AND METHOD

James E. Geiger, 1044 Rogers St., Broderick, Calif. 95605

Filed May 18, 1984, Ser. No. 611,726
Int. Cl.[4] A01G *27/00*
U.S. Cl. 239—69 **6 Claims**



1. A retrofit mechanism for an automatic lawn sprinkler system having a plurality of sprinkler heads piped to a water supply via electrically operated valves and an electrical controller for programming the operation of said valves, said retrofit mechanism comprising

(a) electrical latching switching means which when successively energized alternatively switches energizing power to one of two or more conductive paths,

(b) waterproof container means for housing said latching means and

(c) conductor means sealingly passing through said container for energizing said latching switching means and connecting said alternate conductive paths to said valves

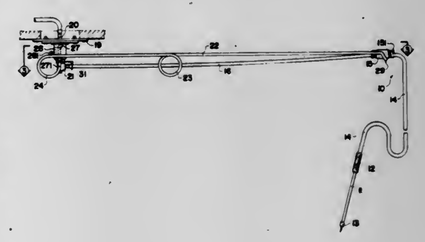
whereby mounting said latching switching means near an existing valve and electrically connecting said existing valve to one of said conductor means attached to one of said conductive paths, electrically connecting a new valve to another conductor means connected to another conductive path and connecting said conductor means for energizing said latching switching means to the wire originally connecting said existing valve to said controller incorporates said new valve into said program without running new wire from said controller to said new valve.

4,575,005

HOSE ARRANGEMENT FOR A CAR WASH

Jacob R. Wiebe, 125 Eastwood Dr., Winnipeg, Manitoba, Canada (R2E 0C7)

Filed Mar. 8, 1984, Ser. No. 587,511
Int. Cl.[4] B05B *15/08*
U.S. Cl. 239—195 **15 Claims**



1. A hose arrangement for use in a car wash comprising a flexible hose, a wash-spray device on one end of the hose, a water supply device for attachment to the other end of the hose, a boom for supporting a substantially horizontal portion of the hose, means providing a rotatable coupling between the supply device and the hose so that the horizontal portion of the hose can rotate about a vertical axis in a horizontal plane with the remainder of the hose extending downwardly from the horizontal plane and means for mounting the boom for rotation about the axis, said boom comprising an integral flexible wire which extends from the supply device to an outer end of the horizontal portion of the hose and includes a loop therein rotated through at least 360° arranged such that the wire can bend in a vertical bending plane down from the horizontal plane about an axis defined by said loop, said loop lying substantially in the vertical bending plane of the wire whereby bending of said wire in said vertical bending plane causes torsioning of the loop.

4,575,006

NOZZLE FLAP EDGE SEAL

William M. Madden, Palm Springs, FL, assignor to United Technologies Corporation, Hartford, Conn.

Filed Jun. 13, 1983, Ser. No. 503,954
Int. Cl.[4] F02K *1/06*
U.S. Cl. 239—265.29 **9 Claims**

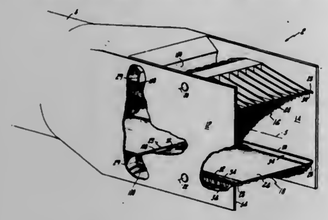
1. An exhaust nozzle flap assembly, said flap assembly being rotatable about a first axis and comprising:

a stationary wall surface;

flap means including a flap member having a front surface

defining a portion of a gas flow path, said flap member having an edge extending in a first direction adjacent said stationary wall surface, said front surface terminating at said edge; and

seal means for minimizing leakage of gases from the gas flow path between said edge of said flap member and said stationary wall surface, said seal means including a seal plate and seal support means for connecting said seal plate to said flap member, said support means being pivotally secured to said flap means along a second axis extending substantially in said first direction, said seal plate having a first seal plate surface in sealing contact with said front surface of said flap member substantially along a line parallel to said second axis, said seal plate being moveable relative to said front surface, said seal plate also having



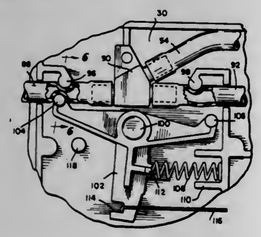
means defining a second seal plate surface extending substantially parallel to said second axis and spaced outwardly of said flap member edge in sealing contact with said stationary wall surface, said seal plate being pivotally secured to said support means along a third axis parallel to and spaced from said second axis, said third axis being located with respect to said second axis such that a gas pressure load on said seal plate perpendicular to said front surface of said flap member creates a moment on said support means about said second axis and a moment on said seal plate about said third axis which moments tend to simultaneously urge said first seal plate surface against said front surface of said flap member and to urge said second seal plate surface against said stationary wall surface during nozzle operation.

4,575,007

MIXING CONTROL FOR WATER AND CLEANING FLUID

Hugh F. Groth, Richfield, Ohio, and Peter A. Basile, East Windsor, N.J., assignors to Regina Corporation, Rahway, N.J.

Filed Mar. 2, 1984, Ser. No. 585,610
Int. Cl.⁴ F16K *11/14*; B05B *7/26*
U.S. Cl. 239—310 **14 Claims**



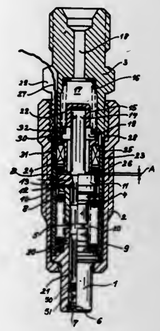
1. A cleaning device comprising:
a source of water;
a source of cleaning fluid;
mixing means having water and cleaning fluid inlets connected to said water and cleaning fluid sources respectively for mixing said water and cleaning fluid and dispensing a mixture at an outlet of said mixing means;
a nozzle connected to said mixing means outlet;
control means connected to said mixing means and having a single moveable member for valving the flow of at least one of said water and cleaning fluid inlets to said mixing means and the flow from said mixing means outlet for determining the rate of flow at said outlet and determining the mixing ratio of water and cleaning fluid; and
said control means including a first restriction means operated by said member and connected to said mixing means outlet for determining the rate of flow at said outlet and a second restriction means operated by said member and connected to a water inlet of said mixing means for determining said mixing ratio.

4,575,008

FUEL INJECTION NOZZLE FOR INTERNAL COMBUSTION ENGINES

Bernhard Kaczynski, Waiblingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Apr. 9, 1984, Ser. No. 598,094
Claims priority, application Fed. Rep. of Germany, Jul. 26, 1983, 3326840
Int. Cl.⁴ F02M *47/00*; B05B *1/30*; G01M *15/00*
U.S. Cl. 239—533.3 **20 Claims**



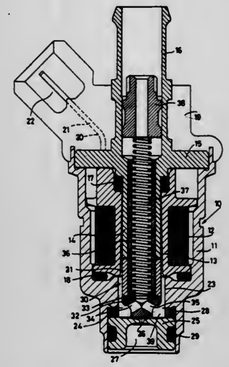
1. A fuel injection nozzle for internal combustion engines comprising a housing; a sheath-like tubular segment in said housing, a valve needle, a damping piston disposed on an end of said valve needle remote from an injection side of said valve needle, a support ring on said valve needle, a closing spring which stresses said support ring to force said valve needle in a closed direction, said valve needle opening in the flow direction of fuel under fuel inlet pressure, a cap disposed on said damping piston, said damping piston defining with said cap a damping chamber which communicates in a throttled manner with a flow path of fuel admitted through an inlet under pressure, a damping chamber formed by said damping piston and said cap, an encapsulated induction coil disposed about the valve needle and attached to said sheath-like tubular segment in a spatial segment between said damping chamber and said support ring for determining an injection onset and-or injection duration, and said support ring serves as an armature of a transducer embodied by said induction coil, and at least one yoke part of said encapsulated induction coil.

4,575,009

ELECTRICALLY OPERATED INJECTOR FOR AN I.C. ENGINE

Walter Giraudi, Milan, Italy, assignor to Alfa Romeo Auto S.p.A., Naples, Italy

Filed Feb. 25, 1983, Ser. No. 469,708
Claims priority, application Italy, Aug. 18, 1982, 22885 A/82
Int. Cl.⁴ B05B *1/30*
U.S. Cl. 239—585 **2 Claims**



1. An electrically operated injector of the type particularly constructed for the intermittent delivery of fuel to an I.C. engine, said injector including a core of ferromagnetic material, a coil surrounding said core, an injection nozzle, a mobile cup-shaped armature having means for acting as a closure element for said injection nozzle and disposed between said core and said injection nozzle, said armature being coaxial with both said core and said injection nozzle, said armature having a base wall and a side wall, a return spring urging said armature against said injection nozzle to close said injection nozzle, and a tubular element projecting from the interior of said core and forming an inner guide for said armature and a duct for conveying fuel to said injection nozzle, said injector being characterized in that there is a washer of impact-resistant material disposed between said base wall and said side wall of the armature, said tubular element in combination with said washer also forms stop means for limiting a lifting stroke of said armature, said tubular element lower annular end wall is spaced axially from an upper surface of said washer by a distance equal to a selected lifting stroke of said armature.

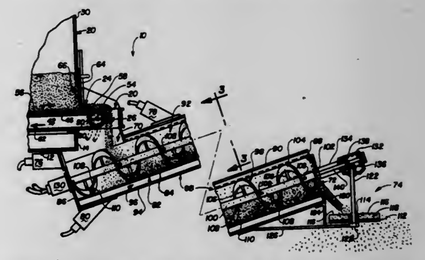
4,575,010

METHOD AND APPARATUS FOR SPREADING HEATED SAND

Harold M. Zimmerman, R.D. 1, Wabash Rd., Ephrata, Pa. 17522

Filed Jun. 20, 1984, Ser. No. 622,375
Int. Cl.⁴ B05B *1/24*; B61C *15/10*
U.S. Cl. 239—650 **6 Claims**

2. In an apparatus for spreading heated sand on ice on a road surface, the combination comprising:
(a) means defining an elongated generally inclined chamber having a lower inlet end and an upper discharge end, said chamber defining means including
(i) a trough having a generally U-shaped elongated side wall and opposite fore and aft end walls, and
(ii) a cover enclosing said side wall at the top thereof, said cover terminating short of said fore end wall of said trough so as to define said inlet end of said chamber;
(b) means for conveying the sand received at said lower inlet end of said inclined chamber in a first direction through said chamber from said lower inlet end toward said upper discharge end thereof while simultaneously flinging the sand in a second direction generally transverse to the first direction so as to move the grains of sand in a generally inclined spiraling path, said conveying means including an elongated auger disposed in said chamber, said auger including
(i) a central shaft extending between and rotatably mounted at opposite ends to said fore and aft end walls of said trough,
(ii) a ribbon flighting,
(iii) a plurality of spokes extending radially from said shaft and spaced therealong in angularly offset relationships for supporting said ribbon flighting in spaced relationship to, and spiraling relationship about, said shaft, and
(iv) a plurality of axially protruding paddles attached to an advancing face of said ribbon flighting for aggressively flinging the sand outwardly upon rotation of said auger such that a flury of moving sand grains is formed in said trough as said auger rotates therein;
(c) means for directing heat both generally axially through and transversely across said inclined chamber directly on the sand grains as the sand is being conveyed through said chamber for heating the sand grains to the degree that



they contain sufficient heat so that upon subsequent contact with ice on the road surface they will melt, and deposit into, the ice and after the ice refreezes form a granular surface with the ice, said heat directing means including
(i) a first heat generator attached to said fore end wall of said trough forwardly of said inlet end of said chamber and aligned generally in the axial direction of said auger shaft, and
(ii) a second heat generator attached to said cover above said trough and rearwardly of said inlet end of said chamber;
(d) means defining a generally inclined cavity which is coextensive with and surrounds said inclined sand conveying and heating chamber;
(e) means for directing heat into said inclined cavity for adding heat to said inclined chamber and the sand being conveyed therein; and
(f) means for receiving the heated sand from said upper discharge end of said inclined chamber and for spreading the heated sand grains in broadcast fashion on ice on the road surface.

4,575,011

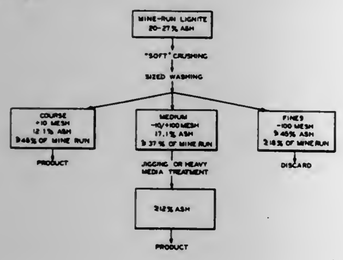
REDUCING ASH CONTENT OF LIGNITE

Roger W. Fenstermaker, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 27, 1984, Ser. No. 574,484
Int. Cl.⁴ B02C *19/12*
U.S. Cl. 241—1 **14 Claims**

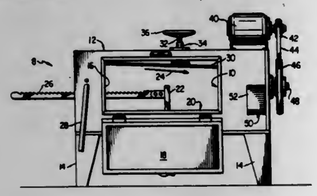
1. A method for producing a low-ash lignite from heterogeneous, mine-run lignite of higher ash content, said method comprising:
(a) agitating clay-containing, mine-run lignite sufficiently,

selectively to shatter the clay seam portions which are the more friable portions;
(b) classifying by size the effluent from the agitation operation;
(c) recombining said classified effluent into cuts comprising:
(1) largest sized particles having an overall, combined clay content in the range of about 12 to about 13 percent by weight dry;
(2) middle-sized particles having an overall, combined clay content of about 13 to about 50 percent by weight dry; and



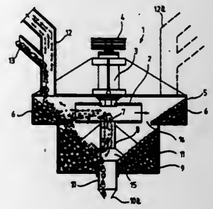
(3) smallest sized particles having an overall, combined clay content greater than about 50 percent by weight dry,
(d) separating each of said effluent cuts from the other effluent cuts;
(e) further treating said effluent cut (2) of middle-sized particles by a process of heavy media separation to yield a classified product having clay content in the range of about 12 to about 13 percent by weight dry;
(f) combining said effluent cut (1) of largest size particles and the classified product of treating the effluent cut (2); and
(g) recovering the product of the combining of cuts of step (f) as low-ash lignite.

4,575,012
BEARING CONSTRUCTION FOR SNOW CONE MACHINE
Irvin A. Uphoff, and Leon F. Williams, both of Dallas, Tex., assignors to Leon F. Williams, Dallas, Tex.
Filed Apr. 18, 1984, Ser. No. 601,706
Int. Cl.⁴ B02C *19/12*
U.S. Cl. 241—92 **9 Claims**



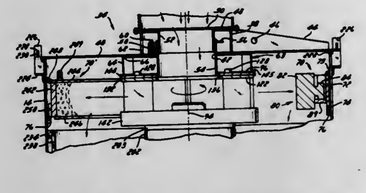
1. An ice shaving apparatus comprising:
a stationary drum comprising a generally planar rear plate wall and an annular rim having a predetermined inside diameter and having a discharge aperture formed therein;
a cutting head comprising a circular plate having an outside diameter substantially equal to the inside diameter of the rim of the drum and adapted for rotation therein;
the circular plate of the cutting plate having a plurality of radially extending slots formed therethrough;
a plurality of blades each mounted on the circular plate for shaving ice from a billet so that the shaved ice passes through one of the slots in the plate and into the drum;
a plurality of vanes secured to the circular plate of the cutting head for rotation therewith for directing shaved ice received through the slots through the discharge aperture in the drum;
the rear plate of the drum including a boss having an aperture extending therethrough which is coaxial with the rim of the drum and with the circular plate of the cutting head;
the cutting head further including a shaft extending rearwardly from the circular plate through the aperture of the boss of the rear plate of the drum;
a plurality of spaced apart, sealed, antifriction bearing means mounted in the aperture of the boss of the drum and receiving the shaft of the cutting head therethrough and thereby rotatably supporting the cutting head; and
slinger means comprising a relatively large diameter portion mounted on the shaft for rotation therewith and positioned within the drum between the cutting head and the antifriction bearing means for centrifugally discharging water from the shaft and thereby preventing water resulting from operation of the cutting head from engaging the antifriction bearing means.

4,575,013
MINERAL BREAKER
Bryan A. Bartley, Auckland, New Zealand, assignor to Barmac Associates Limited, Wellington, New Zealand
Filed Jul. 25, 1983, Ser. No. 517,022
Claims priority, application New Zealand, Jul. 28, 1982, 201418
Int. Cl.⁴ B02C *23/32*
U.S. Cl. 241—275 **3 Claims**



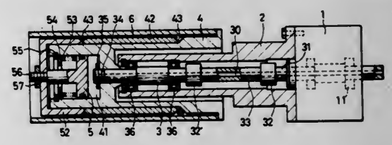
1. A centrifugal disintegrator for reducing particle size of disintegratable mineral material, comprising
a rotor housing symmetrical about a longitudinal axis,
said rotor housing having a top portion and a floor with substantially vertical walls rising from said floor,
an opening in said top portion,
an outlet tube fitted in said opening,
an opening in a wall of said outlet tube,
an infeed means fitted in said opening in the wall of the outlet tube with said infeed means feeding in mineral material to pass into the rotor housing of the centrifugal disintegrator,
a centrally located opening in the floor of said rotor housing,
a material accelerating rotor with a substantially vertical axis rotatably supported in said rotor housing with a lower surface of said rotor being positioned within the rotor housing and substantially co-planar with said floor of the rotor housing so that an annular opening is defined between the accelerating rotor and the floor, the lower surface of the accelerating rotor having a centrally located opening for a material to be fed into said rotor,
means for rotating said accelerating rotor about its substantially vertical axis,
a secondary housing symmetrical about said substantially vertical axis and positioned immediately below said rotor housing,
said second housing having a floor with walls rising from the floor of the second housing and engaging an undersurface of the rotor housing floor,
a centrally located opening in the floor of the secondary housing,
a vertical draught tube fitted in said opening of the floor of the secondary housing,
a vertical feed tube extending downwardly from the opening in the lower surface of the rotor with a lower end of the feed tube and an upper end of the draught tube defining an opening through which material from the secondary housing may pass so that during rotation of the rotor a draught drawing air generates in the draught tube and passes through the feed tube and the rotor and exits out the outfeed tube with material to be disintegrated fed through the mineral infeed means and initially into the draught in the outlet tube to remove particles which are entrained in an airflow with larger particles falling into the rotor housing and through the annular gap between the floor of the rotor housing and the rotor into the secondary housing to accumulate until material passes into the opening between the draught tube and the feed tube with the rotor induced draught carrying pieces of material up into the rotor for acceleration with material being prevented to entrain in the draught of air into the rotor discharged out the draught tube and with the rotor accelerated material impacting with multiple collisons the infeed material delivered into the rotor housing.

4,575,014
VERTICAL SHAFT IMPACT CRUSHER RINGS
Scott E. Szalanski, Oak Creek, and Kenneth Tess, Greendale, both of Wis., assignors to Rexnord Inc., Brookfield, Wis.
Filed Jun. 27, 1984, Ser. No. 624,885
Int. Cl.⁴ B02C *19/00*
U.S. Cl. 241—275 **2 Claims**



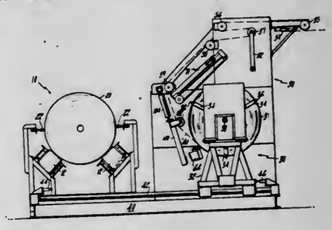
1. A vertical shaft impact crusher, having a cylindrical tank in which a rotor is mounted for rotation about a vertical axis for receiving rock fed axially from above and having shoes for accelerating and throwing the rock outward against an annular breaker ring, wherein said breaker ring comprises:
a circular hoop of a radius slightly smaller than the radius of said tank;
a series of brackets welded to the inside of said hoop at angularly spaced positions therearound, said brackets each having two legs fastened to and extending inwardly from said hoop on a secant to the circle of said hoop; a cross arm fastened to said legs and extending between them; means in said cross arm defining a vertically elongated slot extending completely therethrough; and a support plate fastened to the bottom of said legs and said cross arm;
an anvil supported by each of said brackets, each anvil having a central axis and a massive head with a flat face lying perpendicular to said central anvil axis, said head having a regular octagonal cross-sectional shape symmetrical about said central anvil axis;
said anvil further comprising a neck having a cross-sectional polygonal shape perpendicular to and symmetrical about said anvil axis and which is slightly narrower, along a line perpendicular to the faces of said polygon and through said anvil axis, than the width of said slot in said cross arm;
a foot connected to said head by said neck and having a cross-sectional polygonal shape similar to said cross-sectional polygonal shape of said neck and substantially wider, along a line perpendicular to the faces of said foot polygonal shape and through said anvil axis, than the width of said slot in said cross arm; and
said foot and neck polygonal shape and having a number of faces equal to a multiple of four so that said anvil may be oriented at a number of angular positions equal to said multiple of four and, in each of said positions said foot will rest on one of the polygonal faces thereof and be supported by said support plate in sable manner, and said cross arm will engage the inside face of said foot and either side of said neck to prevent said anvil head from tipping downwardly, so that as a portion of said anvil becomes worn, said foot and neck may be rotated in said bracket to present a relatively uneroded anvil surface to said outwardly thrown rock.

4,575,015
FLUID COUPLING DEVICE
Takami Sugioka, and Takeshi Tanaka, both of Ehime, Japan, assignors to Teijin Seiki Company Limited, Osaka, Japan
Filed Mar. 19, 1985, Ser. No. 713,665
Claims priority, application Japan, Mar. 19, 1984, 59-38094[U]
Int. Cl.⁴ B65H *54/547*
U.S. Cl. 242—46.4 **4 Claims**



1. A thread bobbin holder device comprising: a bobbin holder body having a bobbin fitted on an outer circumference thereof through a bobbin holing member; a piston provided inside said bobbin holder body for controlling an amount of tension between said bobbin and said bobbin holding member; a holder shaft; a support body for rotatably supporting said bobbin holder body; a second shaft rotated by a driving source, a throughhole being formed in each of said holder shaft and said second shaft; a shaft joint for connecting said holder shaft and said second shaft; and a tubular elastic member disposed in said shaft joint and fitted into respective end portions of said holder shaft and said second shaft.

4,575,016
CONTINUOUS RIBBON FEED METHOD AND SYSTEM
Christopher Pali, Fort Wayne, Ind., assignor to Essex Group, Inc., Fort Wayne, Ind.
Filed Jun. 4, 1984, Ser. No. 617,283
Int. Cl.⁴ B65H *19/18, 19/14*
U.S. Cl. 242—58.1 **8 Claims**



1. Apparatus for receiving rolls of ribbon material having a

hollow core and for supplying a continuous ribbon to an end use which comprises:

conveyor means for storing numerous rolls of ribbon and transporting said rolls to an unloading position;

ribbon payoff means including means for securing a roll of ribbon in a payoff position with a chuck inserted through the hollow core, means for unwinding the roll of ribbon at the desired speed and splicing means for securing the trail end of one roll of ribbon to the beginning end of the next roll of ribbon mounted to the payoff means on the same chuck;

robot means interacting with the conveyor means and the ribbon payoff means to secure a roll of ribbon material about is radially outward surface, to transfer the roll of ribbon from the conveyor means to the ribbon payoff means and to position the roll with the hollow core about the chuck of the payoff means; and

wherein the conveyor means comprises two parallel endless conveyor belts between which the rolls are mounted, said conveyor belts acting to displace the rolls serially to the unloading position, means for powering said conveyor belts and position sensors mounted to detect the presence of a roll in the unloading position wherein the roll is properly oriented to be secured by the robot means, said position sensor being electrically connected to the means for powering said conveyor belts such that a belt is advanced if the corresponding position sensor fails to detect a roll in the desired position.

4. A method of continuously supplying a ribbon of material to an end use from a plurality of rolls of ribbon which comprises the steps of:

(a) loading a conveyor means with a plurality of rolls of ribbon;

(b) conveying the rolls of ribbon to an unloading position of the conveyor means;

(c) sensing the rolls are located in the unloading position and oriented appropriately;

(d) unwinding a roll of ribbon at a controlled rate of speed on a ribbon payoff means;

(e) automatically unloading the remnants of the unwound roll of ribbon from the ribbon payoff means;

(f) transmitting rolls of ribbon from the unloading position of the conveyor means and loading the roll when appropriate onto a single ribbon payoff means;

(g) splicing the beginning end of the new roll of ribbon to the trail end of ribbon from the unwound roll of ribbon; and

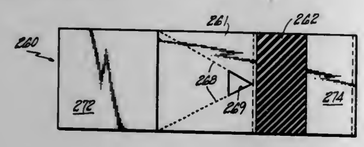
(h) repeating the above steps (b), (c), (d), (e), (f), and (g) to continuously supply a ribbon of material to an end use.

4,575,017

PASTER TAB AND METHOD OF USE

Christopher Pali, Fort Wayne, Ind., assignor to Essex Group, Inc., Fort Wayne, Ind.

Filed Jun. 4, 1984, Ser. No. 617,307
Int. Cl.⁴ B65H *19/18*
U.S. Cl. 242—58.3 **6 Claims**



1. A paster tab for releasably securing the beginning end of a roll of material to the first layer of the roll which comprises:

a tab body divided into an upstream section and a downsteam section;

an upstream adhesive portion located on the top side of the upstream section such that the bottom of the beginning end of the new roll may be secured thereto;

a downstream adhesive portion located on the bottom side of the downstream section such that the top of the first layer may be secured thereto;

a dark color contrast area on the top side of the downstream section, said area being optically detectable for use in orienting the roll; and

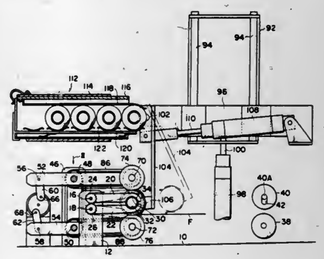
a weakened tab body portion formed between the upstream section and the downstream section for promoting separation of the upstream section from the downstream section, said body portion in the upstream section defining a triangular opening at the center of the tab body, and two outwardly diverging series of perforations extending from the triangular opening to the edges of the tab body.

4,575,018

APPARATUS FOR HANDLING PHOTOGRAPHIC FILM

Koji Ichikawa, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 14, 1985, Ser. No. 691,039
Claims priority, application Japan, Jan. 30, 1984, 59-14921
Int. Cl.⁴ B65H *18/16, 19/30*
U.S. Cl. 242—66 **25 Claims**



1. A photographic film handling apparatus which rewinds a photographic film on the associated spool and stores the rewound film in film storing means, comprising:

(a) spool holding means which holds a flanged spool having one end of a film secured thereto at its shaft portions outward of the flanges;

(b) rewinding means which rewinds said film on said spool while pressing against the outer periphery of the portion of said film already wound on said spool in a state wherein said spool is held by said spool holding means;

(c) gripping means which grips said rewound film being held by said spool holding means and takes the former away from the latter;

(d) film storing means including a clamping member which clamps said rewound film being gripped by said gripping means and takes the former away from the latter; and

(e) shifting means which shifts said gripping means between a receiving position where said gripping means takes said rewound film away from said spool holding means and a transfer position where said gripping means transfers said rewound film to said clamping member of said film storing means.

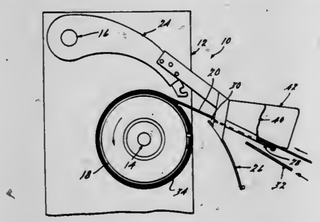
4,575,019

STEEL SLITTER RECOILER GUARD

William R. Hubbell, Hoffman Estates, Ill., assignor to A & W Industries, Inc., Franklin Park, Ill.

Filed Jan. 17, 1985, Ser. No. 692,213
Int. Cl.⁴ B21C *47/02;* B65H *27/00;* F16P *1/00*
U.S. Cl. 242—78.1 **3 Claims**

1. In a steel slitter recoiler comprising a rotatable takeup drum for the coiling of a strip of steel, an improved guard for protecting the hand of an operator feeding spacer material between convolutions of the steel on said drum comprising a drum shroud extending the full width of said drum and generally tangentially thereto and radially spaced therefrom, a skid plate extending the full width of said drum and generally tangentially thereto and radially spaced therefrom, both said shroud and said skid plate being disposed between an advancing portion of steel strip and convolutions of the steel strip on said drum, said shroud and skid plate being orientated at an acute angle relative to one another and spaced from one another adjacent the point of convergence therebetween so as to define a relatively narrow slit extending parallel to the axis of rotation of said drum, said slit extending the full width of said drum between said drum and the advancing strip of steel for the acceptance of spacer material between coils of steel.

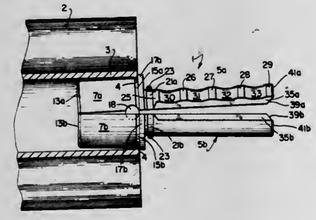


4,575,020

PORTABLE CHUCK FOR DISPENSING WRAPPING MATERIAL

Russell B. Strout, Winchester, and Jerold J. Golner, Lowell, both of Mass., assignors to Borden, Inc., Columbus, Ohio

Filed Mar. 24, 1983, Ser. No. 478,499
Int. Cl.⁴ B65H *23/06*
U.S. Cl. 242—96 **12 Claims**



1. A portable, manually operable chuck for dispensing under tension a roll of wrapping material wound about a tubular core, comprising:

(a) first and second adjacent chuck pieces, wherein each of said chuck pieces includes:

(i) a spindle portion insertable within one end of said tubular core for applying an infinitely adjustable braking force against said tubular core;

(ii) a collar connection to the proximal end of said spindle portion for limiting the insertion of said chuck piece into said tubular core to said spindle portion, and

(iii) a handle portion connected to said collar which is longer than said spindle portion for providing both a handle for manipulating said roll of wrapping material when said spindle portion is inserted into one end of said tubular core, and a means for adjusting the amount of braking force applied to the tubular core of the wrapping material when said handle is manually grasped and squeezed by a single hand;

(b) a fulcrum means disposed between said adjacent chuck pieces above said collar of each for allowing said spindle portions to be spaced farther apart from one another with a mechanical advantage when said handle portions are manually squeezed together, whereby the braking force applied by the spindle portion against said tubular core is amplified; and

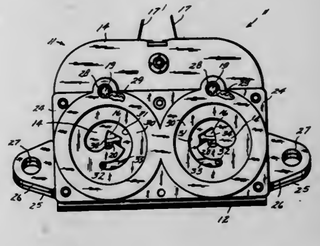
(c) biasing means for biasing said handle portions toward one another so that said spindle portions will lightly frictionally engage the side wall of said core when said spindle portions are inserted in said core.

4,575,021

SEAT BELT RETRACTOR

Wallace C. Higbee, Romeo, Mich., assignor to TRW Automotive Products, Inc., Cleveland, Ohio

Filed Mar. 15, 1984, Ser. No. 589,679
Int. Cl.⁴ A62B *35/00;* B65H *75/48*
U.S. Cl. 242—107.4 A **5 Claims**



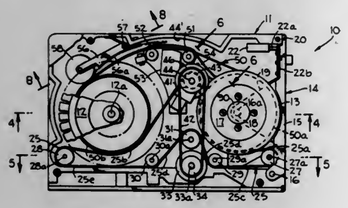
1. A seat belt retractor for a vehicle comprising a frame, a drum rotatably mounted in said frame and on which seat belt webbing is wound, ratchet means secured to and rotatable with said drum, locking means movable into engagement with said ratchet means to lock said ratchet means and thereby lock said drum against rotation in the direction of withdrawal of said seat belt webbing, and means for moving said locking means into engagement with said ratchet means in response to withdrawal of said seat belt webbing in excess of a predetermined amount, said means for moving said locking means into engagement with said ratchet means comprising a cam member rotatable in response to rotation of said drum, and lever means supported for pivotal movement about an axis parallel to the axis of rotation of said cam member and radially with respect to said cam member, said cam member being in the form of a ring having an opening therethrough, said ring having an outer peripheral surface, an inner peripheral surface, and opposite side surfaces extending between said outer and inner peripheral surfaces, said opening being defined by a camming surface formed on said inner perpheral surface, said camming surface having a radially changing profile with respect to said axis of rotation of said cam member for applying only radially directed force to said lever means to effect only radial movement thereof with respect to said cam member, said lever means comprising a follower member extending into said opening and engaging said camming surface for moving said lever means in first and second opposite directions, respectively, said camming surface having a first portion for moving said follower member and said lever means in said first of opposite directions radially with respect to said cam member to move said locking means into engagement with said ratchet means upon a predetermined angular rotation of said cam member in said direction of withdrawal of said seat belt webbing and having a second portion for moving said follower member and said lever means in said second of opposite directions radially with respect to said cam member to move said locking means out of engagement with said ratchet means upon a predetermined angular rotation of said cam member in a direction opposite said direction of withdrawal of said seat belt webbing.

4,575,022

REEL TO REEL TAPE DRIVE DEVICE

Elmer C. Allwine, Jr., Santa Clara, and Paul A. Gilovich, Saratoga, both of Calif., assignors to Interdyne Company, Milpitas, Calif.

Filed Mar. 23, 1984, Ser. No. 592,556
Int. Cl.[4] G03B *1/04*; G11B *15/32*
U.S. Cl. 242—192 **15 Claims**



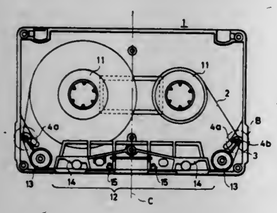
1. A tape drive assembly comprising a housing, a take-up reel mounted for rotation in said housing, an endless drive belt, a drive pulley and a plurality of idler pulleys positioned in said housing and mounting said drive belt so that one reach thereof is wrapped about a circumferential portion of said take-up reel, means non-movably attached to said housing for rotatably mounting said drive pulley and each of said idler pulleys, means for driving said drive pulleys at variable speeds and in both forward and reverse directions, means mounting a supply reel for movement into and out of circumferential engagement with a second reach of said drive belt, said belt being substantially stretched when the supply reel is moved into circumferential engagement therewith, means for directing tape from one of said reels to the other of said reels along a tape feed path when said drive means is energized for driving said drive belt, and a read/write head fixedly positioned adjacent said tape feed path, said belt being formed of a viscoelastic material which maintains a generally constant tension on said tape throughout the variable speed range of said drive means so as to keep the tape in said tape feed path and maintain a predetermined close spacing of the tape and said read/write head throughout said speed range, said viscoelastic material of said belt maintaining the belt under tension with said supply reel both in and out of engagement therewith.

4,575,023

MAGNETIC TAPE CASSETTE

Choji Komiyama, and Seiji Odate, both of Kanagawa, Japan

Filed Jul. 24, 1984, Ser. No. 634,008
Claims priority, application Japan, Aug. 10, 1983, 58-123219[U]
Int. Cl.[4] G03B *1/04*; G11B *15/32*; B65H *23/04*
U.S. Cl. 242—199 **3 Claims**



1. In a magnetic tape cassette including a pair of hubs on which a magnetic tape is wound, two guide rollers, one provided at either end of an opening formed in the front of said cassette, and two inner guides, one provided between each said guide rollers and a respective one of said hubs, the improvement wherein each inner guide comprises:

a cylindrical barrel having a tape sliding surface, a protrusion having a tape sliding surface wider than said tape, said protrusion being turnable rearwardly of said cassette, and a tape guide groove formed in said tape sliding surface of said cylindrical barrel, said tape guide groove being slightly wider than said tape; and

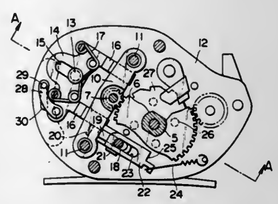
a stop for engaging said protrusion to limit the rotation of said barrel provided at a predetermined engagement position so that, at least on a tape winding side of said cassette, said magnetic tape slides in said tape guide groove.

4,575,024

FISHING REEL WITH SHAFT SUPPORTED AT BOTH ENDS

Kyoichi Kaneko, Tokyo, Japan, assignor to Daiwa Seiko Inc., Higashikurume, Japan

Filed Mar. 21, 1984, Ser. No. 591,793
Claims priority, application Japan, Apr. 13, 1983, 58-64702
Int. Cl.[4] A01K *89/02*
U.S. Cl. 242—218 **3 Claims**



1. In a fishing reel comprising a spool shaft carrying a spool supported between opposite side plates, said spool being adapted for the winding of a line thereon and the release of said line in a forward direction substantially perpendicular to a longitudinal axis of said spool shaft, said spool shaft having a central longitudinal axis defining a rotational axis, a power-transmitting mechanism provided in one of said side plates which is adapted to transmit the power of a handle shaft to said spool shaft, a clutch mechanism provided in said power-transmitting mechanism which is adapted to selectively transmit said power of said spool shaft, and a thumb-retaining member provided between said side plates at the rear side of said spool which is adapted to disengage said clutch mechanism to allow the free rotation of said spool shaft about said rotational axis, wherein the improvement comprises a guide means causing the whole of said thumb-retaining member to move along an arc of a cylinder having, as its central longitudinal axis, the rotational axis of said spool shaft, when said thumb-retaining member is downward, the upper surface of said thumb-retaining member constituting a thumb-retaining surface said thumb-retaining surface of said thumb-retaining member being arranged over substantially the entire width of said spool and in the vicinity of spool flanges, and a rear surface of said thumb-retaining member having an arcuate configuration substantially conforming with the rear edges of said side plates.

4,575,025

FIN DEPLOYMENT MECHANISM FOR MISSILES

John W. Sadvary, 40 Notch Park Rd., Little Falls, N.J. 07424, and Tim C. Fung, 1241 Miriam Pl., Hillside, N.J. 07205

Filed Apr. 25, 1984, Ser. No. 603,690
Int. Cl.[4] F42B *13/32*
U.S. Cl. 244—3.27 **7 Claims**

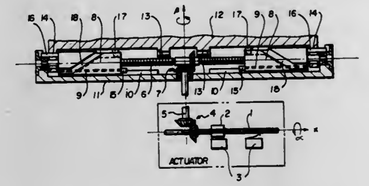
1. A control surface deployment apparatus for missiles, comprising

a control surface supporting member having cam follower means thereon and a locking means thereon,

a screw nut means having (1) a cam slot means on the exterior surface thereof for receiving said cam follower means and imparting arcuate motion thereto for a first portion thereof and no motion thereto for a second portion thereof and (2) an engaging means integral with said screw nut means for engaging said locking means,

a screw shaft means for supporting said screw nut means along the axis thereof, and

means for rotating said screw shaft means to axially translate



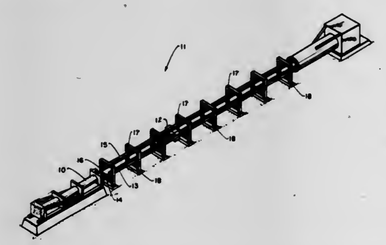
said screw nut means, whereby said control surface supporting member via the cooperation of said cam follower means and said cam slot means is caused to rotate through a given angle of rotation whose limits are defined by a retracted position and an extended position of said control surface supporting member with respect to the contour of said missile, and further wherein said engaging means engages said locking means in each of said retracted and extended positions when said cam follower means is stationary in said second portion of said cam slot means.

4,575,026

GROUND LAUNCHED MISSILE CONTROLLED RATE DECELERATOR

Harold G. Brittain, San Diego, and Charles B. Brantley, Poway, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 2, 1984, Ser. No. 626,958
Int. Cl.[4] B64F *1/04*
U.S. Cl. 244—63 **4 Claims**



1. In a ground launched missile controlled rate decelerator for a dummy missile under test, the combination comprising:

a. a dummy missile having a rocket motor for accelerating said dummy missile when fired;

b. movable support means in the path of said dummy missile and being operable to move at the same rate of speed as said dummy missile in response to a collision thereof;

c. stationary support means;

d. tapered forming shoes being mounted on said movable support means;

e. mandrel means being mounted on said stationary support means; and

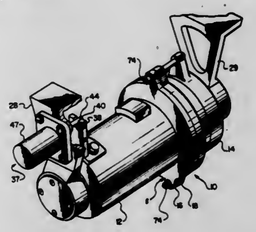
f. flat plate means mounted on said stationary support means and engaging said forming shoes so that relative movement between said movable support means and said stationary support means will cause said forming shoes to move over the upper and lower edges of said plate, rolling them over into a "U" shape.

4,575,027

ELECTROMECHANICAL ACTUATOR SYSTEM WITH ANTI-JAMMING FEATURES

Michael J. Cronin, Sherman Oaks, Calif., assignor to Lockheed Corporation, Burbank, Calif.

Filed May 16, 1983, Ser. No. 495,013
Int. Cl.[4] B64C *13/42*
U.S. Cl. 244—75 R **8 Claims**



1. An actuator system for an aircraft, said aircraft having a control surface rotatably mounted to a portion of said aircraft's structure, said actuator system comprising:

a rotary actuator rotatably mounted to said aircraft structure, said actuator having an output member coupled to said control surface; and

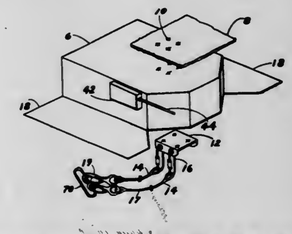
latch means mounted on said structure, releasably engaging said actuator, said latch means movable from a first position preventing rotation of said actuator to a second position allowing rotation of said actuator about its axis of rotation.

4,575,028

CARGO CARRYING HELICOPTERS

Edward H. Dean, and Burnley R. Doxey, both of Newport News, Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 28, 1984, Ser. No. 625,749
Int. Cl.[4] B64D *1/22*
U.S. Cl. 244—137 A **4 Claims**



1. In a helicopter of the type having a cargo retrieving line carried by means attached to the underside thereof, adapted to be lowered therefrom to retrieve cargo, the cargo retrieving line being provided with a repelling hook at its lowering end for attachment to cargo, the improvement permitting rapid deployment of a plurality of such cargo retrieving lines comprising a cargo line housing in the form of a box secured at its top to the helicopter at its cargo hook attachment point, door means in the cargo line housing including a spring biasing means and a door in the bottom of the housing, the door being biased to an open position, latch means adapted to hold the

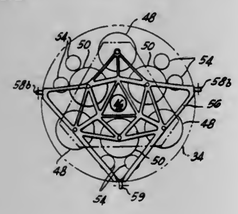
door closed against said bias, a cargo retrieving line bracket within said cargo line housing, attached to the helicopter, means secured one end of the cargo retrieving lines to the bracket, and cable release means opening the cargo line housing door to jettison the cargo retrieving lines.

4,575,029

SPACECRAFT FOR USE IN CONJUNCTION WITH A REUSABLE SPACE SHUTTLE

Oliver P. Harwood, Huntington Beach, and John A. Love, Seal Beach, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Continuation of Ser. No. 89,349, Apr. 30, 1980, abandoned. This application Aug. 12, 1982, Ser. No. 407,379
Int. Cl.⁴ B64G *1/26, 1/40*
U.S. Cl. 244—172 **12 Claims**



1. A propulsion system for a spacecraft, said propulsion system utilizing a fuel and an oxidizer which is significantly more dense than the fuel and comprising:

at least one liquid bipropellant rocket engine disposed to provide thrust directed along an axis passing through the center of mass of the spacecraft;

a plurality of fuel tanks disposed symmetrically about said axis; and a like plurality of oxidizer tanks also disposed symmetrically about said axis;

said fuel tanks and oxidizer tanks are paired in such a manner that each fuel tank is balanced by an oxidizer tank located closer to said axis than the corresponding fuel tank, and said tanks being arranged in jettisonable pairs each consisting of one of said fuel tanks and one of said oxidizer tanks adapted to be emptied together and jettisoned without substantial lateral disturbance of the center of mass of the spacecraft; and

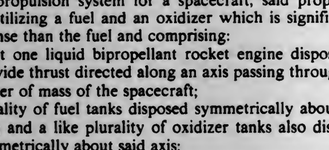
means for jettisoning said tank pairs.

4,575,030

LAMINAR FLOW CONTROL AIRFOIL

Louis B. Gratzer, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Sep. 13, 1982, Ser. No. 416,923
Int. Cl.⁴ B64C *21/06*
U.S. Cl. 244—209 **5 Claims**



1. A laminar flow control airfoil having a leading edge and a trailing edge, comprising:

a leading edge region including the leading edge of said airfoil;

the leading edge flap means for providing additional lift for said airfoil during low-speed operation of said airfoil and for protecting said leading edge region from insect accumulation and surface erosion caused by dirt and rain during said low-speed operation, said leading edge flap means being movable between a low-speed position and a cruise position;

first suction means associated with said leading edge region for removing boundary layer air flowing over upper and lower surfaces of said leading edge region, said first suction means comprising:

a porous upper skin on said leading edge region;

an upper surface duct connected to said porous upper skin for drawing off boundary layer air flowing over said porous upper skin;

a leading edge flap purge duct for providing suction of boundary layer air from said leading edge flap means when said leading edge flap means is in said cruise position;

a porous lower skin on said leading edge region; and,

a lower surface duct connected to said porous lower skin for drawing off boundary layer air flowing over said porous lower skin;

a main box region contiguous to said leading edge region for receiving air flowing over said leading edge region, said main box region including an upper and a lower surface configured for providing a favorable pressure gradient without the application of suction for air flowing in a rearward, chordwise direction over said main box region;

a trailing edge region contiguous to said main box region on the end thereof remote from said leading edge region, said trailing edge region including said trailing edge of said airfoil; and

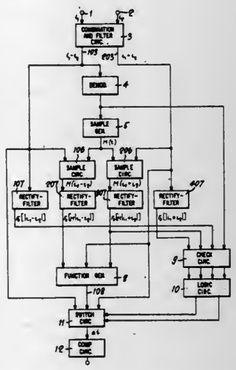
second suction means for removing boundary layer air flowing over upper and lower surfaces of said trailing edge region of said airfoil.

4,575,031

DEVICE FOR DETECTING THE UNBALANCE BETWEEN THE TWO FRACTIONS OF THE RETURN TRACTION CURRENT IN THE RAILS OF A RAILROAD TRACK

Antonio Lazzari, Bologna, Italy, assignor to Sasib S.p.A., Bologna, Italy

Filed Nov. 22, 1983, Ser. No. 554,322
Claims priority, application Italy, Nov. 23, 1982, 12674 A/82
Int. Cl.⁴ B61L *21/00*
U.S. Cl. 246—34 R **4 Claims**



1. A device for detecting the unbalance Δi between two fractions of the return traction current which flow in the two rails of a railroad track, in the presence of a signalling current in the respective track circuit, comprising: a linear combination circuit (3) which receives the two currents (i_1 and i_2) actually existing in the two rails and generates both the difference (i_1-i_2) and the sum (i_1+i_2); a demodulating circuit (4)

which is fed with the signal of the difference (i_1-i_2) and which takes from it the modulating signal of the signalling current; a sample generator circuit (5) which receives the modulating signal of the signalling current and generates a sample function M(t); two sampling circuits (106 and 206) which receive the sample function, one of which (106) also receives the difference signal (i_1-i_2) and supplies the difference sampled signal $M(i_1-i_2)$, while the other (206) also receives the sum signal (i_1+i_2) and supplies the sum sampled signal $M(i_1+i_2)$; four rectifying-filtering circuits (107,207,307,407) which receive the difference signals (i_1-i_2), the sampled difference $M(i_1-i_2)$, the sum (i_1+i_2) and the sampled sum $M(i_1-i_2)$ and supply the mean values of the respective rectified signals $Fo[|i_1-i_2|]$, $Fo[M|i_1-i_2|]$, $Fo[|i_1+i_2|]$ and $Fo[M|i_1+i_2|]$; a function generator circuit (8) which is fed with the signals (i_1+i_2), $Fo[M|i_1-i_2|]$ and $Fo[M|i_1+i_2|]$ and supplies a signal corresponding to

$$(i_1 + i_2)\frac{Fo[M|i_1 - i_2|]}{Fo[M|i_1 + i_2|]};$$

a switching circuit (11) that receives the signal supplied by the function generator circuit, the difference signals (i_1-i_2) and the sum signals (i_1+i_2); and means including a check circuit (9) and a logic circuit (10) for controlling the switching circuit so that it emits at its output, as a Δi signal corresponding to the unbalance between the two fractions of the return traction current in the two rails, depending upon certain conditions, one of the received signals

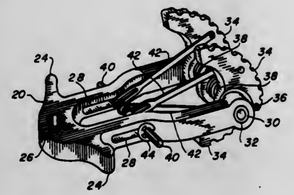
$$(i_1 + i_2)\frac{Fo[M|i_1 - i_2|]}{Fo[M|i_1 + i_2|]} \text{ or } (i_1 - i_2) \text{ or } (i_1 + i_2).$$

4,575,032

ROCK CLIMBING ADJUSTABLE CHOCK

Peter C. Taylor, 1222 N. DeJoy St., Santa Maria, Calif. 93454

Filed Apr. 4, 1985, Ser. No. 719,990
Int. Cl.⁴ A47G *29/00*
U.S. Cl. 248—1 **7 Claims**



1. A rock climbing adjustable chock of the type having opposed pivotal cams the improvement comprising:

(a) a biforcated yoke handle having a counter-bored hole in each fork on the first end and a palm shaped second end with opposed extending fingers, each fork having a slot in parallel planar relationship;

(b) a shaft tensionally positioned between said forks of the handle, each end urgingly supported within said counter-bored holes;

(c) a plurality of opposed cams rotatably positioned on said shaft at least one pivoting in one direction and at least a pair pivoting in the opposite direction, for gripping the inside surface of a crack in a rock;

(d) a plurality of torsional springs disposed upon said shaft with each end pivotally fixed to said cam urging opposed rotation thereof;

(e) a pull rod slideably disposed within said slot in each fork free to move transversely fore and aft, providing a gripping surface for actuation of said chock; and,

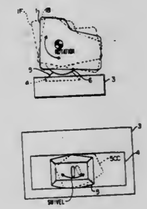
(f) a plurality of connecting links, each link freely reciprocable having one end pivotally mounted on the periphery of said cam and the other end slideably joined to said pull rod for retractably rotating said spring loaded opposed cams when sliding said pull rod toward said palm shaped yoke end while being inserted into an open rock fault, further providing an adjustable device to which a climbing rope may be attached to arrest a fall.

4,575,033

TILT-SWIVEL BASE FOR A CRT DISPLAY TERMINAL

Helmut H. Henneberg, Canton; Richard R. Dillon, Wellesley; Domenic R. Romano, Chelmsford, all of Mass., and Roger L. Hall, Nashua, N.H., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Apr. 4, 1983, Ser. No. 482,115
Int. Cl.⁴ H04M *1/04*
U.S. Cl. 248—185 **19 Claims**



17. A base for supporting a CRT display terminal having a viewing screen on one side thereof, said base for providing a wide range of operator viewing angles, said base being adapted to rest on a generally horizontal surface, said base comprising:

a rocker drum having a convex arcuate lower wall, said rocker drum when attached to a bottom surface of said terminal having said arcuate wall extending downwardly from said terminal;

a cradle having a bottom surface adapted to rest on said generally horizontal surface, said cradle having an upper surface for engaging and supporting said arcuate lower wall of said rocker drum, wherein said horizontal surface has a recess having a width, from front to back, slightly larger but approximately equal to, the width, of said cradle and a length, from side to side, substantially longer than the length of said cradle such that said cradle when resting in said recess can not be displaced appreciably from front to back but can be displaced from side to side by sliding said cradle within the length of said recess thereby allowing said terminal when attached to said rocker drum to be positioned for viewing said viewing screen; and wherein a back bottom edge of said cradle is triangular shaped with the apex of the triangle located in the middle of said back bottom edge and wherein the front bottom edge of said cradle is arcuate with a radius approximately equal to said width of said cradle and the center of said arc at said apex at said center of said back bottom edge such that said cradle can be rotated in said recess in either a clockwise or counterclockwise direction around a vertical axis thereby allowing said terminal when attached to said rocker drum to be swiveled for adjustment of said viewing angle of said viewing screen while more or less maintaining said apex of said back bottom edge and a point of said arcuate front bottom edge in contact with a back edge and a front edge of said recess respectively; and a slideable attachment means for slideably attaching said rocker drum to said cradle such that said rocker drum can be rotated around a generally horizontal axis relative to said cradle to enable manually setting inclination of said

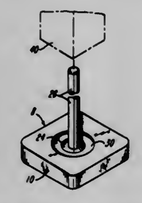
viewing screen when said rocker drum is attached to said terminal, said slideable attachment means also for preventing the sideways motion of said rocker drum relative to said cradle, wherein said rocker drum relative to said cradle, wherein said rocker drum to cradle engagement can frictionally hold said terminal when attached to said rocker drum in an inclined position to which said terminal is manually set.

4,575,034

ISOLATING FOOT PAD OR MOUNT

Richard D. Tobey, Beavercreek, Ohio, assignor to Tech Products Corporation, Dayton, Ohio

Continuation of Ser. No. 190,349, Sep. 24, 1980, Pat. No. 4,368,864. This application Jan. 3, 1983, Ser. No. 455,464
The portion of the term of this patent subsequent to Jan. 18, 2000, has been disclaimed.
Int. Cl.⁴ A47B *91/00*
U.S. Cl. 248—188.9 **8 Claims**



1. A mounting unit for support of a piece of equipment or furniture or the like upon a floor comprising:
- a housing provided with an opening in the upper portion thereof, the opening having a given area, the housing being adapted to rest upon a floor, at least a part of the housing being of elastomeric material,
- a receptable within the housing and resting upon the part of the housing which is of elastomeric material, the receptacle having a support surface of a given area,
- a stem extending into the housing through the opening, the stem having a cross-sectional area at the opening which is considerably smaller than the area of the opening so that the stem is laterally and angularly movable within the opening,
- a base at the lower portion of the stem, the base having a lower surface in engagement with the support surface of the receptacle, the area of the lower surface of the base being considerably less than the given area of the support surface of the receptacle, the lower surface of the base and the support surface of the receptacle being complementary curved surfaces, the base thus being laterally and angularly movable with respect to the housing as the base moves laterally and angularly upon the support surface of the receptacle and as the stem moves angularly and laterally within the opening in the housing, the stem being adapted to support a piece of equipment or furniture as the housing rests upon a floor.

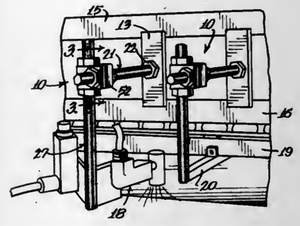
4,575,035

MULTIPLE AXIS LINEARLY AND ROTATIONALLY ADJUSTABLE SUPPORT

David C. McDonough, 426 S. First St., Dundee, Ill. 60118

Filed Mar. 8, 1984, Ser. No. 587,399
Int. Cl.⁴ E04G *3/00*
U.S. Cl. 248—287 **11 Claims**

1. A linearly and rotationally adjustable support, comprising: a threaded rod having a hexagonal cross-section, a support member having a bore therein with a hexagonal cross-section defined by six adjacent surfaces complementary to the hexagonal cross-section of the rod and adapted to be slidably mounted on the hexagonal rod in a plurality of angular orientations, means for positively locking the support member axially on the hexagonal rod, and means separate from the means for axially positively locking the support member on the rod for compressing the block in a direction transverse to the bore therein



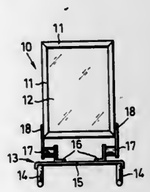
for clamping the support member bore surfaces against at least four of the bore defining surfaces for rotationally positively locking the support member on the rod.

4,575,036

ADVERTISING STAND

Heinz Allekotte, Pestalozzistrasse 28, 5000 Köln, Fed. Rep. of Germany

Filed Aug. 9, 1984, Ser. No. 639,018
Claims priority, application Fed. Rep. of Germany, Aug. 23, 1983, 8324149[U]
Int. Cl.⁴ G09F *15/00*
U.S. Cl. 248—289.3 **11 Claims**



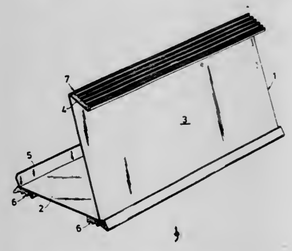
1. A stand comprising a pedestal and a frame, said frame including opposite lateral upstanding edges, an upper edge and a lower edge; horizontally disposed elastomeric means for torsionally elastically connecting said frame to said pedestal whereby the frame is adapted to assume a tilted position relative to the pedestal by elastic torsional deformation of said elastomeric means due to the force of wind or the like, said elastomeric means being a pair of generally horizontally aligned elastomeric bodies disposed between said lower edge and said pedestal, each body having opposite terminal faces, a plate bonded to each face, means for nonrotatably securing said opposite terminal face plates of each body one each to said pedestal and said frame opposite lateral upstanding edges, each said body terminal face plates being defined by respective inner and outer face plates, bracket means between said lower edge and pedestal and within an area set-off by downwardly imaginary projections of said frame lateral edges whereby said pair of bodies are generally unobtrusively disposed within said area, said bracket means including a first bracket projecting downwardly and a second bracket projecting upwardly from each frame lateral edge and pedestal respectively, each said first and second brackets being vertically aligned with each other when said frame is in a generally upright position thereof, and means for connecting said inner and outer plates to respective ones of said second and first brackets.

4,575,037

STAND TO HOLD A BOOK OR THE LIKE IN AN OBLIQUE POSITION

Algot Hammar, 18, MUrtsbovägen, 790 21 BjursUs, Sweden

Filed Jun. 8, 1984, Ser. No. 618,953
Claims priority, application Sweden, Jun. 8, 1983, 8303251
Int. Cl.⁴ A47B *19/00*
U.S. Cl. 248—441.1 **4 Claims**



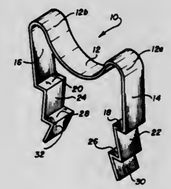
1. A portable support stand mounted on a substantially planar surface for supporting objects, which comprises:
- an individual support frame having a series of integrally connected sections including:
  - a base member having a substantially planar configuration and a pair of substantially parallel end sections, said base member also having a lower surface proximate the substantially planar surface,
  - a vertical extension extending upward from one of said end sections at a predetermined angle less than 90° relative to said base member, said vertical extension having an upper edge opposite the portion of said vertical extension connected to said base member, and
  - a sloped member depending from said upper edge at an angle less than 90° relative to said base member, the angular orientation of said base member, said vertical extension and said sloped member providing a substantially Z-shaped side sectional configuration, the length of said sloped member measured from said upper edge being substantially less than the length of said base member measured between said end sections;
- means affixed to said lower surface to increase friction of said base member for restricting movement thereof; and
- means affixed to said sloped member to increase friction for preventing the objects supported by said sloped member and said substantially planar surface from movement relative thereto.

4,575,038

SPRING CLIP FASTENER FOR MOUNTING OF PRINTED CIRCUIT BOARD COMPONENTS

Marvin F. Moore, Carrollton, Tex., assignor to Thermalloy Incorporated, Dallas, Tex.

Filed Jul. 2, 1984, Ser. No. 626,662
Int. Cl.⁴ A47B *97/00*
U.S. Cl. 248—505 **5 Claims**



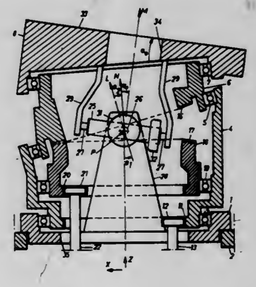
1. Unitary apparatus for assembling a heat sink and a semiconductor device package in intimate mutual contact and securing the assembly to a circuit board, said apparatus comprising:
- (a) body;
- (b) spring means integral with and substantially centrally disposed in said body for engaging said semiconductor device package and urging said semiconductor device package into contact with said heat sink;
- (c) support means extending from said spring means for supporting said spring means and said assembly above the surface of said circuit board;
- (d) first shoulder means integrally formed in said support means and spaced from said spring means for engaging and supporting said heat sink above the surface of said circuit board and for retaining said heat sink in fixed position when said spring means urges said semiconductor device package into contact with said heat sink;
- (e) foot means extending from said support means adapted to be positioned with an aperture in said circuit board; and
- (f) second shoulder means integrally formed in said support means between said foot means and said first shoulder means and spaced from said first shoulder means, said second shoulder means adapted to engage the surface of said circuit board when said foot means is inserted within said aperture and thereby support said assembly in a fixed position spaced from the surface of said circuit board.

4,575,039

APPARATUS FOR POSITIONING THE PLANE OF AN APPARATUS TABLE AT AN OPTIONAL INCLINATION

Nils A. Persson, Gothenburg, and Torsten G. Lindberg, Öckerö, both of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Dec. 15, 1983, Ser. No. 561,617
Claims priority, application Sweden, Dec. 29, 1982, 8207491
Int. Cl.⁴ F16M *13/00*
U.S. Cl. 248—550 **3 Claims**



1. Apparatus for positioning the planar surface of a table at an optional inclination in relation to the plane of a substructure, said apparatus comprising
- an attachment ring for mounting the apparatus on a substructure, a first bearing in said attachment ring having a rotational axis, a rotatably mounted first housing in said bearing, a second bearing in said housing having a rotational axis deviating from that of the rotational axis of said first bearing, a second housing rotatably mounted in said second bearing, a third bearing on said second housing having a rotational axis deviating from that of said second bearing, a table supported by said third bearing and having a planar surface whose angular position is adjustable by a combination of angular rotations of both rotatable housings,
- a servo mechanism comprising a first motor for angularly positioning the first housing in said first bearing, and a second motor for angularly positioning the second hous-

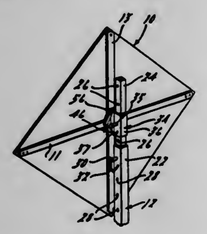
ing in said second bearing, a gimbal ring having first and second axes of rotation and including angular position transducers at each axis for controlling said motors, means connecting the gimbal ring to the table for rotation around one of the axes parallel to said planar surface, and means connecting the gimbal ring to the attachment ring for rotation about the other of the axes parallel to the plane of said attachment ring, and means for avoiding a point of singularity within the positioning range of the inclination of said planar surface by the provision of an angularity between the plane of said substructure and the planar surface of the table.

4,575,040

DEFLECTABLE SIGN AND STAND

James R. Seely, Rochester, Mich., assignor to Marketing Displays, Inc., Farmington Hills, Mich.

Division of Ser. No. 497,815, May 25, 1983, Pat. No. 4,572,473, which is a continuation-in-part of Ser. No. 442,378, Nov. 17, 1982, abandoned. This application Jul. 3, 1985, Ser. No. 751,562
The portion of the term of this patent subsequent to Oct. 1, 2002, has been disclaimed.
Int. Cl.⁴ F16M *13/00*
U.S. Cl. 248—624 **6 Claims**



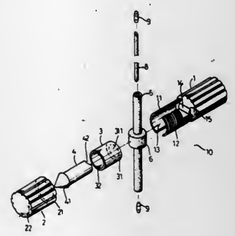
1. In a sign and sign stand assembly, said sign having at least one generally horizontal cross-brace thereon, said sign stand including a frame member, frame deflection means for resiliently deflecting said frame member downwardly generally along a predetermined plane in response to first wind forces exerted generally transverse to the plane of said sign, the improvement comprising a pair of upwardly-presenting channel members secured to said frame member for receiving said horizontal cross-brace therein; each of said channel members having an inner leg spaced apart from an outer leg, the spaces between said legs being sufficiently wide to allow said cross-brace to pivotally swing therebetween, a pair of latching members pivotal relative to said frame member, resilient means for biasing said latching members toward abutting engagement with said horizontal cross-brace to biasingly urge cross-brace against said outer leg, said resilient means yieldably allowing said cross-brace and said sign to pivotally swing about a generally vertical axis in response to second wind forces exerted generally parallel to the plane of said sign, said pivoted sign being oriented generally transverse to said second wind forces in order to allow said frame member to deflect generally along said predetermined plane, said assembly further comprising a generally vertical cross-brace on said sign, and warning device supporting means for supporting a warning device thereon, said vertical cross-brace being adapted to support said warning device supporting means and said warning device thereon.

4,575,041

LIQUID FLOW CONTROLLER

Liang-Tung Hu, 3rd Fl., No. 248, Sec. 4, Hsing-Yi Rd., Taipei, Taiwan

Filed Jan. 17, 1985, Ser. No. 692,350
Int. Cl.⁴ F16L *55/14*
U.S. Cl. 251—8 **1 Claim**



1. A liquid flow controller comprising:
a first cylindrical member provided at one end surface with a pair of threaded means which extend outwardly therefrom and form a recess thereof;
a flange being properly disposed on said end surface;
a second cylindrical member being hollowed and provided at a first end with a threaded inner wall, the other end thereof being provided with closed second end face, and said second cylindrical member being threadedly engaged with said first cylindrical member;
an annular member provided at a first end surface with a hole and a second end surface thereof being apertured; said annular member being received within and secured to said second cylindrical member;
a controlling rod being provided at one terminal with an enlarged end and the other terminal thereof being provided with a concaved end, and said controlling rod being inserted through said apertured second end surface of said annular member and received within said annular member;
a rubber hose being partially surrounded by a rubber ring for preventing said rubber hose from being directly pressed;
a solid rubber rod being inserted into and received within said rubber hose;
a pair of connectors being disposed on the both terminals of said rubber hose; and
said rubber hose together with said rubber ring being positioned in said recess and clamped between the concaved end of said controlling rod and said flange.

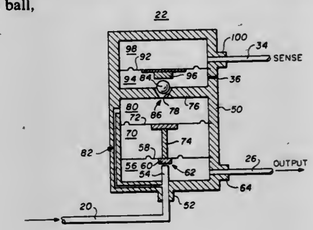
4,575,042

PNEUMATICALLY AMPLIFIED CONSERVATION VALVE

Charles J. Grimland, Garland, and Richard P. Cheatham, Royse City, both of Tex., assignors to Associates of Dallas, Dallas, Tex.

Filed Aug. 17, 1984, Ser. No. 642,062
Int. Cl.⁴ F16K *31/385*
U.S. Cl. 251—46 **2 Claims**

1. A pneumatically amplified conservation valve for controlling gas flow from a supply tube to a user through an output tube in response to gas pressure variations received through a sense tube, the valve comprising:
a normally open pneumatically controlled valve which is closed in response to a pressure increase in a first chamber, said pneumatically controlled valve having the input thereof connected to said supply tube and the output thereof connected to said output tube,
a passage for providing fluid communication between said supply tube and said first chamber,
a pneumatically controlled check valve to permit fluid flow from said first chamber to a bleed port, said check valve closed in response to a pressure increase in a second chamber which is connected to said sense tube, whereby a pressure increase received through said sense tube closes said check valve such that gas received through said passage pressurizes said first chamber to close said pneumatically controlled valve to stop the supply of said gas to said output tube,
said pneumatically controlled check valve including
a ball,



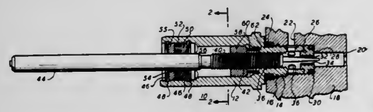
a plate which serves as a wall of said first chamber, said plate having a conical orifice therethrough for receiving said ball for permitting the flow of said gas only out of said first chamber,
a diaphragm closing said second chamber, said diaphragm deflected by gas pressure received through said sense tube, and
a piston connected to said diaphragm facing said ball for forcing said ball to close said conical orifice when said diaphragm is deflected toward said ball.

4,575,043

NEEDLE VALVE

Robert E. Braatz, Sun Prairie, Wis., assignor to The BOC Group, Inc., Montvale, N.J.

Continuation of Ser. No. 539,362, Oct. 6, 1983, abandoned. This application Feb. 8, 1985, Ser. No. 699,490
Int. Cl.⁴ F16K *47/00*
U.S. Cl. 251—122 **2 Claims**



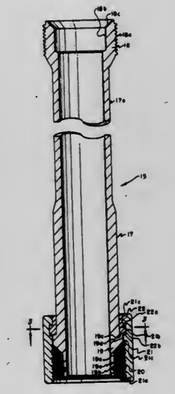
1. A needle valve comprising a housing having an inlet means, and outlet means and a flow path formed there between, a cylindrical valve seat in said flow path, a hollow valve stem threadedly engaged with said housing and moveable coaxially toward and away from said cylindrical valve seat, said hollow valve stem having its end remote from said cylindrical valve seat closed and its end near said cylindrical valve seat open, a tapered needle affixed within said hollow valve stem by having one end secured to said closed end of said hollow valve stem and having its free end extending outwardly from said open end of said hollow valve stem and having its main axis at an angle to the main axis of said hollow valve stem, said needle adapted to enter and withdraw from said cylindrical valve seat as said hollow valve stem moves toward and away therefrom to decrease and increase, respectively, the flow through said needle valve, said needle physically touching the inner surface of said cylindrical valve seat throughout its movement therein.

4,575,044

LUBRICATOR SECTION

Ernest B. Gentry, Dallas, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Dec. 20, 1984, Ser. No. 684,386
Int. Cl.⁴ F16K *51/00*
U.S. Cl. 251—145 **8 Claims**



1. A lubricator section comprising:
a. a tubular body having a reduced outside diameter portion, a union box portion formed on the end of said reduced diameter portion, and a union pin portion formed on the other end of said tubular body, said pin portion including an external shoulder, a grooved body extension and a resilient seal housed in said groove;
b. a connecting collar having threads and a groove therein and an inside diameter slightly larger than said pin portion shoulder diameter; and
c. circular segments, each having a lug, each said lug positioned in said collar groove when said collar is around said body reduced outside diameter portion, said segment lugs being retained in said groove by said larger tubular body outside diameter when said collar is around said larger diameter where said segments form an inside diameter less than said pin portion shoulder diameter.

4,575,045

ROTARY COCK WITH GENERALLY SPHERICAL VALVE MEMBER

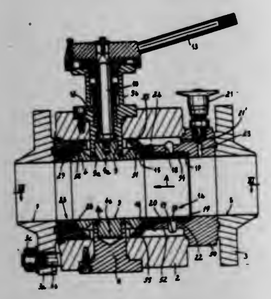
Roger Martin, Saint-Cyr, and Laurent Buffa, Annonay, both of France, assignors to Vanatome, Annonay, France

Filed May 20, 1985, Ser. No. 735,916
Claims priority, application France, May 18, 1984, 84 08177
Int. Cl.⁴ F16K *25/00*
U.S. Cl. 251—172 **10 Claims**

1. A ball valve comprising:
a housing formed with an inlet at an upstream side and an outlet at a downstream side, said inlet and outlet defining a flow cross section;
a generally spherical main valve member formed with a passage substantially equal in cross section to said flow cross section and being rotatable in said housing about an axis transverse to said passage between open and closed positions;
a downstream valve seat in said housing engageable with said member between said member and said outlet;
an upstream valve seat movably mounted in said housing between said inlet and said valve member, a deflectable annular metallic lip being formed on one of said valve member and said upstream valve seat and being deflect-

able in said closed position of said member by fluid pressure applied to said upstream valve seat to seal between said upstream valve seat and said valve member;

a flexible metal element having one side connected to said housing and another side connected to said upstream valve seat for applying fluid pressure at said upstream side



to said upstream valve seat in the direction of said valve member to generate a sealing force between said upstream valve seat and said valve member; and

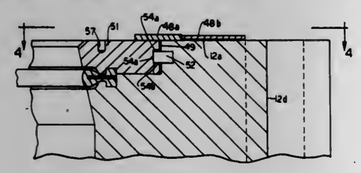
means for equilibrating pressure on opposite sides of said upstream valve seat for relieving said force prior to shifting of said valve member to said open position.

4,575,046

VALVE SEAT RETAINER HAVING A FULL UNINTERRUPTED GASKET FACE

Bernd Krause, Cincinnati; Wayne L. Hoelscher, West Chester, and William F. Scroggin, Cincinnati, all of Ohio, assignors to Xomox Corporation, Cincinnati, Ohio

Filed Apr. 2, 1984, Ser. No. 595,839
Int. Cl.⁴ F16K *1/22*
U.S. Cl. 251—316 **9 Claims**



9. A valve for minimizing fluid leakage at an interface with an adjacent fluid handling component comprising:

(a) a valve body having first and second axial sides with a fluid flow passage extending therethrough from one axial side to the other, said valve body having an annular recess in the first axial side, said annular recess circumscribing the fluid flow passage and including an axial end wall and a cylindrical sidewall;

(b) a closure member movable in said valve body between open and closed positions for selectively blocking fluid flow through said fluid flow passage;

(c) a valve seat disposed in said annular recess about said fluid flow passage, said valve seat being sealingly engageable with said closure member when said closure member is in the closed position;

(d) a seat retainer selectively secureable in said annular recess, said valve seat being interposed between said seat retainer and said valve body, said seat retainer having a pair of substantially planar and parallel axial end surfaces and a cylindrical side surface said pair of axial end surfaces being axially spaced by a distance approximately equal to the axial dimension of the sidewall of the annular recess so that one of said pair of axial end surfaces is in substantially co-planar relationship with said first axial side of the valve body when the other of the pair of axial end surfaces engages the axial end wall of the annular recess, one of the seat retainer walls having an annular keyway; and

(e) a closed ended keyseat formed in the cylindrical sidewall of the annular recess;

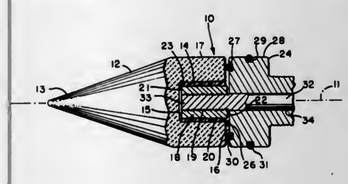
(f) at least one key member disposed in the keyseat axially spaced from the first axial side of the valve body and extending from a wall of the annular recess into the annular keyway for holding said seat retainer in said annular recess and securing said valve seat relatively to said valve body, said at least one key member being rigidly secured against radial movement and mounted in the annular recess without creating an external leak path for a fluid media in said fluid flow passage.

4,575,047

CERAMIC TO METAL JUNCTION AND METHOD OF MAKING SAME

Charles J. Boos, Lewiston, and Mario C. Kerr, East Amherst, both of N.Y., assignors to Kennecott Corporation, Cleveland, Ohio

Filed Jan. 24, 1984, Ser. No. 573,278
Int. Cl.⁴ F16K *17/38*
U.S. Cl. 251—356 **14 Claims**



1. A ceramic-to-metal junction comprising:

(a) a ceramic part having a boss projecting therefrom;

(b) a metallic part having a bore therein of a size and shape complementary to that of the boss of the ceramic part, the metallic part overlapping the ceramic part such that the boss is within the bore;

(c) a metallic insert having inner and outer peripheral surfaces, anterior and posterior ends, the insert being bonded by said inner surface to the boss of the ceramic part in the overlapping area and being secured by threads to the metallic part in the overlapping area:

(d) the ceramic part, metallic part and metallic insert being dimensioned such that the posterior end of the insert engages the metallic part and the metallic part does not contact the ceramic part when assembled.

4,575,048

INSERT RETAINER FOR A WAFER STYLE BUTTERFLY VALVE

Arie P. Bregman, Sterling Junction, and Ronald J. Collette, Spencer, both of Mass., assignors to Jamesbury Corporation, Worcester, Mass.

Filed Jun. 15, 1984, Ser. No. 621,066
Int. Cl.⁴ F16K *1/22, 43/00*
U.S. Cl. 251—360 **14 Claims**

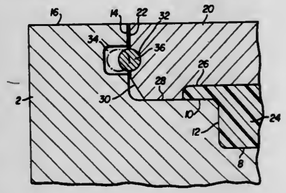
1. A wafer style butterfly valve comprising:

a valve body having a through opening forming a fluid flow passage and having a wall coaxially surrounding an end portion of said fluid flow passage;

a first annular groove in a surface of said wall;

an insert having a peripheral surface shaped and sized such that said peripheral surface closely faces said wall surface when said insert is positioned within said through opening, said insert including a second annular groove having a semi-circular section and positioned in facing opposition to said first groove when said insert is positioned within said through opening, wherein said first and second grooves define an annular channel;

at least a first and second elastic wire form, each of said wire forms having an arcuate section defined by a plurality of



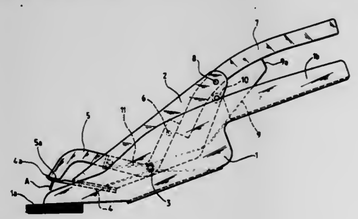
interconnected straight sections in an undeformed state wherein each of said wire forms include first and second respective portions disposed in said first and second grooves when said insert is positioned within said through opening so as to retain said insert within said through opening.

4,575,049

STAPLE REMOVER AND METHOD OF REMOVING STAPLES

Christian Fister, Lyons, France, assignor to AFSAL Sarl, Paray-le-Monial, France

Filed Apr. 13, 1984, Ser. No. 600,330
Claims priority, application France, Apr. 14, 1983, 83 06329
Int. Cl.⁴ B25C *11/00*
U.S. Cl. 254—28 **18 Claims**



1. A tool comprising:

(a) a first element having a front portion and a rear portion;

(b) a second element having an end portion with a tongue, said second element being operably connected to said first element by a first pivot;

(c) a lever operably connected to said second element by a second pivot;

(d) a means for gripping operably connected to said second element by said first pivot, said means for gripping being in contact with said lever; and

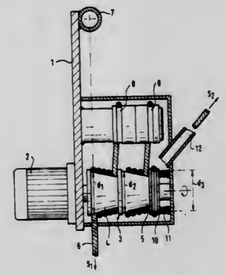
(e) a first spring and a second spring bent around said first pivot, said second spring being stronger than said first spring, so that an end of the first spring presses against said lever and another end of the first spring is supported by said rear portion so as to bias said lever against said means for gripping, and an end of the second spring presses against said means for gripping and another end of the second spring is supported by the front base portion so as to bias said means for gripping against said lever.

4,575,050

MOBILE CABLE WINCH

Peter Bechmann, Uffing, Fed. Rep. of Germany, assignor to Rotzler GmbH & Co., Fed. Rep. of Germany

Filed Sep. 22, 1982, Ser. No. 421,266
Claims priority, application Fed. Rep. of Germany, Sep. 24, 1981, 3138034; Aug. 31, 1982, 3232402
Int. Cl.⁴ B66D *1/36, 3/00*
U.S. Cl. 254—286 **38 Claims**



1. A cable winch comprising a motor-driven cable drum operating as a pull-through type drum, a load-bearing cable held in position on said cable drum for a plurality of turns by a clamping force in the direction of a disk driven in synchronism with the cable drum, said cable drum including a shell having a conical shape and an angle of inclination throughout its entire length which corresponds to the angle of friction between said load-bearing cable and said cable drum, and wherein the load-bearing cable is pulled into the cable drum at the shell end having the larger diameter, wherein said clamping disk is mounted on a shaft driving said cable drum and a first guide pulley is rotatably supported for rotation about an axis parallel to the axis of said shaft, said first guide pulley for guiding said load-bearing cable between said cable drum and said clamping disk; and wherein said cable drum is subdivided into at least first and second conical surfaces having identical angles of inclination and disposed in identical attitudes to extend in the direction of the axis of said cable drum, the diameter of the larger diameter end of the first conical surface provided for pulling in said load bearing cable being identical with or smaller than the diameter of the larger-diameter end of the second conical surface which is wrapped by the section of said load-bearing cable which is paid out by the smaller-diameter end of the first conical surface, the cable section deflected by a second guide pulley whose axis extends parallel to the drum axis.

4,575,051

GUIDE AND SUPPORT MEMBER FOR CUTTING TORCHES, WIRE WELDERS, AND THE LIKE

James D. Kuper, 12683 Woodpecker Dr., Tunner, Oreg. 97392

Filed Oct. 15, 1984, Ser. No. 661,138
Int. Cl.⁴ B23K *5/24*
U.S. Cl. 266—66 **5 Claims**

1. A guide and support member for tools of the type having a depending tip comprising

a rigid disc having an upright aperture arranged to receive a tip of a tool,

means in said disc arranged to secure said disc to a depending tool tip,

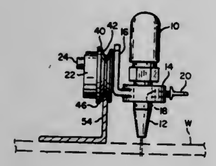
an upright arm on said disc,

a hub member supported eccentrically on said arm on a horizontal axis,

and a roller supported rotatably on said hub member,

said roller having a diameter greater than said hub member and having a rolling edge for engaging guide means,

said hub member being adjustable rotatably on its eccentric support to position said roller vertically relative to said



disc for selectively positioning a tip to which said disc is secured in spaced relation from a work piece.

4,575,052

APPARATUS FOR CONTINUOUSLY QUENCHING A STEEL PLATE

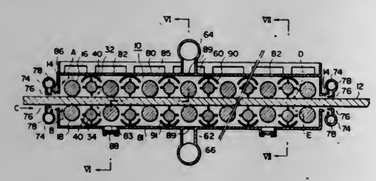
Sadao Ebata, and Seiji Bando, both of Kurashiki, Japan, assignors to Kawasaki Steel Corporation, Hyogo, Japan

Division of Ser. No. 438,528, Nov. 1, 1982, abandoned. This application Jun. 28, 1984, Ser. No. 625,635

Claims priority, application Japan, Nov. 19, 1981, 56-185664; Nov. 20, 1981, 56-186325; Nov. 27, 1981, 56-190063; Nov. 27, 1981, 56-176336; Dec. 10, 1981, 56-3564; Dec. 10, 1981, 56-3565; Dec. 22, 1981, 56-207388; Dec. 22, 1981, 56-207389; Jan. 11, 1982, 57-2100; Jan. 11, 1982, 57-2101

Int. Cl.⁴ C21D *1/64*

U.S. Cl. 266—81 **31 Claims**



1. An apparatus for continuously quenching a steel plate by continuously cooling the steel plate with cooling water comprising:

a water storage vessel disposed in a feeding passage of the steel plate, said vessel containing circulated cooling water and having a ceiling and a bottom plate;

upper supplying openings disposed in the ceiling for supplying the cooling water into said vessel;

upper exhausting openings disposed in the ceiling for exhausting the cooling water from said vessel;

lower supplying openings disposed in the bottom plate for supplying the cooling water into said vessel;

lower exhausting openings disposed in the bottom plate for exhausting the cooling water from said vessel;

adjusting means for regulating an opening area of said lower exhausting openings;

a plurality of upper and lower rolls in said vessel for feeding the steel plate; and

a plurality of upper and lower impellers in said vessel disposed in the vicinity of the steel plate for agitating and moving the cooling water on both surfaces of the steel plate at a predetermined speed with respect to the steel plate;

the cooling water for quenching substantially an upper portion of the steel plate being supplied from said upper supplying openings and exhausted from said upper exhausting openings, and the cooling water for quenching substantially a lower portion of the steel plate being supplied from said lower supplying openings and exhausted from said lower exhausting openings, the adjusting means preventing the cooling water from moving in a vertical direction in said vessel.

4,575,053

CONTINUOUS ANNEALING APPARATUS

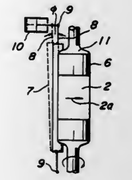
Kichizaemon Nakagawa; Takaaki Hira; Hideo Abe; Toru Sasaki, and Yuji Shimoyama, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Filed Jun. 25, 1984, Ser. No. 623,950

Claims priority, application Japan, Aug. 6, 1983, 58-144314

Int. Cl.⁴ C21D *9/56*

U.S. Cl. 266—92 **4 Claims**



1. A continuous annealing apparatus for metal strips, said apparatus comprising a hearth roll and a cylindrical roll arranged at a location immediately before a metal strip passes about said hearth roll in a high temperature heat-treatment region of the apparatus, an axis of said cylindrical roll being finely tiltable within a 0.15° angle relative to an axis of said hearth roll, bearings for supporting said cylindrical roll at the ends thereof, and hydraulic means for making one of said bearings shiftable transversely to the axis of said cylindrical roll.

4,575,054

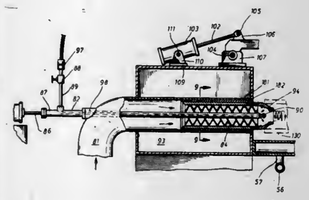
APPARATUS FOR QUENCHING STEEL PIPES

Frederick W. Kruppert, Goulais River, Canada, assignor to Kruppert Enterprises, Inc., Goulais River, Canada

Continuation of Ser. No. 346,755, Feb. 8, 1982, abandoned. This application Mar. 13, 1984, Ser. No. 588,986

Int. Cl.⁴ C21D *1/62*

U.S. Cl. 266—114 **9 Claims**



1. An apparatus for quenching a steel pipe comprising:

a receptacle adapted to receive the pipe;

an exterior quenching means in communication with the receptacle, the exterior quenching means being adapted for separately directing a cooling medium in a substantially circumferential flow pattern at variable flow rates around separate exterior segments of the pipe while allowing rapid turnover of cooling medium in the receptacle;

an interior quenching means for passing a cooling medium through the interior of the pipe, the interior quenching means comprising:

a cooling medium conduit adapted to introduce a cooling medium into the pipe; and

a gas injection conduit adapted to blow a gas into the cooling medium as it enters the pipe from the cooling medium conduit to encourage sufficient turbulence in the cooling medium as it passes through the pipe to facilitate heat transfer from the pipe to the cooling medium.

4,575,055

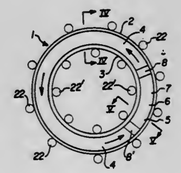
CIRCULAR TRAVELING GRATE MACHINE

Stanley M. Coulter, Wexford, Pa., assignor to Dravo Corporation, Pittsburgh, Pa.

Filed Jul. 15, 1985, Ser. No. 755,167

Int. Cl.⁴ F27B *9/26*

U.S. Cl. 266—159 **14 Claims**



1. A circular traveling grate machine comprising:

a first circular trackway having inner and outer concentric rails;

ring-shaped inner and outer side frame members each having wheeled support means movable on the inner and outer rails, respectively, of said first trackway;

drive means for moving the side frame members along said first trackway;

a second circular trackway having a pair of rails positioned within the annular region defined by the rails of the first trackway;

a plurality of gas permeable pallets, each having a pair of laterally disposed wheels for travel along said second trackway, said pallets having spaced-apart grate elements for supporting a burden thereon;

coupling means connecting said pallets to each of the side frame members to enable the pallets to travel with said side frame members whereby the weight of the side frame members is carried by the wheeled support means on the first trackway and the weight of the pallets and the burden is supported by the pairs of pallet wheels on the second trackway;

stationary gas confining hood means positioned above the pallets and the second trackway;

stationary gas confining windbox means having spaced-apart sidewalls positioned below the pallets and the second trackway, a portion of the windbox means being in fluid communication with said hood means and defining a process zone along said communicating portion;

upper liquid sealing means circumferentially coacting between the hood means and the inner and outer side frame members; and

lower liquid sealing means circumferentially coacting between the windbox means and the inner and outer side frame members and disposed between adjacent rails of the first and second trackways, whereby said process zone is hermetically sealed from the ambient atmosphere around its inner and outer peripheries.

4,575,056

APPARATUS FOR THE RECOVERY OF LIQUID ALUMINIUM BY COMPRESSION OF HOT DROSS

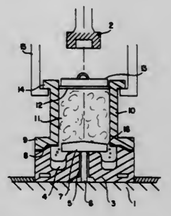
Jacques Julliard, Voiron; Louis Tirilly, Colmar, and Pierre Vigier, Grenoble, all of France, assignors to Cegedur Societe de Transformation de l'Aluminium Pechiney, Paris, France

Division of Ser. No. 683,270, filed as PCT FR 84/00070 Mar. 20, 1984 published WO 84/03719 on Sep. 27, 1984, § 102(e) date Nov. 21, 1984, Pat. No. 4,575,392. This application Jun. 10, 1985, Ser. No. 742,787

Claims priority, application France, Mar. 22, 1983, 83 05080; Feb. 21, 1984, 84 02790; PCT Int'l Appl., Mar. 20, 1984, PCT/FR84/00070

Int. Cl.⁴ B30B *9/06*

U.S. Cl. 266—227 **11 Claims**



1. Apparatus for the recovery of liquid aluminium by compression of hot dross and easy extraction of the cake of compressed dross, which is intended to be temporarily placed between the punch (2) and the table (1) of a unidirectional press, comprising a base (3) on which rests a cylindrical die (10) adapted to be filled with dross and provided at each of its ends with circular insert member (7 and 13), characterised in that, on its upper face, the base has an annular groove (4) whose bottom communicates with the exterior, that the lower insert member (7) is separable from the base, is of a diameter at least equal to the inside diameter of the groove and in any case less than the outside diameter of the groove, and has a continuous upper face which projects outwardly, forming a conical configuration, and that the space (16) between the side wall surface of said insert member and the internal side wall surface of said die is of a constant width which is disposed in a horizontal plane and facing the groove.

4,575,057

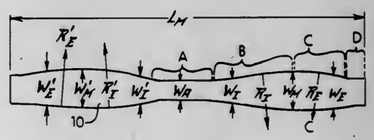
FILAMENT WOUND COMPOSITE MATERIAL LEAF SPRING

Richard E. Robertson, Allen Park, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 27, 1983, Ser. No. 566,067

Int. Cl.⁴ B60G *11/02*; F16F *1/36*

U.S. Cl. 267—47 **6 Claims**



1. A filament wound composite material leaf spring having upper and lower surfaces of length L_M and of width W_M at the widest point and having longitudinal portions in which the width of the leaf spring changes substantially, and having longitudinal camber such that said upper and lower surfaces each have a longitudinal radius of curvature R_C, where R_C is not necessarily constant over length L_M, and said leaf spring having a right and a left longitudinal side surface and a substantially constant total cross-sectional area, said leaf spring char-

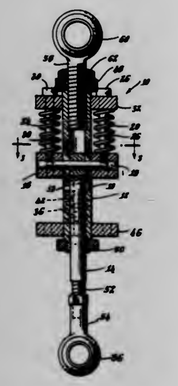
acterized in that the longitudinal side surfaces of the leaf spring in said portions of the leaf spring wherein the width of the leaf spring changes substantially, are outwardly convex and define a curve, the radius of which at each point is equal to the longitudinal radius of curvature, R_C, of the spring at that point.

4,575,058

VARI-TORQUE BAR SHOCK ABSORBER FOR A RACING VEHICLE

Bernard B. Daraz, P.O. Box 3097 Ridgeway Post Office, Stamford, Conn. 06905

Filed May 21, 1984, Ser. No. 612,452
Int. Cl.⁴ F16F *3/04*
U.S. Cl. 267—70 **3 Claims**



1. An adjustable damping rate shock absorber for absorbing shock loading created by the acceleration and deceleration of a racing vehicle comprising:

a torque plate having a diametrical opening therein adapted to receive a pin,

a central opening extending through said torque plate and said diametrical opening, and transverse to said diametrical opening in said torque plate,

a torque tube having diametrically opposed longitudinal slots therein,

a torque rod slidably carried by said torque tube having a diametrical opening near one end thereof,

a pin for mounting said torque rod to said torque plate, said pin extending through said diametrical openings in said torque plate and torque rod,

said torque rod being slidably movable in said torque tube with said torque plate being movable by said pin sliding in said diametrically opposed longitudinal slots in said torque tube,

first and second stop plates removably mounted adjacent opposite ends of said torque tube,

six equally spaced openings in said first and second stop plates surrounding said torque tube,

a plurality of guide screws removably mounted in said spaced openings in said first and second stop plates,

a plurality of heavy duty coiled springs having at least three springs in first and second sets which are equally spaced and visually exposed and removably mounted on said guide screws, said first set between said first stop plate and said torque plate and said second set between said second stop plate and said torque plate,

first and second stop nuts respectively mounted on opposite ends of said torque tube for removably mounting said first and second stop plates adjacent said opposite ends of said torque tube whereby repair or change of either one or a complete set of springs is accomplished by loosening said first or second stop nuts or both and removing the guide screws carrying the springs to be removed or replaced,

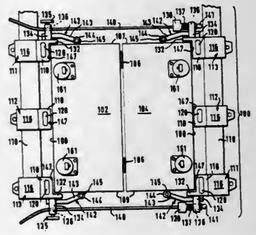
and mounting means including means coupled to said torque rod and to said torque tube for mounting said shock absorber to the rear end of a racing vehicle.

4,575,059

METHOD AND JIG FOR FURNITURE CONSTRUCTION

Anthony F. Blaine, Stamford, England, assignor to Prutec Ltd., England

Division of Ser. No. 328,076, Dec. 7, 1981, Pat. No. 4,485,539.
This application Mar. 26, 1984, Ser. No. 593,424
Claims priority, application United Kingdom, Dec. 8, 1980, 8039231; Dec. 9, 1980, 8039372; Dec. 19, 1980, 8040699; Mar. 16, 1981, 8108161; May 18, 1981, 8115097; May 26, 1981, 8116017
Int. Cl.⁴ B25B *1/20*
U.S. Cl. 269—41 **8 Claims**



1. A jig for use in the construction of a carcase-type article of furniture, the jig comprising a plurality of abutment means for abutting respective edges of a panel which is to form a part of the finished article, mounting means for maintaining the abutment means in abutting relation with the edges of the panel and locating means associated with the respective abutment means and arranged in a predetermined position relative thereto for defining the position of the carcase walls relative to the edges of the panel and locating the said walls while being secured to one another, the abutment means including two pairs of corner abutment blocks, each pair being mounted on a respective common rail to adjust the distance between the corner abutment blocks to each rail to the height of the panel, the locating means comprising locating blocks movable relative to the abutment blocks, guide means being provided for determining the position of the locating blocks relative to the abutment blocks, each locating block comprising a support surface arranged to overlie the edge of the panel and to support the edge of the carcase walls during assembly and means above the latter surface defining channels for guiding two carcase walls extending in mutually perpendicular planes.

4,575,060

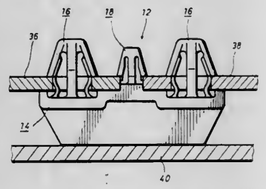
FIXING APPLIANCE

Hiroji Kitagawa, Nagoya, Japan, assignor to Kitagawa Industries Co., Ltd., Nagoya, Japan

Filed Jul. 16, 1984, Ser. No. 631,313
Claims priority, application Japan, Jul. 19, 1983, 58-112024[U]
Int. Cl.⁴ H01R *13/54*
U.S. Cl. 269—43 **10 Claims**

1. A fixing appliance for connecting and holding two substantially parallel substrates at a predetermined distance from a stationary member, end faces of said two substrates being close to each other in a direction along the substrate surfaces, said fixing appliance including two substrate mounting means for mounting to said two substrates, a body portion for holding said substrates at a predetermined spacing from said stationary member, and an elastic pressing portion disposed between said two substrate mounting means for elastically pressing said end faces of the substrates in directions away from each other, wherein said elastic pressing portion comprises:

a support part of a predetermined width provided on a protrusion centered on said plate portion, said plate portion having recesses adjacent said protrusion;



a pair of elastic hook pieces capable of expanding laterally by virtue of the elasticity thereof, said elastic hook pieces extending from a free end of said support part; and

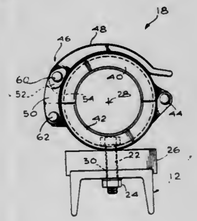
retaining projections projecting from free end faces of each of said elastic hook pieces.

4,575,061

ADJUSTABLE ALIGNMENT TOOL

Monte A. Dille, 2320 Greenbrier La., La Habra, Calif. 90631

Filed Oct. 15, 1984, Ser. No. 660,714
Int. Cl.⁴ B25B *1/20*
U.S. Cl. 269—44 **2 Claims**



1. An alignment tool including:

a base portion having a slot extending for a substantial portion of the length of said base portion;

a fixed clamp positioned proximate to one end of said base portion, said clamp having a first center point, said first center point being aligned with said slot in said base portion;

a first movable clamp supported in said slot and having a second center point;

a second movable clamp supported in said slot and having a third center point;

said first, second and third center points being aligned;

said first and second movable clamps being adjustable in position along said slot with respect to each other and with respect to said fixed clamp while maintaining said first, second and third center points in alignment;

said first and second movable clamps including means for fixing the positions of said movable claimps in said slot;

each of said fixed and first and second movable clamps including a pair of semi-circular, opposed clamp sections pivotally joined to each other;

said base portion being channel-shaped with the sides of the channel directed away from said fixed and first and second movable clamps;

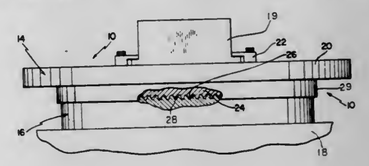
said fixed and first and second movable clamps each including, in addition, closure means comprising a handle portion and an articulating memer pivotably joined to said handle portion, said articulating member being, in turn, pivotably joined to one of said semi-circular clamp sections, said handle portion including a nose portion for engaging the other of said semi-circular clamp sections in said pair in toggling fashion, each of said fixed and first and second movable clamps including, in addition, a clamp base portion having a shallow-channel shape, with said shallow-channel facing away from said semi-circular clamp secitions, said channel in said clamp base portion having an internal width corresponding to the outer width of said base portion of said alignment tool.

4,575,062

COUPLING CONSTRUCTION AND CLAMP THEREFOR

Dennis Mudge, Cumberland, R.I., and William A. Wood, Attleboro, Mass., assignors to American Machine & Science, Inc., Park Ridge, Ill.

Filed Sep. 5, 1984, Ser. No. 647,715
Int. Cl.⁴ B23Q *3/18*
U.S. Cl. 269—64 **36 Claims**



1. A clamping device for securing a first member and an adjacent second member in a clamped position, said first and second members having clamping surfaces thereon which face generally away from one another when said first and second members are in said clamped position and being securable in said clamped position by the application of clamping forces to the clamping surfaces thereof, said clamping device comprising:

a. a clamp body having a central axis;

b. a clamping member attached to said body and extending generally outwardly with respect to said axis;

c. a slide member mounted on said body so that it is slidable a distance with respect thereto in a direction substantially parallel to said axis;

d. said clamping device being positionable in an engaged position adjacent said first and second members wherein said clamping member is in engagement with said first member clamping surface and said slide member is in engagement with said second member clamping surface;

e. spring means attached to said body, operable substantially along the longitudinal axis thereof; and

f. actuating means communicating with said slide member and said spring means, and operable for loading said spring means when said device is in the engaged position thereof to bias said slide member toward said clamping member and to thereby bias said first member toward said second member.

4,575,063

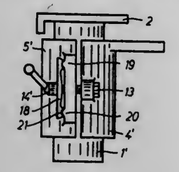
VERTICALLY ADJUSTABLE DEVICE

Wolfgang Schlegel, Oehringen, and Arthur Wilke, Bad Friedrichshall-Jagstfeld, both of Fed. Rep. of Germany, assignors to Schlegel GmbH, Oehringen, Fed. Rep. of Germany

Filed Sep. 23, 1983, Ser. No. 534,989
Claims priority, application Fed. Rep. of Germany, Oct. 13, 1982, 3238024
Int. Cl.⁴ B25B *1/22*
U.S. Cl. 269—78 **12 Claims**

1. A vertically adjustable device comprising a vertical support tube for carrying a vise, an assembly platform or the like, and a mounting for attachment of the support tube to a work bench or the like, said mounting comprising two semicylindrical clamping shells which surround the support tube and which are interconnected on one side by support means and

can be clamped together on the other side by a clamping screw which comprises a head which abuts against an outer surface of one shell and a nut with handle which abuts against an outer surface of the other shell, the improvement that two support means are arranged in a vertical distance one below the other, that the clamping screw is arranged essentially in the middle



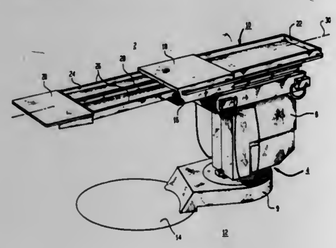
between the horizontal planes through the two support means, wherein a yoke is provided between the clamping screw and the outer surface of the respective shell, said yoke having two points of contact, one above and one below said clamping screw, with said outer surface and further comprising locking means formed on the surface of the respective shell to engage the yoke and to prevent turning of said yoke.

4,575,064

PATIENT TREATMENT TABLE

George Menor, Martinez, Calif., assignor to Siemens Medical Laboratories, Inc., Walnut Creek, Calif.

Filed Sep. 8, 1983, Ser. No. 530,318
Int. Cl.[4] A61G *13/00*
U.S. Cl. 269—322 10 Claims



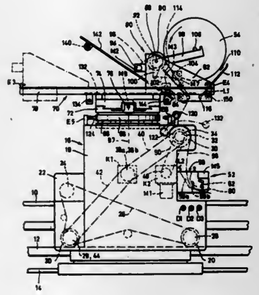
1. A patient treatment table comprising:
(a) a base;
(b) a fixed table plate for positioning of a patient thereon;
(c) a spine for supporting at least one part of the table plate, said spine comprising two bars;
(d) means for shiftably mounting the bars of the spine on the base while keeping the table plate unmoved, said means comprising a rotatable right thread screw, a rotatable left thread screw and a guide bar, one bar of the spine being mounted between the right thread screw and the guide bar, and the other bar being mounted between the left thread screw and the guide bar, such that when rotating the right and left thread screws the bars travel away fom each other; and
(e) drive means for shifting the bars relative to each other beneath the table plate between a first and second position.

4,575,065

WEB LAYING MACHINE AND METHOD

Rolf Jung, Waiblingen; Winfried Buchmann, Hemmingen, and Albert Buss, Münsingen, all of Fed. Rep. of Germany, assignors to Krauss u. Reichert GmbH & Co. KG, Spezialmaschinenfabrik, Fellbach, Fed. Rep. of Germany

Filed Apr. 8, 1985, Ser. No. 721,069
Claims priority, application Fed. Rep. of Germany, Apr. 13, 1984, 3413985
Int. Cl.[4] B65H *29/46*
U.S. Cl. 270—31 20 Claims



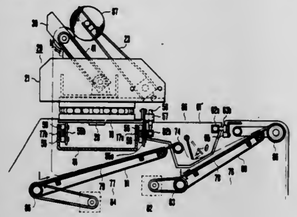
1. In a web laying machine having a laying table, a motor-driven laying carriage arranged for back-and-forth travel over the laying table parallel to a web laying direction; the laying carriage including a chassis, an upper part mounted on the chassis, means for a motor-driven linear displacement of the upper part transversely to the laying direction relative to the chassis and means for a rotary displacement of the upper part about a vertical axis relative to the chassis; a support mechanism mounted on said upper part and arranged for supporting a supply reel on which the web to be laid on the laying table is stored; unwinding means mounted on said upper part for rotating the supply reel; a feed roll rotatably supported on said chassis; said feed roll having an axis extending parallel to a supply reel axis when the supply reel is in position on said support mechanism; drive means for rotating the feed roll as a function of travelling speeds of said laying carriage and a laying aggregate supported on said chassis and arranged for deflecting and cutting the web; the improvement comprising:
(a) a sled carrying said support mechanism and being arranged on said upper part; said sled having a first position and a second position spaced from the first position in a direction parallel to said laying direction; said sled being movable from either of said positions to the other position by rotating said upper part through an angle of 180° by said means for a rotary displacement of the upper part;
(b) means for linearly displacing said sled relative to said upper part from either of said positions to the other position; and
(c) web guide means extending generally transversely to said laying direction and supported on said sled underneath said support mechanism for causing the web to hang from the sled at approximately the same location thereof independently from an unwinding direction of said supply reel and for causing a leading end of the web to be positioned in a web intake zone of said feed roll.

4,575,066

WEB LAYING MACHINE

Nobuo Nasu, Fukuyama, Japan, assignor to Kabushiki Kaisha Kawakami Seisakusho, Hiroshima, Japan

Filed Jul. 2, 1984, Ser. No. 626,974
Claims priority, application Japan, Jul. 13, 1983, 58-128109
Int. Cl.[4] B65H *29/46*
U.S. Cl. 270—31 10 Claims



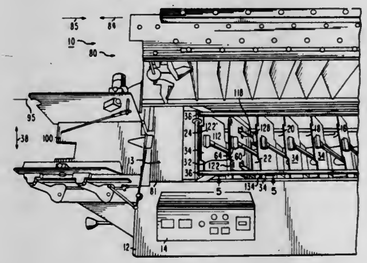
1. A web laying machine comprising a laying unit adapted for forward and backward movement, the laying unit including a pair of sidewalls and an interconnecting frame extending across and connected to the pair of sidewalls, a horizontal base slidably disposed on the interconnecting frame and capable of movement on the frame in a direction substantially perpendicular to the direction of movement of the laying unit, a pivotable casing rotatably mounted on the horizontal base and including a pair of support arms which define a given distance therebetween across which a roll of stock material is to be received, a transfer roll disposed in juxtaposed relationship with the pair of support arms for paying off a cloth from the roll of stock material and support arms associated with the transfer roll, and spring means for normally urging the transfer roll toward and into contact with the roll of stock material with a given resilent bias.

4,575,067

COLLATING MACHINE STACKING BIN INSERT

Robert J. Ciatteo, Trenton, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Dec. 10, 1984, Ser. No. 679,865
Int. Cl.[4] B65H *39/02*
U.S. Cl. 270—58 10 Claims



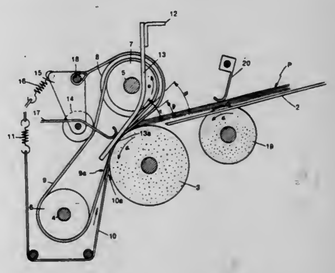
1. In a collating apparatus having an array of bins, each bin including stack receiving means for receiving a stack of sheet material of a given length between first and second stack edges, said apparatus including first adjustment means coupled to the stack receiving means and including settable stack second edge receiving means located in each bin for settably placing the first edge of each said received stack in a reference plane by setting in unison the position of said received second edge, the first edge of a stack of a length different than the given length tending to be offset from said reference plane an amount proportional to the difference between the given and different lengths, the improvement therewith comprising:
second adjustment means including means adapted to be releasably coupled to any selected one of said bins, said second adjustment means including means for receiving said second edge of said stack of different length for setting the position of the first edge of said stack of said different length on said reference plane regardless the setting of the first adjustment means in said selected one bin.

4,575,068

PAPER FEEDER

Kenji Kato, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jan. 13, 1984, Ser. No. 570,524
Claims priority, application Japan, Jan. 18, 1983, 58-5238
Int. Cl.[4] B65H *3/52*
U.S. Cl. 271—122 12 Claims



1. A paper feeder for picking sheets off the bottom of a stack of paper, said feeder comprising an inclined plane for receiving a stack of paper sheets and gravity feeding said stack toward a pick up station, rotating feed roller means at said pick up station for frictionally engaging the lowermost sheet in said stack and propelling it away from said stack in the direction of said gravity feed, separator means comprising a running belt moving in a direction which pushes back all except the lowermost of said sheets in said stack to oppose said gravity feed, a nip angle being formed between said feed roller and said separator means, pressure means for aiding said separator means by resisting the weight of said stack of paper acting on said separator means whereby said separator has to accommodate the weight of only a few sheets paper, and means comprising elastomeric material in pressure contact with said feed roller means for assisting said pressure means, elastomeric material forming an angle with said sheets of paper which is greater than said nip angle.

4,575,069

SHEET FEEDING MECHANISM

Christopher W. Burkhart, San Jose, Calif., assignor to Qume Corporation, San Jose, Calif.

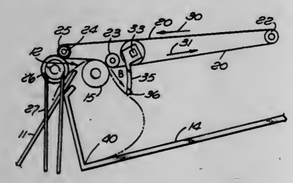
Filed May 13, 1983, Ser. No. 494,600
Int. Cl.[4] B65H *29/18, 31/00*
U.S. Cl. 271—186 10 Claims

1. A sheet handling apparatus for enabling sheets of paper fed from a printing station to be stacked in a receiving tray, said sheet handling apparatus comprising:
means for positively feeding a sheet entering said apparatus at an entrance location from a first direction to an exit location from which said sheet may exit in a second rearwardly facing direction;
a deflector roller in the vicinity of said exit location;
a pivoting deflector arm having a concave working end normally to the rear of and extending circumferentially about said deflector roller and downwardly to a third

location at a portion of said concave working end remote from an upper portion of said concave working end at said exit location for normally deflecting the leading portion of said sheet around a portion of said deflector roller and then forwardly along a third direction towards a front wall of said receiving tray and for forming a buckle in said sheet rearwardly of said feeding means whereby the buckled portion of said sheet may commence to move rearwardly after the leading portion of said sheet has contacted said front portion of said tray;

means for manipulating said working end of said deflector means from said exit location to a remote position once said sheet has commenced to buckle rearwardly away from said deflector roller; and

a plurality of sheet feeding belts extending rearwardly of said feeding means and said deflector roller and above said



third location said belts having a downwardly facing frictional surface for frictionally feeding the remaining portion of said sheet of paper rearwardly of said deflector roller;

wherein said remote location of said deflector arm is above said feeding belts, and said manipulating means includes means for moving said working end of said deflector arm from its normal operative position about said deflector roller through a gap between adjacent ones of said sheet feeding belts to an inoperative position above said sheet feeding belts,

said manipulating means further including means for returning said working end of said deflector arm from said inoperative position to said normal position after the rear edge of said sheet has cleared said working end of said deflector arm.

4,575,070

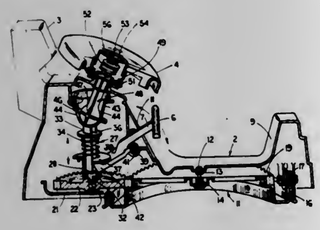
ROTATABLE TOY ASSEMBLY

Benjamin Kinberg, 200 Fifth Ave., New York, N.Y. 10010; Ronald R. Klawitter, 210 Wharf St., and Bev W. Taylor, R.R. 2 Box 198, both of Hermann, Mo. 65041

Filed Oct. 2, 1984, Ser. No. 656,963

Int. Cl.⁴ A63G *1/12*

U.S. Cl. 272—33 R **3 Claims**



1. A rotatable toy assembly comprising: a circular horizontal stationary base member having a stationary circular gear tooth rack and a circular rail member extending in spaced integral relationship about the periphery thereof; a hollow body member in the configuration of an automobile body and adapted to support a child for movement therewith rotatably mounted on said base member for rotational movement about the central vertical axis thereof; a plurality of spaced rollers mounted on said body member to engage said circular rail member on said base member; a drive gear mounted in a horizontal plane on said body member to engage said circular gear tooth rack on said base member; said drive gear having a stub member projecting centrally in a vertical fashion from the upper face thereof, said stub member having an outer rectangular cross-section and an aperture therein of circular cross-section, said stub member thus forming the male portion of a coupler assembly; a female portion of said coupler assembly in the form of a flanged sleeve having a passage therethrough of rectangular cross-section sized to nestingly engage with the male portion of said coupler assembly; a longitudinal drive shaft section extending vertically through said female portion of said coupler assembly, said shaft section having a tapered portion at one end thereof to rotatably engage in the aperture of said stub member with the opposite end of said drive shaft being contoured in the form of a slotted cradle, the portion of said shaft passing freely through the passage of said female coupler being of rectangular cross-section to rotate said coupler therewith when said shaft is rotated, and having a flange extending normally therefrom in spaced parallel relation to the flange of said coupler; a helical compression spring surrounding said shaft between said spaced parallel flanges to yieldingly urge said male and female portions of said coupler into nesting engagement; a coupler actuating member extending through said hollow body member; said actuating member including intermediate pivot pin members adapted to pivotally engage in a contoured cradle on said body member; an actuating handle at one end and a forked boss arrangement at the opposite end to straddle said female portion of said coupler assembly to disengage said male and female portion of said coupler assembly when the handle is actuated downwardly by a child supported on said body member; an inclined universal section extending through said body member and having a ball member at one end having pin means to engage with said slotted cradle on said vertical drive shaft section; a steering wheel fixed to the opposite end of said universal section and extending above said body member in an angular plane to simulate an automobile driving wheel and to be readily accessible for manual operation by a child supported on said body member to rotate said drive shaft; and a horn assembly mounted on said steering wheel for manual operation by such child.

4,575,071

OSCILLATING DEVICE AND COMPLIANT BEARINGS THEREFOR

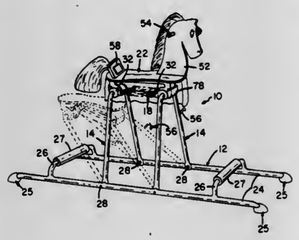
Robert C. Swengel, Sr., and Robert C. Swengel, Jr., both of York, Pa., assignors to Donsco Inc., Wrightsville, Pa.

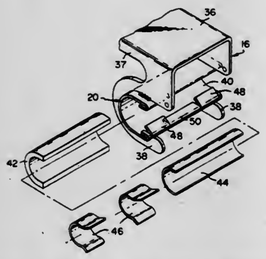
Filed Jul. 10, 1984, Ser. No. 629,334

Int. Cl.⁴ A63G *17/00*

U.S. Cl. 272—52 **25 Claims**

1. An oscillating device, comprising: a base; a pair of members pivoted upon parallel axes at lower ends thereof to said base and extending upwardly therefrom in substantial parallelism, said members having horizontal sections at upper ends thereof which extend transversely of said base; body support means having oppositely opening bearings receiving said horizontal sections respectively therein, each of said bearings having a rigid housing member secured to said body support means, an elastomer member extending along an inside surface of said housing member, a support member extending along an inside surface of said elastomer member, bearing means extending along an inside surface of said support member, and means provided by said housing member removably securing said elastomer member, said support member, and said bearing means in freely floatable position therein, said horizontal sections engaging said bearing means; arm means secured to said pair of members adjacent said horizontal sections and having spring-engaging means secured thereto; and spring means extending between said spring-engaging means to maintain said horizontal sections in said bearings, to maintain said body support means in a normally vertical position of rest and to move said body support means back toward said normally





vertical position when said body support means is moved to each side of said vertical position during oscillatory movement thereof.

4,575,072

THERAPEUTIC RIDING DEVICE

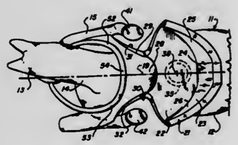
Christine E. Russell, Denver, Colo., assignor to Tiger Hug Toys, Inc., Denver, Colo.

Filed Nov. 28, 1984, Ser. No. 675,632

Int. Cl.⁴ A63G *17/00*

U.S. Cl. 272—52 **10 Claims**





1. A therapeutic riding device for reducing spasticity in a rider such as a cerebral palsied child, said device comprising:

a seat with a base and an upright portion,

said base being substantially flat and having a slight rearward and downward tilt to facilitate trunk flexion and inhibit spastic extension of the rider,

said upright portion including a substantially flat back and wraparound sides extending forwardly of the opposite sides of said back with said back having a slight rearward tilt to form a body cup for the pelvis of the rider from which the rider can achieve a substantially optimal trunk position and extremity function so as to build a more normal muscle tone as the rider exercises the trunk:

a hump forwardly of said seat and symmetrically arranged on opposite sides of the center line of said seat, said hump extending up and forwardly along an arc from the forward edge of said base and further extending laterally out and forwardly along opposite arcs, said hump providing leg abduction and preventing both abnormal adduction and internal rotation at the hip, thereby providing good lower extremity position through reflex-inhibiting posture;

resilient base means supporting said seat for tilting about a vertical axis through substantially a full 360-degree range of flexure by a rider on said seat to encourage trunk strengthening on posterior, anterior, lateral and diagonal planes;

a pair of footrests symmetrically arranged on opposite sides of the longitudinal center line of said seat and having rearwardly and downwardly inclined foot support surfaces and being substantially parallel to said seat base, said footrests providing a slight foot dorsiflexion to prevent spastic leg extension thrust and encourage proper leg flexion; and

a hand grip member forwardly of said seat including a pair of upright rod portions symmetrically arranged on opposite sides of said longitudinal center line and an intermediate rod portion connecting said upright rod portions, said hand grip member facilitating muscle tone normalization by providing an option of symmetrical hand grasping in a supinated position or asymmetrical hand grasping allowing one hand to be supinated while the second hand maintains a neutral position with a moderately extended arm position and a range of shoulder levels allowing the rider to maintain depressed shoulders to reduce spasticity and provide optimal trunk function and further to enable good hand grasp with thumb abduction and thumb and forefinger opposition.

4,575,073

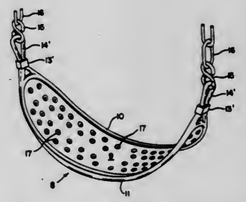
CHILD'S SWING SEAT

Robert W. Thacker, West Point, Miss., assignor to Blazon-Flexible Flyer, Inc., West Point, Miss.

Filed May 6, 1985, Ser. No. 731,149

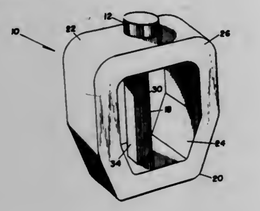
Int. Cl.⁴ A63G *9/00*

U.S. Cl. 272—85 **10 Claims**



1. A swing seat comprinsing a generally elliptical straplike seat body of molded flexible and resilient plastic material, a strand of reinforcing cable integrally molded in the periphery of said seat body and having end loops projecting from the ends of said body to form hanger means for attachment to strands suspending the swing seat, and said seat body adapted when occupied to curve in conformance to the body of the applicant.

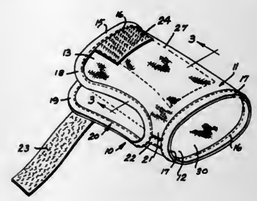
4,575,074
EXERCISE WEIGHT
Daniel J. Damratoski, 229 Roycroft Ave., Mt. Lebanon, Pa. 15234
Filed Sep. 14, 1984, Ser. No. 650,273
Int. Cl.[4] A63B *21/12*
U.S. Cl. 272—119 **5 Claims**



1. An exercise weight comprising;
a. a handgrip;
b. a symmetric hollow peripheral body of substantially uniform internal cross-section having an opening therein whereby the peripheral body may be filled with fluent material and further having a first inner wall segment and a second inner wall segment spaced apart therefrom, the peripheral body being joined to the handgrip in such relationship that the hardgrip is located between the first inner wall segment and the second inner wall segment with the distance from the handgrip to the first inner wall segment being sufficiently greater than the distance from the handgrip to the second inner wall segment that the mass of the peripheral body and of any material with which it may be filled will be substantially uniformly distributed about the hand of a user when grasping the handgrip; and
c. means for closing the opening in the peripheral body.
2. An exercise weight comprising;
a. a handgrip;
b. a symmetric hollow peripheral body of substantially uniform internal cross-section having an opening therein whereby the peripheral body may be filled with fluent material and further having a first inner wall segment and a second inner wall segment spaced apart therefrom, the peripheral body being joined to the handgrip in such relationship that the handgrip is located between the first inner wall segment and the second inner wall segment with the distance from the handgrip to the first inner wall segment being sufficiently greater than the distance from the handgrip to the second inner wall segment that the least distance between the first inner wall segment and any of the metacarpophalangeal joints of the hand of a user when grasping the handgrip will be substantially equal to the least distance between the second inner wall segment and any of the distal phalanges of the same hand when grasping the handgrip; and
c. means for closing the opening in the peripheral body.

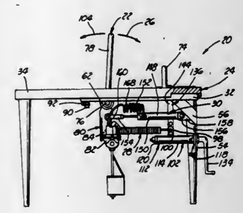
4,575,075
HAND EXERCISE WEIGHTS
Max R. Tarbox, Lubbock, and Nancy Rosales, Wolfforth, both of Tex., assignors to Tarbox, Inc., Lubbock, Tex.
Filed Feb. 10, 1984, Ser. No. 579,060
Int. Cl.[4] A63B *21/12*
U.S. Cl. 272—119 **5 Claims**

1. An exercise device to be selectively worn around either of a person's hands comprising a continuous band body member having inner and outer surface portions, said body member being defined having front and rear edge portions, said front edge portion being continuous, an elongated slotted opening disposed in said band member and extending from said rear edge portion toward said front edge portion, said slotted opening being spaced from said front edge portion by a bridging portion of said body member, said slotted opening having opposing side wall portions having substantially the same configuration, first and second weight means carried by said body member and disposed in generally overlapping relationship with one another so as to be oriented adjacent to palm



and back of a person's hand, and fastening means spaced from said bridging portion of said body member for securing said first and second side walls portions of said slotted opening in adjusted relationship with one another when said elongated body member is placed around a person's hand with the person's thumb positioned in said slotted opening.

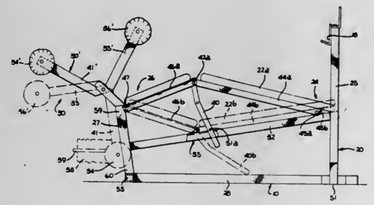
4,575,076
ARM WRESTLING MACHINE
Guy W. Reichert, P.O. Box 441, and Orvil L. Abshire, P.O. Box 671, both of Canton, Okla. 73724
Filed Dec. 15, 1983, Ser. No. 561,912
Int. Cl.[4] A63B *21/00*
U.S. Cl. 272—130 **11 Claims**



1. An arm wrestling machine, comprising:
a base;
an operating arm pivotally supported on the base for pivoting movement thereon away from a rest position of the operating arm;
first biasing means, connected between the base and the operating arm, for continuously urging the operating arm, when the latter is pivoted, toward said rest position; and
second biasing means, connected below the base and to the pivoted operating arm, for intermittently urging the operating arm toward said rest position after a predetermined movement of said first biasing means.

4,575,077
EXERCISE BENCH
Ralph Osborne, Irvine, and Dennis C. Phelps, Orange, both of Calif., assignors to Weider Health & Fitness, Woodland Hills, Calif.
Filed Sep. 23, 1983, Ser. No. 535,353
Int. Cl.[4] A63B *21/00*
U.S. Cl. 272—134 **13 Claims**

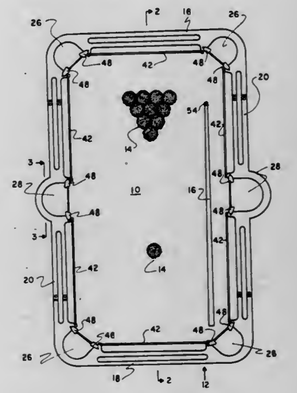
1. In an improved exercise bench of the type having (i) a frame; (ii) a platform supported by said frame, said platform comprising generally planar head and foot sections, each having first and second ends, said head and foot sections being pivotally connected to one another at their respective first ends by first pivot means having a generally horizontal pivot axis transverse to the length of said platform; and (iii) means for exercising a user's legs pivotally affixed to said frame at the end thereof adjacent said second end of said foot section;
the improvement comprising:
(a) means for selectively translating said first pivot means in a generally vertical direction to a position above or below the plane defined by said head and foot sections when they are horizontal, said translating means being coupled to said first pivot means;
(b) means for securing said first pivot means in at least one translated position in said generally vertical direction;
(c) a support means disposed below the plane defined by



said head and foot sections when they are horizontal, said support member being adjustably coupled to said first pivot means securing means to support said first pivot means in a predetermined vertical position;
(d) second pivot means interconnecting said frame and said second end of said foot section; and
(e) means for adjusting the distance between said second ends of said foot and head sections whenever said first pivot means is vertically translated, said distance adjusting means being coupled to said platform,
whereby, a user of said improved exercise bench can select the vertical position of said first pivot means, thereby selectively determining the spatial relationship between said head section and said foot section, so as to enhance the degree of exercise provided to said user by said leg exercise means and to decrease the risk of injury to said user.

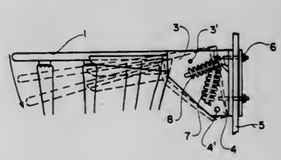
4,575,078
POOL GAME SET
A. Edward Fogarty, and Bonnie R. Fogarty, both of 3513 School Ave., Sarasota, Fla. 33579
Filed Jul. 5, 1984, Ser. No. 627,926
Int. Cl.[4] A63G *31/00*
U.S. Cl. 273—9 **1 Claim**

1. A pool game set for use on a tabletop or the like, comprising:
a rigid, bottomless frame having a plurality of inwardly opening pockets, said frame comprising a plurality of connectable sections; each of said sections comprising an inverted channel having an integrally formed, horizontal, plate-like tongue with a vertical hole therethrough on one of its ends and a curved slot in its upper surface which demarcates a cantilever spring on the other of its ends, said cantilever spring having a hemispherical locking element extending downward from its free end, said channels being connectable by inserting said tongue on one end of one of said channels in said end of another of said channels having said cantilever spring such that said cantilever spring first flexes upward until the vertical axis of said locking element is aligned with the vertical axis of said hole and then flexes downward to force said locking element into said hole;
a plurality of elastic band holders, each of said holders being integrally formed with said frame at a location adjacent to one side of the mouth of one of said pockets;
a plurality of elastic bands, each of said bands being stretched between a pair of said holders to function as a bumper between a pair of said pockets;



a plurality of lightweight, rigid balls, each of said balls having a fibrous surface texture which simulates the felt top of a conventional pool table; and
a cue stick.

4,575,079
ARTICULATED RESILIENTLY-BIASED MOUNTED MEANS FOR BASKETBALL HOOP
Umberto De Faveri, Via Garibaldi 41/a, 34074 Monfalcone (Go), Italy
Filed Mar. 1, 1985, Ser. No. 707,382
Claims priority, application Italy, Mar. 13, 1984, 83334 A/84
Int. Cl.[4] A63B *63/08*
U.S. Cl. 273—1.5 R **6 Claims**



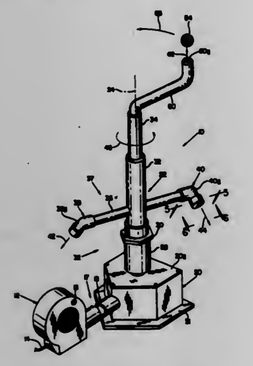
1. In a basketball hoop having an annular rim adapted to be supported by a backboard, the improvement of articulated bracket means between the backboard and the rim, which comprises a first bracket secured to the backboard, a second bracket pivotably supported on the first bracket about a first substantially-horizontal axis, first spring means for constantly urging the second bracket in a direction towards the backboard and into a normal position nested relative to the first bracket, a third bracket pivotably supported on the second bracket about a second substantially-horizontal axis spaced from the first axis, means for securing the annular rim to the third bracket, and second spring means for constantly urging the third bracket into a normal position wherein the annular rim assumes a substantially-horizontal position.

4,575,080

AIR SUSPENSION BATTING TEE APPARATUS

Michael E. Miles, 2931 Arrowhead Bend, Willis, Tex. 77378

Filed Apr. 26, 1984, Ser. No. 604,166
Int. Cl.[4] A63B *69/40*
U.S. Cl. 273—26 R **5 Claims**



1. An air suspension batting tee apparatus for fluctuatingly supporting a spherical object on a moving air stream, comprising

conduit means having an exit end for transmitting an air stream along a travel path therethrough and for controlling the issuance of the air stream from the exit end in a manner capable of producing suspension of a spherical object in the issuing air stream,

air pressurization means operatively joined to said conduit means for providing such an air stream in the conduit means, and

fluctuation means operatively connected to said conduit means for producing fluctuations in the air stream issuing from the exit end of said conduit means, said fluctuation means including air-flow constriction means disposed in the air stream travel path in said conduit means which is adjustable cyclically to vary the transverse area of the travel path adjacent said constriction means, said constriction means including a pair of relatively rotatable air-flow constrictors having air-flow accommodating passages which cooperate during relative rotation to provide a travel path for at least a part of the air stream, the transverse area of which varies according to the relative position of said constrictors, said constrictors being adjacent and the passages in the adjacent constrictors being disposed to align substantially by varying amounts during relative rotation when viewed along the air stream travel path, one of said constrictors being fixed relative to said conduit means, said fluctuation means further including air-flow-driven rotation drive means operatively drivingly connected to the other of said constrictors for rotating the same.

4,575,081

TENNIS BALL RETRIEVING SYSTEM

Peter A. Cavanagh, Pole 29 1/2, West Greenville Rd., Greenville, R.I. 02828

Filed Sep. 24, 1984, Ser. No. 653,195
Int. Cl.[4] A63B *61/00*
U.S. Cl. 273—29 A **3 Claims**

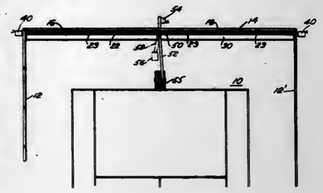
1. A tennis ball recovery system for a tennis playing court having a back fence comprising:

a substantially inelastic flexible damping screen, said screen being mounted such that a portion thereof is in spaced relation to and substantially parallel to the back fence of a tennis court, a horizontal trough having its length substantially parallel with and positioned below the bottom edge of the damping screen;

said trough having an opening;

a ball receptacle;

a conduit at the opening directed away from the back fence to said receptacle;



positive pressure means arranged to direct air transversely across the trough and through said conduit to feed balls into the conduit;

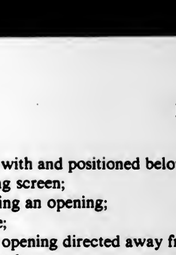
an airplane cable having a cord wound helically thereabout forming a helical feed screw and means to rotate the cable whereby balls are moved toward the opening.

4,575,082

RACQUET WITH RATCHET-CONNECTED THROAT AND HANDLE

Jonathan C. Mott, Honiton, England, and Robert C. Kelley, Opelika, Ala., assignors to Diversified Products Corporation, Opelika, Ala.

Filed Jan. 24, 1984, Ser. No. 573,494
Int. Cl.[4] A63B *49/08*
U.S. Cl. 273—73 G **10 Claims**





1. In a racquet having a handle, a string-supporting frame having two end portions which converge toward said handle and extend longitudinally therethrough, and a throat member disposed between the converging sections of said end portions, an improved handle structure comprising:

an internal handle member connected to said throat member, projecting into said handle between said end portions, and having a series of longitudinally arranged ratchet teeth; and

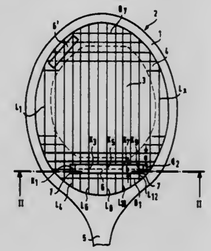
an external handle member telescopingly received on said end portions, said external handle member having a series of longitudinally arranged ratchet teeth which are complementary to and cooperate with the ratchet teeth on said internal handle member and having space adjacent its ratchet teeth for receiving said end portions, whereby the handle is assembled by pushing said external handle member longitudinally onto said end portions so that said end portions extend into said space adjacent the ratchet teeth of said external handle member and said cooperating ratchet teeth progressively engage to lock the handle members together and firmly secure said throat member and said frame to the external handle member.

4,575,083

RACKET WITH ELASTIC VIBRATION DAMPING STRIP

Günter Adam, Straubing, Fed. Rep. of Germany, assignor to Puma-KG, Fed. Rep. of Germany

Filed Jul. 3, 1984, Ser. No. 627,544
Claims priority, application Fed. Rep. of Germany, Jul. 5, 1983, 3324142
Int. Cl.[4] A63B *49/00*
U.S. Cl. 273—73 D **17 Claims**



1. A racket having a hitting area strung with longitudinal and transverse strings disposed so as to form crossing points therebetween and having at least one detachable damping means, comprising at least one elastic strip in an assembled condition on the racket, said elastic strip being of a width which is smaller than twice the distance between two transverse strings, for the damping of string vibrations, wherein the elastic strip is located solely in an edge area of the hitting area and is clamped in a sandwiched relationship such that said elastic strip extends between the longitudinal string and the transverse string of at least two crossing points and wherein the elastic strip, starting from one crossing point, is successively clamped between longitudinal and transverse strings only at alternate crossing points.

4,575,084

BADMINTON RACKET HAVING NOVEL THROAT CONNECTION

Minoru Yoneyama, Niigata, Japan, assignor to Yonex Kabushiki Kaisha, Niigata, Japan

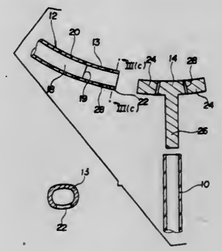
Filed Jul. 6, 1984, Ser. No. 628,629
Claims priority, application Japan, Dec. 16, 1983, 58-192849[U]
Int. Cl.[4] A63B *49/02*
U.S. Cl. 273—73 G **7 Claims**

1. A badminton racket comprising:

a tubular shaft having a hollow upper end;

an oval-shaped tubular frame having opposite end portions, each said end portion being hollow with an opened end face and being formed smaller in dimension than the remaining portion of said frame, each said end face having at its lower side a recess of generally semi-circular shape, and said end faces being substantially abutted against each other except at said recesses;

a joint of substantially T-shaped configuration having a pair of horizontal extensions and a vertical extension, said horizontal extensions being fixedly inserted into said end



portions of said frame, and said vertical extension being fixedly inserted into said upper end of said shaft, thereby to internally connect said frame to said shaft; and

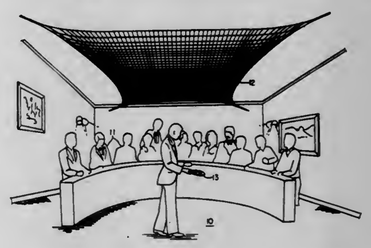
fiber reinforced plastic layers coating the outer surface of said end portions of said frame and said upper end of said shaft to provide an external connection therebetween, said fiber reinforced plastic layers placed over said end portions of said frame resulting in a structure whose dimensions are substantially the same as said remaining portion of said frame so as to reduce air resistance.

4,575,085

CASINO GAME

Lionel V. Ollington, 185 Canterbury Rd., St. Kilda West, Victoria 3182, Australia

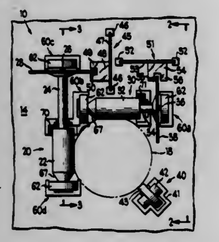
Continuation-in-part of Ser. No. 486,939, Apr. 20, 1983, abandoned. This application Aug. 30, 1983, Ser. No. 527,791
Claims priority, application Australia, Feb. 10, 1983, PF7972
Int. Cl.[4] A63F *5/00*
U.S. Cl. 273—138 R **3 Claims**



1. A casino game of two-up comprising: a ring structure within which a spinner stands and outside which other players are located; and an obstruction located above at least a portion of the interior of the ring structure which obstruction is adapted to be struck by the coins to be thrown by the spinner to ensure that these are caused to spin, said obstruction being relatively fully viewable from any location adjacent the outside of said ring structure and wherein the obstruction is in the form of a mesh having apertures therethrough which are of a sufficient size to pass the coins but of a size so that the coins will strike the edges of the mesh, either when passing upwardly

or downwardly therethrough, to ensure that the coins are caused to spin.

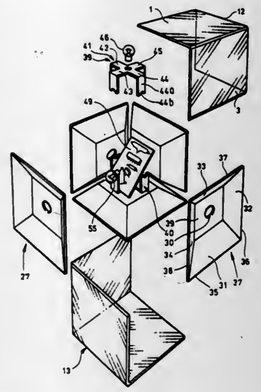
4,575,086
TRACKBALL DEVICE
Syng N. Kim, Hoffman Estates, and Max Wiczer, Skokie, both of IL, assignors to Wico Corporation, Niles, Ill.
Filed May 14, 1984, Ser. No. 609,598
Int. Cl.[4] A63B *71/04*; G05G *9/00*
U.S. Cl. 273—148 B **7 Claims**



1. A trackball device comprising a housing having a circular opening therein, a generally cylindrical first support mounted for rotation in said housing and having a first axis of rotation, a generally cylindrical second support mounted for rotation in said housing and having a second axis of rotation, first and second code wheels respectively coupled to said supports and rotatable therewith, first and second reader means respectively associated with said first and second code wheels for generating control signals, a ball seated on said supports and having a portion projecting through said opening for manual rotation by the user, said second support and both of said reader means and said second code wheel and said ball all lying on the same side of said first axis, a plurality of mounting means each including bias means, each of said first and second supports being carried between a pair of said mounting means, said mounting means being constructed and arranged to allow movement of said first and second supports in directions toward and away from the plane of said opening and preventing movement of each of said supports in directions parallel to the plane of said opening, said bias means resiliently urging each of said supports toward the plane of said opening, and fixed stop means disposed between said mounting means of each of said pairs of mounting means and respectively engageable with said first and second supports for limiting movement thereof away from the plane of said opening.

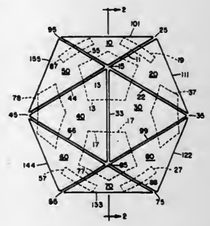
4,575,087
PUZZLE
Iain Sinclair, Willow House/Hildersham, Cambridge, United Kingdom
Filed Oct. 3, 1983, Ser. No. 538,197
Claims priority, application United Kingdom, Oct. 5, 1982, 8228474
Int. Cl.[4] A63F *9/06*
U.S. Cl. 273—153 R **13 Claims**

1. A puzzle comprising a polyhedral body, binary indicator means on each face of said polyhedral body,
gravity responsive switch means sensitive to a change of orientation of said polyhedral body about each of two axes inclined to one another, said gravity responsive switch means operating to cause said binary indicator means on one face of said polyhedral body to change from one binary state to another when said polyhedral body is turned from a first predetermined orientation to a second predetermined orientation and to remain in said other binary state whereby to indicate that said polyhedral body has passed through a given orientation change,
memory means storing at least one predetermined sequence of changes of said gravity responsive switch means representing at least one predetermined sequence of orientation changes of said polyhedral body and,
comparison means for comparing the instantaneous state of each said gravity responsive switch means with said sequence of changes stored in said memory means whereby to generate electrical signals for control of said binary indicator means to cause said change of binary state of any one indicator to said other binary state and maintenance of



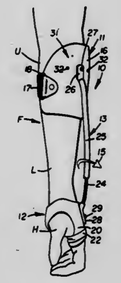
said indicator in said other binary state only if the associated orientation change is effected as part of said predetermined sequence of such changes by turning said polyhedral body about one or the other of said two axes about which the gravity responsive switch means associated with said one binary indicator means is sensitive, said comparison means including a microprocessor capable of producing electrical signals to control the state of a plurality of binary indicators simultaneously.

4,575,088
THREE DIMENSIONAL COMBINATORIAL DEVICE
Darwin E. Peek, 853 Maske Rd., Schertz, Tex. 78154
Filed Apr. 21, 1982, Ser. No. 370,566
Int. Cl.[4] A63F *9/08*
U.S. Cl. 273—153 S **11 Claims**



11. A three-dimensional combinatorial device comprising:
a core member;
a multiplicity of non-rotatable support members extending radially from said core member;
a multiplicity of identical, generally triangular face pieces having a first orientation about said core member, slidably interlocked with said support members such that any five of said triangular face pieces having a common vertex may be rotated about said core member as a unit, resulting in a multiplicity of orientations of said face pieces, each of said face pieces being rotatable with respect to said core; said support members further comprising an orientation means for insuring said face pieces remain in a generally fixed spatial relationship to said core member.

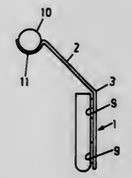
4,575,089
GOLF PRONATION DEVICE
William H. Corbett, Four Amalfi Pl., and Edward N. Snygg, 152 Peacock Dr., both of San Rafael, Calif. 94901
Filed Mar. 22, 1984, Ser. No. 592,350
Int. Cl.[4] A63B *69/36*
U.S. Cl. 273—183 B **8 Claims**



1. A sports training device for inducing a hand turn over upon swinging of an arm comprising;
first attachment means for releasably attaching said device to an upper forearm of a forearm,
second attachment means for releasably attaching said device to a hand that is connected to said forearm, and
torsion means interconnecting said first and second attachment means for normally twisting said second attachment means out of alignment relative to said first attachment means in a first rotative direction for imposing a torquing force on the hand and a lower forearm of said forearm when said first and second attachment means are attached in alignment to said upper forearm and said hand, respectively, to urge said hand and lower forearm in a second rotative direction opposite to said first rotative direction whereby said hand will be urged to turn over upon swinging of said arm when impacting a game ball with a sporting implement, and adjusting means for adjusting the connected orientation of said torsion means to at least one of said first and second attachment means for selectively varying the torguing force preloaded into said torsion means when said device is attached to said upper forearm and said hand.

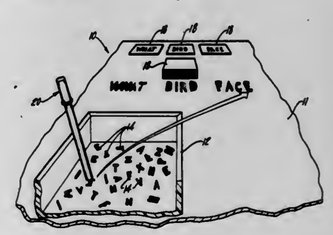
4,575,090
PUTTING AID
Barry E. Heseltine, 1 New England Dr., Kingsgrove, New South Wales, 2208, Australia
Filed Sep. 12, 1984, Ser. No. 649,603
Int. Cl.[4] A63B *69/36*
U.S. Cl. 273—183 D **2 Claims**

1. A putting aid to be mounted on the blade of a golf putting club, said putting aid comprising a sheet of foldable metal with a width substantially the same as the length of the blade of a putting club on which the putting aid is to be mounted, a straight line bend across the front face of the sheet in the width direction to provide a first surface for reflection means and a second ball striking surface with a reflex angle therebetween, a channel in the first surface located remotely from the straight line bend in the sheet with the channnel sides parallel to the straight line bend, and an elongated levelling device permanently mounted in the channel so that the level indicating part



of the levelling device lies in a levelling plane that is parallel to the straight line bend.

4,575,091
WORD GAME OF MAGNETIZABLE LETTERS FOR CHILDREN
Mark J. Boomer, 15825-29 Mile Rd., Romeo, Mich. 48065
Filed Oct. 1, 1984, Ser. No. 656,684
Int. Cl.[4] A63F *9/00*
U.S. Cl. 273—199 **5 Claims**



1. A word game for children comprising the combination of a plurality of magnetizable alphabet letters for throwing on a supporting surface to form a pile thereof, a permanent magnet stiff wand having a handle for pulling a desried one or more of said letters from said pile, each letter having a body cut-out into the shape of one of the letters of the alphabet so that, while disposed in said pile, the letter can be recognized by the sighting of a part thereof, the body of each letter being magnetizable throughout the confines thereof so that, when any part thereof is touched by said wand, the letter can be pulled from said pile, and a plurality of cards for the players to draw respective control cards therefrom, each control card having intelligence printed thereon which requires each player to spell a word with the letters on the card he pulls from said pile, said wand and said pile of magnetizable letters challenging a player's dexterity in being able to sight a desired letter or letters in the pile and to manipulate said wand and to insert same into said pile to pull therefrom only the letter or letters desired and no other letters.

5. In a word game for children, a method of entertaining children and simultaneously challenging their dexterity, said method using a plurality of cards, a plurality of magnetizable letters, and a permanent magnet stiff wand having a handle, said method inclucing throwing of said letters on a supporting surface to form a pile thereof, each letter having a body cut-out into the shape of one of the letters of the alphabet so that, while disposed in said pile, it can be recognized by the sighting of a part thereof, said method including using said wand for pulling a desired one or more of said letters from said pile, the body of each letter being magnetizable throughout the confines thereof so that when any part thereof is touched by said wand, the letter can be pulled from said pile, said method including the drawing of respective control cards from the plurality of cards,

each control card having intelligence printed thereon which required each player to spell a word with the letters on the card he pulls from said pile, said wand and said pile of magnetizable letters challenging a player's dexterity in being able to sight a desired letter or letters in the pile and to manipulate said wand and insert same into said pile to pull therefrom only the letter or letters desired and no other letters.

4,575,092

BALL DISPENSER

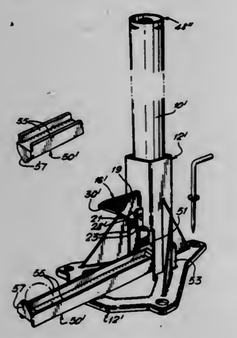
Gavin L. Watson, Wyndcliffe, Shooters Way La., Berkhamsted, Hertfordshire, England

Filed Aug. 6, 1984, Ser. No. 637,736

Claims priority, application United Kingdom, Aug. 5, 1983, 8321142

Int. Cl.[4] A63B *57/00*

U.S. Cl. 273—201 **8 Claims**



1. In an apparatus for dispensing balls which comprises a magazine (10) for receiving a plurality of balls (14, 14') and mounted on a base portion so as to extend downwardly to permit the balls (14) to be dispensed from the lower end thereof, and ball-releasing means (16) having a first condition in which the lowermost ball (14) is restrained in the magazine (10) and a second condition in which the lowermost ball (14) is released from the magazine (10) and another ball (14') is restrained in the magazine (10), the ball-releasing means (16) being operable by change between the two conditions to dispense at least the lowermost ball (14) whilst restraining at least one other ball (14') in the apparatus, said base portion including a chute (52, 50', 68) for directing balls dispensed from said magazine to a desired position; the improvement in which the chute (52, 50', 68) is detachably mountable upon said base portion in either of two positions that are inverted relative to each other, the chute including a stop member (57) at the outlet end of the chute (52, 50', 68) when in one position of said two positions, whereby use of the chute (52, 50', 68) with the stop member (57) uppermost holds each dispensed ball (14) against the stop member (57), whereas when said chute is in the other position of said two positions said stop member (57) is lowermost and allows each dispensed ball (14) to roll out of said outlet end and come to rest on the ground.

4,575,093

TRAVEL BOARD GAME

Ethel C. Russell, 202 Dodge Ave., Danville, Ill. 61832

Filed Apr. 23, 1984, Ser. No. 603,303

Int. Cl.[4] A63F *3/04*

U.S. Cl. 273—244 **3 Claims**

1. A game comprising:

A main playing board, a plurality of state cards, one of said state cards to be selected by each of two or more players, a plurality of said state cards being placeable on an area of said playing board, each of the state cards having a travel path thereon with a succession of marked significant points of interest, a primary travel path being provided on the said main playing board completely surrounding the said area on which said state cards are placeable, the said primary travel path on the said main playing board having places of direct access for entrance to and exit from the travel paths on the state cards, the said primary travel path



being divided into a plurality of marked sections, a playing marker for each player, a die to be shaken by each player is succession for the number of spaces to be moved by the markers along said primary travel path and state cards paths, this game being designed for means of recreation, and teaching players of different points of interest and provide variation in the game of chance.

4,575,094

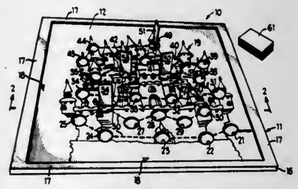
GAME BOARD HAVING SHIFTABLE BOARD WITH INDICIA THEREON

Michael J. Ferris, Chicago, and Jeffrey D. Breslow, Highland Park, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Feb. 8, 1984, Ser. No. 578,192

Int. Cl.[4] A03F *3/00*

U.S. Cl. 273—249 **20 Claims**



1. A board game comprising:

markers for a plurality of players;

a base board having a substantially planar player facing surface;

a laterally shiftable board overlying the player facing surface and being selectively movable substantially parallel to the player facing surface into each of at least two positions;

the shiftable board being laterally moveable in either of two substantially transverse directions;

viewing means at spaced intervals on the shiftable board defining a path for movement of the player markers and permitting portions of the player facing surface of the underlying board to be viewed by the player;

first means on the player facing surface of the base board indicating a first condition of play exposed to the player through some of the viewing means on the shiftable board when the shiftable board is in each of the positions; and

second means on the player facing surface of the base board indicating a second condition of play exposed to the player through some of the viewing means on the shiftable board when the shiftable board is in each of the positions.

4,575,095

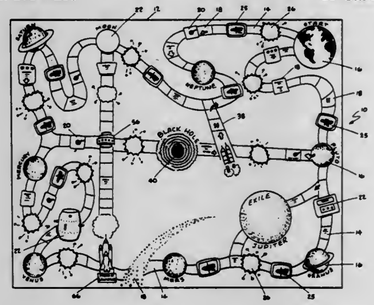
SPACE COMBAT GAME

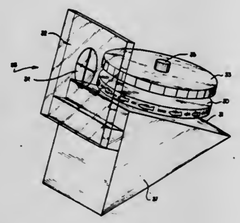
Eugene Gaster, 207 Paradise, Madison, Ohio 44057

Filed Oct. 24, 1983, Ser. No. 544,518

Int. Cl.[4] A63F *3/00*

U.S. Cl. 273—253 **15 Claims**





1. A space combat game comprising:

a game board with a play surface having indicia defining a plurality of playing spaces which cooperatively define a continuous path of the players;

a plurality of distinct play pieces selected and used by each player and moved along said playing spaces in said continuous path;

a first chance means for randomly determining the number of playing spaces a play piece may be moved along during a player's turn;

a second chance means for randomly determining the outcome of an attack by a player on another player, said second chance means includes a base having a rotating means projecting therefrom with two wheels rotatably and centrally disposed about said rotating means, said wheels being independently rotatable, each in a plane substantially parallel to said base, and said wheels further having indicia on their outer circumference; said second chance means further including a substantially transparent viewing means attached to said base and having a sight printed thereon, whereby upon rotation of either or both wheels about said rotating means, the circumferential indicia on said wheels can be viewed through the viewing means and in relation to said sight;

a plurality of galaxy cards, each of said cards having indicia thereon for instructing the movement of said play pieces;

a plurality of scoring markers for representing a player's score; and

a scoring means for indicating a player's total score.

4,575,096

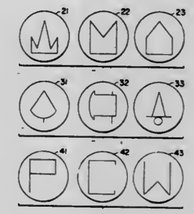
GAME PIECES FORMING UNIQUE PLAYING UNITS

Roger K. Lam, 11889 Dogwood Ave., Fountain Valley, Calif. 92708

Continuation-in-part of Ser. No. 439,179, Jan. 7, 1983, Pat. No. 4,488,727. This application Jun. 18, 1984, Ser. No. 621,853

Int. Cl.[4] A63F *3/00*

U.S. Cl. 273—296 **9 Claims**



5. A game comprising:

first and second sets of playing units, each of said sets of playing units consisting of n^x number of playing units, each of said playing units being made up of x playing pieces, each of said playing pieces having a first face thereon with said first face carrying a symbol, for each symbol carrying piece in said first set, there being a piece in said second set carrying the same symbol, each piece within a playing unit having a symbol selected from a group consisting of n symbols, the value of x being at least 3; and wherein each of the playing pieces in a playing unit comprises distinguishing means in the form of identical indicia for maintaining the playing pieces within their respective playing units, the indicia of one playing unit being different from the indicia of any other playing unit within a set.

4,575,097

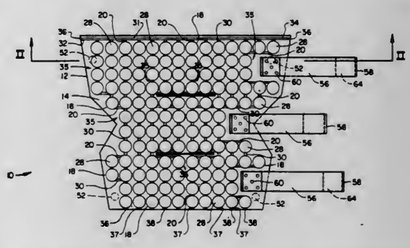
THERAPEUTIC DEVICE AND METHOD FOR FORMING AND USING SAME

Patrick J. Brannigan, and Gerald L. Peckich, both of Pittsburgh, Pa., assignors to Fastencold, Inc., Pittsburgh, Pa.

Filed Jun. 1, 1984, Ser. No. 616,489

Int. Cl.[4] A61F *7/10*

U.S. Cl. 128—402 **24 Claims**



1. A therapeutic device for a body portion utilizing a thermal responsive medium comprising,

a first flexible layer,

said first flexible layer having an upper surface and a lower surface and having a plurality of raised chamber-like projections and raised channel-like portions,

said raised channel-like portions interconnecting pairs of adjacent chamber-like projections,

a second flexible layer,

said second flexible layer having an upper surface and a lower surface,

said upper surface of said second flexible layer being sealingly engaged to said lower surface of said first flexible layer to thereby form a plurality of chambers spaced from each other with adjacent chambers being connected by said raised channel-like portions forming passageways therebetween to provide a continuous fluid circuit for said thermal responsive medium,

said chambers and said passageways being filled with said thermal responsive medium,

a seal applied at the intersection of each of said passageways with said respective chambers containing said thermal responsive medium to close said continuous fluid circuit, said seal separating said passageway from said respective chamber, and

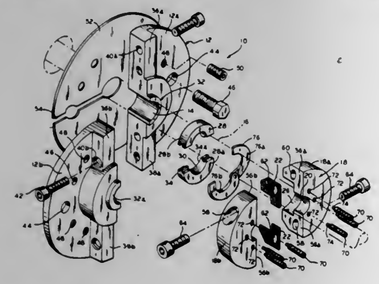
said passageways being sealed from said chambers to provide a plurality of discrete chambers separated from one another and containing said thermal responsive medium.

4,575,098

ROTATABLE SHAFT SEALING ASSEMBLY WITH FLOWABLE MATERIAL SPACER MEANS

Jesse W. Escue, 611 Joyce Rd., Joliet, Ill. 60435

Filed Aug. 19, 1985, Ser. No. 767,237
Int. Cl.[4] F16J *15/34*
U.S. Cl. 277—9 **18 Claims**



1. A sealing assembly for a device having a rotatable shaft, comprising:

stationary seal means associated with said device and having an opening generally conforming to said rotatable shaft;

rotatable seal means including means for engaging and cooperating with said stationary seal means for effecting a seal therebetween, said rotatable seal means being adapted to be mounted on said rotatable shaft for rotational movement therewith, said rotatable seal means also including means for engaging and cooperating with said rotatable shaft for effecting a seal therebetween;

said rotatable seal means further including a collar having an opening generally conforming to said rotatable shaft, said opening in said collar being defined by a normally undersized shaft confronting surface dimensioned smaller than said rotatable shaft and said collar being split through said opening, said collar being split along a diameter to include a pair of substantially identical portions;

spacer means adapted to be disposed between said substantially identical portions of said collar, said spacer means being formed of a flowable material to fill any gap between said collar and said rotatable shaft, said spacer means adapting said collar to sealingly conform to said rotatable shaft within a normal tolerance range for rotatable shafts; and

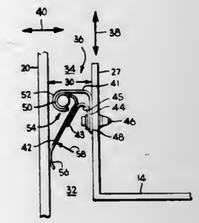
means for securing said substantially identical portions of said collar together in engagement with said rotatable shaft, said securing means causing said flowable material of said spacer means to fill any gaps between said collar and said rotatable shaft.

4,575,099

HIGH EXCURSION SEAL WITH FLEXIBLE MEMBRANE TO PREVENT GAS LEAKAGE THROUGH HINGE

Dudley O. Nash, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Jan. 27, 1984, Ser. No. 574,317
Int. Cl.[4] F16J *15/06;* **B64C** *9/38*
U.S. Cl. 277—12 **7 Claims**



1. Means for reducing gas flow in the space between first and second relatively moveable members comprising:

a support bracket attached to said first member;

a seal plate with first and second opposite ends, said first end being hinged to said support bracket and said second end being in slideable contact with said second member; and

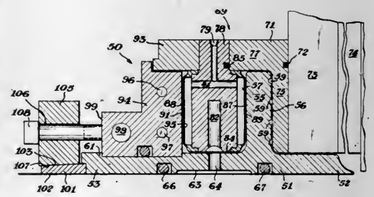
a flexible membrane fixedly attached to said support bracket and said seal plate.

4,575,100

SEAL ASSEMBLY WHICH IS HYDRAULICALLY ACTUATED

Robert A. Hay, II, Midland, and Albert C. Dowell, Mount Pleasant, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 5, 1984, Ser. No. 668,582
Int. Cl.[4] F16J *15/34*
U.S. Cl. 277—65 **10 Claims**



1. A shaft seal, the shaft seal comprising

a sleeve generally having rotational symmetry about an axis, the sleeve adapted to be affixed to a shaft, the sleeve having a generally radially extending flange portion and a bore;

the radially extending flange having a first side and a second side, the first side being a generally annular planar first face, the second side having a similar or second face defining at least one generally back pumping generally spiral groove;

a first clamping means for clamping said sleeve to a shaft disposed within the bore;

a generally annular second clamping means disposed remote from the second side, the second clamping means defining a generally radially extending annular third face spaced from the first face of the annular flange, the third face being adjacent and spaced apart from the first face, the third face and sleeve defining an outwardly opening annular recess of generally elongate rectangular cross sectional configuration;

a fixed housing adapted to receive a shaft passing through the sleeve, the fixed housing being disposed about at least a portion of the sleeve; the fixed housing defining a generally radially outwardly extending annular fourth face generally parallel to and spaced from the second face defining the spiral groove, the housing having supported thereon

a generally annular sealing member, the annular sealing member having affixed thereto in liquid tight engagement at least one

annular diaphragm, the annular diaphragm having at least one annular radially extending surface disposed adjacent the first face of the flange, the annular diaphragm being in communication with

a first fluid supply passage;

a second fluid supply passage communicating between space external of the means supporting the diaphragm and space adjacent the sleeve,

first fluid discharge means located generally at a peripheral location communicating with a space between first and third faces and a second fluid discharge means at a generally peripheral location communicating with space between the second and fourth faces;

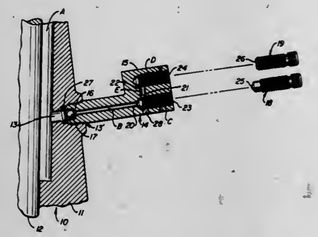
where upon the application of fluid pressure to the first fluid supply passage, the diaphragm is displaced toward the third face.

4,575,101

DEVICE FOR SAFE ON-STREAM ADDITION OF VALVE PACKING

Larry D. Hopkins, San Pablo, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Sep. 12, 1984, Ser. No. 650,318
Int. Cl.[4] F16L *55/10;* **F16J** *15/40*
U.S. Cl. 277—72 FM **6 Claims**



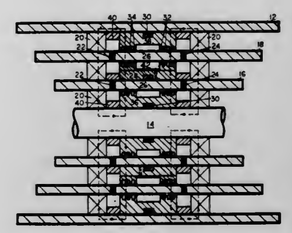
1. A fitting safely used to add an injectable material to a valve in high pressure service which comprises a housing enclosing a first and a second sealable chamber, each chamber associated with a means for ejecting said injectable material from said chamber; and which fitting when mounted to said valve has a first sealable portal between its first chamber and said valve and also a second sealable portal between its first chamber and its second chamber, said second chamber having a sealable entrance portal to receive said injectable material; said chamber and portals being arranged and equipped with seals in such a manner that each portal can be independently sealed or opened thereby permitting the addition of said injectable material to said valve by a succession of injections from said second chamber to said first chamber to said valve while at all times having at least two portals sealed between the fluid in said valve and the outside of said entrance portal of said second chamber.

4,575,102

COAXIAL, MULTIPLE-SHAFT FERROFLUID SEAL APPARATUS

Kuldip Raj, Merrimack, and Hanumaiah L. Gowda, Nashua, both of N.H., assignors to Ferrofluidics Corporation, Nashua, N.H.

Filed Nov. 20, 1984, Ser. No. 673,550
Int. Cl.[4] F16J *15/40*
U.S. Cl. 277—80 **7 Claims**



1. A coaxial, multiple-shaft radially polarized ferrofluid seal apparatus, which apparatus comprises:

(a) a magnetically permeable housing for the seal apparatus;

(b) a magnetically permeable central shaft element extending in the housing;

(c) a one or more spaced apart magnetically permeable coaxial shaft elements about the central shaft element, and each coaxial shaft including first and second spaced apart nonmagnetically permeable shaft sections to define a magnetically permeable central section there between;

(d) a radially polarized annular permanent magnet means secured to one of the coaxial shafts to provide a source of magnetic flux;

(e) a thin magnetically permeable annular sleeve means secured to one radially polarized surface of the permanent magnet to form one or more radial gaps with a surface of a coaxial shaft element;

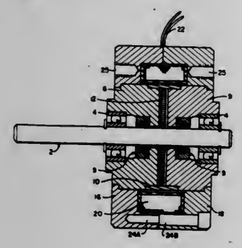
(f) pole block means comprising a magnetically permeable block element which includes at least first and second pole block means having spaced apart raised pole piece at the one and other axial end to form a plurality of radial gaps under each pole piece with a surface of a shaft element, the first pole piece means secured to the housing and the second pole piece means secured to the central shaft;

(g) a pair of magnetically permeable bearing means for each shaft to support the central and coaxial shaft elements, the bearing means disposed on either side of the permanent magnet means;

(h) nonmagnetically permeable annular insulating means to insulate magnetically each of the bearing means from the permanent magnet means and each of the pole block means, the insulating means radially aligned with the first and second shaft sections; and

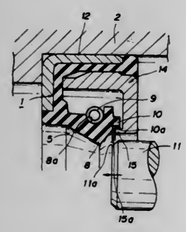
(i) ferrofluid in the radial gaps to form a plurality of ferrofluid O-ring seals under each pole piece and sleeve means and to provide for the sealing of the coaxial shaft elements whereby the magnetic flux from the permanent magnet passes in a closed circuit through the housing, the bearing means, the central shaft, the pole block means, the sleeve means, the central shaft sections, the ferrofluid in the radial gaps; and the radially polarized permanent magnet means.

4,575,103
MAGNETIC SEAL FOR MAGNETIC PARTICLE CLUTCHES AND BRAKES
Alexander A. Pedu, 100 River St., Lake Placid, N.Y. 12946
Filed Apr. 9, 1984, Ser. No. 598,465
Int. Cl.⁴ F16J *15/40*
U.S. Cl. 277—80 **12 Claims**



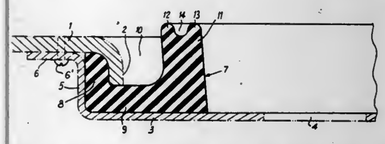
1. A magnetic particle device having (a) at least two coaxial members arranged for rotation relative to one another, (b) a gap formed between mutually-confronting surfaces of at least two of said members, and (c) a supply of magnetic particles in contact with at least one of said members, one of said coaxial members being a shaft made of a non-magnetic material, improved sealing means for preventing magnetic particles which intrude into said gap from migrating in said gap along said mutually-confronting surfaces, said improved sealing means comprising at least one annular permanent magnet fixed to one of said mutually-confronting surfaces and disposed concentrically with and close to the other of said mutually-confronting surfaces, said at least one magnet having a magnetic field with a strength sufficient to cause intruding magnetic particles to agglomerate at said at least one magnet so as to block said gap and thereby prevent further migration of intruding particles.

4,575,104
RADIAL TYPE LIQUID SEAL WITH BEND PREVENTING MEANS
Shinji Nagasawa, Fukushima; Toshiki Ono, Fujisawa, and Masaharu Suehiro, Fukushima, all of Japan, assignors to Nippon Oil Seal Industry Co., Ltd., Tokyo, Japan
Filed Oct. 4, 1984, Ser. No. 657,449
Claims priority, application Japan, Oct. 4, 1983, 58-185676
Int. Cl.⁴ F16J *15/32*
U.S. Cl. 277—153 **2 Claims**



1. A radial type liquid seal comprising in combination:
an annular body of elastic material disposed between two relatively moving concentrically located members and having sealing engagement with one of said members;
a seal lip integrally formed and extending from said annular body toward the other of said members and having at its distal end an annular seal portion to provide sealing engagement with said other member;
a bend preventing portion provided at the distal end of said seal lip and axially extending therefrom;
a support ring secured to said annular body; and
means on said support ring to restrict the bending of the seal lip beyond a predetermined level.

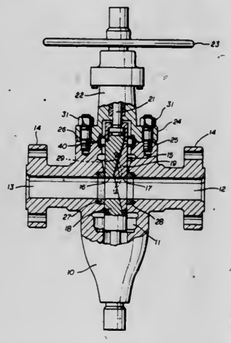
4,575,105
SEAL FOR ELECTRONIC SHELF OF AN AIRPLANE
Gildas le Pierres, La Ferte Alais, France, assignor to Vibrachoc S.A., Saint Cloud, France
Filed Feb. 23, 1984, Ser. No. 582,726
Claims priority, application France, Feb. 23, 1983, 83 02908
Int. Cl.⁴ F16J *15/10*
U.S. Cl. 277—166 **12 Claims**



1. Seal for an electronic shelf of an airplane, the seal being annular, and placed at the periphery of an opening of an airplane electronic shelf to seal between the shelf and the lower surface of electronic apparatus on the shelf, and to seal between the shelf and an airflow control plate placed in the opening of the shelf, said seal comprising, a resilient continuous annular seal which has, in section, an outer portion gripped between the lower surface of the shelf and the upper surface of the air flow control plate, a central connecting portion inwardly of the outer portion and inside the shelf opening, and a seal portion within the shelf opening and projecting above the shelf, said seal portion having an end face for sealing against the bottom of an electronic unit on the shelf, said seal portion being sufficiently resilient to permit sliding the electronic apparatus over the seal portion, and fastener means for removably fastening the airflow plate directly to the bottom of the shelf.

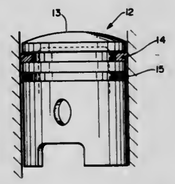
4,575,106
HIGH PRESSURE SEALING CONNECTION WITH METAL SEAL
F. Harold Hollister, Houston; Tri C. Le, Missouri City, and Danny S. Meyer, Richmond, all of Tex., assignors to Joy Manufacturing Company, Pittsburgh, Pa.
Filed Sep. 21, 1984, Ser. No. 653,104
Int. Cl.⁴ F16J *15/08*
U.S. Cl. 277—167.5 **5 Claims**

1. A high pressure sealing connection for sealing between connected first and second coaxially aligned members which are provided with central bores and are connected by metal bolt means having a different thermal coefficient of expansion than said aligned members, said first and second aligned members being each provided with an internal annular recess at the end thereof which is connected adjacent to the other of said members, each recess being defined by an internal frusto-conical sealing surface tapering inwardly from the end of the member and terminating at an annular radial shoulder formed by an enlargement of the bore in said member;
a metallic sealing ring for sealing between said connected first and second coaxially aligned members when positioned in said recesses, said sealing ring having an external diameter which exceeds the bore diameter of the coaxially aligned members measured at their adjoining ends and upper and lower annular end surfaces which reside in planes transverse to the axis of the sealing ring, said sealing ring having;
an external peripheral surface characterized by a convex arcuate configuration as defined in radial cross section by a center of curvature of radius which is co-diametral with the center of said ring whereby when said metallic sealing ring is positioned in said annular recesses in coaxial alignment with said bores and its inner peripheral surface exposed to said bore the upper and lower annular edges of the external peripheral surface respectively of the metallic sealing ring initially provide the only points of engagement with the internal frusto-conical seating surfaces of the coaxially aligned members;
upper and lower radial flanges extending into the interior of said ring at the upper and lower ends of said sealing ring, respectively, in a direction radial and perpendicular to the axis of the ring and sealing ring having an enlarged bore section as defined by a central inner peripheral surface



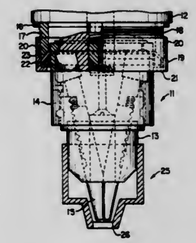
intermediate said upper and lower radial flanges and extending therebetween; and
said bolt means being adapted for drawing said coaxially aligned members to apply a compressive force on said sealing ring in the axial direction of said ring for effecting a fluid sealing relationship between the surface of the sealing ring and the tapered surfaces of the coaxially aligned members such that the Annular line of sealing contact between said ring and each said coaxially aligned member shifts to a location intermediate the annular ends of said sealing ring as compression is applied by said bolt means and the fluid sealing relationship is enhanced by fluid pressurization within the coaxially aligned members and maintained during thermal expansion and contraction of said seal ring and the aligned members.

4,575,107
PISTON RINGS FOR INTERNAL COMBUSTION ENGINE
Koujiro Umegawa, Kashiwazaki, Japan, assignor to Kabushiki Kaisha Riken and Honda Giken Kogyo Kabushiki Kaisha, both of Tokyo, Japan
Filed Feb. 9, 1984, Ser. No. 578,433
Claims priority, application Japan, Feb. 12, 1983, 58-19221[U]
Int. Cl.⁴ F16J *9/14*
U.S. Cl. 277—221 **1 Claim**



1. A piston for an internal combustion engine, comprising a piston main body having a piston head, only one pressure ring installed in a ring groove formed on an outer surface of said piston main body adjacent to the piston head, and only one oil ring installed in a ring groove formed on the outer surface of said piston main body below said pressure ring, said pressure ring having a double-angle butt end construction comprising an outer circumferential surface slidably contacting an inner surface of a cylinder bore, an upper surface facing a combustion chamber side of the engine, a radially extending first butt flat end face, said outer circumferential surface, the upper surface and said first butt flat end face defining a corner portion on a side of said pressure ring, only said corner portion being partially cut away to form a notch which is continguous to said outer circumferential surface, said upper surface and said first butt flat end face, said notch having a surface portion that extends downwardly from said upper surface to said outer circumferential surface, a radially extending second butt flat end face opposing said first butt flat end face, and a rib or projection projecting circumferentially from said second butt flat end face only at a position corresponding to said notch, said rib or projection having a shape which is complementary to that of said notch for gas-tight engagement with said notch.

4,575,108
DRILL CHUCK ATTACHMENTS
Dennis M. Whitehead, 202 Terrace Ct., Trafford, Pa. 15085
Filed Sep. 28, 1983, Ser. No. 536,676
Int. Cl.⁴ B23B *31/06*
U.S. Cl. 279—59 **3 Claims**



1. An attachment for a power drill having a housing and a drill chuck including a body portion, a sleeve which rotates on said body portion and jaws caused to clamp against a drill bit by rotation of said sleeve comprising an externally threaded ring surrounding said sleeve with clearance therebetween adapted for fixing to said housing, a nut threaded on said ring for rotation thereabout and wedging means positioned between said nut and said ring adapted to be forced radially inwardly and axially toward said body portion clamping said sleeve to said ring when said nut is rotated.

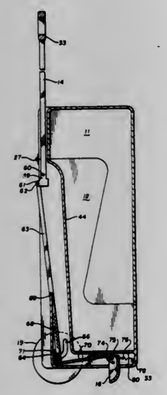
4,575,109
LUGGAGE CASE WITH RETRACTABLE WHEELS
Timothy K. Cowdery, 13647 Oakwood Curve, Burnsville, Minn.
Filed Feb. 28, 1983, Ser. No. 470,620
Int. Cl.⁴ B62B *3/02*
U.S. Cl. 280—37 **7 Claims**

1. A luggage case having a front wall, a back wall and a plurality of edge walls, said luggage case comprising:
an elongated handle pivotally secured to said back wall of the luggage case about a first axis and pivotally movable through an arc of approximately 180° between a retracted, non-operative position in which said handle is generally parallel to said back wall and an extended, operative position in which said handle is generally parallel to said back wall and disposed at approximately 180° relative to the position of said handle when said handle is in its non-

operative position, said handle including a gripping portion near one end and a motion transfer link at its other end on the side of said first axis opposite said gripping portion;

an elongated wheel axle extending parallel to said first axis and supporting a pair of wheels, said wheel axle and said wheels being movable between a retracted, non-operative position and an extended, operative position;

a pair of guide means comprising an elongated guide slot near each end of said wheel axle for guiding the movement of said wheel axle between its retracted and extended positions;



an enlongated recess extending along a portion of said back wall and being generally perpendicular to said wheel axle; and

an elongated motion transfer rod located within said elongated recess extending between said motion transfer link and said wheel axle for causing movement of said wheel axle along said elongated guide slots between retracted and extended positions of said wheel axles in response to corresponding movement of said handle between its retracted and extended positions.

4,575,110

DEVICE FOR DAMPING OSCILLATIONS OF A TRAILER

Wolfgang Kuhn, Stuttgart, and Karl-Heinz Richter, Kernen, both of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 15, 1983, Ser. No. 466,538

Claims priority, application Fed. Rep. of Germany, Feb. 17, 1982, 3205668

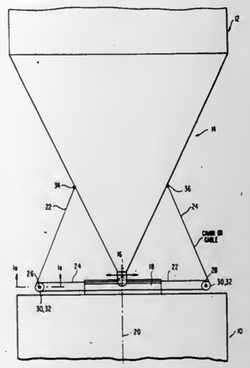
Int. Cl.[4] B60D *1/00*

U.S. Cl. 280—446 R **13 Claims**

1. Device for damping oscillations of a trailer hitched with its drawbar to a motor vehicle, comprising

damping means mounted at least to the trailer and activatable in response to the magnitude of the jackknife angle of the trailer drawbar with respect to the motor vehicle occurring during swerving of the trailer to counteract the swerving motions at the rear end of the motor vehicle, and

coupling means between the motor vehicle and trailer horizontally adjusted at substantially right angles to a longitudinal axis of the vehicle displaceable in response to the damping means in proportion to the drawbar deflection from a position lying on the longitudinal vehicle axis to a



position in the direction of the side of the motor vehicle into which the trailer is swerving.

4,575,111

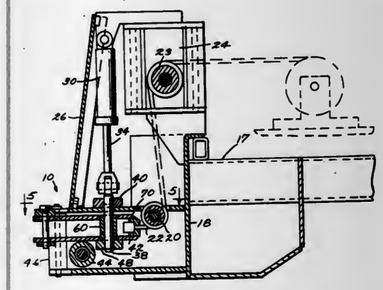
QUICK HITCH ASSEMBLY

William C. Roberson, Murfreesboro, N.C., assignor to Franklin Equipment Company, Franklin, Va.

Filed Dec. 14, 1983, Ser. No. 561,516

Int. Cl.[4] B60D *1/00*

U.S. Cl. 280—477 **8 Claims**



2. A hitch assembly for mounting on a towing vehicle including winch means for reeling in and letting out a cable, said assembly comprising bracket means mountable on a towing vehicle, said bracket means including socket means for receiving connecting means, connecting means having at one end a nose portion for connection to an end of the cable and at an end opposite said nose portion hitching means for connection to an implement to be towed, said bracket means further including locking means movable to a locked position for locking said connecting means in said socket means when said connecting means is in said socket means and movable to an unlocked position wherein said connecting means will be movable out of said socket means, said socket means having an entrance opening for said connecting means and said bracket means including guide means adjacent said entrance means, said guide means comprising a plurality of rotatably mounted rollers, said plurality comprising three rollers, a first one of said rollers being rotatably mounted on one side of said entrance opening, a second one of said rollers being rotatably mounted on the other side of said entrance opening with said one and said another

rollers being rotatable about vertical axes, the third one of said rollers being rotatably mounted beneath said socket means and spaced inwardly of said entrance opening and being rotatable about a horizontal axis.

4,575,112

MECHANIZED HITCH FOR TRACTOR OR THE LIKE

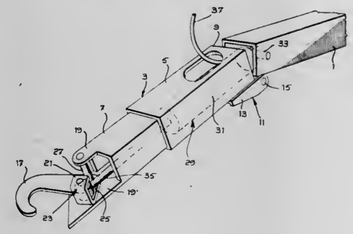
Jacques I. Tremblay, 952, Ile Rang, Roxton Falls, Quebec, Canada (J0H 1E0)

Filed Apr. 26, 1984, Ser. No. 604,175

Claims priority, application Canada, Jan. 20, 1984, 445803

Int. Cl.[4] B60D *1/04*

U.S. Cl. 280—479 A **13 Claims**



1. A mechanized hitch comprising:

a stationary bracket;

a telescopic device including a first and a second hollow lever slidable one into the other between a nested position and an extended position, each lever having a free end;

means mounting the free end of said first lever on said bracket for pivotal movement of said telescopic device in a plane between an upright position and an inclined position;

a hook;

means mounting said hook at the free end of said second lever for pivotal movement of said hook in a plane perpendicular to said pivot plane of said telescopic device between a hooking position in which said hook lies essentially in said pivot plane and a release position in which said hook lies essentially outside of said pivot plane;

a jack housed within said telescopic device and pivotally mounted at one of its ends to said bracket and pivotally mounted, at the other of its ends, to said hook to pivot said hook; said jack, in retracted position thereof, holding said telescopic device in said upright position with the levers of said device in said nested position and, in elongated position thereof, holding said telescopic device in said inclined position with the levers of said device in said extended position and with said hook in said release position.

4,575,113

WHEELCHAIR KIT FOR A FOLDING CHAIR

Dennis D. Boudreau, 3671 NE. 11th Ave., Fort Lauderdale, Fla. 33334

Filed Jun. 4, 1984, Ser. No. 616,818

Int. Cl.[4] B62B *7/10*

U.S. Cl. 280—650 **6 Claims**

1. A wheel chair kit for a folding chair, the kit comprising:

two side braces;

a front and a rear cross brace;

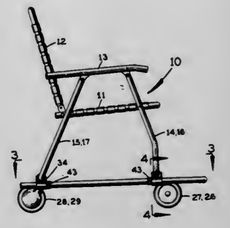
corner joints for detachably attaching the cross braces to the side braces at their ends for forming a rectangular frame having four corners;

four wheels attached to the underside of the cross braces proximal to the corners;

means for detachably attaching the folding chair to the top side of the frame, thereby forming a wheelchair assembly;

said corner joints comprising four outside collars rigidly, transversely attached to the underside of said cross braces for slidably receiving said side braces;

said side braces being curved back at one end to form a curved section and a short straight shank section, said curved section forming a foot rest for a person sitting in the chair;



two inside collars rigidly, transversely attached to the underside of said front cross brace, spaced apart a shorter distance than said two outside collars on the front cross brace, for receiving the short shanks of the side braces.

4,575,114

VEHICLE SUSPENSION JOINT

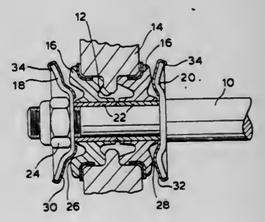
John W. A. Camp, Colchester, United Kingdom, assignor to Ford Motor Company, Dearborn, Mich.

Filed May 14, 1984, Ser. No. 610,216

Claims priority, application United Kingdom, Oct. 31, 1983, 8329042

Int. Cl.[4] B60G *7/02*

U.S. Cl. 280—673 **14 Claims**



1. A vehicle suspension joint between a suspension arm and a bar which passes through an aperture in the arm, wherein a compliant insulator is provided between the bar and the walls of the aperture and retainer discs are mounted on respective sides of the insulator to keep the insulator in position, plastic discs being provided between the retainers and the insulator.

4,575,115

VEHICLE HEIGHT CONTROL SYSTEM

Minoru Tatemoto, and Mitsuhiko Harara, both of Okazaki, Japan, assignors to Mitsubishi Jidosha Kogyo K.K. and Mitsubishi Denki K.K., Both of Tokyo, Japan

Filed May 15, 1984, Ser. No. 610,329

Claims priority, application Japan, May 20, 1983, 58-75443[U]

Int. Cl.[4] B60G *11/26*

U.S. Cl. 280—707 **6 Claims**

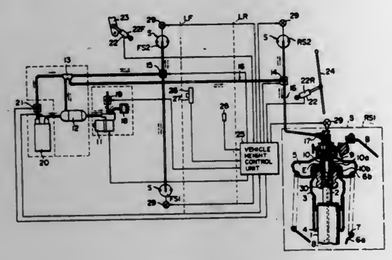
1. A vehicle height control system comprising:

hydraulic suspension units interposed between the members on the side of the wheels and the members on the side of the body of a vehicle respectively and each having fluid chambers for vehicle height adjustment;

a running speed sensor for detecting the running speed of the vehicle;

a vehicle height sensor for detecting the height of the vehicle;

vehicle height control operation initiating device adapted to receive detection signals from said running speed sensor and said vehicle height sensor, to set a vehicle height judging time interval for determining the initiation of vehicle height control operation when the running speed of the vehicle is higher than a set value longer than a vehicle height judging time interval for determining the initiation of vehicle height control operation when the running speed of the vehicle is the set value or lower than that, and to give a signal for initiating vehicle height control operation to adjust the vehicle height to a standard vehicle height if the vehicle height detected in the set vehicle height judging time interval is different from said standard vehicle height;



vehicle height control operation stopping device adapted to receive detection signals from said vehicle height sensor and to stop the vehicle height control operation immediately after the standard vehicle height has been reached;

hydraulic control device for controlling the pressure in the fluid chambers of said suspension unit on the basis of the output signals of said vehicle height control operation initiating device and said vehicle height control operation stopping device; and

vehicle height control operation initiating timing advancing device which, when the preceding vehicle height control operation is started while the vehicle is running at a speed of the set value or below and the same is completed while the vehicle is running at a speed over the set value, gives a next vehicle height control operation initiating signal to said hydraulic control device after a time which is shorter than said vehicle height judging time interval for a running mode in which the vehicle is running at a speed over the set value has elapsed.

4,575,116

SHOCK ABSORBER CONTROL UNIT FOR USE OF A VEHICLE SUSPENSION

Hiroshi Miyata, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Dec. 19, 1983, Ser. No. 563,175

Claims priority, application Japan, Dec. 27, 1982, 57-234584

Int. Cl.⁴ B60G *17/08*

U.S. Cl. 280—707 **8 Claims**

1. A shock absorber control unit for use in a vehicle having a steering wheel and at least one shock absorber said at least one shock absorber having a damping force which is adjustable, comprising:

a vehicle speed sensor for detecting a vehicle speed;

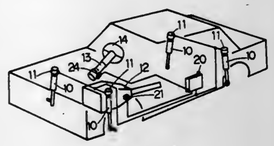
a vehicle speed signal generating means for receiving the vehicle speed detected by the vehicle speed sensor and generating a vehicle speed signal;

a steering angle sensor for detecting a steering angle of the steering wheel, and for detecting a rotational direction of the steering wheel;

a steering angular velocity signal generating means for receiving the steering angle and detecting a period between a start and an end of rotation of the steering wheel and calculating and generating a steering angular velocity signal;

a compensating means for compensating the steering angular velocity signal generated by said steering angular velocity signal generating means in accordance with the vehicle speed signal generated by said vehicle speed signal generating means, said compensating means also generates a compensated steering angular velocity signal;

a reference value setting means for setting a first reference value when the steering wheel is turned in a direction from its neutral position to a first turning position, and for setting a second reference value to be larger said first reference value when the steering wheel is turned in a



direction from the first turning position to the neutral position in accordance with the rotational direction detected by said steering angle sensor;

a comparing means for comparing the first reference value or the second reference value with the compensated steering angular velocity signal, and for generating a first output signal when the compensated steering angular velocity signal is larger than the first reference value, and for generating a second output signal when the compensated steering angular velocity signal is smaller than the second reference value; and

an actuating means for increasing a damping force of the shock absorber when the first output signal is generated by said comparing means, or decreasing the damping force of the shock absorber when the second output signal is generated by the comparing means, whereby a roll of the vehicle is prevented by increasing and decreasing the damping force exerted on the shock absorber.

4,575,117

STRIKING ENERGY ABSORBING STRUCTURE FOR STEERING WHEEL AND METHOD OF MANUFACTURING THE SAME

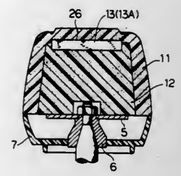
Sadao Uchida, Ichinomiya, Japan, assignor to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Filed Jun. 13, 1984, Ser. No. 620,295

Claims priority, application Japan, Jun. 14, 1983, 58-106287

Int. Cl.⁴ B60R *21/02*

U.S. Cl. 280—750 **5 Claims**



1. A striking energy absorbing hub structure for a steering wheel, said hub structure being comprised of a hollow exterior cover member with one open end, an energy absorbing brittle plastic material molded inside said hollow cover, and a horn switch member integrally molded

(a) said energy absorbing material fills the inside of said cover member; and

(b) so that said horn switch member is buried between said cover member and said energy absorbing material.

4,575,118

SUPPORT CONSTRUCTION OF SECURING MEMBER FOR SECURING AN OCCUPANT RESTRAINING WEBBING

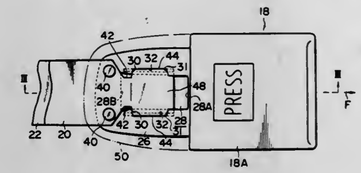
Kenji Matsui, and Hironori Sasaki, both of Aichi, Japan, assignors to Kabushiki Kaisha Toka-rika-denki-seisakusho, Aichi, Japan

Filed Feb. 29, 1984, Ser. No. 584,901

Claims priority, application Japan, Mar. 4, 1983, 58-31475[U]

Int. Cl.⁴ A62B *35/00*; A47C *31/00*

U.S. Cl. 280—801 **17 Claims**



1. A support construction of a securing member for securing an occupant restraining webbing, applied to a vehicle and adapted for supporting the securing member to a vehicle body through an extension member, which comprises:

(a) the securing member formed with a rectangular support hole wherein said hole is formed with step portions which are oriented along the width of the securing member at an intermediate portion within the rectangular support hole;

(b) the extension member, a forward end portion thereof being bent at both its side portions to be formed in a portal shape, the portal shape portion being received in the rectangular support hole and the back of the portal shape portion being caused to abut on a periphery of the rectangular support hole, and the portal shape portion being formed at both the side portions with hook-shaped receiving portions, each of which includes a forward end which is positioned at the back of the securing member, whereby the step portions of the rectangular support hole are latched to the hook-shaped receiving portions in an emergency situation of the vehicle and a tension load acting between the securing member and the extension member is sustained, and

(c) a connecting means connecting the securing member and the extension member.

4,575,119

SEAT BELT DEVICE

Hisakazu Okuhara; Kazuo Higuchi, both of Tochigi, and Kiichi Sasaki, Saitama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 17, 1984, Ser. No. 581,088

Claims priority, application Japan, Feb. 17, 1983, 58-25325

Int. Cl.⁴ B60R *22/48*

U.S. Cl. 280—801 **7 Claims**

1. A seat belt device for a seat of a vehicle, comprising:

(a) a webbing;

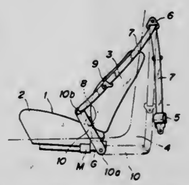
(b) a retractor mounted on the inner wall of the vehicle body for winding up said webbing;

(c) a through anchor mounted on the vehicle body and above said retractor;

(d) a lever connected at one end thereof to a part of the vehicle body swingably in the back-and-forth direction with respect to the vehicle body;

(e) said webbing having a first end thereof coupled to said retractor, a second end thereof secured to a movable end of said lever, and an intermediate portion thereof loosely inserted through said through anchor;

(f) drive means for driving said lever to move between a relatively forward first position and a relatively rearward second position;



(g) the position of said movable end of said lever at the time when said lever is in said first position and the position of said movable end of said lever at the time when said lever is in said second position being substantially symmetrical with respect to a straight line passing through said through anchor and the connecting point where said lever is connected to the vehicle body; and

(h) said retractor including winding limiting means for limiting winding operation of said retractor to keep a predetermined length of said webbing unwound.

4,575,120

DISPLACEMENT ENTRAINMENT AND UNLOCKING MEMBERS FOR A PASSIVE SAFETY BELT

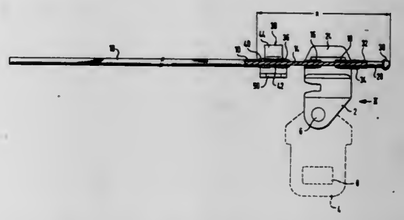
Hans-Joachim Volk, Ebersdorf; Herbert Becker, and Michael Forkel, both of Coburg, all of Fed. Rep. of Germany, assignors to Brose Fahrzeugteile GmbH & Co. KG, Fed. Rep. of Germany

Filed May 4, 1984, Ser. No. 607,286

Claims priority, application Fed. Rep. of Germany, May 5, 1983, 3316457

Int. Cl.⁴ B60R *21/10*

U.S. Cl. 280—804 **20 Claims**



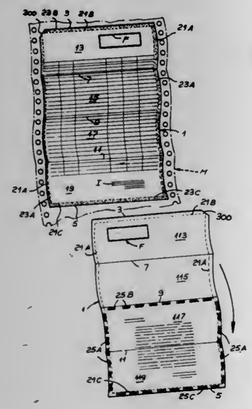
1. An arrangement in a passive safety belt actuating installation for the displacement of an entrainment means for a safety belt along a guide profile means, comprising a lengthwise groove in the guide profile means and an elongated flexible member extending in the guide profile means, said entrainment means being secured on said flexible member longitudinally displaceably within limits and having a tongue means engaging the lengthwise groove in the guide profile means, the flexible member consisting of a cable means substantially non-yielding in tension and compression and having a plastic sleeve which is removed within the longitudinal displacement area of the entrainment means, and an unlocking means for unlocking the entrainment means from a locking mechanism, said unlocking means being non-displaceably secured on said cable means within an area of said cable means adjoining the longitudinal

displacement area of the entrainment means and having a tongue means engaging the lengthwise groove in the guide profile means, and the plastic sleeve being removed also from the cable means within said adjoining area.

4,575,121
POSTAL MODULE FOR CONFIDENTIAL INFORMATION

Romano Conti, 37, Via Pier della Francesca, I-50047 Prato (Florence), Italy

Filed Nov. 14, 1983, Ser. No. 551,607
Claims priority, application Italy, Nov. 25, 1982, 9552 A/82
Int. Cl.⁴ B41L *1/20*; B42D *1/00*; B65D *27/00, 27/10*
U.S. Cl. 281—2 **13 Claims**



1. A postal module, of the foldable and sealable type, separable from a continuous strip of modules suitable to be passed through a printer and then through a cutting unit in which individual modules are separated from the strip comprising:

a sheet having longitudinal and transverse axes of symmetry and including at least four substantially equal sections delimited by corresponding, preformed, parallel fold lines, said sections having a front face, usable for reporting confidential information, and back face,

one of said fold lines corresponding to the transverse axis of symmetry of said sheet and facilitating a first fold in which the front faces of said sections are disposable adjacent each other, the section delimited by one end of the sheet and the closest fold line parallel to it being provided with a window for visualizing an address correspondingly printed on the front face of a symmetrically disposed section delimited by an opposite end of the sheet and the closet fold line,

the remaining fold lines facilitating at least one further fold of the sheet in which the back faces of two adjacent sections are disposed adjacent to each other, the section with said window being kept visible on the folded sheet;

permanent sealing means provided on a perimetrical band of said face usable for reporting information for securing the inviolability thereof;

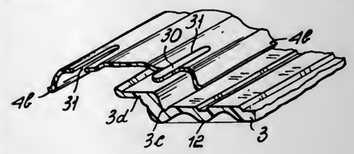
non-permanent glueing means provided on the back face of the sections to be disposed against each other so as to allow opening of the sheet for control;

and tearing means provided along said perimetrical band for complete opening of the sheet following its mailing and receipt.

4,575,122
COVER STRUCTURE FOR BOOKS, DIARY BOOKS, AND THE LIKE

Rinaldo Nava, Milan, Italy, assignor to Nava Milano S.p.A., Milan, Italy

Filed Jan. 13, 1984, Ser. No. 570,555
Claims priority, application Italy, Jan. 21, 1983, 20571/83[U]
Int. Cl.⁴ B42D *3/06, 3/08*
U.S. Cl. 281—29 **1 Claim**

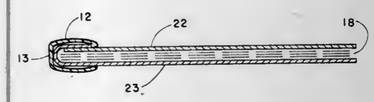


1. A cover structure for books, diary books, and the like, of the type including sheets having an inside spine edge, the structure comprising two substantially rigid covers, ledges, and a substantially flexible outside spine, having an inside face and connection portions said covers including contiguous rim portions and having grooves provided therein, said contiguous rim portions being co-extensive with said ledges, said covers being united together by said substantially flexible outside spine, said inside face, of said substantially flexible outside spine being directly attachable to said inside spine edge of said sheets, said connection portions being integral with said substantially flexible outside spine and with said substantially rigid covers, said substantially flexible outside spine comprising a band, said band having longitudinal end portions, said longitudinal end portions being adapted to be clamped between said contiguous rim portions of said covers and said ledges, said contiguous rim portions and said ledges being Z-like shaped in cross-section, said longitudinal end portions having bead formations, said bead formations being adapted for engagement with said grooves provided in said covers, said contiguous rim portions of said covers having stud and boss formations, said stud and boss formations being adapted for engagement with said band.

4,575,123
REPORT COVER

John P. Giblin, Mountain Lake, N.J.; Andrew E. Semancik, Joppa, Md., and Sherman D. Forehand, Trussville, Ala., assignors to St. Regis Corporation, New York, N.Y.

Filed Jul. 25, 1984, Ser. No. 634,374
Int. Cl.⁴ B42D *3/10, 3/18*; B42B *5/06*
U.S. Cl. 281—48 **8 Claims**

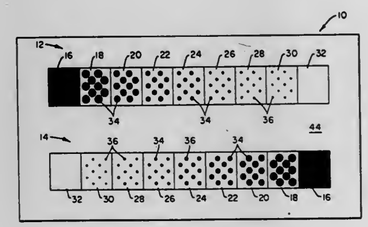


1. A report cover comprising a folded cover adapted to hold papers each having one edge extending parallel and contiguous to the fold in the cover, a strip secured to one of the exterior sides of the cover and extending parallel and contiguous to the fold in the cover, a channel-shaped gripping member extending along the fold and having the interior of the free end of one of its legs formed with a stop that juts out in the direction of the other leg, the gripping member being adapted to firmly grip the cover and the papers by laterally sliding the gripping member onto the cover so that the stop of the one leg interlocks with a longitudinal edge of the strip and the one side of the cover to prevent motion of the gripping member toward and perpendicular to the longitudinal edge of the strip and the other leg engages the other side of the cover.

4,575,124
REPRODUCIBLE GRAY SCALE TEST CHART FOR TELEVISION CAMERAS

Eric F. Morrison, Redwood City, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Continuation of Ser. No. 365,197, Apr. 5, 1982, abandoned, which is a continuation of Ser. No. 139,513, Apr. 11, 1980, abandoned. This application Mar. 20, 1984, Ser. No. 591,664
Int. Cl.⁴ B42D *15/00*; G01J *1/02*; H04N *17/00*
U.S. Cl. 283—1 A **16 Claims**



1. A gray value test chart formed by a selected reproduction technique in combination with a television camera for calibrating or adjusting the output signal of the television camera, the camera and the reproduction technique having respective resolution capabilities, the combination comprising:

the gray value chart having a plurality of regions having selected gray values, each gray value region being formed by an array of indicia, each indicium of the array being of a uniform similar size and of a substantially uniform black value arranged on a background of a substantially uniform white value, the size of the indicia being varied for each successive gray value region, the array of indicia for each gray value region being arranged on the background of each gray value region with a selected spatial frequency for the array of the indicia for each gray value region; and

the television camera having the selected resolution capability which responds to said array, the size of indicia, and its selected spatial frequency to cause the camera to produce an integrated output signal in response to the chart while being within the resolution capability of the reproduction technique;

whereby the array, the uniform size, and the selected spatial frequency of the indicia on each background provide a combined area which, in combination with the television camera and the resolution capability associated therewith, defines the gray value for each region.

7. A method of forming a gray value test chart for use in calibrating or adjusting the output signal of a television camera having a predetermined resolution capability, the chart including a plurality of regions having respectively different selected gray values, the method of forming the gray value test chart by means of a selected reproduction technique having a predetermined resolution capability comprising the following steps;

first, selecting an array of indicia, each indicium of a uniform similar size and of a substantially uniform black value for arranging on a background of a substantially uniform white value;

second applying the array of indicia on the background with a uniform spatial frequency to form a gray value region;

third, providing successive gray value regions by varying the size of the indicia for each array and applying each array on a respective background with the uniform spatial frequency;

wherein, the array, the size of indicia, the uniform spatial frequency for each region coacts with the resolution capability of the camera to cause the camera to produce an integrated output signal corresponding to a gray value output in response to each region while being within the resolution capability of the reproduction technique; and

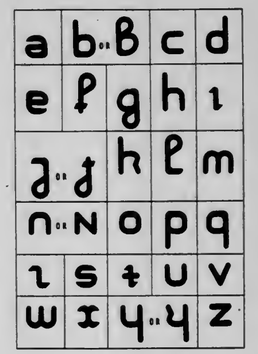
fourth, combining a series of successive gray value regions to produce a gray value test chart,

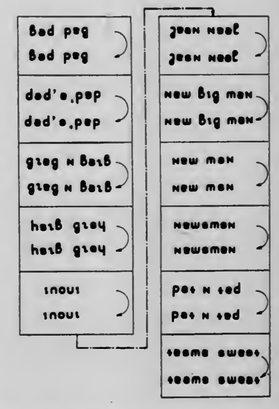
whereby the array, the uniform size, and the uniform spatial frequency of the indicia on each background provide a combined area which, in combination with the resolution capability of the camera, defines the gray value for each region.

4,575,125
ARTICLES HAVING INVERTIBLE LETTERING THEREON

Pierre J. Augier, Grosse Pointe Park, Mich., assignor to Uniroyal, Inc., Middlebury, Conn.

Filed Dec. 19, 1983, Ser. No. 562,684
Int. Cl.⁴ B42D *15/00*
U.S. Cl. 283—1 R **1 Claim**





1. An article bearing upon the material thereof one or more identifying words composed of a plurality of letters chosen from an alphabet comprising twenty-six distinctive letters wherein:

a. said twenty-six distinctive letters have substantially the configuration shown in FIG. 3 hereof;

b. twnety-four of said twenty-six distinctive letters are in-

vertible and each of said twenty-four letters form, when inverted, either the same letter as before that letter was inverted or another letter from said alphabet so that uninverted words may be selectively composed of said twenty-four letters, and said words when inverted, can form either the same words or different words from the uninverted words; and

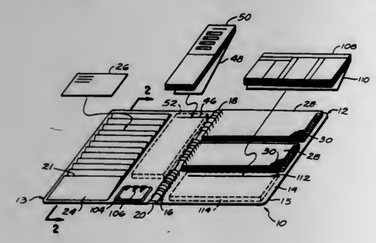
c. said twenty-six distinctive letters, when univerted, are readily distinguishable from one another upon comparison of the characteristic features of each of the twenty-six distinctive letters.

4,575,126

SPECIAL PROJECT WORKBOOK

James B. Grubbs, 6409 Greenhaven Dr., Sacramento, Calif. 95831

Filed May 18, 1983, Ser. No. 495,856
Int. Cl.⁴ B42F *21/00, 17/06, 17/00*; B42D *3/00*
U.S. Cl. 283—38 **4 Claims**



1. A project-organizing workbook for maintaining informational data regarding individuals and records of contacts therewith in readily available form, comprising:

a first and second portion hingedly connected in book-like form along a binder portion therebetween, the binder portion including a plurality of annular rings having a substantially rectangular cross-section;

a plurality of alphabetically-ordered, information cards releasably attached to the binder portion and overlying said first portion, the information cards including linear indicia adapted to record the names and other data regarding said individuals, and to serve as a register of a summary of contacts therewith, the information cards including a plurality of aperatures along a resilient edge thereof, each of said apertures having a slot which extends through the resilient edge, the apertures engaging the rings to retain the card in the workbook and the slot allowing the information cards to be withdrawn from the binder by the movement of the rings through the slot in the resilient edge portion;

a daily schedule of sequential calendar sheets attached to one of the portions adapted for the recording of prearranged communications made with certain individuals on particular days;

a daily call record or sequential sheets attached to one of the portions and adapted for the recording of the number of communications made on a particular day and the results of each communications; and

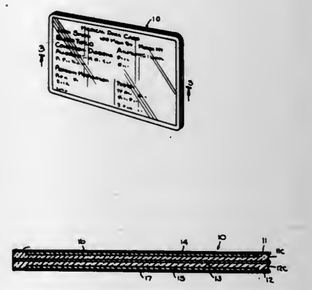
a plurality of pockets each labelled according to a specific project and disposed in the second portion, the pockets adapted for retaining identification cards regarding certain of said individuals according to a specific project, the cards adapted to identify a portion of said individuals to be contacted with regard to specific matters and to record information regarding said matters.

4,575,127

MEDICAL DATA CARD HAVING INTERNAL ILLUMINATION

Thomas J. Michel, Miami, Fla., assignor to Data Medi-Card, Inc., Lake Worth, Fla.

Filed Jan. 18, 1985, Ser. No. 692,702
Int. Cl.⁴ B42D *15/00*; B32B *7/00, 3/00*
U.S. Cl. 283—109 **4 Claims**



1. A medical data card in credit card format containing a summary of the medical history of the bearer germane to his existing medical condition, the card comprising:

A. a core panel having light transmitting properties;

B. a front slide containing medical data in a legible scale mounted on the front face of the panel; and

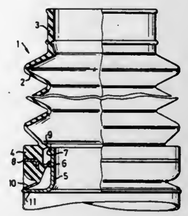
C. a rear slide containing medical data in a legible scale mounted on the rear face of the panel, said core panel transmitting light incident thereto to back illuminate the slides said core panel being constituted by interlaminated front and rear sections having a double faced mirror layer sandwiched therebetween.

4,575,128

SEAL, ESPECIALLY FOR A COUPLING BETWEEN AN AIR INTAKE ON A TILTING TRUCK CAB AND A PIPE SECURELY MOUNTED ON THE CHASSIS

Tommy Sundquist, Göteborg, Sweden, assignor to AB Volvo, Göteborg, Sweden

PCT No. PCT/SE84/00041, § 371 Date Sep. 18, 1984, § 102(e) Date Sep. 18, 1984, PCT Pub. No. WO84/03132, PCT Pub. Date Aug. 16, 1984
PCT Filed Feb. 8, 1984, Ser. No. 654,012
Claims priority, application Sweden, Feb. 9, 1983, 8300679
Int. Cl.⁴ F16L *55/00*
U.S. Cl. 285—9.2 **4 Claims**



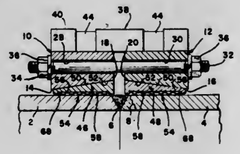
1. A device for establishing a tight communication with a first tubular element, said device comprising a hose of elastic material, which at least over a portion of its length has a wall folded in the form of a bellows, said hose having a first end for securing to said first tubular element, and in combination with said hose a second tubular element comprising an annular bead; said hose having a second end for detachably securing said hose to said second tubular element, said second end comprising a wall of greater thickness than said bellows portion, and an inwardly extending solid annular lip on said thicker wall; said second hose end and said second tubular element being so dimensioned that when said second end of said hose and said end of said second tubular element are coupled, said annular lip passes over said annular bead and occupies a position in contact with said second tubular element and inclined toward said bead such that uncoupling of said hose and said second tubular element requires substantially greater force than does coupling.

4,575,129

PIPELOCK

Engelina Porowski, Pittsburgh, Pa., assignor to O'Donnell & Associates, Inc., Pittsburgh, Pa.

Filed Jun. 15, 1984, Ser. No. 621,228
Int. Cl.⁴ F16L *21/06*
U.S. Cl. 285—15 **5 Claims**



1. An improved pipelock adapted to surround and to grip a pair of nonaxisymmetric pipe ends joined by a weldment to produce axial and circumferential compressive stresses at the weld location and thereby reduce crack growth rates comprising a first pair of rings facing each other axially, with the inner diameter of each ring at the outer face being smaller than the inner diameter of each ring at the inner face, each of said first pair of rings comprising at least two circumferential parts, means to restrain longitudinal movement of facing circumferential parts outwardly from each other, at least one second ring comprised of at least two circumferential parts connected to each other, outwardly surrounding said first pair of rings, and constraining outward radial movement of said first pair of rings, a pair of third rings, each comprised of at least two circumferential parts having outer surfaces conforming to the inner surfaces of said first pair of rings, and a pair of waffled fourth rings, each comprised of at least two circumferential parts having outer surfaces in contact with the inner surfaces of said third pair of rings and having inner surfaces facing the outer surface of a pipe adapted to fit therethrough, said pair of waffled fourth rings being capable of automatically adjusting themselves and conforming to the inner surfaces of said third pair of rings and the outer surface of said nonaxisymmetric pipe ends upon application of radial load thereon.

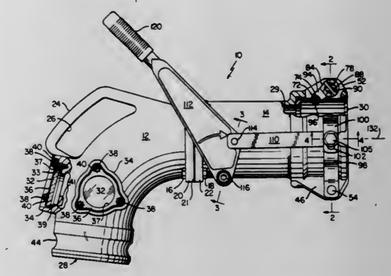
4,575,130

COUPLING APPARATUS

Eugene B. Pemberton, Fairfield, and Richard L. Fahl, Cincinnati, both of Ohio, assignors to Dover Corporation, Cincinnati, Ohio

Filed Apr. 15, 1982, Ser. No. 368,626
Int. Cl.⁴ F16L *37/20*
U.S. Cl. 285—38 **26 Claims**

1. In a coupling apparatus for selectively coupling a first component having an opening therein and a second component having a locking groove therein upon disposing said second component with its locking groove within said opening, said apparatus comprising a pair of rotatable rollers, means operatively connecting each of said rollers on said first component while enabling rotation of each roller about an associated first rotational axis, said means operatively connecting including a pair of devices each supporting an associated roller on said first component for pivoting movements about an associated second rotational axis, and means for actuating said devices in a simultaneous manner to move said rollers into and out of said groove to locked and unlocked positions respectively of said



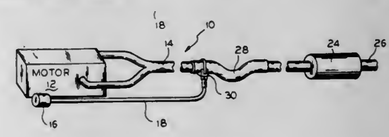
first and second components, the improvement wherein said means for actuating said devices comprises an interconnected mechanical linkage system and an actuating lever operatively connected to said linkage system, said lever being the sole means provided for actuating said devices in said simultaneous manner.

4,575,131

AIR LINE TO EXHAUST SYSTEM CONNECTOR

Cedric R. Kotowicz, Addison, Ill., assignor to CED's Inc., Addison, Ill.

Continuation-in-part of Ser. No. 414,967, Sep. 7, 1982, abandoned. This application Mar. 17, 1983, Ser. No. 476,043
Int. Cl.⁴ F16L *41/02*
U.S. Cl. 285—158 **7 Claims**



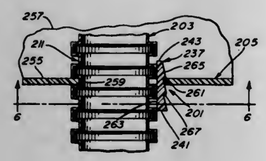
1. An air line to exhaust system connector for a vehicle exhaust system having an exhaust pipe, said connector comprising means including a pipe element with a tapered section, said tapered section having a narrow part and a wide part, said narrow part being a first end of said pipe element, said wide part terminating in a flat head, means for driving said tapered section into a pilot hole located in said exhaust pipe until said flat head comes into abutment with said exhaust pipe, said tapered section spreading said pilot hole when said tapered section is driven into said pilot hole and means for attaching an air line to said vehicle exhaust system provided by a second end of said pipe element, each of said tapered first end, flat head and second end sections being integral thereby forming said pipe element, said means for driving said tapered section into said exhaust pipe including a saddle, a U-bolt with nuts, said saddle containing two bolt openings for attachment of said U-bolt to said saddle and an aperture for fitting said pipe element into said saddle.

4,575,132

CONDUIT CONNECTOR WEDGE TYPE

William Nattel, Montreal, Canada, assignor to Commander Electrical Materials, Inc., Quebec, Canada

Filed Sep. 4, 1984, Ser. No. 647,241
Claims priority, application Canada, May 31, 1984, 455600
Int. Cl.⁴ F16L *5/00*
U.S. Cl. 285—194 **5 Claims**



4. Connector means for use in connecting a corrugated conduit to a member, the conduit being of the type having longitudinally spaced apart circular ribs on at least its outer surface, the member comprising a wall having an aperature just slightly larger than the largest diameter of the conduit so that the conduit can be freely passed through the aperature; the connector means comprising:

a locking wedge having a concave inner surface and a convex outer surface and tapering in a direction generally parallel to the axis of convexity from a narrow end to a wide end, at least one step on the outer surface of the wedge extending transverse to its axis of convexity; the wall thickness being less than the distance between any two adjacent ribs on the conduit;

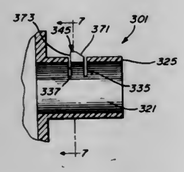
whereby when the conduit is inserted axially through the aperature in the wall and then moved transversely, the edge of the wall on one side of the aperature enters the space between two adjacent ribs to hold the conduit against withdrawal, the locking wedge being then inserted axially, narrow end first, between the conduit and the edge of the wall on the side of the aperature opposite the one side with its concave inner side adjacent the conduit and its convex outer side adjacent the edge of the wall to hold the conduit in place, the step on the convex outer surface of the wedge cooperating with the edge of the wall to hold the wedge in place relative to the wall.

4,575,133

CONDUIT CONNECTOR

William Nattel, Montreal, Canada, assignor to Commander Electrical Materials, Inc., Quebec, Canada

Filed Aug. 27, 1984, Ser. No. 644,360
Claims priority, application Canada, May 18, 1984, 454760
Int. Cl.⁴ F16L *39/00*
U.S. Cl. 285—319 **4 Claims**



1. A connecting member for use in connecting a corrugated conduit to another member, the conduit being of the type having longitudinally spaced-apart, circular ribs on its inner and outer surfaces, the connecting member having:

a cylindrical wall with circular ends, at least one of the ends forming a conduit entry end;

at least one opening in the wall;

a resilient finger in each opening and connected at one end to the wall;

said finger extending in a circumferential direction, transverse to the central, longitudinal axis of the member;

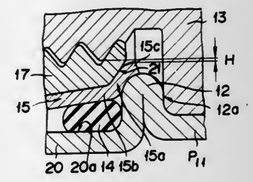
the finger having a projection at its other free end, the projection extending radially past the wall to cooperate, when the conduit is mounted on the member, with a rib on the conduit to hold the conduit on the member.

4,575,134

PIPE JOINT CONSTRUCTION

Mitsutoshi Sugano, Sano, Japan, assignor to Nihon Radiator Co., Ltd., Tokyo, Japan

Filed Jul. 11, 1984, Ser. No. 630,365
Claims priority, application Japan, Jul. 13, 1983, 58-107609[U]
Int. Cl.⁴ F16L *19/02*
U.S. Cl. 285—353 **5 Claims**



1. In a pipe joint construction for joining two pipes characterized by having a bead formed on the outer side near the end of one of said pipes, a sealing member fitted around the base of said bead on the end side of said one pipe, and a radially-expanded portion near the end of the other of said pipes for embracing said sealing member; said radially-expanded portion having a flared end; a union screw with the inner end surface thereof in engagement with said radially-expanded portion and the flared end thereof; and a union nut with the inner end surface thereof in engagement with said bead, whereby tightening the union screw and the nut against each other presses the flared end of said radially-expanded portion into contact with said bead, the improvement in which the inner circumferential edge of the leading end of said union screw is beveled so that the upper portion of the bevel first engages said flared end of said radially-expanded portion and then deforms it along the outer circumferential surface of said bead when said union screw and said nut are screw tightened.

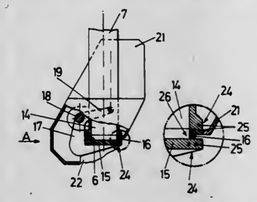
4,575,135

SAND-DISPENSING DEVICE FOR MOTOR VEHICLES

Franz Cervinka, Oberleitenweg 35, A-6370 Kitzbühel, Austria

PCT No. PCT/AT83/00017, § 371 Date Feb. 1, 1984, § 102(e) Date Feb. 1, 1984, PCT Pub. No. WO83/04397, PCT Pub. Date Dec. 22, 1983
PCT Filed Jun. 8, 1983, Ser. No. 584,254
Claims priority, application Austria, Jun. 11, 1982, 2267/82
Int. Cl.⁴ B60B *39/04*; B61C *15/10*
U.S. Cl. 291—20 **6 Claims**

1. An abrasive material dispenser for dispensing an abrasive material for the wheels of vehicles, comprising an abrasive material container having an outlet channel terminating in an outlet through which abrasive material is dispensed, a flap for engaging said outlet channel at a contact area of said channel around said opening to close said opening, a crank lever member pivotally mounted to said channel and having one arm portion connected to said flap which is movable upwardly and downwardly relative to said opening with said flap and having an opposite arm, drive means connected to said opposite arm to oscillate said crank lever member and to move said flap between a position engaged with said contact area of said channel to close the opening and a position downwardly spaced from said contact area and away from said opening to open the opening, and heating means arranged in said flap only in the



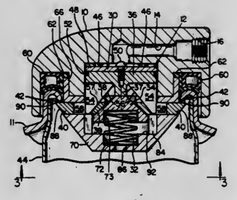
vicinity of the contact area of said channel for heating the contact area to permit movement of said flap from its position engaging the contact area to its position downwardly spaced from the contact area.

4,575,136

TANK CAP HAVING AIR ACTUATED LATCH

Russell D. Keller, 149 N. Lotus Beach Dr., Portland, Oreg. 97217

Filed Feb. 13, 1984, Ser. No. 579,269
Int. Cl.⁴ E05C *9/06*
U.S. Cl. 292—33 **22 Claims**



1. Container tank filler cap apparatus, comprising:

cap body member having a cylinder chamber therein;

piston means mounted in said cylinder chamber;

latch means mounted on said cap body member for sliding movement outward into a locked position beneath the lip of a tank filler opening, and inward into an unlocked position spaced from said lip;

first cam means coupled to said piston means for moving said latch means inward into said unlocked position;

second cam means biased toward said latch means for moving said latch means outward into said locked position; and

air inlet means connected to said cap body member for supplying air pressure into said cylinder chamber, said air pressure causing the movement of said piston means and said first cam means, said movement of said first cam means causing said first cam means to contact and urge said latch means inward into said unlocked position.

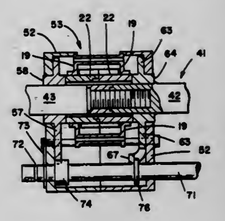
4,575,137

LATCH MECHANISM AND LOCKING ADAPTOR

Franz W. Jans, Offenbach, Fed. Rep. of Germany, assignor to Jans & Heinsdorf GmbH, Offenbach, Fed. Rep. of Germany

Filed Jul. 25, 1983, Ser. No. 516,967
Int. Cl.⁴ E05C *1/16*
U.S. Cl. 292—169.14 **8 Claims**

1. A door latch mechanism, including a housing, a latch bolt supported in said housing in translatable fashion and adapted to extend outwardly from one end of said housing, a split sleeve assembly extending through said housing, said split sleeve assembly including a pair of sleeve members having aligned openings extending therethrough, a handle assembly including a handle spindle, said spindle extending through said aligned openings of said split sleeve assembly, each of said sleeve members including a retractor cam extending radially therefrom, a retractor frame slidably disposed in said housing and joined to said bolt, cam follower means extending from said retractor frame and disposed to be engaged by either of said retractor cams to translatably withdraw said bolt into said housing, spring means for biasing said bolt to extend outwardly of said housing, said spindle of said handle assembly comprising a pair of shaft members joined end to end in rotatable fashion, each of said shaft members being received in a respective one of said sleeve members for independent actuation thereof, an adapter assembly for said door latch mechanism secured about a portion of said housing and including means to selectively lock said door latch mechanism, said adapter assembly including an adapter housing, a slot extending through said adapter housing to receive said portion of said door latch housing therethrough, said adapter assembly including a pair of holes extending therethrough and disposed in registration with said aligned openings of said split sleeve assembly of the latch housing received in said slot, said adapter assembly further including a locking cam member rotatably secured in one of said holes, one of said spindle shaft members extending through and engaging said locking cam member for rotation in common therewith, and means for releasably engaging said locking cam member to prevent rotation of said one of said spindle shaft members extending therethrough and thus prevent retraction of said bolt, thereby locking said door latch mechanism.



4,575,138

DOOR LATCHING DEVICE

Hitoshi Nakamura, and Ryoji Shimura, both of Yokohama, Japan, assignors to Ohi Seisakusho Co., Ltd., Yokohama, Japan

Filed Sep. 21, 1983, Ser. No. 534,248
Claims priority, application Japan, Sep. 22, 1982, 57-165338; Sep. 22, 1982, 57-165334; Sep. 22, 1982, 57-165335; Sep. 22, 1982, 57-165336; Sep. 22, 1982, 57-165337
Int. Cl.⁴ E05C *3/26*
U.S. Cl. 292—216 **19 Claims**

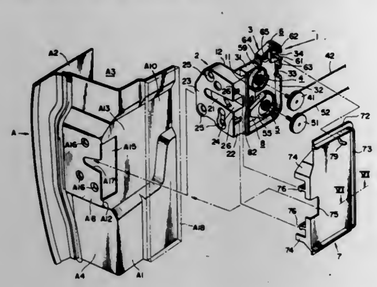
1. In an arrangement having a door, a door latching device mounted on said door to latch the same to a fixed member, an inside handle mounted on an inboard side of said door, for producing a first movement, and for releasing said latching device when handled, and a locking device mounted on said door for locking said latching device when handled,

said door latching device comprising:

a latch section including a first casing having a backside and containing therein a latch plate and first control means for causing said latch plate to assume a first nonlatched condition and a second full-latched condition;

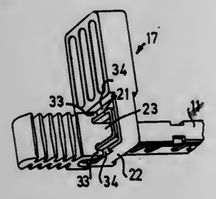
a control section including a second casing having a back side and containing therein second control means and third control means, said second control means comprising means for transmitting the movement of said inside handle to said first control means, said third control means comprising means for disabling said second control means

from transmitting the movement from said inside handle to said first control means; and



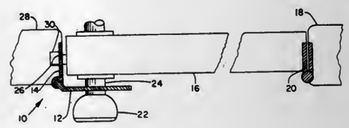
hinge means for hingedly connecting the casing of said latch section to the casing of said control section so that said latch section and said control section are openable to assume a substantially flat configuration.

4,575,139
RETAINING DEVICE
Alf H. Sundberg, Flintåsvägen 8, S-191 54 Sollentuna, Sweden
Filed May 8, 1984, Ser. No. 608,199
Claims priority, application Sweden, May 10, 1983, 8302678
Int. Cl.⁴ E05C *17/16*
U.S. Cl. 292—265 **10 Claims**



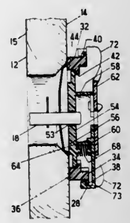
1. A device for retaining casement windows, doors or the like, comprising:
- a bar pivotally mounted on a stationary portion of the window, door or the like;
- a catch member mounted on the movable portion of the window, door or the like, and arranged to cooperate with the bar to releasably fix the stationary and the movable portions in a desired relative position;
- said bar having a longitudinal guide groove on at least one side with a number of adjoining, transverse catch notches;
- a catch heel arranged on at least one facing wall defining a recess in the catch member for receiving the catch notches of the bar;
- said bar having at its outer end a stop which limits the movement of the catch member outwards along the guide groove in the bar;
- the catch member, on at least one side wall adjacent to the recess receiving the bar, and the outer stop on the bar, including means engageable in each other, when the catch member is in its outer end position on the bar, for locking and resisting separation of the defining walls of the recess in the catch member, when a compressive force is applied between the outer stop of the bar and the catch member.

4,575,140
DOOR LOCK METHOD AND APPARATUS
Kenneth Dargis, 6811 Clee La., Spring, Tex. 77379
Filed Feb. 28, 1983, Ser. No. 470,004
Int. Cl.⁴ E05C *19/18*
U.S. Cl. 292—288 **20 Claims**



1. A door fastening device including a hinged door having an interior doorknob, an interior door handle neck portion, latch means, and a doorjamb having an opening for receiving said latch means, comprising:
- a flat plate portion fixedly mounted on said doorjamb and having a flat plate aperture generally positioned over said doorjamb opening;
- a strike plate securing portion fixedly secured to said flat plate portion independent of said hinged door and having an elongate bore arranged with a substantially vertical axis positioned generally adjacent an interior corner of said doorjamb;
- a main plate portion positioned over said door handle neck portion and having a slot for receiving said door handle neck portion;
- an edge portion of said main plate portion forming said slot being structurally arranged for engagement with said door handle neck portion;
- said vertical axis of said elongate bore spaced toward said flat plate aperture with respect to a plane defined by said main plate portion; and
- an elongate pin member spaced from said plane defined by said main plate portion and fixedly secured to an upper portion of said main plate portion and structurally arranged for positioning within said elongate bore for limiting movement of said main plate portion toward said door handle neck portion.

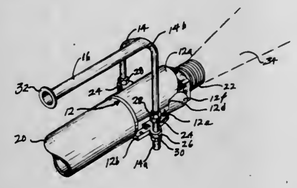
4,575,141
SAFETY DEAD-BOLT LOCK
Michael P. Burns, 2202 Commonwealth Ave., Madison, Wis. 53705
Filed Nov. 7, 1983, Ser. No. 549,301
Int. Cl.⁴ E05C *13/00*
U.S. Cl. 292—336.3 **16 Claims**



1. A safety dead-bolt lock adapted to be mounted on a door comprising:
- (a) a dead-bolt including a bolt adapted to extend to move longitudinally within the door and a rotatable bolt activator operatively connected to the bolt to extend and withdraw the bolt upon selective rotation of the bolt activator; and

- (b) a safety knob adapted to be mounted to the door having:
  - (1) a stationary member adapted to be affixed to the door;
  - (2) a rotatable member mounted for rotation to the stationary member and exposed to allow it to be grasped and rotated by the hand of the user, the rotatable member engaged with the bolt activator to rotate it as the rotatable member rotates;
  - (3) interlocking means, having engaged and disengaged positions, for preventing rotation of the rotatable member relative to the stationary member when in its engaged position and permitting rotation of the rotatable member when in its disengaged position;
  - (4) a plurality of depressable tabs mounted to the rotatable member for movement inwardly toward the door when pressed by the fingers of a user and biased to return outwardly toward the user when the user's fingers release the tabs, the tabs being operatively connected to the interlocking means such that depression of the tabs by the user moves the interlocking means from its engaged position to its disengaged position thereby allowing the user to turn the rotatable member, and wherein release of the tabs by the fingers of a user such that the tabs return to their undepressed position causes the interlocking means to move to its engaged position preventing rotation of the rotatable member with respect to the stationary member.

4,575,142
SAFETY GRIP HANDLE FOR A HOSE
Fayne P. Parker, Memphis, Tenn., assignor to Witco Chemical Corporation, New York, N.Y.
Filed Sep. 13, 1984, Ser. No. 650,119
Int. Cl.⁴ B65G *7/12*
U.S. Cl. 294—15 **4 Claims**



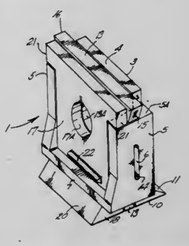
1. A safety grip handle for use with a hose having a nozzle for directing substances such as steam, hot water, chemicals, and the like, conveyed by the hose at an object or area to be contacted by the substance, comprising: hose engaging means including interlocking clamp means adapted to encircle and firmly engage the nozzle end of a hose, said clamp means having inwardly extending, arcuate jaws at one end thereof for engaging an end of the hose nozzle, said jaws acting to prevent both longitudinal and transverse movement of the hose nozzle relative to the longitudinal axis of the clamp means; U-shaped handle support means extending upwardly from said clamp means rearwardly of said arcuate jaws, said handle support means having leg portions releasably secured to the clamp means on opposite sides thereof and being adapted to maintain said clamp means in interlocked relation on the nozzle end of a hose; and a handle carried on the bight of said U-shaped handle support means, said handle extending rearwardly from the U-shaped handle support means in a direction away from the nozzle of the hose, and being supported by the U-shaped handle support means a sufficient distance from the nozzle end of the hose to prevent the hand of an operator from coming into contact with substances such as steam, hot water, or chemicals passing from the nozzle of the hose.

4,575,143
PICK-UP TOOL
Irving J. Nast, 217 N. Kenwood, Glendale, Calif. 91206
Filed Oct. 4, 1984, Ser. No. 657,598
Int. Cl.⁴ B25J *1/00*
U.S. Cl. 294—65.5 **11 Claims**



1. An object manipulating and pick-up tool comprising:
- (a) an elongated assembly having a longitudinal passageway therethrough and first and second end portions, at least a portion of said second end portion being stationary and magnetic;
- (b) finger engaging means connected proximate said first end portion of said sleeve assembly for engagement by the fingers of the user;
- (c) reciprocating means carried within said assembly for reciprocating movement within said passageway between first and second positions, said reciprocating means having a first and a second end, said first end extending from said sleeve assembly a limited distance;
- (d) palm engaging means connected proximate said first end of said reciprocating means for engagement by the palm of the user; and
- (e) prehensile means connected at said second end of said reciprocating means for gripping objects when said reciprocating means is moved between said first and second positions, said prehensile means being at least partially encapsulated within said stationary magnetic portion of said assembly when said reciprocating means is in said first position and being movable relative to said stationary magnetic portion.

4,575,144
DEVICE FOR ATTACHING A LIFTING MEANS TO A LOAD
Edwin L. Silva, Rte. 2, Box 46A, Yoncalla, Oreg. 97499, and Fred D. Silva, 16142 Via Descanso, San Lorenzo, Calif. 94580
Filed Mar. 26, 1984, Ser. No. 593,510
Int. Cl.⁴ B66C *1/10*
U.S. Cl. 294—97 **9 Claims**



1. A lifting device for removable attachment to a body to be lifted having device engaged surfaces thereon, said device comprising,
- a main member having an open area defined by side walls and a rear wall the latter being integral with said side walls and having a depending portion located below the side walls and having an inclined surface thereon,
- a positionable member normally located between said side walls and having a downwardly and outwardly inclined surface for body engagement,
- a locking member located between said side walls and positionable relative said main member and operable to pre-

vent relative movement between the main and positionable members during a lifting operation,

stop means constraining the locking member for movement in an upright plane, and

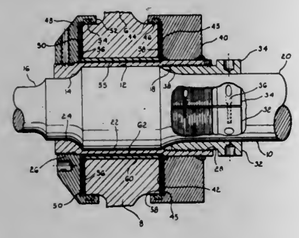
retainer means acting on said positionable member to limit movement thereof in one direction while permitting rotational movement of same about a transverse axis of the positionable member during installation and removal of said positionable member inclined surface relative to a cooperating surface on a body to be lifted.

4,575,145

DIFFERENTIAL AXLE FOR RAILROAD CAR

Norman E. Wolfram, 216 Millers Falls Rd., Turners Falls, Mass. 01376; Frederick T. Skalski, Upper Road, West Deerfield, Mass. 01342, and William E. Heronemus, 730 West St., Amherst, Mass. 01002

Filed Dec. 13, 1984, Ser. No. 681,285
Int. Cl.[4] B60B *37/10;* **F16C** *17/10, 33/20*
U.S. Cl. 295—37 **6 Claims**



1. Differential wheel mounting for railroad cars having a standard railroad axle with a raised wheel seat portion adjacent at least one end, a first wheel fixedly mounted adjacent the other end of such axle and a second wheel having a hub rotatably mounted relative to said axle on the raised wheel seat of the axle, the second wheel mounting comprising a steel cylindrical sleeve fitted about said raised wheel seat and having an axial length substantially greater than the length of the raised wheel seat to provide extensions inboard and outboard of the second wheel hub, means for retaining said sleeve in fixed axial relation on said raised wheel seat, wheel retaining flanges affixed to the inboard and outboard extensions of said sleeve to provide thrust bearing surfaces for the hub of the second wheel, the opposed annular surfaces of the wheel hub, the retaining flanges and the inner cylindrical bore of said hub and the outer bearing surface of said sleeve being oppositely surfaced with a relatively hard corrosion and wearing resistant metal and with a non-metallic, long wearing surface of a material having a low coefficient of friction.

4,575,146

PROTECTIVE TRUCK LINER RETAINER

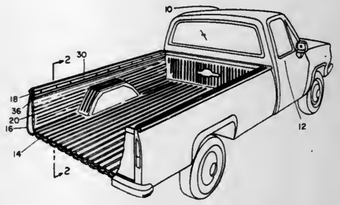
Dennis A. Markos, Lincolnwood, Ill., assignor to Penda Corporation, Portage, Wis.

Filed Sep. 28, 1984, Ser. No. 655,872
Int. Cl.[4] B62D *33/02*
U.S. Cl. 296—39 R **16 Claims**

1. A protective retainer for fastening and retaining the side wall of a protective liner in a pickup truck cargo bed having side rails with side surfaces facing the interior of the cargo bed area, comprising:

(a) a longitudinally extending fastening plate adapted to substantially cover a side surface of a cargo bed side rail and be fastened thereto in fixed supporting relation;

(b) a retainer section depending generally downwardly from the fastening plate, the retainer section including an inner wall extending downwardly from the fastening plate and an outer wall extending outwardly from the area of intersection of the fastening plate and the inner wall and then extending downwardly and nearly parallel to the inner wall, the inner and outer walls of the retainer section being adapted to closely engage and retain therebetween the upper portion of a cargo bed liner side wall in substantially longitudinal alignment, the inner and outer walls permitting vertical and longitudinal movement of the liner side wall within the retainer section but substantially preventing significant transverse displacement of the upper portion of the liner side wall.

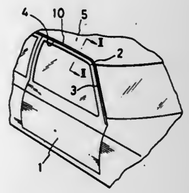


4,575,147

VEHICLE DOOR

Yoshio Ui, Niiza, and Yukio Kurosu, Urawa, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 30, 1984, Ser. No. 605,501
Claims priority, application Japan, May 2, 1983, 58-65034[U]
Int. Cl.[4] B60J *7/18*
U.S. Cl. 296—154 **12 Claims**



1. A door of an automotive vehicle, comprising:

an elastic molding fit on an extension of an upper portion of a reveal of a door which is extended toward a side edge of a roof of the vehicle, said elastic molding including an end face which protrudes toward the roof beyond an edge of said extension and an upper surface, an upper portion of which is positioned above the side edge of the roof, said end face of the molding which protrudes toward the roof being provided with a lug in an upper portion thereof.

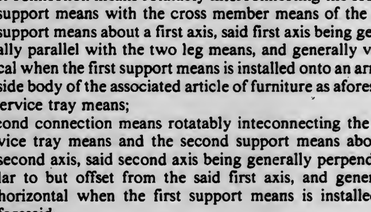
4,575,148

VAN TOP

Leonard J. Bieber, 54578 Suburban Dr., Elkhart, Ind. 46516

Filed Feb. 4, 1985, Ser. No. 698,032
Int. Cl.[4] B62D *25/06*
U.S. Cl. 296—210 **3 Claims**

1. In a van including an exterior side wall and an integral roof, a top covering said roof section, the improvement wherein said top includes a roof part and a lower peripheral edge and an internal inturned mounting flange extending upwardly from adjacent said top lower edge, said top mounting flange overlying said van roof section, and means securing said top mounting flange to said van roof section below said top roof part.



4,575,149

ATTACHABLE HOUSEHOLD SERVICE TRAY DEVICE FOR FURNITURE

Robert J. Forestal, 2714 Coldstream Ln., Indianapolis, Ind. 46220, and John R. Meek, P.O. Box 622, R.R. #1, Crawfordsville, Ind. 47933

Filed Feb. 21, 1984, Ser. No. 581,890
Int. Cl.[4] A47B *83/02;* **A47C** *7/68*
U.S. Cl. 297—194 **18 Claims**

1. A furniture auxiliary device, comprising, in combination:

first support means having a pair of leg means free at one end but at the other end interconnected by a cross member means so that the leg means are held generally parallel and in spaced relationship, providing that the first support means of the device may be placed onto an arm or side body of an associated article of furniture with the free ends-portions of the leg means extending vertically and supportingly straddling the sides thereof, and the cross member means is generally horizontal and supported by the said furniture arm or side body;

a second support means;

first connection means rotatably interconnecting the second support means with the cross member means of the first support means about a first axis, said first axis being generally parallel with the two leg means, and generally vertical when the first support means is installed onto an arm or side body of the associated article of furniture as aforesaid;

a service tray means;

second connection means rotatably inteconnecting the service tray means and the second support means about a second axis, said second axis being generally perpendicular to but offset from the said first axis, and generally horizontal when the first support means is installed as foresaid;

the location of the first axis with respect to the cross member means, and the location of the second axis with respect to the service tray means, and the location of both the first axis and the second axis with respect to the second support member, being such as to provide that the service tray means may optionally be positioned with respect to the first support means to provide to operative characteristics of optional choice, including (a) when the service tray means and the second support means are rotated, so that the service tray means is positioned over the furniture seat inwardly adjacent the said furniture article's arm or side body, the service tray means is generally horizontal, and supported by supporting engagement of the service tray means with the portion of the cross member means which is relatively inwardly of the said arm or side body of the furniture article, providing a service-operational position for an occupant of the said furniture seat, and (b) when the service tray means and the second support means are rotated so that the service tray means is positioned outwardly of said arm or side body of the article of furniture, 180° from said service-operational position over the furniture seat inwardly adjacent the said article of furniture's arm or side body, the said service tray means is out of supporting engagement with the said cross member means, and being then unsupported except at the said second axis, the service tray means hangs generally vertical in a retracted and generally out-of-the-way position.

4,575,150

SUSPENSION ARRANGEMENT FOR A TILTING CHAIR

David W. Smith, Calgary, Canada, assignor to SimoDow Manufacturing Ltd., Calgary, Canada

Filed Apr. 13, 1984, Ser. No. 599,789
Int. Cl.[4] A47C *3/00*
U.S. Cl. 297—300 **19 Claims**

1. A suspension arrangement for a tilting chair of the type wherein a back and seat of the chair tilt rearwardly under pressure from an occupant, the suspension arrangement comprising a back support member, a seat support member, a base frame member, first spring means interconnecting said back support member and said base frame member, second spring means interconnecting said seat support member and said base frame member and third spring means interconnecting said seat support member and said back support member, said first, second and third spring means providing the sole structural interconnection between said members and being arranged such that each provides pivotal movement about an axis of movement without the use of hinges whereby the back support member tilts through an angle greater than and proportional to an angle through which the seat support member is tilted.

4,575,151

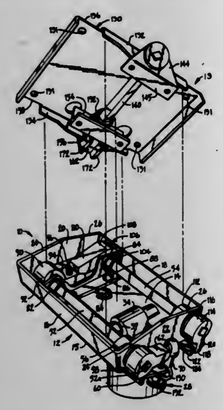
CHAIR TILTING MECHANISM

Andrew H. Edstrom, San Jose, Calif., assignor to Maridyne, Inc., Palo Alto, Calif.

Filed Sep. 13, 1983, Ser. No. 532,234
Int. Cl.[4] A47C *3/00*
U.S. Cl. 297—304 **38 Claims**

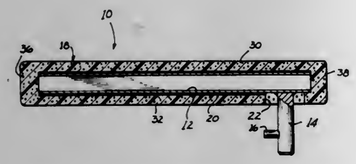
1. A tilting mechanism for a chair having a base comprising: a support; first means on the support for pivotally coupling the support to the base for pivotal movement about a horizontal axis; second means on the support for coupling the support to

the chair; and torsion bar means extending transversely of said axis for providing a spring bias force exerted on the support



when the support is pivoted in either of a pair of opposed directions relative to the base and when the support is coupled to the base.

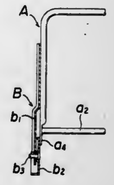
4,575,152
PADDED MEMBER AND METHOD OF MAKING THE SAME
Thomas M. McLaughin, Sr., 515 N. Clay St., Mishawaka, Ind. 46544
Filed Feb. 17, 1984, Ser. No. 581,237
Int. Cl.[4] A47C 7/54
U.S. Cl. 297—411 **2 Claims**



1. A cushion for a member having a projecting part adapted to be secured to a support, said cushion comprising a foam member having an interior cavity, a substantially rigid tubular member positioned within said cavity and extending for a portion of the length of said cavity whereby said tubular member terminates spaced from an end edge of said cavity, said foam member having an aperture extending into said cavity adjacent said foam member one end edge to accommodate flexing of the apertured portion of said foam member for insertion of a support into said cushion and reception of said projecting part through said aperture when said cushion is positioned to enclose said support.

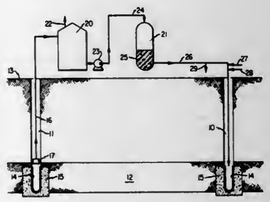
4,575,153
BACK FRAME IN A SEAT BACK FOR A VEHICLE SEAT
Akira Aoki, Akishima, and Hideo Shimbori, Tokyo, both of Japan, assignors to Tachikawa Spring Co. Ltd., Japan
Filed May 2, 1984, Ser. No. 606,415
Int. Cl.[4] A47C 7/02
U.S. Cl. 297—452 **3 Claims**

1. A back frame for a vehicle seat, comprising:
a generally inverted U-shaped back frame body having a pair of spaced end portions, at least one of said end portions including a reinforcing member, said frame body also including a transverse cross member rigidly interconnected between said reinforcing member and the other of said end portions;
at least one lower bracket adapted to being coupled to a cushion frame body;
an upper bracket rigidly fixed to said one end portion and extending parallel to said reinforcing member, said upper bracket and said reinforcing member together establishing a space therebetween; wherein
a portion of said lower bracket extends into said space so as to be sandwiched between said upper bracket and said reinforcing member so that said reinforcing member is in



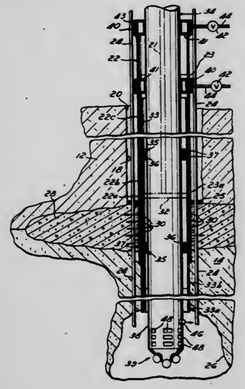
juxtaposed relationship to an inner surface of said lower bracket portion; and
reclining adjustment means for pivotally coupling at least said upper bracket to said lower bracket to permit relative pivotal movements thereof, wherein
said cross member and said reinforcing member together provide the means for transferring, to said lower bracket portion, at least a part of a load applied to said back frame body by virtue of said reinforcing member being juxtaposed with said lower bracket portion and by virtue of said rigid interconnection of said cross member between said reinforcing member and said other end portion of said back frame body.

4,575,154
IN SITU LEACH METHOD
Wallace M. Mays, 4730 Sea Island, Corpus Christi, Tex. 78413
Filed Dec. 19, 1983, Ser. No. 562,932
Int. Cl.[4] E21B 43/28, 43/40
U.S. Cl. 299—4 **9 Claims**



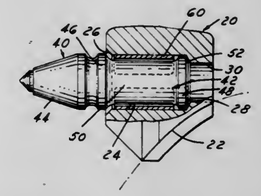
1. A method for the in situ leaching of uranium and/or related valves from a subterranean deposit, said method comprising:
drilling at least one injection well and at least one production well into said deposit at spaced intervals from each other;
completing said at least one production well so that said production well has a gravel pack therein lying adjacent said deposit;
injecting a leach solution into said deposit through said injection well and flowing said leach solution through said deposit to dissolve uranium and/or related valves therein;
filtering said leach solution and said uranium and/or related valves dissolved therein through said gravel pack as said leach solution and dissolve uranium and/or related valves flows into said production well to remove substantially all of any particular material and/or sediment entrained in said leach solution;
flowing said leach solution and dissolved uranium and/or related valves from said production well and downward through a bed of an ion exchange resin without additional filtering of particulate material from said leach solution;
absorbing said uranium and/or related valves from said leach solution on said bed of ion exchange resin as said leach solution flows downward therethrough;
filtering substantially all of any remaining particulate material and/or sediment from said leach solution into said bed of ion exchange resin as said leach solution flows downward therethrough; and
adding leach chemicals to said leach solution after said leach solution has flowed through said bed of ion exchange resin without any further filtering of particulate material and/or sediment from said leach solution to thereby makeup fresh leach solution for recycle in the leaching operation.

4,575,155
PRESSURE DIFFERENTIAL MINING TOOL
Everett L. Hodges, 49 Royal St. George, Newport Beach, Calif. 92660
Filed Mar. 12, 1984, Ser. No. 588,211
Int. Cl.[4] E21C 37/06
U.S. Cl. 299—17 **6 Claims**



1. A borehole mining system for hydraulically mining an unconsolidated mineral deposit through a borehole into a cavity subjacent an overburden, comprising:
a casing for positioning in the borehole;
a drill string for extending through the casing between the ground surface and the cavity;
sealing means connected to the drill string between the drill string and the casing for retaining fluid pressure within the cavity while the drill string rotates within the borehole;
means for injecting a pressurized fluid into the cavity to provide a force for supporting the overburden above the cavity; and
means for retaining fluid pressure within the cavity during vertical movement of the drill string within the borehole, wherein the retaining means comprises an annular balloon blowout protector positioned around the drill string and affixed to the casing, the annular balloon blowout protector and the sealing means being configured such that the annular balloon blowout protector may enclose sealing means during movement of the sealing means into or out of the borehole without substantial fluid pressure loss in the borehole and cavity.
5. A method for hydraulically mining an unconsolidated mineral deposit through a borehole into a cavity subjacent an overburden, comprising the steps of:
positioning a casing in the borehole;
inserting a conduit into the cavity through the borehole;
sealing the conduit and casing in the borehole;
fitting a drill string with at least one seal to retain fluid pressure in the cavity while the drill string rotates within the borehole;
inserting the drill string with a hydraulic mining tool mounted thereon in the casing so that the hydraulic mining tool extends into the cavity while the seal retains fluid pressure in the cavity;
injecting a pressured fluid into the cavity through the conduit to support the overburden; and
forming a blowout seal on the casing around the drill string to permit vertical movement of the drill string within the borehole for retaining fluid pressure inside the cavity while permitting adjustments in the length of the drill string.

4,575,156
MINING BLOCK AND BIT
David L. Hunter, Versailles, Ky., and Leroy E. Den Besten, Valatie, N.Y., assignors to Fansteel Inc., North Chicago, Ill., by said David L. Hunter
Filed Mar. 13, 1984, Ser. No. 589,153
Int. Cl.[4] E21C 35/18
U.S. Cl. 299—92 **1 Claim**



1. In a mining tool and mounting block combination in which a mining tool is supported and retained for rotation in a bore of the mounting block, that improvement which comprises:
(a) a support block having an open-ended, two-step bore with an enlarged portion and a reduced portion with a wear shoulder at the bottom end of the enlarged portion of the bore ensmalling the bore to the reduced portion and a mouth at the open outer end of said bore,
(b) a mining tool having an extended working portion to extend outside said bore and a mouting shank having an outer end adjacent said working portion and an inner end opposite said working portion to extend into and be retained in said bore, a first annular shoulder land formed between said working portion and said mounting shank at the outer end of said shank having a diameter larger than said bore and a second shoulder land formed adjacent the inner end of said shank, said second shoulder land having a diameter to enter said bore, and said shank having an ensmalled portion of reduced diameter between said first and second shoulder lands, said lands having axially facing surfaces at the ends of said ensmalled portion,
(c) a retainer sleeve on the ensmalled portion of said shank extending between and retained axially by the facing surfaces of said first and second shoulder lands to provide a retainer for said shank in said bore, said retainer sleeve serving also as a wear sleeve interposed radially between said ensmalled portion of said shank and the wall of said

bore, and engaging the wall of said bore while spaced from the ensmalled portion of said shank,

(d) said wear shoulder in said bore being positioned axially relative to the mouth of said bore, and said shoulder lands on said shank being spaced axially, wherein one side of said second shoulder land at the inner end of said shank and bore engages said wear shoulder upon insertion of said shank into said bore and said first shoulder is spaced outwardly of the mouth of said bore.

4,575,157

PNEUMATICALLY CONTROLLED RELAY VALVE ARRANGEMENTS

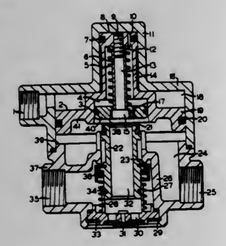
Erich Reinecke, Burgdorf, Fed. Rep. of Germany, assignor to WABCO Westinghouse Fahrzeugbremsen GmbH, Hanover, Fed. Rep. of Germany

Filed Jun. 11, 1984, Ser. No. 619,104

Claims priority, application Fed. Rep. of Germany, Jun. 15, 1983, 3321566

Int. Cl.⁴ B60T *15/02*

U.S. Cl. 303—40 **13 Claims**



1. A relay valve comprising, a housing having a control pressure inlet, a working pressure inlet, and a working pressure outlet, a control piston slidably disposed in said housing for establishing a control pressure chamber and a working pressure chamber, a valve mechanism disposed in said housing, said valve mechanism including an inlet and an outlet valve, said inlet valve including a valve seat formed on a central bore wall in said housing, said inlet valve carried by a biased member reciprocally disposed in said central bore, said outlet valve including a valve seat carried by said biased member, said outlet valve including a piston element which is reciprocally movable in said control piston for initially closing said outlet valve and for subsequently opening said inlet valve when control pressure is supplied to said control pressure inlet so that said working pressure chamber is pressurized from said working pressure inlet to said working pressure outlet, said piston element responsive to said working pressure to allow said biased member to close said inlet valve to assume a lap position, and said working pressure causing said piston element to be movable relative to said control piston to open said outlet valve.

4,575,158

BRAKE CONTROL VALVE DEVICE FOR AN AIR PRESSURE BRAKE SYSTEM OF A RAILWAY VEHICLE

Wolfgang Grünert, and Johann Huber, both of Munich, Fed. Rep. of Germany, assignors to Knorr-Bremse GmbH, Munich, Fed. Rep. of Germany

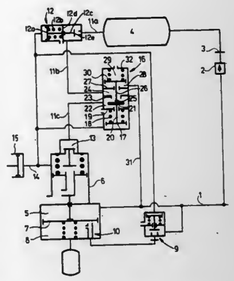
Filed Aug. 2, 1984, Ser. No. 636,979

Claims priority, application Fed. Rep. of Germany, Aug. 2, 1983, 3327888

Int. Cl.⁴ B60T *15/34*

U.S. Cl. 303—57 **6 Claims**

1. In a brake control valve device for an air pressure brake system of a railway vehicle having a brake line and a brake cylinder, a maximum pressure control device having a first means for limiting the pressure in a brake cylinder to that required for a service brake application and a second means for limiting the pressure to that required for an emergency brake application, said maximum pressure control device comprising a control piston having one side thereof acted upon by the brake line pressure and a second side acted upon by a spring, a



piston actuated valve device means responsive to a service brake pressure in the brake cylinder for limiting the service brake pressure, and means for mechanically connecting said control piston and said valve device when said control piston is actuated such that one of said first and second limiting means is cut off.

4,575,159

RAIL VEHICLE BRAKE SYSTEM

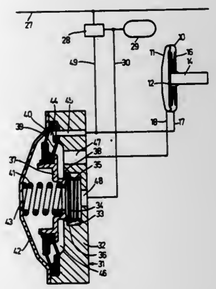
Fred S. Emilsson, Trelleborg, Sweden, assignor to SAB Nife AB, Landskrona, Sweden

Filed Jun. 19, 1984, Ser. No. 622,175

Claims priority, application Sweden, Jun. 22, 1983, 8303579

Int. Cl.⁴ B60T *13/38*

U.S. Cl. 303—71 **7 Claims**



1. A rail vehicle service brake system, comprising in combination, an air brake cylinder with a piston which is spring-biased for brake application on one side thereof, and a service brake control system including control means for selectively supplying variably controlled pressurized air from a service braking line in response to service braking control signals to spaces in said cylinder on both sides of the piston, said means being commonly connected to said two spaces for selectively controlling the supply and discharge of pressurized air to and from, respectively, said brake cylinder spaces by the variably controlled pressure in said service braking line, and service brake control means to accomplish a controllable pressure differential of variable pressure magnitudes responsive to normal service braking signals between said spaces for braking under the influence of the spring bias as modified by said controllable pressure differential.

4,575,160

VEHICLE WHEEL CONTROLLED ANTI-BRAKE LOCK BRAKING ARRANGEMENT

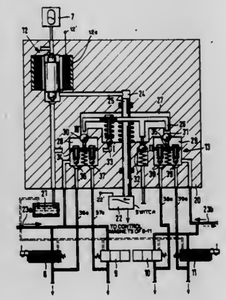
Heinz Leiber, Oberriexingen, and Wolf-Dieter Jonner, Beilstein, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 14, 1984, Ser. No. 620,466

Claims priority, application Fed. Rep. of Germany, Jun. 14, 1983, 3321376; Oct. 29, 1983, 3339336

Int. Cl.⁴ B60T *8/10*

U.S. Cl. 303—110 **20 Claims**



1. Vehicle wheel controlled anti-brake lock braking arrangement having

an automatic braking system evaluation unit (ABS) coupled to receive wheel operation signals (W);

a source (4, 7) of pressurized brake fluid;

at least one brake fluid circuit having valve means (8–11; 43–45) controllable to transmit pressure from said source to a braking means at a first rate

and said arrangement comprising, in accordance with the invention,

means for selectively controlling the rate of pressure rise affecting at least one wheel or an axle of the vehicle including

a shunt valve (36–39; 51, 52) which is normally open, and hydraulically connected in parallel with at least one of the brake fluid circuit valve means (8–11; 43–45) to apply pressurized brake fluid to said braking means at a second rate higher than said first rate;

a feed valve (12, 32; 48) coupled to the source (4, 7) of pressurized brake fluid and the pressure inlet of the at least one brake fluid circuit valve means; and

a single electromagnetic means (12*a*, 55) connected to and controlled by the automatic braking system evaluation unit (ABS) for controlling, conjointly, operation of the feed valve (12, 32; 48) and of the shunt valve (36–39; 51, 52).

4,575,161

ANTI-SPIN DEVICE

Teddy L. Vanzant, 3060 Kips Korner, Norco, Calif. 91760, and Karol W. Vanzant, 1518 N. Freeman, Santa Ana, Calif. 92704

Filed Aug. 10, 1984, Ser. No. 639,626

Int. Cl.⁴ B60T *8/06*

U.S. Cl. 303—110 **22 Claims**

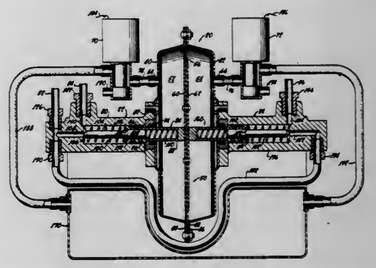
1. In a vehicle having a pair of power wheels driven by differential gearing, a wheel brake cylinder for braking each wheel, and a master cylinder for applying pressure to said brake cylinders, an improved anti-spin system comprising

first and second spin controls connected between said master cylinder and respective ones of said brake cylinders, each said spin control comprising,

an anti-spin cylinder having an input port at one end thereof connected to said master cylinder and an output port connected to said wheel brake cylinder,

anti-spin piston means mounted in said anti-spin cylinder for motion between a cylinder pressurizing position and an unpressurized position,

valve closure means responsive to motion of said piston means toward said cylinder pressurizing position for closing said input port, said valve closure means comprising a valve operator shiftably carried by said piston means for motion toward and away from said input



port, spring means on said piston means for urging said valve operator away from said piston means and toward said input port, said valve operator having an end remote from said piston means adapted to seat upon and close said input port as said piston means moves toward said pressurizing position,

sensing means for measuring rotational speed of said wheels, and

means responsive to said sensing means for driving one of said piston means toward its cylinder pressurizing position.

4,575,162

SEALED BALL AND SOCKET JOINTS CAPABLE OF DISASSEMBLY

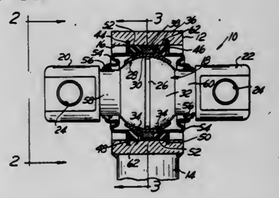
Joseph E. Smith, Birmingham, Mich., assignor to O & S Manufacturing Co., Whitmore Lake, Mich.

Division of Ser. No. 332,110, Dec. 18, 1981, Pat. No. 4,483,569, which is a continuation-in-part of Ser. No. 286,470, Jul. 24, 1981, Pat. No. 4,386,869. This application Feb. 27, 1984, Ser. No. 583,965

The portion of the term of this patent subsequent to Jun. 7, 2000, has been disclaimed.

Int. Cl.⁴ F16C *32/00*

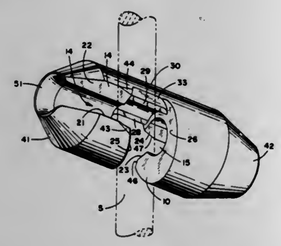
U.S. Cl. 308—2 R **3 Claims**



1. In a sealed bearing comprising an inner member having a peripheral surface of regular predetermined contour, a tubular housing, a solid ring disposed in said housing, a bearing shell having a bearing surface in sliding engagement with the peripheral surface of said inner member, said solid ring having a peripheral surface generally conforming to the inner surface of said housing and fitting in said housing, a pair of resiliently deformable rings each made of elastomeric material and each disposed on one side of said solid ring, means in said housing

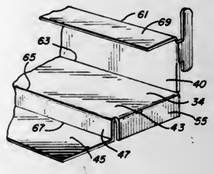
holding said deformable rings under compression such as to firmly engage said deformable rings with a portion of said solid ring towards the peripheral surface of said inner member, an elastomeric bellows seal at one end of said housing and having a flange at an end held by one of said means in said housing for holding one of said deformable rings under compression, said bellows seal having a garter flange at an other end in firm elastic engagement with a portion of the peripheral surface of said inner member, and sealing means at the other end of said housing sealing the interior of said housing and said bearing surfaces from the ambient, wherein said inner member has a portion projecting from said housing at an end of said housing, the improvement comprising a groove in the inner surface of said housing, one of said holding means being in the form of a springingly expandable removable retaining ring disposed in said groove, said bellows seal having said flange at an end formed integral with a corresponding one of said resiliently deformable rings and said garter flange at said outer end in firm elastic engagement with the peripheral surface of said portion of said inner member projecting from said housing, whereby said bellows seal defines a first sealing means at one end of said housing sealing the interior of said housing and said bearing surfaces from the ambient and held by said one of said holding means, an outwardly domed end cap closing the other end of said housing, said outwardly domed end cap having an outwardly extending edge flange engaged with the other of said resiliently deformable rings being held by the other of said holding means.

4,575,163
ROD GUIDE
Donald E. Sable, 4301 Edmondson, Dallas, Tex. 75205-2601
Filed Dec. 31, 1984, Ser. No. 687,830
Int. Cl.⁴ F16C *29/02*
U.S. Cl. 308—4 A **2 Claims**



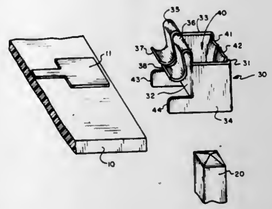
1. A guide for a sucker rod comprising: a resilient body having a central longitudinal bore and a mounting slot therethrough opening to said bore, said slot having two longitudinal sections opening to the exterior of said body in mutually opposite radial directions, said slot having a transverse section joining said longitudinal sections wherein said body at one end of said slot transverse section having cam surfaces on opposite sides of the inner end of said top longitudinal slot section extending longitudinally upwardly and outwardly from a first top surface of the body defining the top of said slot transverse section and convergently inwardly from said cylindrical surface, said body at the other end of said slot transverse section has cam surfaces on opposite sides of the inner end of said bottom longitudinal slot section extending longitudinally downwardly and outwardly from a second surface of the body defining the bottom of said slot transverse section and convergently inwardly from said cylindrical surface, whereby said cam surfaces guide movement of said guide body onto a rod during rotational movement of the body about an axis perpendicular to the longitudinal axis of the rod to position said guide body on the rod with the rod extending through said bore.

4,575,164
HEAVY DUTY UNIVERSAL ADJUSTABLE SLIDER FOR FOOD SERVICE CART
Curtis C. Pinnow, and Robert L. Logemann, both of Mundelein, Ill., assignors to Carter-Hoffman Corporation, Mundelein, Ill.
Filed May 18, 1984, Ser. No. 612,061
Int. Cl.⁴ A47F *3/14*
U.S. Cl. 312—350 **7 Claims**



1. A one-piece, universal type sheet metal slider for a food service cart of the type having a cabinet with inside, facing walls to which a plurality of the sliders are mountable for slidably accepting food trays, said slider comprising:
a first, flat shelf for supporting an end of a tray having a first width, said first shelf having opposite ends;
a second shelf parallel to the first shelf for supporting an end of a tray having a second width less than said first width;
a panel portion connecting between said first and second shelves and substantially at right angles thereto;
a gusset integral with and folded perpendicularly to the plane of the first shelf in depending fashion at one end of said first shelf and having oppositely facing first and second edges,
said first gusset edge being situated adjacent said panel and said second gusset edge being situated adjacent one of said facing walls so that said gusset simultaneously reinforces said one end of the first shelf and limits movement of said panel toward said one of the facing walls; and
means for detachably mounting the slider to said one of the facing walls.

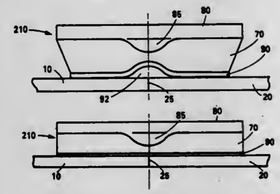
4,575,165
CIRCUIT TO POST INTERCONNECTION DEVICE
William E. Stepan; Clarendon Hills, Ill., assignor to GTE Communication Systems Corporation, Phoenix, Ariz.
Filed Oct. 12, 1984, Ser. No. 660,348
Int. Cl.⁴ H01R *9/09*
U.S. Cl. 339—17 M **3 Claims**



1. A circuit interconnection device for mechanically retaining and electrically connecting a planer substrate to a printed wiring card, said planer substrate including at least one termination pad located adjacent one edge of said substrate, and said printed wiring card including at least one interconnection post extending perpendicularly from a top surface of said printed wiring card, said circuit interconnection device comprising:
a generally rectangular device body having a pair of planer sidewalls and a planer front and rear wall defining a hollow interconnection post receiving area therebetween,

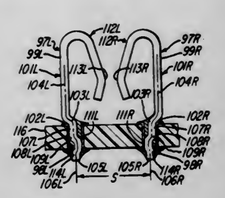
said rear wall including a pair of adjacently located post spring members extending inwardly into said post receiving area, said post receiving area arranged to accept substantially therein said interconnection post with each post spring member engaging and exerting a compressive force against said interconnection post, mechanically retaining and electrically connecting said device body to said interconnection post;
a pair of rectangularly shaped ears spaced parallel to each other extending from a bottom edge of said front wall, said ears defining a shoulder area between said ears and said front wall arranged to have an edge of said substrate rest on said shoulder area; and,
a pair of S-shaped substrate spring members spaced parallel to each other extending from the top edge of said front wall, each of said substrate spring member including a contact surface arranged to compressively engage said termination pad, mechanically retaining and electrically connecting said substrate to said device body.

4,575,166
CIRCUITRY ON MYLAR AND DUAL DUROMETER RUBBER MULTIPLE CONNECTOR
Dino G. Kasdagly, Rome, Pa., and Robert W. Little, Endicott, N.Y., assignors to International Business Machines Corp., Armonk, N.Y.
Filed May 1, 1984, Ser. No. 606,087
Int. Cl.⁴ H01R *23/72*
U.S. Cl. 339—17 M **7 Claims**



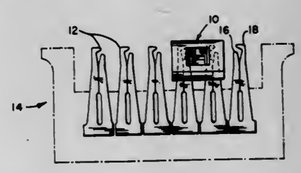
1. An electrical connector for multiple connection of closely spaced juxtapositioned lands on a first circuit board to corresponding lands on a second circuit board abutting said first circuit board, said connector comprising: a connector body having a first layer of relatively high stiffness and a downwardly disposed protuberence formed therein, a second relatively resilient layer having a relatively thin portion disposed intermediate thicker, displaceable portions of said resilient layer, said relatively thin portion being formed by top and bottom transverse depressions and being operatively connected to said first layer, said top transverse depression being adapted to receive said protuberence, and multiple preformed electrically conductive connector elements operatively connected to said relatively resilient layer and partially embedded therein, said connector body being adapted to be mounted on the upper edge surfaces of said first and second circuit boards for establishing spring loaded multiple connections so that, in the process of outwardly displacing said thicker portions of said relatively resilient layer, each one of said preformed electrically conductive connector elements wipes across each pair of corresponding lands when said elements are pressed against said lands on said first and second circuit boards.

4,575,167
ELECTRICAL CONNECTOR FOR PRINTED CIRCUIT BOARDS AND THE LIKE
Jerry B. Minter, c/o Components Corporation, Denville, N.J. 07834
Filed Apr. 2, 1984, Ser. No. 596,096
Int. Cl.⁴ H01R *23/70*
U.S. Cl. 339—17 L **11 Claims**



1. A connector to be supported in a hole in an insulating support member, said connector comprising a continuous length of wire having a rounded cross section and first and second free ends, the wire being bent into a generally J-shaped configuration comprising:
(a) a first part;
(b) a second part displaced in one direction from the first part; and
(c) a U-shaped loop integrally joining the first and second parts, the first part extending from the first end to the loop and being bent to form, in a limited region intermediate the first end and the loop, a first offset to engage one side of the hole to brace the first part against the opposite side of the hole, the direction of the first offset from the portion of the first part between the first offset and the U-shaped loop being the same as the direction in which the second part is displaced from the first part and the extent of the first offset being about one-half the diameter of the wire, the first part also being bent to form a second offset between the first free end and the first offset, the second offset being in the opposite direction from the first offset and of approximately half the size of the first offset to facilitate alignment with and insertion in the hole, and the second part extending from the loop to the second end alongside a substantial portion of the first part between the loop and the first offset, the second part comprising:
(i) a bend between the loop and the second free end, and
(ii) a convex contact surface area on the surface of that portion of the bend most remote from the first part to engage and to bear resiliently against a mating structure.

4,575,168
BRIDGING CLIP WITH CENTERING TAB
Stephen M. Thomas, Torrington, Conn., assignor to The Siemon Company, Watertown, Conn.
Continuation of Ser. No. 534,308, Sep. 21, 1983, abandoned. This application Apr. 23, 1985, Ser. No. 726,119
Int. Cl.⁴ H01R *31/08*
U.S. Cl. 339—19 **15 Claims**



1. A portable bridging clip for connecting adjacent, fixedly

located electrical terminals in order to electrically bridge said terminals comprising:

a first outer arm portion;

a second outer arm portion;

a base portion connecting said arm portions;

said arm portions extending from said base, said arm portions converging toward each other for a section of their length to contact points, said arm portions flaring outwardly from said contact points, said arm portions being adapted to grippingly surround at least a pair of adjacent electrical terminals to provide electrical bridging therebetween; and

means for accurately positioning said first arm portion and said second arm portion between at least two adjacent terminals, said positioning means comprising at least one centering tab, said centering tab being attached to and formed from said first outer arm portion, said centering tab being partially separated from said first outer arm portion by a step of puncturing the material of said first outer arm and thereby forming an indentation pointing inwardly towards said second outer arm portion.

4,575,169

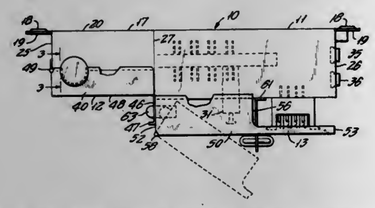
TELEPHONE BUILDING ENTRANCE TERMINAL

Raymond Duplatre, Bellerose, and Paul V. De Luca, Plandome Manor, both of N.Y., assignors to Porta Systems Corp., Syosset, N.Y.

Filed Feb. 6, 1985, Ser. No. 698,922

Int. Cl.[4] H05K *5/03*; B65D *43/64*

U.S. Cl. 339—44 M **1 Claim**



1. A telephone building entrance terminal comprising: a housing having first and second chambers, said first chamber having means therein for receiving an end of a subscriber pair cable, said second chamber having means accommodating protector and connector blocks; first pivotally mounted planar cover means selectively closing said first chamber, and moving in a given angular direction to open position, said first cover means including an outwardly extending planar extension substantially perpendicular to the plane of said first cover means, and having a pair of slotted openings at each end of said extension; second planar pivotally mounted cover means selectively closing said second chamber and moving in said given angular direction to open position, said second cover means having a pair of opposed walls lying in planes perpendicular to the plane of said outwardly extending planar portion, each of said pair having a projecting lug selectively engageable with said slotted openings in said first cover means when said first and second cover means are in closed position overlying said first and second chambers, respectively; and lockable means including hasp for maintaining said second cover means in closed position.

4,575,170

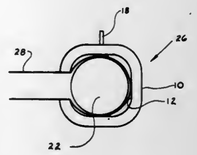
SOLDERLESS CONNECTOR

F. Stevenson Gurley, Tempe, Ariz., assignor to Rogers Corporation, Rogers, Conn.

Filed Jan. 4, 1985, Ser. No. 688,880

Int. Cl.[4] H01R *11/00*

U.S. Cl. 339—59 M **10 Claims**



1. A solderless connector for effecting electrical contact between terminal portions of circuit devices, at least one of said devices being a flexible circuit device, comprising:

rigid connector housing means, said housing means including a channel therein, said channel having a selected diameter; and

stressed elastomeric element means being loaded in said channel, said element means having a first diameter which is less than said channel diameter in a stressed state and a second diameter which is greater than said channel diameter in a restored state;

said stressed elastomeric element means urging said terminal portions of said circuit devices into electrical contact.

4,575,171

CONNECTOR CONNECTABLE AND DISCONNECTABLE WITHOUT FORCE

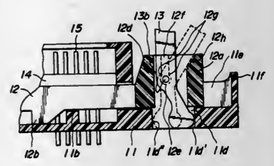
Yoshiaki Igarashi, Mooka, and Shoichi Hamano, Yuki, both of Japan, assignors to Daiichi Denshi Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 15, 1984, Ser. No. 661,170

Claims priority, application Japan, Oct. 24, 1983, 58-164169[U]

Int. Cl.[4] H01R *13/629*

U.S. Cl. 339—74 R **9 Claims**



1. In a connector connectable and disconnectable without requiring any force including an insulating casing, a lever operable out of said insulating casing, a slide plate linearly movable in longitudinal directions by operation of said lever, cam means causing said slide plate to rise and lower in response to linear longitudinal movements thereof, and an ON-OFF plate movable vertically in response to the rising and lowering movements of the slide plate, at least one pair of contacts being opened by inserting said ON-OFF plate between said contacts in the rising movement of said ON-OFF plate, said pair of contacts being closed by removing said ON-OFF plate from between the contacts in the lowering movement of said ON-OFF plate, the improvement comprising said lever being made detachable from the connector, wherein said slide plate includes at least one sidewall having a guide hole formed contiguous with said sidewall at one end of said slide plate, said guide hole opening through said slide plate at respective upper and lower edges of said sidewall to enable insertion of said lever through said guide hole so that a lower end of said lever projects below the lower edge of said sidewall into an engaging aperture formed in said insulating casing, said sidewall having a lever support aperture extending through said upper edge, said lever having at least one surface thereof provided with a projecting support pin inserted into said lever support aperture through said upper edge for enabling said lever to be detachable and for enabling pivot of said lever about said pin supported on said slide plate.

4,575,172

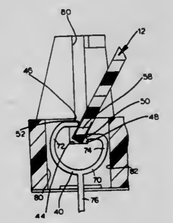
LOW INSERTION FORCE ELECTRICAL CONNECTOR WITH STRESS CONTROLLED CONTACTS

Alan Walse, LaGrange, and John Stipanuk, Glen Ellyn, both of Ill., assignors to Molex Incorporated, Lisle, Ill.

Continuation of Ser. No. 597,333, Apr. 6, 1984. This application Apr. 26, 1985, Ser. No. 727,714

Int. Cl.[4] H01R *13/62, 13/50*

U.S. Cl. 339—75 MP **4 Claims**



1. An electrical connector for a printed circuit board having a mating edge and first and second opposed surfaces with a plurality of contact pads on each surface adjacent said edge, said connector including an elongated dielectric housing with a cavity formed along its length with an opening for receiving the printed circuit board mating edge, a plurality of spring contacts mounted in the housing to engage the printed circuit board contact pads when the printed circuit board is inserted into the cavity through said opening at a first angular position and subsequently pivoted to a second angular position,

the improvement wherein:

each of said plurality of contacts being stamped and integrally formed to have a rounded continuously curved generally C-shaped portion with first and second free ends each having a contact surface disposed at different elevations in said cavity, said ends being independently and resiliently moveable with respect to each other after both said contact surfaces engage the board, and a leg mounted in the housing and extending from said C-shaped portion intermediate the ends thereof providing the sole support for said C-shaped portion when the printed circuit board is mounted therein, whereby said C-shaped portion is rockably mounted to have freedom of movement as said printed circuit board is pivoted in said cavity between said first and second angular positions; and

said housing further includes first and second integrally formed limit surfaces disposed immediately adjacent said contact surfaces and said printed circuit board contact pads when said printed circuit board is inserted into said cavity through said opening, whereby said limit surfaces abut said printed circuit board surface to limit deflection of said C-shaped portion while maintaining the freedom of movement of said spring contact as said printed circuit board is pivoted in said cavity.

4,575,173

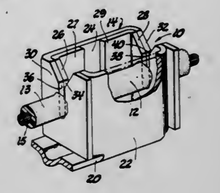
INSULATION DISPLACEMENT TERMINAL

Melodee A. Chapin, Cortland; Charles R. Nestor, Niles, and William E. Cross, Brookfield, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 19, 1984, Ser. No. 683,341

Int. Cl.[4] H01R *4/24*

U.S. Cl. 339—97 R **2 Claims**



1. An insulation displacement terminal for piercing the insulation of an insulated electrical conductor and making contact with the conductive core comprising,

a base member having first and second side members connected to opposite longitudinal sides of the base member by respective bights so that the side members are spaced apart and confront each other,

first and second slotted plates connected at opposite longitudinal ends of the first side member by respective bights so that the first and second slotted plates extend toward the second side member, and

third and fourth slotted plates connected at opposite longitudinal ends of the second side member by respective bights so that the third and fourth slotted end plates are juxtaposed the first and second slotted plates respectively, to form two longitudinally spaced pairs of plates having cooperating slots which impart a scissors-like action against an insulated electrical conductor forced into the cooperating slots.

4,575,174

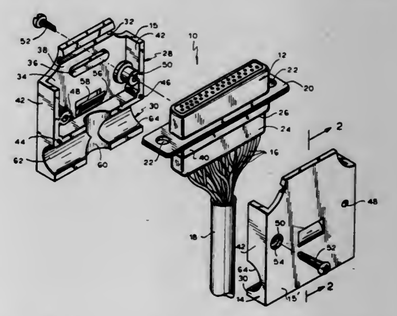
ELECTRICAL CONNECTOR HOOD

Richard Leeds, Lawrence, and Arthur Roberts, Westbury, both of N.Y., assignors to Global Equipment Company, Division of Continental Dynamics Corp., Hempstead, N.Y.

Filed Aug. 16, 1984, Ser. No. 641,390

Int. Cl.[4] H01R *13/585*

U.S. Cl. 339—103 M **15 Claims**



1. A hood for a connector of the type adapted for connection thereto of at least one conductor comprising:

a pair of complementary body portions each having a flat wall surface and a flexible strain relief tab projecting at an inclined angle from said wall surface;

means at a first end of each said body portion for grasping said connector;

an outlet opening at a second end of each said body portion for exiting said at least one conductor;

means for securing together said body portions in an assembled condition about said conductor to form a hollow hood body with said wall surfaces spaced from each other and said strain relief tabs aligned with each other and inclined toward each other in a direction toward said connector and away from said outlet opening;

a flat linear edge on each of said strain relief tabs for engaging and gripping said at least one conductor in a wedging action for resisting an outward force applied to said at least one conductor in a direction generally away from said connector; and

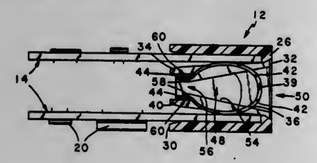
said strain relief tabs being of resilient material effective for permitting a substantial lateral deflection thereof by contact with said at least one conductor whereby a substantial range of diameters of said at least one conductor is accommodated.

4,575,175

EDGE CONNECTOR FOR MULTIPLE PRINTED CIRCUIT BOARDS

Bill B. Wilson, Clarendon Hills, Ill., assignor to Molex Incorporated, Lisle, Ill.

Filed Oct. 27, 1983, Ser. No. 546,229
Int. Cl.⁴ H01R *9/09*
U.S. Cl. 339—176 MP **4 Claims**



1. A connector assembly for receiving and electrically interconnecting two parallel spaced-apart circuit boards each having a plurality of circuit pads defined along an edge thereof, the assembly including a dielectric housing with at least one slot opened to a forward face of the housing for receiving the edges of the circuit boards, and support means formed integrally with the housing and adapted with wall portions having recesses receiving and supporting a plurality of metallic contacts in engagement with the circuit pads of the circuit boards, each contact formed from a unitary piece of stamped resilient sheet metal of generally U-shaped configuration including a rearward bight portion joining two spaced-apart forwardly extending leg portions, each leg portion having a contact portion formed thereon adapted to engage a circuit pad on each of the two circuit boards, each contact further including rearward stop means formed on at least one leg portion cooperating with a portion of the recess to prevent movement of the contact in a rearward direction and forward stop means formed on the bight portion to prevent movement of the contact in the forward direction and in a direction toward the other circuit board,

the improvement comprising:

each contact having a smoothly and continuously curved configuration;

each of said housing recesses including a pair of opposing forwardly converging wall portions for cooperation with said forward stop means and forwardly located shoulders for cooperation with said rearward stop means; and

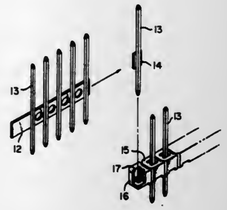
said U-shaped contact being resiliently compressed when said circuit boards are mounted in the connector assembly, so that said forward stop means is moved out of engagement with said wall portions with portions of said contact adjacent said bight being free to move between said circuit boards, whereby contact forces imparted to one leg contact portion are capable of being at least partially transmitted to the other leg contact portion.

4,575,176

MANUFACTURE OF PIN HEADERS

Paolo Castello, and Claudio Tartari, both of Turin, Italy, assignors to AMP Incorporated, Harrisburg, Pa.

Filed Jun. 15, 1984, Ser. No. 621,276
Int. Cl.⁴ H01R *33/04*
U.S. Cl. 339—195 M **2 Claims**



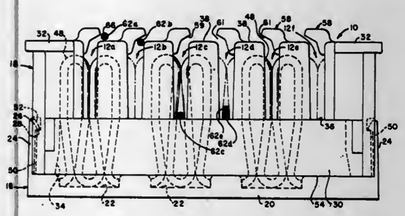
1. A pin header for a printed circuit board comprising a plurality of plated pins anchored in an insulating housing with opposite ends of the pins protruding from different faces of the housing, each pin being of drawn wire stock and attached by welding to a severed metal carrier strip portion received in the housing as an interference fit.

4,575,177

MULTIPLE ELECTRICAL CONNECTOR AND MOUNTING BLOCK WITH BOOTS

Robert H. Knickerbocker, Cheshire, Conn., assignor to The Siemon Company, Watertown, Conn.

Filed Sep. 29, 1983, Ser. No. 537,068
Int. Cl.⁴ H01R *9/00, 4/02*
U.S. Cl. 339—198 R **5 Claims**



1. A block for housing connector elements formed from electrically conductive stock of circular cross-section, the block including:

a retainer section;

a plurality of spaced slots in said retainer section;

a main body section;

a plurality of spaced slots in said main body section, said body section slots each being in alignment with a corresponding slot in said retainer section;

a plurality of bridge elements on said main body section, said bridge elements each being in alignment with a main body section slot, each bridge element defining a passage in registration with the main body section slot with which it is aligned;

said corresponding retainer section slots, main body section slots and bridge element passages cooperating to define housings for connector elements of the type formed from electrically conductive stock of circular cross-section;

the bridge elements which are in alignment with each slot being spaced apart and being in alignment with the bridge elements which are in alignment with other body section slots to define spaced columns which guide electrical conductors to connector elements of the type formed from electrically conductive stock of circular cross-section which are to be inserted in said block;

at least one boot at the top of at least one bridge element, said boot overhanging the top of an adjoining bridge element, said boot having a hook shape and being spaced above each connector element; and

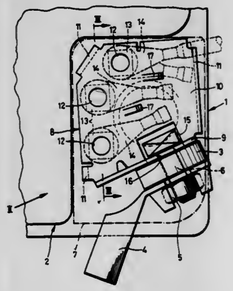
means for releasably joining said retainer section to said main body section.

4,575,178

CONNECTOR FOR SECURING WIRES TO A BATTERY TERMINAL

Manfred Coesfeld, Pulheim, and Friedrich Helbert, Hurth, both of Fed. Rep. of Germany, assignors to Ford Motor Company, Dearborn, Mich.

Filed Jul. 9, 1984, Ser. No. 629,155
Claims priority, application Fed. Rep. of Germany, Sep. 15, 1983, 3333308
Int. Cl.⁴ H01R *11/26*
U.S. Cl. 339—224 **9 Claims**



1. A connector for enabling a plurality of electrical wires to be individually connected to a battery terminal post extending from the housing surface of an electric storage battery, comprising a conducting component having a portion for attachment to the battery terminal post and a base plate portion formed with bores capable of being directly engaged by male screw-threaded members for establishing the desired electrical wire connections, wherein the portion for attachment to the battery terminal post projects from the plane of the base plate, and the base plate is provided with support flanges to space the bores from the housing surface of the battery.

4,575,179

INTEGRATED OPTICAL SIGNAL PROCESSOR USING DIFFRACTION OF LIGHT BY MAGNETOSTATIC WAVES

John N. Lee, Silver Spring, Md., and Arthur D. Fisher, Alexandria, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 28, 1983, Ser. No. 546,757
Int. Cl.⁴ G02B *6/12*
U.S. Cl. 350—96.13 **21 Claims**

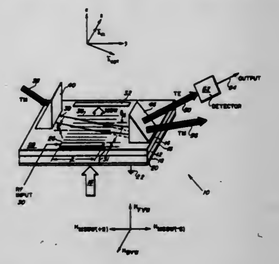
21. An integrated optical signal processor device comprising:

a thin film of ferrite material forming an optical waveguide, said thin film being adaptable to conduct a guided optical beam in a first polarization mode; and

an optical beam in a first polarization mode propagating in said thin film ferrite material;

means for generating a magnetostatic wave in said thin film in response to an input electrical signal, said magnetostatic wave diffracting a portion of said guided optical beam proportional to said input electrical signal, said diffracted portion of said guided optical beam being coupled into a second polarization mode orthogonal to said first polarization mode, said optical beam angled with respect to said magnetostatic wave to achieve phase matching of the optical beam and the magnetostatic wave;

whereby said guided optical beam is modulated by said input electrical signal.

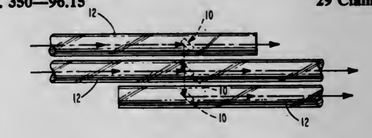


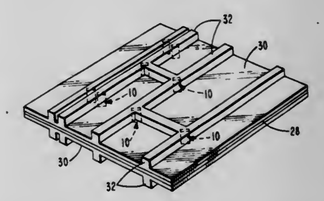
4,575,180

INTRAWAVEGUIDE FIBER OPTIC BEAMSPLITTER/COUPLER

David B. Chang, 14212 Livingston St., Tustin, Calif. 92680

Filed Aug. 15, 1983, Ser. No. 523,325
Int. Cl.⁴ G02B *5/172*
U.S. Cl. 350—96.15 **29 Claims**





16. An optical waveguide beamsplitter/coupler comprising:

an intact, cladded optical waveguide having a submicron, internal slot formed therein whereby said internal slot divides, combines and directs a light beam along desired paths, and whereby orientation and width of said slot determines the branching ratio of the optical waveguide beamsplitter/coupler.

23. An array of selectively coupled linear waveguides comprising a plurality of layers of material having different indexes of refraction;

a plurality of intact linear waveguides formed in said layers; and

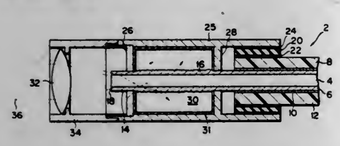
a plurality of light directing submicron internal oriented slots formed in said intact linear waveguides whereby said waveguides are selectively coupled by said slots to create circuit paths.

4,575,181

OPTICAL FIBER ASSEMBLY WITH CLADDING LIGHT SCATTERING MEANS

Ken Ishikawa, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Apr. 26, 1983, Ser. No. 488,704
Int. Cl.⁴ G02B *7/26*
U.S. Cl. 350—96.20 **9 Claims**



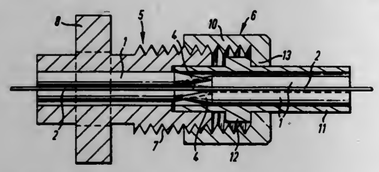
1. An optical head assembly for coupling a laser beam to an optical fiber comprising:
an optical fiber having a core and a cladding covering the core and an end face for receiving said laser beam;
a protection film covering a portion of said cladding;
means, formed on a predetermined outer surface region of said cladding on which there is no protection film and which extends along the optical fiber, for scattering a component of the laser beam introduced into the cladding out of the cladding;
a heat conductive case encapsulating the scattering means and having an inner surface separated from the scattering means; and
absorbing means formed on the inner surface of the heat conductive case for absorbing the laser beam component scattered from said scattering means.

4,575,182

DIELECTRIC OPTICAL WAVEGUIDE CONNECTING DEVICE

Paul C. Hensel, Woodbridge, and Geoffrey W. Gillings, Ipswich, both of United Kingdom, assignors to The Post Office, London, England

Filed Mar. 12, 1980, Ser. No. 129,566
Claims priority, application United Kingdom, Mar. 13, 1979, 7908863
Int. Cl.⁴ G02B *7/26*
U.S. Cl. 350—96.21 **4 Claims**



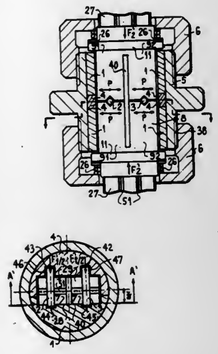
1. A device for interconnecting optical fibres in precise end-to-end relationship, such device comprising two clusters of straight rigid elements in side-by-side abutting relationship, each element in each cluster being tapered at the connecting end into a straightsided docking ramp, the connecting ends being laterally aligned and the ramps in one cluster being complementary to the ramps in the other, thereby achieving precise axial alignment of two optical fibres one positioned in the center of each cluster respectively, when the clusters are docked against one another.

4,575,183

MULTI-FIBER OPTICAL CONNECTION ENDPIECE, CONNECTOR USING SUCH AN ENDPIECE AND APPARATUS FOR MOUNTING FIBERS IN THE ENDPIECE

Pierre Parchet, Paris, and Jean Bouygues, Le Plessis Robinson, both of France, assignors to SOCAPEX, France

Filed Oct. 25, 1983, Ser. No. 545,297
Claims priority, application France, Oct. 26, 1982, 82 17916
Int. Cl.⁴ G02B *7/26*
U.S. Cl. 350—96.22 **12 Claims**



1. A multiple optical fiber connector endpiece, comprising a body provided with a plurality of recesses for housing optical fibers eventuating onto a front face and with a reference plane situated on a second face contiguous to said front face, wherein a distance (Z) between the fibers and said reference plane is indicated in a precise manner, said endpiece further comprising relative means for the alignment of said fibers in an X-Y plane, said relative means including two V-shaped grooves integrated on said front face of said endpiece, ridges of each groove being situated in a plane perpendicular to the reference plane, and said ridges being symmetrical with respect to a median plane of said endpiece perpendicular to the reference plane.

4,575,184

FLAME RETARDANT OPTICAL COMPOSITE CABLE

Keiji Ueno, Osaka, and Akinori Mori, Tochigi, both of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Dec. 22, 1983, Ser. No. 564,648
Claims priority, application Japan, Jun. 6, 1983, 58-101240
Int. Cl.⁴ G02B *5/16*
U.S. Cl. 350—96.23 **10 Claims**



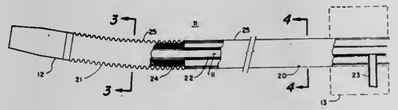
1. An optical composite cable comprising (1) at least one insulated electric wire which comprises a core of a metallic conductor and an insulating coating of a fluorine resin, (2) at least one optical transmission line which comprises a buffered core of an optical fiber and a coating of a fluorine resin and (3) an outer sheath which envelops all the electric wires and optical transmission lines, wherein said outer sheath comprises:
a radiation cured copolymer of ethylene and vinyl acetate containing 50 to 85% by weight of polymerized units derived from vinyl acetate; and
a flame retarding and smoke suppressing amount of a finely divided filler mixture intimately admixed with said copolymer, said filler mixture consisting essentially of a first filler selected from the group consisting of hydroxides and carbonates and di- and tri-valent metals and a second filler which is zinc borate, the ratio by weight of said second filler to the filler mixture being within the range between 0.25 to 0.75.

4,575,185

SYSTEM FOR A FIBER OPTIC CABLE FOR REMOTE INSPECTION OF INTERNAL STRUCTURE OF A NUCLEAR STEAM GENERATOR

Timothy H. Wentzell, South Windsor; John P. Lareau, and Charles B. Innes, Jr., both of Granby, all of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Aug. 1, 1983, Ser. No. 519,152
Int. Cl.⁴ G02B *5/17*
U.S. Cl. 350—96.26 **10 Claims**



5. A system for deflecting and flexing and controlling the buoyancy of a fiber optic cable, including,
a fiber optic cable having a head attached to its first end to transmit a visual image to a receiving station connected to the second end of the cable,
means for initially deflecting the assembly as the assembly is moved to insert its attached head to the position for inspection,
a cluster of extendible chambers (24) connected to each end of the first length of the cable extending back from the inspecting head,
a source of fluid pressure connected to each extendible chamber of the cluster to create an internal pressure within the chamber to extend that chamber to control the direction of flexure of the first end of the cable,
an expandable sheath (22) over and along the length of the cable to form a chamber of variable volume,
and a source of liquid connected to the chamber of variable volume to insert a predetermined amount of liquid to control the buoyancy of the complete cable in a liquid environment.

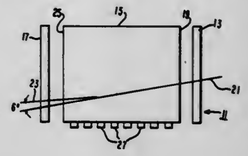
4,575,186

METHOD AND APPARATUS FOR THE SPECTRAL RANGE ENLARGEMENT OF ACOUSTO-OPTIC TUNABLE FILTERS

Milton Gottlieb, Churchill, and John J. Conroy, Penn Hills, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 14, 1982, Ser. No. 417,965
Int. Cl.⁴ G02F *1/11*
U.S. Cl. 350—358 **6 Claims**

1. A method for operating an acousto-optic device including a crystal employed as a sonic medium, a transducer structure, having individually electrically interconnected transducer elements displaying a first degree of capacity coupled thereto and an RF source in communication with the transducer structure comprising the steps of:
aplying a fundamental frequency from said RF source to said transducer structure exhibiting the first degree of capacity;
modifying the electrical interconnection of the transducer elements of said transducer structure to exhibit a second degree of capacity;



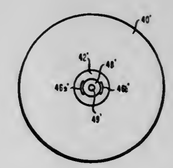
applying a third harmonic of said fundamental frequency from said RF source to the modified transducer structure;
returning said transducer structure to said first degree of capacity; and
applying said fundamental frequency from said RF source to said transducer structure.

4,575,187

OPTICAL FIBER WITH EMBEDDED METAL LAYER

Richard E. Howard, Holmdel; William Pleibel, Matawan, and Rogers H. Stolen, Rumson, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Division of Ser. No. 333,433, Dec. 22, 1981, Pat. No. 4,428,761.
This application Jan. 28, 1983, Ser. No. 461,965
Int. Cl.⁴ G02B *5/172*
U.S. Cl. 350—96.33 **3 Claims**



1. An optical fiber including an interior portion for guiding lightwaves and a metal layer embedded in said interior portion,
said metal layer extending axially along said fiber,
said interior portion of said fiber comprising
a glass core,
a glass cladding surrounding said core, and wherein
said metal layer is embedded in said cladding.
2. The fiber of claim 1 wherein said cladding comprises
an inner cladding,
an outer cladding, and wherein
said metal layer is located at the interface between said inner and outer claddings.

4,575,188

HEAT RESISTANT PLASTIC OPTICAL FIBER

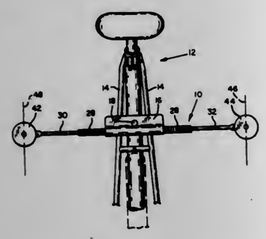
Yoshinobu Ueba, Osaka, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Apr. 11, 1983, Ser. No. 484,042
Claims priority, application Japan, Apr. 12, 1982, 57-61287
Int. Cl.⁴ G02B *5/172*
U.S. Cl. 350—96.34 **6 Claims**

1. A heat resistant plastic optical fiber having a three component structure of a core, a cladding and a sheath, wherein the core material comprises an amorphous transparent polymer, the cladding material comprises a transparent polymer having a refractive index lower than that of the core material, and the sheath material comprises a resin which is hardenable by irra-

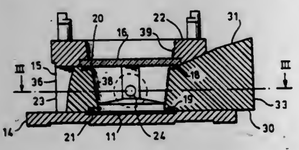
diation with ultraviolet rays and is selected from the group consisting of epoxy acrylate-based resins, 1,2-polybutadiene-based resins having an acryl group and thiol-ene type resins.

4,575,189
BICYCLE REFLECTOR SAFETY DEVICE
William M. Johnson, P.O. Box 70404, Eugene, Oreg. 97401
Filed Mar. 12, 1985, Ser. No. 710,976
Int. Cl.⁴ B60Q *1/34*
U.S. Cl. 350—99 **6 Claims**



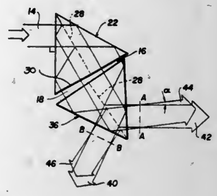
1. A bicycle reflector safety device, comprising:
(a) a multi-reflector warning system which comprises:
two rearward reflectors with their reflective surfaces oriented to the rear of the bicycle so as to be visible from the rear of the bicycle, said reflectors being laterally positioned one on each side of the bicycle so as to be substantially separated and to be located at and define the outer width dimensions of the bicycle; and
two forward reflectors with their reflective surfaces oriented to the front of the bicycle so as to be visible from the front of the bicycle, said reflectors being laterally positioned one on each side of the bicycle so as to be substantially separated and to be located at and define the outer width dimensions of the bicycle; and
(b) means for mounting said reflectors sturdily on the bicycle.

4,575,190
HERMETIC ELECTRO-OPTIC DISPLAY CELL
John C. Wood, Eastleigh; Anthony C. Lowe, Braishfield, and Barry F. Dowden, Romsey, all of England, assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 9, 1983, Ser. No. 560,050
Claims priority, application European Pat. Off., Dec. 30, 1982, 82306991.9
Int. Cl.⁴ G02F *1/17*
U.S. Cl. 350—357 **8 Claims**



1. A hermetic electro-optic display cell having an enclosure for a liquid electrolyte, the enclosure comprising: side walls of a plastic moulded material;
a lower inorganic base, substantially impervious to the electrolyte, upon which a plurality of display electrodes is disposed, within said side walls;
an upper window, also substantially impervious to the electrolyte, by way of which the display electrodes are view or projected;
impervious gasket means for sealing the lower edge of said side walls to said base and for sealing said upper window to the upper edge of said side walls;
clamp means for clamping said side walls, said upper window and said base together to effect a gasket seal; and
an inorganic coating around the exterior of said side walls and along said side wall edges at least at said gasket means, which coating is sufficiently thick to render said walls substantially impervious to the electrolyte.

4,575,191
COMPACT BEAM SPLITTER FOR ACOUSTO-OPTIC CORRELATOR
Irwin J. Abramovitz, Baltimore, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Aug. 22, 1983, Ser. No. 525,183
Int. Cl.⁴ G02F *1/11*; G02B *27/14*
U.S. Cl. 350—358 **11 Claims**

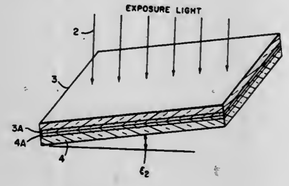


1. An optical apparatus which comprises:
beam splitting means for splitting a first laser light beam into second and third beams which extend primarily in a common direction; and
beam folding means for folding a portion of the second beam and a portion of the third beam such that the folded second and third beam portions converge at a predetermined acute angle between the second beam portion and the third beam portion to a common beam position, the beam folding means including a first Koesters prism which is disposed in the paths of the second and third beams such that the second beam enters the first Koesters prism at a planar base surface of the first Koesters prism on one side of a partially reflecting planar region of the first Koesters prism and the third beam enters the first Koesters prism at the base surface on the other side of the partially reflecting region, and such that the converging second and third beam portions leave the first Koesters prism at one of two planar lateral surfaces of the first Koesters prism.

4,575,192
METHOD OF BRAGG ANGLE ADJUSTMENTS FOR COPYING HOLOGRAMS
Joseph G. M. Duthie, Huntsville; Charles R. Christensen, Athens, both of Ala., and Carl D. Leonard, Ann Arbor, Mich., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Oct. 11, 1983, Ser. No. 540,949
Int. Cl.⁴ G03H *1/20*
U.S. Cl. 350—3.69 **1 Claim**

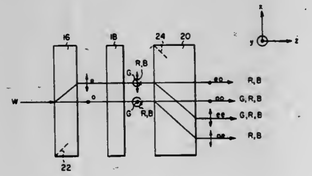
1. A method of copying a thick master holographic optical element, which element at wavelength λ_1 would be read out at at optimal efficiency at incident beam angle $\xi_3=\xi_1$, so that a copy hologram can be read out at optimal efficiency at incident angle $\xi_3=\xi_1$ but at wavelength λ_3, said method comprising the steps of:
(a) placing said thick master holographic optical element adjacent a copy plate having a thick emulsion thereon;
(b) directing radiation at wavelength λ_2 and at predetermined incident angle ξ_2 onto said thick master holographic element and adjacent copy plate;

(c) developing the copy plate emulsion to form the copy hologram;
(d) illuminating the copy hologram with radiation at wavelength λ_3 and at the incident angle $\xi_3=\xi_1$;



wherein the predetermined incident angle ξ_2 is determined so that the resulting fringe plane angles in the copy hologram satisfy the Bragg condition for step (d) above.

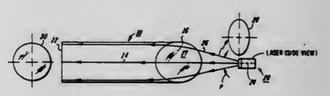
4,575,193
OPTICAL SPATIAL FREQUENCY FILTER
John E. Greivenkamp, Jr., Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Apr. 6, 1984, Ser. No. 597,290
Int. Cl.⁴ G02B *5/30*; H04N *9/097*
U.S. Cl. 350—401 **10 Claims**



1. An optical spatial frequency filter comprising; at least one pair of birefrigent elements for separating a ray of unpolarized white light into three or more spaced apart rays of light and means for changing the polarization state of light between the birefrigent elements, wherein the means for changing the polarization state of light changes the polarization state of light of a first color by a first amount, and changes the polarization state of light of a second color by a second amount different from the first amount such that light of said first color is split into a first subset of one or more of said rays, separated by a first distance in a given direction, and light of said second color is split into a second subset of two or more of said rays, separated by a second distance larger than said first distance in said given direction, whereby the spatial frequency response of the spatial frequency filter is color dependent and higher for said first color than for said second color.

4,575,194
SEMICONDUCTOR LASER BEAM COLLIMATOR
William Streifer, Palo Alto; Donald R. Scifres, Los Altos, and G. A. Neville Connell, Cupertino, all of Calif., assignors to Xerox Corporation, Stamford, Conn.
Filed Mar. 26, 1984, Ser. No. 593,210
Int. Cl.⁴ G02B *6/18, 6/32*
U.S. Cl. 350—413 **6 Claims**

1. A semiconductor laser beam collimator comprising means for collimating an output beam of radiation having a substantially elliptical cross sectional configuration emitted from a semiconductor laser and converting said emitted beam of radiation into a beam of circular cross sectional configuration, said output beam emitted from a facet of said laser at the plane of its p-n junction, characterized in that said means comprises a single lens element consisting of a graded-index (GRIN) rod, said GRIN rod having one end beveled to an angle, θ, relative to the optical axis of said GRIN rod forming an elliptical surface, the length, D, and bevel angle, θ, of said GRIN rod



chosen according to the particular diameter and optical power of said output beam, the plane of said laser p-n junction aligned parallel to a plane represented by the longitudinal axis of said GRIN rod elliptical surface.

4,575,195
FLAT FIELD LENSES
Jan Hoogland, 41 Los Charros La., Portola Valley, Calif. 94025
Continuation-in-part of Ser. No. 268,230, May 29, 1981. This application Dec. 16, 1983, Ser. No. 562,500
Int. Cl.⁴ G02B *9/06, 9/12, 13/18*
U.S. Cl. 350—432 **1 Claim**

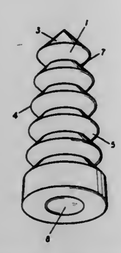


1. A paired doublet and cylinder assembly defining half a transfer module for an endoscope relay system comprising elements made of optical materials and having normalized geometrical parameters as follows:

Radius	Thickness	Medium	Refractive Index	Abbe Number
d_a = stop diameter = 30.0	t_{ab} = 3.000	air		
r_b = −36.340, aspheric	t_{bc} = 8.000	polystyrene	n_{bc} = 1.5713	v_{bc} = 30.8
r_c = 44.493	t_{cd} = 20.000	Schott LaSF31	n_{cd} = 1.8858	v_{cd} = 41
r_d = −57.064	t_{de} = 1.000	air		
r_e = flat	t_{ef} = 163.000	Schott SF6	n_{ef} = 1.8126	v_{ef} = 25.2
r_f = flat	t_{fg} = 1.000	air		
r_g = 57.064	t_{gh} = 20.000	Schott LaSF31	n_{gh} = 1.8858	v_{gh} = 41
r_h = −44.493	t_{hi} = 8.000	polystyrene	n_{hi} = 1.5713	v_{hi} = 30.8
r_i = 36.340, aspheric	t_{ij} = 3.000	air		
d_j = stop diameter = 30.0				
Aspheric Coefficients				
AD_b = −4.33 e-6	AE_b = −9.54 e-9		AF_b = 0	AG_b = 0
AD_i = 4.33 e-6	AE_i = 9.54 e-9		AF_i = 0	AG_i = 0

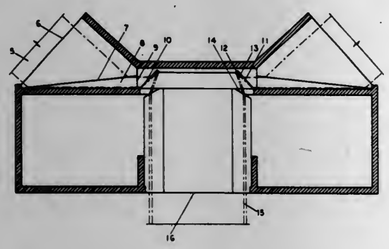
where the single subscripts denote the characteristic surfaces of the elements and the double subscripts denote the regions between corresponding surfaces.

4,575,196
CONICAL BEAM CONCENTRATOR
John E. Clegg, 2320 Keystone Dr., Orlando, Fla. 32806
Filed Jul. 25, 1984, Ser. No. 634,155
Int. Cl.⁴ G02B *13/18, 17/00, 27/00*
U.S. Cl. 350—432 **2 Claims**



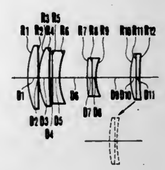
1. A conical beam concentrator comprising a stage lens RT (1) consisting of an apex component lens (3) and a series of five integral or separate inset component lenses (4) of increased diameters aligned on a vertical axis, with apex component lens (3) and inset component lenses (4) having parallel inset convex conical sections (7) which transmit convergent conical incipient beams (6) through the lenses to concave conical section (8) which refracts beams (6) out of the stage lens RT (1), forming concentrated whole beam (9) which is emitted parallel to the vertical axis.

4,575,197
CONICAL BEAM CONCENTRATOR
John E. Clegg, 2320 Keystone Dr., Orlando, Fla. 32806
Filed Nov. 23, 1984, Ser. No. 674,376
Int. Cl.⁴ G02B *13/18, 17/00*
U.S. Cl. 350—432 **1 Claim**



1. A conical beam concentrator TR-LRT-RT:CS comprising:
a. an upper component lens RT (1) with a convex conical section (6) and a concave conical section (7),
b. a middle component lens LRT (2) with a cylindrical section (9), a concave conical section (10) and a convex conical reflective section (12), and
c. a lower component lens TR (3) with a convex conical section (14) and a planar section (16).

4,575,198
LENS SYSTEM
Tsunefumi Tanaka, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 18, 1983, Ser. No. 476,624
Claims priority, application Japan, Mar. 30, 1982, 57-53540
Int. Cl.⁴ G02B *9/62*
U.S. Cl. 350—464 **10 Claims**



1. A lens system comprising:
three lens groups, said three lens groups being, from front to rear, a 1st lens group having a positive refractive power, a 2nd lens group having a negative refractive power and a 3rd lens group having a positive refractive power, wherein focusing is performed by moving said 3rd lens group,
said lens system, when focused on an infinitely distant object, satisfies the relationship

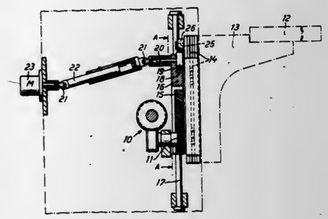
$$0.4<|l1/l2|<1.5$$

where l1 is the air separation between said 1st lens group and said 2nd lens group, and
l2 is the air separation between said 2nd lens group and said 3rd lens group,
wherein said 2nd lens group has at least one positive lens and at least one negative lens, and wherein said lens system satisfies the relationship

$$0.15<|n2-n2'|<0.28$$

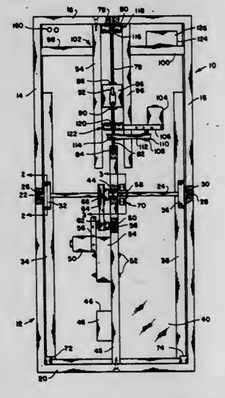
where n2 and n2′ are the refractive indices of the glasses of said positive lens and said negative lens respectively.

4,575,199
FOCUSING DRIVE FOR A MICROSCOPE WITH FLEXIBLE DRIVE SHAFT
Robert Lisfeld, Greifenstein-Ulm, Fed. Rep. of Germany, assignor to Ernst Leitz Wetzlar GmbH, Wetzlar, Fed. Rep. of Germany
Filed Apr. 25, 1983, Ser. No. 487,990
Claims priority, application Fed. Rep. of Germany, Apr. 26, 1982, 3215566
Int. Cl.⁴ F16H *35/18;* **G01J** *1/20;* **G02B** *21/26*
U.S. Cl. 350—530 **12 Claims**



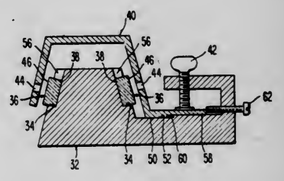
1. In a microscope having an adjustable portion, a focusing drive for moving said adjustable portion, comprising:
manual coarse and fine adjustment means comprising a gear drive connected to said portion for moving said portion in response to manual actuation to effect individual coarse and fine adjustments, said manual adjustment including separate actuating knobs connected to said gear drive to effect, respectively, said coarse and fine adjustments; and
motor drive means for moving said portion independently of said gear drive, such that said gear drive remains stationary during actuation of said motor drive means, said motor drive means comprising a motor and a control element connected to effect movement of the adjustable portion in response to said motor.

4,575,200
FLEXIBLE MIRROR DEVICE
Gerald F. Humiston, c/o Beaugeste, 14525 62nd St., North, Clearwater, Fla. 33520
Filed Jul. 13, 1983, Ser. No. 513,334
Int. Cl.⁴ G02B *7/18*
U.S. Cl. 350—611 **15 Claims**



1. A flexible mirror device for providing a modified reflection of the body of a person, comprising in combination:
a first frame member;
a second frame member disposed parallel to said first frame member;
a an upper and a lower frame member extending respectively between said first and said second frame members, said upper and said lower frame members being spaced relative each other;
a transverse shaft extending between said first and said second frame members, said transverse shaft being located between said upper and said lower frame members;
a first frame member bearing associated with said first frame member for rotatably supporting a first end of said transverse shaft;
a second frame member bearing associated with said second frame member for rotatably supporting a second end of said transverse shaft;
a first cam rigidly secured to said transverse shaft adjacent said first end of said transverse shaft;
a first mirror support cooperating with said first cam for moving said first mirror support relative said transverse shaft upon rotation of said transverse shaft;
a second cam rigidly secured to said transverse shaft adjacent said second end of said transverse shaft;
a second mirror support cooperating with said second cam for moving said second mirror support relative said transverse shaft upon rotation of said transverse shaft;
a central frame member extending between said lower frame member and said transverse shaft;
a central frame member transverse shaft bearing associated with said central frame member for rotatably supporting said transverse shaft;
a flexible mirror extending between and rigidly secured to said first and said second mirror supports;
first attachment means associated with said central frame member for securing said mirror relative said central frame member;
a flexible transverse frame means extending between said first and said second frame members for flexibly supporting said flexible mirror in the vicinity of said upper frame member; and
second attachment means associated with said transverse frame means for securing said mirror relative said flexible transverse frame means such that rotation of said transverse shaft results in a differential change in curvature of the mirror in the vicinity of the transverse shaft relative to the changing curvature of the mirror in the vicinity of the flexible transverse frame means.

4,575,201
METHOD AND APPARATUS FOR PRODUCING FOLDED OPTICAL PATH DEVICES
David E. Christian; C. Eugene McGraw, both of Danbury, Conn., and Robert Gazzero, Poway, Calif., assignors to Burroughs Corp., Detroit, Mich.
Filed Nov. 3, 1983, Ser. No. 548,553
Int. Cl.⁴ G02B *5/08*
U.S. Cl. 350—612 **19 Claims**

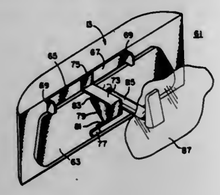


18. A method of connecting a plurality of optical elements to a holding frame, said method comprising the steps of:
a. positioning said optical elements on an alignment platform so they are in optical alignment;
b. positioning said holding frame over and in spaced relationship to said aligned optical elements;
c. longitudinally aligning said holding frame with respect to said alignment platform such that each of a plurality of holes in said holding frame, corresponding in number to said plurality of optical elements, is positioned at a point opposite one of said optical elements;
d. clamping said holding frame in the longitudinally aligned position; and
e. injecting an adhesive through each of said holes in the holding frame so that the adhesive flows between each of said optical elements and an adjacent section of said holding frame.

4,575,202
REARVIEW MIRROR FOR VEHICLES
Arthur M. McGuire, High Spire Apartments, Apartment 100, High Spire, Pa. 17034
Filed Oct. 21, 1983, Ser. No. 544,074
Int. Cl.⁴ G02B *5/10*
U.S. Cl. 350—627 **5 Claims**

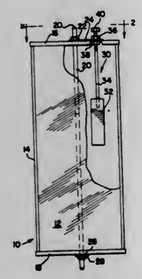
1. Rearview mirror apparatus for automobiles that eliminates the blind spots to the left rear and to the right rear of the automobile and is adapted to be mounted on or adjacent to the windshield of the automobile at about the center, comprising
a mirror housing having a back plate and upper, lower, and side panels extending therefrom,
a mirror having a body sheet and a reflecting surface sheet,

said mirror having a center portion which is flat so as to reflect images of vehicles located directly behind the driver of the automobile,
said mirror having a left mirror portion which is curved at its left end toward the housing back plate so as to reflect images of vehicles located in the left lane and especially in the left blind spot, and
said mirror having a right mirror portion which is curved at its right and toward the housing back plate so as to reflect images of vehicles located in the right lane and especially in the right blind spot,
and means for attaching the mirror housing to an automobile comprising
a bracket mounted on the rear of the mirror housing for easily and removably slipping onto an existing rearview mirror mounted on the automobile,



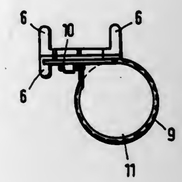
said bracket including
a horizontal cross bar attached to the back of the housing near the top,
a positioning tab extending rearwardly from each end of the horizontal cross bar to engage the top edge of the existing mirror to horizontally position said mirror housing and keep the two mirrors parallel to each other,
a first vertically positioned spring having one end fixed to the horizontal cross bar and having a free end which contacts the rear of the existing mirror to hold the housing in place,
and a second vertically positioned spring having one end fixed to the first vertical spring and having a free end which contacts the rear of the existing mirror to assist in holding the housing in place.

4,575,203
MIRROR VIBRATION ABSORBER
Herbert E. Brandt, and Thomas C. Tecco, both of Fort Wayne, Ind., assignors to International Harvester Company, Chicago, Ill.
Filed Aug. 3, 1984, Ser. No. 637,674
Int. Cl.[4] G02B *5/08*; B60R *1/02*; F16F *15/28*
U.S. Cl. 350—631 **10 Claims**



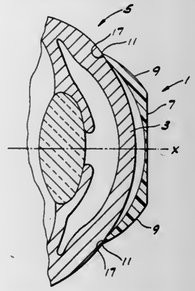
1. A motor vehicle mirror assembly comprising:
a mirror frame having side walls defining an internal cavity;
a vertical support rod attached to said frame for connecting said mirror assembly to an associated motor vehicle body;
a mounting means connected to said support rod;
and a vibration absorber connected to said mounting means, said absorber comprising an adjustment rod with a ballast secured thereto free from contact with said side walls said ballast position being adjustable relative to said mounting means.

4,575,204
SPECTACLE-LIKE FRAME
Otto Heide; Marc O. Heide; Nicole S. Heide; Philipp J. Heide, all of Am Dickelsbach 12, D-4030 Ratingen, and Christa Wagner nee Heide, Breslauer Str. 14, D-3560 Biedenkopf, all of Fed. Rep. of Germany
Filed Jul. 15, 1983, Ser. No. 514,307
Claims priority, application Fed. Rep. of Germany, Jul. 28, 1982, 3228093
Int. Cl.[4] G02C *5/14, 1/00*
U.S. Cl. 351—155 **13 Claims**



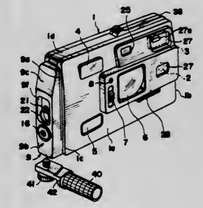
1. A spectacle frame which comprises:
a holder for receiving at least one eyeglass lens;
a clamp connected to and supporting said holder, said clamp having a pair of relatively displaceable parts formed with surfaces biased toward one another and positioned above said lens to engage and grip the hair of an eyebrow of a wearer; and
means connected to said lens and said clamp for bracing the frame against the head of a wearer at a location spaced from that at which the hair is gripped by said clamp.

4,575,205
SELF-ADHERENT CORNEAL CONTACT LENS
J. Alan Rappazzo, 501 W. Ray Rd., Ste. 7, Chandler, Ariz. 85224
Filed Oct. 15, 1984, Ser. No. 660,641
Int. Cl.[4] A61B *3/10*; G02C *7/04*
U.S. Cl. 351—219 **16 Claims**



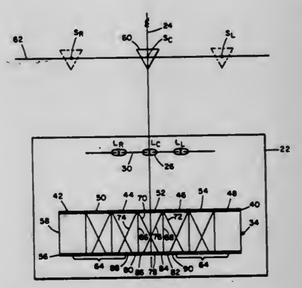
1. A self-adherent corneal contact lens adapted to be placed on the cornea of an eye for viewing the interior of the eye, as during clinical diagnosis of the eye and eye surgery, said lens having a central optical zone for viewing the posterior chamber or segment of the eye, a curved peripheral flange for viewing the periphery of the posterior chamber or segment, said flange terminating in an edge having a non-optical bevel engageable with the cornea of the eye, said lens further having a generally concave inside surface having a radius of curvature, constituting the central posterior curve, less than that of the cornea of the eye for creating a suction effect when the lens is placed on the cornea with said non-optical bevel engaging the cornea of the eye thereby to hold the lens in a substantially stationary self-adherent position on the cornea, said central optical zone having a negative diopter power and said curved peripheral flange having a positive diopter power.

4,575,206
FLAT CAMERA WITH A RETRACTABLE GRIP MEMBER
Keisuke Maeda, Sakai, and Hiroshi Ueda, Nara, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed Sep. 7, 1983, Ser. No. 530,143
Claims priority, application Japan, Sep. 10, 1982, 57-138120[U]; Sep. 10, 1982, 57-138121[U]
Int. Cl.[4] G03B *21/14*
U.S. Cl. 354—82 **2 Claims**



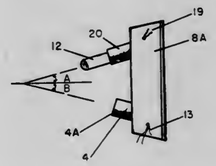
1. A thin flat camera comprising:
a housing of parallelepiped shape and flat and thin with respect to the transverse direction, said housing including a front plane, opposite first and second side planes, a top plane, a bottom plane and a rear plane;
an objective lens vertically medially located in said housing front plane proximate said housing first side plane;
an electronic flash device having a light emitting portion located on said housing front plane at an upper position proximate said housing second side plane;
a stud mounted on said housing second side plane at a position close to said housing bottom plane;
a grip member rotatably supported by said stud on said housing second side plane at a lower position close to said housing bottom plane and being rotatable about an axis normal to said housing second side plane between a plurality of angular positions including a retracted position where it extends along and is substantially coextensive in length with said second side plane, an extended position where a portion thereof extends downward from said second side plane to be hand holdable and a self-support position between said extended and retracted positions, where said camera is self-supporting with the cooperation of one end of said grip member and a bottom edge of said housing;
releasable locking means for releasably retaining said grip member in its extended and self-supporting positions;
a camera release circuit for initiating a camera operation;
a cable release member connectable to said grip member; and
means provided on said grip member for electrically connecting said cable release member to said camera release circuit.

4,575,207
THREE-DIMENSIONAL EFFECT REPRESENTATION, AND CAMERA AND METHOD FOR USE IN MAKING
Jerome M. August, 3 S. 260 Park Blvd., Glen Ellyn, Ill. 60137
Filed May 24, 1984, Ser. No. 614,084
Int. Cl.[4] G03B *35/04*
U.S. Cl. 354—112 **12 Claims**



1. Apparatus for providing three-dimensional effect transparencies, said apparatus comprising:
a camera including mounting means for retaining a photosensitive assembly at a predetermined location, and a movable lens,
movable support means disposed in front of said lens for supporting an object whose image is to be taken; and
said photosensitive assembly which comprises a layer of photosensitive material, a generally planar line screen having regularly spaced blocking portions spaced by transparent portions, and a transparent spacer disposed between said material and said line screen;
said camera having a central axis with which said photosensitive assembly is aligned, said lens and said support means each having respective guide means so that they are movable along respective paths which are substantially linear, parallel to one another and are substantially normal to said central axis, whereby a three-dimensional effect transparency can be produced by placing said object at a number of spaced object positions and for each position aligning said lens with said object and the intersection of said central axis with said assembly and opening said lens to expose a segment of said photosensitive material, the number of object positions being sufficient to substantially completely fill all photosensitive material segments beneath the blocking portions of said line screen.

4,575,208
LENS MOUNTED LIGHT SYSTEM
Bedford G. King, 526 N. Third St., Bardstown, Ky. 40004
Filed Feb. 21, 1984, Ser. No. 582,007
Int. Cl.[3] G03B *15/02*; A61B *3/10*
U.S. Cl. 354—126 **4 Claims**



1. Cap means adapted to be received on a photographic lens having an aperture and a shutter to selectively cover said

aperture and generally centrally located in alignment with said lens aperture where said cap includes a focusing light of first intensity and a light flash device to emit selective bursts of light of higher intensity than said focusing light to facilitate macro photographic procedures where said focusing light is adapted to be actuated when said shutter is open wherein said light flash device includes a light transmitting cylinder extending through said cap means with a light source located within said cap means whereby the light generated by said light source passes through said light transmitting cylinder toward an object to be photographed wherein said light transmitting cylinder is located a selected distance from said aperture of said cap means and is disposed with its longitudinal axis at an acute angle relative to a photographic axis extending through said lens shutter and said aperture and directed toward said photographic axis.

4,575,209

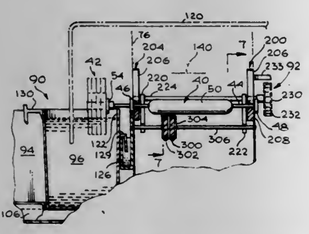
DISC FILM PROCESSOR

Ernest Zwettler, Santa Monica, Calif., assignor to Houston Fearless 76, Inc, Carson, Calif.

Filed May 22, 1984, Ser. No. 613,081

Int. Cl.⁴ G03D *3/04, 3/08*

U.S. Cl. 354—322 **19 Claims**



1. Apparatus for processing film discs comprising:
at least one elongated carrier spindle;
mounting means on at least one end of said spindle for removably mounting a plurality of film discs thereon;
a plurality of substantially aligned tanks, each for containing a liquid;
transport means for moving said spindle along a defined path including a plurality of processing stations, each station located proximate to one of said tanks, whereby when said spindle is at a processing station, the film discs thereon extend into the liquid in the tank located proximate thereto;
spin means frictionally engaging said spindle at each of said processing stations for rotating said spindle to spin said film discs in said liquid;
said transport means including a plurality of transport arms each mounted for unidirectional rotation through a full 360° cycle about an axis located adjacent to a different one of said stations; and
means for rotating said transport arms to concurrently transfer spindles from each of said stations to a succeeding station.

4,575,210

AUTOMATIC FOCUSING DEVICE

Masashi Yamada, and Kenichi Iwaida, both of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

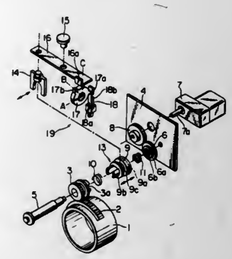
Filed Jan. 18, 1985, Ser. No. 692,682

Claims priority, application Japan, Jan. 27, 1984, 59-14140

Int. Cl.⁴ G03B *3/10*

U.S. Cl. 354—400 **15 Claims**

1. A method of changing over the modes of focusing in which a motor is operated responsive to a range signal so as to move a lens moving system, comprising:
switching a power source of the motor ON and engaging the motor with the lens moving system, for an automatic focusing mode;



switching the power source of the motor OFF and engaging the motor with the lens moving system, for a focus locking mode; and
disengaging the motor from the lens moving system, for a manual focusing mode.

4,575,211

DISTANCE MEASURING DEVICE

Susumu Matsumura; Yuichi Sato; Takashi Kawabata, and Tokuichi Tsunekawa, all of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 16, 1984, Ser. No. 601,054

Claims priority, application Japan, Apr. 18, 1983, 58-68641; Apr. 18, 1983, 58-68643; Apr. 18, 1983, 58-68650; Apr. 19, 1983, 58-68656

Int. Cl.⁴ G03B *13/20;* **G01C** *3/06*

U.S. Cl. 354—403 **6 Claims**



1. A distance measuring device, comprising:
light emitting means for projecting a light flux for distance measurement;
an optical member arranged to divide and split said projected light flux emitted by said light emitting means into a plurality of projection light fluxes;
scanning means for scanning with the plurality of projection light fluxes produced by said optical member;
photo-electric converting means arranged to receive reflected light fluxes resulting from said plurality of projected light fluxes, said converting means having a plurality of light receiving areas, each of said light receiving areas being arranged to produce a photo-electric converted signal representing a light flux incident thereon as a result of said scanning with said projected light fluxes; and
a circuit for receiving said photo-electric converted signals and producing distance measurement signals, said circuit being arranged to select, as an in-focus signal, any distance measurement signal that first becomes a value close to an in-focus value from distance measurement signals representing the mean value of the photo-electric converted signals from said light receiving areas of the photo-electric converting means, the output value of the photo-electric converted signals from a central part of the light receiving areas and a plurality of combined output values of the photo-electric converted signals from said light receiving areas from among said plurality of light receiving areas.

4,575,212

CAMERA WITH AN IMPROVED FOCUS DETECTING SYSTEM

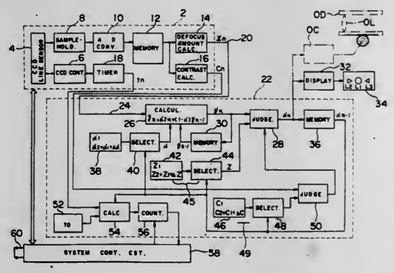
Mashio Kitaura, Tondabayashi; Norio Ishikawa, Osaka, and Toshihiko Ishimura, Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Dec. 27, 1983, Ser. No. 565,353

Claims priority, application Japan, Dec. 28, 1982, 57-228776; Feb. 18, 1983, 58-26587; Feb. 18, 1983, 58-26588; Feb. 18, 1983, 58-26589

Int. Cl.⁴ G03B *3/00*

U.S. Cl. 354—409 **12 Claims**



1. A camera with an improved focus detecting system comprising:
means for periodically sensing a focus condition of the camera to repeatedly produce a first signal in response to every periodical sensing of the focus condition, the first signal being representative of the degree of defocusing;
means for providing a reference level representative of the limit of an unacceptable defocused state for the camera;
detecting means responsive to the first signal for periodically determining whether the level of the first signal is at one side of the reference level or at the other side of the reference level with respect to every first signal repeatedly produced;
means responsive to the determining means for indicating an in-focus condition when the first signal is at the one side of the reference level with the defocusing degree less than the limit of the unacceptable defocused state; and
means for modifying the first signal subject to the determination by the determining means so that the first signal to be determined is influenced by the preceding first signal, the modifying means including means for storing the preceding first signal, means for averaging the stored first signal with the first signal to be determined to get the modified first signal, and means, responsive to the averaging means, for sending the preceding modified first signal to the storing means, whereby the preceding first signal stored in the storing means is the modified one.

4,575,213

DEVICE FOR DISPLAYING DATA IN CAMERA VIEWFINDER

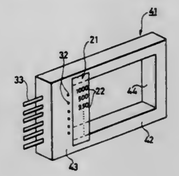
Kiyoshi Kawano, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 18, 1984, Ser. No. 621,660

Claims priority, application Japan, Aug. 8, 1983, 58-123202[U]

Int. Cl.⁴ G03B *17/20*

U.S. Cl. 354—474 **3 Claims**



1. A device for displaying data in the viewfinder of a camera, comprising:
a data film on which photographic data is provided;
an LED package including LEDs for illuminating said data on said data film and terminals of said LEDs; and
a field frame, said LED package and said field frame being molded as a single unit with a resin, and said data film being fixedly secured to one side of said field frame.

4,575,214

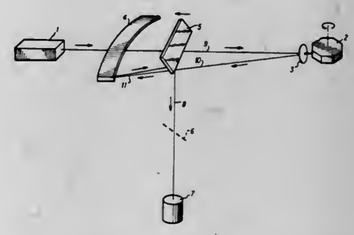
COPIER/LASER-PRINTER CONVERSION

Adam L. Carley, 5 Westside Dr., Atkinson, N.H. 03811

Filed Jul. 5, 1983, Ser. No. 510,553

Int. Cl.⁴ G03G *15/00, 15/28*

U.S. Cl. 355—3 R **11 Claims**



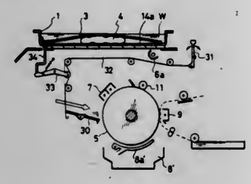
1. A method of reversibly converting a pre-existing copier to a laser printer comprising:
(a) placing a laser-optical apparatus providing a scanned and modulated laser beam, and a field lens converging the beam paths, external to the copier;
(b) orienting the laser-optical apparatus so that its laser beams pass through the copier's existing imaging lens;
(c) further orienting the laser-optical apparatus so that its direction of scan across the copier's photoreceptor is substantially perpendicular to the direction of motion of that photoreceptor; and
(d) electronically controlling the laser-optical apparatus to form images in synchronism with photoreceptor and paper movement in the copier.

4,575,215

ELECTROPHOTOGRAPHIC REPRODUCTION OF A THREE-DIMENSIONAL OBJECT

Kenzo Ariyama, Yokohama; Hideo Yamazaki, Urayasu; Tamotsu Motohashi, Tokyo, and Minoru Hirota, Kawasaki, all of Japan, assignors to Ricoh Company, Ltd., Japan

Division of Ser. No. 342,471, Jan. 25, 1982, Pat. No. 4,454,210.
This application Jun. 8, 1984, Ser. No. 618,564
Claims priority, application Japan, Jan. 24, 1981, 56-9173; Mar. 20, 1981, 56-40713; Mar. 20, 1981, 56-40715
Int. Cl.⁴ G03G *21/00*
U.S. Cl. 355—3 R **7 Claims**



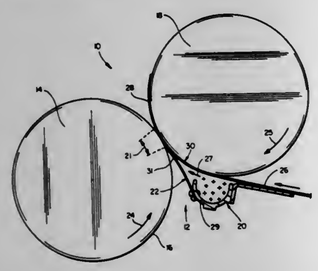
1. An electrophotographic copying machine having a normal copy mode in which a two-dimensional copy is made from a two-dimensional object and a three-dimensional copy mode in which a two-dimensional copy is made from a three-dimensional object, said copying machine comprising:
a photosensitive member;
image forming means including charging means for charging the surface of said photosensitive member, exposure means for exposing the thus charged surface of said photosensitive member to said object to form its electrostatic latent image, and developing means for developing said latent image to form a visual image; and
switching means for switching between said normal copy mode and three-dimensional copy mode, said switching means changing the conditions of at least one of said image forming means when switched between the two modes.

4,575,216

ELECTROPHOTOGRAPHIC COPYING APPARATUS INCLUDING TRANSFER CHARGE CORONA AND SHIELD

Richard D. Hebert, Sunnyvale, and Victor B. Van Blerk, San Jose, both of Calif., assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Nov. 9, 1983, Ser. No. 549,873
Int. Cl.⁴ G03G *15/16*
U.S. Cl. 355—3 TR **10 Claims**



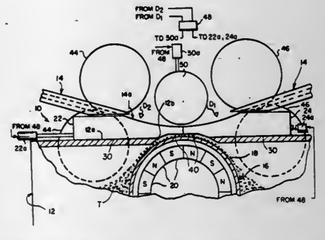
1. In an electrophotographic copying apparatus in which electrically charged toner of one polarity is transferred from an oppositely electrically charged surface of a photoconductive drum to the front side of a blank sheet for transforming the latter into an intended copy as the back side of the sheet follows a paper path which causes the back surface of said sheet to engage the outer surface of a transfer roll positioned adjacent said drum, said photoconductive drum and transfer roll defining a transfer nip wherein said toner transfer occurs, the improvement comprising means for applying an electrical ion charge to the side of said blank sheet which is to receive said toner, and means for shielding said ionically charged paper from said photoconductive drum prior to its entry into the nip, said shield means extending adjacent said paper path between said means for applying electrical charge to said paper and said transfer nip and being biased against said paper to prevent ions from said charging means from reaching the surface of said photoconductive drum.

4,575,217

APPARATUS FOR SELECTIVELY SEALING A DISCRETE DIELECTRIC SHEET DEVELOPER STATION

Carl R. Bothner, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 4, 1984, Ser. No. 678,196
Int. Cl.⁴ G03G *15/00, 15/08*
U.S. Cl. 355—3 DD **12 Claims**



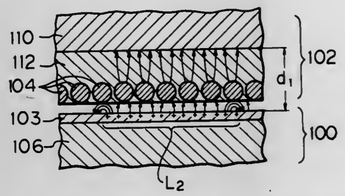
1. In an electrographic copier including a developer station containing developer material and having means for developing, with such developer material, imagewise patterns on discrete dielectric sheets, and means for moving such sheets seriatim about a travel path having a portion in juxtaposition with such developer station, apparatus for selectively sealing developer material within such developer station and, during such sealing, guiding a moving discrete dielectric sheet along such travel path portion out of developing relation with such developer material, said apparatus comprising:
at least one member having a developer material sealing surface and a discrete dielectric sheet guiding surface;
means for selectively moving said member to a first position between said developer station and such travel path portion, wherein said sealing surface seals developer material within said developer station and said guiding surface is coincident with such travel path portion, or to a second position remote from said first position, and
means, responsive to the lead edge of a discrete dielectric sheet moving away from such travel path portion, for actuating said selective moving means to move said member to its second position leaving such moving sheet in developing relation to developer material in such developer station and, responsive to the trail edge of such sheet moving into such travel path portion, for actuating said selective moving means to move said member to its first position to seal developer material within said developer station and to guide such sheet along such travel path portion out of developing relation to developer material.

4,575,218

DEVELOPING APPARATUS FOR ELECTROSTATIC PHOTOGRAPHY

Koji Sakamoto, and Kazuo Kobayashi, both of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Division of Ser. No. 326,098, Nov. 30, 1981, Pat. No. 4,445,771.
This application Apr. 23, 1984, Ser. No. 603,259
Claims priority, application Japan, Dec. 5, 1980, 55-170846; Dec. 12, 1980, 55-174610; Dec. 30, 1980, 55-185726
The portion of the term of this patent subsequent to May 1, 2001, has been disclaimed.
Int. Cl.⁴ G03G *15/08*
U.S. Cl. 355—3 DD **23 Claims**



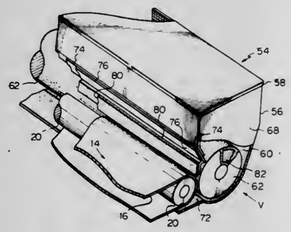
1. In an electrostatographic apparatus including a photoconductive member and means for forming an electrostatic image on the photoconductive member, the improvement comprising:
applicator means for applying a toner to the photoconductive member to develop the electrostatic image into a toner image, the applicator means having an electrically insulative surface with electrically conductive microelectrodes distributatively embedded therein.

4,575,219

DRY PROCESS DEVELOPING APPARATUS HAVING DETACHABLE SCREENING MEMBER FOR DEVELOPING UNIT

Satoru Tomita, Kawasaki, and Haruhiko Nagayama, Tokyo, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Feb. 13, 1984, Ser. No. 579,330
Claims priority, application Japan, Feb. 21, 1983, 58-26371
Int. Cl.⁴ G03G *15/09*
U.S. Cl. 355—3 DD **7 Claims**



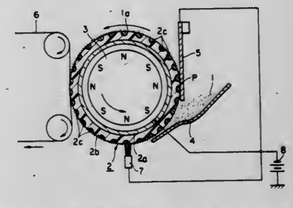
1. A dry process developing apparatus which develops a latent image on a photoconductive element by using a dry developer, comprising:
a casing formed with an opening adjacent to a surface of the photoconductive element, said casing storing the developer therein;
developer transport means located in the vicinity of said opening of the casing for transporting the developer; and
screening means for preventing the developer transported by said developer transport means from scattering in the apparatus, said screening means covering a front open portion between the surface of the photoconductive element and the casing;
the developer transport means comprising a developing sleeve in which a plurality of magnets are accommodated;
the screening means comprising a plate-like member supported by the casing and having a width which substantially covers said front open portion between the surface of the photoconductive element and the casing and a length which is substantially equal to a lengthwise dimension of the developing sleeve;
the screening means further comprising a magnetic member for magnetically coupling with the magnets in the developing sleeve to mount the screening means to the casing.

4,575,220

DEVELOPING DEVICE

Koji Sakamoto; Toshio Kaneko, both of Tokyo; Fuchio Kanno, and Wataru Yasuda, both of Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Dec. 14, 1983, Ser. No. 561,534
Claims priority, application Japan, Dec. 14, 1982, 57-187955[U]
Int. Cl.⁴ G03G *15/09*
U.S. Cl. 355—3 DD **7 Claims**



1. A device for developing an electrostatic latent image formed on an imaging surface by applying a film of toner thereto, comprising:
means for transporting said film of toner along a predetermined path through a developing region where said latent image is developed;
means for supplying toner to said means for transporting; and
means disposed downstream of said means for supplying with respect to the transporting direction of toner for forming said film of toner, said means for forming including a blade pressed against said means for transporting and having a forward end portion which partly projects in a direction opposite to the direction of movement of said means for transporting so as to establish a sliding contact under pressure therebetween to form said film of toner on said means for transporting in a predetermined region thereof where said forward end portion is substantially in sliding contact with said means for transporting.

4,575,221

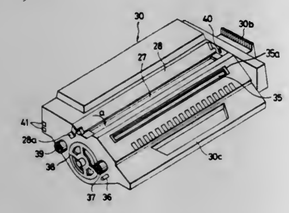
PROCESS KIT AND AN IMAGE FORMING APPARATUS USING THE SAME

Shigeyoshi Onoda, Yokohama; Akihiro Nomura, Kawasaki; Morikazu Mizutani, Tokyo; Shinji Kanemitsu, Ichikawa; Mototada Toriumi, Yokohama, and Fumio Nishino, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 16, 1983, Ser. No. 494,867
Claims priority, application Japan, May 20, 1982, 57-85608; Jul. 21, 1982, 57-127027; Sep. 30, 1982, 57-171905
Int. Cl.⁴ G03G *15/00*
U.S. Cl. 355—3 R **17 Claims**

1. A process kit for use in an image forming apparatus, comprising a photosensitive drum, corona discharge means for uniformly charging said photosensitive drum to a predetermined potential, development means for developing an electro-

static latent image formed on the photosensitive drum, and housing means containing said photosensitive drum, said corona discharge means and said development means with said corona discharge means and development means being respectively disposed upstream and downstream of a position where said photosensitive drum is exposed to information light, said



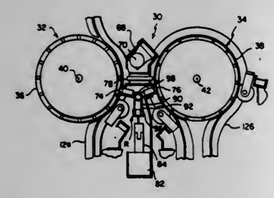
housing means including an optical opening located upstream of said corona discharge means for conducting a uniform light to said photosensitive drum to discharge the remaining charge on said photosensitive drum and an opening for exposure located between said corona discharge means and said development means for conducting said information light to said photosensitive drum.

4,575,222

APPARATUS FOR ACCURATELY FORMING COLOR-CORRECTED ELECTROGRAPHIC IMAGES

Douglas K. Ahern, and Alphonse B. DiFrancesco, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 19, 1984, Ser. No. 683,742
Int. Cl.⁴ G03G *15/01*
U.S. Cl. 355—4 **12 Claims**



1. In a multi-color copier for forming electrographic images on discrete dielectric sheets and having means for color correcting such images, an improved means for transporting and accurately registering selected ones of such sheets relative to others during color correction, said transporting and registering means comprising:

first means for transporting a sheet at a predetermined linear speed along a first travel path associated with said color correction means;

a first registration mechanism selectively movable to a position intercepting such first travel path, upstream of said color correction means, for registering a sheet transported by said first transport means relative to such color correction means, and a position remote from such path;

second means for transporting another sheet at the same predetermined linear speed along a second travel path associated with said color correction means;

a second registration mechanism selectively movable to a position intercepting such second travel path, upstream of said color correction means, for registering the sheet transported by said second transport means relative to such color correction means, and a position remote from such path; and

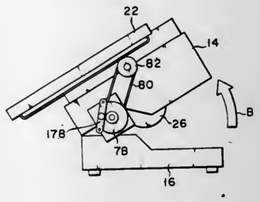
means for simultaneously moving said first registration mechanism and said second registration mechanism from their path intercepting positions to their remote position, after respective registration of transported sheets, whereby such sheets are respectively transported to such color correction means at the same linear speed and are thus in accurate registration relative to one another during color correction.

4,575,223

BRAKING MECHANISM FOR DOCUMENT TABLE DRIVE MEANS IN A COPYING APPARATUS

Mamoru Shimono, Yokohama; Satoshi Yokomori, and Kouji Yukinaga, both of Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba and Toshiba Automation Engineering, Ltd., both of Kawasaki, Japan

Filed Oct. 10, 1984, Ser. No. 659,548
Claims priority, application Japan, Oct. 21, 1983, 58-197237; Apr. 28, 1984, 59-86583
Int. Cl.⁴ G03G *15/28*
U.S. Cl. 355—8 **12 Claims**



1. An image forming apparatus for forming an image in accordance with the image information of an original document, which comprises:

a main body having an image forming function, said main body being divided into an upper unit and a lower unit, said upper unit being made rockable with respect to said lower unit;

a document table slidably provided on said upper unit and intended to have said document placed thereon; and

a driving means for causing said document table to slide on said upper unit in order to cause said document placed on said document table to be scanned at the time of forming its image, said driving means having a braking means which causes a braking force to act on said document table when said upper unit has been rocked with respect to said lower unit.

4,575,224

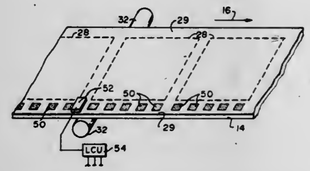
ELECTROGRAPHIC APPARATUS HAVING AN ON-LINE DENSITOMETER

Kenneth A. Arnold, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 5, 1984, Ser. No. 678,728
Int. Cl.⁴ G03G *15/00*
U.S. Cl. 355—14 R **4 Claims**

1. In electrographic apparatus having a movable transparent photoconductor, means for producing toned images on a first surface of the photoconductor, a transfer station at which a toned image can be transferred to a copy sheet, and a post-development erase station comprising a lamp located adjacent a second surface of the photoconductor between the image-producing means and the transfer station, the improvement comprising:

a photodetector located adjacent the first surface of the photoconductor and positioned to receive light rays from the erase lamp so that the photodetector senses light passing through toned images on the first surface of the photoconductor.

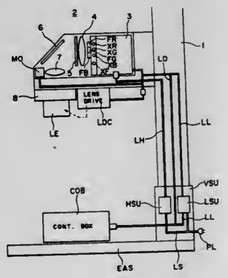


4,575,225

COLOR ENLARGER

Yoshio Yuasa, Kawachinagano; Hidetoshi Yasumoto, Tondabayashi; Kazuhiko Naruse, Nabari; Nobukazu Kawagoe, Sakai, and Masahito Inaba, Ikeda, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Sep. 14, 1983, Ser. No. 532,718
Claims priority, application Japan, Sep. 16, 1982, 57-161754
Int. Cl.⁴ G03B *27/73, 27/72*
U.S. Cl. 355—38 **25 Claims**



1. A color enlarger for use in photography capable of printing a color copy from a color original film comprising:

means for separately generating a plurality of source lights corresponding to a plurality of primary colors;

means for separately picking-up the plurality of source lights to monitor the light generation from said generating means and producing a generated color signal;

means for providing a color data signal representative of a color to be reproduced on the color copy;

means for separately measuring, prior to printing the color copy, the plurality of source lights transmitted through the color original film and producing a measured color signal;

means for separately calculating, prior to printing the color copy, the whole light quantities for the plurality of source lights to be generated upon printing the color copy, in response to the color signal, the color data signal and the measured color signal; and

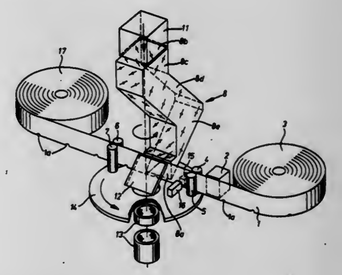
means for controlling said generating means upon printing the color copy in automatic response to said calculating means.

4,575,226

PHOTOGRAPHIC ROLLER COPIER APPARATUS

Wolfgang Zahn, Munich; Erich Nagel, Anzing, and Bernd Payrhammer, Munich, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed Mar. 18, 1985, Ser. No. 713,269
Claims priority, application Fed. Rep. of Germany, Apr. 4, 1984, 3412691
Int. Cl.⁴ G03B *27/52, 27/70*
U.S. Cl. 355—43 **11 Claims**



1. Photographic roller copier apparatus for photographing originals having different side lengths onto a ribbon shaped copier material, the ribbon width corresponding to a desired copy size, the originals being arranged in a ribbon form and having varying formats, one format lying in the lengthwise ribbon direction and the other format lying transverse thereto, said roller copier apparatus comprising: an illuminating device; lens means having an axis and a variable focal length, said focal length being variable to the extent that copies of equal size that fully fill the width of the copier material ribbon can be made from both original formats; a picture gate in the area of which the ribbon of originals is led in a plane parallel to said lens axis; a deflecting part located between said picture gate and said lens which deflects a path of flight from said picture gate through 90° into said lens; and a plurality of transport roller pairs for guiding said ribbon of originals, said picture gate, said deflecting part, said illuminating device, the ribbon of originals and said transport roller pairs being rotatable together through 90° about said lens axis to provide a smaller format position and a larger format position.

4,575,227

COPYING MACHINE HAVING A CAPABILITY OF REPRODUCING IMAGES AT DIFFERENT MAGNIFICATIONS

Masazumi Ito, Toyohashi; Yutaka Irie; Yoshikazu Ikenoue, both of Toyokawa, and Minoru Nakamura, Toyohashi, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Dec. 14, 1983, Ser. No. 561,571
Claims priority, application Japan, Dec. 14, 1982, 57-219566; Dec. 15, 1982, 57-220527
Int. Cl.⁴ G03G *15/00*
U.S. Cl. 355—56 **15 Claims**

1. A copying machine with a photoreceptor having a capability of reproducing an image at different magnifications one at a time, which machine comprises, in combination:

means for detecting the size of an original bearing an image to be reproduced on a copying paper;

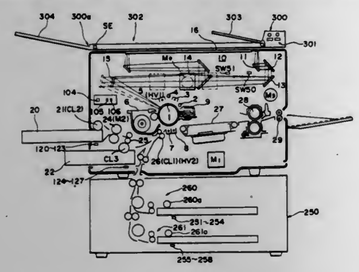
means for discriminating the size of a copying paper to be used;

a storage means storing a numerical figure representative of a magnification ratio of the original image and composed of a predetermined number of digits;

a magnification control means for controlling at least the magnification ratio at which the image is projected onto

the photoreceptor in dependence on the numerical figure stored in the storage means so as to enable a copying operation to be executed at a magnification corresponding to the numerical figure stored in the storage means;

a calculating means for calculating a magnification ratio



from the size of the copying paper discriminated by said discriminating means; and

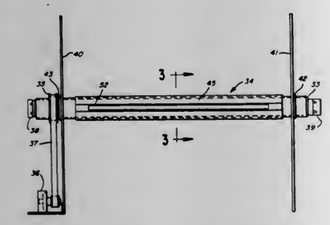
a regulating means for causing a value, obtained by the calculation performed by said calculating means, to be stored in said storage means when said value is within a predetermined range of present values.

4,575,228

ILLUMINATION APPARATUS FOR COPYING MACHINES

Bruce M. Rightmyre, Carol Stream, Ill., assignor to Petro-Fax, Inc., Casper, Wyo.

Filed Nov. 14, 1983, Ser. No. 550,970
Int. Cl.⁴ G03B *27/72*
U.S. Cl. 355—71 **6 Claims**



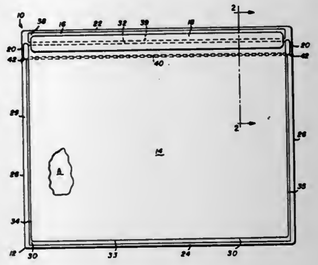
1. An improved xerographic copy machine for producing a copy of an original document and in which the latent image of matter appearing on the original document is cast onto the charged photoconducting surface of a rotating photoconductor drum via a lens arrangement, wherein the improvement comprises: an elongate light source disposed in the copy machine for illuminating the original document passing through said copy machine; filter means disposed adjacent said light source and between said light source and said original document for selectively controlling the intensity or wavelength of the light from said light source which illuminates said original document, said filter means including a plurality of transmissively dissimilar filters, said filter means controlling the intensity or wavelength uniformly along the length of said light source; and control means for alternatively individually disposing said filters between said light source and said document.

4,575,229

PHOTOETCH PLATE HINGE

Inge Lundstrom, Gilroy, Calif., assignor to Koltron Corporation, Sunnyvale, Calif.

Filed May 3, 1984, Ser. No. 606,512
Int. Cl.⁴ G03B *27/58*
U.S. Cl. 355—72 **13 Claims**



1. A photoetch plate hinge structure comprising:

a glass photographic base plate having a support surface for supporting a sheet of material to be etched;

a glass photographic cover plate overlapping said support surface for covering such sheet of material to be etched when said sheet of material is supported by the base plate, at least one of the plates having means for recording a preselected mask pattern thereon and opaque to a preselected radiation;

a burr cavity about a planar surface of one of the plates, the burr cavity being disposed inward toward said sheet of material, to receive a raised edge portion of said sheet of material when said sheet of material is disposed between the cover plate and the base plate;

a hinge base of a predetermined thickness, approximately equal to a combined thickness of said cover plate and said sheet of material, and fixedly attached to an upper surface of the base plate;

a flexible unitary sheet hinge means having a first end portion attached to the hinge base and a second end portion attached to the cover plate so that the cover plate may be pivoted in an arc-like movement relative to the base plate, the hinge means having a coefficient of expansion comparable to that of the cover plate; and

an alignment means, comprising at least one glass stopper having a coefficient of expansion similar to that of the base plate, and positioned about the base plate for aligning said sheet of material about the base plate so that said raised edge portions are within the burr cavity.

4,575,230

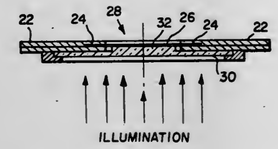
TRANSPARENT CONTOURED SUPPORT PLATE FOR FILM

John F. Carson, Henrietta, and Kimon Papadopoulos, Penfield, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 21, 1985, Ser. No. 714,595
Int. Cl.⁴ G03B *27/62*
U.S. Cl. 355—75 **5 Claims**

1. A transparent support for supporting a resilient image-bearing medium in a projector plane of a projection apparatus having means for projecting an image from the image-bearing medium, the edges of which are constrained in a mounting member having an open aperture, said support comprising:

a substantially flat plate for engaging and supporting the mounting member, said plate having a smoothly con-



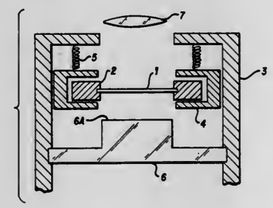
toured raised central area for engaging and supporting the central area of the resilient image-bearing medium.

4,575,231

POSITIONING DEVICE FOR MOUNTED FILM

Yasuhiro Seto, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 9, 1984, Ser. No. 587,894
Claims priority, application Japan, Mar. 9, 1983, 58-33918[U]
Int. Cl.⁴ G03B *27/62, 27/64*
U.S. Cl. 355—76 **4 Claims**



1. A device for positioning a film in an apparatus which projects an image of the film, said device comprising:

a casing having an upper plate with an inner surface, a lower end, and an aperture extending through the upper plate;

a light permeable positioning member secured in and to the casing at the lower end thereof, said light permeable positioning member having a central portion protruding toward the aperture in the upper plate of the casing;

a member movable between the inner surface of the upper plate of the casing and the positioning member;

means, arranged in the casing, for moving the movable member vertically between the inner surface of the upper plate of the casing and the positioning member;

means, set in the movable member, for mounting the film therein;

source means, arranged below the positioning member, for projecting light through the film;

a lens means, disposed outside of the casing above the aperture in the upper plate, for focusing an image on the film through which light is projected by the source means;

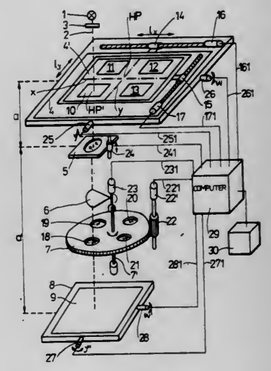
whereby an accurately focused image can always be formed by focusing lens means regardless of the thickness of the mounting means to be used.

4,575,232

METHOD FOR PRODUCING RECTIFIED AND SUPERIMPOSED IMAGES FROM MULTISPECTRAL PHOTOGRAPHS

Joachim Rulf, 30, J.-R.-Becher-Str. 30, 6908 Jena-Winzerla, German Democratic Rep.

Filed Jun. 8, 1984, Ser. No. 618,932
Claims priority, application German Democratic Rep., Jun. 30, 1983, 2525535
Int. Cl.⁴ G03B *27/32*
U.S. Cl. 355—77 **4 Claims**



1. A method for producing rectified and superimposed images from at least two multispectral photographs in a rectifier which has about an optical axis a photograph carrier for supporting the multispectral photographs,

a means for illuminating and means for displacing/tilting the same,

a projection lens and means for displacing the latter relative to the photograph carrier,

a color filter revolver and a projection table for supporting a light sensitive material for being exposed through said projection lens and a respective color filter, including means for displacing and/or tilting said projection table, and for displacing said projection lens relative to said projection table, and means for revolving said color filter revolver,

comprising

an initial step of inserting at least two multispectral photographs being in an aligned position relative to one another into a frame of said photograph carrier ensuring an adjusted position of said multispectral photographs relative to said photograph carrier,

a first step of positioning a multispectral photograph of said at least two multispectral photographs in said optical axis of said rectifier, and accurately aligning said multispectral photograph relative to said optical axis by operation of said means for displacing said photograph carrier,

a second step of setting the displacement means and tilting means, respectively, provided for the image carrier, the projection lens and the projection table according to the Scheimpflug and Newton conditions in order to rectify the multispectral photographs,

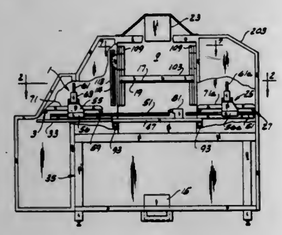
a third step of inserting a color filter of said color filter revolver being adapted to the spectral range of the multispectral photograph present in the optical axis into the latter,

a fourth step of removing a shutter out from the optical axis for a required exposure time to expose said light sensitive color material in the projection table plane,

a fifth step of moving a next multispectral photograph, if any, into the optical axis and repeating the third, fourth and fifth step to expose a multispectral photograph in

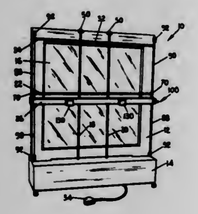
accurate superposition to a previous one on the light sensitive color material.

4,575,233
PHOTOGRAPHIC PRINTING
Harry J. Copeland, Springfield, and John W. Powers, Battlefield, both of Mo., assignors to Western Litho Plate & Supply Co., Springfield, Mo.
Continuation-in-part of Ser. No. 602,337, Apr. 20, 1984. This application Mar. 11, 1985, Ser. No. 710,425
Int. Cl.⁴ G03B *27/04, 27/20*
U.S. Cl. 355—85 **9 Claims**



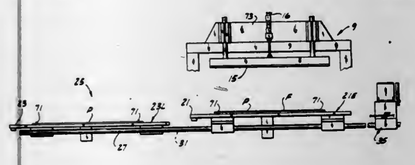
1. Apparatus for exposing boards which are photosensitized on both sides, for production of printed circuits on both sides, to light through films on both sides, each film being imaged in a circuit pattern, said apparatus comprising:
an exposure station at which a board is exposed to light through films on both sides,
a light-transmitting platen at the exposure station for holding thereon a lower film, a board on the lower film and an upper film on the board,
registration means being variably positionable at the exposure station adjacent the platen for holding any one of a variety of sizes of boards along an edge thereof in registry with the upper and lower films during exposure, and
a window movable from a raised position above the platen to a lowered position for engagement of the lower face of the window with the upper film for pressing the upper film, the board and the lower film together against the platen,
means for exposing the board at the exposure station to light through the two films.

4,575,234
STENCIL SCREEN EXPOSURE APPARATUS
James A. Black, Kent City, and Gregory J. Munson, N. Muskegon, both of Mich., assignors to General Research, Inc., Sparta, Mich.
Filed Oct. 31, 1984, Ser. No. 666,966
Int. Cl.⁴ G03B *27/20*
U.S. Cl. 355—91 **16 Claims**



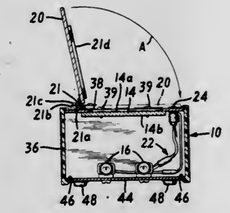
1. Stencil exposure apparatus comprising:
a support frame having a translucent surface for supporting a stencil pattern thereon;
means for positioning a stencil screen adjacent a stencil pattern on said translucent surface;
means for applying a suction between said translucent surface and a stencil screen positioned adjacent thereto;
a plurality of generally flat, compressible, resilient seal elements, each seal element being mounted on said frame to extend between opposite sides of said translucent surface, said seal elements overlapping in order to cooperate to form a periphery seal about the space on said translucent surface to which the stencil pattern is mounted; and
at least one of said seal elements being movably mounted on said frame to be movable across at least approximately half of said translucent surface, whereby the area encompassed by said seal elements may be varied to accommodate stencil screens of various sizes and stretching with resultant distortion of the screen is reduced.

4,575,235
PHOTOGRAPHIC PRINTING APPARATUS AND METHODS
John W. Powers, Battlefield, Mo., assignor to Western Litho Plate & Supply Co., St. Louis, Mo.
Filed Jun. 8, 1984, Ser. No. 618,588
Int. Cl.⁴ G03B *27/04*; B65G *47/96*
U.S. Cl. 355—97 **6 Claims**



1. Apparatus for exposing photosensitized plates to light through films at an exposure station comprising:
a first platen for holding a plate to be exposed;
first fixed guide means for guiding the first platen for movement of the first platen from a loading position at a loading station outside the exposure station to an exposure position at the exposure station for exposure of the plate, and back to loading position for reloading after the plate has been exposed;
said first guide means holding said first platen in a first generally horizontal plane at a first level in its said loading position, throughout its movement, and in its said exposure position;
a second platen for holding a plate to be exposed;
second fixed guide means for guiding the second platen for movement of the second platen from a loading position at the loading station below the loading position of the first platen to an exposure position at the exposure station below the exposure position of the first platen for exposure of the plate on the second platen, said second platen being movable back to its loading position for reloading after the plate thereon has been exposed;
said second guide means holding said second platen at a lower level in a second generally horizontal plane below the first generally horizontal plane in its said loading position, throughout its movement, and in its second exposure position; and
a window at the exposure station movable downwardly from a raised open position to press a film down on either the first platen at the first level at the exposure station or the second platen at the second and lower level at the exposure station for exposure of the plate to light through the window and film.

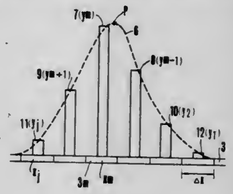
4,575,236
DENTAL X-RAY DUPLICATOR
Edgar S. Lemmey, 108 Aspen Dr., Woodbury, N.Y. 11797
Filed Aug. 21, 1984, Ser. No. 642,753
Int. Cl.⁴ G03B *27/72, 27/04*
U.S. Cl. 355—115 **11 Claims**



1. Apparatus for forming a latent contact photographic copy of an original image, said apparatus comprising
translucent platen means for supporting on one side thereof an assembly including an original image to be copied and an unexposed photographic film overlying said original image,
irradiating means mounting on the opposite side of said platen means for irradiating said photographic film through said platen means and original image,
cover means movable between an open position in which it uncovers said platen means for receiving said assembly and a closed position in which it covers said platen means and assembly, and
circuit means connected to said irradiating means,
said circuit means including switch means for selectively enabling said circuit means to energize said irradiating means, and
said switch means being mounted for contact with said cover means when said cover means is in said closed position,
whereby said switch means is closed to effect exposure of said photographic film in response to pressure exerted on said cover means when said cover means is in said closed position,
said circuit means comprising timing means for timing said exposure and indicator means responsive to said timing means, and
said timing means comprising a time constant circuit including a capacitor and having a selected time constant, said timing means effects alternate charging and discharging of said capacitor at a rate dependent on said time constant, and said indicator means produces an indication dependent on said alternate charging and discharging.

4,575,237
DISTANCE MEASURING DEVICE
Kenji Suzuki, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 22, 1982, Ser. No. 452,076
Claims priority, application Japan, Dec. 28, 1981, 56-211333
Int. Cl.⁴ G01C *3/00, 5/00*
U.S. Cl. 356—1 **27 Claims**

1. A distance measuring device which has signal generating means arranged to transmit a signal to an object the distance to which is to be measured, receives reflection signals from the object by an array of a plurality of signal receiving means and measures the distance to the object on the basis of information obtained from said signal receiving means, said device comprising:
information detecting means for detecting information from at least two of said plurality of signal receiving means; and
distance measuring means for continuously measuring the distance to the object on the basis of signals produced from said information detecting means;
said distance measuring means being arranged to receive and compute signals from said information detecting means and being provided with computing means for obtaining by computation the position of a peak value of the received signals which continuously vary in the direction in which said signal receiving means are set in array;

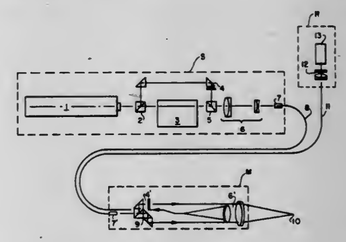


said distance measuring means having largest value determining means for detecting which of the signals received by said signal receiving means is of the largest value among these signals;
said computing means including a computation circuit which computes the position x of said peak value in accordance with the following formula;

$$x = \frac{ym + 1 - ym - 1}{4ym - 2m - 1 - 2ym + 1} \Delta x + xm$$

wherein xm represents the position of signal receiving means that has received a signal of the largest value; ym the signal value of the signal received by said signal receiving means xm; ym+1 and ym−1 signal values of signals received by signal receiving means disposed adjacent to said signal receiving means xm; and Δx a pitch between signal receiving means and is arranged to be Δx=m+1−xm=xm−1.

4,575,238
LASER-DOPPLER-ANEMOMETER
John Knühtsen, Virum, and Peder E. S. Olldag, Humlebaek, both of Denmark, assignors to Disa Elektronik A/S, Skovlunde, Denmark
PCT No. PCT/DK81/00120, § 371 Date Aug. 25, 1983, § 102(e) Date Aug. 25, 1983, PCT Pub. No. WO83/02329, PCT Pub. Date Jul. 7, 1983
PCT Filed Dec. 28, 1981, Ser. No. 530,588
Int. Cl.⁴ G01P *3/36*
U.S. Cl. 356—28.5 **1 Claim**



1. A laser-doppler-anemometer of the kind in which a radiation beam (a) having a predetermined direction of polarization emitted from a laser (1) is separated into two spatially distinct partial beams (B, C), one of which is led through a frequency displacement device (3), following which the separated fre-

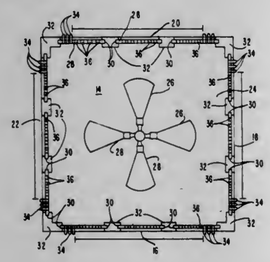
quency-displaced partial beams (B, C') having the same direction of polarization are focussed in a measuring volume (10) for measuring the rate of flow of a liquid or gaseous medium by interference between said partial beams, whereby an interference picture is supplied to a photoelectric receiving device (12, 13), characterized in that the laser (1) together with a first beamsplitter (2) for separating the laser radiation beam (A) into said spatially distinct partial beam (B, C) and said frequency-displacing member (3) affecting one partial beam (B) form parts of a transmitting device (S) which further includes a first polarization-direction-turning device (4) positioned in the path of one of said spatially distinct partial beams (B, C) for turning the direction of polarization of said partial beam (C) by 90°, and another beamsplitter (5) for spatially uniting said two frequency-displaced partial beams (B, C') having directions of polarization mutually displaced by 90°, said transmitting device (S) being connected with the inlet end of a polarization-direction-preserving optical "single-mode"-fiber (8) having two orthogonal principal axes (Z, Y) adjusted to each respective of said two directions of polarization of said partial beams (B, C') displaced by 90°, the outlet end of said fiber (8) being connected with a measuring probe (M) to be positioned close to said measuring volume (10) and accommodating an additional beamsplitter (9) for spatially separating the partial beams (B, C') transmitted through the fiber (8) into partial beams with each respective of said two directions of polarization displaced by 90°, and a second polarization turning member (4') acting on one of said partial beams (C') for turning the direction of polarization of said partial beam to the same direction of polarization as that of the other partial beam (B).

4,575,239

APPARATUS FOR DETECTING DEFECTS IN CAPSULE SHELLS

Thomas G. Wood, East Brunswick, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Aug. 27, 1982, Ser. No. 412,330
Int. Cl.⁴ G01N *21/90*
U.S. Cl. 356—240 **8 Claims**



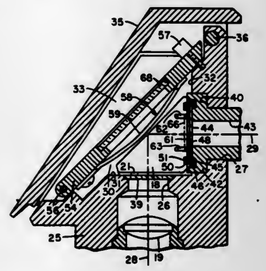
1. A method for detecting defects in capsule bodies and caps, which comprises fashioning an apparatus comprising, in combination, an enclosed area, which is defined by a plurality of external surfaces, and which includes a top portion, a bottom portion and at least three longitudinally disposed sides at least one side of which includes a series of removable vertical panels, each panel of which includes a plurality of openings and is easily removable for loading or unloading of capsule bodies or caps, and a light source which is disposed within the enclosed area, said panels including said openings having solid portions which are opaque, and each of the openings therein being defined by internal walls of said panels dimensioned to snugly carry a capsule body or cap which when seated in said opening will extend horizontally outwardly from said panel but which will snugly fit in said opening and will firmly be held therein so that it will not be easily dislodged, but yet may be manually rotated, positioning capsule bodies, capsule caps or mixtures of separated capsule bodies and caps in said openings, shining light through the openings and said capsule bodies and caps mounted therein and observing if the capsule bodies and caps contain defects.

4,575,240

VISIBLE SAMPLE CHAMBER FOR FLUID ANALYSIS

Craig N. Hess, Brookline, and Robert S. Potts, Sherborn, both of Mass., assignors to Corning Glass Works, Corning, N.Y.

Filed Jun. 10, 1983, Ser. No. 502,943
Int. Cl.⁴ G01N *21/05, 33/49*
U.S. Cl. 356—246 **5 Claims**



1. An apparatus for automatically analyzing a fluid comprising;
a first transparent member having a flat surface,
a transparent prism having a first flat surface adjacent to said flat surface of said first member,
means for supporting said flat surfaces of said first member and said prism in a spaced, substantially parallel relationship,
means for sealing off a region between said flat surfaces, the sealed-off region constituting a sample chamber for supporting said fluid,
means for flowing said fluid through said chamber,
means for urging said first member and said prism toward each other,
means for directing a beam of light through said first transparent member and said first prism surface, said beam reflecting from a second surface of said prism and passing through a third surface of said prism,
means for automatically analyzing the resultant light beam, and
optical path means in said instrument adjacent said second surface of said prism for operator inspection of said sample chamber, whereby said sample chamber can be inspected through said prism.

4,575,241

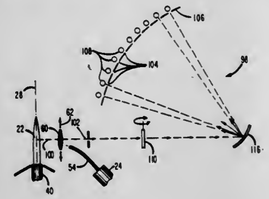
SPECTROMETER

Donald R. Demers, Nashua, N.H., and Charly D. Allemand, Newton, Mass., assignors to Baird Corporation, Bedford, Mass.

Division of Ser. No. 254,929, Apr. 16, 1981, Pat. No. 4,432,644. This application Sep. 29, 1983, Ser. No. 537,177
Int. Cl.⁴ G01N *21/64, 21/73*
U.S. Cl. 356—316 **2 Claims**

1. A fluorescence spectrometer for multielement analysis of samples comprising:
(a) a source for atomizing a dispersed sample along its axis;
(b) at least one energizer mounted about said source for exciting the elements in said sample;
(c) a polychromator having a focal curve and a wide entrance slit with a bandpass of about 4 nanometers, said polychromator mounted about said source for receiving via said wide entrance slit fluorescent emission from said excited elements in said sample;

(d) at least one detector mounted about said focal curve;
(e) a vibrating quartz refractor plate disposed between said source and said detector;
(f) said source being an inductively coupled plasma movable along its said axis; and



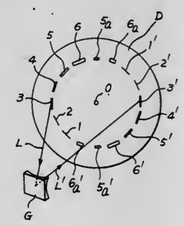
(g) a single optical element movably mounted between said source and said polychromator for permitting said detector to view different segments of said source along its said axis.

4,575,242

SLIT MECHANISM FOR USE IN A MONOCHROMATOR

Osamu Akiyama, and Rikuo Hira, both of Kyoto, Japan, assignors to Shimadzu Corporation, Kyoto, Japan

Filed Oct. 14, 1983, Ser. No. 542,151
Claims priority, application Japan, Oct. 29, 1982, 57-191305
Int. Cl.⁴ G01J *3/04, 3/18*
U.S. Cl. 356—331 **6 Claims**



1. A slit mechanism for use in a monochromator, comprising:
a plurality of discrete pairs of slits, the two slits in each pair having the same width and the same height and each pair having a same height and a different width from those of the other pairs, and at least one additional pair of slits having the same width as the width of, and a smaller height from the height of, a predetermined one of said plurality of pairs of slits said additional pair of slits having a slit height smaller than the slit heights of said pairs of slits; and means for defining said slits.

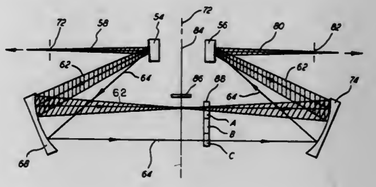
4,575,243

MONOCHROMATOR

Wolfgang Witte, Uberlingen, Fed. Rep. of Germany, assignor to Bodenseewerk Perkin-Elmer & Co., GmbH, Uberlingen, Fed. Rep. of Germany

Filed Jun. 10, 1983, Ser. No. 502,990
Claims priority, application Fed. Rep. of Germany, Jul. 1, 1982, 3224559
Int. Cl.⁴ G01J *3/18*
U.S. Cl. 356—333 **8 Claims**

1. A grating monochromator for scanning a spectrum comprising, in combination:
an entrance slit
an entering light beam disposed to pass through said entrance slit and for defining a first optical axis;
a first stationary grating means for dispersing said light beam, after passing through said entrance slit, into dispersed beams having axes in accordance with wavelength about a fanning point on said optical axis;
a first concave mirror arranged to receive said dispersed beams and to image said fanning point at infinity and to focus said dispersed beams to form intermediate images of said entrance slit in a plane, said intermediate images forming a spectrum;
a second stationary grating for defining a second optical axis and fanning point on said second optical axis;



an exit slit disposed along said second optical axis;
a second concave mirror arranged on the side of said plane opposite said first concave mirror, said second concave mirror being disposed to receive said dispersed beams and redirect them onto said second grating and to image said intermediate image on said exit slit;
a rotatable disc having a spiral slot therein, said disc being disposed in said plane and said slot being arranged to define an intermediate slit in the area of said intermediate images and, in operation on rotation of said disc, said spectrum is scanned; and
stationary filter means arranged in the path of said dispersed beams to supress undesired grating orders.

4,575,244

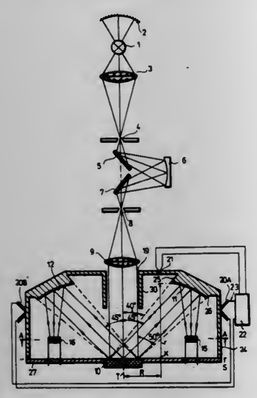
DETECTOR SYSTEM FOR MEASURING THE INTENSITY OF A RADIATION SCATTERED AT A PREDETERMINED ANGLE FROM A SAMPLE IRRADIATED AT A SPECIFIED ANGLE OF INCIDENCE

Károly Kaffka; Béla Nadai; András Czabaffy, and Loránd Horváth, all of Budapest, Hungary, assignors to Kozponti Elelmiszeripari Kutato Intezet, Budapest, Hungary

Filed May 19, 1983, Ser. No. 496,250
Claims priority, application Hungary, May 28, 1982, 1733/82
Int. Cl.⁴ G01N *21/00*
U.S. Cl. 356—343 **23 Claims**

1. A detector system for measuring the intensity of a radiation scattered from a sample irradiated by an incident beam of radiation, said detector system comprising
means defining a path to transmit the incident beam of radiation onto the sample substantially at a specified angle of incidence,
an optical arrangement having at least two substantially contiguous concave reflecting surfaces, each said surface being located in the path of only the radiation scattered from the sample in a small range about a predetermined angle in particular section of an imaginary hemisphere, said concave reflecting surfaces covering substantially the whole said imaginary hemisphere in said range,
a plurality of radiation sensors one for each of said concave

reflecting surfaces, each of said concave reflecting surfaces focusing the radiation scattered from the sample in



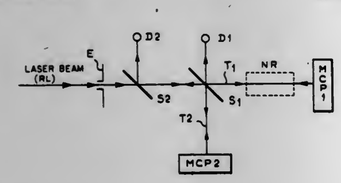
said particular section onto the radiation sensor associated with it.

4,575,245

INTERFEROMETRIC OPTICAL DEVICES WITH PHASE CONJUGATING MIRRORS IN PARTICULAR FOR LASER GYROMETERS

Christian J. R. Bordé, Paris, France, assignor to Centre National de la Recherche Scientifique (C.N.R.S.), Paris, France

Filed Apr. 8, 1982, Ser. No. 366,662
Claims priority, application France, Apr. 8, 1981, 81 07054
Int. Cl.⁴ G01B *9/02*
U.S. Cl. 356—345 **15 Claims**



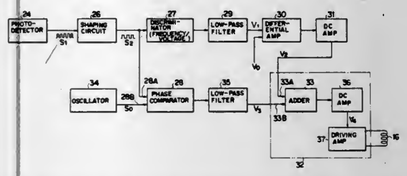
1. An interferometric optical device comprising:
an input for receiving laser radiation;
means positioned to receive said laser radiation for separating said laser radiation into first and second split beams propagating respectively along first and second beam paths;
first mirror means positioned in said first beam path for returning a first reflected beam which is a phase conjugate of said first split beam back along said first beam path;
second mirror means positioned in said second beam path for returning a second reflected beam which is a phase conjugate of said second split beam back along said second beam path; and
means positioned to receive said first and second reflected beams for comparing said first and second reflected beams through their mutual interference, and thus for detecting an optical non-reciprocity in said first beam path.

4,575,246

MICHELSON INTERFEROMETER

Seizi Nishizawa, and Kikuo Shirawachi, both of Tokyo, Japan, assignors to Japan Spectroscopic Co., Ltd., Hachioji, Tokyo, Japan

Filed Mar. 5, 1984, Ser. No. 586,142
Int. Cl.⁴ G01J *3/45*
U.S. Cl. 356—346 **3 Claims**



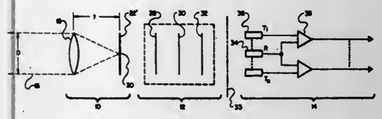
1. A continuous drive type Michelson interferometer system comprising
a main Michelson interferometer including a movable mirror, a beam splitter, and drive means for continuously moving the movable mirror in a direction toward and away from the beam splitter,
an auxiliary Michelson interferometer including an auxiliary movable mirror in the form of a specular surface formed on said movable mirror in a plane perpendicular to the direction of movement of said movable mirror, and a detector for detecting the interference fringes of light having a given wavelength with the movement of the movable mirror to produce an AC signal, and
a control section connected to said detector for receiving the signal of said detector to control the driving speed of said drive means,
said control section including
frequency/voltage conversion means for converting the AC output signal of the detector of said auxiliary Michelson interferometer into a voltage corresponding to the frequency of the signal,
voltage difference detection means for comparing the voltage developed by said conversion means with a preset voltage to produce a signal representative of the difference,
phase comparison means for phase comparing the AC output signal of said detector with a signal at a preset frequency to produce a signal representative of the phase difference, and
control means adapted to respond to both the outputs of said voltage difference detection means and said phase comparison means for controlling the driving speed of said movable mirror drive means.

4,575,247

PHASE-MEASURING INTERFEROMETER

Richard J. Tansey, Thousand Oaks, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jul. 2, 1984, Ser. No. 627,363
Int. Cl.⁴ G01B *9/02*
U.S. Cl. 356—349 **7 Claims**



1. A phase-determining interferometer for determining the phases at different points in the wavefront of an incoming test beam of light comprising:

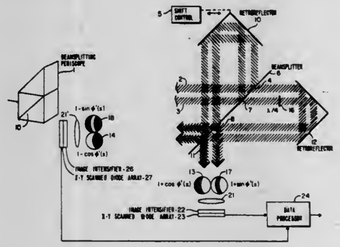
point diffraction interferometer (PDI) means for forming a directly transmitted and a diffracted beam whose polarization vectors are orthogonal to each other, said PDI means having a focusing means and a half-wave, partially transmitting plate with a pinhole therein, the diameter of the pinhole being small enough to form a spherical unaberrated reference wavefront from the light focussed on the pinhole;
frequency-shifting means for converting said orthogonal beams from the interferometer into two beams differing in frequency from each other and forming a moving interference pattern therefrom in a plane transverse to the beam propagation axis; and
means for converting the irradiance at specific points in the output beam pattern of the frequency-shifting means into proportionate phase-indicating data.

4,575,248

WAVEFRONT SENSOR EMPLOYING NOVEL D.C. SHEARING INTERFEROMETER

Bruce A. Horwitz, Newton, and Alan J. MacGovern, Acton, both of Mass., assignors to Itek Corporation, Lexington, Mass.

Filed Jun. 18, 1984, Ser. No. 621,408
Int. Cl.⁴ G01B *9/02*
U.S. Cl. 356—353 **27 Claims**



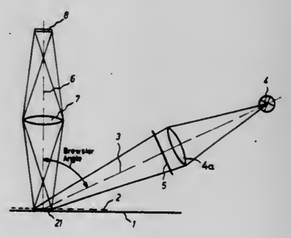
1. Method of measuring the shape of an incoming wavefront of light comprising the steps of:
a. providing first and second retroreflector means together with a beamsplitter;
b. replicating said incoming wavefront into a first and second beam;
c. directing said first and second beams at first and second portions respectively of said beamsplitter;
d. redirecting first portions of said first and second beams reflected off of said beamsplitter at third and fourth portions of said beamsplitter respectively via said first retroreflector means;
e. redirecting second portions of said first and second beams transmitted through said beamsplitter at said third and fourth portion respectively of said beamsplitter via said second retroreflector means, for producing interference between said first and second beams at said third and fourth portions of said beamsplitter;
f. introducing a phase shift between said first and second beams before said first and second beams are directed at said third and fourth portion of said beamsplitter;
g. adjusting the relative positions between said first and second beams to produce shearing interferograms at said third and fourth portions of said beamsplitter;
h. examining first and second shearing interferograms produced by combining said first and second beams at one side of said beamsplitter at said third and fourth portions thereof; and
i. examining third and fourth shearing interferograms produced by combining said first and second beams at the other side of said beamsplitter at said third and fourth portions thereof.

4,575,249

METHOD AND DEVICE FOR MEASURING THE DENSITY OF COLOR LAYERS OF PRINTING INKS THAT ARE STILL WET

Dieter Grieger, Kiel, Fed. Rep. of Germany, assignor to Dr. Ing. Rudolf Hell GmbH, Fed. Rep. of Germany

Filed Mar. 23, 1983, Ser. No. 477,976
Claims priority, application European Pat. Off., Apr. 10, 1982, 82103089.7
Int. Cl.⁴ G01N *21/47*
U.S. Cl. 356—369 **12 Claims**



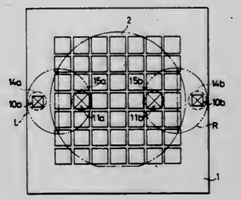
4. A device for measuring the density of color layers of printing ink which is still wet comprising:
a source of polarized light for illuminating the color layer along an optical axis at an angle of incidence,
the oscillation direction of the E-Vector of said polarized light being parallel to the plane of impingement which is defined by said optical axis and the surface normal line of the color layer,
the optical axis of illumination being inclined relative to the surface normal line of the color layer at approximately the Brewster angle of the printing ink color layer, and
a photoelectric receiver for measuring the light reflected by the color layer and converting the measured light into an electrical signal.

4,575,250

ALIGNING APPARATUS AND METHOD FOR MITIGATING INSTABILITY CAUSED BY INTERFERENCE IN ALIGNMENT SIGNAL

Akiyoshi Suzuki, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 20, 1982, Ser. No. 451,334
Claims priority, application Japan, Dec. 29, 1981, 56-215324
Int. Cl.⁴ G01B *11/26*
U.S. Cl. 356—401 **13 Claims**



8. Apparatus for aligning a first body with a second said body, said first body being characterized in that light may be transmitted therethrough to the second body, said first body

having a first and second alignment marks in respective first and second zones thereon, said second body having an alignment mark thereon; said apparatus comprising:

observing means for observing the regions of said first and second zones on said first body;

obtaining means for obtaining, in response to a first observing operation through said observing means carried out under first conditions in which there is substantially no influence from any light transmitted through said first body at said first and second zones, first electrical signals dependent upon the relative positions of said first and said second alignment marks on said first body; and for obtaining, in response to a second observing operation through said observing means carried out with said alignment mark on said second body aligned with said first zone and under second conditions in which there is substantially no influence from any light transmitted through said first body at said second zone, second electrical signals dependent upon the relative position of said second alignment mark on said first body and said alignment mark on said second body; and

means for bringing said first and said second bodies into a desired positional relationship utilizing said first and said second electrical signals.

4,575,251

MEASUREMENT DEVICE OF PHOTOGRAPHIC DENSITY OF FILM

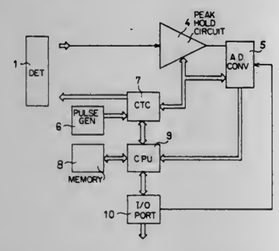
Tomiji Hotta, Kyoto, and Mitsuo Inoue, Ōtsu, both of Japan, assignors to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan

Filed Nov. 16, 1983, Ser. No. 552,450

Claims priority, application Japan, Dec. 11, 1982, 57-218169

Int. Cl.⁴ G01N *21/59*

U.S. Cl. 356—443 **2 Claims**



1. Apparatus for measuring the photographic density of a film wherein the film is passed between a light source and a plurality of light sensitive elements for converting the received light into electrical signals comprising;

means supplied with the electrical signals in the absence of film for deriving an arithmetic average value A of said electrical signals,

means supplied with the electrical signals in the presence of film for deriving a value B and in turn the value $(A-B_n)$ for each element,

and means for summing the $(A-B_n)/A$ values for all the elements for deriving the desired measure for utilization.

4,575,252

APPARATUS FOR MEASURING ABSOLUTE REFLECTANCE

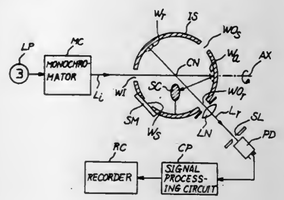
Osamu Akiyama, Kyoto, Japan, assignor to Shimadzu Corporation, Kyoto, Japan

Filed Oct. 14, 1983, Ser. No. 542,150

Claims priority, application Japan, Oct. 29, 1982, 57-191306

Int. Cl.⁴ G01N *21/47*

U.S. Cl. 356—446 **6 Claims**



1. Apparatus for measuring the absolute reflectance of a sample, comprising:

(a) an integrating sphere provided in a spherical wall thereof with four windows having a center of each window lying in a single plane including a center of said sphere, a first one of said four windows having its center coinciding with a diametric line included in said plane while a second and a third one of said four windows are arranged symmetrically with respect to said diametric line, with a fourth one of said windows having a sample set therein so as to face inwardly of said integrating sphere;

(b) a light source so arranged as to introduce a beam of light into said integrating sphere;

(c) light intercepting means provided in said integrating sphere and arranged in a partial light intercepting relation to said sample so as to prevent diffuse light which is reflected a first time by an inner surface of said sphere from directly impinging on said sample and to allow light reflected by said inner surface said first time to impinge directly on said inner surface so as to be reflected a second time and to directly exit said sphere through one of said second and third windows;

(d) light measuring means so arranged as to receive light emerging from inside said integrating sphere;

(e) means for rotating said integrating sphere about an axis coinciding with said diametric line so that said integrating sphere selectively takes first and second positions 180° apart from each other thereby to change the operative position of said second and third windows relative to said light source and said light measuring means; and

(f) means for processing measured data obtained by said measuring means when said integrating sphere is at said first and second positions, respectively, thereby to obtain the absolute reflectance of said sample.

4,575,253

STIRRING APPARATUS

Jörg List, Pratteln, and Alfred Kunz, Witterswil, both of Switzerland, assignors to Dipl. Ing. H. List, Industrielle Verfahrenstechnik, Pratteln, Switzerland

Filed Nov. 22, 1983, Ser. No. 554,551

Claims priority, application Switzerland, Nov. 26, 1982, 6904/82

Int. Cl.⁴ B01F *7/04*

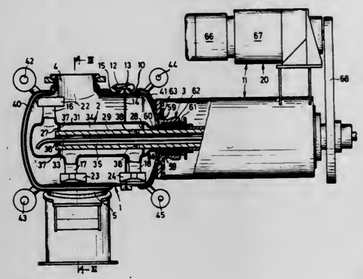
U.S. Cl. 366—331 **8 Claims**

1. A stirring apparatus comprising:

a drive means;

a two-part stirring shaft including a hollow casing having a plurality of stirring arms affixed thereto and an impact sensitive protective coating thereon and a hollow shaft positioned within said casing and connected to said drive means to be rotated by said drive means;

force transmitting means connecting said hollow shaft to said casing for causing said stirring arms to be rotated by said drive means and for isolating said casing from said hollow shaft during sudden load peaks applied to said stirring arms whereby loading stress associated with such load peaks is not transmitted to said impact sensitive protective coating, said force transmitting means including first flexible means connecting each stirring arm to a stirring blade thereon, second flexible means connecting said casing to said hollow shaft at one location and third flexible means connecting said casing to said hollow shaft at a second location spaced from said first location, said second and third flexible means permitting movement of said hollow shaft relative to said casing to that said hollow shaft and said casing can rotate at different speeds.



4,575,254

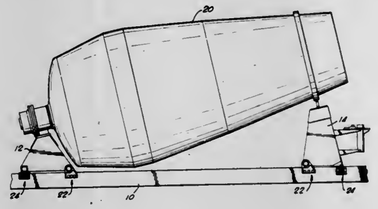
TRANSIT MIXER SUPPORT PEDESTAL MOUNTING APPARATUS

James G. Johnston, Walnut, Calif., assignor to Challenge-Cook Bros., Incorporated, Industry, Calif.

Filed Apr. 4, 1984, Ser. No. 596,630

Int. Cl.⁴ B28C *5/18*

U.S. Cl. 366—62 **12 Claims**



1. A mounting apparatus for a transit mixer having a frame, a front support pedestal and a rear support pedestal, both pedestals having a front and a back, comprising, a first rotational joint means pivotally connecting the back of the front pedestal to the frame, a second rotational joint means pivotally connecting the front of the rear pedestal to the frame, a first flexure joint means connecting the front of the front pedestal to the frame, a second flexure joint means connecting the back of the rear pedestal to the frame, said flexure joint means being arranged so as to allow relative movement between the pedestal and the frame.

4,575,255

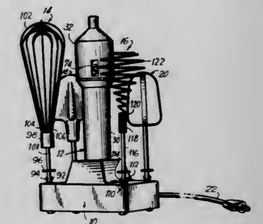
KITCHEN APPLIANCE ARRANGEMENT WITH PORTABLE UNIT

Barbara Kafka, 23 E. 92nd St., New York, N.Y. 10028

Filed Sep. 7, 1982, Ser. No. 415,272

Int. Cl.⁴ B01F *15/00*

U.S. Cl. 366—129 **19 Claims**



1. Apparatus comprising a portable casing adapted for being grasped in and manipulated by the hand of a user, a motor in said casing, a battery in said casing and coupled to said motor for driving the latter, a first kitchen appliance unit supported by and extending from said casing and coupled to and driven by said motor, reduction gear means coupling said motor to said kitchen appliance unit, a plurality of different kitchen appliance units wherein the appliance units, including the first said appliance unit, are detachably and selectively insertable in part into said casing for being driven by said motor, and a base provided with a receptacle for holding said portable casing and a plurality of receptacles for holding said appliance units, wherein said first kitchen applicance unit includes a first shaft coaxial with said motor, and a mixing means on said shaft and having an axis parallel with, but concentrically related to, said shaft.

4,575,256

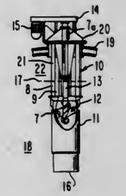
RAGLESS PROPELLER DRAFT TUBE MIXER

Jack R. Armitage, Kearns, and Ralph B. Haymore, Salt Lake City, both of Utah, assignors to Envirotech Corporation, Salt Lake City, Utah

Filed Sep. 19, 1983, Ser. No. 533,831

Int. Cl.⁴ B01F *5/12*

U.S. Cl. 366—266 **1 Claim**



1. In a draft tube mixer in flow connection to a solids and debris containing liquid-holding tank wherein a motor-driven shaft and propeller mounted to a hub on said shaft are mounted in a draft tube to pump liquid, solids and debris through said draft tube in one direction the improvement comprising:

a ragless propeller within said draft tube, said propeller having a series of lobed blades extending from said hub and symmetrically spaced and spirally disposed at varying diameter along a constant-diameter length of said hub, each of said blades spirally extending about 360° around said hub;

means including a blade leading edge regressing from a point of tangency at the shaft hub as said blades progress along said hub for outwardly deflecting debris striking said blades;

wherein each of said blades are faired into said hub at spaced apart positions on opposite ends of said hub and have a maximum diameter essentially midway of said spaced apart positions; and

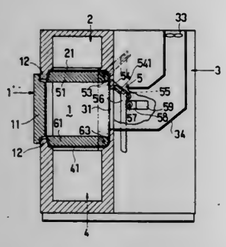
further comprising bearing means for supporting said shaft adjacent the attachment of said propeller to said shaft at a level within said draft tube at hydraulic pressure, said bearing means including a shaft housing, a bearing sleeve and means including an oil column within said shaft housing above and around said bearing sleeve pressurizing said bearing sleeve to a pressure greater than the hydraulic pressure in said draft tube at said level.

4,575,257

THERMAL SHOCK CHAMBER

Toichi Ogura, Shiga; Ikuo Kanamori, Osaka, and Keiichi Murano, Sakurai, all of Japan, assignors to Tabai Espec Corp., Japan

Filed Mar. 1, 1984, Ser. No. 585,191
Claims priority, application Japan, Oct. 5, 1983, 58-186179
Int. Cl.[4] G01N *25/00*; F25B *29/00*
U.S. Cl. 374—45 **4 Claims**



1. A thermal shock chamber comprising a test area, a high-temperature air conditioning unit having a gas outlet and a gas inlet adjacent to the test area, an outside air supplying unit having an air outlet and an air inlet adjacent to the test area and to the gas outlet and inlet of the high-temperature air conditioning unit, a low-temperature air conditioning unit having a gas outlet and a gas inlet adjacent to the test area and to the air outlet and inlet of the outside air supplying unit,

a first damper assembly, means for moving the first damper assembly between two end positions and to positions between said end positions, at one of said end positions the first damper assembly closing both the gas outlet and gas inlet of the high-temperature air conditioning unit while opening both the air outlet and air inlet of the outside air supplying unit, and at the other of said end positions the first damper assembly opening both the gas outlet and the gas inlet of the high temperature air conditioning unit while closing both the air outlet and the air inlet of the outside air supplying unit,

a second damper assembly, means for moving the second damper assembly between two end positions and to positions between said end positions, at one of said end positions the second damper assembly closing both the gas outlet and gas inlet of the low-temperature air conditioning unit while opening both the air outlet and air inlet of the outside air supplying unit, and at the other of said end positions the second damper assembly opening both the gas outlet and the gas inlet of the low temperature air conditioning unit while closing both the air outlet and the air inlet of the outside air supplying unit.

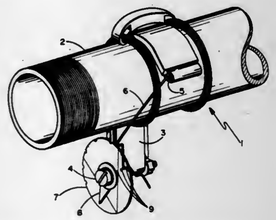
2. A chamber a defined in claim 1, said chamber having a front, a rear, one side portion and an other side portion, said test area having an interior defined by said front, rear, one side portion and said other side portion, and wherein one of the high-temperature air conditioning unit and the low-temperature air conditioning unit is provided immediately above the test area, and the other of said high-temperature air conditioning unit and the low-temperature air conditioning unit is provided immediately below the test area, the outside air supplying unit being provided close to the test area at said rear thereof, the gas outlets of the high-temperature and low-temperature air conditioning units being positioned above and below said one side portion of the test area to communicate with the said interior of the test area, the gas inlets of the high-temperature and the low-temperature air conditioning units being positioned above and below the said other side portion of the test area to communicate with the said interior of the test area, the gas outlets and the gas inlets extending substantially horizontally in the direction of the depth of the test area, the air outlet of the outside air supplying unit being positioned at said rear of said one side portion of the test area to communicate with the interior of the test area and extending substantially vertically in proximity to the gas outlets of the two air conditioning units, the air inlet of the outside air supplying unit being positioned at said rear of said other side portion of the test area to communicate with the interior of the test area and extending substantially vertically in proximity to the gas inlets of the two air conditioning units, the first damper assembly including a pair of dampers each pivotally movable about one end thereof to open the outlet and the inlet of one of the high-temperature air conditioning unit and the outside air supplying unit and to close the outlet and the inlet of the other of said high-temperature air conditioning unit and outside air supplying unit at the same time, the second damper assembly including a pair of dampers each pivotally movable about one end thereof to open the outlet and the inlet of one of the low-temperature air conditioning unit and the outside air supplying unit and to close the outlet and the inlet of the other of said low-temperature air conditioning unit and outside air supplying unit at the same time.

4,575,258

STEAM TRAP FAILURE DETECTOR

Donald E. Wall, 6850 Washington St. NE., Minneapolis, Minn. 55432

Filed Aug. 6, 1984, Ser. No. 637,917
Int. Cl.[4] G01K *3/00*
U.S. Cl. 374—104 **3 Claims**



1. Thermal responsive apparatus comprising:

(a) an arcuately curved bi-metallic strip comprising a temperature sensing element mounted with one end thereof receiving a rotatable axle and one end being a free end, with said sensing element being fixedly coupled to said rotatable axle, and with the free end thereof being mounted adjacent a temperature variable surface and with a disc means coupled to said rotatable axle and being free to rotate;

(b) a push arm having one end coupled to the free end of said sensing element and its opposed end coupled to said disc means, and a temperature indicating means being disposed on said disc means;

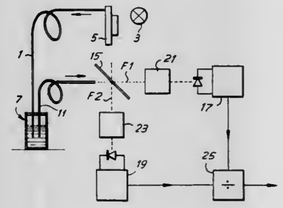
(c) a temperature indicating arm frictionally mounted to said rotatable axle, whereby the sensed temperature variations are indicated relative to the temperature indicating means coaxially mounted on said rotatable axle.

4,575,259

OPTICAL FIBRE THERMOMETER

Mauro Bacci, Florence; Massimo Brenci, Pistoia; Giuliano Conforti, Florence; Riccardo Falciai, Florence; Anna G. Mignani, Florence, and Anna M. Verga-Scheggi, Florence, all of Italy, assignors to Consiglio Nazionale Delle Ricerche, Italy

Filed Oct. 16, 1984, Ser. No. 661,395
Claims priority, application Italy, Oct. 18, 1983, 19540 A/83
Int. Cl.[4] G01J *5/58*
U.S. Cl. 374—130 **9 Claims**



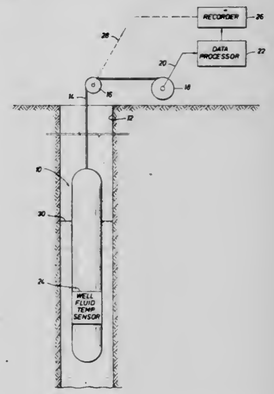
1. In an optical fiber thermometer having an end probe and an optical fiber for conveying light from a source to the end probe and thence to electro-optical means for detecting temperature; the end probe contains a liquid thermochromic substance whose light absorption varies with temperature over a first wavelength range and remains substantially constant with temperature over a second wavelength range; the electro-optical means responding to light transmitted through the thermochromic substance and through the optical fiber to detect the absorption of the first wavelength range relative to the second wavelength range, and to produce a signal indicative of said relative absorption; a light source for producing light in both the first and second wavelength ranges; the electro-optical means splitting said transmitted light into two beams and comprising first and second narrow band-pass filters centered on the first and second wavelength ranges respectively, receiving respective ones of the two beams; first and second photodetectors responsive respectively to outputs of the band-pass filters to produce signals representative of the absorption in the respective wavebands; and processor means responsive to said absorption signals to produce said relative absorption signal which is indicative of the temperature sensed by the end probe; the end probe comprising a specular reflector part which reflects light of both said wavelength ranges, and wherein light from the optical fiber is transmitted through the liquid thermochromic substance, is reflected in the specular reflector part, is transmitted again through the thermochromic substance and is then conveyed to the electro-optical means by a further optical fiber; and the end probe further comprising a capillary tube containing the liquid thermochromic substance and which receives the ends of said optical fiber and of the end of a further optical fiber for conveying light to the electro-optical means, the ends of the optical fibers being immersed in the liquid substance.

4,575,260

THERMAL CONDUCTIVITY PROBE FOR FLUID IDENTIFICATION

Allen R. Young, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed May 10, 1984, Ser. No. 608,838
Int. Cl.[4] E21B *47/06*; G01K *13/00*
U.S. Cl. 374—136 **6 Claims**



1. For use with a sonde supported on a logging cable and adapted to be lowered into a well borehole, well fluid determining apparatus which comprises measuring means adapted to be supported on a sonde and lowered into the well bore hole for determining the thermal conductivity of fluid in the well bore hole and on the exterior of the sonde, said means including measuring circuit means connected to an exposed resistor, a heat sink having fins and joined to a mounting means, said mounting means being affixed to the sonde, said resistor protectively mounted between said fins, wherein said resistor is cooled by heat transfer provided by the well fluid, and said resistor is mounted on said mounting means exposing said resistor to the fluid in the well bore hole and on the exterior of the sonde, said measuring means forming an output signal indicative of the thermal conductivity coefficient of the fluid.

4,575,261

SYSTEM FOR CALCULATING FORMATION TEMPERATURES

Eugene L. Berger, and Richard A. Koseluk, both of Houston, Tex., assignors to NL Industries, Inc., New York, N.Y.

Filed Jun. 30, 1983, Ser. No. 509,484
Int. Cl.[4] G01K *13/00*; G05B *17/00*
U.S. Cl. 374—136 **8 Claims**

1. A method of determining the earth formation temperature while drilling a borehole comprising the steps of:

pumping drilling fluid into the borehole through drill pipe to the drill bit and back to the surface along the annulus between the drill pipe and the walls of the borehole to transfer heat to said fluid from earth formations as they are exposed by the drill bit;

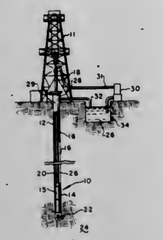
interrupting the flow of said fluid inside said drill pipe;

measuring the temperatures of said fluid inside said drill pipe and in said annulus during said interruption of flow; p1 creating a timed array set of said measured temperatures of said fluid during said interruption of flow and drilling;

determining, by a plurality of calculations, the thermal conductivity of said fluid as a function of the temperature differential of said fluid in said pipe and annulus;

compensating in said calculations for the fluid flow caused

by thermal effects of the cuttings slip in the annulus during said flow interruption; and



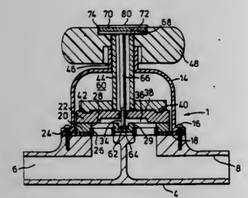
determining the earth formation temperature in said borehole as a function of said fluid thermal conductivity and the temperature differential of said fluid in said pipe and annulus.

4,575,262

TEMPERATURE INDICATOR FOR A FLUID FIXTURE

Markham L. Andersen, Toronto, Canada, assignor to Anderstat Controls, Scarborough, Canada

Filed Nov. 22, 1983, Ser. No. 554,488
Int. Cl.⁴ G01K *1/14, 13/02*
U.S. Cl. 374—147 **14 Claims**



1. A temperature indicator for a fluid fixture, the temperature indicator being adapted to be mounted in a rotatable handle of the fluid fixture, and the temperature indicator comprising:

a temperature probe adapted to be secured to a part of the fluid fixture, so as to be subject to temperature of fluid flowing through the fixture;

electric circuit means connected to the temperature probe;

power supply means for supplying electrical power to the temperature indicator and connected to the circuit means to supply power to the circuit means; and

a display device connected to and driven by the circuit means, to provide an indication of the temperature of the fluid sensed by the temperature probe;

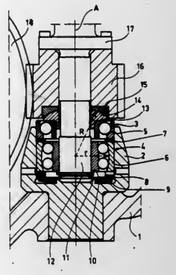
wherein the display device and the power supply means are formed as a single unit, adapted to be mounted in a handle of such a fluid fixture, with the display device located on an external surface of the handle, and wherein the temperature indicator includes a part adapted to be secured to the fluid fixture, so that, as the handle is rotated, the temperature indicator remains stationary.

4,575,263

BEARING DEVICE

Zoltan Földhazy, Tumba, and Otto Hellekant, Ronninge, both of Sweden, assignors to Alfa-Laval Separation AB, Tumba, Sweden

Filed Aug. 23, 1984, Ser. No. 643,453
Claims priority, application Sweden, Sep. 23, 1983, 8305148
Int. Cl.⁴ F16C *21/00*
U.S. Cl. 384—126 **10 Claims**



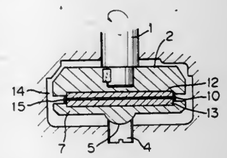
1. In a bearing device for a spindle rotatably suspended in a frame, said device including a first bearing which comprises one rotatable and one non-rotatable bearing ring and which is arranged to transfer radial forces from the spindle to the frame while permitting inclination of the spindle relative to its normal rotational axis, a second bearing arranged to transfer axial forces from the spindle to the frame and comprising one rotatable and one non-rotatable bearing ring, and two abutting contact surfaces through which said axial forces are transferred to the frame by way of one of the bearing rings of said second bearing, said contact surfaces being movable relative to each other to permit inclination of the spindle relative to said rotation axis during rotation of the spindle, the improvement which comprises a first member united with the spindle and carrying one of said contact surfaces, and a second member carrying the other contact surface and united with the rotatable bearing ring of said second bearing, the bearing device including means spacing said first and second bearings from each other while allowing relative axial movement between said radial bearing and one ring of said axial bearing in response to axial resilience or wear of the axial bearing.

4,575,264

THRUST BEARING

Shotaro Mizobuchi, Kanagawa; Katsumi Sasaki, Tokyo; Yoshikazu Kimura, and Kazuyuki Kasahara, both of Kanagawa, all of Japan, assignors to Ebara Corporation, Tokyo, Japan

Filed Jul. 24, 1984, Ser. No. 634,114
Claims priority, application Japan, Jul. 25, 1983, 58-134475
Int. Cl.⁴ F16C *17/06, 17/16*
U.S. Cl. 384—369 **2 Claims**



1. A thrust bearing comprising:

a pair of opposing flat elements, one of which is secured to a rotatable shaft and the other one of which is held stationary; and

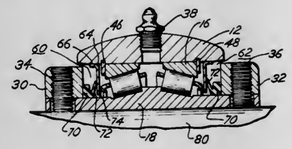
a spiral element made of hard material in a disc form and interposed between said pair of flat elements and freely relatively rotatable with respect to said flat elements, said spiral element having a spiral groove pattern on each of the opposite surfaces thereof with the spiral direction of the pattern on the surface on one side being reverse to that on the surface on the other side, and a liquid lubricating medium between the flat elements and the spiral element, wherein when the shaft is driven in one direction the lubricating medium on one side of said spiral element is directed from a peripheral portion of said spiral element to the central portion thereof creating thrust between the spiral element and the rotatable flat element, and on the opposite side of the spiral element the lubricating medium is discharged outwardly causing a suction between the spiral element and the stationary flat element, and when the shaft is driven in the other direction, the lubricating medium on said one side of said spiral element is directed from a central portion of the spiral element to the peripheral portion thereof creating a suction between the spiral element and the rotatable flat element, and on the opposite side of the spiral element the lubricating medium is directed from the peripheral portion of the spiral element to the central portion thereof creating thrust between the spiral element and the stationary flat element.

4,575,265

SEAL FOR SHAFT BEARINGS

Robert W. Tooley, Osceola, Ind., assignor to Reliance Electric Company, Mishawaka, Ind.

Filed May 27, 1980, Ser. No. 153,767
Int. Cl.⁴ F16C *33/76*
U.S. Cl. 384—474 **6 Claims**



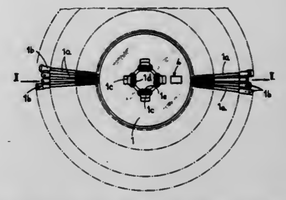
1. A seal for a bearing having a housing with an opening therein for receiving a shaft, and a bearing assembly disposed in said housing and having an outer race and an inner race extending axially relative to the housing opening, a plurality of rotatable bearing elements between said races, and an integral annular extension on the inner race projecting outwardly beyond the end of said outer race, said seal comprising a ring member connected to said housing in said opening and having a smooth annular surface extending radially inwardly toward said inner race, an annular sealing means of the V-ring type mounted directly on and in sealing relationship with said integral annular extension of the inner race externally of said surface and having an annular lip extending generally radially outwardly and seating on said annular surface of said ring member for permitting egress of lubricant from the bearing assembly to purge the assembly and preventing ingress of forgein matter into the bearing assembly, and a collar disposed on said inner race outwardly from said annular sealing means and forming an abutment engaged by said V-ring type sealing means for retaining said sealing means in substantially fixed axial operating relationship with said ring member.

4,575,266

CHARACTER-CARRYING DISC FOR A PRINTING MACHINE

Blaise Moulin, Corcelles, Switzerland, assignor to Caracteres S.A., Neuchatel, Switzerland

Filed Nov. 7, 1984, Ser. No. 669,109
Claims priority, application Switzerland, Nov. 25, 1983, 6320/83
Int. Cl.⁴ B41J *1/30*
U.S. Cl. 400—144.2 **5 Claims**



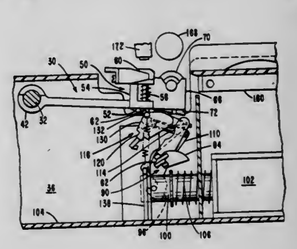
1. A character-carrying disc for a printing machine, which machine has a disc mounting shaft, said disc having a central mounting hole therein, a metal bush within said disc defining said mounting hole, a plurality of closed loop resilient blade members formed integrally with said disc and coaxial with said hole, and each having a portion extending partially over said hole to cooperate with said mounting shaft in order to retain the disc in place thereon, said blade members flexing radially to permit said disc to be installed on and removed from said shaft.

4,575,267

RECORD MEDIA THICKNESS COMPENSATING MECHANISM

Robert A. Brull, Dryden, N.Y., assignor to NCR Corporation, Dayton, Ohio

Filed Apr. 23, 1984, Ser. No. 602,800
Int. Cl.⁴ B41J *11/08, 11/20*
U.S. Cl. 400—56 **20 Claims**



1. Record media thickness compensating mechanism for use in a printer having an operating print head, the mechanism comprising an

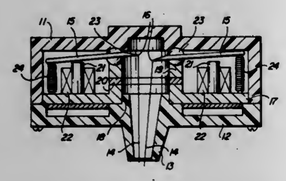
arm assembly pivotally supported from the printer and carrying a platen opposite the print head,

first camming means pivotally supported from the printer and operably associated with the arm assembly,

means for rotating the first camming means for moving the platen toward and away from the print head during respective printing and non-printing conditions,

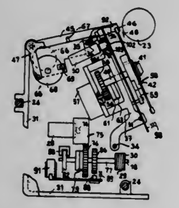
second camming means pivotally supported from the printer, and linkage means comprising a lost-motion type connection operably connecting the first camming means and the second camming means whereby the second camming means is rotated by and subsequent to rotation of said first camming means for maintaining the platen in position during printing operation.

4,575,268
DOT MATRIX PRINTER HEAD
Wu-ji Yang, Hsien, and Kuo-Chyuan Chen, Taiwan, both of Taiwan, assignors to Industrial Technology Research Institute, Taiwan
Filed Oct. 25, 1984, Ser. No. 664,519
Int. Cl.⁴ B41J *3/12*
U.S. Cl. 400—124 **6 Claims**



1. A dot matrix printer head comprising a plurality of printing wires, a like number of armatures adapted to control movement of said printing wires from a non-print position to a print position, and a magnetic means for selectively actuating said armatures, said magnetic means comprising an annular core base member of magnetically permeable material, a plurality of electromagnetic cores disposed in circular array on said base member, each of said cores being associated with a different armature and having an electrically energizable coil thereon, an annular yoke member carried by said base member within said array of cores, said yoke member being magnetically associated with and constituting a fulcrum for said armatures, and an annular permanent magnet disposed within said yoke member, said permanent magnet imparting a flux to said magnetic means for moving said armatures in one direction, said coils being selectively energizable to oppose the flux created by said permanent magnet in selected cores to permit the armature associated with a selected core to move in the opposite direction, said printing wires extending from said armatures through the open central regions of said yoke member, said permanent magnet and said base member.

4,575,269
PORTABLE ELECTRONIC TYPEWRITER
Josè Gubau, Ivrea, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy
Filed Apr. 13, 1984, Ser. No. 599,972
Claims priority, application Italy, Apr. 13, 1983, 67405 A/83
Int. Cl.⁴ B41J *19/30*
U.S. Cl. 400—322 **20 Claims**



1. In an electronic typewriter comprising a platen; a carriage which is movable in front of said platen and on which is mounted a print device; an electric motor having a bidirectionally rotating rotor; motion converting means for converting the rotation of said rotor to motion of said carriage including a rotatable member permanently operating on said carriage for its movement wherein said electric motor is selectively actuatable for moving the carriage in two opposite directions in front of the platen; and setting means actuatable for arresting said rotatable member for a fine positioning of said carriage, the improvement comprising rectifying means for exactly arresting said carriage in front of a desired position of the platen, independently of the direction of movement of said carriage, said rectifying means comprising:

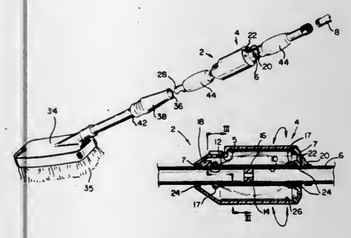
arrest means of said setting means capable of operating solely unidirectionally on said rotatable member;

first means defining an intermediate coarse position at a first side of said desired position along a given direction;

a control circuit which first actuates the electric motor for coarsely moving the carriage along one or another of the two opposite directions from a current position up to said intermediate coarse position then deactuates said electric motor once the intermediate coarse position has been reached; and

second means for causing said control circuit to actuate again the electric motor and for actuating said setting means for unidirectional movement of the carriage from said coarse intermediate position to said desired position as defined by the unidirectional arrest of said rotatable member by actuated arresting means.

4,575,270
HOSE END SPRAYER
Dennis A. Hammond, Ottawa, Canada, assignor to Dustbane Products Limited, Ottawa, Canada
Filed Nov. 6, 1984, Ser. No. 669,650
Int. Cl.⁴ A46B *11/06*
U.S. Cl. 401—40 **20 Claims**



1. In a hose end sprayer comprising a tube, hose attachment means at one end of the tube and spray means for producing and directing a spray of liquid at the other end of the tube, a chemical concentrate reservoir secured to and having walls circumscribing a portion of the tube between the ends of the tube, and an opening, normally blocked, to enable filling of the reservoir with concentrate, being positioned in the walls of the reservoir, wherein the improvement comprises a pair of holes spaced along the length of the tube in the portion thereof circumscribed by the reservoir walls, a back pressure baffle fitted within the tube between the holes, the baffle having an aperture to permit flow of liquid within the tube through the baffle and to create a differential in pressure between the liquid upstream and downstream of the baffle, a first one of the holes to permit gradual release of liquid concentrate within the reservoir, when under pressure, into the tube, being positioned downstream of the baffle, partition means within the chamber fitted over the tube and at least a portion thereof being movable during operation under pressure from liquid within the tube upstream of the baffle passing through the second one of said holes and bearing on one side of the partition means to provide sufficient pressure on the liquid concentrate within the reservoir to cause its gradual release through the first hole into the stream of liquid passing through the tube, the partition means obstructing passage of the liquid entering the chamber through the second hole to the concentrate on the other side of the partition means.

4,575,271
WRITING INSTRUMENT WITH MOVABLE CLOSURE AND SECOND SEALING MEANS
Yasuyuki Hashimoto, Hyogo, and Kazuo Shimizu, Osaka, both of Japan, assignors to Ancos Co., Ltd., Osaka, Japan
Filed Sep. 6, 1983, Ser. No. 529,771
Claims priority, application Japan, Sep. 4, 1982, 57-133783[U]; Dec. 29, 1982, 57-233143; May 12, 1983, 58-81798
Int. Cl.⁴ B43K *9/00, 7/12, 8/02*
U.S. Cl. 401—107 **21 Claims**



1. A writing instrument comprising:

an outer barrel unit (1);

a slidable tube (27) housed in said outer barrel unit (1) and movable between a sealing position, and an advanced position;

an inner tube (16) housed in said slidable tube (27), said inner tube (16) having an opening (18) defined in a distal end thereof and being associated with said barrel unit (1);

a writing unit (10) disposed in said inner tube (16) and having a writing tip (14) on a distal end thereof, said writing unit being axially movable among a retracted position, a writing position and a projected position;

a first means for biasing said writing unit in one direction;

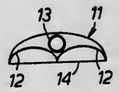
a second means for biasing said slidable tube in said one direction;

a first sealing means for sealing said opening (18) of said inner tube (16), said first sealing means being pressable by an inner surface of a front end of said slidable tube (27) against said opening (18) of said inner tube (16) when said slidable tube (27) is in said sealing position;

a second sealing means for sealing said writing tip (14) of said writing unit (10) together with said first sealing means, said second sealing means being located between said writing unit (10) and said inner tube (16) towards a proximal end of said inner tube (16); and

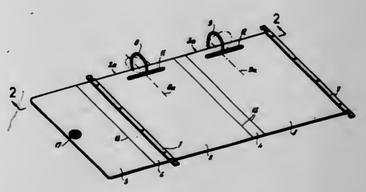
a retaining means for retaining said writing unit (10) at said retracted position and said writing position.

4,575,272
TOOTHPASTE APPLICATOR ON A DRINKING STRAW
Edgar W. Borrow, Padnell Grange, Cowplain, Portsmouth, Hampshire, England
Filed Aug. 23, 1984, Ser. No. 643,549
Claims priority, application United Kingdom, Sep. 3, 1983, 8323687
Int. Cl.⁴ A46B *11/00*
U.S. Cl. 401—195 **4 Claims**



1. A toothpaste applicator comprising an applicator head formed on, or otherwise securely attached to, one end of a drinking straw, the applicator head comprising a pair of wing-shaped portions extending away from the straw on opposite sides thereof, each portion being concave on one face and convex on the opposite face, and the concave faces being configured and textured to assist in retaining toothpaste and to assist in effecting a brushing action in use.

4,575,273
BINDER FOR CONTINUOUS OR SEPARATED COMPUTER PRINTOUT SHEETS
Jacques Gerriet, Fleury-sur-Andelle, France, assignor to Arianex Systemse, Societe Anonyme francaise, Bernay, France
Filed Sep. 4, 1984, Ser. No. 646,926
Claims priority, application France, Sep. 22, 1983, 83 15078
Int. Cl.⁴ B42F *3/02, 13/20, 13/28, 15/00*
U.S. Cl. 402—75 **3 Claims**

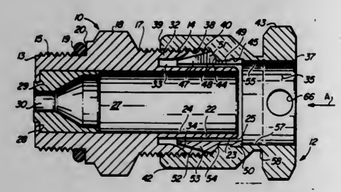


1. A binder for holding continuous unseparated or separated printout sheets, comprising a bottom panel, a top panel, a first back panel connecting the bottom and top panels, a second back panel extending from one said bottom and top panels, a flap hinged to said second back panel, said panels being connected by fold lines and having free edges adjacent said fold lines, and at least two means for fastening of the separated or unseparated printout sheets, one of the two means for fastening of the sheets being connected to said bottom panel in the vicinity of one of the free edges thereof and the other fastening means being connected in the vicinity of the corresponding free edge of the top panel, said fastening being made with at least two degrees of freedom including crosswise displacement parallel to said free edges of the bottom and top panels, and pivoting around an axis parallel to the fold lines connecting the bottom panel and the top panel to the back panel which separates them, said axis being contained in the plane of the panels and passing through a point of intersection of the fastening means with said panels.

4,575,274
CONTROLLED TORQUE CONNECTOR ASSEMBLY
Robert D. Hayward, Phoenix, Ariz., assignor to Gilbert Engineering Company Inc., Glendale, Ariz.
Filed Mar. 2, 1983, Ser. No. 471,315
Int. Cl.⁴ F16D *9/00*
U.S. Cl. 403—2 **14 Claims**

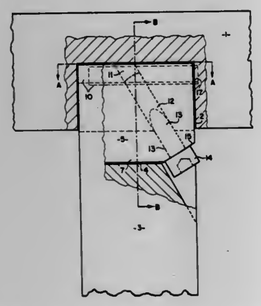
1. In a connector assembly for securement to a coaxial cable, which assembly includes,

a body portion,
a nut portion for receiving said cable therethrough and having a body portion engaging section and a tool receiving section,
said body portion engaging section being rotatable in response to torque applied to said tool receiving section, and
gripping means for compressively gripping said cable in response to rotation of said nut portion relative said body portion,
said gripping means exerting an increasing compressive



force upon said cable in proportion to continued rotation of said nut portion,
gripping means engaging means at the end of said body portion engaging section,
improvements therein for preventing damage to said cable as a result of over tightening said gripping means, said improvements comprising:
means between said sections for limiting the compressive force exerted by said gripping means to a pre-determined value.

4,575,275
CLAMPING DEVICE FOR ATTACHING COMPONENT WHICH IS INSERTED INTO A HOLE
Ragnar Sterte, Boc 7008, S-550 07 Jönköping, Sweden
PCT No. PCT/SE83/00321, § 371 Date May 14, 1984, § 102(e) Date May 14, 1984, PCT Pub. No. WO84/01193, PCT Pub. Date Mar. 29, 1984
PCT Filed Sep. 12, 1983, Ser. No. 610,988
Claims priority, application Sweden, Sep. 13, 1982, 8205186
Int. Cl.[4] B25G *3/00*; F16D *1/00*
U.S. Cl. 403—7 **4 Claims**



1. A clamping device for attaching a component inserted in a hole, such as a table leg inserted at its upper end in a hole in a table top or frame comprising:
an elongated recess having a substantially U-shaped cross-section in the part of the component inserted into the hole;
a deformable casing disposed in said recess;
an elongated V-shaped notch in said casing having the open end of the V thereof facing the same direction as the open end of said U-shaped cross-section of said recess;
an elongated wedge member in said notch having a longitudinal axis extending substantially parallel to the longitudinal axis of said recess;
a screw-threaded hole in said wedge member on an axis at an acute angle to the longitudinal axis of said wedge member;
a guide hole in said casing extending coaxially with said screw-threaded hole;
a screw extending through said guide hole and threadedly engaging said screw-threaded hole; and
a head on said screw engaging said casing on a contact surface thereof, so that when said screw is tightened said wedge member is drawn into said V-shaped notch to displace the portions of the casing on opposite sides of said notch outwardly transversely to the longitudinal axis of said wedge member into engagement with the sides of the U-shaped recess, and said wedge member is simultaneously displaced in its longitudinal direction into engagement with the side wall of the hole substantially perpendicularly to the direction of displacement of the portions of said casing.

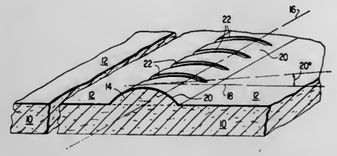
4,575,276
Patent Not Issued For This Number

4,575,277
EASY ALIGN CONNECTION FOR SLIP-ON MALE/FEMALE FITTED JOINT
Aris M. Dickey, Kendallville, and David A. Dickey, South Milford, both of Ind., assignor to Dickey, Inc., South Milford, Ind.
Filed Aug. 25, 1978, Ser. No. 930,713
Int. Cl.[4] F16B *7/00*; F16D *1/00*; A01K *87/02*
U.S. Cl. 403—361 **1 Claim**



1. A frictionally engaging aligning rod connector wherein two or more rod sections are secured in linear frictional alignment with the employment of
(a) a longitudinally coextensive from end to end, generally D-configured shaft member with three-fourths arcuate wall and one fourth flattened surface, being permanently affixed to one rod section end, and an outwardly symmetrical-with-rod chamber member having a D-configured chamber bore of three-fourths arcuate wall and one-fourth flattened surface longitudinally coextensive from entrance to bottom thereof, being permanently affixed to the end of a second rod section, are dimensioned from preferred material to accommodate thickness and longitude of the two rod sections to which they are separately affixed in providing optimum frictional engagement in radially outward pressment of the inserted shaft member against said corresponding chamber bore, thereby creating sufficient high intensity of frictional grip and suction for aligned rod section securement and precluding movement and dislodgement of said aligned rod sections, the described shaft and chamber members respectively employed on each two rod section ends to be frictionally engaged in alignment:
(b) a longitudinally coextensive from end to end, generally D-configured shaft member with elements set forth in subparagraph (a) correspondingly having a D-configured chamber member with elements likewise set forth in subparagraph (a), but employing an outward D-configuration corresponding to the D-configured chamber bore, the described shaft and chamber members respectively employed on each two rod section ends to be frictionally engaged in alignment.

4,575,278
RAIN DRAINING LANE MARKER
James R. Whitney, 4886 Old Well Rd., Annandale, Va. 22003
Filed Jan. 19, 1983, Ser. No. 459,224
Int. Cl.[4] E01C *23/16, 23/09*; E01F *9/04*
U.S. Cl. 404—72 **31 Claims**

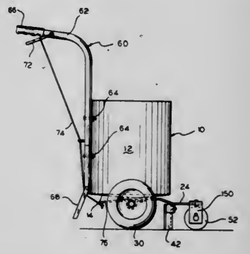


1. A traffic lane marker system, including a road, a solid raised marking strip on the road having at least one reflecting stripe thereon, the stripe carrying small, reflectivity-increasing glass spheres or glass particles therein, the at least one stripe running longitudinally with the marking strip, the marking strip being narrower than the road and following the curvature of the road, the marking strip lying above the road surface, at least the major part of the surface of the raised marking strip having sloping sides to drain rain from its surface, the marking strip being formed from asphalt, asphalt slurry or epoxy and stone, whereby the marking strip permits increased visibility of the marking strip during darkness hours, during times of rain, to thereby enhance the contrast between the marking strip and the road surface.

27. A method of making a raised road marker strip for a road, including the steps of (1) extruding a generally convex strip of a flowable composition along a road to be marked so that the generally convex extruded marker strip lies on the top surface of the road (2) forming rain drainage grooves in the strip at an angle to the longitudinal axis of the road, (3) coating the strip with at least one reflecting stripe running longitudinally therewith.

4,575,279
APPARATUS FOR SPREADING LIQUID MATERIAL
Edwin S. Mateja, 6028 S. Kolmar Ave., Chicago, Ill. 60629
Filed Jul. 26, 1984, Ser. No. 634,586
Int. Cl.[4] E01C *19/16*
U.S. Cl. 404—111 **1 Claim**

1. In a device for dispensing and spreading a flowable material, the combination of:
(a) a frame including at least one longitudinal member and at least one transverse member secured to each other;
(b) a wheel and axle assembly attached to said frame and movably supporting said frame;
(c) a container mounted on and carried by said frame, including a concave bottom wall having a lower portion with a material dispensing aperture extending therethrough;
(d) a generally L-shaped control arm including a vertical portion attached to said container and an integral horizontal handle portion extending rearwardly from said vertical portion;
(e) a ball type valve assembly for opening and closing the the aperture in said container to dispense material therefrom, said valve assembly including:
(i) a spherical stopper element positioned within said container adjacent said aperture;
(ii) a valve lever having one end attached to the underside of said container;
(iii) a stem element disposed to extend through said container aperture with its upper end secured to said spherical stopper element and its lower end secured to said valve lever;



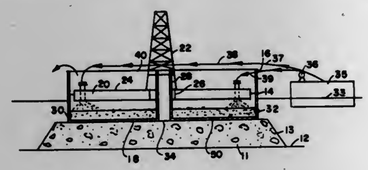
(f) a valve operating mechanism attached to said valve assembly for operating same, said operating mechanism including:
(i) a handle lever pivotally mounted on said horizontal handle portion of said control arm;
(ii) a flexible line connecting said handle lever to said valve lever;
(g) material spreader means carried by said frame, including:
(i) at least one transversely disposed roller carried by said frame forwardly of said container dispensing aperture;
(ii) at least one transversely disposed squeegee carried by said frame between said aperture and said roller.

4,575,280
UNDERWATER TRENCHER WITH PIPELAYING GUIDE
Dean P. Hemphill, Houston, and Paul R. Scott, Brazoria, both of Tex., assignors to Shell Oil Company, Houston, Tex.
Filed Dec. 16, 1983, Ser. No. 562,363
Int. Cl.[4] F16L *1/04*
U.S. Cl. 405—164 **22 Claims**



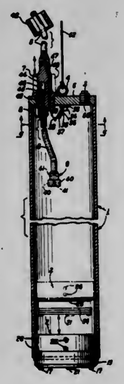
1. A method for laying a relatively stiff pipeline into a soil trench beneath ice covering water, said soil trench having sidewalls susceptible to collapsing, comprising:
cutting an elongated slot in the ice;
forming the trench beneath the ice slot;
positioning an elongated shield in the trench to prevent the sidewalls of the trench from collapsing:
guiding the pipeline through the ice slot and into the trench shield with an adjustable carriage which arcs the pipeline just before the pipeline passes through the ice slot and controls alignment and angle of entry of the pipeline into the trench shield; and
deflecting the pipeline into the trench so that the pipeline enters the trench at one end of the shield and approaches the bottom of the trench before exiting at the other end of the shield.

4,575,281
METHOD AND STRUCTURE FOR FORMING AN OFFSHORE FACILITY
Yalcin Oksuzler, Plano, Tex., assignor to Mobil Oil Corporation, New York, N.Y.
Filed Aug. 23, 1983, Ser. No. 525,539
Int. Cl.⁴ E02B *15/02*
U.S. Cl. 405—217 **21 Claims**



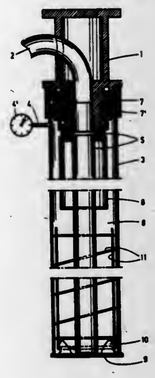
1. A method of constructing a retained island facility comprising the steps of:
positioning an open top container having a steel platform constructed of low temperature steel with a vertical hole therethrough, said platform including drilling and producing equipment for hydrocarbon production, storage areas, living quarters and galley, all completed for operation at a predetermined offshore location;
flooding said container with water for sinking said container to the subwater surface at said location and for floating said platform in the vicinity of the open top of said container; and
displacing water within said container with material suitable for supporting said platform in the vicinity of the open top of said container.

4,575,282
SYSTEM FOR DRIVING OPEN END PIPE PILES ON THE OCEAN FLOOR USING PNEUMATIC EVACUATION AND EXISTING HYDROSTATIC PRESSURE
James H. Pardue, Sr.; James H. Pardue, Jr., and Charles R. Pardue, all of Six Huntington Pl., Atlanta, Ga. 30338
Filed Jun. 4, 1984, Ser. No. 616,815
Int. Cl.⁴ E02D *7/28, 7/20*
U.S. Cl. 405—228 **36 Claims**



1. A pile assembly comprising:
a cylindrical pipe pile;
a pile cap attached to the upper end of said pipe pile and forming a continuous member with said pipe pile;
a diaphragm adapted to slide axially in said pipe pile;
conduit means for allowing the flow of gases and liquids to and from the upper part of said pile assembly through a conduit port in the interior of said pile assembly;
one-way valve means for allowing the flow of liquids and gases from an inlet port in the interior of said pile assembly below said conduit port to an exhaust port on the exterior of said pile assembly, and preventing the flow of liquids and gases from said exhaust port to said inlet port;
retention means for retaining said diaphragm in said pipe pile; and
attachment means for attaching the upper end of said pile assembly to an anchor cable.

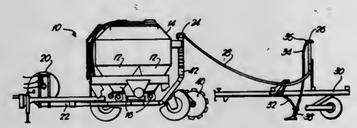
4,575,283
DEVICE AND PROCESS FOR MAKING UNCLAD CONCRETE PILES
Claudio Guandalini, Viale Stefano Franscini 43, 6500 Bellinzona, Switzerland, and Fausto Massari, Via Regina Elena 5, 04016 Sabaudia Latina, Italy
Filed Dec. 5, 1983, Ser. No. 558,555
Claims priority, application Switzerland, Dec. 6, 1982, 7064/82
Int. Cl.⁴ E02D *5/34*
U.S. Cl. 405—240 **6 Claims**



1. An apparatus for making unclad concrete piles, comprising a beating cap having a conduit for the introduction of concrete under pressure, a pipe form to be sunk and pulled out gradually as the concrete is introduced, the pipe form having a connection to a pressure gauge for reading the pressures acting on the concrete, sealing means sealing between the beating cap and the pipe form to seal air under pressure within the pipe form, a bottom at the base of the pipe form to prevent dirt from penetrating into the pipe form during sinking, the bottom having securing means to hold reinforcement of the concrete pile, whereby the pipe form can be gradually raised as concrete is introduced and the air pressure within the pipe form rises due to the introduction of the concrete, the securing means preventing the reinforcement from rising with the pipe form.

4,575,284
DISTRIBUTION TUBE FOR PNEUMATIC APPLICATOR
Daniel W. Kelm, Winnipeg, Canada, assignor to Flexi-Coil Ltd., Saskatoon, Canada
Filed Sep. 23, 1981, Ser. No. 304,940
Claims priority, application Canada, Jul. 22, 1981, 382218
Int. Cl.⁴ B65G *47/24*
U.S. Cl. 406—87 **20 Claims**

1. In a pneumatic applicator having a conduit for delivering pneumatically carried granular material to a distributing header, the improvement comprising a section of said conduit having an interior with a plurality of inwardly directed projections, said projections being grouped in annular rows with the projections of one row being offset with respect to the projec-



tions of an adjacent row, said inwardly directed projections centering said granular material being conveyed by said conduit.

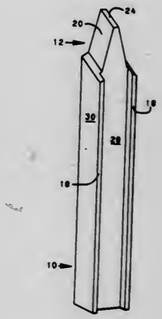
4,575,285
CUTTING TOOL AND METHOD OF MANUFACTURE
Richard C. Blakesley, Holcomb, N.Y., assignor to The Gleason Works, Rochester, N.Y.
Filed Nov. 19, 1984, Ser. No. 672,532
Int. Cl.⁴ B26D *1/00*; B21K *5/12*
U.S. Cl. 407—115 **14 Claims**



1. A gear cutting tool of the type formed from a length of bar stock having a generally rectangular cross-section comprising a first cutting face formed into a front wall portion of the bar stock at a desired rake angle therewith for a part of the length of said cutting tool, said tool including a base portion having rectangular mounting surfaces extending the remaining length of said cutting tool and a cutting end having a first flank surface formed thereon for defining a first cutting edge between said first cutting face and a first side of the tool, and further comprising a second cutting face formed as a slot in said front wall portion of the bar stock at a desired rake angle therewith for substantially the full length of said cutting tool, said cutting end also having a second flank surface formed thereon for defining a second cutting edge between said second cutting face and a second side of the tool.

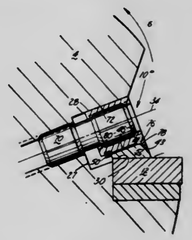
11. A method for manufacturing a gear cutting tool of the type formed from a length of bar stock having a generally rectangular cross-section comprising the steps of:
forming a first cutting face in a front wall portion of the bar stock at a desired rake angle therewith for part of the length of the tool;
forming a second cutting face as a slot within said front wall portion of the bar stock at a second desired rake angle therewith for substantially the full length of said cutting tool;
forming a cutting end having first and second flank surfaces thereon for defining first and second cutting edges between said cutting faces and sides of the tool.

4,575,286
GEAR CUTTER ASSEMBLY
Richard C. Blakesley, Holcomb, N.Y., assignor to The Gleason Works, Rochester, N.Y.
Filed Nov. 19, 1984, Ser. No. 672,741
Int. Cl.⁴ B23F *21/12, 21/22*
U.S. Cl. 407—22 **8 Claims**



1. In a face milling type cutting assembly for use in gear cutting operations comprising:
a disc-shaped body having slots for receiving bar stock type cutting tools in positions projecting from a front face thereof;
bar stock type cutting tools being received in said slots;
means for securing said bar stock type cutting tools in said slots; two of said bar stock type cutting tools being contiguously positioned in the same slot and generally aligned to a cutting direction; the improvement comprising:
one of said two bar stock type cutting tools having a back wall with a recess formed therein for providing cutting clearance between said two bar stock type cutting tools during use; and,
said back wall being defined by two abutment surfaces located on either side of said recess for contacting a front wall of the other of said two bar stock type cutting tools.

4,575,287
MILLING CUTTER AND METHOD OF ASSEMBLING THEREFOR
James A. Oshnock, and Robert A. Erickson, both of Latrobe, Pa., assignors to Kennametal Inc., Latrobe, Pa.
Continuation-in-part of Ser. No. 387,344, Jun. 11, 1982, abandoned. This application Jan. 13, 1983, Ser. No. 457,865
Int. Cl.⁴ B23C *5/22*
U.S. Cl. 407—41 **1 Claim**



1. A milling cutter comprising: a cutter body rotatable about its central axis; a peripheral wall on said cutter body; insert pockets and clamp recesses located in said peripheral wall, said insert pockets having locating surfaces for positioning an insert

when placed in said pocket; and clamp means for releasably clamping an insert when the insert is placed and positioned in said pocket, said recesses each having a clamp contact surface and said clamp means comprising movement means; a bushing pivotally mounted around said movement means with a bearing surface and wedge means having a planar surface, means pivotally mounting said wedge means around said bushing so that said bearing surface contacts said clamp contact surface when said planar surface contacts an insert in said pocket.

4,575,288

METHOD OF AND APPARATUS FOR WORKING A PROFILED STEEL WORKPIECE

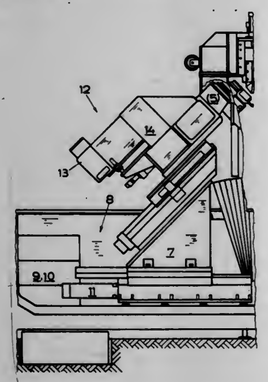
Helmut Roschiwal, Ulrichsmahd 16; Herbert Schmidt, Eichenstrasse 13, both of 8900 Augsburg, and Karl Schink, Heidenstrasse 12, 5952 Attendorn-Dünschede, all of Fed. Rep. of Germany

Filed Jan. 30, 1984, Ser. No. 575,044

Claims priority, application Fed. Rep. of Germany, Feb. 1, 1983, 3303319

Int. Cl.⁴ B23B *39/14*

U.S. Cl. 408—1 R **13 Claims**



10. A method of drilling an elonated angle-iron workpiece having a pair of nonparallel flanges at least one of which is to be drilled, the method comprising the steps of:

holding the workpiece with the one flange forming an acute angle with the horizontal in a working station;

displacing a drilling tool horizontally in the station transverse to the workpiece until the tool is aligned with the location on the flange to be drilled, the drilling tool being inclined to the horizontal to extend perpendicularly of the one flange; and

displacing the drilling tool perpendicularly of the workpiece through the one flange.

4,575,289

APPARATUS FOR ORIENTING THE POSITION OF A MACHINE TOOL CARRIAGE RELATIVE TO A STATIONARY MACHINE PART

Heinrich Fischer, Munich; Walter Schmidkunz, Eichenau, and Johann Spensberger, Poing, all of Fed. Rep. of Germany, assignors to Carl Hurth Maschinen- und Zahnradfabrik GmbH & Co., Munich, Fed. Rep. of Germany

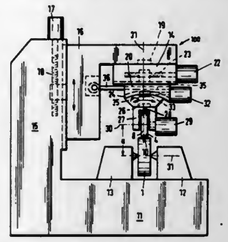
Filed Jul. 19, 1984, Ser. No. 632,560

Claims priority, application Fed. Rep. of Germany, Aug. 4, 1983, 3328177; Mar. 23, 1984, 3410686

Int. Cl.⁴ B23F *19/06*

U.S. Cl. 409—33 **6 Claims**

1. In an apparatus for orienting the position of a feed carriage of a machine tool relative to a stationary machine part, said feed carriage being movable in a plane defined by orthogonally related X and Y axes, the improvement comprising: a holding means movably mounted on said stationary machine part, said holding means including a first guide rod mounted on said stationary machine part, a guide sleeve reciprocally movably mounted on said first guide rod, at least one second guide rod



mounted on said guide sleeve, said first and said second guide rods extending perpendicularly with respect to one another in said plane, said plane also being parallel with respect to an axis of rotation of a workpiece and with respect to a feed direction (R), said feed carriage being supported for movement along said second guide rod.

4,575,290

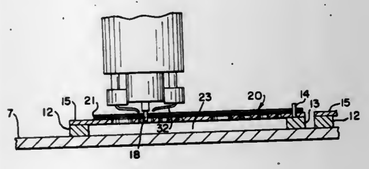
APPARATUS AND METHOD FOR PRODUCING TEMPLATES

William A. Adair, Des Plaines, Ill., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

Filed Sep. 30, 1982, Ser. No. 428,962

Int. Cl.⁴ B23C *9/00;* **B23B** *47/00*

U.S. Cl. 409—132 **9 Claims**



1. In apparatus for making workpieces in the form of sheet material having openings therein of predetermined size, shape and position, said apparatus having a support platform mounted for shiftable movement in a horizontal plane on x and y axes, a tool-supporting head supporting at least one downwardly projecting rotary cutting tool said head being mounted for reciprocal vertical movement, and at least one platen for supporting a stack of one or more blanks of sheet material from which said workpieces are to be made, each said platen having openings therein sized, shaped and positioned to accommodate each said rotary cutting tool during movement in its lowered cutting position, the areas of said openings formed in said blanks by each said rotary cutting tool being appreciably larger than the cross-sectional area of each rotary cutting tool forming said respective openings, the improvement which comprises, means for supporting each said platen on and above said platform and providing an air flow channel therebetween which is open at opposite ends, and means for creating and maintaining a flow of air through said channel of such volume and velocity as to create downward suction in said openings as they are formed in said workpieces by said one or more rotary cutting tools, said suction and air flow being sufficient to remove from said workpieces, cutting tools and channels, debris as it is being produced by said one or more rotary cutting tools.

4,575,291

DIVIDING APPARATUS FOR A PROGRAM CONTROLLED MACHINE TOOL

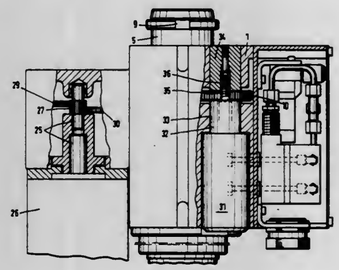
Werner Babel, Pfronten-Meilingen, Fed. Rep. of Germany, assignor to Maho Werkzeugmaschinenbau Babel & Co., Pfronten/Allgau, Fed. Rep. of Germany

Filed Apr. 22, 1982, Ser. No. 370,837

Claims priority, application Fed. Rep. of Germany, May 7, 1981, 3118141

Int. Cl.⁴ B23C *9/00*

U.S. Cl. 409—222 **3 Claims**



1. A dividing apparatus for a machine tool having a program control unit which includes an electro-optically acting angle measuring unit comprising a housing including clamping means for attachment to a machine part, a dividing spindle mounted in said housing and including work holding means and a clamping unit, drive means including a spindle drive gear and reduction gearing for said dividing spindle, and a releasable fixing device for said dividing spindle,

said fixing device (**31** to **36**) and said electro-optically acting angle measuring unit (**24**) being connected to said program control unit,

said fixing device (**31** to **36**) comprising at least one hydraulic clamping cartridge (**31**) which is floatingly disposed within said housing (**1**) on one side of said spindle drive gear (**10**), said clamping cartridge (**31**) including a plunger member (**35**) being axially movable with respect to said clamping cartridge and fixedly coupled to a thrust piece (**34**) mounted in a longitudinally movable manner on the other side of said spindle drive gear (**10**) within said housing whereby the thrust piece (**34**) and the clamping cartridge (**31**) are drawn together when the clamping cartridge (**31**) is activated to retract the plunger member (**35**) thereby to clamp the spindle drive gear (**10**) between the clamping cartridge (**31**) and the thrust piece (**34**), and

said reduction gearing including two cylindrical gears (**29**, **30**) having parallel axes and jointly meshing with a motor shaft pinion (**27**) and two pinions (**46**, **47**) mounted on intermediate shafts (**40**, **41**) of said cylindrical gears, both of said pinions (**46**, **47**) meshing with said spindle drive gear (**10**).

4,575,292

DEVICE FOR CONNECTING A TOOL PART TO A CONNECTING SHAFT

Dieter Pape, Rümlang; Hans Woerz, Oberhasli, and Heinz Kaiser, Wallisellen, all of Switzerland, assignors to Heinz Kaiser A.G., Rümlang, Switzerland

Filed Feb. 21, 1985, Ser. No. 703,804

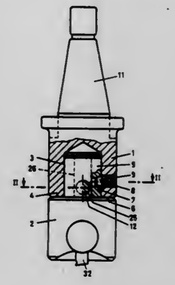
Claims priority, application Switzerland, Feb. 24, 1984, 923/84

Int. Cl.⁴ B23C *5/26;* **B23B** *31/00*

U.S. Cl. 409—234 **12 Claims**

1. A device for connecting tool parts of a tool system to a connecting shaft, said tool part having a cylindrical fastening spigot which is capable of being received in a bore of the connecting shaft, and a conical transverse bore within which a retaining screw is received to engage and wedge the tool part against the connecting shaft, and said device comprising:

a cylindrical transverse bore in said fastening spigot, positioned at an approximate right angle to the conical transverse bore, and a drive pin supported for longitudinal displacement within said cylindrical transverse bore and having ends which penetrate into recesses in the connecting shaft, which recesses become narrower in the radially outward direction.



4,575,293

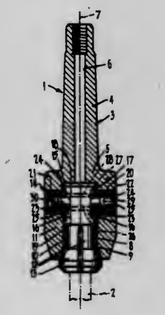
MACHINE TOOL HOLDER HAVING OPPOSED RAMP MEMBERS

Mario Berti, 76 Station St., Bayswater, Victoria 3153, Australia

Filed Jul. 12, 1984, Ser. No. 630,223

Int. Cl.⁴ B23B *31/20, 31/04*

U.S. Cl. 409—234 **5 Claims**



1. A machine tool holder comprising:

a body,

mounting means adapted to mount the tool holder on a material working machine,

a conic bore in the body having a longitudinally extending axis, a shank on a tool mounting means received in said conic bore, said shank having a conic surface that matingly fits within the conic bore and two ramp surfaces which are disposed on opposite sides of the shank with respect to said axis,

and clamping means comprising two bodies each having a ramp surface, said bodies being located in bores which are radial to said axis of said conic bore,

said bodies and bores being of complementary non-circular cross-section so that said bodies are non-rotatable but slidably secured in said bores,

a screw member acting simultaneously and equally on said bodies to urge them radially inward,

and wherein the ramp surfaces of said shank are complementarily shaped and oriented with respect to said ramp surfaces of said bodies whereby to engage over a substantial area as the bodies are urged radially inward by said screw member to draw the shank into said conic bore and clampingly locate and centre the shank in said conic bore.

4,575,294

ANCHORING BOLT

Kurt Mermi, Teningen; Danilo Sternisa, Emmendingen, and Albert Frischmann, Teningen, all of Fed. Rep. of Germany, assignors to Upat GmbH & Co., Emmendingen, Fed. Rep. of Germany

PCT No. PCT/DE83/00133, § 371 Date Apr. 9, 1984, § 102(e) Date Apr. 9, 1984, PCT Pub. No. WO84/00793, PCT Pub. Date Mar. 1, 1984

PCT Filed Jul. 30, 1983, Ser. No. 604,615

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1982, 3329633

Int. Cl.⁴ F16B *13/06*

U.S. Cl. 411—30 **9 Claims**



1. Anchoring bolt for rotatable insertion into a cylindrical bore and capable of conically undercutting said bore and securing itself in the undercut bore, comprising a shaft, a connection portion extending from said shaft at one end thereof for connections to the bolt outside of the bore in which the bolt may be set, an insertion portion extending from said shaft at the other end thereof for insertion in a bore along with at least part of said shaft, said insertion portion having a slot running axially and separating said insertion portion into two branches capable of being spread apart from each other, a spreading wedge having its tapered-down end extending into said slot, and a plurality of protuberant inserts near the free end of said insertion portion projecting from said insertion portion;

said inserts (**16,17**) being set in the end face (**11,12**) of said insertion portion (**5**) and respectively having median lines in the direction of projection from said end face which are obliquely inclined to the direction of the longitudinal axis of said insertion portion and of said shaft, and

the protuberant ends of said inserts having leading edge portions (**29**) in the direction of rotation of said bolt, which project further from said insertion portion than their trailing edge portions (**31**).

4,575,295

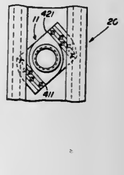
FASTENER FOR CHANNELED STRUCTURAL MEMBERS

Hugo E. Rebentisch, Wayne, Mich., assignor to GTE Products Corporation, Stamford, Conn.

Filed Jan. 11, 1984, Ser. No. 569,950

Int. Cl.⁴ F16B *39/00*

U.S. Cl. 411—85 **7 Claims**



1. A fastener in combination with a channeled structural member; said fastener being used for affixing parts to said channeled structural member; said combination comprising said channeled structural member having a depth, a width, a bottom section, two parallel side sections being spaced apart by a distance between said side sections, and a top section parallel with the bottom section, said top section having a longitudinal slot bordered by inwardly projecting flanges, said flanges each having an end portion, said flanges being spaced apart by a slot width distance and said fastener comprising

a nut having a depth, a width, a length longer than its width, opposite parallel longitudinal side surfaces, end surfaces, a top major face, and an opposite bottom major face substantially perpendicular to said side surfaces, said nut having parallel grooves located on said top major face perpendicular to said parallel longitudinal side surfaces, said parallel grooves having flange engaging means therein for engaging said end portion of said flanges of said channeled structural member, said parallel grooves being spaced apart and centered on said top major face for co-acting with said flanges of said channeled structural member, said longitudinal side surfaces being contiguous with said end surfaces forming a first and a second set of diagonally opposite corners, said first set of diagonally opposite corners being foreshortened, said first set of diagonally opposite corners being spaced apart by a first set diagonal dimension, said first set diagonal dimension being sufficiently less than the distance between said parallel side sections of said channeled structural member to provide clearance between said first set of diagonally opposite corners and said parallel side sections during installation of said nut, said nut having a centrally located bolt engaging means having an extended portion above said top major face of said nut, said nut having an overall thickness equal to said depth of said nut plus said extended portion, said extended portion having two sets of opposite parallel extended sides, said two sets of opposite parallel extended sides being contiguous with each other forming a third and a fourth set of diagonally opposite corners, said third set of diagonally opposite corners being foreshortened, said third set of diagonally opposite corners being spaced apart by a third set diagonal dimension, said third set diagonal dimension being sufficiently less than said slot width distance of said channeled structural member to provide clearance between said third set of diagonally opposite corners of said extended portion and said flanges of said channeled structural member during installation of said nut, said fourth set of diagonally opposite corners co-acting with said flanges during the installation of said nut providing an alignment of said parallel grooves with said end portion of said flanges of said channeled structural member.

4,575,296

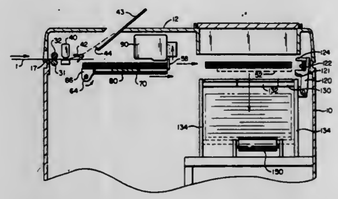
APPARATUS AND METHOD FOR PREPARING MULTIPAGE, SIDE-STITCHED DOCUMENTS

Barry C. Kockler, Lewisville; Daniel T. Noonan, Plano, and Donald F. Renfrow, Richardson, all of Tex., assignors to The Mead Corporation, Dayton, Ohio

Filed May 21, 1984, Ser. No. 612,230

Int. Cl.⁴ B42B *4/02*

U.S. Cl. 412—6 **10 Claims**



1. Apparatus for preparing a multipage, side-stitched document which comprises in combination:

(a) means for feeding a series of sheets to be included in said document in a paused, timed, preselected order;

(b) a downstream, in-line accumulating station to receive the sheets;

(c) first clamping means associated with the accumulating station for grasping a complete assembly of sheets on the side opposite the side to be stitched;

(d) means for moving said clamped assembly to a downstream, in-line stitching station;

(e) said stitching station including a stitching head to make two or more stitches in the assembled sheets at selected loci along their edge;

(f) means for moving the stitched assembly downstream from the stitching station;

(g) stop means downstream of the stitching station to stop movement of the side-stitched document;

(h) second clamping means associated with said stop means for grasping the document on its upstream side transverse to the stitched side;

(i) means for releasing the first clamping means from the document and returning said clamping means to the accumulating station; and

(j) means for releasing the second clamping means and transferring the side-stitched document to a packing station.

4,575,297

ASSEMBLY ROBOT

Hans Richter, Oberlander Str. 123, D-8900 Augsburg, Fed. Rep. of Germany

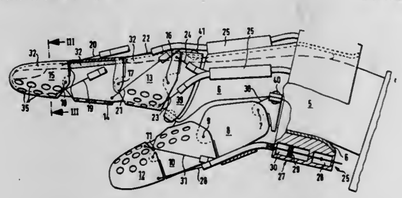
PCT No. PCT/EP82/00271, § 371 Date Aug. 9, 1983, § 102(e) Date Aug. 9, 1983, PCT Pub. No. WO83/02249, PCT Pub. Date Jul. 7, 1983

PCT Filed Dec. 22, 1982, Ser. No. 527,645

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1981, 3151503

Int. Cl.⁴ B25J *9/00*

U.S. Cl. 414—5 **14 Claims**



1. An assembly robot adapted to be manipulated by a human operator to perform a task during a programming mode of operation wherein different portions of said robot are moved during said programming mode of operation and signals representative of the movements are recorded for purposes of later driving said different portions of said robot to effect like movements during an operating mode of operation thereby to repeat the performance of said task without intervention by the human operator, said assembly robot comprising a breastplate which is connectable to the upper part of the body of a human operator during said programming mode, an upper arm member connectable to an upper arm of the human operator during said programming mode, said upper arm member being connected at one end thereof to said breastplate by a joint having both a horizontal axis and a vertical axis whereby said upper arm member may be moved relative to said breastplate by the human operator about said horizontal and vertical axes through ranges of movement which fully correspond to those of the human operator's shoulder joint, first sensor means for sensing movements of said upper arm member relative to said breastplate about said horizontal axis, means for recording the output of said first sensor means during said programming mode, first driving means between said breastplate and said upper arm member responsive to the recorded output of said first sensor means for moving said upper arm member about said horizontal axis during said operating mode, second sensor means for sensing movements of said upper arm member relative to said breastplate about said vertical axis, means for recording the output of said second sensor means during said programming mode, second driving means between said breastplate and said upper arm member responsive to the recorded output of said second sensor means for moving said upper arm member about said vertical axis during said operating mode, a lower arm member connectable to the lower arm of the human operator during said programming mode, means connecting one end of said lower arm member to the other end of said upper arm member for pivotal motion about a third joint through a range of movement fully corresponding to that of the human operator's elbow joint, third sensor means for sensing movements of said upper and lower arm members relative to one another about said third joint, means for recording the output of said third sensor means during said programming mode, third driving means between said upper and lower arm members responsive to the recorded output of said third sensor means for moving said upper and lower arm members relative to one another about said third joint during said operating mode, a hollow hand member adapted to receive the hand of the human operator during said programming mode, said hollow hand member being connected to the other end of said lower arm member by a knuckle joint having fourth and fifth pivotal axes that are prependicular to one another, fourth and fifth sensor means for sensing movements of said hollow hand member relative to said lower arm member about said fourth and fifth axes respectively, means for recording the outputs of said fourth and fifth sensor means during said programming mode, fourth and fifth driving means responsive respectively to the recorded outputs of said fourth and fifth sensor means for moving said hollow hand member relative to said lower arm member about said fourth and fifth axes respectively during said operating mode, said hollow hand member including a hollow central hand member which is connected to said lower arm member by said knuckle joint, a plurality of hollow thumb members interconnected sequentially to one another and to said central hand member by a plurality of pivotal thumb joints, said plural hollow thumb members forming a hollow articulated thumb unit which receives the thumb of the human operator and which is capable of movements about said thumb joints through ranges of movement fully corresponding to those of the human operator's thumb during said programming mode, a plurality of thumb member sensor elements for sensing movements of said thumb members about said plurality of thumb joints respectively, means for recording the outputs of said thumb member sensor elements during said programming mode, a plurality of thumb member driving

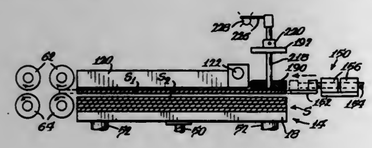
means responsive respectively to the recorded outputs of said thumb member sensor elements for moving said hollow thumb members relative to one another and relative to said central hand member about said plurality of thumb joints respectively during said operating mode, a plurality of hollow finger members interconnected sequentially to one another and to said central hand member by a plurality of pivoted finger joints, said plural hollow finger members forming a hollow articulated finger unit which receives a finger of the human operator during the said programming mode and which is capable of movements about said finger joints through ranges of movement fully corresponding to those of the human operator's finger, a plurality of finger member sensor elements for sensing movements of said finger members about said plurality of finger joints respectively, means for recording the outputs of said finger member sensor elements during said programming mode, and a plurality of finger member driving means responsive respectively to the recorded outputs of said finger member sensor elements for moving said hollow finger members relative to one another and relative to said central hand member about said plurality of finger joints respectively during said operating mode.

4,575,298

APPARATUS FOR DESTACKING SHEETS OF MATERIAL

Curtis N. Maas, Chicago, and Sastry K. Ganti, Wheeling, both of Ill., assignors to Reichel & Drews, Inc., Itasca, Ill.

Filed Dec. 29, 1982, Ser. No. 454,271
Int. Cl.⁴ B65H *03/08, 05/06*
U.S. Cl. 414—116 **9 Claims**



8. An apparatus for destacking sheets of material from a stack of such sheets, comprising:

a vertically movable platform adapted to carry said stack of sheets;

means for selectively upwardly indexing said platform;

air plenum means for directing air against opposite sides of said stack so that the uppermost sheet of said stack is entirely separated from and floated on a layer of air above the remaining sheets of said stack;

cyclically operable means for pushing said separated sheet out of registry with the remaining sheets of said stack;

means for limiting upward movement of said separated sheet, and means apart from said indexing means for moving said limiting means upwardly during upward indexing of said stack of sheets;

roller means for receiving said separated sheet after pushing thereof by said pushing means, and for displacing said separated sheet from above the remaining sheets of said stack, said indexing means operating during displacement of said separated sheet from above said remaining sheets;

sensing means for sensing the position of the uppermost one of the remaining sheets of said stack, said sensing means including cyclically operable vertically movable foot means adapted to engage the uppermost one of the remaining sheets of said stack and maintain that uppermost sheet at least partially in contact with the sheet beneath it as said air plenum means directs air against said stack and tends to separate said uppermost remaining sheet from the sheet therebeneath, to thereby sense the position of the uppermost remaining sheet, said foot means being operable in timed relation to said pushing means so that said foot means move downwardly into engagement with the uppermost one of the remaining sheets after said pushing means pushes said separated sheet; and

means for signalling said indexing means to move said platform and said stack upwardly, said sensing means signalling said indexing means to stop upward movement of said platform and said stack when the uppermost one of said remaining sheets reaches a predetermined location;

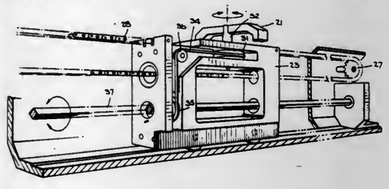
said movable foot means being upwardly movable to permit said uppermost remaining sheet to be entirely separated from the sheet therebeneath by air directed against said stack by said air plenum means to permit pushing of the uppermost remaining sheet by said cyclically operable pushing means.

4,575,299

AUTOMATED WORK TRANSFER SYSTEM FOR CHEMICAL PROCESSING BATHS

Howard M. Layton, New Fairfield, Conn., and Kenneth Yocis, Carmel, N.Y., assignors to Interlab, Inc., Danbury, Conn.

Filed Oct. 24, 1984, Ser. No. 664,299
Int. Cl.⁴ B65G *49/04*
U.S. Cl. 414—222 **10 Claims**



10. A work transfer system for conveying a work basket to a plurality of processing tanks disposed along a work bench, said system comprising:

(A) a robot riding on a rail parallel to the front of the bench, said robot having a hoist which is raisable or lowerable relative to the work bench;

(B) a hollow arm cantilevered from the hoist along a transverse axis across the bench;

(C) a driven trolley riding within the arm and provided with a driven turntable having a spindle projecting upwardly therefrom; and

(D) a loop encircling the arm, the upper end of the loop being joined to the spindle whereby the loop is caused to assume an angular position relative to the arm in accordance with the turntable position, the lower end of the loop being coupled to the work basket.

4,575,300

CONTAINER LIFT APPARATUS FOR A GARBAGE TRUCK

Richard D. George, P.O. Box 1464, Conrad, Mont. 59425

Filed Jun. 14, 1984, Ser. No. 620,483
Int. Cl.⁴ B65F *3/04*
U.S. Cl. 414—406 **12 Claims**

1. Container lift apparatus for a garbage truck, said truck having a box and means for pivoting a side of said box between open and closed positions, said side in the open position forming a hopper for receiving garbage, said side movable with said pivoting means to the closed position to move said garbage from said hopper to said box, said apparatus comprising:

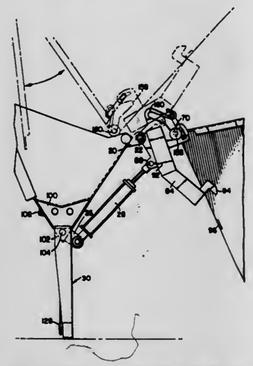
an arm;

means for pivotably attaching said arm to said hopper;

an hydraulic piston and cylinder assembly having one end attached to said hopper and a second end attached to said arm at a location spaced from the axis of said arm attaching means;

means for controllably energizing said assembly; and

means, attached to said arm, for holding said container;



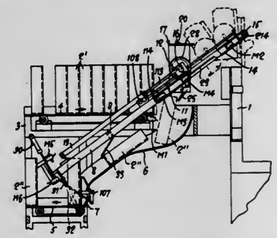
whereby said holding means holds said container as said hydraulic assembly rotates said arm to lift said container and dump garbage from same into said hopper.

4,575,301

AUTOMATIC FEEDER DEVICE FOR CIGARETTES AND SIMILAR ROD-LIKE ARTICLES

Oliviero Lodi, Sasso Marconi, and Gianni Armaroli, Bologna, both of Italy, assignors to Sasib S.p.A., Bologna, Italy

Filed Oct. 21, 1983, Ser. No. 545,044
Claims priority, application Italy, Oct. 22, 1982, 12645 A/82
Int. Cl.⁴ B65B *19/04*
U.S. Cl. 414—411 **9 Claims**



1. An automatic feeder device for transferring articles from trays to a packing machine having a hopper with an inlet, by moving trays that are full of articles over the inlet and by discharging trays that are empty after the contents thereof have been released into the inlet, each tray having a mouth and a bottom, comprising:

a tray-carrying casing provided with a gate for closing the tray mouth and with tray-holding means cooperating with the bottom of the tray;

feeding means defining a feeding path directed toward said hopper for feeding said full trays;

discharging means defining a discharge path directed away from said hopper for discharging said empty trays, said discharge path being below said feeding path;

a loading-and-unloading inclined frame having an upwardly oriented fore end that is disposed above said inlet of said hopper and having longitudinal side members that extend laterally to said paths;

first means for swingably moving said frame about a transversely extending axis so that said frame moves between a first angular position wherein said fore end is lowered toward said inlet and a second angular position wherein said fore end is lifted from said inlet, said frame being more inclined when in said second angular position than in said first angular position;

second means for mounting said tray-carrying casing so that said casing is longitudinally slidable along said longitudinal side members and rotatable about an axis extending transversely between said longitudinal side members; and

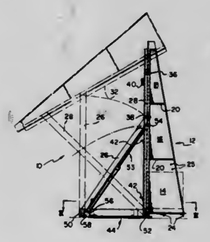
third means cooperating with said frame and said second means for moving said tray-carrying casing from an overturned upper position, wherein a tray carried by said casing is disposed over said inlet of said hopper with the mouth of the tray directed downward so that articles fall from the mouth into said hopper, through an upstanding intermediate position, wherein an empty tray is released from said casing onto said discharge path, to an upstanding lower position, wherein said casing receives a full tray from said feeding path, and then to said overturned upper position.

4,575,302

DUMPING MECHANISM

John A. Holden, 107 Chedoke Ave., Hamilton, Ontario, Canada (L8P 4P2)

Filed Mar. 20, 1984, Ser. No. 591,573
Int. Cl.⁴ B65G *65/23, 7/08*
U.S. Cl. 414—420 **3 Claims**



1. A displacement mechanism for tilting, laterally displacing, and dumping a load, comprising:

carrying means for carrying a load, said carrying means including wall means; and

supporting means for supporting said carrying means for movement between a first position at which said load is supplied to said carrying means and a second position at which said carrying means is tilted to dump said load from said carrying means, said second position being horizontally displaced and rotated more than 90 degrees from said first position, said wall means, in the first position of the carrying means, being generally vertical;

said supporting means comprising pivotal first and second links mounting said carrying means and for pivoting said carrying means through more than ninety degrees and simultaneously tilting and horizontally displacing said carrying means during the movement of said carrying means from said first position to said second position; and

drive means for effecting pivotation of said pivotal first and second links and thereby movement of said carrying means between said first and second positions;

said first and second links having upper ends and lower ends;

first and second pivot means pivotally connecting the upper ends of said first and second links, respectively, to said carrying means;

a generally horizontal base; and

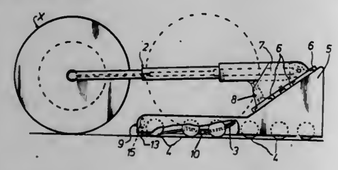
third and fourth pivot means pivotally connecting the lower ends of said first and second links, respectively, to said base;

said first and second links being laterally spaced and movable in mutually crossing relation to each other to effect the tilting and horizontal displacement of said carrying

means during the movement of the carrying means between the first and second positions;
said first pivot means being generally vertically above said second pivot means and said third pivot means being generally vertically below said second pivot means when said carrying means is in said first position;
said first link, in said first position of said carrying means, being generally vertical and generally paralleling the wall means of said carrying means;
said first link, in moving between the first position of said carrying means and the second position of said carrying means, moving from a generally vertical position with the first pivot means at substantially maximum height over said base to a pivotally lowered position, whereby said first pivot means and therewith said carrying means are lowered as said carrying means moves from said first position to said second position.

4,575,303
DEVICE FOR HANDLING AND MOVING CYLINDRICAL UNITS

Bengt Lindell, S-563 00 Gränna, Sweden
Filed May 29, 1984, Ser. No. 614,643
Int. Cl.⁴ B60P *1/50, 3/00*
U.S. Cl. 414—430 **9 Claims**

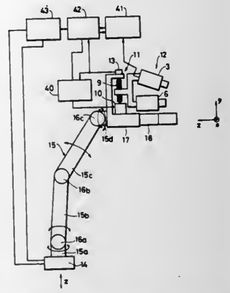


1. A device for handling and moving generally cylindrical loads, such as cable reels, rolls of paper, sheet metal, and the like, comprising
a frame supported by wheels;
a load-supporting surface supported on said frame;
vertically pivotable, laterally movable telescoping arms for retentive engagement with the load to move the load toward and away from said load-supporting surface;
said load-supporting surface including
a cradle having a downwardly curved concave seat portion, and a downwardly sloping substantially planar wedge shaped ramp extending from said seat portion in the direction of the ends of said telescoping arms which are for engaging the load; and
a transverse shaft supported by said frame, spaced from the ground surface supporting said wheels, and mounted beneath said downwardly curved seat portion;
said cradle being tiltable about said shaft;
said telescoping arms being movable past and beyond said cradle and having engagement means on their free ends adapted to engage with said cylindrical load during loading and unloading thereof.

4,575,304
ROBOT SYSTEM FOR RECOGNIZING THREE DIMENSIONAL SHAPES

Yasuo Nakagawa, Chigasaki, and Takanori Ninomiya, Yokohama, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Apr. 7, 1983, Ser. No. 482,730
Claims priority, application Japan, Apr. 7, 1982, 57-56584
Int. Cl.⁴ B66C *1/00*
U.S. Cl. 414—730 **18 Claims**

1. A robot [characterized in that a three-dimensional shape detection device is mounted on an operating member of the robot] system for operating upon an object, comprising:
a robot having an operating member movable with at least three degrees of freedom;
robot control means for moving the operating member of the robot according to a program;
a three-dimensional shape detection device mounted on the operating member of the robot, said three-dimensional shape detection device comprising a light projector which projects light so as to form a slit-light on the object, an image detector which projects in two dimensions an image of the light-segment projected by said light projector, and a scanning device which scans at least the slit-light in a predetermined direction;
circuit means for extracting a range data signal representing the image of the light-segments from the image signal detected by the image detector in accordance with scanning performed by said scanning device;



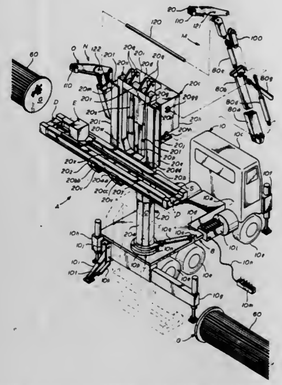
an image processor for visually recognizing the three-dimensional shape of the object including the position and the inclination, said image processor comprising differentiation means for differentiating the range data signal obtained by said circuit means to form a jump edge image signal representing a jump edge of the object, separation means for separating the range data into a region closed with the jump edge, extraction means for extracting a necessary region from the separated region and then extracting the range data of a major plane from the extracted region, and detection means for detecting a position of a center of gravity and an inclination of the major plane on the basis of the range data; and
means for modifying said program to thereby modify the movement of said operating member of the robot in response to said recognized three-dimensional shape of the object obtained by said image processor so as to be able to operate the object with said operating member of the robot.

4,575,305
TRUCK MOUNTED TUBE BUNDLE PULLING APPARATUS

Richard W. Krajicek, Houston, Tex.; Steven W. Krajicek, and Robert R. Cradeur, both of Sulphur, La., assignors to Bon Ton Rolle Limited, Houston, Tex.
Filed Nov. 18, 1983, Ser. No. 553,403
Int. Cl.⁴ B60P *1/00, 11/00*
U.S. Cl. 414—746 **35 Claims**

1. An apparatus for removing tube bundles of shell and tube heat exchangers, said bundles having a tubesheet on at least one end and said exchanger having at least one flanged end cap, comprising:
an over the road vehicle;
a vertical telescoping column rotatably mounted to and extending from said vehicle, said column having a vertical axis, said column movable between an expanded and a retracted position;
a top telescoping section slidably mounted to said vertical telescoping column;

a bundle support member having a longitudinal horizontal axis mounted upon and adjacent to said telescoping column and adapted for slidable movement relative to said telescoping column;
a carriage mounted with said bundle support member, said carriage adapted to receive the flanged end of a tube bundle and adapted to be driven horizontally along said bundle support member;
means for displacing said carriage axially along said bundle support member; and
means on said vertical telescoping column for selectively unloading and reloading a tube bundle from said bundle support member;

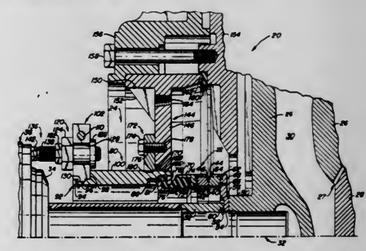


a bundle support member vertical adjustment section connected to said top telescoping section and said bundle support member, disposed to move vertically relative to said top section, independently of the telescoping action relative to said base section;
guide means with said top telescoping section for guiding vertical movements of said bundle support member vertical adjustment section; and
bundle support member telescoping means with said guide means for vertical movements of said bundle support member vertical adjustment section relative to said top telescoping section.

4,575,306
SLURRY PUMP MECHANICAL SEAL MOUNTING ASSEMBLY

James A. Monnot, Baton Rouge, La., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.
Filed Aug. 28, 1984, Ser. No. 644,909
Int. Cl.⁴ F04D *29/10, 29/60*
U.S. Cl. 415—131 **9 Claims**

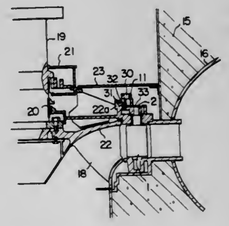
1. In a pump having an impeller rotatably driven by an axially moveable rotatable pump shaft supported by an axially adjustable bearing assembly and having a mechanical seal assembly including a rotatable seal ring adapter secured to and rotatable with the pump shaft and a stationary seal ring adapter attached to a first end of a cylindrical seal carrier which is sized to completely pass through a pump back plate, a mounting assembly for the seal carrier, said mounting assembly comprising:
a split gland ring having spaced gland nut receiving apertures, said split gland ring having an inner peripheral portion engageable with a second end of the seal carrier;
a gland nut having a central longitudinal threaded bore and being rotatably positioned in each of said gland nut receiving apertures;
a gland bolt receivable in said central longitudinal threaded bore in each of said gland nuts and secured to the axially adjustable bearing assembly; and



means for forming a stationary seal between the seal carrier and the pump back plate.

4,575,307
GUIDE VANE OPERATING MECHANISM FOR HYDRAULIC MACHINE

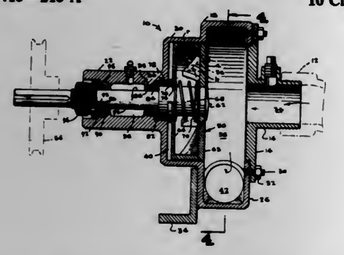
Morimiti Shinohara, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan
Filed Dec. 8, 1983, Ser. No. 559,268
Claims priority, application Japan, Dec. 10, 1982, 57-215562
Int. Cl.⁴ F03B *3/18*
U.S. Cl. 415—150 **1 Claim**



1. A guide vane operating mechanism in a hydraulic machine having a main shaft; a volute casing surrounding said main shaft and having an inner peripheral wall, said volute casing being imbedded in a concrete structure having an inner wall defining an inside space; a runner integrally incorporated with said main shaft and disposed within said inside space; and guide vanes lying along said inner peripheral wall of said volute casing for guiding water led from said volute casing to said runner at an optimum angle for rotation of said inner runner; the guide vane operating mechanism comprising: a plate-like rotatable guide ring rotatably arranged around said main shaft within said inner space and having an outer peripheral edge section defining therein a bearing hole; a guide vane driving mechanism for linkage between said guide vanes and said guide ring to drive said guide vanes in a range of between fully-opened and fully-closed positions in association with rotation of said guide ring; at least one servo motor having a gear end stationarily secured to said inner wall of said concrete structure and having a reciprocating piston rod secured thereto with a rod end fitting formed therein with a bearing hole, for rotating said guide ring, said piston rod reciprocating slightly above said guide ring in a direction parallel to a line tangential to said outer peripheral edge section of said guide ring; and an eccentric pin formed of two columnar bodies which are integrally incorporated together in a staggered manner so that one of said columnar bodies provides one end shaft part of said eccentric pin while the other of said columnar bodies provides the other end shaft part of said eccentric pin for connecting said rod end fitting with said guide ring such that said one end shaft part of said eccentric pin is rotatably

fitted in said bearing hole in said rod end fitting while the other end shaft part of said eccentric pin is rotatably fitted in said bearing hole in said outer peripheral edge section of said guide ring.

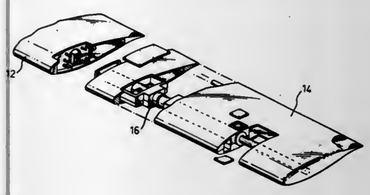
4,575,308
SOLID MATERIALS PUMP
William M. Corkill, White Sulphur Springs, Mont., assignor to Metal Technologies, Inc., Mont.
Filed Dec. 15, 1983, Ser. No. 562,283
Int. Cl.⁴ F04D *7/02*
U.S. Cl. 415—213 A **10 Claims**



1. A rotary pump for pumping liquid and solid materials carried in suspension therein, said rotary pump comprising:
(a) an impeller having an axis of rotation:
(b) housing means comprising a swirl chamber, an impeller chamber for receiving said impeller, means for mounting said impeller within said impeller chamber for rotation in a given rotational direction about said axis, means for introducing the liquid and solid materials into said swirl chamber, and means for discharging the liquid and solid materials from said swirl chamber; and
(c) said impeller comprising a surface exposed to said swirl chamber and disposed substantially outside said swirl chamber, and a plurality of enclosed pockets disposed in said exposed surface and recessed with respect to said swirl chamber, each of said recessed pockets comprising a blade surface intersecting said exposed surface to form an intersection line, said blade surface including a curved surface disposed adjacent said intersection line and disposed further away from said exposed surface and said swirl chamber as the distance from said axis increases, said intersection line oriented outward from said axis and leading said blade surface when considering said given rotational direction, whereby upon rotation of said impeller the liquid and suspended solid materials are formed into a swirling vortex of increased rotational velocity and establish a negative pressure in front of said exposed surface to substantially prevent the solid materials from striking said impeller.

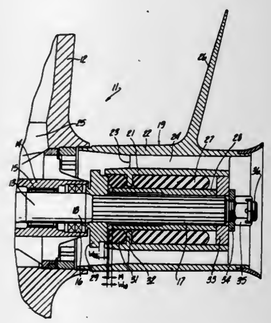
4,575,309
WIND TURBINES
Allan W. Brown, Glasgow, Scotland, assignor to James Howden & Company Ltd., Glasgow, Scotland
Filed May 22, 1984, Ser. No. 613,089
Claims priority, application United Kingdom, May 25, 1983, 8314405
Int. Cl.⁴ F03D *7/04*
U.S. Cl. 416—41 **6 Claims**

1. A wind turbine comprising:
(a) a plurality of blades,
(b) variable pitch portions on at least two of said blades,
(c) said variable pitch portions being movable between normal operating positions and altered pitch positions and being effective when in said altered pitch positions to cause the speed of the turbine to be reduced,
(d) pitch variation means tending to effect movement of said variable pitch portions towards said altered pitch positions,
(e) a hydraulic system normally operating to overcome the effect of said pitch variation means, so that the said portions of the blade remain in the normal operating position,
(f) pressure generating means for pressurising said hydraulic system as a function of the rotational speed of the turbine, and



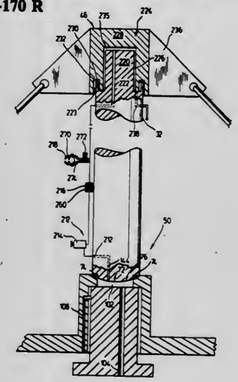
(g) a valve operable to release pressure in said hydraulic system when said pressure reaches a threshold value corresponding to a maximum turbine speed,
whereby, when the rotational speed of said turbine increases sufficiently to cause said pressure to reach said value, said hydraulic system ceases to operate and said variation means is free to effect said movement of said variable pitch portions towards said altered pitch positions to reduce the rotational speed.

4,575,310
PROPELLER SHOCK ABSORBER FOR MARINE PROPULSION DEVICE
Hiroaki Otani, Shizuoka, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan
Filed Mar. 15, 1984, Ser. No. 589,955
Claims priority, application Japan, Mar. 17, 1983, 58-43127
Int. Cl.⁴ B63H *1/20*
U.S. Cl. 416—134 R **15 Claims**



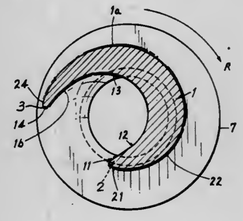
1. A marine drive comprising a propeller adapted to be coupled in driving relation with a driving shaft having a thrust member thereon for receiving driving thrusts, said propeller comprising a hub having at least one blade formed thereon, an inner sleeve adapted to be affixed against rotation relative to the driving shaft, and a coupling arrangement for coupling said propeller and said inner sleeve comprising first resilient means directly connected to said hub and said inner sleeve for providing a resilient connection in a circumferential direction between said propeller and the driving shaft, and second resilient means affixed at one end directly to said hub and adapted to engage the thrust member at its other end for providing a resilient connection between said propeller and the driving shaft in an axial direction.

4,575,311
GEAR BOX ASSEMBLY-UPPER HEAD ASSEMBLY
Charles F. Wood, Mississauga, Canada, assignor to Indal Technologies Inc., Mississauga, Canada
Division of Ser. No. 332,859, Dec. 21, 1981, Pat. No. 4,514,145. This application Aug. 13, 1984, Ser. No. 639,824
Int. Cl.⁴ F03D *7/06, 11/04*
U.S. Cl. 416—170 R **16 Claims**



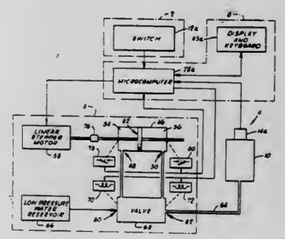
1. An upper head assembly for the top of a wind turbine for securing the guy wires thereto, the upper head assembly comprising a guy wire coupling to which the guy wires are secured, a support for supporting the guy wire coupling, the guy wire coupling being vertically displacable relative to the support, the guy wire coupling and support presenting a housing and shaft, the shaft for being received in the housing and presenting a space therebetween for receiving fluid for vertically displacing the guy wire coupling from the support, a fluid passageway opening into the space, means for supplying fluid through the fluid passageway to elevate the coupling relative to the top of the wind turbine, sealing means for sealing the space between the shaft and housing and means to drain the fluid from the space.

4,575,312
IMPELLER
Magnus Erikson, Johanneshov, Sweden, assignor to ITT Industries, Inc., New York, N.Y.
Continuation of Ser. No. 390,084, Jun. 2, 1982, abandoned, which is a continuation-in-part of Ser. No. 140,892, Apr. 16, 1980, abandoned. This application Nov. 9, 1984, Ser. No. 670,427
Int. Cl.⁴ F04D *1/04*
U.S. Cl. 416—179 **8 Claims**



1. An impeller for use in a centrifugal pump, said impeller comprising cover discs connected to each other by a single generally helical vane having an outer surface and an inner surface, said outer surface being eccentric with respect to said discs whereby it forms a pressure surface, said discs and said inner surface of said vane defining a channel having an inlet coaxial with the impeller axis of rotation and being formed by an opening in one of said discs and an outlet eccentric to said axis, said circumferential extent of said vane being less than 360° so that it has a leading edge and a trailing edge with the space between said edges forming said outlet, the thickness of said vane varying in both its radial and axial directions such that the cross-section of the channel taken normal to the axis of flow through the channel has a varying shape and an area having a range from substantially constant to only slightly increasing.

4,575,313
DIGITAL PRESSURE CONTROLLER
Prabhakar P. Rao; Jim B. Surjaatmadja, and Jack C. Penn, all of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.
Division of Ser. No. 463,219, Feb. 2, 1983, abandoned. This application Sep. 19, 1984, Ser. No. 651,978
Int. Cl.⁴ F04B *49/00*
U.S. Cl. 417—26 **4 Claims**



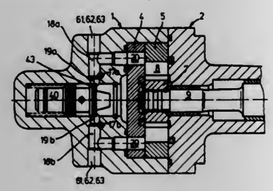
1. An apparatus for controlling pressure in a chamber, comprising:
set point means for setting a magnitude of pressure which is to be maintained in said chamber;
detector means for detecting the actual pressure in said chamber;
a body having a cavity, a first port and a second port defined therein, said first and second ports extending between said cavity and the exterior of said body;
connector means for connecting one of said first and second ports in fluid communication with said chamber, said connector means including valve means, having a fluid inlet and a fluid outlet, for communicating said fluid inlet with said first port and for communicating said fluid outlet with said second port when said valve means is in a first state and for communicating said fluid inlet with said second port and for communicating said fluid outlet with said first port when said valve means is in a second state, said fluid outlet being communicable with said chamber;
a member, movably disposed in said cavity, for defining first and second portions of said cavity, said first portion having said first port communicating therewith and said second portion having said second port communicating therewith;
motor means for moving said member to vary the sizes of said first and second portions, said motor means including stepper actuator means of linearly moving said member in said cavity; and
computer means, responsive to said set point means and said detector means, for providing control signals to said motor means and said valve means when the magnitude of pressure which is to be maintained in said chamber is not within a predetermined range of the detected actual pressure.

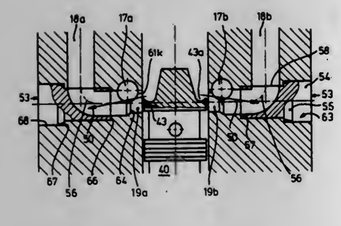
4,575,314

DEFLECTING INSERT FOR A ROTARY VANE PUMP

Heinz Teubler, Friedrichsdorf; Heinz W. Krüger, Wilhelmsdorf, and René Schulz, Neu-Anspach, all of Fed. Rep. of Germany, assignors to Vickers Systems GmbH, Homburg, Fed. Rep. of Germany

Filed May 11, 1984, Ser. No. 609,290
Claims priority, application European Pat. Off., May 14, 1983, 83104769.1
Int. Cl.[4] F04B *49/02;* F04C *15/02*
U.S. Cl. 417—310 6 Claims





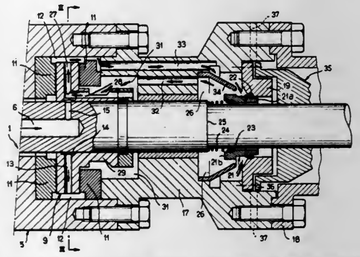
1. A rotary vane pump comprising
a housing having a cavity therein,
a pressure plate having inlet and outlet openings,
a cam ring also having inlet and outlet openings,
a rotor having slots,
a plurality of vanes, at least a vane being in each slot,
a shaft being journalled in said housing and drivingly connected to that rotor,
a valve,
a tank and
a pump outlet,
cell chambers being comprised in said cavity between said pressure plate, said cam ring, said rotor and said vanes, wherein at least one cell chamber is contracting and another cell chamber is expanding,
that housing having inlet passageways leading from said tank to said expanding cell chamber, and outlet passageways leading from said contracting cell chamber to said pump outlet, said inlet and outlet passageways also being connected to said valve,
said inlet passageways including a pair of normally vertical feed passages and a pair of normally horizontal elbow-bend feed passages, each connected to a discharge passage which is opened and closed by said valve, which when open will produce each a fluid jet into said elbow-bend feed passages, the improvement wherein said elbow-bend feed passages each comprises a stepped bore and a plug-like insert being made up from an erosion-resistant material fixed in said stepped bore and including a fluid deflection means,
wherein said valve has a land which is undercut so as to produce, in cooperation with said discharge passage, a fluid jet which is directed essentially in longitudinal direction of said insert.

4,575,315

DEVICE FOR PROVIDING FLUID-TIGHTNESS OF A SUBMERSIBLE MOTOR AND A MOTOR INCORPORATING SAID DEVICE

Michel Galais, Angouleme; Christian Sardain, Delle; Jean Fouin, Angouleme; Marcel Arnaudeau, Paris, and Pierre Morin, Levallois-Perret, all of France, assignors to Moteurs Leroy-Somer, Angouleme, France

Filed Jun. 1, 1983, Ser. No. 500,178
Claims priority, application France, Jun. 4, 1982, 82 09746
Int. Cl.[4] F04B *39/02;* H02K *5/12*
U.S. Cl. 417—365 7 Claims



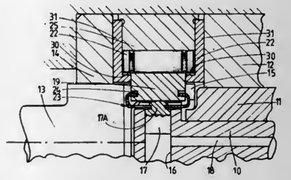
1. A device for providing fluid tightness of a submersible motor, said motor comprising a casing, a shaft having an emergent end extending through one end of said casing, said shaft supporting at least one rotor adapted to cooperate with a stator supported by said casing, said casing being provided with a rotary packing gland for said emergent end of said shaft, said casing being filled with a lubricating and cooling fluid under pressure and including tight means for maintaining the overall pressure of said lubricating and cooling fluid at a level subsantially equal to that of an external medium, said device comprising a first circuit means providing an overpressure in a zone adjacent to said rotary packing gland, wherein said device comprises a second circuit means for providing a further increase of pressure within said zone.

4,575,316

ROTARY DISTRIBUTOR PUMP

Dorian F. Mowbray, Burnham, England, assignor to Lucas Industries public limited company, Birmingham, England

Filed Mar. 28, 1985, Ser. No. 717,006
Claims priority, application United Kingdom, Apr. 19, 1984, 8410280
Int. Cl.[4] F04B *19/00, 29/00*
U.S. Cl. 417—462 5 Claims



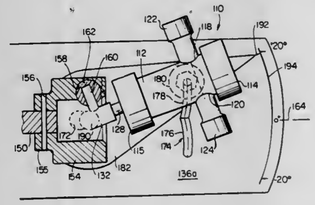
1. A rotary distributor type fuel injection pump comprising a rotary distributor member housed in a body and arranged in use to be driven in timed relationship with an associated engine, a radial bore in the distributor member and plunger located therein, an annular cam in the body, the cam having an internal cam surface defining an inwardly directed cam lobe or cam lobes for imparting inward movement to the pumping plunger as the distributor member rotates, passage means through which fuel can escape from the bore to a pump outlet and through which fuel can flow to the bore from a source of fuel, a cam follower positioned at the outer end of the plunger, said cam follower comprising a shoe and a captive roller carried by the shoe for engagement with the cam surface of the cam ring, said roller extending at its opposite ends beyond the shoe, clip means retaining the shoe to the outer end of the plunger, and a pair of cam members positioned on opposite sides of said cam ring, said cam members defining cam surfaces engageable by the extended portions of said roller respectively, said cam surfaces facing the cam surface defined by the cam ring and acting to urge the cam follower and plunger outwardly following inward movement by the cam lobe or lobes.

4,575,317

CONSTANT CLEARANCE POSITIVE DISPLACEMENT PISTON PUMP

George H. Lindner, Vlissingen, Netherlands, assignor to M&T Chemicals Inc., Woodbridge, N.J.

Filed Jun. 26, 1985, Ser. No. 749,066
Int. Cl.[4] F04B *7/06*
U.S. Cl. 417—500 10 Claims



1. A pump comprising:
a cylinder including a working end, an inlet port, an outlet port and a working chamber bounded by said outlet port and said working end;
a piston rotatably and reciprocably movable in said cylinder between a retracted position and an extended position, said piston including a free end having a recessed section alternately in fluid communication with said inlet port and said outlet port;
means for pivotally connecting said piston to drive means which rotatably and reciprocably drives said piston in said cylinder; and
means for ensuring that said recessed section is positioned entirely in said working chamber when said piston is in said extended position, regardless of the angle between said piston and said drive means.

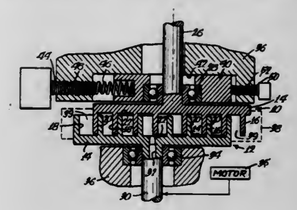
4,575,318

UNLOADING OF SCROLL COMPRESSORS

Edward S. Blain, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Aug. 16, 1984, Ser. No. 641,214
Int. Cl.[4] F04C *2/04, 15/04, 18/04, 29/10*
U.S. Cl. 418—14 2 Claims

1. A positive displacement compressor or pump of the scroll type comprising:
a bearing;
first and second scroll plates having convoluted, interfitting vanes, the flanks of the vane(s) on one plate being in sealing contact with the flanks of the vane(s) on the other plate at at least two locations, the tips of the vane(s) on each plate being in sealing contact with the other plate whereby at least one sealed pocket exists between said plates, one of said plates having a shaft extending therefrom oppositely of the vane(s) thereon and journalled in said bearing;
a slidable block receiving said bearing;
a generally central port in at least one plate through which fluid may pass;
a peripheral port to the interface of said plate spaced outwardly from said central port;
means for causing said plates to undergo orbital movement relative to each other to cause said pocket(s) to deliver fluid between said ports; and
selectively operable means for causing said plates to separate from one another to break at least one of said sealing contacts and form a leakage path from said pocket(s) through the interface between said plates to thereby unload said compressor or pump, said selectively operable means including an actuator and spring means extending between said actuator and said block, said actuator being operable to slide said block to thereby shift said bearing in a direction generally transverse to the axis of said shaft to separate said plates by relative radial movement to establish said leakage path.

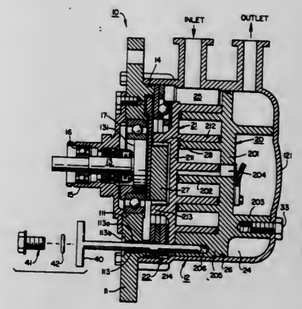


4,575,319

METHOD AND APPARATUS FOR ADJUSTING THE ANGULAR RELATIONSHIP OF SPIRAL ELEMENTS IN A SCROLL TYPE FLUID DISPLACEMENT APPARATUS

Kiyoshi Terauchi, Isesaki, Japan, assignor to Sanden Corporation, Gunma, Japan

Filed Aug. 1, 1984, Ser. No. 636,670
Int. Cl.[4] F01C *1/04, 19/00;* B23P *15/00*
U.S. Cl. 418—55 6 Claims



1. In a scroll type fluid displacement apparatus including a housing having a front end plate, a fixed scroll member disposed relative to said housing and having a first end plate from which a first spiral element extends, an orbiting scroll member having a second end plate from which a second spiral element extends, said orbiting scroll member being disposed within said housing and interfitting with said fixed scroll member at an angular and radial offset to make a plurality of line contacts to define at least one pair of sealed off fluid pockets a driving mechanism operatively connected to said orbiting scroll member to effect the orbital motion of said orbiting scroll member, a rotation preventing/thrust bearing mechanism operatively

connected to said driving mechanism and said orbiting scroll member to prevent rotation of said orbiting scroll member during orbital motion, said rotation preventing/thrust bearing mechanism including a fixed ring connected to said fixed scroll member and an orbiting ring connected to said orbiting scroll member, said fixed and orbiting rings being formed with a plurality of holes which receive a corresponding plurality of ball elements, the improvement comprising:

said fixed scroll member having a bore of predetermined depth;

said second end plate having a hole adjacent said bore;

said front end plate having a hole adjacent said hole in said second end plate, the combination of said hole in said front end plate, said hole in said second end plate and said bore being capable of receiving an adjusting member with an elongated portion during assembly of said scroll type fluid displacement apparatus so that said holes can be brought into substantial alignment with said bore by the elongated portion of said adjusting member to establish a predetermined angular relationship between said fixed and orbiting scroll members, wherein said plurality of ball elements are held adjacent the edges of said plurality of holes formed in said fixed and orbiting rings.

4,575,320

SCROLL COMPRESSOR HAVING IMPROVED LUBRICATING STRUCTURE

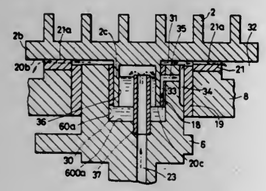
Norihide Kobayashi; Toshiyuki Nakamura, and Masahiro Sugihara, all of Wakayama, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 11, 1984, Ser. No. 659,926

Claims priority, application Japan, Mar. 13, 1984, 59-49705

Int. Cl.⁴ F04C *18/04, 29/02*

U.S. Cl. 418—55 **24 Claims**



1. A scroll compressor comprising:

a stationary scroll and an orbiting scroll having respective spiral wraps assembled to form compression chambers therebetween, said orbiting scroll having a drive shaft;

a main shaft for driving said orbiting scroll to compress fluid in said compression chambers, an oil storage section being formed by a hole in an upper end portion of said main shaft and a hole in a lower portion of said drive shaft of said orbiting scroll, and a lubrication hole being formed in said main shaft, said lubrication hole having a lower end opening in a lower end of said main shaft and an upper end communicated with said oil storage section so that lubricating oil flowing into said lubrication hole through said lower end when said main shaft is driven is delivered through said lubrication hole to the oil storage section;

bearing means interposed between said main shaft and said drive shaft of said orbiting scroll and receiving lubricating oil from said oil storage section;

an electric motor for driving said main shaft;

a housing having an oil pool in a bottom portion thereof and accommodating said stationary scroll, said orbiting scroll, said motor and said main shaft with said stationary scroll and said orbiting scroll at an upper portion of said housing and said motor at a lower portion of said housing, and a lower end portion of said main shaft being immersed in lubricating oil in said oil pool; and

a weir for storing a predetermined quantity of lubricating oil in said oil storage section;

said bearing extending from a first axial position to a second axial position in said main shaft and said weir maintaining a level of oil therein to a position intermediate said bearing positions when the compressor is stopped.

4,575,321

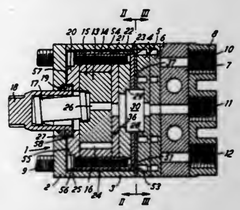
HYDROSTATIC CONTROL DEVICE, PARTICULARLY STEERING DEVICE

Hans C. Petersen, Nordborg; Erik Kyster, Augustenborg, and Svend E. Thomsen, Nordborg, all of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Division of Ser. No. 550,256, Nov. 10, 1983. This application Jul. 19, 1985, Ser. No. 756,659

Int. Cl.⁴ F04C *2/10*; F16D *31/02*

U.S. Cl. 418—61 B **2 Claims**



1. A hydrostatic steering control device, comprising, a housing having a plurality of ports including fluid inlet and outlet ports and two motor ports connectable to an external servomotor, said housing having first and second transversely and oppositely facing annularly shaped wall means, a metering motor having a casing rotatably mounted in said housing, said casing having first and second wall means with first and second planar surfaces in sealing engagement with said housing first and second surfaces, said metering motor being a gerotor type gear unit with an internally toothed ring member forming a part of said casing between said wall means thereof and an externally toothed star member engaging said ring member, said star member having orbital and rotational movement relative to said ring member to form expansible and collapsible chambers, said housing second wall surface having valving orifices, directional valve means connected to said casing second wall means and being in valving engagement with said housing second wall means, said directional valve means having opposite turn functions formed by valving orifices in said casing second planar surface and said housing second wall means, control shaft means for actuating said star member to rotate said directional valve means upon said shaft means turning said casing and said star member in unison, resilient means for maintaining said directional valve means in a neutral position between two operating positions in the absence of a turning force on said shaft means, passage means cooperable with and connecting said housing ports with said directional valve means, said housing having exhaust passage means between said fluid outlet port and a space radially inward of said housing and casing first wall means, said housing and casing second wall means having first annular groove means therebetween, said housing having inlet passage means between said fluid inlet port and said groove means to create a high pressure zone with said groove means, first throttle gap means between said second housing and casing wall means radially outward from said groove means, and second throttle gap means between said first housing and casing wall means to form an intermediate pressure zone between said first and second throttle gap means.

4,575,322

OIL-SEALED VANE PUMP

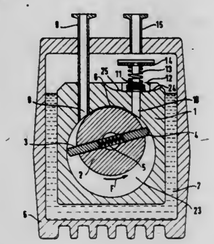
Jean-Marc Paquet, and René Sibuet, both of Annecy, France, assignors to Compagnie Industrielle des Telecommunications Cit-Alcatel, Annecy, France

Filed Nov. 28, 1984, Ser. No. 675,390

Claims priority, application France, Nov. 30, 1983, 83 19148

Int. Cl.⁴ F04C *27/02, 29/02*

U.S. Cl. 418—96 **2 Claims**



1. In an oil-sealed vane pump with a stator and rotor both mounted in an oil-filled tank, said stator having an oil injection orifice opening to said tank below the oil level, therein, a suction port connected to a tank inlet pipe and a discharge port opening into said tank, said discharge port being provided with a check valve, said check valve comprising a spring biased valve element overlying said discharge port and fitted into a recessed spot facing in the stator, said tank further comprising a discharge port, the improvement wherein said pump is provided with at least one clearance slot in said stator, said clearance slot opening from the side of said stator into said recessed spot facing, and wherein said stator clearance slot opens to said recessed spot facing at a level just slightly higher than the bottom of said recessed spot facing, and wherein said check valve element is of a height in excess of the distance between the bottom of said spot facing and the level of said slot where it opens to said recessed spot facing such that said valve element is unsubmerged and a thin film of oil is maintained in the bottom of said recessed spot facing when said valve element is closed, whereby, said clearance slot significantly increases the area for receiving ejected oil discharging into said recessed spot facing off said check valve element for drainage back to said tank via said clearance slot opening to the side of said stator and to the interior of said tank.

4,575,323

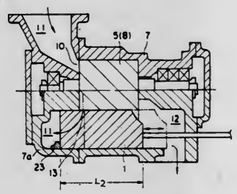
SLIDE VALVE TYPE SCREW COMPRESSOR

Shoji Yoshimura, Hyogo, Japan, assignor to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed May 23, 1984, Ser. No. 613,224

Int. Cl.⁴ F01C *1/16*

U.S. Cl. 418—201 **7 Claims**



1. A slide valve type screw compressor, comprising:

a slide valve with a surface of chevron shape in section and which further comprises a pair of arcuately curved surfaces forming part of the walls of a compression chamber accommodating a pair of intermeshed male and female screw rotors, said slide valve being slidable in the axial direction of a plurality of rotors for communicating said compression chamber with a suction port through an opening with an adjustably variable area for volumetric control of said compressor; and

a suction casing communicating with said compression chamber, wherein a fore end of said slide valve is retractably protrudable into said suction casing and has opposite outer corner portions of said curved surfaces cut off at said fore end thereof at a predetermined angle with an axis thereof to provide rearwardly-directed substantially triangular sections at said fore end, said triangular sections and said arcuately curved surfaces meeting in curvilinear lines of intersection, said suction casing and said triangular sections comprising means for gradually initiating volumetric control of said compressor from an initial state of maximum volumetric flow by gradually withdrawing said triangular sections from said suction casing to expose increasing amounts of the lengths of said lines of intersection to fluid entering said compression chamber.

4,575,324

ROTARY FLUID PUMP

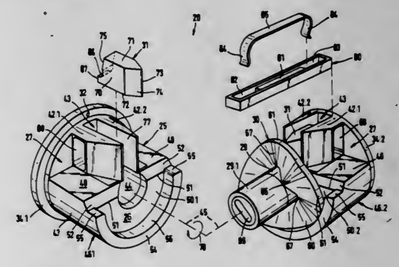
Manfred Sommer, Untergruppenbach-Vorhof, Fed. Rep. of Germany, and A. Robert Gudheim, Petersham, Mass., assignors to Sine Pumps, N.V., Curacao, Netherlands Antilles

Filed May 21, 1984, Ser. No. 612,615

Claims priority, application Fed. Rep. of Germany, May 21, 1983, 3318631

Int. Cl.⁴ E04C *2/00*

U.S. Cl. 418—217 **11 Claims**



1. A rotary fluid pump comprising:

a hollow shell comprising at least two parts which are sufficiently separable from one another to open said shell and means for separably securing said shell parst together in closed condition,

complementary casing parts fitting in said shell and defining between them a pump chamber comprising a suction chamber, a discharge chamber and a transport zone extending circumferentially between said suction chamber and said discharge chamber, said transport zone defined by said parts having a cylindrical inner peripheral surface and opposite planar end surfaces, said casing parts being removably insertable in said shell when open and being held in assembed relation to one another by said shell when closed,

a rotor rotatably received in said pump chamber, said rotor comprising a hub portion and an undulating vane portion projecting radially outwardly from said hub portion and having an outer periphery slidable engaging said inner peripheral surface of said transport zone of said pump chamber and opposite surfaces which in a circumferential direction are smooth, continuous cyclic curves with at least two complete cycles in the circumferential extent of said rotor, crests of said curves slidably engaging opposite planar end surfaces of said pump chamber,

gate means separating said suction chamber from said discharge chamber and comprising a pair of gate members slidable longitudinally in guide channels and having rounded nose portions engaging respectively opposite faces of said undulating vane portion of the rotor, and spring means interconnecting said gate members with one another and biasing them toward said undulating vane portion,

said vane portion of the rotor having a thickness which varies in a circumferential direction and in a radial direction to provide constant line contact with said rounded nose portions of said gate members throughout the radial extent of said vane portion as said rotor rotates, and

inlet and outlet openings in said shell communicating respectively with said suction chamber and discharge chamber.

4,575,325

DEVICE FOR ATOMIZING LIQUID METALS FOR THE PURPOSE OF PRODUCING A FINELY GRANULAR POWDER

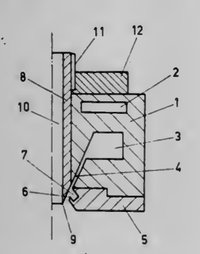
Thomas Duerig, Fremont, Calif.; Marcel Escudier, Mönthal, and Jakob Keller, Kilwangen, both of Switzerland, assignors to BBC Brown, Boveri & Co., Ltd., Baden, Switzerland

Filed Feb. 27, 1984, Ser. No. 583,691

Claims priority, application Switzerland, May 3, 1983, 2389/83

Int. Cl.⁴ B22D *11/01*; B05B *3/14*

U.S. Cl. 425—7 **1 Claim**



1. In a device for atomizing liquid metals to produce a finely granular powder comprising a centrally symmetrical body containing ducts for supplying liquid metal to be atomized and for atomizing gas, the improvement characterized in that there is provided a housing defined by cylindrical surfaces, said housing defining an annular cooling duct, an annular chamber there being within said housing conical confining surfaces defining an annular nozzle slit connected with said annular chamber and for use in producing a gas jet in the shape of a hollow cone, said housing having on an end facing the gas exit from the nozzle slit a flange with a sharp annular edge defining an annular resonance space in the shape of a hollow cone intersecting and possesses a flange said housing further containing in a central longitudinal bore, a sleeve which possesses an exit edge with a conical confining surface and a thread and which can be shifted in the longitudinal direction and is adjustable and is attached to the said housing by means of a round nut to receive the liquid jet of metal flowing through the bore.

4,575,326

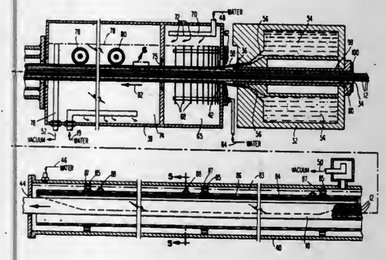
APPARATUS FOR CALIBRATING EXTRUDED MATERIAL

Terry M. French, Cressona, Pa., assignor to Tamaqua Cable Products Corporation, Schuylkill Haven, Pa.

Division of Ser. No. 548,503, Nov. 3, 1983, Pat. No. 4,508,500. This application Dec. 7, 1984, Ser. No. 679,561

Int. Cl.⁴ B29C *47/90*

U.S. Cl. 425—71 **7 Claims**



1. A differential pressure calibrating tank for sizing and cooling just-extruded duct comprising:

a duct inlet opening to the tank for receiving just-extruded duct from an adjacent extrusion die;

a calibrator head adjacent the inlet opening for sizing the just-extruded duct;

a cooling water inlet to the tank, the cooling water partially filling the tank and submersing the just-extruded duct;

a vacuum source to the tank for creating a differential pressure across the walls of the duct;

a duct exit from the tank through which the sized and cooled duct passes; and

a means for restraining the duct submersed in the water as the duct travels from the duct inlet to the exit, the restraining means including a perforated tube situated within the tank, the longitudinal axis of said tube being generally parallel to the direction of travel of the duct, said duct traversing the perforated tube as it travels, the restraining means further including a channel having a generally inverted V-shape situated within said perforated tube, the apex of said channel being oriented vertically upwardly.

4,575,327

ENCLOSURE FOR THE HOT-ISOSTATIC PRESSING OF HIGHLY STRESSED WORKPIECES OF COMPLEX SHAPE FOR TURBOMACHINES

Barbara Borchert, Munich; Herbert Schmid, Lauterbach; Werner Hüther, Karlsfeld, and Herbert Merz, Munich, all of Fed. Rep. of Germany, assignors to MTU Motoren-und Turbinen-Union Munchen GmbH, Munich, Fed. Rep. of Germany

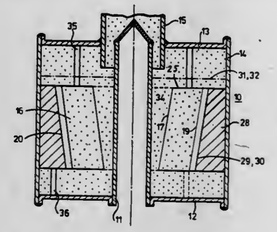
Filed Feb. 9, 1983, Ser. No. 465,104

Claims priority, application Fed. Rep. of Germany, Feb. 13, 1982, 3205158

Int. Cl.⁴ B22F *3/14*

U.S. Cl. 425—78 **12 Claims**

1. Apparatus for the hot isostatic pressing of a highly stressed rotor of titanium base for a turbomachine, the rotor having a hub and a plurality of radial vanes extending from the hub, said apparatus comprising a core having surfaces of negative contour for forming corresponding surfaces for the rotor, an outer enclosure surrounding said core to form collectively therewith a space for the formation of the rotor, means for introducing an alloy powder for said rotor into said space, said powder comprising a titanium base containing at least 80 to 90% by weight of titanium, said core being composed, at least in the surface region thereof, of a high temperature alloy having a base of nickel or iron which is neutral in chemical reaction and of low diffusion with respect to said alloy powder of titanium base, said core comprising a plurality of annular segments, in a number corresponding to the number of vanes of the rotor, and collectively forming the surfaces of the radial vanes with the negative contour therefor and an outer holding ring engaging said segments in surrounding relation, said enclosure including outer walls surrounding said core and an



inner tube within said core which opens externally of said enclosure and means for subjecting said enclosure to heat and isostatic pressure to effect hot isostatic pressing of the powder to form the rotor, said heat and pressure being applied all around to said powder in said space by application to said walls of the enclosure and within said tube, the presence of said tube leading to the formation of a bore within the hub.

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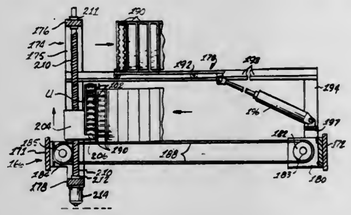
AUTOMATIC CONTINUOUSLY CYCLEABLE MOLDING APPARATUS

Richardus H. J. Fierkens, Herwen, and Ireneus J. T. M. Pas, Rozendaal, both of Netherlands, assignors to ASM Fico Tooling, b.v., Herwen, Netherlands

Filed Mar. 6, 1984, Ser. No. 586,855

Int. Cl.⁴ B29G *3/00*; B29D *31/00*

U.S. Cl. 425—126 R **109 Claims**



1. An automatic multi-station molding apparatus for use with bottom and top molds that are assembleable into mold sets each of which cooperatively define at least one molding material receiving cavity from which at least one run extends to at least one product defining recess, the top mold having a bore extending into the cavity with a plunger removably carried in the bore, said apparatus comprising, in interconnected combination:

(a) a mold assembly station for receiving a preheated bottom mold and having means for receiving a preheated top mold and moving it into assembled engagement with the received bottom mold to form a mold set;

(b) a molding station for receiving the mold set from said mold assembly station and including,

I. means for applying a clamping force on the received mold set,

II. means for pulling and subsequently reinserting the plunger of the top mold of the received mold set,

III. means for placing molding material in the cavity defined by the received mold set when the plunger is pulled from the top mold thereof,

IV. means for applying a force on the reinserted plunger of the top mold of the received mold set for liquification and flow of the molding material into the recess defined by the received mold set;

(c) a curing station for receiving the mold set from said molding station;

(d) a mold disassembly station for receiving the mold set from said curing station and having means for removing the top mold from the bottom mold to disassemble the received mold set;

(e) a product removal station for receiving the bottom mold from said mold disassembly station and having means for removing the molded product from the received bottom mold;

(f) a degating station for receiving the molded product from said product removal station and having means for removing the cull and gate from the received molded product to form a finished product; and

(g) a finished product handling station for receiving the finished product from said degating station and having means for moving the finished product out of the system.

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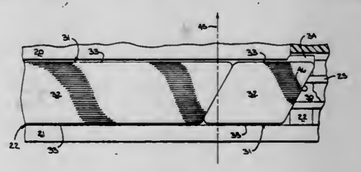
ELECTRODE ELEMENT FOR CORONA TREATER

Andreas Ahlbrandt, 17 Uhlandstrasse, Lauterbach, Fed. Rep. of Germany

Division of Ser. No. 569,264, Jan. 9, 1984, Pat. No. 4,533,523. This application Apr. 18, 1985, Ser. No. 724,823

Int. Cl.⁴ B29B *13/08*; B29C *71/04*

U.S. Cl. 425—174 **5 Claims**



1. An electrode element for a corona treater, which comprises;

a case made from a heat resistant electrically insulating material and having a bottom wall which provides a discharge surface and a pair of spaced side walls which connect to the bottom wall and extend upward therefrom;

a metal plate disposed between the side walls and against the bottom wall of the case on the side opposite the discharge surface;

means for connecting the case to the corona treater; and

a contact spring which is disposed between the side walls of the case and having one end in electrical contact with the metal plate and its other end extending upward to make electrical contact with an electrode bar on the corona treater.

4,575,330

APPARATUS FOR PRODUCTION OF THREE-DIMENSIONAL OBJECTS BY STEREOLITHOGRAPHY

Charles W. Hull, Arcadia, Calif., assignor to UVP, Inc., San Gabriel, Calif.

Filed Aug. 8, 1984, Ser. No. 638,905

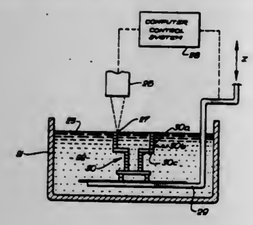
Int. Cl.⁴ B29D *11/00*; G03C *00/00*

U.S. Cl. 425—174.4 **47 Claims**

1. A system for producing a three-dimensional object from a fluid medium capable of solidification when subjected to prescribed synergistic stimulation, said system comprising:

means for drawing upon and forming successive cross-sec-

tional laminae of said object at a two-dimensional interface; and



means for moving said cross-sections as they are formed and building up said object in step wise fashion, whereby a three-dimensional object is extracted from a substantially two-dimensional surface.

4,575,331

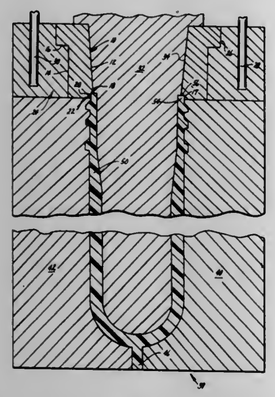
TRANSPORT NECK RING

Dennis L. Dundas, Lee's Summit; William H. Myers, Raytown, and William G. Kinslow, Jr., Gladstone, all of Mo., assignors to Hoover Universal, Inc., Ann Arbor, Mich.

Continuation of Ser. No. 358,137, Mar. 15, 1982, abandoned. This application Oct. 28, 1983, Ser. No. 546,680

Int. Cl.⁴ B29C *45/04, 49/06*

U.S. Cl. 425—577 **1 Claim**



1. A carrier ring and split injection mold assembly including a core pin and a powered transport system wherein the carrier ring is supported by an annular collar attached to the powered transport mechanism, said mechanism being operable to support the carrier ring and a preform suspended therefrom for movement to and from various stations in multi-station forming apparatuses after the split injection mold assembly including the core pin have been removed, said assembly comprising

a pair of mold halves which cooperate to define an injection mold cavity having an open upper end, a carrier ring of annular shape positioned at said upper end of said mold cavity and having an outwardly tapered inside wall aligned with the open end of said cavity, a core pin having a tapered surface and insertable into said mold cavity to a position in which said tapered surface seats on said tapered ring wall and said core cooperates with said mold halves to form a mold cavity corresponding in shape to a lower portion of the desired shape of a hollow preform to be molded in said mold assembly,

said carrier ring being structured to provide for an interference fit between the carrier ring and the preform so that when the preform is removed from the mold it is supported by said carrier ring, said carrier ring for this purpose having at its inner lowermost extent an annular groove which defines an upper portion of said preform cavity, said annular groove having:

(a) a substantially horizontal first wall extending radially outwardly in a direction away from said core pin and terminating at a location spaced radially outwardly from said core pin, said first wall defining a portion of the upper surface of said preform cavity;

(b) a substantially horizontal second wall downwardly displaced from said first wall extending radially inwardly in a direction toward said core pin and terminating at a location spaced radially outwardly from said core pin; and

(c) a downwardly and inwardly extending third wall emanating from the outward most extent of said first wall and terminating at the inward most extent of said second wall,

said core pin being upwardly removable from said injection mold and said mold halves being movable away from said preform so as to leave said preform suspended solely from said carrier ring with the interior surface of the preform accessible from above through the open center of said carrier ring.

4,575,332

METHOD OF AND BURNER FOR BURNING LIQUID OR GASEOUS FUELS WITH DECREASED NO_x FORMATION

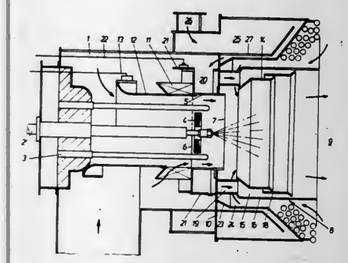
Rolf Oppenberg, Wesel, and Helmüt Wiehn, Oberhausen, both of Fed. Rep. of Germany, assignors to Deutsche Babcock Werke Aktiengesellschaft, Oberhausen, Fed. Rep. of Germany

Filed Jun. 26, 1984, Ser. No. 624,712

Claims priority, application Fed. Rep. of Germany, Jul. 30, 1983, 3327597

Int. Cl.⁴ F23M *3/00*

U.S. Cl. 431—9 **24 Claims**



3. Method of burning liquid or gaseous fuels in a firebox with reduced formation of NO_x, comprising the steps of: supplying combustion air in portions of primary and secondary air; feeding said portions in one after the other at axial intervals parallel to flow of combustion gases, said primary air generating an injector effect for drawing combustion gases in, said primary air being supplied at a percentage of the total combustion air that is higher than that of the secondary air; and drawing out extensively burned combustion gases from the firebox downstream of the feeding of said secondary air and conducting to a flame-initiation point between primary-air and secondary-air feeds, so that said burned combustion gases produce a gaseous separating layer between said primary air and said secondary air, said gaseous layer being comprised of substantially inert combustion gas and delaying access of the secondary air to said flame-initiation point for delaying combustion with reduced formation of NO_x.

4,575,333

FLAME MONITOR TIME DELAY CONTROL

Jack A. Bryant, 500 Main St., Apt. 6, Melrose, Mass. 02176

Filed May 2, 1984, Ser. No. 606,176

Int. Cl.⁴ F23N *5/20*

U.S. Cl. 431—18 **12 Claims**



1. Apparatus for monitoring a flame comprising in combination:

(a) means for detecting the intensity level of a flame;

(b) means for controlling said flame;

(c) flame-on timing means arranged to time out after a predetermined period;

(d) means for starting said flame-on timing means and continuing its operation only while the intensity level of said detecting means remains above a preselected value; and

(e) means for actuating said control means when said flame-on timing means times out.

4,575,334

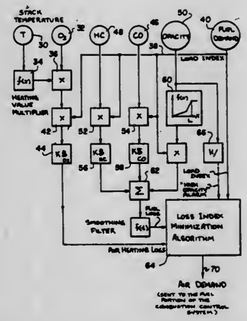
LOSS MINIMIZATION COMBUSTION CONTROL SYSTEM

Marion A. Keyes, IV, Chagrin Falls; Michael P. Lukas, Eastlake, and Robert E. Pocock, Highland Heights, all of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Division of Ser. No. 438,216, Nov. 1, 1982. This application Nov. 14, 1984, Ser. No. 550,439

Int. Cl.⁴ F23N *5/00*

U.S. Cl. 431—76 **1 Claim**



1. An apparatus for reducing losses in a combustion operation for burning fuel with air at a low level with the combustion operation producing flue gas having unburned by-product, oxygen and a selected stack temperature, comprising:

a temperature transmitter for measuring the stack temperature;

an oxygen sensor for sensing unburned oxygen in the flue gas;

at least one unburned combustion by-product sensor for sensing an amount of unburned combustion by-product in the flue gas;

an opacity sensor for sensing the opacity of the flue gas;

means for establishing a load level for the combustion operation which is proportional to a load index thereof;

a first multiplier connected to the temperature transmitter and oxygen sensor for multiplying values generated thereby together;

a second multiplier connected between said means and an output of said first multiplier for multiplying values generated thereby together;

a first cost factor unit connected to an output of said second multiplier for generating an air heating loss value in response to said second multiplier output;

a third multiplier connected between said means and said at least one unburned by-product sensor for multiplying values generated thereby together;

a second cost factor unit connected to an output of said third multiplier for generating a quantity value proportional to an unburned by-product loss for the combustion operation in response to said third multiplier output;

a function generator connected to an output of said opacity sensor for multiplying an amount of opacity sensed by said opacity sensor by an amount which increases to a fine that is exacted for reaching a limit in opacity; a fourth multiplier connected to an output of said function generator and to said means for multiplying values generated thereby together for generating an opacity loss quantity value;

a summing unit connected to an output of said second cost factor unit and said fourth multiplier for combining values generated thereby together for generating a total fuel loss value for the combustion operation; and

a loss index minimizing unit connected to an output of said summing unit, an output of said first cost factor unit, and to said means, for generating an air demand signal for controlling the amount of air for the combustion operation, at which a fuel loss cost, an air heating loss cost, and a summation of fuel loss cost plus air heating loss cost are minimized.

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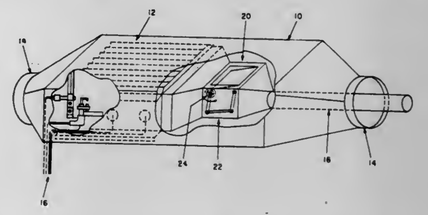
APPARATUS AND METHOD FOR HEATING AN AIR STREAM FLOWING THROUGH A CONDUIT

Thomas J. Hirt, and Merlin H. Moseman, both of Omaha, Nebr., assignors to InterNorth, Inc., Omaha, Nebr.

Filed Dec. 3, 1984, Ser. No. 677,592

Int. Cl.⁴ F24H *7/00, 1/00*

U.S. Cl. 432—29 **7 Claims**



6. A method for heating an air stream flowing through a conduit which minimizes the introduction of noxious burner exhaust emissions into said air stream, which comprises:

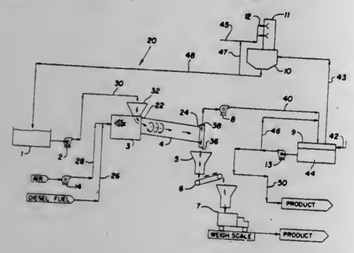
(a) igniting a combustible fuel in a refractory radiant-type burner disposed within said air stream,

(b) venting the hot products of combustion to the outside atmosphere,

(c) allowing said products to flow into said air stream to heat said air stream when a specified operating parameter is attained, and

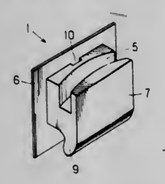
(d) venting said products to the outside atmosphere when said burner shuts off.

4,575,336
APPARATUS FOR TREATING OIL FIELD WASTES CONTAINING HYDROCARBONS
Robert E. Mudd, and Wendell L. Wyatt, both of Cameron, La., assignors to Eco Industries, Inc., Waco, Tex.
Filed Jul. 25, 1983, Ser. No. 517,113
Int. Cl.[4] F23G *7/04, 5/06;* F23J *11/00*
U.S. Cl. 432—72 **5 Claims**



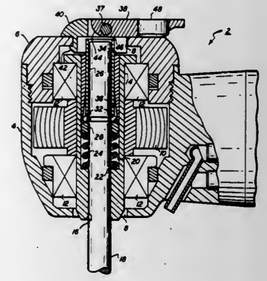
4. Apparatus for treating wastes containing carbonaceous materials comprising:
(a) a rotary kiln having a first end higher than a second end whereby material rotating therein will flow from the first to the second end, said kiln having an inlet at the first end;
(b) means for injecting burning fuel and air into said first end of the kiln and cause subsantially complete combustion of all carbonaceous materials in said wastes and leaving only dry solid non-combustible residue and gasses;
(c) outlet means at the second end of the kiln;
(d) separating means connected to said outlet means for separating heavier solid materials exiting said kiln from lighter solid materials exiting said kiln, said separating means including suction means for entraining said lighter materials in air and gasses exhausted from said kiln while permitting heavier solid materials to separate therefrom by gravity; and
(e) means downstream from said suction means for separating said lighter solid materials from said gasses.

4,575,337
ORTHODONTIC APPLIANCE
Kinya Fujita, No. 3998-5, Kamariya-cho, Kanazawa-ku, Yokohama-shi, Kanagawa-ken, Japan
Filed Nov. 25, 1983, Ser. No. 555,068
Claims priority, application Japan, Nov. 25, 1982, 57-178070[U]
Int. Cl.[4] A61C *7/00*
U.S. Cl. 433—8 **11 Claims**



1. An orthodontic appliance for applying forces to correct malocclusion of teeth, comprising:
a generally U-shaped orthodontic first curved arch wire for applying said corrective forces;
a plurality of arch wire support brackets cooperating with and supporting in a predetermined manner said arch wire, each of said brackets being attachable to individual teeth at either the buccal or lingual side thereof, a laterally central portion of a width of each of said brackets being substantially aligned with respect to a laterally central portion of the attached buccal or lingual side, respectively, of said attached tooth;
at least one of said brackets being formed with a curved arch wire engaging a first slot extending the full width thereof, said first slot being curved to match the shape of a corresponding portion of said curved arch wire engaged into corresponding slots of adjacent support brackets attached to a plurality of said teeth; and
said first slot is curved to be concave toward an end surface of said bracket with which said bracket is attached to a tooth.

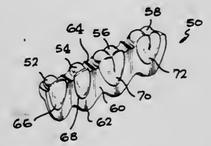
4,575,338
BALL TYPE BUR GRIPPING MECHANISM FOR DENTAL HANDPIECE
Leonid I. Maizenberg, Chicago, Ill., assignor to Sybron Corporation, Rochester, N.Y.
Filed Nov. 21, 1984, Ser. No. 673,822
Int. Cl.[4] A61C *1/08*
U.S. Cl. 433—126 **9 Claims**



1. A head for a dental handpiece, including:
a rotor tube disposed for rotation within said head, said rotor tube having an inner ramp surface in its upper portion and an inner circumferential shoulder at a lower portion,
a spring disposed within said rotor tube on said shoulder,
a grip carrier disposed within said rotor tube on said spring, said grip carrier entraining in its wall a gripping element for operative engagement and disengagement with said ramp surface,
said rotor tube and said grip carrier surrounding an axial bore for the reception of a bur shank, and
a cam lever pivotally mounted to said head in operative relationship with said grip carrier, said cam lever being movable to an open position to move said grip carrier against said spring and to a closed position to return said grip carrier under the influence of said spring into operative engagement with said ramp surface whereby said gripping element is urged into engagement with a bur shank in said bore.

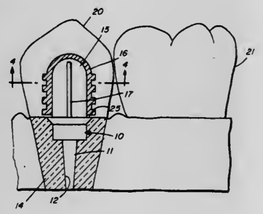
4,575,339
PROSTHESIS SUBSTRUCTURE
Robert P. Berger, 4421 Rochelle Pl, Encino, Calif. 91316
Filed Jun. 18, 1984, Ser. No. 621,852
Int. Cl.[4] A61C *13/00*
U.S. Cl. 433—167 **16 Claims**

1. A dental prosthesis substructure comprising:
a central member having a buccal and a lingual side, said central member having a width extending across a plurality of tooth spaces, a height extending from a gingival margin to an occlusal edge, and a thickness between said sides, said central member of said prosthesis substructure being for positioning on the dental arch with its height direction in the direction of principal mastication forces; and



a plurality of U-shaped webs integrally formed with said central member and extending from the lingual side thereof, said U-shaped webs being oriented for strengthening the central member against bending of said central member both in the height direction and thickness direction.

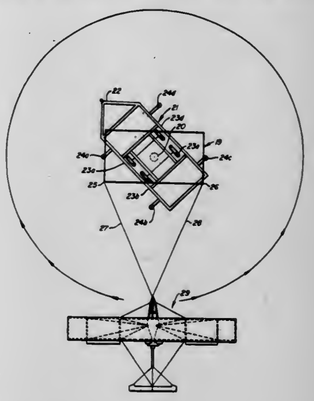
4,575,340
PRECISION DENTAL RESTORATIVE SYSTEM
Leopold P. Lustig, 304 Greenwood St., Newton Centre, Mass. 02159
Filed Feb. 4, 1985, Ser. No. 698,677
Int. Cl.[4] A61C *8/00*
U.S. Cl. 433—173 **30 Claims**



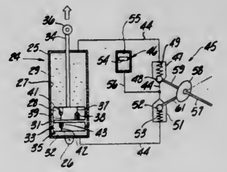
1. A replacement tooth comprising a supragingivally-extending post fixed in the patient's mouth, said post having prescribed external length and width dimensions, a precision fitting prefabricated sleeve having substantially the same internal width dimensions as said external dimensions of said post axially slidable on said post so as to be non-rotationally telescopically mated to said post, restorative material for forming said tooth surrounding said sleeve, and means on an external surface of said sleeve to retain said restorative material fixed relative to said sleeve.

4,575,341
TRAINING APPARATUS FOR ULTRALIGHT AIRCRAFT
Billy O. Bryant, 2600 Buena Vista, Bakersfield, Calif. 93304, and William J. Mitchell, Jr., 3303 Morningside Dr., Hermosa Beach, Calif. 90254
Filed Aug. 29, 1983, Ser. No. 527,027
Int. Cl.[4] G09B *9/08*
U.S. Cl. 434—35 **6 Claims**

1. Training apparatus for use with an aircraft comprising:
movable support means;
means on the support means for generating a generally horizontal airstream; and
tethering means adapted to tether an aircraft to the support means while permitting the aircraft to move vertically in the airstream and horizontally with the tethering means connected to the support means to move the direction of the airstream with the aircraft as the aircraft moves horizontally.



4,575,342
TILT LOCK MECHANISM FOR MARINE PROPULSION DEVICE
Ryoji Nakahama, Iwata, and Takashi Iwashita, Hamakita, both of Japan, assignors to Sanshin Kogyo Kabushiki Kaisha, Japan
Filed Dec. 27, 1983, Ser. No. 565,271
Claims priority, application Japan, Dec. 28, 1982, 57-227559
Int. Cl.[4] B63H *5/12, 21/26*
U.S. Cl. 440—56 **30 Claims**



1. In a tilt locking and shock absorbing arrangement for a marine outboard drive comprising a drive member supported for tilting movement relative to a hull of an associated watercraft about a substantially horizontally disposed tilt axis, a hydraulic assembly comprising a cylinder and a piston slidably supported in said cylinder and defining first and second chambers, a piston rod affixed to said piston and extending through one of said chambers, means for operatively interposing said hydraulic assembly between said hull and said drive member for relative movement of said piston and said cylinder upon tilting movement of said drive member about said tilt axis, damping means for permitting flow from said first chamber to said second chamber upon the application of a predetermined force tending to cause said drive member to tilt up about said tilt axis and for permitting flow from said second chamber to said first chamber upon the exertion of a predetermined force to effect tilt down of said drive member, means for controlling movement of said drive member about said tilt axis comprising passage means extending between said first and second chambers, first check valve means in said passage means for permitting flow from said first chamber to said second chamber and for precluding flow from said second chamber to said first

chamber, second check valve means in said passage means for permitting flow from said second chamber to said first chamber and for precluding flow from said first chamber to said second chamber, and control means for selectively opening one of said check valve means so that the other of said check valve means controls the flow through said passage means, the improvement comprising an accumulator communicating with said passage means between said check valve means for compensating for the changes in the volume of the fluid displace from said one chamber by said piston rod.

4,575,343

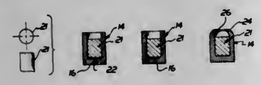
BIMETAL ELECTRODE AND METHOD OF MAKING SAME

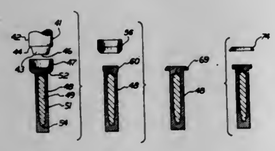
Nelson I. Kin, and George T. Payne, both of Tiffin, Ohio, assignors to The National Machinery Company, Tiffin, Ohio

Continuation-in-part of Ser. No. 138,500, Apr. 9, 1980, abandoned. This application Feb. 9, 1981, Ser. No. 232,954

Int. Cl.⁴ H01T *21/02*

U.S. Cl. 445—7 **23 Claims**





1. A method of forming bimetal electrodes for spark plugs or the like, comprising forming an outer metal cup having an open end and a closed end, positioning a cylindrical core of a different metal within said cup so that said core does not project beyond said open end, pressing said cup and core through an extrusion die with said closed end first by applying a force primarily through said core to said closed end to produce a compound extrusion in which intimate contact is provided between the inner end of said core and the closed end of said cup.

4,575,344

METAL ARC DIRECTOR FOR COMPACT FLUORESCENT LAMP

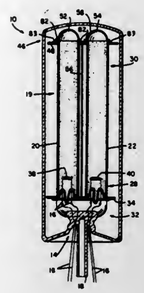
Andre C. Bouchard, Peabody; Jakob Maya, Brookline; Fred Longbridge, Ipswich; Charles W. Andress, Danvers, and Julian Wierzbicki, Peabody, all of Mass., assignors to GTE Products Corporation, Stamford, Conn.

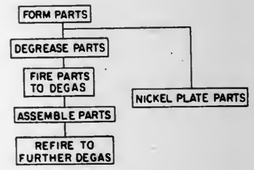
Division of Ser. No. 481,204, Apr. 1, 1983, Pat. No. 4,527,088. This application Feb. 4, 1985, Ser. No. 698,215

Int. Cl.⁴ H01J *9/00*

U.S. Cl. 445—26 **3 Claims**

1. The method of making an arc directing means comprised of a base member and an arc director for a compact fluorescent lamp comprising the steps of: forming said base member of relatively thick, electrically conductive material with a plurality of apertures therein; forming at least one substantially rectangular, dish shaped arc director from relatively thin, electrically conductive material; degreasing said base member and said arc director; degassing said base member and said arc director by firing in a vacuum for about one hour at about 800° C.; affixing said arc director to said base member to form said arc directing means; firing said arc directing means in a vacuum for about two hours at about 1000° C. to further degas





same; and subsequently employing said arc directing means in said fluorescent lamps.

4,575,345

METHOD OF PLAYING WITH DOLLS

Jack B. Wager, 80-B Morningside Dr., Albany, Ga. 31705

Filed Mar. 25, 1985, Ser. No. 715,729

Int. Cl.⁴ A63H *3/16*

U.S. Cl. 446—99 **1 Claim**



1. A method of playing with a doll comprising:

providing a first doll and a second doll substantially identical to said first doll,

said dolls being made up of articulated sections such that each section of said first doll is interchangeable with the corresponding section of said second doll,

said sections, for each said doll, including a head section, a torso section including shoulders, chest, abdomen and hips, arm sections including biceps, elbows, wrists and hands, leg sections including thighs, knees, calves and feet,

the top end and the bottom end of said head, torso, arm and leg sections of said first doll being identical to the top end and bottom end of said head, torso, arm and leg sections, respectively, of said second doll,

the outside surfaces of said head, torso, arm and leg sections of said first doll being bandaged, simulating injured body parts,

the outside surfaces of said head, torso, arm and leg sections of said second doll being clothed,

whereby one or more of said bandaged sections can be substituted for corresponding ones of said clothed sections to make up a doll simulating an individual with both uninjured and injured body parts,

each said section of each doll being connected to an adjacent section thereof with a flat surface on the one section adjacent a flat surface on the next section,

each said flat surface on each said section having means for detachably holding the said sections together,

said method further comprising pretending that at least one said section of said second doll has been injured,

removing said section pretended to be injured from said second doll connecting the corresponding bandaged section of said first doll to the section or sections of said second doll with which said section pretended to be injured was connected and,

treating said second doll as an invalid.

4,575,346

MAGNETIC TOP RUNNING TOY

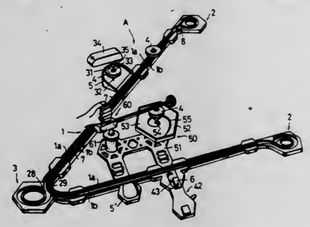
Iwakichi Ogawa, Kashiwa, Japan, assignor to Takara Co., Ltd., Tokyo, Japan

Filed Aug. 22, 1983, Ser. No. 525,549

Claims priority, application Japan, Aug. 28, 1982, 57-130405[U]

Int. Cl.⁴ A63H *1/06, 33/26, 17/12, 18/00*

U.S. Cl. 446—259 **10 Claims**



1. A magnetic top running toy assembly wherein a spinning top is run along a predetermined running path, comprising:

a top having a magnetic shaft;

a running path having a magnetic attraction wall adapted to contact with said magnetic shaft of said top when the top runs along the running path;

a starting station attached to said running path and having a guide surface for guiding said top onto said running path; and

a jumping station attached to said running path including means for directing said top, while spinning, to a specific location, and means for impacting said spinning top at said specific location with sufficient force to propel it into the air including a lever mounted to transfer force to the bottom of a spinning top to propel said top into the air upon the application of an impacting force downward upon the said lever's exposed end.

4,575,347

TOY MUSIC BOX

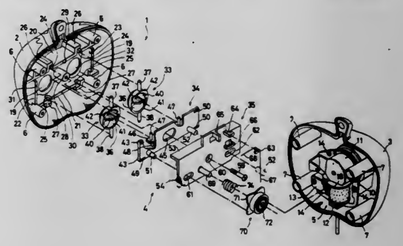
Yoshio Kitamura, Nagano, Japan, assignor to Kabushiki Kaisha Sankyo Seiki Seisakusho, Nagano, Japan

Filed Mar. 19, 1984, Ser. No. 590,620

Claims priority, application Japan, Aug. 31, 1983, 58-134520[U]

Int. Cl.⁴ A63H *3/28, 3/40*

U.S. Cl. 446—301 **10 Claims**



1. A toy music box comprising: a casing;

a pair of movable members, at least portions of which are viewable through corresponding apertures formed in said casing, each of said movable members having an upper and lower rotary shaft affixed thereto rotatably mounted on said casing, and a tongue having a groove formed therein projecting toward an interior of said casing;

a control plate reciprocatably mounted in said casing, said control plate having first and second pairs of engaging pins affixed thereto such that said first pair of said engaging pins is fitted into said grooves of said moving members in a first orientation of said movable members and said second pair of said engaging pins is fitted into said grooves of said moving members in a second orientation of said movable members, said second orientation of said movable members being upside down from said first orientation of said movable members, and spacings between the pins of said two pairs of pins being different from one another;

a music generating mechanism comprising a movable drum and a sounding plate for sounding a tune; and

means for reciprocating said control plate back and forth in response to movement of said music generating mechanism.

4,575,348

OPENING CASE TOY OR AMUSEMENT DEVICE

Christopher C. Wiggs, 64 Goldborough Crescent, Chingford, London, England (E4), and Christopher J. C. Taylor, 117 Latchmere Rd., London, England (SW11)

Filed Mar. 29, 1984, Ser. No. 594,534

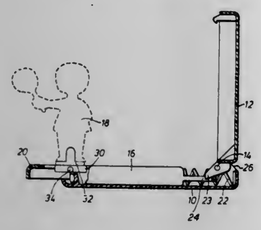
Claims priority, application United Kingdom, Mar. 30, 1983, 8308881

Int. Cl.⁴ A63H *13/16*

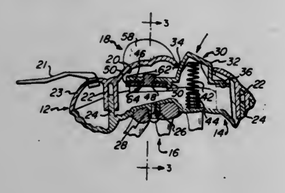
U.S. Cl. 446—310 **9 Claims**

8. An amusement device comprising a case and a display object movable between a collapsed position in which it is housed within the case and an erect position in which it stands proud of said case, wherein said device includes means operable by the user of the device to raise the object from its collapsed position to its erect position and to rotate said object about an axis substantially normal to the case as the object reaches its erect position, said means for raising the object comprising a turntable on which said object is mounted, said turntable being pivotally connected to a tray movable within

the case, and fence means cooperating with said turntable during travel of said tray to pivot said turntable about its connection to said tray to raise the turntable and said object to its erect position.

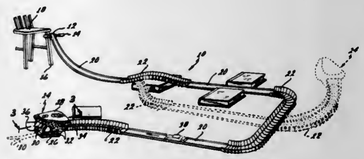


4,575,349
WINGED CREATURE
Pietro Piazza, Prospect, and Richard I. Farrington, New Britain, both of Conn., assignors to Coleco Industries, Inc., West Hartford, Conn.
Filed Feb. 11, 1985, Ser. No. 700,505
Int. Cl.[4] A63H *3/20*
U.S. Cl. 446—330 **11 Claims**



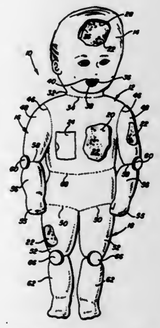
1. In a toy creature having manually actuated flappable wings, the combination comprising: a creature body having an internal cavity and a pair of lateral openings communicating therewith and formed in opposite sides of said body; a manual actuating member having a wing supporting portion thereon with a bottom surface; means for mounting said actuating member substantially within said body cavity for pivotable movement about a transverse axis between said opposite sides, and for actuation by the application of manual force externally applied thereto; means for upwardly biasing said actuating member; and a pair of wing elements rigidly affixed to said bottom surface of said supporting portion of said actuating member and extending in generally opposite directions therefrom outwardly through said lateral body openings, at least the portions of said wing elements adjacent said supporting portion being adapted for pivotable movement thereabout, said actuating member and the underlying marginal portions of said body defining said lateral openings cooperating to deflect said wing elements upwardly when said actuating member is depressed against the force of said biasing means, said supporting portion having laterally spaced edge elements transversed thereby, said edge elements being configured to provide relatively smooth transition surfaces extending upwardly from said bottom surface to facilitate pivoting of said wing elements thereabout, said wing elements being provided by a one-piece wing member integrally formed from a semi-rigid material having sufficient inherent flexibility to permit such pivoting movement thereof, said wing member having a connecting web element between said wing elements by which it is affixed to said supporting portion of said actuating member, thereby enabling a flapping action of said wing elements to be simulated by reciprocation of said actuating member.

4,575,350
TRACK FOR TOY VEHICLES
Keith A. Hippely, Manhattan Beach, and Philip W. Crain, Rancho Palos Verdes, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Jan. 16, 1984, Ser. No. 571,025
Int. Cl.[4] A63H *3/00, 18/00*
U.S. Cl. 446—368 **21 Claims**



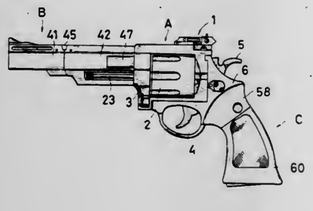
1. In a toy track for a gravity-powered toy vehicle, a track comprising a beginning and an end connected together by a plurality of sections of track, the sections of track including at least one flexible section, and wherein a head having a top section and a bottom section forming a mouth therebetween is attached to the end of a section of flexible track whereby a toy vehicle traveling along the track must pass through the head between said top and bottom sections to exit from the track.

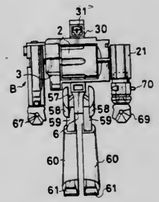
4,575,351
TRAINING DOLL
Cindy L. Gonzalez, 2105 Manning Ave., Burbank, Calif. 91505
Filed Jan. 26, 1984, Ser. No. 574,073
Int. Cl.[4] A63H *3/02*
U.S. Cl. 446—371 **5 Claims**



1. An improved infant care training doll, said doll comprising, in combination:
(a) a life-like doll having the approximate weight, size and appearance of a baby;
(b) a torso with head, arms and legs attached to said torso, said torso, head, arms and legs being of the approximate weight, size and appearance of a human baby, and including means which provide for the free directional movement thereof to simulate life-like movement;
(c) wherein said head is connected to said torso by a weak neck which permits the head to flop freely rearwardly and forwardly with respect to the torso,
(d) wherein the connections between the torso and head, arms and legs are pinched transversely at about the junction with said torso to allow said head, arms and legs to sharply flop downwardly from said torso when the torso is raised without simultaneously supporting the head, arms and legs, said arms and legs also including pinched portions thereon,
(e) a plurality of weights,
(f) cavity means in each of said head, arms and legs adapted to receive and retain a preselected amount of said weights to cause said head, arms and legs to sharply flow downwardly, and
(g) movement restricting means applied to some of said pinched portions to prevent flopping of a portion of said legs and arms forwardly from said torso.

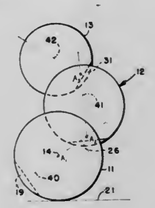
4,575,352
TOY GUN CONVERTIBLE INTO ROBOT-HUMANOID FORM
Takashi Matsuda, Tokyo, Japan, assignor to Takara Co., Ltd., Tokyo, Japan
Filed Feb. 28, 1984, Ser. No. 584,461
Claims priority, application Japan, Jun. 15, 1983, 58-91864[U]
Int. Cl.[4] A63H *3/46, 33/30*
U.S. Cl. 446—376 **9 Claims**





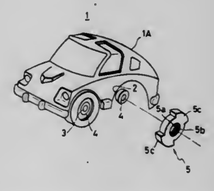
1. In a toy gun having a gunbarrel with a muzzle, and a gunstock provided with a rear sight, a cylinder and a grip, a toy gun comprising:
the gunbarrel foldably provided so as to constitute one of a robotic humanoid arms;
the cylinder adapted to constitute a robotic humanoid breast and drawably fitted with a core member;
the core member adapted to be movable so as to constitute the other robotic humanoid arm;
the grip pivotally attached so as to be splitable and unfoldable into two to constitute a pair of robotic humanoid legs; and
the rear sight slidably as well as rotatably provided on the gunstock so as to constitute a robotic humanoid head;
wherein
the toy gun is able to take a robotic humanoid configuration when unfolded.

4,575,353
COUNTERWEIGHTED AND SELF-EXTENDING MOBILE
Jerzy Perkitny, 2546 Kenilworth, Apt. 43, Cleveland Heights, Ohio 44106
Filed Apr. 23, 1984, Ser. No. 603,215
Int. Cl.[4] A63H *13/38, 33/02, 29/00, 33/00*
U.S. Cl. 446—396 **11 Claims**



1. A counterweighted and self-extending mobile having a base element including means supporting said base element for angular displacement, at least one additional element pivoted to the base element and pivotally movable from a folded to an extended position and having a mass placed counter to its pivot with the base element whereby sufficient angular displacement of the mobile when said additional element is in a folded condition of stability will excite the mobile to oscillate with said mass causing said additional element to extend from said base element, whereupon the damping of oscillations result in the elements obtaining a second extended condition of stability with said additional element extended from said base element, said second condition of stability being such that when angular displacement of at least said additional element again occurs, the mobile returns to the second extended condition of stability upon damping of displacement energies.

4,575,354
RUNNING TOY
Yoichi Wakayama, Tokyo; Hirohisa Sato, Nagareyama, and Masumi Terui, Matsudo, all of Japan, assignors to Takara Co., Ltd., Tokyo, Japan
Filed Jun. 23, 1983, Ser. No. 507,706
Claims priority, application Japan, Jun. 25, 1982, 57-95387[U]
Int. Cl.[4] A63H *17/00;* **B62B** *9/22;* **B62D** *57/00*
U.S. Cl. 446—437 **8 Claims**



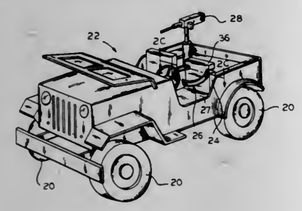
4. In combination with a toy car having a self-contained power source for driving an axle, the improvement comprising:
a tire of a non-circular configuration mounted on the axle for contacting a support surface during translational movement of the toy car, the tire is formed of a base of cylindrical solid material having a central bore and has a plurality of fan shaped portions equally spaced about its circumference, the side edges of the fan shaped portions extending radially outwardly from the base of cylindrical solid material.

4,575,355

TOY VEHICLE ACTIVATED BY MOVING BODY PART

James S. W. Lee, Long Island, N.Y.; Kwong-Wai Chow, Kowloon, Hong Kong; Alfred T. Y. Lau, and Ming-Ngar Chow, both of Hong Kong, Hong Kong, assignors to Zima Products, Ltd., Hung Kum, Hong Kong

Filed Feb. 17, 1984, Ser. No. 581,301
Int. Cl.⁴ A63H *29/22*
U.S. Cl. 446—462 **5 Claims**



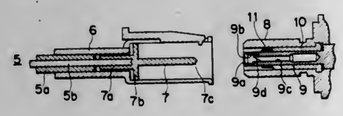
1. A toy vehicle having a seat with a seat belt which may be moved between opened and closed positions, drive means in said vehicle for providing the energy required to propel said vehicle, control means for selectively operating said drive means to propel said vehicle, and seat-belt-controlled means responsive to the opening and closing of said seat belt for inhibiting or enabling said propulsion of said vehicle, respectively, whereby said drive means may not propel said vehicle when said seat belt is opened, wherein said seat includes a back having two spaced parallel channels formed therein with windows extending from the channels through the seat back, said seat belt comprising two parts, each of said parts being of relatively rigid construction and having a vertical shaft fitting through and mounted within said channel for turning movement therein about an axis extending lengthwise of said channel, a semi-circular part fixedly attached to and laterally projecting from one end of said shaft and extending through a respective one of said windows in said seat back to form half of a seat belt, and a toe fixedly attached to and laterally projecting from the other end of said shaft for turning in toward the other part when said semi-circular part is in an opened seat belt position and for turning out and away from said other part when said semi-circular part is in a closed seat belt position, whereby said toes form a closed capture window when the seat belts are opened and an opened window when said seat belt is closed, and said seat belt controlled means comprises a part which is captured in said capture window when it is closed.

4,575,356

CONNECTION FOR FLEXIBLE CABLE AND SPEEDOMETER

Yoshiyuki Murohushi; Kiyomitsu Kato, and Mineo Takahashi, all of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Continuation of Ser. No. 377,699, May 12, 1982, abandoned.
This application Jan. 7, 1985, Ser. No. 688,288
Claims priority, application Japan, May 13, 1981, 56-70620
Int. Cl.⁴ F16C *1/08*
U.S. Cl. 464—52 **8 Claims**



1. A connection for an axially rotating flexible cable and a speedometer comprising:

an elongate prism member longitudinally extending from an axially rotating flexible cable, and having outer corners therearound, and an end defined by a conical surface;

a rotary shaft to transmit axial rotation of said flexible cable to a speedometer stem section, said rotary shaft being formed with a longitudinal through bore, said bore having an engagement section defined by flat engagement inner walls meeting each other to form inner corners and a receiving section defined by receiving inner wall means continuous from said flat engagement inner walls to facilitate insertion of said elongate member from outside the through bore, said engagement section being sized to provide a sliding fit of the elongate member therewithin, said receiving inner wall means including divergent flat inner walls continuous from the respective flat engagement inner walls, and

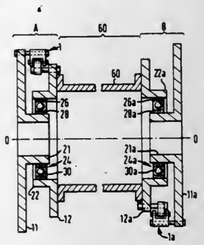
guide means formed in the receiving section of the longitudinal through bore for guiding said outer corners of the elongate prism member toward said inner corners in case where said elongate prism member is inserted into the longitudinal through bore of the rotary shaft at a misaligned angle, said guide means having ridge means extending toward at least one of said inner corners at angle relative to a longitudinal direction, said ridge means being formed by cutting away at least one of the divergent inner walls, said conical surface of the elongate member being adapted to contact said ridge means.

4,575,357

FLEXIBLE COUPLINGS

Ivan Taylor, Davyhulme, and John P. Harrington, Radcliffe, both of England, assignors to Flexibox Limited, Manchester, England

Filed May 4, 1983, Ser. No. 491,436
Claims priority, application United Kingdom, May 21, 1982, 8214807
Int. Cl.⁴ F16D *3/60*
U.S. Cl. 464—69 **4 Claims**



1. A flexible coupling comprising:

(a) an input member connectable to a driving shaft;

(b) an output member connectable to a driven shaft axially spaced from the driving shaft;

(c) a spacer means concentrically disposed between said input and output members to accommodate and bridge the axial spacing between the driving and driven shafts;

(d) coupling elements connecting said spacer means to each member, each coupling element comprising two links connected to one another and at their other ends to the spacer means and respective member through pivots allowing rotation of the links in the plane of rotation of the coupling such that said spacer means is relatively rotatable in the plane of rotation of the coupling with respect to both members;

(e) parallel interjacent axial flanges on and between the spacer means and at least one of said members defining an annular open-ended passage; and

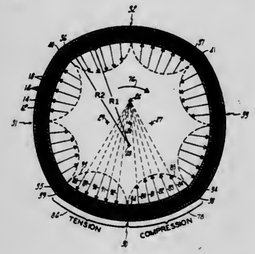
(f) a radially-rigid secondary coupling axially located within said annular passage between said interjacent axial flanges, the secondary coupling being in the form of a freely rotatable bearing comprising inner and outer race elements of spherical configuration engaging the said interjacent axial flanges whereby the spherical bearing not only allows angular misalignment between the said members but also serves as a thrust bearing to absorb any residual thrust arising between the said members.

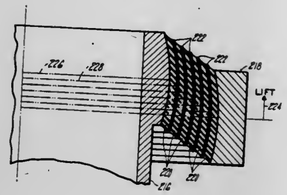
4,575,358

ACCOMMODATING AXIAL LOAD IN AN ELASTOMERIC HIGH TORQUE, CONSTANT VELOCITY JOINT

Donald L. Ferris, Newtown, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Jun. 20, 1984, Ser. No. 622,801
Int. Cl.⁴ F01D *5/02*; F16C *9/00*; F16D *3/06*
U.S. Cl. 464—90 **1 Claim**





1. A constant velocity joint comprising:

an inner shell having an exterior surface defined by an axis, first at least three arc segments generating points equally offset from the axis and symmetrically distributed thereabout on a first plane which is normal to the axis, and a first radius from each of the first at least three arc segment generating points, said exterior surface having a nearly spherical axial profile with polar symmetry;

an outer shell disposed about the inner shell and having an interior surface defined by the axis, second at least three arc segment generating points equally offset from the axis and symmetrically distributed thereabout on a second plane which is normal to the axis and offset from the first plane in a direction away from an axial load applied to the outer shell, and a second radius from each of the second at least three arc segment generating points, the second radius of the second at least three arc segments generating points being larger than the first radius of the first at least three arc generating points, said interior surface having a nearly spherical axial profile with polar symmetry; and

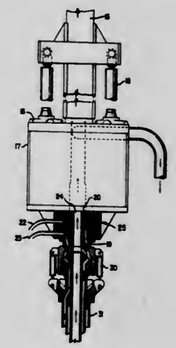
a plurality of elastomer layers having interposed shims, both elastomer layers and shims having a nearly spherical axial profile disposed between the exterior surface of the inner shell and the interior surface of the outer shell wherein the centers of axial contour for the layers are progressively offset, from layer-to-layer, in a direction away from the axial load when the bearing is unloaded, and wherein the centers of axial contour for the layers are configured to come together on a common plane normal to the axis under load, the total offset of all of the layers corresponding to the offset between the first plane and the second plane.

4,575,359

ROTARY DRIVE COUPLING

Patrick D. Bermingham, Ancaster, Canada, assignor to Bermingham Construction Limited, Ontario, Canada

Filed May 2, 1984, Ser. No. 606,252
Int. Cl.⁴ F16D *3/30, 3/16*
U.S. Cl. 464—123 **18 Claims**



1. A coupling for transmitting a rotary drive between a driving member and a driven member that are engagable in a mutually registered position, said coupling comprising:

(a) two bearing elements each associated with a respective one of said members and co-operating to transmit axial thrust between said members, said bearing elements having interengaging bearing surfaces that are spherically curved to permit limited angular misalignment between the axes of said members;

(b) torque-transmitting means on said members co-operating to transmit the rotary drive;

(c) locking means engagable to form locking connections between said members and between one said member and its associated bearing element; and

(d) selectively actuable control means carried by said coupling for rapidly controlling engagement and disengagement of said locking means;

wherein said locking means when engaged is adapted to accommodate only limited misalignment while maintaining firm engagement of said members against high separation forces, and is adapted to disengage rapidly in response to operation of said control means, to permit separation of said one member from its associated bearing element and hence separation of said members while said bearing elements remain engaged.

4,575,360

SLIP TYPE DRIVELINE

Ronald N. Brissette, Medina, Ohio, assignor to Rockwell International Corp., Pittsburgh, Pa.

Filed Jul. 15, 1983, Ser. No. 513,946
The portion of the term of this patent subsequent to Jul. 17, 2001, has been disclaimed.
Int. Cl.⁴ F16J *15/32*; F16D *3/06, 3/84*
U.S. Cl. 464—133 **5 Claims**

1. A slip-type driveline assembly comprising:

a first member with a generally circular cross section, said first member having a first end with a means for connecting it to a cross of a universal type joint and a second end

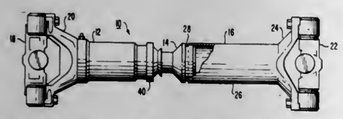
having an opening to a cavity within the body of said first member, said cavity having a splined surface;

a second member having a first end portion, a central portion and an enlarged end portion, said first and central portions being slidably received into said cavity of said first member through the second end of said first member, the outer surface of said first end portion of said second member being splined for complementing engagement with the splined inner surface of said cavity of said first member, said central portion having a generally circular cross section with a smooth surface, and said enlarged end portion of said second member being provided with a projection;

a third member including a first end for rigid attachment to the projection of the enlarged end portion of said second member, and a second end having a means for connecting it to a cross of a universal type joint; and

a resilient one-piece sealing member including:

(a) a cylindrical wall,



(b) a radially inwardly extending wall at one end of said cylindrical wall,

(c) a radially inwardly converging truncated conical wall joined to said inwardly extending wall,

(d) a radially outwardly extending reinforcing rib joined at the inner end of said truncated conical wall wherein the edge formed by the inner section of said reinforcing rib and said truncated conical wall defines a circular opening the diameter of which is slightly less than the central portion of the second member; and

(e) means for mounting the sealing member at the second end of said first member including a radially extending circumferential annulus formed on the inner surface of said cylindrical wall of said sealing member and integral therewith, and an annular groove formed near the edge of the second end of said first member, wherein the circumferential annulus fits into and generally complements the annular groove.

4,575,361

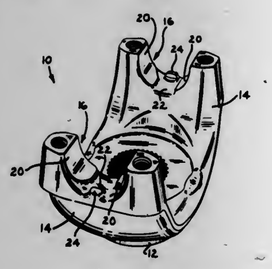
UNIVERSAL JOINT YOKE

David L. Thatcher, Douglassville, Pa., assignor to Dana Corporation, Toledo, Ohio

Filed Jan. 7, 1985, Ser. No. 689,231

Int. Cl.[4] F16D *3/26*

U.S. Cl. 464—135 **8 Claims**



1. In a universal joint yoke rotatable about a yoke axis, said yoke having a hub, a pair of spaced and parallel arms extending from said hub in the direction of said yoke axis, each arm including a generally U-shaped bearing cup receiving recess, said recesses being aligned on a bearing cup axis transverse to said yoke axis, and an integral bearing cup positioning and retaining lug extending from said recess, an improvement wherein each of said recesses comprise a pair of circumferentially extending bearing cup support surfaces, and wherein each of said recesses further comprise a circumferential gap between each of said bearing cup support surfaces and the respective bearing cup positioning and retaining lug, whereby a broach can be moved axially through the generally U-shaped bearing cup receiving recess to machine the bearing cup support surfaces while simultaneously avoiding material which defines said positioning and retaining lugs.

4,575,362

CONSTANT VELOCITY JOINT

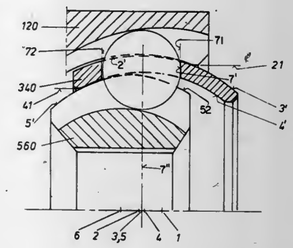
Sobhy L. Girguis, Magdalenenstrasse 19, D-5210 Troisdorf-Oberlar, Fed. Rep. of Germany

Filed Sep. 6, 1983, Ser. No. 529,610

Claims priority, application Fed. Rep. of Germany, Sep. 11, 1982, 3233753

Int. Cl.[4] F16D *3/21*

U.S. Cl. 464—145 **19 Claims**



1. In a constant velocity joint comprising an outer part having an inner surface in which grooves are provided, an inner part having an outer surface in which grooves corresponding to said grooves of said outer part are provided, a cage interposed between said inner and outer parts, said cage having an outer and an inner surface of generally spherical shapes, said inner surface of said outer part and said outer surface of said cage providing bigger centering surfaces mating with each other, said outer surface of said inner part and said inner surface of said cage providing smaller centering surfaces mating with each other, said outer and inner parts and said cage being adapted for relative angular travel about a joint center, said cage having windows therein, and balls disposed in said windows, the centers of said balls lying in a ball plane, each of said balls being received in one of said grooves of said outer and of said inner parts, the improvement wherein each said centering surface consists of one bearing surface of narrow axial length being placed remote from said ball plane and spherical guide surfaces extending on both sides of said bearing surface, the center of each said guide surface lying on said ball plane, said bearing surface of said smaller centering surfaces lying on one side of said ball plane, and said bearing surface of said bigger centering surfaces lying on the other side of said ball plane, whereby with the joint in the straight position and under torque, the contact points of said balls with said grooves of said outer and said inner part are located one said one side of said ball plane, the tracks of said balls in said grooves of said outer part running as a mirror image of said corresponding tracks of said inner part in relation to said ball plane.

4,575,363

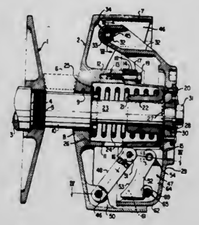
DRIVE PULLEY

Geoffrey W. Burgess, Beloel, and Denis Roy, Valcourt, both of Canada, assignors to Bombardier Inc., Valcourt, Canada

Filed Mar. 2, 1984, Ser. No. 585,446

Int. Cl.[4] F16H *11/06*

U.S. Cl. 474—14 **13 Claims**



1. A variable ratio drive pulley comprising: two opposed frusto-conical flanges arranged co-axially with respect to a drive shaft to rotate therewith and impart a variable ratio drive to a transmission belt arranged between the flanges;

one said flange comprising a fixed flange that is fixed axially relative to said shaft, and the other said flange being a movable flange that is movable axially of said shaft towards and away from said fixed flange;

biassing means operatively arranged between said shaft and said movable flange to urge the latter axially away from said fixed flange; and

centrifugal means acting between said movable flange and a part fixed relative to said shaft and responsive to rotation of said drive pulley to generate an axial thrust on said movable flange urging it towards said fixed flange, such axial thrust increasing with the speed of rotation until it reaches a value sufficient to overcome the force of said biassing means and displace said movable flange axially towards said fixed flange said centrifugal means being located within a casing defined by said movable flange and a cup enclosing the rear side of said movable flange;

wherein said pulley includes adjustment means engaging said centrifugal means and selectively settable to vary the axial thrust response characteristics of the pulley, said adjustment means being accessible for adjustment from the exterior of said casing.

4,575,364

INFINITELY VARIABLE TRANSMISSION

Hendricus F. Lamers, Goirle, Netherlands, assignor to Van Doorne's Transmissie B.V., Tilburg, Netherlands

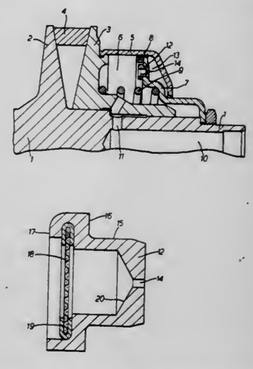
Filed Jun. 13, 1984, Ser. No. 620,255

Claims priority, application Netherlands, Jun. 13, 1983, 8302089

Int. Cl.[4] F16H *11/06*

U.S. Cl. 474—16 **5 Claims**

1. An infinitely variable transmission provided with an endless transmission member and at least one V-shaped pulley of which at least one sheave is rigidly connected to a hydraulic cylinder-piston unit for the axial displacement of the sheave, the said cylinder-piston unit having a cylinder space and being provided with a pressure-equalizing chamber for the compensation of pressure rises in the cylinder space due to centrifugal forces, which pressure-equalizing chamber can be supplied with fluid from the cylinder space through a charging port, wherein upstream of the charging port, on the side of the cylinder space, a filtering member in the form of a meshed wire screen is provided through which the fluid flow passes on its way to the charging port and which member contains a number of passages whose bores are from 0.3 to 0.9 times that of the



charging port, the overall area of the combined bores being from 10 to 25 times the area of the bore of the charging port.

4,575,365

REAR DERAILLEUR FOR A BICYCLE

Masashi Nagano, Izumi, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Filed Jul. 30, 1984, Ser. No. 636,012

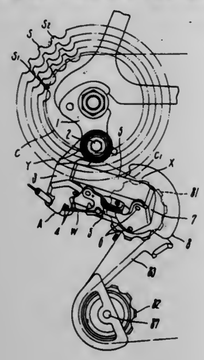
Claims priority, application Japan, Aug. 2, 1983, 58-121079[U]; Aug. 2, 1983, 58-121080[U]

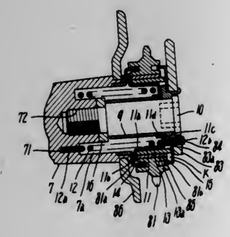
Int. Cl.[4] F16H *11/08, 7/22*

U.S. Cl. 474—80 **5 Claims**

1. A rear derailleur for a bicycle, comprising a fixing member; a movable member movable with respect to said fixing member; a chain guide having a guide pulley, a tension pulley and at least one pulley plate, said chain guide being supported swingably with respect to said movable member; a tension spring interposed between said movable member and said chain guide; said chain guide including support means for supporting said guide pulley such that said guide pulley is rotatable and axially movable in a predetermined range with respect to said pulley plate, said support means positioning said

guide pulley such that in at least one operative position a gap is located between said guide pulley and said pulley plate for





allowing said guide pulley to move axially with respect to said pulley plate.

4,575,366

TENSION MECHANISM FOR αBELT DRIVE APPARATUS

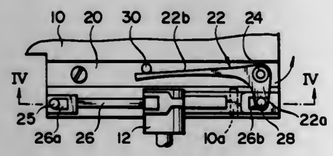
Yoshiyuki Ohishi, Tokyo, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Mar. 13, 1985, Ser. No. 711,462

Claims priority, application Japan, Mar. 19, 1984, 59-40330[U]

Int. Cl.⁴ F16H 7/08

U.S. Cl. 474—101 4 Claims



1. A tension mechanism for an α belt drive apparatus comprising:

an α belt which is wound around a drive pulley, the one end of which is fixed to a carriage and the other end of which is formed an engaging portion; and a lever which is rotatingly and pivotally supported on the part of the carriage, and forms a short hand portion having a stopper on its tip end to engage with said engaging portion and a long hand portion being urged on its tip end to be stopped at the part of the carriage, wherein said lever is rotated and stopped on its tip end of said long hand portion at the part of the carriage so that said α belt can be applied a tension force.

4,575,367

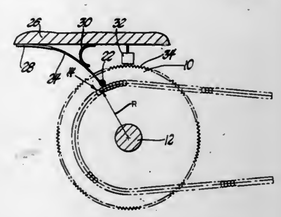
SLIP SPEED SENSOR FOR A MULTIPLE LINK BELT DRIVE SYSTEM

Amir Karmel, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 6, 1984, Ser. No. 638,070

Int. Cl.⁴ F16H 7/22

U.S. Cl. 474—106 2 Claims



1. Apparatus for determining the presence and amount of slip between a belt and sheave wherein the belt operates at various drive radii on the pulley and is comprised of a plurality of individual link members of a predetermined thickness measured in the longitudinal direction of the belt and one or more continuous band members for maintaining the links in a continuous loop, said apparatus comprising: sensing means for determining the rotational speed of the sheave; flexible arm sensing means for determining the drive radius of said belt on said sheave and also for determining the number of links passing the flexible arm sensing means in a predetermined time; means for determining the product of the sheave speed and the belt radius and the product of the thickness of the links and the number of links passing said flexible arm sensing means in a predetermined time; and means for determining the difference between the two products to indicate the presence and amount of slip between the sheave and the belt.

4,575,368

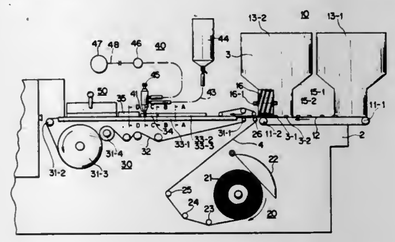
METHOD AND APPARATUS FOR MAKING FILTERS

Takayoshi Sagawa, and Ichiro Hirose, both of Hiratsuka, Japan, assignors to The Japan Tobacco & Salt Public Corporation, Tokyo, Japan

Filed Jul. 21, 1983, Ser. No. 515,900

Int. Cl.⁴ A24D 3/02

U.S. Cl. 493—49 12 Claims



1. A method of manufacturing tobacco filters comprising the steps of

feeding a tape of filter wrapping paper having first and second surfaces, and first and second edges, said tape being in a substantially stretched condition;

supplying rod-shaped filter components on said first surface in train without gap therebetween each having a predetermined circumference, said tape having an edge-to-edge size larger than said circumference;

guiding said tape at a first part thereof adjacent said first edge around the rod-shaped filter components such that said second surface faces radially outwardly;

applying paste on only said second surface of the tape at said first part; and

guiding said tape at a second part thereof adjacent said second edge around each rod-shaped filter component to lap over said paste-applied first part to form a wrapped piece of filter components.

4,575,369

METHOD OF FORMING A KNOCKDOWN HANDBAG AND MAT

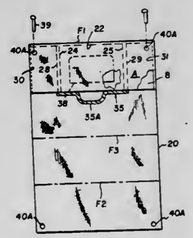
Rose M. Grayek, 35J Leslie Rd., Bridgeport, Conn. 06606

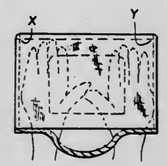
Division of Ser. No. 546,278, Oct. 28, 1983, Pat. No. 4,516,668.

This application Mar. 11, 1985, Ser. No. 710,508

Int. Cl.⁴ B31B 31/26, 31/60

U.S. Cl. 493—226 4 Claims





1. A method for forming a combination handbag and mat from a blank of foldable material of a predetermined width and length, comprising the steps of

reversely folding one end portion of said blank onto said blank so as to be disposed contiguous to a portion of said blank equal to the depth of said folded one end portion, and leaving a remainder portion;

securing said reversely folded portion to said equal portion of said blank to define a pocket having an open end;

folding the remainder portion of said blank about a transversely extending foldline to equal to the shape of the reversely folded end portion, whereby the remainder portion is disposed contiguous said reversely folded portion;

and reaching into said pocket and turning the same inside out to define the handbag.

4,575,370

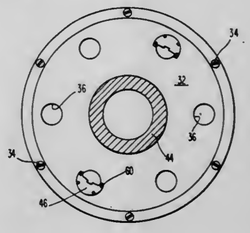
CENTRIFUGE EMPLOYING VARIABLE HEIGHT DISCHARGE WEIR

Peter L. LaMontagne, New Britain, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Nov. 15, 1984, Ser. No. 671,540

Int. Cl.⁴ B04B 1/20, 3/04

U.S. Cl. 494—56 12 Claims



1. Centrifuge apparatus for separating solids from liquids from feed comprising a solids-liquids mixture fed into a bowl of said centrifuge mounted for rotation about an axis of rotation and including screw means cooperating with means for rotating said bowl for conveying said solids from said mixture for discharge out a rear portion of said bowl and liquid for discharge out a front portion of said bowl, said centrifuge having a hub at a front portion thereof mounted for rotation with said bowl, said hub having a plurality of spaced openings therethrough communicating with said fed solids-liquids mixture, the improvement to said centrifuge apparatus comprising,

a dam plate secured to each of said hub openings, each of said dam plates having variable height discharge weirs provided therein,

one of said weirs having a curved upper weir surface for controlling level of separated liquid within said bowl during normal or stable centrifuge operation, and

other of said weirs comprising a lower cut-out portion disposed along said upper weir surface and substantially immediately therebelow for permitting separated liquid to be discharged therethrough during centrifuge start-up operations wherein said separated liquid is discharged at a lower rate than during said stable centrifuge operation.

4,575,371

URINARY CATHETER

Percy Nordqvist, Budskär, Särö, Sweden, and Eric Hylerstedt, S:t Sigfridsg. 69, Göteborg, Sweden (412 66)

PCT No. PCT/SE82/00124, § 371 Date Dec. 13, 1982, § 102(e) Date Dec. 13, 1982, PCT Pub. No. WO82/03557, PCT Pub. Date Oct. 28, 1982

Continuation of Ser. No. 453,899, Dec. 13, 1982, abandoned.

This PCT application Apr. 16, 1982, Ser. No. 738,509

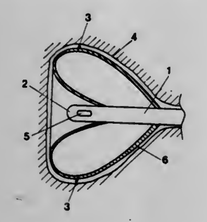
Claims priority, application Sweden, Apr. 16, 1981, 8102467

Int. Cl.⁴ A61M 25/00

U.S. Cl. 604—96 4 Claims

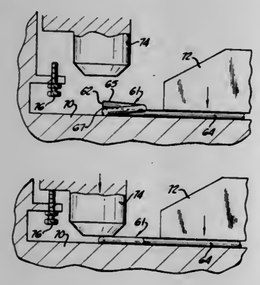
1. A urinary catheter comprising an elongated member for transporting urine through the urethra and provided with a point end enabling insertion of the catheter through the urethra and having at least one radial inlet opening close to said point end a retention member in the form of an expandable balloon arranged distally with respect to said inlet opening wherein the walls of the expandable balloon at a portion remote from the catheter tip being stiffer than the rest of the balloon, the opposite more flexible portion being arranged when inflated to expand obliquely forwards, so that the balloon assumes a bowl-

like shape, the front portion of the bowl-like inflated balloon projecting in front of the catheter tip, thus preventing contact



between the mucous membrane of the urinary bladder and the catheter tip as well as the radial inlet opening.

4,575,372
INTRAOCULAR LENS AND METHOD OF MANUFACTURE USING ULTRASONIC BONDING
Ivan Gundersen, Diamond Bar, Calif., assignor to Iolab Corporation, Covina, Calif.
Filed Jun. 22, 1983, Ser. No. 506,576
Int. Cl.[4] A61F *2/16*; B32B *31/16*; B29C *53/00*
U.S. Cl. 623—6 **39 Claims**



1. A method of forming an eyelet on a haptic loop of an intraocular lens comprising the steps of:

(a) forming loop material into a desired shape with a portion of said material coiled in overlapping relationship providing an overlapping portion and an overlapped portion of said loop to form an eyelet wherein the confronting surfaces of the overlapped loop material define an overlapped region for providing a bonding site;

(b) placing at least said overlapped region of said loop on an anvil of an ultrasonic bonder;

(c) contacting at least said overlapped region with the horn of an ultrasonic bonder;

(d) compressing the overlapped region with the horn of an ultrasonic bonder so that the resulting thickness of the compressed overlapped region is not less than the thickness of the loop material in the region of said loop that is not overlapped; and,

(e) energizing the ultrasonic bonder to bond the confronting surface of the overlapped region.

31. A haptic loop for an intraocular lens comprising:

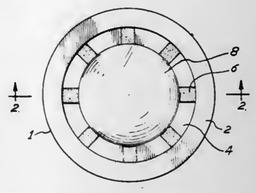
a body adapted for connection to the optic of an intraocular lens;

an integral and continuous portion of said body disposed in overlapping relationship to define an eyelet portion of the loop material;

the confronting surfaces of said overlapped region bonded together ultrasonically;

wherein said ultrasonically bonded area of said loop is substantially continuous with said adjacent body, and the transition area from said body to said bonded area is substantially smooth and is substantially without excess material.

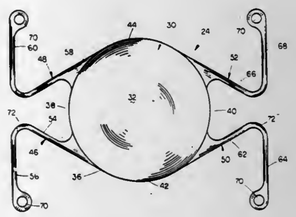
4,575,373
LASER ADJUSTABLE INTRAOCULAR LENS AND METHOD OF ALTERING LENS POWER
Don R. Johnson, 9131 Piscataway Rd., Clinton, Md. 20735
Filed Nov. 2, 1984, Ser. No. 667,648
Int. Cl.[4] A61F *2/16*
U.S. Cl. 623—6 **12 Claims**



1. A method for altering the corrective power of an implanted intraocular lens while positioned in an eye which comprises contacting a selected portion of the implanted lens with a laser beam at an intensity and for a time sufficient to alter the shape of the lens thereby altering its corrective power without substantially and permanently harming the eye.

7. An intraocular lens for implantation into an eye and capable of having its corrective power altered by a laser when positioned in the eye which comprises an optically clear central portion and a heat shrinkable plastic peripheral portion, said peripheral portion having a colored section to receive laser energy, said colored section, when exposed to laser energy being capable of altering the shape of and thus the corrective power of the intraocular lens.

4,575,374
FLEXIBLE ANTERIOR CHAMBER LENS
Aziz Y. Anis, 7531 N. Hampton, Lincoln, Nebr. 68506
Filed Feb. 16, 1983, Ser. No. 467,034
Int. Cl.[4] A61F *2/16*
U.S. Cl. 623—6 **13 Claims**



1. An anterior chamber lens, comprising,

a disc-shaped lens having a front face, a rear face, an outer peripheral edge including upper and lower ends, and first and second sides,

first, second, third and fourth flexible holding members extending from said lens,

said first flexible holding member comprising a leg portion having inner and outer ends, said leg portion secured to said lens and extending upwardly and inwardly from said first side of said outer peripheral edge adjacent the upper end thereof in a substantial tangential relationship with respect to said peripheral edge, and a foot portion extending laterally outwardly from said outer end of said leg portion,

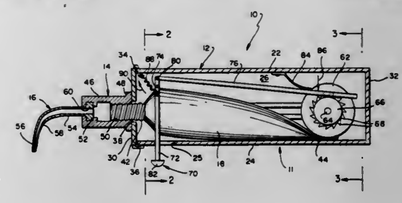
said second flexible holding member comprising a leg portion having inner and outer ends, said leg portion secured to said lens and extending upwardly and inwardly from said second side of said outer peripheral edge adjacent the upper end thereof in a substantially tangential relationship with respect to said peripheral edge, and a foot portion extending laterally outwardly from said outer end of said leg portion,

said third flexible holding member comprising a leg portion having inner and outer ends, said leg portion secured to said lens and extending downwardly and inwardly from said first side of said outer peripheral edge adjacent the lower end thereof in a substantially tangential relationship with respect to said peripheral edge, and a foot portion extending laterally outwardly from said outer end of said leg portion,

said fourth flexible holding member comprising a leg portion having inner and outer ends, said leg portion secured to said lens and extending downwardly and inwardly from said second side of said outer peripheral edge adjacent the lower end thereof in a substantially tangential relationship with respect to said peripheral edge, and a foot portion extending laterally outwardly from said outer end of said leg portion,

the outer ends of said leg portions terminating outwardly of the center line of said lens so that said first and second holding members are positioned at said first side of said lens and so that third and fourth holding members are positioned at said second side of said lens.

4,575,375
PERIODONTAL POCKET IRRIGATING AND MEDICATION DELIVERY DISPENSER AND GEL SYSTEM
George Kozam, 234 E. Clinton Ave., Tenafly, N.J. 07670
Filed Nov. 2, 1984, Ser. No. 667,575
Int. Cl.[4] A61M *5/18*
U.S. Cl. 604—185 **12 Claims**



1. A periodontal pocket irrigating and treatment dispenser for use with a tube capable of containing a medication comprising:

a housing;

means for retaining said tube within said housing;

actuating means including a roller for squeezing said tube, to force the contained medication therefrom; and

means for controlling said actuating means to control the amount, speed and force of medication squeezed from said tube,

said means for controlling including at least one perforated bar movably disposed within said housing, and said roller including ratchet means engaging said bar for movement of said roller with said bar in a direction in which said roller engages and squeezes said tube sufficiently to force said medication from said tube.

4,575,376

METHOD FOR INCREASING THE ABSORBENCY OF CELLULOSIC FIBERS

Shailesh Shah, Paramus; David R. King, Roxbury, and Nathan D. Field, Wyckoff, all of N.J., assignors to International Playtex, Inc., Stamford, Conn.

Filed Nov. 7, 1983, Ser. No. 549,356
Int. Cl.[4] D06M *1/00*
U.S. Cl. 8—116.1 12 Claims

1. A method for increasing the absorbency of processed cotton or other processed non-regenerated cellulosic fibers, comprising:

(a) heating, by a high temperature wet treatment, the cellulosic fibers in the presence of water at a temperature within a range of 95° C.–100° C. for a period in a range of one to sixty minutes; and

(b) treating the fibers with water at a temperature from about 20° C. to about 25° C. for a period of from approximately 5 to 10 minutes,

to increase the absorbency of the treated fibers by at least 2% of the absorbency of the corresponding untreated fibers as measured by the in vitro Syngyna Test Method.

4,575,377

OXIDATION HAIR DYES COMPRISING RESORCINOL DERIVATIVES AS COUPLING COMPONENTS

David Rose, Hilden, and Edgar Lieske, Düsseldorf, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldor-Holthausen, Fed. Rep. of Germany

Continuation of Ser. No. 458,832, Jan. 18, 1983, abandoned. This application Sep. 12, 1984, Ser. No. 650,304
Claims priority, application Fed. Rep. of Germany, Sep. 10, 1982, 3233541
Int. Cl.[4] A61K *7/13*
U.S. Cl. 8—408 15 Claims

1. An oxidation hair dye composition for the dyeing of human hair, comprising (a) at least one compound selected from the group consisting of 3,5-dihydroxybenzyl alcohol, 3,5-dihydroxybenzylamine and 3,5-dihydroxyphenyl acetic acid, or a salt thereof with an inorganic or organic acid or an alkali metal, as coupling component, and (b) a developer component, the coupling and developer components being present in a molar ratio of from about 2:1 to 1:2.

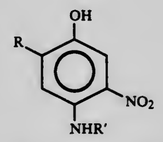
4,575,378

SUBSTITUTED 4-AMINO-3-NITROPHENOLS, PROCESSES FOR THEIR PREPARATION AND HAIR-COLORING AGENTS CONTAINING THESE COMPOUNDS

Winfried Seidel, Obertshausen; Thomas Oelschläger, Norderstedt, and Wolfgang Schlenther, Hamburg, all of Fed. Rep. of Germany, assignors to Hans Schwarzkopf GmbH, Hamburg, Fed. Rep. of Germany

Filed Jan. 19, 1984, Ser. No. 572,028
Claims priority, application Fed. Rep. of Germany, Jan. 28, 1983, 3302817
Int. Cl.[4] A61K *7/13*; C07C *87/60*
U.S. Cl. 8—414 9 Claims

1. Compound of the formula



(I)

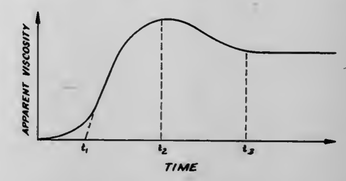
wherein R is Cl and R′ is β-hydroxyethyl, α-methyl-β-hydroxyethyl, α-ethyl-β-hydroxyethyl, β-hydroxypropyl, γ-hydroxypropyl, β-hydroxy-n-butyl, or β-hydroxy-n-hexyl.

4,575,379

FUEL COMPOSITION AND METHOD OF PREPARATION THEREFOR

John M. Browning, 496 Stratford Ave., Elmhurst, Ill. 60126

Filed Jun. 11, 1984, Ser. No. 619,041
Int. Cl.[4] C10L *7/00*
U.S. Cl. 44—7.4 13 Claims



1. A method for forming a combustible fuel gel comprising the steps of:

forming an aqueous alcohol solution;

adjusting the pH of said aqueous alcohol solution to a value less than 7;

adding a cellulose ether to said pH-adjusted aqueous alcohol solution;

mixing the cellulose ether aqueous alcohol solution; and

increasing the pH of the cellulose ether aqueous alcohol solution to a value above 7 in forming said combustible fuel gel.

4,575,380

FORMATION OF DISPERSE-SLURRY OF H-COAL RESIDUE

Farrokh Yaghmaie, Wappingers Falls, and Stephen R. Vasconcellos, Fishkill, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Apr. 22, 1983, Ser. No. 487,555
Int. Cl.[4] C10L *1/32*
U.S. Cl. 44—51 15 Claims

1. The process for forming a disperse-slurry in aqueous medium of 40–400 mesh particles of a hydrophobic H-coal residue containing phenolic components which are conducive to creaming which comprises

contacting said hydrophobic H-coal residue, containing phenolic components which are conductive to creaming, with 0.01–1 parts per 100 parts of residue of an alkali metal salt or an amine salt of an alkylbenzene sulfonic acid wherein said alkyl group contains 10–18 carbon atoms whereby said salt is absorbed onto said particles; and

comminuting, in the presence of 50–200 parts of aqueous medium per 100 parts of residue, said hydrophobic H-coal residue, containing phenolic components which are conductive to creaming, in the presence of said alkali metal salt or amine salt of said alkylbenzene sulfonic acid wherein said alkyl group contains 10–18 carbon atoms thereby forming a slurry of comminuted hydrophobic H-coal residue in aqueous medium characterized by decreased creaming, enhanced dispersability, decreased wall adhesion, and reduced phase separation; and

recovering said slurry of comminuted hydrophobic H-coal residue in aqueous medium characterized by decreased creaming, enhanced dispersability, decreased wall adhesion, and reduced phase separation.

4,575,381

FORMATION OF DISPERSE-SLURRY OF COAL LIQUEFACTION RESIDUE

Roger J. Corbeels, Wappingers Falls, and Stephen R. Vasconcellos, Fishkill, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Mar. 1, 1984, Ser. No. 584,977
Int. Cl.⁴ C10L 1/32
U.S. Cl. 44—51 **18 Claims**

1. The process for forming a disperse-slurry in aqueous medium of comminuted particles of a hydrophobic coal liquefaction residue containing phenolic components which are conducive to creaming which comprises

contacting said hydrophobic H-coal residue, containing phenolic components which are conducive to creaming, with 0.001–0.1 parts per 100 parts of aqueous medium of a cationic surfactant $R^1R^2R^3R^4N^+X^-$ wherein R^1 is a C_{12}–C_{20} hydrocarbon group; each of R^2, R^3 and R^4 is a C_1–C_6 lower hydrocarbon group or a poly(oxyalkylene) group having 12–25 repeating units; and X is an inert anion

whereby said surfactant is adsorbed onto said particles; and

comminuting, in the presence of aqueous medium, said hydrophobic coal liquefaction residue, containing phenolic components which are conducive to creaming, in the presence of said surfactant thereby forming a slurry of comminuted hydrophobic coal liquefaction residue in aqueous medium characterized by decreased creaming decreased wall adhesion, and reduced phase separation; and

recovering said slurry of comminuted hydrophobic coal liquefaction residue in aqueous medium characterized by decreased creaming, enhanced dispersability, decreased wall adhesion, and reduced phase separation.

4,575,382

THERMAL STABILIZED VEGETABLE OIL EXTENDED DIESEL FUELS

William M. Sweeney, Wappingers Falls, and Donald R. Lachowicz, Fishkill, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Jun. 21, 1985, Ser. No. 747,197
Int. Cl.⁴ C10L 1/22
U.S. Cl. 44—57 **16 Claims**

1. A middle distillate fuel composition comprising:

(a) a major portion of a middle distillate containing a hydrocarbon boiling in the middle distillate boiling range;

(b) an extending portion of a vegetable oil; and

(c) an effective thermal-stabilizing amount of a nitrogen-containing polymer prepared by

reacting an ethylene/propylene copolymer with maleic anhydride, thereby forming a succinic anhydride,

reacting said succinic anhydride, with an alcohol, thereby forming a succinate ester while leaving a portion of the succinic anhydride unreacted, and,

reacting said succinate ester and said unreacted succinic anhydride with dimethylaminopropylamine, thereby forming a nitrogen-containing polymer.

4,575,383

PROCESS FOR PRODUCING ACETYLENE USING A HETEROGENEOUS MIXTURE

Frank E. Lowther, Chatsworth, Calif., and Frederick L. Voelz, Munster, Ind., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Apr. 20, 1984, Ser. No. 602,320
Int. Cl.⁴ C07C 2/78
U.S. Cl. 48—212 **19 Claims**

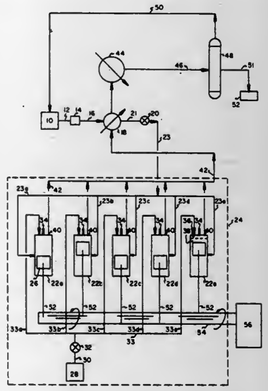
1. A process for converting low molecular weight hydrocarbons to acetylene which comprises the steps of:

introducing said hydrocarbons into a first reaction zone;

compressing said hydrocarbons in said first reaction zone to a volume which ranges from about 1/5 to about 1/10 of the original volume of said hydrocarbons in said first reaction zone;

introducing an oxygen-containing gas into said first reaction zone to intermix with a portion of said compressed hydrocarbons, the mole ratio of said hydrocarbons to said oxygen-containing gas comprising between 0.75:1 to about 2:1;

igniting said mixture causing partial combustion of said portion of said hydrocarbons and the release of heat energy so that the temperature of the remaining portion of



said hydrocarbons is increased substantially to a level conducive to a limited reaction under compression to produce an acetylene-containing reaction product;

expanding said reaction product to reduce the temperature of said reaction product;

recovering power from said expanding step;

removing said reaction product from said first reaction zone; and

cooling said product; said steps are repeated from about 500 to about 2000 times per minute.

4,575,384

GRINDING WHEEL FOR GRINDING TITANIUM

Robert H. Licht, Hudson, and Charles V. Rue, Petersham, both of Mass., assignors to Norton Company, Worcester, Mass.

Filed May 31, 1984, Ser. No. 615,847
Int. Cl.⁴ B24D 3/02
U.S. Cl. 51—308 **8 Claims**

1. A process for grinding titanium metal and its alloys, characterized by:

applying to the surface of said metal, a moving abrasive product comprised of abrasive grains and a bond therefor wherein said abrasive grains are each made up of a plurality of silicon carbide particles bonded together by an inorganic binder wherein said inorganic binder is one selected from the group consisting of silicon oxynitride and iron silicate.

4,575,385

PERMEATION MODIFIED GAS SEPARATION MEMBRANES

Albert A. Brooks, St. Louis, Mo.; Joel R. Fried, Cincinnati, Ohio; Jay M. S. Henis, Creve Coeur, Mo.; Anthony Zampini, and Daniel Raucher, both of St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

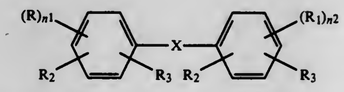
Filed Jun. 30, 1983, Ser. No. 509,843
Int. Cl.⁴ B01D 53/22
U.S. Cl. 55—158 **5 Claims**

1. An improved non-porous asymmetric gas separation membrane comprising: a preformed non-porous asymmetric gas separation membrane material having a separation factor for one gas of a gaseous mixture over that of one or more remaining gases of the gaseous mixture, said membrane material having contacted on one or both surfaces thereof a permeation modifier in an amount effective to improve the separation factor of the membrane for said one gas over that of said remaining gases but insufficient to cause an appreciable change in the physical properties of said membrane material, said permeation modifier being selected from the formula



(a)

in which n is one to three, R and R_1 independently are hydroxy, chloro, bromo, amino, alkylamino, dialkylamino, nitro, alkoxy, hydroalkoxy, hydroxyalkyl, carboalkoxy, carboxyalkoxy, or glycidyloxy, and R_2 and R_3 independently are hydrogen or alkyl; or the formula



(b)

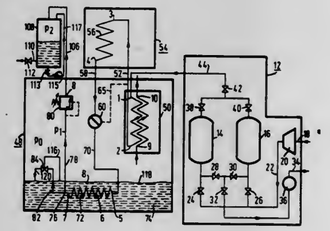
in which R, R_1, R_2, and R_3 are the same as in formula (a), x is oxygen, sulfur, dithio, carbonyl, alkylene, or cycloalkylene, and n_1 and n_2 are zero to three with the proviso that the sum n_1 and n_2 is at least two.

4,575,386

METHOD OF LIQUEFYING A GAS AND LIQUEFIER FOR CARRYING OUT THE METHOD

Leo J. M. Hamers, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 17, 1984, Ser. No. 651,485
Claims priority, application Netherlands, Mar. 29, 1984, 8400990
Int. Cl.⁴ F25J 3/00
U.S. Cl. 62—11 **6 Claims**



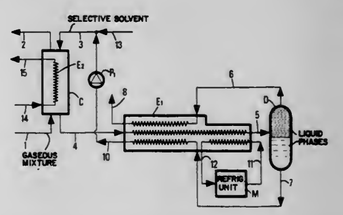
1. A method of liquefying a gas, which comprises precooling such gas at a first, superatmospheric pressure in a first heat exchanger; introducing the precooled gas into a cryogenerator to effect condensation thereof; passing the resulting saturated liquid-wet vapour mixture to a liquid separator and thence to a second heat exchanger maintained in a bath of such liquid contained in a thermally isolated reservoir to effect sub-cooling of the saturated liquid and condensation of the wet vapour and sub-cooling of the resulting condensate at a second pressure, said sub-cooling and said condensation resulting in evaporation of a portion of the liquid bath in the reservoir; regulating said sub-cooling by adjusting the second pressure between a maximum corresponding to said first, superatmospheric pressure and a minimum corresponding to the pressure in the reservoir; passing the vapour resulting from said evaporation to the first heat exchanger to effect said precooling; and adding liquid from the condensate stream after the liquid separator to the liquid bath to replenish the evaporated liquid.

4,575,387

PROCESS FOR SEPARATING A MULTI-COMPONENT GASEOUS MIXTURE

Joseph Larue, Vaucresson, and Alexandre Rojey, Garches, both of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Apr. 27, 1984, Ser. No. 604,680
Claims priority, application France, Apr. 29, 1983, 83 07306
Int. Cl.⁴ F25J 3/00; B01D 53/14
U.S. Cl. 62—17 **16 Claims**



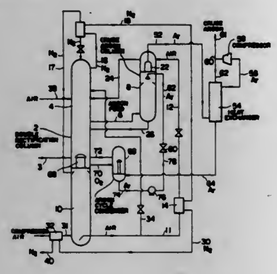
1. A process for fractionating a gaseous mixture comprising the steps of: (a) contacting in an extraction zone, under extracting conditions, the gaseous mixture to be fractionated with a solvent selective with respect to at least one of the components of the gaseous mixture, wherein the solvent has variable liquid solubility properties as a function of temperature and the solvent is employed in an amount sufficient to provide substantially only a single liquid solvent - extracted component(s) phase at one temperature and substantially only two liquid phases upon a reduction in temperature, said extraction zone being at a temperature at least 30° C. lower than the critical temperature of said solvent, (b) separating a solution being the single liquid solvent-extracted component(s) phase from residual gaseous mixture, (c) cooling the separated solution in at least one heat exchange zone, down to a temperature at which said solution forms two liquid phases, one of which (F1) is enriched with solvent and the other (F2) enriched with component(s) extracted in step (a), (d) separating the two liquid phases (F1 and F2) from each other, (e) recycling to step (a) the phase (F1) enriched with solvent so as to re-dissolve a portion of the gaseous mixture to be separated, and (f) recovering the phase (F2), enriched with component(s) extracted during step (a).

4,575,388

PROCESS FOR RECOVERING ARGON

Hidetake Okada, Yokosuka, Japan, assignor to Nihon Sanso Kabushiki Kaisha, Japan

Filed Feb. 8, 1984, Ser. No. 578,200
Claims priority, application Japan, Feb. 15, 1983, 58-23428
Int. Cl.⁴ F25J *3/04*
U.S. Cl. 62—22 **3 Claims**



1. In a process for recovering argon in which a crude argon column is supplied with an argon feed gas containing a larger proportion of oxygen from a middle stage of an upper column of a double rectification column for low temperature air separation, the improvement comprising retrofitting an existing process to maximize argon recovery and minimize power consumption while precluding deterioration of rectification conditions in the upper column including the steps of:

(a) compressing argon gas to a pressure sufficient for evaporating liquid oxygen fed from a condenser of the double rectification column;

(b) precooling the compressed argon gas in a heat exchanger;

(c) liquefying the precooled argon gas by heat exchange with liquid oxygen from the condenser of the double rectification column;

(d) introducing the liquefied argon as a reflux into the head portion of the crude argon column thereby cooling said head portion and evaporating the liquefied argon; and

(e) returning the evaporated argon to the step (a) for further compression to thereby circulate the argon gas.

4,575,389

DEVICE FOR BENDING GLASS PLATES

Friedrich Halberschmidt, Herzogenrath; Josef Andi, Aachen, and Gerhard Schubert, Herzogenrath, all of Fed. Rep. of Germany, assignors to Saint-Gobain Vitrage, Courbevoie, France

Filed Nov. 9, 1984, Ser. No. 669,795
Claims priority, application France, Nov. 9, 1983, 83 17830
Int. Cl.⁴ C03B *23/033*
U.S. Cl. 65—273 **16 Claims**

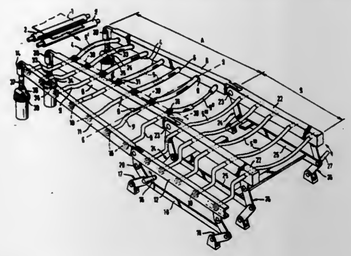
1. A device for bending a heat softened glass plate moving in a substantially horizontal orientation, comprising:

a horizontal frame having an upstream end pivotable about a horizontal transverse axis;

a plurality of rotating shaping elements rotatable about axes movable with said frame, said plurality of elements being spaced in a longitudinal direction, said shaping elements defining curved generatrices in contact with said glass plate, said curved generatrices having increased degrees of curvature with increased distance from said upstream end, said frame and shaping elements together defining a shaping bed;

first means for simultaneously adjusting said degrees of curvature of all of said curved generatrices; and

second means independent of said first means for adjusting the height of said horizontal frame such that a selected transverse portion of a sheet being bent by the weight thereof during movement along said shaping bed can be



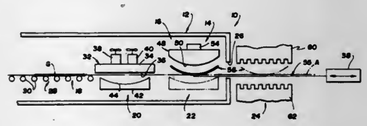
maintained at a constant height while moving in said longitudinal direction along said shaping bed.

4,575,390

APPARATUS FOR FORMING GLASS SHEETS

Harold A. McMaster, Woodville, Ohio, assignor to Glasstech, Inc., Perrysburg, Ohio

Filed Nov. 23, 1984, Ser. No. 674,039
Int. Cl.⁴ C03B *23/03*
U.S. Cl. 65—273 **16 Claims**



1. Apparatus for forming a glass sheet heated to a sufficiently high temperature to be deformable, the apparatus comprising:

a first curved mold for engaging the heated glas sheet at a first position to provide initial forming of the glass sheet;

an actuator for moving the first curved mold and the initially formed glass sheet thereon horizontally to a second position; and

a second curved mold for engaging the initially formed glass sheet from above at the second position to further form the glass sheet.

4,575,391

PROCESS AND COMPOSITIONS FOR CONDITIONING SOILS

Marcel F. DeBoodt, Ghent; Werner G. Minjauw, Gullegem, and Hermann Oppliger, Herstal, all of Belgium, assignors to Societe Carbochimique Societe Anonyme, Belgium

Filed Jan. 23, 1984, Ser. No. 573,177
Claims priority, application Luxembourg, Jan. 24, 1983, 84601
Int. Cl.⁴ C05C *9/00*; C09K *17/00*
U.S. Cl. 71—28 **25 Claims**

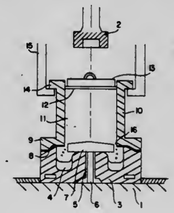
1. A process for conditioning loose or sandy soils, comprising treating the soil with an iron salt and with an aqueous solution or dispersion containing at least one polymer which does not require a pH greater than about 7 for it to harden and a protein substance, said protein substance being of animal or vegetable origin, said protein of animal origin being selected from the group consisting of protein fractions of animal blood, milk and tissues, said vegetable protein being selected from the group consisting of protein fractions of cereals or leguminous plants, said polymer being selected from the resins of the urea-formaldehyde type containing urea in a free condition, polyurethanes, polyvinyl alcohol which may be urethanized, potassium polystyrene sulphonate, maleic acid-vinyl acetate copolymers, polyvinyl acetate, polybutadiene, synthetic rubbers, natural rubber latex and asphaltic bitumen.

4,575,392

PROCESS FOR THE RECOVERY OF LIQUID ALUMINIUM BY COMPRESSION OF HOT DROSS

Jacques Julliard, Voiron; Louis Tirilly, Colmar, and Pierre Vigier, Grenoble, all of France, assignors to Cegedur Societe de l'Aluminium Pechiney, Paris, France

PCT No. PCT/FR84/00070, § 371 Date Nov. 21, 1984, § 102(e) Date Nov. 21, 1984, PCT Pub. No. WO84/03719, PCT Pub. Date Sep. 27, 1984
PCT Filed Mar. 20, 1984, Ser. No. 683,270
Claims priority, application France, Mar. 22, 1983, 83 05080; Feb. 21, 1984, 84 02790
Int. Cl.⁴ C22B *7/00, 21/00*
U.S. Cl. 75—24 **6 Claims**



1. A process for the recovery of liquid aluminum from hot dross by compression of said hot dross loaded into a die of circular section between a punch and table of a vertical unidirectional press, comprising the steps of:

(a) applying said punch to the upper part of said dross by downward movement of the punch at an initial rate until a continuous flow of liquid aluminum is obtained at the lower part of the die; and then

(b) moving the punch downward at a lower rate while continuing to obtain aluminum at the lower part of the die, said lower rate being in proportion to the lower concentration of liquid aluminum in the dross, which is caused by operation of the press.

4,575,393

APPARATUS FOR INTRODUCING SUBSTANCES INTO LIQUIDS E.G. METAL MELTS

Kenneth W. Bates, and William A. Griffiths, both of Chesterfield, Great Britain, assignors to Injectall Limited, Sheffield, England

PCT No. PCT/GB83/00297, § 371 Date Jul. 10, 1984, § 102(e) Date Jul. 10, 1984, PCT Pub. No. WO84/02147, PCT Pub. Date Jun. 7, 1984
PCT Filed Nov. 21, 1983, Ser. No. 629,782
Claims priority, application United Kingdom, Nov. 23, 1982, 8233300; Apr. 21, 1983, 8310814; Jun. 1, 1983, 8310525
Int. Cl.⁴ C21C *7/00*
U.S. Cl. 75—53 **17 Claims**

1. Apparatus suitable for introducing selected substances into an elevated temperature liquid, comprising:

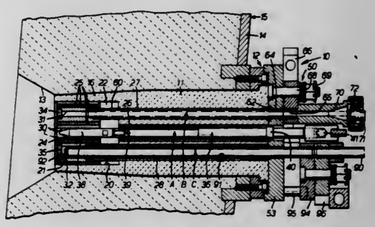
a refractory body adapted to be installed in a wall of a liquid container below the liquid surface, the body being traversed between outer and liquid-confronting ends of the body by a plurality of passages each for conveying different, selected substances to the liquid;

dislodgeable, refractory passage-closing means for each of said passages in the refractory body, and located at the liquid-confronting end of the body to prevent liquid in said container from entering the passages;

elements each movable independently of one another and located in a different one of said passages to engage with the closing means associated with the respective passage; and

a plurality of actuating means at said outer end of the refractory body and selectively operative to propel the corresponding movable elements toward the associated closing means to dislodge the closing means and open the corresponding passage so that feeding of a selected substance introduced within the passage into the liquid will commence;

said actuating means being operative to open the passages in a chosen order so that the selected substances can be fed into the liquid in said chosen order.

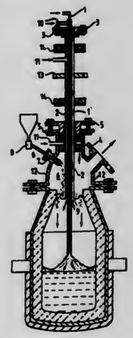


4,575,394

METALLURGICAL PROCESSES

Ivor G. Nixon, Ier Stock Ost, "Matterhorngruss", Steinmattstrasse, 3920 Zermatt, Valais, Switzerland

Division of Ser. No. 510,926, Jul. 5, 1983, which is a continuation of Ser. No. 249,495, Mar. 31, 1981, abandoned. This application Feb. 25, 1985, Ser. No. 705,204
Claims priority, application United Kingdom, Aug. 4, 1980, 8011546
Int. Cl.⁴ C21B *7/00*
U.S. Cl. 75—59.19 **10 Claims**



1. In a metallurgical process employing a burner and using fuel which has a heat of decomposition ranging from exothermic to an endothermic heat of decomposition of not more than 1.0 K. cals per carbon atom of said fuel expressed as a hypothetical hydrocarbon C_1H_x, the improvement which comprises use of said fuel as coolant for the burner in which said fuel is employed.

4,575,395

COATED PREGELATINIZED STARCH AND PROCESS FOR PRODUCING THE SAME

Richard E. Rudin, Kenosha County, Wis., assignor to S. C. Johnson & Son, Inc., Racine, Wis.

Continuation of Ser. No. 464,179, Feb. 7, 1983, abandoned. This application Dec. 4, 1984, Ser. No. 677,335

Int. Cl.⁴ C08B *30/12*

U.S. Cl. 127—32 **2 Claims**

1. A modified pregelatinized starch which is dispersible in liquids without agglomeration consisting essentially of from about 99.0 to 99.95% by weight of a pregelatinized starch selected from the group consisting of tapioca starch, corn starch, wheat starch, potato starch, rye starch and mixtures thereof, and from about 0.05 to 1.0% by weight of a food grade emulsifier consisting of a mixture of distilled propylene glycol monoesters, distilled monoglycerides, and sodium stearoyl lactylate wherein the emulsifier substantially coats and substantially encapsulates the starch to prevent agglomeration when the substantially encapsulated starch is added to liquids and to form a thin coating such that upon minimal agitation the starch is dispersed throughout a liquid medium to which it is added and thickens said liquid medium.

4,575,396

PROCESS AND BLASTING MEDIA FOR DEFLASHING ARTICLES

Katsuaki Matsumoto, Numazu, and Takao Taguchi, Tokyo, both of Japan, assignors to Fuji Seiki Machine Works, Ltd., Shizuoka, Japan

Filed Sep. 22, 1983, Ser. No. 534,528

Claims priority, application Japan, Oct. 15, 1985, 57-179797

Int. Cl.⁴ B08B *7/00*; B24C *1/00*; C09K *3/14*

U.S. Cl. 134—7 **14 Claims**



1. A process for removing resin flash and burrs from a part, comprising the steps of providing a fine blasting media of irregularly shaped blasting particles each comprising a spherical glass bead embedded within an irregularly shaped body of synthetic resin which has a specific gravity of at least about 1.3 so that the particles have a specific gravity in the range of about 1.5 to about 2.0 and a mean diameter less than 0.5 mm, mixing the blasting media with water to form a blasting media mixture, and then directing said blasting media mixture in the form of a jet stream against said part to effect removal of undesired resin burrs and flash without causing any significant surface abrasion of the part.

4,575,397

RAIL HAVING HIGH RESISTANCE TO WEAR IN ITS HEAD AND HIGH RESISTANCE TO RUPTURE IN ITS FOOT

Wilhelm Heller, Duisburg, Fed. Rep. of Germany, assignor to Krupp Stahl Aktiengesellschaft, Bochum, Fed. Rep. of Germany

Filed Oct. 1, 1984, Ser. No. 656,400

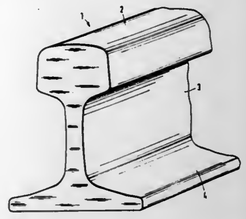
Claims priority, application Fed. Rep. of Germany, Oct. 4, 1983, 3336006

Int. Cl.⁴ C21D *9/04*, *1/18*

U.S. Cl. 148—12 B **11 Claims**

1. In a rail for a rail vehicle comprising a head and a foot interjoined by a web, the improvement wherein said rail is one having a fine pearlitic structure in its head to at least a depth of 20 mm from the surface and a martensitic annealed grain structure throughout its entire foot.

4. A method for producing a rail for a rail vehicle and having a head and a foot interjoined by a web, which comprises the steps of: subjecting a rail which has been rolled and air-cooled to room temperature to a temperature from 810° to 890° C. to austenized the same and thereafter cooling the same such that the rate of cooling in the head region is such to impart a fine



pearlitic structure to such head region to at least to a depth of 20 mm from the surface after the same has been cooled to room temperature, the rate of cooling in the foot region being selected such that the resultant foot has a martensitic structure throughout after being cooled and thereafter heat treating said foot at a temperature of 600° to 700° C.

4,575,398

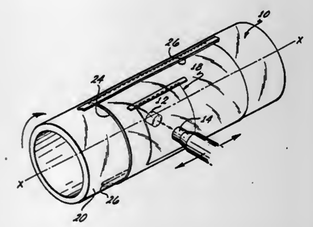
METHOD FOR PREVENTING NEWTON RING TYPE PATTERNS PARTICULARLY IN COLOR SEPARATION SCANNING OF TRANSPARENCIES

Michael Tschishow, 485 Gatewood La., Sierra Madre, Calif. 91024

Filed Jun. 30, 1982, Ser. No. 393,750

Int. Cl.⁴ B05D *5/06*; B32B *31/12*; G02B *1/10*

U.S. Cl. 156—99 **9 Claims**



7. A method for preventing the formation of Newton ring light patterns between a transparency or the like and a transparent mounting surface, said method comprising the steps of:

spraying a resinous solution on the surface of the transparency to be applied against the transparent mounting surface, said solution comprising a resin substantially transparent to light dissolved in a solvent system selected for low surface tension to obtain good wetting of a surface sprayed with said solution; and

allowing the sprayed resinous solution to dry so as to form a thin resin film having a matte finish over the transparency surface, such that said matte resin film serves as a spacer and also reduces reflection of light between said transparency surface and said mounting surface.

4,575,399

METHOD OF PATTERN DETECTION

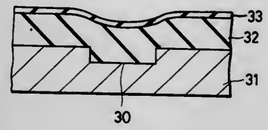
Toshihiko Tanaka, Setagaya; Norio Hasegawa, and Tetsuya Hayashida, both of Nishitama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 8, 1985, Ser. No. 689,803

Claims priority, application Japan, Jan. 17, 1984, 59-4813

Int. Cl.⁴ G03C *5/00*; B05D *3/06*; B32B *31/00*

U.S. Cl. 156—272.8 **10 Claims**



6. A method of pattern detection comprising the steps of laminating an organic film, an inorganic film, a resist film and an anti-reflective coating film for reducing multiple reflection in said resist film on the surface of a substrate having a target pattern formed on its surface; and applying light for detecting said pattern to the surface of said substrate and detecting the reflected light.

4,575,400

APPARATUS FOR MANUFACTURING CORRUGATED TUBES

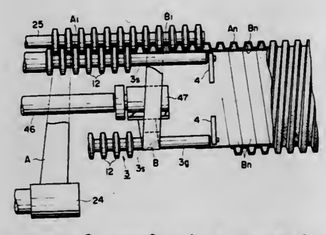
Koutarou Ueda, Fuji; Noboru Hasegawa, Fujisawa; Akio Machihara, Yokohama; Masaharu Kusaka, Yokosuka; Kohei Orii, Miura, and Yoshiro Noguchi, Odawara, all of Japan, assignors to Toyo Chemical Co., Ltd., Kamakura, Japan

Filed May 31, 1984, Ser. No. 615,977

Claims priority, application Japan, Jun. 8, 1983, 58-102465; Mar. 22, 1984, 59-53582; Mar. 23, 1984, 59-54483

Int. Cl.⁴ B65H *81/00*

U.S. Cl. 156—428 **15 Claims**



1. Apparatus for manufacturing a corrugated tube having a smooth inner wall surface along the length of the tube and axially extending spiral convolutions to form a corrugated outer wall in longitudinal cross-section comprising:

a roller assembly composed of a plurality of rollers arranged in a circular array so as to define an imaginary cylinder about its central axis with the longitudinal axes of said rollers offset with respect to the central axis of the imaginary cylinder while the rollers are maintained in parallel to each other;

first feeding means for continuously feeding a first strip of synthetic resin material in a softened state transversely onto the periphery of said roller assembly;

drive means for rotating each of said rollers at the same speed;

each of said rollers having a first portion with a plurality of axially equally spaced annular ridges therearound and a second portion with a smooth surface, the ridges of the respective rollers being arranged such that the associated ridges of each adjacent roller are successively aligned with each other along a spiral path;

pressure roller means having annular ridges therearound adapted to mate with recesses defined by each adjacent ridge of at least one of said rollers,

whereby said first strip is spirally wrapped around the first portions of the rollers while being axially advanced and the first strip is formed with corrugations along said ridges as said first strip is wrapped around said first portions of said rollers, to thereby form said corrugated outer wall; and

second feeding means disposed in the interior of said roller assembly for continuously feeding a second strip of synthetic resin material in a softened state, from the inside of the outer wall being manufactured, onto the inner surface of said outer wall so that the second strip is bonded to the inner surface of the outer wall and guided by said second portions of the rollers

and so that said second strip is spirally wrapped around said second portions of the rollers while being axially advanced together with the outer wall, to thereby form said smooth inner wall surface.

4,575,401

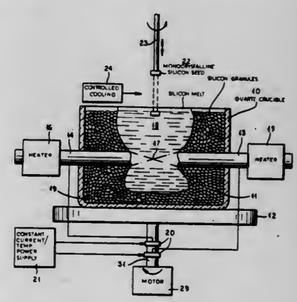
METHOD OF AND APPARATUS FOR THE DRAWING OF BARS OF MONOCRYSTALLINE SILICON

Eduard Pinkhasov, Mt. Vernon, N.Y., assignor to Wedtech Corp, Bronx, N.Y.

Filed Jun. 7, 1984, Ser. No. 618,192

Int. Cl.⁴ C30B *15/14*

U.S. Cl. 156—602 **10 Claims**



1. A method of melting elemental silicon which comprises the steps of:

filling a mass of elemental silicon granules into a crucible; and

passing an electric current through only a portion of said mass between electrodes which are at least in part surrounded by said mass and are in contact with said granules outwardly of said portion, said electric current being passed with an intensity sufficient to melt said portion while leaving at least a layer of said granules between the resulting melt and the walls of said crucible, thereby insulating said walls from said melt and interposing a barrier to contamination from said crucible to said melt.

4,575,402

METHOD FOR FABRICATING CONDUCTORS IN INTEGRATED CIRCUITS

Paul J. Marcoux, Mountain View, Calif.; Eileen M. Murray, and Hugh R. Grinolds, both of Yokohama, Japan, assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Feb. 13, 1985, Ser. No. 701,270

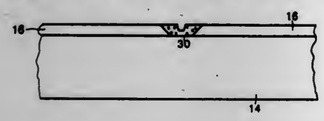
Int. Cl.⁴ B44C *1/22*; C03C *13/00*, *25/06*; C23F *1/02*

U.S. Cl. 156—643 **5 Claims**

1. A process for selectively patterning a layer on a surface comprising the steps of:

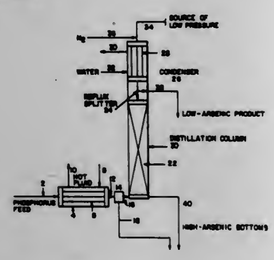
depositing an initial layer onto the surface;

removing portions of the initial layer to form a select pattern on the initial layer;
transferring the select pattern onto the surface by forming a depression of the pattern in the surface to result in a nonplanar surface;
depositing a first layer to be patterned onto the patterned initial layer such that the first layer partially fills the depression on the nonplanar surface;
depositing a second layer of planarizing material onto the



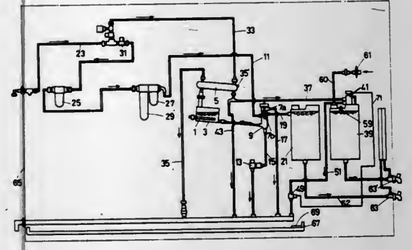
first layer to form a substantially planar surface and completely filling the depression to form a substantially planar surface;
uniformly removing the second layer until the uppermost portions of the first layer is exposed, leaving remnants of the second layer in the depression to protect those portions of the first layer in the depression;
removing portions of the exposed first layer; and
removing remnants of the second layer and the initial layer to provide a selectively patterned first layer.

4,575,403
APPARATUS FOR DISTILLING PHOSPHORUS
Harvey Rosenhouse, East Windsor, and Jeffrey C. Dore, Hamilton Square, both of N.J., assignors to FMC Corporation, Philadelphia, Pa.
Division of Ser. No. 385,144, Jun. 4, 1982, Pat. No. 4,483,746.
This application Jun. 1, 1984, Ser. No. 616,377
Int. Cl.[4] B01D *3/14*
U.S. Cl. 202—153 **3 Claims**



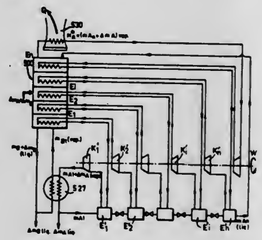
1. An apparatus for distilling phosphorus to reduce its arsenic content comprising:
(a) a feed conduit for receiving molten phosphorus connected to
(b) a heat exchanger comprising tubular means through which liquid phosphorus can be passed continuously,
(c) means for out of contact heating of the phosphorus passing through said tubular means of said heat exchanger,
(d) an exit conduit from said heat exchanger connected to disengaging means for permitting phosphorus heated in said heat exchanger to be separated into phosphorus vapor and phosphorus liquid, said disengaging means being located in an upstream position from and outside of the fractional distillation zone of any subsequent fractional distillation means,
(e) fractional distillation means containing a fractional distillation zone located in a downstream position from said disengaging means and connected thereto by conduit means for passing phosphorus vapor into the fractional distillation means, said disengaging means being positioned outside said fractional distillation zone,
(f) an internal condenser means positioned directly above said fractional distillation means, said condenser means containing vertically disposed second tubular means open at both ends, the bottom ends of said second tubular means being connected to said fractional distillation means whereby phosphorus vapor from said fractionating means can flow into the bottom ends and up into said second tubular means, condense on the inside walls thereof, and drain downwardly therefrom towards said fractional distillation tubular means,
(g) means for cooling said second tubular means,
(h) means located below the bottom ends of said second tubular means of said condenser for collecting and splitting the liquid phosphorus condensate from said condenser into a reflux stream, which is directed by the collecting and splitting means into the top of the fractional distillation zone, and a product stream of low arsenic phosphorus, which is directed by the collecting and splitting means into an exit conduit therefor, and
(i) vacuum means connected to said disengaging means, fractionating means and condensing means to maintain these means under subatmospheric pressure.

4,575,404
PURE WATER TANK ASSEMBLY FOR WATER DISTILLATION EQUIPMENT
Hideo Goto, Koshigaya, and Naoki Yoshida, Sagamihara, both of Japan, assignors to Yamato Scientific Co., Ltd., Tokyo, Japan
Filed Sep. 23, 1983, Ser. No. 535,211
Claims priority, application Japan, Oct. 16, 1982, 57-156902
Int. Cl.[4] B01D *3/42*
U.S. Cl. 202—202 **2 Claims**



1. A pure water tank assembly for water distillation equipment comprising:
a pure water tank with an inlet opening at its upper portion and an outlet opening at its lower portion,
a casing of smaller capacity than said pure water tank for receiving pure water and delivering pure water to said pure water tank, said casing being mounted at a level above the inlet opening of said pure water tank and including a casing inlet opening for connection to a pure water delivery conduit and a communicating port at a level higher than said casing inlet opening so that pure water moving through said casing inlet opening must move to a level higher than said casing inlet opening to move through said communicating port and pure water covers the casing inlet opening and air is prevented by the pure water in the casing from moving from the casing inlet opening to the communicating port, a pipe connecting the communicating port of said casing to the inlet opening of said pure water tank for moving pure water from said casing to said pure water tank, and a discharge opening positioned at a level below said casing inlet opening for discharging water from said casing away from said pure water tank,
a discharge conduit connected to said discharge opening and valve means in said discharge conduit for controlling the flow of water from said casing,
a water purity sensor mounted to said casing for determining the purity of the water in said casing and for opening and closing said valve means in response to the purity of the water in the casing to drain impure water from the casing.

4,575,405
PROCESS FOR THE RECTIFICATION OF BINARY LIQUID MIXTURES
Jacques Sterlini, Paris, France, assignor to Cie Electro Mecanique, Paris, France
Division of Ser. No. 290,224, Aug. 5, 1981, Pat. No. 4,411,739.
This application Dec. 9, 1982, Ser. No. 448,056
Claims priority, application France, Aug. 5, 1980, 80 17313
Int. Cl.[4] B01D *3/14*
U.S. Cl. 203—24 **3 Claims**

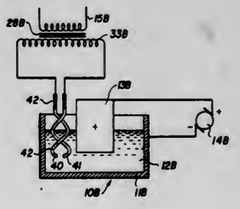


1. In a process for the rectification of a mixture comprised of components "A" and "B", wherein said mixture is fed to the intermediate state of a rectification column comprising in sequence a depletion stage, an intermediate stage, and a rectification stage, a vapor stream and a liquid stream passing between said stages in a countercurrent manner with said vapor stream moving in a direction from said depletion stage toward said rectification stage and said liquid, stream moving in a direction from said rectification stage toward said depletion stage, said vapor and liquid being in equilibrium in each stage, component "A" being recovered as a vapor from said rectification stage and component "B" being recovered as a liquid from said depletion stage, the temperature-pressure relationship in the column being such that substantially pure component "A" vapor is present in the rectification stage and substantially pure component "B" liquid is present in the depletion stage, the improvement comprising:
employing a polytropic process wherein rectification of the binary mixture of the two components A and B takes place without the external addition of heat and only work is provided, the latter being of a value close to the theoretical value of the work necessary for the separation of the components A and B, said polytropic process including the steps of:
(a) partially condensing said recovered component "A" vapor;
(b) passing said component "A" vapor in indirect heat exchange relationship sequentially to said rectification, intermediate, and depletion stages, to provide said stages with an amount of heat adequate to achieve thermodynamic equilibrium between the vapor and liquid phase of said mixture, said component "A" vapor being compressed as it passes from heat exchange relationship with one stage to heat exchange relationship with the next stage and being compressed as it passes from heat exchange relationship with one stage to heat exchange relationship with the next stage and being compressed subsequent to passing from heat exchange relationship with said depletion stage, and thereafter cooling said component "A" vapor to provide a condensed component "A";
(c) recovering a portion of said liquid component "B" as product and vaporizing the remainder of said component "B" liquid stream not recovered as product by use of the heat of condensation provided by the condensation of the component "A" vapor and passing said vaporized component "B" to said depletion stage as reflux;
(d) recovering a portion of said condensed component "A" as product and passing the remainder of the condensed component "A" in countercurrent direct mass and heat exchange and equilibrium relationship with said vaporized component "A" which passes in indirect heat exchange relationship with said stages; and,
(e) feeding said condensed component "A" subsequent to passing in indirect heat exchange and equilibrium relationship with said vaporized component "A" to said rectification stage as reflux.

4,575,406
MICROPOROUS FILTER
Warren D. Slafer, Arlington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Jul. 23, 1984, Ser. No. 633,290
Int. Cl.[4] C25D *1/08, 1/20, 5/02*
U.S. Cl. 204—11 **12 Claims**

1. A method for forming a metal filter having a pore size of less than 15 micrometers and an open area of greater than 10% which comprises the step of providing a patterned exposure of a photoresist with interferring laser beams; developing said exposed photoresist to provide a substantially planar surface having a relief pattern of depressions therein in said photoresist; rendering said surface electrically conductive, electrically depositing a metal on said electrically conductive surface; and removing the thus-formed metal layer.

4,575,407
PRODUCT AND PROCESS FOR THE ACTIVATION OF AN ELECTROLYTIC CELL
Isaac M. Diller, 50 Park Ave., New York, N.Y. 10016
Continuation of Ser. No. 300,942, Sep. 10, 1981, Pat. No. 4,483,935, which is a division of Ser. No. 701,200, Jun. 30, 1976, Pat. No. 4,324,624, and a continuation of Ser. No. 428,779, Dec. 27, 1973, abandoned, which is a division of Ser. No. 3,668, Jan. 19, 1970, Pat. No. 3,806,433, which is a continuation-in-part of Ser. No. 241,895, Dec. 3, 1962, Pat. No. 3,244,604, and a continuation-in-part of Ser. No. 305,768, Aug. 30, 1963, Pat. No. 3,392,092, and a continuation-in-part of Ser. No. 539,906, Apr. 4, 1966, abandoned. This application Oct. 24, 1984, Ser. No. 664,145
Int. Cl.[4] C25C *3/00, 3/06, 3/18*
U.S. Cl. 204—67 **2 Claims**



1. In a melt of a Hall-type cell, including an oxide of a metal to be reduced and a fused salt electrolyte, the melt being adapted to be activated by the application of high energy pulses, the improvement comprising an additive to be introduced into the melt prior to the application of high energy pulses in order to facilitate the activation of the melt by de-

creasing the impedance of the melt to the high energy pulses by increasing the dielectric constant of the electrolyte, the ratio of the weight of the additive introduced into the melt to the weight of the melt being about 2%, the ratio being sufficient to materially improve the effectiveness of the pulses for the activation of the melt and less than sufficient to materially reduce the transport function of the electrolyte, said additive being a high dielectric material selected from the group consisting essentially of barium oxide, barium titanate, and titanium oxide.

4,575,408

METHOD FOR FLOATING TRANSPORT OF SUBSTRATES

Edward Bok, Burg. Amersfoordtlaan 82, 1171 DR Badhoevedorp, Netherlands

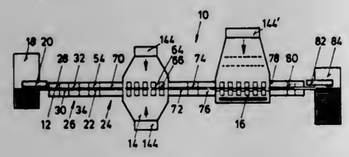
PCT No. PCT/NL83/00031, § 371 Date Mar. 19, 1984, § 102(e) Date Mar. 19, 1984, PCT Pub. No. WO84/01084, PCT Pub. Date Mar. 15, 1984

PCT Filed Aug. 23, 1983, Ser. No. 598,549

Claims priority, application Netherlands, Aug. 24, 1982, 8203318

Int. Cl.⁴ C23C *15/00*

U.S. Cl. 204—192 E **13 Claims**



1. Method for floating gaseous transport and processing of substrates and tape comprising:

(a) introducing said substrates into an elongated transport and processing passage;

(b) maintaining a pressurized source of gaseous transport medium in communication with said passage;

(c) injecting said pressurized gaseous transport medium from above and below into said passage via a successive series of transversely aligned gaseous medium supply ports, while

(d) simultaneously removing said gaseous transport medium via a series of transversely arrayed discharge ports intersecting said passage both before and behind each said series of gaseous medium supply ports; and

(e) processing the moving substrates within said passage.

4,575,409

APPARATUS FOR ELECTROLYZING METAL SHEET

Robert L. Dragon, Jr., Hazlet; Lawrence C. Grambo, Westfield, and John E. Walls, Hampton, all of N.J., assignors to American Hoechst Corporation, Somerville, N.J.

Filed Jan. 5, 1984, Ser. No. 568,328

Int. Cl.⁴ C25D *21/10, 17/06;* C25C *7/00*

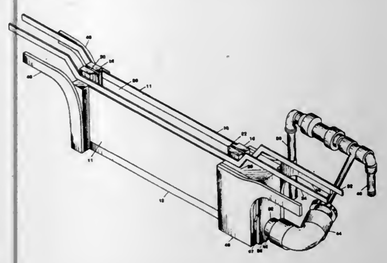
U.S. Cl. 204—237 **5 Claims**

1. An apparatus for uniformly electrolyzing a metal sheet comprising:

(a) a generally rectagular, non-electrically conductive frame defined by planar walls, which is capable of supporting a metal sheet within said walls and which is adapted for immersion in a tank capable of containing an electrolytic solution therein;

(b) at least one electrode mounted on each of two opposite inside walls of said frame, such that said electrodes are spaced at a distance from, and in planes paralled to the metal sheet;

(c) electrically conductive clamping means capable of rigidly holding at least one of the peripheral edges of the metal sheet and engaging with said frame such that at least one of the sides of the metal sheet is uniformly spaced at a pre-selected distance from said electrodes.



(d) means for circulating electrolyte uniformly about the surface of said metal sheet and;

(e) means for applying an electrical current between said electrode or electrodes and said metal sheet.

4,575,410

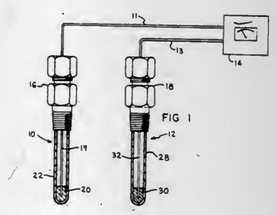
SOLID STATE ELECTRODE SYSTEM FOR MEASURING PH

Radhakrishna M. Neti, Brea, Calif., assignor to Beckman Industrial Corporation, Cedar Grove, N.J.

Continuation of Ser. No. 357,221, Mar. 11, 1982, abandoned. This application Jun. 19, 1984, Ser. No. 621,890

Int. Cl.⁴ G01N *27/56*

U.S. Cl. 204—422 **1 Claim**



1. A high temperature electrode system for indicating the pH of a test solution, the combination comprising:

a. a pH electrode including:

i. a pH sensitive member composed of a metal oxide based ceramic, having an outer surface and an inner surface, and said outer surface disposed for direct contact with said test solution;

ii. a first oxygen-free solid electrolyte body in the pH sensitive member for direct contact with said inner surface of said pH sensitive member,

iii. a first metal conductor in electrical contact with said first electrolyte body, and means on said first metal conductor for connecting said pH electrode to an instrument for measuring electrical potential,

b. a reference electrode including:

i. a reference member having, an outer surface and an inner surface, said outer surface disposed for direct contact with said test solution;

ii. said reference member has the same composition and porosity as the pH sensitive member and has a thickness in the range of 10 to 50 Angstroms,

iii. a second oxygen-free solid electrolyte body in the reference member for direct contact with said inner surface of said reference member, and said second oxygen-free solid electrolyte body composed of a material selected from the group consisting of: a silver halide other than fluorides, mixtures of silver halides other than fluorides, mixtures of a silver halide other than fluoride and metallic silver, mixtures of a silver halide other than flouride and one or more alkali halide other than fluoride, an alkali halide other than fluoride, and mixtures of alkali halide other than fluorides, and

iv. a second metal conductor in electrical contact with said second electrolyte body, and means on said metal conductor for connecting the reference electrode to an instrument for measuring electrical potential.

4,575,411

PROCESS FOR PREPARING PRECURSOR PITCH FOR CARBON FIBERS

Seiichi Uemura, Tokyo; Shunichi Yamamoto, Kamakura; Takao Hirose, Kamakura; Hiroaki Takashima, Kawasaki, and Osamu Kato, Yokohama, all of Japan, assignors to Nippon Oil Company, Limited, Japan

Filed Nov. 21, 1984, Ser. No. 673,578

Claims priority, application Japan, Jun. 15, 1982, 57-101377

Int. Cl.⁴ C10C *1/00*

U.S. Cl. 208—44 **5 Claims**

1. A process for preparing a precursor pitch for the production of carbon fibers comprising forming a carbonaceous pitch into a thin film having a thickness not greater than 5 mm and treating said carbonaceous pitch film at a temperature of 250°–390° C. and at a reduced pressure not higher than 100 mmHg for a time sufficient to produce a precursor pitch containing 40–100% of mesophase having a softening point of 200°–280° C. and consisting of a quinoline-insoluble optical anisotropic phase and a quinoline-soluble anisotropic phase, the proportion of said quinoline-insoluble mesophase being 0–15 wt.%.

4,575,412

METHOD FOR PRODUCING A PRECURSOR PITCH FOR CARBON FIBER

Kozo Yudate, and Ken Nagasawa, both of Chiba, Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Filed Aug. 28, 1984, Ser. No. 645,174

Int. Cl.⁴ C10C *3/02, 3/08;* D01F *9/14*

U.S. Cl. 208—45 **2 Claims**

1. A method for producing carbon fiber precursor pitch which comprises heating a coal tar soft or middle pitch at a temperature of 350°–500° C. at a first stage to form 10–30% by weight of mesophase, extracting the thus treated pitch with an aromatic solvent, separating and removing the solvent insoluble portion including mesophase to obtain a pitch containing no free carbon and further heat-treating the pitch containing no free carbon in an inert gas atmosphere under atmospheric pressure or a reduced pressure at a second stage to form bulk mesophase pitch containing 20–60% by weight of quinoline insoluble portion.

4,575,413

ALUMINUM STEARATE AND/OR ACETATE ANTIFOULANTS FOR REFINERY OPERATIONS

Vincenzo M. P. Pizzoni, Woking, and Sukhjit S. Randhawa, Guildford, both of England, assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jul. 5, 1985, Ser. No. 752,414

Claims priority, application United Kingdom, Jul. 6, 1984, 8417320

Int. Cl.⁴ C10G *9/16*

U.S. Cl. 208—48 AA **18 Claims**

1. A method of reducing fouling in a tube carrying a refinery or petrochemical process stream which comprises introducing into the stream an effective concentration of an antifoulant selected from the group consisting of at least one of aluminium stearate and aluminium acetate.

4,575,414

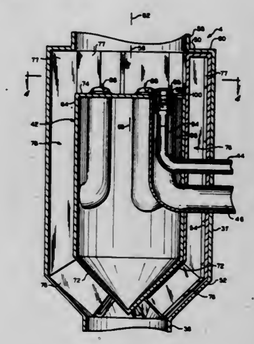
METHOD FOR MIXING OF FLUIDIZED SOLIDS AND FLUIDS

Frank W. Skraba, Sweeny, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 645,386, Aug. 29, 1984. This application Jul. 26, 1985, Ser. No. 759,371

Int. Cl.⁴ C10G *11/18*

U.S. Cl. 208—157 **6 Claims**



1. A method of mixing a fluidized solid and a fluid comprising the steps of:

(a) passing a stream of fluidized solid particles substantially longitudinally through an annular space between an outer elongated hollow member in an annular and an inner elongated member, said inner elongated member having an axis and also having upstream and downstream ends, wherein said ends are contained in said outer member, said stream passing among a plurality of filler elements positioned in said annular said stream then flowing inwardly towards said axis in a generally radial direction past said downstream said inner member;

(b) introducing a fluid into said stream of solid particles as said stream flows generally radially toward said axis past said downstream end of said inner member thus forming a mixture.

4,575,415

APPARATUS AND PROCESS FOR CATALYTIC REFORMING WITH CONTINUOUS SULFUR REMOVAL

William J. Novak, Guttenberg, and Ronald G. McClung, Bridgewater, both of N.J., assignors to Engelhard Corporation, Menlo Park, N.J.

Division of Ser. No. 582,123, Feb. 21, 1984, Pat. No. 4,534,943. This application Jan. 18, 1985, Ser. No. 692,471

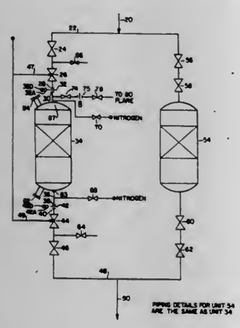
Int. Cl.⁴ C10G *25/00, 53/08, 61/06, 25/12*

U.S. Cl. 208—91 **2 Claims**

1. A method for continuously removing residual sulfur from a naphtha stream to be fed to a reformer comprising:

passing said naphtha stream through entrance duct means through a primary absorber and thence through exit duct means leading to a reformer, the primary absorber having a charge of manganous oxide disposed therein, until the weight of sulfur passed through said primary absorber exceeds a predetermined amount of from about 5 to about 30 of the weight of the charge of manganous oxide; then simultaneously passing a portion of said naphtha stream through a bypass absorber having a charge of manganous oxide disposed therein; the volume of the bypass absorber being no more than about ¼ the volume of the primary absorber; said entrance duct means having a least one entrance seal double seat double gate wedge valve means disposed therein for interrupting flow through said primary absorber and at least one entrance seal collar means

mounted on said entrance duct means adapted to receive a blind seal plate means mountable thereon, locatable in said entrance duct means between said primary absorber and said entrance seal double seat double gate wedge valve means; removing naphtha from said primary absorber through said exit duct means for withdrawing desulfurized naphtha from said primary absorber, said exit duct means having at least one exit seal double seat double gate wedge valve means disposed therein for interrupting flow through said primary absorber and at least one exit seal collar means mounted on said exit duct means adapted to receive a blind seal plate means mountable thereon, locatable in said exit duct means between said primary absorber and exit seal double seat double gate wedge valve means; and means for diverting flow of naphtha through said bypass absorber while said entrance seal and exit seal double seat double gate wedge valve means are in their closed position, subsequently interrupting flow through said entrance and exit duct means by closing said entrance



seal and exit seal double seat double gate wedge valves; venting said primary absorber to flare means operably associated with said primary absorber, subsequently maintaining blind seal plate means upon entrance seal and exit seal collar means; subsequently passing nitrogen through said primary absorber to said flare means and purging said primary absorber while said entrance seal and exit seal double seat double gate wedge valve means are closed and said entrance seal and exit seal collar means each have blind seal plate means mounted thereon; supplying a nitrogen purge between the gates of each of said entrance seal and exit seal double seat double gate wedge valve means; withdrawing manganous oxide from said primary absorber into vessels having an inert atmosphere therein; recharging said primary absorber with manganous oxide; purging said primary absorber of air by passing nitrogen therethrough; repositioning said blind seal plate means to allow flow through said entrance and exit duct means; and opening said entrance seal and exit seal double seat double gate wedge valves.

4,575,416

HYDRODEWAXING WITH MIXED ZEOLITE CATALYSTS

Arthur W. Chester, Cherry Hill; William D. McHale, and Jeffrey H. Yen, both of Swedesboro, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jul. 16, 1984, Ser. No. 631,681
Int. Cl.[4] C10G *45/64*
U.S. Cl. 208—111 **24 Claims**

1. A process for catalytically dewaxing a hydrocarbon lubricating oil feedstock comprising contacting said feedstock with a dewaxing catalyst, said dewaxing catalyst comprising, in combination:

(a) a zeolite catalyst having a Constraint Index not less than 1,

(b) an acidic catalytic material selected from the group consisting of Mordenite, TEA Mordenite, Dealuminized Y, Ultrastable Y, Rare Earth Y, amorphous silica-alumina, chlorinated alumina, ZSM-4 and ZSM-20, and

(c) a hydrogenation component, and recovering a dewaxed product.

12. A process for catalytically dewaxing a hydrocarbon lubricating oil feedstock comprising contacting said feedstock with a dewaxing catalyst, said dewaxing catalyst comprising, in combination:

(a) a first zeolite catalyst selected from the group consisting of ZSM-5, ZSM-11, ZSM-12, ZSM-22, ZSM-23, ZSM-34, ZSM-35, ZSM-38, ZSM-48, TMA Offretite and Erionite,

(b) a second catalyst selected from the group consisting of ZSM-12, ZSM-22, ZSM-38 and ZSM-48, said second zeolite catalyst being different from said first zeolite catalyst, and

(c) a hydrogenation component, and recovering a dewaxed product.

4,575,417

PROCESS FOR CATALYTIC DEWAXING WITH MORDENITE

Paul H. Lewis, Groves, Tex., assignor to Texaco Inc., White Plains, N.Y.

Division of Ser. No. 480,640, Mar. 31, 1983, Pat. No. 4,536,486. This application Jun. 20, 1985, Ser. No. 746,825
Int. Cl.[4] C10G *11/05, 45/62, 45/64*
U.S. Cl. 208—111 **7 Claims**

1. The method of catalytically dewaxing a hydrocarbon base lubricating oil, charge containing a wax fraction which comprises

passing a hydrocarbon base lubricating oil charge, at anhydrous dewaxing catalytic conditions, into contact with as dewaxing catalyst, a hydrogen mordenite catalyst, which catalyst has been calcined at 1300° F.–1500° F. after contact with water for the last time, having a silica-to-alumina mole ratio of 10:50:1, loaded with a metal of the platinum-palladium group, said catalyst containing activated sites, thereby forming a product dewaxed lubricating oil base stock; and

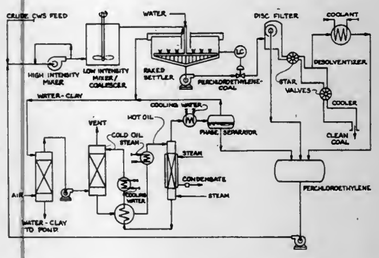
recovering said product.

4,575,418

COAL CLEANING AND THE REMOVAL OF ASH FROM COAL

Lanny A. Robbins, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Oct. 3, 1984, Ser. No. 657,327
Int. Cl.[4] B03B *5/28*; C10L *1/00*; C07C *5/00*
U.S. Cl. 209—3 **13 Claims**



1. A method for treating a coal containing mass to reduce the ash components which comprises:

(1) crushing said mass smaller than 20 mesh;

(2) slurrying said crushed mass with water and an immiscible heavier-than-water organic media employing an intense mixing sufficient to cause intimate contact of the crushed mass with each liquid component of the slurry without an appreciable attrition;

(3) carrying out a mild to substantially quiescent mixing sufficient to allow some initial disengagement of the water phase and its occluded ash from the organic media phase and its occluded coal;

(4) separating the water phase from said heavier-than-water media phase including their respective solids in a raked settler;

(5) collecting said separated phases and freeing the solids in each phase from its liquid;

(6) drying the solids by contact with a heated surface.

4,575,419

DIFFERENTIAL FLOTATION REAGENT FOR MOLYBDENUM SEPARATION

John A. Peterson, Niagara Falls; Mohan S. Saran, Grand Island, and Joseph S. Wisnouskas, Amherst, all of N.Y., assignors to Occidental Chemical Corporation, Niagara Falls, N.Y.

Division of Ser. No. 631,262, Jul. 16, 1984, Pat. No. 4,518,573, which is a division of Ser. No. 471,608, Mar. 3, 1983. This application Jan. 7, 1985, Ser. No. 689,422
Int. Cl.[4] B03D *1/02*
U.S. Cl. 209—167 **4 Claims**

1. A method for recovering molybdenum from a molybdenum concentrate containing copper, lead and iron as impurities comprising the steps of:

(a) feeding the molybdenum concentrate to a flotation vessel,

(b) adding a collector and a differential flotation reagent to the flotation vessel to float molybdenum values and suppress other metals, said differential flotation reagent consisting essentially of the reaction product of P_4S_{10} and an alkali mixture of NaOH and NaSH in a molar ratio of P_4S_{10} to alkali mixture of from about 1:15 to about 1:17, said mixture containing at least about 50 mole percent of NaOH,

(c) sparging the flotation vessel with air to form a froth, and

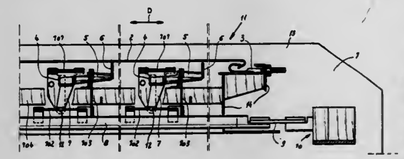
(d) recovering a concentrated molybdenum-containing material from the froth.

4,575,420

BEATER-TYPE POWER SIEVE WITH FULL SPRING MOUNTING

Wolfram Blachetta, Cologne, and Horst Peterling, Remscheid, both of Fed. Rep. of Germany, assignors to "RHEWUM" Rheinische Werkzeug- und Maschinenfabrik GmbH, Remscheid, Fed. Rep. of Germany

Filed May 4, 1984, Ser. No. 607,205
Claims priority, application Fed. Rep. of Germany, May 4, 1983, 8313148[U]; Aug. 20, 1983, 3330196
Int. Cl.[4] B07B *1/34*
U.S. Cl. 209—322 **10 Claims**



1. A power sieve comprising:

a generally planar frame extending parallel to a predetermined generally horizontal longitudinal direction and having upstream and downstream longitudinally spaced ends and a pair of side members extending longitudinally between the ends and spaced apart transversely of the longitudinal direction;

a generally planar screen spanned longitudinally within the frame;

a plurality of longitudinally spaced, horizontally and transversely extending, and substantially parallel beater beams underneath the screen and each having transversely opposite beam ends juxtaposed with the frame side members;

respective longitudinally extending leaf springs extending substantially parallel with said screen in the predetermined longitudinal direction each having one longitudinal end secured to the respective side member underneath the screen and another longitudinal end secured to the respective beam end underneath the screen, whereby the beams can move generally vertically on the springs;

respective beater arms extending longitudinally and generally parallel to the screen from the beater beams and having outer ends engageable with the underside of the screen;

respective actuation arms extending at least generally vertically from the beater beams and having outer ends;

a rigid longitudinally extending link pivotably connected to the outer ends of the actuation arms; and

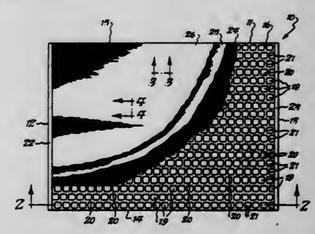
drive means on the frame connected to the link for longitudinally reciprocating the link and thereby simultaneously and synchronously pivotally oscillating the beater beams with the respective beater arms to hammer the outer ends of the beater arms up against the screen, whereby when the screen is inclined down from the upstream frame end and particulate material is loaded onto the screen at this upstream end the particulate material migrates down along the screen to the downstream frame end with the smaller fractions falling through the screen.

4,575,421

NON-CLOGGING WEAR-REDUCING SCREEN ASSEMBLY FOR VIBRATING SCREENING MACHINE

James W. Derrick, East Aurora, and Robert G. Derrick, Glenwood, both of N.Y., assignors to Derrick Manufacturing Corporation, Buffalo, N.Y.

Filed Mar. 8, 1984, Ser. No. 587,613
Int. Cl.[4] B07B *1/49*
U.S. Cl. 209—397 **19 Claims**



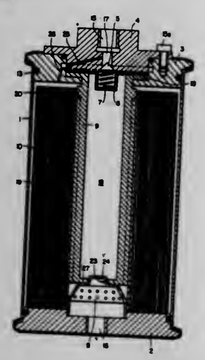
1. A screen assembly for a vibrating screening machine comprising a substantially rigid plate having upper and lower sides and having outer edge portions, a plurality of spaced openings in said substantially rigid plate extending in both directions between said outer edge portions, said spaced openings being relatively small as compared to the size of said plate, border portions on said plate surrounding said openings, first and second superimposed screening screens on said upper side and extending across said openings, adhesive means firmly bonding portions of said first and second screening screens surrounding said openings to said border portions, and channel means at opposite sides of said rigid plate for attaching said rigid plate to a vibratory screening machine.

4,575,422

PAPER ROLL FILTER STRUCTURE

Cornelius P. Zimmer, Sürst 9, 5308 Rheinbach, Fed. Rep. of Germany

Filed Feb. 25, 1983, Ser. No. 446,963
Int. Cl.⁴ B01D *27/10, 27/12*
U.S. Cl. 210—130 **3 Claims**



1. A filter for regenerating oil in combustion engines with a replaceable tissue filter roll comprising;
a cylindrical filter housing having a top and bottom sealed by first and second circular plates, respectively, said first plate containing an inlet and said second plate containing an outlet;
a replaceable tissue filter roll wrapped on a thin wall carton tube;
a rubber tube located within and supporting said thin wall carton tube against collapse having lengthwise running flutes around its outer-circumference, said rubber tube having a sealing circular plate at its top end and a tapered smooth collar below the circular plate;
an oil pressure responsive bypass in flow communication with the inlet and an inner cylindrical space within the rubber tube; and
an annular element closing the bottom of the rubber tube and provided with holes that form a flow path between the flutes of the rubber tubes and said outlet in said second plate, whereby the thin wall carton tube is punctured by oil pressure exerted from outside the thin wall carton tube upon the flutes and oil within the rubber tube exserting back pressure against the tube.

4,575,423

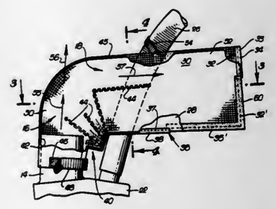
DEBRIS COLLECTION BAG FOR POOL CLEANERS

J. Jesus Alanis, San Marcos, and Paul Greskovics, Manhattan Beach, both of Calif., assignors to Alopex Industries, Inc., San Marcos, Calif.

Filed Nov. 1, 1984, Ser. No. 667,220
Int. Cl.⁴ B01D *35/00*
U.S. Cl. 210—169 **18 Claims**

1. A debris collection bag incombination with a pool cleaner having a water supply hose, a suction mast, and means for drawing water and debris from a swimming pool or the like through the suction mast, said collection bag comprising:
a pair of elongaged sidewalls of generally common shape and formed from a material pervious to water flow and generally impervious to passage of debris of selected size, said sidewalls being joined seamlessly along a first longitudinal margin and having a generally aligned second longitudinal margin and generally aligned end margins;
means for interconnecting said sidewalls along said second longitudinal margin and along one of said end margins, said interconnecting means being releasably separable over a portion thereof spaced from the other of said end margins to define a discharge opening;
mounting means cooperating with the other of said end margins to define an open mouth for mounting onto the discharge end of the pool cleaner suction mast for flow of water and debris through the suction mast into the bag between said sidewalls;
means for shaping said sidewalls into a generally L-shaped configuration including a generally upright forward bag leg having said open mouth at the lower end thereof and joined at its upper end to a generally horizontal rear bag leg, said first and second longitudinal margins respectively defining the outboard and inboard longitudinal margins of said L-shaped configuration;
said forward bag leg defining a forward flow chamber for reception of water and debris flowing through said open mouth with the water exiting the bag generally through said outboard margin and the debris passing into a collection chamber defined by said rear bag leg for collection and storage; and
means for supporting said rear bag leg from the water supply hose.

14. A debris collection bag incombination with a pool cleaner having a water supply hose, a suction mast, and means



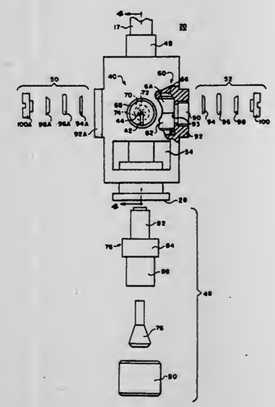
for drawing water and debris from a swimming pool or the like through the suction mast, said collection bag comprising:
an elongated bag member formed from a material pervious to water flow and generally imprevious to passage of debris of selected size, said bag member defining a substantially normally closed interior and having an open mouth at one end thereof;
means for mounting said one end of said bag member onto the discharge end of the pool cleaner suction mast for passage of water and debris drawn through the suction mast through said open mouth into the interior of said bag member;
means for shaping said bag member into a generally L-shaped configuration including a generally upright forward bag leg having said open mouth at the lower end thereof and joined at its upper end to a generally horizontal rear bag leg, said forward bag leg defining a forward flow chamber for reception of water and debris flowing through said open mouth with the water exiting the bag generally through said bag member and the debris passing into a collection chamber defined by said rear bag leg for collection and storage; and
means for releasably accessing said collection chamber from the exterior of said bag member at a position spaced from said open mouth to permit removal of collected debris.

4,575,424

CHROMATOGRAPHIC FLOW CELL AND METHOD OF MAKING IT

Robert W. Allington, and John N. Jones, both of Lincoln, Nebr., assignors to ISCO, Inc., Lincoln, Nebr.

Filed Mar. 1, 1984, Ser. No. 585,347
Int. Cl.⁴ B01D *15/08*
U.S. Cl. 210—198.2 **17 Claims**



8. A chromatograph comprising:
a chromatographic column;
an injection valve;
a source of light;
a flow cell;
a photocell;
a detection system connected to said photocell to receive light from said light source passing through said flow cell;
said chromatographic column having a predetermined inside diameter no greater than two millimeters and communicating with said flow cell whereby said fluid from said chromatograph flows through said flow cell while said light passes through said flow cell;
said flow cell having a plastic body portion; a metal insert; a pair of window inserts; an inlet port; a pair of windows and an outlet port;
said metal portion being comprised of first and second parts with a path between said first and second parts having a diameter no greater than four millimeters, having a mirror reflective finish with a roughness factor no greater than 16 RMS microinches; and
said pair of windows being aligned with said path.

4,575,425

PROCESS FOR CONTROLLING CALCIUM OXALATE SCALE OVER A WIDE PH RANGE

Bennett P. Boffardi, Bethel Park; John P. Farkas, and Monica A. Yorke, both of Coraopolis, all of Pa., assignors to Calgon Corporation, Pittsburgh, Pa.

Filed Dec. 24, 1984, Ser. No. 685,513
Int. Cl.⁴ C02F *5/14*
U.S. Cl. 210—697 **3 Claims**

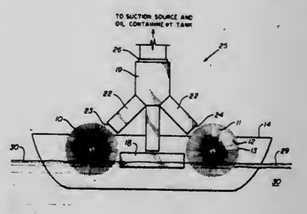
1. A method of inhibiting the precipitation and deposition of calcium oxalate scale in an aqueous system, comprising adding to said system an effective amount of (a) a compound selected from the group consisting of water soluble metaphosphates, pyrophosphates or polyphosphates of sodium, potassium, cesium, rhobidium, or ammonium, and amino tri(methylene phosphonic acid); and (b) an anionic water soluble polyelectrolyte selected from the group consisting of homopolymers of acrylic acid, homopolymers of methacrylic acid, copolymers of acrylic acid and methacrylic acid, copolymers of acrylica acid and 2-acrylamido-2-methyl propyl sulfonic acid, copolymers of methacrylic acid and 2-acrylamido-2-methyl propyl sulfonic acid, copolymers of acrylic acid and 2-hydroxypropyl acrylate, and copolymers of methacrylic acid and 2-hdroxypropyl acrylate wherein the ratio of component (a) to component (b) ranges from 10:1 to 1:10 by weight, and wherein the pH of said aqueous system ranges from about 4.0 to 6.0.

4,575,426

METHOD AND APPARATUS EMPLOYING OLEOPHILIC BRUSHES FOR OIL SPILL CLEAN-UP

Lee A. Littlejohn, Houston; Keith F. Kruk, Sugar Land; Robert E. Williams, and Thomas F. Bailey, both of Houston, Tex., assignors to Exxon Production Research Co., Houston, Tex.

Filed Jun. 19, 1984, Ser. No. 622,326
Int. Cl.⁴ E02B *15/04*
U.S. Cl. 210—671 **26 Claims**



23. A method for removing oil from a surface that is not oleophilic, where such surface is a body of water, a subtidal seafloor, a riverbed, a shoreline, or a beach, comprising:
a. sweeping such surface with flexible, oleophilic bristles such that said oil is adsorbed on said bristles and drawn into the interstitial spaces between said bristles, and said bristles comprise at least one brush so that said sweeping of said surface may be easily controlled, and the removal of said oil thereby will be continuous and even without leaving behind streaks of said oil;
b. removing said oil from said bristles and said interstitial spaces between said bristles by a means consisting essentially of suction; and
c. depositing said oil in a collection tank.

4,575,427

PROCEDURE FOR THE TREATMENT OF INDUSTRIAL RESIDUAL SLUDGE

Vicente Ysern de Arce, and Giovanni Crosti Soldatti, both of Barcelona, Spain, assignors to Gabinete International Consulting, S.A., Barcelona, Spain

Filed Mar. 14, 1984, Ser. No. 590,272
Claims priority, application Spain, Mar. 15, 1983, 520914
Int. Cl.⁴ C02F *1/22*
U.S. Cl. 210—751 **15 Claims**

1. A process for treating resinous paint sludge residue resulting from a spray-gun painting process to produce a waterproof granulate whose particles have irregular, spongy shapes, said process comprising the successive steps of:
(1) collecting from a spray-gun painting process a paint sludge containing resinous paint residue as a solid component together with organic solvents and water as the liquid component, and removing at least a portion of the liquid component to produce a resinous paint residue agglomerate;
(2) dividing the resinous paint residue agglomerate into blocks of predetermined dimensions;
(3) freezing the blocks produced in step (2) to a temperature below 0° C. thereby hardening and embrittling the residue;

(4) crushing the hardened and embrittled blocks of step (3) to produce residue particles of a predetermined size;
(5) measuring the acidity or alkalinity of the residue particles and treating the particles as required to neutralize same; and
(6) completely drying the neutralized residue particles to complete polymerization of the paint resin thereby producing a waterproof granulate whose particles have irregular, spongy shapes.

4,575,428

INVERT EMULSION DRILLING FLUID COMPRISING OLIGAMIDE COMPOSITION

Dennis K. Clapper; Alphonse C. Perricone, both of Houston, and Darrell P. Salisbury, Sugarland, all of Tex., assignors to Milchem Incorporated, Houston, Tex.

Filed May 10, 1984, Ser. No. 609,025
Int. Cl.[4] C09K 7/06
U.S. Cl. 252—8.5 P 16 Claims

1. A water-in-oil emulsion fluid for use in the drilling, completion or workover of a subterranean well comprising:
(1) a liquid hydrocarbon base;
(2) an aqueous phase; and
(3) a surfactant, said surfactant comprising: an oligamide prepared by reacting from between about 20 mole percent and about 35 mole percent of a polyalkylene polyamine having two or more alkylene groups separated by nitrogen atoms, and from between about 30 mole percent and about 70 mole percent of a fatty acid having from between about 6 to about 20 carbon atoms therein, said polyamine and fatty acid being reacted to form a diamide intermediate product, said diamide intermediate product being further reacted with from between about 15 mole percent to about 35 mole mole percent of a tricarboxylic acid selected from citric acid and trimellitic acid to form an oligamide, said surfactant, when diluted to 70 percent w/w concentration with a suitable solvent, having an acid value from about 26 to about 46, said surfactant having a total amine value from between about 10 to about 30, the drilling fluid produced with said surfactant having an ES_3 of at least about 400 volts, and an ES_5 greater than the ES_4 thereof, the ES_5 being greater than about 1,000 volts.

4,575,429

COMPOSITE SELF LUBRICATING BEARINGS

Charles B. Jacobson, Yardley, Pa., assignor to Garlock Bearings, Inc., Thorofare, N.J.

Filed Dec. 4, 1984, Ser. No. 677,828
Int. Cl.[4] F16C 33/12
U.S. Cl. 252—12 19 Claims

1. A self lubricating, composite bearing having improved resistance to stripping and improved wear resistance comprising:
a metal backing;
a porous layer on the backing;
a sintered lining on and impregnated into the porous layer, said lining formed from a blend comprising by weight:
a major proportion of lead or a lubricating alloy of lead;
a minor proportion of perfluorinated polymer selected from the group consisting of homopolymers and copolymers of polytetrafluoroethylene;
from about 3 to about 15% of a particulate thermoplastic polymer having a mean particle size less than about 20 microns; and
from about 1 to about 5% of clay;
said thermoplastic polymer being selected to improve the adherence of the sintered lining to the porous layer, the thermoplastic polymer being substantially undegraded when sintered in the blend to form the lining.

4,575,430

SEPARATING-AND-LUBRICATING AGENT IN SOLID FORM

Jacques Périard, Sins; Alain Cron, Hildisrieden, and Francis Fischer, Sins, all of Switzerland, assignors to Lonza Ltd., Gampel/Valais, Switzerland

Filed Jan. 19, 1984, Ser. No. 572,073
Claims priority, application Switzerland, Feb. 18, 1983, 934/83
Int. Cl.[4] C10M 141/04
U.S. Cl. 252—12.6 15 Claims

1. Separating-and-lubricating agent in solid form for warm metal shaping, especially for hot-sheet or profile rolling, comprising an agent containing (a) at least one thermoplastic polymer and/or copolymer, (b) a lubricant for synthetic substances, (c) a wetting agent, (d) an adhesive agent, (e) a surface modification agent, (f) fibers and (g) a solid lubricant, the softening point of said agent being between 30° and 250° C., the melting point of said agent being between 30° and 300° C., the shore-D-hardness of said agent at 20° C. being between 20 and 80, the cold pressure strength of said agent being between 5 and 500 kg/cm^2, the thermoplastic polymer and/or copolymer being present in an amount between 1 and 90 weight percent, the lubricant being present in an amount between 1 and 70 weight percent, the wetting agent being present in an amount between an affective amount and up to 10 weight percent, the adhesive agent being present in an amount between an effective amount and up to 70 weight percent, the surface modification agent being present in an amount between an effective amount and up to 2 weight percent, the fibers being present in an amount between an effective amount and up to 5 weight percent and the solid lubricant being present in an amount between an effective amount and up to 90 weight percent.

4,575,431

LUBRICANT COMPOSITION CONTAINING A MIXTURE OF NEUTRALIZED PHOSPHATES

Christopher G. Salentine, Mill Valley, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 615,508, May 30, 1984, abandoned. This application Jul. 31, 1985, Ser. No. 761,210
Int. Cl.[4] C10M 137/10, 137/04
U.S. Cl. 252—32.7 E 18 Claims

1. A lubricating oil additive comprising a mixture of phosphates, said phosphates being essentially free of monothiophosphates and comprising:
(a) dihydrocarbyl hydrogen dithiophosphates; and
(b) a sulfur-free mixture of hydrocarbyl dihydrogen phosphates and dihydrocarbyl hydrogen phosphates, said composition being at least 50% neutralized by a hydrocarbyl amine having 10 to 30 carbons in said hydrocarbyl group.

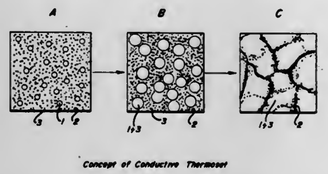
4,575,432

CONDUCTIVE THERMOSETTING COMPOSITIONS AND PROCESS FOR USING SAME

Shiow C. Lin, Ellicott City, and Craig S. Barber, Columbia, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed Jul. 9, 1984, Ser. No. 629,085
Int. Cl.[4] H01B 1/06
U.S. Cl. 252—511 4 Claims

1. A conductive, thermosettable, reactive plastisol dispersion composition comprising an admixture of
(a) particles of a polymeric material crosslinked to at least its gell point and swellable at its plasticization temperature,
(b) at least one liquid, reactive plasticizer for (a), and
(c) particles of a heat or electrically conductive material, the weight ratio of (a):(b) being 0.0001:99.9999 to 70:30 with (c) being present in an amount in the range 1 to 80% by



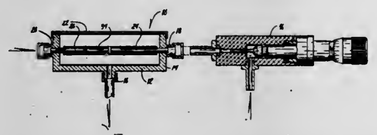
weight of the total conductive, thermosettable, reactive plastisol dispersion composition.

4,575,433

METHOD OF GENERATING CHEMILUMINESCENT LIGHT

Stanford R. Spurlin, and Edward S. Yeung, both of Ames, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Division of Ser. No. 462,532, Jan. 31, 1983. This application Jan. 3, 1985, Ser. No. 688,553
Int. Cl.[4] C09K 11/07, 11/56, 11/61; F21K 2/06
U.S. Cl. 252—700 3 Claims



1. A method of generating chemiluminescent light comprising,
reacting a gaseous sulfide containing compound selected from the group consisting of hydrogen sulfide and methyl mercaptan with gaseous chlorine dioxide, at a pressure of 40 torr, or lower to provide a single photon of chemiluminescent light for every two molecules of sulfide containing compound.

4,575,434

PROCESS FOR THE SEPARATION OF AMIDES FROM NITRILES

Dieter Frank, Naperville; Lincoln D. Metcalfe, La Grange, and John Y. G. Park, Naperville, all of Ill., assignors to Akzona Incorporated, Enka, N.C.

Filed Sep. 28, 1984, Ser. No. 656,083
Int. Cl.[4] C07C 120/08, 121/16
U.S. Cl. 558—435 15 Claims

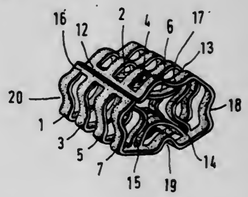
1. A process for the removal of long-chain aliphatic amides from a solution of said amides and fatty acid derived nitriles comprising forming a reaction mixture comprising said solution, a layered mineral comprising an aluminum silicate having exchangeable alkaline or alkaline earth cations on the surfaces of said layers and an acid having an acid strength sufficient to protonate said amides at conditions including a temperature of from about 30° C. to about 100° C., a time from about 30 minutes to about 4 hours and a water content in said reaction mixture of less than about 0.5 wt. % for substantially all of said time, the protonated amides adhering to said surface of said layers during said time, the solublity of the salt of said acid and exchangeable cation at said conditions being such that there will be a precipitation of said salt from said reaction mixture, and separating said nitriles having a reduced content of said amides from said reaction mixture.

4,575,435

PACKING UNIT FOR MASS-TRANSFER COLUMNS

Reinhard Kühl, Niederrahr, Fed. Rep. of Germany, assignor to Vereinigte Füllkörper-Fabriken GmbH & Co., Ransbach-Baumbach, Fed. Rep. of Germany

Filed Sep. 12, 1984, Ser. No. 649,689
Claims priority, application Fed. Rep. of Germany, Oct. 25, 1983, 8330573
Int. Cl.[4] B01F 3/04
U.S. Cl. 261—94 14 Claims



1. Packing unit for mass-transfer columns comprising a basic flat member with several parallel and adjacent slits terminating short of the border on each side; sections between ends and said slits and between the slits themselves bent out in opposing curves; said basic member comprising a plurality of adjacent strips, facing uncut borders between two adjacent strips being connected and their free borders being joined.

4,575,436

PRODUCTION OF NUCLEAR FUEL PRODUCTS

Richard I. Larson, Wilmington, N.C., and William E. Smith, Schenectady, N.Y., assignors to General Electric Company, San Jose, Calif.

Continuation of Ser. No. 410,978, Aug. 24, 1982, abandoned. This application Jul. 2, 1984, Ser. No. 627,256
Int. Cl.[4] G21C 3/62, 21/02
U.S. Cl. 264—0.5 8 Claims

1. A method of producing fissionable nuclear fuel pellets containing uranium dioxide, consisting essentially of the steps of:
(a) admixing particulate uranium dioxide nuclear fuel with a fugitive binder comprising a combination of about 1 part by weight of high molecular weight acrylic acid polymer having an average molecular weight of at least about 400,000 and about 4 to about 8 parts by weight of ammonium bicarbonate;
(b) forming the resultant admixture by pressing into a coherent compact; and
(c) sintering the resultant admixture of said particulate uranium dioxide with acrylic acid polymer and ammonium bicarbonate fugitive binder formed into a compact to expel binder material and integrate the particulate uranium dioxide nuclear fuel into a uniform body.

4,575,437

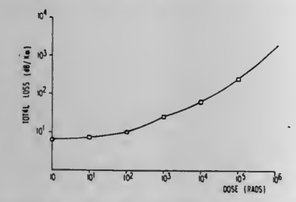
PROCESS FOR PRODUCING OPTICAL FIBER FOR OPTICAL TRANSMISSION

Keiichi Kojima, and Keiji Ueno, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jan. 14, 1985, Ser. No. 691,038
Claims priority, application Japan, Jan. 13, 1984, 59-5398
Int. Cl.[4] G02B 6/22; B29D 11/00
U.S. Cl. 264—1.4 8 Claims

1. A process for producing an optical fiber for optical transmission, which comprises forming a primary coating layer on a glass fiber, forming a secondary coating layer comprising a polyamide resin composition or polyester elastomer composition containing a polyfunctional monomer on the primary

coating layer, and crosslinking the secondary coating layer by irradiation with electron rays having a maximum transmittance



thickness smaller than the total thickness of the primary coating layer and the secondary coating layer.

4,575,438

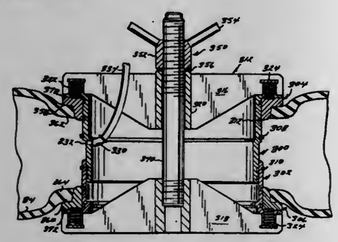
TUBELESS TIRE CURING METHOD

Louis T. Fike, Hacienda Heights, and Kenneth A. Green, Ontario, both of Calif., assignors to Ohio Machine Company, Inc., Los Angeles, Calif.

Division of Ser. No. 208,392, Nov. 19, 1980, which is a continuation-in-part of Ser. No. 84,646, Oct. 15, 1979, abandoned, which is a continuation-in-part of Ser. No. 903,900, May 8, 1978, abandoned. This application Dec. 24, 1984, Ser. No. 685,757

Int. Cl.⁴ B29H *5/04*

U.S. Cl. 264—36 **2 Claims**



1. A method of curing tubeless tires in a mold without requiring a tube or flap, said method utilizing upper and lower radially extending sealing rim flanges mounted on upper and lower sleeve members that are relatively vertically movable, said upper and lower sleeve members having fixed telescopically interfitting tubular skirt means, said method including the steps of:

raising the upper sleeve member free of the lower sleeve member;

positioning a tire to be cured upon the lower sleeve member, with the lower bead of said tire engaged with the sealing rim flange of said lower sleeve member;

lowering the upper sleeve member towards the lower sleeve member until said skirt portions are in telescopic engagement, with the upper sealing rim flange engaging the upper bead of said tire and the lower sealing rim flange engaging the lower bead of said tire with sufficient force to effect an initial sealing action between said beads and said sealing rim flanges;

locking said sleeve members against relative axial movement with the axial distance of separation of said upper and lower sleeve members being adjustably limited to thereby control the bead-to-bead spacing of the tire being cured;

inflating said tire whereby the beads thereof effect relative separation of said sealing rim flanges, with solely the resistance of the beads against separating continuing to maintain a seal between said sealing rim flanges and said beads, while sealing the interior of the tubular skirt means with respect to the interior of said tire; and

curing said tire within a mold.

4,575,439

METHOD OF PRODUCING A REFRACTORY BRICK

Ullrich Hintzen, Taunusstein, and Michael Neuenburg, Hallgarten, both of Fed. Rep. of Germany, assignors to Didier-Werke AG, Wiesbaden, Fed. Rep. of Germany

Filed Jul. 6, 1984, Ser. No. 628,626

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1983, 3326270

Int. Cl.⁴ C04B *33/04, 35/04, 35/48*

U.S. Cl. 264—43 **11 Claims**

1. A method of producing a refractory brick which comprises:

providing a foamed, aqueous mixture containing 1–10% of hydrated aluminumhydroxychloride, 0.1–3% of at least one first refractory material selected from the group consisting of sintered magnesia and caustic-calcined magnesia, and 87–97% of a granular second refractory material, said amounts being based on the combined weight of said aluminumhydroxychloride and first and second refractory materials, said foamed, aqueous mixture being prepared by mixing a first mixture containing said hydrated aluminumhydroxychloride, said second refractory material and water, with a second mixture containing said first refractory material, a foaming agent and water;

introducing said foamed, aqueous mixture into a mold and allowing said mixture to set;

removing the resultant molded article from said mold and drying said molded article; and

firing the dried article to produce a refractory brick.

4,575,440

PROCESS FOR THE PREPARATION OF HOMOGENEOUS METAL OXIDE VARISTORS

Frank C. Palilla, Framingham, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Feb. 21, 1984, Ser. No. 581,927

Int. Cl.⁴ C04B *33/34;* **H01B** *1/06*

U.S. Cl. 264—61 **5 Claims**

1. A process for making a homogeneous metal oxide varistor power comprising the steps of:

(A) dissolving in an aqueous solvent from about 6.9 w/o to about 33.0 w/o of soluble compounds, which are soluble in water or acid, to form an aqueous solution, said soluble compounds containing metals which are desired in a homogeneous metal oxide varistor powder, said metals being selected from the group consisting of Al, B, Bi, Co, Cr, K, Mn, Ni, Pb, Sb and combinations thereof;

(B) mixing from about 68.0 w/o to about 93.2 w/o of insoluble compounds, as a powder, which are not soluble in water or acid, into the aqueous solution of step (A) to form a solution containing a suspension, said insoluble compounds being selected from the group consisting of ZnO, TiO_2 and combinations thereof;

(C) evaporating to dryness the solution containing the suspension from step (B) to form a homogeneous material; and

(D) calcining the homogeneous material from step (C) to an oxide of each metal contained therein at temperatures up to 800° C. to form a homogeneous metal oxide varistor powder.

4,575,441

EXHAUST GAS SENSOR AND PROCESS FOR PRODUCING SAME

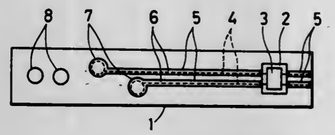
Nobuaki Murakami, Nishinomiya; Katsuyuki Tanaka, Suita, and Kousuke Ihokura, Takarazuka, all of Japan, assignors to Figaro Engineering Inc., Japan

Division of Ser. No. 482,239, Apr. 5, 1983, Pat. No. 4,459,577. This application Mar. 8, 1984, Ser. No. 587,530

Claims priority, application Japan, Apr. 17, 1982, 57-64209

Int. Cl.⁴ H01L *7/00*

U.S. Cl. 264—61 **10 Claims**



1. A process for producing combustion gas sensor elements, which comprise:

heating a composition including at least one member of the group consisting of tin and tin compounds in a non-reducing atmosphere to produce SnO_2 crystals having a d, wherein d is the mean particle size, of approximately 500–3200 Å and an S, wherein S is the surface area per unit mass, of approximately 1–8 m^2/g;

pulverizing the SnO_2 into a ceramic element; and,

molding the pulverized SnO_2 into a ceramic element; and

providing the ceramic element with means for connection to an electric circuit.

4,575,442

MAKING HEART VALVES

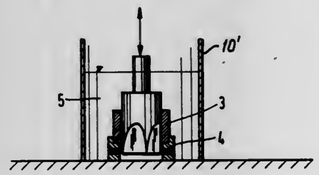
Ewald Hennig, Hirschhornerweg 17, D-1000 Berlin 37, Fed. Rep. of Germany; Emil S. Buecherl, and Friedrich Zartnack, both of Berlin, Fed. Rep. of Germany, assignors to Ewald Hennig, Berlin, Fed. Rep. of Germany

Filed Dec. 23, 1983, Ser. No. 565,142

Claims priority, application Fed. Rep. of Germany, Dec. 27, 1982, 3248560

Int. Cl.⁴ B29C *13/04*

U.S. Cl. 264—135 **4 Claims**



1. Method of making artificial heart valves, each being comprised of a case or stint and one or two leaf-like flap vanes comprising the steps of

providing a core having surfaces corresponding to the individual flap vanes;

slowly dipping the core into a high viscosity polymer solution;

retaining the core therein and withdrawing it slowly therefrom so that a film forms on the core surfaces;

drying the thus formed polymer film to define a coating;

repeating the three previous steps at least once to form a plurality of coatings;

providing a valve case of annular configuration having an interior diameter slightly larger than the diameter of said core;

dipping said valve case into a low viscosity polymer solution;

inserting the coated core into the valve case while in said low viscosity polymer solution whereby solution in the interior of the valve case flows out of the interior of the valve case;

retaining the core together with the valve case in said low polymer solution for a short period of time sufficient for obtaining a common coating;

slowly withdrawing the core and the valve case from the low-viscosity polymer solution;

drying the coating formed in the low viscosity polymer solution; and

removing the core from its plurality of coatings and the valve case, the previously made plurality of coatings and the common coating remaining adhered to and integral with the valve case.

4,575,443

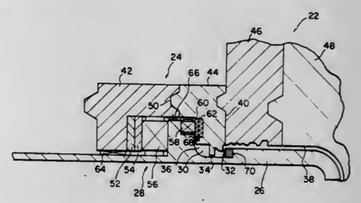
ROTARY INJECTION MOLDING SYSTEM FOR SUPPRESSING POLYMER FLASH

Bruce A. Moen, Golden, and Roger A. Hahn, Arvada, both of Colo., assignors to Adolph Coors Company, Golden, Colo.

Filed Dec. 21, 1984, Ser. No. 684,673

Int. Cl.⁴ B29C *17/12;* **B29D** *7/10*

U.S. Cl. 264—161 **39 Claims**



1. A system for preventing flash buildup on mating surfaces of a rotary molding machine comprising:

mandrel housing means having a first mating interface;

mandrel means rotatably supported by said mandrel housing means;

molding cavity means for forming a second mating surface in said molding enclosure and having a second mating surface which is adapted to abut with said first mating surface of said mandrel housing means to form a stationary mating interface therebetween which is capable of venting gases and suppressing flash during injection molding;

coupling means for providing relative rotation between said mandrel means and said mandrel housing means and a predetermined separation therebetween which functions as a flash gap;

reservoir means disposed between said mandrel means and said mandrel housing means for receiving and containing flash emitted by said flash gap.

4,575,444

FABRICATION OF FLEXIBLE PANEL WITH REINFORCING RIBS

Joseph R. Paradis, 60 Plymouth Rd., Holden, Mass. 01520

Filed Apr. 21, 1982, Ser. No. 370,556

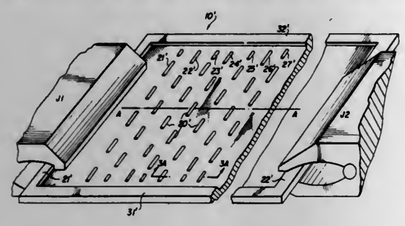
Int. Cl.⁴ B29C *17/02;* **B29D** *7/24*

U.S. Cl. 264—291 **8 Claims**

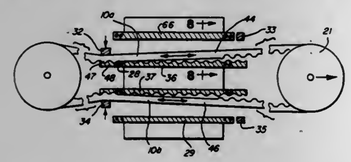
1. The method of fabricating a flexible reinforced panel, which comprises the steps of:

(a) molding the panel from a stretch reorientable plastics mate-

rial with a plurality of segmented ribs thereon in linear alignment; and
(b) stretching the molded panel along only one axis at a right angle to the linear alignment of said segmented ribs to elongate said panel and draw said segmented ribs closer to one another in said linear alignment;
whereby the drawing together of said segmented ribs provides reinforcement for said flexible panel.

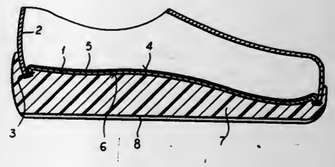


4,575,445
METHOD OF MANUFACTURE OF LONG COGGED V-BELTS
Kunihiro Fujita, Nishinomiya; Hideaki Tanaka, Kobe, and Toshiaki Maebara, Kasugai, all of Japan, assignors to Mitsubishi Belting Ltd., Kobe, Japan
Filed Dec. 17, 1984, Ser. No. 682,429
Claims priority, application Japan, Dec. 15, 1983, 57-236538
Int. Cl.[4] B29H *7/22*
U.S. Cl. 264—291 **24 Claims**



1. The method of forming a cogged belt structure comprising the steps of:
(a) extending a continuous looped vulcanizable belt preform element about a pair of spaced support members;
(b) press-forming a first preselected length portion of the element disposed between a pair of press-forming members to form a first longitudinally extending series of cogs therein;
(c) vulcanizing the press-formed portion;
(d) advancing the belt to bring a second, similar length portion of the element extending from said first portion to between said press-forming members;
(e) press-forming said second length portion to form a second longitudinally extending series of cogs therein continuing from said first series;
(f) vulcanizing the second press-formed portion;
(g) repeating steps (d), (e) and (f) if necessary until a final unformed portion of the belt extending from the last formed series of cogs and disposed between said support members has a length of approximately 60 to 85% of said preselected length;
(h) clamping the trailing end cogs of said last formed series of cogs;
(i) longitudinally stretching said final unformed portion in a direction away from the clamped cogs to cause the cumulative length of the clamped trailing end cogs, the final unformed portion, and a preselected number of cogs adjacent the trailing end of said final deformed portion to have a length substantially equal to said preselected length;
(j) press-forming said stretched final unformed portion to form a final longitudinally extending series of cogs therein to define a continuous series of substantially uniformly spaced cogs along the entire length of said looped element; and
(k) vulcanizing the said final series of cogs.

4,575,446
PROCESS FOR PRODUCING AN INSOLE FOR SHOES
Helmut Schaefer, Winzlerstrasse 114, D-6780 Pirmasens, Fed. Rep. of Germany
Division of Ser. No. 526,112, Aug. 24, 1983, Pat. No. 4,524,529. This application Jan. 25, 1985, Ser. No. 695,095
Claims priority, application Fed. Rep. of Germany, Aug. 27, 1982, 3231971
Int. Cl.[4] A43B *23/16*; B05D *1/00*
U.S. Cl. 264—45.4 **8 Claims**

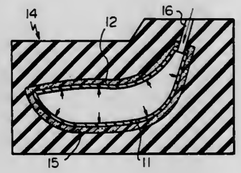


1. Process for producing an insole for shoes, comprising the steps of:
(a) providing a fleece, essentially consisting of synthetic fibers, with a reinforcing insert;
(b) impregnating said fleece with a dispersion or emulsion containing compact particles, containing an inflating agent, of a vinylidene chloride copolymer;
(c) heating the thus impregnated fleece to a temperature of more than 75° C., hollow microspheres being thereby formed in situ;
(d) connecting the thus formed insole with the shoe upper; and
(e) applying to the bottom side of said insole, by foaming operation, a polyurethane-forming material forming the running sole and/or the foot fed of the shoe.

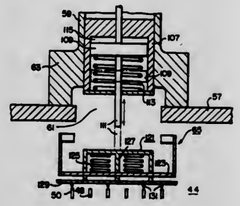
4,575,447
METHOD FOR PRODUCING A WOOD-TYPE GOLF CLUB HEAD
Yoshinori Hariguchi, Shizuoka, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Japan
Continuation-in-part of Ser. No. 516,800, Jul. 25, 1983, abandoned. This application Nov. 15, 1983, Ser. No. 551,512
Claims priority, application Japan, Jul. 29, 1982, 57-132746
Int. Cl.[4] B29C *49/02*; B29D *9/00*
U.S. Cl. 264—516 **7 Claims**

1. Improved method for producing a wood-type golf club head of predetermined shape comprising
providing a mould having cavity walls defining a predetermined shape,
forming a cavitious unfinished core from thermoplastic synthetic resin, said unfinished core having an initial shape conforming substantially to said predetermined shape of said cavity walls,
covering said unfinished core with an unfinished shell made of fiber reinforced plastics while maintaining said shape of said unfinished core to form an unfinished club head,

placing said unfinished club head within said mould, and
subjecting said unfinished club head within said mould to heat pressing at a temperature to cause softening thereof and to achieve inflation of said unfinished core by internal pressure within said unfinished core during said heat pressing so as to conform the shape of said unfinished club head to said predetermined shape defined by said cavity walls.

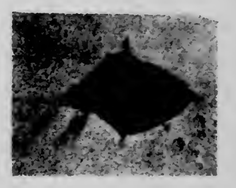


4,575,448
MODERATION OF NEUTRON ENERGY
George R. Marlatt, Monroeville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Mar. 11, 1982, Ser. No. 357,237
The portion of the term of this patent subsequent to Feb. 1, 2000, has been disclaimed.
Int. Cl.[4] G21C *7/26*
U.S. Cl. 376—209 **7 Claims**



1. A nuclear reactor system having a nuclear reactor having a core including fuel assemblies, means for transmitting through said core a coolant, said coolant having a predetermined neutron-energy moderating property, a plurality of sealed tubes in said core, each said tube containing a material having a different neutron-energy moderating property than said coolant, means, when actuated, to engage at least certain of said tubes, for opening said certain of said tubes to permit the coolant to replace said material in said tubes thereby to change the energy spectrum of the neutrons in said reactor, hydraulic means, connected to said opening means, for actuating said opening means to engage said certain of said tubes to open said tubes, and means, external to the reactor, connected to said hydraulic means for controlling the actuation of said opening means, said opening means being so set with reference to said tubes that only certain of said tubes are opened at any time as the opening means is advanced towards said tubes by said hydraulic means.

4,575,449
METALLURGICAL PROCESS
Roy C. Lueth, St. Clair, Mich., assignor to Ultra-Temp Corporation, Mt. Clemens, Mich.
Continuation-in-part of Ser. No. 375,681, May 6, 1982, Pat. No. 4,431,605. This application Sep. 23, 1983, Ser. No. 535,278
The portion of the term of this patent subsequent to Feb. 14, 2001, has been disclaimed.
Int. Cl.[4] B22F *3/00*
U.S. Cl. 419—26 **6 Claims**



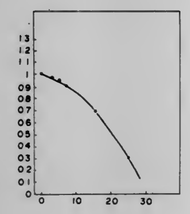
1. A method for densifying previously sintered parts containing internal voids and constructed from powdered metals, ceramics and binder, comprising the steps of:
placing said parts in a pressurizable chamber,
heating said parts above the liquid phase temperature of the parts,
applying a pressure in an amount below the capillary pressure imposed on molten binder in a direction away from the part voids and above the pressure necessary to physically collapse the part structure inwardly to said parts for a predetermined period of time while maintaining said parts above said liquid phase temperature, said applying step comprising the step of introducing a sufficient amount of a gas to said chamber to create said pressure.

4,575,450
PROCESS FOR OBTAINING EXTRUDED SEMIFINISHED PRODUCTS FROM HIGH RESISTANCE ALUMINUM ALLOY POWDER
Jean Meunier, Grenoble, France, assignor to Pechiney, France
Filed Jan. 12, 1984, Ser. No. 570,257
Claims priority, application France, Jul. 21, 1983, 83 12381
Int. Cl.[4] B22F *1/00*; C22F *1/10*
U.S. Cl. 419—41 **14 Claims**



1. A process for producing extruded semi-finished products from a high resistance aluminum alloy powder which comprises:
(a) hot degassing said powder, produced by atomization in an inert gas, in a jacket of aluminum alloy which is capable of deformation during extrusion, at a pressure of less than 1×10^{-3} torr and at a temperature of between 350° and 500° C.,
(b) sealing said jacket in an air-tight manner,
(c) directly subjecting the sealed jacket to hot inverted-extrusion at a temperature betwen 350° and 500° C. to form a semi-finished product and
(d) heat treating the formed semi-finished product.

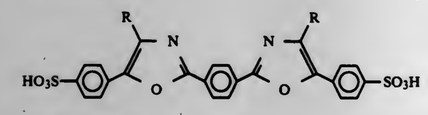
4,575,451
CONTACT MATERIAL FOR VACUUM CIRCUIT BREAKER
Eizo Naya, Ibaragi, and Mitsuhiro Okumura, Sakai, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 16, 1983, Ser. No. 552,442
Claims priority, application Japan, Nov. 16, 1982, 57-202530; Apr. 29, 1983, 58-76720; Apr. 29, 1983, 58-76721; Apr. 29, 1983, 58-76722
Int. Cl.⁴ C22C *9/00, 30/02*
U.S. Cl. 420—489 **16 Claims**



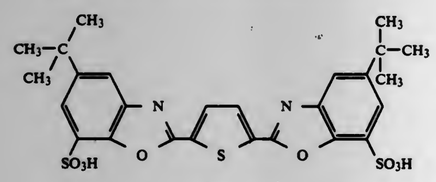
1. A contact material for a vacuum circuit breaker, which consists essentially of:
copper as the basic component, and, as the other component, from 5 to 35% by weight of chromium and from 1% to 40% by weight of niobium, the total quantity of chromium and niobium in said contact material being at least 10% by weight.

4,575,452
KIT FOR SILVER STAINING PROTEINS AND NUCLEIC ACIDS
Duk H. Lee, Wellesley, and Thomas J. O'Connell, III, Quincy, both of Mass., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Sep. 21, 1984, Ser. No. 652,890
Int. Cl.⁴ G01N *33/68*
U.S. Cl. 422—61 **3 Claims**

1. A kit for the optical detection of proteins and nucleic acids in a matrix, comprising:
(a) a fixer comprising a compound selected from the group consisting of

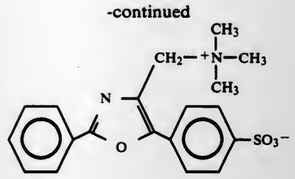


wherein R is H, CH_3, C_2H_5 or $CH_2N^+(CH_3)_3$,



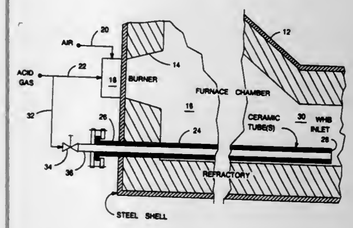
and

-continued



(b) a sensitizer selected from the group consisting of sodium sulfide, thiourea, dithiothreitol and sodium thiosulfate;
(c) a source of silver ions;
(d) a developer capable of reducing silver ions to metallic silver; and
(e) a stopper capable of stopping reduction of silver ions to metallic silver.

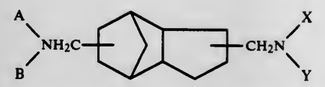
4,575,453
MODIFIED CLAUS FURNACE
Robert L. Reed, Houston, Tex., assignor to Amoco Corporation, Chicago, Ill.
Filed Nov. 13, 1984, Ser. No. 670,708
Int. Cl.⁴ C01B *17/04*; B01J *8/04*
U.S. Cl. 422—149 **5 Claims**



1. A Claus thermal conversion furnace comprising a primary furnace chamber, a burner in said primary furnace chamber, an oxidant containing gas supply inlet connected to said burner, a hydrogen sulfide containing gas supply conduit connected to said burner, an outlet extending from said furnace, a secondary reaction chamber in heat but not gas exchange relationship with said primary furnace chamber, said secondary reaction chamber extending through the length of said primary furnace chamber to a point in the outlet extending from said furnace, a hydrogen sulfide decomposing catalyst in said secondary reacton chamber, a hydrogen sulfide containing gas supply conduit connected to said secondary reaction chamber.

4,575,454
METAL ION CONTROL AGENTS BASED ON DICYCLOPENTADIENE DERIVATIVES
David A. Wilson, Richwood, Tex., assignor to The Dow Chemical Company, Midland, Mich.
Division of Ser. No. 486,122, Apr. 18, 1983, Pat. No. 4,500,470. This application May 21, 1984, Ser. No. 612,109
Int. Cl.⁴ C02F *5/12*; C02B *5/06*; C01G *1/00*
U.S. Cl. 423—139 **9 Claims**

1. A process for inhibiting the precipitation of alkaline earth metal ions from their aqueous solutions which comprises adding to said solutions in less than stoichiometric amounts, based on the metal ions present, a compound of the formula



wherein substituents A, B, X and Y are each independently selected from radicals including hydrogen, hydroxyalkyl (wherein the alkyl group contains 2–6 carbon atoms) phosphonic, sulfonic, hydroxyethyl- and hydroxypropylsulfonic methylenephosphonic, methylene-, ethylene- and propylene-sulfonic, alkylcarboxylic acid radicals (having 2–4 carbon atoms) and the alkali or alkaline earth metal, ammonia and amine salts thereof and wherein at least one of said substituents is a methylenephosphonic acid radical or a salt thereof.

4,575,455
PROCESS FOR REMOVING HYDROGEN SULFIDE WITH REDUCED FOULING
Richard F. Miller, Humble, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.
Filed Nov. 23, 1984, Ser. No. 674,206
Int. Cl.⁴ C01B *17/16, 31/20*
U.S. Cl. 423—228 **9 Claims**

1. In a gas scrubbing operation wherein a mixture of gases containing hydrogen sulfide is scrubbed with an alkanolamine gas scrubbing medium to remove hydrogen sulfide from the mixture, the improvement which comprises reducing the fouling of apparatus used in the scrubbing operation by adding to the scrubbing medium an antifoulant effective amount of hydroxylamine compound.

4,575,456
GEL DENTIFRICE OF DESIRABLE CONSISTENCY
Harry Hayes, Warrington, England, assignor to Colgate-Palmolive Company, New York, N.Y.
Filed Nov. 30, 1984, Ser. No. 676,751
Int. Cl.⁴ A61K *7/16*
U.S. Cl. 424—49 **3 Claims**

1. A phytate salt free gel dentifrice consisting essentially of about 20–90% by weight of liquid vehicle comprising water in amount of about 1–10% by weight of said dentifrice, about 0.05–5% by weight of a gelling agent, about 10–50% by weight of a polishing agent comprising a synthetic precipitated, amorphous silica gel having an average particle size of 1 to 30 microns and
(a) a surface area of 1 to 600 m^2/g,
(b) a pore volume of 0.05 to 0.5 cm^3/g,
(c) a product of surface area (in m^2/g)×pore volume (in cm^3/g) less than or equal to 240,
(d) a calculated pore diameter of 1.5 to 2.5 nm and
(e) a water content of less than 25% by weight; and
about 1–15% by weight of an anticalculus or antiplaque effective antinucleating agent containing at least one phosphonic group.

4,575,457
PERIODONTAL TOOTHPASTE WITH WOUND-HEALING PROPERTIES
Sanford S. Mazarin, Stamford, Conn., assignor to American Home Products Corporation, New York, N.Y.
Filed May 24, 1984, Ser. No. 613,999
Int. Cl.⁴ A61K *7/16, 7/18*
U.S. Cl. 424—52 **4 Claims**

1. A pharmaceutical composition comprising skin respiratory factor (SRF), sodium chloride, and bicarbonate, fluoride, and zinc ions in a suitable toothpaste vehicle, wherein the range of SRF present is from 2700 to 3300 units per oz., total fluoride is present in the range 900 to 1100 ppm, bicarbonate ion is present in the range 13.05 to 20.00% by weight, sodium chloride is present in the range 4.50 to 10.5% by weight and zinc ion is present in the range 0.108 to 0.132% by weight.

4,575,458
MULTICOMPONENT ATTRACTANT FOR ARMYWORM MOTHS
Warren F. Steck; Edward W. Underhill; Melvin D. Chisholm, and Berton K. Bailey, all of Saskatoon, Canada, assignors to Canadian Patents and Development Limited, Ottawa, Canada
Filed Sep. 29, 1982, Ser. No. 427,721
Int. Cl.⁴ A01N *25/00*
U.S. Cl. 424—84 **11 Claims**

1. A multicomponent attractant composition for moths of the armyworm *Pseudaletia unipuncta*, comprising:
(a) (Z)-11-hexadecenyl acetate
(b) (Z)-11-hexadecenol
(c) (Z)-11-hexadecenal and
(d) (Z)-9-tetradecenyl acetate,
in the approximate ranges of proportions by weight:
(a) 10,000
(b) 1–200
(c) 1–50 and
(d) 0.1–2.

4,575,459
TOXOIDS OF ELASTASE OF *PSEUDOMONAS AERUGINOSA* ORIGIN
Yuzuru Homma, Tokyo, and Kazuyuki Morihara, Osaka, both of Japan, assignors to Toho Yakuhin Kogyo Kabushiki Kaisha, Osaka, Japan
Filed Jan. 24, 1985, Ser. No. 694,637
Claims priority, application Japan, Feb. 24, 1984, 59-35061; Feb. 24, 1984, 59-35062
Int. Cl.⁴ C07G *7/00*; A61K *39/40, 39/104*; C12P *21/00*
U.S. Cl. 424—87 **10 Claims**

1. A toxoid of the elastase of *Pseudomonas aeruginosa* origin, which is obtained by treating purified elastase produced from *Pseudomonas aeruginosa*, for inactivating the activity of proteinase naturally existing in the purified elastase, in a buffer solution with a synthetic peptide of chloroacetyl-N-hydroxy-L-leucyl-L-alanylglycinamide represented by the following formula:

$$ClCH_2CO—HO—L—Leu—L—Ala—L—Gly—NH_2,$$

wherein Leu, Ala and Gly express respectively leucine, alanine and glycine, in a proportion of 40–60% by weight of the purified elastase, with subsequent steps of dialysis and lyophilization, said toxoid possessing the following physicochemical properties:
(1) Molecular weight: 20,400, determined by a method of SDS-polyacrylamide gel cataphoresis,
(2) Ultraviolet absorption spectrum: maximum at 230 nm, ($E_1^{280}\%=14.52$, pH 10), minimum at 252 nm,
(3) Isoelectric point: pH 7.0, determined by cataphoresis with an acetate film,
(4) Composition of amino acids: amino acid residues (mol protein) aspartic acid (15.7), threonine (6.9), serine (9.2), glutamic acid (6.3), proline (4.5), glycine (13.5), alanine (11.0), cystine/2 (1.6), valine (6.7), methionine (3.0), isoleucine (3.0), leucine (5.4), tyrosine (8.2), phenylalanine (6.3), lysine (4.4), histidine (2.5), arginine (5.9), and tryptophane (3.0) (Total 117.1 residues),
(5) Color: colorless powders,
(6) Antigen activity: positive, and
(7) Enzymatic activity: negative.

4,575,460
PROCESS FOR PREPARING FARINACEOUS PASTA PRODUCTS

József Alapi, Budapest; László Baldaszti, Gárdony; László Gáspár; Márton Herczegh, both of Martonvásár; István Jávorka, Budapest; Ferenc Kisberk; János Klauser, both of Székesfehérvár; Antal Makk, Budapest, and István Pallos, Székesfehérvár, all of Hungary, assignors to Fejer Megyei Gabonaforgalmi es Malomipari Vallalat, Székesfehérvár; Aranykalasz Mgtsz, Rackeve and MTA Mezogazdasagi Kutato Intezet, Martonvásár, all of, Hungary

Filed Oct. 25, 1983, Ser. No. 545,143
Int. Cl.⁴ A23L *1/16, 1/30*
U.S. Cl. 426—72 **15 Claims**

1. A process for the preparation of a farinaceous pasta product which comprises the steps of:
(a) admixing wheat grist with a waxy hybrid maize grist, said maize grist having a starch fraction containing at least 90% of amylopectin, wherein the maize grist amounts to 5 to 40% by weight of the mixture;
(b) adding water to the mixture formed in step (a);
(c) kneading the mixture formed in step (b) to form a homogeneous mass; and
(d) shaping the homogeneous mass to form the farinaceous pasta product.

4,575,461
EMULSIFYING AND HUMECTANT AGENT, METHOD OF MANUFACTURE AND BAKED PRODUCTS CONTAINING SAME

Robert B. Friedman, Chicago; Isaac R. West, South Holland, both of Ill., and Susan L. Furcsik, Crown Point, Ind., assignors to American Maize-Products Company, Hammond, Ind.

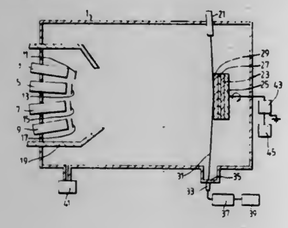
Filed Mar. 26, 1984, Ser. No. 593,679
Int. Cl.⁴ A21D *13/00*; A23L *1/00*
U.S. Cl. 426—549 **21 Claims**

1. A dried particulate additive for baked goods comprising an admixture of about 8 to about 40% by weight fructose, about 45 to about 80% by weight starch hydrolysate having a DE of about 5 to about 36, and about 0.5 to about 20% by weight an emulsifying agent.

4,575,462
METHOD OF GROWING AN ALLOY FILM BY A LAYER-BY-LAYER PROCESS ON A SUBSTRATE, AND A METHOD OF MAKING A SEMICONDUCTOR DEVICE

Peter J. Dobson, Croydon; Charles T. Foxon, Crawley, and James H. Neave, Horsham, all of England, assignors to U.S. Philips Corporation, Tarrytown, N.Y.

Filed Nov. 17, 1983, Ser. No. 552,653
Claims priority, application United Kingdom, Nov. 26, 1982, 8233778
Int. Cl.⁴ C30B *23/02*; H01L *21/203*
U.S. Cl. 427—9 **11 Claims**

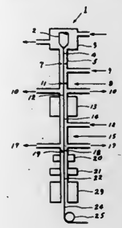


1. A method of growing an alloy film by a layer-by-layer process on a substrate, and determining the growth rate of the alloy film by irradiating the growing alloy film with a beam of electrons and measuring the period of oscillations in the intensity of the stream of electrons diffracted at the growth surface or specularly reflected by the growth surface, or emitted from the growth surface, or of the current flowing to ground through the substrate, which period is equal to the growth time of one monolayer of the alloy on the substrate, characterized in that at least one intermediate film consisting of at least one constituent of the alloy is grown between the substrate and the alloy film, that the growth rate of said intermediate film is determined by irradiating the growing intermediate film with a beam of electrons and measuring the period of oscillations in the intensity of the stream of electrons diffracted at the growth surface, specularly reflected by the growth surface, or emitted from the growth surface, or of the current flowing to ground through the substrate, and that the atomic ratio of constituents present in the alloy is calculated from the growth rates of the alloy film and of the intermediate film(s).

4,575,463
METHOD OF APPLYING HERMETIC COATING ON OPTICAL FIBER

Dipak R. Biswas, and Satyabrata Raychaudhuri, both of Roanoke, Va., assignors to ITT Corporation, New York, N.Y.

Filed Aug. 24, 1984, Ser. No. 644,305
Int. Cl.⁴ G02B *1/10, 6/02, 6/16*
U.S. Cl. 427—163 **14 Claims**



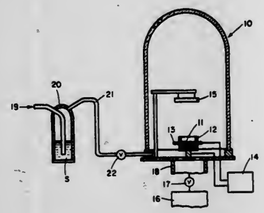
1. A method of forming an optical fiber comprising the steps of:
heating an optical material to an elevated fiber forming temperature;
forming a fiber from the optical material at the elevated forming temperature;
conveying the fiber into an insulated shielding element immediately after formation in order to prevent loss of heat imparted to the fiber from the elevated fiber forming temperature; and
depositing a hermetic coating on the outer surface of the fiber at a temperature within the range of heat retained by the optical fiber.

11. Apparatus for applying coatings on optical fibers comprising:
means for forming an optical fiber from a preform at an elevated fiber forming temperature;
a heat retaining element connected to said forming means and having a central passageway through which the fiber passes, said element being capable of enabling the fiber to retain the heat at its outer surface which was imparted to the fiber from the elevated fiber forming temperature, the fiber temperature after passing through said heat retaining element being sufficient to permit deposition of a hermetic coating thereon using heat obtained from the retained heat of the fiber; and
means for depositing a hermetic coating on the optical fiber from a gaseous medium containing at least one reactant capable of undergoing a chemical conversion into a material of the hermetic coating at the fiber temperature.

4,575,464
METHOD FOR PRODUCING THIN FILMS OF RARE EARTH CHALCOGENIDES

Clark F. Grain, Framingham, Mass., assignor to Arthur D. Little, Inc., Cambridge, Mass.

Filed Jul. 18, 1984, Ser. No. 632,159
Int. Cl.⁴ C23C *16/00*
U.S. Cl. 427—255 **16 Claims**



1. A method for producing thin film chalcogenides of the rare earths comprising
a. reacting a rare earth metal vapor with a non-oxygen containing chalcogenide gas in a hydrogen atmosphere at a pressure of about 1×10^{-4} to about 9×10^{-4} torr thereby forming a gaseous rare earth chalcogenide;
b. depositing on a substrate said gaseous rare earth chalcogenide as a single phase solid thin film, said substrate being at a temperature of about 200° C. to about 400° C.

4,575,465
INK JET TRANSPARENCY

Michael S. Viola, Burlington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 13, 1984, Ser. No. 681,264
Int. Cl.⁴ B41M *5/00*
U.S. Cl. 427—261 **10 Claims**

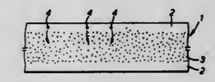
10. The method of ink jet printing which comprises contacting a transparent recording sheet with at least one stream of droplets generated from an ink jet printer, wherein said recording sheet comprises a transparent support carrying a layer comprising up to 50% by weight of a vinylpyridine/vinylbenzyl quaternary salt copolymer and a hydrophilic polymer selected from the group consisting of gelatin, polyvinyl alcohol, and hydroxypropyl alcohol and mixtures thereof.

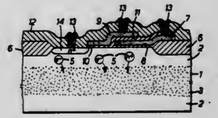
4,575,466
TREATMENT PROCESS FOR SEMICONDUCTOR WAFER

Hiroshi Iwai, Tokyo, and Hideo Ohtsuka, Chigasaki, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 28, 1983, Ser. No. 566,397
Claims priority, application Japan, Dec. 28, 1982, 57/233520
Int. Cl.⁴ B05D *3/02*
U.S. Cl. 427—53.1 **11 Claims**

1. A treatment process for a semiconductor wafer, comprising:
preparing a semiconductor body having one region including impurities at a concentration more than 5×10^{16} cm^{-3} therein;
at least a first radiating step including radiating an energy beam on at least one portion of the one region; and





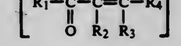
forming a first region including no small defects in a surface region of the one portion and a second region including many defects in an internal region of the one portion.

4,575,467
PROCESS FOR ACTIVATING SUBSTRATES FOR ELECTROLESS METALLIZATION

Kirkor Sirinyan, Bergisch Gladbach; Rudolf Merten, Leverkusen; Henning Giesecke, Cologne, and Gerhard D. Wolf, Dormagen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 27, 1984, Ser. No. 624,882
Claims priority, application Fed. Rep. of Germany, Jul. 8, 1983, 3324767
Int. Cl.⁴ C23C *18/18, 18/28*
U.S. Cl. 427—304 **6 Claims**

1. Process for the activation of substrate surfaces for electroless metallisation by means of solutions or dispersions of complex compounds of Pd, Pt, Ag or Au, said solutions or dispersions having high stability on storage, characterized in that complex compounds of these elements in oxidation stages 1–4 with unsaturated ketones of the formula



wherein, independently of one another,
R_1 denotes a C_1–C_6-alkyl
R_2 and R_3 denote hydrogen or C_1–C_4-alkyl, and R_4 denotes H or C_1–C_6-alkyl.

4,575,468
SEALING-CURING AGENT FOR PROTECTING CONCRETE AGAINST INITIAL DRYING, SHRINKING AND CRACKING

Seiji Sakuta, 3-3-1104, Kamiyoga 2, Setagaya-ku, Tokyo, Japan

Filed Jun. 13, 1984, Ser. No. 620,399
Int. Cl.⁴ B05D *3/02*; C08K *5/12*
U.S. Cl. 427—393.6 **8 Claims**

1. A polymerized solute for incorporating with 60–70 percent by weight of a petroleum-derived solvent to form a sealing-curing composition for protecting concrete against initial drying, shrinkage and consequently forming of cracks in the formed concrete comprising, in proportion by weight, of 12–18 percent of lanolin; 6–9 percent of zinc naphlenate; 2–5 percent of a high molecular weight synthetic resin selected from the group consisting of a styrene resin, an acryl resin, a melamine resin, an alkyd resin and a urethane resin, and 10–20 percent of a petroleum solvent, said solute being polymerized by application of heat at an acceptable temperature prior to incorporation of said solute with the petroleum-derived solvent.

2. A sealing-curing composition wherein the polymerized solute of claim 1 is incorporated in about 60–70 percent by weight of a petroleum solvent.

6. The method of protecting a formed concrete structure against initial drying, shrinking and consequently forming of cracks in the formed structure and to provide a sealing and curing of the formed structure comprising pouring the concrete to form the desired structure, applying the composition of claim 3 to the wet concrete surface of the formed structure and permitting the treated concrete structure to be cured, said polymer solute of said composition will penetrate and fill voids formed in said concrete structure during the curing thereof.

4,575,469

POLYMERIC-COATED FABRIC LAYER AND PRODUCT UTILIZING THE LAYER

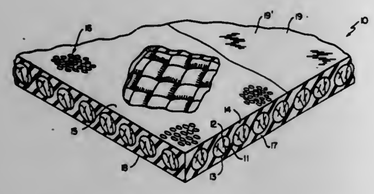
Delmar D. Long, Rock Hill, S.C., and John F. Anderson, Jr., Springfield, Mo., assignors to Dayco Corporation, Dayton, Ohio

Division of Ser. No. 482,365, Apr. 5, 1983, Pat. No. 4,520,038. This application Apr. 1, 1985, Ser. No. 718,626

The portion of the term of this patent subsequent to May 28, 2002, has been disclaimed.

Int. Cl.⁴ B32B *3/02*

U.S. Cl. 428—86 **5 Claims**



1. In a belt construction comprising a polymeric belt body having a surface and a polymeric-coated fabric layer means having an outer surface secured to said surface of said belt body, said fabric layer means comprising a fabric layer having opposed sides and a main layer of polymeric material secured to one of said sides of said fabric layer and having an outer surface facing away from said one side of said fabric layer, said outer surface of said layer means being disposed against said surface of said belt body to provide an assembly thereof and having been bonded to said surface of said belt body by a heat curing operation on said assembly, the improvement comprising a gauge building layer of fibers secured to said one side of said fabric layer with another layer of polymeric material that was disposed on said one side before said layer of fibers was disposed thereon whereby said gauge building layer of fibers has a plurality of voids therein, said voids of said gauge building layer of fibers having been filled with said polymeric material of said main layer in a liquid form thereof to form said main layer.

4,575,470

CHEMICALLY BONDED POLYOLEFIN LAMINATES

Stoyko C. Fakirov, Sofia, Bulgaria; I-Hwa Lee, Wilmington, and Jerold M. Schultz, Newark, both of Del., assignors to University of Delaware, Newark, Del.

Filed Nov. 18, 1983, Ser. No. 553,103

Int. Cl.⁴ B32B *5/12, 27/08*

U.S. Cl. 428—105 **5 Claims**

1. A chemically bonded laminate of crosslapped laminae formed from uniaxially oriented polyolefin film laminae wherein the direction of orientation of adjacent contacting polyolefin laminae is substantially at a right angle, said laminate bonded by the action of organic peroxide crosslinking catalyst to create crosslinking sites while the laminate is held between platens under mechanical pressure during heating to a temperature below its melting point.

2. A process for production of a structure comprising a lamination of substantially unixally oriented polyolefin addition polymer laminae having chemical bonds between polymer molecules of the laminae at the interface of contacting laminae, said process comprising the steps of:

bringing the surfaces of the laminae into contact with the directions of orientation of successive laminae at an angle to each other to form a laminate:

urging the surfaces into intimate contact between heated platens with pressure:

interposing a crosslinking catalyst effective to initiate crosslinking sites for reactions at a temperature below the melting point of the polymer laminae into the interface of contacting surfaces;

maintaining pressure by the platens on the laminate and heating it to a temperature sufficient to initiate crosslinking reactions but below the melting point of the polymer.

4,575,471

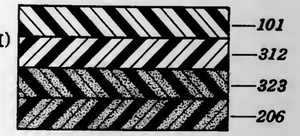
STRUCTURE OF DUAL-FACE ARTIFICIAL LEATHER AND METHOD OF MANUFACTURE THEREOF

Winston W. Wong, 201, Tung Hwa N. Rd., Taipei, Taiwan

Filed Nov. 28, 1983, Ser. No. 555,707

Int. Cl.⁴ B32B *3/26*

U.S. Cl. 428—137 **8 Claims**



1. A laminated artificial leather consisting of a PVC foamed abraded bottom layer, a top layer of (a) wet PU abraded material (b) a PVC non-foamed sheet or (c) a ground sheet of very low foaming rate, and laminations of a single or a multilayer foamed and non-foamed intermediate layers of PVC are inserted as intermediates between said bottom layer and said top layer, said artificial leather having microperforations.

4,575,472

DOUBLE HELIX, SPIRAL BELTS MADE THEREFROM

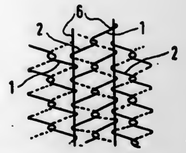
Johannes Lefferts, Enschede, Netherlands, assignor to SITEG Siebtechnik GmbH, Fed. Rep. of Germany

Filed Feb. 7, 1984, Ser. No. 577,764

Claims priority, application Fed. Rep. of Germany, Feb. 9, 1983, 3304459

Int. Cl.⁴ B32B *5/00;* **D04H** *3/02*

U.S. Cl. 428—222 **2 Claims**



1. A spiral belt comprising a multiplicity of double helices, each double helix containing two helix elements formed of windings and having longitudinal axes, the two helix elements of each double helix having their windings intertwinded and being mutually offset normal to their longitudinal axes, the windings of one of the helix elements of a double helix meshing in zipper fashion with the windings of a helix element of the preceding double helix and the windings of the other of the helix elements of the double helix meshing in zipper fashion with the windings of a helix element of the succeeding double helix, and a pintle wire being inserted into the passage formed in the overlapping region of each set of meshed windings.

4,575,473

CURABLE POLY(ACRYLATE) MOLDING COMPOSITIONS CONTAINING A THERMOPLASTIC POLYMER LOW PROFILE ADDITIVE

Linda A. Domeier, Somerville, N.J., assignor to Union Carbide Corporation, Danbury, Conn.

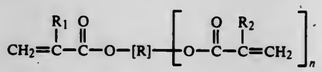
Filed May 26, 1983, Ser. No. 498,501

Int. Cl.⁴ C08K *3/00, 3/04;* **B32B** *27/00;* **C08F** *265/04*

U.S. Cl. 428—290 **19 Claims**

1. A curable molding composition suitable for the preparation of fiber reinforced molded articles by a rapid cure rate, injection molding process, consisting essentially of a mixture of:

(a) from about 10 to about 75 weight percent of a poly(acrylate) characterized by the following empirical formula:



wherein R is the hydroxy-free residue of an organic polyhydric alcohol which contained alcoholic hydroxyl groups bonded to different carbon atoms, R_1 and R_2 are independently hydrogen or methyl, and n is 1 to 3;

(b) from about 10 to about 75 weight percent of an ethylenically unsaturated monomer which is soluble in and copolymerizable with (a); and

(c) from about 5 to about 25 weight percent of a thermoplastic polymer low profile additive which is soluble in the mixture of (a) and (b),

said components (a), (b) and (c) being selected such that said curable molding composition has a viscosity of from about 10 to 1000 centipoise.

4,575,474

MAGNETIC RECORDING MEDIUM AND COMPOSITION AND METHOD THEREFOR

Shoji Akamatsu, and Takeshi Imai, both of Ichihara, Japan, assignors to Toray Silicone Co., Ltd., Tokyo, Japan

Filed Dec. 2, 1983, Ser. No. 557,497

Claims priority, application Japan, Dec. 8, 1982, 57-215134

Int. Cl.⁴ G11B *5/70*

U.S. Cl. 428—447 **15 Claims**

1. A magnetic composition for producing a magnetic recording medium, said magnetic composition comprising a homogeneous mixture of a magnetic powder, a resin binder and a partial hydrolyzate of an organosilicon compound, said organosilicon compound having at least two silicon-bonded hydrolyzable groups and at least one carbon-bonded amino group per molecule.

4,575,475

MAGNETIC RECORDING MEDIUM

Masatoshi Nakayama; Haruyuki Morita, both of Saku; Yuichi Kubota, Komoro, and Keiko Tsuchiya, Saku, all of Japan, assignors to TDK Corporation, Tokyo, Japan

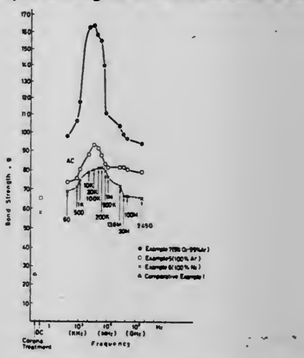
Filed Jul. 10, 1984, Ser. No. 629,465

Claims priority, application Japan, Jul. 12, 1983, 58-125596; May 26, 1984, 59-107178

Int. Cl.⁴ G11B *5/70*

U.S. Cl. 428—480 **11 Claims**

1. A magnetic recording medium comprising a base film and a magnetic layer formed thereon, the base film being plasma treated at a frequency in the range of 10 to 200 kilohertz in an



atmosphere consisting essentially of an inorganic gas and 5–100% oxygen by volume.

4,575,476

DIPPED RUBBER ARTICLE

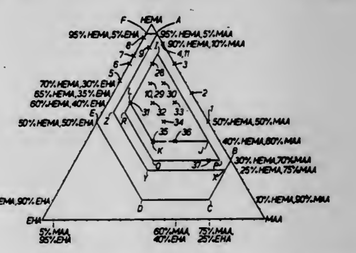
Howard I. Podell, 28 Beachfront La., New Rochelle, N.Y. 10805; Albert Goldstein, Tinton Falls, N.J.; David C. Blackley, Chesham, England; Michael H. James, Harpenden, England; David M. Bratby, and Roger Duck, both of London, England, assignors to Howard I. Podell, New Rochelle, N.Y.

Continuation-in-part of Ser. No. 445,436, Nov. 30, 1982, Pat. No. 4,499,154, and Ser. No. 216,889, Dec. 16, 1980, Pat. No. 4,482,577. This application Nov. 28, 1983, Ser. No. 555,809

Claims priority, application United Kingdom, Sep. 3, 1982, 8225200

Int. Cl.⁴ A41D *19/00*

U.S. Cl. 428—494 **13 Claims**



1. A flexible rubber article having a lubricating layer formed from a hydrogel polymer bonded thereto so as to provide a skin-contacting surface of said article in which a member of the group consisting of surfactant materials and long chain fatty amines has been applied to said skin-contacting surface so as to substantially improve the lubricity of said surface with respect to damp skin, said hydrogel polymer being a copolymer of 2-hydroxyethyl methacrylate with at least one of methacrylic acid and 2-ethylhexyl acrylate.

4,575,477

COATINGS AND COATED PAPERS FOR GRAVURE PRINTING

Donald A. Werkema; Richard A. Willency, and Do I. Lee, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 29, 1983, Ser. No. 556,250

Int. Cl.⁴ B32B *21/04*

U.S. Cl. 428—537.5 **11 Claims**

1. A coated paper comprising a paper substrate and a coating resulting from an aqueous coating formulation containing an

opacifying amount of a pigment, a binding amount of a binder and an amount of a polyamidoamine sufficient to cause the pigment to interact or agglomerate.

4,575,478

TONER FOR USE IN ELECTROPHOTOGRAPHY

Junichi Ohno, Nagoya, Japan, assignor to Toray Industries, Tokyo, Japan

Filed May 17, 1984, Ser. No. 611,526
Claims priority, application Japan, May 17, 1983, 58-86327
Int. Cl.⁴ G03G *9/06*
U.S. Cl. 430—109 **16 Claims**

1. A toner for use in electrophotography, which comprises:
(A) an epoxy resin or a modified epoxy resin obtained by the reaction of an epoxy resin with a polyfunctional compound having at least two carboxyl or amino groups per molecule, and
(B) a bivalent or polyvalent metal complex compound or a bivalent or polyvalent metal salt.

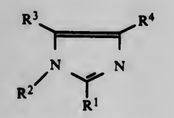
4,575,479

DIAZO-TYPE THERMOSENSITIVE RECORDING MATERIAL WITH IMIDAZOLE COMPOUND

Masanaka Nagamoto, Shizuoka, and Yoshihiro Suguro, Mishima, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jun. 10, 1983, Ser. No. 503,385
Claims priority, application Japan, Jun. 30, 1982, 57-113415
Int. Cl.⁴ G03C *1/60, 1/58;* G01D *15/10*
U.S. Cl. 430—159 **14 Claims**

1. A diazo-type thermosensitive recording material comprising a support, a thermosensitive coloring layer formed on said support, said thermosensitive coloring layer comprising a diazonium compound layer containing a diazonium compound and a coupler layer containing a coupler, and, of said diazonium compound layer and said coupler layer, at least the layer thereof that is closer to said support also contains a thermo-fusible material and a water-insoluble binder agent, said thermo-fusible material being effective to obtain high speed coloring of said recording material when a thermal printing head is applied thereto, the amount of said thermo-fusible material being in the range of from 2 to 30 parts by weight per one part by weight of said diazonium compound, and a portion of said thermosensitive recording material, other than said diazonium compound layer, contains an imidazole derivative of the following formula:



wherein R^1 is alkyl, alkoxy or hydroxyalkyl, all having from 11 to 24 carbon atoms; R^2, R^3 and R^4 independently represent hydrogen, phenyl, benzyl, alkyl, alkoxy, hydroxyalkyl or cyanoalkyl.

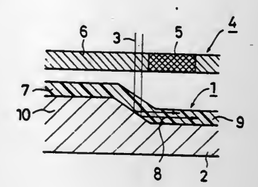
4,575,480

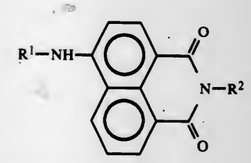
PHOTORESIST COMPOSITION

Takeshi Kotani; Yoshiaki Horiuchi, and Yoichi Kamata, all of Tatsuno, Japan, assignors to Nagase Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Oct. 22, 1984, Ser. No. 663,455
Claims priority, application Japan, Oct. 21, 1983, 58-198046
Int. Cl.⁴ G03C *1/52*
U.S. Cl. 430—192 **2 Claims**

1. A positive photoresist composition in the form of solution which comprises a resin soluble in an aqueous alkaline solution, a 1,2-quinonediazide derivative as a photosensitizer, and an anti-halation agent having the general formula of





wherein R^1 represents a hydrogen, an alkyl or an alkoxyalkyl group, and R^2 represents an alkyl, an alkoxyalkyl or an aryl group which may contain one or more of hydrophilic substituents, in amounts of about 1 to about 10 parts by weight in relation to 100 parts by weight of the resin in the composition.

4,575,481

LIGHT-SENSITIVE MATERIAL FOR COLOR DIFFUSION TRANSFER WITH MIXED OXIDIZED DEVELOPER SCAVENGER PARTICLES

Osamu Takahashi, and Katsumi Makino, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 1, 1985, Ser. No. 707,327
Claims priority, application Japan, Mar. 1, 1984, 59-39654
Int. Cl.⁴ G03C *1/40, 5/54*
U.S. Cl. 430—214 **9 Claims**

1. A photographic light-sensitive material for a color diffusion transfer process comprising a support having provided thereon (1) at least two silver halide emulsion layers which are in combination with dye-releasing redox compounds capable of releasing diffusible dyes upon redox reaction with an oxidized product of a silver halide developing agent which is formed by processing development with an alkaline processing solution in the presence of a silver halide developing agent, and (2) an intermediate layer between said silver halide emulsion layers which comprises a hydrophilic colloid having dispersed therein particles containing a reducing component capable of reacting with the oxidized product of the developing agent, wherein said particles comprise:
(a) a mixture consisting of two or more kinds of dispersed particles, each comprising said reducing component as a first component and a second component which is miscible with the first component to constitute dispersed particles, wherein said two or more kinds of dispersed particles differ from each other in that the second component is different among the two or more kinds of dispersed particles, or the proportion of the second component to the first component is different among the two or more kinds of dispersed particles; or
(b) a mixture consisting of dispersed particles substantially solely comprising said reducing component as a first component and one or more kinds of dispersed particles comprising the same reducing component as said first component and a second component which is miscible with said first component to constitute dispersed particles

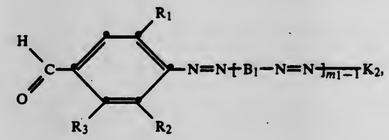
4,575,482

PHOTOGRAPHIC SILVER DYE BLEACH MATERIALS CONTAINING-FORMYL SUBSTITUTED AZO COMPOUNDS AS IMAGE DYES

John Lenoir, Fribourg, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

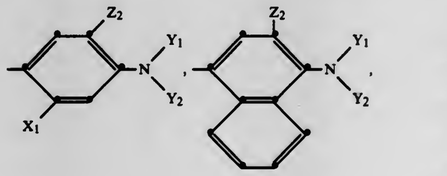
Division of Ser. No. 258,246, Apr. 28, 1981. This application Nov. 14, 1983, Ser. No. 552,220
Claims priority, application Switzerland, Apr. 30, 1980, 3343/80
Int. Cl.⁴ C09B *29/085, 31/043;* G03C *5/44;* C03C *5/52*
U.S. Cl. 430—431 **10 Claims**

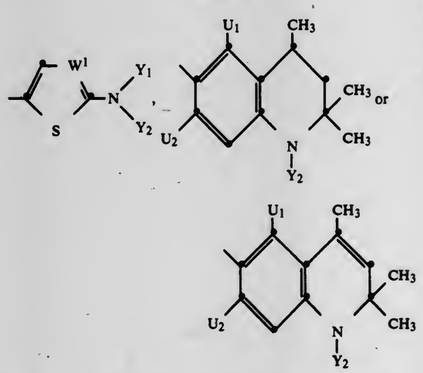
1. A photographic material which comprises on a base, at least one layer containing an azo dyestuff of the formula



(1)

in which R_1 is hydrogen, alkylsulfone having 1 to 8 carbon atoms which is unsubstituted or substituted by methoxy, cyano or halogen, halogen, cyano or nitro, R_2 is hydrogen, halogen, cyano or nitro, R_3 is hydrogen, alkyl having 1 to 4 carbon atoms, halogen or nitro, B_1 is a phenylene, naphthalene, thiophenylene or thiazolyl ring system, K_2 is





in which U_1 and U_2 are hydrogen, alkyl or alkoxy each having 1 to 4 carbon atoms, or $—NHCOA_1$, in which A_1 is alkyl having 1 to 4 carbon atoms or phenyl, and at least one of the substituents U_1 and U_2 must be hydrogen, W^1 is —CH= or —N=, Y_1 is hydrogen or alkyl having 1 to 5 carbon atoms, which is unsubstituted or substituted by halogen, cyano, methoxy or hydroxyl, Y_2 is hydrogen, alkyl having 1 to 12 carbon atoms or alkoxyalkyl having 2 to 12 carbon atoms which are unsubstituted or substituted by methoxy, chlorine, bromine, cyano or hydroxyl, alkenyl having 2 to 4 carbon atoms, benzyl or phenyl which is unsubstituted or substituted by alkyl having 1 to 5 carbon atoms, Z_2 is hydrogen or alkoxy having 1 to 6 carbon atoms which is unsubstituted or substituted by halogen or methoxy, or forms together with Y_1 a radical of the formula $—CH(CH_3)—CH_2—C(CH_3)_2—$ and X_1 is $—NHP(O)(OT_1)_2$, in which T_1 is alkyl having 1 to 8 carbon atoms which is unsubstituted or substituted by methoxy or ethoxy, benzyl or phenyl, and m_1 is 1 or 2.

4,575,483

PHOTOGRAPHICALLY USEFUL CHALCOGENAZOLIUM POLYMETHINE DYES

Wolfgang H. H. Gunther, Webster, and John D. Mee, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 19, 1985, Ser. No. 702,694
Int. Cl.⁴ G03C *1/02*
U.S. Cl. 430—588 **48 Claims**

1. A photographic element comprised of
a support,
at least one radiation sensitive silver halide emulsion layer located on said support, and
a polymethine dye located to facilitate photographic image formation containing as a nucleus thereof an aromatic ring and, fused with said aromatic ring, an azolium ring containing a divalent tellurium atom in its 1-position and substituted at its 2-position with a methine chain, the carbon atom of the methine chain which is in the β position with respect to the azolium ring being substituted with a dye property modifier.

4,575,484

BINDING ASSAY FOR THE DETECTION OF MYCOBACTERIA

Eugene W. Straus, New York, N.Y., assignor to Montefiore Medical Center, Inc., Bronx, N.Y.

Division of Ser. No. 146,294, May 5, 1980, Pat. No. 4,410,600. This application Sep. 23, 1982, Ser. No. 421,957
The portion of the term of this patent subsequent to Oct. 18, 2000, has been disclaimed.
Int. Cl.⁴ G10N *53/00;* C12Q *1/04;* C12R *1/32;* G01N *33/534*
U.S. Cl. 435—7 **26 Claims**

1. A kit for determining the presence of Mycobacteria comprising a carrier being compartmented to receive at least two vials and to maintain said vials in close confinement, which comprises:
a first vial containing a tracer containing molecule wherein said tracer containing molecule is a heat stable charcoal-adsorbable, radiolabeled protein obtained from the growth media of *Mycobacterium tuberculosis*, said protein having a molecular weight of between 20,000 and 30,000, immunochemical stability from 4° C.–250° C. and from pH 3.0 to 9.0, and exhibiting comigration towards the anode in the presence of bovine serum albumin and borate buffer at pH of 8.6 with an applied voltage of 80 volts on starch gel electrophoresis for 12 hours and a second vial containing antibodies raised against or reacting with tubercular proteins isolated from a bacterium of the genus Mycobacterium, and which have reversible binding affinity towards said protein in said first vial wherein the tracer containing molecule and antibodies are present in amounts sufficient to perform an immunoassay for Mycobacteria.

4,575,485

ULTRASONIC ENHANCED IMMUNO-REACTIONS

N. Chung Sizto, Union City, and Cindy Gallup, Foster City, both of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Aug. 29, 1983, Ser. No. 527,441
Int. Cl.⁴ G01N *33/53, 33/543*
U.S. Cl. 435—7 **22 Claims**

1. In a method for measuring the binding of members of a specific binding pair in an aqueous medium, the improvement which comprises ultrasonicating the medium containing the

members of the specific binding pair for a sufficient time to enhance the rate of binding of said members.

4,575,486

PROCESS FOR DIFFERENTIATING THE ORIGIN OF PARTICLES IN URINE

Cleve W. Laird, Simi Valley, Calif., assignor to International Remote Imaging Systems, Inc., Chatsworth, Calif.

Filed Oct. 26, 1983, Ser. No. 545,760
Int. Cl.[4] G01N *33/50*; C12Q *1/02*
U.S. Cl. 435—7 **17 Claims**

1. A process for differentiating the origin of red blood cells or white blood cells, in urine from a urinary tract, wherein said tract has a situs for producing Tamm-Horsfall Protein (THP) and said tract having a portion above said situs and a portion below said situs; said method comprising the steps of:

exposing said urine to THP antibodies;

forming THP antibody-antigen complexes in said urine; and

identifying those red blood cells or white blood cells, coated with said THP and forming THP antibody-antigen complex as being from said portion above said situs.

4,575,487

METHOD FOR DETERMINATION OF TRANSGLUCOSIDASE

Jayarama K. Shetty, and J. John Marshall, both of Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed May 25, 1983, Ser. No. 497,797
Int. Cl.[4] C12Q *1/48*
U.S. Cl. 435—15 **5 Claims**

1. A quantitative method for the determination of transglucosidase activity in glucoamylase preparations which method comprises the steps of:

(a) providing a culture filtrate on a glucoamylase preparation suspected of having transglucosidase activity;

(b) adding acarbose as a selective inhibitor to the culture filtrate in an amount of from 50 to 500 μg per DU of glucoamylase to inhibit the glucoamylase activity without inhibiting the transglucosidase activity;

(c) introducing maltose to the inhibited glucoamylase culture filtrate; and

(d) determining the transglucosidase activity by measuring, as a function of time, the amount of panose produced.

4,575,488

INTERFERENCE FREE TRANSAMINASE ASSAY

Jan S. Krouwer, Valhalla, and Michael J. Lynch, New Rochelle, both of N.Y., assignors to Technicon Instruments Corp., Tarrytown, N.Y.

Filed Jun. 25, 1982, Ser. No. 392,038
Int. Cl.[4] C12Q *1/52, 1/32*
U.S. Cl. 435—16 **15 Claims**

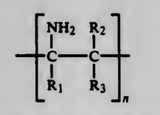
1. A composition for the determination of a transaminase in a sample, which composition comprises:

(a) a substrate for said transaminase;

(b) a reagent responsive to the reaction product of said transaminase and said substrate to provide a detectable response;

(c) pyridoxal-5'-phosphate; and

(d) an amino functionalized polymer having the formula



wherein R_1 is hydrogen, alkyl or aryl; R_2 and R_3 are independently hydrogen, alkyl or aryl; and n is the number of repeating units of the polymer in an amount sufficient to remove the signal interference caused by pyridoxal-5'-phosphate.

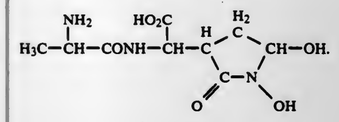
4,575,489

STREPTOMYCES ALBULUS SUBSP. *OCHRAGERUS* SUBSP. NOV. CULTURE FOR MAKING PEPTIDE

Eiji Higashide, Takarazuka, and Satoshi Horii, Sakai, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Sep. 8, 1981, Ser. No. 300,285
Claims priority, application Japan, Sep. 18, 1980, 55-130298
Int. Cl.[4] C12P *21/02*; C12N *1/20*; C07D *207/00*
U.S. Cl. 435—70 **2 Claims**

1. A biologically pure culture of the microorganism belonging to the genus Streptomyces having the characteristics identifiable with ATCC 31713, said culture being capable of producing in a culture medium containing assimilable carbon and digestible nitrogen sources, a recoverable amount of peptide B-52653 of the formula



4,575,490

ONE STEP METHOD FOR SPHERING AND FIXING WHOLE BLOOD ERYTHROCYTES

Leonard Ornstein, White Plains, and Young R. Kim, Hartsdale, both of N.Y., assignors to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed Feb. 29, 1984, Ser. No. 584,882
Int. Cl.[4] G01N *21/49, 33/49, 15/14*
U.S. Cl. 436—63 **20 Claims**

1. A method for treating mammalian red blood cells in a whole blood sample which can be subsequently effectively measured electrooptically for determination of red blood cell volumes which comprises treating in a single step an anticoagulated whole blood sample with an isotonic reagent solution containing both a sphering agent and a fixing agent at a temperature in the range of 4° C. to 37° C. over a reaction period of up to 180 seconds employing a whole blood dilution factor of from 1:300 to 1:4,000, wherein said sphering agent and said fixing agent are present in the reagent at concentrations and at a ratio which provides isovolumetric sphering of the erythrocytes in the sample independent of the concentration of said erythrocytes in the whole blood sample and without inducing lysis of said erythrocytes in the resulting diluted sample.

4,575,491

METHOD OF CONTROLLING AND DETERMINING GERMICIDAL ACTIVITY

William Pollack, Weston, Conn., and Oliver Iny, Little Neck, N.Y., assignors to Euroceltique, S.A., Luxembourg

Filed May 31, 1984, Ser. No. 615,835
Int. Cl.[4] G01N *33/00*
U.S. Cl. 436—125 **8 Claims**

1. Method of determining the content of equilibrium iodine in an aqueous solution of an iodophor, said solution containing iodine bound to said iodophor and iodine in solution, the bound iodine and solution iodine being in equilibrium with each other, comprising the steps of:

subjecting a predetermined amount of said aqueous iodophor solution to several extractions, each with a different amount of a water-immiscible solvent for iodine, thus extracting equilibrium iodine into each of said amounts of said water-immiscible solvent,

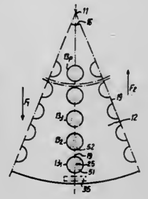
determining the concentrations of said equilibrium iodine in each of said amounts of said water-immiscible solvent, and extrapolating the thus determined concentrations of equilibrium iodine to a theoretical zero value of said water-immiscible solvent, the extrapolated zero value being the amount of equilibrium iodine in said aqueous iodophor solution, the same constituting the amount of iodine available for germicidal action.

4,575,492

PROCESS AND DEVICE FOR THE DETECTION AND QUANTIFICATION OF AGGLUTINATES

Pierre David, Verrieres Le Buisson, and Jean A. Jarricot, Noisy-Le-Roi, both of France, assignors to Le Materiel Biomedical and Commissariat a l'Energie Atomique, both of Paris, France

Filed Apr. 20, 1984, Ser. No. 602,509
Claims priority, application France, May 2, 1983, 83 07266
Int. Cl.[4] G01N *21/59, 21/82, 33/53*
U.S. Cl. 436—164 **6 Claims**



1. Process for the detection and quantification, in recipients of which at least the bottoms are transparent, of reactions of agglutinations capable of being produced, under the action of at least one liquid reagent, by particles in suspension in doses of liquids to be tested contained in said recipients, comprising: observing by transparency the bottoms of said recipients containing the possible aggluintates, at n×m points of measurement distributed over a rectangular or square surface occupying the greater part of the surface of the bottom of each recipient; measuring the light transmission of a plurality of points of a reference sample in which no agglutination has taken place; determining a light transmission threshold which is connected with the mean value of transmission of said plurality of points of measurement of said reference sample; measuring the light transmission of a plurality of points of a test liquid; calculating the mean value of the transmission of the points of measurement whose transmission is greater than said threshold; comparing this mean value with that of said reference sample; and determining, on the one hand, that there is agglutination when, at the same time, this mean value of the transmission is higher than that of said reference sample and when there exists points of measurement whose transmission is less than said threshold, and, on the other hand, that there is no agglutination when, at the same time, this mean value is not greater than that of said reference sample and when there exists no points of measurement whose transmission is less than said threshold.

4,575,493

LOW EXPANSION, MULTIBAND TRANSMITTING GLASSES AND GLASS-CERAMICS

Harry W. Rauch, Sr., Lionville, Pa., assignor to General Electric Co., Philadelphia, Pa.

Filed Mar. 16, 1982, Ser. No. 358,576
Int. Cl.[4] C03C *3/062, 3/253, 4/10, 10/02*
U.S. Cl. 501—10 **8 Claims**

1. An infrared transmitting glass with coefficient of thermal expansion below 4.24×10^{-6}/°C. measured over a temperature range of 25° C. to 300° C. comprising:

15–30 mole percent ZnO;

2–10 mole percent Al_2O_3;

2–15 mole percent Ta_2O_5; and

40–75 mole percent GeO_2.

4. An infrared transmitting glass-ceramic with coefficient of the thermal expansion below 5.70×10^{-6}/°C. measured over a temperature range of 25° C. to 300° C. comprising:

15–30 mole percent ZnO;

2–10 mole percent Al_2O_3;

2–15 mole percent Ta_2O_5; and

40–75 mole percent GeO_2.

4,575,494

ALUMINA COMPOSITIONS USEFUL AS CATALYST SUPPORTS FOR ETHYLENE OXIDATION

Harold W. Young, Jr.; Oliver C. Ainsworth, Jr., both of Baton Rouge, La.; William E. Fry, and Lawrence E. Neil, both of Angleton, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 8, 1984, Ser. No. 578,256
Int. Cl.[1] B01J *20/04*
U.S. Cl. 502—243 **13 Claims**

1. In the process of making an alumina support material by heating at an elevated temperature of >1000° C. a mixture of alumina, porosity control agents and binders, the improvement which comprises adding a cesium compound to said mixture to provide in the finished support an amount of cesium of from about 0.03 to about 0.6 percent by weight of the total support material, said cesium being in substantially unleachable form as the result of having been incorporated into said support by the fusion of said alumina and cesium compound at said elevated temperature.

4,575,495

SYNTHETIC ANTIGENIC PEPTIDE DERIVED FROM HEPATITIS B SURFACE ANTIGEN

John Vnek, Bronx; Alfred M. Prince, Pound Ridge, and Hafeez Ikram, Corona, all of N.Y., assignors to New York Blood Center, Inc., New York, N.Y.

Division of Ser. No. 493,904, May 12, 1983. This application Jul. 17, 1984, Ser. No. 631,661
Int. Cl.[4] A61K *37/00*
U.S. Cl. 514—16 **4 Claims**

1. A synthetic peptide consisting essentially of the following sequence of amino acids

Arg Trp Met Met Leu Arg Arg (I)

wherein said peptide is disposed on a carrier.

4,575,496

ERYTHROMYCIN SALT OF THE O-CARBONYL(1-THIAZOLIDINYL)-BENZOIC ACID AND PHARMACEUTICAL COMPOSITIONS CONTAINING IT

Camillo C. Mora, Piacenza, Italy, assignor to Camillo Corvi S.p.A., Italy

Filed Dec. 15, 1983, Ser. No. 561,529
Claims priority, application Italy, Feb. 16, 1983, 19621 A/83
Int. Cl.[4] A61K *31/71*; C07H *17/08*
U.S. Cl. 514—29 **10 Claims**

1. The erythromycin salt of 2-(1,3-thiazolidin-3-yl)-benzoic acid in which the salt is formed at the nitrogen moiety of said erythromycin.

4. A method of treating a bacterial infection comprising administering to a host having a bacterial infection a pharmacologically effective amount of the salt of claim 1.

4,575,497

3, 3", 4"-TRI-O-ACYLSPIRAMYCIN I

Satoshi Omura, Tokyo; Hiroshi Sano, Machida; Kinya Yamashita, Mishima, and Ryo Okachi, Sunto, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd, Tokyo, Japan

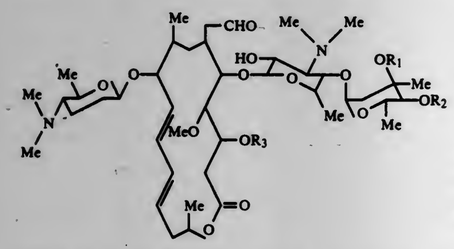
Filed Dec. 11, 1984, Ser. No. 680,347

Claims priority, application Japan, Dec. 13, 1983, 58-234761

Int. Cl.[4] A61K *31/71;* **C07H** *17/08*

U.S. Cl. 514—30 **1 Claim**

1. 3,3", 4"-Tri-O-acylspiramycin I represented by the formula:



wherein R_1, R_2 and R_3 have the meanings represented by one combination selected from the following (1) to (4) combinations:

	R_1	R_2	R_3
(1)	propionyl	propionyl	propionyl
(2)	butyryl	acetyl	acetyl
(3)	acetyl	propionyl	propionyl
(4)	propionyl	butyryl	propionyl.

4,575,498

METHOD FOR RESTORING DEPLETED PURINE NUCLEOTIDE POOLS

Edward W. Holmes, and Judith L. Swain, both of Durham, N.C., assignors to Duke University, Durham, N.C.

Filed Jul. 21, 1983, Ser. No. 515,595

Int. Cl.[4] A61K *31/70*

U.S. Cl. 514—43 **16 Claims**

1. A method of increasing the rate of repletion of adenosine triphosphate and guanosine triphosphate nucleotides in a tissue deficient in said nucleotides, which comprises:

administering to said tissue a therapeutically effect amount of 5-amino-4-imidazolecarboxamide riboside or a pharmaceutically acceptable salt thereof sufficient to increase the rate of said repletion.

4,575,499

PHOSPHORUS DERIVATIVES OF 4-PYRIMIDINOLS

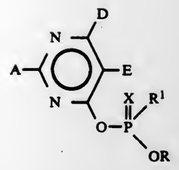
Walter Reifschneider, Walnut Creek, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 443,422, Nov. 22, 1982, abandoned. This application Jun. 6, 1984, Ser. No. 617,776

Int. Cl.[4] A01N *57/08;* **C07F** *9/65*

U.S. Cl. 514—86 **27 Claims**

1. A compound corresponding to the formula



wherein

A represents perfluoroloweralkyl;

D represents hydrogen, chloro, alkyl, alkylthio or alkoxy;

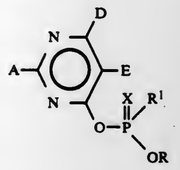
E represents hydrogen, alkyl or halo;

X represents oxygen or sulfur;

R represents alkyl; and

R^1 represents alkyl, alkoxy, alkylthio or phenyl.

19. A method for the kill and control of insects which comprises contacting said insects or their habitat with a composition comprising an inert carrier in intimate admixture with an insecticidally effective amount of an active compound corresponding to the formula



wherein

A represents perfluoroloweralkyl;

D represents hydrogen, chloro, alkyl, alkylthio or alkoxy;

X represents oxygen or sulfur;

R represents alkyl; and

R^1 represents alkyl, alkoxy, alkylthio or phenyl.

4,575,500

ANTIFUNGAL SUBSTANCES AND PROCESS FOR THEIR PRODUCTION

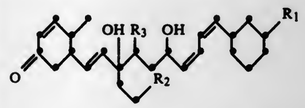
Richard W. Burg, Murray Hill; Lucille J. Cole, Warren, both of N.J., and Sebastian Hernandez, Madrid, Spain, assignors to Merck & Co., Inc., Rahway, N.J.

Filed Mar. 26, 1984, Ser. No. 593,448

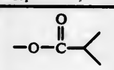
Int. Cl.[4] A01N *57/12;* **C07F** *9/09*

U.S. Cl. 514—121 **7 Claims**

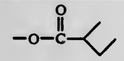
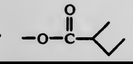
1. A compound having the formula:



wherein the compounds have the following values for R_1, R_2 and R_3:

	R_1	R_2	R_3
I		$-NH_3^{\oplus}$	$-O-PO_3H^{\ominus}$
II	H	$-NH_3^{\oplus}$	$-O-PO_3H^{\ominus}$

-continued

	R_1	R_2	R_3
III		$-NH_3^{\oplus}$	$-O-PO_3H^{\ominus}$
IV		$-OH$	$-O-PO_3H_2$

7. A method for the treatment of fungus infections which comprises treating an area infected with fungi with one or more compounds of claim 1.

4,575,501

2-ARYLHYDRAZINO-2-THIAZOLINES, ACYL DERIVATIVES OF THESE COMPOUNDS, 2-ARYLAZO-2-THIAZOLINES, PREPARATION PROCESSES, AND THEIR USE FOR COMBATING ECTOPARASITES AND ENDOPARASITES

Otto Behner; Wilhelm Stendel, and Peter Andrews, all of Wuppertal, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

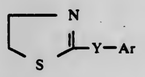
Filed Aug. 6, 1982, Ser. No. 405,847

Claims priority, application Fed. Rep. of Germany, Aug. 27, 1981, 3133918

Int. Cl.[4] C07D *277/18;* **A01N** *43/78*

U.S. Cl. 514—150 **9 Claims**

1. A thiazoline derivative of the formula



in which Y represents —N=N—

Ar denotes phenyl which is disubstituted, other than in the 2,6-position by C_1 to C_3 alkyl, halogen, C_1 to C_3 alkoxy or $-CF_3$.

6. A method of freeing or protecting domesticated animals from endoparasites or ectoparasites, characterised in that there is applied to said animals an ectoparasiticidally or endoparasiticidally effective amounts of compound according to claim 1, in admixture with an inert pharmaceutical carrier.

7. A method according to claim 6, characterised in that a composition is used containing from 0.1 to 95% of the active compound, by weight.

8. A method according to claim 7, characterised in that a composition is used containing from 0.5 to 90% of the active compound, by weight.

4,575,502

PHARMACEUTICAL COMPOSITIONS

Robert C. Hider, Clacton; George Kontoghiorghes, London, and Michael A. Stockham, Saffron Walden, all of England, assignors to National Research Development Corporation, London, England

Filed Oct. 18, 1983, Ser. No. 542,976

Claims priority, application United Kingdom, Oct. 22, 1982, 8230150

Int. Cl.[4] A61K *31/555*

U.S. Cl. 514—184 **13 Claims**

1. A method for the treatment of a patient to effect an increase in the level of iron in the patient's bloodstream, which comprises:

administering to said patient in need thereof a compound comprising a tissue permeable, neutral iron complex of 3-hydroxy-4-pyrone or of a 3-hydroxy-4-pyrone in which at least one of the hydrogen atoms attached to ring carbon atoms is replaced by an aliphatic hydrocarbon group of 1 to 6 carbon atoms, in an amount which is effective to achieve such an increase, said iron complex being a 3:1 hydroxypyrone:iron (III) complex.

4,575,503

3-AMINO-[1]-BENZAZEPIN-2-ONE-1-ALKANOIC ACIDS

Jeffrey W. H. Watthey, Chappaqua, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

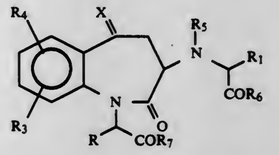
Continuation-in-part of Ser. No. 465,695, Feb. 10, 1983, Pat. No. 4,473,575, which is a continuation-in-part of Ser. No. 398,241, Jul. 19, 1982, Pat. No. 4,410,520, which is a continuation-in-part of Ser. No. 319,863, Nov. 9, 1981, abandoned, which is a continuation-in-part of Ser. No. 291,907, Aug. 11, 1981, abandoned. This application Feb. 9, 1984, Ser. No. 578,456

The portion of the term of this patent subsequent to Sep. 25, 2001, has been disclaimed.

Int. Cl.[4] A61K *31/55;* **C07D** *223/16*

U.S. Cl. 514—213 **11 Claims**

1. A compound of the formula



(IA)

wherein the carbocyclic ring may also be hexahydro; R_1 is indolyl(lower)alkyl, carboxy(lower)alkyl, lower alkoxycarbonyl(lower)alkyl, hydroxy(lower)alkyl, lower alkylthio(lower)alkyl, aryloxy(lower)alkyl or arylthio(lower)alkyl wherein aryl represents phenyl unsubstituted or mono- or di-substituted by lower alkyl, hydroxy, lower alkoxy, lower alkylenedioxy, lower alkanoyloxy, halogen or trifluoromethyl; R_2 and R_5 are hydrogen or lower alkyl; R_3 and R_4 are hydrogen, lower alkoxy, lower alkyl, halogen or trifluoromethyl; or R_3 and R_4 taken together on adjacent carbons represent alkylenedioxy; X represents oxo, one hydroxy or acylated hydroxy and one hydrogen, or 2 hydrogens; R_6 and R_7 independently represent hydroxy, amino, lower alkoxy, phenyl(lower)alkoxy, lower alkoxycarbonyl(lower)alkoxy; and wherein within the above definitions acylated hydroxy represents lower alkanoyloxy, nicotinoyloxy, benzoyloxy or benzoyloxy substituted on the phenyl ring by lower alkyl, halogen or lower alkoxy; or a pharmaceutically acceptable salt thereof.

9. A pharmaceutical composition suitable for oral or parenteral administration to mammals for the treatment or prevention of diseases responsive to inhibition of angiotensin-converting enzyme comprising an effective amount of a compound of claim 1 in combination with one or more pharmaceutically acceptable carriers.

4,575,504

THIENOTHIAZOLE DERIVATIVES

Robert Saüter, Biberach; Gerhart Griss, deceased, late of Biberach (by Elisabeth Griss, executrix); Wolfgang Grell; Rudolf Hurnaus, both of Biberach, all of Fed. Rep. of Germany; Walter Kobinger, and Ludwig Pichler, both of Vienna, Austria, assignors to Dr. Karl Thomae GmbH, Biberach an der Riss, Fed. Rep. of Germany

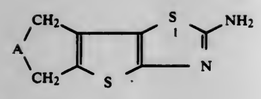
Continuation-in-part of Ser. No. 520,163, Aug. 4, 1983, abandoned. This application Sep. 12, 1984, Ser. No. 649,898

Claims priority, application Fed. Rep. of Germany, Aug. 18, 1982, 3230696

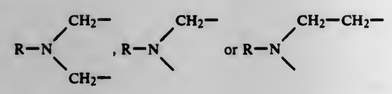
Int. Cl.[4] A61K *31/44, 31/55;* **C07D** *513/14*

U.S. Cl. 514—215 **8 Claims**

1. A compound of the formula



wherein A is



and

R is hydrogen, alkyl of 1 to 5 carbon atoms, alkanoyl of 1 to 5 carbon atoms, alkenyl of 3 to 5 carbon atoms, (alkoxy of 1 to 4 carbon atoms) carbonyl, or aralkyl of 7 to 11 carbon atoms optionally halo-substituted;

or a non-toxic, pharmacologically acceptable acid addition salt thereof.

8. The method of lowering the heart rate of a warm-blooded animal in need thereof, which comprises perorally, parenterally or rectally administering to said animal an effective bradycardiac amount of a compound of claim 1.

4,575,505

PHARMACEUTICAL COMPOSITIONS CONTAINING 2-ARYLTETRAAZAINDENES FOR TREATING ULCERS OR CARDIAC INSUFFICIENCY OR BLOOD PRESSURE ABNORMALITIES

Rochus Jonas, Darmstadt; Michael Kloft; Hanns Wurziger, both of Darmstadt-Arheilgen; Jürgen Harting; Hans J. Enenkel, both of Darmstadt; Klaus-Otto Minck, Ober-Ramstadt, and Hans-Jochen Schliep, Traisa, all of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschränkter Haftung, Darmstadt, Fed. Rep. of Germany

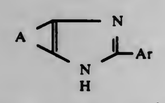
Division of Ser. No. 492,909, May 9, 1983. This application Jul. 26, 1984, Ser. No. 634,847

Claims priority, application Fed. Rep. of Germany, May 11, 1982, 3217583

Int. Cl.[4] A61K *31/495;* **C07D** *487/00*

U.S. Cl. 514—248 **10 Claims**

1. A pharmaceutical composition for treating ulcers or cardiac insufficiency or blood pressure abnormalities, comprising an effective amount of at least one compound of a 2-aryltetraazaindene of the formula



where —A— is —N=CH—CH=N— or —CH=N—N=CH—, Ar is phenyl that is mono-, di- or tri-substituted by hydroxyl, mercapto, dialkylamino, trifluoromethyl and/or —Z—R groups, wherein Z is —O—, —S— or —SO— and R is alkyl, alkenyl, alkynyl or cyanomethyl, wherein said alkyl, alkenyl and alkynyl groups each have up to 5 C atoms, and a physiologically acceptable carrier.

4,575,506

METHOD OF TREATMENT FOR INHIBITING THE TOLERANCE ONSET WHILE TREATING PAINFUL SYNDROMES WITH CENTRAL ANALGESICS

Davide Della Bella, Milan; Viviana Frigeni, Monza Mi, and Angelo Carenzi, Busto Arsizio, all of Italy, assignors to Zambon S.p.A., Vicenza, Italy

Filed Nov. 1, 1984, Ser. No. 667,441

Claims priority, application Italy, Nov. 3, 1983, 23571 A/84

Int. Cl.[4] A61K *31/44, 31/165*

U.S. Cl. 514—282 **7 Claims**

1. A method of inhibiting tolerance onset in the treatment of painful syndromes with a central analgesic agent comprising admistering to a patient thiamphenicol or a derivative of thiamphenicol which releases thiamphenicol in the body in association with the central analgesic agent and an amount effective to inhibit the tolerance onset of the central analgesic agent, the central analgesic agent being morphine, pentazocine, meperidine, methadone or laevorphanol.

4,575,507

SPIRO-IMIDAZOLIDINES AS ALDOSE REDUCTASE INHIBITORS AND THEIR PHARMACEUTICAL USE

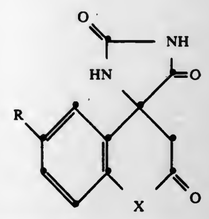
Christopher A. Lipinski, Waterford, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed May 29, 1985, Ser. No. 738,924

Int. Cl.[4] A61K *31/415;* **C07D** *471/10, 491/07, 233/78*

U.S. Cl. 514—278 **11 Claims**

1. A spiro-imidazolone of the formula



and a pharmaceutically acceptable base salt thereof, wherein R is selected from the group consisting of fluoro, chloro, hydrogen, methyl and methoxy; and X is selected from the group consisting of —O—, CH_2 and NH.

11. A method of treating a diabetic host to prevent or alleviate ocular or neuritic diabetes-associated chronic complications, which comprises administering to said diabetic host an alleviating or prophylactically effective amount of a compound selected from claim 1 or claim 7.

4,575,508

2-SUBSTITUTED 1-(3'-AMINOALKYL)-1,2,3,4-TETRAHYDRO-β-CARBOLINES, AND THEIR USE AS ANTIARRHYTHMIC AGENTS

Gerd Steiner, Kirchheim; Claus D. Mueller, Viernheim, and Dieter Lenke, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

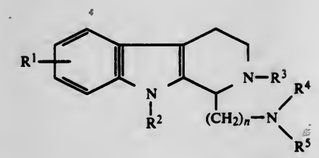
Filed Aug. 5, 1983, Ser. No. 520,600

Claims priority, application Fed. Rep. of Germany, Aug. 5, 1982, 3229214; Mar. 17, 1983, 3309596

Int. Cl.[4] A61K *31/40, 31/44;* **C07D** *471/04*

U.S. Cl. 514—292 **8 Claims**

1. A 2-substituted 1-(3'-aminoalkyl)-1,2,3,4-tetrahydro-β-carboline of formula I:



wherein n is an integer from 2 to 5, R^1 is hydrogen, halogen, trifluoromethyl, C_1–C_4-alkyl or C_1–C_4-alkoxy, R^2 is hydrogen or C_1–C_3-alkyl, R^3 is C_1–C_3-alkanoyl, R^4 is hydrogen, or an alkyl or cycloalkyl radical of not more than 4 carbon atoms and R^5 is hydrogen or an alkyl or cycloalkyl radical of not more than 4 carbon atoms or R^4 and R^5, together with the nitrogen atom, form a piperazine, piperidine or morpholine ring or a piperazine, piperidine or morpholine ring substituted by at least one C_1–C_3-alkyl group, and any nitrogen atom present can be substituted by C_1–C_3-alkyl, C_1–C_3-hydroxyalkyl, phenyl or by phenyl monosubstituted by methoxy or methyl, and its salts with physiologically tolerated acids.

8. A method of treating cardiac arrhythmias in a patient suffering therefrom, which comprises:

administering an amount of the compound of claim 1 sufficient to exert antiarrhythmic activity in said patient.

4,575,509

WATER-SOLUBLE FORMULATIONS OF M-AMSA WITH PYROGLUTAMIC ACID

Jivn-Ren Chen, Liverpool, and Edward C. Shinal, Manlius, both of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Continuation of Ser. No. 462,260, Jan. 31, 1983, abandoned, which is a continuation of Ser. No. 386,178, Jun. 8, 1982, abandoned, which is a continuation of Ser. No. 244,928, Mar. 18, 1981, abandoned. This application Jul. 18, 1984, Ser. No. 631,965

Int. Cl.[4] A61K *31/47;* **C07D** *219/10*

U.S. Cl. 514—297 **11 Claims**

1. The mono DL-pyroglutamate salt of m-AMSA.

7. A stable, solid, water-soluble composition for reconstitution with water or aqueous vehicle as a stable solution of m-AMSA, said composition comprising a mixture of about one to two moles of pyroglutamic acid per mole of m-AMSA.

4,575,510

METHOD OF ALLEVIATING WITHDRAWAL SYMPTOMS

Albert Sjoerdsma, Cincinnati, Ohio, assignor to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Division of Ser. No. 467,553, Feb. 17, 1983, abandoned. This application Oct. 3, 1984, Ser. No. 657,288

Int. Cl.[4] A61K *31/415*

U.S. Cl. 514—401 **2 Claims**

1. A method of alleviating the adverse symptoms associated with tobacco withdrawal which comprises the administration of an anti-withdrawal effective amount of lofexidine, or a pharmaceutically acceptable salt thereof, to a patient in need thereof.

4,575,511

ANTI-HYPERTENSIVE CHROMANOL DERIVATIVES

John M. Evans, Roydon, and Frederick Cassidy, Harlow, both of England, assignors to Beecham Group p.l.c., England

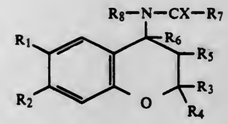
Filed May 16, 1984, Ser. No. 610,626

Claims priority, application United Kingdom, May 18, 1983, 8313676; May 18, 1983, 8313681; May 18, 1983, 8313683; May 18, 1983, 8313688

Int. Cl.[4] A61K *31/35;* **C07D** *311/02*

U.S. Cl. 514—456 **15 Claims**

1. A compound of formula (I):



(I)

wherein:

either one of R_1 and R_2 is hydrogen and the other is selected from the class of C_{1-6} alkylcarbonyl, C_{1-6} alkoxycarbonyl, C_{1-6} alkylcarbonyloxy, C_{1-6} alkylhydroxymethyl, nitro, cyano, chloro, trifluoromethyl, C_{1-6} alkylsulphinyl, C_{1-6} alkylsulphonyl, C_{1-6} alkoxysulphinyl, C_{1-6} alkoxysulphonyl, C_{1-6} alkylcarbonylamino, C_{1-6} alkoxycarbonylamino, C_{1-6} alkylthiocarbonyl, C_{1-6} alkoxy-thiocarbonyl, C_{1-6} alkyl-thiocarbonyloxy, C_{1-6} alkyl-thiolmethyl, formyl or aminosulphinyl, aminosulphonyl or aminocarbonyl, the amino moiety being optionally substituted by one or two C_{1-6} alkyl groups, or C_{1-6} alkylsulphinylamino, C_{1-6} alkylsulphonylamino C_{1-6} alkoxysulphinylamino or C_{1-6} alkoxysulphonylamino or ethylenyl terminally substituted by C_{1-6} alkylcarbonyl, nitro or cyano, or one of R_1 and R_2 is nitro, cyano or C_{1-3} alkylcarbonyl and the other is methoxy or amino optionally substituted by one or two C_{1-6} alkyl groups or by C_{2-7} alkanoyl;

one of R_3 and R_4 is hydrogen or C_{1-4} alkyl and the other is C_{1-4} alkyl or R_3 and R_4 together are C_{2-5} polymethylene;

either R_5 is hydrogen, hydroxy, C_{1-6} alkoxy or C_{1-7} carboxylic acyloxy and R_6 is hydrogen or R_5 and R_6 together are a bond;

R_7 is selected from the class consisting of C_{1-6} alkyl substituted by amino optionally substituted by one or two C_{1-6} alkyl groups which may be the same or different; amino optionally substituted by a C_{1-6} alkyl or C_{1-6} alkenyl group or a C_{1-6} alkanoyl group optionally substituted by up to three halo atoms or by a phenyl group optionally substituted by C_{1-6} alkyl, C_{1-6} alkoxy or halogen; or C_{1-6} alkoxy, or phenoxy optionally substituted by C_{1-6} alkyl, C_{1-6} alkoxy or halogen; or, when X is oxygen, R_7 is further selected from the class of carboxy, C_{1-6} alkoxycarbonyl, or aminocarbonyl optionally substituted by one or two C_{1-6} alkyl groups which may be the same or different;

R_8 is hydrogen or C_{1-6} alkyl; and

X is oxygen or sulphur;

the R_8-N-CX-R_7 group being trans to the R_5 group when R_5 and R_6 together are not a bond;

or, when the compound of formula (I) contains a salifiable group, a pharmaceutically acceptable salt thereof.

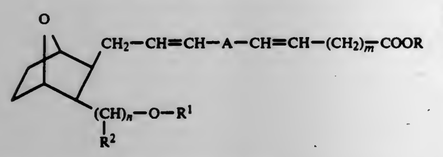
8. An anti-hypertensive pharmaceutical composition which comprises an anti-hypertensive effective amount of a compound according to claim 1 of formula (I) or a pharmaceutically acceptable salt thereof and a pharmaceutically acceptable carrier.

4,575,512
7-OXABICYCLOHEPTANE SUBSTITUTED OXA PROSTAGLANDIN ANALOGS AND THEIR ANTI-THROMBOTIC COMPOSITIONS AND METHODS

Steven E. Hall, Ewing Township, Mercer County; Martin F. Haslanger, Lambertville, and Ravi K. Varma, Belle Mead, all of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Nov. 1, 1984, Ser. No. 667,200
Int. Cl.[4] A61K *31/34;* C07D *307/935*
U.S. Cl. 514—469 11 Claims

1. A compound having the structural formula



and including all stereoisomers thereof;

wherein A is a single bond or —CH_2—; m is 0 when A is —CH_2— and m is 1 when A is a single bond; R is H, lower alkyl or alkali methyl; R^1 is lower alkyl, aryl, aralkyl, cycloalkyl or cycloalkylalkyl; n is 1 to 4; and R^2 is H or lower alkyl, wherein the term lower alkyl or alkyl by itself or as part of another group contains 1 to 12 carbons and is unsubstituted or substituted with halo, trifluoromethyl, aryl, alkoxy, haloaryl, alkyl-aryl, cycloalkyl or alkylcycloalkyl;

the term aryl by itself or as part of another group contains 6 to 10 carbons and is unsubstituted or substituted with 1 or 2 lower alkyl groups, 1 or 2 halogens and/or 1 or 2 lower alkyl groups;

the term cycloalkyl by itself or as part of another group contains 3 to 12 carbons and is unsubstituted or substituted with 1 or 2 halogens, 1 or 2 lower alkyl groups and/or 1 or 2 lower alkoxy groups.

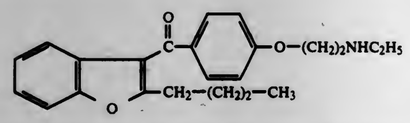
8. A method of inhibiting arachidonic acid-induced platelet aggregation and bronchoconstriction, which comprises administering to the circulatory system of a mammalian host an effective amount of a compound as defined in claim 1 or a pharmaceutically acceptable salt thereof.

4,575,513
PHARMACEUTICAL AND VETERINARY COMPOSITIONS FOR THE TREATMENT OF ISCHEMIC CARDIAC DISORDERS

Marcel Descamps, Rosieres, and Yves Berger, Wemmel, both of Belgium, assignors to Sanofi, Paris, France

Filed Jul. 5, 1984, Ser. No. 628,210
Claims priority, application France, Aug. 2, 1983, 83 12739
Int. Cl.[4] A61K *31/34*
U.S. Cl. 514—469 16 Claims

1. A pharmaceutical composition for the treatment of cardiac arrhythmia and angina pectoris, comprising as active ingredient from 50 to 1200 mg of a compound of formula:



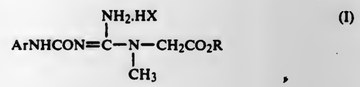
or a pharmaceutically acceptable acid addition salt thereof, in association with a pharmaceutical carrier or excipient.

4,575,514
ANXIETY ALLEVIATING COMPOSITIONS CONTAINING LOWERALKYL-N-[AMINO(ARYLAMINOCARBONYL)-IMINOMETHYL]-N-METHYLGLYCINATES

John R. Carson, Norristown, Pa., assignor to McNeilab, Inc., Fort Washington, Pa.

Division of Ser. No. 450,827, Dec. 20, 1982, abandoned. This application Nov. 9, 1984, Ser. No. 670,654
Int. Cl.[4] A61K *31/215;* C07C *101/453*
U.S. Cl. 514—542 18 Claims

1. A pharmaceutical useful against anxiety composition comprising an anxiety-alleviating amount of an acid addition salt compound of a loweralkyl N-[amino(arylaminocarbonyl-)iminomethyl]-N-methylglycinate represented by the following formula (I):



(I)

wherein

Ar is phenyl substituted in the 3-position by a radical selected from the group consisting of halo, methoxy, methyl, ethyl or trifluoromethyl;

R is lower alkyl; and

HX is a pharmaceutically acceptable strong acid, and a pharmaceutically acceptable carrier.

4,575,515
PHARMACEUTICAL SOLUTIONS COMPRISING DIMETHYL SULFOXIDE

Edmund Sandborn, Burlington, Canada, assignor to Clark Pharmaceutical Laboratories Ltd., Weston, Canada

Filed May 15, 1984, Ser. No. 610,590
Int. Cl.[4] A61K *31/10*
U.S. Cl. 514—708 48 Claims

1. A deep and rapidly penetrating homogeneous solution for topical application causing medicine to penetrate deeply into affected parts of the body without irritating the skin or leaving a greasy film on the skin when the solution is applied topically, the solution comprising:

(a) between about 40% and about 85% DMSO by weight of the solution;

(b) a polyalcohol for assisting to retain moisture in the skin and prevent the skin from dehydrating;

(c) dispersant for assisting to disperse the components in solution to provide a homogeneous solution when applied and when penetrating the skin

(d) a medicine

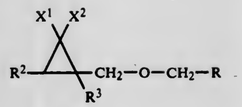
(e) water.

4,575,516
CYCLOPROPYLMETHYL(ENE) ETHERS AND ARTHROPOCIDAL USE THEREOF

Bernd-Wieland Krüger, Wuppertal; Uwe Priesnitz, Solingen; Gerhard Jäger, Leverkusen, and Wolfgang Behrenz, Overath, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 1, 1984, Ser. No. 576,073
Claims priority, application Fed. Rep. of Germany, Feb. 19, 1983, 3305835
Int. Cl.[4] C07C *43/15, 43/162, 43/166;* A01N *43/00*
U.S. Cl. 514—715 17 Claims

1. A substituted cyclopropylmethyl(ene) ether of the formula



in which

X^1 and X^2 are identical or different and represent halogen,

R^2 represents hydrogen, methyl, halomethyl, alkinyloxymethyl or iodoalkinyloxymethyl,

R^3 represents hydrogen or methyl, and

R represents a triiodoalkenyl, alkinyl or iodoalkinyl radical.

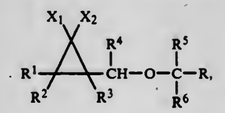
9. An arthropodicidal composition comprising an anthropodicidally effective amount of a compound according to claim 1 plus an additional ingredient.

4,575,517
MICROBICIDAL AGENT FOR PRESERVING INDUSTRIAL MATERIALS

Bernd-Wieland Krüger, Wuppertal; Uwe Priesnitz, Solingen; Gerhard Jäger, Leverkusen; Wilfried Paulus, and Hermann Genth, both of Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 16, 1984, Ser. No. 580,902
Claims priority, application Fed. Rep. of Germany, Feb. 19, 1983, 3305834
Int. Cl.[4] A01N *31/04, 33/04, 43/653, 43/00*
U.S. Cl. 514—715 28 Claims

1. A microbicidal composition for preserving industrial materials comprising a microbicidally effective amount of a cyclopropylmethyl-(ene) ether of the formula



wherein

X^1 and X^2 are identical or different and represent fluorine, chlorine and/or bromine,

R^1 represents hydrogen or C_1–C_6 alkyl,

R^2 and R^3 are identical or different and represent hydrogen, C_1–C_6 alkyl, C_1–C_4 halogenoalkyl, 1-pyrazolylmethyl, 1-imidazolylmethyl, 1-(1,2,4-triazolyl)methyl, C_1–C_4-alkoxy-C_1–C_4-alkyl, C_1–C_4-alkylthio-C_1–C_4-alkyl, (di)C-$_1$–C_4-alkylamino-C_1–C_4-alkyl or a radical from the series phenyl, C_2–C_4-alkenoxy-C_1–C_2-alkyl and C_2–C_4-alkinoxy-C_1–C_2-alkyl which is unsubstituted or substituted by halogen:

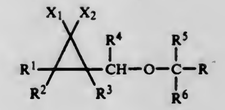
R^4 represents hydrogen or C_1–C_4-alkyl:

R^5 and R^6 are identical or different and represent hydrogen, C_1–C_4-alkyl or a radical selected from the group consisting of phenyl, benzyl and phenethyl which is unsubstituted or substituted by halogen, and

R represents triiodo-C_2–C_4-alkenyl, dibromo-iodo-C_2–C_4-alkinyl, dichloro-iodo-C_2–C_4-alkenyl and iodo C_2–C_4-alkinyl,

in a diluent.

27. A process for rendering an industrial material less subject to attack by microorganisms which comprises applying to said industrial material a microbicidally effective amount of a cyclopropylmethyl-(ene) ether of the formula



in which

X^1 and X^2 are identical or different and represent fluorine, chlorine and/or bromine,

R^1 represents hydrogen or C_1–C_6 alkyl,

R^2 and R^3 are identical or different and represent hydrogen, C_1–C_6 alkyl, C_1–C_4 halogenoalkyl, 1-pyrazolylmethyl, 1-imidazolylmethyl, 1-(1,2,4-triazolyl)methyl, C_1–C_4-alkoxy-C_1–C_4-alkyl, C_1–C_4-alkylthio-C_1–C_4-alkyl, (di)C-$_1$–C_4-alkylamino-C_1–C_4-alkyl or a radical from the series phenyl, C_2–C_4-alkenoxy-C_1–C_2-alkyl and C_2–C_4-alkinoxy-C_1–C_2-alkyl which is unsubstituted or substituted by halogen,

R^4 represents hydrogen or C_1–C_4-alkyl;

R^5 and R^6 are identical or different and represent hydrogen, C_1–C_4-alkyl or a radical selected from the group consisting of phenyl, benzyl and phenethyl which is unsubstituted or substituted by halogen, and

R represents triiodo-C_2–C_4-alkenyl, dibromo-iodo-C_2–C_4-alkinyl, dichloro-iodo-C_2–C_4-alkenyl and iodo C_2–C_4-alkinyl,

in a diluent.

4,575,518
HOMOGENEOUS STORAGE STABLE SALT-CONTAINING MIXTURE

Werner Rasshofer, Cologne, and Reiner Paul, Muelheim am Rhein, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 17, 1984, Ser. No. 682,221
Claims priority, application Fed. Rep. of Germany, Dec. 30, 1983, 3347574
Int. Cl.[4] C08G *18/14*
U.S. Cl. 521—51 21 Claims

1. A composition which is a homogeneous storage stable salt containing mixture having a high mixed hydroxyl number and/or mixed hydroxyl amine number and a high content of polyols having a molecular of from 62 to 399 comprising:

(a) a polyoxyalkylene polyol based on an alkyloxirane which polyol has a molecular weight of from 400 to 12,000 and-/or polyolamine based on an alkyloxirane which polyolamine has a molecular weight of from 400 to 12,000 and/or polyamine based on an alkyloxirane which polyamine has a molecular weight of from 400 to 12,000,

(b) a polyol containing at least two hydroxyl groups and having a molecular weight of from 62 to 399 which polyol when combined only with compound (a) does not form a mixture which remains homogeneous and

(c) a solution-promoting additive selected from salts of cations of the first, second an third Main Groups of the Periodic System of Elements, ammonium ions, monoalkylammonium ions, dialkylammonium ions, trialkylammonium ions and tetraalkylammonium ions and of anions formed by removing at least one proton from an acid having a K_s-value of at least 10^{-7} in which for every 100 parts of (a) there are from 1 to 200 parts by weight (b) and form 0.01 to 10 parts by weight (c).

4,575,519

POROUS CHITIN SHAPED ARTICLE AND PRODUCTION THEREOF

Koji Kifune, Nara; Hiroyuki Tanae; Yasuhiko Yamaguchi, both of Kyoto, and Kenzo Motosugi, Uji, all of Japan, assignors to Unitika, Ltd., Hyogo, Japan

Filed Aug. 21, 1985, Ser. No. 767,971
Claims priority, application Japan, Aug. 23, 1984, 59-176952
Int. Cl.[4] C08D *5/20;* **C08J** *9/00;* **B32B** *9/00*
U.S. Cl. 521—77 **5 Claims**

1. A porous chitin shaped article characterized by having a wet strength of not less than about 1 g/mm^2.

4,575,520

RIGID, CLOSED-CELL, FLAME-RESISTANT POLYURETHANE FOAMS

Manfred Kapps, Bergisch-Gladbach; Rolf Wiedermann, Odenthal; Norbert Adam, Cologne, and Eckehard Weigand, Roesrath, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 16, 1985, Ser. No. 691,813
Claims priority, application Fed. Rep. of Germany, Jan. 24, 1984, 3402310
Int. Cl.[4] C08G *18/14, 18/76, 18/48*
U.S. Cl. 521—107 **9 Claims**

1. A rigid, closed-cell, flame-resistant polyurethane foam which is the reaction product of

(a) a polyol mixture which is made up of
(1) from 25 to 43 wt % flame-proofing agent,
(2) from 5 to 50 wt % sucrose polyether having an OH number of from 350 to 550,
(3) from 0 to 30 wt % amine initiated polyether having an OH number of from 400 to 800,
(4) from 0 to 30 wt % polyether other than components (2) and (3) and/or polyesters having an OH number of from 160 to 600,
(5) from 4 to 13 wt % glycerol,
(6) from 0.5 to 3 wt % of silicone stabilizer, and
(7) from 0.05 to 1.5 wt % of water, with

(b) a polyphenyl-polymethylene-polyisocyanate containing from 30 to 60 wt % of 4,4'- and 2,4'-diphenylmethane diisocyanate

in an NCO to OH equivalent ratio of from 1.07 to 1.45 and in the presence of

(c) a catalyst mixture made up of at least two components selected from
(1) tertiary amines
(2) alkali metal carboxylates,
(3) quaternary ammonium carboxylates, and
(4) organic tin compounds.

9. A polyol mixture which comprises
(1) from 25 to 43 wt % of flame-proofing agent,
(2) from 5 to 50 wt % sucrose polyether having an OH number of from 350 to 550,
(3) from 0 to 30 wt % amine initiated polyether having an OH number of from 400 to 800,
(4) from 0 to 30 wt % polyether other than components (2) and (3) and/or polyester having an OH number of from 150 to 600,
(5) from 4 to 13 wt % of glycerol,
(6) from 0.5 to 3 wt % silicone stabilizer, and
(7) from 0.05 to 1.5 wt % water.

4,575,521

CLOSED CELL PHENOLIC FOAMS

Jacynthe Côté, Chateauguay, and Sunil K. Vidyarthi, Beaconsfield, both of Canada, assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Dec. 19, 1984, Ser. No. 683,691
Claim priority application Canada Oct. 30, 1984, 466623
Int. Cl.[4] C08J *9/14*
U.S. Cl. 521—112 **20 Claims**

1. An improved process for the preparation of a cured substantially closed cell phenolic resin foam by preparing a mixture of a foamable phenol-aldehyde resin, a blowing agent, and an acid catalyst, allowing the mixture to foam, and curing the phenolic foam, wherein the improvement comprises:

(a) maintaining the water content of the foamable mixture below about 14% by weight,
(b) using a resin-soluble acid catalyst,



(c) adding at least a minimum amount of two parts per hundred resin of surfactant to the mixture prior to foaming, and
(d) adding a member selected from the group consisting of butyrolactone, 5-valerolactone and bromo-butyrolactone to the mixture prior to foaming.

4,575,522

RUBBER COMPOSITION FOR GEOTHERMAL APPLICATION

William D. Breach, Humble, and Edwin W. Vaclavik, Houston, both of Tex., assignors to Hydril Company, Houston, Tex.

Filed Mar. 7, 1985, Ser. No. 709,514
Int. Cl.[4] C08K *3/04, 5/13;* **C08J** *3/24*
U.S. Cl. 523—220 **16 Claims**

1. A rubber composition comprising a peroxide crosslinked ethylene propylene compolymer; an effective amount of metal salts of dithiocarbamate; an effective amount of sterically hindered phenol; minor effective amounts of coagent to peroxide crosslinking; a mixture of carbon black of a particle size of about 201 to about 500 nm and of a particle size less than about 201 nm wherein the carbon blacks are used individually in about 25 to 100 parts per weight of copolymer.

4,575,523

HIGH BUILD, LOW BAKE CATHODIC ELECTROCOAT

Terry L. Anderson, Rochester Hills; Tapan K. Deb Roy, Novi, and Ding Y. Chung, Farmington Hills, all of Mich., assignors to Inmont Corporation, Clifton, N.J.

Filed Jan. 29, 1985, Ser. No. 696,296
Int. Cl.[4] C25D *13/06;* **C09D** *5/44, 3/58*
U.S. Cl. 523—414 **18 Claims**

1. A resin composition particularly adapted for use as a film-forming composition in a cathodic electrodeposition process comprising the reaction product of:

(I) a modified epoxy resin formed by reacting a polyepoxide with a water miscible or water soluble polyol;
(II) a polyamine in a ratio equal to at least 1.5 moles of polyamine to each molar equivalent of epoxide; and
(III) an aliphatic monoepoxide,

wherein the resulting reaction product in combination with a cross-linking agent component is capable of depositing coatings about 1.2 to about 1.8 mils thick in less than about 2 minutes with a cross-linking temperature of about 225° F. to about 300° F. in a cathodic electrodeposition process.

4,575,524

HIGH BUILD, LOW BAKE CATHODIC ELECTROCOAT

Terry L. Anderson, Rochester Hills; Tapan K. Deb Roy, Novi, and Ding Y. Chung, Farmington Hills, all of Mich., assignors to Inmont Corporation, Clifton, N.J.

Filed Jan. 29, 1985, Ser. No. 696,297
Int. Cl.[4] C25D *13/06;* **C09D** *5/44, 3/58*
U.S. Cl. 523—455 **18 Claims**

1. A resin composition particularly adapted for use as a film-forming composition in a cathodic electrodeposition process comprising the reaction product of:

(I) a modified epoxy resin formed by reacting a polyepoxide with a water miscible or water soluble polyol;
(II) a polyamine in a ratio equal to at least 1.5 moles of polyamine to each molar equivalent of epoxide; and
(III) a fatty acid,

wherein the resulting reaction product in combination with a cross-linking agent component is capable of depositing coatings about 1.2 to about 1.8 mils thick in less than about 2 minutes with a cross-linking temperature of about 225° F. to about 300° F. in a cathodic electrodeposition process.

4,575,525

REMOISTENABLE ADHESIVE COMPOSITIONS

Donald M. Wacome, Greenville, S.C.; Christopher T. Fazioli, Western Springs, Ill., and Vincent A. Lauria, Somerville, N.J., assignors to National Starch and Chemical Corporation, Bridgewater, N.J.

Continuation of Ser. No. 422,631, Sep. 24, 1982, abandoned. This application Nov. 5, 1984, Ser. No. 668,603
Int. Cl.[4] C08L *3/02;* **C08J** *3/02;* **C09J** *3/06*
U.S. Cl. 524—48 **7 Claims**

1. Remoistenable adhesive compositions comprising:

(a) 55–99.5% of an ethylene vinyl acetate resin latex having a T_g of 15° to −10° C., the latex having been emulsified in an aqueous solution of dextrin;
(b) 0.5–5% of a humectant; and
(c) 0–40% dextrin.

4,575,526

HYDROCARBYL SUBSTITUTED CARBOXYLIC ACYLAGING AGENT DERIVATIVE CONTAINING COMBINATIONS, AND FUELS CONTAINING SAME

Casper J. Dorer, Jr., Lyndhurst, and Katsumi Hayashi, Mentor, both of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Division of Ser. No. 404,845, Aug. 9, 1982, abandoned. This application Mar. 12, 1985, Ser. No. 711,114
Int. Cl.[4] C08K *5/35*
U.S. Cl. 524—96 **3 Claims**

1. A composition comprising:

(A) a copolymer of ethylene and vinyl acetate, said copolymer having about 30 to about 40% by weight vinyl acetate, a number average molecular weight in the range of about 1500 to about 3000, and about 3 to about 6 methyl terminating side branches per 100 methylene groups; and
(B) the reaction product of a hydrocarbylsubstituted succinic anhydride with a mixture of aminopropylmorpholine and diethylenetriamine, the hydrocarbyl substituent of said succinic anhydride being a polymer of C_{15-18} alpha-olefins, the number average molecular weight of said substituent being in the range of about 2000 to about 8000, the weight ratio of (A) to (B) being in the range of about 10:1 to about 1:10.

4,575,527

VISCOSITY STABILIZED WATER-SOLUBLE AMINE POLYMERS

Kenneth W. Dixon, Thornton, and Steven M. Menchen, Rosemont, both of Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 12, 1984, Ser. No. 680,636
Int. Cl.[4] C08K *5/17*
U.S. Cl. 524—253 **16 Claims**

1. A visocity-stable aqueous polymer solution suitable for use as a flocculating agent comprised of (a) a water-soluble cationic amine polymer which is the condensation reaction product of ammonia or a polyfunctional amine and a difunctional epoxy compound or an alkylene dihalide and (b) a stabilizer containing 1 to about 20 amine groups, said solution having a pH in the range of about 10.5 to 12.5 and said stabilizer being present in an amount sufficient to stabilize said solution against viscosity changes.

4,575,528

VISCOSITY MODIFIERS FOR GRAFTED STARCH POLYMER SOLUTIONS

Donald N. Van Eenam, Des Peres, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 500,211, Jun. 2, 1983, abandoned. This application Mar. 2, 1984, Ser. No. 585,461
Int. Cl.[4] C08K *5/09*
U.S. Cl. 524—287 **21 Claims**

1. A graft polymer comprising about 10 weight percent to about 80 weight percent of a starch substrate, about 20 weight percent to about 90 weight percent of vinyl polymeric segments and a sufficient amount of cinnamic acid material to significantly reduce the viscosity of a solution of said graft polymer.

4,575,529

DISPERSIBLE VINYLIDENE CHLORIDE POLYMER POWDERS AS ADDITIVES FOR POLYMERS

Dale S. Gibbs; Jack H. Benson, and Reet T. Fernandez, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 150,771, May 19, 1980, abandoned, which is a division of Ser. No. 942,510, Sep. 15, 1978, abandoned. This application Oct. 19, 1981, Ser. No. 312,566
Int. Cl.[4] C08J *75/00;* **C08G** *18/06*
U.S. Cl. 524—507 **2 Claims**

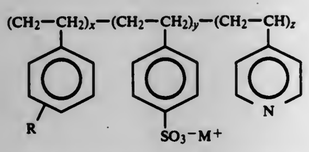
1. A composition of matter for use in the preparation of polymeric materials having enhanced physical properties comprising (A) a nonsolvent for vinylidene chloride polymers and (B) a vinylidene chloride polymer powder, having a second order transition temperature of at least about 50° C., which is dispersed in the nonsolvent, said powder being obtained by a method comprising the steps of

(I) preparing a vinylidene chloride polymer latex by emulsion polymerizing about 50 to about 65 weight percent vinylidene chloride and at least one copolymerizable ethylenically unsaturated comonomer and
(II) recovering the vinylidene chloride polymer powder from the latex;

wherein the latex polymer particles prior to recovery have a diameter less than about 1 micron, with the further limitation that when 20 weight percent of the powder is mixed with a polyol having a room temperature viscosity of about 900 to 1000 centipoise and the powder polyol mixture is passed once through a Gifford-Wood colloid mill operating at 10,000 rpm with a gap setting of 0.004 inch and then twice through a Gaulin homogenizer operating at 5000 pounds per square inch, the powder will break down in polyol and regenerate original latex particles; powder particles which do not break down to latex particle size are of a size less than about 100 microns.

4,575,530
MULTIFUNCTIONAL POLYMERIC ADDITIVE
Dennis G. Peiffer, East Brunswick, and Robert D. Lundberg, Bridgewater, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.
Continuation-in-part of Ser. No. 720,967, Apr. 8, 1985, which is a continuation of Ser. No. 638,217, Aug. 6, 1984, abandoned.
This application Jun. 21, 1985, Ser. No. 747,253
Int. Cl.[4] C08L 39/00
U.S. Cl. 524—548 2 Claims

1. A terpolymer having the formula:



wherein x is about 40 to about 98 mole %, y is about 1 to about 50 mole %, and z is about 1 to about 50 mole %, wherein y and z are less than 60 mole %, and M is an amine or a metal cation selected from the group consisting of aluminum, iron, lead, Groups IA, IIA, IB and IIB of the Periodic Table of Elements and where R is hydrogen or an alkyl group of from 1 to 12 carbon atoms.

4,575,531
PARTIALLY HYDROLYZED ETHYLENE-VINYL ACETATE (EVA) ELASTOMERS VULCANIZABLE WITH SULFUR
John M. Hoyt, Cincinnati, and Steven D. Blazey, Akron, both of Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.
Filed Nov. 7, 1984, Ser. No. 668,606
Int. Cl.[4] C08L 31/02
U.S. Cl. 524—563 11 Claims

1. A process for producing a sulfur vulcanizable ethylene-vinyl acetate copolymer which comprises the steps of:
(1) partial hydrolysis to produce vinyl alcohol groups;
(2) thermal modification to produce ethylenic unsaturation during which a molecular weight stabilizer is added; and
(3) combining the polymer obtained after the aforesaid partial hydrolysis and thermal modification steps with a vulcanizing agent selected from a member of the group consisting of sulfur and compounds that liberate sulfur at vulcanizing temperatures.

4,575,532
POLYVINYL ALCOHOL ALLOYS AND METHOD OF MAKING THE SAME
Seymour Schmukler, Palatine; Mitsuzo Shida, Barrington, and John Machonis, Jr., Schaumburg, all of Ill., assignors to Norchem, Inc., Rolling Meadows, Ill.
Filed Feb. 8, 1984, Ser. No. 578,111
Int. Cl.[4] C08L 29/04
U.S. Cl. 525—57 36 Claims

1. A melt processable polymer alloy prepared by the method comprising the steps of:
(a) providing a polyvinyl alcohol polymer having a degree of hydrolysis of less than about 90 mole percent and a degree of polymerization of about 300 to 900, inclusive;
(b) providing a functional polymer comprising a backbone of a polyolefin or an ethylene-ester copolymer grafted with functional groups reactive with the hydroxyl groups of said polyvinyl alcohol polymer, said functional groups comprising a carboxylic acid, a carboxylic acid anhydride, a metal salt of a carboxylic acid, a derivative thereof, or mixtures; and,
(c) thereafter reacting said polyvinyl alcohol polymer with less than a stoichiometric amount of said functional polymer to provide a mixture of grafted and ungrafted polyvinyl alcohol polymers, said grafted polyvinyl alcohol polymer having less than all available hydroxyl groups reacted with said functional groups, said polyvinyl alcohol polymer comprising at least about 70 weight percent of said mixture.

4,575,533
THERMOPLASTIC FLUORINE-CONTAINING RESIN BLEND COMPOSITION
Shinji Horie; Tetsuji Kakizaki, and Toshikazu Mizutani, all of Mie, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan
Filed May 3, 1985, Ser. No. 730,149
Claims priority, application Japan, Jul. 10, 1984, 59-142785
Int. Cl.[4] C08L 27/14, 27/16, 51/00
U.S. Cl. 525—72 13 Claims

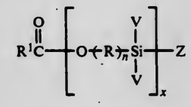
1. A thermoplastic fluorine-containing resin blend composition comprising
(a) from 5 to 95% by weight of a thermoplastic fluorine-containing resin, and
(b) from 95 to 5% by weight of at least one modified ethylene polymer selected from the group consisting of the following components (i) and (ii):
(i) a modified ethylene polymer containing at least 50% weight ethylene obtained by subjecting an ethylene polymer and an alkyl acrylate to graft reaction conditions, wherein the total alkyl acrylate content is from 5 to 70% by weight based on the weight of the modified ethylene polymer;
(ii) a modified ethylene polymer containing at least 50% weight ethylene obtained by subjecting an ethylene polymer having a crystallinity of from 4 to 50% and vinyl acetate to graft reaction conditions, wherein the total vinyl acetate content is from 5 to 70% by weight based on the weight of the modified ethylene polymer and the boiling xylene insoluble content is 10% by weight or less based on the weight of the modified ethylene polymer.

4,575,534
STYRENE-BUTADIENE COPOLYMER RUBBER COMPOSITION
Noboru Oshima, Suzuka; Isamu Shimizu, Kameyama; Mikio Takeuchi, Yokkaichi; Tatsuo Fujimaki, Higashimurayama, and Shinsuke Yamaguchi, Higashikurume, all of Japan, assignors to Bridgestone Tire Company Limited and Japan Synthetic Rubber Company Limited, both of, Japan
Filed Apr. 6, 1984, Ser. No. 597,635
Claims priority, application Japan, Apr. 6, 1983, 58-59362
Int. Cl.[4] C08L 9/00, 53/00
U.S. Cl. 525—99 3 Claims

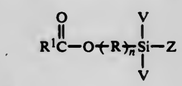
1. A rubber composition comprising at least 20% by weight of styrene-butadiene copolymer based on the total weight of the rubber content, said styrene-butadiene copolymer being a copolymer containing 30–70% by weight of branched polymers therein obtained by randomly copolymerizing stryene with 1,3-butadiene at a temperature within a range of 0° to 120° C. in a hydrocarbon solvent in the presence of an organolithium compound as an initiator and in the presence of at least one compound selected from an ether, a tertiary amine, a potassium salt of an organosulfonic acid, a potassium salt of an alcohol and a potassium salt of a phenol, and then subjecting to a coupling reaction with a polyfunctional coupling agent, and having the following properties:
(a) a content of bound styrene in the copolymer is 3–15% by weight;
(b) a content of vinyl bond contained in the butadiene units is 15–30% by weight;
(c) a Mooney viscosity ($ML_{1+4}^{100°C}$) is 15–50; and
(d) a molecular weight distribution of the copolymer is bimodal at a ratio $\overline{M}w/\overline{M}n$ of 1.4–2.2 in which $\overline{M}w$ is a weight-average molecular weight and $\overline{M}n$ is a number-average molecular weight.

4,575,535
WATER-CURABLE, SILANE MODIFIED ALKYLENE-ALKYL ACRYLATE COPOLYMERS AND A PROCESS FOR THE PRODUCTION THEREOF
Michael J. Keogh, Bridgewater, N.J., assignor to Union Carbide Corporation, Danbury, Conn.
Division of Ser. No. 439,173, Nov. 5, 1982, Pat. No. 4,552,941, which is a continuation-in-part of Ser. No. 294,784, Aug. 10, 1981, Pat. No. 4,369,289, which is a continuation-in-part of Ser. No. 192,319, Sep. 30, 1980, Pat. No. 4,327,323, which is a continuation-in-part of Ser. No. 70,785, Aug. 29, 1979, Pat. No. 4,291,136, which is a continuation-in-part of Ser. No. 892,153, Mar. 31, 1978, abandoned. This application Sep. 17, 1984, Ser. No. 650,890
The portion of the term of this patent subsequent to May 4, 1999, has been disclaimed.
Int. Cl.[4] C08L 83/06; C08F 255/00, 8/00
U.S. Cl. 525—106 20 Claims

1. A water-curable silane modified alkylene-alkyl acrylate copolymer which is the reaction product of an alkylene-alkyl acrylate copolymer and a polysiloxane having the formula:



wherein R is a hydrocarbon radical or an oxy substituted hydrocarbon radical, R^1 is a hydrocarbon radical, each V is hydrogen, a hydrocarbon radical or a hydrolyzable group, Z is an alkoxy radical having one to 18 carbon atoms inclusive, n is an integer having a value of one to 18 inclusive and x is an integer having a value of at least 2; said polysiloxane derived from a mixture of different silanes having the formula:



wherein the variables are as previously defined.

4,575,536
RESINOUS COATING COMPOSITION CURABLE AT LOW TEMPERATURE
Mitsuo Yamada, and Hiromichi Tamasaki, both of Osaka, Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan
Filed Mar. 30, 1984, Ser. No. 595,382
Claims priority, application Japan, Apr. 2, 1983, 58-58545
Int. Cl.[4] C08L 61/28
U.S. Cl. 525—162 5 Claims

1. A coating composition containing, as a resinous vehicle, a melamine resin (A) having a weight-average molecular weight by Gel Permeation Chromatography of 6000–12000 and having as functional groups, imino, methylol and alkoxymethylol groups, the sum of the imino and methylol groups being, when expressed in terms of average numbers of the functional groups per triazine nucleus, 2.0–2.5, the number of alkoxymethylol groups being 2.0 or more, and the ratio of the number of methylol groups to the number of imino groups being 1.0–2.5, and a crosslink curable resin (B) having functional groups which are reactive with the functional groups of said melamine resin and being selected from the group consisting of polyester resin, acrylic resin, epoxy resin and polyurethane resin.

4,575,537
FLUORORUBBER-BASED COMPOSITION
Keiji Ueno, Osaka, Japan, assignor to Sumitomo Electric Industries, Ltd., Japan
Continuation-in-part of Ser. No. 346,328, Feb. 5, 1982, Pat. No. 4,489,113. This application Oct. 3, 1984, Ser. No. 657,427
Claims priority, application Japan, May 2, 1981, 56-16587; May 2, 1981, 56-16588
Int. Cl.[4] C08L 23/08, 27/16
U.S. Cl. 525—199 2 Claims

1. A fluororubber-based composition useful for the production of heat-shrinkable products consisting essentially of a mixture of 100 parts by weight of fluororubber and 10 to 100 parts by weight of an ethylene-vinyl acetate copolymer having a vinyl acetate content of 10 to 30% by weight or an ethylene-ethyl acrylate copolymer having an ethyl acrylate content of 8 to 20% by weight.

4,575,538
OLEFIN POLYMERIZATION
Henry L. Hsieh, and Gene H. C. Yeh, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.
Filed Dec. 20, 1984, Ser. No. 684,407
Int. Cl.[4] C08F 4/52
U.S. Cl. 525—244 29 Claims

10. A process for the production of polymers of conjugated diolefins and vinyl-substituted aromatic compounds which comprises polymerizing monomers of diolefins and vinyl-substituted aromatic compounds under polymerization conditions in a two stage process by contacting at least one of said monomers in the presence of an organic base in a first stage with a catalyst composition comprising a rare earth metal halide-ligand complex (component A) formed by admixing a rare earth metal halide and an electron donor ligand containing an acidic proton in a solvent or diluent to form a suspension of the complex and an organometal compound (component B) and then contacting the product of said first stage with at least one vinyl-substituted aromatic monomer and a free radical initiator in a second stage.

4,575,539
DRUG DELIVERY SYSTEMS INCLUDING NOVEL INTERPENETRATING POLYMER NETWORKS AND METHOD
Mark T. DeCrosta, Plainsboro; Nemichand B. Jain, Monmouth Junction, and Edward M. Rudnic, Kendall Park, all of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.
Filed Jun. 3, 1985, Ser. No. 740,689
Int. Cl.[4] C08L 33/14
U.S. Cl. 525—283 17 Claims

1. An interpenetrating polymer network drug delivery system comprised of a hydrogel polymer interpendetrated by and interwoven with a diffusion rate controlling membrane formed of a cross-linked polymer consisting essentially of the reaction product of a swelling agent which is acrylic acid, methyl methacrylate, acrylic anhydride, ethylene-vinyl acetate, hydroxyehtyl acrylate, methyl acrylate, vinyl pryidine, vinyl chloride, methacrylic acid, acrylamide, hydroxy propyl methacrylate, hydroxyethyl methacrylate, butyl acrylate or mixtures thereof and a cross-linking agent which is butylene diacrylate, ethylene diemthacrylate, divinyl benzene, ethylene glycol dimethacrylate, tetraethylene glycol dimethacrylate or methyl bisacrylamide.

4,575,540

POLYVINYL BUTYRAL SHEET ROUGHNESS CONTROL

George E. Cartier, Springfield, Mass., assignor to Monsanto Company, St. Lousi, Mo.

Filed Dec. 21, 1984, Ser. No. 684,765
Int. Cl.[4] C08F 8/28
U.S. Cl. 525—328.7 5 Claims

1. A method of regulating the surface roughness of extruded, plasticized PVB sheet which comprises:

employing during extrusion a PVB resin lightly cross-linked prior to extrusion through intermolecular linkages developed through the hydrated form of formaldehyde, said sheet having a surface roughness less than that which would be present in the absence of such linkages.

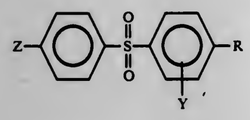
4,575,541

POLYMER WITH SULFONE-BENZENE APPENDAGE

Louis A. Carpino, Amherst, Mass., and Beri Cohen, Tarrytown, N.Y., assignors to Research Corporation, New York, N.Y.

Filed May 24, 1984, Ser. No. 614,344
Int. Cl.[4] C08F 8/34
U.S. Cl. 525—333.5 6 Claims

1. Polymer supports or substrates for peptide synthesis characterized by insensitivity to moisture and alcohols in neutral solution, ready swelling in a variety of solvents, retention of form after repeated usage, a substantial lack of brittleness of tendency to crumble, and a rapid rate of reaction with amino acids or peptides having a free amine function, said polymers being compounds of the formula:



wherein

Z is polystyrene, or a copolymer comprising styrene and a divinyl benzene comonomer;

Y is selected from the group comprising nitro, acyl, carboxyl, formyl, cyano, carbalkoxy, arylsulfone, alkylsulfone, carboxyamide or halogen; and

R is hydroxy, aryloxy, alkoxy, halogen, formyloxy, acyloxy, cyano, amino, alkylamino, acylamino, carboxyamine, thiol, alkylthio, arylthio, aralkylthio or acylthio.

4,575,542

THERMOSETTABLE POLYSTYRYLPYRIDINE PREPOLYMER TERMINATED WITH ETHYLENICALLY UNSATURATED GROUPS AND CURED PRODUCTS THEREFROM

Duane S. Treybig, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Apr. 23, 1985, Ser. No. 726,554
Int. Cl.[4] C08F 283/04; C08G 2/26
U.S. Cl. 525—426 21 Claims

1. A thermosettable composition which results from reacting

(A) a pyridine compound containing at least two substituent groups which have at least one hydrogen atom attached to a carbon atom which is attached to the ring or mixture of such pyridines;

(B) at least one material having at least two aldehyde groups; and

(C) at least one aldehyde containing at least one polymerizable unsaturated group;

wherein components (A), (B) and (C) are employed in quantities which provide a mole ratio of (C):(B):(A) of from about 0.25:0.25:1 to about 4:4:1.

4,575,543

LOW VISCOSITY EPOXY AND PHENOXY RESINS

Michael B. Cavitt; William O. Perry, and Robert E. Hefner, Jr., all of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 3, 1985, Ser. No. 730,008
Int. Cl.[4] C08G 59/14
U.S. Cl. 525—510 20 Claims

1. A process for reducing the viscosity of epoxy or phenoxy resins which comprises reacting

(A) at least one epoxy or phenoxy resin having an average weight average molecular weight of from about 1,700 to about 100,000 and containing an average of at least about 4.5 hydroxyl groups per molecule; with

(B) at least one trihalomethyl acyl aromatic compound; in the presence of

(C) a catalytic amount of at least one tertiary amine; wherein components (A) and (B) are present in an amount of from about 0.1 to 0.9 moles of component (B) per mole of hydroxyl groups contained in component (A).

4,575,544

FERRICENIUM SALT CATALYSTS FOR VINYL ETHERS

John M. Rooney, Naas, Ireland, and Paul Conway, Bury St. Edmunds, England, assignors to Loctite (Ireland) Ltd., Dublin, Ireland

Filed Apr. 16, 1984, Ser. No. 600,627
Int. Cl.[4] C08F 4/52, 4/58, 4/70, 116/14
U.S. Cl. 526—118 9 Claims

1. A curable composition consisting essentially of a mixture of at least one vinyl ether monomer and a ferricenium salt represented by the formula:



where R^1, R^2, R^3, and R^4 are the same or different H or alkyl groups or a linkage to a polymer backbone, M is a metal or metalloid; X is a halide and n is an integer equal to 1 plus the valency of M.

4,575,545

TERMINAL CLUSTER ACRYLATE SILICONES

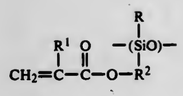
Steven T. Nakos, Andover, Conn., and Samuel Q. S. Lin, Fort Lee, N.J., assignors to Loctite Corporation, Newington, Conn.

Continuation-in-part of Ser. No. 515,702, Jul. 20, 1983, Pat. No. 4,504,629, Ser. No. 571,036, Jan. 16, 1984, and Ser. No. 575,256, Jan. 30, 1984, Pat. No. 4,503,208. This application Jun. 22, 1984, Ser. No. 623,760
Int. Cl.[4] C08F 12/20, 18/20, 30/08; C07F 7/04
U.S. Cl. 526—242 19 Claims

1. A polyorganosiloxane polymer having a structure represented by one of the formulas

$(AB)_mC$ or $[(AB)_m]_nSiR_{(4-n)}$

where the R groups are the same or different organic groups other than acrylic groups or groups co-curable therewith; A is a linear polyorganosiloxane segment containing between 3 and about 50 siloxane repeat units at least 3 of which are acrylic groups containing repeat units represented by the formula



where R^1 is H or lower alkyl, R^2 is alkylene or alkylene; B is a polyorganopolysiloxane segment represented by the formula



where x is an integer of at least 100; C is A or a triorganosilyl group; m is an integer of 1 or more; and n is 3 or 4.

4,575,546

TERMINAL CLUSTER VINYL SILICONES AND ACRYLATE CLUSTER SILICONES THEREFROM

Philip Klemarczyk, Newington, Conn., and Samuel Q. S. Lin, Edgewater, N.J., assignors to Loctite Corporation, Newington, Conn.

Filed Jun. 22, 1984, Ser. No. 623,759
Int. Cl.[4] C08F 230/08, 218/20, 275/00; C08G 77/20
U.S. Cl. 526—245 19 Claims

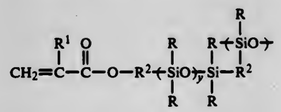
1. A polyorganosiloxane polymer having a structure represented by one of the formulas

$(AB)_mC$

or

$[(AB)_m]_nSiR_{(4-n)}$

where the R groups are the same or different organic groups other than acrylic groups or groups co-curable therewith; A is a linear polyorganosiloxane segment containing between 3 and about 50 siloxane repeat units at least 3 of which are acrylic group containing repeat units represented by the formula



where R^1 is lower alkyl, the R^2 groups are the same or different alkylene, alkyleneoxy or alkenylene groups, and y is 0–4; B is a polyorganosiloxane segment represented by the formula:



where x is an integer of at least 100; C is A or a triorganosilyl group; m is an integer of 1 or more; and n is 3 or 4.

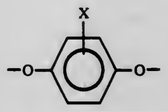
4,575,547

LOW-MELTING AROMATIC POLYESTERS OF TRIFLUOROMETHYL TEREPHTHALIC ACID OR ESTER FORMING DERIVATIVES THEREOF

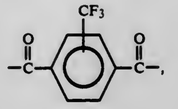
Howard G. Rogers, Weston, Mass.; Russell A. Gaudiana, Merrimack, N.H.; Richard A. Minns, and Roger F. Sinta, both of Arlington, Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Nov. 26, 1984, Ser. No. 674,775
Int. Cl.[4] C08G 63/68
U.S. Cl. 528—191 16 Claims

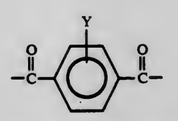
1. A melt-processable polyester comprising as essential units, repeating units of the formula



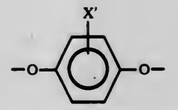
wherein X is hydrogen, halogen, alkyl or nitro, and repeating units of the formula



and as optional units, repeating units of the formula



wherein Y is hydrogen, halogen, alkyl or nitro, and repeating units of the formula



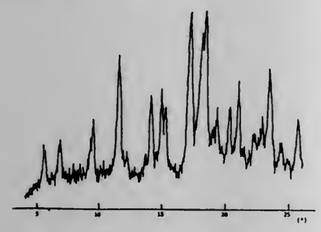
wherein X' is hydrogen, halogen, alkyl or nitro, except that X' is different from X.

4,575,548

OCCLUSION COMPOUND OF 2-NITROXYMETHYL-6-CHLOROPYRIDINE WITH β-CYCLODEXTRIN AND PROCESS FOR PREPARATION THEREOF

Yoshio Ueda, Mikageasakamachi; Fumio Shimojo, Kawanishi, and Kiyoshige Yoshida, Mino, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed Sep. 26, 1984, Ser. No. 654,471
Claims priority, application Japan, Oct. 11, 1983, 58-190345
Int. Cl.⁴ C08B *37/16*; A61K *31/73*
U.S. Cl. 536—46 **6 Claims**



1. An occlusion compound of 2-nitroxymethyl-6-chloropyridine with β-cyclodextrin.

4,575,549

PROCESS FOR THE PREPARATION OF FRUCTOSE 1,6 DIPHOSPHATE ACID

Massimo Diana, and Guglielmo M. Bisso, both of Rome, Italy, assignors to Biomedica Foscama Industria Chimico-Farmaceutica S.p.A., Rome, Italy

Filed Dec. 18, 1984, Ser. No. 683,254
Claims priority, application Italy, Dec. 23, 1983, 24355 A/83
Int. Cl.⁴ C07H *1/06*
U.S. Cl. 536—117 **4 Claims**

1. A process for the preparation of fructose-1,6-diphosphate starting with the broth obtained after the enzymatic phosphorylation of glucose by brewer's yeast in the presence of inorganic phosphate and comprising the following steps:
(a) acidification of the broth below pH 2.0 by passage through a strong acid cationic resin
(b) subsequent passage of the output from the acid column through a strong base anionic resin which retains fructose-1,6-diphosphate and leaves unreacted glucose to be washed out with water
(c) two-step elution which allows removal of monophosphorylated sugars and inorganic phosphate from fructose-1,6-diphosphate
(d) partial neutralization of the eluate at pH 3.0
(e) molecular filtration performed by Reverse Osmosis
(f) acidification of the resulting solution below pH 1.0 by passage through a strong acid cation resin.

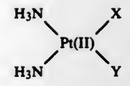
4,575,550

PLATINUM COMPLEXES

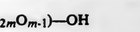
Tetsushi Totani, Hyogo, Japan, assignor to Shionogi & Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 337,514, Jan. 6, 1982, abandoned. This application Apr. 14, 1983, Ser. No. 485,584
Claims priority, application Japan, Jan. 23, 1981, 56-9463
Int. Cl.⁴ C07F *17/02, 15/00*
U.S. Cl. 536—121 **9 Claims**

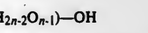
1. A platinum complex of the formula:



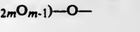
wherein each of X and Y is a mono-valent group of



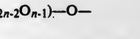
or



or X and Y taken together form a di-valent group of



or



(wherein m is an integer of 1 to 6, and n is an integer of 4 to 5.)

4,575,551

ACIDIC HETEROPOLYSACCHARIDE AM-2

Seiichi Fujiyama; Hiroyuki Minakami; Kenji Tayama, and Hiroshi Masai, all of Aichi, Japan, assignors to Nakano Vinegar Co., Ltd., Handa, Japan

Filed Oct. 25, 1983, Ser. No. 545,270
Claims priority, application Japan, May 2, 1983, 58-076265
Int. Cl.⁴ C12P *19/06, 1/16*; C08B *37/00*
U.S. Cl. 536—123 **1 Claim**

1. Acidic heteropolysaccharide AM-2 having the following physiochemical characteristics:
(1) composition
composed of glucose, rhamnose, mannose, glucuronic acid and acetyl group as main components, the molar ratio of glucose:rhamnose:mannose:glucuronic acid being 4:0.9～1.1:0.9～1.1:0.9～1.1 and the acetyl group content is 4 to 8%;
(2) infrared spectrum
the infrared spectrum is as shown in FIG. 1;
(3) color reaction
Anthrone reaction: positive
Carbazole reaction: positive
Elson-Morgan's reaction: negative
Iodine reaction: positive;
(4) solubility in solvents
soluble in water, and insoluble in ethanol, ether, acetone;
(5) color and appearance
the purified polysaccharide is white, cottony or fibrous;
(6) viscosity
the aqueous solution is colorless, transparent and viscous, and the viscosity of 1% solution is 1200 to 2000 cps as determined with a torque measuring viscometer at 25° C. and a rate of 30 rpm;
(7) elemental analysis:
C: 39.9±1%; H: 6.2±1%; N: 0%; ash: 3.0±1.0%;
(8) Specific rotation
$[\alpha]_D^{27}=0\sim+20$
(C=0.33 in the aqueous solution);
(9) molecular weight
about 10^5 or above;
(10) melting point
the polysaccharide turns dark brown at 190° C. and decomposes at 250° C.; and
(11) nuclear magnetic resonance spectrum
the ^{13}C-nuclear magnetic resonance spectrum is as shown in FIG. 7.

4,575,552

PROCESS OF MAKING ETHYL[6-[ETHYL-(2-HYDROXYPROPYL)AMINO]-3-PYRIDAZINYL]HYDRAZINE CARBOXYLATE

Carlo Farina, Valsolda; Giorgio Pifferi, Milan, and Mario Pinza, Corsico, all of Italy, assignors to I.S.F. S.p.A., Milan, Italy

Filed Apr. 16, 1984, Ser. No. 600,407
Claims priority, application Italy, Apr. 28, 1983, 20813 A/83
Int. Cl.⁴ C07D *237/20*
U.S. Cl. 544—224 **5 Claims**

1. A process making ethyl {6-[ethyl-(2-hydroxypropyl-)amino]-3-pyridazinyl}hydrazinecarboxylate comprising the following stages:
(a) treating 3-chloro-6-hydrazinopyridazine, in a form protected with a triphenylmethyl protecting group at the hydrazino group, with a strong oxidizing agent selected from potassium permanganate, potassium dichromate and sodium hypochlorite to obtain a corresponding azoderivative;
(b) treating said azoderivative with an alkoxide derived from ethyl-(2-hydroxypropyl)amine to obtain 3-[ethyl-(2-hydroxypropyl)amino]-6-protected-azopyridazine;
(c) treating the compound resulting from stage (b) with a reducing agent selected from hydrogen, sodium borohydride and sodium hydrosulphite to obtain 3-[ethyl-(2-hydroxypropyl)amino]-6(protected-hydrazino)pyridazine;
(d) treating the compound resulting from stage (c) by acidic hydrolysis to remove said protecting group to obtain 3-[ethyl-(2-hydroxypropyl)amino]-6-hydrazinopyridazine;
(e) treating the compound resulting from stage (d) with ethyl chlorocarbonate at a temperature higher than −10° C. to acylate it and obtain the desired compound.

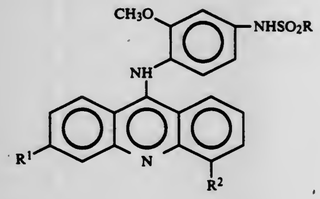
4,575,553

ANTITUMOR M-AMSA ANALOG

Gerry Kavadias, Athens, Greece; Terrance W. Doyle, Fayetteville, N.Y.; Elizabeth Janik, Boucherville, Canada, and Richard A. Partyka, Liverpool, N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Filed Jun. 18, 1984, Ser. No. 621,399
Int. Cl.⁴ A61K *31/47*; C07D *219/10*
U.S. Cl. 546—106 **1 Claim**

1. A compound having the formula



in which
R is CH_3,
R^1 is Cl,
R^2 is CH_2NHCH_3.

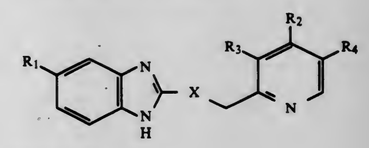
4,575,554

SUBSTITUTED 2-PYRIDYLMETHYLTHIO- AND SULFINYL-BENZIMIDAZOLES AS GASTRIC ANTISECRETORY AGENTS

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 558,087, Dec. 5, 1983, abandoned. This application Sep. 6, 1984, Ser. No. 648,118
Int. Cl.⁴ C07D *401/12*
U.S. Cl. 546—271 **7 Claims**

1. A compound of the formula I:



I

wherein X is
(a) =S, or
(b) =SO;
wherein R_1 is
(a) hydrogen,
(b) methyl,
(c) methoxy, or
(d) trifluoromethyl;
wherein R_2 is
(a) $-SR_5$,
wherein R_5 is
(a) (C_1-C_4)alkyl,
(b) (C_1-C_4)alkenyl,
(c) PhX,
(d) $-CH_2PhX$, or
(e) (C_3-C_{10})cycloalkyl;
wherein (PhX) is phenyl substituted by zero to 3 of the following:
(a) (C_1-C_4)alkyl,
(b) chloro,
(c) fluoro,
(d) bromo,
(e) nitro,
(f) trifluoromethyl; or
(g) OR_3;
wherein R_3 and R_4 are the same or different and are
(a) hydrogen, or
(b) (C_1-C_4)alkyl.

4,575,555

4-(3-CHLOROPHENYL)-1,2,3,6-TETRAHYDROPYRIDINE DERIVATIVE

Davis L. Temple, Jr., and Walter G. Lobeck, Jr., both of Evansville, Ind., assignors to Mead Johnson & Company, Evansville, Ind.

Continuation of Ser. No. 509,266, Jun. 29, 1983, Pat. No. 4,487,773, which is a continuation-in-part of Ser. No. 351,834, Feb. 24, 1982, abandoned, which is a continuation-in-part of Ser. No. 244,464, Mar. 16, 1981, Pat. No. 4,338,317. This application Sep. 28, 1984, Ser. No. 656,128
Int. Cl.⁴ C07D *401/06*
U.S. Cl. 546—276 **1 Claim**

1. 2-[3-[4-(3-Chlorophenyl)-1,2,3,6-tetrahydro-1-pyridinyl]-propyl]-5-ethyl-2,4-dihydro-4-(2-phenoxyethyl)-3H-1,2,4-triazol-3-one.

4,575,556

BIFUNCTIONAL CHELATING AGENTS

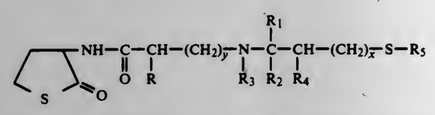
Edmund F. Byrne, Alameda, Calif., and Glen L. Tolman, Chelmsford, Mass., assignors to Medi-Physics, Inc., Emeryville, Calif.

Division of Ser. No. 439,960, Nov. 8, 1982, Pat. No. 4,434,151. This application Nov. 28, 1983, Ser. No. 555,850

Int. Cl.⁴ C07C *333/32*

U.S. Cl. 549—63 **4 Claims**

1. A compound of the formula:



wherein R is hydrogen or lower alkyl; R_1 and R_2 are individually hydrogen or lower alkyl or taken together form oxo; R_3 is an amino protecting group where R_1 and R_2 are individually hydrogen or lower alkyl; R_3 is hydrogen when R_1 and R_2 taken together form oxo; R_4 is hydrogen or lower alkyl, R_5 is hydrogen or a thiol protecting group; and x and y are integers from 0 to 2.

4,575,557

PREPARATION OF SUBSTITUTED BENZAMIDES

John D. Jones, Bury, and David Schofield, Greater Manchester, both of England, assignors to Imperial Chemical Industries PLC, London, England

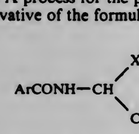
Filed Jul. 30, 1984, Ser. No. 635,595

Claims priority, application United Kingdom, Sep. 22, 1983, 8325408

Int. Cl.⁴ C07D *319/18*; C07C *121/78*

U.S. Cl. 549—366 **1 Claim**

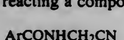
1. A process for the preparation of a substituted benzamide derivative of the formula (I):



(I)

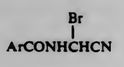
in which Ar is optionally substituted aryl; X is O, S or NH and R is optionally substituted alkyl or alkenyl when X is O of S, or is optionally substituted alkenoyl when X is NH, which comprises the steps of

(a) reacting a compound of the formula (II):



(II)

with a brominating agent in ethyl acetate as a solvent, to form a compound of the formula (III):



(III)

and

(b) reacting the compound (III) with a compound RXH, in which R and X have the meanings hereinbefore defined.

4,575,558

PREPARATION OF OPTICALLY ACTIVE 1,3-DIOXOLANE-4-METHANOL COMPOUNDS

Khuong H. X. Mai, and Ghanshyam Patil, both of Vernon Hills, Ill., assignors to American Hospital Supply Corporation, Evanston, Ill.

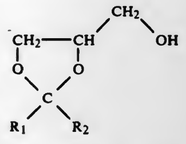
Filed Feb. 15, 1984, Ser. No. 580,492

Int. Cl.⁴ C07D *317/00*; C07C *59/10, 59/285*

U.S. Cl. 549—453 **19 Claims**

1. A process for the preparation of 2,3-dihydroxypropanoic acid which comprises reacting L-serine with a nitrosating agent in an aqueous solution in the presence of formic acid, acetic acid, or propanoic acid at about room temperature for a period of about 8 to 20 hours and wherein said aqueous solution of L-serine comprises from 0.10 to 0.5 liter of water per mole of L-serine and said acid is present in an amount of from 0.1 to 0.75 liter per mole of L-serine.

5. A process for preparing a selected 2,2'-disubstituted-1,3-dioxolane-4-methanol derivative having the formula



wherein R_1 and R_2 are each independently hydrogen, alkyl, cycloalkyl or R_1 and R_2 together with the carbon atom form a 3 to 6 member cycloalkyl group, or aryl, the process comprising:

reacting D- or L-serine with a nitrosating agent in an aqueous solution in the presence of acetic acid, formic acid, or propanoic acid at about room temperature for a period of about 8 to 20 hours and wherein said aqueous solution of D- or L-serine comprises from about 0.10 to 0.5 liter of water per mole of D- or L-serine and said acid is present in an amount of from about 0.1 to 0.75 liter per mole of D- or L-serine to produce 2,3-dihydroxypropanoic acid;

adding to the 2,3-dihydroxypropanoic acid so produced 2,2-dimethoxypropane in the presence of a loweralkyl alcohol to produce D- or L-glyceric acid alkyl ester;

reacting the D- or L-glyceric acid alkyl ester with an appropriate aldehyde, ketone or their acetal or ketal derivative to produce the corresponding 1,3-dioxolane derivative; and

reacting the 1,3-dioxolane derivative so produced with lithium aluminum hydride to produce the desired 2,2'-disubstituted-1,3-dioxolane-4-methanol derivative.

4,575,559

PROCESS FOR PREPARING CERTAIN SULFOPHENETHYLSILOXANES

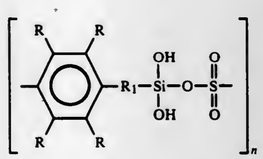
Edward J. Panek, Randolph Township, Dover County, N.J.; Thomas M. Schmitt, Dearborn Heights; Pauls Davis, Gibraltar, both of Mich., and Jen-Sheng Ku, Grosse Ile, Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Feb. 12, 1985, Ser. No. 700,645

Int. Cl.⁴ C07F *7/08, 7/18*

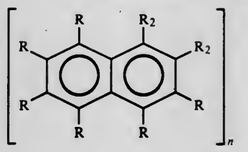
U.S. Cl. 556—428 **11 Claims**

1. A process for preparing a sulfophenethylsiloxane having either of the following formulae:



(I)

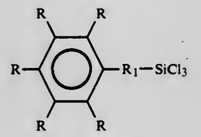
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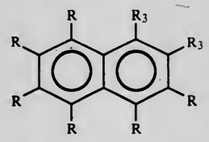
(II)

comprising:

(a) adding chlorosulfonic acid and a phenethyltrichlorosilane having either of the following formulae:



(III)



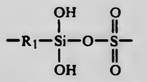
(IV)

in essentially equimolar ratios of chlorosulfonic acid and phenethyltrichlorosilane to a reaction vessel;

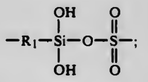
(b) heating the reaction mixture to a temperature greater than 45° C. until the evolution of hydrogen chloride is substantially complete to form an intermediate; and

(c) hydrolyzing the intermediate;

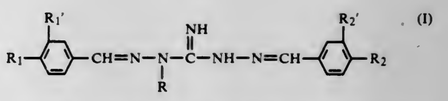
wherein R of Formulae I, II, III, and IV is individually hydrogen, halogen, or an alkyl radical having 1 to 4 carbon atoms; R_1 is an alkylene radical having 2 to 5 carbon atoms; R_2 is R or



with the proviso that at least one R_2 be



R_3 is R or $-R_1-SiCl_3$ with the proviso that at least one R_3 be $-R_1SiCl_3$; and n is at least 1.



(I)

wherein R_1' and R_2' are H, and R_1 and R_2 are individually selected from fluoro, chloro, bromo, trifluoromethyl, CF_3CH_2O, CHF_2X, CF_3X, CHY_2CF_2X, or $CHFYCF_2X$, where X is O or S and Y is F or Cl; or wherein R_1 and R_1' or R_2 and R_2' are $-OCF_2O-$, OCF_2CHFO-, $OC(CH_3)_2-O-$, or $-OCF_2CF_2O-$;

R is



where R_3 is C_1-C_2 alkyl, or C_1-C_2 haloalkyl, R_4 is hydrogen or C_1-C_2 alkyl; or R_3 and R_4 when taken together may form a ring represented by $CH_2(CH_2)_n-$ where n is 3 or 4; R_5 is C_1-C_4 alkyl optionally substituted with one to three halogens or C_3-C_4 alkenyl, with the proviso that when R is



R_1 and R_2 are CF_3CH_2O, CHF_2X, CF_3X, CHY_2CF_2X, or $CHFYCF_2S$, where X is O or S and Y is F or Cl; R_1 and R_1' or R_2 and R_2' are $-OCF_2O-$; $OC(CH_3)_2-O-$, OCF_2CHFO or $-OCF_2CF_2O-$.

4,575,560

INSECTICIDAL DIAMINOGUANIDINE HYDRAZONE COMPOUNDS

Roger W. Addor; Donald P. Wright, Jr., both of Pennington; Jack K. Siddens, Princeton Junction, and John J. Hand, Lawrenceville, all of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Feb. 25, 1985, Ser. No. 704,974

Int. Cl.⁴ C07C *125/065, 149/40, 133/10, 109/10*; C07D *295/16, 319/16, 317/48*

U.S. Cl. 560—27 **7 Claims**

1. A compound of the formula

4,575,561

CARBOXYALKYLATION OF ARYL-SUBSTITUTED ALKYL HALIDES TO THE CORRESPONDING ESTERS

Robert A. Sawicki, Wappingers Falls, N.Y., assignor to Texaco Inc., White Plains, N.Y.

Filed Mar. 28, 1983, Ser. No. 479,592

Int. Cl.⁴ C07C *69/76*

U.S. Cl. 560—105 **14 Claims**

1. The method which comprises

carbonylating $R'CH_2X$, wherein X is an active halide and R' is an aromatic hydrocarbon group at 0° C.-50° C. and at a carbon monoxide partial pressure of 760–1500 mm Hg in liquid phase in the presence of ROH, wherein R is alkyl, alkenyl, alkynyl, alkaryl, aralkyl, cycloalkyl or aryl in the presence of catalyst composition containing as catalyst a cobalt carbonyl and as a co-reactant a base-alumina or base-silica thereby forming product stream; and

recovering said product stream.

4,575,562

DIMETHYL ADIPATE FROM BUTADIENE

Charles K. Hsu, Pensacola, and Frank Dobinson, Gulf Breeze, both of Fla., assignors to Monsanto Company, St. Louis, Mo.

Filed Sep. 19, 1984, Ser. No. 652,049

Int. Cl.⁴ C07C *67/38*

U.S. Cl. 560—204 **19 Claims**

1. A process for the preparation of dimethyl adipate comprising reacting 1,3-butadiene with carbon monoxide under reactive conditions of temperature and pressure in the presence of methanol, a catalyst comprising a platinum metal group compound in a high oxidation state, and a quinone oxidant to form an intermediate comprising dimethyl hex-3-enedioate, and hydrogenating the dimethyl hex-3-enedioate to form dimethyl adipate.

4,575,563
LIQUID MIXTURES OF TRIALKYLPHOSPHINE OXIDES

Louis T. Gunkel, Yardley, Pa., assignor to FMC Corporation, Philadelphia, Pa.

Filed Feb. 1, 1984, Ser. No. 575,734
Int. Cl.[4] C07F *9/53*
U.S. Cl. 568—14 **6 Claims**

1. In a process of producing liquid mixtures of trialkylphosphine oxides by alkylating phosphine with a mixture of α-olefins in the presence of a free radical source and oxidizing the resulting trialkylphosphine mixture; the improvement of decreasing the volatility of the trialkylphosphine oxide mixture by increasing therein the ratio of higher trialkyl groups to lower trialkyl groups and oxidizing the trialkylphosphine mixture, comprising:
   a. forming an initial reaction mixture of alkylated phosphines containing the higher alkyl groups and unreacted phosphine by alkylating excess phosphine with a mixture of the corresponding higher α-olefins;
   b. forming a final reaction mixture of trialkylphosphines by alkylating the initial reaction mixture with a lower α-olefin, and
   c. oxidizing the reaction mixture of step b. to the corresponding mixture of trialkylphosphine oxides.

4,575,564
CATALYST AND PROCESS FOR HYDROFORMYLATION OF OLEFINS

Chao-Yang Hsu, Media, Pa., assignor to Sun Refining and Marketing Company, Philadelphia, Pa.

Division of Ser. No. 598,933, Apr. 11, 1984, Pat. No. 4,528,278. This application Mar. 1, 1985, Ser. No. 707,277
Int. Cl.[4] C07C *45/50*
U.S. Cl. 568—454 **9 Claims**

1. In the process of hydroformylating an olefin by reacting the olefin with hydrogen and carbon monoxide at elevated pressures in the presence of a catalyst to produce an aldehyde, the improvement of using as the catalyst a catalyst system which comprises (1) $Pt(acetylacetonate)_2$; (2) a ferrocene-derived ligand; and (3) a Group IVB metal halide.

4,575,565
PROCESS FOR PREPARING SUBSTITUTED BENZOTRICHLORIDES

William F. Goure, Maryland Heights, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Apr. 15, 1985, Ser. No. 723,373
Int. Cl.[4] C07C *41/22, 17/22*
U.S. Cl. 568—655 **14 Claims**

1. A process for the preparation of a substituted benzotrichloride which comprises the steps of:
   (a) reacting a substituted benzaldehyde with a compound having the formula $HS—(CH_2)_n—SH$ in the presence of an acid;
   (b) reacting the product of step (a) with a chlorinating agent to form a substituted benzotrichloride wherein in the above formula n is an integer from 2 to 3.

4,575,566
ADSORBENT REGENERATION IN ETHERIFICATION PROCESSES

Bipin V. Vora, Elk Grove Village, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 395,413, Jul. 6, 1982, Pat. No. 4,447,653. This application Apr. 9, 1984, Ser. No. 598,122
The portion of the term of this patent subsequent to May 8, 2001, has been disclaimed.
Int. Cl.[4] C07C *41/06, 41/00*
U.S. Cl. 568—697 **10 Claims**

1. A process for the production of an ether which comprises the steps of:
   (a) passing a first process stream comprising an isoparaffin through a catalytic dehydrogenation reaction zone and thereby producing a reaction zone effluent stream comprising the isoparaffin and a corresponding isoolefin;
   (b) passing the reaction zone effluent stream and a hereinafter characterized second process stream into a stripping column and producing a stripping column bottoms stream comprising the isoparaffin, oxygen-containing hydrocarbonaceous compounds, and the corresponding isoolefin;
   (c) passing the stripping column bottoms stream and a feed stream comprising an alcohol into an etherification zone maintained at etherification conditions, and withdrawing from the etherification zone a product stream comprising the ether and a hydrocarbonaceous third process stream comprising the isoparaffin and oxygen-containing hydrocarbonaceous compounds;
   (d) removing oxygen-containing hydrocarbonaceous compounds from the third process stream by contacting the third process stream with a selective sorbent at sorption-promoting conditions in a sorption zone and thereby producing a treated process stream which comprises the isoparaffin and is substantially free of oxygen-containing hydrocarbonaceous compounds;
   (e) removing a first portion of the treated process stream from the process;
   (f) heating a second portion of the treated process stream to a temperature above 250° F.; and
   (g) regenerating sorbent in the sorption zone by a regeneration procedure which comprises contacting sorbent present in the sorption zone with a regeneration stream comprising the heated second portion of the treated process stream of step (f) at regeneration-promoting conditions to produce the previously referred to second process stream, which comprises the isoparaffin and oxygen-containing hydrocarbonaceous compounds.

4,575,567
ADSORBENT REGENERATION IN ETHERIFICATION PROCESSES

Bipin V. Vora, Elk Grove Village, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 598,122, Apr. 9, 1984, which is a continuation-in-part of Ser. No. 395,413, Jul. 6, 1982, Pat. No. 4,447,653. This application Aug. 2, 1984, Ser. No. 636,900
The portion of the term of this patent subsequent to May 8, 2001, has been disclaimed.
Int. Cl.[4] C07C *41/06, 41/00*
U.S. Cl. 568—697 **7 Claims**

1. A process for the production of an ether which comprises the steps of:
   (a) passing a first process stream comprising a feed isoparaffin through a catalytic dehydrogenation reaction zone and thereby producing a reaction zone effluent stream comprising the isoparaffin and a corresponding isoolefin;
   (b) passing the reaction zone effluent stream and a hereinafter characterized second process stream into a stripping column and producing a stripping column bottoms stream comprising the isoparaffin, oxygencontaining hydrocarbonaceous compounds, and the corresponding isoolefin;
   (c) passing the stripping column bottoms stream and a feed stream comprising an alcohol into an etherification zone maintained at etherification conditions, and withdrawing from the etherification zone a product stream comprising an ether and a hydrocarbonaceous third process stream comprising the isoparaffin and oxygen-containing hydrocarbonaceous compounds;
   (d) removing oxygen-containing hydrocarbonaceous compounds from the third process stream by contacting the third process stream with a selective sorbent at sorption-promoting conditions in a sorption zone and thereby producing a treated process stream which comprises the isoparaffin and is substantially free of oxygen-containing hydrocarbonaceous compounds;
   (e) removing at least a first portion of the treated process stream from the process; and,
   (f) regenerating sorbent in the sorption zone by a regeneration procedure which comprises contacting sorbent present in the sorption zone with a regeneration stream comprising a regenerent hydrocarbon having the same number of carbon atoms per molecule as the feed isoparaffin at regeneration-promoting conditions including a temperature above 250° F. to produce the previously referred to second process stream, which comprises the regenerent hydrocarbon and oxygen-containing hydrocarbonaceous compounds.

4,575,568
REMOVAL OF PHENOLS FROM WATER

Stephen A. Yuhas, Jr., Fords, and Denise Lopez, South Amboy, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Nov. 23, 1984, Ser. No. 674,262
Int. Cl.[4] C07C *37/72, 37/70*
U.S. Cl. 568—749 **11 Claims**

8. In a process for purification of wastewater streams containing phenolic impurities comprising benzene, polynuclear aromatic compounds, alkylated derivatives of the foregoing and hydroxy-substituted derivatives of each of the above, wherein the wastewater stream contains such impurities in an amount of from about 500 ppm to 3 wt.% and wherein the wastewater stream is contacted with an ether extraction solvent selected from the group consisting of diisopropyl ether, methyl tertiary butyl ether, disecondary butyl ether, and ethyl isopropyl ether, for the extractive removal of the phenolic impurities, to form an ether extract phase containing at least a portion of said phenolic impurities and an aqueous raffinate phase depleted in said phenolic impurities, the improvement which comprises effecting the separation of said phases in the presence of a phase separation promoting amount of at least one polyhydric alcohol selected from the group consisting of dihydric and trihydric alcohols and alcohol ethers having from 2 to 6 carbon atoms per molecule.

4,575,569
ALKOXYLATION OF THIOLS IN THE PRESENCE OF A REACTION PROMOTER

Charles L. Edwards, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Jun. 15, 1984, Ser. No. 621,316
Int. Cl.[4] C07C *148/00*
U.S. Cl. 568—45 **23 Claims**

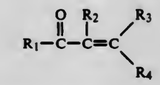
1. A process for the preparation of thiol alkoxylates which comprises (a) mixing (i) a secondary thiol reactant comprising one or more secondary C_6 to C_{30} alkane thiols, (ii) a catalytically effective amount of a basic alkoxylation catalyst selected from the group consisting of alkali and alkaline earth metal oxides and hydroxides and mixture thereof, and (iii) between about 10 and 2000 percent by mole, based on catalyst, one or more thiol alkoxylates as are produced by the alkoxylation reaction of C_6 to C_{30} alkane thiols and C_2 to C_4 alkylene oxides, (b) evaporating water from the resulting mixture, and (c) contacting the mixture, following water evaporation, with an alkylene oxide reactant comprising one or more C_2 to C_4 alkylene oxides.

4,575,570
PROCESS FOR PRODUCING ALPHA, BETA-UNSATURATED KETONES

Hideaki Katsuka, Yokohama; Toshiro Yamada, Fujisawa; Kuniaki Goto, Tokyo, and Jiro Tsuji, Kamakura, all of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

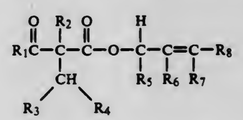
Filed Jul. 31, 1984, Ser. No. 636,379
Claims priority, application Japan, Aug. 2, 1983, 58-141488; Aug. 2, 1983, 58-141489
Int. Cl.[4] C07C *45/65*
U.S. Cl. 568—346 **21 Claims**

1. A process for producing alpha,beta-unsaturated ketones represented by the following general formula



(II)

wherein R_1 represents an alkyl or alkylene group, R_2 represents an alkyl, alkenyl, alkynyl, alkylene, alkoxycarbonyl, alkeneoxycarbonyl, alkoxyalkyl or alkoxycarbonylalkyl group, R_3 and R_4 represent a hydrogen atom or an alkyl or alkylene group, and R_1, R_2, R_3 and R_4 may be linear or form a ring when taken together in arbitrary combinations, which comprises contacting an alpha-disubstituted-beta-keto acid ester represented by the general formula



(I)

wherein R_1, R_2, R_3 and R_4 are as defined, and R_5, R_6, R_7 and R_8 represents a hydrogen atom or an alkyl group, said alpha-disubstituted-beta-keto acid ester being an ester formed between a keto acid having not more than 20 carbon atoms and an allylic alcohol having not more than 6 carbon atoms,

with a catalyst consisting essentially of (a) a palladium compound or (b) a mixture of a palladium compound and monodentate ligand selected from the group consisting of N-containing compounds, P-containing compounds and As-containing compounds, said mixture being composed of 1 mole of the palladium compound and not more than 2.5 moles of the monodentate ligand.

4,575,571
PROCESS FOR THE SIMULTANEOUS HALOGENATION AND FLUORINATION OF AROMATIC DERIVATIVES

Michel Desbois, Rillieux, and Camille Didier, Lyons, both of France, assignors to Rhone-Poulenc Specialites Chimiques, France

Filed Jun. 22, 1984, Ser. No. 623,465
Claims priority, application France, Jun. 23, 1983, 83 10372
Int. Cl.[4] C07C *17/12, 17/20*
U.S. Cl. 570—140 **12 Claims**

1. A process for the halogenation and fluorination of an aromatic derivative substituted by at least one group containing a halogenoalkyl unit comprising the step of reacting, in the substantial absence of a halogenation catalyst other than liquid hydrofluoric acid,
   (a) an aromatic derivative substituted by at least one group containing a halogenoalkyl unit corresponding to the formula:

$$Ar—(A—CX_1X_2Y)_n$$

in which:
Ar is a monocyclic or polycyclic aromatic radical which

may contain at least one substituent other than $-(A-CX_1X_2Y)_n$,

A is a covalent bond, oxygen or sulfur,

X_1 and X_2, which are identical or different, are a halogen,

Y is selected from the group consisting of hydrogen, a halogen and an optionally halogenated alkyl chain having 1 to 3 carbon atoms; and wherein the halogens corresponding to X_1, X_2 and Y are identical or different, but at least one of them is other than fluorine; and

n is equal to 1 or 2; with

(b) a halogen in liquid hydrofluoric acid for a time sufficient to effect halogenation of the aromatic ring of said aromatic derivative and to effect halogen/fluorine exchange on said group containing a halogenoalkyl unit.

4,575,572

METHOD FOR PRODUCING CYCLOOLEFINS

Hiroshi Ichihashi, and Hiroshi Yoshioka, both of Niihama, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Jul. 11, 1985, Ser. No. 753,861

Claims priority, application Japan, Jul. 31, 1984, 59-162738; Nov. 16, 1984, 59-243083; Nov. 20, 1984, 59-245668

Int. Cl.⁴ C07C *5/11*

U.S. Cl. 585—266 **21 Claims**

1. A method for producing cycloolefin which comprises partial hydrogenation of aromatic hydrocarbons with hydrogen gas in the presence of a catalyst composed of barium sulfate which is a carrier as well as ruthenium and at least one metal selected from the group consisting of iron, cobalt, silver and copper supported on said barium sulfate, and water.

4,575,573

CATALYSIS OVER ACTIVATED ZEOLITES

Ralph M. Dessau, Edison, and George T. Kerr, Lawrenceville, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 566,376, Dec. 28, 1983, Pat. No. 4,517,075, which is a continuation-in-part of Ser. No. 319,175, Nov. 9, 1981, Pat. No. 4,438,215. This application Feb. 28, 1985, Ser. No. 707,109

Int. Cl.⁴ C07C *2/68*

U.S. Cl. 585—467 **21 Claims**

1. A process for converting feedstock aromatic compounds selected from the group consisting of benzene, monocyclic alkyl-substituted benzene of from 7 to 10 carbon atoms and mixtures thereof, alkyl being methyl, ethyl or a combination thereof, to conversion product aromatic compounds which differ from feedstock aromatic compounds, which comprises contacting said feedstock at conversion conditions with a catalyst comprising a zeolite material prepared by a method comprising calcining a crystalline zeolite material having an initial silica:alumina mole ratio of at least about 100:1, said crystalline material having been synthesized from a reaction mixture containing quaternary onium ions, contacting said calcined crystalline material with aluminum chloride vapor at a temperature of from about 100° C. to about 600° C., hydrolyzing said aluminum chloride contacted crystalline material and calcining said hydrolyzed crystalline material.

4,575,574

ETHYLENE POLYMER USEFUL AS A LUBRICATING OIL VISCOSITY MODIFIER

Edward N. Kresge, Watchung, and Gary W. Ver Strate, Matawan, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Dec. 17, 1984, Ser. No. 682,286

Int. Cl.⁴ C07C *2/02*

U.S. Cl. 585—520 **15 Claims**

1. A process for preparing a polymer from a monomer mixture consisting essentially of ethylene, an alpha-olefin, a non-conjugated diene which has a first site of unsaturation which is coordination catalyst polymerizable and a second site of unsaturation which is cationically polymerizable, and optionally, a cationically polymerizable mono-olefin which comprises utilizing a catalyst system to initiate polymerization wherein the catalyst system comprises:

(a) a coordination catalyst; and

(b) a cationic polymerization catalyst; said polymer being a substantially saturated, long chain ethylene ter- or tetra polymer.

4,575,575

CATALYSTS AND PROCESS FOR OLEFIN CONVERSION

Charles A. Drake, and Robert E. Reusser, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 5, 1984, Ser. No. 596,984

Int. Cl.³ C07C *3/62*

U.S. Cl. 585—646 **11 Claims**

1. A process comprising contacting at least one olefin selected from the group consisting of acyclic mono- and polyenes having at least 3 carbon atoms per molecule and cycloalkyl and aryl derivatives thereof; cyclic mono- and polyenes having at least 4 carbon atoms per molecule and alkyl and aryl derivatives thereof; mixtures of two or more of the above olefins; and mixtures of ethylene with one or more of the above olefins capable of undergoing disproportionation with a combined catalyst consisting essentially of:

(a) a first catalyst component consisting essentially of:

(i) a silica support,

(ii) an oxide of tungsten or a precursor of an oxide of tungsten, and

(iii) a Group I oxide or compound convertible to the oxide; and

(b) a second catalyst component consisting essentially of a double bond isomerization catalyst in admixture with said first catalyst component.

4,575,576

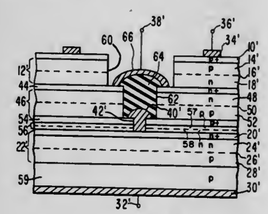
THREE-JUNCTION SOLAR CELL

Michael J. Ludowise, Cupertino, Calif., assignor to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Nov. 7, 1984, Ser. No. 669,273

Int. Cl.⁴ H01L *31/06*

U.S. Cl. 136—249 **7 Claims**



1. A monolithic photovoltaic cell comprising:

an upper surface layer adapted for entrance of exciting light,

three semiconductive layers positioned sequentially with respect to a position starting from said upper surface layer, namely an upper layer, a middle layer, and a lower layer,

within each of said semiconductive layers, a photovoltaic junction, thus providing upper, middle, and lower junctions, said upper junction having a first polarity with respect to said upper surface, said middle and lower junctions having a second polarity opposite to that of said upper junction,

a conductive substrate beneath said lower layer,

a conductive electrode connected to said substrate,

a light-permeable electrode attached to the upper surface of said upper surface layer,

a high gap transparent layer between said middle layer and said lower layer,

a first high conductivity layer between said middle layer and said high-gap transparent layer,

an aperture through said upper, middle, first high conductivity, and transparent layers, said aperture having stepped sides exposing a portion of the upper surfaces of said middle layer, said first high conductivity layer, and said lower layer,

a first metallic conductor in said aperture in ohmic contact with the top of said bottom layer and in overlapping contact with the top of said first high conductivity layer,

a second metallic conductor in said aperture insulated from said first conductor and in contact with the upper surface of said middle layer, and

means for external electrical connections to said substrate connected electrode, said light permeable electrode, and said second conductor.

4,575,577

TERNARY III-V MULTICOLOR SOLAR CELLS CONTAINING A QUATERNARY WINDOW LAYER AND A QUATERNARY TRANSITION LAYER

Lewis M. Fraas, Albany, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed May 27, 1983, Ser. No. 499,080

The portion of the term of this patent subsequent to Sep. 13, 2000, has been disclaimed.

Int. Cl.⁴ H01L *31/06, 31/18*

U.S. Cl. 136—249 **20 Claims**

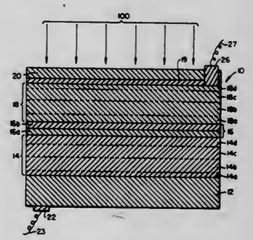
1. A photovoltaic device comprising:

a conductive crystalline substrate;

a layer of $GaAs_{(1-y)}Sb_{(y)}$ having regions of differing conductivity forming a homojunction therein contacting said substrate and lattice matching the substrate to within about ±1%;

a shorting junction layer contacting the surface of said GaAsSb layer opposite to the surface contacting said substrate;

a layer of $GaAs_{(1-x)}P_{(x)}$ having regions of differing conductivity forming a homojunction therein and a larger bandgap than said GaAsSb layer, said $GaAs_{(1-x)}P_{(x)}$ layer contacting the surface of said shorting junction layer opposite to said surface contacting said GaAsSb layer;



a layer of $Al_{(z)}Ga_{(1-z)}As_{(1-z)}P_{(z)}$ contacting a surface of said $GaAs_{(1-x)}P_{(x)}$ layer opposite to said surface contacting said shorting junction layer, said $Al_{(z)}Ga_{(1-z)}As_{(1-z)}P_{(z)}$ layer forming a transparent window layer on said $GaAs_{(1-x)}P_{(x)}$; and

means for forming an electrical contact to said layers to withdraw photogenerated current therefrom.

4,575,578

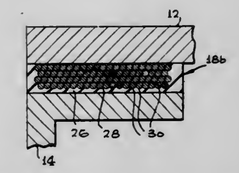
RADIATION SHIELDING AND THERMALLY CONDUCTIVE GASKET WITH INTERNAL BONDING AGENT

John J. Bogan, Glendora; Robert E. Meeks, Duarte, and Arthur M. Crestfield, Goleta, all of Calif., assignors to Keene Corporation, New York, N.Y.

Filed Jan. 5, 1983, Ser. No. 455,662

Int. Cl.⁴ H05K *9/00*

U.S. Cl. 174—35 GC **40 Claims**



1. In combination, a high-frequency electromagnetic-radiation-shielding gasket that has been formed and cured in a mold and is integral with a surface; the said combination comprising:

a molded and cured gasket comprising a mixture of a cured elastomer, an electrically conductive filler and a bonding agent; and

on one side of said molded gasket only, a surface bonded to said molded gasket by said bonding agent;

the filler and bonding agent each being interdispersed throughout the molded and cured gasket.

4,575,579

EDITING ARRANGEMENT FOR VIDEOTEX SYSTEM WITH PUBLIC TERMINALS

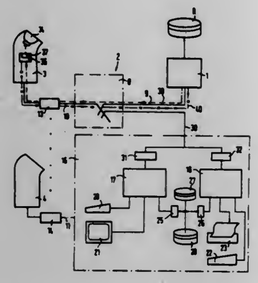
Gerhard J. Simon, Hemmingen, and Gerhard Schneider, Leonberg, both of Fed. Rep. of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Nov. 29, 1983, Ser. No. 555,906

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1982, 3244212

Int. Cl.⁴ H04L *21/00*

U.S. Cl. 178—4 **7 Claims**



1. Videotex system with public terminals whereby information is called up from a videotex center over a telecommunication network and presented in the form of videotex pages on a screen of the terminal, the terminal being provided with a memory containing information which is presented as off-line videotex pages on the screen, characterized in that the memory is a read/write memory (46), that a central operating facility (16) is provided which includes an editing device (17) in which information and control characters giving an off-line videotex page are produced, and that said characters are transmitted from the operating facility (16) to the videotex center (1), from which they are transmissible over the telecommunication network (2) to the read/write memory (46).

4,575,580

DATA INPUT DEVICE WITH A CIRCUIT RESPONSIVE TO STYLUS UP/DOWN POSITION

Louis H. M. Jandrell, Woodside, Calif., assignor to Astec International, Ltd., Kowloon, Hong Kong

Filed Apr. 6, 1984, Ser. No. 597,509

Int. Cl.⁴ G08C *21/00*

U.S. Cl. 178—18 **20 Claims**

1. In an apparatus having a writing surface and a means for generating an electrical signal representative of a contact point location on said writing surface including:

first and second resistive sheets positioned so as to overlap one another to define said writing surface;

means for maintaining said first and second resistive sheets in a spaced apart relationship such that said sheets are adapted for electrical contact with each other at a point corresponding to said contact point only when pressure is applied at said contact point;

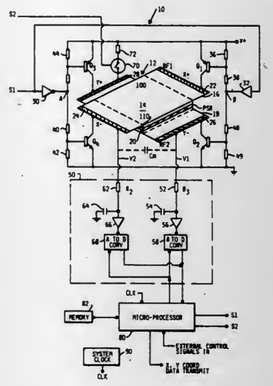
a source of energizing potential;

means for alternately energizing said first and second resistive sheets to alternately establish a voltage gradient on each of said sheets in a direction different from one another such that a voltage is generated on the alternately non-energized sheet whose value is a function of the position of said contact point on the energized sheet, each point on said writing area thereby being uniquely defined by a unique combination of voltages on said first and second resistive sheets; and

means for detecting and outputting the voltage appearing on each resistive sheet when said sheet is in a non-energized state such that during each alternate energizing cycle first and second voltages are obtained and output which are uniquely representative of the present position on the writing surface of said contact point,

an improvement comprising:

means for periodically biasing one of said resistive sheets such that an overvoltage is generated thereon when said first and second resistive sheets are not in electrical contact with each other at a contact point, said overvoltage defined to be a voltage that is outside of the normal



range of voltages that can exist on a non-energized resistive sheet when said first and second resistive sheets are in electrical contact with each other at a contact point;

overvoltage detection means responsive to said detecting means for detecting when said one of said resistive sheets has an overvoltage generated thereon; and

means responsive to the detection of said overvoltage for preventing the output of voltages by said outputting means and for maintaining said bias on said one of said resistive sheets.

4,575,581

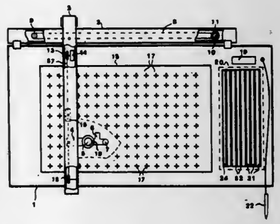
DIGITIZER AND POSITION ENCODERS AND CALIBRATION SYSTEM FOR SAME

Edwin Langberg, 13 Valley Forge Ct., Marlton, N.J. 08053

Filed Feb. 6, 1984, Ser. No. 577,597

Int. Cl.⁴ G08C *21/00*

U.S. Cl. 178—18 **16 Claims**



1. A position encoding system, comprising

means for encoding position coordinates of a point,

a position reference medium containing reference marks,

means for processing calibration data, said calibration data based on a value of encoded coordinates of the reference marks,

operation means for correction of encoding errors in accordance with said calibration data, so as to improve accuracy and repeatability for said encoding of position coordinates.

4,575,582

MOBILE RADIO COMMUNICATIONS SYSTEM

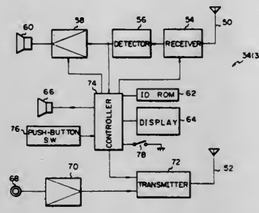
Masayuki Makino, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 23, 1984, Ser. No. 664,066

Claims priority, application Japan, Oct. 28, 1983, 58-202167

Int. Cl.⁴ H04Q *7/04*

U.S. Cl. 179—2 EC **3 Claims**



1. A mobile radio communications system, comprising:

a plurality of fixed stations connected to a subscriber's line of a swiching network, a mobile station connectable to any one of said fixed stations by radio, and a transmission base station for paging said mobile station;

each of the fixed stations comprising means for sending to an exchange identification data associated with the mobile station and identification data associated with said one fixed station upon origination of a call by the mobile station;

the transmission base station comprising means for transmitting to a mobile station to be called a paging signal and the identification data associated with the calling mobile station and the identification data associated with the fixed station;

the mobile station comprising means for displaying a call in response to the paging signal from the transmission base station, and means for displaying the calling mobile station represented by the identification data from the transmission base station, the mobile station being constructed to send an answer to the paging from the transmission base station by way of another one of the fixed stations which is connected by radio with the called mobile station, thereby enabling the calling mobile station and the called mobile station to be connected with each other.

4,575,583

PROGRAMMABLE DIGITAL CONTROLLER FOR GENERATING INSTRUCTIONS

Stamatios V. Kartalopoulos, Rockaway Township, Morris County, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Oct. 1, 1981, Ser. No. 307,490

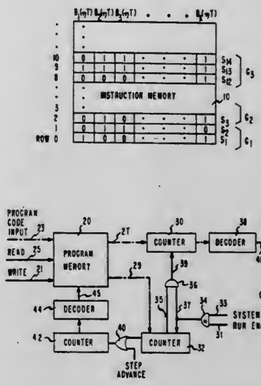
Int. Cl.⁴ H04M *3/00*

U.S. Cl. 179—18 ES **10 Claims**

1. In a telephone or telecommunications system, a programmable digital controller for generating a plurality of instructions, said instructions being in bits, each of said instructions being used for controlling a separate apparatus or process, said controller comprising

a first memory having previously entered therein said instructions in a matrix form, each column of said matrix comprising one of said instructions, each row of said matrix comprising one bit from each of said columns, each of a plurality of blocks of said rows having a unique bit pattern, each block appearing only once,

a second memory comprising a plurality of addresses previously entered therein, each of said addresses comprising two parts: a first part indicating one of said rows of said



first memory to be read initially and a second part indicating one of said blocks of said rows to be read consecutively,

means for reading said addresses, and

means responsive to said addresses for reading said blocks of said rows.

4,575,584

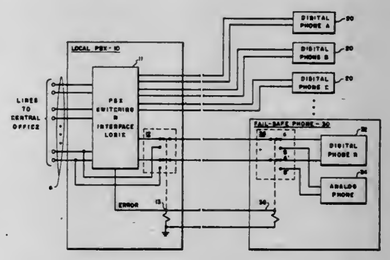
FAIL-SAFE DIGITAL PHONE

Dennis K. Smith, Ft. Worth, and John J. Holesha, Plano, both of Tex., assignors to Honeywell Inc., Phoenix, Ariz.

Filed Jul. 5, 1984, Ser. No. 628,102

Int. Cl.⁴ H04M *3/58*

U.S. Cl. 179—81 R **10 Claims**



1. A fail-safe digital telephone set, operatively connected to a digital PBX having at least one digital telephone set operatively connected thereto, said digital PBX further operatively connected to at least one telephone line having an analog protocol, said digital PBX providing an interface to said telephone lines for each of said digital telephone sets and for said fail-safe digital telephone set in a normal operating mode, said fail-safe digital telephone set comprising:

(a) first means for providing digital communication of voice information with said digital PBX;

(b) second means for providing analog communication of voice information with said telephone lines; and

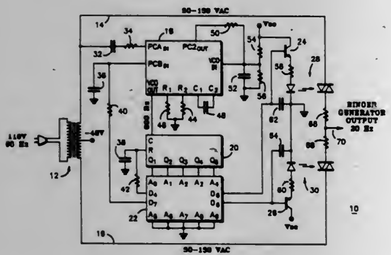
(c) switch means, having a first and a second terminal corresponding to a first and a second select position, respectively, said first means operatively connected to said first terminal and said second means operatively connected to said second terminal, for selecting between said first select position and said second select position in response to a control signal thereby causing said first means to be operative when said first select position is chosen and causing said second means to be operative when said second select position is chosen, to operatively connect said first means to said digital PBX in a normal operating mode and to operatively connect said second means to said telephone lines in a failure mode.

4,575,585

SYNCHRONOUS PROGRAMMABLE SIGNAL GENERATOR AND METHOD

Leland T. Brown, Phoenix, Ariz., assignor to Motorola Inc., Schaumburg, Ill.

Filed Jul. 16, 1984, Ser. No. 631,379
Int. Cl.[4] H04M *3/02*
U.S. Cl. 179—84 A **18 Claims**



13. A telephone system including a programmable signal generator for producing a ringing signal having a frequency bearing a predetermined relationship to a 60 hertz input signal comprising:

frequency synthesizer means for generating a synchronous clocking signal in response to said 60 hertz input signal;

counter means coupled to said clocking signal generating means for developing an address signal in response thereto;

memory means coupled to said address signal developing means for providing predetermined first and second control signals in response thereto, said first and second control signals having respective passing and rectifying levels thereof; and

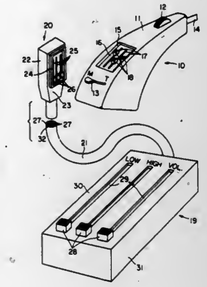
first and second bilateral switching means for producing said ringing signal by alternately passing and rectifying selected portions of said 60 HZ input signal in response to said passing and rectifying levels of said first and second control signals respectively.

4,575,586

APPARATUS FOR USE IN THE ADJUSTMENT OF THE SECONDARY ADJUSTMENT MEANS OF A HEARING AID

Christian Topholm, Vaerlose, Denmark, assignor to Topholm & Westermann APS, Erlose, Denmark

PCT No. PCT/DK83/00103, § 371 Date Jul. 3, 1984, § 102(e) Date Jul. 3, 1984, PCT Pub. No. WO84/01876, PCT Pub. Date May 10, 1984
PCT Filed Nov. 4, 1983, Ser. No. 626,875
Claims priority, application Denmark, Nov. 5, 1982, 4924/82
Int. Cl.[4] H04R *25/00*
U.S. Cl. 179—107 H **5 Claims**



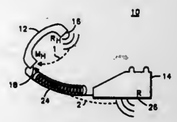
1. An apparatus for use in the adjustment of a secondary adjustment device on a hearing aid, comprising, an adaptor which is arranged to be applied to the hearing aid and has at least one moving means adapted to be brought into contact with at least one corresponding secondary adjustment means in said secondary adjustment device of the hearing aid for transmitting movement thereto upon application of the adaptor, and a control desk equipped with at least one adjustable activation means remotely located relative to the adaptor and connected with the adaptor so that movement of the activation means of the control desk causes corresponding movement of the moving means of the adaptor.

4,575,587

SIGNAL WRAP FOR TRANSDUCER FAULT ISOLATION

Rembert R. Stokes, Austin, Tex., and David J. Priniski, Barrington, Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 24, 1984, Ser. No. 653,626
Int. Cl.[4] H04M *1/24*; H04R *29/00*
U.S. Cl. 179—175.1 A **22 Claims**



FAILED COMPONENT	FAILED TEST
R_H	1
M_H OR CORD	1 & 2
R	2

13. A telephone station having a fault isolation system for a telephone including a handset receiver and handset microphone and an associated sound source comprising:

first means for causing said handset receiver to produce a first acoustic signal to said handset microphone for detection by providing a corresponding electrical signal;

second means for causing said sound source to produce a second acoustic signal to said handset microphone for detection by providing a corresponding electrical signal; and

logic means for permutationally associating selected ones of the corresponding electrical signals provided by said handset microphone in response to said first and second acoustic signals;

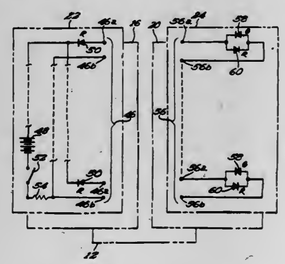
whereby said handset receiver and sound source may be considered defective if either said first or second acoustic signals is not respectively detected by said handset microphone, and said handset microphone may be considered defective if both said first and said second acoustic signals are not detected thereby.

4,575,588

UNIVERSAL TELEPHONE TEST APPARATUS

Michael Vande Vyver, 2608 W. 60th St., Minneapolis, Minn. 55410

Filed Oct. 15, 1984, Ser. No. 660,639
Int. Cl.[4] H04B *3/46*
U.S. Cl. 179—175.3 A **17 Claims**



1. In conjunction with a multiple wire pair telephone cable having a first telephone electrical connection block arrangement on one cable end, and a second telephone electrical connection block on the other cable end, with each pair of wire including one wire having a first end electrically connected to a first pin set of the first telephone electrical connection block and the other wire having a first end electrically connected to a second pin set of the first electrical connection block and with each pair of wires including one wire having a second end electrically connected to a first pin set of the second telephone electrical connection block and the other wire having a second end electrically connected to a second pin set of the second electrical connection block, universal telephone test apparatus comprising, in combination: first test jig apparatus; with the first test jig apparatus comprising, in combination: a housing; means, supported by the housing, for receiving and providing electrical connection to a battery; multiple first means, supported by the housing, associated with each of the multiple pairs of wire of the cable for detecting current and for indicating the presence of current; first connection means, supported by the housing, for providing removable, electrical connection between one of the first current detecting and indicating means and the battery means and each of the first and second pin sets of the first telephone electrical connection block for each of the multiple pairs of wire of the cable; second test jig apparatus; with the second test jig apparatus comprising, in combination: a housing; multiple second means, supported by the housing, associated with each of the multiple pairs of wire of the cable for detecting current in a first direction and for indicating the presence of current in the first direction; multiple third means, supported by the housing, associated with each of the multiple pairs of wire of the cable for detecting current in a direction opposite to the first direction and for indicating the presence of current in the direction opposite to the first direction; second connection means, supported by the housing, for removable, electrical connection between one of the second current detecting and indicating means and one of the third current detecting and indicating means, in parallel, and each of the first and second pin sets of the second electrical connection block for each of the multiple pairs of wire of the cable; wherein with the first test jig apparatus electrically connected to the first electrical connection block and the second test jig apparatus electrically connected to the second electrical connection block, when the pairs of wires are correctly electrically connected between the first and second pin sets of the first and second electrical connection blocks, a complete electrical circuit is formed between the first and second test jig apparatuses and the first and second current detecting and indicating means indicate the presence of current and the third current detecting and indicating means does not indicate the presence of current for each of the wire pair correctly electrically connected, when a short exists between the wires of the wire pair, the first current detecting and indicating means indicates the presence of current and the second and third current detecting and indicating means do not indicate the presence of current for each of the shorted wire pair, when the wires of the wire pair are reversed, the first and third current detecting and indicating means indicate the presence of current and the second current detecting and indicating means does not indicate the presence of current for each of the reversed wire pair, and when electrical connection is not made with at least one of the first and second pin sets of the electrical connection blocks or an improper pairing of wires has occurred, none of the first, second, and third current detecting and indicating means indicate the presence of current for each of the incorrectly connected wire pair, wherein the universal telephone testing apparatus allows the simultaneous diagnosis of each of all possible conditions of the electrical connection of each of the pairs of wire of the multiple wire pair cable to the first and second electrical connection blocks; with at least one of the test jig apparatuses further comprises, in combination: at least first auxiliary connector means, supported by the housing; and third connection means, supported by the housing, for providing removable electrical connection between the electrical apparatus of the test jig apparatus, the auxiliary connector means, and the first and second pin sets of the electrical connection blocks; and with at least a part of the third electrical connection means comprising fourth means interrelating with the first connection means including means for providing simultaneous electrical disconnection of the battery means and each of the pin sets of the first telephone electrical connection block and for providing simultaneous electrial isolation of each of the first and second pin sets of the first telephone electrical connection block from each other, with the universal telephone testing apparatus allowing the testing, from a single set up, of at least one and possibly all of: multiple wire pair cable and their correct electrical connection between the pin sets of the first and second telephone electrical connection blocks; telephone base cords having telephone plug connectors on each end for receipt in the first auxiliary connector means of the test jig apparatus allowing simultaneous diagnosis of each of all possible conditions of the electrical connection of each of the pairs of wire of the telephone base cord when the telephone base cord is electrically received within and between the first and second test jig apparatuses; telephones having various styles of plugs, with the telephones electrically connected to selective pin sets of the electrical connection block when electrically received within the first auxiliary connector means of the test jig apparatus without damage to the telephone created by electrical connection to the battery means and allowing testing of multiple telephones at a single location for distribution to locations remote from the electrical connection block; the continuity of a single pair of wires from the multiple wire pair cable and their correct electrical connection between the pin sets of the first and second telephone connection blocks; and the tone testing of a single pair of wires from the multiple wire pair cable and their correct electrical connection between

the pin sets of the first and second telephone connection blocks.

4,575,589

SWITCHING CONTACT ARRANGEMENT, IN PARTICULAR FOR KEYBOARDS AND A KEYBOARD

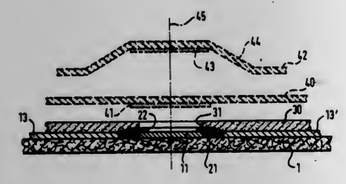
Horst Hoffmann, Gloan, Fed. Rep. of Germany, assignor to Firma Wilhelm Ruf KG, Munich, Fed. Rep. of Germany

Filed Jul. 5, 1984, Ser. No. 627,755

Claims priority, application Fed. Rep. of Germany, Jul. 27, 1983, 3327130

Int. Cl.⁴ H01H *3/12*

U.S. Cl. 200—5 A **19 Claims**



1. A switching contact arrangement, in particular for keyboards, comprising a support made of an electrically insulated material, further comprising two tracks disposed in one plane on the support, said tracks being each connected to a first and a second switching contact surface respectively and the switching contact surfaces which form one pair of switching contacts being spaced apart, still further comprising a movable, flexible contact surface made of an electrically conductive material, said contact surface being in contact with all switching contact surfaces associated therewith when in one of its end positions, whereas it is spaced apart from at least one of the switching contact surfaces when in the other of its end positions, and still further comprising a track intersection in which the tracks intersecting each other are separated from each other by means of an intermediate insulating layer, characterized in that an electrically conductive layer serves as a bridge **(30)** forming said track intersection and at the same time forms the second contact surface.

4,575,590

THRUST-IN OPERATION TYPE SWITCHING DEVICE

Masaichi Hattori; Kaneyasu Arakawa, and Akira Hanaki, all of Aichi, Japan, assignors to Kabushikikaisha Tokairikadenkiseisakusho, Aichi, Japan

Filed Jul. 27, 1984, Ser. No. 635,299

Claims priority, application Japan, Jul. 29, 1983, 58-119268

Int. Cl.⁴ H01H *9/26*

U.S. Cl. 200—5 B **4 Claims**

1. A thrust-in operation type switching device comprising, in combination:

a switch frame **1**;

a movable member **10** provided in said switch frame **1** for straight motion by thrust-in operation from an initial position to a first thrust-in position and further from the first thrust-in position to a second thrust-in position;

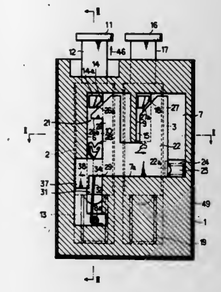
a first reset spring **13** provided in said switch frame **1**, the first reset spring biasing between the switch frame and the movable member to always urge said movable member **10** in the direction of the initial position thereof;

first and second switches **39** and **42** positioned adjacent to the switch frame, the first and second switches being adapted to be operated by shifting the movable member **10** to the first and second thrust-in positions respectively;

a first locking means **21** for locking the movable member **10** at the first thrust-in position without interrupting further motion thereof in the direction of the second thrust-in position, said locking means **21** comprising an engaging hook **14** secured on the movable member **10**, a first locking member **22** reciprocally associated in the switch frame **1** for motion between a first position for engaging with said hook **14** and a second position for disengaging therefrom, and a second reset spring **24** biasing between the first locking member and a portion of the switch frame **1** for always urging said first locking member **22** in the direction of said second, disengaging position, whereby said hook **14** engages with said locking member **22** when the movable member **10** is thrust from the initial position to the first thrust-in position;

a reset member **15** provided in the switch frame **1** for motion by thrust-in operation from an initial position to a thrust-in position, the reset member being contacted by a reset spring **19**, the reset spring being positioned to bias between the switch frame **1** and the reset member to continuously urge the reset member towards said initial position, said reset member **15** being adapted to move the first locking member **22** in the direction of the second disengaging position and disengaging it from the hook **14** when the reset member **15** is moved to the thrust-in position;

a second locking means **31** for locking the movable member **10** at the second thrust-in position when it is shifted via the



first thrust-in position to the second thrust-in position, said second locking means **31** comprising a grooved cam provided on one surface of the movable member **10** in a substantial closed loop configuration and having a wall **28***a* and an elastic locking member **32** one end of which is supported in the switch frame **1** and the other end of which serves as a sliding head **34** for moving via said wall **28***a* along the groove every time the movable member **10** reciprocally moves, whereby said sliding head **34** engages with said wall **28***a* and locks the movable member **10** when it is thrust to the second position, said sliding head **34** being adapted to disengage from the wall **28***a* and to move the movable member **10** back to the first thrust-in position when it is further thrust slightly inwardly from the second thrust-in position; and

an auxiliary reset member **37** connected to and adapted to move with the first locking member **22** and which is adaptable to be engageable with part of the second locking member **32** only when the sliding head **34** is in a position where it is engaged with the wall **28***a*, the auxiliary reset member being adapted to drive the sliding head **34** away from engagement with the wall **28***a* when the first locking member moves.

4,575,591

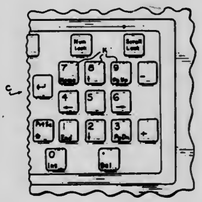
JOYSTICK ATTACHMENT FOR A COMPUTER KEYBOARD

Thomas J. Lugaresi, 4715 Hacienda Ave., Campbell, Calif. 95008

Filed Apr. 23, 1984, Ser. No. 602,825

Int. Cl.⁴ A63F *9/00;* **H01H** *25/00*

U.S. Cl. 200—6 A **19 Claims**



1. A joystick attachment for a computer keyboard having a plurality of keys arranged in a rectangular array comprising, in combination, a base member, a joystick assembly on said base memer, means for detachably mounting said base member on a computer keyboard with said joystick assembly in overlying spaced-apart relationship with said array of keys, said joystick assembly including an upstanding handle, universal mounting means on said base member engageable with the lower end of said handle, a plurality of circumferentially spaced actuating arms mounted on said base member adjacent said handle for movement between an inoperative position and an operative position for depressing engagement with an associated one of said keys, means for yieldingly urging said arms into said inoperative position, said handle being movable into engagement with a selected one of said arms to move said selected arm against said urging means into said depressing engagement with said associated one of said keys.

4,575,592

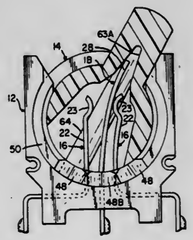
ELECTRICAL SWITCH

William H. Rose, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 21, 1984, Ser. No. 684,530

Int. Cl.⁴ H01H *13/00, 19/00*

U.S. Cl. 200—6 R **14 Claims**



1. An electrical switch comprising a dielectric housing having electrical contact members secured therein including stationary and movable contact sections, a dielectric actuator movably mounted on the housing for moving the movable contact section into and out of electrical engagement with the stationary contact section, and a detent arrangement for maintaining the actuator in a first or second position, characterized in that:

said housing having a base, resilient sections extending outwardly from said base, a profiled arcuate inner surface formed on said base and resilient sections with the stationary and movable contact sections being located in and extending outwardly from said arcuate inner surface; and

said actuator having a cavity and an external arcuate surface matable with said arcuate inner surface, said surfaces movable relative to each other when said actuator has been mounted on said housing, stationary and movable contact sections disposed in said cavity, said resilient sections of said housing maintaining said actuator on said housing, said movable contact section being disposed in a section of said cavity and is movable into and out of electrical engagement with said stationary contact section upon movement of said actuator from the first position to the second position.

5. An electrical switch as claimed in claim 1, characterized in that stationary contact sections are disposed on both sides of said movable contact section.

4,575,593

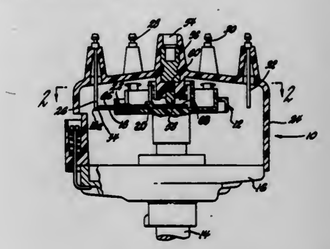
ELECTROMAGNETIC RADIATION SUPPRESSING DISTRIBUTOR ROTORS

Edward Welker, and Lynn A. Rockwell, both of Anderson, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Jul. 5, 1984, Ser. No. 627,815

Int. Cl.⁴ H01H *19/00*

U.S. Cl. 200—19 DR **2 Claims**



2. A distributor spark output electrode comprising an electrically conductive copper alloy body having a spark discharge tip, the surface of the body adjacent the tip being coated with a varnish comprising a base layer of thermoset polyester resin and an overlying layer of aromatic-aliphatic polyamide-imide resin, the copper alloy body and the coating cooperating to suppress the generation of radio frequency noise when said electrode is employed in an operating automotive distributor.

4,575,594

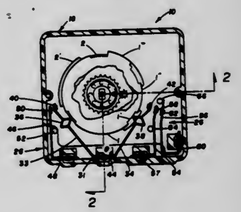
TIMING MECHANISM

Daniel K. Amonett, Indianapolis, Ind., assignor to Emhart Industries, Inc., Indianapolis, Ind.

Filed May 28, 1985, Ser. No. 737,934

Int. Cl.⁴ H01H *43/10*

U.S. Cl. 200—38 B **3 Claims**



1. A timing mechanism comprising:

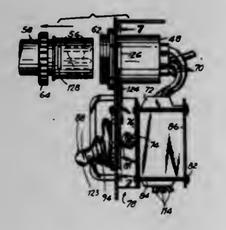
(a) a motor driven rotatable camstack, said camstack including at least two individual cams,
(b) a V-shaped electrical terminal blade providing individual first and second legs extending from a common first electrical terminal and spanning at least a portion of said two cams, each of said first and second legs including individual cam followers, one each engaging one of said two individual cams, and electrical contacts carried at a distal end of said legs,
(c) two individual spring electrical contact blades having electrical contacts in operable position with an electrical contact of said first leg and with each other, and electrically connected to a second and third electrical terminal, and
(d) a single spring electrical contact blade having an electrical contact in operable position with an electrical contact of said second leg and electrically connected to a fourth electrical terminal.

4,575,595

MODULAR POWER INTERFACE SYSTEM FOR PROVIDING POWER TO CARGO CONTAINERS

Michael J. Gill, 137 Orient Way, Apt. 3-C, Rutherford, N.J. 07070

Continuation-in-part of Ser. No. 635,420, Jul. 30, 1984, abandoned. This application Feb. 27, 1985, Ser. No. 705,866
Int. Cl.[4] H01H *9/20*
U.S. Cl. 200—50 B **44 Claims**



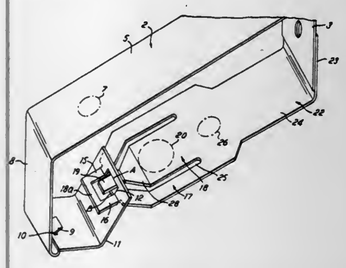
1. A system for interfacing a power source with cargo containers requiring a source of power, comprising:
a housing defining a plurality of openings in a wall thereof, each opening communicating with a chamber in said housing;
means secured in said housing for electrical connection to said power source;
a plurality of modular units receivable in said chambers through said openings, each unit comprising
(a) a frame having a front panel;
(b) a receptacle secured to said front panel and suitable for receiving a plug on a cable connected to a cargo container for providing power from said power source to said container;
(c) means secured to said frame for electrical connection to said power source connection means when the unit is fully received in a chamber;
(d) circuit breaker means secured to said frame and connected in series with said receptacle and said bus bar connecting means;
(e) switch means operable from said front panel for opening and closing said circuit breaker means;
(f) locking means disposed behind said front panel for movement between a locking position wherein said locking means blocks insertion of said plug into said receptacle and an unlocking position wherein said locking means unblocks said receptacle; and
(g) means for operatively connecting said locking means to said switch means for moving said locking means to said locking position when said switch means is operated to energize said circuit breaker means and to said unlocking position when said switch means is operated to deenergize said circuit breaker means.

4,575,596

SNAP SWITCH

Niels P. Thorsen, Horuphav, and Per Andersen, Nordborg, both of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Continuation of Ser. No. 538,112, Oct. 3, 1983, abandoned. This application Nov. 26, 1984, Ser. No. 675,027
Claims priority, application Fed. Rep. of Germany, Oct. 22, 1982, 3239079
Int. Cl.[4] H01H *5/18*
U.S. Cl. 200—67 D **5 Claims**



1. A snap switch unit, comprising, a casing, fixed and moveable contacts with said fixed contact connected to said casing, an operating arm having fixed and free ends with said fixed end thereof hingedly connected to said casing, a resilient switching member having fixed and free ends with said fixed end thereof hingedly connected to said casing, said fixed ends of said operating arm and said switching member being in juxtaposition, said switching member having relatively moveable switching arm and snap arm sections with free ends in juxtaposition, said moveable contact being on said switching arm section, toggle spring means for toggling said switching member in response to movement of said operating arm, said toggle spring means being hingedly connected to said free end of said operating arm and having a hinge connection with said free end of said snap arm section, stop means connected to said casing for limiting one snap position of said switching member, said toggle spring means having a window with upper and lower edges alternately abuttingly engageable with said free end of said switching arm section corresponding to open and closed conditions of said contacts and being for opposite snap positions of said operating arm, said switching arm being dedicated to and restricted to opening and closing said contacts in synchronism with said toggling by the alternate engagement of said switching arm section with said window edges, there being a lost motion connection between said switching arm section and said window edges.

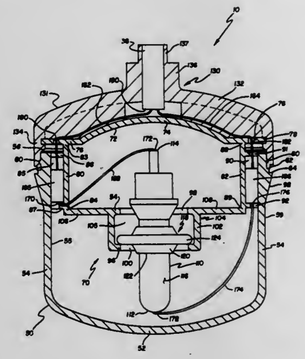
4,575,597

FLOAT SWITCH ASSEMBLY HAVING MERCURY-TYPE SWITCH MOVABLY RETAINED WITHIN A CAGE

Pervez Akhter, Ft. Wayne, Ind., assignor to The Scott & Fetzer Company, Fort Wayne, Ind.

Filed Aug. 3, 1984, Ser. No. 637,397
Int. Cl.[4] H01H *35/18*
U.S. Cl. 200—84 R **10 Claims**

1. A float switch for use in a fluid-retaining sump with a sump pump comprising:
a canister having an open end defined by a peripheral edge, said canister having a shaped exterior surface defining a shoulder and a projection near said peripheral edge;
a mounting assembly including a cap having a peripheral edge, a pair of oppositely disposed support members depending from said cap, a retaining cage connected to said support members and defining a retaining volume,
a switch means, movably contained by said mounting assembly, for controlling the activation of the sump pump, said switch means including a switch having a retainer mounted thereto, said retainer being continuously retained within the retaining volume so that said switch may tilt between one and the other of two conditions;
a cover having a depending flange, said flange having an interior surface in which is contained a pair of axially-



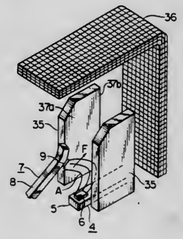
spaced channels, said cover including electrical means for electrically connecting said switch means to the sump pump;
said peripheral edge of said cap being received within one of said channels so as to form a first assembly for connection to said canister, said first assembly comprising the mounting assembly, the switch means and the cover; and
said canister projection being received within the other of said channels so as to join together said canister and said first assembly to form the float switch.

4,575,598

CIRCUIT BREAKER

Shinji Yamagata; Fumiyuki Hisatsune; Junichi Terachi; Kiyomi Yamaoto; Shiro Murata, all of Fukuyama, and Hajimu Yoshiyasu, Itami, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP84/00224, § 371 Date Aug. 14, 1984, § 102(e) Date Aug. 14, 1984, PCT Pub. No. WO85/05217, PCT Pub. Date Nov. 21, 1985
PCT Filed May 1, 1984, Ser. No. 643,618
Int. Cl.[4] H01H *33/08*
U.S. Cl. 200—144 C **6 Claims**



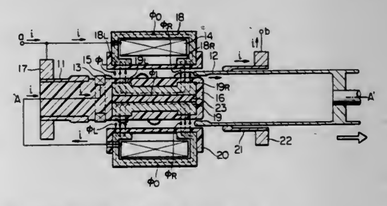
1. A circuit breaker with an arc light absorber and a thermal absorber, and comprising:
a pair of electric contactors contained in an insulating container for opening or closing an electric circuit;
electric conductors extending to said electric contactors and contacts on said conductors;
a pair of side walls provided on both sides of said contactors in spaced opposed relation to each other and having a size for absorbing light from the arc formed when said contactors open and close;
said side walls being formed of a heat resistant, electrically insulating, light absorbing material having more than 35% apparent porosity; and
a thermal absorber disposed opposite the opening between the opposed surfaces of said light absorbing side walls at locations other than the path of movement of said electric contactors, said thermal absorber being of a composite material of at least one material taken from the group consisting of an assembly of fine metal wires, porous metals, and a metal plate having a plurality of pores therein.

4,575,599

SPIRAL ARC CIRCUIT BREAKER

Satomi Arimoto, Nishinomiya, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 6, 1984, Ser. No. 618,409
Claims priority, application Japan, Jun. 30, 1983, 58-120830
Int. Cl.[4] H01H *9/44, 33/18*
U.S. Cl. 200—147 A **9 Claims**



1. A spiral arc circuit breaker comprising:
a hollow fixed electrode which is electrically connected to the source side of said circuit breaker;
a hollow movable electrode which is electrically connected to the load side of said circuit breaker and which is coaxially disposed with respect to said fixed electrode and which is slidably mounted so as to be capable of sliding axially from a first position in which it is in contact with said fixed electrode to a second position spaced axially from said first position and in which it is separated by an arc forming space from said fixed electrode;
a longitudinally extending inner electrically insulating member coaxially disposed with respect to said fixed electrode, one end of which is secured to said fixed electrode and the other end of which extends into the interior of said space, the outer surface of said inner electrically insulating member being radially spaced from the inner surface of said movable electrode when said movable electrode is in said first position;
a hollow, longitudinally extending outer electrically insulating member which is coaxially disposed with respect to said inner electrically insulating member and which is radially spaced therefrom so that a longitudinally extending annular gap is formed therebetween at said arc forming space through which said movable electrode can pass; and
a magnetic flux forming means extending axially along said arc forming space on the inside and outside of said space, said flux forming means being capable of forming a flux extending radially inwards at one of the longitudinal ends of said arc forming space and radially outwards at the opposite longitudinal end of said arc forming space.

4,575,600

SWITCHING DEVICE

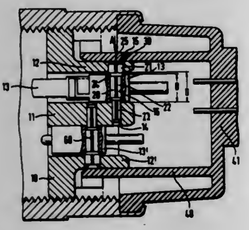
Jakob Botz, Ingersheim; Berthold Fein, Bietigheim; Erich Mutschler, Bietigheim, and Adam Weber, Bietigheim, all of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Jun. 18, 1984, Ser. No. 621,520

Claims priority, application Fed. Rep. of Germany, Jun. 24, 1983, 3322775

Int. Cl.[4] H01H *9/02*

U.S. Cl. 200—293 9 Claims



1. A switching device comprising:

a support and at least one switch having a housing, said housing having at least one through-bore fastening hole defining a diameter, wherein the switch is laterally held on a first web of the support by at least one fastening element, said fastening element projecting through the fastening hole into a receiving bore in the first web;

a second web projecting from the support at a spacing parallel to the first web, said second web having a receiving bore coaxially arranged to the receiving bore of the first web;

wherein the receiving bore in the first web has a diameter smaller than the diameter of said fastening hole, and the receiving bore in the second web has a diameter larger than the diameter of the fastening hole in the switch;

and wherein the fastening element includes three portions with differing diameters, wherein the first portion with the largest diameter is press-fitted into the receiving bore of the second web, the second portion, is press-fitted into the fastening hole of the switch and the third portion with the smallest diameter is press-fitted into the receiving bore of the first web.

4,575,601

KEYBOARD OF THE MEMBRANE TYPE

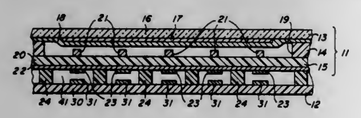
Toshimichi Taguchi, and Hideyuki Akao, both of Osaka, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 11, 1982, Ser. No. 347,972

Claims priority, application Japan, Feb. 19, 1981, 56-25280

Int. Cl.[4] G06F *3/02*; H05B *6/68*

U.S. Cl. 219—10.55 B 18 Claims



1. A microwave oven apparatus comprising:

an actuator means including a generally flat plate having first and second major surfaces and having a plurality of elongated actuator sections therein, each of said plurality of elongated actuator sections being adapted to permit actuation of a plurality of switches distributed along its length, said actuator means having a like plurality of electrically interconnected first discrete electrodes on said second major surface with a first discrete electrode being associated with each of said plurality of switches;

substrate means having a first major surface thereon, said first major surface being disposed in juxtaposition to said second major surface of said actuator means and being coextensive therewith over at least one of said elongated actuator sections, said substrate means having a like plurality of electrically interconnected second discrete electrodes on its first major surface disposed so as to be facing and spaced way from said first discrete electrodes and capable of selectively establishing electrical contact with a respective one of said plurality of first discrete electrodes upon deformation of said actuator means at its respective switch location along one of said elongated actuator sections;

resistor means connected between said second electrodes;

each of said plurality of elongated actuator sections being flexibly actuatable to reduce the spacing between said first and second electrode thereby reducing the electrical resistance between said actuator means and said substrate means at one of said switch locations;

means for sensing discrete resistance values of said resistor means as a function of the respective switch location where a first electrode is brought into electrical contact with the respective second electrode;

means for controlling microwave heating time in said microwave oven in response to a discrete resistance sensed by a first of said plurality of elongated actuator sections;

means for controlling grill heating time in said microwave oven in response to a discrete resistance sensed by a second of said plurality of elongated actuator sections; and

means for controlling oven heating temperature in said microwave oven in response to a discrete resistance sensed by a third of said plurality of elongated actuator sections.

4,575,602

APPARATUS FOR FORMING BONDING BALLS ON BONDING WIRES

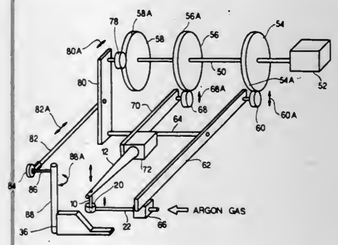
Keizou Sakurai, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 24, 1985, Ser. No. 726,482

Claims priority, application Japan, Apr. 26, 1984, 59-84437

Int. Cl.[4] B23K *31/00*

U.S. Cl. 219—56.21 20 Claims



1. An improved apparatus for forming a bonding ball on a tip end of the bonding wire in a ball bonding machine, comprising a capillary member having a through-hole for holding and guiding the bonding wire and adapted to be vertically reciprocated so as to cause the tip end of the bonding wire held by the capillary member to displace towards and apart from a surface to be wire-bonded; a cylindrical member having an inner diameter larger than the outer diameter of said capillary member and located in a substantially coaxial relation to said capillary member, said cylindrical member being adapted to be reciprocated in the same direction as that of movement of said capillary member but at a velocity slower than the moving velocity of said capillary member; means for supplying a non-oxidizing gas into said cylindrical member so as to substantially fill the inside space of said cylindrical member with said non-oxidizing gas; and means for melting the tip end of said bonding wire, said melting means being activated when said tip end of said bonding wire held by said capillary member is moved into the inside space of said cylindrical member because of the moving velocity difference between said capillary member and said cylindrical member in the upward stroke of the reciprocation of said two members, whereby said tip end of said bonding wire is molten in said non-oxidizing gas within said cylindrical member so as to form a bonding ball.

4,575,603

TW-ELECTROEROSION WITH CONTROLLED FLUSHING FLOW GUIDANCE MEANS

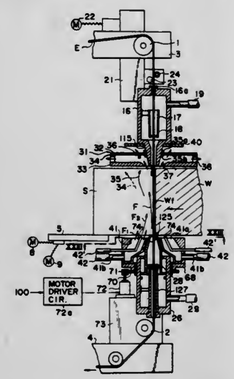
Kiyoshi Inoue, Tokyo; Makoto Onoue, Kanagawa; Sadao Sano, Kanagawa, and Jun Hayakawa, Kanagawa, all of Japan, assignors to Inoue-Japax Research Incorporated, Kanagawaken, Japan

Filed Mar. 9, 1984, Ser. No. 587,923

Claims priority, application Japan, Mar. 12, 1983, 58-40949; Mar. 12, 1983, 58-40950; Mar. 12, 1983, 58-40951; Apr. 21, 1983, 58-70506; Apr. 21, 1983, 58-70507; Apr. 26, 1983, 58-63452[U]

Int. Cl.[4] B23H *7/36, 7/02*

U.S. Cl. 219—69 D 30 Claims



1. In an apparatus for electroerosively cutting an electrically conductive workpiece with a continuous wire electrode, having means for axially transporting the wire electrode through the workpiece while defining a cutting zone therewith flushed with a cutting liquid medium, power supply means for electrically energizing said cutting zone to erode the workpiece, and cutting feed means for relatively displacing the workpiece and the traveling wire electrode transversely along a cutting path to progressively form a cutting slot behind the wire electrode advancing along the path in the workpiece, the improvement which comprises:

first nozzle means disposed at one side of the workpiece and having a nozzle opening juxtaposed with the cutting zone and substantially coaxially surrounding the wire electrode for directing the cutting liquid medium under a first pressure into the cutting zone from said one side;

second nozzle means disposed at the other side of the workpiece and having a nozzle opening juxtaposed with the cutting zone and substantially coaxially surrounding the wire electrode for directing the cutting liquid medium under a second pressure higher than the first pressure into the cutting zone from said other side; and

liquid flow guidance means disposed at said one side and adjacent to said workpiece and to the nozzle opening of said first nozzle means, said flow guidance means having a liquid escape passage formed therein adjacent said nozzle opening and a flow deflecting surface overlying said cutting slot along a length thereof for impeding the flushing liquid medium in the cutting slot to flush out directly into said one side along said length and creating a high-velocity stream of the high-pressure cutting liquid medium from said second nozzle means flowing through and out of said liquid escape passage.

4,575,604

CONSTANT POTENTIAL/CONSTANT CURRENT AUTOMATIC CONTROL SYSTEM FOR AIR-CARBON ARC METAL REMOVAL

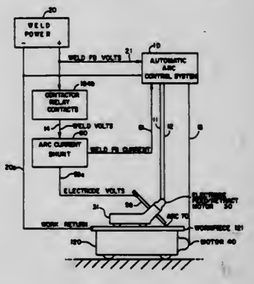
Henry B. Delius, Lancaster, Ohio, assignor to Arcair Company, Lancaster, Ohio

Continuation of Ser. No. 485,804, Apr. 18, 1983, Pat. No. 4,492,841. This application Oct. 18, 1984, Ser. No. 662,208

The portion of the term of this patent subsequent to Jan. 8, 2002, has been disclaimed.

Int. Cl.[4] B23K *9/10*

U.S. Cl. 219—69 R 5 Claims



1. A control system for air-carbon arc metal removal having a power source for producing an arc between an electrode and a workpiece and at least one control device for controlling said system comprising:

means for sensing the current of the arc between the electrode and the workpiece and providing an arc current derived signal, said arc current derived signal having frequency components;

signal conditioning means coupled to the sensing means for receiving the arc current derived signal and removing the frequency components from the arc current derived signal;

detection means for detecting arc current derived signals below a predetermined threshold level, which level is low in relation to the frequency components; and

means for providing an arc current command signal in response to said detection and applying the command signal to the control device.

4,575,605

APPARATUS AND METHOD FOR DETECTING THE LOCATION OF AN ELECTRICAL DISCHARGE ALONG THE ELECTRODE WIRE OF AN EDM APPARATUS

Roland Martin, Valleiry, France, assignor to Charmilles Technologies, S.A., Geneva, Switzerland

Filed Sep. 5, 1984, Ser. No. 647,415

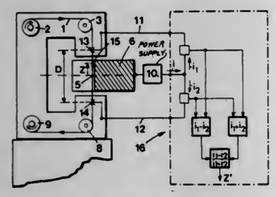
Claims priority, application Switzerland, Sep. 7, 1983, 4893/83

Int. Cl.[4] B23H *7/04*

U.S. Cl. 219—69 W 4 Claims

1. An apparatus for detecting the location of an electrical discharge along the length of an electrode wire in the machin-

ing zone between the electrode wire and an electrode workpiece in a travelling wire EDM apparatus, said detecting means comprising a pair of electric lines each for supplying machining current to the electrode wire on one side of the machining zone, and a pulse generator connected across the



electrode workpiece and said electric lines, means for establishing the difference and the sum of the currents each flowing through one of said lines in the course of each electrical discharge, and means for providing a signal proportional to the quotient of said difference by said sum.

4,575,606

METHOD OF ELECTROSLAG WELDING AND FLUX

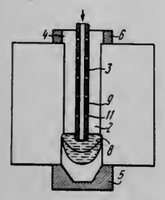
Anatoly N. Safonnikov, ulitsa Filatova, 1/22, kv. 78, and Anatoly V. Antonov, ulitsa Kreisera Avrora 1, korpus 2, kv. 104, both of Kiev, U.S.S.R.

PCT No. PCT/SU81/00057, § 371 Date Feb. 15, 1983, § 102(e) Date Feb. 15, 1983, PCT Pub. No. WO83/00027, PCT Pub. Date Jan. 6, 1983

PCT Filed Jun. 25, 1981, Ser. No. 468,054

Int. Cl.⁴ B23K *25/00*

U.S. Cl. 219—73.1 **1 Claim**



1. A method of electroslag welding, comprising the steps of mounting the parts to be welded with a required gap, assembling a forming device, introducing an electrode into the gap between the parts to be welded, filling the gap with a flux, setting a slag pool with subsequent melting of the electrode and edges to be welded, and cooling the electrode in a zone of melting during welding, wherein cooling the zone of the electrode melting is carried out by supplying a pressurized cooled gas through longitudinal ducts provided in the electrode, the gas being discharged from the electrode through transverse ducts communicating with the longitudinal ducts and provided on the side surface of the electrode.

4,575,607

ROTARY WELDING OF ELECTRICAL CONTACTS IN A PROGRESSIVE DIE

John J. Rozmus, 1030 Derwydd La., Berwyn, Pa. 19312

Filed Nov. 28, 1983, Ser. No. 555,601

Int. Cl.⁴ B23K *11/06*

U.S. Cl. 219—83 **3 Claims**

1. The method of welding a surface strip having a precious metal surface to a body strip, the welded strips to be at least partially fabricated into electrical spring contacts by a progressive die comprising the steps of:

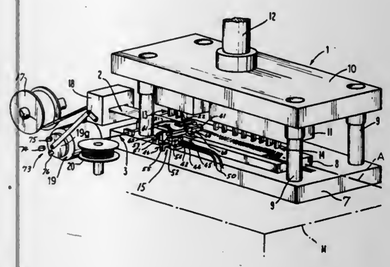
providing a progressive die having a fixed die pad bolster and a reciprocating punch pad bolster mounted to move in a working stroke from a return position toward the die pad bolster and then in a return stroke away from the die pad bolster to the return position, punch and die means respectively mounted on the bolsters, and drive means for moving a flat body strip along a horizontal axis between the bolsters when the punch pad bolster is in the return stroke and for stopping the body strip when the punch pad bolster is in the working stroke for working by said punch and die means to form electrical contacts;

providing an elongated, flat body strip;

providing an elongated surface strip, the topside of which has a contoured precious metal surface and the underside of which has at least one welding tip extending along the axis of the surface strip;

providing a first electrode in the form of a first roller rotatably mounted on the fixed die pad bolster and electrically insulated therefrom and having a flat circumferential surface; providing second electrode in the form of a second roller rotatably mounted on the fixed die pad bolster above said first roller and electrically insulated from the fixed die pad bolster and having a circumferential surface the same shape as the contour of said precious metal surface and being plated with precious metal the same as the precious metal surface on said surface strip;

providing a source to supply power to said electrodes;



using the punch and die means, forming a plurality of spaced apart welding beads on the body strip, the beads being serially spaced along the axis of the body strip and extending normal thereto;

after the forming of said beads, placing said surface strip on said body strip over said welding beads and positioning said strips between said rollers with the underside of the body strip engaging the flat circumferential surface of the first roller and the contoured circumferential surface of the second roller engaging the contoured precious metal surface strip whereby said welding tip engages one of said welding beads;

providing spring means urging the first and second rollers together whereby said tip tightly engages said bead; twice energizing said electrodes from said source during each said return stroke and during the time when the strips are moving and the rollers are rotating, one energizing period occuring when said rollers are aligned with one bead and the next period occuring when the rollers are aligned with the next adjacent bead;

the welding of the surface strip to the body strip causing the surface strip to move in unison with the body strip when said drive means moves the body strip; and

said engagement of the rollers with the surface and body strip causing said rollers to rotate when the strips are moving in unison.

4,575,608

METHOD AND APPARATUS FOR SPOT HEATING A BODY, PARTICULARLY FOR BRAZING HARD SOLDER GOLD ALLOYS

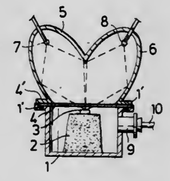
Lennart Wictorin, Jägarstigen 11, S-131 50 Saltsjö-Duvnäs; Torbjörn Carlberg, Kung Hans Väg 117B, S-191 76 Sollentuna, and Mikael Liljendahl, Hirdvägen 8, S-161 54 Bromma, all of Sweden

Filed Oct. 5, 1984, Ser. No. 657,909

Claims priority, application Sweden, Oct. 5, 1983, 8305476

Int. Cl.⁴ B23K *1/04*

U.S. Cl. 219—85 BM **6 Claims**



1. A method of spot heating individual articles of varying shapes to a desired temperature between 900° and 2000° Celsius to implement brazing or the like, comprising:

(a) disposing an article at a common focal point of two angularly positioned, interconnected partial ellipsoids of revolution, said common focal point being located in an evacuated chamber having a glass cover penetrable by IR light through which said article can be viewed,

(b) positioning a substantially point source IR lamp at each one of other focal points of said interconnected partial ellipsoids of revolution,

(c) energizing the IR lamps, and

(d) manually controlling relative displacements between the article and said common focal point to thereby control the temperature of the article.

4,575,609

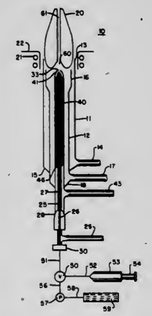
CONCENTRIC MICRO-NEBULIZER FOR DIRECT SAMPLE INSERTION

Velmer A. Fassel, Ames; Gary W. Rice, Nevada, and Kimberly E. Lawrence, Ames, all of Iowa, assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 6, 1984, Ser. No. 586,611

Int. Cl.⁴ B23K *9/00*; G01N *21/73*

U.S. Cl. 219—121 PY **20 Claims**



1. A concentric micro-nebulizer for introducing liquid samples into a plasma established in a plasma torch including a first tube connected to a source of plasma gas, said concentric micro-nebulizer comprising inner and outer concentric tubes extending upwardly within the first tube for connection to a source of nebulizer gas and to a source of liquid solvent and to a source of sample liquid, said inner tube being constructed and arranged for connection to the source of liquid solvent and to the source of sample liquid and said outer tube being constructed and arranged for connection to the source of nebulizer gas, said outer tube having an orifice positioned slightly below the plasma when it is established, said inner and outer tubes forming an annulus therebetween with the annular spacing between said tubes at said orifice being less than about 0.05 mm around the entire periphery thereof, the volume of said inner tube between the end thereof near said orifice and the connection thereof to the source of sample liquid being less than about 5 microliters.

4,575,610

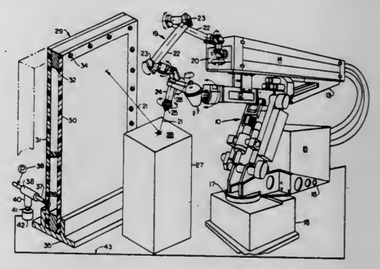
LASER SHIELDING DEVICE

James T. Gavin, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Mar. 12, 1984, Ser. No. 588,299

Int. Cl.⁴ B23K *26/00*

U.S. Cl. 219—121 L **8 Claims**



1. A shielded laser robot system, comprising in combination:

(a) a work zone target;

(b) robotic means proximate to said work zone target for automatically wielding a laser beam through multi-angle spatial orientations while aiming said beam at said work zone target; and

(c) a laser beam shielding device proximate to said work zone target, said shielding device comprising:

(1) a first shielding layer comprised of material capable of absorbing at least a portion of a laser light beam and degrading in the presence of said beam,

(2) a second shielding layer,

(3) means for spacing said first and second layers from one another and for creating a substantially enclosed chamber between the two layers,

(4) a pressure source port in fluid communication with said chamber, and

(5) means for sensing and signalling a pressure change in said chamber wherein a pressure level may be maintained in said chamber until said first shielding layer is degraded through, causing a pressure chamber leak.

4,575,611

METHOD OF JOINING PIPES

Donald C. Bertossa, Saratoga, Calif., assignor to General Electric Company, San Jose, Calif.

Filed Dec. 26, 1984, Ser. No. 686,560

Int. Cl.⁴ B23K *31/06, 9/02*

U.S. Cl. 219—137 R **29 Claims**

1. A method of joining a pair of metal pipe sections having substantially equal inside and outside diameters, said pipe sections being positioned such that a pair of pipe edge surfaces

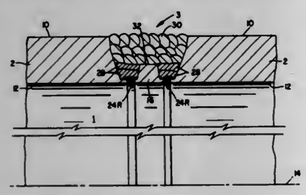
coaxially confront each other and define a circumferential gap therebetween, said method comprising the steps of:

positioning an annular metal bridge ring in said gap coaxially with said pipe sections, said ring having a smaller wall thickness than said pipe sections, the interior surfaces of said ring and said pipe sections having substantially the same diameter, said ring further including a pair of ring edge surfaces each facing one of said pipe edge surfaces;

providing an atmosphere of inert gas inside said pipe sections and said ring to inhibit oxidation in the area of said gap during subsequent fusing steps;

positioning fusible inserts on opposite sides of said ring, each of said inserts being bracketed by a pair of edge surfaces belonging to said ring and one of said pipe sections;

fusing each of said inserts to its bracketing pair of edge surfaces wherein portions of the inserts and bracketing edge surfaces make contact to provide a root layer therebetween and to thereby contact portions of said pair of



coaxially confronting pipe edge surfaces through the metal bridge ring;

depositing at least one additional layer of fusible material by welding on each of said root layers between said bracketing edge surfaces up to a predetermined thickness, each of said additional layers coaxially encircling its underlying surface and being fused by welding thereto and to the contacted portions of said bracketing edge surfaces;

removing said inert gas atmosphere; and

depositing further layers of a fusible material by welding in said gap and fusing said material to the underlying surfaces and to the contacted portions of said pipe edge surfaces, each of said further wedling layers extending throughout the full width of said gap and coaxially encircling its underlying surface. said further layers being successively deposited until said gap is filled substantially to the level of the exterior surfaces of said pipe sections and a unitary pipe is formed.

4,575,612

ARC WELDING GUIDE TUBE WITH NON-ADHESIVE TIP

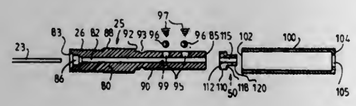
Robert Prunier, Route de Semur-Crepand, 25100 Montbard, France

Filed Apr. 7, 1982, Ser. No. 366,343

Claims priority, application France, Apr. 9, 1981, 81 07164; Sep. 16, 1981, 81 17517; Nov. 2, 1981, 81 20531; Dec. 23, 1981, 81 24180

Int. Cl.⁴ B23K *9/00*

U.S. Cl. 219—137.43 **15 Claims**



7. A guide tube for an electrical discharge welding machine, said guide tube comprising:

a metal body having a longitudinal bore for guiding a wire of filler metal and supplying welding current to the filler metal wire by contact with the walls of the longitudinal bore, said longitudinal bore opening out in a front face of said metal body, wherein said front face is covered by a ceramic material element having a bore which registers with the bore of said metal body, said ceramic material element being non-adhesive with respect to metal that splatters up from a weld melt during welding, and said element being held in place on said front face by a protective sheath fitted over the front end of said body.

4,575,613

ELECTRICAL STEAM GENERATOR

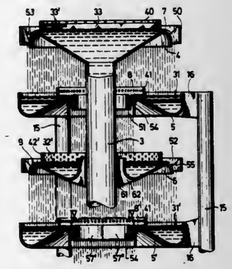
Albert Kunzli, Wiesendangen, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Nov. 9, 1984, Ser. No. 670,064

Claims priority, application Switzerland, Nov. 17, 1983, 6177/83

Int. Cl.⁴ H05B *3/60*; F22B *1/30*

U.S. Cl. 219—284 **14 Claims**



1. An electrical steam generator comprising

a pressure vessel having a wall defining a chamber;

at least two trays for receiving water disposed in a vertical spaced array within said pressure vessel along a vertical axis with alternate trays eletrically connected to said pressure vessel wall and the other trays electrically insulated from said pressure vessel, each tray having an overflow over which a film of water flows from each tray downwardly into the next lower tray and from the bottom tray into a sump in said pressure vessel;

a power supply electrically connected to said other trays and to said pressure vessel;

means for pumping water from said sump in said pressure vessel to the uppermost of said trays;

at least one flat stilling element horizontally disposed in each tray at the overflow to calm the water in said respective tray;

at least one vertical water and steam permeable stilling wall disposed upstream of said overflow of each tray and extending from a horizontal plane below said overflow to a horizontal plane above said overflow; and

at least one vertical water impermeable shielding wall disposed downstream of said overflow of each tray and extending from a horizontal plane above said overflow to a horizontal plane below said overflow to define a gap with said tray of a horizontal dimension greater than the maximum expected thickness of the film of water flowing out of said respective tray at the overflow.

4,575,614

PIPE THAWING APPARATUS

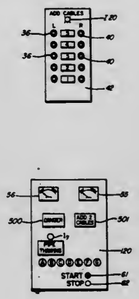
Douglas B. Hughes, Rideau Ferry, Ontario, Canada

Filed Sep. 16, 1983, Ser. No. 533,529

Claims priority, application Canada, Jun. 2, 1983, 429506

Int. Cl.⁴ H05B *1/02*; F24H *1/10*; E03B *7/14*; F16L *53/00*

U.S. Cl. 219—300 **18 Claims**



1. A pipe thawing apparatus comprising a power source of relatively low voltage high current power having a first voltage output and a second voltage output which is higher than the first voltage output, a switch means associated with said power source and operable selectively between at least first and second conditions, said first condition defining said first voltage output and said second condition defining said second voltage output higher than said first voltage output, a means connected to said power source for applying the selected voltage to a pipe to be thawed, a current sensing means for sensing the current flowing in said pipe to be thawed and a control means connected to said current sensing means and to said switch means, said control means including means which are operable in response to said switch means being in said first condition and said sensed current being above a predetermined value so as to permit, on subsequent switching of said switch means to said second switch condition, application of said second voltage output to the pipe but operable in response to said sensed current being below said predetermined value so as to prevent application of said second voltage to said pipe.

4,575,615

HOT WATER SUPPLYING DEVICE

Hiromichi Shigenobu; Takao Nakabayashi, both of Maebashi; Kitio Akiyama, Fujioka; Masao Miida, Numata, and Hisashi Karasawa, Takasaki, all of Japan, assignors to Toshiba Electric Appliances Co., Ltd., Maebashi, Japan

Filed May 29, 1984, Ser. No. 614,532

Int. Cl.⁴ F24H *1/18*

U.S. Cl. 219—314 **11 Claims**

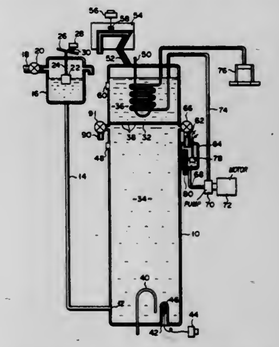
1. A hot water supplying device for heating water to a predetermined temperature and discharging hot water thus heated from said device, comprising:

a tank in which a tank chamber is defined;

water supplying means for supplying water into said tank such that a water surface in the tank is kept at a predetermined level, said water supplying means including a water supply pipe coupled to a lower side of said tank chamber;

upper and lower electric immersion heaters, disposed in upper and lower regions of said tank chamber, respectively, for heating the water in said tank chamber, the heat generated from said upper and lower heaters causing the water in said tank chamber to have different specific gravities, and the difference in specific gravity dividing said tank chamber into an upper tank region where hot water is stored and a lower tank region where warm water having a temperature lower than that of the hot water is stored;

feeding means for feeding the warm water from said lower tank region, said feeding means including a first supply pipe having one end connected to the lower tank region, a pressure pump having a sucking side connected to the other end of the first supply pipe, and a second supply pipe having one end connected to a discharge side of the pressure pump, said second supply pipe extending into the upper tank region and further extending to the outside of the upper tank region, whereby the warm water fed from



the lower tank region through the first and second supply pipes is further heated by the heat of the hot water in the upper tank region; and

adjusting means for adjusting said feeding means such that a constant quantity of warm water is supplied through said feeding means, said adjusting means including a metering container which is disposed in the first supply pipe and into which the warm water is introduced from said lower tank region, and a switch which produces a stop signal for stopping said pressure pump when said pressure pump has fed a predetermined quantity of warm water from the metering container through the second supply pipe.

4,575,616

DOMESTIC INFRA-RED RADIATION OVEN

Lars R. G. Bergendal, Lidingö , Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden

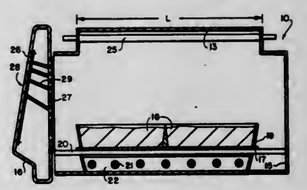
PCT No. PCT/SE83/00035, § 371 Date Sep. 26, 1983, § 102(e) Date Sep. 26, 1983, PCT Pub. No. WO83/02817, PCT Pub. Date Aug. 18, 1983

PCT Filed Feb. 3, 1983, Ser. No. 541,326

Claims priority, application Sweden, Feb. 5, 1982, 8200685

Int. Cl.⁴ F24C *7/06*

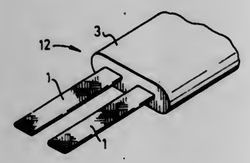
U.S. Cl. 219—405 **8 Claims**

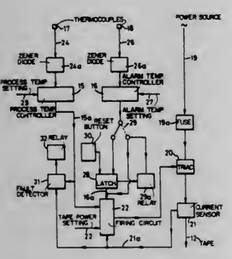


1. In a domestic oven having a generally parallelepiped oven space with walls of a material which is highly reflective of infra-red radiation, one side wall being a door, and an upper and a lower radiation source arranged at top and bottom walls repectively of the oven, the radiation sources emitting infra-

red radiation and a supporting surface substantially transparent to the radiation and arranged between the two radiation sources and adapted to support an oven load, the upper radiation source being arranged to emit short-wave IR-radiation with a peak performance in a wavelength range of 1.0 to 1.4 μm, the improvement wherein the upper radiation source is comprised of at least one straight rod-shaped quartz-tube radiation element having an active length and being in a plane parallel to the top wall of the oven, the oven having a vertical distance from the rod-shaped radiation element to said supporting surface that is 40–70% of the active length of the radiation element.

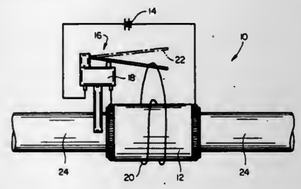
4,575,617
HEAT TRACING TAPE AND POWER CONTROL SYSTEM
Peter J. Cooper, Southport, England, assignor to Cooperheat, England
Filed Apr. 12, 1984, Ser. No. 599,447
Int. Cl.⁴ H05B *1/01*
U.S. Cl. 219—494 **7 Claims**





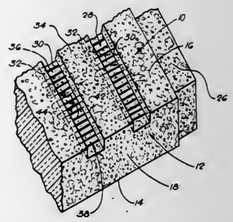
1. An electrical heat tracing tape and an electrical power control system for varying the electrical power supplied to the tape, said heat tracing tape being in a form which can be cut to required lengths and having a series heating element in that the tape comprises at least two lengths of woven or braided resistance wire, each of said lengths being in the form of a flat strip, said flat strips being encased in extruded insulating material whereby they are spaced from one another along the length of the tape, said strips being electrically connectible together at one end of the tape by means of a connector so as to form the series heating element and the tape being provided with a termination for connection to a supply of current via said power control system; said power control system including adjustable power control means which can be adjusted to an estimated electrical power value depending upon the tape length for controlling the amount of power supplied to said tape in order to maintain a preset process temperature, the adjustment of the power control means normally being made when the length of said tape lies within a predetermined range, a current sensor for sensing the current supplied to the tape and for providing a feedback signal to said power control means, said power control means being responsive to the feedback signal to adjust the power supplied to the tape until it is substantially equal to the estimated value, process temperature control means and a process temperature sensor for measuring the temperature at the location of the tape connected to said process temperature control means, said power control means being responsive to said process temperature control means to regulate the power supplied to said tape in accordance with the sensed temperature.

4,575,618
SWITCH UNIT FOR USE WITH HEAT-RECOVERABLE ARTICLES
Nachum Rosenzweig, Palo Alto, Calif., assignor to Raychem Corporation, Menlo Park, Calif.
Filed Jul. 25, 1984, Ser. No. 634,241
Int. Cl.⁴ H05B *3/58*
U.S. Cl. 219—535 **10 Claims**



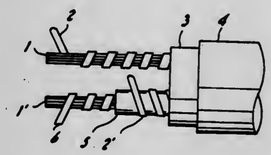
1. An assembly comprising
(a) a heat-recoverable article which can be connected to a power supply to cause electrical current to pass through the article and to cause the article to heat and recover; and
(b) a switch unit which comprises
(i) an electrical switch which can be connected into a circuit comprising the recoverable article and a power supply, and which, when so connected, regulates the flow of current through the heat-recoverable article, and
(ii) a thermally-responsive member which can be thermally coupled to the heat-recoverable article and which, when so coupled, controls the electrical switch in response to change in the temperature of the article.

4,575,619
ELECTRICAL HEATING UNIT WITH SERPENTINE HEATING ELEMENT
Ludwig Porzky, Watertown, Wis., assignor to General Signal Corporation, Stamford, Conn.
Filed May 8, 1984, Ser. No. 608,348
Int. Cl.⁴ H05B *3/02*
U.S. Cl. 219—542 **12 Claims**



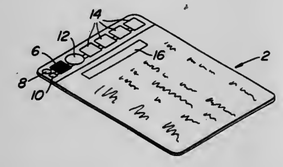
1. A combination heating and thermal insulating unit for heating a particular region comprising a ceramic fiber thermal insulating block having a surface adapted to confront the region to be heated, said block being constructed of electrical insulating material and having an elongated slot, said slot having walls extending into the block from the surface of the block on opposite sides of the axis of elongation of the slot, an elongated heating element disposed within the slot and engaging the walls of the slot, said heating element having a serpentine electrical conductor extending outwardly on opposite sides of the axis of elongation of the heating element, and said heating element having portions extending through the walls and embedded in the block.

4,575,620
FLEXIBLE HEATING WIRE
Kazunori Ishii, Nara; Yoshio Kishimoto, Osaka, and Shuji Yamamoto, Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed May 11, 1984, Ser. No. 609,216
Claims priority, application Japan, May 11, 1983, 58-80771; May 18, 1983, 58-86927; May 18, 1983, 58-86928; Oct. 20, 1983, 58-196312; Oct. 20, 1983, 58-196314
Int. Cl.⁴ H05B *3/02, 3/54*
U.S. Cl. 219—549 **7 Claims**



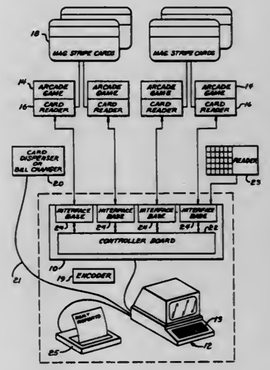
1. A flexible heating cable, comprising: a wire assembly composed of a first conductive body, a thermally fusible electrically insulative body covering said first conductive body, and a second conductive body disposed as an electrode on said thermally fusible electrically insulative body, said first and second conductive bodies being electrically contactable to electrically disconnect said heating cable when said thermally fusible electrically insulative body is thermally fused; a third conductive body as another electrode spaced from said wire assembly and extending parallel thereto; a heating body having a positive temperature coefficient of resistance, said second and third conductive bodies being covered by and held in electric contact with said heating body along the length thereof in order to function as the electrodes to control said heating body.

4,575,621
PORTABLE ELECTRONIC TRANSACTION DEVICE AND SYSTEM THEREFOR
Henry N. Dreifus, Narberth, Pa., assignor to Corpra Research, Inc., Rosemont, Pa.
Filed Mar. 7, 1984, Ser. No. 586,938
Int. Cl.⁴ G06K *5/00*
U.S. Cl. 235—380 **34 Claims**



1. A portable electronic transaction device for use in a system having a terminal, said device being sealed in a container and comprising means for storing information therein, means for transmitting and receiving information to and from said terminal, internal, self-contained, power source means, sensing means for detecting abnormal conditions in said device, said sensing means being powered by said internal power source means and operated at all times, and means for permanently incapacitating said device in response to detection of abnormal conditions in said device by said sensor means, whereupon said device is precluded from use with said terminal.

4,575,622
ELECTRONIC ACCESS CONTROL SYSTEM FOR COIN-OPERATED GAMES AND LIKE SELECTIVELY ACCESSIBLE DEVICES
Frank J. Pellegrini, Hoffman Estates, Ill., assignor to ESAC, Inc., Hillside, Ill.
Filed Jul. 29, 1983, Ser. No. 518,426
Int. Cl.⁴ G06K *5/00*
U.S. Cl. 235—382 **33 Claims**

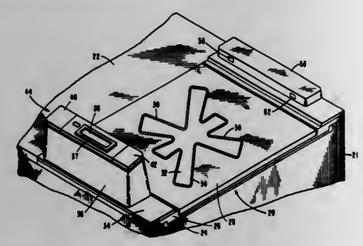


1. A system for controlling access to an equipment which has a control device associated therewith operative in response to an activation signal to permit usage of said equipment, the system comprising:
a portable data-carrying device;
a reader associated with said equipment for obtaining data from said data-carrying device;
a data center communicating with said reader;
a data entry device for communicating to said data center data regarding said portable data-carrying device, said data center being responsively coupled to said data entry device and operative for establishing a data record in said data center representative of a number of activations of said equipment, said number corresponding to said portable data-carrying device, said data center also being coupled to said reader for receiving data contained on said data-carrying device when it is transmitted to said data center via said reader, said data center responding to receipt of said data from said reader by examining the data record within said data center corresponding to said data-carrying device and selectively activating the control device and adjusting said data record to account for such current activation, said data center also refraining from activating the control device if said data record shows no further activations of the equipment are warranted by the portable data-carrying device.

4,575,623
OPTICAL CODE SCANNER AND DISPLAY
Victor L. Cononi, Raleigh, N.C., and Herbert D. McClain, Quaker City, Ohio, assignors to NCR Corporation, Dayton, Ohio
Filed Jan. 10, 1985, Ser. No. 690,422
Int. Cl.⁴ G06K *15/00*
U.S. Cl. 235—383 **6 Claims**

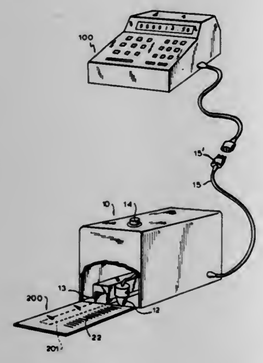
1. In combination with an optical scanning system in which

a scanning beam is projected to a position where there is located a coded label to be scanned,
a cover member for supporting a merchandise item on which is located a coded label to be read;
an aperture located in the cover member through which the scanning beam is projected to read the coded label on the merchandise item positioned adjacent the aperture;
a housing member mounted adjacent said support member and having an inclined top surface at an acute angle to a plane parallel to the top surface of the cover member;



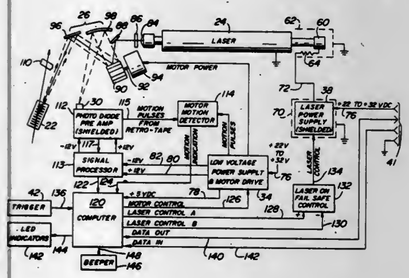
processing means for generating a numerical value representing the purchase price of the merchandise item being scanned in response to the scanning of the coded label by the scanning beam; and
display means mounted on the top surface of the housing member and operated by said processing means for displaying the purchase price of the item being scanned, said display means positioned in a common vertical plane with the aperture in the cover member enabling the customer to view simultaneously the merchandise item being scanned and the display displaying the price of the item being scanned.

4,575,624
ARRANGEMENT FOR ACTIVATING AND/OR DEACTIVATING A MARKER STRIP HAVING A MAGNETIZABLE LAYER
Erhard Klinkhardt, Neuss, Fed. Rep. of Germany, assignor to Rheinmetall GmbH, Duesseldorf, Fed. Rep. of Germany
Filed Nov. 30, 1983, Ser. No. 556,310
Claims priority, application Fed. Rep. of Germany, Dec. 1, 1982, 3244431
Int. Cl.[4] G06K *7/08*
U.S. Cl. 235—449 **4 Claims**



1. A portable device for activating and/or deactivating a magnetizable layer which forms part of a marker strip of an anti-shoplifting system, comprising
means for producing an electro-magnetic activating or deactivating field;
electro-optical reading means for reading a readable or pictorial coding on said marker strip;
means for preventing production of said activating or deactivating field until said electro-optical reading means has read said readable or pictorial coating on said marker strip;
said electro-magnetic field producing means and electro-optical reading means being mounted in a common portable housing.

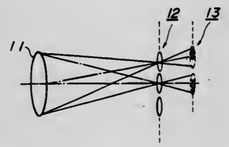
4,575,625
INTEGRAL HAND-HELD LASER SCANNER
Carl H. Knowles, 425 E. Linden St., Moorestown, N.J. 08057
Filed Sep. 27, 1983, Ser. No. 536,404
Int. Cl.[4] G06K *7/10*
U.S. Cl. 235—467 **22 Claims**



1. A portable, hand-held laser scanner comprising a housing, laser beam generation means, power supply means, user actuable means for initiating operation of said scanner and control and override means, said laser generation means, said power supply means and said control and override means being located within said housing, said laser generation means being arranged when operative to produce a laser beam which exits said housing for scanning across a target located adjacent said scanner, said scanner being arranged to receive light reflected off said target and for providing signals indicative thereof, said power supply means being arranged to energize said laser generation means, said actuable means being arranged for actuation by said user to cause said laser generation means to operate, said control and override means automatically precluding operation of said laser generation means when the amount of laser energy produced within a predetermined period of time reaches a predetermined threshold value and enabling said laser generation means to operate when the amount of laser energy produced is less then said predetermined threshold value within said predetermined period of time.

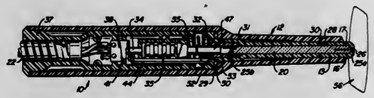
4,575,626
APPARATUS FOR DETECTING FOCUS CONDITIONS OF AN IMAGING OPTICAL SYSTEM
Kenichi Oinoue, Tokyo; Kenji Kimura, Tachikawa, and Masatoshi Ida, Hachioji, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Jun. 14, 1983, Ser. No. 504,319
Claims priority, application Japan, Jun. 17, 1982, 57-103086
Int. Cl.[4] G01J *1/20*
U.S. Cl. 250—201 **9 Claims**

1. An apparatus for detecting a focus condition of an imaging optical system having a focal plane comprising:
light flux dividing means having a plurality of light flux dividing elements arranged in said focal plane or near a plane conjugated with said focal plane;
photoelectric conversion means having a plurality of light receiving elements arranged in a linear array and paired with respective ones of said flux dividing elements to receive light fluxes divided by respective ones of said light flux dividing elements and so arranged that the cross-sec-



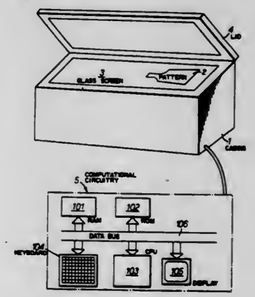
tion of light fluxes incident upon the respective light receiving elements at the exit pupil of the imaging optical system includes regions which are not overlapped with each other; and
means for detecting focus conditions of the imaging optical system based on the outputs of the light receiving elements.

4,575,627
MOLDED LIGHT PEN WITH LENS WITH WATER IMPERVIOUS HOUSING
Logan L. Pease; Wes F. Carmean, and Robert A. Luciano, all of Reno, Nev., assignors to IGT, Reno, Nev.
Filed Sep. 14, 1983, Ser. No. 532,502
Int. Cl.[4] H01J *5/16*
U.S. Cl. 250—227 **8 Claims**



1. A fiber optic light pen adapted to be connected to a fiber optic cable for transmission of light pulses to a processing unit, the light pen comprising:
an elongated, water impervious, tubular member having first and second open ends;
a tubular insert extending from the first open end into an interior of the housing and terminating at a point spaced from the second open end;
means carried by the insert for securing a fibre optic cable to the insert so that an end face of the cable is substantially coaxially disposed within the housing, faces towards the second open end, and is at a fixed axial location within the housing;
means for securing the insert to the housing and preventing relative axial movements of the insert in the housing;
a generally tubular actuator axially movably disposed within the housing and extending through the second open end thereof, the actuator having an outer end including a coaxial light aperture and an inner end spaced from the insert;
means defined by the housing and the actuator for guiding the actuator during its relative axial movements within the housing;
means limiting axial movements of the actuator within the housing to movements between spaced apart first and second positions arranged so that the outer end of the actuator is disposed exteriorly of the housing in its first and second positions;
means for biasing the actuator into the first position;
means forming a watertight seal between the actuator and the housing;
an elongated light conducting rod disposed interiorly of the actuator and extending from proximate the light aperture towards the fiber optic cable end face so that the rod is spaced from the end face when the actuator is in the first and second positions, the rod and the actuator being in firm engagement with each other over substantially their full common lengths, whereby liquid is prevented from passing therebetween, the rod being shaped so that it focuses light entering through the aperture on the fiber optic cable end face when the actuator is in the second position and so that it focuses the light in a plane other than the fiber optic cable end face when it is in the first position;
an electric switch carried by the insert and spaced from the inner end of the actuator, the switch being adapted to generate a signal perceptible by a person using the light pen when it is operated; and
means operatively coupled with the switch and the actuator for operating the switch when the actuator is moved between the first and second positions.

4,575,628
PATTERN SCANNER PROVIDING DATA TO A COMPUTER WHICH CARRIES OUT LAY PLANNING
Adrian E. Bankart, and Clive N. Jenkins, both of London, Great Britain, assignors to Cybrid Limited, London, England
Filed Nov. 9, 1982, Ser. No. 440,273
Claims priority, application United Kingdom, Nov. 9, 1981, 8133723
Int. Cl.[4] G01B *11/00*; H04N *1/10*
U.S. Cl. 250—235 **25 Claims**



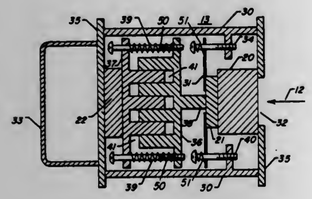
1. A pattern scanner, for scanning pattern pieces, comprising:
a plurality of radiation sensitive elements;
means for guiding said elements in X and Y coordinate directions with said elements evenly spaced in the Y coordinate direction;
control means for controlling the guiding means to cause said elements to make uninterrupted scans across a pattern piece in the X coordinate direction, such scans alternating with stepping in the Y coordinate direction by steps substantially equal to n times half of the spacing of said elements in the Y coordinate direction (where n is an odd integer), in order to scan a matrix of unitary areas encompassing the entire area of said pattern piece within its outer boundary;
and means for the transmission of data sensed by said elements during said scans in both X directions.

4,575,629

DETECTOR FOR RAMAN SPECTRA AND OTHER WEAK LIGHT

Robert P. Schnell, Deerfield; Robert W. Sampson, Wayne; Ronald F. Pancanowski, Hoffman Estates, and Donald J. Bruggema, Wheeling, all of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Dec. 29, 1983, Ser. No. 566,843
Int. Cl.⁴ H01J 7/24
U.S. Cl. 250—238 **9 Claims**



1. Apparatus for converting weak light to electrical signals descriptive of said light, said converting apparatus being capable of sensing differences inphoton flux over an area of detection, comprising:

(a) a housing to contain elements comprising said converting apparatus, the housing having an entrance aperture through which photons pass;

(b) means for sending the number of photons passing through said aperture, said photon sensing means being comprised of a plurality of sensing elements, where each element provides an intermittent electrical signal corresponding to the total number of photons incident upon it over a time period;

(c) means for holding in position and adjusting the position of said photon sensing means comprising, in cooperative combination:

(i) a diode board to which said photon sensing means are affixed, the diode board having an opening in its center area and a plurality of tie rod openings;

(ii) a plurality of tie rods affixed at one end to the housing, each tie rod slidably passing through one of said tie rod openings in the diode board and being normal to the diode board, and at least a portion of the tie rods having retaining means at their non-affixed ends;

(iii) first elastic expansive means located between the diode board and said retaining means, said first elastic expansive means urging the diode board toward said entrance aperture; and,

(iv) a plurality of alternate tie rod attachment points on the housing, such that the diode board may be adjusted in the plane in which it lies by repositioning one or more tie rods to an alternate attachment point or to an alternate attachment point and another tie rod opening;

(d) means for removing heat from said converting apparatus; and,

(e) means for providing a heat sink and a thermal path to said heat removal means comprising, in cooperative combination:

(i) a first cold plate and a second cold plate disposed within the housing, each cold plate having one of its two major surfaces partially covered by a series of ridges parallel to one another with valleys being formed between the ridges, with the ridges being disposed and dimensioned in such a manner that the ridges of the first cold plate are interleaved with the ridges of the second cold plate to at least partially fill the valleys of each plate and provide substantial contact between the plates, and with the first cold plate having a projection extending from its unridges major surface toward said photon sensing means;

(ii) a plurality of tie rods, each tie rod having one end affixed to a cold plate, all tie rods being affixed to the same cold plate, and each rod slidably passing through an opening in the other cold plate; and,

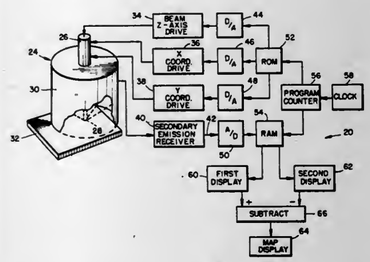
(iii) second elastic expansive means located between the first and second cold plates, said second elastic expansive means urging the cold plates apart and urging said projection extending from the unridged major surface of said first cold plate into contact with said photon sensing means through the opening in the center area of the diode board.

4,575,630

ELECTRON-BEAM TESTING OF SEMICONDUCTOR WAFERS

George V. Lukianoff, Hopewell Junction, N.Y., assignor to IBM Corporation, Armonk, N.Y.

Filed Jan. 30, 1984, Ser. No. 575,353
Int. Cl.⁴ G01N 23/00
U.S. Cl. 250—307 **5 Claims**



1. A method of mapping areas in a semiconductor structure having a plurality of junctions, which structure has been fabricated without metallization, the method comprising the steps of:

scanning the structure with an electron beam in the absence of potentialization of the structure by any means other than by said electron beam;

measuring the secondary emission of radiation induced by the bombardment of the semiconductor structure by said electron beam, a measurement of the secondary emission being manifested by a first voltage;

repeating said measuring step to obtain a second measurement manifested by a second voltage; and

mapping a difference of said first voltage and said second voltage as a function of the coordinates of the scanning position of said electron beam to provide a map capable of identifying the presence of a defective area in the semiconductor structure.

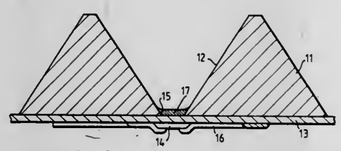
4,575,631

INFRA-RED DETECTOR

David W. Satchell, Berden, United Kingdom, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Aug. 13, 1984, Ser. No. 640,438
Claims priority, application United Kingdom, Aug. 12, 1983, 8321807
Int. Cl.⁴ H01L 31/02, 31/18
U.S. Cl. 250—332 **8 Claims**

1. An infra-red sensor comprising a body of single crystal silicon having a plurality of horn aerial elements formed therein, and a plurality of bolometer elements each of said bolometer elements being mounted adjacent to one of said horn aerial elements for detecting radiation received by said horn aerial elements.

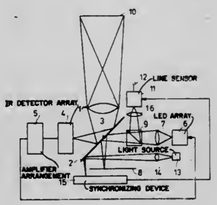


4,575,632

INFRARED VIEWING APPARATUS

Gerhard Lange, Bremen, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 401,040, Jul. 22, 1982. This application Nov. 30, 1984, Ser. No. 676,592
Claims priority, application Fed. Rep. of Germany, Aug. 26, 1981, 3133641
Int. Cl.⁴ H01J 31/50; H04N 7/18
U.S. Cl. 250—334 **6 Claims**



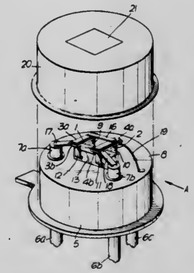
1. An infrared scanning apparatus comprising a plurality of infrared detectors arranged in a line and each supplying an output signal corresponding to infrared radiation incident thereon, means for periodically scanning a scene to be viewed, said scanning means including a scanning element mounted for periodic movement about an axis which is parallel to said line, said scanning element being arranged such that upon movement thereof, consecutive lines of a thermal image of the scene to be viewed are successively projected onto said infrared detectors so that said thermal image is successively scanned line-by-line by said infrared detectors, a plurality of light emitting sources arranged in a single line so as to define a linear array, means for coupling each of said output signals to a respective one of said light emitting sources so that the light emitted by said array is representative of a line of said thermal image scanned by said infrared detectors, a single line sensor positioned for detecting light successively emitted by said linear array of light emitting sources, said successively emitted light being representative of consecutive lines of said image, said line sensor supplying an analog electrical signal corresponding to the light emitted by said linear array and representing a line of said thermal image scanned by said infrared detectors, and a synchronizing means for detecting the movement of said scanning element and generating further signal for synchronizing said analog signal with the movement of said scanning element so as to enable a two dimensional image of the scene to be produced from said electrical analog signal at a remote location.

4,575,633

PYROELECTRIC INFRARED RADIATION DETECTOR

Geoffrey Baker; Patrick J. R. Ball, and Martin Renals, all of Southampton, England, assignors to US Philips Corporation, New York, N.Y.

Filed Jul. 1, 1983, Ser. No. 509,617
Claims priority, application United Kingdom, Jul. 23, 1982, 8220816
The portion of the term of this patent subsequent to Dec. 18, 2001, has been disclaimed.
Int. Cl.⁴ G01J 1/00
U.S. Cl. 250—338 **20 Claims**



1. An infrared radiation detector comprising:

a substrate having a supporting surface;

a pyroelectric element comprising a body of pyroelectric material sandwiched between two electrodes;

two support members for supporting the pyroelectric element on and for spacing the pyroelectric element from the supporting surface; and

a circuit arrangement having at least one circuit element electrically connected to one of the electrodes;

characterized in that:

the circuit arrangement is encapsulated in a package which has at least first and second protruding conductive leads electrically connected to the circuit arrangement;

the circuit arrangement package is mounted on the supporting surface; and

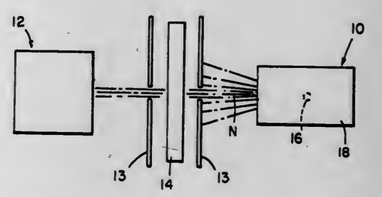
the two support members are the first and second protruding conductive leads.

4,575,634

ASSAYING COMPOSITE STRUCTURES

Elisa Redler, and Gerald Entine, both of Waban, Mass., assignors to Radiation Monitoring Devices, Inc., Watertown, Mass.

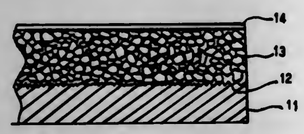
Continuation-in-part of Ser. No. 336,183, Dec. 31, 1981, abandoned. This application Oct. 7, 1982, Ser. No. 433,276
Int. Cl.⁴ G01N 23/09
U.S. Cl. 250—358.1 **23 Claims**



1. The method of measuring the glass content of a glass-containing composite material, comprising the steps of exposing said material to a source of neutrons,

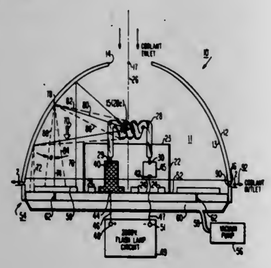
measuring the degree of neutron absorption by boron contained in said glass, and
determining said glass content on the basis of said degree of neutron absorption.

4,575,635
RADIATION IMAGE STORAGE PANEL
Satoshi Arakawa, and Terumi Matsuda, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed May 18, 1983, Ser. No. 496,278
Claims priority, application Japan, May 18, 1982, 57-82431
Int. Cl.⁴ G21K *4/00*
U.S. Cl. 250—484.1 **10 Claims**



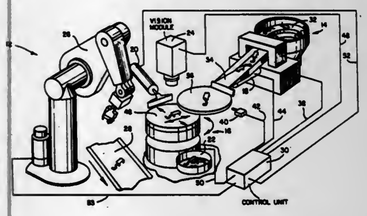
1. A radiation image storage panel comprising a support and at least one phosphor layer comprising a binder and a stimulable phosphor dispersed therein, in which the support is provided on the surface facing the phosphor layer with a great number of pits having a mean depth of at least 1 μm, a maximum depth of more than 1 μm to 100 μm, and a mean diameter at the opening of at least 1 μm.

4,575,636
DEEP ULTRAVIOLET (DUV) FLOOD EXPOSURE SYSTEM
Fausto Caprari, East Brunswick, N.J., assignor to RCA Corporation, Princeton, N.J.
Filed Apr. 30, 1984, Ser. No. 605,244
Int. Cl.⁴ H01L *21/26*
U.S. Cl. 250—492.1 **9 Claims**



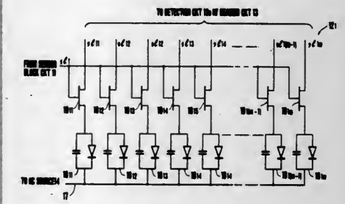
1. An apparatus for flood exposing to deep ultraviolet (DUV) radiation a plurality of substrates arranged in an annular pattern, each substrate having a layer of photoresist material, comprising:
(a) a paraboloidal reflector having an optical axis and a focus;
(b) means for providing a pulse of radiation including a tubular xenon lamp having a geometric center;
(c) said lamp being positioned within said reflector so that the reflector focus is near or at the geometric center of the lamp to provide a reflected annular beam of radiation that is substantially collimated and parallel to said optical axis and having a predetermined divergence; and
(d) means for positioning a plurality of said substrates in an annular planar pattern perpendicular to the path of said annular beam.

4,575,637
PART POSITIONING SYSTEM EMPLOYING A MASK AND PHOTODETECTOR ARRAY
William F. Sullivan, Jr., Stoughton, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Jul. 28, 1983, Ser. No. 518,053
Int. Cl.⁴ G01B *11/00*
U.S. Cl. 250—548 **9 Claims**



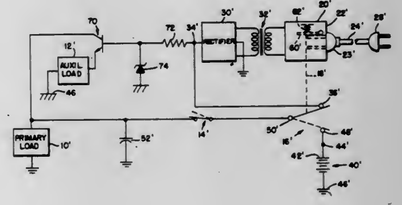
1. Apparatus for placing an irregular shaped object within a predetermined area, comprising:
a light source mounted in a fixed position for illuminating a portion of said object;
a set of photosensitive elements spaced from said light source and electrically divided into a plurality of photosensitive groups for generating a plurality of object positioning electrical signals with each of said groups containing a plurality of photosensitive elements;
a light attenuating, generally opaque mask interposed between said light source and said element set, said opaque mask being similar in shape and slightly larger than an image of said object with the shape of said opaque mask defining said predetermined area;
means for supporting said object between said light source and said photosensitive element set; and
means coupled to said object support means responsive to said electrical positioning signals for moving the shadow falling on said photosensitive element set produced by said illuminated interposed object to a rest position within said predetermined area.

4,575,638
THIN FILM PHOTOELECTRIC CONVERTING DEVICE
Fujio Okumura, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Apr. 29, 1983, Ser. No. 489,748
Claims priority, application Japan, May 4, 1982, 57-74885; May 10, 1982, 57-77889
Int. Cl.⁴ H01J *40/14*
U.S. Cl. 250—578 **5 Claims**



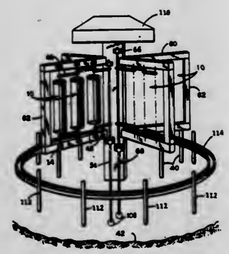
1. A thin film photoelectric converting device comprising:
a plurality of sensor blocks, each block including a thin film transistor array which is paired with a storage type image sensor array, said thin film transistor array and said image sensor array being formed on the same insulating substrate;
means for simultaneously turning ON as a group the thin film transistors in each block and for sequentially driving the thin film transistors of said blocks; and
reading means comprising detection means and scanning means for sequentially reading electric charge signals sensed by the storage type image sensor elements in each block;
said detection means including a plurality of detectors of the same number as that of sensor elements in each block, said detectors simultaneously detecting electric charge signals of said image sensor elements in each block, and said scanning means scanning and reading out outputs of said detectors wherein each of said image sensor elements is a sensor constituted by a first transparent electrode array on a dielectric substrate, a silicon insulating film deposited on said electrode in a predetermined pattern, a high resistance amorphous silicon film deposited on said silicon insulating film, a P type amorphous silicon film deposited on said amorphous silicon, and a second electrode deposited on said amorphous silicon film, said silicon insulating film and said P type amorphous silicon film acting as blocking layers for preventing undesired charge injection.

4,575,640
POWER CIRCUIT CONTROL APPARATUS FOR PRIMARY AND AUXILIARY LOADS
Hugh H. Martin, North Syracuse, N.Y., assignor to General Electric Company, Portsmouth, Va.
Filed Oct. 12, 1984, Ser. No. 660,136
Int. Cl.⁴ H02J *1/10*
U.S. Cl. 307—23 **15 Claims**



1. In a consumer electronics product adapted for energization from either a source of a-c potential or a source of d-c potential and having a primary load and an auxiliary load, power circuit control apparatus comprising:
rectifying means for converting electric power from an a-c source to d-c electric power and supplying d-c electric power to a first output terminal,
means for receiving a d-c battery source and supplying d-c electric power to a second output terminal,
a two position mechanical switch having a third output terminal, a first input terminal coupled to said first output terminal, a second input terminal coupled to said second output terminal, and means for connecting said third output terminal to said first input terminal in the first of said two positions and for connecting said third output terminal to said second input terminal in the second of said two positions,
a solid state switch having a pair of power terminals and a control terminal, said control terminal coupled to said first output terminal,
a first load circuit comprising at least the primary load coupled to said third output terminal for receiving electric power therefrom, the primary load being energized whenever operating voltage is supplied to said third output terminal,
a second load circuit coupled to said third output terminal for receiving electric power therefrom, said second load circuit comprising at least a series connection of the auxiliary load and the power terminals of said solid state switch,
said solid state switch being conductive only when operating voltage is applied to said second load circuit from said third output terminal and control voltage is simultaneously applied to said control terminal from said first output terminal,
whereby the auxiliary load is energized only when said rectifying means is supplying d-c electric power from an a-c source.

4,575,639
FLUID TURBINE SYSTEM
Bruce I. Rogow, 3709 Merrimac Ave., San Diego, Calif. 92117, and Fred Sternberg, 4702 - 16th Ave., Brooklyn, N.Y. 11204
Filed Dec. 16, 1980, Ser. No. 203,234
Int. Cl.⁴ F03D *9/00*
U.S. Cl. 290—55 **10 Claims**



1. A fluid turbine system comprising:
a vertical axis rotor;
a plurality of vanes driving said rotor;
an arcuate shield movable on pair of concentrically external to said vanes; tracks;
said shield controlled in response to wind direction;
said shield comprising externally placed, horizontally bracketted, vertical louvers as means to guide fluid current along the surface of said shield, the outlets of said louvers being parallel to and outside of said shield.

4,575,641

CIRCUIT ARRANGEMENT FOR REDUCING THE RESIDUAL VOLTAGE ON PARTIALLY DISCONNECTED LOADS

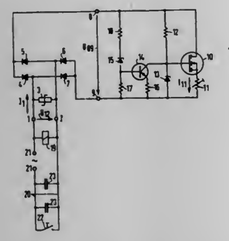
Thomas Kölpin, Amberg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich and Berlin, Fed. Rep. of Germany

Filed May 25, 1984, Ser. No. 614,073

Claims priority, application Fed. Rep. of Germany, Jun. 10, 1983, 3321086

Int. Cl.⁴ H01H *47/00*

U.S. Cl. 307—38 **12 Claims**



1. In a circuit arrangement for reducing the residual voltage on partially disconnected load, by connecting an additional load in parallel to the load, the improvement wherein the additional load is a constant-current sink.

4,575,642

CONTROL CIRCUIT FOR AN INTEGRATED DEVICE

Roger M. Hochreutiner, Lieli, Switzerland, and Walter Mattheus, Kessel-Lo, Belgium, assignors to International Standard Electric Corporation, New York, N.Y.

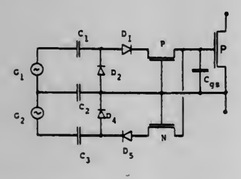
PCT No. PCT/CH83/00042, § 371 Date Dec. 7, 1983, § 102(e) Date Dec. 7, 1983, PCT Pub. No. WO83/03724, PCT Pub. Date Oct. 27, 1983

PCT Filed Apr. 7, 1983, Ser. No. 567,850

Claims priority, application Switzerland, Apr. 7, 1982, 2153/82

Int. Cl.⁴ H03K *17/08*

U.S. Cl. 307—200 A **9 Claims**



1. Monolithically integrated control circuit for an integrated device with galvanic isolation between its input and its output including a push-pull AC-source connected via two series input capacitances (C_1, C_3) to the input of a rectifying circuit incorporating at least four diodes, and a shunt output charging capacitance (C_{g2}) being coupled across the output of said rectifying circuit and isolated from said input capacitances, characterized in that a third series input capacitance (C_2) is provided having its input connected to said push-pull AC-source and having its output also connected to the input of said rectifying circuit which produces first and second output polarities respectively, and control means to charge the output capacitance (C_{g2}) with said first or with said second output polarity produced by said rectifying circuit.

4,575,643

FULL-WAVE RECTIFIER CIRCUIT

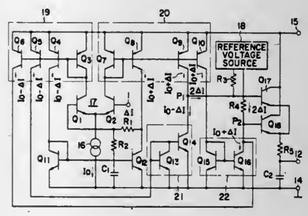
Koichi Sakai, Tokyo, Japan, assignor to Toko Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 20, 1983, Ser. No. 486,926

Claims priority, application Japan, Apr. 28, 1982, 57-72247

Int. Cl.⁴ H03K *5/01*; G06G *7/12*; H02M *7/217*

U.S. Cl. 307—261 **3 Claims**



1. A full-wave rectifier circuit comprising:
a differential amplifier for receiving a sine wave input signal;
first and second current mirror circuits for obtaining outputs from said differential amplifier, said outputs comprising a direct current component and a sine wave signal superposed thereon, said outputs being opposite in phase to each other;
a third current mirror circuit comprising a first transistor, an output of said second current mirror circuit being applied to said first transistor, said first transistor being biased by a bias source which is obtained from an output of said first current mirror circuit;
a fourth current minor circuit comprising a second transistor, an output of said first current mirror circuit being applied to said second transistor, said second transistor being biased by a bias source which is obtained from an output of said second current mirror circuit;
a first current source connected to a first connecting point between said second and third current mirror circuits;
a second current source connected to a second connecting point between said first and fourth current mirror circuits;
a third transistor having a base connected to said first connecting point, said third transistor being emitter-follower-connected; and
a fourth transistor having a base connected to said second connecting point, said fourth transistor being emitter-follower-connected, collectors of said third and fourth transistors being commonly connected and emitters of said third and fourth transistors being commonly connected; whereby said third and fourth transistors are operative alternatively with a half period of said sine wave input signal to said differential amplifier to obtain a full-wave rectified output from a common connecting point of said emitters of said third and fourth transistors.

4,575,644

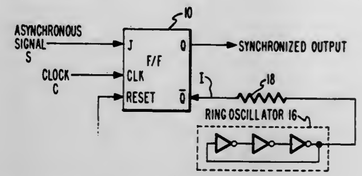
CIRCUIT FOR PREVENTION OF THE METASTABLE STATE IN FLIP-FLOPS

Duane W. Leslie, Pasadena, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Dec. 2, 1983, Ser. No. 557,690

Int. Cl.⁴ H03K *3/29, 5/13*

U.S. Cl. 307—291 **13 Claims**



1. A synchronizing circuit comprising:
means providing an asynchronous input signal;
means providing a clock signal;
a switchable bistable element;
said switchable bistable element being responsive to logical combination of said asynchronous input signal and said clock signal for providing a synchronized output signal corresponding to reception of said asynchronous input signal; and
signal injection means for injecting an injection signal into said switchable bistable element in an asymmetric fashion and
at a sufficiently slower rate than the reaction time of said switchable bistable element so as to inhibit maintenance of a balanced or metastable state of said switchable bistable element without interfering with normal switching operation of said switchable bistable element.

4,575,645

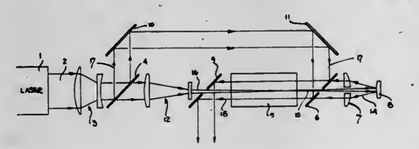
COMPACT RAMAN OSCILLATOR-AMPLIFIER OPTICAL SYSTEM

Hiroshi Komine, Torrance, Calif., assignor to Northrop Corporation, Hawthorne, Calif.

Filed Aug. 9, 1984, Ser. No. 639,302

Int. Cl.⁴ H03F *7/00*

U.S. Cl. 307—426 **3 Claims**



1. A device utilizing Stokes-Raman scattering for converting a beam of radiation from a laser into radiation at other wave lengths comprising:
(a) a Raman cell,
(b) beam splitting means for splitting the laser beam into an oscillator pump beam and an amplifier pump beam,
(c) means for directing the amplifier pump beam so as to pass through the Raman cell,
(d) condensing means for condensing the oscillator pump beam, and directing the condensed oscillator pump beam to pass through the Raman cell, wherein the oscillator pump beam within the Raman cell generates a Stokes beam which is emitted from the Raman cell,
(e) enlargement means for enlarging the cross section of the Stokes beam generated by the oscillator pump beam and for redirecting the enlarged Stokes beam through the Raman cell so as to have a substantial portion of the enlarged Stokes beam spatially coincide with a substantial portion of the amplifier pump beam within the Raman cell, whereby the amplifier pump beam and the enlarged Stokes beam interact within the Raman cell so as to amplify the enlarged Stokes beam.

4,575,646

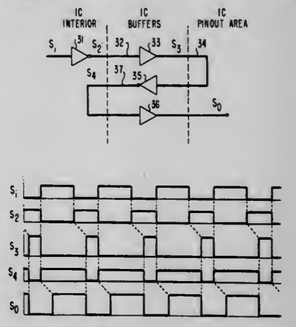
HIGH-SPEED BUFFER ARRANGEMENT WITH NO DELAY DISTORTION

Steven P. Saneski, Lake Hiawatha, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 2, 1983, Ser. No. 500,419

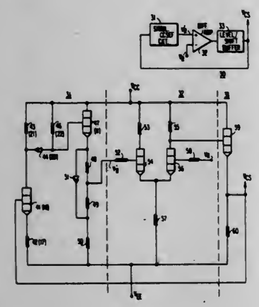
Int. Cl.⁴ H03K *19/003, 19/092, 5/01*

U.S. Cl. 307—443 **5 Claims**



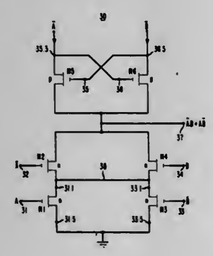
1. A circuit arrangement on an integrated circuit for translating a first signal having first and second voltage levels to a second signal having third and fourth voltage levels, said integrated circuit including at least two buffers for translating signals having said first and second voltage levels to signals having said third and fourth voltage levels, each of said buffers having substantially the same distortion characteristic which results in a propagation delay at each transition from said third to said fourth voltage level and from said fourth to said third voltage level, said arrangement comprising
first inverting and distorting means comprising one of said buffers for deriving from said first signal an inverted predistorted signal having said third and fourth voltage levels and having a propagation delay at each transition between said third and fourth voltage levels due to the third-to-fourth level or fourth-to-third level propagation delay of said one buffer, and
second inverting and distorting means in series with said first inverting means and distorting means comprising a second of said buffers for inverting and redistorting said inverted predistorted signal to produce said second signal, said second buffer further delaying each of said transitions between said third and fourth voltage levels due to the third-to-fourth level or fourth-to-third level propagation delay of said second buffer, the total delay of each transition from said third to said fourth voltage level in said second signal being equal to the sum of said third-to-fourth level propagation delay of one of said two buffers and the fourth-to-third level propagation delay of the other of said two buffers, the total delay of each transition from said fourth to said third voltage level in said second signal being equal to the sum of said third-to-fourth level propagation delay of said other of said two buffers plus the fourth-to-third level propagation delay of said one of said two buffers, said sums being substantially equal.

4,575,647
REFERENCE-REGULATED COMPENSATED CURRENT SWITCH EMITTER-FOLLOWER CIRCUIT
Gerard J. Ashton, Hopewell Junction; Emilio Colao, Poughkeepsie, and Joseph R. Cavaliere, Hopewell Junction, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jul. 8, 1983, Ser. No. 512,071
Int. Cl.⁴ H03K *19/003, 19/086*
U.S. Cl. 307—443 **17 Claims**



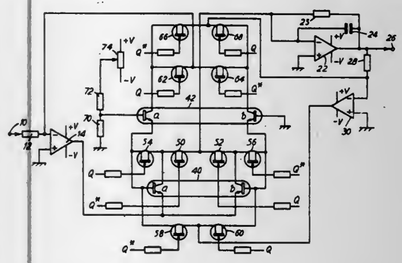
1. A logic circuit network comprising:
a plurality of logic circuits, each of said logic circuits comprising means for shifting UP and DOWN logic levels produced by said logic circuit in response to a control potential applied to said shifting means; and
means for supplying said control potential to each of said logic circuits at a level so as to maintain both said UP and DOWN logic levels produced by each of said logic circuits in a predetermined relationship with respect to a logic signal reference potential employed by said logic circuits, said control potential supplying means including means for simulating an output of at least one of said logic circuits at at least one logic level.

4,575,648
COMPLEMENTARY FIELD EFFECT TRANSISTOR EXCLUSIVE OR LOGIC GATES
Charles M. Lee, Berkeley Heights, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Dec. 23, 1983, Ser. No. 564,930
Int. Cl.⁴ H03K *19/21*
U.S. Cl. 307—471 **5 Claims**



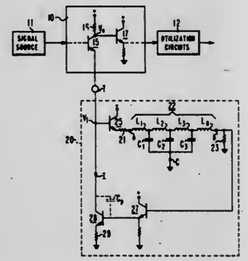
1. An integrated circuit comprising a complementary MOS logic gate consisting of:
(a) a pair of MOS driver transistors, both of one channel conductivity type, each of such transistors having a control terminal which is connected to a first current-path terminal of the other and which is connected for receiving a different one of first and second input signals, and each having a second current-path terminal which is connected to an output terminal of the logic gate;
(b) a first branch consisting of two driver transistors, both of a type opposite to the one channel type, connected in series with each other;
(c) a second branch consisting of two other driver transistors, both of the type opposite to the one type, connected in series with each other;
(d) first connecting means for directly connecting the first and second branches to the output terminal; and
(e) second connecting means for directly connecting a terminal located in the series connection of the two driver transistors of the first branch to a terminal located in the series connection of the two other driver transistors of the second branch.

4,575,649
RMS CONVERTERS
William H. Gardiner, Bath, and Geoffrey A. Luckhurst, Yately, both of United Kingdom, assignors to Schlumberger Electronics (U.K.) Limited, Farnborough, England
Filed Jul. 19, 1984, Ser. No. 632,365
Claims priority, application United Kingdom, Jul. 23, 1983, 8319911
Int. Cl.⁴ H03K *5/00;* **G06G** *7/24*
U.S. Cl. 307—492 **6 Claims**



1. An RMS converter comprising:
first differential amplifier means having an output and arranged to receive a varying waveform at an inverting input;
a feedback circuit, comprising first and second transistors with their collector-emitter paths in series, said first transistor being connected to the output of said first amplifier means and said second transistor being connected to the inverting input of said first amplifier means;
averaging means having an input, said averaging means producing an output signal;
third transistor means having a base and having its collector-emitter path coupled between the output of said first amplifier means and the input of said averaging means;
second differential amplifier means arranged coupled to receive the output signal of said averaging means at an inverting input and having an output coupled to the base of said third transistor means;
and fourth transistor means having its collector-emitter path coupled between the inverting input and the output of said second amplifier means;
whereby the output signal of said averaging means is representative of the RMS conversion of said varying waveform;
and wherein switch means is coupled to said first, second, third and fourth transistor means to alternately and repetitively interchange selected connections of said first and third transistor means respective, and of said second and fourth transistor means respectively so that the first transistor means and the third transistor means are connected as above, or the first transistor means is alternatively connected as the third transistor means was and the third transistor means is alternatively connected as the first transistor means was, whereby errors induced by differences in operating characteristics of said first and third transistor means and said second and fourth transistor means are reduced.

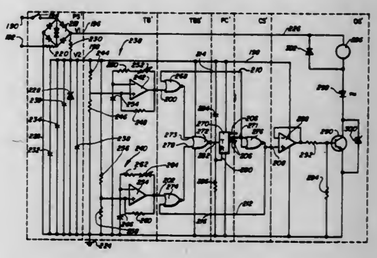
4,575,650
SIGNAL TRANSLATING CIRCUIT WITH COMPENSATED TRANSIENT RESPONSE
Saiprasad V. Naimpally, and Thomas D. Gurley, both of Indianapolis, Ind., assignors to RCA Corporation, Princeton, N.J.
Filed Jul. 29, 1983, Ser. No. 518,461
Int. Cl.⁴ A03B *1/00;* **H03K** *5/00*
U.S. Cl. 307—520 **10 Claims**



1. Signal translating apparatus comprising:
a signal path including a source of signal voltage to be translated;
signal translating means having an input and an output;
current amplifier means having input and output terminals exhibiting a parasitic capacitance therebetween;
first means for coupling said signal source to said input of said translating means and to said output terminal of said current amplifier means; and
second means comprising a low output impedance voltage source, for coupling translated signals from said output of said translating means to said input terminal of said current amplifier means for causing said current amplifier to conduct an output current representative of translated signals to said signal source; wherein
the impedance presented to said input terminal of said current amplifier means is primarily determined by said low output impedance of said voltage source.

4,575,651
ELECTRONIC REPEAT CYCLE DELAY TIMER
John S. Hoelzer, Wauwatosa, Wis., assignor to Square D Company, Palatine, Ill.
Continuation of Ser. No. 363,323, Mar. 29, 1982, abandoned. This application Feb. 22, 1985, Ser. No. 704,894
Int. Cl.⁴ H03K *5/13, 5/158*
U.S. Cl. 307—593 **9 Claims**

1. A repeat cycle timer, comprising:
means for generating a first train of pulses at a first frequency;
means for generating a second train of pulses at a second frequency;
means for counting a predetermined number of pulses; and,
means for alternately selecting said first train of pulses and said second train of pulses into said means for counting a predetermined number of pulses in order to count said first train of pulses for a first time interval and said second train of pulses for a second time interval, both said first and said second time intervals dependent upon the respective frequencies and said predetermined number of pulses, in order to repeatedly make timing cycles having a duration of said first and second time intervals.



4,575,652
PERMANENT MAGNET MOTOR HAVING HIGH STARTING TORQUE AND NARROWLY-DEFINED DETENT ZONES
George P. Gogue, Beaverton, Oreg., assignor to Synektron Corporation, Portland, Oreg.
Filed Sep. 27, 1984, Ser. No. 654,728
Int. Cl.⁴ H02K *37/00*
U.S. Cl. 310—49 R **11 Claims**

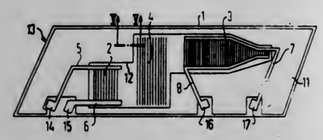
1. A permanent magnet motor having a stator element and a rotor element defining a gap therebetween, one of said elements having a core and the other of said elements having at least a pair of permanent magnet poles of opposite polarity facing said core and gap, and electrically-conductive coil means mounted on said core for selectively energizing or de-energizing said motor, said core and poles comprising detent means for causing varying amounts of magnetic flux across said gap when said motor is de-energized depending upon the rotational relationships of said core and poles to each other so as to create detent positions of said core and poles in those rotational relationships thereof wherein said flux is maximized, said coil means comprising a primary coil means and an auxiliary coil means each having turns of electrically-conductive wire, the turns of said auxiliary coil means being of lesser length than the turns of said primary coil means, the turns of said auxiliary coil means being positioned on said core so as to operatively span both of said pair of permanent magnet poles of opposite polarity when said core and poles are in one of said detent positions.

4,575,653

DAMPING LAYER FOR SURFACE WAVE FILTER

Badri Sinha, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Sep. 15, 1983, Ser. No. 532,827
Claims priority, application Fed. Rep. of Germany, Sep. 23, 1982, 3235236
Int. Cl.⁴ H03H *9/25;* H01L *41/22*
U.S. Cl. 310—313 B **13 Claims**



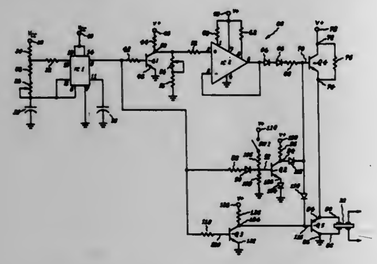
1. A surface wave filter with a polygonal of at least four sides, slab-shaped substrate of monocrystalline piezoelectric material comprising a slab-shaped monocrystalline piezoelectric material, input and output transducers optionally coupled by means of a coupler on one substrate side of the slab of piezoelectric material, electric conductor runs extending from the input and output transducers with each run terminating in an end, a damping layer with a level surface for suppressing partially reflected waves which are generated at cut ends of the substrate and are also caused by crystal structure faults in the substrate, which layer covers at least in some regions said one substrate side except for the area which is bounded by the transducers, the coupler, the ends of the conductor runs and the regions between the transducers and the coupler, the combination therewith wherein the end face edge of the damping layer increases in thickness with a continuous grade from zero to the value of the layer thickness to also suppress interfering waves reflected by the end face edges of the damping layer.

4,575,654

PIEZOCERAMIC COUPLER CONTROL CIRCUIT

John G. Basch, North Olmsted, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 1, 1984, Ser. No. 655,807
Int. Cl.⁴ H01L *41/08*
U.S. Cl. 310—318 **15 Claims**



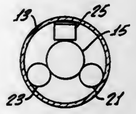
1. A control circuit for a piezoceramic coupler comprising:
controllable drive circuit means for applying an amplitude modulated d-c drive signal to a pair of input terminals of said piezoceramic coupler comprising:
reference frequency oscillator circuit means for providing at an output terminal thereof a switching control signal having a predetermined frequency;
operational amplifier means for receiving as one input said switching control signal from said reference frequency oscillator circuit means and providing at an output terminal thereof an amplitude modulated d-c signal; and
first power transistor means for receiving said amplitude modulated d-c signal from said operational amplifier means and transmitting said amplitude modulated d-c signal as a drive signal to said piezoceramic coupler; and
input discharge means for controllably removing said drive signal from said input terminals of said piezoceramic coupler.

4,575,655

CATHODE RAY TUBE ELECTRON GUN SNUBBER

Michael E. Borer, 4750 70th St., #21, La Mesa, Calif. 92041

Filed Dec. 27, 1983, Ser. No. 566,126
Int. Cl.⁴ H01J *29/02, 29/48*
U.S. Cl. 313—417 **5 Claims**



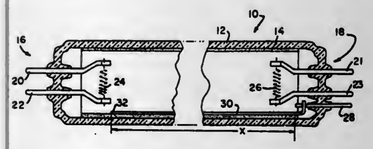
1. In a cathode ray tube (CRT) having an elongate neck housing an electron gun extending along said neck, said CRT neck and electron gun having circular cross-sections, an improved snubber for maintaining said gun precisely centered along its length within said CRT neck, comprising a pair of cylindrical spacers attached to said electron gun in adjacent quadrants of the circular cross-section of said CRT neck, each spacer extending within said CRT neck parallel to said gun between said gun and said neck and in contact with both of them, each said spacer presenting a centering support surface having a circular cross-section at two or more points along the length of said electron gun, all of said support surfaces having the same diameter, and resilient biasing means attached to said electron gun in the remaining quadrants of said cross-section and compressed between said electron gun and said CRT neck.

4,575,656

STARTING AID FOR NON-LINEAR DISCHARGE LAMPS AND METHOD OF MAKING SAME

John W. Anderson, Jr., Ipswich, and William J. Roche, Merrimac, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Filed Dec. 8, 1980, Ser. No. 214,370
Int. Cl.⁴ H01J *1/62*
U.S. Cl. 313—492 **6 Claims**



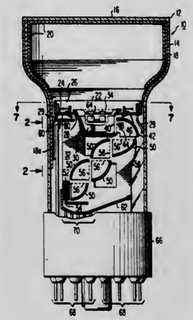
1. A non linear discharge lamp including at least one curved portion, said lamp comprising a tubular glass envelope having a layer of phosphor on the interior surface thereof; sealing closure means closing the ends of said envelope; an arc generating and sustaining medium within said envelope; first and second lead-in wires sealed in each of said sealing closure means supporting electrodes within said envelope; one of said sealing closure means including a third lead-in wire sealed therein; and a wire starting aid electrically connected to said third lead-in, said wire starting aid having the major portion of its length contiguous with said phosphor coating and lying along the outside diameter of said curved portion.

4,575,657

PHOTOMULTIPLIER TUBE HAVING AN IMPROVED CENTERING AND CATHODE CONTACTING STRUCTURE

Donald B. Kaiser, Lancaster, Pa., assignor to RCA Corporation, Princeton, N.J.

Filed May 18, 1984, Ser. No. 611,958
Int. Cl.⁴ H01J *40/04, 43/26, 19/42*
U.S. Cl. 313—533 **6 Claims**



1. In a photomultiplier tube comprising an evacuated envelope including a faceplate and a sidewall, a conductive coating disposed annularly around an interior portion of said sidewall adjacent to said faceplate and on a longitudinally extending portion of said sidewall as a strip, a photoemissive cathode disposed on an interior surface of said faceplate and on said conductive coating adjacent thereto, a shield cup spaced from said cathode and centered within said envelope by a plurality of bulb contacts, an electron multiplier cage assembly abutting said shield cup and attached thereto, and
a cathode contact assembly in contact with said strip on said sidewall, the improvement comprising
said shield cup including bulb contact locating means formed therein, said locating means being oriented to position said bulb contacts in contact with said sidewall of said envelope and spaced from said longitudinally extending strip portion of said conductive coating,
said bulb contacts each including a stop means that retains said bulb contact within said bulb contact locating means, and
said cathode contact assembly including a cathode contact support member and a resilient cathode contact member, said cathode contact support member including a cathode support tab having alignment means therein to circumferentially locate said resilient cathode contact member between two consecutively spaced bulb contacts and to align said resilient cathode contact member with said longitudinally extending strip portion of said conductive coating on said sidewall of said envelope.

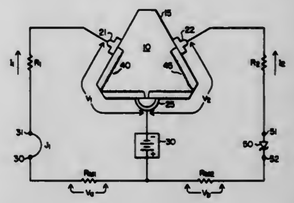
4,575,658

POWER SUPPLY FOR A RING LASER

Robert M. Kay, Seminole, Fla., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 23, 1983, Ser. No. 564,802
Int. Cl.⁴ H01J *7/24*
U.S. Cl. 315—111.21 **3 Claims**

1. A power supply circuit for a gas ring laser having first, second, and third electrodes for establishing an ionization current between said first electrode and each of said second and third electrodes so as to provide a plasma path through the gas between said first electrode and each of said second and third electrodes, aaid power supply circuit comprising:
a power supply having first and second output means for providing an output voltage therebetween, said first output means electrically connected to said first electrode;
a first impedance means electrically in series between said second electrode and said second power supply output means;
a second impedance means, substantially equivalent to said first impedance means, electrically in series between said third electrode and said second power supply output means; and
zener-acting means for establishing a substantially constant voltage drop exhibiting a zener-voltage characteristic about a selected voltage magnitude between first and second terminating means thereof in the presence of an electrical current passing therethrough, said zener-acting means being electrically connected in series with a selected one of said first and second impedance means such that the current through said selected impedance means and through said electrode associated therewith, is greater than the other one of said impedance means in the absence of a voltage drop produced by said zener-acting means, said zener-acting means selected voltage magnitude being of a value for establishing substantially equal ionization currents passing through said second and third electrodes, respectively.

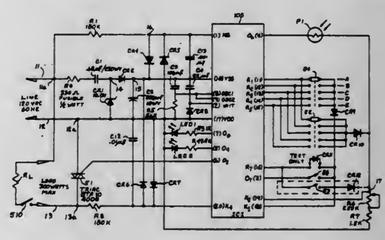


4,575,659

SENSOR TIMER FOR LAMPS

Donald E. Pezzolo, Cupertino; James W. Pfeiffer, Santa Clara, and Thomas E. Corder, Martinez, all of Calif., assignors to Intermatic Electronics Incorporated, Spring Grove, Ill.

Filed May 31, 1983, Ser. No. 499,133
Int. Cl.⁴ H05B *41/36*
U.S. Cl. 315—159 **19 Claims**



1. Structure comprising
means, electrically connectable to a power supply, for supplying electric power to a lamp, said lamp containing a light source;
a switch for turning on and off said light source, said means for supplying comprising:
means for sensing the arrival of nighttime;
means for operating said structure in an automatic mode including
means for automatically turning on the lamp on the expiration of a first selected time period after the arrival of nighttime;

means for automatically turning off the lamp on the expiration of a second selected time period after the lamp has been turned on;

means for operating said structure in a manual mode; and

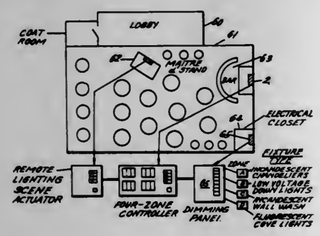
means for converting said structure from the manual mode to the automatic mode.

4,575,660

LIGHTING SCENE CONTROL PANEL AND CONTROL CIRCUIT

Walter Zaharchuk, Macungie, and Joel S. Spira, Coopersburg, both of Pa., assignors to Lutron Electronics Co., Inc., Coopersburg, Pa.

Filed Aug. 25, 1983, Ser. No. 526,321
Int. Cl.⁴ H02P *5/00*
U.S. Cl. 315—295 **24 Claims**



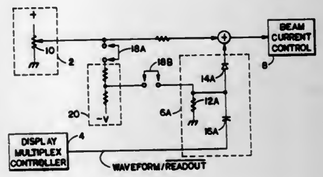
1. A lighting scene control system comprising: a plurality of groups of potentiometer controls, each of said groups mounted within a distinct respective area of a control panel, each of said groups including a plurality of individual linearly movable potentiometer adjustment members; each of said groups being physically spaced from one another and being spatially distinct from one another; a plurality of dimmer control circuit means; a plurality of output light means; said plurality of dimmer control circuit means connected to respective ones of said plurality of output light means and being operable to dim the output of their respective output light means; corresponding ones of said individual movable adjustment members of each of said groups being connectable to corresponding ones of said dimmer control circuit means; the output of each of said plurality of output light means being dependent upon the linear position of said adjustment member of said respective potentiometer connected to its respective dimmer control circuit means; a plurality of switches mounted on said control panel corresponding in number to the number of said groups; each of said switches operatively connected between said plurality of dimmer control circuit means and respective ones of said potentiometers of said respective groups, each of said switches being operable between a first position, in which said potentiometers of only its respective group is connected to control respective ones of said output light means independently of all other potientiometers of said other groups, and a second position in which the potentiometers of its respective group are disconnected from operative control of said output light means; whereby each of said adjustment members of each of said groups is settable to a given position such that a different given pattern of light dimming for each of said output light means can be provided in response to operation of different ones of said switches to their respective first position.

4,575,661

MULTIPLEXED DISPLAY INTERFERENCE COMPENSATOR

Lloyd R. Bristol, Tigard, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Feb. 7, 1983, Ser. No. 464,289
Int. Cl.⁴ H01J *29/52*
U.S. Cl. 315—383 **6 Claims**



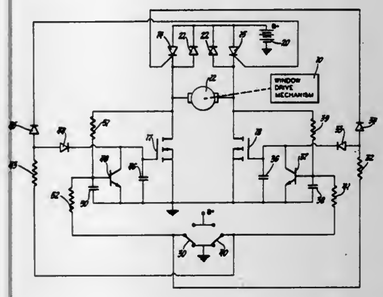
1. A multiplexed display interference compensator for minimizing apparent waveform intensity modulation due to imperceptibly short interruptions of the waveform display on a cathode ray tube in a waveform display system wherein a beam is temporarily diverted to a secondary display segment on the screen of the cathode ray tube within a waveform displaying period in response to a control signal from display multiplex control means, the compensator comprising means for adding a current pulse to a waveform intensity control signal in response to the conrol signal from said display multiplex control means, to increase the intensity of a portion of the waveform display near each interrupted portion thereof.

4,575,662

VEHICLE POWER WINDOW CONTROL CIRCUIT

Richard N. Lehnhoff, Kettering, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 26, 1984, Ser. No. 674,688
Int. Cl.⁴ H02P *1/22*
U.S. Cl. 318—282 **2 Claims**



1. Vehicle window drive apparatus comprising, in combination:

A source of electric power having first and second terminals;

an electric motor having first and second terminals;

first and second semiconductor switches connecting the first terminal of the source of electric power to the first and second terminals of the electric motor, respectively, the first and second semiconductor switches each having an actuating gate effective to latch the switch in a conducting condition until current therethrough is stopped;

third and fourth semiconductor switches connected in series between the first and second terminals, respectively, of the electric motor and the second terminal of the source of electric power, the third and fourth semiconductor switches having actuating gates and being characterized by a voltage thereacross which increases with current therethrough;

first and second actuating switches momentarily activatable to communicate, respectively, the actuating gates of the first and fourth semiconductor switches and the actuating gates of the second and third semiconductor switches with the first terminal of the source of electric power;

first and second capacitors connected from the actuating gates of the third and fourth semiconductor switches, respectively, to the second terminal of the source of electric power;

first and second discharge transistors connected across the first and second capacitors, respectively, the first and second discharge transistors having bases;

a first impedance connected in series between the first actuating switch and the base of the first discharge transistor, the first actuating switch normally communicating the base of the first discharge transistor through the first impedance to the second terminal of the source of electric power but being momentarily activatable to communicate the base of the first discharge transistor through the first impedance to the first terminal of the source of electric power;

a second impedance connected in series between the second actuating switch and the base of the second discharge transistor, the second actuating switch normally communicating the base of the second discharge transistor through the second impedance to the second terminal of the source of electric power but being momentarily activatable to communicate the base of the second discharge transistor through the second impedance to the first terminal of the source of electric power;

third and fourth capacitors connecting the bases of the first and second discharge transistors, repectively, to the second terminal of the source of electric power;

a third impedance connecting the base of the first discharge transistor to the first terminal of the electric motor, the first and third impedances forming a voltage divider effective to hold the first discharge transistor in a non-conducting state until the current through the first FET increases due to stalling of the electric motor or the second actuating switch is activated; and

a fourth impedance connecting the base of the second discharge transistor to the second terminal of the electric motor, the second and fourth impedances forming a voltage divider effective to hold the second discharge transistor in a non-conducting state until the current through the second FET increases due to stalling of the electric motor or the first actuating switch is activated.

4,575,663

MICROPROCESSOR BASED TWO SPEED MOTOR CONTROL INTERFACE

Gregory J. Papson, Eastlake, and Adolph L. Trolli, Mentor, both of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Sep. 7, 1984, Ser. No. 648,100
Int. Cl.⁴ H02P *5/00*
U.S. Cl. 318—305 **6 Claims**

1. A two speed motor control for a motor having a high speed breaker closable to operate the motor at high speed, a low speed breaker closable to operate the motor at low speed, and a stop breaker closable to stop the motor, comprising:

a start switch manually operable to start the motor at high or low speed;

motor start permissive means connected to said start switch and having a plurality of inputs for receiving permissive signals indicative of conditions acceptable for the motor to be started, said motor start permissive means having an output for generating a start signal when the start switch is operated and when all of said permissive signals are received;

high speed selector means operable by an operator to select high speed operation for the motor, said high speed selector means being connected to said motor start permissive means output for initiating high speed operation of the motor;

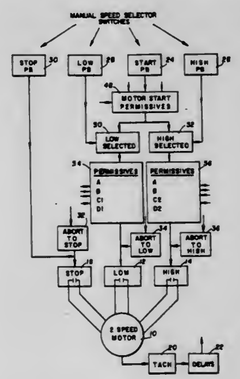
low speed selector means activatable by an operator for initiating low speed operation of the motor, said low speed selector means connected to said motor start permissive means output for initiating low speed operation of the motor;

high speed start permissive means connected to said high speed selector means and having a plurality of inputs for establishing permissive conditions for starting the motor at high speed, said high speed start permissive means connected to the high speed breaker;

low speed start permissive means connected to said low speed selector means and having inputs for establishing permissive conditions for a low speed start of the motor, said low speed start permissive means connected to the low speed breaker;

said high speed selector means includes a high speed selector switch manually operable to select high speed operation, and a low speed switch connected to said low speed selector means manually operable to select low speed operation; and

abort means connected to said high and low speed breakers and to said stop breaker for selectively operating said breakers upon the occurence of a start up or transfer failure including an abort-to-low unit connected to the low speed breaker for activating the low speed breaker upon a failure of said high speed start permissive means to activate the high speed breaker, and an abort-to-high speed unit connected to the high speed breaker for activating the high speed breaker upon failure of the low speed start permissive means to activate the low speed breaker.



4,575,664

TACHOMETER CHECK APPARATUS

Frederick O. Johnson, Monroeville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 12, 1984, Ser. No. 588,637
Int. Cl.⁴ H02P *5/00*
U.S. Cl. 318—327 **1 Claim**

1. A speed-controlled motor system, comprising:

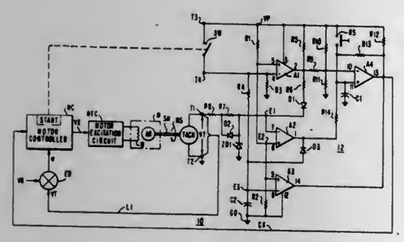
(a) electric motor means with a rotating member for driving a load at a predetermined angular velocity;

(b) motor controller means interconnected with said electric

motor means for causing said rotating member to rotate at said predetermined angular velocity when actuated;

(c) tachometer means with output voltage terminal means interconnected with said rotating member for generating a tachometer means output voltage at said output voltage terminal means which is indicative of the angular velocity of said rotating member, said tachometer means being interconnected at said output voltage terminal means with said motor controller means for providing said tachometer means output voltage thereto for being utilized by said motor controller means to maintain the angular velocity of said rotating member at said predetermined angular velocity within limits; and

(d) combination motor control starter and tachometer checker means interconnected with said tachometer means output voltage terminal means and said motor controller means for simultaneously actuating said motor controller means to cause said rotating member to rotate and initiate a tachometer means check to stop said rotating member from continued rotation if a minimum output check voltage value is not present at said output voltage terminal means at a predetermined time after said motor controller means has been actuated, comprising:



(i) a power supply means;

(ii) voltage time delay means for providing an output feedback signal at the end of said predetermined time unless sooner disabled at a disable terminal thereof;

(iii) disable comparator means interconnected at the input thereof with said tachometer means output voltage terminal means and connected at the output thereof within said voltage time delay means for providing a disabling condition for said voltage time delay means when the voltage on said output voltage terminal means exceeds said minimum output check voltage; and

(iv) switch means connected at one pole thereof between said power supply means and said voltage time delay means and connected at another pole thereof with said motor controller means for simultaneous actuation of said motor controller means and connection of said power supply means to said voltage time delay means so that said output feedback signal will be provided after said predetermined time unless sooner disabled, said disabling occurring if said minimum output check voltage is reached before the end of said predetermined time.

4,575,665

TRACER CONTROL METHOD

Hitoshi Matsuura; Etsuo Yamazaki, and Hiroshi Sakurai, all of Tokyo, Japan, assignors to Fanuc Limited, Minamitsuru, Japan

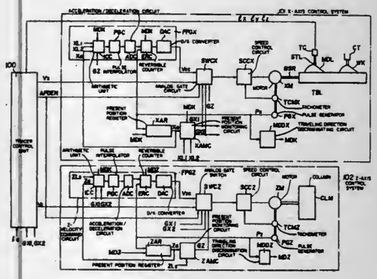
PCT No. PCT/JP83/00447, § 371 Date Aug. 10, 1984, § 102(e) Date Aug. 10, 1984, PCT Pub. No. WO84/02487, PCT Pub. Date Jul. 5, 1984

PCT Filed Dec. 21, 1983, Ser. No. 641,944

Claims priority, application Japan, Dec. 22, 1982, 57/233385

Int. Cl.⁴ G05B *19/33*

U.S. Cl. 318—578 **10 Claims**



1. A tracer control method for calculating velocity commands along respective axes by using a deflection value sensed by a tracer head, driving motors, which are provided for the respective axes, in response to said velocity commands to move a tool relative to a workpiece, and causing the tracer head to trace a model, said method comprising the steps of:

(a) presetting a tracer machining inhibit area and a safe level;

(b) monitoring a machine position to sense whether the machine position has reached the machining inhibit area;

(c) inhibiting tracer machining when the machining inhibit area is reached;

(d) retracting the machine until the machine position coincides with said safe level;

(e) causing the machine to pass the machining inhibit area by moving the machine position along said safe level;

(f) causing the machine to approach a workpiece after the machining inhibit area is passed; and

(g) executing tracer machining upon completion of the approach.

4,575,666

ABSOLUTE POSITION DETECTING SYSTEM FOR SERVOCONTROL SYSTEM

Seiichiro Nakashima; Kenichi Toyoda, both of Hino, and Shinsuke Sakakibara, Komae, all of Japan, assignors to Fanuc Ltd., Minamitsuru, Japan

PCT No. PCT/JP84/00185, § 371 Date Dec. 11, 1984, § 102(e) Date Dec. 11, 1984, PCT Pub. No. WO84/04162, PCT Pub. Date Oct. 25, 1984

PCT Filed Apr. 11, 1984, Ser. No. 688,049

Claims priority, application Japan, Apr. 11, 1983, 58-63333

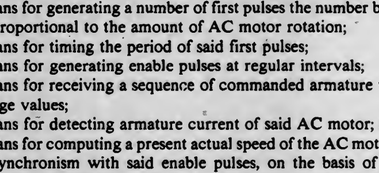
Int. Cl.⁴ G05B *1/06*

U.S. Cl. 318—661 **4 Claims**

1. An absolute position detecting system for a servocontrol system for controlling, under servocontrol, a servomotor for driving an operating shaft, comprising:

a resolver, coupled to the servomotor, for detecting a rotational position upon rotation of the servomotor; and

an absolute encoder, coupled to the servomotor for generating a detected output, said resolver and said absolute encoder being arranged to rotate at a ratio of 1:m, the rotational position detected by said resolver being converted into a unit grid value of said absoute encoder, an absolute position of the operating shaft being detected



based on the detected output of said absolute encoder and the converted unit grid value.

4,575,667

AC MOTOR SPEED CONTROL APPARATUS

Mitsuo Kurakake, Hino, Japan, assignor to Fanuc Ltd, Minamitsuru, Japan

Filed Jun. 7, 1982, Ser. No. 386,130

Int. Cl.⁴ H02P *5/40*

U.S. Cl. 318—803 **3 Claims**

1. An apparatus for detecting the speed of an AC motor driven by a current command, produced at regular intervals, based on a speed error between a commanded speed and the actual motor speed, which apparatus comprises:

means for generating a number of first pulses the number being proportional to the amount of AC motor rotation;

means for timing the period of said first pulses;

means for generating enable pulses at regular intervals;

means for receiving a sequence of commanded armature voltage values;

means for detecting armature current of said AC motor; and

means for computing a present actual speed of the AC motor in synchronism with said enable pulses, on the basis of said period of said first pulses, at a time when a first pulse is generated by said pulse generating means, and for predicting a present actual speed, in synchronism with said enable pulses, on the basis of the magnitude of a commanded armature voltage, magnitude of a previously detected armature current, the magnitude of a present detected armature current and a previously computed actual speed, when enable pulses are generated in the absence of said first pulses from said pulse generating means.

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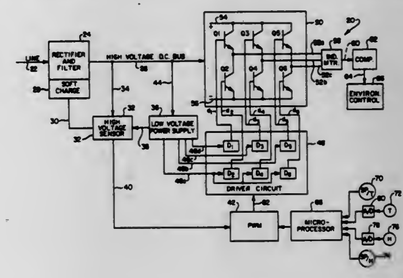
CONTROLLER FOR PROVIDING PWM DRIVE TO AN A.C. MOTOR

Robert W. Baker, Westerville, Ohio, assignor to Liebert Corporation, Columbus, Ohio

Filed Jul. 9, 1984, Ser. No. 629,093

Int. Cl.⁴ H02P *5/40*

U.S. Cl. 318—811 **28 Claims**



1. A controller for providing pulse width modulated polyphase drive to an a.c. motor comprising:

high voltage rectifier means connectable with an a.c. source for providing a d.c. power output;

low voltage power supply means for providing a d.c. supply output, including:

step down impedance means coupled with said d.c. power supply output for deriving a d.c. output of selectively reduced voltage level,

gate controlled series regulator means having an input for receiving said reduced voltage d.c. output and a first gate responsive to a bias signal asserted thereto for deriving a pre-regulated output,

gate input means coupled with said series regulator for providing said bias signal at said first gate,

shunt regulator means having an input coupled with said gate input means and having a second gate controllable to selectively effect the shunting of said biasing signal from said first gate,

reference means for providing a reference output of predetermined voltage level, and

gate control means coupled with said second gate, responsive to said reference output and said pre-regulated output for controlling said gate to effect regulation at said gate controlled series regulator means;

first oscillator means coupled with said pre-regulated output for deriving a time varying output;

first transformer means having a primary winding responsive to said time varying output and having first mutually isolated secondary windings for providing discrete, phase designated time varying air supply outputs and of stepped down voltage level;

first discrete, mutually isolated low voltage rectifier means coupled with each phase designated time varying supply outputs for deriving discrete, phase designated positive and negative d.c. supply outputs;

switching bridge means coupled with said d.c. power output, including discrete, phase designated, paired transistor switching stages, each said stage having dual inputs responsive to selectively applied on-drive and off-drive signals to provide a polyphase motor drive at the outputs thereof;

control circuit means for providing discrete, phase designated pulse width modulation control outputs; and

driver means having discrete driver networks, each having dual outputs coupled with said dual inputs of a corresponding one of said transistor switching stages, each said driver network having dual power supply inputs coupled

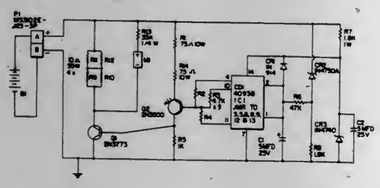
with a corresponding one of said discrete, phase designated positive and negative d.c. supply outputs and responsive to a corresponding said discrete, phase designated pulse width modulation control output to derive said on-drive and off-drive signals for application to said transistor switching stage inputs.

4,575,669

BATTERY EQUALIZER CIRCUIT

Harry B. Brown, Falls Church, Va., assignor to Applied Electro Mechanics, Inc., Alexandria, Va.

Filed Aug. 29, 1984, Ser. No. 645,216
Int. Cl.⁴ H02J 7/00
U.S. Cl. 320—13 **1 Claim**



1. A battery equalizer circuit for preparing a battery for charge, comprising

a battery discharge circuit including resistor means and switch means in series therewith for connection across the terminals of a battery to draw current therefrom when the switch means is closed,

control circuit means for opening and closing such switch means,

voltage sensing means for sensing the voltage across the battery terminals,

and means actuatable by said sensing means for actuating said control circuit means whereby to close said switch means when the sensed battery voltage is equal to or more than a predetermined upper voltage and for opening said switch means when the sensed battery voltage is in a lower range which is equal to or less than a predetermined voltage which is lower than said upper voltage,

said switch means comprising a transistor having its emitter-collector terminals in series with said resistor means and a base,

said means actuable by the sensing means comprising a Schmitt-Trigger having output terminals operably connected to said transistor base, said voltage sensing means being connected to one imput circuit means of the Schmitt-Trigger,

regulated power supply means for establishing a reference voltage which is substantially lower than said lower range of voltage and which is connected to another input terminal of the Scmitt-Trigger whereby the latter is flipped "on" and said transistor is thereby rendered conductive when the sensed voltage exceeds the reference voltage by a predetermined amount.

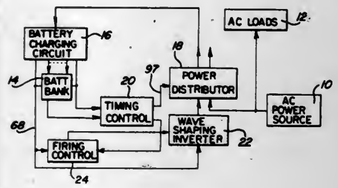
4,575,670

BATTERY CHARGING SYSTEM

Frank A. Hignutt, 602 "E" St., Millville, N.J. 08332

Filed Feb. 29, 1984, Ser. No. 584,915
Int. Cl.⁴ H02J 7/04, 9/00
U.S. Cl. 320—14 **19 Claims**

1. In combination with an AC voltage source, a charging circuit for a plurality of storage batteries interconnected in series at intermediate junctions between end terminals of opposite polarity, said charging circuit having a plurality of voltage converters respectively connected to said batteries and switching control means operatively connected to the voltage converters for controlling the charging of the batteries through the voltage converters, the improvement comprising jumper means connected to the intermediate junctions for interconnecting the voltage converters in series with each other and in parallel to the respective batteries, said voltage converters including current rectifiers and transformer means having a plurality of secondary windings respectively coupled exclusively to said current rectifiers and primary windings connected to the switching control means, at least one AC load, a power distributor operatively connecting the source to the load and the charging circuit, a voltage inverter operatively connecting the power distributor to the batteries, and firing control means connected to the batteries and the inverter for establishing a predetermined wave shape with respect to voltage applied from the batteries to the power distributor.

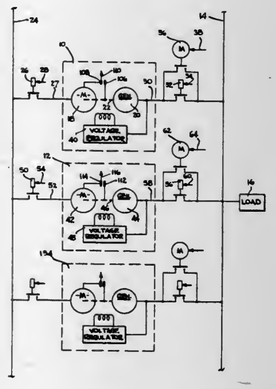


4,575,671

METHODS AND APPARATUS FOR SYNCHRONIZING MULTIPLE MOTOR DRIVEN GENERATORS

Robert H. Lee, Fullerton, and Suresh C. Gupta, Los Alamitos, both of Calif., assignors to Teledyne Industries, Inc., Los Angeles, Calif.

Filed Feb. 14, 1984, Ser. No. 580,143
Int. Cl.⁴ H02J 1/00; H02P 9/00
U.S. Cl. 322—16 **9 Claims**



1. A method of synchronizing a second synchronous motor driven multi-pole synchronous generator to an AC voltage on an output bus, where the output bus voltage is supplied by a first synchronous motor driven multi-pole synchronous generator powered from an AC power source, the motor of second motor driven generator is also powered from the AC power source, the second motor driven generator having its motor and generator stators oriented so that there is at least one particular mechanical phase angle between the second generator rotor and stator at which the difference between the phase of the second motor voltage created when the second motor acts as a generator and the phase of the source voltage is within a predetermined input phase tolerance when the difference between the phase of the second generator voltage and the phase of the output bus voltage is within a prdetermined output phase tolerance, the method comprising the steps of:

(A) connecting the motor to an AC power source;

(B) permitting the motor driven generator to reach operating speed, whereby the generator produces a generator voltage having an amplitude and frequency substantially equal to the amplitude and frequency of the output bus voltage;

(C) disconnecting the motor from the AC power source, whereby the motor driven generator begins to slow down;

(D) comparing the phase of the generator voltage with the phase of the output bus voltage;

(E) connecting the generator to the output bus when the difference between the phase of the generator voltage and the phase of the output bus voltage is within a predetermined output phase tolerance, whereby the generator voltage is synchronized to the output bus voltage and the generator is driven by the output bus power;

(F) comparing the phase of the AC power source voltage to the phase of the motor voltage generated by the motor as it is being driven by the generator;

(G) reconnecting the motor to the AC power source only if the difference between the phase of the motor voltage and the phase of the source voltage is within a predetermined input phase tolerance, whereby the motor driven generator is synchronized both to the output bus voltage and the source voltage;

(H) disconnecting the generator from the output bus if the difference between the phase of the motor voltage and the phase of the source voltage is not within the predetermined input phase tolerance, whereby the motor dirven generator begins to slow down;

(I) reconnecting the generator to the output bus when the difference between the phase of the generator voltage and the phase of the output bus voltage are within the predetermined output phase tolerance, whereby the generator voltage is again synchronized to the output bus voltage but the position of the generator rotor as a function of time has been slipped one generator pole with respect to its position when the generator was last connected to the output bus; and

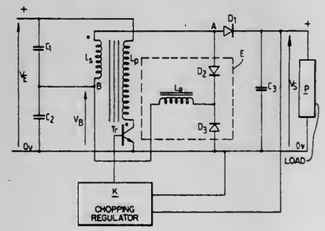
(J) repeating steps F through I until the phase criterion recited in step G is met.

4,575,672

CHOPPED POWER SUPPLY CONVERTER

Louis E. Dèprez, Palaiseau, and Denys C. Klein, Orsay, both of France, assignors to Compagnie de Signaux et d'Entreprises Electriques, Paris, France

PCT No. PCT/FR83/00111, § 371 Date Feb. 6, 1984, § 102(e) Date Feb. 6, 1984
PCT Filed Jun. 7, 1983, Ser. No. 584,251
Claims priority, application France, Jun. 7, 1982, 82 09886
Int. Cl.⁴ G05F 1/10
U.S. Cl. 323—222 **3 Claims**



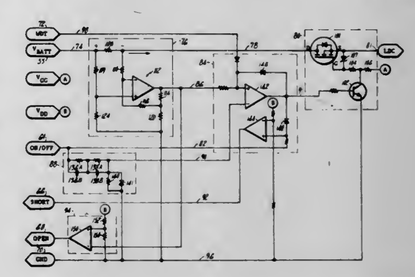
1. A chopped power supply converter comprising a DC power supply source having two terminals; between said terminals: a primary inductance in series with a chopping means, and a capacitive divider bridge formed of two capacitors and having an output terminal; a secondary inductance coupled to said primary inductance and having a value with respect to said primary inductance which depends on the ratio of the capacitive divider bridge, said secondary inductance being connected between said output terminal of the divider bridge and a load via a first, series diode and a parallel capacitor connected across the load, and a balancing device operatively connected to said divider bridge for permanently rebalancing said divider bridge.

4,575,673

SOLID STATE ELECTRONIC SWITCH FOR MOTOR VEHICLES

Rinaldo R. Tedeschi, Newington; Arthur R. Emery, Windsor Locks, both of Conn., and Robert A. Edwards, Woodstock, England, assignors to United Technologies Corporation, Hartford, Conn.

Filed Nov. 1, 1984, Ser. No. 667,050
Int. Cl.⁴ H02J 1/00
U.S. Cl. 323—351 **10 Claims**



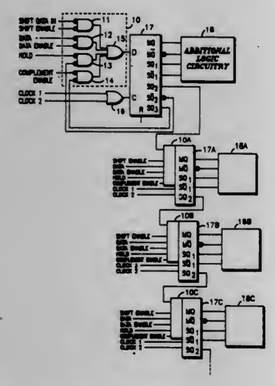
1. Apparatus for selectably energizing a power consuming device with an electrical current signal from an electrical power source in response to a command signal presented thereto, comprising:

gated switch means, having a first terminal connected to the power source and a second terminal connected to the power consuming device, for conducting the electrical current signal therebetween in the presence of a gate signal presented to a gate input thereof, and for not conducting the current signal therebetween in the absence of said gate signal;

reference signal source means for providing, in the presence of the command signal, a time variant signal representative of reference current signal magnitudes for each of a plurality of succeeding time intervals occurring in the presence of the command signal; and

detection means, responsive to said time variant signal and including sensor means for providing sensed signals indicative of the actual magnitude of the electrical current signal, for providing said gate signal to said gate input in each of said time intervals in which said sensed actual current signal magnitude is less than said reference current signal magnitude.

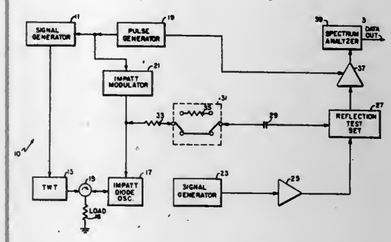
4,575,674
MACROCELL ARRAY HAVING REAL TIME DIAGNOSTICS
Alan S. Bass, and Shi-Chuan Lee, both of Mesa, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Jul. 1, 1983, Ser. No. 510,028
Int. Cl.[4] G01R *31/28*
U.S. Cl. 324—73 R **5 Claims**



1. A macrocell array comprising:
a plurality of cells, each of said cells having a plurality of semiconductor devices, said semiconductor devices being interconnected within each cell to provide logic functions;
a plurality of input/output pads, each adapted to receive an input signal having a data input;
a plurality of horizontal routing channels within one or more metallization layers overlying said cells, said horizontal routing channels being coupled to said plurality of semiconductor devices at selected input/output points of said logic functions;
a plurality of vertical routing channels within said one or more metallization layers overlying said cells, said vertical routing channels coupled to said horizontal routing channels and said input/output pads;
a plurality of serially connected latches within one of said cells, said latches being clocked by a system clock; and
a plurality of diagnostic means for performing both AC and DC tests, one each coupled to one each of said plurality of serially connected latches, each of said diagnostic means including feedback for facilitating AC testing at each clock pulse and a hold means for capturing the states of said plurality of serially connected latches independent of said system clock.

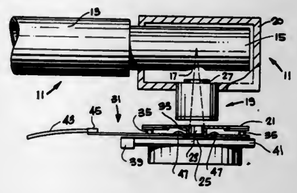
4,575,675
TESTER FOR PULSED IMPATT DIODE AND METHOD OF OPERATING SAME
Lawrence H. Olsen, Hudson, N.H., and Donald S. Porterfield, Billerica, Mass., assignors to Raytheon Company, Lexington, Mass.
Filed Jun. 18, 1984, Ser. No. 621,984
Int. Cl.[4] G01R *31/26*
U.S. Cl. 324—158 D **4 Claims**

1. The method of determining the impedance of an IMPATT diode operating as a pulsed oscillator comprising the steps of:
(a) connecting the IMPATT diode in circuit to operate as a pulsed oscillator at a predetermined frequency and pulse repetition frequency in response to modulation signals passed over a bias line to such diode;
(b) applying a test signal alternately through a first and a second path to the bias line, the characteristic impedance and electrical length of each such path being known a priori, with the characteristic impedance of the first path differing from the characteristic impedance of the second path; and



(c) measuring the change in the reflectivity of the test signal between the first and the second path, such change being indicative of the impedance of the IMPATT diode operating at the predetermined frequency and pulse repetition frequency.

4,575,676
METHOD AND APPARATUS FOR RADIATION TESTING OF ELECTRON DEVICES
Leslie J. Palkuti, Sunnyvale, Calif., assignor to Advanced Research and Applications Corporation, Sunnyvale, Calif.
Filed Apr. 4, 1983, Ser. No. 481,772
Int. Cl.[4] G01R *31/26, 31/02*
U.S. Cl. 324—158 R **18 Claims**

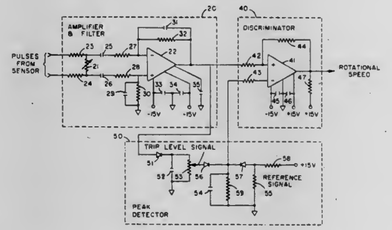


1. A test apparatus for electronic devices comprising,
means for supporting an electronic device, said electronic device partially formed of silicon dioxide,
a source of radiation having a collimated beam, said radiation having an energy which is ionizing to silicon dioxide, causing permanent degradation of electrical characteristics of said electronic device, said source mounted above said device supporting means,
an electrical probe means for applying electrical power to said electronic device and communicating device performance date outwardly, said probe means located between said device supporting means and said beam source, said probe means having fine electrical wires contacting said electronic device, said probe means having an auxiliary collimator with an aperture defined therein for transmitting the beam to the electronic device under test.

4,575,677
MOTOR SPEED DETECTOR
Charles L. Dennis, Richardson, Tex., assignor to Mobil Oil Corporation, New York, N.Y.
Filed May 25, 1984, Ser. No. 614,082
Int. Cl.[4] G01P *3/56*
U.S. Cl. 324—161 **6 Claims**

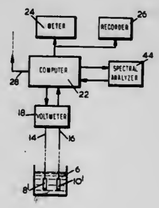
1. A method for detecting rotational speed of a motor, comprising the step of:

(a) producing a first signal comprising real tachometer pulses responsive to revolution of rotor armature segments of said motor and false tachometer pulses responsive to extraneous non-rotor components of said motor, both said real and false tachometer pulses increasing in amplitude with increasing rotational speed of said motor,
(b) producing a second signal with amplitude representative of the maximum amplitude of said real tachometer pulses,



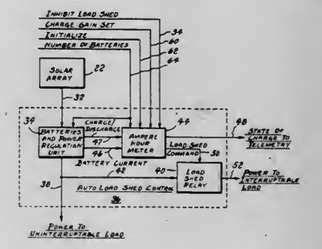
(c) producing a third signal with amplitude less than that of said second signal and exceeding the maximum expected amplitude of said false tachometer pulses, and
(d) comparing said first and third signals to discriminate against said false tachometer pulses and produce a fourth signal that is directly proportional to the rotational speed of said motor as represented solely by said real tachometer pulses.

4,575,678
CORROSION MONITORING
Karel Hladky, Manchester, England, assignor to The University of Manchester Institute of Science and Technology, Manchester, England
Filed Jan. 5, 1983, Ser. No. 455,709
Claims priority, application United Kingdom, Jan. 5, 1982, 8200196
Int. Cl.[4] G01N *27/00*
U.S. Cl. 324—425 **9 Claims**



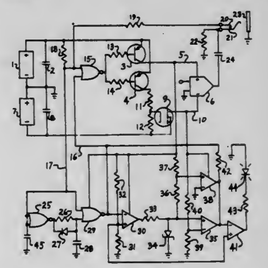
7. An apparatus for monitoring the corrosion of a metal part, wherein the part constitutes a first electrode in contact with an electrolyte, comprising a second electrode in contact with said electrolyte but otherwise electrically insulated from said first electrode, a high input impedance volt meter connected to said first electrode and said second electrode, means for filtering the output of the volt meter to remove (1) DC components and (2) AC components of the measured voltage having a frequency greater than a predetermined threshold frequency, and means for monitoring the output of the filtering means to provide an indication of the rate of corrosion of the first electrode.

4,575,679
AUTOMATIC LOAD SHED CONTROL FOR SPACECRAFT POWER SYSTEM
Albert S. Chung, Wayne, and Carl F. Mazzocco, Norristown, both of Pa., assignors to General Electric Co., Philadelphia, Pa.
Filed May 10, 1983, Ser. No. 493,227
Int. Cl.[4] G01N *27/46*
U.S. Cl. 324—427 **24 Claims**



1. Apparatus for calculating a state of charge of batteries in a battery system of the type having at least one of a variable source capacity and a variable load, comprising:
means for measuring a charging current and a discharging current of said batteries;
means having a first gain for accumulating a first value related to said charging current;
means having a second gain for calculating a second value related to said discharging current;
means for differencing said first and second values to produce a calculated state of charge of said battery system;
means for initializing said means for differencing to a known value of said state of charge of said battery system; and
means for selecting a value of at least one of said first and second gains effective to produce an output of said means for differencing which is an approximation of a variable state of charge of said battery system.

4,575,680
BATTERY CONDITION INDICATOR AND ON-OFF RELAY CIRCUIT
Kenneth S. Gold, 7721 Nevada Ave., Canoga Park, Calif. 91304
Filed Apr. 18, 1983, Ser. No. 485,879
Int. Cl.[4] G01N *27/46*
U.S. Cl. 324—433 **15 Claims**



1. In a battery-operated appliance, a battery condition indicating system comprising,
(a) an electronic relay circuit having a power input terminal connected to a battery, a power output terminal connected to a power input terminal of the appliance, and a control input terminal,
(b) a test interval timing circuit having a control input terminal connected to one of a pair of on-off contacts, a control output terminal connected to the control input terminal of said electronic relay circuit, and a timing output terminal

supplying a test interval pulse signal, whereby actuating the on-off contacts for turn-on causes said electronic relay circuit to connect the battery to the appliance, and actuating the on-off contacts for turn-off causes said electronic relay circuit to disconnect the appliance from the battery, after a delay timed by the duration of the test interval pulse signal,

(c) comparator means for comparing the voltage of the battery with a fixed reference voltage, said comparator means supplying an output signal, enabled during the duration of the test interval pulse signal, the comparator output signal signifying the comparison result, and

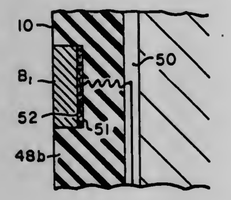
(d) indicator means driven by and responsive to the output signal of said comparator means, whereby the condition of the battery is communicated to a user during the duration of the test interval pulse signal, from indication of the comparison result by said indicator means.

4,575,681

INSULATING AND ELECTRODE STRUCTURE FOR A DRILL STRING

Donald S. Grosso, West Hartford, and Charles W. Helm, Rocky Hill, both of Conn., assignors to Teleco Oilfield Services Inc., Meriden, Conn.

Continuation of Ser. No. 441,107, Nov. 12, 1982, abandoned. This application Apr. 25, 1985, Ser. No. 727,362
Int. Cl.⁴ G01V *3/20*; E21B *49/00*
U.S. Cl. 324—347 **8 Claims**



1. An electrode structure for a drill string, including:

a drill string segment having a recess along an axial length thereof;

a sleeve of electrically nonconductive elastomeric material in said recess;

a plurality of bands of electrically conductive elastomeric material embedded in said nonconductive elastomeric sleeve, a portion of each of said bands of electrically conductive elastomeric material being in contact with said electrically nonconductive elastomeric material; and

resilient electrically conductive material between a portion of each of said bands of electrically conductive elastomeric material and said electrically nonconductive elastomeric material.

4,575,682

CIRCUIT FOR ESTABLISHING ACCURATE SAMPLE TIMING

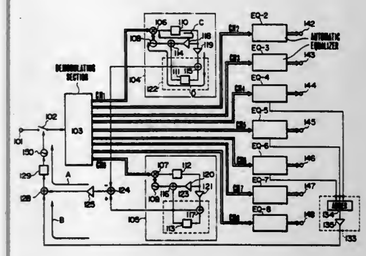
Hidehito Aoyagi, and Botaro Hirosaki, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Aug. 30, 1984, Ser. No. 645,684
Claims priority, application Japan, Sep. 1, 1983, 58-160786
Int. Cl.⁴ H03D *3/00, 3/18*
U.S. Cl. 329—50 **10 Claims**

1. A circuit for establishing accurate sample timing by correcting sampling frequency offsets and sampling phase offsets, said circuit forming part of a demodulator for an orthogonally multiplexed parallel data transmission system, said demodulator including a demodulating section which receives the orthogonally multiplexed parallel data to recover baseband signals of corresponding parallel channels which consist of data and pilot channels, said circuit comprising:

a first second-order PLL which includes a first integrator, said first second-order PLL being arranged after said demodulating section so as to receive a recovered baseband signal of a first pilot channel;

a second second-order PLL which includes a second integrator, said second second-order PLL being arranged after said demodulating section so as to receive a recovered baseband signal of a second pilot channel;



a subtracter which is supplied with the outputs of said first and second integrators and which produces the subtraction result as sampling frequency offset information; and

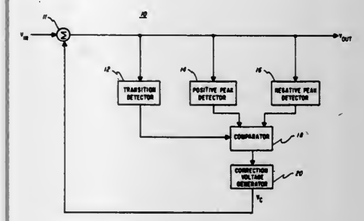
a voltage-controlled oscillator which receives the output of said subtracter so as to establish the accurate sample timing.

4,575,683

APPARATUS AND METHOD FOR REMOVING AN OFFSET SIGNAL

Richard D. Roberts, Palm Bay, and Robert S. Padgett, Melbourne, both of Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed Apr. 10, 1985, Ser. No. 721,824
Int. Cl.⁴ H03D *3/00, 3/18*
U.S. Cl. 329—50 **19 Claims**



1. A method for removing an offset signal from an antipodal signal, comprising the steps of:

(a) determining the peak magnitude of the antipodal signal in the first state by successively approximating the magnitude until the approximation is within a predetermined limit of the peak magnitude;

(b) determining the peak magnitude of the antipodal signal in the second state by successively approximating the magnitude until the approximation is within a predetermined limit of the peak magnitude;

(c) comparing the approximation of the magnitude of the first state and the approximation of the magnitude of the second state;

(d) producing a correction signal in response to step (c) wherein said correction signal represents the sign and magnitude difference between the approximation of the peak magnitude of the first state and the approximation of the peak magnitude of the second state; and

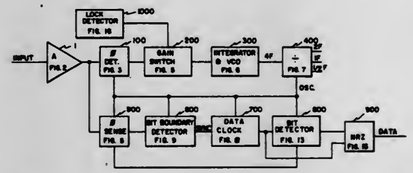
(e) applying said correction signal to the antipodal signal.

4,575,684

DIFFERENTIAL PHASE SHIFT KEYING RECEIVER

Thomas A. Stamm, Chicago, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Feb. 22, 1985, Ser. No. 704,433
Int. Cl.⁴ H03D *3/18*
U.S. Cl. 329—122 **31 Claims**



1. A receiver for demodulating differential phase shift keying data, said data having bit values dependent upon whether the phase of a carrier is inverted or not inverted during a bit interval, said receiver comprising:

input means for receiving differential phase shift keying data;

oscillator means for supplying an oscillator signal;

phase detection means connected to said input means and to said oscillator means for providing a phase detection output signal dependent upon the difference in phase between said oscillator signal and said differential phase shift keying data;

oscillator control means connected to said phase detection means and to said oscillator means for controlling the phase of said oscillator signal in response to said phase detection output signal;

phase sense detection means connected to said input means and to said oscillator means for providing a phase sense output signal dependent upon the phase relationship between said differential phase shift keying data and said oscillator signal;

data clock means connected to said oscillator means and to said phase sense detection means for providing a data clock signal defining a bit interval; and,

bit detection means connected to said phase sense detection means, to said data clock means, and to said oscillator means for providing demodulated output data bits dependent upon said differential phase shift keying data.

4,575,685

ARRANGEMENT FOR CANCELLING THE INPUT BIAS CURRENT, AT PICOAMPERE LEVELS, IN AN INTEGRATED CIRCUIT

Robert C. Dobkin, San Jose; George Erdi, Portola Valley, and Carl T. Nelson, San Jose, all of Calif., assignors to Linear Technology Corporation, Milpitas, Calif.

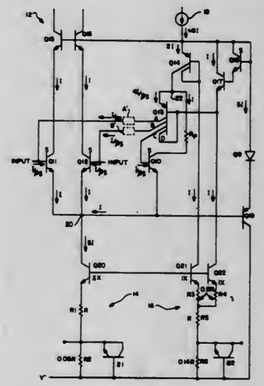
Filed Aug. 3, 1984, Ser. No. 637,389
Int. Cl.⁴ H03F *3/45*
U.S. Cl. 330—261 **23 Claims**

1. In an integrated circuit such as an operational amplifier, a comparator, or the like having a common mode input voltage, an arrangement for cancelling the input bias current at the base of an NPN input transistor forming part of the integrated circuit, said arrangement comprising:

(a) an NPN tracking transistor having the same characteristics as said input transistor;

(b) first circuit means acting on both said tracking and input transistors so as to cause currents to flow in the collectors of said transistors in a given, fixed proportion to one another regardless of fluctuations in said common mode input voltage, whereby to limit the tracking transistor to a base current in the same given proportion to the bias current at the base of said input transistor; and

(c) second circuit means in circuit with said tracking and input transistor for supplying the tracking transistor with its base current and, at the same time, providing along with said last-mentioned base current a second current in said given proportion and applying said second proportionate current to the base of said input transistor in order to cancel the bias current at the input transistor's base, said second circuit means including PNP transistor means



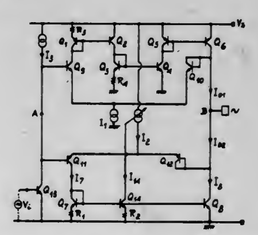
connected in a feedback loop with said tracking transistor with only a collector means of said PNP transistor means being connected to the base of said tracking transistor for supplying said last-mentioned transistor with its base current and with a second collector means of said PNP transistor means being connected to the base of said input transistor for supplying said second current, whereby said second current and the base current of the tracking transistor remain fixed in said given proportion independent of the presence or absence of leakage current in the integrated circuit.

4,575,686

OUTPUT STAGE FOR POWER AMPLIFIERS

Sergio Palara, Bareggio, and Aldo Torazzina, Monza, both of Italy, assignors to SGS-ATES Componenti Elettronici S.p.A., Catania, Italy

Filed Jul. 24, 1984, Ser. No. 634,002
Claims priority, application Italy, Aug. 5, 1983, 22466 A/83
Int. Cl.⁴ H03F *3/26*
U.S. Cl. 330—273 **5 Claims**



1. An output stage for power amplifiers, comprising an input transistor in series with a first current source so as to define a first common point, a first section and a second section ar-

ranged in parallel between a power supply and ground, each section including:

a first transistor having its base connected to said first common point;

a second current source, said second current source of said first section being interposed between the emitter of said first transistor and the ground and said second current source of said second section being interposed between the emitter of said first transistor and the power supply; said second current source and said first transistor defining a second common point;

at least one current mirror circuit formed by a first diode and a second transistor, said first diode of said first section being interposed between the collector of said first transistor and the power supply and said first diode of said second section being interposed between the collector of said first transistor and the ground, said second transistor of said first section having its emitter connected to the power supply, and said second transistor of said second section having its emitter connected to the ground;

a second diode connected between said second common point and the collector of said second transistor, the second transistor of said first and second sections being connected together and to a stage output thereby the voltage of the power supply can drop up to the value defined by the following expression

$$V_{BE}+2\times V_{CE\ sat}$$

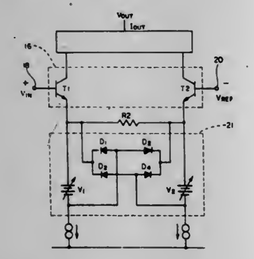
wherein V_{BE} represents the voltage across the base-emitter junction in the transistor forward region and $V_{CE\ sat}$ represents the voltage across the collector-emitter junction in the transistor saturation region, while maintaining the device in operation.

4,575,687

VOLTAGE ADJUSTABLE CAPACITANCE FOR FREQUENCY RESPONSE SHAPING

Chester A. Moore, Jr., Bartlett, Ill., assignor to Gould Inc., Rolling Meadows, Ill.

Filed Oct. 1, 1984, Ser. No. 656,209
Int. Cl.⁴ H03F *3/45*
U.S. Cl. 330—261 **11 Claims**



1. A substantially constant capacitance circuit for use with an external circuit having a variable voltage signal across first and second terminals, said capacitance circuit comprising:

first voltage means for supplying voltage having a positive terminal operatively connected to the first terminal;

second voltage means for supplying a voltage having a positive terminal operatively connected to the second terminal;

first, second, third and fourth reverse biased means for providing a voltage dependent capacitance, said first biased means connected across said first voltage means and said fourth biased means connected across said second voltage means, said second biased means connected from one side of said first voltage means to the opposed side of said second voltage means and said third biased means connected between said first and second voltage means in an opposite configuration to said second biased means, said first, second, third and fourth biased means connected to be reversed biased by said variable voltage signal and by said first and second voltage means;

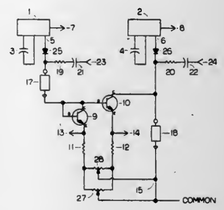
wherein said substantially constant capacitance circuit provides a substantially constant equivalent capacitance across the first and second terminals of the external circuit as the level of the variable voltage signal changes.

4,575,688

TRACKING OSCILLATORS

Alan D. Whitefoot, 7620 29th St. W., Tacoma, Wash. 98466

Filed Apr. 24, 1985, Ser. No. 726,668
Int. Cl.⁴ H03B *21/01*
U.S. Cl. 331—37 **2 Claims**



1. An oscillator circuit comprising;

two current controlled oscillators,

current mirror circuitry which provides closely tracking timing currents for said current controlled oscillators,

a variable resistance means which controls said tracking timing currents of said current controlled oscillators, and

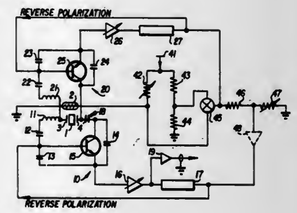
a variable resistance means which controls an additional timing current of only one of said current controlled oscillators.

4,575,689

HIGH FREQUENCY OSCILLATOR WITH A COMPENSATED ISOCHRONISM DEFICIENCY

Jean P. Valentin, Pouilley les Vignes, France, assignor to L'Etat Francais represente par le Delegue General pour l'Armement, Paris, France

Filed Dec. 12, 1983, Ser. No. 560,225
Claims priority, application France, Dec. 27, 1982, 82 21797
Int. Cl.⁴ H03B *5/30*
U.S. Cl. 331—116 R **12 Claims**



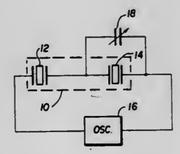
1. A high frequency oscillator of the kind that includes, mounted in a sealed structure, a piezo-electric resonator comprised of at least one piezo-electric crystal (1) that is connected to at least two exciter electrodes (3, 4) said electrodes producing an electric field in the active part of the piezo-electric crystal (1), means for applying to the electrodes (3, 4) on the one hand electric power for exciting the crystal according to a useful vibratory mode that is selected for determining a frequency reference and on the other hand a main electric internal heating power to excite the crystal according to a second vibratory mode consisting of an overtone vibration which is different from the vibration of the useful vibratory mode, the main electric internal heating power being regulated with a temperature pick-up (2, 7), located on the resonator or in its vicinity, in order to constantly maintain the temperature of the resonator at the reversing point of the crystal, including: means (46, 47) for regulating the electric power for exciting the crystal according to the useful vibratory mode in a predetermined and constant proportion in relation to the main electric heating power so as to provide a compensation for an indirect amplitude-frequency effect which is produced on the frequency of the useful vibratory mode by the vibration that is designed to produce main internal heating.

4,575,690

ACCELERATION INSENSITIVE OSCILLATOR

Fred L. Walls, Boulder, Colo., and John R. Vig, Colts Neck, N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 25, 1985, Ser. No. 715,862
Int. Cl.⁴ H03B *5/32*
U.S. Cl. 331—162 **26 Claims**



1. A method of suppressing the effects of vibration acting on a crystal resonator which comprises the primary frequency determining element of a crystal controlled oscillator, comprising the steps of:

determining the magnitude and direction of the acceleration sensitivity vector representing the maximum change in frequency per change in acceleration for a first crystal;

determining the magnitude and direction of the acceleration sensitivity vector representing the maximum change in frequency per change in acceleration for a second crystal;

positioning two of said first and second crystals such that the respective acceleration sensitivity vectors are anti-parallel;

electrically coupling said two crystals as a composite crystal resonator to an electrical oscillator circuit; and

coupling electrical reactance means to one of said crystals for cancelling any difference in the magnitudes of the acceleration sensitivity vectors of said two crystals.

4,575,691

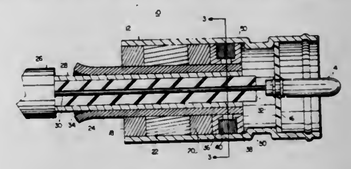
CABLE ISOLATOR WITH OVERVOLTAGE PROTECTION

Raymond G. Capek, Elmhurst; Anthony Cocco, Chicago; Leonard Dietch, and Michael Livshits, both of Skokie, all of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.

Filed Jun. 20, 1984, Ser. No. 622,415
Int. Cl.⁴ H01P *1/202;* H02H *9/06*
U.S. Cl. 333—12 **8 Claims**

1. A coaxial cable line isolator having an inner conductive element and an outer conductive element for coupling a high frequency signal to a device adapted to be powered from a low frequency power source, said isolator including an interruption in the outer conductive element for low frequency energy and including ceramic capacitor and inductor element means bridging the interruption for high frequency energy and precluding relatively long term voltage buildup thereacross, but being susceptable to short term high voltage buildup across the interruption from high voltage energy comprising:

spark gap energy discharge means in said interruption for



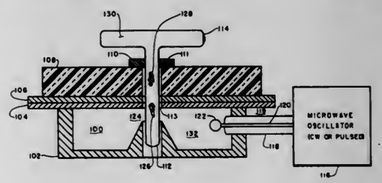
rapidly conducting energy thereacross, to limit short term buildup of voltage to a safe value, said spark gap energy discharge means being formed by a conductive ceramic element spaced with respect to at least one of said inner and said outer conductive elements.

4,575,692

MICROWAVE DISCHARGE APPARATUS AND METHOD WITH DUAL FUNCTION PRIMING RESONATOR

Harry Goldie, deceased, late of Randalstown, Md. (by Fritzi Goldie, administrator), assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 18, 1984, Ser. No. 601,515
Int. Cl.⁴ H01P *1/14*
U.S. Cl. 333—13 **14 Claims**



1. Microwave apparatus comprising:

planar microwave transmission means for conveying electrical energy signals of microwave radio frequency between nodes in a microwave electrical network;

gas-filled capillary tube means electromagnetically coupled with said transmission means for selectively modifying the signal transmission characteristics thereof;

a source of capillary gas priming microwave energy; and

microwave resonator means coupled with the gas in said gas-filled capillary tube means and with said source of gas priming microwave energy for both conveying said priming energy to said capillary tube means gas and determining the microwave operating frequency of said gas priming microwave energy source.

4,575,693

HIGH CURRENT PULSE MODULATOR WITH WAVE SHAPING CAPABILITY

Michael de la Chapelle, Canoga Park, and Frank A. Wilhelmi, Simi, both of Calif., assignors to Hughes Aircraft Company, El Segundo, Calif.

Filed May 9, 1983, Ser. No. 492,513
Int. Cl.⁴ H04B *3/04;* H03K *5/07*
U.S. Cl. 333—20 **1 Claim**

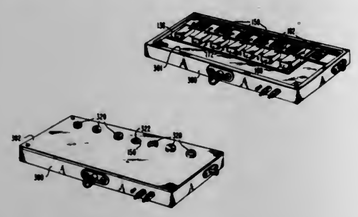
1. A pulse modulator comprising a pulse forming network mounted within a housing:

said pulse forming network including a plurality of microstrip spiral inductors;

a plurality of apertures in said housing, each said aperture

being juxtaposed with a respective microstrip spiral inductor;

a plurality of metallic slugs each of which is moveably mounted in a respective one of said plurality of aperatures;



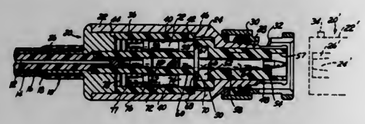
whereby said slugs may be adjustably positioned relative to said inductors to vary the inductance thereof, whereby the shape of the current waveform output from said pulse modulator, may be adjusted.

4,575,694

COAXIAL CONNECTOR

James A. Lapke, Shelton, and Carl W. Schmelzle, Westport, both of Conn., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Mar. 5, 1984, Ser. No. 586,468
Int. Cl.⁴ H01P *1/10, 1/26*
U.S. Cl. 333—22 R **5 Claims**



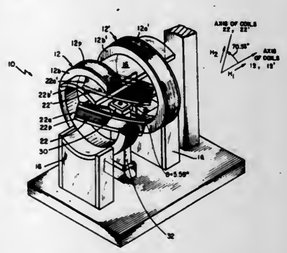
1. A coaxial connector for electrically coupling with a coaxial cable having a center conductor encircled by a shield conductor, comprising a shell of electrically conductive material, an insert of dielectric material fixedly secured to said shell, a connector contact of electrically conductive material fixedly mounted in said insert and disposed in electrical isolation to said shell, an electrical circuit element electrically connected to said shell and said contact, the electrical connection completing a first electrical circuit path including the circuit element, the shield conductor, and the center conductor when said coaxial connector is disconnected from a compatible connector, and make-before-break switch means for breaking said first electrical circuit path including said circuit element and simultaneously establishing a second electrical circuit path excluding said circuit element when connected to the compatible connector, said second electrical circuit path including said center conductor, the connector contact, and a compatible contact of the compatible connector when mated therewith, characterized by said insert including a passage which receives said circuit element and a pocket, a dielectric sleeve disposed in said shell for movement between a first position completing the first electrical circuit path and a second position establishing the second electrical circuit path, said sleeve having a forward portion sized to fit said pocket, a rearward portion, and a bore extending therethrough, said connector contact having a contact portion disposed in said bore, mechanical means for biasing the circuit element into electrical circuit relation with the contact portion, said circuit element including an electrically conductive contactor which is biased into contact with said rearward portion and said connector contact when the dielectric sleeve is in the first position, said forward portion being adapted to be abutted by the compatible connector during mating whereby to force the dielectric sleeve rearwardly and drive the contactor from abutment with the compatible contact when in the first position and out of contact therewith when driven to the second position.

4,575,695

METHOD AND APPARATUS FOR ORIENTATING FERRIMAGNETIC BODIES

Ernst F. R. A. Schloemann, Weston, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Dec. 3, 1982, Ser. No. 446,533
Int. Cl.⁴ H01P *1/30, 1/32*
U.S. Cl. 333—24.1 **22 Claims**



1. A method for orientating a magnetic resonant body comprising the steps of:

generating a first magnetic field along a first direction during first intervals of time;

generating a second magnetic field along a second direction, during second, different intervals of time;

positioning the magnetic resonant body within the influence of each one of said fields; and

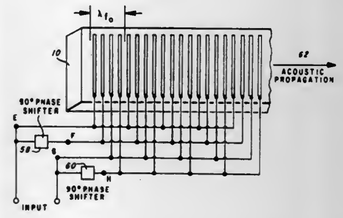
attaching a support member comprising a non-magnetic material to said magnetic resonant body at a predetermined bias angle with respect to the direction of one of said fields after a predetermined number of said first and second intervals of time to align a selected crystallographic axis of the magnetic resonant body along the support member.

4,575,696

METHOD FOR USING INTERDIGITAL SURFACE WAVE TRANSDUCER TO GENERATE UNIDIRECTIONALLY PROPAGATING SURFACE WAVE

Clinton S. Hartmann, Dallas, Tex., and William S. Jones, Bramhall, United Kingdom, assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 69,081, Sep. 2, 1970, Pat. No. 3,686,518.
This application Aug. 2, 1972, Ser. No. 277,443
Int. Cl.⁴ H03H *9/145, 9/25*
U.S. Cl. 333—154 **2 Claims**



1. A method for using an interdigital surface wave transducer to generate an acoustic surface wave which propagates unidirectionally on the surface of a piezoelectric substrate, said interdigital transducer having a preselected center frequency

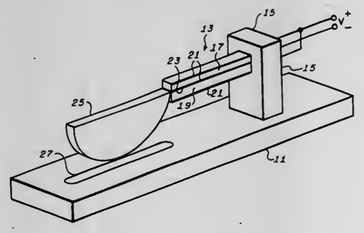
and including four separate arrays of elongated and substantially parallel electrodes, the respective electrodes of each array separated by one acoustic wavelength of said preselected center frequency, said arrays interleaved such that within each successive acoustic wavelength there is defined an interdigital pattern of electrodes comprising one electrode from each of said four arrays, adjacent electrodes spaced apart by a distance $\lambda/4$ where λ is said one acoustic wavelength, comprising the step of simultaneously generating driving electric fields of different phase wherein the phase difference between successive ones of the electric fields is 90° and respectively applying these driving electric fields to successive electrodes to thereby generate in said substrate an acoustic surface wave which propagates unidirectionally, wherein the step of simultaneously generating driving electric fields includes generating from a single input signal a plurality of inputs having a phase difference of 90° between successive ones of the plurality of inputs and respectively applying these inputs to the four successive electrodes included within each acoustic wavelength.

4,575,697

ELECTRICALLY CONTROLLED PHASE SHIFTER

Basrur R. Rao, Lexington, and Chris J. Daigle, Littleton, both of Mass., assignors to Sperry Corporation, New York, N.Y.

Filed Jun. 18, 1984, Ser. No. 621,838
Int. Cl.⁴ H01P *1/18*
U.S. Cl. 333—157 **9 Claims**



1. An electrically variable phase shifter for use in a microwave transmission system comprising a section of waveguide having a longitudinal axis and a wall with a narrow slot therein parallel to said waveguide section longitudinal axis, a piezoelectric element constructed to bend in response to applied voltages and cantileveredly mounted externally to said waveguide section adjacent said wall, thereby having a free end, means for applying a variable voltage to said piezoelectric element to cause bending of said element as a function of said variable voltage, a dielectric fin constructed to include a thin wafer of fused quartz attached to said free end of said piezoelectric element and positioned relative to said narrow longitudinal slot for movement therethrough when said piezoelectric element is bent by said variable voltage.

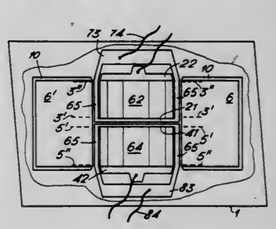
4,575,698

SURFACE ACOUSTIC WAVE DEVICE

John Schofield, Coulsdon, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 29, 1984, Ser. No. 665,837
Claims priority, application United Kingdom, Oct. 31, 1983, 8328965
Int. Cl.⁴ H03H *9/145, 9/64*
U.S. Cl. 333—195 **14 Claims**

10. A surface acoustic wave device comprising: a piezoelectric substrate able to propagate acoustic waves at a surface thereof, a wide aperture input transducer arranged to launch surface acoustic wave energy along a propagation track at said surface, a wide aperture output transducer located adjacent the input transducer and arranged to receive acoustic wave energy from a further propagation track at said surface which is substantially parallel to but does not overlap said first track, each of said transducers having two ends and formed as an interdigital electrode array comprising parallel strip electrodes which are respectively connected to a corresponding one or the other of a pair of conductive strips which form an inner and an outer bus bar extending along the corresponding adjacent (inner) and opposite (outer) sides of the interdigital electrode array, an electrical reflective multistrip coupling means arranged to receive acoustic wave energy from each end of the input transducer and to relaunch at least part of that energy as acoustic wave energy back towards a corresponding end of the output transducer in a cooperative transductive relationship, the reflective multistrip coupling means comprising respective reflective multistrip couplers each including a first and a second array of mutually parallel conducting strips arranged respectively across an input and an output propagation track, characterized in that for each transducer a respective electrically conductive strip-like surface layer is provided extending across the full width of the acoustic aperture of the transducer at each end thereof, said strip-like layers being electrically continuous at the inner end with said inner bus bar and at the outer end with an associated conductive connection region located outside the outer boundary of the strip-electrode array of the transducer and with said associated conductive connection region electrically connected to a terminal connection for said inner bus bar.

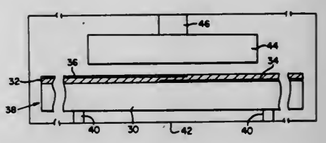


4,575,699

DIELECTRIC RESONATOR FREQUENCY SELECTIVE NETWORK

Larry R. Lockwood, McMinnville, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Nov. 23, 1984, Ser. No. 674,208
Int. Cl.⁴ H01P *7/10, 5/02*
U.S. Cl. 333—219 **11 Claims**



1. A frequency selectively network, comprising:

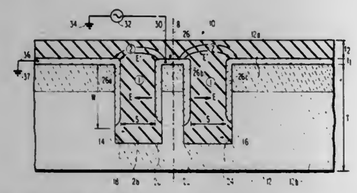
(a) a first coupling loop lying in a first plane;

(b) a second coupling loop lying in a second plane substantially parallel to said first plane, said second coupling loop being disposed so as to overlap partially said first coupling loop and be substantially decoupled therefrom as a result of the relative positions of the geometric centers of said loops within the two dimensions of the two planes; and

(c) a dielectric resonator disposed adjacent one said coupling loop such that a predetermined portion of said resonator is proximate the geometric center of the overlapping portions of said first and second coupling loops, both said

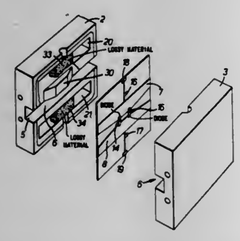
coupling loops being disposed on the same side of said dielectric resonator.

4,575,700
PARALLEL PLATE TRANSMISSION LINES INTEGRATED WITH COPLANAR WAVEGUIDES OR SLOT LINES AND METHOD OF MAKING SAME
G. Conrad Dalman, Ithaca, N.Y., assignor to Cornell Research Foundation, Inc., Ithaca, N.Y.
Filed May 17, 1984, Ser. No. 611,295
Int. Cl.[4] H01P *3/08*
U.S. Cl. 333—238 **6 Claims**



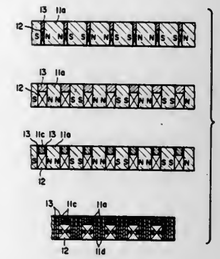
1. A transmission line structure comprising:
a semi-conductor substrate including a semi insulating layer of low conductivity underlying an active layer of different conductivity and permittivity,
a slot extending through said substrate active layer and partially through said semi insulating layer,
a thin metalization coating across the exposed surface of said substrate active layer and extending into said slot along opposed sides thereof to a depth beyond said active layer and forming a gap therein across said slot, and
a low loss dielectric material of second permittivity at least partially filling said slot and spanning between said metalization coatings on opposite sides of said slot to thereby form a combined parallel plate and slot line transmission line.

4,575,701
MICROWAVE SWITCH
Robert B. Greed, Colchester, England, assignor to The Marconi Company Ltd., Stanmore, England
Filed May 27, 1983, Ser. No. 498,776
Int. Cl.[4] H01P *1/10*
U.S. Cl. 333—258 **4 Claims**



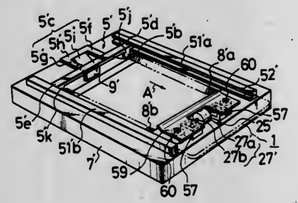
1. A microwave switch including a waveguide channel dimensioned to support a predetermined waveguide mode of propagation of the microwave energy applied to it; a fin line structure, dimensioned to support a slot line mode of propagation, comprising a pair of co-planar conductive plates mounted across the waveguide channel and lying in the E plane, the two plates being spaced apart by a small distance; switchable means associated with at least one of said conductive plates and arranged to control the conductivity of the switch; and means for locally modifying the waveguide channel in the vicinity of the fin line structure so as to render it incapable of supporting said predetermined waveguide mode so that the microwave energy is diverted to said fin line structure, wherein said means for locally modifying includes a pair of conductive blocks, one mounted on either side of said fin line structure, to very much reduce the height, in a direction perpendicular to the E plane direction, of a portion of the waveguide channel in the region of the fin line structure.

4,575,702
PERMANENT MAGNETIC CHUCK
Takeshi Nitta, Ebina, and Hiroshi Iwasaki, Tokyo, both of Japan, assignors to Fuji Jiko Kabushiki Kaisha, Tokyo, Japan
Filed May 22, 1984, Ser. No. 613,071
Claims priority, application Japan, May 30, 1983, 58-95548
Int. Cl.[4] H01F *7/20*
U.S. Cl. 335—286 **7 Claims**



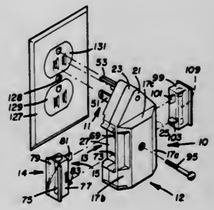
1. A permanent magnetic chuck comprising:
a workpiece holding plate having an attractive surface and a bottom surface, said holding plate having first permanent magnets with a high coercive force disposed along said bottom surface in a first direction each of said permanent magnents having a magnetic isolator adjacent to said permanent magnet disposed along said attractive surface said holding plate also having magnetic pole pieces which alternate with said permanent magnets, the poles of adjacent first permanent magnets which face each other being in an imposed magnetic relationship with each other, said isolator and magnetic pole pieces are respectively constructed as layers of a plurality of thin magnetic layers and a plurality of thin nonmagnetic layers each of which is disposed alternatively with each of said magnet layers;
a sliding magnet member in which disk-shaped second permanent magnets with a high coercive force are disposed, in round holes provided in said member at the same pitch as the pitch of said first permanent magnets in said workpiece holding plate, said second permanent magnets being so disposed that the magnetic lines of flux are at right angles relative to said workpiece holding plate and that the magnetic poles of adjacent second permanet magnets are oppositely directed, said sliding magnet member being slidably made into contact with the bottom surface of said workpiece holding plate;
a sliding mechanism for causing said sliding magnet member to slide by one pitch of said second permanent magnet in said first direction; and
a bottom plate disposed in contact with the bottom surface of said sliding magnet member, said bottom plate and said first and second permanent magnets of said workpiece holding plate and sliding magnet member establishing magnetic circuits.

4,575,703
DATA READING DEVICE FOR DATA PROCESSING APPARATUS
Kentaro Shishido, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Jul. 8, 1983, Ser. No. 511,927
Claims priority, application Japan, Jul. 22, 1982, 57-111229[U]; Feb. 16, 1983, 58-23996
Int. Cl.[4] G06K *13/04*
U.S. Cl. 235—479 **3 Claims**



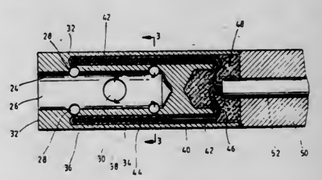
1. In a data processing apparatus, a device for reading data stored in a card comprising:
a housing having a slit adapted for the insertion of the card therethrough into said housing;
guide means in said housing engageable with the card for guiding the latter in a predetermined path during insertion of the card into said housing to an operative position in the latter;
slider means movable within said housing and having a portion interposed in said path so as to be engaged by the card and moved by the latter in one direction from an initial position to a displaced position upon the insertion of the card through said slit to said operative position in said housing;
spring means acting on said slider means and yieldably urging the latter in a direction opposite to said one direction;
lock means engageable when said card is inserted to said operative position for holding said slider means in said displaced position against the force of said spring means;
lock releasing means for disengaging said lock means and thereby permitting said spring means to return said slider means to said initial position during which said slider means propels the card out of said housing through said slit; and
frictional drag means engageable with the card in said predetermined path for frictionally resisting separation of the card from said slider means when the card is held in said displaced position and also during said return of the slider means to its initial position, said frictional drag means including a rotatable roller, and means mounting said roller adjacent said slit at one side of said path and resiliently urging said roller against a surface of the card in said path, said means mounting the roller including a bent wire spring member having end portions on which said roller is rotatably journalled and an intermediate portion angularly displaced from said end portions, and support means to which said intermediate portion of the spring member is secured so that the angular displacement of said end portions relative to said intermediate portion achieves said resilient urging of the roller against the card.

4,575,704
ELECTRICAL ADAPTOR
Arthur J. Pezold, Redding, Calif., assignor to Fire Savr, Redding, Calif.
Continuation-in-part of Ser. No. 574,548, Jan. 27, 1984, abandoned. This application Jan. 23, 1985, Ser. No. 693,789
Int. Cl.[4] H01H *85/02*
U.S. Cl. 337—197 **11 Claims**



1. An adaptor for an electrical AC wall socket for providing a fused link between the wall socket and an electrical appliance or the like, said adaptor comprising: an adaptor housing, first male connector means extending from said adaptor housing and being adapted for mating with the wall socket for providing electrical connection therewith, first female connector means in said adaptor housing and being adapted for receiving an appliance plug or the like, said adaptor housing having an externally accessible recess therein and including second female connector means in said recess of said adaptor housing disposed electrically between said first female connector means and said first male connector means and constituting at least one open circuit segment therebetween, fuse means including a fuse housing having a transparent window therein, means for removably mounting a fuse link in said fuse housing, said fuse link having a transparent cylindrical body, two metal end caps, one disposed on each end of said body, and a fuse conductor mounted inside said cylinder, said conductor creating an electrical link between said two metal end caps, said fuse housing being of a mating configuration with said recess in said adaptor housing to be received therein, said transparent window and transparent cylindrical body enabling said fuse conductor to be externally viewed when said adaptor is mated with said wall socket, and second male connector means connected to said fuse means, said second male connector means extending out from a surface of said fuse housing so as to mate with said second female connector means for connecting said fuse means across said open circuit segment when said fuse housing is received in said recess.

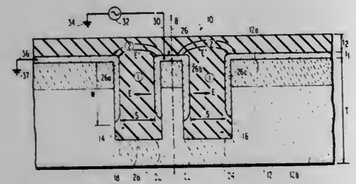
4,575,705
TEMPERATURE PROBE
Ricky G. Gotcher, Taylor, Tex., assignor to Weed Instrument Co., Inc., Round Rock, Tex.
Filed Feb. 17, 1984, Ser. No. 581,426
Int. Cl.[4] H01C *3/04*
U.S. Cl. 338—28 **19 Claims**



1. A temperature probe for measuring the temperature of the probe's surroundings comprising:

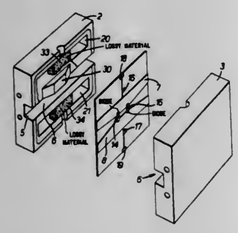
coupling loops being disposed on the same side of said dielectric resonator.

4,575,700
PARALLEL PLATE TRANSMISSION LINES INTEGRATED WITH COPLANAR WAVEGUIDES OR SLOT LINES AND METHOD OF MAKING SAME
G. Conrad Dalman, Ithaca, N.Y., assignor to Cornell Research Foundation, Inc., Ithaca, N.Y.
Filed May 17, 1984, Ser. No. 611,295
Int. Cl.⁴ H01P *3/08*
U.S. Cl. 333—238 **6 Claims**



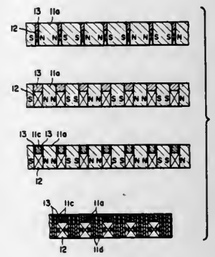
1. A transmission line structure comprising:
a semi-conductor substrate including a semi insulating layer of low conductivity underlying an active layer of different conductivity and permittivity,
a slot extending through said substrate active layer and partially through said semi insulating layer,
a thin metalization coating across the exposed surface of said substrate active layer and extending into said slot along opposed sides thereof to a depth beyond said active layer and forming a gap therein across said slot, and
a low loss dielectric material of second permittivity at least partially filling said slot and spanning between said metalization coatings on opposite sides of said slot to thereby form a combined parallel plate and slot line transmission line.

4,575,701
MICROWAVE SWITCH
Robert B. Greed, Colchester, England, assignor to The Marconi Company Ltd., Stanmore, England
Filed May 27, 1983, Ser. No. 498,776
Int. Cl.⁴ H01P *1/10*
U.S. Cl. 333—258 **4 Claims**



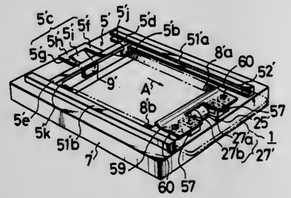
1. A microwave switch including a waveguide channel dimensioned to support a predetermined waveguide mode of propagation of the microwave energy applied to it; a fin line structure, dimensioned to support a slot line mode of propagation, comprising a pair of co-planar conductive plates mounted across the waveguide channel and lying in the E plane, the two plates being spaced apart by a small distance; switchable means associated with at least one of said conductive plates and arranged to control the conductivity of the switch; and means for locally modifying the waveguide channel in the vicinity of the fin line structure so as to render it incapable of supporting said predetermined waveguide mode so that the microwave energy is diverted to said fin line structure, wherein said means for locally modifying includes a pair of conductive blocks, one mounted on either side of said fin line structure, to very much reduce the height, in a direction perpendicular to the E plane direction, of a portion of the waveguide channel in the region of the fin line structure.

4,575,702
PERMANENT MAGNETIC CHUCK
Takeshi Nitta, Ebina, and Hiroshi Iwasaki, Tokyo, both of Japan, assignors to Fuji Jiko Kabushiki Kaisha, Tokyo, Japan
Filed May 22, 1984, Ser. No. 613,071
Claims priority, application Japan, May 30, 1983, 58-95548
Int. Cl.⁴ H01F *7/20*
U.S. Cl. 335—286 **7 Claims**



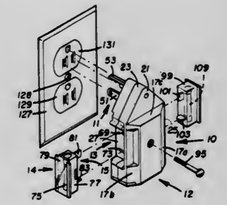
1. A permanent magnetic chuck comprising:
a workpiece holding plate having an attractive surface and a bottom surface, said holding plate having first permanent magnets with a high coercive force disposed along said bottom surface in a first direction each of said permanent magnents having a magnetic isolator adjacent to said permanent magnet disposed along said attractive surface said holding plate also having magnetic pole pieces which alternate with said permanent magnets, the poles of adjacent first permanent magnets which face each other being in an imposed magnetic relationship with each other, said isolator and magnetic pole pieces are respectively constructed as layers of a plurality of thin magnetic layers and a plurality of thin nonmagnetic layers each of which is disposed alternatively with each of said magnet layers;
a sliding magnet member in which disk-shaped second permanent magnets with a high coercive force are disposed, in round holes provided in said member at the same pitch as the pitch of said first permanent magnets in said workpiece holding plate, said second permanent magnets being so disposed that the magnetic lines of flux are at right angles relative to said workpiece holding plate and that the magnetic poles of adjacent second permanet magnets are oppositely directed, said sliding magnet member being slidably made into contact with the bottom surface of said workpiece holding plate;
a sliding mechanism for causing said sliding magnet member to slide by one pitch of said second permanent magnet in said first direction; and
a bottom plate disposed in contact with the bottom surface of said sliding magnet member, said bottom plate and said first and second permanent magnets of said workpiece holding plate and sliding magnet member establishing magnetic circuits.

4,575,703
DATA READING DEVICE FOR DATA PROCESSING APPARATUS
Kentaro Shishido, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Jul. 8, 1983, Ser. No. 511,927
Claims priority, application Japan, Jul. 22, 1982, 57-111229[U]; Feb. 16, 1983, 58-23996
Int. Cl.⁴ G06K *13/04*
U.S. Cl. 235—479 **3 Claims**



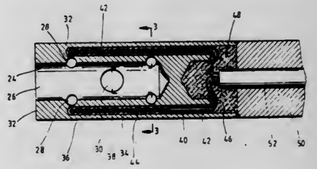
1. In a data processing apparatus, a device for reading data stored in a card comprising:
a housing having a slit adapted for the insertion of the card therethrough into said housing;
guide means in said housing engageable with the card for guiding the latter in a predetermined path during insertion of the card into said housing to an operative position in the latter;
slider means movable within said housing and having a portion interposed in said path so as to be engaged by the card and moved by the latter in one direction from an initial position to a displaced position upon the insertion of the card through said slit to said operative position in said housing;
spring means acting on said slider means and yieldably urging the latter in a direction opposite to said one direction;
lock means engageable when said card is inserted to said operative position for holding said slider means in said displaced position against the force of said spring means;
lock releasing means for disengaging said lock means and thereby permitting said spring means to return said slider means to said initial position during which said slider means propels the card out of said housing through said slit; and
frictional drag means engageable with the card in said predetermined path for frictionally resisting separation of the card from said slider means when the card is held in said displaced position and also during said return of the slider means to its initial position, said frictional drag means including a rotatable roller, and means mounting said roller adjacent said slit at one side of said path and resiliently urging said roller against a surface of the card in said path, said means mounting the roller including a bent wire spring member having end portions on which said roller is rotatably journalled and an intermediate portion angularly displaced from said end portions, and support means to which said intermediate portion of the spring member is secured so that the angular displacement of said end portions relative to said intermediate portion achieves said resilient urging of the roller against the card.

4,575,704
ELECTRICAL ADAPTOR
Arthur J. Pezold, Redding, Calif., assignor to Fire Savr, Redding, Calif.
Continuation-in-part of Ser. No. 574,548, Jan. 27, 1984, abandoned. This application Jan. 23, 1985, Ser. No. 693,789
Int. Cl.⁴ H01H *85/02*
U.S. Cl. 337—197 **11 Claims**



1. An adaptor for an electrical AC wall socket for providing a fused link between the wall socket and an electrical appliance or the like, said adaptor comprising: an adaptor housing, first male connector means extending from said adaptor housing and being adapted for mating with the wall socket for providing electrical connection therewith, first female connector means in said adaptor housing and being adapted for receiving an appliance plug or the like, said adaptor housing having an externally accessible recess therein and including second female connector means in said recess of said adaptor housing disposed electrically between said first female connector means and said first male connector means and constituting at least one open circuit segment therebetween, fuse means including a fuse housing having a transparent window therein, means for removably mounting a fuse link in said fuse housing, said fuse link having a transparent cylindrical body, two metal end caps, one disposed on each end of said body, and a fuse conductor mounted inside said cylinder, said conductor creating an electrical link between said two metal end caps, said fuse housing being of a mating configuration with said recess in said adaptor housing to be received therein, said transparent window and transparent cylindrical body enabling said fuse conductor to be externally viewed when said adaptor is mated with said wall socket, and second male connector means connected to said fuse means, said second male connector means extending out from a surface of said fuse housing so as to mate with said second female connector means for connecting said fuse means across said open circuit segment when said fuse housing is received in said recess.

4,575,705
TEMPERATURE PROBE
Ricky G. Gotcher, Taylor, Tex., assignor to Weed Instrument Co., Inc., Round Rock, Tex.
Filed Feb. 17, 1984, Ser. No. 581,426
Int. Cl.⁴ H01C *3/04*
U.S. Cl. 338—28 **19 Claims**



1. A temperature probe for measuring the temperature of the probe's surroundings comprising:

a hollow thermally conductive tip portion having a hollow interior portion in fluid communication with the probe's surroundings and forming one end of the probe and the other end being formed from a support portion, the body of the tip portion also defining a sensor cavity which is positioned in an outer wall of the tip portion so as to be between the hollow interior of said tip portion and the exterior surface of said tip portion, said sensor cavity being out of fluid communication with the probe's surroundings;

a sensor positioned within said sensor cavity, said sensor comprising a temperature sensing element; and

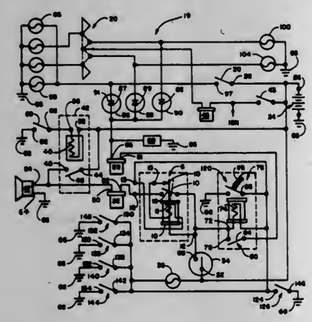
a refractory packing material packed into the sensor cavity to electrically insulate the sensor from the body of the tip portion.

4,575,706

COMBINED MAGNETIC AND THERMAL RELAY AND CIRCUITS FOR TIMED ALARMS AND LAMPS OF VEHICLES

William A. Heidman, Jr., 4604 Robbins, San Diego, Calif. 92122

Filed Feb. 17, 1984, Ser. No. 581,117
Int. Cl.[4] B60R *25/00*; G08B *21/00*
U.S. Cl. 340—63 **16 Claims**



15. A vehicle alarm circuit comprising:

a power source;

a relay having a normally open single throw magnetic switch;

a combined thermal and magnetic relay having an activating coil wound around a central core, a normally open magnetic switch and a normally closed thermal operational switch;

a plurality of parallel, mechanically operated, normally open, single throw, single pole switches;

a vehicle interior lamp;

an activating switch having an open and closed position;

a flasher element; and

an audio alarm;

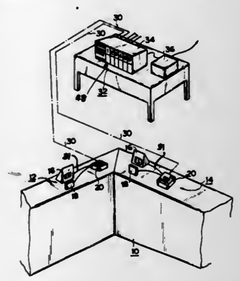
said power source, said relay, the switches of said combined thermal and magnet relay, said plurality of mechanical magnetic parallel switches, said vehicle interior lamp, said activating switch, said flasher element and said audio alarm are electrically inter-connected so that when said activating switch is in a closed position and at least one of said parallel mechanically operated switches is positioned from a normally open state to a closed state, the normally open magnetic switch of said combined thermal and magnetic relay is caused to close, said interior lamp illuminates, said audio alarm intermittently sounds until the heat from said coil causes said thermal switch of said combined thermal and magnetic relay to open after a predetermined time delay.

4,575,707

WAITING TIME DISPLAY SYSTEM

Kazuyoshi Imazeki; Toshiyuki Tanaka, and Fumio Hayashibara, all of Tokyo, Japan, assignors to General Research of Electronics, Inc., Tokyo, Japan

Filed Mar. 3, 1983, Ser. No. 471,891
Int. Cl.[4] G08B *7/00*
U.S. Cl. 340—286 R **8 Claims**



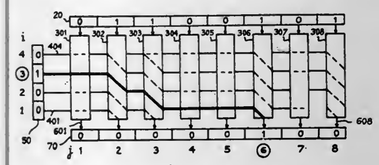
1. A waiting time system comprising: a plurality of remote stations, each including a waiting time display unit comprising a display portion responsive to predetermined time signals for producing a visual display corresponding to waiting time, and a control unit comprising control means selectively actuatable for producing said predetermined time signals, said time signals corresponding to a selected waiting time; a centralized monitoring unit responsive to the predetermined time signals from each said control unit for monitoring the waiting time displayed on each display unit; and a plurality of transmission lines coupled intermediate each of said control units and its associated display unit and intermediate each of said control units and said centralized monitoring unit for transmitting the output signals from each control unit to its associated display unit and to the centralized monitoring unit, respectively.

4,575,708

DECODER OF A DATA FROM A SUBGROUP OF P DATA BELONGING TO A GROUP OF N DATA

Jacques Meyer, Grenoble, France, assignor to Societe pour l'Etude et la Fabrication de Circuits Integres Speciaux E.F.-C.I.S., Grenoble, France

Filed Mar. 20, 1984, Ser. No. 591,605
Claims priority, application France, Mar. 25, 1983, 83 04977
Int. Cl.[4] G06F *5/00*
U.S. Cl. 340—347 DD **3 Claims**



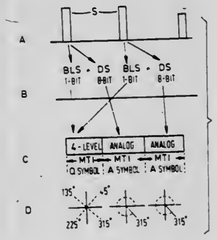
1. A decoder for selecting a data belonging to a subgroup of P data, said subgroup of P data being part of a group of N data, P being a number lower than N, said decoder comprising a first register with N locations, each location corresponding to a respective data, and each location being given a repective binary state indicating whether the data corresponding to this location is part of the subgroup including the data to be selected; a second register with P locations, each location of said second register corresponding to a respective position of a data among a sugbroup of P data, and each location of said second register being given a respective binary state corresponding to whether or not the respective position corresponds to the position of the data to be selected; a switching array having P rows and N columns, each row corresponding to a respective location of said second register and each column corresponding to a respective location of said first register, with a switching cell at each intersection of a row and a column, each cell comprising a control input a signal input and two signal outputs, the first signal output of one cell being connected to the signal input of an adjacent cell belonging to the same row as said one cell and to the next adjacent column, the second signal output of said one cell being connected to the signal input of an adjacent cell belonging to the next adjacent row and to the next adjacent column, except for the cells of the last row which have their second signal output connected to a respective output terminal of the array; the control input of the cells of a same column being connected to a location corresponding to said column in said first register; the signal input of a cell which is at the intersection of the first column and of a given row being connected to a location corresponding to said given row in said second register, whereby the position of said selected data in said group of N data appear as a specific binary state on one out of N terminals of said array.

4,575,709

SIGNAL ENCODING-DECODING APPARATUS

Martin Tomlinson, Looe, England, assignor to General Electric Company, Portsmouth, Va.

PCT No. PCT/GB83/00278, § 371 Date Jun. 13, 1984, § 102(e) Date Jun. 13, 1984, PCT Pub. No. WO84/01874, PCT Pub. Date May 10, 1984
PCT Filed Oct. 31, 1983, Ser. No. 620,856
Int. Cl.[4] H04N *7/133*
U.S. Cl. 340—347 DD **26 Claims**



1. In a communications system, encoding-decoding apparatus comprising an encoder for encoding information signals prior to transmission and decoder for decoding the received transmissions, characterised in that the encoder comprises:

signal processing means (**10,11**) arranged to sample the information signals sequentially and to represent each sample (S) by the combination of a base-level signal BLS indicative of a coarse level quantisation of the sample (S), and a difference signal DS providing a high resolution measurement of the difference between the actual sampled signal level (W) and the quantisation level represented by the BLS signal,

encoder signal-organising means (**13**) arranged to receive and organise said BLS and DS signals into a composite modulation output that is divided into a succession of modulation time intervals MTI and includes, at least when considered over a number of MTI, both coarsely-quantised BLS-related components hereafter referred to a Q symbols, and high-resolution DS-related components hereafter referred to as A symbols, each symbol being mono-valued and occupying one MTI,

a carrier signal oscillator (**40**) for generating a carrier signal, and

a modulator (**14**) responsive to the Q and A symbols of the composite modulation output to modulate said carrier signal respectively with a coarsely quantised first modulation indicative of said BLS signals and with a high resolution second modulation indicative of said DS signals; and in that the decoder comprises:

a demodulator (**16**) arranged to receive the modulated carrier signal and to demodulate said first and second modulations to produce a composite demodulated output with Q symbol and A symbol components indicative of the corresponding symbols of the encoder composite modulation output,

decoder signal-organising means (**18**) connected to receive the composite demodulated output and to provide therefrom signals corresponding to the BLS and DS signals of the decoder; and

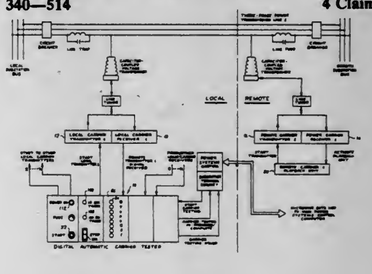
signal recombining means (**19**) arranged to receive and combine the said signals provided by the decoder signal-organising means (**18**) to reproduce the information-signal samples in their original sequence.

4,575,710

AUTOMATIC TESTING SYSTEM ELECTRICAL TRANSMITTERS

Martin F. Best, Charlotte, N.C., assignor to Duke Power Company, Charlotte, N.C.

Filed May 9, 1983, Ser. No. 493,050
Int. Cl.[4] G08B *29/00, 26/00*
U.S. Cl. 340—514 **4 Claims**



1. A system for automatically testing the operability of a series of remote, normally quiescent, electrically operable carriers located at diverse remote locations, with each of said remote carriers having an associated local carrier which is adapted to transmit an operability-inquiring electrical signal to its associated remote carrier to cause its associated remote carrier, if it is operable, to transmit, for a predetermined period of time, an operability-indicating electrical signal to its associated local carrier, and with the local carriers being located in general proximity to one another at a single local location, said system comprising:

testing means located at said local location and including:

actuating means associated with each of said local carriers, with each of said actuating means being adapted to selectively actuate its associated local carrier to transmit said operability-inquiring electrical signal to its associated remote carrier;

indicating means associated with each of said local carriers, with each indicating means being adapted to indicate non-receipt by its associated local carrier of said operability-indicating electrical signal from its associated remote carrier within said predetermined peiod of time after the selective actuation of its local carrier by its associated actuating means;

stepping means for enabling all of said actuating means sequentially to cause said actuating means to sequentially actuate all of said local carriers;

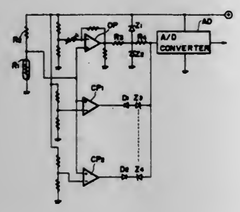
de-energizing means for de-energizing said system upon completion of said sequential actuation of all of said local carriers; and

de-energizing prevention means responsive to all of said indicating means and being adapted to prevent operation of said de-energizing means in response to an indication by at least one of said indicating means of non-receipt of said operability-indicating electrical signal by at least one of the local carriers from its associated remote carrier.

4,575,711
ALARM TERMINAL DEVICE

Takashi Suzuki; Tetsuo Kimura, both of Tokyo, and Seiichi Tanaka, Chiba, all of Japan, assignors to Nittan Company, Limited, Tokyo, Japan

Filed Sep. 23, 1983, Ser. No. 535,142
Claims priority, application Japan, Sep. 24, 1982, 57-164966
Int. Cl.⁴ G08B *19/00, 29/00*
U.S. Cl. 340—521 **18 Claims**



1. In an alarm terminal device having a first sensor means for generating an analog signal providing information indicating one of the parameters smoke concentration, gas concentration and temperature, and an analog-to-digital converter means for converting the analog signal to digital data, the improvement comprising:

discriminating means for discriminating the analog signal in accordance with at least one reference value;

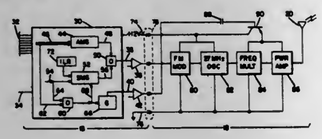
at least one second sensor means for generating an analog data signal providing information exclusive of the information in the analog signal from said first sensor means, the analog data signal from said at least one second sensor means being supplied in parallel with the analog signal from said first sensor means to said analog-to-digital converter means; and

said discriminating means comprising a limit voltage generator means for generating an upper or lower limit voltage relative to an analog voltage range of the analog signal of the first sensor means.

4,575,712
COMMUNICATION SYSTEM

Steven J. Wialick, Woodmere, N.Y., assignor to Pittway Corporation, Syosset, N.Y.

Filed Feb. 27, 1984, Ser. No. 583,827
Int. Cl.⁴ G08B *1/08*
U.S. Cl. 340—539 **11 Claims**



1. In a communication system that includes a common receiver unit and a plurality of satellite transmitter units remote from said receiver unit,

each said transmitter unit comprising a logic section and a transmitter section that includes an output stage coupled to an output means for transmitting messages to a common receiver unit, each said transmitter unit being switchable between a standby mode in which no message is intended to be sent to said receiver unit and an active mode in which a message is intended to be sent to said receiver unit,

said logic section including means to generate status messages and data messages, the format of each said status message including an address portion identifying the transmitter unit and an indicator portion shiftable between first and second values,

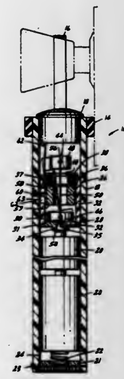
means operative during said standby mode for repetitively generating status messages in which said indicator portion is set to said first value,

means operative only during said active mode for enabling said transmitter section for sending a message to said receiver unit, and means operative during said active mode for concurrently switching said indicator portion of said status message to said second value when the message to be transmitted is a status message.

4,575,713
DISTURBANCE ALARM

Bert W. Piper, 850 Old Post Rd., Port Richey, Fla. 33568

Filed Apr. 23, 1984, Ser. No. 605,552
Int. Cl.⁴ G08B *13/08*
U.S. Cl. 340—546 **7 Claims**

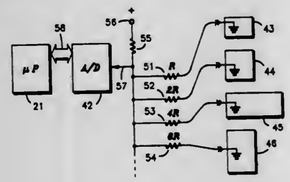


1. A disturbance alarm comprising a case adapted to be positioned in vertical orientation; first electrical contact means disposed in fixed position within said case and having a contact face which is oriented upwardly in vertical orientation of said case; a pendulum assembly comprising a lower weight of electrically conductive material resting upon said contact face in vertical orientation of said case, an upper weight and a rigid shaft of electrically conductive material affixed to and extending between said upper and lower weights to support said upper weight above and spaced from said lower weight for tilting motion within said case; second electrical contact means affixed within said case, spaced from said first contact means and encircling said pendulum assembly adjacent to said upper weight; alarm means responsive to electric power; electrical circuit means including a source of electric power connected through said alarm means to said first and second contact means; and means for positioning said lower weight on said contact face such that said pendulum assembly is balanced on said lower contact face in vertical orientation of said case with said shaft and upper weight spaced from said second contact means, disturbance of said case unbalancing said pendulum assembly such that said pendulum assembly contacts said second contact means and thereby completes an electrical circuit through said alarm and said source of electrical power.

4,575,714
MODULE PRESENCE SENSOR

Paul W. Rummel, Kentfield, Calif., assignor to Tegal Corporation, Novato, Calif.

Filed Mar. 12, 1984, Ser. No. 588,823
Int. Cl.⁴ G08B *21/00*
U.S. Cl. 340—568 **6 Claims**



1. A system for sensing the presence of peripheral modules comprising:

analogue encoding means, connected to one or more of said peripheral modules , for producing a unique signal in response to each combination of peripheral modules connected thereto;

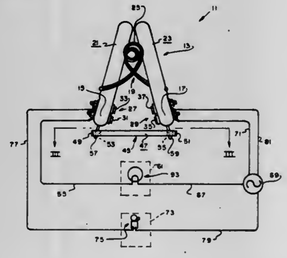
analogue to digital conversion means for converting said signal into a corresponding digital signal; and

digital means for controlling said modules in accordance with the content of said digital signal.

4,575,715
HIGH TEMPERATURE ALARM SYSTEM WITH FUSIBLE LINK

Joseph Forgione, 6094 Millington, Millington, Tenn. 38053

Filed Jun. 8, 1984, Ser. No. 618,912
Int. Cl.⁴ G08B *17/02*
U.S. Cl. 340—590 **4 Claims**



1. Alarm means installed in a building having a light system and an audible entrance signalling system for producing an alarm signal when the temperature at a certain location rises to a pre-selected degree, said alarm means comprising:

(a) body means including a first head portion, a second head portion, said first and second head portions being movable between an open and a closed position and being electrically insulated relative to one another when in said open position, and urging means for normally urging said first and second head portions to said closed position; said body means including first and second body members, each of said body members having a first end and a second end with said first ends of said first and second body members respectively defining said first and second head portions; said urging means including a spring member for pivotally joining said first and second body members to one another in such a manner that said first ends thereof are movable between open and closed positions and normally urged to said closed position; said first and second body members of said body means being constructed of electrically non-conductive material;

(b) first electrical contact means for being positioned on said first head portion of said body means; said first electrical contact means including first and second electrical contact members;

(c) second electrical contact means for being positioned on said second head portion of said body means and for electrically contacting said first electrical contact means when said first and second head portions of said body means are urged to said closed position; said second electrical contact means including first and second electrical contact members for making electrical contact with the respective said first and second electrical contact members of said first electrical contact means when said first and second head portions of said body means are in said closed position;

(d) fusible means for being attached relative to said first and second head portions of said body means and for normally holding said first and second head portions in said open position to normally hold said first and second electrical contact means out of electrical contact with one another, said fusible means being rendered ineffective at a certain temperature to then allow said first and second electrical contact means to electrically contact one another;

(e) circuit means for being electrically coupled to said first and second electrical contact means and for producing an alarm signal if said first and second electrical contact means make electrical contact with one another; said circuit means including a first circuit for being electrically coupled to said first electrical contact members of said first and second electrical contact means and including a second circuit for being electrically coupled to said second electrical contact members of said first and second electrical contact means; said first circuit of said circuit means being electrically coupled to said light system for producing a visible alarm signal when said first and second head portions of said body means are in said closed position; said second circuit being electrically coupled to said audible entrance signalling system for producing an audible alarm signal when said first and second head portion of said body means are in said closed position;

(f) a first pin member for being attached to and extending outwardly from said first end of said first body member; and

(g) a second pin member for being attached to and extending outwardly from said first end of said second body member; said fusible means being attached to said first and second pin members.

4,575,716
METHOD AND SYSTEM FOR OPERATING A DISPLAY PANEL HAVING MEMORY WITH CELL RE-IGNITION MEANS

George E. Holz, North Plainfield, and James A. Ogle, Neshanic Station, both of N.J., assignors to Burroughs Corp., Detroit, Mich.

Filed Aug. 22, 1983, Ser. No. 525,283
Int. Cl.⁴ G09G *3/02*
U.S. Cl. 340—714 **11 Claims**

1. A system for operating a display panel with memory wherein the display panel includes

a gas-filled envelope,

a first layer of D.C. scan cells disposed in rows and columns and including row scan anodes and column scan cathodes which cross each other, with said crossings defining said D.C. cells,

an apertured electrode defining rows and columns of display

cells, each display cell being in communication with a D.C. scan cell, and

an A.C. electrode associated with and insulated from said apertured electrode and operating therewith as the electrodes for said display cells,

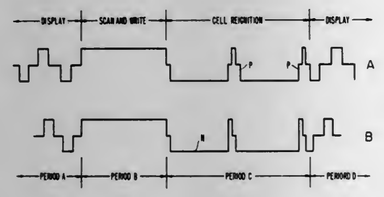
said system comprising

first means coupled to all of said scan anodes for applying operating potential thereto,

second means coupled to said scan cathodes for applying operating potential to each cathode in turn to fire and turn on each column of scan cells in turn sequentially,

third means coupled to said scan anodes for applying data signals to selected ones of said anodes as its column of scan cells is fired and turned on,

fourth means coupled to said apertured electrode and said A.C. electrode for applying sustainer signals thereto, the application of said sustainer signals and said data signals being synchronized so that, when the data signals are applied, glow is generated in the selected display cells associated with the scan anodes to which the data signals are applied, the sustainer signals sustaining the display glow in such selected display cells, and



control means coupled to said fourth means for modifying said sustainer signal to include a time period in which the displayed message is in a reduced state of brightness or is completely extinguished, and then modifying said sustainer signal to include a cell re-ignition period after said time period and before the panel is returned to normal display brightness;

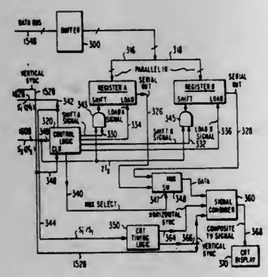
said cell re-ignition period being a time period in which a signal is applied to said panel to facilitate return of the panel to normal display brightness.

4,575,717

LOGIC FOR INCREASING THE NUMBER OF PIXELS IN A HORIZONTAL SCAN OF A BIT MAPPING TYPE VIDEO DISPLAY

Nicola J. Fedele, South Brunswick Township, Middlesex County, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Dec. 5, 1983, Ser. No. 558,372
Int. Cl.⁴ G09G *1/00*
U.S. Cl. 340—728 **3 Claims**



1. In a system having: a visual display means; memory means including a random access memory responsive to a train of clock pulses for reading serially therefrom respective N-bit words, where each bit is used to represent a pixel on said display means; a resident timing system for supplying a first train of clock pulses at a first repetition rate and a second train of clock pulses at a second repetition rate; and control means coupled to said memory means: (a) responsive to said first train of clock pulses for causing said memory means to read words serially to said control means at said first rate and (b) responsive to said second train of clock pulses for serially arranging the bits of each word read from said memory, in order to present on said visual display means a given number (X) of pixels per scan;

the improvement comprising:

a circuit which multiplies by a factor M the rate of pixel generation and the number of pixels per display scan without changing the rates at which said resident timing system produces said first and second pulse trains, and which comprises:

a source of a third train of clock pulses at a third repetition rate which is M times the repetition rate of pulses in said second clock pulse train;

generating means responsive to said third train of clock pulses for generating a fourth train of clock pulses having a repetition rate which is a multiple M of the repetition rate of pulses in said first clock pulse train;

switching means for transferring said memory means from connection to said first pulse train produced by said resident timing system to connection to said fourth train of clock pulses produced by said generating means, in order to read words from said memory at a rate which is M times the first rate; and

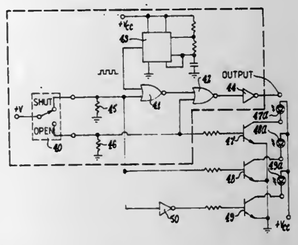
shift register means (a) for receiving in a parallel manner each N-bit pixel-representing data word read from said memory and (b) responsive to said third train clock pulses for serially shifting at said third rate the N-bits of each data word placed therein to a circuit output thereof, in order to produce at said circuit output M times the given number of bits for use in a display scan.

4,575,718

COMPONENT STATE MONITORING

Christopher J. Ludowyk, Brighton, Australia, assignor to The Commonwealth of Australia, Australia

Filed Aug. 5, 1982, Ser. No. 405,418
Claims priority, application Australia, Aug. 7, 1981, PF0118
Int. Cl.⁴ H04Q *1/00*; G08B *21/00*
U.S. Cl. 340—825.17 **18 Claims**



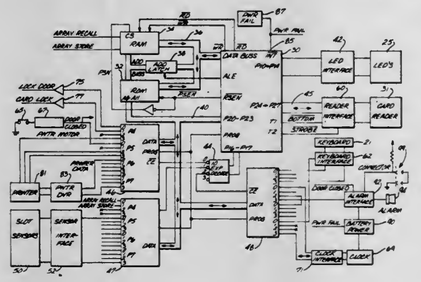
1. Apparatus suitable for use with an operative system for monitoring the operational state of at least one system component, said component having three states, said apparatus including a state signal generator for operative association with the component and responsive to the state of the component to generate and apply to a single output line a first steady DC signal for as long as said component is in a first state, a second steady DC signal for as long as said component is in a second state and an oscillating signal for as long as said component is in a third state, said first signal corresponding to a first digital signal, said second signal corresponding to a second digital signal and said oscillating signal comprising an alternating current signal.

4,575,719

CONTROLLED ACCESS STORAGE SYSTEM

Richard A. Bertagna, San Dimas, and Dickey J. Berry, Azusa, both of Calif., assignors to Avicom International, Inc., Pasadena, Calif.

Filed Oct. 14, 1983, Ser. No. 541,987
Int. Cl.⁴ H04Q *9/00*
U.S. Cl. 340—825.35 **11 Claims**



1. Apparatus for selectively permitting custodial access to valuable items, which comprises:

a safe having a closure movable between closed and open positions, and having a valuable-item storage region from which and into which valuable items can be removed and replaced while the closure is in its open position;

locking means operable while the closure is in its closed position for selectively locking and unlocking the closure;

access-control means including prerecorded data entry means for deriving a first code from a record member, the prerecorded data entry means including a receptacle configured to guide the record member as it is inserted and withdrawn from the receptacle and reading means for deriving the first code upon insertion of the record member into the receptacle, manually controlled means for inputting a second code, and data processing means for controlling predetermined sequences of operation during item-removal and item-replacement modes of operation;

capturing means selectively operable to capture and release an inserted record member;

transducing means for supplying data to the data processing means for use in controlling said predetermined sequences of operation; and

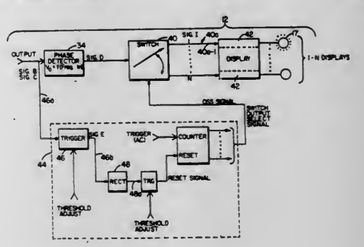
the data processing means including means operative during the item-removal mode of operation for detecting a predetermined relationship between such first and second codes, to cause the capturing means to capture the inserted record member and to cause the locking means to unlock the closure, and further including means operative during the item-replacement mode of operation to respond to data supplied by the transducing means to cause the capturing means to release the inserted record member.

4,575,720

DATA ACQUISITION TRANSMITTER AND RECEIVER

David C. Smith, Jupiter, Fla., assignor to Otis Elevator Company, Farmington, Conn.

Filed Oct. 14, 1983, Ser. No. 542,305
Int. Cl.⁴ H04Q *9/12*; G08B *25/00*
U.S. Cl. 340—825.54 **4 Claims**



1. A communication system comprising:

a transmitter with N inputs and one output, N being more than one;

a remote receiver with one input and N outputs;

characterized in that:

said transmitter comprises means for providing a serial output signal on said output which comprises N signals preceded by a sync signal in synchronism with a fixed frequency trigger applied to the transmitter, each of said N signals being associated with one of the N inputs and produced on a particular repetition of said trigger signal following production of said sync signal, said sync signal preceding said N signals;

said receiver receives said transmitter serial output signal and said trigger signal and comprises means for providing a status signal on each of its N outputs for each of said N signals, means for providing a second sync signal in response to the presence of said sync signal in said transmitter output signal, means for generating a status signal from each one of said N signals as said one of said N signals is received, and means for applying said status signal to one of the N receiver outputs in response to said trigger signal and said second sync signal, said one receiver output being identified by the number of trigger signal repetitions following the said second sync signal.

4,575,721

AC PLASMA DISPLAY PANEL CONTROL CIRCUIT

Louis Delgrange; Francoise Vialettes, and Jacques Deschamps, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Sep. 30, 1982, Ser. No. 431,152
Claims priority, application France, Oct. 23, 1981, 81 19941
Int. Cl.⁴ G09G *3/28*
U.S. Cl. 340—776 **4 Claims**

1. A control circuit for an alternating current plasma display panel which comprises of matrix of light-emissive cells respectively connected between respective pairs of electrodes, the electrodes of each such pair being respectively connected to respective orthogonal networks of such electrodes; each cell being adapted to be switched on, off, or maintained in its existing state at any time in response to set, erase, or maintenance voltages, respectively, applied to the electrodes connected thereto; such control circuit comprising:

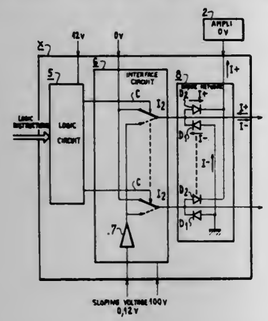
at least one integrated circuit for each of said networks, each such integrated circuit comprising

an interface circuit for producing set and erase voltages for each of the electrodes in such network;

and a diode network connecting such interface circuit to each of such electrodes for applying the set and erase voltages produced thereby to such electrodes;

and at least one amplifier for each of said networks, each

such amplifier having an output terminal which is connected by the diode network of the integrated circuit for such network to each of the electrodes to which such diode network applies said sets and erase voltages, each such amplifier producing a maintenance voltage which is applied by such diode network to each of such electrodes;
the diode network in each of said integrated circuits being adapted to isolate the amplifier connected thereto from the electrodes to such diode network when said interface



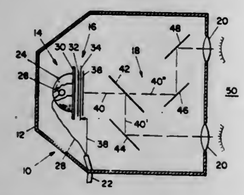
circuit is producing set or erase voltages for such electrodes;
wherein the diode network in each of said integrated circuits comprises a plurality of pairs of diodes, the anode of one diode of each such pair being connected to the cathode of the other diode of such pair, such common connection of each diode pair being connected to said interface circuit, and the remaining electrode of one of the diodes in each such pair being connected to the output terminal of the amplifier which is connected to such diode network.

4,575,722

MAGNETO-OPTIC DISPLAY

Robert H. Anderson, Long Beach, Calif., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed May 5, 1982, Ser. No. 375,325
Int. Cl.⁴ G09G *3/20*
U.S. Cl. 340—783 **34 Claims**



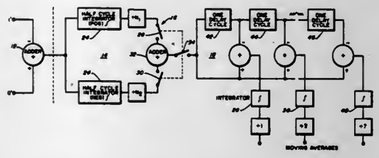
1. A binocular magneto-optic display comprising:
(a) a source producing a first beam of light;
(b) first polarizer means disposed in said first beam for polarizing the light of said first beam:
(c) first magneto-optic chip means disposed in said first beam after said first polarizer means for selectively altering the axis of polarization of said first beam passing through addressible areas of said first chip, said first chip including means adapted to be operably connected to a first display driver for addressing said addressible areas whereby said first chip can be driven to alter the axes of polarization of said areas as a function of a desired first display;
(d) first polarization analyzer means disposed in said first beam after said first chip means for blocking or passing portions of said first beam corresponding to respective ones of said areas through which they have passed as a function of said altering of the axes of polarization performed by said respective ones of said areas whereby said desired first display is imparted into first light beam;
(e) first beam splitter means disposed in said first beam for splitting said beam into first and second partial-intensity beams;
(f) focusing means disposed in said first and second partial-intensity beams for viewing said first display contained within said first and second partial-intensity beams; and,
(g) second beam splitter means disposed in said first and second partial-intensity beams after said focusing means whereby a viewer can look through said second beam splitter means and see said display superimposed on a normal field of vision.

4,575,723

FOLIAGE CLUTTER REJECTOR

Donald G. Turner, and R. David Pogge, both of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 16, 1982, Ser. No. 349,884
Int. Cl.⁴ G01S *13/52*
U.S. Cl. 343—7.7 **7 Claims**



1. A signal processing circuit for processing radar return signals to render them substantially independent of clutter caused by the presence of foliage in the target area comprising:
first circuit means for separately integrating each half of said signals,
second circuit means connected to said first circuit means for dividing each integrated half-cycle by the number of samples it contains to provide an average value of each half-cycle,
third circuit means connected to said second circuit means for summing the average values obtained at the end of each cycle to provide a single cycle bias, and
fourth circuit means connected to said third circuit means for integrating a predetermined number of said single cycle biases to provide an output signal that is substantially independent of clutter.

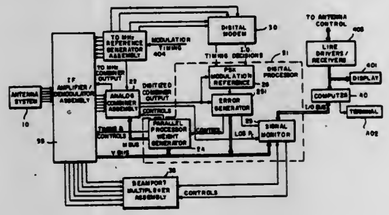
4,575,724

PARALLEL PROCESSOR CONFIGURATION FOR ADAPTIVE ANTENNA ARRAYS

Alan I. Wiener, Lexington, Mass., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 15, 1984, Ser. No. 640,904
Int. Cl.⁴ G01S *3/16, 3/28*
U.S. Cl. 343—383 **12 Claims**

1. A signal processing system receiving detected signals from the subarray sensors of an adaptive phased array and delivering to the array data processing system an output of weighted sensor signal, said weighted sensor signals having the signal components of multiple jamming sources in said detected signals nulled and maximizing the gain of desirable components of said detected signals, said signal processing system comprising:
a parallel analog combiner receiving said detected signals from said subarray sensors of an adaptive phased array, said parallel analog combiner applying a first set of output weights to each of said detected signals from each of said subarray sensors, and combining the resultant weighted analog signals into the combiner output signal, said parallel analog combiner producing said first set of output weights by combining a first set of output weight change values with its first set of old output weight values;
an error generator receiving said combiner output signal and one of said detected signals which is used as a reference signal and generating an error signal;
a parallel processor receiving said detected signals from said subarray sensor, said parallel processor producing a sec-



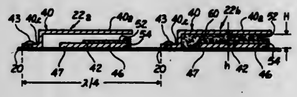
ond set of output weights to said detected signals and producing said output of weighted sensor signals to said array data processing system; said processing producing said second set of output weights by combining a second set of output weight change values with its second set of old output weight values; and
an algorithm circuit receiving said error signal from said error generator and said weighted output signals from said parallel processor and providing a first set of output weight change values to said parallel analog combiner, and a second set of output weight change values to said parallel processor.

4,575,725

DOUBLE TUNED, COUPLED MICROSTRIP ANTENNA

Carl P. Tresselt, Towson, Md., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Aug. 29, 1983, Ser. No. 527,139
Int. Cl.⁴ H01Q *1/38*
U.S. Cl. 343—700 MS **7 Claims**



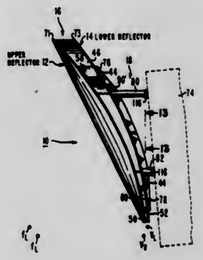
1. An antenna for radiating a signal in a range of frequencies having a predetermined center frequency comprising:
a ground plane conductor;
a microstrip resonator including shunt means for connecting a first end thereof to said ground plane conductor and a second end adapted to receive the signal; said resonator being resonate at a quarter wavelength of said predetermined center frequency,
a metal radiator having a radiating surface suspended above said resonator by a predetermined distance, said radiating surface, at one edge thereof, electrically connected to said ground plane conductor, said grounded edge being oriented so as to be on the opposite end generally from the shunt means to ground of said microstrip resonator, said radiator being resonate at substantially a quarter wavelength of said predetermined center frequency whereby the reactance at said second end of the resonator is of opposite sign to that of the reactance coupled in from said radiator at a plurality of frequencies in said range of frequencies.

4,575,726

ANTENNA CONSTRUCTION INCLUDING TWO SUPERIMPOSED POLARIZED PARABOLIC REFLECTORS

Raj N. Gounder, Robbinsville, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Aug. 16, 1982, Ser. No. 408,503
Int. Cl.⁴ H01Q *15/22, 15/16*
U.S. Cl. 343—756 **12 Claims**



1. An antenna construction comprising:
first and second electromagnetic wave reflectors spaced one over the other, each reflector comprising an array formed of a plurality of parallel, spaced, elongated electromagnetic wave reflecting elements, the elements of one array extending in a direction normal to the reflector elements of the other array, and an element support structure for supporting the elements of that reflector, each said element support structure comprising a member transparent to electromagnetic waves and having a shape conforming to that of its array of reflecting elements;
radiation transparent rib means secured to and between said support structures to form a sandwich construction with said support structures, whereby when a wave is applied through the first reflector to the second reflector, the linearly polarized component thereof reflected from the array of reflecting elements of said second reflector passes through the space occupied by the rib means, the element support structure of the first reflector, and the array of reflecting elements of the first reflector; and
said element support structures each have an annular peripheral edge, the edge of one structure being located over the edge of the other structure, said rib means including a first, outer annular rib joined to said two support structures at the region of the peripheral edges of the respective structures, and a second annular rib within and concenctric with said first annular rib and also joined to said two support structures, and a plurality of radially extending ribs between said first and second ribs also joined to said two support structures.

4,575,727

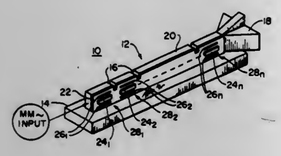
MONOLITHIC MILLIMETER-WAVE ELECTRONIC SCAN ANTENNA USING SCHOTTKY BARRIER CONTROL AND METHOD FOR MAKING SAME

Richard A. Stern, Allenwood, and Elio A. Mariani, Hamilton Square, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 20, 1983, Ser. No. 505,667
Int. Cl.⁴ H01Q *13/24*
U.S. Cl. 343—768 **12 Claims**

1. A monolithic, millimeter-wave electronic scan antenna comprising:

a longitudinal section of dielectric waveguide having a rectangular cross-section;
said waveguide having a semi-insulating dielectric core and a first semi-conducting epitaxial layer formed on a first side surface of said waveguide;
a plurality of first Schottky barrier electrode means, affixed to said first epitaxial layer, for varying the conductance of said first epitaxial layer;
a plurality of first ohmic contact means, affixed to said first epitaxial layer adjacent and associated with the Schottky barrier electrodes of said plurality of first Schottky barrier



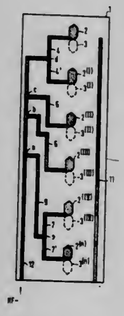
electrode means, for applying a bias voltage to vary the conductivity of said first epitaxial layer;
a plurality of periodic radiating slots formed in the upper surface of said waveguide;
means for applying millimeter wavelength travelling waves to one end of said waveguide; and
absorber means affixed to the other end of said waveguide;
whereby the varying of the conductivity of said first epitaxial layer causes said waveguide to alter the propagation characteristic of said travelling waves thereby creating a phase shift of said travelling waves which results in beam scanning by said antenna.

4,575,728

DIPOLE ARRAY WITH MEANS FOR COMPENSATING FEEDLINE PARASITIC CURRENTS

Michael Theobald, Ditzingen, and Gerhard Greving, Untergruppenbach, both of Fed. Rep. of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Mar. 4, 1983, Ser. No. 472,405
Claims priority, application Fed. Rep. of Germany, Mar. 11, 1982, 3208789
Int. Cl.⁴ H01Q *21/10*
U.S. Cl. 343—813 **4 Claims**



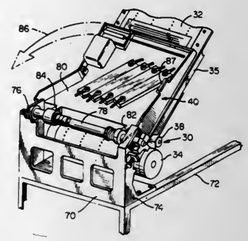
1. An antenna comprising
a substrate extending along a substrate plane;
an array of elongated dipoles provided on said substrate and arranged along an array axis that is substantially parallel to said substrate plane;
means for feeding electric excitation currents to said dipoles, said feeding means being provided on said substrate, extending substantially parallel to said substrate plane at one side of said array axis, and having portions substantially parallel to said array axis; and
means for compensating, at least to a large extent, for the influence of the flow of said electric excitation currents through said feeding means on the radiation pattern of said dipole for producing a final radiation pattern that is at least substantially circular in a plane perpendicular to said array axis, including at least one parasitic compensating radiator arranged on said substrate at said substrate plane and at the opposite side of said dipoles from and in substantial parallelism and alignment with said portions of said feeding means.

4,575,729

INK PRINTER PIVOTAL FRAME

Scott D. Ayers, Garland; John E. Comley, Plano; Ronald L. Hirt, Richardson, and Barry C. Kockler, Lewisville, all of Tex., assignors to The Mead Corporation, Dayton, Ohio

Filed Jun. 28, 1984, Ser. No. 625,418
Int. Cl.⁴ G01D *15/18*; B41J *1/22*
U.S. Cl. 346—75 **7 Claims**



1. In an apparatus for printing paper sheets having a frame, at least one print head for depositing ink upon the sheets, and tranport means supported by the frame for carrying the sheets past the print head along a generally planar paper path, the improvement comprising means for mounting the print head in a fixed but adjustable relationship with respect to the transport means, said mounting means including:
a shaft having first and second ends;
first rotational mounting means secured to said frame for rotatably supporting said first end of said shaft;
second rotational mounting means for rotatably supporting said second end of said shaft so that said shaft extends generally perpendicular to the paper path;
means for securing said second rotational mounting means to said frame;
a mounting plate having means for securing the print head thereto;
means for attaching said mounting plate to said shaft, whereby said mounting plate and the print head thereon are pivotable with said shaft from a normal position near the paper path to provide access to the path; and
stop means for limiting pivotal movement of said plate towards the paper path;
said means for securing said second rotational mounting means to said frame including means for enabling selective movement of said second rotational mounting means with respect to the frame in a direction parallel to the paper path, whereby the skew angle of said mounting plate and the print head with respect to the paper path may be adjusted.

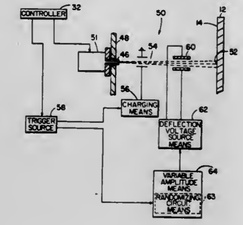
4,575,730

INK JET PRINTING RANDOMIZING DROPLET PLACEMENT APPARATUS

David J. Logan, Glastonbury, and Leonard G. Rich, West Hartford, both of Conn., assignors to Metromedia, Inc., Secaucus, N.J.

Filed Nov. 14, 1984, Ser. No. 671,291
Int. Cl.⁴ G01D *15/18*
U.S. Cl. 346—75 **13 Claims**





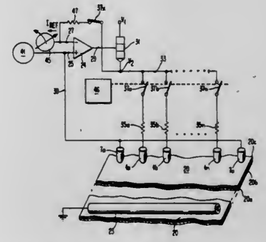
1. Ink jet printing apparatus including ink jet printing means and means for controlling and operating said ink jet printing means to apply or not apply dots to a plurality of dot positions located sequentially along a horizontal scan line scanned by said printing means, each of said dots having a higher density at its center than its periphery, said apparatus being characterized by:
flight path control means for vertically randomizing the flight paths of ink drops ejected from said printing means to print dots at positions randomly deviated vertically with respect to said line scanned by said printing means,
said flight path control means including, deflection plates for supporting a deflection field to deflect the flight path of an ejected ink drop passing therebetween, each of said ejected drops being subjected to said field for substantially the same amount of time;
deflection voltage source means coupled to said deflection plates to create an electric field between said plates, and
variable amplitude control means coupled to said deflection voltage source means, said voltage source means having circuit means for producing a randomly varying magnitude electric potential to produce a bipolar electric field having a randomly varying intensity the magnitude of which at each instant in time is related to the magnitude of said electrical potential to randomly deflect the ink drop flight path in a vertical direction generally perpendicular to the line of flight with respect to said scan line and within a predetermined range above and below said scan line, and at least some of said ink drop flight paths being different than other ink drop flight paths along said scan line so that dots associated with said at least some flight paths along one scan line overlap at least some of said dots located along another scan line immediately adjacent to said one scan line.

4,575,731

ELECTRO RESISTIVE PRINTHEAD DRIVE LEVEL SENSING AND CONTROL

Frank J. Horlander, Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 30, 1984, Ser. No. 666,414
Int. Cl.⁴ G01D *15/10*; B41J *3/20*
U.S. Cl. 346—76 PH **6 Claims**



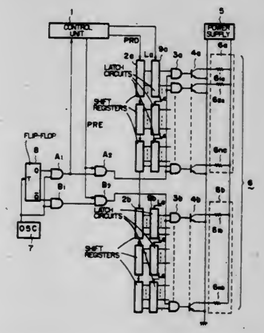
1. A printhead supporting electrodes including a plurality of printing electrodes for carrying driving current for printing, said printhead having integrally therein at least one sensing electrode for sensing voltage on a ribbon being printed from by said printing electrodes, each said sensing electrode being separated from said printing electrodes and connected to an electrical control circuit for setting the level of drive current to said printing electrodes.

4,575,732

THERMAL PRINTER

Takashi Kitaoka, Ohtsu, Japan, assignor to Kabushiki Kaisha Ishida Koki Seisakusho, Kyoto, Japan

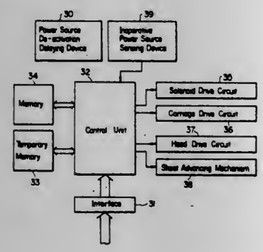
Filed Sep. 28, 1984, Ser. No. 655,570
Claims priority, application Japan, Sep. 30, 1983, 58-182575
Int. Cl.⁴ B41J *3/20*
U.S. Cl. 346—76 PH **2 Claims**



1. A printer for printing on a recording medium by controlling the supply of electric power to a heating head, comprising:
a heating head equipped with first and second heating element groups each heating element group having a plurality of heating elements;
a control unit for producing print data to be printed by said heating head, a latch pulse and a print enable signal;
a plurality of shift registers, operatively connected to respective ones of said heating elements, for storing print data produced by said control unit;

a plurality of latch circuits, operatively connected to respective ones of said shift registers and responsive to the latch pulse, for latching the print data stored by said shift registers;
a plurality of switch elements operatively connected between respective ones of said latch circuits and said heating elements;
a flip-flop for alternately producing first and second signals;
logic circuitry operable when the print enable signal is produced, to apply, in response to the first signal from the flip-flop, output signals from the latch circuits corresponding to said first heating element group to switching elements, for driving said first heating element group, and to apply, in response to a second signal from the flip-flop, output signals from the latch circuits corresponding to said second heating element group to switching elements, for driving said second heating element group.

4,575,733
THERMAL PRINTER
Shigenori Hattori, Oharucho; Hideo Ueno, Nagoya, and Toyohisa Uchida, Yokkaichi, all of Japan, assignors to Brother Industries, Ltd., Magoya, Japan
Filed Nov. 21, 1984, Ser. No. 673,564
Claims priority, application Japan, Nov. 25, 1983, 58-223026
Int. Cl.⁴ B41J *19/00*
U.S. Cl. 346—76 PH **8 Claims**



1. A thermal printer comprising:
first holding means for holding a thermal head in an inoperative position in which it is away from a printing sheet when the printing sheet is advanced;
second holding means for holding the thermal head in an operative position in which is presses against the printing sheet when a printing operation is performed; and
actuating means operative to move the thermal head between the inoperative position and operative position;
a switch for turning on and off a power source;
battery means capable of storing an electric charge when the power source is turned on; and
a control unit for causing the battery means to render the actuating means operative to move the thermal head from the operative position to the inoperative position when the power source is turned off.

4,575,734
THERMOSENSITIVE IMAGE TRANSFER MEDIUM
Norio Kurisu, Numazu, and Keishi Kubo, Yokohama, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan
Filed Jul. 27, 1983, Ser. No. 517,874
Claims priority, application Japan, Aug. 19, 1982, 57-143668; Aug. 19, 1982, 57-143669
Int. Cl.⁴ B41M *5/22*
U.S. Cl. 346—208 **17 Claims**

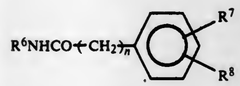
1. A thermosensitive image transfer medium comprising:
an image transfer sheet having an image transfer layer which comprises as the main component a leuco dye; and
an acceptor sheet having an acceptor layer which comprises as the main component a coloring agent, which coloring agent has a melting point of not higher than 200° C. and induces color formation in said leuco dye, and only one of said image transfer layer and said acceptor layer further contains at least one image transfer auxiliary agent for facilitating image formation selected from the group consisting of:
(1) N-substituted acid amides of the formula (I)


(I)

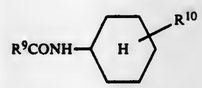
wherein R^1 represents an alkyl group having 10 to 30 carbon atoms, and R^2 represents an alkyl group having 1 to 30 carbon atoms;
(2) N-substituted acid amides of the formula (II)


(II)

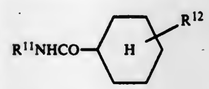
wherein R^3 represents an alkyl group having 10 to 30 carbon atoms, and R^4 and R^5 each represent hydrogen or a lower alkyl group;
(3) N-substituted acid amides of the formula (III)


(III)

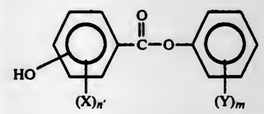
wherein R^6 represents an alkyl group having 1 to 30 carbon atoms, R^7 and R^8 each represent hydrogen, halogen, a lower alkyl group or a lower alkoxy group, and n is an integer of 0 or 1;
(4) N-substituted acid amides of the formula (IV)


(IV)

wherein R^9 represents an alkyl group having 1 to 30 carbon atmos, or a substituted or unsubstituted aryl group, and R^{10} represents hydrogen, halogen or a lower alkyl group;
(5) N-substituted acid amides of the formula (V)

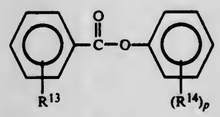

(V)

wherein R^{11} represents an alkyl group or alkenyl group having 1 to 30 carbon atoms, and R^{12} represents hydrogen, halogen or a lower alkyl group;
(6) esters of the formula (VI)

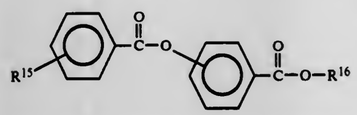

(VI)

wherein X represents halogen, and Y represents propenyl, an alkyl group or alkoxy group having 1 to 30 carbon atoms, halogen, a substituted or unsubstituted aryl group of aralkyl group, a substituted or unsubstituted aryloxy or aralkyloxy group, a carbosyl group or a hydroxyl group,

n' is an ingeter of 0, 1, 2 3 or 3; and m is an integer of 1, 2 or 3;
(7) esters of the formula (VII)

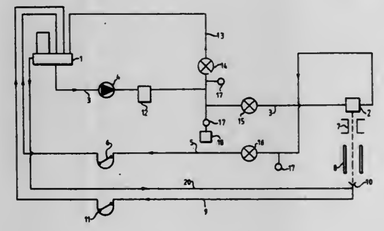

(VII)

wherein R^{13} represents hydrogen, an alkyl group or alkoxy group having 1 to 30 carbon atoms, halogen, a nitro group, a nitrile group, an acyloxy group, a substituted or unsubstituted aryl group or aralkyl group, or a substituted or unsubstituted aryloxy or aralkyloxy group, R^{14} represents hydrogen, an alkyl group of alkoxy group having 1 to 30 carbon atoms, halogen, a nitro group, a nitrile group, an acyloxy group, a substituted or unsubstituted aryl group or aralkyl group, a substituted or unsubstituted aryloxy group or aralkyloxy group, or an acyl group, and p is an integer of 1, 2, or 3; and
(8) esters of the formula (VIII)


(VIII)

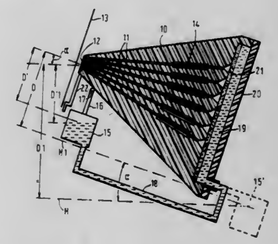
wherein R^{15} represents hydrogen, an alkyl group or alkoxy group having 1 to 30 carbon atoms, or halogen, and R^{16} represents an alkyl group or alkenyl group having 1 to 30 carbon atoms, or a substituted or unsubstituted aryl group or aralkyl group.

4,575,735
DROPLET DEPOSITING VISCOSITY LINE-PRESSURE SENSING CONTROL FOR FLUID RE-SUPPLY
Hillar Weinberg, Girton, England, assignor to Willett International Limited, Slough, England
Filed Apr. 19, 1984, Ser. No. 601,842
Claims priority, application United Kingdom, Feb. 4, 1983, 8310711
Int. Cl.⁴ G01D *15/18*; B65D *83/14*
U.S. Cl. 346—1.1 **6 Claims**



1. In a method for applying an ink composition comprising a carrier medium to a substrate using a droplet depositing apparatus in which the ink is ejected through a nozzle as a jet of fluid, the jet is broken up into substantially uniformly sized droplets by the application of vibration to the ink, the droplets are given an electrical charge by means of a charge electrode, the charged droplets are passed through an electric field whereby they are deflected to a desired extent so as selectively to fall upon a substrate to form a symbol thereon and into a catching means from which the ink is recycled for re-use, and the viscosity of the recycled ink is monitored and carrier medium for the ink is added to the ink to return the liquid content of the ink composition to a desired valud, the improvement comprising:
pumping the ink composition by means of a variable flow pump through a circulation system of the apparatus containing a valve; and
monitoring the viscosity of the ink by determining the difference in pressure within a section of said circulation system between when said valve is closed and when said valve is open, said difference in pressure being a function of the amount of said carrier medium to be added.

4,575,736
PRINT HEAD FOR A DOT MATRIX INK PRINTER
Rolf Röschlein, and Heinz Schulte, both of Paderborn-Sande, Fed. Rep. of Germany, assignors to Nixdorf Computer AG, Fed. Rep. of Germany
Filed Apr. 9, 1984, Ser. No. 598,517
Claims priority, application Fed. Rep. of Germany, Apr. 12, 1983, 3313142
Int. Cl.⁴ G01D *15/16*
U.S. Cl. 346—140 R **7 Claims**



1. Printing apparatus of the type which includes a body forming an ink duct having an input end and outlet end, an ink driver associated with said duct and selectively actuable to cause ink to be emitted from said outlet end, wherein the improvement comprises:
an ink reservoir;
pivot means connecting said reservoir to said body proximate the outlet of said duct and operative to maintain the inclination of the reservoir regardless of variations, at least within a certain range, in the inclination of said body; and
means connecting said reservoir to said input end of said duct.

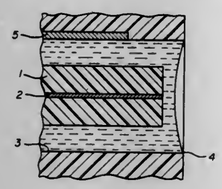
4,575,737
DEVICE FOR PROJECTING DROPLETS OF AN ELECTRICALLY CONDUCTING LIQUID
Jacques Vermot-Gaud, Perly, and Pierre Genequand, Petit Saconnex, both of Switzerland, assignors to Battelle Memorial Institute, Carouge/Geneve, Switzerland
PCT No. PCT/CH83/00110, § 371 Date Jun. 7, 1984, § 102(e) Date Jun. 7, 1984, PCT Pub. No. WO84/01544, PCT Pub. Date Apr. 26, 1984
PCT Filed Oct. 5, 1983, Ser. No. 619,557
Claims priority, application Switzerland, Oct. 8, 1982, 5914/82
Int. Cl.⁴ G01D *15/16*
U.S. Cl. 346—140 R **5 Claims**

1. A nozzle-less device for the projection of drops of an electrically conducting liquid onto a substrate, said device comprising:
an electrically insulating support;
at least one first electrode in said support having a surface flush with the surface of said support and of a diameter of

the same order of magnitude as the diameter of drops to be projected from said device;

means for applying said liquid as a layer over said surfaces in a thickness such that drops are generated solely by electrical activation of the device; and

a source of intermittent current having a pole connected to



said first electrode and another pole connected to a second electrode in contact with said liquid layer for electrically activating said device exclusively between said electrodes whereby the electrical field created to generate droplets at said surface of said first electrode is concentrated at its surface and extends between said first electrode and said second electrode.

4,575,738

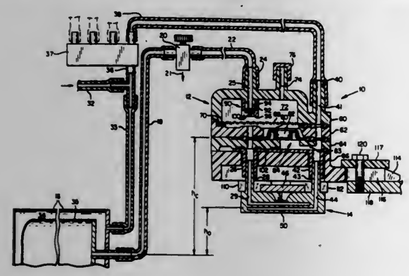
INK JET PRINTING APPARATUS HAVING AN INK PRESSURE TRANSIENT SUPPRESSOR SYSTEM

Edward L. Sheufelt, Tigard; David B. Kreitlow, Portland, both of Oreg., and Jeffrey M. Hall, Walnut Creek, Calif., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Jul. 20, 1984, Ser. No. 633,159

Int. Cl.[4] G01D *15/18*

U.S. Cl. 346—140 R **20 Claims**



1. Ink drop generating apparatus for printing on a medium with ink, comprising:

a body;

ink jet print head means mounted to the body, the ink jet print head means having an ink receiving port and an outlet orifice through which ink drops are delivered to the print medium;

the body having an upstream ink receiving inlet and defining an ink flow passageway through which ink is delivered from the ink receiving inlet downstream to the ink receiving port of the ink jet print head means; and

ink pressure transient suppression means within the body for attenuating ink pressure transients so as to inhibit the ingestion of air and the formation of an ink flow blocking air bubble within the ink jet print head means.

4,575,739

RECORDING APPARATUS

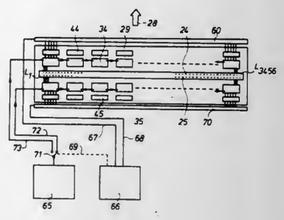
Lucien A. De Schamphelaere, Edegem; Freddy M. Librecht, Boechout; Willy F. Van Peteghem, Berchem, and Etienne M. De Cock, Edegem, all of Belgium, assignors to AGFA-Gevaert, N.V., Mortsel, Belgium

Filed Oct. 26, 1984, Ser. No. 665,521

Claims priority, application European Pat. Off., Nov. 1, 1983, 83201561.4

Int. Cl.[4] B41B *13/00*

U.S. Cl. 346—160 **5 Claims**



1. A recording appratus for linewise recording information on a moving photoreceptor, said apparatus comprising a recording head with a multiplicity of individually addressable and energisable point-like radiation sources arranged in staggered parallel rows for irradiating points across a photoreceptor during movement thereof relative to and in a direction normal to said rows, and driver circuits for simultaneously energising the radiation sources of each row responsive to respective data bit input signals serially applied to said driver circuits during an information line period, there being delay means for delaying energisation of the radiation sources of a first said row relative to the energisation of the sources of a second said row thereby to compensate for the distance between such rows, characterised in that

the said driver circuits are provided with means which restricts the individual line exposure times for which the radiation sources of each row are energised, to a value less than one line period;

the apparatus includes speed monitor means for monitoring the speed of a said photoreceptor and yielding output signals indicative of photoreceptor speed variations;

there is trigger means effective for initiating the energisation period of each of said rows of radiation sources, by the respective received energising signals, at a moment subsequent to the commencement of one line period; and

said trigger means is responsive to said output signals from said speed monitor means so that the moment of initiation of the energisation period of said first row of radiation sources by data bit signals pertaining to an information line is automatically determined in dependence on any change in the photoreceptor speed subsequent to the energisation of said second row of radiation sources by their data bit signals pertaining to that same information line, thereby to achieve transverse alignment of the projected information line points on the photoreceptor.

4,575,740

TRANSISTOR CIRCUIT FOR REDUCING CURRENT AFTER IGNITION IN A METAL PAPER PRINTER

Gottfried Goldrian, Boeblingen, and Volker Rudolph, Aidlingen, both of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

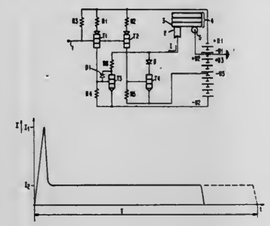
Filed Mar. 21, 1983, Ser. No. 477,559

Claims priority, application European Pat. Off., Mar. 25, 1982, 82102519.4

Int. Cl.[4] G01D *15/08*

U.S. Cl. 346—163 **2 Claims**

1. A transistor circuit for switching print current in a metal paper printer having a print-electrode igniting an arc and for automatically reducing the print current after ignition of the arc, characterized in that two transistor power stages are connected to the print electrode and to operating voltage sources of different magnitude with the magnitude of the operating



voltage of the second transistor power stage chosen such that the second transistor power stage, as a result of a drop in potential occurring at it upon ignition of the arc between the metal layer of the record carrier and the print electrode, no longer contributes to the print current.

4,575,741

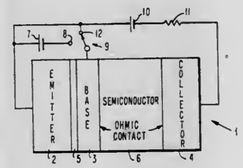
CRYOGENIC TRANSISTOR WITH A SUPERCONDUCTING BASE AND A SEMICONDUCTOR-ISOLATED COLLECTOR

David J. Frank, Ossining, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 26, 1984, Ser. No. 604,183

Int. Cl.[4] H01L *49/02, 39/22, 23/48*

U.S. Cl. 357—6 **30 Claims**



1. A superconducting transistor comprising:

a layer of superconductive material,

a layer of conductive material,

means disposed between said layers for controlling the flow between said layers of quasiparticles which are generated in said layer of superconductive material and for simultaneously inhibiting the tunnelling of Cooper pairs and the flow of carriers from said layer of conductive material to said layer of superconductive material,

said layer of superconductor material and said layer of conductive material being connected to said means for controlling and inhibiting by means of ohmic contacts.

4,575,742

EPITAXIAL WAFER FOR USE IN THE PRODUCTION OF AN INFRARED LED

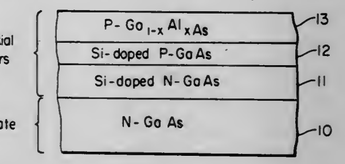
Yasuji Kohashi, Tsuchiura, and Yoshinobu Tsujikawa, Kyoto, both of Japan, assignors to Mitsubishi Monsanto Chemical Co., Ltd., Tokyo, Japan

Filed Dec. 27, 1983, Ser. No. 565,623

Claims priority, application Japan, Dec. 27, 1982, 57-232210; Mar. 17, 1983, 58-45094

Int. Cl.[4] H01L *33/00;* **H01S** *3/19*

U.S. Cl. 357—17 **6 Claims**



1. In an infrared light-emitting diode, an epitaxial wafer comprising:

a single crystalline semiconductor substrate consisting of N-type GaAs;

an N-type GaAs epitaxial layer consisting of N-type GaAs doped with Si, formed on said single crystalline semiconductor substrate, and having a thickness of from 20 μm to 100 μm and a carrier concentration in the range of from $1.0\times10^{17}.cm^{-3}$ to $2.0\times10^{18}.cm^{-3}$;

a P-type GaAs epitaxial layer consisting of P-type GaAs doped with Si, formed on said N-type GaAs epitaxial layer, and having a thickness of from 10 μm to 80 μm and a carrier concentration in the range of from $1.0\times10^{17}.cm^{-3}$ to $5.0\times10^{18}.cm^{-3}$; and

a mixed crystal layer consisting of P-type $Ga_{1-x}Al_xAs$ with a mixed crystal ratio "x", formed on said P-type GaAs epitaxial layer, and having a thickness of from 5 μm to 90 μm and a carrier concentration of from $1.0\times10^{17}.cm^{-3}$ to $5.0\times10^{18}.cm^{-3}$, the mixed crystal ratio of $Ga_{1-x}Al_xAs$ being in the range of from 0.03 to 0.8 at least in a region of the mixed crystal layer, which is at least 2 μm thick when measured from the interface between said mixed crystal layer and said P-type GaAs epitaxial layer.

4,575,743

DOUBLE LAYER ROM INTEGRATED CIRCUIT

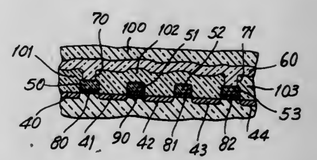
Masami Hashimoto, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Apr. 26, 1983, Ser. No. 488,841

Claims priority, application Japan, Apr. 27, 1982, 57-70960

Int. Cl.[4] H01L *29/04, 29/78;* **G11C** *11/40*

U.S. Cl. 357—23.12 **11 Claims**



1. A double layer ROM integrated circuit comprising: a first ROM formed of a matrix of transistors, the source, drain and gate electrodes of the transistors being formed of one of P-type and N-type polycrystalline silicon; and a second ROM formed of a matrix of diodes, the diodes being formed by a junction between P-type and N-type polycrystalline silicon regions, the gate electrodes of the transistors in the first ROM being one of

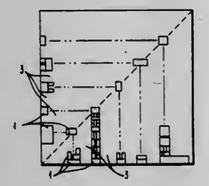
the polycrystalline silicon regions forming each of the diodes in the second ROM.

4,575,744

INTERCONNECTION OF ELEMENTS ON INTEGRATED CIRCUIT SUBSTRATE

Luther B. Caldwell, Charlotte, N.C.; Michael F. Crocetti, Lexington, Ky., and Bradford Dunham, White Plains, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 16, 1983, Ser. No. 533,383
Int. Cl.⁴ H01L *27/10, 23/52, 29/52*
U.S. Cl. 357—45 **24 Claims**



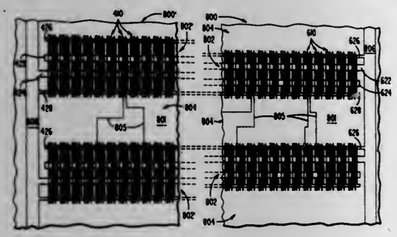
1. A solid state integrated circuit having circuit elements in adjoining cells and first and second spaced levels of conductive lines formed on said integrated circuit for interconnecting said cells, and said cells being primarily interconnected by generally concentric conductive lines on said second level which have at least one turn and by generally straight conductive lines on said first level connected to said conductive lines on said second level.

4,575,745

TAILORABLE STANDARD CELLS AND METHOD FOR TAILORING THE PERFORMANCE OF IC DESIGNS

Shanti S. Sharma, Maple Shade, and Fred Borgini, Haddonfield, both of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Jun. 21, 1983, Ser. No. 506,379
Int. Cl.⁴ H01L *27/10, 23/50*
U.S. Cl. 357—45 **4 Claims**



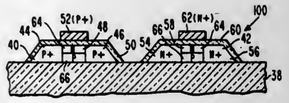
1. A semiconductor integrated circuit (IC) comprising:
a plurality of parallel, first-direction-extending cell rows each comprised of a plurality of cells;
each of said plurality of cells including active semiconductor devices;
a plurality of wiring corridors extending parallel to said cell rows, interleaved with said cell rows and spacing said cell rows apart in a second direction perpendicular to said first direction, said wiring corridors being substantially free of active devices and containing conductors which interconnect various ones of said cells to form the logic circuit of said IC, said cell rows themselves being free of such wiring corridors;
each of said cell rows having a first first-direction-extending power bus for providing power to said active devices within the cells of said row, said first power bus having first and second substantially parallel segments each extending along said cell row in said first direction and spaced from each other in said second direction and connected to a first common supply bus, at least said first segment overlying some of said active devices within said cell row;
each of said cell rows having a second first-direction-extending power bus for providing power to said active devices within the cells of said row, said second power bus having first and second substantially parallel segments each extending along said cell row in said first direction and spaced from each other in said second direction and connected to a second common supply bus, at least said first segment of said second power bus overlying said active devices within said cell row; and wherein
all of the within-the-cell contacts to active devices in each of said cell rows are located between said second segment of said first bus and said second segment of said second bus.

4,575,746

CROSSUNDERS FOR HIGH DENSITY SOS INTEGRATED CIRCUITS

Andrew G. F. Dingwall, Bridgewater, N.J., assignor to RCA Corporation, Princeton, N.J.

Continuation of Ser. No. 556,051, Nov. 28, 1983, abandoned, which is a continuation of Ser. No. 396,625, Jul. 9, 1982, abandoned, which is a continuation of Ser. No. 245,653, Mar. 20, 1981, abandoned, which is a continuation of Ser. No. 68,148, Aug. 20, 1979, abandoned. This application Mar. 18, 1985, Ser. No. 712,479
Int. Cl.⁴ H01L *27/12, 27/02*
U.S. Cl. 357—49 **6 Claims**



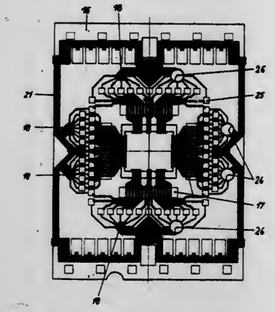
1. An integrated circuit including a universal crossunder comprising:
(a) a substrate of an insulating material;
(b) at least two islands of a layer of single crystal semiconductor material disposed on said substrate;
(c) each of said islands including therein a pair of separate spaced regions of the same conductivity type with the regions on one of said islands being of one conductivity type and the regions in the other island being of the opposite conductivity type,
(d) a portion of the semiconductor layer lying between said pair of spaced regions in each island, said portion being comprised of a first layer of one conductivity type and a second layer overlying said first layer, said second layer being opposite in conductivity type to said first layer, each of said layers having an impurity concentration of at least 10^{18} atoms/cm^3, and each of said layers contacting each of said spaced regions whereby one of said layers of said portion ohmically connects said pair of spaced regions together; and
(e) a conductive gate line extending over and insulated from the portion of each of said islands.

4,575,747

DEVICE FOR PROTECTING FILM-MOUNTED INTEGRATED CIRCUITS AGAINST DESTRUCTION DUE TO ELECTROSTATIC CHARGES

Otmar Fritz, Neukeferloh, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 18, 1983, Ser. No. 524,442
Claims priority, application Fed. Rep. of Germany, Sep. 20, 1982, 3234745
Int. Cl.⁴ H01L *23/50, 23/32;* H03F *1/52*
U.S. Cl. 357—70 **11 Claims**



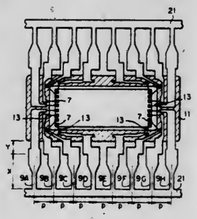
1. A device for protecting film-mounted integrated circuits (micropacks) against disruption due to electrostatic charging wherein said micropacks have outer track conductive structures, comprising:
a mounting frame having a central opening for receiving said micropack in a freely accessible manner and a plurality of retaining means engagable with said micropack for fixing the position and flatness of said micropack, and;
a short-circuit frame having disengagable and reengagable locking means for securing said short-circuit frame to said mounting frame and planar short-circuit regions aligned to contact said outer track structures of said micropack when said micropack is received in said mounting frame and said short-circuit frame is secured to said mounting frame.

4,575,748

SEMICONDUCTOR DEVICE

Kazuo Terui, Kawasaki; Rikio Sugiura, Sagamihara, and Takehisa Sugawara, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 23, 1983, Ser. No. 564,711
Claims priority, application Japan, Dec. 29, 1982, 57-231631
Int. Cl.⁴ H01L *23/02, 23/12*
U.S. Cl. 357—74 **5 Claims**



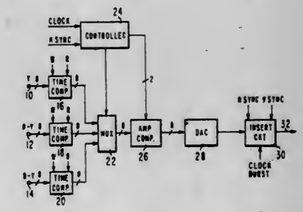
1. A semiconductor device that minimizes the area utilized as the base margin, comprising:
a semiconductor chip having a plurality of bonding pads;
means for enclosing the chip, including a base portion for holding the chip and a base margin around the periphery of the base portion; and
a plurality of lead terminals, each lead terminal including
a connector pad lying on the base margin adjacent to the corresponding bonding pad of the chip and connected to the corresponding bonding pad by a connecting wire,
a connector leg having first, second and intermediate portions, the center lines of the second portions of the connector legs being spaced at a constant pitch from one another, the first portion connecting the intermediate portion to the connector pad, and the first portion of the connector leg of at least one of the lead terminals being off-center from the second portion of the connector leg.

4,575,749

COMPONENT COMPANDING IN A MULTIPLEXED COMPONENT SYSTEM

Alfonse A. Acampora, Staten Island, N.Y., and Richard M. Bunting, Cranbury, N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Jul. 28, 1983, Ser. No. 518,087
Int. Cl.⁴ A04N *9/68*
U.S. Cl. 358—27 **9 Claims**



1. A method for transmitting luminance and chroma component signals of a color video signal and for reducing the effect of noise on the transmitted signals, said method comprising amplitude compressing said component signals using different compression laws for said luminance component signal and for said chroma component signals, and wherein:
said compression law for said luminance component signal is a non-symmetrical function of the amplitude of said luminance component signal and wherein
said compression law for said chrominance component signal is a symmetrical function of the amplitude of said chrominance component signal.

4,575,750

COMMUNICATIONS APPARATUS FOR USE WITH CABLE TELEVISION SYSTEMS

Marty Callahan, Box 117, Greeley, Nebr. 68842

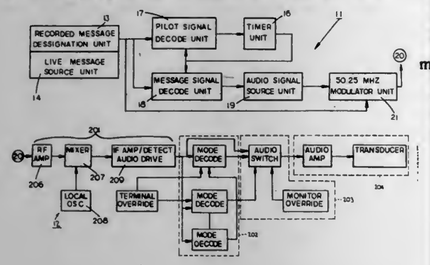
Filed May 31, 1984, Ser. No. 615,986
Int. Cl.⁴ H04B *7/00;* H04N *7/10*
U.S. Cl. 358—86 **7 Claims**

1. A communications apparatus for use with a cable television system, the apparatus comprising:
(a) transmission means for originating a message and transmitting said message through at least a portion of said cable television system, said transmission means including:
(i) audio signal source means for providing at least one audio signal message to serve as the originated message wherein said audio signal message comprises at least one recorded message;
(ii) modulator means for receiving said audio signal message and for converting said audio signal message into a radio frequency signal that may be broadcast through

said cable television system without interferring with any signals ordinarily broadcast therethrough;

(iii) recorded message designation means for generating a code signal that designates a particular recorded message that is to be transmitted by said transmission means through said cable television systems; and

(iv) message signal decode means for receiving said coded signal from said recorded message designation means to at least partially decode said coded signal and for generating an enable signal in response thereto; wherein said audio signal source means is responsive to said message signal decode means such that said enable signal from said message signal decode means will cause said audio



signal source means to provide a particular recorded message as designated by said recorded message designation means; and

(b) receiver means for receiving said radio frequency signal and for rendering said audio signal message audible, said receiver means including:

(i) demodulation means for receiving said radio frequency signal and for converting said radio frequency signal into an audio frequency signal; and

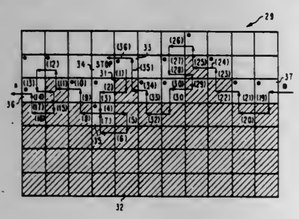
(ii) transducer means for rendering said audio frequency signal audible without use of any transducer elements that are otherwise ordinarily connected to said cable television system, such as television speakers.

4,575,751

METHOD AND SUBSYSTEM FOR PLOTTING THE PERIMETER OF AN OBJECT

Robert A. Duschl, Lancaster, Pa., assignor to RCA Corporation, Princeton, N.J.

Filed Nov. 15, 1983, Ser. No. 551,920
Int. Cl.⁴ H04N *7/18*
U.S. Cl. 358—106 **14 Claims**



1. In a system for inspecting objects using a charge coupled device having a plurality of pixels and a central processing unit, the improvement comprising:

a subsystem for detecting and plotting the perimeters of said objects irrespective of the size and orientation of said objects including:

means for sequentially detecting the charge level on adjacent pixels in a substantially straight line of said charge coupled device until said charge level changes from a first level to a second level for a preselected number of consecutive pixels;

means for backing up said detection for said preselected number of pixels and recording the address of the pixel preceeding the pixel where said charge level change occurs as a start pixel address;

means for sequentially detecting the charge level on individual adjacent first and second pixels, the second detection occurring on a second pixel disposed from said first pixel in one direction when the level of said first pixel is said first level and the second detection occurring on a second pixel displaced from said first pixel in an opposite direction when the level of said first pixel is said second level; and

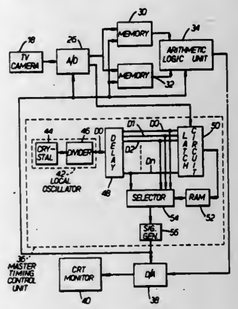
means for storing the address of said second pixel when said second pixel energy level is said first level, and for storing the address of said first pixel when said second pixel energy level is said second level.

4,575,752

DIAGNOSTIC X-RAY APPARATUS HAVING A MASTER TIMING CONTROL UNIT

Michitaka Honda, 1376-1 Shimoishigami, Otawara-shi, Tochigi-ken, Japan

Filed Jun. 10, 1983, Ser. No. 502,951
Claims priority, application Japan, Jun. 17, 1982, 57-103027
Int. Cl.⁴ H04N *5/32*
U.S. Cl. 358—111 **7 Claims**



1. Apparatus for generating an output timing signal synchronized with a video signal including repetitively occurring sync pulses comprising in combination:

timing means for generating a plurality of pulse trains offset in phase from one another;

digital signal generating means producing at its output a sequence of digital control signals containing data indicative of the timing of the signal transitions occurring in said pulse trains;

output means for selecting one of said pulse trains and supplying it as said output timing signal; and

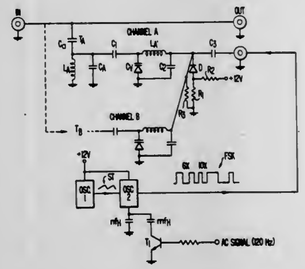
control means including sampling means responsive to said video signal for controlling said output means to select one of said pulse trains in response to the data contained in a digital control signal which is selected by said sampling means, the latter operating to select said digital control signal in response to detection of a sync pulse in said video signal.

4,575,753

METHOD OF AND APPARATUS FOR SCRAMBLING AND DECODING TELEVISION AND SIMILAR SIGNALS WITH WOBBULATING TRAPPING

Kantilal Mistry, Freehold, and Isaac S. Blonder, Morganville, both of N.J., assignors to Blonder-Tongue Laboratories, Inc., Old Bridge, N.J.

Filed Oct. 28, 1983, Ser. No. 546,320
Int. Cl.⁴ H04K *1/02*; H04N *7/167*
U.S. Cl. 358—118 **6 Claims**



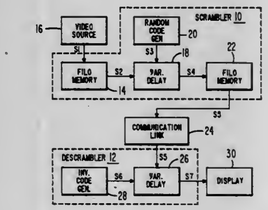
1. A method of scrambling television channel and similar signals having visual carrier and horizontal synchronizing frequencies, that comprises, trapping the visual carrier frequency with narrow band and shallow attenuation of itself ineffective for satisfactory visual signal scrambling, wobbulating the trapping back and forth on one side only of the carrier frequency, and alternately effecting the wobbulating at different frequencies that are different multiples of the said horizontal synchronizing frequency to effect satisfactory signal scrambling without adjacent channel interference.

4,575,754

VIDEO SCRAMBLER SYSTEM

Meir Bar-Zohar, Lawrenceville, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Jan. 6, 1983, Ser. No. 456,308
Int. Cl.⁴ H04N *7/167*
U.S. Cl. 358—119 **10 Claims**



1. Apparatus for scrambling an input signal, comprising:

(a) first memory means of the first-in last-out type for storing said input signal in blocks of sequentially ordered segments and for recovering the stored segments of each block in reverse order to provide a first output signal;

(b) a source for providing a predetermined code;

(c) second memory means for imparting variable delay to selected ones of the reverse ordered segments of each block of said first output signal in accordance with said code to provide a second output signal in which the reverse ordered segments of each block are interchanged in response to said code; and

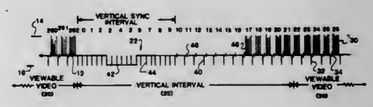
(d) third memory means of the first-in last-out type for reversing the segment sequence of each block of said second output signal to provide a scrambled output signal in which the segments of each block are reversed in sequence, interchanged in response to said code and again reversed in sequence.

4,575,755

VIDEO ENCODER/DECODER SYSTEM

Carl F. Schoeneberger; Allan B. Bundens, both of Carrollton; Richard A. Blake, Garland, and Richard M. Fogle, Bedford, all of Tex., assignors to Tocom, Inc., Irving, Tex.

Filed Dec. 14, 1982, Ser. No. 449,985
Int. Cl.⁴ H04N *7/167*
U.S. Cl. 358—120 **53 Claims**



1. A video encoder system for processing a video signal on an input terminal having alternate video portions and vertical interval portions, each video portion including video data and horizontal sync pulses, to provide a scrambled video signal on an output terminal, comprising:

first encoder means for inverting a plurality of the horizontal sync pulses in a first section of said video signal, said first section including at least part of the video portion and excluding at least part of the vertical interval portion;

second encoder means for reducing the amplitude of each said inverted horizontal sync pulses in said first section; and

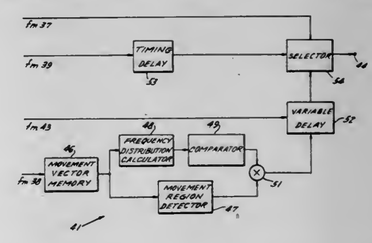
scrambling means for generating a scrambled video signal having said first section of said video signal which has been processed by said first and second encoder means and a second section of said video signal, being that portion of the video signal which has not been processed by said first and second encoder means.

4,575,756

DECODER FOR A FRAME OR FIELD SKIPPED TV SIGNAL WITH A REPRESENTATIVE MOVEMENT VECTOR USED FOR INDIVIDUAL VECTORS

Akihiro Furukawa, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Jul. 25, 1984, Ser. No. 634,126
Claims priority, application Japan, Jul. 26, 1983, 58-136127; Oct. 14, 1983, 58-191868
Int. Cl.⁴ H04N *7/12*
U.S. Cl. 358—136 **7 Claims**



1. A decoder with interpolation of each skipped instantaneous picture which is skipped in a moving picture signal between a preceding and a succeeding instantaneous picture, each of said skipped, said preceding, and said succeeding in-

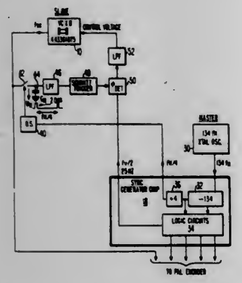
stantaneous pictures comprising a predetermined number of picture blocks, said moving picture signal comprising a movement vector signal representative of individual movement vectors each of which represents movement of a moving body between two corresponding picture blocks in said preceding and said succeeding instantaneous pictures, said decoder including vector reproducing means responsive to said moving picture signal for reproducing said individual movement vectors as reproduced movement vectors, wherein the improvement comprises region detecting means responsive to said moving picture signal for detecting a movement region comprising said moving body in one of said preceding and said succeeding instantaneous pictures, vector selecting means responsive to said reproduced movement vectors and with reference to said movement region for selecting that one of said reproduced movement vectors as a representative movement vector which is representative of the reproduced movement vectors in said movement region, and interpolating means responsive to said movement region and said representative movement vector for interpolating said movement in said skipped instantaneous picture.

4,575,757

PAL OFFSET GENERATOR

Felix Aschwanden, Thalwil, Switzerland, assignor to RCA Corporation, Princeton, N.J.

Filed Apr. 22, 1983, Ser. No. 487,861
Int. Cl.⁴ H04N *5/06*
U.S. Cl. 358—150 **9 Claims**



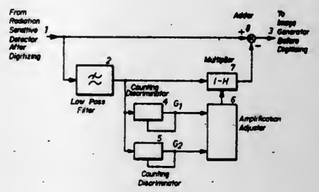
1. Apparatus comprising:
a master oscillator;
a sync generator having an input coupled to said master oscillator, a first output for providing a sampling signal, and a second output providing a one-half vertical frequency signal;
a slave television color subcarrier frequency oscillator;
a sampling means coupled to said slave oscillator and to said first output;
a phase detector having inputs respectively coupled to said sampling means and to said second output, and an output coupled to said slave oscillator for frequency control thereof;
whereby the frequency of said slave oscillator has a one-half vertical frequency offset.

4,575,758

METHOD OF DISPLAYING ON A VIEWING SCREEN THE OUTPUT SIGNALS FROM A DETECTOR SENSITIVE TO RADIATION

Eskel Egeröd, Mölndal, and Lars Y. A. Yngvesson, Växjö, both of Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

PCT No. PCT/SE82/00132, § 371 Date Dec. 6, 1982, § 102(e) Date Dec. 6, 1982, PCT Pub. No. WO82/03959, PCT Pub. Date Nov. 11, 1982
PCT Filed Apr. 23, 1982, Ser. No. 448,905
Claims priority, application Sweden, May 5, 1981, 8102799
Int. Cl.⁴ H04N *5/14*
U.S. Cl. 358—166 **6 Claims**



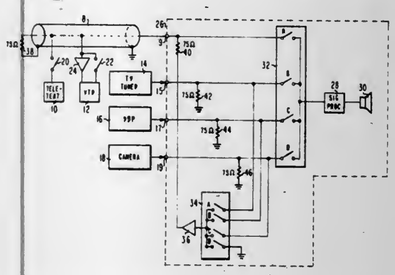
1. In displaying on a viewing screen a varying image generated by video signals converted from output signals from a radiation detector, the method of enhancing the contrast of weakly contrasting details in the image when the radiation picked up by the detector covers a large intensity range comprising the steps of periodically measuring values of the output signals, statistically calculating two statistical parameter characteristics of the statistical properties of the thusly measured values, and adaptively regulating the amplification of video signals in parts of the video frequency spectrum which are below a given frequency value as a function the two statistically calculated statistical parameters.

4,575,759

COMPONENT VIDEO INTERCONNECTION APPARATUS

Dal F. Griepentrog, and William A. Lagoni, both of Indianapolis, Ind., assignors to RCA Corporation, Princeton, N.J.

Filed Jun. 28, 1983, Ser. No. 508,502
Int. Cl.⁴ H04N *5/268*
U.S. Cl. 358—181 **6 Claims**



1. Interconnection apparatus for transferring signals between various components, comprising:
first switch means having a plurality of selectively conductive signal paths having individual inputs and a common output, one of said inputs adapted to be coupled to a bi-directional signal bus connected to at least one of said components and at least one other of said inputs adapted to be coupled to at least one other of said components;

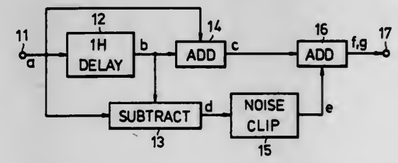
second switch means having a plurality of selectively conductive signal paths having individual inputs and a common output, one of said inputs adapted be coupled to said other one of said components; and
a signal driver having an input coupled to said common output of said second switch means and an output coupled to said input of said first switch means adapted to be coupled to said signal bus, said output having an impedance corresponding substantially to the characteristic impedance of said signal bus when supplying signal and substantially maintaining said characteristic output impedance when not supplying signal.

4,575,760

NOISE REDUCTION CIRCUIT FOR A VIDEO SIGNAL

Shintaro Nakagaki, Fujisawa, and Ichiro Negishi, Tokyo, both of Japan, assignors to Victor Company of Japan Ltd., Yokohama, Japan

Filed Apr. 4, 1984, Ser. No. 596,551
Claims priority, application Japan, Apr. 7, 1983, 58-61295; Jul. 27, 1983, 58-116851[U]
Int. Cl.⁴ H04N *5/213*
U.S. Cl. 358—167 **6 Claims**



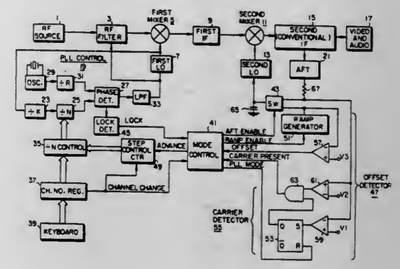
1. A noise reduction circuit for a video signal, said noise reduction circuit comprising:
a delay circuit supplied with an input video signal in which a noise has been multiplexed, for delaying said input video signal by a predetermined delay time which is m times one horizontal scanning period, where m is an integer including one;
a first adding circuit supplied with said input video signal and an output delayed video signal of said delay circuit, for adding said input video signal and said delayed video signal;
a subtracting circuit supplied with said input video signal and said output delayed video signal of said delay circuit, for performing a subtraction between said input video signal and said delayed video signal;
a noise clipping circuit for eliminating a noise component which is multiplexed at a zero level of an output signal of said subtracting circuit, and for producing a signal having a waveform corresponding to a correlation error which is introduced in an output signal of said first adding circuit due to the addition performed in said first adding circuit;
a second adding circuit supplied with the output signal of said first adding circuit and an output signal of said noise clipping circuit, for adding the output signals of said first adding circuit and said noise clipping circuit so as to produce a video signal in which the correlation error has been compensated and the noise has been reduced; and
coefficient multiplying and adding circuit means for multiplying a predetermined coefficient $\beta$and the output video signal of said second adding circuit and for adding the multiplied signal to said input video signal, said delay circuit, said first adding circuit, and said subtracting circuit being respectively supplied with an output signal of said coefficient multiplying and adding circuit means.

4,575,761

AFT ARRANGEMENT FOR A DOUBLE CONVERSION TUNER

David J. Carlson, and Juri Tults, both of Indianapolis, Ind., assignors to RCA Corporation, Princeton, N.J.

Filed Apr. 28, 1983, Ser. No. 489,306
Int. Cl.⁴ H04N *5/44*; H04B *1/26*
U.S. Cl. 358—191.1 **16 Claims**



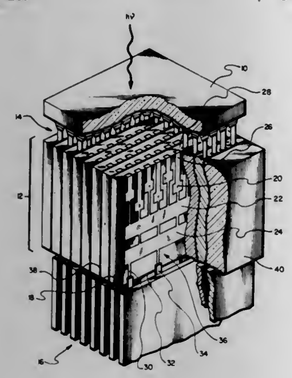
1. Apparatus for tuning a receiver to various RF signals corresponding to respective channels, each RF signal having at least one information bearing carrier, comprising:
RF input means for providing one of said RF signals;
first local oscillator means for generating a first local oscillator signal having a frequency controlled in response to the amplitude of a first control signal applied to a first control input;
channel selection means for selecting one of said channels;
first local oscillator control means coupled to said channel selection means for generating said first control signal in accordance with the selected channel;
completion indicating means coupled to said first oscillator control means and to said channel selection means for generating a completion signal indicating when said first control signal is substantially stabilized after a new channel has been selected;
first mixer means for mixing said RF signal and said first local oscillator signal to produce a first IF signal;
second local oscillator means for generating a second local oscillator signal having a frequency controlled in response to the amplitude to a second control signal applied to a second control input;
second mixer means for mixing said first IF signal and said second local oscillator signal to produce a second IF signal, said second IF signal having at least one information bearing carrier corresponding to the information bearing carrier of said RF signal, said information bearing carrier of said IF signal having a nominal value;
automatic fine tuning (AFT) means generating an AFT signal having an amplitude representing the deviation, if any, of the frequency of said information bearing carrier of said second IF signal from said nominal value; and
AFT coupling control means coupled to said completion indicating means for selectively coupling said AFT signal to said control input of said second local oscillator means so that said AFT signal is allowed to control the frequency of said second local oscillator signal as said second control signal after the generation of said completion signal.

4,575,762

INTEGRATED PROCESSOR BOARD ASSEMBLY

Austin M. Andrews, II, Brea, and Edwin E. Barrowcliff, El Toro, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Sep. 12, 1983, Ser. No. 531,107
Int. Cl.⁴ H04N *5/30*; H01L *31/00*
U.S. Cl. 358—209 **3 Claims**



2. An optical receiver, comprising:
a two dimensional array of detector elements;
a plurality of adjoining processor boards, each board including:
a semiconducting substrate;
integrated processing circuitry fabricated in said substrate;
a plurality of input strip lines deposited on said substrate, said lines being coupled to said circuitry and terminated at a first edge of said substrate;
a plurality of output leads deposited on said substrate, said leads being coupled to said circuitry and terminated at a second edge of said substrate;
a plurality of beam leads projecting from the second edge of each substrate, one of said beam leads being affixed to each output lead on each substrate;
an adhesive layer binding each processor board to the adjoining processor board;
a substrate backing affixed to an outermost one of said processor boards to provide support for said processor boards;
an array of electrically conductive flexible columns connecting each of said detector elements to a corresponding one of said input strip lines; and
a plurality of multiple conductor flexible cables, one of said cables being connected to the beam leads from each substrate.

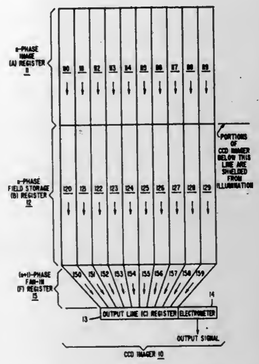
4,575,763

CCD WITH NUMBER OF CLOCKING SIGNAL PHASES INCREASING IN LATER CHARGE TRANSFER STAGES

Hammam Elabd, Mercer County, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Dec. 12, 1984, Ser. No. 680,883
Int. Cl.⁴ H04N *3/14*
U.S. Cl. 358—213 **6 Claims**

5. In combination:
a plurality of CCD charge transfer channels with respective output ports and with n-phase forward clocking, n being a positive integer three or more; and
a CCD fan-in register having a plurality of input ports respectively matched in width to the respective ones of the output ports of said plurality of CCD charge transfer channels to which the fan-in-register input ports respectively connect, having a plurality of relatively narrow output ports as compared to its input parts, and being



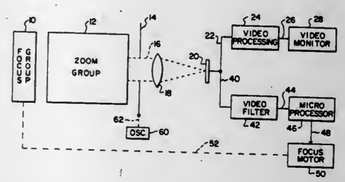
clocked in m phases, m being a positive integer greater than n.

4,575,764

VIDEO CAMERA AUTO FOCUS

Norman L. Stauffer, Englewood, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Nov. 7, 1983, Ser. No. 549,146
Int. Cl.⁴ G03B *3/00*
U.S. Cl. 358—227 **12 Claims**



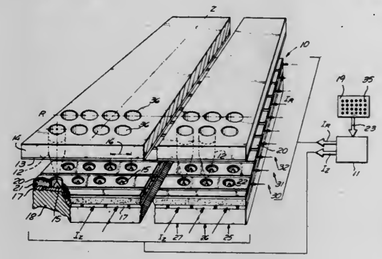
1. Focus apparatus comprising:
radiation detector means;
lens means for directing radiation from a remote object along a path to said radiation detector means, said lens means in a proper focus position producing a focused image of the object on said radiation detector means and said detector means producing an output signal indicative of the radiation received thereby;
dithering means for producing oscillator motion of the image on said radiation detector means when said lens means is in other than the proper focus position so that a dither signal is introduced into the output signal, the dither signal having a magnitude indicative of the amount the lens means is away from the proper focus position and a sense indicative of the direction the lens means should be moved to the proper focus position.

4,575,765

METHOD AND APPARATUS FOR TRANSMITTING IMAGES TO A VIEWING SCREEN

Alfred Hirt, Munich, Fed. Rep. of Germany, assignor to MAN Maschinenfabrik Augsburg Nurnberg AG, Munich, Fed. Rep. of Germany

Filed Oct. 21, 1983, Ser. No. 544,092
Claims priority, application Fed. Rep. of Germany, Nov. 25, 1982, 3243596
Int. Cl.⁴ H04N *3/14*
U.S. Cl. 358—230 **7 Claims**



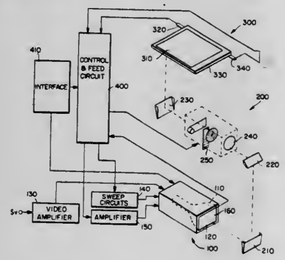
1. A method of transmitting images to a viewing screen having luminescence centers which can be excited by electron beams, comprising the steps of:
providing a thin-film field-effect cathode having cathode tips uniformly distributed over the surface of the cathode, each cathode tip being representative of an image point to be transmitted, and
separately controlling each cathode tip, and driving the cathode tips in the form of a double raster by charge transfer systems.

4,575,766

PROCESS AND APPARATUS FOR FORMING MULTIPLE ELECTRONIC IMAGES ON A PHOTOSENSITIVE SURFACE

Martin Birnbaum, Paris, and Richard Uriet, Sucy en Brie, both of France, assignors to Elscint, Inc., Boston, Mass.

Filed Jun. 7, 1983, Ser. No. 501,884
Claims priority, application France, Jun. 11, 1982, 82 10213
Int. Cl.⁴ H04N *5/84*
U.S. Cl. 358—244 **12 Claims**



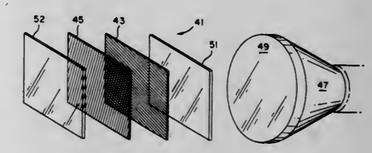
1. A process for forming, on a photosensitive surface, a composite image from a series of individual images formed successively on the screen of a cathode ray tube, comprising, for each individual image, the steps of:
(a) forming an individual image on a zone of the screen, the position and dimensions of said zone of said screen being a function of the number of individual images adapted to form a composite image, said zone of said screen being homologous to the zone of the photosensitive surface where said individual image is to be positioned in said composite image;
(b) transferring said individual image from said screen to said photosensitive surface by means of a fixed apparatus forming on the assembly thereof an image of said screen,
(c) limiting the horizontal and vertical sweep amplitudes of said tube to values which reduce the size of the image formed on said screen to the dimensions of a selected screen zone, and
(d) positioning said image by centering said sweeps at the position homologous to said selected zone.

4,575,767

LOW-MOIRE DIRECTIONAL OPTICAL FILTER FOR CRT DISPLAYS

Richard L. Cohen, Matawan; John C. Wilson, Jr., Wayne, and Mitchell Aron, Harrington Park, all of N.J., assignors to Allied Corporation, Morris County, Morris Township, N.J.

Filed Jan. 9, 1984, Ser. No. 569,363
Int. Cl.⁴ H04N *5/72*
U.S. Cl. 358—250 **16 Claims**



1. Directional optical filter, for use with a display having a plurality of display elements which are in a regular pattern and which are selectively illuminated in order to provide display patterns, some of which elements have similar features, characterized in that:
(a) a plurality of planes, which are substantially light absorbing, are disposed substantially parallel to a preferred viewing angle with respect to the display;
(b) the light absorbing planes are disposed in at least one set, in which the planes in said set are substantially parallel to one another; and
(c) each set, when viewed from the preferred viewing angle, is positioned so that the substantially parallel planes are misaligned approximately 15° from lines passing through the most closely aligned elements having similar features.

4,575,768

CONVERSION TO A TWO-VALUED VIDEO SIGNAL

Toshiyuki Sakai, Takatsuki; Yoshihiro Okada, Nara; Masatoshi Hino, Onomichi, and Yuichi Ohta, Takatsuki, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Mar. 17, 1983, Ser. No. 476,218
Claims priority, application Japan, Mar. 18, 1982, 57-43085; Apr. 22, 1982, 57-67802
Int. Cl.⁴ H04N *1/40*
U.S. Cl. 358—282 **5 Claims**

1. A system for converting an analog video signal obtained by scanning an original image to be processed into a two-valued video signal, comprising:
an analog-to-digital converting means for converting said analog video signal into multi-level digital video data;
arranging means for arranging said multi-level digital video data in a predetermined arrangement when said multi-level digital video data are supplied thereto sequentially, said arranging means including an observation window haying a first location, accommodating one of said multi-level digital video data, and a plurality of second locations, each accommodating another of said multi-level digital video data;
peak/valley extracting means connected to said arranging

means for extracting peaks and valleys from said multi-level digital video data, said peak/valley extracting means supplying a peak extraction signal when said one data in said first location has a density level which is equal to or higher than a predetermined peak threshold level and at the same time said data in said first location is higher in density level than any of a first predetermined number of data among said data in said plurality of second locations, and said peak/valley extracting means supplying a valley extraction signal when said one data in said first location has a density level which is equal to or lower than a predetermined valley threshold level and at the same time said data in said first location is lower in density level than any of a second predetermined number of data among said data in said plurality of second locations;

threshold processing means connected to receive said data in said first location for thresholding said data to supply a binary output as said two-valued video signal; and

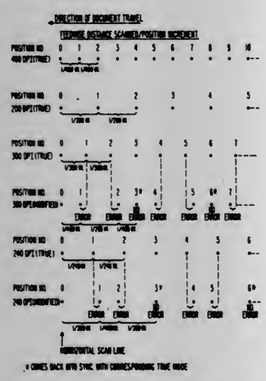
control means connected to receive said peak/valley extraction signal from said peak/valley extracting means and said binary output from said threshold processing means for controlling the level of a threshold to be used in said threshold processing means.

4,575,769

VARIABLE RESOLUTION SCANNING IN LINE SCAN OPTICAL IMAGING SYSTEMS

Douglas R. Arnoldi, Southbury, Conn., assignor to Burroughs Corporation, Detroit, Mich.

Filed Apr. 20, 1984, Ser. No. 602,360
Int. Cl.[4] H04N *1/04*
U.S. Cl. 358—285 **19 Claims**



1. A method of operating a document feeding system to approximate a 240 DPI feedwise scan resolution, said system including means for feedwise advancing said document by either one four-hundredth of an inch or one two-hundredth of an inch, said method comprising the steps of:

a—advancing said document by said one two-hundredth of an inch;

b—advancing said document by said one four-hundredth of an inch;

c—advancing said document by said one two-hundredth of an inch; and

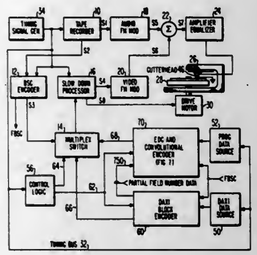
d—repeating said steps a–c.

4,575,770

VIDEO DISC DATA SYSTEMS FOR INTERACTIVE APPLICATIONS

Charles B. Dieterich, Middlesex County, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Dec. 5, 1983, Ser. No. 558,368
Int. Cl.[4] G11B *7/00*
U.S. Cl. 358—342 **19 Claims**



1. A method for encoding data on a video signal carrier wave to be recorded on a video disc, comprising the steps of:

modulating said video signal carrier wave with block encoded data during a selected line of the vertical interval of said video signal carrier wave; said block encoded data including a framing code and a field identification code; and

modulating said video signal carrier wave with convolutionally encoded data during a subsequent line of the vertical interval of said video signal carrier wave, each line of said convolutionally encoded data including an error check code conveying information relating to a predetermined subset of said field identification code, each line of convolutionally encoded data in a given field being in a timed relationship with respect to the block encoded data of that field and having no framing code.

4,575,771

APPARATUS FOR SUPERIMPOSING AND REPRODUCING STILL PICTURE SIGNALS

Tadashi Oota, Tokyo, and Masahiro Sawada, Kawasaki, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed May 11, 1983, Ser. No. 493,713
Claims priority, application Japan, May 14, 1982, 57-80175
Int. Cl.[4] H04N *5/91*
U.S. Cl. 360—10.1 **14 Claims**

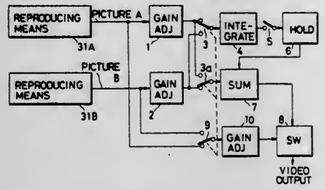
1. An apparatus for reproducing a plurality of still picture signals, said still picture signals being taken by different shots and recorded on a recording medium, comprising:

(a) reading means for reading first and second still picture signals from said recording medium;

(b) averaging means for determining an average luminance value of at least one portion in one field of said first still picture signal read by said reading means and producing an output signal corresponding to said average luminance value;

(c) summing means for adding said output signal produced by said averaging means to said second still picture signal for one field, and producing the resultant signal; and

(d) switching means for inputting said resultant signal produced from said summing means and said first still picture signal and alternately outputting said resultant signal and said first still picture signal at intervals of a predetermined duration.

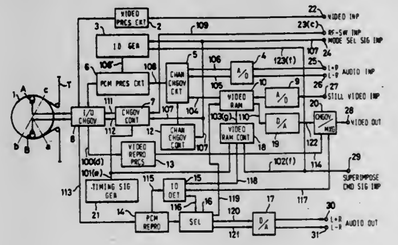


4,575,772

APPARATUS FOR RECORDING ADDITIONAL VIDEO SIGNALS IN A HELICAL SCAN OPERATION

Keiichiro Shimada; Takao Takahashi; Hisayoshi Moriwaki, and Kenji Nakano, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 24, 1983, Ser. No. 478,491
Claims priority, application Japan, Mar. 25, 1982, 57-48019
Int. Cl.[4] H04N *7/00, 5/91;* G11B *5/09*
U.S. Cl. 360—19.1 **11 Claims**



1. Apparatus for recording additional video signals on a magnetic record medium having video and audio signals recorded thereon in oblique tracks by helical scanning, in which the recorded audio signals are arranged at an extended end of each of said oblique tracks, said apparatus comprising:

random access memory means for storing said additional video signals;

means for selectively reading out said additional video signals stored in said random access memory means;

recording means for recording said additional video signals selectively read out from said random access memory means on said magnetic record medium; and

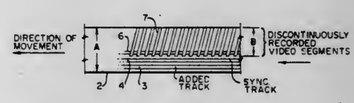
control means for controlling said recording means to record said additional video signals in positional correspondence with selected ones of said audio signals recorded at said extended ends of said tracks, whereby said additional video signals are recorded in place of said selected ones of said audio signals.

4,575,773

METHOD AND APPARATUS FOR SELECTIVELY RECORDING INSTRUMENT QUALITY DATA OR COMPOSITE INSTRUMENT QUALITY DATA AND VIDEO SIGNALS ON A COMMERCIAL UNMODIFIED VIDEO TAPE RECORDER

Anthony M. Dymond, 1513 Pamela Crest Dr., Redlands, Calif. 92373, and Thomas B. Fryer, 14029 Saratoga Hills Rd., Saratoga, Calif. 95070

Filed Nov. 4, 1982, Ser. No. 439,275
Int. Cl.[4] G11B *5/00*
U.S. Cl. 360—32 **3 Claims**



1. In a data acquisition and recording system for receiving and recording analog data through use of a conventional unmodified video tape recorder utilizing conventional video recording tape for recording data thereon other than video information but utilizing the standard video composite waveform standard which includes video information recording tracks extending transversely across the video tape and spaced longitudinally therealong and vertical and horizontal synchronizing pulse recording tracks extending longitudinally therealong, the combination comprising:

(a) analog data input terminal means adapted to selectively receive a single high frequency data signal or a multiplicity of time multiplexed data signals;

(b) means including an analog-to-digital converter connected to receive an analog signal from said analog data input terminal and converting the analog signal to a pulse code modulated digital form;

(c) a parallel-to-serial shift register having input terminals, one input terminal being connected to said analog-to-digital converter to receive the pulse code modulated signal therefrom;

(d) pulse-timing control means having multiple output terminals selectively connected to said analog data input terminal means, to said analog-to-digital converter and to said shift register and operative to provide a constant input during the analog-to-digital conversion process to provide synchronization of the pulse code modulated data stream emanating from said parallel-to-serial shift register with the timing of the vertical and horizontal sync pulses of said video tape recording waveform standard;

(e) a carrier frequency signal source terminal

(f) a modulator for receiving said pulse code modulated data stream signal from said parallel-to-serial shift register and said carrier frequency signal and operative to modulate said carrier frequency in correlation to said pulse code modulated data signal to produce a modulated output signal;

(g) a conventional video camera connected to said timing means whereby said camera is operated in synchronism with the pulse code modulated data stream emanating from said parallel-to-serial shift register, said video camera having a signal output terminal;

(h) a mixer connected to receive said modulated output signal from said modulator and to receive said output signal from said video camera and operative to mix the signals to produce one composite signal suitable for recording on a conventional video tape recorder; and

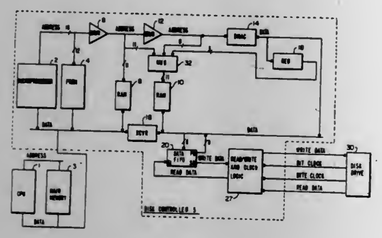
(i) a conventional video tape recorder adapted to receive said composite signal from said mixer to effect recordation thereof on said transversely extending longitudinally spaced recording tracks.

4,575,774

DISK SUBSYSTEM READ WRITE CONTROL

Bruce H. Tarbox, Billerica; Donald J. Rathbun, Andover, both of Mass., and Taian Su, Palo Alto, Calif., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Jun. 22, 1984, Ser. No. 623,856
Int. Cl.[4] G11B 5/012
U.S. Cl. 360—72.2 2 Claims



1. A disk subsystem including a disk drive and a controller, said controller including apparatus for controlling the reading and writing of information on a sector of a disk track, said apparatus comprising:

counting means coupled to said disk drive for keeping count of the number of byte clocks received by said counting means by a byte clock signal from said disk drive and generating byte count signals representative of said count;

read only memory (ROM) means coupled to said counting means and responsive to said byte count signals for reading out the contents of ROM locations addressed by said byte count signals and generating a plurality of control signals;

disk processing means coupled to said ROM means and responsive to a first control signal for reading sector address information;

information processing means coupled to said ROM means and said disk processing means and responsive to said first control signal and a second control signal for receiving said sector address information and generating a clock out signal;

first in-first out (FIFO) memory means for storing a requested sector address and responsive to said clock out signal for reading out said requested sector address; and

comparing means coupled to said information processing means and said FIFO memory means for comparing said sector address information with said requested sector address and generating an address found signal for an equal comparison;

said disk processing means being responsive to said first control signal for reading sector data information from said sector during a read operation, and responsive to a third control signal for writing said sector data information in said sector during a write operation;

said information processing means being responsive to said address found signal for generating a clock in signal during said read operation, and responsive to said third control signal and said address found signal for generating said clock out signal during said write operation;

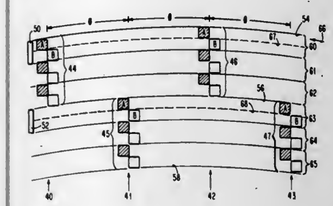
said FIFO memory means being responsive to said clock in signal for storing said sector data information received from said disk processing means during said read operation, and responsive to said clock out signal for transferring said data information to said disk processing means during said write operation.

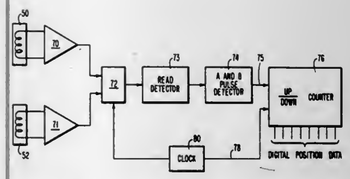
4,575,775

MAGNETIC RECORDING DISK HAVING A SECTOR SERVO PATTERN FOR USE WITH A MULTIPLE ELEMENT HEAD

David W. Albrecht, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 27, 1984, Ser. No. 644,244
Int. Cl.[4] H04N 5/56
U.S. Cl. 360—77 7 Claims





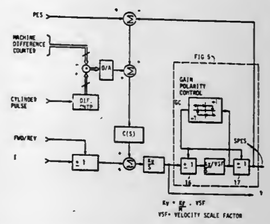
1. A magnetic recording disk for use with a disk file having a head with multiple elements capable of reading servo signals, the disk having a pattern of radially spaced-apart segments of pre-recorded servo signals identifying data track location lines for track following by the head, each segment being located along one of a plurality of angularly spaced sectors and having a radial length no greater than the spacing between adjacent head elements, the radially inner edge of each segment being generally circumferentially coincident with the radially outer edge of a segment on an adjacent sector.

4,575,776

MAGNETIC RECORDING DISK FILE SERVO CONTROL SYSTEM INCLUDING AN ACTUATOR MODEL FOR GENERATING A SIMULATED HEAD POSITION ERROR SIGNAL

Harold C. Stephens, and Michael L. Workman, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 20, 1982, Ser. No. 451,582
Int. Cl.[4] G11B 21/08, 21/10
U.S. Cl. 360—78 4 Claims



1. A servo system for a magnetic disk file in which an electrically driven voice coil motor (VCM) actuator moves a magnetic servo head to different concentric recording tracks on a magnetic recording disk file, said disk file having recorded thereon a servo pattern which produces a position error signal (PES) in said servo head which is a measure of the displacement of said servo head from the centerline of one of said tracks, comprising:

an electrical model of said VCM, said model further comprising means for receiving a first measure of the current in said VCM, and means, including a hysteretic switch, for generating a signal representative of the estimated track location of said servo head and for generating a simulated PES in response to the measure of VCM current received;

means for continuously supplying a first measure of the current in said VCM;

means for comparing the simulated PES with said PES to generate a comparison error signal;

means for generating a signal which is a measure of the actual track location of said servo head;

means for comparing said estimated track location signal from said model with said actual track location signal to generate a track location error signal; and

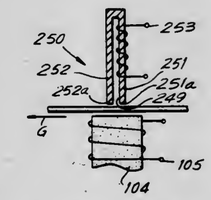
means for combining said comparison error signal, said track location error signal, and said second measure of VCM current to form said first measure of VCM current supplied to said model.

4,575,777

MAGNETIC RECORDING AND REPRODUCING HEAD

Minoru Hosokawa, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Dec. 2, 1982, Ser. No. 446,119
Claims priority, application Japan, Dec. 8, 1981, 56-197424; Dec. 25, 1981, 56-210425; Dec. 28, 1981, 56-213249
Int. Cl.[4] G11B 5/20
U.S. Cl. 360—123 32 Claims



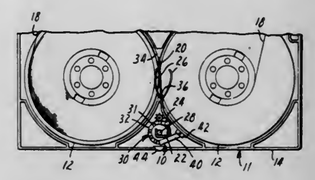
1. A magnetic recording and reproducing head for recording and reproducing information of a magnetic recording medium comprising first and second members spaced apart so as to define a gap therebetween through which said magnetic recording medium can travel, said first member including a first magnetic pole of high permeable magnetic thin film having a tip which faces said magnetic recording medium, a first coil provided around said magnetic thin film, said second member including a second coil without a magnetic core therein defining a central portion, said tip of said magnetic thin film facing said central portion of said second coil, said second coil magnetizing said magnetic recording medium to record information thereon, said first coil detecting the magnetic flux of said magnetic recording medium to reproduce said recorded information.

4,575,778

TAPE CASSETTE CONTAINING RUN COUNTER DISC

Peter J. Vogelgesang, Roseville, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Jan. 14, 1983, Ser. No. 457,905
Int. Cl.[4] G11B 23/02, 5/008, 15/00, 17/00
U.S. Cl. 360—132 2 Claims



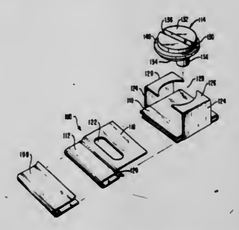
1. A counting mechanism for determining the number of times a length of tape is wound onto and then off of a reel including a hub rotatably mounted on a housing about which hub the tape is wound, and a flange projecting along a side surface of tape wound about the hub, said mechanism comprising a disc having spaced numbers positioned against and centered on the surface of the flange opposite the hub; means for frictionally driving said disc from said reel; first means adapted for engagement between said housing and said disc for preventing rotation of the disc in one direction while permitting rotation of the disc in the other direction; second means adapted for engagement between the housing and said disc at predetermined spaced locations related to the spacings between the numbers that, when engaged, will prevent rotation of the disc in the other direction; and third means adapted to be operated by the changing diameter of a coil of tape being wound onto and then off of the hub for disengaging said second means from one location and affording re-engagement of said second means at another location to cause incremental advance of the disc by said means for frictionally driving to change the location of the numbers relative to the housing.

4,575,779

VARIABLE ELECTRONIC COMPONENT

Martin A. Mittler, Lake Hiawatha, and Kenneth J. Scowen, Springfield, both of N.J., assignors to Voltronics Corporation, East Hanover, N.J.

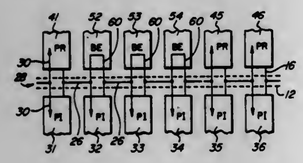
Filed May 23, 1984, Ser. No. 613,220
Int. Cl.[4] H01G 5/04; H01C 9/02
U.S. Cl. 361—296 24 Claims



1. A variable electronic component for use in a subminiature electronic circuit disposed on a supporting substrate, said variable electronic component comprising conductive contact means supportable on said substrate for contacting a portion of said electronic circuit, impedance varying means movably mounted relative to said conductive contact means for providing a desired range of impedance characteristics of said variable electronic component, said impedance varying means including a slot arranged having its longitudinal axis substantially normal to the direction of movement of said impedance

varying means, and eccentric means engaging said slot for moving said impedance means relative to said conductive contact means.

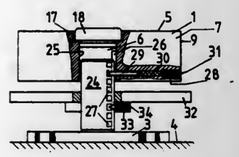
4,575,780
BACKPANEL ASSEMBLIES
David S. Brombal, Kanata, and Charles B. D. Bunner, Carp, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada
Filed Apr. 3, 1984, Ser. No. 596,310
Int. Cl.⁴ H05K 1/14
U.S. Cl. 361—413 2 Claims



1. Electronic apparatus comprising:
a backpanel assembly comprising a backpanel having a plurality of elongate printed circuit board (PCB) connectors aligned in parallel on a first face thereof, each PCB connector including first and second groups of pins which extend from the PCB connector through the backpanel to form at least part of a PCB connector on a second face of the backpanel, the first and second groups of pins having equal numbers of pins, the individual pins of the first and second groups of pins in adjacent PCB connectors on the first face of the backpanel being respectively interconnected via the backpanel;
a plurality of PCBs each inserted into a respective PCB connector on one of the faces of the backpanel and having electrical connections to pins of the first group but not to pins of the second group of the respective PCB connector;
at least one PCB inserted into a PCB connector on the other face of the backpanel opposite a respective one of said plurality of PCBs, said at least one PCB having electrical connections to pins of the first group but not to pins of the second group of the respective PCB connector; and
at least one connecting means inserted into a PCB connector on said other face of the backpanel opposite a respective one of said plurality of PCBs, said connecting means electrically interconnecting individual pins of the first and second groups of pins of the respective connector.

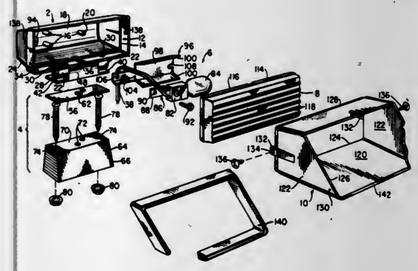
4,575,781
PROXIMITY SWITCH
Günther Weber, Kollmar, Fed. Rep. of Germany, assignor to Weber Gesellschaft fur Huttenelektronik mbH, Kollmar, Fed. Rep. of Germany
Filed May 11, 1984, Ser. No. 609,210
Claims priority, application Fed. Rep. of Germany, May 13, 1983, 3317447
Int. Cl.⁴ H05K 5/00, 7/00
U.S. Cl. 361—380 31 Claims

1. A mounting for a proximity switch with a switching body which has a target area-directed sensing area normal to a central recess, said mounting comprising, in combination: a mounting stud erected with its longitudinal axis directed normal to the target area and normal to a support area for said stud, and on which the switching body is longitudinally adjustable at said central recess relative to the target area; and means



to secure the switching body in adjusted longitudinal position on said mounting stud.

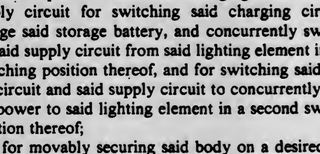
4,575,782
COLLISION AVOIDANCE LIGHT
Mark Levine, Plainview, N.Y.; Robert H. Hanes, Rochelle Park, N.J.; Joel Rudder, Rockaway, N.J., and David Ditlya, Fairlawn, N.J., assignors to General Automotive Specialty Company, Inc., Brunswick, N.J.
Filed Jun. 10, 1985, Ser. No. 742,801
Int. Cl.⁴ B60Q 1/00
U.S. Cl. 362—61 5 Claims



1. A collision avoidance light for placement at the rear window of automotive vehicles, which comprises:
a housing, the housing defining an open face;
a socket assembly, including a socket for removably mounting a light bulb, the socket assembly being mounted in the housing;
a lens detachably secured to the housing in juxtaposition with the open face; and
an anti-glare shield mounted on the housing and at least partially surrounding the lens, the anti-glare shield including a main body defining a first open face adjacent the lens and a second open face opposite the first face, the main body being adapted at its second open face to be conformed to the shape of the window to allow the shield to be positioned closely thereto, so as to avoid light reflection by said window toward the vehicle front.

4,575,783
REFLECTOR FOR ILLUMINATING SIGNS
Douglas S. Hammond, Newark, Ohio, assignor to Manville Service Corporation, Denver, Colo.
Filed Sep. 16, 1983, Ser. No. 533,320
Int. Cl.⁴ F21S 1/14
U.S. Cl. 362—145 5 Claims

1. A luminaire in combination with a sign, the sign being of the type having its vertical length longer than its horizontal comprising, a lamp providing luminance flux positioned below and away from, yet parallel to the sign and parallel to the horizontal center of the area to be illuminated so as to provide a maximum amount of luminance directly to the vertical sign and reflector means for redirecting luminance flux which does not directly illuminate the sign to areas where desired lumi-

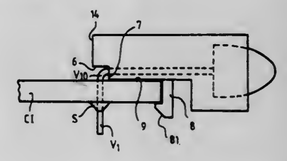


nance is lacking said reflector means including a reference plane along the centerline with left and right segments intersecting thereat, said segments redirecting more intense flux to the corners and edges of the sign.

4,575,784
CHARGEABLE WORKING LIGHT
Golden Diau, Taipei, Taiwan, assignor to Michael Hung, Taipei, Taiwan
Filed Dec. 21, 1984, Ser. No. 684,492
Int. Cl.⁴ F21L 7/00
U.S. Cl. 362—183 4 Claims

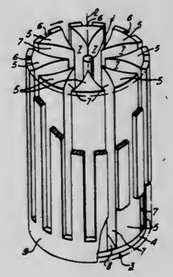
1. A chargeable working light comprising:
a body having a lighting element therein;
a storage battery provided within said body and coupled to said lighting element;
a charging circuit adapted to be connected to a power source, coupled to said storage battery;
a supply circuit connected in parallel to said charging circuit, and connected in series to said lighting element;
a switch coupled between said charging circuit and said supply circuit for switching said charging circuit to charge said storage battery, and concurrently switching off said supply circuit from said lighting element in a first switching position thereof, and for switching said charging circuit and said supply circuit to concurrently supply the power to said lighting element in a second switching position thereof;
means for movably securing said body on a desired place, said means being pivotally connected with said body for a user to adjust the lighting angle of said lighting element;
said securing means having at least one magnet thereon;
a charging seat connected to said power source, said seat being movably engaged with said body for supplying the power to said charging circuit, and said seat being adapted to be fastened onto a proper place; and
said supply circuit consists of a resistor and a diode connected in series with each other.

4,575,785
VISUAL INDICATOR SUPPORT ON A PRINTED CIRCUIT
Gérard Lerude, Antibes, and Christine Roux, Le Rouret, both of France, assignors to La Telemecanique Electrique, France
Filed Aug. 1, 1984, Ser. No. 636,636
Claims priority, application France, Aug. 1, 1983, 83 12627
Int. Cl.⁴ F21V 17/04
U.S. Cl. 362—226 10 Claims



1. In a visual indicator lamp support comprising an elongate insulating body having a front face and a rear face substantially perpendicular to its longitudinal dimension and forming, at its front face, jaws for insertion of an indicator lamp, said indicator lamp having lead wires, a bearing surface inside said body cooperating with a rear surface of the indicator lamp, passage holes for the lead wires thereof formed through said body and means for securing the lead wires to a printed circuit card, said body having a reference surface perpendicular to the rear face and having a re-entrant surface with said passage holes therein and joining said reference surface and rear face to thereby form a channel, said channel frees a portion of said wires for bending, said body being rotatable from a first position in which its rear face is in abutment against the card while said leads are secured to a second position in which said reference surface is in abutment against the card, said rotation causing a pre-determined bending of said wires.

4,575,786
RADIATION EMITTING APPARATUS
John C. Roberts, Bristol, England, assignor to British Aerospace Public Limited Company, London, England
Filed Apr. 12, 1983, Ser. No. 484,361
Claims priority, application United Kingdom, Apr. 13, 1982, 8210362
Int. Cl.⁴ F21V 7/00
U.S. Cl. 362—279 14 Claims



1. An optical radiation beacon comprising:
a radiation source,
first and second apertured mask members positioned so that the first is nearer said source than the second and mounted for movement relative to one another, and
drive means for relatively moving the mask members to

bring the apertures therein repetitively into and out of alignment,

each aperture in said first member being bounded at two opposite sides of the aperture by respective curved reflective surfaces which gather radiation received from the source and form at least a crude image of the source at or near said second member.

4,575,787

ROAD VEHICLE HEADLAMP

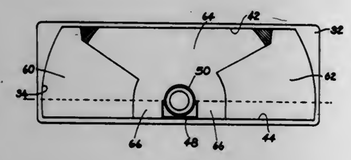
David A. Birt, Cannock, United Kingdom, assignor to Lucas Industries, England

Filed Oct. 5, 1983, Ser. No. 538,819

Claims priority, application United Kingdom, Oct. 15, 1982, 8229538

Int. Cl.⁴ F21V *7/09*

U.S. Cl. 362—297 **9 Claims**



1. A headlamp having a dished reflector provided with a front opening and a light source disposed below the horizontal median line of the headlamp, and a light source shield arrangement providing a horizontal cut-off on both sides of the light source, said reflector having a pair of lateral curved reflective portions with coincident foci, wherein said lateral curved reflective portions have their optical axes mutually inclined both horizontally and vertically by such an extent that the beam pattern projected by the reflector from the shielded light source has, at 25 meters from the headlamp, (1) a lower beam portion having a horizontal upper cut-off, (2) an intermediate beam portion which has an upwardly inclined cut-off extending from one side of the upper cut-off of the lower beam portion, and (3) an upper beam portion having a horizontal upper cut-off extending from the inclined cut off on the opposite side thereof to the lower beam portion, said lower beam portion being provided by one of the curved reflective portions and the intermediate and upper beam portions being provided by the other of said curved reflective portions.

4,575,788

SEGMENTED LUMINAIRE

Ian Lewin, Scottsdale, Ariz., assignor to QL, Inc., Northbrook, Ill.

Filed Apr. 30, 1984, Ser. No. 605,428

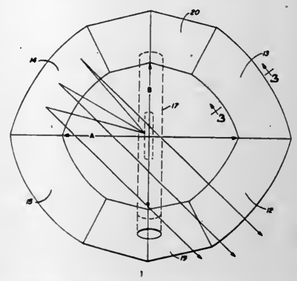
Int. Cl.⁴ F21V *7/12*

U.S. Cl. 362—346 **14 Claims**

1. A luminaire for use with an elongated light source which has a reduction in light intensity in the axial directions of the light source, said luminaire including in combination:

a housing having an open side for permitting light to pass outwardly therefrom; and

first, second, third, and fourth reflector sections, each having continuous compound curved cross-sections in planes perpendicular to the plane of the open side of said housing, mounted in said housing for reflecting light from a bulb located therein in a plane parallel to the plane of the open side of said housing outwardly through such open side, said first and second reflector sections being located on one side of the bulb and said third and fourth reflector sections being located on the other side of the bulb to cause light from the bulb to be reflected through the open side of the said housing from each reflector section diagonally of the bulb axis.



4,575,789

REFLEX REFLECTOR

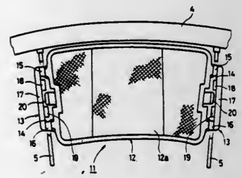
Sadaharu Tsuyama, Osaka, Japan, assignor to Tsuyama Mfg. Co., Ltd., Japan

Filed Jan. 24, 1985, Ser. No. 694,504

Claims priority, application Japan, Sep. 10, 1984, 59-137743[U]

Int. Cl.⁴ F21V *7/00*

U.S. Cl. 362—346 **6 Claims**



1. A reflex reflector having a reflector body (12) and attaching means (13) provided on the right and left sides of said reflector body (12) and adapted to be attached between spokes (5) of a spoked wheel,

said reflex reflector being characterized in that:

each of said attaching means (13) includes a passage (14) for fitting a spoke (5) therein laterally of the wheel, said passage (14) having lateral surfaces (15*a*, 15*b*, 16*a*, 16*b*) positioned laterally of the fitted spoke (50) and back surfaces (15*c*, 16*c*) positioned at the back;

said attaching means (13) further includes lateral projections (18, 19) projecting to the lateral surfaces (15*a*, 15*b*, 16*a*, 16*b*) of said passage (14) and adapted to make the width of the passage (14) smaller than the diameter of the spoke (5), said lateral projections (18, 19) having elasticity which allows the amount of projection from the lateral surfaces (15*a*, 15*b*, 16*a*, 16*b*) of the passage (14) to be decreased, whereby the spoke (15) is allowed to move beyond said lateral projections (18, 19) to reach a predetermined position; and

said attaching means (13) further includes a back projection (20) projecting to the back surfaces (15*c*, 16*c*) of said passage (14), said back projection (20) having elasticity which allows the amount of projection from said passage (14) to be decreased.

4,575,790

METHOD AND APPARATUS FOR CONTROLLING THE MOVEMENT OF AN OSCILLATING SPOUT

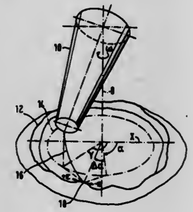
Edouard Legille, Luxembourg; Guy Thillen, Diekirch, and Emile Lonardi, Bascharage, all of Luxembourg, assignors to Paul Wurth S.A., Luxembourg, Luxembourg

Filed Jul. 21, 1983, Ser. No. 515,697

Claims priority, application Luxembourg, Jul. 28, 1982, 84303

Int. Cl.⁴ G05B *15/00*; B65G *25/00, 1/00, 11/00*

U.S. Cl. 364—130 **14 Claims**



5. A process for controlling movement of an oscillating material delivery spout capable of pivoting about two orthogonal axes in order to move end of the spout over a predetermined course about a vertical axis, the spout being driven by first and second independent driving means, including the steps of:

imparting rotational movement to said spout about said vertical axis by said first and second independent driving means; and

controlling angular rotational speed of said spout to obtain a compensated angular speed W_1 about said vertical axis in accordance with angular position of the spout to deposit a charge of material from said spout in a predetermined manner; and wherein the step of controlling rotational speed of the spout includes:

varying the operating speed of at least one of said first and second driving means.

4,575,791

METHOD FOR RESTARTING A TOOL ONTO A WORKPIECE CONTOUR

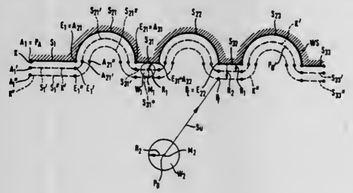
Ernst Schwefel, Traunreut, Fed. Rep. of Germany, assignor to Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

Filed Mar. 20, 1984, Ser. No. 591,429

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1983, 3311119

Int. Cl.⁴ G05B *19/18, 19/41*; G06F *15/46*

U.S. Cl. 364—168 **4 Claims**



1. A process for restarting a tool onto a workpiece contour after a program interruption, in a numerically controlled processing machine of the type comprising a controller, a display unit for graphically representing processing information, and means for storing a plurality of program sets which combine to form a processing program, each program set representing a respective contour section of the workpiece contour to be produced, wherein the machine is characterized by a function state and a tool axial position state, said process comprising the following steps:

(a) after a program interruption, restarting the processing program in a control mode, without machine movement, from a selected beginning point;

(b) displaying a graphical representation on the display unit of one of (1) a workpiece contour and (2) a tool path generated by the controller during execution of the processing program in the control mode;

(c) manually determining with the aid of the graphical representation of step (b) an end point of the control mode execution of the processing program to which is allocated a starting point for the tool onto the workpiece contour;

(d) causing the function state and the tool axial position state of the machine to correspond to values associated with the end point of the control mode execution of the processing program; and

(e) continuing execution of the processing program from the end point of the control mode execution, with the controller in a processing mode in which the controller commands machine movement in accordance with the processing program to cause the tool to restart onto the workpiece contour.

4,575,792

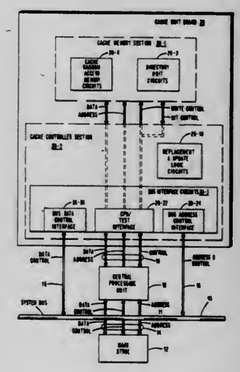
SHARED INTERFACE APPARATUS FOR TESTING THE MEMORY SECTIONS OF A CACHE UNIT

James W. Keeley, Hudson, N.H., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Mar. 31, 1982, Ser. No. 364,051

Int. Cl.⁴ G06F *11/00, 13/00*

U.S. Cl. 364—200 **31 Claims**



1. A single board cache unit including a controller section and a memory section, said controller section including circuits for controlling the operations of said cache unit and input/output circuits for transmitting and receiving signals to and from a plurality of lines of an interface which couples said cache unit to a central processing unit of a system when said cache unit board is installed in said system, said cache unit providing high speed access to main memory data in response to requests containing row and column addresses applied to said interface by said central processing unit, said memory section comprising:

cache and directory stores, each organized into a number of levels of storage locations, each location within said cache and directory levels being defined by a different one of said column addresses and each location of said directory store for storing the row address designating which one of said levels stores corresponding data;

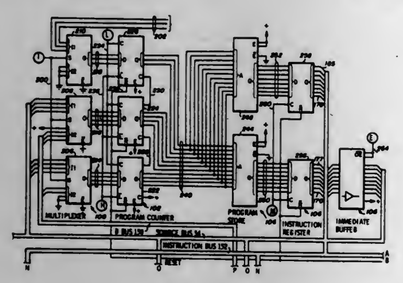
bidirectional data transfer means coupled to said cache store and to a first group of said plurality of said interface lines;
input data transfer means coupled to said cache stored and to said controller section, said input data transfer means being conditioned by said controller section during normal operation to apply data received from said controller section to be written into said cache store during write cycles of operation;
output data transfer means coupled to said cache store, to said first group of said plurality of interface lines and to said controller section, said output data transfer means being conditioned by said controller section during normal operation to selectively apply data read out from said cache store and data from said controller section to said first group of said plurality of said interface lines during read cycles of operation; and,
test mode control means operatively coupled to said interface, to said bidirectional data transfer means, to said input data transfer means and to said output data transfer means, said test mode control means being operative in response to a first signal applied to a first one of said interface lines to configure said cache unit for testing and during said testing conditioning said input transfer means and said output data transfer means to inhibit normal data transfers to and from said cache store and simultaneously enable said bidirectional data transfer means for transferring data patterns between said cache store and said first group of said plurality of interface lines for said direct testing of said memory section without controller interference.

4,575,793

PERSONAL-COMPUTER TO 3270 SYSTEM INTERFACING APPARATUS

Charles P. Morel, Los Altos, and Taylor O. Gahr, Cupertino, both of Calif., assignors to CXI, Inc., Palo Alto, Calif.

Filed Aug. 19, 1983, Ser. No. 524,859
Int. Cl.[4] G06F *3/00*
U.S. Cl. 364—200 10 Claims



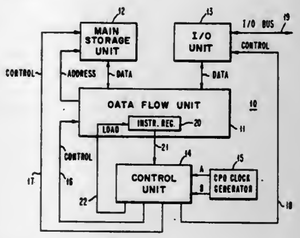
1. A processor comprising in combination:
an instruction bus;
a source bus;
a B bus;
a destination bus;
a program counter for developing signals representing an instruction address, said counter being responsive to a clocking signal and operative to increment said instruction address;
a program store storing a plurality of instructions, said store being responsive to said address signals and operative to develop signals representing the addressed one of said instructions;
an instruction register responsive to a signal and operative to latch the state of each of said instruction signals and to develop on said instruction bus signals each having a respective one of said latched instruction signal states;
an arithmetic logic unit for performing the one of a plurality of operations specified by at least some of said instruction bus signals on signals developed on said source bus as a first operand and on signals developed on said B bus as a second operand to develop signals representing a result;
means for developing signals representing said result on said destination bus;
a B register responsive to a signal and operative to latch the state of each of said destination bus signals and to develop said B bus signals so each has a respective one of said latched destination bus signal states;
a register stack including a plurality of stack registers, said stack being responsive to a signal and operative to latch the state of each of said destination bus signals in the one of said stack registers addressed by at least some of said instruction bus signals and said stack being responsive to an output enabling signal and operative to develop said source bus signals so each has a respective one of said destination bus signal states latched in the one of said stack registers addressed by said some of said instruction bus signals;
circuitry for developing timing signals; and
instruction decoding circuitry responsive to at least some of said instruction bus signals and operative to develop said program counter clocking signal, said instruction register latching signal, said B register latching signal, said stack latching signal, and said stack output enabling signal, each at a time designated by said timing signal developing circuitry.

4,575,794

CLOCKING MECHANISM FOR MULTIPLE OVERLAPPED DYNAMIC PROGRAMMABLE LOGIC ARRAYS USED IN A DIGITAL CONTROL UNIT

Gerard A. Veneski; Nandor G. Thoma, both of Boca Raton, and Moises Cases, Delray Beach, all of Fla., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Feb. 22, 1982, Ser. No. 350,683
Int. Cl.[4] G06F *9/28, 9/26*
U.S. Cl. 364—200 22 Claims



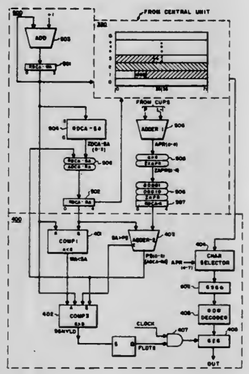
1. In a digital control unit wherein a sequence of control words are used to produce successive groups of control point signals, the combination comprising:
a plurality of dynamic programmable logic arrays for individually producing different ones of the control words, each such control word including a strobe field which is coded to identify a programmable logic array other than the one which produced it;
control circuitry responsive to the control words for producing control point signals and including circuitry responsive to the strobe field in each control word for producing a strobe signal for selecting the next programmable logic array to supply a control word to the control circuitry;
and clocking circuitry responsive to the strobe signals produced by the control circuitry for producing clocking signals for the dynamic programmable logic arrays.

4,575,795

APPARATUS FOR DETECTING A PREDETERMINED CHARACTER OF A DATA STRING

Donald C. Boothroyd, Phoenix, and Robert W. Norman, Jr., Glendale, both of Ariz., assignors to Honeywell Information Systems Inc., Phoenix, Ariz.

Filed Apr. 1, 1983, Ser. No. 481,226
Int. Cl.[4] G06F *7/48*
U.S. Cl. 364—200 5 Claims



1. An apparatus for detecting a predetermined character of a data string being loaded into a temporary storage memory comprising:
(a) first comparator means for comparing a first pointer signal to a second pointer signal, to generate a first output signal when the value of said first pointer signal is less than the value of said second pointer signal;
(b) means for adding said second pointer signal to a first signal having a value corresponding to the number of locations of said temporary storage memory to be loaded, to generate a third pointer signal, and to generate a second output signal when the value of said second pointer signal is greater than the value of said third pointer signal; and
(c) second comparator means for comparing a first input signal, wherein said first input signal comprises said first output signal concatenated with said first pointer signal, to a second input signal, wherein said second input signal comprises said second output signal concatenated with said third pointer signal, to generate a third output signal indicating the end of the data string when said first input signal is greater than said second input signal.

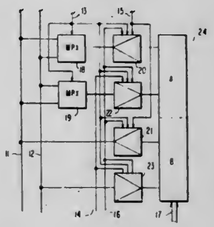
4,575,796

INFORMATION PROCESSING UNIT

Ikutaro Wako, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 341,952, Jan. 22, 1982, abandoned. This application Feb. 13, 1985, Ser. No. 701,269
Claims priority, application Japan, Jan. 22, 1981, 56-8469
Int. Cl.[4] G06F *7/14*
U.S. Cl. 364—200 3 Claims

1. An information processing unit of the type adapted for handling N-bit data in parallel, said unit comprising,
first and second N-bit bus lines,
a random access memory (RAM) having first and second halves,
a first read buffer circuit for coupling N-bit data read from said first half of said RAM to said first bus line,
a first write buffer circuit for coupling N-bit data from said second bus line into said first half of said RAM,
a first multiplexer and a second multiplexer,
a second read buffer circuit for coupling N-bit data read from said second half of said RAM to said first multiplexer, said first multiplexer being coupled to said first and second bus lines and operative to selectively couple N-bit data from said second read buffer to said first and second bus lines,
a second write buffer for coupling N-bit data from said second multiplexer to be written into said second half of said RAM, said second multiplexer being coupled to said first and second bus lines and operative to selectively couple N-bit data from said first and second bus lines to said second write buffer, and
control means for generating first, second and third control signals, N-bit data stored in said first half of said RAM being transferred to said first bus line through said first read buffer in response to said first control signal, N-bit data stored in said second half of said RAM being transferred to said first bus line through said second read buffer and said first multiplexer in response to said second control signal, 2N-bit data stored in said first and second halves of said RAM being simultaneously transferred to



said first and second bus lines, respectively, in response to said third control signal such that N-bit data stored in said first half of said RAM is transferred through said first read buffer to said first bus line and N-bit data stored in said second half of said RAM is transferred through said second read buffer and said first multiplexer to said second data bus, N-bit data on said first bus line being written into said first half of said RAM through said first write buffer in response to said first control signal, N-bit data on said first bus line being written into said second half of said RAM through said second multiplexer and said second write buffer in response to said second control signal, 2N-bit data on said first and second bus lines, respectively, being simultaneously written into said first and second halves of said RAM in response to said third control signals such that the N-bit data on said first bus line is transferred through said first write buffer to said first half of said RAM, and the N-bit data on said second bus line is transferred through said second multiplexer and said second write buffer to said second half of said RAM.

4,575,797

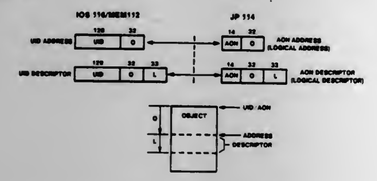
DIGITAL DATA PROCESSING SYSTEM INCORPORATING OBJECT-BASED ADDRESSING AND CAPABLE OF EXECUTING INSTRUCTIONS BELONGING TO SEVERAL INSTRUCTION SETS

Ronald H. Gruner, Cary, N.C.; Gerald F. Clancy, Saratoga, Calif.; Craig J. Mundie, Cary, N.C.; Steven J. Wallach, Saratoga, Calif.; Stephen I. Schleimer, Chapel Hill, N.C., and Richard G. Bratt, Wayland, Mass., assignors to Data General Corporation, Westboro, Mass.

Filed May 22, 1981, Ser. No. 266,426
Int. Cl.[4] G06F *9/30*
U.S. Cl. 364—200 26 Claims

1. A digital computer system comprising:
(1) memory means for storing and providing items of data, said items of data including instructions, each one of said instructions containing an operation code of a plurality of

operation codes, said operation codes belonging to a plurality of functionally different operation code sets, said operation codes in a given one of said operation code sets being definable solely with reference to said given operation code set, and said instructions having common formats; and



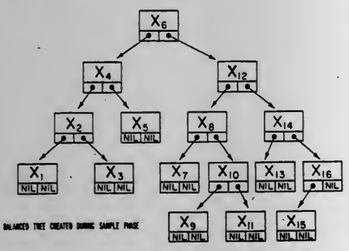
(2) processor means connected to said memory means for receiving said items including said instructions and responding to each said received instruction by performing said operation defined for said operation code in said received instruction in said operation code set to which said operation code in said received instruction belongs.

4,575,798

EXTERNAL SORTING USING KEY VALUE DISTRIBUTION AND RANGE FORMATION

Eugene E. Lindstrom, Saratoga, Calif., and Jeffrey S. Vitter, Providence, R.I., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 3, 1983, Ser. No. 500,741
Int. Cl.[4] G06F *7/08*
U.S. Cl. 364—300 **7 Claims**



1. A method for executing an external distribution sort, the data to be rearranged including N keyed records accessed by a CPU from associative secondary storage, the CPU having predetermined available internal memory of F records capacity, comprising the steps of:

random sampling of S keys, internally sorting the sampled keys within the CPU, and representing the sorted order by a sequential pointer list;

forming equal sized partitions averaging $N/S<F$ records in a single pass by obtaining a histogram of keys and ranges of key values including for each key the step of performing a binary search on the pointer list to ascertain the range associated with the key, and forming $S+1$ ranges and denoting the sorted key values by $X_1, X_2, \ldots, X_S$ for each value i from one to $S+1$, the ith range including the set of records whose key value lies in the semi-closed interval X_{i-1} to X_i, and combining contiguous lesser populated ranges to form larger ranges such that each partition fits within the CPU internal memory; and

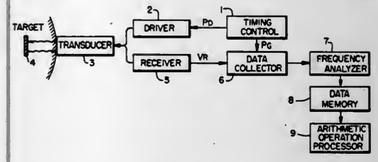
associatively retrieving all of the records whose keys lie within a range of a partition and internally sorting said records.

4,575,799

ULTRASONIC LIVING BODY TISSUE CHARACTERIZATION SYSTEM

Hirohide Miwa, Kawasaki, Japan, and John M. Reid, St. Davids, Pa., assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 23, 1983, Ser. No. 477,935
Int. Cl.[4] G01N *29/04*; G01S *15/89, 7/52*; A61B *10/00*
U.S. Cl. 364—414 **21 Claims**



1. An ultrasonic living body tissue characterization method, comprising the steps of:

(a) transmitting an ultrasonic pulse into the body tissue, receiving an echo reflected from within the body tissue and producing an echo signal from the echo;

(b) converting a portion of the echo signal corresponding to a depth z into a power spectrum;

(c) deriving a tissue power transfer function, R(f), of the portion utilizing a reference power spectrum obtained at the depth z in a reference medium where f indicates frequency within the spectrum;

(d) finding a maximum, Rm, of the tissue power transfer function R(f) and a frequency, fm, at which the maximum Rm occurs;

(e) normalizing the tissue power transfer function R(f) with the maximum Rm;

(f) producing a normalized frequency y in accordance with $y=f/fm$ and substituting the normalized frequency, y, for the frequency f; and

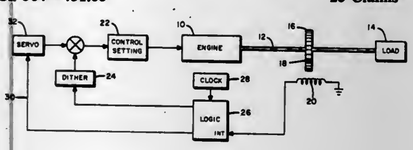
(g) extracting a reflection power exponent, n, from the shape of the normalized tissue power transfer function R(f)/Rm as a function of the normalized frequency y and the reflection power exponent n.

4,575,800

SYSTEM FOR OPTIMIZING THE TIMING OF DIESEL OR SPARK IGNITION ENGINES

David B. Kittelson, Minneapolis, Minn., assignor to Optimizer Control Corporation, Burnsville, Minn.

Continuation-in-part of Ser. No. 483,188, Apr. 8, 1983, abandoned. This application Sep. 6, 1983, Ser. No. 529,287
Int. Cl.[4] G05B *13/02*; F02P *5/08*
U.S. Cl. 364—431.05 **23 Claims**



1. An adaptive electronic control system for maximizing the performance of a power producing machine for given settings of a machine performance modifying parameter, comprising:

(a) shaft rotation sensing means coupled to said machine for sensing complete rotations of the output shaft of said machine with respect to a fixed reference point;

(b) means coupled to said shaft rotation sensing means for symmetrically reciprocally moving the setting of said machine performance modifying parameter back and forth about said given setting in synchronism with the angular rotation of said output shaft during successive integral engine cycles;

(c) speed determining means coupled to said shaft rotation sensing means for defining the average speed of rotation of said output shaft in plural segments of the period of symmetrical reciprocal movement of said setting about said given setting;

(d) computing means for determining the weighted difference between said average speeds in first ones of said plural segments and in second ones of said plural segments, the weighting factor being a function of the acceleration of said output shaft; and

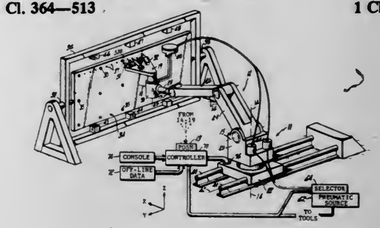
(e) means for adjusting said given setting in accordance with said weighted difference in average speeds.

4,575,802

ROBOT/WORKPIECE ORIENTATION

Peter M. Walsh, So. Windsor, and Stephen M. Gardner, Enfield, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jul. 11, 1983, Ser. No. 512,828
Int. Cl.[4] G06F *15/46*
U.S. Cl. 364—513 **1 Claim**



1. A method of determining a coordinate transformation indicative of the rotation and origin offset of a touchblock frame of reference from a robot frame of reference, wherein the touchblock frame of reference is associated with a workpiece mounted to a fixture and is defined by three orthogonal unit vectors (x,y, and z), and wherein the robot frame of reference is associated with a robot and has three orthogonal axes—an x-axis, a y-axis, and a z-axis, comprising:

providing a first touchblock (**43**) on the fixture having a first face (**1**) substantially normal to the robot x-axis, a second face (**4**) substantially normal to the robot y-axis, and a third face (**6**) substantially normal to the robot z-axis;

providing a second touchblock (**46**) on the fixture having a fourth face (**2**) coplanar to the first face (**1**), and a fifth face (**5**) coplanar to the second face (**4**);

providing a third touchblock (**44**) on the fixture having a sixth face (**3**) coplanar to the first (**1**) and fourth (**2**) faces;

storing nominal coordinates in the robot frame of reference for the six faces (**1–6**) indicative of the approximate location of the fixture relative to the robot;

automatically positioning the touchprobe in response to the stored nominal coordinates for the first face (**1**) to measure the actual location of the first face in the robot frame of reference, and storing a measured x-axis coordinate for the measured location of the first face;

automatically positioning the touchprobe in response to the stored nominal coordinates for the fourth face (**2**) to measure the actual location of the fourth face in the robot frame of reference, and storing a measured x-axis coordinate for the measured location of the fourth face;

automatically positioning the touchprobe in response to the stored nominal coordinates for the sixth face (**3**) to measure the actual location of the sixth face in the robot frame of reference, and storing a measured x-axis coordinate for the measured location of the sixth face;

automatically positioning the touchprobe in response to the stored nominal coordinates for the second face (**4**) to measure the actual location of the second face in the robot frame of reference, and storing a measured y-axis coordinate for the measured location of the second face;

automatically positioning the touchprobe in response to the stored nominal coordinates for the fifth face (**5**) to measure the actual location of the fifth face in the robot frame of reference, and storing a measured y-axis coordinate for the measured location of the fifth face;

automatically positioning the touchprobe in response to the stored nominal coordinates for the third face (**6**) to measure the actual location of the third face in the robot frame of reference, and storing a measured z-axis coordinate for the measured location of the third face;

calculating a first vector ($V_{1,2}$) based on the measured x-axis

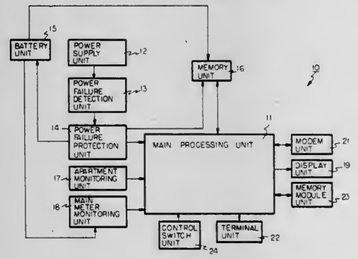
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4,575,801

SUBMETERING APPARATUS

Kenneth H. Hoberman, and Kim J. Kirwan, both of Omaha, Nebr., assignors to GRH Electronics, Inc., Omaha, Nebr.

Filed Apr. 29, 1983, Ser. No. 490,020
Int. Cl.[4] G01K *17/06*; G06F *15/56*
U.S. Cl. 364—483 **9 Claims**
MICROFICHE APPENDIX INCLUDED
(2 Microfiche, 147 Pages)



1. In a submetering apparatus for individually monitoring a plurality of energy consuming units located within a general monitored area, said apparatus comprising power supply means to provide power to said apparatus during normal operation of said apparatus, monitoring means for individually monitoring on-time for said plurality of energy consuming units; time measuring means for individually measuring on-time for each energy consuming unit, memory means for individually storing such measured on-time data, and display means for displaying said measured on-time data, an improvement comprising:

(a) the provision of a main processing unit, which main processing unit includes said time measuring means and which further operates to monitor main meter consumption data, said improvement further comprising main meter monitoring means for monitoring consumption for said general monitored area, and wherein said memory means stores such measured consumption data and wherein said display means can further operate to display said general consumption; and

(b) power failure detection means for sensing an impending AC power failure and power failure protection means for responding to said power failure detection means and for protecting data stored in said memory means in the event of a power failure.

coordinates for the measured location of the first (1) and fourth (2) faces;

calculating a second vector ($V_{1,3}$) based on the measured x-axis coordinates for the measured location of the first (1) and sixth (3) faces;

calculating the x unit vector for the touchblock frame of reference by taking the crossproduct of the first and second vectors;

calculating a third vector ($V_{4,5}$) based on the measured y-axis coordinates for the measured location of the second (4) and fifth (5) faces;

calculating the y unit vector for the touchblock frame of reference by taking the crossproduct of the calculated x unit vector and the third vector;

calculating the z unit vector for the touchblock frame of reference by taking the crossproduct of the calculated x unit vector and the calculated y unit vector;

determining a rotation matrix indicative of the rotation of the touchblock frame of reference relative to the robot frame of reference based on the calculated x, y, and z unit vectors for the touchblock frame of reference;

determining an offset vector indicative of the offset of origins between the touchblock frame of reference and the robot frame of reference based on the measured x-axis coordinate of the first face, the measured y-axis coordinate for the second face, and the measured z-axis coordinate for the third face; and

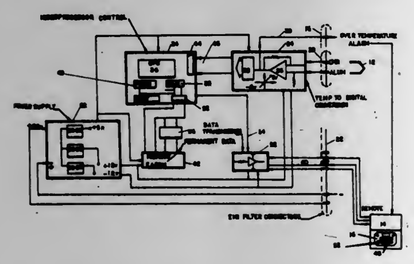
determining the coordinate transformation based on the rotation matrix and the offset vector.

4,575,803

ENGINE MONITOR AND RECORDER

M. Samuel Moore, Northridge, Calif., assignor to Semco Instruments, Inc., No. Hollywood, Calif.

Filed Dec. 30, 1981, Ser. No. 335,841
Int. Cl.⁴ G01K *7/02*
U.S. Cl. 364—551 **11 Claims**



10. A turbine engine monitoring and recording system comprising:

engine mounted electronic circuit means including a microprocessor and a non-volatile memory for receiving engine operating information and for storing such information;

additional electronic circuit means, remote from the turbine engine, and including an additional microprocessor and display means;

circuit means included in said engine mounted electronic circuit means for determining and for recording in said non-volatile memory information indicating the number of times that the turbine engine has been started, and the cumulative length of time that the turbine engine has been operated above each of a plurality of predetermined temperature levels and within predetermined temperature bands;

additional circuit means for interconnecting said remote circuit means with said engine mounted circuit means;

said system including for each temperature channel, means for storing both the total time the turbine engine has been operated above each predetermined temperature defining the lower limit of the channel, and also the time the turbine engine has been operated above each said predetermined temperature and within each temperature band beyond the manufacturers specified time limit for each operation above that temperature, to provide an indication of the cumulative operating time over limits; and

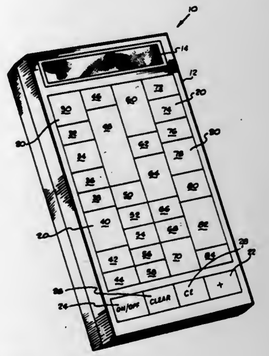
switching means associated with said remote electronic circuit means for ordering selected information stored in said non-volatile memory, and for displaying the ordered information on said display means.

4,575,804

DIET CALCULATOR

Lloyd P. Ratcliff, 306 Bayou Oaks Dr., Monroe, La. 71203

Filed Aug. 1, 1983, Ser. No. 518,947
Int. Cl.⁴ G06F *15/42*
U.S. Cl. 364—715 **25 Claims**



1. A diet calculator, comprising:

(a) a calculator case;

(b) a standard numerical calculator electrical operation circuit contained within the case, the circuit containing at least a memory add circuit as well as other circuits and contacts;

(c) a modified calculator keyboard positioned on the calculator case;

(d) a plurality of first buttons positioned on the keyboard and having formed thereon indicia designating groups of ingestible items, the plurality of first buttons being electrically connected to the standard numerical calculator electrical operation circuit so that each button when pushed represents a number in the standard numerical calculator electrical operation circuit, the items formed on each button being grouped together by a numerical value and having a substantially similar numeric value as grouped so that when a particular first button is pushed on the calculator, a given numerical value will be recorded in the standard numerical calculator electrical operation circuit;

(e) a second button, positioned on the keyboard and electrically connected to the standard numerical calculator electrical operation circuit, the second button functioning as an add button to add the given numerical values recorded in the standard numerical calculator electrical operation circuit whenever the first buttons are pushed; and

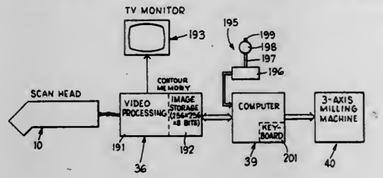
(f) a standard numerical calculator display readout positioned in the calculator case and electrically connected to the standard numerical calculator electrical operation circuit to display a total numerical value of a sum of the numerical values derived from pushing the plurality of first buttons and the numerical values derived from pushing the second button.

4,575,805

METHOD AND APPARATUS FOR THE FABRICATION OF CUSTOM-SHAPED IMPLANTS

Werner H. Moermann, Hofstrasse 104, CH-8044 Zuerich, and Marco Brandestini, Gartenstrasse 10, CH-8702 Zollikon, both of Switzerland

Continuation-in-part of Ser. No. 334,207, Dec. 24, 1981, abandoned. This application Aug. 23, 1984, Ser. No. 643,755
Claims priority, application Switzerland, Dec. 24, 1980, 9561/80
Int. Cl.⁴ G06F *15/46*; G01B *11/24*
U.S. Cl. 364—474 **21 Claims**



1. A method for facilitating the fabrication of a workpiece to be placed onto a light reflective object having a three dimensional contour thereon to which said workpiece is to be conformed, comprising the steps of:

noncontact topographic scanning of said contour on said object, including the step of directing a predetermined intensity pattern of light onto said contour so that a corresponding intensity pattern of light will be reflected therefrom, the varying intensity pattern of said reflected light being a measure of said three dimensional contour on said object;

directing said pattern of said reflected light from said object onto a light sensing means;

converting said pattern of light on said light sensing means into a corresponding pattern of electrical data;

selecting a set of said electrical data;

storing said set of said electrical data;

mounting said workpiece onto a machining means which is responsive to electrical data sequentially presented thereto;

sequentially presenting said stored set of electrical data to said machining means; and

machining said workpiece into a three dimensional shape in accordance with said stored set of data.

4,575,806

PRECISION TEMPERATURE MEASURING SYSTEM

Wilbert H. Aldrich, Winchester; Alan Rich, Haverhill, and Dennis Picker, Arlington, all of Mass., assignors to Gould, Inc., Rolling Meadows, Ill.

Filed Mar. 26, 1982, Ser. No. 362,059
Int. Cl.⁴ G01K *7/02*; G01R *5/22*
U.S. Cl. 364—557 **7 Claims**

1. A precision temperature measuring system for determining and monitoring a plurality of temperatures comprising:

(A) a temperature sensing circuit incorporating

(1) a plurality of temperature detectors, each having an electrical resistance that varies with temperature, and

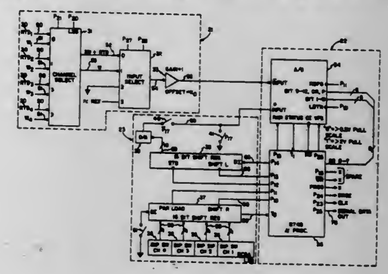
(2) multiplexing means for receiving input signals from the plurality of resistance temperature detectors and sequentially selecting these input signals for subsequent transmission;

(B) a range selection circuit incorporating,

(1) manually operable switch means for pre-selecting a desired temperature range which each particular resistance temperature detector is to monitor, and

(2) signal generating means for receiving the pre-selected temperature ranges and generating output signals representing the pre-selected ranges, the signal generating means comprising a digital-to-analog (D/A) converter that is responsive to the plurality of temperature range signals and which is capable of generating the corresponding analog output signal representative of any such output range signal; and

(C) an information processing circuit connected to the temperature sensing circuit for receipt of the sequentially selected input signals and also connected to the range selection circuit for receiving the output signals therefrom, said information processing circuit having means for generating the temperature range signals and further having means for interpreting the received signals from the



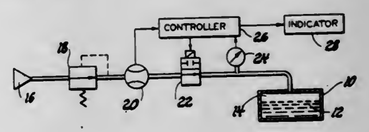
multiplexing means and processing these signals to develop a plurality of temperature output signals, each temperature output signal representing a temperature being monitored by a corresponding resistance temperature detector, wherein the information processing circuit includes an analog-to-digital (A/D) converter, connected to the microprocessor, for receipt of the signals from the multiplexing means, the microprocessor having means for controlling the operation of the A/D converter so as to generate a digital output signal which is based upon the difference of the received multiplexed input signals in comparison to the temperature range signal; whereby an efficient and effective temperature sensing system is obtained for generating output signals for each of the plurality of resistance temperature detectors by having the corresponding input signal processed over a corresponding pre-selected temperature range.

4,575,807

METHOD AND APPARATUS FOR LEAK TEST

Roger C. Dodge, Taylor, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 29, 1983, Ser. No. 527,099
Int. Cl.⁴ G01M *3/26*; G01N *7/00*
U.S. Cl. 364—558 **4 Claims**



3. Apparatus for testing the leak rate of fluid from a transmission having an air space of unknown volume comprising

means for supplying air under pressure to pressurize the air space to a preset value,

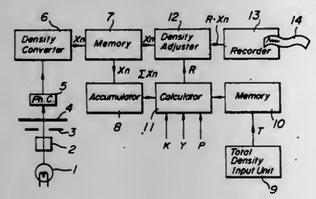
means for measuring the flow rate to the air space during the pressurizing step,
means for measuring the pressure in the air space, and
computer means connected to each measuring means and programmed to
(a) integrate the measured flow rate to determine flow to the air space thereby determining the volume of the air space,
(b) determine from the air flow and a preset leak rate limit, a limit value of a variable parameter in terms of an allowable pressure drop within a set time period or an allowable minimum time period for a preset pressure drop,
(c) monitor the pressure decline to measure the variable parameter, and
(d) compare the measured variable parameter with the limit value, thereby determining whether the leak rate is excessive.

4,575,808

METHOD OF RECORDING DENSITOGRAM REPRESENTING DENSITIES OF FRACTIONATED SUBSTANCES

Nobutaka Kaneko, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Japan

Filed Jul. 14, 1983, Ser. No. 513,913
Claims priority, application Japan, Jul. 20, 1982, 57-126276
Int. Cl.⁴ G01D *9/28*
U.S. Cl. 364—558 **4 Claims**



1. A method of recording a densitogram on a record medium with respect to a base line, said densitogram representing densities of a plurality of fractionated substances contained in a sample comprising the steps of:
deriving density signals X_n representing density values of the fractionated substances;
processing the density signals in such a manner that an area S surround by a densitogram curve to be recorded on the record medium and the base line is made equal to a product of a coefficient K denoting an area on the record medium per unit density and a total density T of the plurality of fractionated substances; and
supplying the processed density signals to a recorder to form a densitogram on the record medium.

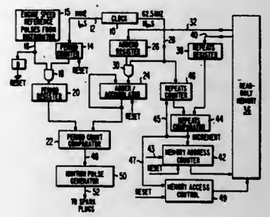
4,575,809

DIGITAL TIMING METHOD FOR SPARK ADVANCE

Joseph O. Sinniger, Pennington, and Anthony D. Robbi, Hopewell, both of N.J., assignors to RCA Corporation, Princeton, N.J.

Division of Ser. No. 161,454, Jun. 20, 1980, Pat. No. 4,375,209. This application Oct. 29, 1982, Ser. No. 437,836
Int. Cl.⁴ F02P *5/04*
U.S. Cl. 364—569 **6 Claims**

1. A method for controlling the point in time within a time interval ΔA of an output pulse for setting spark firing of an engine, said time interval ΔA corresponding to the speed at which said engine is running, said time interval ΔA being represented by a counted number of clock pulses which occur at a first, given clock rate, said method comprising the steps of:
repeatedly combining a quantity which is proportional to a desired spark advance with itself at a second clock rate which is related to but less than said first given clock rate, where said quantity may assume one or more values during the course of the combining step;
producing said output pulse when the combined quantity



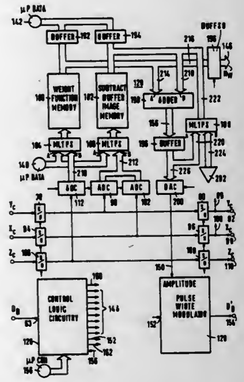
equals or exceeds said counted number of clock pulses, so that the point in time of said output pulse is a function of the value or values assigned to the quantity during said combining step; and setting said spark firing of said engine based on said point in time of outut pulse.

4,575,810

METHOD AND CIRCUIT FOR PROCESSING PULSES BY APPLYING THE TECHNIQUE OF WEIGHTED ACQUISITION

Everett W. Stoub, Villa Park, Ill., assignor to Siemens Gammasonics, Inc., Des Plaines, Ill.

Filed Mar. 11, 1983, Ser. No. 474,409
Int. Cl.⁴ G06F *15/20;* G01T *1/20*
U.S. Cl. 364—581 **14 Claims**



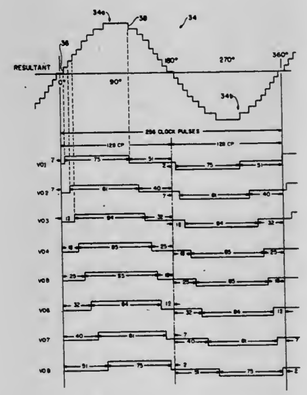
1. A circuit for processing pulses caused by a radioactive source and produced by an imaging radiation detector by applying the technique of weighted acquisition for forming an image, said circuit comprising
(a) a weight function memory having a data output;
(b) a subtract buffer image memory having a data input and a data output;
(c) an adder connected with the data output of said weight function memory and connected with said data output of said subtract buffer image memory for forming a sum signal of the output data of said weight function memory and said subtract buffer image memory;
(d) means associated with said adder for producing a polarity signal in dependence on the polarity of said sum signal performed by said adder; and
(e) means associated with said adder and controlled by said polarity signal for supplying a negative sum signal to the data input of said subtract buffer image memory.

4,575,811

VECTOR SUMMATION POWER AMPLIFIER

Russell E. Hammond, and John L. Henry, both of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 21, 1982, Ser. No. 390,096
Int. Cl.⁴ G06J *1/00;* G06F *1/02*
U.S. Cl. 364—607 **29 Claims**



1. A method of generating a stepped sinusodial waveform having a positive half cycle and a negative half cycle by approximation by summing a plurality of rectangular pulses, each said rectangular pulse having a leading edge and a trailing edge comprising the steps of:
(a) generating a set of n successive positive rectangular pulse, each of said pulses having an equal amplitude and each of said pulses having a different phase shift with respect to a reference, the trailing edge of the nth one of said positive rectangular pulses being the nth down-step of said positive half cycle of said sinusodial waveform, where n is a positive integer greater than 1;
(b) generating a set of n successive negative rectangular pulses, each of said n successive negative pulses having an equal amplitude and each of said negative pulses having a different phase shift with respect to a reference, the trailing edge of the nth one of said negative pulses being the nth up-step of said negative half cycle of said sinusodial waveform:
(c) adding each of said n positive pulses and each of said n negative pulses to obtain said sinusodial waveform.

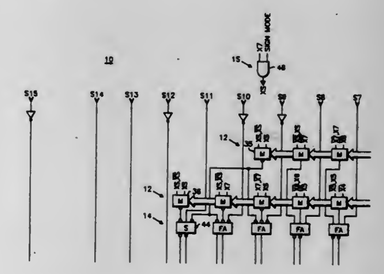
4,575,812

X×Y BIT ARRAY MULTIPLIER/ACCUMULATOR CIRCUIT

Kevin L. Kloker, Arlington Heights, and Ronald H. Cieslak, Chicago, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 31, 1984, Ser. No. 615,989
Int. Cl.⁴ G06F *7/52*
U.S. Cl. 364—760 **20 Claims**

18. An X×Y bit array multiplier circuit for providing a product of an X bit number and a Y bit number, where X and Y are integers, comprising:
encoding means for implementing a predetermined algorithm and providing a rank ordered plurality of first control signals in response to the Y bit number;
a rank ordered plurality of multiplexer means forming at least (Y/2) rank ordered rows and (X+Y) rank ordered columns, each of the multiplexer means having a plurality of control inputs, each control input being coupled to a predetermined one of the rank ordered first control signals, for coupling a predetermined one of the rank ordered first control signals, for coupling a predetermined one of a plurality of input bits of the X bit number of predetermined bit weight to an output; and
a rank ordered plurality of adder means forming at least [(Y/2)−1] rank ordered rows, each of said adder means having a predetermined column rank within said (X+Y)



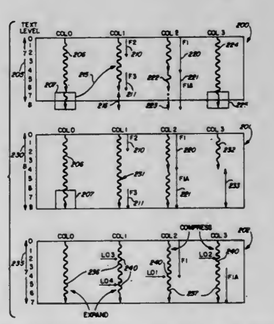
columns, the highest ranked row of the adder means providing a product output number, all remaining rows providing output sum and carry bits of predetermined bit weight, each adder means of the remaining rows providing a partial product output sum bit of predetermined bit weight which is coupled to an input of an adder means having a higher row rank and the same column rank, at least one row of said adder means having each partial product output sum bit thereof coupled to an adder input of adder means of corresponding column rank and at least two row ranks greater.

4,575,813

AUTOMATICALLY BALANCING AND VERTICALLY JUSTIFYING A PLURALITY OF TEXT/GRAPHICS-COLUMNS

Geoffrey M. Bartlett, Ridgefield, Conn.; James P. Hofmeister, Tucson, Ariz.; Derald D. Nye, Tucson, Ariz., and Edward J. Pring, Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 23, 1983, Ser. No. 469,181
Int. Cl.⁴ G06F *3/12, 15/626;* B41J *11/44;* B41B *17/00*
U.S. Cl. 364—900 **12 Claims**



11. The machine-implemented method of arranging text/graphics in a predetermined number of side-by-side columns

for adjusting columnar vertical depths of the columns to a common depth;

including the automatic steps of:

indicating total depth of text/graphics to be distributed to said columns, dividing said total depth by the number of columns to receive such text/graphics to yield an initial depth for said columns, rounding said initial depth to a line space integral one greater than the integer portion of said initial depth, comparing said rounded depth with a minimal depth of text/graphics specified to be in one column if said rounded depth is less than said minimal depth, then increasing the rounded depth to said minimal depth;

attempting a first distribution of text/graphics using said increased and rounded depth, upon completion of said first distribution, determining the difference between the depths of a shortest one and a longest one of the columns, if said determined differences are less than a predetermined vertical distance, vertically justifying the columns to a common depth including selecting said common depth in accordance with predetermined criteria including the determined difference;

when said determined difference is greater than said predetermined vertical distance, selecting a different column or initial depth and then redistributing said text/graphics amongst said columns at said different initial depth, measuring a difference of depths between shortest and longest ones of said columns and comparing the measured difference with a second predetermined vertical distance, if said measured difference is not greater than said second predetermined vertical distance, then justifying the depths of said columns to a common depth including selecting said second-mentioned common depth in accordance with said predetermined criteria including said second measured difference; and

repeating said selecting depth and distributing steps for a predetermined number of recursions or until a resultant measured difference between a shortest one and a longest one of the columns equals or is less than a predetermined one of said predetermined vertical distances, then vertically justifying said columns to said predetermined criteria irrespective of said resultant differences.

4,575,814

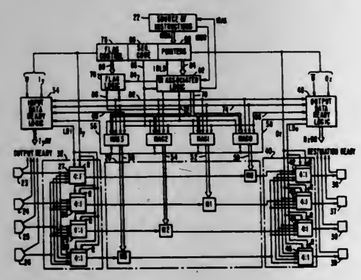
PROGRAMMABLE INTERFACE MEMORY

Charles W. Brooks, Jr., Annapolis, and William L. Price, Severna Park, both of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 26, 1982, Ser. No. 382,318

Int. Cl.[4] G06F *13/00*

U.S. Cl. 364—900 **34 Claims**



1. A programmable digital memory operative in response to programmed instructions from a source of instructions to transfer digital data words between itself and at least one data handling unit external thereto, said digital memory comprising:

a bulk memory partitioned into a plurality of memory sections;

a plurality of memory address generators coupled correspondingly to said plurality of memory sections with each memory address generator being operative, simultaneously with and independently of the other memory address generators of said plurality, to control memory address sequencing of its corresponding memory section for the transfer of digital data words, corresponding to said sequenced addresses, between said memory section and a selected data handling unit, and to generate at least one signal representative of the state of operation thereof; and

memory control logic circuitry operative in response to said programmed instructions to distribute each programmed instruction to a correspondingly designated memory address generator in accordance with said signals representative of the states of operation thereof for governing the memory address sequencing operations performed thereby.

4,575,815

DATA STORAGE UNIT

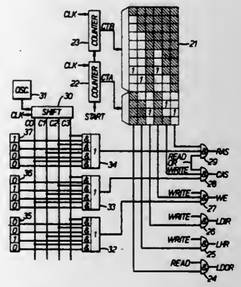
Stephen J. Delahunt, Harvard, Mass., assignor to International Computers Limited, London, England

Continuation of Ser. No. 446,600, Dec. 3, 1982, abandoned. This application Aug. 1, 1985, Ser. No. 761,149

Claims priority, application United Kingdom, Oct. 12, 1982, 8229063

Int. Cl.[4] G06F *1/04*

U.S. Cl. 364—900 **4 Claims**



1. A data storage unit having timing control means for producing internal timing signals for the unit on a plurality of timing signal lines, the timing control means comprising:

(a) a writable control memory having a plurality of individually addressed locations, each location containing a word having a plurality of bits each bit corresponding respectively to each of said plurality of timing signal lines,

(b) means for generating a sequence of clock signals,

(c) means responsive to the sequence of clock signals for addressing the locations of the control memory sequentially to read out the words from successive locations in successive clock signals,

(d) means connected to said clock signals generating means for producing a plurality of further clock signals subdividing each of said clock signal into a plurality of subclock signals,

(e) means connected to said further clock signals producing means for selecting one of the further clock signals for each timing signal line, and

(f) gating means responsive to the selected further clock signals and to each word out of the control memory, for producing a timing signal on each said timing signal line whenever the corresponding bit of the word read out of the control memory is set to a predetermined value.

4,575,816

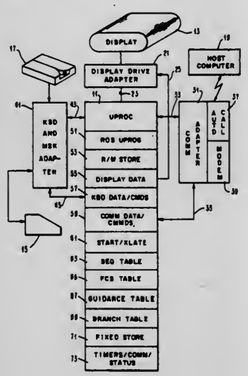
INTERACTIVE TRANSACTIONS PROCESSOR USING SEQUENCE TABLE POINTERS TO ACCESS FUNCTION TABLE STATEMENTS CONTROLLING EXECUTION OF SPECIFIC INTERACTIVE FUNCTIONS

Thomas A. Hendrickson, Charlotte; George C. Macauley, Concord, both of N.C.; Donald L. Pierce, Hyde Park, N.Y.; Robert W. Roefer, and Alan B. Strickland, both of Charlotte, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 19, 1980, Ser. No. 218,143

Int. Cl.[4] G06F *9/40, 13/12, 15/30*

U.S. Cl. 364—900 **10 Claims**



1. In an interactive transaction processor comprising a computer, storage, and input/output devices, the improvement comprising:

a function control statement table containing a plurality of function control statements, each function control statement specifying a function to be executed as part of an interactive transaction to be performed by said interactive transaction processor;

a sequence table containing a plurality of function pointers, said function pointers pointing to specific function control statements, which are needed to perform a specific interactive transaction;

logic means responsive to an input signal for controlling said interactive transaction processor to perform said interactive transaction by executing said specific function control statements, the sequence of their execution being determined by the sequence of said function pointers in said sequence table.

4,575,817

SWITCHING OF PROGRAMMING ROUTINE SUPPORTING STORAGE STACKS

Wade H. Allen, Austin; Theodore M. Cory, Leander, both of Tex.; Patrick J. Hurley, Highland Beach, Fla., and Raymond A. Thornton, Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 27, 1983, Ser. No. 508,394

Int. Cl.[4] G06F *9/00, 7/00, 11/00*

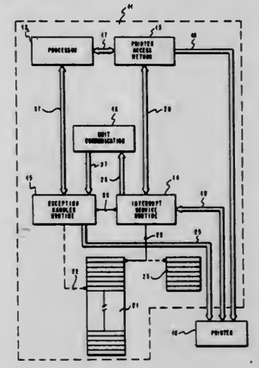
U.S. Cl. 364—900 **10 Claims**

1. In a system comprising a device controlled by instructions from a data processor and a main memory, the improvement comprising

means for monitoring responses from said device to said instructions for the occurrence of exception conditions,

a primary storage stack in the system main memory normally accessed by said monitoring means,

a secondary memory storage stack having less capacity than said primary stack,



an exception handler routine activated by said monitoring means in response to the occurrence of exception conditions, and

means responsive to said activation of said exception handler routine to switch said primary stack to be accessed by said exception handler routine and to place said secondary stack to be accessed by said monitoring means.

4,575,818

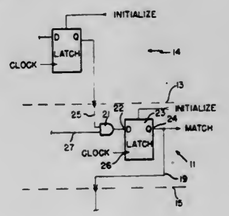
APPARATUS FOR IN EFFECT EXTENDING THE WIDTH OF AN ASSOCIATIVE MEMORY BY SERIAL MATCHING OF PORTIONS OF THE SEARCH PATTERN

Thomas A. Almy, Tualatin, and Thomas E. Merrow, Beaverton, both of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Jun. 7, 1983, Ser. No. 502,048

Int. Cl.[4] G11C *15/00*

U.S. Cl. 365—49 **2 Claims**



1. Apparatus for use in an associate memory device, having a clock in association therewith, comprising:

a plurality of circuit means, each associated with a different word location in the memory device for indicating a match when (1) the data contained in said word location matches with that portion of a selected search pattern being currently associatively searched and (2) the data in the previous word location in the memory device matches with that portion of the search pattern previously associatively searched;

the first of said plurality of circuit means includes a latch under the control of said clock, which clocks the latch, and a match/non-match signal indication for the data

contained in the first word location in the memory device;

each of the other of said plurality of circuit means includes a latch and an AND gate, said latch being controlled by the condition of the output signal of said AND gate and the clock which clocks the latch, the AND gate having applied as input signals thereto (1) a match/non-match signal indication from the previous circuit means and (2) a match/non-match signal indication for the data contained in the word location in the memory device associated with said circuit means; and

the latch of each of said plurality of circuit means being in operation initialized to initially provide a match indication; and

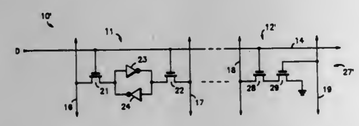
means for applying said match indication from each latch to another circuit means associated with the next successive word location in the memory device.

4,575,819

MEMORY WITH RAM CELLS AND ROM CELLS

Pravin T. Amin, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 1, 1983, Ser. No. 519,179
Int. Cl.⁴ G11C *13/00*
U.S. Cl. 365—104 **5 Claims**



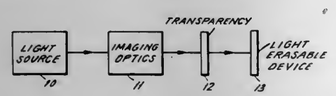
1. In a memory circuit having ROM and RAM cells along a common word line, wherein a RAM cell provides an output on a first pair of bit lines in response to receiving a row signal from the common word line, the improvement comprising a ROM cell having a pair of series-coupled transistors coupled between a first bit line and a reference terminal, wherein a control electrode of one of the pair of transistors is coupled to said word line and a control electrode of the other of the pair of transistors is coupled to a second bit line.

4,575,820

OPTICAL INPUT WITH ELECTRICAL READOUT MEMORY MOSAIC

Irving F. Barditch, 4807 Rosecrest Ave., Baltimore, Md. 21215

Filed Jul. 28, 1983, Ser. No. 518,168
Int. Cl.⁴ G11C *11/34*
U.S. Cl. 365—114 **5 Claims**



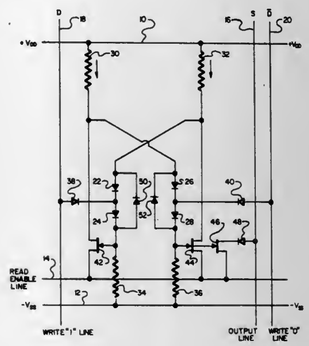
1. A system for converting input signal information in the form of light radiation into corresponding electrical information; said system including a large scale integrated circuit semiconductor device having a surface which is exposed for receipt of incident radiation, said large scale integrated circuit semiconductor device comprising a plurality of discrete devices, and whereby application of radiation greater than a given intensity to said discrete devices places said discrete devices in the same given logic state; a source of light radiation; means for spatially modulating said source of radiation; optical means for directing said source of radiation towards and focusing radiation from said source, after modulation, onto said exposed surface of said semiconductor device so that said discrete devices are placed in a logic state dependent upon the intensity of the radiant energy within said modulated radiation which is applied thereto; and electrical readout means for reading out the logic state of each of said discrete devices after being exposed to said radiation which reading out also causes the erasing of said logic states stored in said devices.

4,575,821

LOW POWER, HIGH SPEED RANDOM ACCESS MEMORY CIRCUIT

Richard C. Eden, and George R. Kaelin, both of Thousand Oaks, Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed May 9, 1983, Ser. No. 493,093
Int. Cl.⁴ G11C *7/00, 11/34*
U.S. Cl. 365—154 **16 Claims**



1. A random access memory circuit for use in conjunction with a positive supply voltage, a negative supply voltage, a read enable line, an output line, a write "1" line, and a write "0" line, comprising:

a first level shifting diode, the anode of which is coupled to said positive supply voltage;

a second level shifting diode, the anode of which is connected to the cathode of said first level shifting diode and the cathode of which is coupled to said negative supply voltage;

a third level shifting diode, the anode of which is coupled to said positive supply voltage;

a fourth level shifting diode, the anode of which is connected to the cathode of said third level shifting diode and the cathode of which is coupled to said negative supply voltage;

a first input isolation diode, the anode of which is connected to said write "1" line and the cathode of which is connected to the cathode of said first level shifting diode;

a second input isolation diode, the anode of which is connected to said write "0" line and the cathode of which is connected to the cathode of said third level shifting diode;

a first write field effect transistor, the drain of which is connected to the anode of said third level shifting diode, the source of which is connected to said read enable line, and the gate of which is connected to the cathode of said second level shifting diode;

a second write field effect transistor, the drain of which is connected to the anode of said first level shifting diode, the source of which is connected to said read enable line, and the gate of which is connected to the cathode of said fourth level shifting diode;

an output buffer field effect transistor, the source of which is connected to said read enable line and the gate of which is connected to the cathode of said fourth level shifting diode; and

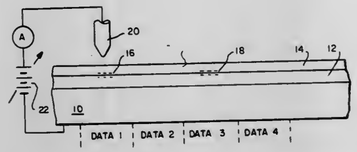
an output isolation diode, the cathode of which is connected to the drain of said output buffer transistor and the anode of which is connected to said output line.

4,575,822

METHOD AND MEANS FOR DATA STORAGE USING TUNNEL CURRENT DATA READOUT

Calvin F. Quate, Palo Alto, Calif., assignor to The Board of Trustees of The Leland Stanford Junior University, Stanford, Calif.

Filed Feb. 15, 1983, Ser. No. 466,563
Int. Cl.⁴ G11C *7/00, 11/34*
U.S. Cl. 365—174 **21 Claims**



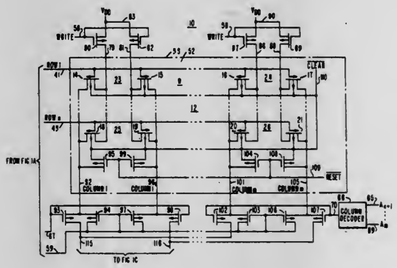
1. A data memory comprising a substrate having a major surface, means for selectively forming perturbations in said surface, and probe means for detecting the presence of said perturbations, said probe means including a conductive probe, means for moving said conductive probe in close proximity to and spaced from the layer, means for voltage biasing said probe and said substrate whereby a tunnel electron current flows between said surface and said conductive probe, and means for measuring said tunnel electron current.

4,575,823

ELECTRICALLY ALTERABLE NON-VOLATILE MEMORY

Michael D. Fitzpatrick, Linthicum, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 17, 1982, Ser. No. 409,002
Int. Cl.⁴ G11C *7/00, 11/40*
U.S. Cl. 365—184 **21 Claims**



5. A method for retrieving information from an array of variable threshold transistors, each one of said transistors having a gate, source, drain and body, said variable threshold transistors arranged in a plurality of rows and at least one column, said gate of said transistors in each row coupled together, said source of said transistors in each column coupled together, said drain of said transistors in each said column coupled together, said body of said transistors in said array coupled together, said method comprising the steps of:

selecting a row in said array in response to address signals,

applying a first predetermined voltage to the gate of said transistors in non-selected rows,

applying a second predetermined voltage to the gate of said transistors in said selected row,

applying a third predetermined voltage to the source of said transistors in at least one column,

applying a fourth predetermined voltage to the drain of said transistors in at least said one column,

sensing the current passing through the transistor of said array which is included in said one column and in said selected row, and

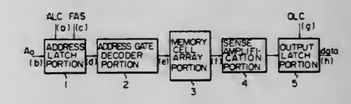
generating a signal upon sensing said current and removing said second predetermined voltage from the gate of said transistors of a selected row in response to said signal.

4,575,824

METHOD FOR CONTROLLING READ-OUT OR WRITE IN OF SEMICONDUCTOR MEMORY DEVICE AND APPARATUS FOR THE SAME

Miki Tanaka, Kawasaki, and Kazuo Ooami, Yokohama, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 27, 1982, Ser. No. 453,116
Claims priority, application Japan, Dec. 29, 1981, 56-214816
Int. Cl.⁴ G11C *7/00*
U.S. Cl. 365—189 **4 Claims**



4. A semiconductor memory device operatively connected to receive external address signals and having a fixed address signal, comprising:

memory cell array having a plurality of memory cells; and

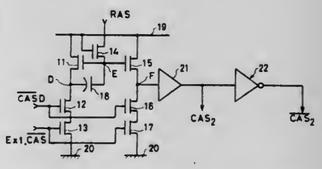
memory access means, operatively connected to said memory cell array, for receiving a selected address signal in dependence upon the external address signals, for accessing one of said memory cells selected in accordance with the selected address signal, and for accessing one of said memory cells, having an address corresponding to the fixed address signal, following the access of said selected memory cell, said memory access means accessing said selected memory cell and said memory cell designated by the fixed address signal during a single address cycle.

4,575,825

SEMICONDUCTOR MEMORY DEVICE

Hideyuki Ozaki; Kazuhiro Shimotori (Fujishima; Kazuyasu), and Hideshi Miyatake, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 4, 1984, Ser. No. 568,139
Claims priority, application Japan, Jan. 24, 1983, 58-11177
Int. Cl.⁴ G11C *11/40*
U.S. Cl. 365—189 **11 Claims**



1. A semiconductor memory device with a memory array for storing data, said data being read out in response to an external row address strobe signal and an external column

address strobe signal, said semiconductor memory device comprising:

(a) internal row address strobe signal generator means for generating a signal synchronous with said external row address strobe signal;

(b) first internal column address strobe signal generator means for generating a signal synchronous with said external column address strobe signal;

(c) delay means for developing a delay time when the output of said first internal column address strobe signal generator means changes from a first level to a second level, and then generating an output changing from said first level to said second level,

(d) second internal column address strobe signal generator means comprising;

a constant voltage source;

circuit means providing an output changing from one level to another level in response to said external row address strobe signal bringing to inactive state and changing from said another level to said one level in response to external column address strobe signal bringing to active state;

first NAND gate means receiving as its one input said external column address strobe signal, said first NAND gate means being provided at the first stage of said second internal column address strobe signal generator means; and

connection means for connecting one selected from the output of said delay means, the output of said constant voltage source and the output of said circuit means to another input to said first NAND gate means;

wherein said second internal column address strobe signal generator means generates a signal responsive to said external address strobe signal and the signal inputted through said connection means

(e) data address signal generator means responsive to the output of said internal row address strobe signal generator means and the output of said second internal column address strobe generator means for generating address signals in connection with the data to be read out from said memory array;

(f) read out means responsive to the output of said data address signal generator means for reading out a plurality of data from said memory array; and

(g) output means responsive to a portion of the output of said data address signal generator means, the output of said first internal column address strobe signal generator means and the output of said second internal column address strobe signal generator means for outputting at least one of said plurality of the data read out through said read out means.

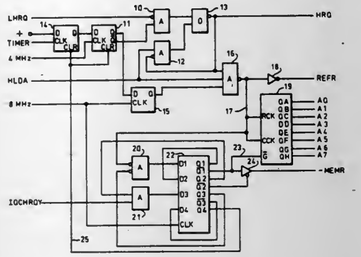
4,575,826

REFRESH GENERATOR SYSTEM FOR A DYNAMIC MEMORY

Mark E. Dean, Boynton Beach, Fla., assignor to International Business Machines Corp., Armonk, N.Y.

Filed Feb. 27, 1984, Ser. No. 584,032
Int. Cl.⁴ G11C *7/00*; G06F *13/00*
U.S. Cl. 365—222 **10 Claims**

1. A refresh generator system for a dynamic random access memory in a data processing system which includes a processor of the type which, in response to a hold request signal, relinquishes control of its local bus and generates a hold acknowledge signal, said refresh generator system comprising first logic means responsive to a periodic signal from a refresh timer circuit to generate a hold request signal for the processor, second logic means responsive to a hold acknowledge signal from the processor to generate a refresh control signal, third logic means responsive to the refresh control signal to provide a refresh signal to control memory row access, a counter circuit coupled to be incremented by one in response to each refresh control signal, and a sequencer circuit responsive to each refresh control signal to generate a first gating signal to gate the current count in the counter circuit, representing a memory row address, to the memory and thereafter



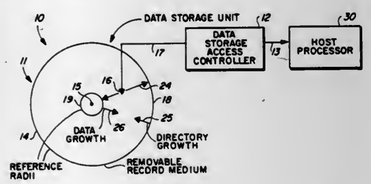
to generate a second gating signal to generate a memory read signal.

4,575,827

SELF-ARCHIVING DATA RECORDING

John E. Kulakowski, Tucson, Ariz., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 18, 1984, Ser. No. 611,809
Int. Cl.⁴ G11C *13/00*
U.S. Cl. 365—230 **25 Claims**



1. In the method of operating a data storage unit having a continuous address space bounded by first and second addresses and respectively representing data storage areas of said data storage unit addressably accessible by addresses in said address space;

the steps of: repeatedly receiving records of diverse data for storage in the data storage unit, storing said received data in said data storage areas beginning at said first addressed data storage area and proceeding sequentially at successively addressed ones of said data storage areas toward said second addressed data storage area;

each time any of said received records of data are stored in said data storage areas, creating a record directory entry having an identification of the received and just stored records of data and an address pointer identifying the data storage area in which said received and just stored records of data are stored; and

storing said created record directory entries respectively in data storage areas of said data storage unit beginning at said second address and storing successively created ones of said entries respectively at successive addressed ones of said data storage areas beginning at said second address and proceeding sequentially toward said first address.

4,575,828

METHOD FOR DISTINGUISHING BETWEEN TOTAL FORMATION PERMEABILITY AND FRACTURE PERMEABILITY

D. Michael Williams, Grapevine, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jul. 9, 1984, Ser. No. 629,147
Int. Cl.⁴ G01V *1/00*
U.S. Cl. 367—31 **11 Claims**



11. A method for distinguishing between total subsurface formation permeability and that portion of such permeability that is attributable to naturally occuring fractures in subsurface formations adjacent a borehole, comprising the steps of:

(a) traversing a borehole with a logging tool having a means for transmitting low-frequency acoustic energy,

(b) pulsing said transmitting means at a plurality of locations in said borehole to produce acoustic energy therein,

(c) detecting for each location said produced energy at a first pair of spaced-apart receivers having a low frequency response in the range 0.1 kHz to 30 kHz to detect shear waves in said acoustic energy,

(d) detecting for each location said produced energy at a second pair of spaced-apart receivers having a low frequency response in the range of 0.1 kHz to 30 kHz to detect tube waves in said acoustic energy,

(e) recording the amplitude ratio of shear waves detected by said first pair of spaced-apart receivers for each location versus depth within the borehole,

(f) identifying the depth of natural fractures in said subsurface formations adjacent said borehole when there is a change in the recorded amplitude ratio of said shear waves detected by said first pair of spaced-apart receivers for each location,

(g) recording the amplitude ratio of tube waves detected by said second pair of spaced-apart receivers for each location versus depth within the borehole,

(h) recording the travel time difference of tube waves detected by said second pair of spaced-apart receivers for each location versus depth within the borehole,

(i) estimating the total permeability of said identified naturally fractured subsurface formation in accordance with a predetermined correlation between permeability and tube wave amplitude ratio established by plotting both the logarithm of core permeability measurements and tube wave amplitude ratio measurements from a select borehole having a known naturally fractured formation adjacent thereto versus depth in said select borehole,

(j) estimating the matrix permeability of said identified naturally fractured subsurface formation in accordance with a predetermined correlation between permeability and tube wave travel time differences established by plotting both the logarithm of core permeability measurements and tube wave travel time ratio measurements from said select borehole versus depth in said select borehole, and

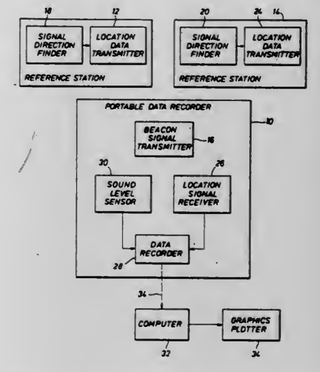
(k) distinguishing between total permeability and that portion of said total permeability that is attributable to the naturally occurring fractures by determining the difference between said total permeability estimate and said matrix permeability estimate.

4,575,829

METHOD AND APPARATUS FOR SOUND LEVEL DETERMINATION

Rand J. Duhe, The Woodlands, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Nov. 14, 1983, Ser. No. 551,782
Int. Cl.⁴ G01S *5/00*
U.S. Cl. 367—129 **6 Claims**



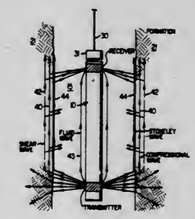
1. A method of determining both the level of sound occurring at a point in an area of interest and the location of the point, said method comprising the steps of: sensing the level of sound at a point in the area of interest; transmitting a first signal from said point; receiving said first signal at a first location related to said area of interest; determining the direction relative to said first location from which said first signal was transmitted; transmitting a second signal indicative of the direction relative to said first location from which said first signal was transmitted; receiving said first signal at a second location related to said area of interest; determining the direction relative to said second location from which said first signal was transmitted; transmitting a third signal indicative of the direction relative to said second location from which said first signal was transmitted; receiving said second and third signals at said point, and recording in a correlatable manner said second and third signals and the level of sound sensed at said point.

4,575,830

INDIRECT SHEARWAVE DETERMINATION

John D. Ingram, Houston, Tex., and Josephine L. Murray, Ridgefield, Conn., assignors to Schlumberger Technology Corporation, Houston, Tex.

Filed Oct. 15, 1982, Ser. No. 434,658
Int. Cl.⁴ G01V *1/40*
U.S. Cl. 367—26 **15 Claims**



1. A method of estimating parameters of shear waves included in acoustic waves arriving sequentially at a plurality of

points spaced vertically along the length of a borehole comprising the steps of:

(a) generating acoustic energy in the borehole,

(b) receiving the acoustic energy at each of the points after refraction, reflection and direct transmission through and along a formation adjacent the borehole,

(c) establishing a window of known length with a known moveout between adjacent receiving points,

(d) positioning said window along the composite wave relative to the estimated arrival of a selected guided acoustic wave,

(e) multiplying the energy received at each point by the window,

(f) generating the Fourier transform of that portion of received guided wave energy multiplied by the window, to produce a plurality of complex signals in the frequency domain,

(g) determining the cross-spectral magnitude and phase for pairs of signals from adjacent receiving points,

(h) computing the phase velocity α from the phase at each frequency,

(i) scanning the cross-spectral magnitudes for a peak in a selected frequency range and identifying the frequency at which the peak occurs,

(j) selecting from the phase velocity α versus frequency a value of guided wave phase velocity α_s at the identified frequency,

(k) estimating the ratio of Lame constants μ_2 and λ_1 in accordance with the expression

$$\frac{\mu_2}{\lambda_1} = \frac{A}{[(\alpha_1/\alpha_s)^2 - 1]^\gamma}$$

where A and γ are values found by matching two points on known dispersion curves for said guided wave where α, represents mud velocity,

(l) obtaining an estimate of shear wave velocity β_2 in accordance with the expression

$$\beta_2 \simeq \alpha_1 \sqrt{\frac{\mu_2/\lambda_1}{\rho_2/\rho_1}}$$

where ρ_2 is formation density and ρ_1 is mud density, and

(m) plotting the estimate of β_2 as a function of depth.

4,575,831

METHOD AND APPARATUS FOR ACQUIRING SEISMIC SIGNALS IN A BOREHOLE

Jean-Luc Decorps, Paris, and Alain Delpuech, Le Plessis Robinson, both of France, assignors to Schlumberger Technology Corporation, Houston, Tex.

Filed Jul. 8, 1983, Ser. No. 511,814

Claims priority, application France, Jul. 13, 1982, 82 12252

Int. Cl.⁴ G01V *1/40, 3/18*

U.S. Cl. 367—33 **17 Claims**

3. Sonde for seismic signal acquisition at different levels in a borehole, comprising:

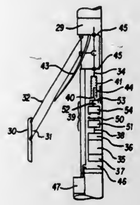
an elongated body member;

seismic wave detection means;

a pad designed to be anchored in the borehole wall;

a pad support articulated on the body member and capable of occupying a retracted position substantially along the body member;

means for effecting movement of said pad support by application of a force to extend the pad away from or retract it toward the body member; and



a means for producing a signal representative of the force exerted on the pad.

4,575,832

DEVICE FOR TIMEPIECE ELECTRONICALLY SIGNALLING A TIME BY MELODY SOUNDS AND TIME STRIKING SOUNDS

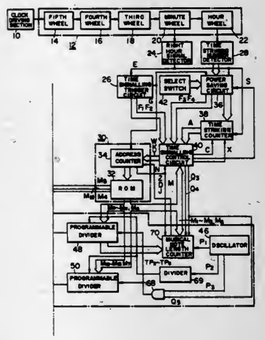
Katsuhiko Takebe, Tokyo, Japan, assignor to Rhythm Watch Co., Ltd., Tokyo, Japan

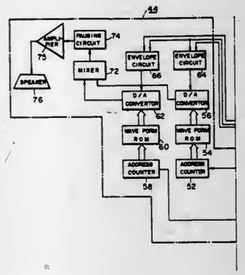
Filed Jan. 5, 1983, Ser. No. 455,835

Claims priority, application Japan, Jan. 9, 1982, 57-1979

Int. Cl.⁴ G04B *37/00*

U.S. Cl. 368—272 **7 Claims**





1. A device for a timepiece electronically signalling a time by melody sounds and time striking sounds comprising a musical scale ROM storing musical scale data for determining the usable scale of musical note, musical note length data for determining the type of musical scale and envelope trigger signals for controlling the operation of envelope for respective musical notes in predetermined melody sounds and time striking sounds, a signalling time detector electrically detecting prestablished signalling times, and address counter reading out a respective musical scale and respective musical note length data from said musical scale ROM one after another in accordance with the musical note rows which are the melody sounds and time striking sounds in response to the detecting signal of the signalling time detector, and a sound generator generating melody sounds or the time striking sounds with said musical scale and musical note length data which are read out by said address counters, wherein said sound generator comprises:

a musical note length counter determining a requested length of respective musical notes by means of selecting a counting interval of said musical note length counter coresponding to said musical note length data supplied from said musical scale ROM;

a pair of sound wave signal generating circuits respectively including a waveform ROM and a D/A convertor in order to output analog waveform signals in compliance with the musical scale set by said musical scale ROM;

a pair of envelope circuits triggered by said envelope trigger signals from said musical scale ROM and supplying to each of said sound wave signal generating circuits envelope signals which attenuate the waveform outputs from said pair of sound wave signal generating circuits in accordance with a predetermined attenuating characteristic;

a mixer mixing the signals from both of the sound wave signal generating circuits;

an amplifier and a speaker producing the requested melody sounds and the time striking sounds in response to a signal from the mixer; and

said musical scale ROM storing musical scale data, musical note length data, envelope trigger signals for respective musical notes for alternately starting a pair of envelope circuits and same musical scale data of last musical note set for the respective musical notes of the requested melody sounds and for storing musical note length data, predetermined musical note data of two different kinds and envelope trigger signals for both of the envelope circuits respectively set for the time striking sounds,

wherein for the melody sounds a pair of said envelope circuits are alternately started at every musical notes by said envelope trigger signals so that the musical notes in the requested musical scale can be generated with the requested musical note length, and, at the same time, the remaining envelope signal of the other envelope circuits is overlapped at least at the initial period, and for the time striking sounds both of the envelope circuits are started at the same time to overlap sound production of two different musical scale.

4,575,833

BAND MOUNTING FOR WRIST WATCH, AND ASSEMBLY, WITH IMPROVED VIEWING

Zilley H. Bakhtiari, 1777 Mitchell Ave., #8, Tustin, Calif. 92680

Filed Oct. 9, 1984, Ser. No. 658,700

Int. Cl.⁴ G04B *37/00;* **G04C** *23/02*

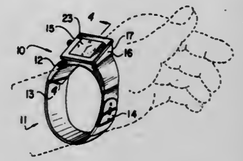
U.S. Cl. 368—282 **8 Claims**

1. An assembly of a wrist watch casing and band for improved viewing, comprising:

(a) a band, including a curved rigid or semi-rigid portion for engaging an inner side wrist of a wearer, and a flexible portion for engaging the balance of the wearer's wrist;

(b) a watch casing having an upper flat watch face surface and a parallel lower watch surface, the watch face providing a time readout, the watch casing being superposed on the said inner side wrist; and,

(c) a mounting integral with the band, for engaging the watch casing, the mounting defining a cavity having an inclined base elevated towards the wearer, and having flexible sidewalls adapted to: i. expand and enable press fitting of the watch casing into the cavity for securing the sides and lower surface of the watch casing into engagement with the corresponding sidewalls and base of the



cavity, thereby inclining the watch face surface toward the wearer for improved viewing; and, ii. expand and enable removal of the watch casing from the cavity.

4,575,834

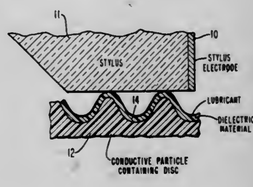
METHOD OF IMPROVING THE SIGNAL-TO-NOISE RATIO IN A CAPACITANCE ELECTRONIC DISC SYSTEM

Robert H. Huck, Indianapolis, Ind., assignor to RCA Corporation, Princeton, N.J.

Filed Oct. 5, 1982, Ser. No. 432,971

Int. Cl.⁴ H04N *5/76;* **G11B** *9/08*

U.S. Cl. 369—126 **7 Claims**



1. A method of enhancing the audio signal-to-noise ratio obtainable in a capacitance electronic disc system including a conductive disc formed from a plastic resin containing dispersed, finely divided, conductive particles and a dielectric playback stylus having an electrode face, said method comprising the step of:

spacing said playback stylus electrode at a distance of from about 200 up to about 500 Angstroms from the surface of said conductive disc by depositing a coating of a solid dielectric material on the surface of said conductive disc, said spacing being sufficient to decrease the noise sensed by said stylus electrode from the surface of said conductive particle containing disc and being limited to yet sense the signals on the said surface at a relatively high level, thereby increasing the audio signal-to-noise ratio of the system.

4,575,835

MOTOR CONTROL CIRCUIT OF DATA REPRODUCTION APPARATUS

Meisei Nishikawa, Yokohama, and Tadashi Kojima, Yokosuka, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 10, 1983, Ser. No. 473,768

Claims priority, application Japan, Jun. 15, 1982, 57-102820; Jun. 15, 1982, 57-102823

Int. Cl.⁴ G11B *17/00*

U.S. Cl. 369—50 **6 Claims**

1. A motor control circuit for controlling a disk motor of a data reproduction apparatus responsive to a sync signal reproduced from a recording medium, comprising:

frequency detecting means for detecting a frequency compo-

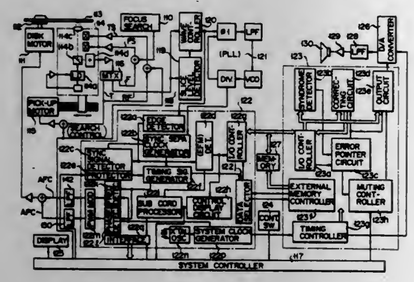
nent of said reproduced sync signal and outputting a signal indicative thereof;

phase detecting means for detecting a phase component of said reproduced sync signal and outputting a signal indicative thereof;

first motor control signal generating means for generating a first motor control signal to control said disk motor in accordance with said output signal from said frequency detecting means;

second motor control signal generating means for generating a second motor control signal to control said disk motor in accordance with said output signal from said phase detecting means;

AFC detector means, responsive to said frequency detecting



means, for detecting whether said frequency component of said reproduced sync signals falls within a first predetermined range, and for holding said first motor control signal at a predetermined low level when said detection is negative; and

controlling means, responsive to said frequency detecting means, for holding said second motor control signal at a predetermined value until said output signal from said frequency detecting means falls within a second predetermined range different from said first predetermined range, and for holding said second motor control signal at said predetermined value whenever said output signal from said frequency detecting means falls out of said first predetermined range after being within said second predetermined range.

4,575,836

DUAL MODE DISC PLAYER

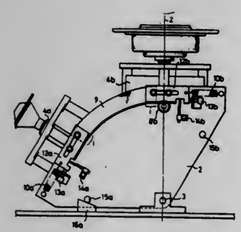
Yasuhiko Seto, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Feb. 3, 1984, Ser. No. 576,823

Claims priority, application Japan, Dec. 22, 1983, 58-197976[U]

Int. Cl.⁴ G11B *15/30, 15/44, 25/04*

U.S. Cl. 369—265 **10 Claims**



1. A disc player comprising:

first drive means for rotating a first turntable for a first kind of an information-recorded disc,

second drive means for rotating a second turntable for a second kind of an information-recorded disc different from said first kind,

a single holder means for holding thereon said first and second drive means,

holder drive means for moving said single holder means along a predetermined path,

a pair of movable members provided on said single holder means near endpoints of said predetermined path,

means for biasing each of said movable members to move away from the center of said predetermined path toward its respective endpoint,

means for positioning said single holder means so that one of said first and second kinds of information-recorded disc is selectively positioned at a predetermined play position, and

pickup means for reproducing signals from said one of said first and second kinds of information-recorded disc when said one of said discs is at said predetermined play position.

4,575,837

MEDIUM CLAMP MECHANISM

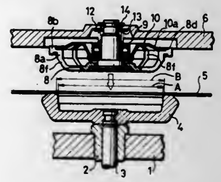
Masao Okita, Furukawa, Japan, assignor to Alps Electric Co., Ltd., Japan

Filed Feb. 27, 1984, Ser. No. 583,705

Claims priority, application Japan, Feb. 28, 1983, 58-27257[U]

Int. Cl.⁴ G11B *3/62, 17/00*

U.S. Cl. 369—270 **3 Claims**



1. In a medium clamp mechanism of the type having a pulley integrally secured to a spindle and having a U-shape cross section, a hub frame supported for a clamping motion toward said pulley, and a hub supported for rotation on a hub shaft which extends through said hub frame, said hub having a cylindrical portion adapted to be fitted into said U-shaped pulley and a flanged portion adjacent a top part of said cylindrical portion, by which a medium having a clamp hole is clamped between said pulley and said hub to rotate the medium,

the improvement comprising:

a spring plate disposed on said hub shaft concentric with said hub and adapted to be pressed by the clamping motion of said hub into said pulley, said spring plate having a radially slitted spring fingered outer portion engaged with said flanged portion of said hub which is radially expanded when the spring plate is pressed so as to radially expand the flanged portion of the hub, whereby said cylindrical portion of the hub is pressed against said U-shaped pulley.

4,575,838

SANDWICH-TYPE CAPACITIVE ELECTRONIC DISCS

Wolfgang H. Meyer, Urdorf, and Hanspeter Schweizer, Mönchaltorf, both of Switzerland, assignors to RCA Corporation, Princeton, N.J.

Filed Feb. 29, 1984, Ser. No. 584,599

Int. Cl.⁴ G11B *3/70, 5/84*

U.S. Cl. 369—276 **20 Claims**

17. A high density information disc suitable for capacitive playback comprising a plastic core disc having on at least one major surface thereof a conductive layer containing an information pattern, said layer being formed by the electro-polymerization of pyrrole onto a substrate having a surface relief pattern which is the negative of said information pattern, thereby producing said information pattern in said layer as it is formed, said layer being free of particulate filler.

4,575,839

CENTRALIZED SUPERVISORY SYSTEM

Yusuke Ogata; Yasushi Nagahama, both of Yokohama; Yoshiaki Matsuura; Kenzou Aoki, both of Kawasaki, and Hidemi Harada, Oyama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jan. 28, 1983, Ser. No. 462,111

Claims priority, application Japan, Jan. 29, 1982, 57-012990

Int. Cl.⁴ H04Q *11/04;* **H04M** *3/22*

U.S. Cl. 370—13 **7 Claims**

1. A centralized supervisory system in an automatic switching system, comprising:

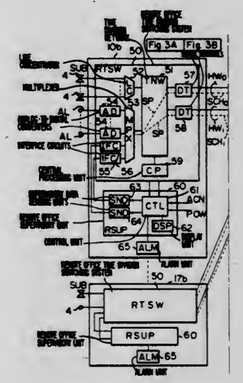
at least one remote office having a remote-office time-division switching system and a remote-office supervisory unit for supervising the system status of said remote-office time-division switching system;

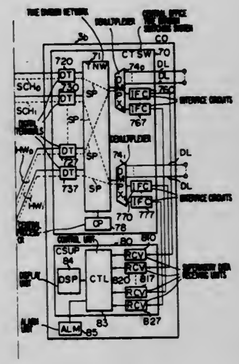
at least one first time-division multichannel line operatively connected to said at least one remote office, and having predetermined channels for transferring communication data representing voice signals;

a central office having a central office time-division switching system connected through said at least one first time-division multichannel line to said at least one remote office, and a centralized supervisory unit for receiving supervisory data, representing at least the system status of said remote office, from said remote-office supervisory unit of said at least one remote office and for centrally supervising the received supervisory data, said central-office time-division switching system having predetermined output signal lines;

first means, operatively connected to said remote office supervisory unit and said remote office time-division switching system, for allocating said supervisory data from said remote-office supervisory unit of said at least one remote office to one or more of the predetermined channels on said at least one first time-division multichannel line; and

second means, operatively connected to said central office time-division switching system and said centralized supervisory unit, for connecting the predetermined output signal lines of said central-office time-division switching system to said centralized supervisory unit, the predetermined output signal lines transferring said supervisory





data output from said central-office time-division switching system.

4,575,840

TELEPHONE LINE ACCESS DEVICE FOR MAIN DISTRIBUTION FRAME

Franklin Hargrave, Newtown; Edward J. Linke, Jr., Monroe, and Francisco A. Middleton, Sandy Hook, all of Conn., assignors to ITT Corporation, New York, N.Y.

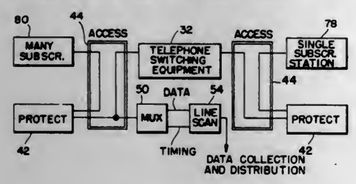
Filed Mar. 30, 1984, Ser. No. 595,120

Int. Cl.⁴ H04J *3/14;* **H04M** *3/22*

U.S. Cl. 370—13 **15 Claims**

1. A device for accessing individual subscriber telephone lines at a main distribution frame that includes an input block having a field of terminals, wherein individual sets of terminals connect with respective ones of the subscriber lines, said sets of terminals also being connected to sets of sockets there being a set of sockets for each subscriber line, said frame further including a plurality of protector modules each having a set of pins which mate with a set of sockets of the input block to provide plug-in connection therebetween, there being a surge protector device supported in each said protector module and connected with respective ones of said terminal sets upon connection of said protector modules with said input block, said access device comprising:

an access block being connected between said protector modules and said input block, said access block having sets of pins for plug-in connection to the sets of sockets of the input block and sets of sockets for receiving the pins of the protector modules, corresponding ones of said pins and sockets of the access block being connected;



terminal means formed on a surface of said access block; and connector means for connecting respective ones of said pins and sockets with terminal means, whereby the subscriber lines may be accessed by way of the terminal means.

4,575,841

METHOD AND APPARATUS FOR THROUGH-CONNECTION TESTING IN A DIGITAL TELECOMMUNICATION NETWORK

Nils U. H. Fagerstedt, Hurstpierpoint, England; Sture G. Roos, Bergshamra, Sweden, and Franko Stipcevic, Mill Park, Australia, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

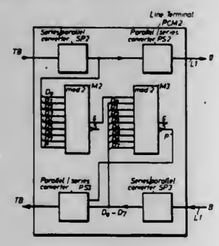
PCT No. PCT/SE83/00195, § 371 Date Jan. 13, 1984, § 102(e) Date Jan. 13, 1984, PCT Pub. No. WO83/04355, PCT Pub. Date Dec. 8, 1983

PCT Filed May 17, 1983, Ser. No. 581,786

Claims priority, application Sweden, May 26, 1982, 8203279

Int. Cl.⁴ H04J *1/16, 3/14*

U.S. Cl. 370—14 **11 Claims**



1. In a time mutiplex type of telecommunication network wherein there is a duplex transmission of digital information in the form of binary words with a parity indicator in specially assigned time slots between subscribers connected via a plurality of terminals arranged in a loop, the method of performing a through-connection test during the transmission of the digital information, comprising the steps of assigning a first value of parity as a correct value with any other value of parity being incorrect, assigning an arbitrary one of said terminals as a monitor terminal, causing all other terminals to transfer any binary word as received around the loop, said monitor terminal first appending to a binary word received thereby with a parity indicator such that the parity of the binary word has said first value and then transmitting the so-modified binary word, upon receipt after transfer around the loop of said so-modified binary word by said monitor terminal, said monitor terminal performing a parity test, if said test indicates that said so-modified binary word has a correct value of parity, said monitor terminal appending to another binary word a parity indicator such that the parity of said other binary word has a second value and transmitting said other binary word, upon receipt after transfer around the loop of said other binary word, said monitor terminal performing another parity test, if said other parity test indicates that said other binary word has an incorrect value of parity, said monitor terminal transmitting all subsequent binary words with the parity value as received.

4,575,842

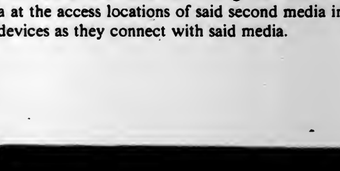
SURVIVABLE LOCAL AREA NETWORK

Joseph L. Katz, Bedford; Edward C. Grund, Burlington; Richard P. Cope, Woburn, and Alvin L. Glick, Lexington, all of Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 14, 1984, Ser. No. 610,148

Int. Cl.⁴ H04Q *9/00*

U.S. Cl. 370—16 **6 Claims**



1. A survivable local area communications system comprising:

n communications media, n being an integer,

p user devices having access to said communications media, p being an integer,

m first media interface devices, m being an integer, providing access locations for m user devices to said communications media by, bridging two media and electrically connecting them to one of the user devices, n-1 first interface devices being in an active mode transmitting data between media and effecting a continuous media network, and m-(n-1) first interface devices being in a standby mode and periodically and sequentially testing said media network for continuity and converting to active mode operation in response to detected discontinuity condition, each of said first media interface devices being a bridging network interface processor providing an interface between its said user devices and two media, said network interface processor periodically and sequentially testing said media network for continuity when in said standby mode by transmitting a test message out a first media isolation device over the first of said two media, and listening for reception of said test message over a second media isolation device from the second of said two media, said bridging network interface processor maintaining said standby mode upon reception of said test message and converting to said active mode operation upon a failure of said second media isolation device to receive said test message,

r second media interface devices, r being an integer of value (p-m) providing access locations for r user devices to a single media by electrically connecting one of the devices to a single media, and

a multiplicity of first, second and third media isolation devices said first and second media isolation devices being connected in said media at the access locations of said first media interface devices as they connect with said media, said third media isolation devices being connected in said media at the access locations of said second media interface devices as they connect with said media.

4,575,843

TIME-DIVISION-MULTIPLEXING LOOP TELECOMMUNICATION SYSTEM HAVING A FIRST AND SECOND TRANSMISSION LINE

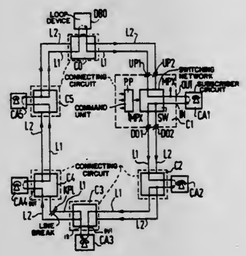
Guy A. J. David, Thiais; Jean-Claude Grima, Chatillon; Bernard Pando, Versailles; Gabriel C. O. Bretez, Bagneux, and Daniel J. F. Lommer, Velizy-Villacoubly, all of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 7, 1984, Ser. No. 578,252

Claims priority, application France, Feb. 7, 1983, 83 01866

Int. Cl.⁴ H04J *3/14*

U.S. Cl. 370—16 **11 Claims**



1. A time-division multiplex loop telecommunication system comprising: first and second transmission lines linking a succession of connecting circuits in a continuous loop through which binary coded information is normally transmitted in a down-line direction through the loop; each connecting circuit having input and output terminals for connection thereto of one or more subscriber circuits, and further having up-line access points respectively coupled to the incoming transmission lines and down-line access points respectively coupled to the outgoing transmission lines; means for transmitting multiplex synchronizing signals through said loop; and each connecting circuit comprising switching means responsive to such synchronizing signals to connect the input terminals of such connecting circuit to one of the up-line access points thereof to receive information from said loop and to connect the output terminals of such connecting circuit to the down-line access points thereof to transmit information into said loop; such switching means being adapted, in the event of a break in one of the incoming transmission lines to such connecting circuit, to reconnect the output terminals of such connecting circuit to the up-line access point which is coupled to the other incoming transmission line so as to permit continued transmission in the down-line direction.

4,575,844

DIGITAL SWITCHING SYSTEM

Yasuharu Kosuge, and Noriharu Miyaho, both of Tokyo, Japan, assignors to Nippon Telegraph & Telephone, Tokyo, Japan

Filed May 30, 1984, Ser. No. 615,438

Claims priority, application Japan, Jun. 3, 1983, 58-99239

Int. Cl.⁴ H04Q *11/04*

U.S. Cl. 370—60 **10 Claims**

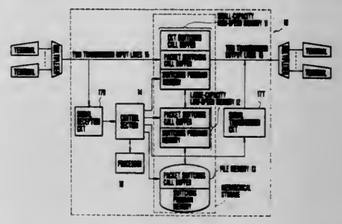
1. A digital switching system comprising:

a hierarchical storage connected to a plurality of input and output transmission lines serving as time division multiplex transmission lines, and

a control section for controlling an operation of said hierarchical storage,

said hierarchical storage including at least a small-capacity high-speed memory and a large-capacity low-speed memory,

said control section being arranged such that said high-speed memory is accessed to immediately perform switching for one of said output transmission lines when states of said input transmission lines indicate a circuit switching call, and that said high-speed memory is accessed to temporarily store data in said high-speed memory and the stored data in the high-speed memory is sent out to one of said output transmission lines, or said high- and low-speed



memories are accessed to store data in said low-speed memory through said high-speed memory so as to perform switching for one of said output transmission lines when the states of said input transmission lines indicate a packet switching call.

4,575,845

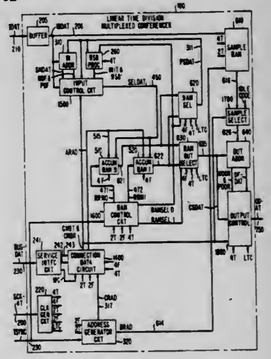
TIME DIVISION MULTIPLEX CONFERENCER

Lawrence Baranyai, Howell, and John R. Colton, Freehold, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Sep. 6, 1984, Ser. No. 647,910

Int. Cl.⁴ H04Q *11/04*

U.S. Cl. 370—62 **4 Claims**



1. A digital conferencing system for establishing one or more conference-type connections between two or more subscribers, the digital message samples of said subscribers occupying separate and distinct time slots of an incoming repetitive frame, comprising means for selectively summing said message samples from predetermined groups of said time slots, first storage means having a plurality of memory locations for respectively storing each of said summed message samples accepted during a first time frame and for supplying the stored summations during the next time frame, second storage means having a plurality of memory locations for respectively storing each of said summed message samples accepted during said next time frame and for supplying the stored summations during the succeeding time frame, the write in to and read out from said first and second storage means being carried out in a continuous alternate manner, common control means for selectively fetching from said first or second storage means during an individual time slot within a frame summed message samples priorly stored for a group and delivering the same directly to

said message sample summing means, said message sample summing means combining message samples received with respect to any time slot of a group of time slots with said fetched priorly stored summed message samples respective to said group, said common control means including means for accessing said storage means such that all of the time slots of a frame can participate fully in a conference connection between time slots of a group including the time slots at the frame boundaries, third storage means having a plurality of memory locations for respectively storing message samples respective to said time slots, means for fetching a priorly stored message sample from said third storage means respective to a time slot prior to storing a new message sample respective to that time slot, and means for subtracting the fetched message sample of said third storage means from a respective supplied summed message sample prior to supplying the difference to an output terminal.

4,575,846

DATA COMMUNICATION SYSTEM

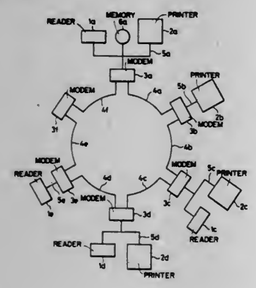
Yoshikazu Yokomizo, Kawagoe, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 3, 1983, Ser. No. 538,741

Claims priority, application Japan, Oct. 8, 1982, 57-176054; Oct. 8, 1982, 57-176055

Int. Cl.⁴ H04J *3/26*

U.S. Cl. 370—90 **9 Claims**



1. A data communication system comprising a plurality of terminal units each provided with an assigned address, wherein:

a terminal unit, which has been given a communication right, is able to perform data communication with other terminal units and said communication right is transferred when a transfer command having an address defined according to a predetermined procedure is transferred from the terminal unit having the communication right to another terminal unit having said defined address; and

a terminal unit, which joins the communication later and has a particular address different from the address assigned as a self address, is adapted to respond to a specific command having said particular address sent from the terminal unit having the communication right, and said terminal unit having the communication right identifies the later joining terminal unit upon detection of a response to the specific command.

4,575,847

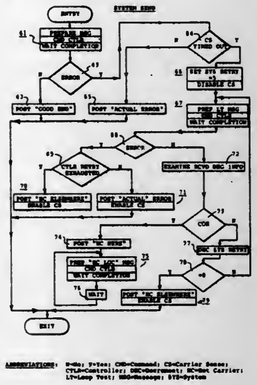
HOT CARRIER DETECTION

Beeman N. Fallwell, Jr., Boca Raton; Matt A. Kaltenbach, Delray Beach, and William B. Ott, Lake Worth, all of Fla., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Sep. 26, 1983, Ser. No. 536,027

Int. Cl.⁴ H04L *1/14*; H04B *17/00*

U.S. Cl. 371—57 **13 Claims**



1. In a multiple access data communication network, in which plural stations intercommunicate through a common medium, and distributively control their access to the medium by monitoring it for busy and idle carrier activity conditions and enabling their respective transmitters only when the medium appears to be idle, a method for determining the location of a hot carrier condition comprising, at any station sensing a busy condition on said medium:

timing out the period of continued existence of said condition;

terminating said timeout without further action if the condition terminates before a predetermined length of time;

attempting to transmit a predetermined test message if the condition persists for at least said predetermined length of time;

receiving signals from said medium while transmitting said test message and evaluating said signals for correlation with said test message; and

establishing either a "hot carrier here" indication or a "hot carrier elsewhere" indication at the respective station depending respectively on whether the received signals do or do not correlate with the test message.

4,575,848

METHODS AND APPARATUS FOR CORRECTING A SOFTWARE CLOCK FROM AN ACCURATE CLOCK

William H. Moore, Bridgewater, N.J., and William J. Trosky, Pittsburgh, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 1, 1984, Ser. No. 576,061

Int. Cl.⁴ G06F *11/00*

U.S. Cl. 371—61 **14 Claims**

1. A method of correcting a software clock from a correct clock, comprising the steps of:

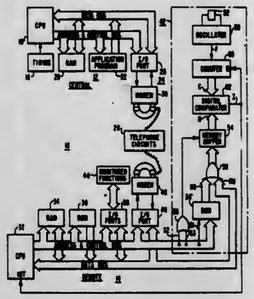
reading a softward clock at known time intervals,

deterimining the error, if any, between the software clock and a correct clock since the last reading thereof,

preparing a correction factor for the software clock in response to the error.

downloading the correction factor and correct time to the software clock,

conforming the time of the software clock to the downloaded correct time,



and using the correction factor in updating the software clock.

4,575,849

OPTICAL FILTER POLARIZER COMBINATION AND LASER APPARATUS INCORPORATING THIS COMBINATION

Myung K. Chun, Manlius, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Continuation-in-part of Ser. No. 450,972, Dec. 20, 1982, abandoned. This application Aug. 20, 1984, Ser. No. 642,571

Int. Cl.⁴ H01S *3/10*

U.S. Cl. 372—9 **41 Claims**

1. A laser apparatus comprising:

first and second reflector means disposed in optical alignment for defining a resonant cavity therebetween;

an active laser medium for producing a beam of coherent electromagnetic radiation disposed between and in optical alignment with said first and second reflector means, and

optical mode control means disposed within said resonant cavity in optical alignment with said laser medium for shaping the optical transmission characteristics of said resonant cavity to maximize transmission of a desired transverse electromagnetic mode of electromagnetic radiation, said control means comprising:

first and second matching phase plates disposed in optical alignment with said laser medium; said first phase plate comprising a bifringent crystal having a first flat major surface and a second concave major surface with a predetermined radius of curvature and a predetermined center thickness; said second phase plate comprising a birefringent crystal having a first flat major surface and a second spherically convex major surface with a predetermined radius of curvature equal to the radius of curvature of said concave surface of said first phase plate and a predetermined center thickness equal to the center thickness of said first phase plate; and

a polarizing means disposed in optical alignment with said phase plates for ejecting radiation having a first polarization from said cavity and transmitting radiation having a second polarization orthogonal to said first polarization.

4,575,850

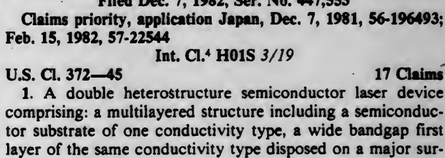
MULTILINE EMISSION INTEGRAL MIRROR LASER

Shing C. Wang, Temple City, and William F. Hug, Pasadena, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 680,559, Jan. 13, 1977. This application Sep. 15, 1980, Ser. No. 187,107

Int. Cl.⁴ H01S *3/10*

U.S. Cl. 372—23 **5 Claims**



1. In a laser discharge tube enclosing first and second different active lasing mediums for producing an output laser beam having a plurality of wavelengths, the improvement comprising:

a tube envelope enclosing said first and second different active lasing mediums, said tube envelope enclosing end members for hermetically sealing said envelope;

a first discharge tube having an inner diameter and supported within said envelope;

a second discharge tube having an inner diameter and supported within said envelope and spaced apart from and coaxially aligned with said first discharge tube, said first and second discharge tubes being operative to produce said output laser beam;

a first electrode positioned adjacent one end of said first discharge tube;

a second electrode positioned adjacent one end of said second discharge tube; and

means for applying an electrostatic potential between said first and second electrodes of a potential to maintain the same discharge current between said electrodes through said first and second discharge tubes whereby said first active lasing medium produces in said first discharge tube a first laser beam of at least one wavelength and said active lasing medium producing in said discharge tube a second laser beam of at least one wavelength, said second laser beam being of a different wavelength than said first laser beam, said first and second laser beams being combined simultaneously into a laser output beam having a plurality of wavelengths, the inner diameters of said first and second discharge tubes being different and selected to optimize the output of said first and second laser beams.

4,575,851

DOUBLE CHANNEL PLANAR BURIED HETEROSTRUCTURE LASER WITH PERIODIC STRUCTURE FORMED IN GUIDE LAYER

Masafumi Seki, and Ikuo Mito, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Dec. 7, 1982, Ser. No. 447,553

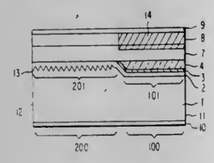
Claims priority, application Japan, Dec. 7, 1981, 56-196493; Feb. 15, 1982, 57-22544

Int. Cl.⁴ H01S *3/19*

U.S. Cl. 372—45 **17 Claims**

1. A double heterostructure semiconductor laser device comprising: a multilayered structure including a semiconductor substrate of one conductivity type, a wide bandgap first layer of the same conductivity type disposed on a major sur-

face of said substrate, a narrower bandgap active region disposed on said first layer, and a wide bandgap second layer of the opposite conductivity type disposed on said active region, said active region being capable of emitting stimulated radiation when said layers are forward biased, either said first or said second layers having on one side thereof a corrugation of a prescribed pitch in the propagating direction of said radiation, said multilayered structure having a portion in the shape of an elongated mesa, which extends in parallel to the propagating direction of said radiation, first and second channels



extending along both sides of said mesa, said channels being of a depth which extends from the upper surface of said second layer through said first layer, and remaining portions outside said channels and including said first and second layers and said active region;

wide bandgap third and fourth layers, opposite to each other in conductivity type, formed over said channels and the remaining portions said multilayered structure except for the top surface of said mesa, for blocking a current flow therethrough; and

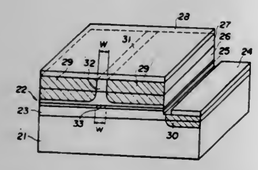
electrode means for applying said forward bias.

4,575,852

SEMICONDUCTOR LASER

Akira Fujimoto, Hirakata; Shigeaki Yamashita, Nagaokakyo; Hirohiko Yasuda, Kyoto, and Yoshikazu Yama, Shiga, all of Japan, assignors to Omron Tateisi Electronics, Co., Kyoto, Japan

Filed Jun. 6, 1983, Ser. No. 501,340
Claims priority, application Japan, Jun. 7, 1982, 57-97218
Int. Cl.⁴ H01S *3/19*
U.S. Cl. 372—46 **3 Claims**



1. In a semiconductor laser having double heterojunction structure, comprising laminations of a p-type semiconductor layer, an active layer and n-type semiconductor layer in this order on an n-type semiconductor substrate;

said n-type semiconductor layer having a narrow current path provided with current constricting layer formed by diffusing p-type electric conductor on opposite sides of said narrow current path to a degree not reaching said active layer;

said n-type semiconductor layer having an electron injection electrode; and

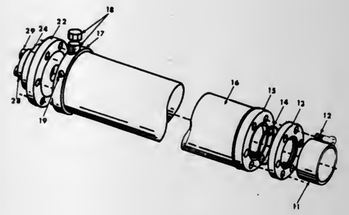
said p-type semiconductor layer having a hole injection electrode provided at the side of said p-type semiconductor layer which is opposite of the side which is next to said n-type substrate.

4,575,853

SEALED LASER

Geza J. Jako, 169 E. Emerson St., Melrose, Mass. 02176

Filed Dec. 30, 1983, Ser. No. 567,094
Int. Cl.⁴ H01S *3/03*
U.S. Cl. 372—61 **12 Claims**



1. A hard sealed gas laser tube comprising,

an internal electrode structure,

envelope means for surrounding said internal electrode structure between first and second fixed flange means for establishing vacuum seals at each end,

first and second outside flange means outside said envelope means for engagement with said first and second fixed flange means respectively,

means for fastening said first and second outside flange means to said first and second fixed flange means respectively to establish a vacuum seal therewith,

said internal electrode structure being inside said envelope means between said first and second fixed flange means,

said internal electrode structure including an internal structure flange for coacting with said first fixed flange means for establishing a vacuum seal therewith.

said internal electrode structure including at least first and second electrodes for establishing an electric field therebetween,

means defining a gas port for allowing gas to flow within said envelope means.

cooling means coupled to said internal electrode structure for carrying a coolant to withdraw heat from within said envelope means,

feedthrough means passing through said internal flange means for establishing electrical connection to at least one of said first and second electrodes,

coolant nozzle means carried by said internal flange means for exchanging coolant with said cooling means,

total reflecting means and output mirror means for reflecting optical energy,

first and second mirror support means in vacuum sealing relationship to said first and second outside flange means, respectively, for supporting said total reflecting means and said output mirror means, respectively, in positions to coact with said internal electrode structure for establishing lasing,

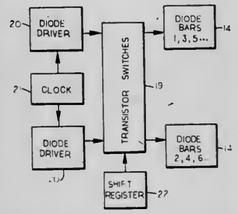
and transmitting means including said output mirror means for maintaining a sealed enclosure within said envelope means while transmitting a laser beam therethrough developed within said envelope means.

4,575,854

UNCOOLED YAG LASER

Danny W. Martin, St. Charles, Mo., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Oct. 14, 1983, Ser. No. 541,871
Int. Cl.⁴ H01S *3/094*
U.S. Cl. 372—75 **9 Claims**



1. A continuous wave laser device comprising:

A solid state gain medium member capable of lasing when pumped with energy and having spaced reflective end surfaces so as to form a cavity and define an optical axis extending through said cavity in a direction perpendicular to each reflective end surface, one of said reflective end surfaces having an aperture for emitting a portion of the output energy;

multiple diode bars containing a plurality of connected diode lasers, capable of being operated as lasers, located in proximity to said solid state gain medium member for pumping energy into said member to cause the member to lase and produce an optical output;

electronic high frequency pulse means, operatively connected to excite said multiple diode bars; and

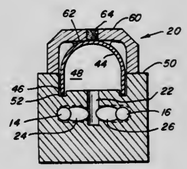
means to sequentially switch said multiple bars so that at least one, but not all, of said multiple diode bars are connected to said pulse means concurrently, with overlap connection between said sequentially switched diode bars of sufficient duration to accommodate the lag between the optical output of the solid state gain medium member and the high frequency pulse input to said diode bar whereby said solid state gain medium member produces a continuous wave optical output without need for cooling said diode lasers.

4,575,855

RING LASER GYRO CATHODE ARRANGEMENT

Thomas Council, Camarillo, Calif., assignor to Sundstrand Optical Technologies, Inc., Newbury Park, Calif.

Filed Jul. 29, 1983, Ser. No. 518,342
Int. Cl.⁴ H01S *3/097*
U.S. Cl. 372—87 **11 Claims**



1. In a ring laser gyro having a body with a cavity therein forming a closed loop path, a cathode and a pair of anodes, each of which is in communication with said cavity and means for establishing a gas discharge between said cathode and each of said anodes to provide a pair of counter-rotating beams traveling through said cavity, an improved cathode arrangement comprising:

a metal cathode member having a lower edge;

an annular groove in a surface of the gyro body, the lower edge of said cathode member being disposed within said groove; and

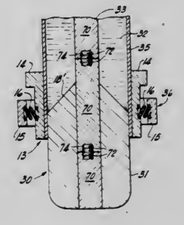
a cover extending about the cathode member and secured to said gyro body, said cover supporting the cathode member.

4,575,856

IRON FREE SELF BAKING ELECTRODE

John A. Persson, Gibsonia, Pa., assignor to Pennsylvania Engineering Corporation, Pittsburgh, Pa.

Filed May 18, 1984, Ser. No. 612,039
Int. Cl.⁴ H05B *7/09*
U.S. Cl. 373—89 **17 Claims**



1. In combination with an electric arc furnace, an iron free self baking electrode comprising an open ended, outer metallic shell disposed within said furnace and oriented generally vertically, a center core of prebaked carbonaceous material disposed within and spaced from the shell, a quantity of carbonaceous electrode forming paste disposed within the shell in surrounding relation to the core, said paste being of a type which cures into a solid electrode and bonds to the carbonaceous core as the paste passes downwardly through the shell, the lower end of said electrode being cured and extending from the lower end of said shell where it is exposed to the heat within the furnace,

and means engaging said electrode adjacent the lower end of the shell for conducting electrical discharge current to the cured lower end of the electrode and bypassing the upper portion thereof to heat the material within the furnace, said current also providing heat for curing said paste, the carbonaceous core conducting heat upwardly to the electrode forming material to promote more rapid curing of said paste whereby said paste cures at an elevation above the lower end of said shell.

4,575,857

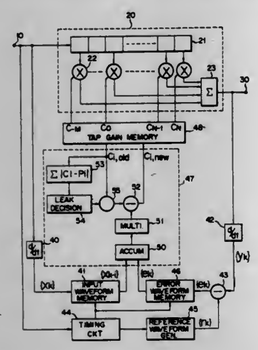
ADAPTIVE EQUALIZER WITH VARIABLE TAP COEFFICIENT LEAKAGE

Junzo Murakami, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 8, 1984, Ser. No. 608,099
Claims priority, application Japan, May 17, 1983, 58-86052
Int. Cl.⁴ H04B *3/04*
U.S. Cl. 375—12 **3 Claims**

1. An automatic equalizer including a waveform equalizer having a transversal filter connected to receive an input signal in which a waveform of a predetermined shape is periodically present, and having a plurality of taps whose gains can be controlled; and a tap gain correcting means for successively correcting each of the tap gains of said transversal filter in such a way that an output waveform of said waveform equalizer circuit, which corresponds to the waveform of the predetermined shape present in the input signal, approaches a predetermined reference waveform, said tap gain correcting means being arranged to add a leak to the tap gain control so that each of the tap gains of said transversal filter approaches its desired value, characterized in that said tap gain correcting means is

arranged to find the sum of absolute values of differences between the tap gains of a plurality of taps of said transversal filter and predetermined values of the corresponding tap gains



set when the input signal contains no distortion, and to change the magnitude of leak to be added to the tap gain control in accordance with the sum of absolute values.

4,575,858

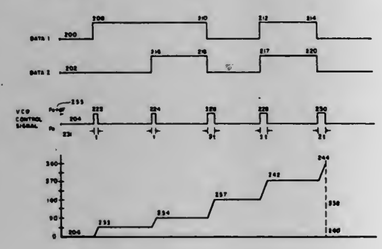
PSK MODULATION BY TEMPORARILY INCREASING FREQUENCY TO ACHIEVE PHASE CHANGE

Joanne B. Dow, 852 First St., Hermosa Beach, Calif. 90254

Filed Apr. 17, 1984, Ser. No. 601,198

Int. Cl.[4] H03C *3/04*; H04L *27/18*

U.S. Cl. 375—53 **1 Claim**



1. Short distance, low power phase shift keyed communication apparatus comprising:

control circuit means for generating a pair of encoded data binary signals each of recurrent time period p from a data input signal, and for generating a recurrent binary keying signal having selected predetermined active time segments of duration t, between one-half and twenty percent of said period p, in response to one data transition occurrence within said pair of encoded data binary signals and for generating a recurrent binary keying signal having predetermined active time segments of duration 2t, between one and forty percent of said period p, in response to simultaneous data transition occurrences within said pair of encoded data keying signals;

multivibrator oscillator radio frequency signal generating means, including a controlled capacitor charge current frequency determining network, operable at first and second predetermined radio frequencies in time segments responsive to said recurrent binary keying signal, each said second radio frequency operation segment being for a selected predetermined time interval of said t and 2t duration binary keying signal and with second frequency operation for said predetermined time segment generating a predetermined phase shift modulation of forty-five degrees for duration t and ninety degrees for duration 2t with respect to said first frequency;

radio frequency wave filter means for generating a filtered radio frequency signal of limited spurious frequency content from said first and second frequency time segmented multivibrator oscillator radio frequency signal;

radio frequency amplifier means generating from said filtered radio frequency signal an amplified radio frequency signal of power level below ten watts;

propagation means for communicating said amplified radio frequency signal to a remote signal reception locus; and

phase demodulation means located in said remote reception locus for demodulating the communicated frequency shift modulated radio frequency signal and reconstructing said data input signal therefrom.

4,575,859

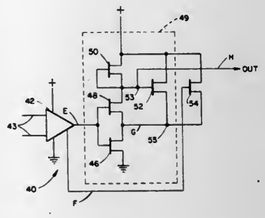
RECEIVER FOR DIGITAL SIGNALS

Gary B. Ollendick, Mundelein, Ill., assignor to AT&T Teletype Corporation, Skokie, Ill.

Filed Mar. 23, 1984, Ser. No. 592,483

Int. Cl.[4] H03K *5/08*

U.S. Cl. 375—76 **4 Claims**



1. A receiver for digital signals comprising:

a differential amplifier (**42**) receiving a digital signal and providing first (E) and second (F) output signals, said first output signal (E) varying in relation to said digital signal and said second output signal (F) being related to the average level of said first output signal (E);

a slicing circuit (**44**) having first and second input transistors (**46, 48**) with the control electrodes of said first and second transistors (**46, 48**) commonly connected to said first output signal E from said differential amplifier (**42**), one electrode of said first transistor (**46**) being connected to a first terminal of a supply source and one electrode of said second transistor (**48**) being connected through a load device (**50**) to a second terminal of said supply source, and the remaining electrodes of said first and second transistors (**46, 48**) being connected together to provide a control node (**55**);

a third transistor (**52**) connected across said control node (**55**) and said second supply source terminal, the control electrode of said third transistor (**52**) being connected to the junction of said load device (**50**) and said second transistor (**48**), said control electrode of said third transistor providing a data output signal (H); and

a means (**54**) connected between said second power source terminal and said control node (**55**) and responsive to said second output signal (F) of said differential amplifier (**42**) for influencing the voltage level (G) of said control node (**55**).

4,575,860

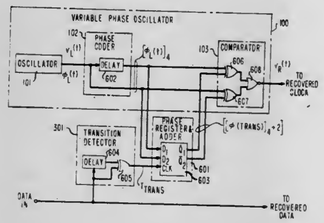
DATA CLOCK RECOVERY CIRCUIT

Dominick Scordo, Middletown, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 12, 1984, Ser. No. 588,359

Int. Cl.[4] H04L *7/02*

U.S. Cl. 375—110 **14 Claims**



1. A variable phase oscillator comprising:

an oscillator having a substantially fixed frequency output signal;

means for periodically generating coded phase values of said oscillator output signal, said generating means including means for quantizing the phase value of said oscillator output signal into a predetermined number of phase steps;

a source of a prescribed phase value; and

means for comparing said periodically generated coded phase values and said prescribed phase value to periodically generate output pulse signals.

4,575,861

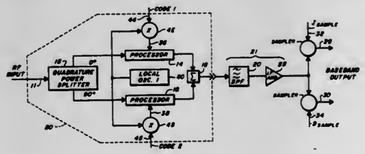
QUADRATURE MULTIPLEXED POST CORRELATION IF CHANNEL

Robert P. Levreault, Norfolk, Mass., assignor to The Charles Stark Draper Laboratory, Cambridge, Mass.

Filed Apr. 8, 1983, Ser. No. 483,214

Int. Cl.[4] H04K *1/02*

U.S. Cl. 375—1 **14 Claims**



1. A receiver apparatus comprising:

a local oscillator providing a local oscillator signal;

a first code generator providing a first code signal; and

a second code generator providing a second code signal;

means for combining said first and second code signals, together with said local oscillator signal and said received signal in a quadrature relationship;

unitary intermediate frequency amplifier means receiving the output signal from the means for combining for providing an amplified output; and

detector means responsive to the intermediate frequency amplified output for forming a first and second detected output signals according to the information in said first and second code signals respectively.

4,575,862

CROSS-POLARIZATION DISTORTION CANCELLER FOR USE IN DIGITAL RADIO COMMUNICATION RECEIVER

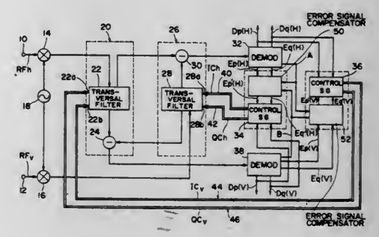
Masato Tahara, and Toshihiko Ryu, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Dec. 20, 1983, Ser. No. 563,364

Claims priority, application Japan, Dec. 20, 1982, 57-223466; Jan. 29, 1983, 58-13141; Jul. 22, 1983, 58-134121; Oct. 14, 1983, 58-191869

Int. Cl.[4] H04B *1/10*

U.S. Cl. 375—102 **15 Claims**



1. A cross-polarization distortion canceller for use in a digital radio communication receiver, comprising:

a first variable coupler (**26**) being adapted to receive a first IF signal of incoming two orthogonally polarized modulated IF signals;

a second variable coupler (**20**) being adapted to receive a second IF signal of said incoming two orthogonally polarized modulated IF signals;

a first demodulator (**32**) for receiving said first IF signal via said first variable coupler and demodulating said first IF signal, said first demodulator producing first baseband signals as well as first error signals according to said first IF signal, and outputting a first recovered carrier;

a second demodulator (**38**) for receiving said second IF signal via said second variable coupler and demodulating said second IF signal, said second demodulator producing second baseband signals as well as second error signals according to said second IF signal, and outputting a second recovered carrier;

a first error signal compensator (**50**) for receiving said first error signals and said first and second recovered carriers, said first error signal compensator outputting third error signals according to the phase differences between said first and second recovered carriers;

a second error signal compensator (**52**) for receiving said second error signals, said second error signal compensator outputting fourth error signals according to the phase differences between said first and second recovered carriers;

a first control signal generator (**34**) for receiving said third error signals and said second baseband signals, said first control signal generator applying first control signals to said first variable coupler; and

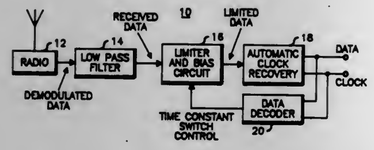
a second control signal generator (**36**) for receiving said fourth error signals and said first baseband signals, said second control signal generator applying second control signals to said second variable coupler;

wherein said first variable coupler substantially cancels the portion of said second IF signal accompanying said first IF signal, and wherein said second variable coupler substantially cancels the portion of said first IF signal accompanying said second IF signal.

4,575,863
FAST RECOVERY BIAS CIRCUIT

James S. Butcher, Phoenix, Ariz. and Charles G. Rousch, Streamwood, Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 22, 1983, Ser. No. 564,974
Int. Cl.⁴ H04L *7/00*
U.S. Cl. 375—114 **4 Claims**



1. A method for adaptively adjusting a data limiter bias circuit having a plurality of time constants which are programmably controllable in response to a received data signal, said method comprising the steps of:

(a) receiving a data signal having a digital word sync pattern followed by a digital data message;

(b) detecting the end of said digital word sync pattern and the completion of the digital data message in the received data signal;

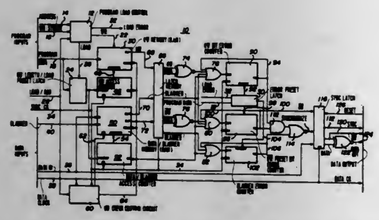
(c) switching the time constant of the receiver data limiter bias circuit, to a relatively long time constant, when the end of the word sync pattern is detected; and

(d) swtiching the time constant of the receiver data limiter bias circuit, to a relatively short time constant at the completion of the digital data message.

4,575,864
DIGITAL PROGRAMMABLE PACKET SWITCH SYNCHRONIZER

Robert P. Rice, Jr.; Larry J. Fruit, both of Seminole, and Gary B. Trout, St. Petersburg, all of Fla., assignors to E-Systems, Inc., Dallas, Tex.

Filed Mar. 7, 1983, Ser. No. 473,104
Int. Cl.⁴ H04L *7/06*
U.S. Cl. 375—116 **16 Claims**



1. A method for detecting a unique digital word in a digital data stream, comprising the steps of:

(a) storing a representative sample of said unique digital word;

(b) storing a preset number of the most recently received data bits of said digital data stream;

(c) receiving and storing a new data bit of said digital data stream in said most recently received data bits and displacing an oldest bit thereof;

(d) in response to the storing of a new data bit, comparing a first bit of said unique digital word with an oldest bit of said most recently received data bits as modified in step (c);

(e) repeating step (d) for each subsequent bit, from said first bit, of said unique digital word and each next oldest bit, from said oldest bit, of said most recently received bits as modified in step (c) until a last bit of said unique digital word has been compared to said new data bit;

(f) evaluating the results of said comparisons to determine if the stored data stream bits correlate with the stored unique digital word bits exceeding a preset threshold; and

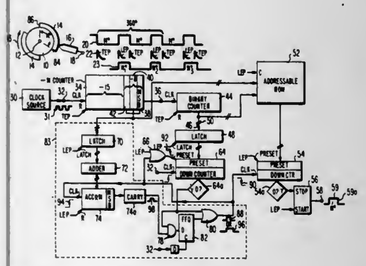
(g) if said stored data stream bits do not correlate with the stored unique digital word bits exceeding the preset threshold, repeating steps (c)–(f); and

(h) if said stored data stream bits do correlate with the stored unique digital word bits exceeding the preset threshold, generating an output signal to indicate detection of said unique digital word within said digital data stream.

4,575,865
SYSTEM FOR DETERMINING TIME DURATION OF ANGULAR ROTATION

Paul N. Dackow, Hillsborough Township, Somerset County, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed May 16, 1983, Ser. No. 495,117
Int. Cl.⁴ F02P *5/08, 9/00*
U.S. Cl. 377—20 **5 Claims**



1. The combination comprising:

a rotating means producing a signal corresponding to a given value M in degrees of angular rotation;

means producing clock pulses at a fixed frequency;

means responsive to said signal and to said clock pulses for generating a value representing the number of clock pulses in a unit value X in degrees of angular rotation of said rotation of said rotating means, where X is unequal to M and

means responsive to said generated value and to said clock pulses and to a value representing a desired rotational value N° of the rotating means for producing a signal marking N° of rotation of said rotating means following the M° of rotation thereof.

4,575,866
CHARGE TRANSFER FILTER STRUCTURE INCLUDING A SPLITTER AND EQUILIBRATOR

Thomas L. Vogelsong, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jul. 5, 1983, Ser. No. 510,523
Int. Cl.⁴ G11C *19/28;* **H01L** *29/78;* **H03H** *15/02*
U.S. Cl. 377—62 **9 Claims**

1. In combination,

a substrate of semiconductor material of one conductivity type,

means for forming an elongated first charge storage region in said substrate including a first storage electrode of generally elongated outline insulatingly overlying said first storage region,

means for forming a pair of elongated second charge storage regions in said substrate including a pair of second storage electrodes of generally elongated outline, each insulatingly overlying a respective one of said second storage regions,

a long side of one of said second storage regions spaced a short distance from and parallel to a part of one long side of said first storage region,

an elongated first region of opposite conductivity type and high conductivity in aaid substrate having a long side contiguous with the other long side of said first storage region,

means forming a pair of elongated first transfer regions in said substrate including a pair of first transfer electrodes each insulatingly overlying a respective one of said first transfer regions,

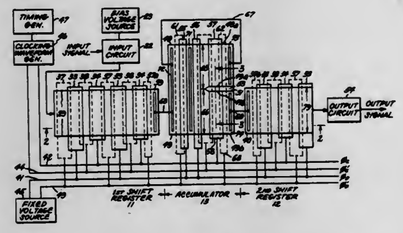
one of said first transfer regions in said substrate having a long side spaced apart a short distance from and parallel to the other long side of said first region of opposite conductivity type,

the other of said first transfer regions in said substrate having a long side contiguous with the other long side of said second storage region,

an elongated second region of opposite conductivity type and high conductivity in said substrate having a long side contiguous with the other long side of said one first transfer region,

an elongated third region of opposite conductivity type and high conductivity in said substrate having a long side contiguous with the other long side of said other first transfer region,

means for conductively interconnecting said second region



of opposite conductivity type and said third region of opposite conductivity type,

said second region of opposite conductivity type, said one of said first transfer regions, said first region of opposite conductivity type, and said first storage region each having long sides of a width equal to a first predetermined value,

means for forming a pair of elongated second transfer regions including a pair of second transfer electrodes,

one of said second transfer electrodes insulatingly overlying one of said second transfer regions,

the other of said second transfer electrodes insulatingly overlying the other of said second transfer regions,

one long side of said one second transfer region and one long side of said other second transfer region being coplanar and contiguous, the other long sides of said second transfer regions being noncontiguous

said other long side of said one second transfer region being contiguous to said one long side of said one second storage region, said other long side of said other second transfer region being contiguous to said one long side of said other second storage regin, the sum of the width of said one long side of said one second transfer region and the width of said one long side of said other second transfer region being equal to said first predetermined value,

means for applying a first fixed voltage to said first storage electrode to form said first storage region in said substrate,

means for applying a first pulsating voltage to said second storage electrodes for form said pair of second storage regions in said substrate and to effect the transfer of charge between said first and said second storage regions,

means for applying a second fixed voltage to said first transfer electrodes,

means for applying a second pulsating voltage to said pair of second transfer electrodes, means for synchronizing said first and said second pulsating voltages, said second fixed voltage being of a value in relation to said first fixed voltage and the levels of said second pulsating voltage to permit transfer of charge in one direction from said first storage region to said second storage regions and the levels of said second pulsating voltage being set in relation to the levels of said first pulsating voltage to permit transfer of charge in said one direction from said first storage region to said second storage regions under the control of the level of the potential on said pair of second transfer electrodes,

means for providing a sequence of first quantities of charge, each quantity corresponding to a respective value of a series of successive values of a signal,

introducing means including said second region of opposite conductivity type for introducing serially each of said quantities of charge of said sequence into said first charge storage region, whereby over a first half of a cycle of said first pulsating voltage a first fixed portion of charge is transferred to said one second storage region and a second fixed fraction of charge is transferred to said other second storage region, and over a second half of a cycle of said first pulsating voltage said first fixed fraction of charge is transferred to said first charge storage region and combines with a successive quantity of charge introduced into said first charge storage region by said introducing means,

removing means including said other of said second transfer regions for removing periodically said second fixed fraction of charge in said other second charge storage region to provide a sequence of second quantities of charge, said second fixed fraction of charge periodically removed from said second charge storage region by said removal means being determined by the ratio of the width of said one long side of said other second transfer region to the sum of the width of the one long side of said one second transfer region and the width of said one long side of said other second transfer region,

means for forming a second elongated first charge storage region in said substrate including said first storage electrode of generally elongated outline insulatingly overlying said first storage region, in which

a long side of said second elongated first charge storage region is contiguous with the other long side of said first region of opposite conductivity type, and in which

the other long side of said second elongated first charge storage region is contiguous with said one long side of said one first transfer region.

4,575,867
HIGH SPEED PROGRAMMABLE PRESCALER

Noel E. Hogue, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

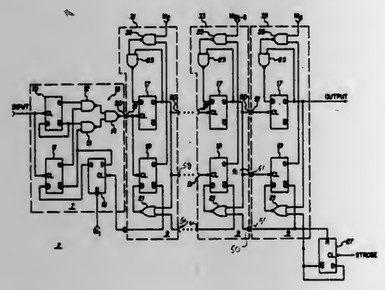
Filed Aug. 9, 1982, Ser. No. 406,419
Int. Cl.⁴ H03K *21/36, 23/26*
U.S. Cl. 377—110 **7 Claims**

1. A high speed programmable prescaler comprising:

first means forming a first frequency divider circuit for receiving and frequency dividing an input signal by a selectable divisor to provide a first divided output signal;

second means coupled to said first means for frequency dividing the first divided output signal, said second means comprising a plurality of frequency divider circuits electrically cascaded and constructed such that each receives an input signal and frequency divides that signal by a selectable divisor to produce a divided output signal, the divided output signal of each divider circuit of said cascaded dividers being coupled as the input signal to the

next successive divider circuit of said cascaded dividers, said first divided output signal being coupled as the input signal to the first divider circuit of said cascaded dividers, and the divided output signal of the last divider circuit of said cascaded dividers forming a prescaler output signal; and



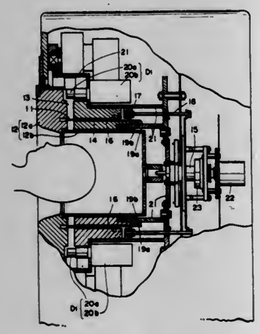
means responsive to a control signal M and coupled to said first and second means for selecting the divisor of said divider circuits of said first and second means such that the prescaler output signal from said second means has a frequency equal to the frequency of the input signal of said first means divided by 2^N+M, where N is the number of divider circuits in said first and second means, and M is a number having a value from zero to 2^N-1.

4,575,868

POSITRON COMPUTED TOMOGRAPH DEVICE

Ken Ueda, Oume; Kenichi Okajima, Hoya, and Katsumi Takami, Tokyo, all of Japan, assignors to Agency of Industrial Science & Technology and Ministry of International Trade & Industry, both of Tokyo, Japan

Filed Sep. 9, 1983, Ser. No. 530,545
Claims priority, application Japan, Sep. 9, 1982, 57-155945
Int. Cl.[4] G01T *1/20*
U.S. Cl. 378—4 7 Claims



8. A positron-computed tomograph device in which attenuation correction in image reconstruction is effected by revolving a gamma ray source around a subject and scanning said subject with gamma rays emitted from said gamma ray source and causing a certain opposed detector pair out of a plurality of circumferentially spaced detectors to detect coincidence, which device comprises:

a means for measuring the relative positions of said opposed detector pair with respect to said source at the time of detection of said coincidence and computing data on the relative positions thus measured;

an arithmetic circuit for allowing the values of said data on the relative position of said opposed detector pair with respect to said source at the time of detection of said coincidence to be compared with predetermined values of data on the position of all possible opposed detector pairs relative to all possible positions of said source and determining whether or not the differences between said values of data obtained at the time of detection of said coincidence and said predetermined values of data fall within a certain allowable range; and

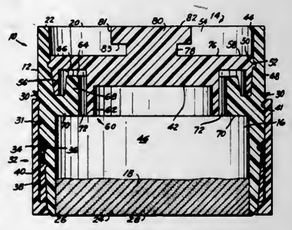
a memory for storing said data on the positions of said opposed detector pair relative to the position of said source when said comparison effected in said circuit has ascertained that said differences between said values obtained at the time of detection of said coincidence and said predetermined values of data fall within said allowable range.

4,575,869

SAMPLE HOLDER WITH HANDLING SUPPORT FOR X-RAY SPECTROSCOPIC ANALYSIS

Angelo M. Torrisi, 10 Anpell Dr., Scarsdale, N.Y. 10583, and Roland Urbano, Tuckahoe, N.Y., assignors to Angelo M. Torrisi, Scarsdale, N.Y.

Filed May 16, 1984, Ser. No. 611,047
Int. Cl.[4] G01N *23/10*
U.S. Cl. 378—47 20 Claims



1. A sample holder for liquid or powder sample material for X-ray spectroscopic analysis, comprising, in combination:

a body having an outer wall and a transverse wall having an outside surface, said transverse wall being secured to said outer wall, said outer wall and said transverse wall defining a cell adapted to contain said sample material, said outer wall including a rim portion defining an open face of said body and of said cell,

handling support means extending substantially perpendicularly outwardly from the center portion of said outside surface of said transverse wall, said handling support means being for providing a grip for a tool used in the process of raising or lowering said sample holder, said handling support means being equally accessible to said tool completely around said handling support means, and

film means for maintaining a taut flat film surface for said sample material for X-ray analysis across said open face of said cell and for sealing said open face of said cell, said film means including means for securing said film means to said outer wall of said body.

4,575,870

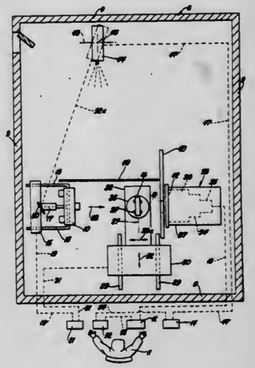
REMOTE CONTROL OF INDUSTRIAL FLUOROSCOPE

William A. Moncrief, Detroit, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 7, 1980, Ser. No. 166,722
Int. Cl.[4] G01N *23/04*
U.S. Cl. 378—51 1 Claim

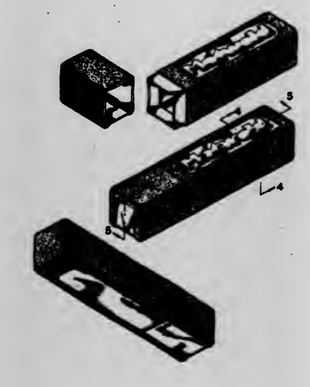
1. In a nondestructive testing system comprising an x-ray room containing an x-ray tube (10) having an output beam axis (22); means (17) for moving the x-ray tube parallel to the output beam axis; a fluoroscope assembly (33) oriented to receive the x-ray beam, said fluoroscope assembly including a fluorescent screen; an object manipulator for supporting a test object in a variety of positions in the space between the fluoroscope screen and x-ray tube, said manipulator including an object-support arm structure (28) movable in a direction parallel to the aforementioned output beam axis to vary the spacing of the object from the x-ray tube and fluoroscope screen; a first television camera (35) optically trained on the aforementioned fluorescent screen to provide an electrical output representing the internal structure of the x-rayed object, a first television receiver (12) outside the x-ray room, and cable connections between the first television receiver and the first camera:

the improvement comprising a second television camera (44) having a first position in which it is optically trained on the area between the x-ray tube and the fluoroscope assembly with its field of view encompassing the tube-object spacing and the tube-fluoroscope spacing; a scale (49) extending parallel to the aforementioned output beam axis in the space between x-ray tube and fluoroscope assembly to give the second camera a measuring reference for the test object position; a mirror (50) located in close adjacency to the x-ray tube; said second television camera being swingable to a second position in which it is optically trained on the mirror; the mirror being oriented to reflect into the second camera the external surface of the object being irradiated by the x-ray beam; a second television receiver (14) outside the x-ray room; cable connections between the second television camera and second television receiver; and a video recorder (52) cablecon-

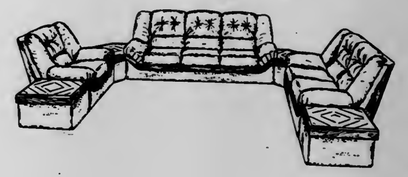


nected to the first and second television receivers to provide a permanent record of the visual information on each receiver.

282,884
WELDING ROD CASE
James E. Byrns, 1027 2nd Ave. S., Clinton, Iowa 52732
Filed Oct. 3, 1983, Ser. No. 538,545
Term of patent 14 years
U.S. Cl. D3—30.1



282,886
COMBINED SECTIONAL SOFA AND MULTIPLE TABLE UNIT
David P. G. Williams, Englewood, N.J., assignor to The Berkline Corporation, Morristown, Tenn.
Division of Ser. No. 597,844, Apr. 9, 1984. This application Jul. 12, 1985, Ser. No. 754,422
Term of patent 14 years
U.S. Cl. D6—336



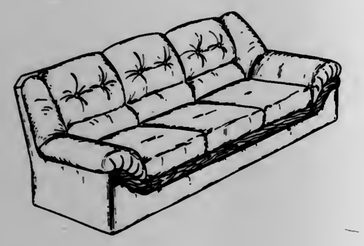
282,885
WALL-MOUNTED CLOTHES HOOK
William E. Jarrett, Grand Rapids, Mich., assignor to Dan H. Vollink, Lowell, Mich., a part interest
Filed Aug. 8, 1983, Ser. No. 521,438
Term of patent 14 years
U.S. Cl. D6—323



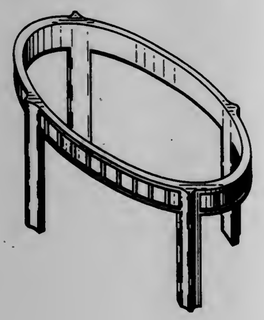
282,887
CHAIR
Mike T. Claman, 1766 Hickory Blvd., S.W., Lenoir, N.C. 28645
Filed Aug. 25, 1983, Ser. No. 526,270
Term of patent 14 years
U.S. Cl. D6—369



282,888
SEAT
David P. G. Williams, Englewood, N.J., assignor to The Berkline Corporation, Morristown, Tenn.
Filed Apr. 9, 1984, Ser. No. 597,844
Term of patent 14 years
U.S. Cl. D6—381



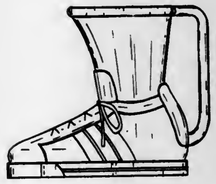
282,889
TABLE BASE
William Doezema, Grand Rapids, Mich., assignor to Baker, Knapp & Tubbs, Inc., Chicago, Ill.
Filed Oct. 18, 1983, Ser. No. 543,188
Term of patent 14 years
U.S. Cl. D6—495



282,890
BEVERAGE MUG
Roy E. Satterfield, 309 Oak Park Dr., Knoxville, Tenn.
Filed Sep. 26, 1983, Ser. No. 535,664
Term of patent 14 years
U.S. Cl. D7—5









282,891
BEVERAGE MUG
Roy E. Satterfield, 309 Oak Park Dr., Knoxville, Tenn. 37918
Filed Sep. 26, 1983, Ser. No. 535,941
Term of patent 14 years
U.S. Cl. D7—5



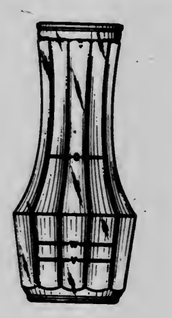
282,892
BEVERAGE CUP
Roy E. Satterfield, 309 Oak Park Dr., Knoxville, Tenn. 37918
Filed Sep. 27, 1983, Ser. No. 536,197
Term of patent 14 years
U.S. Cl. D7—5



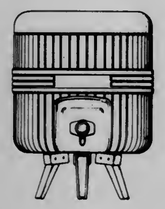
282,893
COOKIE CUTTER OR THE LIKE
Robert H. C. M. Daenen, Hekelgem, Belgium, assignor to Dart Industries Inc., Northbrook, Ill.
Filed Jun. 6, 1983, Ser. No. 501,346
Term of patent 14 years
U.S. Cl. D7—43



282,894
CRUET
Roy Watson, Mt. Kisco, N.Y., and Ernest F. Thomson, Fairfield, Conn., assignors to General Foods Corporation, White Plains, N.Y.
Filed Oct. 11, 1983, Ser. No. 540,263
Term of patent 14 years
U.S. Cl. D7—52



282,895
INSULATED BEVERAGE CONTAINER
Sami Sagol, 43 Hasayfan St., Ramat Hasharon, Israel
Filed Sep. 9, 1982, Ser. No. 416,430
Claims priority, application Israel, Mar. 11, 1982, 8945
Term of patent 14 years
U.S. Cl. D7—77

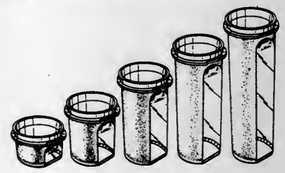


282,896
COVERED FOOD STORAGE CONTAINER OR THE LIKE
Rino Conti, Stoughton, Mass., and Robert H. C. M. Daenen, Hekelgem, Belgium, assignors to Dart Industries Inc., Northbrook, Ill.
Filed Aug. 10, 1982, Ser. No. 406,845
The portion of the term of this patent subsequent to Aug. 27, 1999, has been disclaimed.
Term of patent 14 years
U.S. Cl. D7—79

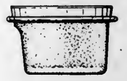




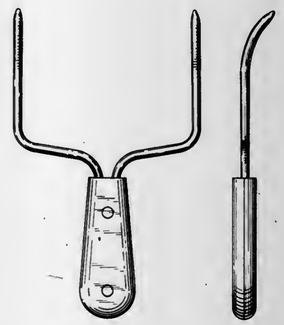
282,897
FOOD STORAGE CONTAINER OR THE LIKE
Rino Conti, Stoughton, Mass., and Robert H. C. M. Daenen, Hekelgem, Belgium, assignors to Dart Industries Inc., Northbrook, Ill.
Filed Aug. 10, 1982, Ser. No. 407,008
The portion of the term of this patent subsequent to Aug. 27, 2002, has been disclaimed.
Term of patent 14 years
U.S. Cl. D7—79



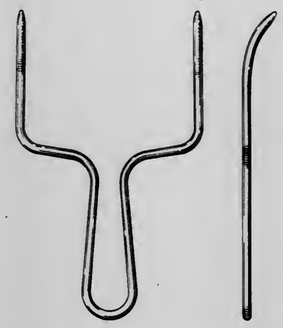




282,898
ROAST LIFTER
Thomas G. Furlan, 16730 Gaynelle Rd., Tinley Park, Ill. 60477
Filed Feb. 16, 1983, Ser. No. 467,101
Term of patent 14 years
U.S. Cl. D7—102



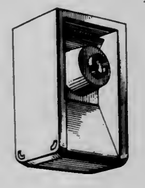
282,899
ROAST LIFTER
Thomas G. Furlan, 16730 Gaynelle Rd., Tinley Park, Ill. 60477
Filed Feb. 16, 1983, Ser. No. 467,102
Term of patent 14 years
U.S. Cl. D7—102



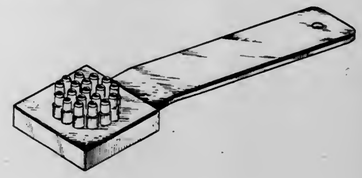
282,900
ADJUSTABLE RAKE
Joseph F. Salvato, 8020 W. 47th St., Lyons, Ill. 60534
Filed Oct. 6, 1983, Ser. No. 539,670
Term of patent 14 years
U.S. Cl. D8—13



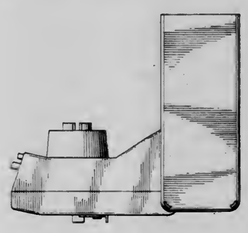




282,901
HOLE PUNCH FOR SOUND SPEAKER COVERS
Peter D. Quinn, 1002 Santa Clara, #1, Grand Junction, Colo. 81503
Filed Oct. 17, 1983, Ser. No. 542,596
Term of patent 14 years
U.S. Cl. D8—14



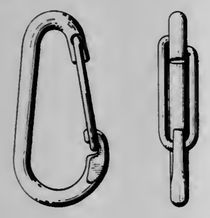
282,902
COMBINATION CAN OPENER AND BLENDER ASSEMBLY
Paul Rawson, Easton; Stanley J. Brym, Torrington, and Richard H. Yagami, Bridgewater, all of Conn., assignors to Dynamics Corporation of America, Greenwich, Conn.
Filed Jan. 30, 1985, Ser. No. 696,540
Term of patent 14 years
U.S. Cl. D8—34



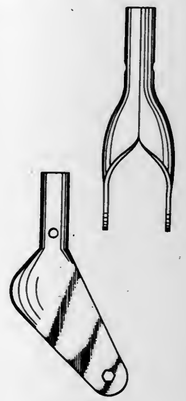
282,903
FLEXIBLE SUPPORT FOR HOLDING A RECREATIONAL VEHICLE DRAINAGE HOSE TAUT, OR SIMILAR ARTICLE
Ralph Baker, 19240 Circle Rd., P.O. Box 373, Oro Grande, Calif. 92368
Filed Sep. 26, 1983, Ser. No. 535,889
Term of patent 14 years
U.S. Cl. D8—356



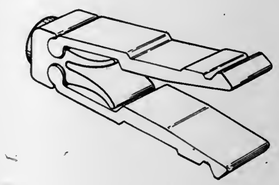
282,904
SNAP-HOOK FOR FIREFIGHTING EQUIPMENT OR THE LIKE
Christian Faidide, Maringues, France, assignor to s.a.r.l. Wichard, Thiers, France
Filed Jul. 20, 1983, Ser. No. 515,484
Claims priority, application France, Jan. 21, 1983, 830197
The portion of the term of this patent subsequent to Feb. 21, 1998, has been disclaimed.
Term of patent 14 years
U.S. Cl. D8—367



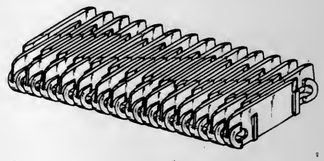
282,905
CASTER FRAME
John W. Black, Hickory Corners, Mich., assignor to Pemco-Kalamazoo, Inc., Kalamazoo, Mich.
Filed Apr. 26, 1983, Ser. No. 488,872
Term of patent 14 years
U.S. Cl. D8—375



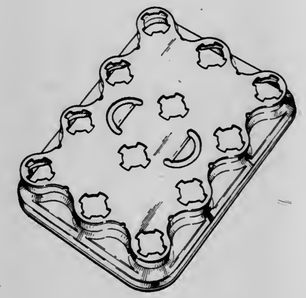
282,906
CONNECTOR FOR FRAMING SYSTEM
Stuart R. Marshall, Brighton, Australia, assignor to California Nominees Pty. Ltd., Forestville, Australia
Filed Mar. 7, 1983, Ser. No. 473,103
Term of patent 14 years
U.S. Cl. D8—382



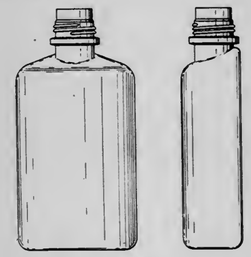
282,907
CHAIN LINK FOR CONVEYORS
Roger H. Schroeder, Hartland, and Wasyly G. Hodlewsky, Greendale, both of Wis., assignors to Rexnord Inc., Brookfield, Wis.
Filed Sep. 22, 1983, Ser. No. 534,919
Term of patent 14 years
U.S. Cl. D8—499



282,908
BOTTLE CARRIER
Aldo Panazzolo, Perrysburg, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Jun. 8, 1983, Ser. No. 502,426
Term of patent 14 years
U.S. Cl. D9—344



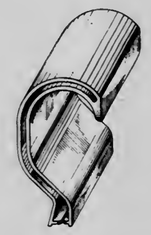
282,909
BOTTLE
Frederick N. Biesecker, Boyertown, Pa., assignor to Drug Plastics & Glass Company, Inc., Boyertown, Pa.
Filed Oct. 3, 1983, Ser. No. 538,689
Term of patent 14 years
U.S. Cl. D9—372



282,910
BOTTLE
Frederick N. Biesecker, Boyertown, Pa., assignor to Drug Plastics & Glass Company, Inc., Boyertown, Pa.
Filed May 6, 1983, Ser. No. 492,300
The portion of the term of this patent subsequent to Dec. 25, 1998, has been disclaimed.
Term of patent 14 years
U.S. Cl. D9—405



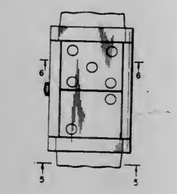
282,911
HANGER FOR COLLAPSIBLE TUBES
Louis V. Nigro, Saugus, Mass., assignor to The Gillette Company, Boston, Mass.
Filed Jun. 1, 1983, Ser. No. 500,054
Term of patent 14 years
U.S. Cl. D9—434

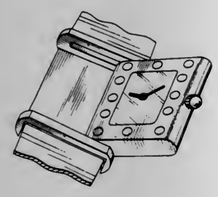


282,912
GOLF CLOCK
John A. Clepea, Stamford, Conn., assignor to Sun Hill Industries, Inc., Stamford, Conn.
Filed Oct. 28, 1983, Ser. No. 546,574
Term of patent 14 years
U.S. Cl. D10—6

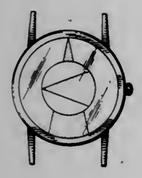


282,913
WRIST WATCH
Roy E. Stevens, Colchester, England, assignor to Asprey & Company PLC, London, England
Filed Oct. 5, 1983, Ser. No. 539,165
Claims priority, application United Kingdom, Apr. 11, 1983, 1012416
Term of patent 14 years
U.S. Cl. D10—33





282,914
INDICATOR WATCH
Jeffrey Maron, 248 Lafayette St., New York, N.Y. 10012
Filed Oct. 13, 1983, Ser. No. 541,677
Term of patent 14 years
U.S. Cl. D10—39





282,915
DEVICE FOR THE INSTANT TESTING OF WATER QUALITY
Trigger J. Hartshorn, 108 River Rd., Corona, Calif. 91720
Filed Aug. 8, 1983, Ser. No. 521,133
Term of patent 14 years
U.S. Cl. D10—81



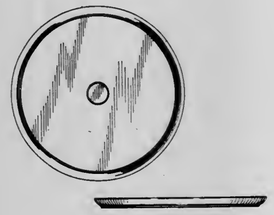
282,916
FINGER RING
William R. Schellmann, 901 Annabelle Ave., Modesto, Calif. 95350
Filed Jun. 23, 1983, Ser. No. 507,273
Term of patent 14 years
U.S. Cl. D11—32





282,917
PLAQUE
James R. Hackett, 6136 Avalon Ct., Long Beach, Calif. 90803
Filed Jul. 7, 1983, Ser. No. 511,777
Term of patent 14 years
U.S. Cl. D11—132



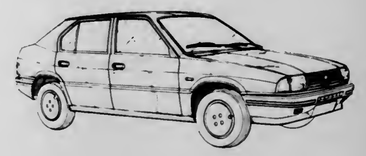


282,918
MOTORCAR
Youzaburo Yamashita, Tokyo; Tsuyoshi Nishimura, Asaka, and Hijira Ohya, Tokyo, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 7, 1983, Ser. No. 472,624
Claims priority, application Japan, Sep. 8, 1982, 57-40705
Term of patent 14 years
U.S. Cl. D12—92

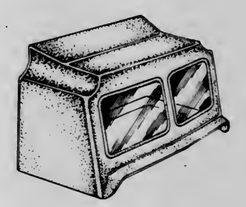




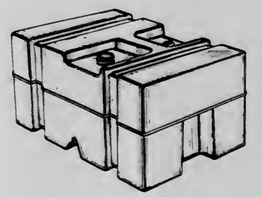
282,919
AUTOMOBILE
Ermanno Cressoni, Arese, Italy, assignor to Alfa Romeo Auto S.p.A., Naples, Italy
Filed Apr. 27, 1983, Ser. No. 489,208
Claims priority, application Italy, Nov. 2, 1982, 23347/82[U]
Term of patent 14 years
U.S. Cl. D12—92



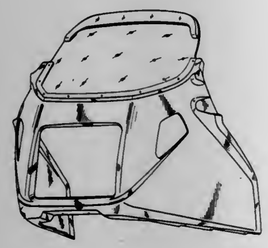
282,920
TOP COMPARTMENT FOR A TRUCK CAB
Bruce W. Eggan, 404 Jackson Ave. South, Hopkins, Minn. 55343
Filed Sep. 15, 1983, Ser. No. 532,399
Term of patent 14 years
U.S. Cl. D12—96



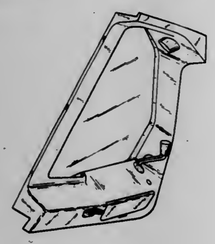
282,921
FUEL TANK
Ronald R. Eureka, Mantua; Benson T. Nicholl, Solon, and Gerald A. Hite, Willoughby, all of Ohio, assignors to Tempo Products Company, Cleveland, Ohio
Filed Jul. 11, 1983, Ser. No. 512,900
Term of patent 14 years
U.S. Cl. D12—155



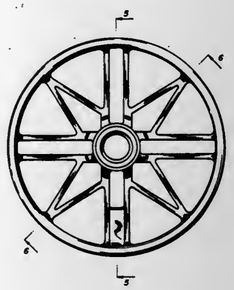
282,922
UPPER FAIRING FOR MOTORCYCLES
Karl H. Abe, Steinebach/Woerthsee, and Klaus V. Gevert, Munich, both of Fed. Rep. of Germany, assignors to Bayerische Motoren Werke AG, Fed. Rep. of Germany
Filed Nov. 9, 1983, Ser. No. 550,128
Claims priority, application Fed. Rep. of Germany, May 9, 1983, MR No. 13415
Term of patent 14 years
U.S. Cl. D12—182



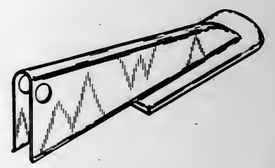
282,923
INTERIOR SURFACE OF A VEHICLE WINDOW
Richard W. Soederberg, Mühlacker, Fed. Rep. of Germany, assignor to Dr. Ing. h.c.F. Porsche Aktiengesellschaft, Weissach, Fed. Rep. of Germany
Filed Aug. 17, 1983, Ser. No. 524,092
Claims priority, application Fed. Rep. of Germany, Mar. 4, 1983, MR 5614
Term of patent 14 years
U.S. Cl. D12—183



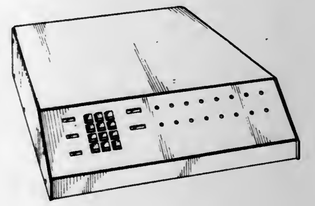
282,924
VEHICLE WHEEL
Kiyoharu Inoue, Osaka, Japan, assignor to Araya Industrial Co., Ltd., Osaka, Japan
Filed Dec. 21, 1983, Ser. No. 563,951
Term of patent 14 years
U.S. Cl. D12—211



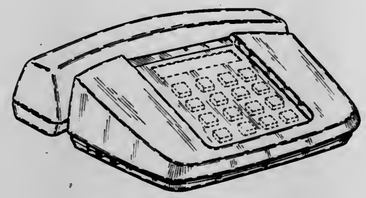
282,925
AIRCRAFT FLAP HINGE COVER
Norman F. Carden, III, 5207 Stephens La., Durham, N.C. 27712
Filed Nov. 1, 1982, Ser. No. 438,042
Term of patent 14 years
U.S. Cl. D12—345

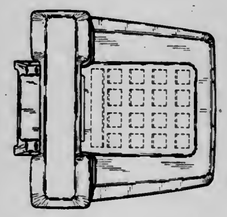


282,926
AUTOMATIC TELEPHONE APPARATUS
Robert D. Fulton, Kansas City, Mo., assignor to Butler National Corporation, Lenexa, Kans.
Filed Dec. 5, 1983, Ser. No. 557,894
Term of patent 14 years
U.S. Cl. D14—53



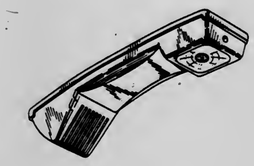
282,927
TELEPHONE INSTRUMENT
William R. Story, Mission Viejo; Larry G. Hickey, Laguna Hills, and David A. Sharbaugh, Irvine, all of Calif., assignors to GTE Business Communication Systems Inc., Northlake, Ill.
Filed Sep. 16, 1983, Ser. No. 532,948
Term of patent 14 years
U.S. Cl. D14—53



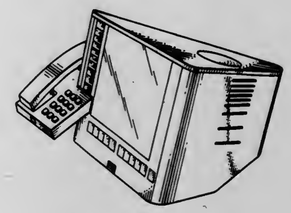


282,928
TELEPHONE HANDSET
Eric J. Marshall, London, England, assignor to British Telecommunications, England
Filed Jul. 22, 1983, Ser. No. 516,411
Claims priority, application United Kingdom, Jan. 24, 1983, 1011008
Term of patent 14 years
U.S. Cl. D14—63

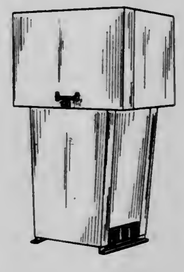




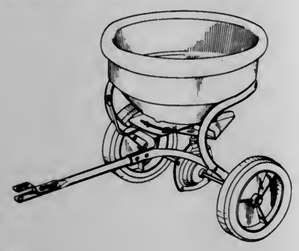
282,929
DATA TERMINAL
Lewis J. Bangham, Sausalito, Calif., assignor to Sydis Inc., San Jose, Calif.
Filed Mar. 18, 1983, Ser. No. 476,833
Term of patent 14 years
U.S. Cl. D14—101

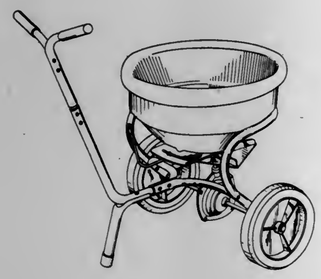


282,930
GAS PUMP HOUSING
Charles C. Gilmore, 3710 N. 71st St., Omaha, Nebr. 68104; David M. Gilmore, 11022 Grande Ave., Omaha, Nebr. 68164, and Robert L. Gilmore, 3715 N. 71st St., Omaha, Nebr. 68104
Filed Mar. 14, 1983, Ser. No. 475,344
Term of patent 14 years
U.S. Cl. D15—9.1



282,931
MATERIAL SPREADER
Charles W. Doering, and Arthur N. BecVar, both of Louisville, Ky., assignors to Brinly-Hardy Co., Inc., Louisville, Ky.
Filed Dec. 29, 1983, Ser. No. 566,505
Term of patent 14 years
U.S. Cl. D15—13

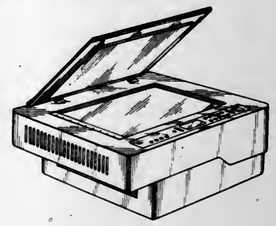




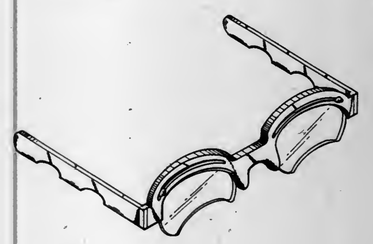
282,932
SINGLE-LENS REFLEX CAMERA BODY
Yoshihisa Maitani, Hachioji, Japan, assignor to Olympus Optical Company Ltd., Japan
Filed Jul. 27, 1983, Ser. No. 517,707
Claims priority, application Japan, Feb. 25, 1983, 58-7584
Term of patent 14 years
U.S. Cl. D16—8



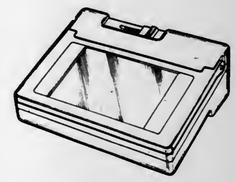
282,933
ELECTRONIC COPYING MACHINE
Kunio Hara, Chiba; Shigeru Sutoh, Urawa; Hideyuki Horie, Kamagaya; Tooru Okuyama, Isehara, and Shinichi Hiroki, Tokyo, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan
Filed Nov. 17, 1983, Ser. No. 552,828
Claims priority, application Japan, May 18, 1983, 58-20643
Term of patent 14 years
U.S. Cl. D16—31



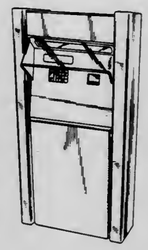
282,934
COMBINATION SUNGLASSES AND 3-D GLASSES
Carolyn Marks, 160-30 11th Ave., Whitestone, N.Y. 11357
Filed May 11, 1983, Ser. No. 493,720
Term of patent 14 years
U.S. Cl. D16—102



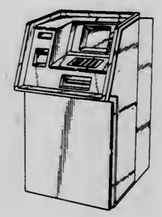
282,935
TEACHING APPARATUS FOR CORRECTING LEARNING PROBLEMS
David C. Shifflett, 42579 Royal La., Clinton Township, Lenawee County, Mich. 48044
Filed Jan. 27, 1983, Ser. No. 461,347
Term of patent 14 years
U.S. Cl. D19—60



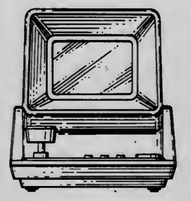
282,936
VENDING MACHINE CURRENCY ACCEPTOR
Glen A. Gardner, Castro Valley, and Richard C. Spake, Valencia, both of Calif., assignors to Atlantic Richfield Company, Los Angeles, Calif.
Filed Apr. 28, 1983, Ser. No. 489,686
Term of patent 14 years
U.S. Cl. D20—1



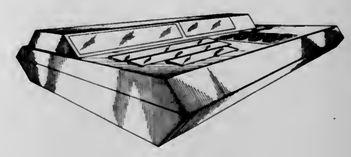
282,937
CASH DISPENSER
Luigi Di Benedetto, Los Angeles, Calif., and Yoshinori Kakiuchi, Yokohama, Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed May 23, 1983, Ser. No. 497,114
Term of patent 14 years
U.S. Cl. D20—1



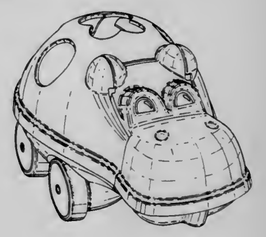
282,938
ELECTRONIC GAME HOUSING
Charles P. L. Leung, Kwai Chung, Hong Kong, assignor to Tronica Electronic Engineering Co., Ltd., Kwai Chung, Hong Kong
Filed Oct. 27, 1983, Ser. No. 546,118
Claims priority, application United Kingdom, Apr. 27, 1983, 1012747
Term of patent 14 years
U.S. Cl. D21—13



282,939
RANDOM NUMBER ELECTRONIC GAMING MACHINE
Floyd H. Haker, 6546 Linden La., Dallas, Tex. 75230
Filed Aug. 22, 1983, Ser. No. 525,104
Term of patent 14 years
U.S. Cl. D21—37



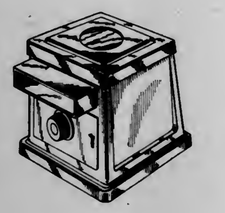
282,940
SHAPE SORTING TOY
Harry S. Thomson, Richmond; David M. Raffo, and John A. Pape, both of Hitchin, all of England, assignors to Hestair Kiddicraft Limited, Surrey, England
Filed Aug. 23, 1983, Ser. No. 525,730
Claims priority, application United Kingdom, Nov. 12, 1982, 1009672
Term of patent 14 years
U.S. Cl. D21—105



282,941
TOY TEA POT
Harry S. Thomson, Richmond; David M. Raffo, and John A. Pape, both of Hutchin, all of England, assignors to Hestair Kiddicraft Limited, Surrey, England
Filed Feb. 1, 1984, Ser. No. 575,835
Claims priority, application United Kingdom, Nov. 9, 1983, 1016182
Term of patent 14 years
U.S. Cl. D21—121



282,942
TOY OVEN
Mark E. Hartelius, Rochester, Mich., assignor to CPG Products Corp., Minneapolis, Minn.
Filed Dec. 22, 1983, Ser. No. 564,271
Term of patent 14 years
U.S. Cl. D21—122



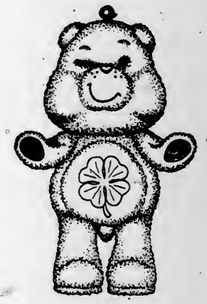
282,943
SIMULATIVE TRUNDLE TOY
Hubert A. Langton, Leicester, England, assignor to Hestair Kiddicraft Limited, Surrey, England
Filed Jun. 3, 1982, Ser. No. 384,540
Claims priority, application United Kingdom, Dec. 3, 1981, 1003964
Term of patent 14 years
U.S. Cl. D21—150



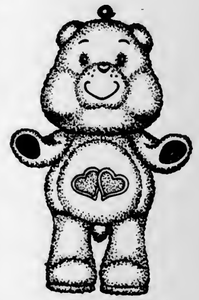
282,944
TOY CROCODILE FIGURE
Jacob Nielsen, Copenhagen, Denmark, assignor to Interlego AG, Baar, Switzerland
Filed Dec. 15, 1983, Ser. No. 561,664
Term of patent 14 years
U.S. Cl. D21—157



282,945
TOY BEAR FIGURE
Ralph Shaffer, Columbia Station, and William Davidson, Lakewood, both of Ohio, assignors to American Greetings Corporation, Cleveland, Ohio
Filed Sep. 2, 1983, Ser. No. 529,051
Term of patent 14 years
U.S. Cl. D21—159



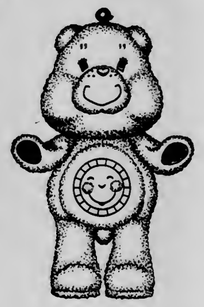
282,946
TOY BEAR FIGURE
Ralph Shaffer, Columbia Station, and William Davidson, Lakewood, both of Ohio, assignors to American Greetings Corporation, Cleveland, Ohio
Filed Sep. 2, 1983, Ser. No. 529,052
Term of patent 14 years
U.S. Cl. D21—159



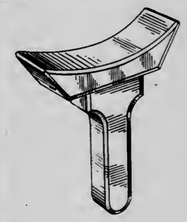
282,947
TOY BEAR FIGURE
Ralph Shaffer, Columbia Station, and William Davidson, Lakewood, both of Ohio, assignors to American Greetings Corporation, Cleveland, Ohio
Filed Sep. 2, 1983, Ser. No. 529,053
Term of patent 14 years
U.S. Cl. D21—159



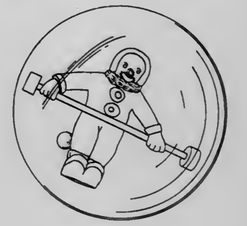
282,948
TOY BEAR FIGURE
Ralph Shaffer, Columbia Station, and William Davidson, Lakewood, both of Ohio, assignors to American Greetings Corporation, Cleveland, Ohio
Filed Sep. 2, 1983, Ser. No. 529,056
Term of patent 14 years
U.S. Cl. D21—159



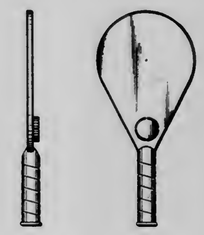
282,949
FACIAL EXERCISER
Richard P. Arve, Calumet City, Ill., assignor to Chin-Up, Chicago, Ill.
Filed Oct. 7, 1983, Ser. No. 540,129
Term of patent 14 years
U.S. Cl. D21—198



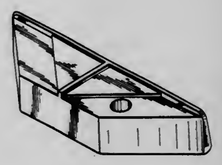
282,950
CHILD'S BALL TOY
Peter G. Adams, Lingfield, nr. East Grinstead, England, assignor to Hestair Kiddicraft Limited, Surrey, England
Filed Jun. 3, 1982, Ser. No. 384,541
Claims priority, application United Kingdom, Dec. 3, 1981, 1 003 971
Term of patent 14 years
U.S. Cl. D21—204



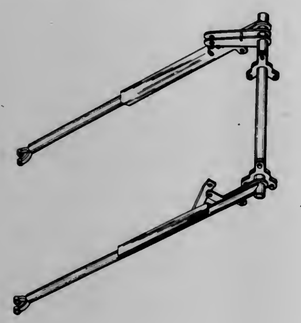
282,951
PADDLEBALL PADDLE
Craig E. Brown, 1426 W. 6785 South, West Jordan, Utah 84084
Filed Oct. 11, 1983, Ser. No. 540,897
Term of patent 14 years
U.S. Cl. D21—213



282,952
GOLF PUTTER HEAD
Charles D. Mattingly, #1 Highland Rd., Wichita, Kans. 67208
Filed Nov. 23, 1983, Ser. No. 554,580
Term of patent 14 years
U.S. Cl. D21—219



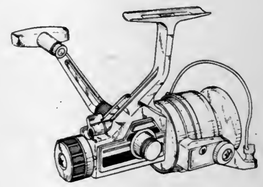
282,953
PIN SETTER RAKE TUBE ASSEMBLY
Richard D. Lenhard, Arvada, and Roger D. Lindblad, Westminster, both of Colo., assignors to Zot Manufacturing Co., Arvada, Colo.
Filed Apr. 18, 1983, Ser. No. 485,711
Term of patent 14 years
U.S. Cl. D21—233



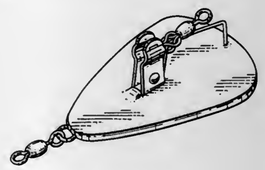
282,954
INSECT ELECTROCUTION DEVICE
Michael Ganor, Tel-Aviv, Israel, assignor to Amcor Ltd., Tel-Aviv, Israel
Filed Jun. 3, 1983, Ser. No. 501,061
Claims priority, application Israel, Mar. 7, 1983, 9400
Term of patent 14 years
U.S. Cl. D22—19



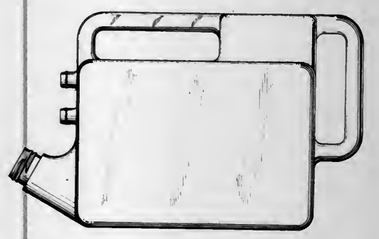
282,955
FISHING REEL
Etsuo Aota, Higashi-Kurume; Kanji Iinuma, and Yasuhisa Kameda, both of Musashino, all of Japan, assignors to Daiwa Seiko, Inc., Tokyo, Japan
Filed Jan. 21, 1983, Ser. No. 459,895
Claims priority, application Japan, Aug. 24, 1982, 57-38297
Term of patent 14 years
U.S. Cl. D22—25



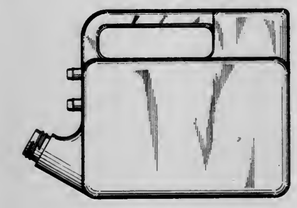
282,956
WEIGHTED DEVICE FOR FISHING LINES
Christopher Duffey, Winchester, England, assignor to Bowler (Presswork Services) Limited, England
Filed Aug. 4, 1983, Ser. No. 520,314
Claims priority, application United Kingdom, Feb. 9, 1983, 1 011 339
Term of patent 14 years
U.S. Cl. D22—30



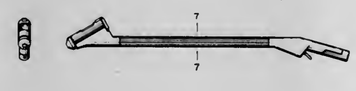
282,957
WATERING CAN
Arthur R. Carlson, 401A Waverley Rd., East Malvern, Victoria, Australia (3144)
Filed May 2, 1983, Ser. No. 490,311
Claims priority, application Australia, Nov. 12, 1982, 2127/82
Term of patent 14 years
U.S. Cl. D23—11



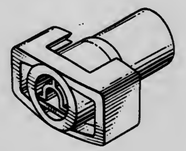
282,958
WATERING CAN
Arthur R. Carlson, 401A Waverley Rd., East Malvern, Victoria 3144, Australia
Filed May 2, 1983, Ser. No. 490,877
Claims priority, application Australia, Nov. 12, 1982, 2126/82
Term of patent 14 years
U.S. Cl. D23—11



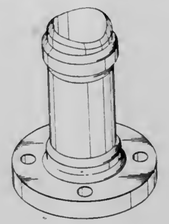
282,959
SPRAY WAND
David Powell, London, England, assignor to Imperial Chemical Industries PLC, London, England
Filed Dec. 14, 1984, Ser. No. 681,626
Claims priority, application United Kingdom, Jun. 19, 1984, 1020376
Term of patent 14 years
U.S. Cl. D23—17



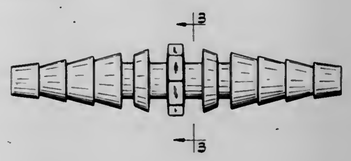
282,960
SPRINKLER NOZZLE
Robert J. O'Neill, and Hans D. Christen, both of LaVerne, Calif., assignors to Rain Bird Sprinkler Mfg. Corp., Glendora, Calif.
Filed Jun. 2, 1983, Ser. No. 500,274
Term of patent 14 years
U.S. Cl. D23—34



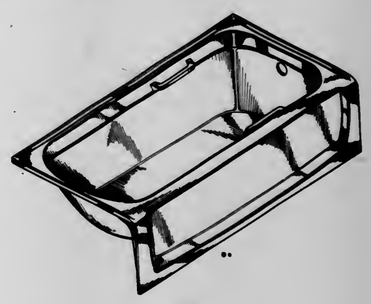
282,961
WELDING OUTLET
Bobby W. Ryan, Houston, Tex., assignor to WFI, Inc., Houston, Tex.
Filed Jun. 22, 1983, Ser. No. 506,898
Term of patent 14 years
U.S. Cl. D23—40



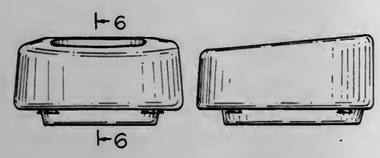
282,962
PLASTIC TUBING CONNECTOR
Albert J. Gerber, 15 Paxton La., St. Louis, Mo. 63124
Filed Feb. 14, 1983, Ser. No. 465,826
Term of patent 14 years
U.S. Cl. D23—43



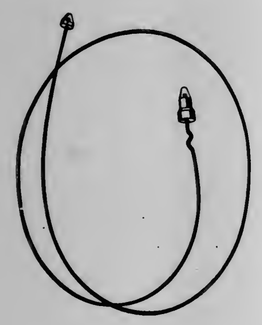
282,963
BATHTUB
Andrew L. Alger, Wilmette, Ill., assignor to Household International, Inc., Prospect Heights, Ill.
Filed Mar. 18, 1983, Ser. No. 476,597
Term of patent 14 years
U.S. Cl. D23—55



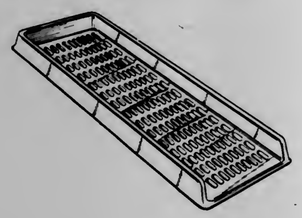
282,964
TOILET SEAT ADAPTOR FOR INVALIDS
Andrew J. Bepristis, 177 Kellogg Way, Santa Clara, Calif. 95051
Filed Feb. 16, 1983, Ser. No. 467,143
Term of patent 14 years
U.S. Cl. D23—71



282,965
VEIN STRIPPING INSTRUMENT AND HEADS, CAP AND CABLE THEREFOR
Kjell I. Wellenstam, Gothenburg, Sweden, assignor to Astra Meditec Aktiebolag, Sweden
Filed Jun. 21, 1983, Ser. No. 506,332
Claims priority, application Sweden, Jan. 7, 1983, 83-0048
Term of patent 14 years
U.S. Cl. D24—26



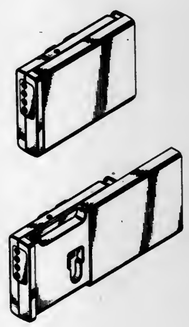
282,966
PHARMACEUTICAL CHECK BOX
Robert L. Brown, 41 Fontaine Rd., Greenville, S.C. 29607
Filed Aug. 4, 1983, Ser. No. 520,488
Term of patent 14 years
U.S. Cl. D24—31



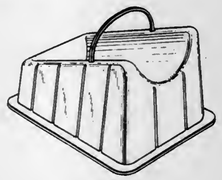
282,967
MASSAGER HEAD
Robert P. Libin, 11151 Blix St., North Hollywood, Calif. 91601
Filed Jan. 21, 1983, Ser. No. 459,709
Term of patent 14 years
U.S. Cl. D24—36



282,968
TRANSCUTANEOUS ELECTRICAL NERVE STIMULATOR OR SIMILAR ARTICLE
Eugene A. Dickhudt, New Brighton, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.
Filed Jul. 1, 1983, Ser. No. 510,021
Term of patent 14 years
U.S. Cl. D24—41



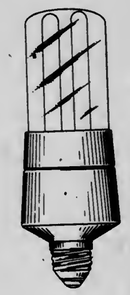
282,969
FEEDING BOTTLE HOLDER
Ira E. Sukoff, 75 Cricket Club Dr., Nassau, N.Y. 11576
Filed Mar. 7, 1983, Ser. No. 473,194
Term of patent 14 years
U.S. Cl. D24—48



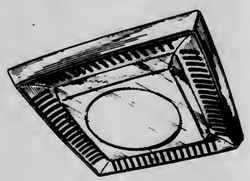
282,970
MOBILE CABANA
Roger Parkin, 10 Steptoe St., Chapel Hill, Queensland, Australia (4069)
Filed Apr. 27, 1983, Ser. No. 489,143
Term of patent 14 years
U.S. Cl. D25—16



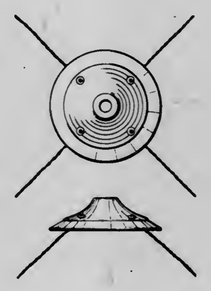
282,971
FLUORESCENT LAMP OR THE LIKE
Julian J. Wierzbicki, Peabody; Harold L. Hough, Beverly, and Andre C. Bouchard, Peabody, all of Mass., assignors to GTE Products Corporation, Stamford, Conn.
Filed Jun. 22, 1984, Ser. No. 623,608
Term of patent 14 years
U.S. Cl. D26—3



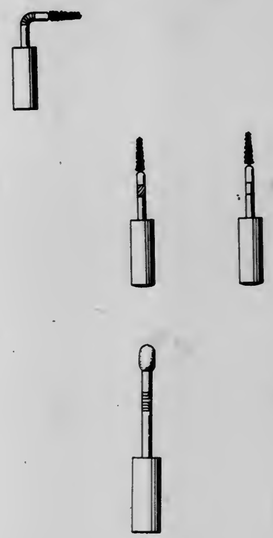
282,972
COMBINED CEILING LIGHT AND VENT INTAKE FOR BATHROOM AND THE LIKE
Dennis B. Castor, Cincinnati, Ohio, and Harold R. Pettit, Independence, Ky., assignors to Scovill Inc., Waterbury, Conn.
Filed Jun. 6, 1983, Ser. No. 501,651
Term of patent 14 years
U.S. Cl. D26—59



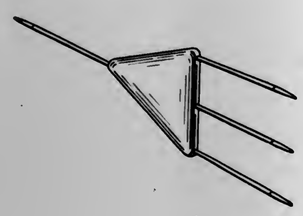
282,973
SAFETY CAP FOR A GLASS LAMPSHADE, OR SIMILAR ARTICLE
William L. Kempton, and Joyce K. Kempton, both of 15814 Fresno St., Victorville, Calif. 92392
Filed Jul. 28, 1983, Ser. No. 518,065
Term of patent 14 years
U.S. Cl. D26—140



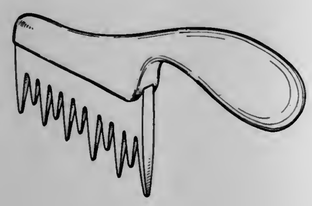
282,974
ADJUSTABLE COSMETIC APPLICATOR WITH UNIVERSAL JOINT
Henry J. Cassai, 163-47 85 St., Howard Beach, N.Y. 11414, and Gino H. Cassai, 924 E. 96th St., Brooklyn, N.Y. 11236
Filed Mar. 28, 1983, Ser. No. 479,198
The portion of the term of this patent subsequent to Sep. 20, 1997, has been disclaimed.
Term of patent 14 years
U.S. Cl. D28—7



282,975
COMBINED HAIR PICK AND LIFT
Franklin D. Harvey, 22 E. Broad St., Richmond, Va. 23219
Filed Jul. 10, 1984, Ser. No. 629,401
Term of patent 14 years
U.S. Cl. D28—25



282,976
HAIR COMB
Phillip H. Kenney, 119 Harvard St., Rochester, N.Y. 14607
Filed Jan. 16, 1984, Ser. No. 571,054
Term of patent 14 years
U.S. Cl. D28—30



282,977
HAIR PICK
Franklin D. Harvey, 22 E. Broad St., Richmond, Va. 23219
Filed Jul. 10, 1984, Ser. No. 629,403
Term of patent 14 years
U.S. Cl. D28—31

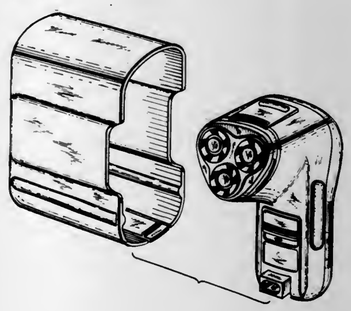




282,978
HAIR ORNAMENT
Emily Woods, Tengstrasse 24, D-8000, Munich, 40, Fed. Rep. of Germany
Filed Nov. 18, 1983, Ser. No. 553,285
Term of patent 14 years
U.S. Cl. D28—41



282,979
COMBINED ELECTRIC SHAVER AND COVER
Petrus J. J. Nagelkerke, Eindhoven, and Klaas T. Oord, Drachten, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Nov. 17, 1983, Ser. No. 552,995
Claims priority, application Benelux, May 27, 1983, 57903-00
Term of patent 14 years
U.S. Cl. D28—50



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 11TH DAY OF MARCH, 1986

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. F. Hickman Associates, Inc.: *See—*
Hickman, Albert F., 4,574,707, Cl. 105-159.000.
A & W Industries, Inc.: *See—*
Hubbell, William R., 4,575,019, Cl. 242-78.100.
AB Volvo: *See—*
Sundquist, Tommy, 4,575,128, Cl. 285-9.00R.
Abbott, Seth C.; Connerley, James J.; and Klok, Arthur W., Jr., to FMC Corporation. Planetary final drive. 4,574,658, Cl. 74-785.000.
Abdo, Milton K., to Mobil Oil Corporation. Method for preparation of viscous aqueous liquids for wellbore injection. 4,574,887, Cl. 166-275.000.
Abe, Hideo: *See—*
Nakagawa, Kichizaemon; Hira, Takaaki; Abe, Hideo; Sasaki, Toru; and Shimoyama, Yuji, 4,575,053, Cl. 266-92.000.
Abe, Norio, to Bridgestone Tire Company Limited. Tire bead wire supply apparatus. 4,574,940, Cl. 198-468.600.
Abiko, Tetsuo: *See—*
Sugiyama, Yoshihiko; Uno, Teruo; Irie, Hiroshi; Kurachi, Teruo; and Abiko, Tetsuo, 4,574,878, Cl. 165-134.100.
Abramovitz, Irwin J., to United States of America, Army. Compact beam splitter for acousto-optic correlator. 4,575,191, Cl. 350-358.000.
Abshire, Orvil L.: *See—*
Reichert, Guy W.; and Abshire, Orvil L., 4,575,076, Cl. 272-130.000.
Acampora, Alfonse A.; and Bunting, Richard M., to RCA Corporation. Component companding in a multiplexed component system. 4,575,749, Cl. 358-27.000.
Adair, William A., to Teledyne Industries, Inc. Apparatus and method for producing templates. 4,575,290, Cl. 409-132.000.
Adam, Gunter, to Puma-KG. Racket with elastic vibration damping strip. 4,575,083, Cl. 273-73.00D.
Adam, Norbert: *See—*
Kapps, Manfred; Wiedermann, Rolf; Adam, Norbert; and Weigand, Eckehard, 4,575,520, Cl. 521-107.000.
Addor, Roger W.; Wright, Donald P., Jr.; Siddens, Jack K.; and Hand, John J., to American Cyanamid Company. Insecticidal diaminoguanidine hydrazone compounds. 4,575,560, Cl. 560-27.000.
Adler, Laszlo; Fitting, Dale W.; and de Billy, Michel. Method for measuring surface and near surface properties of materials. 4,574,637, Cl. 73-629.000.
Adolph Coors Company: *See—*
Moen, Bruce A.; and Hahn, Roger A., 4,575,443, Cl. 264-161.000.
Advanced Research and Applications Corporation: *See—*
Palkuti, Leslie J., 4,575,676, Cl. 324-158.00R.
Aero Tec Laboratories, Inc.: *See—*
Baris, Albert S.; and Regna, Peter J., 4,574,986, Cl. 222-94.000.
AFSAL Sarl: *See—*
Fister, Christian, 4,575,049, Cl. 254-28.000.
AFTCO Mfg. Co., Inc.: *See—*
Shedd, William D.; and Eschbach, Robert C., 4,574,516, Cl. 43-43.120.
Shedd, William D.; and Eschbach, Robert C., 4,574,518, Cl. 43-43.120.
AG fur Industrielle Elektronik AGIE: *See—*
Lodetti, Attilio; Blaser, Hansueli; Medici, Brenno; and Sieg, Arno, 4,574,464, Cl. 29-568.000.
Agency of Industrial Science & Technology: *See—*
Ueda, Ken; Okajima, Kenichi; and Takami, Katsumi, 4,575,868, Cl. 378-4.000.
AGFA-Gevaert AG: *See—*
Fleck, Adolf; Kastl, Alfons; Loistl, Rudolf; Lehnert, Klaus; and Widemann, Ernst, 4,574,852, Cl. 141-286.000.
Zahn, Wolfgang; Nagel, Erich; and Payrhammer, Bernd, 4,575,226, Cl. 355-43.000.
AGFA-Gevaert, N.V.: *See—*
De Schamphelaere, Lucien A.; Librecht, Freddy M.; Van Peteghem, Willy F.; and De Cock, Etienne M., 4,575,739, Cl. 346-160.000.
Aggour, Mohamed A.; and Greebe, Frans, to Exxon Production Research Co. Method and apparatus for splitting two-phase gas-liquid flows having a known flow profile. 4,574,837, Cl. 137-561.00A.
Ahern, Douglas K.; and DiFrancesco, Alphonse B., to Eastman Kodak Company. Apparatus for accurately forming color-corrected electrographic images. 4,575,222, Cl. 355-4.000.
AHK Alkohol Handelskontor GmbH & Co. KG: *See—*
Schuster, Wilhelm; Stahl, Jurgen; and Scondo, Ludwig, 4,574,967, Cl. 215-276.000.
Ahlbrandt, Andreas. Electrode element for corona treater. 4,575,329, Cl. 425-174.000.
Aid, James D., to Extracorporeal Medical Specialties, Inc. Container with tapered walls for heating or cooling fluids. 4,574,876, Cl. 165-46.000.
Ainsworth, Oliver C., Jr.: *See—*
Young, Harold W., Jr.; Ainsworth, Oliver C., Jr.; Fry, William E.; and Neil, Lawrence E., 4,575,494, Cl. 502-243.000.
Air Preheater Company, Inc., The: *See—*
Counterman, Wayne S., 4,574,865, Cl. 164-11.000.
Aisin Seiki Kabushiki Kaisha: *See—*
Hashimoto, Akio; and Yasuda, Tomio, 4,574,903, Cl. 180-79.100.
Hayashi, Masaharu; Hattori, Kenji; and Itakura, Masato, 4,574,929, Cl. 192-58.00B.
Kodama, Hisashi; Sato, Katsujiro; Tamura, Tetsuomi; Hamamoto, Toru; and Yamada, Kazuharu, 4,574,750, Cl. 123-90.580.
Akamatsu, Shoji; and Imai, Takeshi, to Toray Silicone Co., Ltd. Magnetic recording medium and composition and method therefor. 4,575,474, Cl. 428-447.000.
Akao, Hideyuki: *See—*
Taguchi, Toshimichi; and Akao, Hideyuki, 4,575,601, Cl. 219-10.55B.
Akhter, Pervez, to Scott & Fetzer Company, The. Float switch assembly having mercury-type switch movably retained within a cage. 4,575,597, Cl. 200-84.00R.
Akino, Kenichiro; and Miura, Akira, to Kyocera Corporation; and Daiwa Can Company, Limited. Can end seaming tool. 4,574,607, Cl. 72-112.000.
Akiyama, Kitio: *See—*
Shigenobu, Hiromichi; Nakabayashi, Takao; Akiyama, Kitio; Miida, Masao; and Karasawa, Hisashi, 4,575,615, Cl. 219-314.000.
Akiyama, Osamu; and Hira, Rikuo, to Shimadzu Corporation. Slit mechanism for use in a monochromator. 4,575,242, Cl. 356-331.000.
Akiyama, Osamu, to Shimadzu Corporation. Apparatus for measuring absolute reflectance. 4,575,252, Cl. 356-446.000.
Aktiebolaget Electrolux: *See—*
Bergendal, Lars R. G., 4,575,616, Cl. 219-405.000.
Akzona Incorporated: *See—*
Frank, Dieter; Metcalfe, Lincoln D.; and Park, John Y. G., 4,575,434, Cl. 558-435.000.
AL-PI S.r.l.: *See—*
Bertani, Carlo, 4,574,503, Cl. 38-77.600.
Alanis, J. Jesus; and Greskovics, Paul, to Alopex Industries, Inc. Debris collection bag for pool cleaners. 4,575,423, Cl. 210-169.000.
Alapi, Jozsef; Baldaszti, Laszlo ; Gaspar, Laszlo ; Horczegh, Marton; Javorka, Istvan; Kisberk, Ferenc; Klauser, Janos; Makk, Antal; and Pallos, Istvan, to Fejer Megyei Gabonaforgalmi es Malomipari Vallalat; Aranykalasz Mgtsz; and MTA Mezogazdasagi Kutato Intezet. Process for preparing farinaceous pasta products. 4,575,460, Cl. 426-72.000.
Albany International Corp.: *See—*
Luciano, William A.; and Cosciani, Mary, 4,574,435, Cl. 24-33.00C.
Alberta Oil Sands Technology and Research Authority: *See—*
Scott, Donald S.; and Rhodes, Edward, 4,574,643, Cl. 73-861.040.
Albrecht, David W., to International Business Machines Corporation. Magnetic recording disk having a sector servo pattern for use with a multiple element head. 4,575,775, Cl. 360-77.000.
Aldinio, Giuseppe; Baggio, Giorgio; and Sartor, Mariano, to Nordica S.p.A. Foot retaining device particularly for ski boots. 4,574,500, Cl. 36-119.000.
Aldrich, Wilbert H.; Rich, Alan; and Picker, Dennis, to Gould, Inc. Precision temperature measuring system. 4,575,806, Cl. 364-557.000.
Alessio, Lorenzo E., to Black & Decker Inc. Radial arm of a radial arm saw. 4,574,671, Cl. 83-471.200.
Alexander, William J., III. Cloth roll overhead takeup apparatus and method. 4,574,845, Cl. 139-1.00R.
Alfa-Laval Separation AB: *See—*
Foldhazy, Zoltan; and Hellekant, Otto, 4,575,263, Cl. 384-126.000.
Alfa Romeo Auto S.p.A.: *See—*
Giraudi, Walter, 4,575,009, Cl. 239-585.000.
Allekotte, Heinz. Advertising stand. 4,575,036, Cl. 248-289.300.
Allemand, Charly D.: *See—*
Demers, Donald R.; and Allemand, Charly D., 4,575,241, Cl. 356-316.000.
Allen, James M.; and Howard, Thomas B., to James River-Norwalk, Inc. Apparatus for sampling particulate material. 4,574,645, Cl. 73-863.510.
Allen, Wade H.; Cory, Theodore M.; Hurley, Patrick J.; and Thornton, Raymond A., to International Business Machines Corporation. Switching of programming routine supporting storage stacks. 4,575,817, Cl. 364-900.000.
Allied Corporation: *See—*
Cohen, Richard L.; Wilson, John C., Jr.; and Aron, Mitchell, 4,575,767, Cl. 358-250.000.
Kytta, Oswald O., 4,574,455, Cl. 29-445.000.
Lapke, James A.; and Schmelzle, Carl W., 4,575,694, Cl. 333-22.00R.

Tresselt, Carl P., 4,575,725, Cl. 343-700.0MS.

Allington, Robert W.; and Jones, John N., to ISCO, Inc. Chromatographic flow cell and method of making it. 4,575,424, Cl. 210-198.200.

Allwine, Elmer C., Jr.; and Gilovich, Paul A., to Interdyne Company. Reel to reel tape drive device. 4,575,022, Cl. 242-192.000.

Almy, Thomas A.; and Merrow, Thomas E., to Tektronix, Inc. Apparatus for in effect extending the width of an associative memory by serial matching of portions of the search pattern. 4,575,818, Cl. 365-49.000.

Alopex Industries, Inc.: *See—*
Alanis, J. Jesus; and Greskovics, Paul, 4,575,423, Cl. 210-169.000.

Alps Electric Co., Ltd.: *See—*
Okita, Masao, 4,575,837, Cl. 369-270.000.

Aluminum Company of America: *See—*
Woolsey, Steven L., 4,574,493, Cl. 33-501.000.

AM General Corporation: *See—*
Sanborn, Steven L.; and Neumeyer, Martin J., 4,574,685, Cl. 89-37.140.

American Cyanamid Company: *See—*
Addor, Roger W.; Wright, Donald P., Jr.; Siddens, Jack K.; and Hand, John J., 4,575,560, Cl. 560-27.000.

American Gas Association: *See—*
Belles, Frank E., 4,574,745, Cl. 122-24.000.

American Hoechst Corporation: *See—*
Dragon, Robert L., Jr.; Grambo, Lawrence C.; and Walls, John E., 4,575,409, Cl. 204-237.000.

American Home Products Corporation: *See—*
Mazarin, Sanford S., 4,575,457, Cl. 424-52.000.

American Hospital Supply Corporation: *See—*
Mai, Khuong H. X.; and Patil, Ghanshyam, 4,575,558, Cl. 549-453.000.

American Machine & Science, Inc.: *See—*
Mudge, Dennis; and Wood, William A., 4,575,062, Cl. 269-64.000.

American Maize-Products Company: *See—*
Friedman, Robert B.; West, Isaac R.; and Furcsik, Susan L., 4,575,461, Cl. 426-549.000.

Amin, Pravin T., to Motorola, Inc. Memory with RAM cells and ROM cells. 4,575,819, Cl. 365-104.000.

Amoco Corporation: *See—*
Reed, Robert L., 4,575,453, Cl. 422-149.000.

Amonett, Daniel K., to Emhart Industries, Inc. Timing mechanism. 4,575,594, Cl. 200-38.00B.

AMP Incorporated: *See—*
Castello, Paolo; and Tartari, Claudio, 4,575,176, Cl. 339-195.00M.
Rose, William H., 4,575,592, Cl. 200-6.00R.

Ampex Corporation: *See—*
Morrison, Eric F., 4,575,124, Cl. 283-1.00A.

Anazawa, Osamu: *See—*
Kurosawa, Akihito; and Anazawa, Osamu, 4,574,980, Cl. 221-116.000.

Ancos Co., Ltd.: *See—*
Hashimoto, Yasuyuki; and Shimizu, Kazuo, 4,575,271, Cl. 401-107.000.

Anders, Gene A., to Caterpillar Tractor Co. Flow directing element for heat exchanger. 4,574,868, Cl. 165-144.000.

Andersen, Markham L., to Anderstat Controls. Temperature indicator for a fluid fixture. 4,575,262, Cl. 374-147.000.

Andersen, Per: *See—*
Thorsen, Niels P.; and Andersen, Per, 4,575,596, Cl. 200-67.00D.

Anderson, Alan M. Tire chain device. 4,574,858, Cl. 152-216.000.

Anderson, James M.; and Dean, William C., to FMC Corporation. Guide and hand rail with latch. 4,574,937, Cl. 198-321.000.

Anderson, John F., Jr.: *See—*
Long, Delmar D.; and Anderson, John F., Jr., 4,575,469, Cl. 428-86.000.

Anderson, John W., Jr.; and Roche, William J., to GTE Products Corporation. Starting aid for non-linear discharge lamps and method of making same. 4,575,656, Cl. 313-492.000.

Anderson, Robert H., to Litton Systems, Inc. Magneto-optic display. 4,575,722, Cl. 340-783.000.

Anderson, Terry L.; Deb Roy, Tapan K.; and Chung, Ding Y., to Inmont Corporation. High build, low bake cathodic electrocoat. 4,575,523, Cl. 523-414.000.

Anderson, Terry L.; Deb Roy, Tapan K.; and Chung, Ding Y., to Inmont Corporation. High build, low bake cathodic electrocoat. 4,575,524, Cl. 523-455.000.

Anderstat Controls: *See—*
Andersen, Markham L., 4,575,262, Cl. 374-147.000.

Andral Corporation: *See—*
Marques, Salvador A., 4,574,918, Cl. 182-164.000.

Andress, Charles W.: *See—*
Bouchard, Andre C.; Maya, Jakob; Loughridge, Fred; Andress, Charles W.; and Wierzbicki, Julian, 4,575,344, Cl. 445-26.000.

Andrews, Austin M., II; and Barrowcliff, Edwin E., to Rockwell International Corporation. Integrated processor board assembly. 4,575,762, Cl. 358-209.000.

Andrews, Peter: *See—*
Behner, Otto; Stendel, Wilhelm; and Andrews, Peter, 4,575,501, Cl. 514-150.000.

Anis, Aziz Y. Flexible anterior chamber lens. 4,575,374, Cl. 623-6.000.

Annowsky, Wolfgang. Dirt trap for flush basins. 4,574,400, Cl. 4-222.100.

Anthony, Andrew J.; and Young, Richard H., to Combustion Engineering, Inc. Leak detection method and apparatus. 4,574,618, Cl. 73-40.50R.

Antonov, Anatoly V.: *See—*
Safonnikov, Anatoly N.; and Antonov, Anatoly V., 4,575,606, Cl. 219-73.100.

Aoki, Akira; and Shimbori, Hideo, to Tachikawa Spring Co. Ltd. Back frame in a seat back for a vehicle seat. 4,575,153, Cl. 297-452.000.

Aoki, Akira: *See—*
Yano, Nobuyuki; Kotera, Takuro; Utagawa, Toshio; Aoki, Akira; Watanabe, Kazufumi; and Wakai, Masao, 4,574,872, Cl. 165-8.000.

Aoki, Hidekatsu; and Hashimoto, Masami, to Kabushiki Kaisha Komatsu Seisakusho. Drive mechanism for track-type vehicle. 4,574,900, Cl. 180-6.200.

Aoki, Kenzou: *See—*
Ogata, Yusuke; Nagahama, Yasushi; Matsuura, Yoshiaki; Aoki, Kenzou; and Harada, Hidemi, 4,575,839, Cl. 370-13.000.

Aoyagi, Hidehito; and Hirosaki, Botaro, to NEC Corporation. Circuit for establishing accurate sample timing. 4,575,682, Cl. 329-50.000.

Appels, Johannes A.: *See—*
Slotboom, Jan W.; Maas, Henricus G. R.; Appels, Johannes A.; and Klaassen, Francois M., 4,574,468, Cl. 29-571.000.

Applied Electro Mechanics, Inc.: *See—*
Brown, Harry B., 4,575,669, Cl. 320-13.000.

Arakawa, Kaneyasu: *See—*
Hattori, Masaichi; Arakawa, Kaneyasu; and Hanaki, Akira, 4,575,590, Cl. 200-5.00B.

Arakawa, Satoshi; and Matsuda, Terumi, to Fuji Photo Film Co., Ltd. Radiation image storage panel. 4,575,635, Cl. 250-484.100.

Aranykalasz Mgtsz: *See—*
Alapi, Jozsef; Baldaszti, Laszlo ; Gaspar, Laszlo ; Herczegh, Marton; Javorka, Istvan; Kisberk, Ferenc; Klauser, Janos; Makk, Antal; and Pallos, Istvan, 4,575,460, Cl. 426-72.000.

Arcair Company: *See—*
Delius, Henry B., 4,575,604, Cl. 219-69.00R.

Arianex Systemse, Societe Anonyme francaise: *See—*
Gerriet, Jacques, 4,575,273, Cl. 402-75.000.

Arimoto, Satomi, to Mitsubishi Denki Kabushiki Kaisha. Spiral arc circuit breaker. 4,575,599, Cl. 200-147.00A.

Ariyama, Kenzo; Yamazaki, Hideo; Motohashi, Tamotsu; and Hirota, Minoru, to Ricoh Company, Ltd. Electrophotographic reproduction of a three-dimensional object. 4,575,215, Cl. 355-3.00R.

Arkans, Edward J., to Kendall Company, The. Arterial thrombus detection system and method. 4,574,812, Cl. 128-691.000.

Arledge, James M. Gravity feed hydroponic system. 4,574,520, Cl. 47-59.000.

Armaroli, Gianni: *See—*
Lodi, Oliviero; and Armaroli, Gianni, 4,575,301, Cl. 414-411.000.

Armitage, Jack R.; and Haymore, Ralph B., to Envirotech Corporation. Ragless propeller draft tube mixer. 4,575,256, Cl. 366-266.000.

Arnaudeau, Marcel: *See—*
Galais, Michel; Sardain, Christian; Fouin, Jean; Arnaudeau, Marcel; and Morin, Pierre, 4,575,315, Cl. 417-365.000.

Arndt, Heinrich, to Zahnraderfabrik Renk, A.G. Precision drive for positioning solar energy apparatus. 4,574,659, Cl. 74-804.000.

Arnold, Kenneth A., to Eastman Kodak Company. Electrographic apparatus having an on-line densitometer. 4,575,224, Cl. 355-14.00R.

Arnoldi, Douglas R., to Burroughs Corporation. Variable resolution scanning in line scan optical imaging systems. 4,575,769, Cl. 358-285.000.

Aron, Mitchell: *See—*
Cohen, Richard L.; Wilson, John C., Jr.; and Aron, Mitchell, 4,575,767, Cl. 358-250.000.

Arthur D. Little, Inc.: *See—*
Grain, Clark F., 4,575,464, Cl. 427-255.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Kawano, Kiyoshi, 4,575,213, Cl. 354-474.000.

Asano, Hiroaki; Nakamura, Keiichi; and Mori, Yutaka, to Toyoda Koki Kabushiki Kaisha. Steering force controlling apparatus for power steering system. 4,574,905, Cl. 180-142.000.

Aschwanden, Felix, to RCA Corporation. PAL offset generator. 4,575,757, Cl. 358-150.000.

Asfar, Khaled R. Motor operated hand tool for tightening and loosening threaded fasteners and the like. 4,574,657, Cl. 74-766.000.

Ashley, Charles R.: *See—*
Huck, Charles M.; and Ashley, Charles R., 4,574,948, Cl. 206-63.300.

Ashton, Gerard J.; Colao, Emilio; and Cavaliere, Joseph R., to International Business Machines Corporation. Reference-regulated compensated current switch emitter-follower circuit. 4,575,647, Cl. 307-443.000.

ASM Fico Tooling, b.v.: *See—*
Fierkens, Richardus H. J.; and Pas, Ireneus J. T. M., 4,575,328, Cl. 425-126.00R.

Aspen Laboratories, Inc.: *See—*
Manes, Michael R., 4,574,801, Cl. 128-303.140.

Associates of Dallas: *See—*
Grimland, Charles J.; and Cheatham, Richard P., 4,575,042, Cl. 251-46.000.

Astec International, Ltd.: *See—*
Jandrell, Louis H. M., 4,575,580, Cl. 178-18.000.

AT&T Bell Laboratories: *See—*
Baranyai, Lawrence; and Colton, John R., 4,575,845, Cl. 370-62.000.
Howard, Richard E.; Pleibel, William; and Stolen, Rogers H., 4,575,187, Cl. 350-96.330.
Kartalopoulos, Stamatios V., 4,575,583, Cl. 179-18.0ES.
Lee, Charles M., 4,575,648, Cl. 307-471.000.

Saneski, Steven P., 4,575,646, Cl. 307-443.000.
Scordo, Dominick, 4,575,860, Cl. 375-110.000.

AT&T-Teletype Corporation: *See—*
Ollendick, Gary B., 4,575,859, Cl. 375-76.000.

Atlantic Richfield Company: *See—*
Dixon, Kenneth W.; and Menchen, Steven M., 4,575,527, Cl. 524-253.000.
Lowther, Frank E.; and Voelz, Frederick L., 4,575,383, Cl. 48-212.000.
Miller, Richard F., 4,575,455, Cl. 423-228.000.
Schmidt, Joseph H., 4,574,884, Cl. 166-263.000.

Audi, Josef: *See—*
Halberschmidt, Friedrich; Audi, Josef; and Schubert, Gerhard, 4,575,389, Cl. 65-273.000.

Audio Technica U.S., Inc.: *See—*
White, Jeffrey N.; and Reichel, Kenneth R., 4,574,906, Cl. 181-145.000.

Auergesellschaft GmbH: *See—*
Molt, Werner, 4,574,647, Cl. 73-864.340.

Augier, Pierre J., to Uniroyal, Inc. Articles having invertible lettering thereon. 4,575,125, Cl. 283-1.00R.

August, Jerome M. Three-dimensional effect representation, and camera and method for use in making. 4,575,207, Cl. 354-112.000.

Avicom International, Inc.: *See—*
Bertagna, Richard A.; and Berry, Dickey J., 4,575,719, Cl. 340-825.350.

Ayers, Scott D.; Comley, John E.; Hirt, Ronald L.; and Kockler, Barry C., to Mead Corporation, The. Ink printer pivotal frame. 4,575,729, Cl. 346-75.000.

B. B. Robertson Company: *See—*
Robertson, Michael L., 4,574,689, Cl. 99-337.000.

B e B S.r.l.: *See—*
Bertani, Carlo, 4,574,503, Cl. 38-77.600.

Babb, Harvey M.: *See—*
Chiles, Michael J.; and Babb, Harvey M., 4,574,723, Cl. 114-253.000.

Babcock & Wilcox Company, The: *See—*
Bower, John R.; and Hammond, Charles W., 4,574,615, Cl. 73-24.000.
Kaya, Azmi; and Keyes, Marion A., IV, 4,574,626, Cl. 73-112.000.
Keyes, Marion A., IV; and Pocock, Robert E., 4,574,746, Cl. 122-448.00S.
Keyes, Marion A., IV; Lukas, Michael P.; and Pocock, Robert E., 4,575,334, Cl. 431-76.000.
Papson, Gregory J.; and Trolli, Adolph L., 4,575,663, Cl. 318-305.000.
Sauder, Robert A.; Kendrick, Gary R.; and Mase, John R., 4,574,995, Cl. 228-140.000.

Babel, Werner, to Maho Werkzeugmaschinenbau Babel & Co. Dividing apparatus for a program controlled machine tool. 4,575,291, Cl. 409-222.000.

Bacci, Mauro; Brenci, Massimo; Conforti, Giuliano; Falciai, Riccardo; Mignani, Anna G.; and Verga-Scheggi, Anna M., to Consiglio Nazionale Delle Ricerche. Optical fibre thermometer. 4,575,259, Cl. 374-130.000.

Bach, Robert D.; and Nagel, Christopher J., to United States Steel Corporation. Destruction of toxic chemicals. 4,574,714, Cl. 110-346.000.

Badoz, Jean-Marie: *See—*
Rosaz, Guy; Maire, Guy; and Badoz, Jean-Marie, 4,574,641, Cl. 73-726.000.

Baggio, Giorgio: *See—*
Aldinio, Giuseppe; Baggio, Giorgio; and Sartor, Mariano, 4,574,500, Cl. 36-119.000.

Bailey, Berton K.: *See—*
Steck, Warren F.; Underhill, Edward W.; Chisholm, Melvin D.; and Bailey, Berton K., 4,575,458, Cl. 424-84.000.

Bailey, Thomas F.: *See—*
Littlejohn, Lee A.; Kruk, Keith F.; Williams, Robert E.; and Bailey, Thomas F., 4,575,426, Cl. 210-671.000.

Bailey, Walter L. Device for inserting a bushing into a socket. 4,574,447, Cl. 29-234.000.

Bair, Eugene C., to General Electric Company. Method of releasably securing a stator, method of releasably securing a clamping device, method of adjusting a wedge angle, clamping device, and wedge device. 4,574,460, Cl. 29-559.000.

Baird Corporation: *See—*
Demers, Donald R.; and Allemand, Charly D., 4,575,241, Cl. 356-316.000.

Baisch, Herbert: *See—*
Handler, Milton E.; Sylvan, Richard; and Baisch, Herbert, 4,574,530, Cl. 51-166.0TS.

Baker, Geoffrey; Ball, Patrick J. R.; and Renals, Martin, to US Philips Corporation. Pyroelectric infrared radiation detector. 4,575,633, Cl. 250-338.000.

Baker, Robert W., to Liebert Corporation. Controller for providing PWM drive to an A.C. motor. 4,575,668, Cl. 318-811.000.

Bakhtiari, Zilley H. Band mounting for wrist watch, and assembly, with improved viewing. 4,575,833, Cl. 368-282.000.

Baldaszti, Laszlo : *See—*
Alapi, Jozsef; Baldaszti, Laszlo ; Gaspar, Laszlo ; Herczegh, Marton; Javorka, Istvan; Kisberk, Ferenc; Klauser, Janos; Makk, Antal; and Pallos, Istvan, 4,575,460, Cl. 426-72.000.

Balke, Siegmund, to Durkoppwerke GmbH. Optoelectronic scanner for sewing machine. 4,574,719, Cl. 112-272.000.

Ball, Patrick J. R.: *See—*
Baker, Geoffrey; Ball, Patrick J. R.; and Renals, Martin, 4,575,633, Cl. 250-338.000.

Bamber, Barry H.; Brookhart, George C., Jr.; and Sabatino, Alan H., to Oldcastle, Inc. Roof tile. 4,574,536, Cl. 52-125.300.

Bando, Seiji: *See—*
Ebata, Sadao; and Bando, Seiji, 4,575,052, Cl. 266-81.000.

Bangor Punta Corporation: *See—*
Moffett, Warren, 4,574,600, Cl. 70-16.000.

Bankart, Adrian E.; and Jenkins, Clive N., to Cybrid Limited. Pattern scanner providing data to a computer which carries out lay planning. 4,575,628, Cl. 250-235.000.

Bar-Zohar, Meir, to RCA Corporation. Video scrambler system. 4,575,754, Cl. 358-119.000.

Baranyai, Lawrence; and Colton, John R., to AT&T Bell Laboratories. Time division multiplex conferencer. 4,575,845, Cl. 370-62.000.

Barber, Craig S.: *See—*
Lin, Shiow C.; and Barber, Craig S., 4,575,432, Cl. 252-511.000.

Barbieri, Giovanni. Apparatus for cooking food. 4,574,688, Cl. 99-330.000.

Barditch, Irving F. Optical input with electrical readout memory mosaic. 4,575,820, Cl. 365-114.000.

Baris, Albert S.; and Regna, Peter J., to Aero Tec Laboratories, Inc. Flexible container system. 4,574,986, Cl. 222-94.000.

Barlics, John J.: *See—*
Dintemann, Ronald J.; and Barlics, John J., 4,574,403, Cl. 4-309.000.

Barmac Associates Limited: *See—*
Bartley, Bryan A., 4,575,013, Cl. 241-275.000.

Barnard, George B., Jr., to Purolator Technologies Inc. Filter differential pressure impending and bypass indicator. 4,574,728, Cl. 116-267.000.

Barnard, George B., Jr., to Purolator Technologies Inc. Bypass valve with indicator. 4,574,836, Cl. 137-553.000.

Baron, Kenneth S.: *See—*
Lee, Kyu-Wang; Hedges, Winston L.; and Baron, Kenneth S., 4,574,793, Cl. 128-90.000.

Barrowcliff, Edwin E.: *See—*
Andrews, Austin M., II; and Barrowcliff, Edwin E., 4,575,762, Cl. 358-209.000.

Bartlett, Geoffrey M.; Hofmeister, James P.; Nye, Derald D.; and Pring, Edward J., to International Business Machines Corporation. Automatically balancing and vertically justifying a plurality of text/graphics-columns. 4,575,813, Cl. 364-900.000.

Bartley, Bryan A., to Barmac Associates Limited. Mineral breaker. 4,575,013, Cl. 241-275.000.

Bartzick, Gerd; Buhne, Gerd; and Werk, Jurgen, to Hoesch Werke Aktiengesellschaft. Device for tensioning a strapping band positioned around a package. 4,574,848, Cl. 140-93.200.

Basch, John G., to General Electric Company. Piezoceramic coupler control circuit. 4,575,654, Cl. 310-318.000.

BASF Aktiengesellschaft: *See—*
Steiner, Gerd; Mueller, Claus D.; and Lenke, Dieter, 4,575,508, Cl. 514-292.000.

BASF Wyandotte Corporation: *See—*
Panek, Edward J.; Schmitt, Thomas M.; Davis, Pauls; and Ku, Jen-Sheng, 4,575,559, Cl. 556-428.000.

Basile, Peter A.: *See—*
Groth, Hugh F.; and Basile, Peter A., 4,575,007, Cl. 239-310.000.

Bass, Alan S.; and Lee, Shi-Chuan, to Motorola, Inc. Macrocell array having real time diagnostics. 4,575,674, Cl. 324-73.00R.

Bates, Donald E.: *See—*
Parkinson, David W.; Bates, Donald E.; and Poteralski, Raymond F., 4,574,871, Cl. 165-1.000.

Bates, Kenneth W.; and Griffiths, William A., to Injectall Limited. Apparatus for introducing substances into liquids e.g. metal melts. 4,575,393, Cl. 75-53.000.

Battelle Memorial Institute: *See—*
Vermot-Gaud, Jacques; and Genequand, Pierre, 4,575,737, Cl. 346-140.00R.

Battery Engineering, Inc.: *See—*
Epstein, James; and Marincic, Nikola, 4,574,472, Cl. 29-623.100.

Baxter Travenol Laboratories, Inc.: *See—*
Soika, Emil H., 4,574,456, Cl. 29-451.000.

Bayer Aktiengesellschaft: *See—*
Behner, Otto; Stendel, Wilhelm; and Andrews, Peter, 4,575,501, Cl. 514-150.000.
Kapps, Manfred; Wiedermann, Rolf; Adam, Norbert; and Weigand, Eckehard, 4,575,520, Cl. 521-107.000.
Kruger, Bernd-Wieland; Priesnitz, Uwe; Jager, Gerhard; and Behrenz, Wolfgang, 4,575,516, Cl. 514-715.000.
Kruger, Bernd-Wieland; Priesnitz, Uwe; Jager, Gerhard; Paulus, Wilfried; and Genth, Hermann, 4,575,517, Cl. 514-715.000.
Rasshofer, Werner; and Paul, Reiner, 4,575,518, Cl. 521-51.000.
Sirinyan, Kirkor; Merten, Rudolf; Giesecke, Henning; and Wolf, Gerhard D., 4,575,467, Cl. 427-304.000.

BBC Brown, Boveri & Co., Ltd.: *See—*
Duerig, Thomas; Escudier, Marcel; and Keller, Jakob, 4,575,325, Cl. 425-7.000.

Beaton, Patrick H. Tension enclosure system. 4,574,534, Cl. 52-63.000.

Bechmann, Peter, to Rotzler GmbH & Co. Mobile cable winch. 4,575,050, Cl. 254-286.000.

Becker, Herbert: *See—*
Volk, Hans-Joachim; Becker, Herbert; and Forkel, Michael, 4,575,120, Cl. 280-804.000.

Becker, Robert F.: *See—*
Young, Horace J.; and Becker, Robert F., 4,574,893, Cl. 175-170.000.

Beckman Industrial Corporation: *See—*
Neti, Radhakrishna M., 4,575,410, Cl. 204-422.000.

Bednarz, James W. Split nut in blowout preventer. 4,574,881, Cl. 166-75.100.

Beecham Group p.l.c.: *See—*
Evans, John M.; and Cassidy, Frederick, 4,575,511, Cl. 514-456.000.

Beeghly, Richard M.; Cundiff, William P.; Legas, William H.; Hurst, Lawrence B., Jr.; Crump, Robert L.; and Boore, Robert E., to Goodyear Tire & Rubber Company, The. Tractor tire tread. 4,574,857, Cl. 152-209.00B.

Behlmer, Robert F.: *See—*
Wirth, Gary J.; and Behlmer, Robert F., 4,574,440, Cl. 29-33.00E.

Behner, Otto; Stendel, Wilhelm; and Andrews, Peter, to Bayer Aktiengesellschaft. 2-Arylhydrazino-2-thiazolines, acyl derivatives of these compounds, 2-arylazo-2-thiazolines, preparation processes, and their use for combating ectoparasites and endoparasites. 4,575,501, Cl. 514-150.000.

Behrenz, Wolfgang: *See—*
Kruger, Bernd-Wieland; Priesnitz, Uwe; Jager, Gerhard; and Behrenz, Wolfgang, 4,575,516, Cl. 514-715.000.

Belles, Frank E., to American Gas Association. Compact pulse combustion burner with enhanced heat transfer. 4,574,745, Cl. 122-24.000.

Benson, Jack H.: *See—*
Gibbs, Dale S.; Benson, Jack H.; and Fernandez, Reet T., 4,575,529, Cl. 524-507.000.

Bentin, Horst; Doring, Michael; Kronenberg, Horst; and Jeglinski, Werner, to U.S. Philips Corporation. Method and apparatus for manufacturing a nozzle plate for ink-jet printers. 4,574,445, Cl. 29-157.00C.

Berecz, Imre, to Microdot Inc. Nut forming apparatus. 4,574,609, Cl. 72-354.000.

Bergendal, Lars R. G., to Aktiebolaget Electrolux. Domestic infra-red radiation oven. 4,575,616, Cl. 219-405.000.

Berger, Eugene L.; and Koseluk, Richard A., to NL Industries, Inc. System for calculating formation temperatures. 4,575,261, Cl. 374-136.000.

Berger, Gerald P., to FMC Corporation. Breakaway bail. 4,574,964, Cl. 212-149.000.

Berger, Robert P. Prosthesis substructure. 4,575,339, Cl. 433-167.000.

Berger, Yves: *See—*
Descamps, Marcel; and Berger, Yves, 4,575,513, Cl. 514-469.000.

Bergquist Company, The: *See—*
DeGree, David C.; Fick, Herbert J.; and Juenger, Bruce H., 4,574,879, Cl. 165-185.000.

Bermingham Construction Limited: *See—*
Bermingham, Patrick D., 4,575,359, Cl. 464-123.000.

Bermingham, Patrick D., to Bermingham Construction Limited. Rotary drive coupling. 4,575,359, Cl. 464-123.000.

Berry, Dickey J.: *See—*
Bertagna, Richard A.; and Berry, Dickey J., 4,575,719, Cl. 340-825.350.

Bertagna, Richard A.; and Berry, Dickey J., to Avicom International, Inc. Controlled access storage system. 4,575,719, Cl. 340-825.350.

Bertani, Carlo, to AL-PI S.r.l.; and B e B S.r.l. Ironing board support for iron and auxiliary steam generator. 4,574,503, Cl. 38-77.600.

Berti, Mario. Machine tool holder having opposed ramp members. 4,575,293, Cl. 409-234.000.

Bertossa, Donald C., to General Electric Company. Method of joining pipes. 4,575,611, Cl. 219-137.00R.

Bertsch, Peter K., to Helix Technology Corporation. Clearance seals and piston for cryogenic refrigerator compressors. 4,574,591, Cl. 62-6.000.

Best, Martin F., to Duke Power Company. Automatic testing system electrical transmitters. 4,575,710, Cl. 340-514.000.

Bieber, Leonard J. Van top. 4,575,148, Cl. 296-210.000.

Bigelow, Floyd E., Jr.; Bigelow, Floyd E., III; and Bigelow, William H. Portable home. 4,574,533, Cl. 52-34.000.

Bigelow, Floyd E., III: *See—*
Bigelow, Floyd E., Jr.; Bigelow, Floyd E., III; and Bigelow, William H., 4,574,533, Cl. 52-34.000.

Bigelow, William H.: *See—*
Bigelow, Floyd E., Jr.; Bigelow, Floyd E., III; and Bigelow, William H., 4,574,533, Cl. 52-34.000.

Biomedica Foscama Industria Chimico-Farmaceutica S.p.A.: *See—*
Diana, Massimo; and Bisso, Guglielmo M., 4,575,549, Cl. 536-117.000.

Birnbaum, Martin; and Uriet, Richard, to Elscint, Inc. Process and apparatus for forming multiple electronic images on a photosensitive surface. 4,575,766, Cl. 358-244.000.

Birt, David A., to Lucas Industries. Road vehicle headlamp. 4,575,787, Cl. 362-297.000.

Bisso, Guglielmo M.: *See—*
Diana, Massimo; and Bisso, Guglielmo M., 4,575,549, Cl. 536-117.000.

Biswas, Dipak R.; and Raychaudhuri, Satyabrata, to ITT Corporation. Method of applying hermetic coating on optical fiber. 4,575,463, Cl. 427-163.000.

Blachetta, Wolfram; and Peterling, Horst, to "RHEWUM" Rheinische Werkzeug- und Maschinenfabrik GmbH. Beater-type power sieve with full spring mounting. 4,575,420, Cl. 209-322.000.

Blachly, Harry L. Ratchet wrench for accommodating both English and metric-sized workpieces. 4,574,665, Cl. 81-59.100.

Black & Decker: *See—*
Trelford, Alan, 4,574,568, Cl. 56-202.000.

Black & Decker Inc.: *See—*
Alessio, Lorenzo E., 4,574,671, Cl. 83-471.200.
Dibbern, John E., Jr.; and Moores, Gregory E., 4,574,471, Cl. 29-596.000.

Black, James A.; and Munson, Gregory J., to General Research, Inc. Stencil screen exposure apparatus. 4,575,234, Cl. 355-91.000.

Blackley, David C.: *See—*
Podell, Howard I.; Goldstein, Albert; Blackley, David C.; James, Michael H.; Bratby, David M.; and Duck, Roger, 4,575,476, Cl. 428-494.000.

Blain, Edward S., to Sundstrand Corporation. Unloading of scroll compressors. 4,575,318, Cl. 418-14.000.

Blaine, Anthony F., to Prutec Ltd. Method and jig for furniture construction. 4,575,059, Cl. 269-41.000.

Blake, Richard A.: *See—*
Schoeneberger, Carl F.; Bundens, Allan B.; Blake, Richard A.; and Fogle, Richard M., 4,575,755, Cl. 358-120.000.

Blakesley, Richard C., to Gleason Works, The. Cutting tool and method of manufacture. 4,575,285, Cl. 407-115.000.

Blakesley, Richard C., to Gleason Works, The. Gear cutter assembly. 4,575,286, Cl. 407-22.000.

Blaser, Hansueli: *See—*
Lodetti, Attilio; Blaser, Hansueli; Medici, Brenno; and Sieg, Arno, 4,574,464, Cl. 29-568.000.

Blau, James R. Transparent plow blade. 4,574,502, Cl. 37-266.000.

Blazey, Steven D.: *See—*
Hoyt, John M.; and Blazey, Steven D., 4,575,531, Cl. 524-563.000.

Blazon-Flexible Flyer, Inc.: *See—*
Thacker, Robert W., 4,575,073, Cl. 272-85.000.

Blonder, Isaac S.: *See—*
Mistry, Kantilal; and Blonder, Isaac S., 4,575,753, Cl. 358-118.000.

Blonder-Tongue Laboratories, Inc.: *See—*
Mistry, Kantilal; and Blonder, Isaac S., 4,575,753, Cl. 358-118.000.

Board of Reagents, The University of Texas System: *See—*
Kurwa, Badrudin, 4,574,804, Cl. 128-322.000.

BOC Group, Inc., The: *See—*
Braatz, Robert E., 4,575,043, Cl. 251-122.000.

Bodary, Michael G.: *See—*
Gordon, Robert L.; and Bodary, Michael G., 4,575,000, Cl. 229-87.00F.

Bodenseewerk Perkin-Elmer & Co., GmbH: *See—*
Witte, Wolfgang, 4,575,243, Cl. 356-333.000.

Boeing Company, The: *See—*
Faville, Paul E.; and Yousko, David A., 4,574,488, Cl. 33-201.000.
Gratzer, Louis B., 4,575,030, Cl. 244-209.000.

Boffardi, Bennett P.; Farkas, John P.; and Yorke, Monica A., to Calgon Corporation. Process for controlling calcium oxalate scale over a wide pH range. 4,575,425, Cl. 210-697.000.

Bogan, John J.; Meeks, Robert E.; and Crestfield, Arthur M., to Keene Corporation. Radiation shielding and thermally conductive gasket with internal bonding agent. 4,575,578, Cl. 174-35.0GC.

Bohl, Rainer; and Hiller, Dorothee, to Fissler GmbH. Frying pan. 4,574,777, Cl. 126-390.000.

Bok, Edward. Method for floating transport of substrates. 4,575,408, Cl. 204-192.00E.

Bolieau, Christopher W., to Thiokol Corporation. Extendible wafer igniter with perforations adjacent the foot portion. 4,574,699, Cl. 102-202.000.

Bolingen, Johann: *See—*
Kreutz, Ferdinand; Keck, Jurgen; and Bolingen, Johann, 4,574,485, Cl. 33-143.00L.

Bombardier Inc.: *See—*
Burgess, Geoffrey W.; and Roy, Denis, 4,575,363, Cl. 474-14.000.

Bon Ton Rolle Limited: *See—*
Krajicek, Richard W.; Krajicek, Steven W.; and Cradeur, Robert R., 4,575,305, Cl. 414-746.000.

Bonerb, Timothy C., to Bonerb, Vincent C., a part interest. Material-handling and discharge bin of the type having a fluid-expandable flexible membrane for discharge assistance. 4,574,984, Cl. 222-61.000.

Bonerb, Vincent C.: *See—*
Bonerb, Timothy C., 4,574,984, Cl. 222-61.000.

Bonetti, Massimo; Manente, Giuseppe; and Mion, Abramo, to KAIROS S.n.c. di Bonetti M, Manente G. e Mion A. Apparatus for opening aligned sliding doors of furniture. 4,574,524, Cl. 49-130.000.

Boomer, Mark J. Word game of magnetizable letters for children. 4,575,091, Cl. 273-199.000.

Boore, Robert E.: *See—*
Beeghly, Richard M.; Cundiff, William P.; Legas, William H.; Hurst, Lawrence B., Jr.; Crump, Robert L.; and Boore, Robert E., 4,574,857, Cl. 152-209.00B.

Boos, Charles J.; and Kerr, Mario C., to Kennecott Corporation. Ceramic to metal junction and method of making same. 4,575,047, Cl. 251-356.000.

Boothroyd, Donald C.; and Norman, Robert W., Jr., to Honeywell Information Systems Inc. Apparatus for detecting a predetermined character of a data string. 4,575,795, Cl. 364-200.000.

Borchert, Barbara; Schmid, Herbert; Huther, Werner; and Merz, Herbert, to MTU Motoren-und Turbinen-Union Munchen GmbH. Enclosure for the hot-isostatic pressing of highly stressed workpieces of complex shape for turbomachines. 4,575,327, Cl. 425-78.000.

Borda, Edwardo R. Patterngraph apparatus. 4,574,484, Cl. 33-27.110.

Borde, Christian J. R., to Centre National de la Recherche Scientifique (C.N.R.S.). Interferometric optical devices with phase conjugating mirrors in particular for laser gyrometers. 4,575,245, Cl. 356-345.000.

Borden, Inc.: *See—*
Strout, Russell B.; and Golner, Jerold J., 4,575,020, Cl. 242-96.000.

Borer, Michael E. Cathode ray tube electron gun snubber. 4,575,655, Cl. 313-417.000.

Borgini, Fred: *See—*
Sharma, Shanti S.; and Borgini, Fred, 4,575,745, Cl. 357-45.000.

Borrelli, Nicholas F.; Luderer, Albert A.; Mansfield, Gerald R.; and Panzarino, Joseph N., to Corning Glass Works. Radio frequency-induced hyperthermia for tumor therapy. 4,574,782, Cl. 128-1.300.

Borrow, Edgar W. Toothpaste applicator on a drinking straw. 4,575,272, Cl. 401-195.000.

Bothner, Carl R., to Eastman Kodak Company. Apparatus for selectively sealing a discrete dielectric sheet developer station. 4,575,217, Cl. 355-3.0DD.

Botz, Jakob; Fein, Berthold; Mutschler, Erich; and Weber, Adam, to ITT Industries, Inc. Switching device. 4,575,600, Cl. 200-293.000.

Bouchard, Andre C.; Maya, Jakob; Loughridge, Fred; Andress, Charles W.; and Wierzbicki, Julian, to GTE Products Corporation. Metal arc director for compact fluorescent lamp. 4,575,344, Cl. 445-26.000.

Boudreau, Dennis D. Wheelchair kit for a folding chair. 4,575,113, Cl. 280-650.000.

Bourns Instruments, Inc.: *See—*
Krechmery, Roger L., 4,574,640, Cl. 73-721.000.

Bouygues, Jean: *See—*
Parchet, Pierre; and Bouygues, Jean, 4,575,183, Cl. 350-96.220.

Bower, John R.; and Hammond, Charles W., to Babcock & Wilcox Company, The. Sonic apparatus and method for detecting the presence of a gaseous substance in a closed space. 4,574,615, Cl. 73-24.000.

Braatz, Robert E., to BOC Group, Inc., The. Needle valve. 4,575,043, Cl. 251-122.000.

Brandenstein, Manfred; Gossmann, Willi; Pape, Gebhard; Huttner, Klaus; and Ludwig, Wilfried, to SKF Kugellagerfabriken GmbH. Apparatus for fastening machine element to a shaft. 4,574,448, Cl. 29-283.500.

Brander, Stephan, to Zschokke Wartmann AG. Method and drying plant for drying a material in batch operation. 4,574,495, Cl. 34-15.000.

Brandestini, Marco: *See—*
Moermann, Werner H.; and Brandestini, Marco, 4,575,805, Cl. 364-474.000.

Brandt, Francois. Armour-piercing high-explosive projectile with cartridge. 4,574,702, Cl. 102-476.000.

Brandt, Herbert E.; and Tecco, Thomas C., to International Harvester Company. Mirror vibration absorber. 4,575,203, Cl. 350-631.000.

Brannigan, Patrick J.; and Peckich, Gerald L., to Fastencold, Inc. Therapeutic device and method for forming and using same. 4,575,097, Cl. 128-402.000.

Brantley, Charles B.: *See—*
Brittain, Harold G.; and Brantley, Charles B., 4,575,026, Cl. 244-63.000.

Bratby, David M.: *See—*
Podell, Howard I.; Goldstein, Albert; Blackley, David C.; James, Michael H.; Bratby, David M.; and Duck, Roger, 4,575,476, Cl. 428-494.000.

Bratt, Richard G.: *See—*
Gruner, Ronald H.; Clancy, Gerald F.; Mundie, Craig J.; Wallach, Steven J.; Schleimer, Stephen I.; and Bratt, Richard G., 4,575,797, Cl. 364-200.000.

Breach, William D.; and Vaclavik, Edwin W., to Hydril Company. Rubber composition for geothermal application. 4,575,522, Cl. 523-220.000.

Breen, William C.: *See—*
Schulman, Richard E.; and Breen, William C., 4,574,757, Cl. 123-396.000.

Bregman, Arie P.; and Collette, Ronald J., to Jamesbury Corporation. Insert retainer for a wafer style butterfly valve. 4,575,048, Cl. 251-360.000.

Breidenbach, Dieter: *See—*
Lorenz, Kurt; Dungs, Horst; Nashan, Gerd; Breidenbach, Dieter; and Volmark, Josef, 4,574,744, Cl. 122-7.00R.

Breivik, A. Norris: *See—*
Reigstad, Gordon H.; Breivik, A. Norris; and Reigstad, Hanley S., 4,574,545, Cl. 52-223.00R.

Breivik-Reigstad, Inc.: *See—*
Reigstad, Gordon H.; Breivik, A. Norris; and Reigstad, Hanley S., 4,574,545, Cl. 52-223.00R.

Brenci, Massimo: *See—*
Bacci, Mauro; Brenci, Massimo; Conforti, Giuliano; Falciai, Riccardo; Mignani, Anna G.; and Verga-Scheggi, Anna M., 4,575,259, Cl. 374-130.000.

Breslow, Jeffrey D.: *See—*
Ferris, Michael J.; and Breslow, Jeffrey D., 4,575,094, Cl. 273-249.000.

Bretez, Gabriel C. O.: *See—*
David, Guy A. J.; Grima, Jean-Claude; Pando, Bernard; Bretez, Gabriel C. O.; and Lommer, Daniel J. F., 4,575,843, Cl. 370-16.000.

Brian, James A., to Crown Zellerbach Corporation. Multi-cell container. 4,574,996, Cl. 229-27.000.

Brick, Francis M. Automatic braking system for backing vehicles. 4,574,908, Cl. 180-169.000.

Bridgestone Tire Company Limited: *See—*
Abe, Norio, 4,574,940, Cl. 198-468.600.
Oshima, Noboru; Shimizu, Isamu; Takeuchi, Mikio; Fujimaki, Tatsuo; and Yamaguchi, Shinsuke, 4,575,534, Cl. 525-99.000.

Brissette, Ronald N., to Rockwell International Corp. Slip type driveline. 4,575,360, Cl. 464-133.000.

Bristol, Lloyd R., to Tektronix, Inc. Multiplexed display interference compensator. 4,575,661, Cl. 315-383.000.

Bristol-Myers Company: *See—*
Chen, Jivn-Ren; and Shinal, Edward C., 4,575,509, Cl. 514-297.000.
Kavadias, Gerry; Doyle, Terrance W.; Janik, Elizabeth; and Partyka, Richard A., 4,575,553, Cl. 546-106.000.

British Aerospace Public Limited Company: *See—*
Roberts, John C., 4,575,786, Cl. 362-279.000.

Brittain, Harold G.; and Brantley, Charles B., to United States of America, Navy. Ground launched missile controlled rate decelerator. 4,575,026, Cl. 244-63.000.

Brombal, David S.; and Bunner, Charles B. D., to Northern Telecom Limited. Backpanel assemblies. 4,575,780, Cl. 361-413.000.

Brookhart, George C., Jr.: *See—*
Bamber, Barry H.; Brookhart, George C., Jr.; and Sabatino, Alan H., 4,574,536, Cl. 52-125.300.

Brooks, Albert A.; Fried, Joel R.; Henis, Jay M. S.; Zampini, Anthony; and Raucher, Daniel, to Monsanto Company. Permeation modified gas separation membranes. 4,575,385, Cl. 55-158.000.

Brooks, Charles W., Jr.; and Price, William L., to Westinghouse Electric Corp. Programmable interface memory. 4,575,814, Cl. 364-900.000.

Brose Fahrzeugteile GmbH & Co. KG: *See—*
Volk, Hans-Joachim; Becker, Herbert; and Forkel, Michael, 4,575,120, Cl. 280-804.000.

Brossard, Louis: *See—*
Raynaud, Guy; Morin, Francois; and Brossard, Louis, 4,574,778, Cl. 126-417.000.

Brother Industries, Ltd.: *See—*
Hattori, Shigenori; Ueno, Hideo; and Uchida, Toyohisa, 4,575,733, Cl. 346-76.0PH.

Brown, Allan W., to James Howden & Company Ltd. Wind turbines. 4,575,309, Cl. 416-41.000.

Brown, Boveri & Cie AG: *See—*
Klein, Erwin, 4,574,877, Cl. 165-104.330.

Brown, Harry B., to Applied Electro Mechanics, Inc. Battery equalizer circuit. 4,575,669, Cl. 320-13.000.

Brown, Leland T., to Motorola Inc. Synchronous programmable signal generator and method. 4,575,585, Cl. 179-84.00A.

Brown, Theodore C., Sr. Two piece closet ring with moisture membrane clamping arrangement. 4,574,402, Cl. 4-252.00R.

Browning, John M. Fuel composition and method of preparation therefor. 4,575,379, Cl. 44-7.400.

Bruggema, Donald J.: *See—*
Schnell, Robert P.; Sampson, Robert W.; Pancanowski, Ronald F.; and Bruggema, Donald J., 4,575,629, Cl. 250-238.000.

Brull, Robert A., to NCR Corporation. Record media thickness compensating mechanism. 4,575,267, Cl. 400-56.000.

Brumfield, William B., to SI-FLO, Inc. Hand held and hand operated pumping and siphoning device. 4,574,828, Cl. 137-149.000.

Brunnschweiler, David, to Haigh Chadwick Limited. Fibre metering arrangement. 4,574,433, Cl. 19-105.000.

Bryan, Raymond G.: *See—*
Paulsen, Craig A.; and Bryan, Raymond G., 4,574,824, Cl. 133-4.00R.

Bryant, Billy O.; and Mitchell, William J., Jr. Training apparatus for ultralight aircraft. 4,575,341, Cl. 434-35.000.

Bryant, Jack A. Flame monitor time delay control. 4,575,333, Cl. 431-18.000.

BTM Corporation: *See—*
Sawdon, Edwin G., 4,574,453, Cl. 29-432.000.
Sawdon, Edwin G., 4,574,473, Cl. 29-798.000.

Bubak, John. Oil cooled and fluid pressure operated clutch assembly. 4,574,926, Cl. 192-18.00A.

Buchmann, Winfried: *See—*
Jung, Rolf; Buchmann, Winfried; and Buss, Albert, 4,575,065, Cl. 270-31.000.

Buck, Alfred; and Roser, Erich, to Memminger GmbH. Yarn feeding apparatus, particularly for knitting machines. 4,574,597, Cl. 66-125.00R.

Buckeye International, Inc.: *See—*
Solomon, James E., 4,574,708, Cl. 105-193.000.

Buckhorn Material Handling Group, Inc.: *See—*
Tabler, Charles P.; and Devins, Theodore R., 4,574,962, Cl. 211-122.000.

Buddy L Corp: *See—*
Hanazato, Hiroshi, 4,574,946, Cl. 206-45.190.

Budzich, Tadeusz, to Caterpillar Tractor Co. Digital proportional spool position control of compensated valves. 4,574,686, Cl. 91-35.000.

Buecherl, Emil S.: *See—*
Hennig, Ewald; Buecherl, Emil S.; and Zartnack, Friedrich, 4,575,442, Cl. 264-135.000.

Buffa, Laurent: *See—*
Martin, Roger; and Buffa, Laurent, 4,575,045, Cl. 251-172.000.

Buffet, Jacques, to Cardiofrance-Compagnie Francaise d'Electrocardiologie. Sliding coaxial probe for a pacemaker. 4,574,814, Cl. 128-786.000.

Bugeja, Joseph C. Structure for housing animals. 4,574,737, Cl. 119-16.000.

Buhne, Gerd: *See—*
Bartzick, Gerd; Buhne, Gerd; and Werk, Jurgen, 4,574,848, Cl. 140-93.200.

Bulso, Joseph D., Jr.; and McClung, James A., to Redicon Corporation. Single station, in-die curling of can end closures. 4,574,608, Cl. 72-348.000.

Bundens, Allan B.: *See—*
Schoeneberger, Carl F.; Bundens, Allan B.; Blake, Richard A.; and Fogle, Richard M., 4,575,755, Cl. 358-120.000.

Bunner, Charles B. D.: *See—*
Brombal, David S.; and Bunner, Charles B. D., 4,575,780, Cl. 361-413.000.

Bunting, Richard M.: *See—*
Acampora, Alfonse A.; and Bunting, Richard M., 4,575,749, Cl. 358-27.000.

Burg, Richard W.; Cole, Lucille J.; and Hernandez, Sebastian, to Merck & Co., Inc. Antifungal substances and process for their production. 4,575,500, Cl. 514-121.000.

Burgess, Geoffrey W.; and Roy, Denis, to Bombardier Inc. Drive pulley. 4,575,363, Cl. 474-14.000.

Burkeen, Ralph D. Device for landing big fish on a light test leader. 4,574,517, Cl. 43-44.980.

Burkhart, Christopher W., to Qume Corporation. Sheet feeding mechanism. 4,575,069, Cl. 271-186.000.

Burns, Michael P. Safety dead-bolt lock. 4,575,141, Cl. 292-336.300.

Burroughs Corporation: *See—*
Arnoldi, Douglas R., 4,575,769, Cl. 358-285.000.
Christian, David E.; McGraw, C. Eugene; and Gazzero, Robert, 4,575,201, Cl. 350-612.000.
Holz, George E.; and Ogle, James A., 4,575,716, Cl. 340-714.000.
Leslie, Duane W., 4,575,644, Cl. 307-291.000.

Burt, Roy J., to Trilogy Computer Development Partners, Ltd. Semiconductor chip mounting system. 4,574,470, Cl. 29-590.000.

Buss, Albert: *See—*
Jung, Rolf; Buchmann, Winfried; and Buss, Albert, 4,575,065, Cl. 270-31.000.

Butcher, James S.; and Rousch, Charles G., to Motorola, Inc. Fast recovery bias circuit. 4,575,863, Cl. 375-114.000.

Byrne, Edmund F.; and Tolman, Glen L., to Medi-Physics, Inc. Bifunctional chelating agents. 4,575,556, Cl. 549-63.000.

C. & E. Fein GmbH & Co.: *See—*
Haberle, Egon; and Schwarz, Bernd, 4,574,532, Cl. 51-268.000.

Caldwell, Luther B.; Crocetti, Michael F.; and Dunham, Bradford, to International Business Machines Corporation. Interconnection of elements on integrated circuit substrate. 4,575,744, Cl. 357-45.000.

Calgon Corporation: *See—*
Boffardi, Bennett P.; Farkas, John P.; and Yorke, Monica A., 4,575,425, Cl. 210-697.000.

Callahan, James J.; and Hammell, James M., to Lubriquip - Houdaille, Inc. Hydropneumatic monitoring device. 4,574,920, Cl. 184-39.100.

Callahan, Marty. Communications apparatus for use with cable television systems. 4,575,750, Cl. 358-86.000.

Camco, Incorporated: *See—*
Pringle, Ronald E., 4,574,889, Cl. 166-386.000.

Camillo Corvi S.p.A.: *See—*
Mora, Camillo C., 4,575,496, Cl. 514-29.000.

Camossi, Carlo, to Cavoflex Ammortizzatori a cavo metallico s.r.l. Box like container including a basket for receiving a load, supported by the box by means of shock and vibration damping mounts secured therebetween in demontable manner. 4,574,955, Cl. 206-583.000.

Camp, John W. A., to Ford Motor Company. Vehicle suspension joint. 4,575,114, Cl. 280-673.000.

Canadian Patents and Development Limited: *See—*
Steck, Warren F.; Underhill, Edward W.; Chisholm, Melvin D.; and Bailey, Berton K., 4,575,458, Cl. 424-84.000.

Canadian Patents and Development Limited-Societe Canadienne des Brevets et d'Exploitation Limitee: *See—*
Woolley, John H.; Westley, Robert; and Swail, Carl P., 4,574,632, Cl. 73-571.000.

Canon Kabushiki Kaisha: *See—*
Matsumura, Susumu; Sato, Yuichi; Kawabata, Takashi; and Tsunekawa, Tokuichi, 4,575,211, Cl. 354-403.000.
Onoda, Shigeyoshi; Nomura, Akihiro; Mizutani, Morikazu; Kanemitsu, Shinji; Toriumi, Mototada; and Nishino, Fumio, 4,575,221, Cl. 355-3.00R.
Suzuki, Akiyoshi, 4,575,250, Cl. 356-401.000.
Suzuki, Kenji, 4,575,237, Cl. 356-1.000.
Tanaka, Tsunefumi, 4,575,198, Cl. 350-464.000.
Yokomizo, Yoshikazu, 4,575,846, Cl. 370-90.000.

Cantherm Heating Ltd.: *See—*
Oskarsson, Sven G.; and Santangelo, Salvatore, 4,575,001, Cl. 237-2.00B.

Capek, Raymond G.; Cocco, Anthony; Dietch, Leonard; and Livshits, Michael, to Zenith Electronics Corporation. Cable isolator with overvoltage protection. 4,575,691, Cl. 333-12.000.

Caprari, Fausto, to RCA Corporation. Deep ultraviolet (DUV) flood exposure system. 4,575,636, Cl. 250-492.100.

Caracteres S.A.: *See—*
Moulin, Blaise, 4,575,266, Cl. 400-144.200.

Cardiofrance-Compagnie Francaise d'Electrocardiologie: *See—*
Buffet, Jacques, 4,574,814, Cl. 128-786.000.

Carenzi, Angelo: *See—*
Della Bella, Davide; Frigeni, Viviana; and Carenzi, Angelo, 4,575,506, Cl. 514-282.000.

Carl Hurth Maschinen- und Zahnradfabrik GmbH & Co.: *See—*
Fischer, Heinrich; Schmidkunz, Walter; and Spensberger, Johann, 4,575,289, Cl. 409-33.000.

Carl Still GmbH & Co. KG, Firma: *See—*
Lorenz, Kurt; Dungs, Horst; Nashan, Gerd; Breidenbach, Dieter; and Volmark, Josef, 4,574,744, Cl. 122-7.00R.

Carlberg, Torbjorn: *See—*
Wictorin, Lennart; Carlberg, Torbjorn; and Liljendahl, Mikael, 4,575,608, Cl. 219-85.0BM.

Carley, Adam L. Copier/laser-printer conversion. 4,575,214, Cl. 355-3.00R.

Carlson, David J.; and Tults, Juri, to RCA Corporation. AFT arrangement for a double conversion tuner. 4,575,761, Cl. 358-191.100.

Carlsson, Sven A. L.: *See—*
Opperud, Hans-Jorgen; Carlsson, Sven A. L.; and Ericson, Hans G., 4,574,661, Cl. 74-856.000.

Carmean, Wes F.: *See—*
Pease, Logan L.; Carmean, Wes F.; and Luciano, Robert A., 4,575,627, Cl. 250-227.000.

Carpino, Louis A.; and Cohen, Beri, to Research Corporation. Polymer with sulfone-benzene appendage. 4,575,541, Cl. 525-333.500.

Carroll, Albert W.; and Pearce, Joseph L., to Otis Engineering Corporation. Well tool stopping devices, systems and methods. 4,574,883, Cl. 166-255.000.

Carson, John F.; and Papadopoulos, Kimon, to Eastman Kodak Company. Transparent contoured support plate for film. 4,575,230, Cl. 355-75.000.

Carson, John R., to McNeilab, Inc. Anxiety alleviating compositions containing loweralkyl-N-[amino(arylaminocarbonyl)-iminomethyl]-N-methylglycinates. 4,575,514, Cl. 514-542.000.

Carter-Hoffman Corporation: *See—*
Pinnow, Curtis C.; and Logemann, Robert L., 4,575,164, Cl. 312-350.000.

Cartier, George E., to Monsanto Company. Polyvinyl butyral sheet roughness control. 4,575,540, Cl. 525-328.700.

Cases, Moises: *See—*
Veneski, Gerard A.; Thoma, Nandor G.; and Cases, Moises, 4,575,794, Cl. 364-200.000.

Cassidy, Frederick: *See—*
Evans, John M.; and Cassidy, Frederick, 4,575,511, Cl. 514-456.000.

Casteel, Carroll: *See—*
Mastroianni, Sal; Casteel, Carroll; and Hulseweh, Terry S., 4,574,469, Cl. 29-576.00W.

Castellant, Jean-Pierre J. E.; Habrard, Alain G. J.; and Pidebois, Jacques E., to Societe Nationale d'Etude et de Construction de Meteurs d'Aviation. Method for determining the flow rate of air through a turbine-engine labyrinth seal. 4,574,619, Cl. 73-40.700.

Castello, Paolo; and Tartari, Claudio, to AMP Incorporated. Manufacture of pin headers. 4,575,176, Cl. 339-195.00M.

Caterpillar Tractor Co.: *See—*
Anders, Gene A., 4,574,868, Cl. 165-144.000.
Budzich, Tadeusz, 4,574,686, Cl. 91-35.000.

Caudill, Keith E.: *See—*
Vogel, Ralph A.; and Caudill, Keith E., 4,574,604, Cl. 72-38.000.

Cavalet ApS: *See—*
Werk, Otto; and Duringer, Rudi H., 4,574,601, Cl. 70-70.000.

Cavaliere, Joseph R.: *See—*
Ashton, Gerard J.; Colao, Emilio; and Cavaliere, Joseph R., 4,575,647, Cl. 307-443.000.

Cavanagh, Peter A. Tennis ball retrieving system. 4,575,081, Cl. 273-29.00A.

Cavazza, Roberto, to SASIB S.p.A. Reciprocating folder for packaging machines. 4,574,562, Cl. 53-381.00R.

Cavitt, Michael B.; Perry, William O.; and Hefner, Robert E., Jr., to Dow Chemical Company, The. Low viscosity epoxy and phenoxy resins. 4,575,543, Cl. 525-510.000.

Cavoflex Ammortizzatori a cavo metallico s.r.l.: *See—*
Camossi, Carlo, 4,574,955, Cl. 206-583.000.

CED's Inc.: *See—*
Kotowicz, Cedric R., 4,575,131, Cl. 285-158.000.

Ceeco Machinery Manufacturing, Ltd.: *See—*
Thompson, Walter F., 4,574,571, Cl. 57-3.000.

Cegedur Societe de l'Aluminium Pechiney: *See—*
Julliard, Jacques; Tirilly, Louis; and Vigier, Pierre, 4,575,392, Cl. 75-24.000.

Cegedur Societe de Transformation de l'Aluminium Pechiney: *See—*
Julliard, Jacques; Tirilly, Louis; and Vigier, Pierre, 4,575,056, Cl. 266-227.000.

Centexbel: *See—*
Matthelie, Jean-Pierre, 4,574,598, Cl. 66-146.000.

Centre National de la Recherche Scientifique (C.N.R.S.): *See—*
Borde, Christian J. R., 4,575,245, Cl. 356-345.000.

Cervinka, Franz. Sand-dispensing device for motor vehicles. 4,575,135, Cl. 291-20.000.

Challenge-Cook Bros., Incorporated: *See—*
Johnston, James G., 4,575,254, Cl. 366-62.000.

Champion International Corporation: *See—*
Lepisto, J. George, 4,574,720, Cl. 141-10.000.
Lepisto, J. George, 4,574,851, Cl. 141-68.000.
Weaver, Sherry M., 4,574,951, Cl. 206-461.000.

Chang, David B. Intrawaveguide fiber optic beamsplitter/coupler. 4,575,180, Cl. 350-96.150.

Chao, Sing N. One process twist and ply twist yarn spinning. 4,574,579, Cl. 57-328.000.

Chapin, Melodee A.; Nestor, Charles R.; and Cross, William E., to General Motors Corporation. Insulation displacement terminal. 4,575,173, Cl. 339-97.00R.

Charles Stark Draper Laboratory, The: *See—*
Levreault, Robert P., 4,575,861, Cl. 375-1.000.

Charmilles Technologies, S.A.: *See—*
Martin, Roland, 4,575,605, Cl. 219-69.00W.

Cheatham, Richard P.: *See—*
Grimland, Charles J.; and Cheatham, Richard P., 4,575,042, Cl. 251-46.000.

Chen, Jivn-Ren; and Shinal, Edward C., to Bristol-Myers Company. Water-soluble formulations of m-AMSA with pyroglutamic acid. 4,575,509, Cl. 514-297.000.

Chen, Kuo-Chyuan: *See—*
Yang, Wu-ji; and Chen, Kuo-Chyuan, 4,575,268, Cl. 400-124.000.

Chester, Arthur W.; McHale, William D.; and Yen, Jeffrey H., to Mobil Oil Corporation. Hydrodewaxing with mixed zeolite catalysts. 4,575,416, Cl. 208-111.000.

Chevron Research Company: *See—*
Fraas, Lewis M., 4,575,577, Cl. 136-249.000.
Hopkins, Larry D., 4,575,101, Cl. 277-72.0FM.
Salentine, Christopher G., 4,575,431, Cl. 252-32.70E.

Chiao, Cherry C.: *See—*
Chiao, Tsu T.; and Chiao, Cherry C., 4,574,690, Cl. 99-353.000.

Chiao, Tsu T.; and Chiao, Cherry C. Apparatus for forming wrapped food products. 4,574,690, Cl. 99-353.000.

Chien, Chung Min. Assembly for holding cargo. 4,574,721, Cl. 114-72.000.

Chiles, Michael J.; and Babb, Harvey M., to VMW Industries, Inc. Paravane handling system. 4,574,723, Cl. 114-253.000.

Chin, Albert K., to Fogarty, Thomas J. Endarterectomy process. 4,574,781, Cl. 128-1.00R.

Chiodo, Rudolph J., to Dimedco. Identification locket. 4,574,505, Cl. 40-365.000.

Chisholm, Melvin D.: *See—*
Steck, Warren F.; Underhill, Edward W.; Chisholm, Melvin D.; and Bailey, Berton K., 4,575,458, Cl. 424-84.000.

Chow, Kwong-Wai: *See—*
Lee, James S. W.; Chow, Kwong-Wai; Lau, Alfred T. Y.; and Chow, Ming-Ngar, 4,575,355, Cl. 446-462.000.

Chow, Ming-Ngar: *See—*
Lee, James S. W.; Chow, Kwong-Wai; Lau, Alfred T. Y.; and Chow, Ming-Ngar, 4,575,355, Cl. 446-462.000.

Christensen, Charles R.: *See—*
Duthie, Joseph G. M.; Christensen, Charles R.; and Leonard, Carl D., 4,575,192, Cl. 350-3.690.

Christian, David E.; McGraw, C. Eugene; and Gazzero, Robert, to Burroughs Corp. Method and apparatus for producing folded optical path devices. 4,575,201, Cl. 350-612.000.

Christian, J. Vernon. Granulated solid fuel burner. 4,574,711, Cl. 110-264.000.

Christianson, Tony. Diaphragm and exhaust valve for second stage regulator. 4,574,797, Cl. 128-204.260.

Chrysler Corporation: *See—*
Yagley, Martin G., 4,574,758, Cl. 123-425.000.

Chubb & Son's Lock and Safe Company Limited: *See—*
Dyson, George W., 4,574,454, Cl. 29-434.000.

Chun, Myung K., to General Electric Company. Optical filter polarizer combination and laser apparatus incorporating this combination. 4,575,849, Cl. 372-9.000.

Chung, Albert S.; and Mazzocco, Carl F., to General Electric Co. Automatic load shed control for spacecraft power system. 4,575,679, Cl. 324-427.000.

Chung, Ding Y.: *See—*
Anderson, Terry L.; Deb Roy, Tapan K.; and Chung, Ding Y., 4,575,523, Cl. 523-414.000.
Anderson, Terry L.; Deb Roy, Tapan K.; and Chung, Ding Y., 4,575,524, Cl. 523-455.000.

Ciatteo, Robert J., to RCA Corporation. Collating machine stacking bin insert. 4,575,067, Cl. 270-58.000.

Ciba-Geigy AG: *See—*
Lenoir, John, 4,575,482, Cl. 430-431.000.

Ciba-Geigy Corporation: *See—*
Watthey, Jeffrey W. H., 4,575,503, Cl. 514-213.000.

Cicin-Sain, Ivo, to Matisa Materiel Industriel S.A. Apparatus for guiding a railroad track positioning device. 4,574,704, Cl. 104-8.000.

Cie Electro Mecanique: *See—*
Sterlini, Jacques, 4,575,405, Cl. 203-24.000.

Cieslak, Ronald H.: *See—*
Kloker, Kevin L.; and Cieslak, Ronald H., 4,575,812, Cl. 364-760.000.

Cincinnati Milacron Inc.: *See—*
Gavin, James T., 4,575,610, Cl. 219-121.00L.

Citizen Watch Co., Ltd.: *See—*
Ohishi, Yoshiyuki, 4,575,366, Cl. 474-101.000.
Ohnuki, Yasuhide; and Uchibori, Minoru, 4,574,633, Cl. 73-587.000.

Citroen Messian Durand: *See—*
Durand, Francois; and Smulders, Auguste, 4,574,650, Cl. 74-411.500.

Clancy, Gerald F.: *See—*
Gruner, Ronald H.; Clancy, Gerald F.; Mundie, Craig J.; Wallach, Steven J.; Schleimer, Stephen I.; and Bratt, Richard G., 4,575,797, Cl. 364-200.000.

Clapper, Dennis K.; Perricone, Alphonse C.; and Salisbury, Darrell P., to Milchem Incorporated. Invert emulsion drilling fluid comprising oligamide composition. 4,575,428, Cl. 252-8.50P.

Clark Michigan Company: *See—*
Sturtz, Charles R., Jr., 4,574,927, Cl. 192-4.00C.

Clark Pharmaceutical Laboratories Ltd.: *See—*
Sandborn, Edmund, 4,575,515, Cl. 514-708.000.

Claus, Guy, to Elf France. Heat generator for heating a fluid by heat exchange through a fluidized bed and a process for implementing same. 4,574,743, Cl. 122-4.00D.

Clay, Michael D. Tree climbing implement. 4,574,919, Cl. 182-221.000.

Clay, Ronald L.: *See—*
Norton, Edward J.; Clay, Ronald L.; and Smotrycz, Zenon O., 4,574,498, Cl. 36-114.000.

Clegg, John E. Conical beam concentrator. 4,575,196, Cl. 350-432.000.

Clegg, John E. Conical beam concentrator. 4,575,197, Cl. 350-432.000.

Clemens, William J.: *See—*
Jones, Colin; and Clemens, William J., 4,574,760, Cl. 123-472.000.

Cline, Steven D., to Donn Incorporated. Access floor panel with edge trim. 4,574,555, Cl. 52-785.000.

Coberley, Lavan E., to Goorhouse, Donald E. Supplemental air injection method and devices for carburetors of internal combustion engines. 4,574,765, Cl. 123-585.000.

Cocco, Anthony: *See—*
Capek, Raymond G.; Cocco, Anthony; Dietch, Leonard; and Livshits, Michael, 4,575,691, Cl. 333-12.000.

Coesfeld, Manfred; and Helbert, Friedrich, to Ford Motor Company. Connector for securing wires to a battery terminal. 4,575,178, Cl. 339-224.000.

Cohen, Beri: *See—*
Carpino, Louis A.; and Cohen, Beri, 4,575,541, Cl. 525-333.500.

Cohen, Richard L.; Wilson, John C., Jr.; and Aron, Mitchell, to Allied Corporation. Low-moire directional optical filter for CRT displays. 4,575,767, Cl. 358-250.000.

Cohl, Arnold. Fixturing and process for pressurizing engine cylinders. 4,574,620, Cl. 73-47.000.

Colao, Emilio: *See—*
Ashton, Gerard J.; Colao, Emilio; and Cavaliere, Joseph R., 4,575,647, Cl. 307-443.000.

Cole, Lucille J.: *See—*
Burg, Richard W.; Cole, Lucille J.; and Hernandez, Sebastian, 4,575,500, Cl. 514-121.000.

Coleco Industries, Inc.: *See—*
Piazza, Pietro; and Farrington, Richard I., 4,575,349, Cl. 446-330.000.

Coleman, Larry; and Van Duyne, Fred, to Melrose Displays, Inc. Aisle closer apparatus. 4,574,863, Cl. 160-216.000.

Colgate-Palmolive Company: *See—*
Hayes, Harry, 4,575,456, Cl. 424-49.000.

Collette, Ronald J.: *See—*
Bregman, Arie P.; and Collette, Ronald J., 4,575,048, Cl. 251-360.000.

Colling, Larry J. Knife for filleting fish. 4,574,431, Cl. 17-66.000.

Colton, John R.: *See—*
Baranyai, Lawrence; and Colton, John R., 4,575,845, Cl. 370-62.000.

Combustion Engineering, Inc.: *See—*
Anthony, Andrew J.; and Young, Richard H., 4,574,618, Cl. 73-40.50R.
Wentzell, Timothy H.; Lareau, John P.; and Innes, Charles B., Jr., 4,575,185, Cl. 350-96.260.

Comley, John E.: *See—*
Ayers, Scott D.; Comley, John E.; Hirt, Ronald L.; and Kockler, Barry C., 4,575,729, Cl. 346-75.000.

Commander Electrical Materials, Inc.: *See—*
Nattel, William, 4,575,132, Cl. 285-194.000.
Nattel, William, 4,575,133, Cl. 285-319.000.

Commissariat a l'Energie Atomique: *See—*
David, Pierre; and Jarricot, Jean A., 4,575,492, Cl. 436-164.000.

Commonwealth of Australia, The: *See—*
Ludowyk, Christopher J., 4,575,718, Cl. 340-825.170.

Compagnie de Signaux et d'Entreprises Electriques: *See—*
Deprez, Louis E.; and Klein, Denys C., 4,575,672, Cl. 323-222.000.

Compagnie Generale des Etablissements Michelin: *See—*
Gergele, Jean, 4,574,921, Cl. 188-71.800.

Compagnie Industrielle de Mecanismes: *See—*
Dieudonne, Jean P.; and Steiner, Michel, 4,574,422, Cl. 16-85.000.

Compagnie Industrielle des Telecommunications Cit-Alcatel: *See—*
Paquet, Jean-Marc; and Sibuet, Rene , 4,575,322, Cl. 418-96.000.

Compuguide Chemical Corporation: *See—*
Dintemann, Ronald J.; and Barlics, John J., 4,574,403, Cl. 4-309.000.

Concorde Battery Corp.: *See—*
Hollett, Ronald J., 4,574,959, Cl. 211-41.000.

Conforti, Giuliano: *See—*
Bacci, Mauro; Brenci, Massimo; Conforti, Giuliano; Falciai, Riccardo; Mignani, Anna G.; and Verga-Scheggi, Anna M., 4,575,259, Cl. 374-130.000.

Conn, Francis E., to General Motors Corporation. Compressor bleed valve. 4,574,585, Cl. 60-39.290.

Connell, G. A. Neville: *See—*
Streifer, William; Scifres, Donald R.; and Connell, G. A. Neville, 4,575,194, Cl. 350-413.000.

Connerley, James J.: *See—*
Abbott, Seth C.; Connerley, James J.; and Klok, Arthur W., Jr., 4,574,658, Cl. 74-785.000.

Cononi, Victor L.; and McClain, Herbert D., to NCR Corporation. Optical code scanner and display. 4,575,623, Cl. 235-383.000.

Conroy, John J.: *See—*
Gottlieb, Milton; and Conroy, John J., 4,575,186, Cl. 350-358.000.

Consiglio Nazionale Delle Ricerche: *See—*
Bacci, Mauro; Brenci, Massimo; Conforti, Giuliano; Falciai, Riccardo; Mignani, Anna G.; and Verga-Scheggi, Anna M., 4,575,259, Cl. 374-130.000.

Construction Robotics, Inc.: *See—*
Deike, Robert F., 4,574,539, Cl. 52-163.000.

Conti, Romano. Postal module for confidential information. 4,575,121, Cl. 281-2.000.

Conway, Paul: *See—*
Rooney, John M.; and Conway, Paul, 4,575,544, Cl. 526-118.000.

Cooke, Theodore D.; Saunders, Gerald A. B.; and Siu, David, to Queen's University at Kingston. Orthopaedic bone cutting jig and alignment device. 4,574,794, Cl. 128-92.00H.

Cooper, Peter J., to Cooperheat. Heat tracing tape and power control system. 4,575,617, Cl. 219-494.000.

Cooperheat: *See—*
Cooper, Peter J., 4,575,617, Cl. 219-494.000.

Cope, Richard P.: *See—*
Katz, Joseph L.; Grund, Edward C.; Cope, Richard P.; and Glick, Alvin L., 4,575,842, Cl. 370-16.000.

Copeland, Harry J.; and Powers, John W., to Western Litho Plate & Supply Co. Photographic printing. 4,575,233, Cl. 355-85.000.

Corbeels, Roger J.; and Vasconcellos, Stephen R., to Texaco Inc. Formation of disperse-slurry of coal liquefaction residue. 4,575,381, Cl. 44-51.000.

Corbett, William H.; and Snygg, Edward N. Golf pronation device. 4,575,089, Cl. 273-183.00B.

Corbin, Krestine, administrator: *See—*
Dickinson, Lawrence C., deceased; and Corbin, Krestine, administrator, 4,574,442, Cl. 29-90.00R.

Corder, Thomas E.: *See—*
Pezzolo, Donald E.; Pfeiffer, James W.; and Corder, Thomas E., 4,575,659, Cl. 315-159.000.

Cordiano, Ettore, to Corint S.r.l. Power-assisted rack-and-pinion steering apparatus. 4,574,907, Cl. 180-148.000.

Cordis Corporation: *See—*
McCarthy, Brian D., 4,574,806, Cl. 128-334.00R.
Peers-Trevarton, Charles A., 4,574,800, Cl. 128-303.00R.

Cordova, Adolfo O. Water distribution valve. 4,574,842, Cl. 137-625.460.

Corint S.r.l.: *See—*
Cordiano, Ettore, 4,574,907, Cl. 180-148.000.

Corkill, William M., to Metal Technologies, Inc. Solid materials pump. 4,575,308, Cl. 415-213.00A.

Cornell Research Foundation, Inc.: *See—*
Dalman, G. Conrad, 4,575,700, Cl. 333-238.000.

Corning Glass Works: *See—*
Borrelli, Nicholas F.; Luderer, Albert A.; Mansfield, Gerald R.; and Panzarino, Joseph N., 4,574,782, Cl. 128-1.300.
Hess, Craig N.; and Potts, Robert S., 4,575,240, Cl. 356-246.000.
Peters, Donald C., 4,574,459, Cl. 29-527.400.

Corpra Research, Inc.: *See—*
Dreifus, Henry N., 4,575,621, Cl. 235-380.000.

Cory, Theodore M.: *See—*
Allen, Wade H.; Cory, Theodore M.; Hurley, Patrick J.; and Thornton, Raymond A., 4,575,817, Cl. 364-900.000.

Cosciani, Mary: *See—*
Luciano, William A.; and Cosciani, Mary, 4,574,435, Cl. 24-33.00C.

Cote, Jacynthe; and Vidyarthi, Sunil K., to Exxon Research and Engineering Company. Closed cell phenolic foams. 4,575,521, Cl. 521-112.000.

Coulter, Stanley M., to Dravo Corporation. Circular traveling grate machine. 4,575,055, Cl. 266-159.000.

Council, Thomas, to Sundstrand Optical Technologies, Inc. Ring laser gyro cathode arrangement. 4,575,855, Cl. 372-87.000.

Counterman, Wayne S., to Air Preheater Company, Inc., The. Method of making a finned cast recuperator tube. 4,574,865, Cl. 164-11.000.

Cowdery, Timothy K. Luggage case with retractable wheels. 4,575,109, Cl. 280-37.000.

Cradeur, Robert R.: *See—*
Krajicek, Richard W.; Krajicek, Steven W.; and Cradeur, Robert R., 4,575,305, Cl. 414-746.000.

Crain, Philip W.: *See—*
Hippely, Keith A.; and Crain, Philip W., 4,575,350, Cl. 446-368.000.

Craxton, Robert S. Toric lens generating. 4,574,527, Cl. 51-33.00W.

Crestfield, Arthur M.: *See—*
Bogan, John J.; Meeks, Robert E.; and Crestfield, Arthur M., 4,575,578, Cl. 174-35.0GC.

Crocetti, Michael F.: *See—*
Caldwell, Luther B.; Crocetti, Michael F.; and Dunham, Bradford, 4,575,744, Cl. 357-45.000.

Cron, Alain: *See—*
Periard, Jacques; Cron, Alain; and Fischer, Francis, 4,575,430, Cl. 252-12.600.

Cronin, Michael J., to Lockheed Corporation. Electromechanical actuator system with anti-jamming features. 4,575,027, Cl. 244-75.00R.

Cross, William E.: *See—*
Chapin, Melodee A.; Nestor, Charles R.; and Cross, William E., 4,575,173, Cl. 339-97.00R.

Crosson, Robert J. Truck bay door apparatus. 4,574,543, Cl. 52-173.0DS.

Crosti Soldatti, Giovanni: *See—*
Ysern de Arce, Vicente; and Crosti Soldatti, Giovanni, 4,575,427, Cl. 210-751.000.

Crown Zellerbach Corporation: *See—*
Brian, James A., 4,574,996, Cl. 229-27.000.

Crump, Robert L.: *See—*
Beeghly, Richard M.; Cundiff, William P.; Legas, William H.; Hurst, Lawrence B., Jr.; Crump, Robert L.; and Boore, Robert E., 4,574,857, Cl. 152-209.00B.

Csongor, Frank, to Csongor, Frank. Ammunition loading device. 4,574,511, Cl. 42-87.000.

Cudzik, Daniel F.: *See—*
Taylor, Robert L.; Sink, Danny R.; and Cudzik, Daniel F., 4,574,975, Cl. 220-306.000.

Cullen, Robert E., Jr., to Du Pont de Nemours, E. I., and Company. Yarn texturing jet. 4,574,436, Cl. 28-254.000.

Cummings, Ernie W.; and Valk, Nick, to Drain-All, Inc. Automatic drain valve. 4,574,829, Cl. 137-195.000.

Cundiff, William P.: *See—*
Beeghly, Richard M.; Cundiff, William P.; Legas, William H.; Hurst, Lawrence B., Jr.; Crump, Robert L.; and Boore, Robert E., 4,574,857, Cl. 152-209.00B.

Curchod, Donald B., to Dynabal Corporation. Wheel alignment system with ball joint wear monitor and method. 4,574,490, Cl. 33-203.180.

Curry, Vern, to Eckel Manufacturing Co., Inc. Powered back-up tongs. 4,574,664, Cl. 81-57.340.

Custer, Craig S. Excess flow control device. 4,574,833, Cl. 137-498.000.

CXI, Inc.: *See—*
Morel, Charles P.; and Gahr, Taylor O., 4,575,793, Cl. 364-200.000.

Cybrid Limited: *See—*
Bankart, Adrian E.; and Jenkins, Clive N., 4,575,628, Cl. 250-235.000.

Czabaffy, Andras: *See—*
Kaffka, Karoly; Nadai, Bela; Czabaffy, Andras; and Horvath, Lorand, 4,575,244, Cl. 356-343.000.

Czelusniak, Paul A., Jr., to Fieldcrest Mills, Inc. Tufting machine with modular constructed needle bars. 4,574,716, Cl. 112-79.00R.

Dackow, Paul N., to RCA Corporation. System for determining time duration of angular rotation. 4,575,865, Cl. 377-20.000.

Daigle, Chris J.: *See—*
Rao, Basrur R.; and Daigle, Chris J., 4,575,697, Cl. 333-157.000.

Daiichi Denshi Kogyo Kabushiki Kaisha: *See—*
Igarashi, Yoshiaki; and Hamano, Shoichi, 4,575,171, Cl. 339-74.00R.

Daimler-Benz Aktiengesellschaft: *See—*
Kuhn, Wolfgang; and Richter, Karl-Heinz, 4,575,110, Cl. 280-446.00R.

Dainippon Screen Mfg. Co.: *See—*
Senju, Tsutomu, 4,574,483, Cl. 33-18.100.

Dainippon Screen Mfg. Co., Ltd.: *See—*
Hotta, Tomiji; and Inoue, Mitsuo, 4,575,251, Cl. 356-443.000.

Daiwa Can Company, Limited: *See—*
Akino, Kenichiro; and Miura, Akira, 4,574,607, Cl. 72-112.000.

Daiwa Seiko Inc.: *See—*
Kaneko, Kyoichi, 4,575,024, Cl. 242-218.000.

Dalman, G. Conrad, to Cornell Research Foundation, Inc. Parallel plate transmission lines integrated with coplanar waveguides or slot lines and method of making same. 4,575,700, Cl. 333-238.000.

Damratoski, Daniel J. Exercise weight. 4,575,074, Cl. 272-119.000.

Dana Corporation: *See—*
Thatcher, David L., 4,575,361, Cl. 464-135.000.

Danfoss A/S: *See—*
Jacobsen, Peter E., 4,574,831, Cl. 137-382.500.
Petersen, Hans C.; Kyster, Erik; and Thomsen, Svend E., 4,575,321, Cl. 418-61.00B.
Thorsen, Niels P.; and Andersen, Per, 4,575,596, Cl. 200-67.00D.

Daraz, Bernard B. Vari-torque bar shock absorber for a racing vehicle. 4,575,058, Cl. 267-70.000.

Dargis, Kenneth. Door lock method and apparatus. 4,575,140, Cl. 292-288.000.

Data General Corporation: *See—*
Gruner, Ronald H.; Clancy, Gerald F.; Mundie, Craig J.; Wallach, Steven J.; Schleimer, Stephen I.; and Bratt, Richard G., 4,575,797, Cl. 364-200.000.

Data Medi-Card, Inc.: *See—*
Michel, Thomas J., 4,575,127, Cl. 283-109.000.

David, Emil J. Wood chip burning stoker type furnace. 4,574,712, Cl. 110-288.000.

David, Guy A. J.; Grima, Jean-Claude; Pando, Bernard; Bretez, Gabriel C. O.; and Lommer, Daniel J. F., to U.S. Philips Corporation. Time-division-multiplexing loop telecommunication system having a first and second transmission line. 4,575,843, Cl. 370-16.000.

David, Pierre; and Jarricot, Jean A., to Le Materiel Biomedical; and Commissariat a l'Energie Atomique. Process and device for the detection and quantification of agglutinates. 4,575,492, Cl. 436-164.000.

Davis, James E., to Du Pont de Nemours, E. I., and Company. Method of and apparatus for dispensing liquid. 4,574,850, Cl. 141-9.000.

Davis, Pauls: *See—*
Panek, Edward J.; Schmitt, Thomas M.; Davis, Pauls; and Ku, Jen-Sheng, 4,575,559, Cl. 556-428.000.

Day, Curtis H.: *See—*
Loup, Ronald L.; and Day, Curtis H., 4,574,843, Cl. 137-625.650.

Dayco Corporation: *See—*
Long, Delmar D.; and Anderson, John F., Jr., 4,575,469, Cl. 428-86.000.

De La Rue Giori S.A.: *See—*
Giori, Gualtiero, 4,574,696, Cl. 101-152.000.

de la Chapelle, Michael; and Wilhelmi, Frank A., to Hughes Aircraft Company. High current pulse modulator with wave shaping capability. 4,575,693, Cl. 333-20.000.

Deaccelerator Corporation: *See—*
Schulman, Richard E.; and Breen, William C. (said William C. Breen assors. to), 4,574,757, Cl. 123-396.000.

Dean, Edward H.; and Doxey, Burnley R., to United States of America, Army. Cargo carrying helicopters. 4,575,028, Cl. 244-137.00A.

Dean, Mark E., to International Business Machines Corp. Refresh generator system for a dynamic memory. 4,575,826, Cl. 365-222.000.

Dean, William C.: *See—*
Anderson, James M.; and Dean, William C., 4,574,937, Cl. 198-321.000.

Deb Roy, Tapan K.: *See—*
Anderson, Terry L.; Deb Roy, Tapan K.; and Chung, Ding Y., 4,575,523, Cl. 523-414.000.
Anderson, Terry L.; Deb Roy, Tapan K.; and Chung, Ding Y., 4,575,524, Cl. 523-455.000.

Debello, Robert J. Pinion gear retainer assembly for a starter motor of an internal combustion engine. 4,574,648, Cl. 74-7.00A.

de Billy, Michel: *See—*
Adler, Laszlo; Fitting, Dale W.; and de Billy, Michel, 4,574,637, Cl. 73-629.000.

DeBoodt, Marcel F.; Minjauw, Werner G.; and Oppliger, Hermann, to Societe Carbochimique Societe Anonyme. Process and compositions for conditioning soils. 4,575,391, Cl. 71-28.000.

De Cock, Etienne M.: *See—*
De Schamphelaere, Lucien A.; Librecht, Freddy M.; Van Peteghem, Willy F.; and De Cock, Etienne M., 4,575,739, Cl. 346-160.000.

Decorps, Jean-Luc; and Delpuech, Alain, to Schlumberger Technology Corporation. Method and apparatus for acquiring seismic signals in a borehole. 4,575,831, Cl. 367-33.000.

DeCrosta, Mark T.; Jain, Nemichand B.; and Rudnic, Edward M., to E. R. Squibb & Sons, Inc. Drug delivery systems including novel interpenetrating polymer networks and method. 4,575,539, Cl. 525-283.000.

Deere & Company: *See—*
West, Neil L.; and Vogelaar, Bernard F., 4,574,815, Cl. 130-27.00T.

De Faveri, Umberto. Articulated resiliently-biased mounted means for basketball hoop. 4,575,079, Cl. 273-1.50R.

DeGree, David C.; Fick, Herbert J.; and Juenger, Bruce H., to Bergquist Company, The. Mounting pad for solid-state devices. 4,574,879, Cl. 165-185.000.

Dehart, Michael J.; Spitzner, Warren C.; and Estes, James M., to W. A. Krueger Co. Method of recovering ink remaining in an ink drum liner. 4,574,982, Cl. 222-1.000.

Dehne, Clarence A., to Jervis B. Webb Company. Conveyor system with alternative carrier propulsion. 4,574,706, Cl. 104-162.000.

Deike, Robert F., to Construction Robotics, Inc. Ground anchor with scoop channel discharging to groove forming ridge. 4,574,539, Cl. 52-163.000.

Delahunt, Stephen J., to International Computers Limited. Data storage unit. 4,575,815, Cl. 364-900.000.

Delgrange, Louis; Vialettes, Francoise; and Deschamps, Jacques, to Thomson-CSF. AC plasma display panel control circuit. 4,575,721, Cl. 340-776.000.

Delisle, Bernard, Jr. Cork extractor. 4,574,663, Cl. 81-3.480.

Delius, Henry B., to Arcair Company. Constant potential/constant current automatic control system for air-carbon arc metal removal. 4,575,604, Cl. 219-69.00R.

Della Bella, Davide; Frigeni, Viviana; and Carenzi, Angelo, to Zambon S.p.A. Method of treatment for inhibiting the tolerance onset while treating painful syndromes with central analgesics. 4,575,506, Cl. 514-282.000.

DelNero, David L.: *See—*
Stolper, Peter R., 4,574,724, Cl. 114-271.000.

Delpuech, Alain: *See—*
Decorps, Jean-Luc; and Delpuech, Alain, 4,575,831, Cl. 367-33.000.

De Luca, Paul V.: *See—*
Duplatre, Raymond; and De Luca, Paul V., 4,575,169, Cl. 339-44.00M.

Demers, Donald R.; and Allemand, Charly D., to Baird Corporation. Spectrometer. 4,575,241, Cl. 356-316.000.

Den Besten, Leroy E.: *See—*
Hunter, David L.; and Den Besten, Leroy E., 4,575,156, Cl. 299-92.000.

Dennard, David G. Article used as garment and sleeping bag. 4,574,397, Cl. 2-69.500.

Dennis, Charles L., to Mobil Oil Corporation. Motor speed detector. 4,575,677, Cl. 324-161.000.

Dentler, Wolfgang; and Endres, Peter. Lifting device for use in a bath tub. 4,574,408, Cl. 4-560.000.

Deprez, Louis E.; and Klein, Denys C., to Compagnie de Signaux et d'Entreprises Electriques. Chopped power supply converter. 4,575,672, Cl. 323-222.000.

Derichs, Josef; and Stahlecker, Fritz, to Stahlecker, Hans; Stahlecker, Fritz; and W. Schlafhorst & Co. Driving arrangement for a spinning rotor of an open-end spinning machine. 4,574,577, Cl. 57-100.000.

Derichs, Josef, to W. Schlafhorst & Co. Spinning device. 4,574,582, Cl. 57-401.000.

Derrick, James W.; and Derrick, Robert G., to Derrick Manufacturing Corporation. Non-clogging wear-reducing screen assembly for vibrating screening machine. 4,575,421, Cl. 209-397.000.

Derrick Manufacturing Corporation: *See—*
Derrick, James W.; and Derrick, Robert G., 4,575,421, Cl. 209-397.000.

Derrick, Robert G.: *See—*
Derrick, James W.; and Derrick, Robert G., 4,575,421, Cl. 209-397.000.

Desbois, Michel; and Disdier, Camille, to Rhone-Poulenc Specialites Chimiques. Process for the simultaneous halogenation and fluorination of aromatic derivatives. 4,575,571, Cl. 570-140.000.

Descamps, Marcel; and Berger, Yves, to Sanofi. Pharmaceutical and veterinary compositions for the treatment of ischemic cardiac disorders. 4,575,513, Cl. 514-469.000.

De Schamphelaere, Lucien A.; Librecht, Freddy M.; Van Peteghem, Willy F.; and De Cock, Etienne M., to AGFA-Gevaert, N.V. Recording apparatus. 4,575,739, Cl. 346-160.000.

Deschamps, Jacques: *See—*
Delgrange, Louis; Vialettes, Francoise; and Deschamps, Jacques, 4,575,721, Cl. 340-776.000.

Despres, Dominique, to Valeo. Torsion damping assembly for automotive clutches. 4,574,932, Cl. 192-106.200.

Dessau, Ralph M.; and Kerr, George T., to Mobil Oil Corporation. Catalysis over activated zeolites. 4,575,573, Cl. 585-467.000.

Deutsche Babcock Werke Aktiengesellschaft: *See—*
Oppenberg, Rolf; and Wiehn, Helmut, 4,575,332, Cl. 431-9.000.

Deutsche Forschungs- und Versuchsanstalt fur Luft- und Raumfahrt e.V.: *See—*
Pabsch, Arno R. E. K., 4,574,535, Cl. 52-118.000.

Devins, Theodore R.: *See—*
Tabler, Charles P.; and Devins, Theodore R., 4,574,962, Cl. 211-122.000.

Diafil International S.A.: *See—*
Ribi, Valentino, 4,574,909, Cl. 180-227.000.

Diana, Massimo; and Bisso, Guglielmo M., to Biomedica Foscama Industria Chimico-Farmaceutica S.p.A. Process for the preparation of fructose 1,6 diphosphate acid. 4,575,549, Cl. 536-117.000.

Diau, Golden, to Hung, Michael. Chargeable working light. 4,575,784, Cl. 362-183.000.

Dibbern, John E., Jr.; and Moores, Gregory E., to Black & Decker Inc. Methods of assembling components of an electric motor. 4,574,471, Cl. 29-596.000.

Dickey, David A., to Dickey, Inc. Easy align connection for slip-on male/female fitted joint. 4,575,277, Cl. 403-361.000.

Dickey, Inc.: *See—*
Dickey, David A., 4,575,277, Cl. 403-361.000.

Dickinson, Lawrence C., deceased; and by Corbin, Krestine, administrator. Single pass boring, skiving and roller burnishing tool. 4,574,442, Cl. 29-90.00R.

Didia, Nicholas A. Portable beauty basin vanity. 4,574,407, Cl. 4-559.000.

Didier-Werke AG: *See—*
Hintzen, Ullrich; and Neuenburg, Michael, 4,575,439, Cl. 264-43.000.

Diepers, Heinrich; and Schewe, Herbert, to Siemens Aktiengesellschaft. Method of making pressure-sensitive transducer. 4,574,438, Cl. 29-25.350.

Dietch, Leonard: *See—*
Capek, Raymond G.; Cocco, Anthony; Dietch, Leonard; and Livshits, Michael, 4,575,691, Cl. 333-12.000.

Dieterich, Charles B., to RCA Corporation. Video disc data systems for interactive applications. 4,575,770, Cl. 358-342.000.

Dietrich, William J., Sr.; Sizelove, Cary L., Sr.; and Knobloch, Dean A., to DMI, Inc. Agricultural fertilizer applicator. 4,574,715, Cl. 111-7.000.

Dieudonne, Jean P.; and Steiner, Michel, to Compagnie Industrielle de Mecanismes. Resiliently biased shoes for maintaining a vehicle door in an open position. 4,574,422, Cl. 16-85.000.

DiFrancesco, Alphonse B.: *See—*
Ahern, Douglas K.; and DiFrancesco, Alphonse B., 4,575,222, Cl. 355-4.000.

Dille, Monte A. Adjustable alignment tool. 4,575,061, Cl. 269-44.000.

Diller, Isaac M. Product and process for the activation of an electrolytic cell. 4,575,407, Cl. 204-67.000.

Dillon, Richard R.: *See—*
Henneberg, Helmut H.; Dillon, Richard R.; Romano, Domenic R.; and Hall, Roger L., 4,575,033, Cl. 248-185.000.

Dimedco: *See—*
Chiodo, Rudolph J., 4,574,505, Cl. 40-365.000.

Dingwall, Andrew G. F., to RCA Corporation. Crossunders for high density SOS integrated circuits. 4,575,746, Cl. 357-49.000.

Dintemann, Ronald J.; and Barlics, John J., to Compuguide Chemical Corporation. Urinal screen and deodorant cake holder. 4,574,403, Cl. 4-309.000.

Dipl. Ing. H. List, Industrielle Verfahrenstechnik: *See—*
List, Jorg; and Kunz, Alfred, 4,575,253, Cl. 366-331.000.

Dirico, Mark A., to Hub Folding Box Co., Inc. Apparatus and method for sealing the cover side flaps of cartons. 4,574,561, Cl. 53-376.000.

Disa Elektronik A/S: *See—*
Knuhtsen, John; and Olldag, Peder E. S., 4,575,238, Cl. 356-28.500.

Disdier, Camille: *See—*
Desbois, Michel; and Disdier, Camille, 4,575,571, Cl. 570-140.000.

Ditlya, David: *See—*
Levine, Mark; Hanes, Robert H.; Rudder, Joel; and Ditlya, David, 4,575,782, Cl. 362-61.000.

Diversified Products Corporation: *See—*
Mott, Jonathan C.; and Kelley, Robert C., 4,575,082, Cl. 273-73.00G.

Dixon, Kenneth W.; and Menchen, Steven M., to Atlantic Richfield Company. Viscosity stabilized water-soluble amine polymers. 4,575,527, Cl. 524-253.000.

DMI, Inc.: *See—*
Dietrich, William J., Sr.; Sizelove, Cary L., Sr.; and Knobloch, Dean A., 4,574,715, Cl. 111-7.000.

Dobinson, Frank: *See—*
Hsu, Charles K.; and Dobinson, Frank, 4,575,562, Cl. 560-204.000.

Dobkin, Robert C.; Erdi, George; and Nelson, Carl T., to Linear Technology Corporation. Arrangement for cancelling the input bias current, at picoampere levels, in an integrated circuit. 4,575,685, Cl. 330-261.000.

Doboy Packaging Machinery, Inc.: *See—*
Eaves, Fred W.; Matt, Timothy S.; Sommer, Wayne D.; and Wensink, James B., 4,574,566, Cl. 53-450.000.

Dobson, Deborah H.: *See—*
Rickey, Wynn P.; Dobson, Deborah H.; and Huffaker, Roger W., 4,574,830, Cl. 137-242.000.

Dobson, Peter J.; Foxon, Charles T.; and Neave, James H., to U.S. Philips Corporation. Method of growing an alloy film by a layer-by-layer process on a substrate, and a method of making a semiconductor device. 4,575,462, Cl. 427-9.000.

Dr. Alois Stankiewicz GmbH: *See—*
Gahlau, Heinemann; Hoffmann, Manfred; and Wittenmayer, Klaus, 4,574,915, Cl. 181-290.000.

Dr. Ing. Rudolf Hell GmbH: *See—*
Grieger, Dieter, 4,575,249, Cl. 356-369.000.

Dr. Karl Thomae GmbH: *See—*
Sauter, Robert; Griss, Gerhart, deceased; Grell, Wolfgang; Hurnaus, Rudolf; Kobinger, Walter; and Pichler, Ludwig, 4,575,504, Cl. 514-215.000.

Dodge, Roger C., to General Motors Corporation. Method and apparatus for leak test. 4,575,807, Cl. 364-558.000.

Doi, Shigeru: *See—*
Sato, Toshihiko; and Doi, Shigeru, 4,574,755, Cl. 123-320.000.

Dolejs, Charles A.: *See—*
Schumann, Gary M.; Dolejs, Charles A.; and Schick, David L., 4,574,840, Cl. 137-625.150.

Dolezal, George E.; and Kelly, Joseph L., Jr., to Hughes Tool Company - USA. Solid head bit with tungsten carbide central core. 4,574,895, Cl. 175-329.000.

Domeier, Linda A., to Union Carbide Corporation. Curable poly(acrylate) molding compositions containing a thermoplastic polymer low profile additive. 4,575,473, Cl. 428-290.000.

Don Watt + Associates Communications, Inc.: *See—*
Shikatani, Edward R., 4,574,960, Cl. 211-60.100.

Donn Incorporated: *See—*
Cline, Steven D., 4,574,555, Cl. 52-785.000.
Menchetti, Robert J.; Safran, Robert H.; and Sauer, Gale E., 4,574,547, Cl. 52-238.100.

Donsco Inc.: *See—*
Swengel, Robert C., Sr.; and Swengel, Robert C., Jr., 4,575,071, Cl. 272-52.000.

Dore, Jeffrey C.: *See—*
Rosenhouse, Harvey; and Dore, Jeffrey C., 4,575,403, Cl. 202-153.000.

Dorer, Casper J., Jr.; and Hayashi, Katsumi, to Lubrizol Corporation, The. Hydrocarbyl substituted carboxylic acylaging agent derivative containing combinations, and fuels containing same. 4,575,526, Cl. 524-96.000.

Doring, Michael: *See—*
Bentin, Horst; Doring, Michael; Kronenberg, Horst; and Jeglinski, Werner, 4,574,445, Cl. 29-157.00C.

Double A Products Co.: *See—*
Loup, Ronald L.; and Day, Curtis H., 4,574,843, Cl. 137-625.650.

Doughty, Michael E. Versatile lightweight power post. 4,574,613, Cl. 72-447.000.

Dover Corporation: *See—*
Pemberton, Eugene B.; and Fahl, Richard L., 4,575,130, Cl. 285-38.000.

Dow Chemical Company, The: *See—*
Cavitt, Michael B.; Perry, William O.; and Hefner, Robert E., Jr., 4,575,543, Cl. 525-510.000.
Gibbs, Dale S.; Benson, Jack H.; and Fernandez, Reet T., 4,575,529, Cl. 524-507.000.
Hay, Robert A., II; and Dowell, Albert C., 4,575,100, Cl. 277-65.000.
Reifschneider, Walter, 4,575,499, Cl. 514-86.000.
Robbins, Lanny A., 4,575,418, Cl. 209-3.000.
Treybig, Duane S., 4,575,542, Cl. 525-426.000.
Werkema, Donald A.; Willency, Richard A.; and Lee, Do I., 4,575,477, Cl. 428-537.500.
Wilson, David A., 4,575,454, Cl. 423-139.000.
Young, Harold W., Jr.; Ainsworth, Oliver C., Jr.; Fry, William E.; and Neil, Lawrence E., 4,575,494, Cl. 502-243.000.

Dow, Joanne B. PSK modulation by temporarily increasing frequency to achieve phase change. 4,575,858, Cl. 375-53.000.

Dowd, Dennis. Collapsible boat. 4,574,725, Cl. 114-352.000.

Dowden, Barry F.: *See—*
Wood, John C.; Lowe, Anthony C.; and Dowden, Barry F., 4,575,190, Cl. 350-357.000.

Dowell, Albert C.: *See—*
Hay, Robert A., II; and Dowell, Albert C., 4,575,100, Cl. 277-65.000.

Doxey, Burnley R.: *See—*
Dean, Edward H.; and Doxey, Burnley R., 4,575,028, Cl. 244-137.00A.

Doyle, Terrance W.: *See—*
Kavadias, Gerry; Doyle, Terrance W.; Janik, Elizabeth; and Partyka, Richard A., 4,575,553, Cl. 546-106.000.

Dragerwerk Aktiengesellschaft: *See—*
Warncke, Ernst, 4,574,799, Cl. 128-206.240.

Dragon, Robert L., Jr.; Grambo, Lawrence C.; and Walls, John E., to American Hoechst Corporation. Apparatus for electrolyzing metal sheet. 4,575,409, Cl. 204-237.000.

Drain-All, Inc.: *See—*
Cummings, Ernie W.; and Valk, Nick, 4,574,829, Cl. 137-195.000.

Drake, Charles A.; and Reusser, Robert E., to Phillips Petroleum Company. Catalysts and process for olefin conversion. 4,575,575, Cl. 585-646.000.

Dravo Corporation: *See—*
Coulter, Stanley M., 4,575,055, Cl. 266-159.000.

Drechsler, Mark A., to Stanley Works, The. Top reading rule using blades with directional arrows. 4,574,486, Cl. 33-138.000.

Dreifus, Henry N., to Corpra Research, Inc. Portable electronic transaction device and system therefor. 4,575,621, Cl. 235-380.000.

Dubuit, Jean-Louis, to Societe d'Esploitation des Machines Dubuit. Stamping machines with coordinated movement of opposing dies. 4,574,694, Cl. 101-11.000.

Dubuit, Jean-Louis. Automatic bottle handling apparatus. 4,574,939, Cl. 198-396.000.

Duck, Roger: *See—*
Podell, Howard I.; Goldstein, Albert; Blackley, David C.; James, Michael H.; Bratby, David M.; and Duck, Roger, 4,575,476, Cl. 428-494.000.

Duerig, Thomas; Escudier, Marcel; and Keller, Jakob, to BBC Brown, Boveri & Co., Ltd. Device for atomizing liquid metals for the purpose of producing a finely granular powder. 4,575,325, Cl. 425-7.000.

Duhe, Rand J., to Shell Oil Company. Method and apparatus for sound level determination. 4,575,829, Cl. 367-129.000.

Duke Power Company: *See—*
Best, Martin F., 4,575,710, Cl. 340-514.000.

Duke University: *See—*
Holmes, Edward W.; and Swain, Judith L., 4,575,498, Cl. 514-43.000.

Dundas, Dennis L.; Myers, William H.; and Kinslow, William G., Jr., to Hoover Universal, Inc. Transport neck ring. 4,575,331, Cl. 425-577.000.

Dungs, Horst: *See—*
Lorenz, Kurt; Dungs, Horst; Nashan, Gerd; Breidenbach, Dieter; and Volmark, Josef, 4,574,744, Cl. 122-7.00R.

Dunham, Bradford: *See—*
Caldwell, Luther B.; Crocetti, Michael F.; and Dunham, Bradford, 4,575,744, Cl. 357-45.000.

Dunn, Lawrence M., to Rusch, Ronald L.; and Jacobson, Grodon L. Rotary shear cutter. 4,574,480, Cl. 30-240.000.

Duo-Fast Corporation: *See—*
Holman, Alfred D., 4,574,992, Cl. 227-83.000.
Thorsen, Elmer J., Jr., 4,574,991, Cl. 227-3.000.

Duplatre, Raymond; and De Luca, Paul V., to Porta Systems Corp. Telephone building entrance terminal. 4,575,169, Cl. 339-44.00M.

Du Pont de Nemours, E. I., and Company: *See—*
Cullen, Robert E., Jr., 4,574,436, Cl. 28-254.000.
Davis, James E., 4,574,850, Cl. 141-9.000.
Lee, Duk H.; and O'Connell, Thomas J., III, 4,575,452, Cl. 422-61.000.
Wells, John R., 4,574,729, Cl. 118-52.000.

Dupre, George T., to NFE International, Ltd. Versatile particle collector apparatus. 4,574,420, Cl. 15-331.000.

Duran, Melchor, to Pan Tech Management Corp. Chemisorption air conditioner. 4,574,874, Cl. 165-43.000.

Durand, Francois; and Smulders, Auguste, to Engrenages et Reducteurs; and Citroen Messian Durand, part interest to each. Force limiting gear reducer for lifting pinion of self-elevating platform. 4,574,650, Cl. 74-411.500.

Duringer, Rudi H.: *See—*
Werk, Otto; and Duringer, Rudi H., 4,574,601, Cl. 70-70.000.

Durkoppwerke GmbH: *See—*
Balke, Siegmund, 4,574,719, Cl. 112-272.000.

Duschl, Robert A., to RCA Corporation. Method and subsystem for plotting the perimeter of an object. 4,575,751, Cl. 358-106.000.

Dustbane Products Limited: *See—*
Hammond, Dennis A., 4,575,270, Cl. 401-40.000.

Duthie, Joseph G. M.; Christensen, Charles R.; and Leonard, Carl D., to United States of America, Army. Method of bragg angle adjustments for copying holograms. 4,575,192, Cl. 350-3.690.

Duz-Mor, Inc.: *See—*
Field, Carl R., 4,574,614, Cl. 72-447.000.

Dymond, Anthony M.; and Fryer, Thomas B. Method and apparatus for selectively recording instrument quality data or composite instrument quality data and video signals on a commercial unmodified video tape recorder. 4,575,773, Cl. 360-32.000.

Dynabal Corporation: *See—*
Curchod, Donald B., 4,574,490, Cl. 33-203.180.

Dynamit Nobel Aktiengesellschaft: *See—*
Nicodemus, Joachim, 4,574,680, Cl. 89-1.701.

Dyson, George W., to Chubb & Son's Lock and Safe Company Limited. Method of constructing fire resistant enclosures. 4,574,454, Cl. 29-434.000.

E. R. Squibb & Sons, Inc.: *See—*
DeCrosta, Mark T.; Jain, Nemichand B.; and Rudnic, Edward M., 4,575,539, Cl. 525-283.000.
Hall, Steven E.; Haslanger, Martin F.; and Varma, Ravi K., 4,575,512, Cl. 514-469.000.
Wood, Thomas G., 4,575,239, Cl. 356-240.000.

E-Systems, Inc.: *See—*
Rice, Robert P., Jr.; Fruit, Larry J.; and Trout, Gary B., 4,575,864, Cl. 375-116.000.

Earle, John L. Fuel vaporization method and apparatus. 4,574,764, Cl. 123-545.000.

Eastman Kodak Company: *See—*
Ahern, Douglas K.; and DiFrancesco, Alphonse B., 4,575,222, Cl. 355-4.000.
Arnold, Kenneth A., 4,575,224, Cl. 355-14.00R.
Bothner, Carl R., 4,575,217, Cl. 355-3.0DD.
Carson, John F.; and Papadopoulos, Kimon, 4,575,230, Cl. 355-75.000.
Greivenkamp, John E., Jr., 4,575,193, Cl. 350-401.000.
Gunther, Wolfgang H. H.; and Mee, John D., 4,575,483, Cl. 430-588.000.

Eaves, Fred W.; Matt, Timothy S.; Sommer, Wayne D.; and Wensink, James B., to Doboy Packaging Machinery, Inc. Wrapping machine and method. 4,574,566, Cl. 53-450.000.

Ebara Corporation: *See—*
Mizobuchi, Shotaro; Sasaki, Katsumi; Kimura, Yoshikazu; and Kasahara, Kazuyuki, 4,575,264, Cl. 384-369.000.

Ebata, Sadao; and Bando, Seiji, to Kawasaki Steel Corporation. Apparatus for continuously quenching a steel plate. 4,575,052, Cl. 266-81.000.

Eberhard, Eugen: *See—*
Straub, Reinhold; and Eberhard, Eugen, 4,574,802, Cl. 128-305.000.

Eckebrecht, James L. Mouse trap. 4,574,519, Cl. 43-81.000.

Eckel Manufacturing Co., Inc.: *See—*
Curry, Vern, 4,574,664, Cl. 81-57.340.

Eco Industries, Inc.: *See—*
Mudd, Robert E.; and Wyatt, Wendell L., 4,575,336, Cl. 432-72.000.

Eden, Richard C.; and Kaelin, George R., to Rockwell International Corporation. Low power, high speed random access memory circuit. 4,575,821, Cl. 365-154.000.

Edstrom, Andrew H., to Maridyne, Inc. Chair tilting mechanism. 4,575,151, Cl. 297-304.000.

Edwards, Charles L., to Shell Oil Company. Alkoxylation of thiols in the presence of a reaction promoter. 4,575,569, Cl. 568-45.000.

Edwards, Robert A.: *See—*
Tedeschi, Rinaldo R.; Emery, Arthur R.; and Edwards, Robert A., 4,575,673, Cl. 323-351.000.

Edwards, William H. String locking assembly for a musical instrument. 4,574,678, Cl. 84-314.00N.

EFAFLEX Transport-und Lager Technik GmbH: *See—*
Rejc, Gabriel, 4,574,862, Cl. 160-199.000.

Egerod, Eskel; and Yngvesson, Lars Y. A., to Telefonaktiebolaget LM Ericsson. Method of displaying on a viewing screen the output signals from a detector sensitive to radiation. 4,575,758, Cl. 358-166.000.

Ehm, Karl H.; and Orendi, Roderich R. Cutting apparatus. 4,574,672, Cl. 83-471.200.

Eisai Co., Ltd: *See—*
Tanaka, Tadaaki; Ibuki, Tadahiro; Nakamura, Yoshiaki; and Yamamoto, Masaichi, 4,574,736, Cl. 119-14.080.

Elabd, Hammam, to RCA Corporation. CCD with number of clocking signal phases increasing in later charge transfer stages. 4,575,763, Cl. 358-213.000.

Electro-Biology, Inc.: *See—*
Talish, Roger J.; Parr, William E.; and Zavros, Steven J., 4,574,809, Cl. 128-419.00F.

Elf France: *See—*
Claus, Guy, 4,574,743, Cl. 122-4.00D.
Negre, Guy, 4,574,749, Cl. 123-80.00R.

Elliott, Paul G. Street sign adaptor unit and assembly including the same. 4,574,507, Cl. 40-607.000.

Ellis, Debbie K.: *See—*
Ellis, Kurt; and Ellis, Debbie K., 4,574,977, Cl. 220-403.000.

Ellis, Julius A.: *See—*
Harben, Grover S., Jr.; and Ellis, Julius A., 4,574,427, Cl. 17-11.000.

Ellis, Kurt; and Ellis, Debbie K. Drip tray for high chairs. 4,574,977, Cl. 220-403.000.

Elscint, Inc.: *See—*
Birnbaum, Martin; and Uriet, Richard, 4,575,766, Cl. 358-244.000.

Elsner Engineering Works, Inc.: *See—*
Elsner, Frank, Jr.; and Molison, Robert E., 4,574,458, Cl. 29-525.000.

Elsner, Frank, Jr.; and Molison, Robert E., to Elsner Engineering Works, Inc. Roll-capping machine and method. 4,574,458, Cl. 29-525.000.

Emery, Arthur R.: *See—*
Tedeschi, Rinaldo R.; Emery, Arthur R.; and Edwards, Robert A., 4,575,673, Cl. 323-351.000.

Emhart Industries, Inc.: *See—*
Amonett, Daniel K., 4,575,594, Cl. 200-38.00B.

Emilsson, Fred S., to SAB Nife AB. Rail vehicle brake system. 4,575,159, Cl. 303-71.000.

Endicott Johnson Corporation: *See—*
Jindra, Frank J., 4,574,497, Cl. 36-77.00R.

Endo, Kazuya; and Ito, Hiroko. Escape gloves. 4,574,398, Cl. 2-159.000.

Endres, Peter: *See—*
Dentler, Wolfgang; and Endres, Peter, 4,574,408, Cl. 4-560.000.

Enenkel, Hans J.: *See—*
Jonas, Rochus; Kloft, Michael; Wurziger, Hanns; Harting, Jurgen; Enenkel, Hans J.; Minck, Klaus-Otto; and Schliep, Hans-Jochen, 4,575,505, Cl. 514-248.000.

Energy Conversion Devices, Inc.: *See—*
Nath, Prem; and Hoffman, Kevin R., 4,574,733, Cl. 118-718.000.

Engelfried, Werner; and Muller, Gerhard, to Terrot Strickmaschinen GmbH. Stitch-forming machine. 4,574,596, Cl. 66-104.000.

Engelhard Corporation: *See—*
Novak, William J.; and McClung, Ronald G., 4,575,415, Cl. 208-91.000.

Engrenages et Reducteurs: *See—*
Durand, Francois; and Smulders, Auguste, 4,574,650, Cl. 74-411.500.

Entine, Gerald: *See—*
Redler, Elisa; and Entine, Gerald, 4,575,634, Cl. 250-358.100.

Environmental Products & Services Co., Inc.: *See—*
Lewis, Robert L., Jr.; and Hudson, J. Albert, 4,574,973, Cl. 220-259.000.

Envirotech Corporation: *See—*
Armitage, Jack R.; and Haymore, Ralph B., 4,575,256, Cl. 366-266.000.

Epstein, James; and Marincic, Nikola, to Battery Engineering, Inc. Method and apparatus for inserting electrodes into the container of an electrochemical cell. 4,574,472, Cl. 29-623.100.

Erdi, George: *See—*
Dobkin, Robert C.; Erdi, George; and Nelson, Carl T., 4,575,685, Cl. 330-261.000.

Erickson, Robert A.: *See—*
Oshnock, James A.; and Erickson, Robert A., 4,575,287, Cl. 407-41.000.

Ericson, Hans G.: *See—*
Opperud, Hans-Jorgen; Carlsson, Sven A. L.; and Ericson, Hans G., 4,574,661, Cl. 74-856.000.

Ericsson, C. G. Folke. Motor assembly for carrying on the back. 4,574,481, Cl. 30-296.00R.

Erikson, Magnus, to ITT Industries, Inc. Impeller. 4,575,312, Cl. 416-179.000.

Ernst Leitz Wetzlar GmbH: *See—*
Lisfeld, Robert, 4,575,199, Cl. 350-530.000.

ESAC, Inc.: *See—*
Pellegrini, Frank J., 4,575,622, Cl. 235-382.000.

Eschbach, Robert C.: *See—*
Shedd, William D.; and Eschbach, Robert C., 4,574,516, Cl. 43-43.120.
Shedd, William D.; and Eschbach, Robert C., 4,574,518, Cl. 43-43.120.

Escher Wyss GmbH: *See—*
Sedlacek, Franz, 4,574,496, Cl. 34-57.00A.

Escudier, Marcel: *See—*
Duerig, Thomas; Escudier, Marcel; and Keller, Jakob, 4,575,325, Cl. 425-7.000.

Escue, Jesse W. Rotatable shaft sealing assembly with flowable material spacer means. 4,575,098, Cl. 277-9.000.

Eskeli, Michael. Heat pump with liquid-gas working fluid. 4,574,592, Cl. 62-114.000.

Essex Group, Inc.: *See—*
Pali, Christopher, 4,575,016, Cl. 242-58.100.
Pali, Christopher, 4,575,017, Cl. 242-58.300.
Vogel, Ralph A.; and Caudill, Keith E., 4,574,604, Cl. 72-38.000.

Establissements Jouk: *See—*
Lassmann, Dieter; Vialla, Remy; and Jouk, Leo , 4,574,410, Cl. 5-81.00R.

Estes, James M.: *See—*
Dehart, Michael J.; Spitzner, Warren C.; and Estes, James M., 4,574,982, Cl. 222-1.000.

Ethicon, Inc.: *See—*
Stead, Michael J., 4,574,957, Cl. 206-63.300.

Euroceltique, S.A.: *See—*
Pollack, William; and Iny, Oliver, 4,575,491, Cl. 436-125.000.

Evans, John M.; and Cassidy, Frederick, to Beecham Group p.l.c. Anti-hypertensive chromanol derivatives. 4,575,511, Cl. 514-456.000.

Ewald Dorken GmbH & Co. KG: *See—*
Raidt, Heinz P.; Jablonka, Dieter; and Urban, Klaus, 4,574,541, Cl. 52-169.500.

Ex-Cell-O Corporation: *See—*
Stein, Ronald R., 4,574,605, Cl. 72-88.000.

Extracorporeal Medical Specialties, Inc.: *See—*
Aid, James D., 4,574,876, Cl. 165-46.000.

Exxon Production Research Co.: *See—*
Aggour, Mohamed A.; and Greebe, Frans, 4,574,837, Cl. 137-561.00A.
Konak, A. Riza, 4,574,827, Cl. 137-89.000.
Littlejohn, Lee A.; Kruk, Keith F.; Williams, Robert E.; and Bailey, Thomas F., 4,575,426, Cl. 210-671.000.
Rickey, Wynn P.; Dobson, Deborah H.; and Huffaker, Roger W., 4,574,830, Cl. 137-242.000.

Exxon Research and Engineering Company: *See—*
Cote, Jacynthe; and Vidyarthi, Sunil K., 4,575,521, Cl. 521-112.000.
Kresge, Edward N.; and Ver Strate, Gary W., 4,575,574, Cl. 585-520.000.
Peiffer, Dennis G.; and Lundberg, Robert D., 4,575,530, Cl. 524-548.000.
Persak, Steven R.; and Hudak, John, Jr., 4,574,443, Cl. 29-157.10R.
Pizzoni, Vincenzo M. P.; and Randhawa, Sukhjit S., 4,575,413, Cl. 208-48.0AA.

Yuhas, Stephen A., Jr.; and Lopez, Denise, 4,575,568, Cl. 568-749.000.

F. F. Seeley Nominees Pty. Ltd.: *See—*
Wright, Peter S., 4,574,832, Cl. 137-426.000.

Fagerlie, Richard A.: *See—*
Neff, James A.; and Fagerlie, Richard A., 4,574,844, Cl. 137-625.650.

Fagerstedt, Nils U. H.; Roos, Sture G.; and Stipcevic, Franko, to Telefonaktiebolaget LM Ericsson. Method and apparatus for through-connection testing in a digital telecommunication network. 4,575,841, Cl. 370-14.000.

Fahl, Richard L.: *See—*
Pemberton, Eugene B.; and Fahl, Richard L., 4,575,130, Cl. 285-38.000.

Fakirov, Stoyko C.; Lee, I-Hwa; and Schultz, Jerold M., to University of Delaware. Chemically bonded polyolefin laminates. 4,575,470, Cl. 428-105.000.

Falciai, Riccardo: *See—*
Bacci, Mauro; Brenci, Massimo; Conforti, Giuliano; Falciai, Riccardo; Mignani, Anna G.; and Verga-Scheggi, Anna M., 4,575,259, Cl. 374-130.000.

Fallwell, Beeman N., Jr.; Kaltenbach, Matt A.; and Ott, William B., to International Business Machines Corp. Hot carrier detection. 4,575,847, Cl. 371-57.000.

Fannin, Wayne V.; and Pees, James M., to General Motors Corporation. Method of servicing a vehicle suspension unit with replacement air spring. 4,574,450, Cl. 29-402.080.

Fansteel Inc.: *See—*
Hunter, David L.; and Den Besten, Leroy E. (said David L. Hunter assors. to), 4,575,156, Cl. 299-92.000.

Fanuc Limited: *See—*
Matsuura, Hitoshi; Yamazaki, Etsuo; and Sakurai, Hiroshi, 4,575,665, Cl. 318-578.000.
Nakashima, Seiichiro; Toyoda, Kenichi; and Sakakibara, Shinsuke, 4,575,666, Cl. 318-661.000.

Fanuc Ltd: *See—*
Kurakake, Mitsuo, 4,575,667, Cl. 318-803.000.

Farina, Carlo; Pifferi, Giorgio; and Pinza, Mario, to I.S.F. S.p.A. Process of making ethyl[6-[ethyl-(2-hydroxypropyl)amino]-3-pyridazinyl]hydrazine carboxylate. 4,575,552, Cl. 544-224.000.

Farkas, John P.: *See—*
Boffardi, Bennett P.; Farkas, John P.; and Yorke, Monica A., 4,575,425, Cl. 210-697.000.

Farnum, Francis H., III, to Gabriel Electronics Incorporated. Method for forming a precision surface of large area. 4,574,457, Cl. 29-469.500.

Farrington, Richard I.: *See—*
Piazza, Pietro; and Farrington, Richard I., 4,575,349, Cl. 446-330.000.

Fassel, Velmer A.; Rice, Gary W.; and Lawrence, Kimberly E., to United States of America, Energy. Concentric micro-nebulizer for direct sample insertion. 4,575,609, Cl. 219-121.0PY.

Fastencold, Inc.: *See—*
Brannigan, Patrick J.; and Peckich, Gerald L., 4,575,097, Cl. 128-402.000.

Fatkin, Harry W. Accumulator device for a collapsible tube dispenser. 4,574,983, Cl. 222-1.000.

Faville, Paul E.; and Yousko, David A., to Boeing Company, The. Gundrill diameter gage and method. 4,574,488, Cl. 33-201.000.

Fazioli, Christopher T.: *See—*
Wacome, Donald M.; Fazioli, Christopher T.; and Lauria, Vincent A., 4,575,525, Cl. 524-48.000.

Feco Engineered Systems, Inc.: *See—*
Verwey, William G.; and Hovekamp, John C., 4,574,732, Cl. 118-642.000.

Fedele, Nicola J., to RCA Corporation. Logic for increasing the number of pixels in a horizontal scan of a bit mapping type video display. 4,575,717, Cl. 340-728.000.

Federal Products Corporation: *See—*
Olasz, Joseph S.; and MacIndoe, William C., 4,574,625, Cl. 73-105.000.

Feeley, George F., to Norwood Industries, Inc. Sheet material for mounting printing plates. 4,574,697, Cl. 101-401.100.

Fehrer, Ernst. Apparatus for making a yarn. 4,574,572, Cl. 57-5.000.

Fein, Berthold: *See—*
Botz, Jakob; Fein, Berthold; Mutschler, Erich; and Weber, Adam, 4,575,600, Cl. 200-293.000.

Fejer Megyei Gabonaforgalmi es Malomipari Vallalat: *See—*
Alapi, Jozsef; Baldaszti, Laszlo ; Gaspar, Laszlo ; Herczegh, Marton; Javorka, Istvan; Kisberk, Ferenc; Klauser, Janos; Makk, Antal; and Pallos, Istvan, 4,575,460, Cl. 426-72.000.

Fenstermaker, Roger W., to Phillips Petroleum Company. Reducing ash content of lignite. 4,575,011, Cl. 241-1.000.

Fernandez, Reet T.: *See—*
Gibbs, Dale S.; Benson, Jack H.; and Fernandez, Reet T., 4,575,529, Cl. 524-507.000.

Ferris, Donald L., to United Technologies Corporation. Accommodating axial load in an elastomeric high torque, constant velocity joint. 4,575,358, Cl. 464-90.000.

Ferris, Michael J.; and Breslow, Jeffrey D., to Marvin Glass & Associates. Game board having shiftable board with indicia thereon. 4,575,094, Cl. 273-249.000.

Ferrofluidics Corporation: *See—*
Raj, Kuldip; and Gowda, Hanumaiah L., 4,575,102, Cl. 277-80.000.

Fetzer, Gerhard: *See—*
Stahlecker, Fritz; Griesinger, Rolf; and Fetzer, Gerhard, 4,574,583, Cl. 57-408.000.

Fick, Herbert J.: *See—*
DeGree, David C.; Fick, Herbert J.; and Juenger, Bruce H., 4,574,879, Cl. 165-185.000.

Field, Carl R., to Duz-Mor, Inc. Apparatus for repairing and straightening vehicles. 4,574,614, Cl. 72-447.000.

Field, Nathan D.: *See—*
Shah, Shailesh; King, David R.; and Field, Nathan D., 4,575,376, Cl. 8-116.100.

Fieldcrest Mills, Inc.: *See—*
Czelusniak, Paul A., Jr., 4,574,716, Cl. 112-79.00R.

Fierkens, Richardus H. J.; and Pas, Ireneus J. T. M., to ASM Fico Tooling, b.v. Automatic continuously cycleable molding apparatus. 4,575,328, Cl. 425-126.00R.

Figaro Engineering Inc.: *See—*
Murakami, Nobuaki; Tanaka, Katsuyuki; and Ihokura, Kousuke, 4,575,441, Cl. 264-61.000.

Fike, Louis T.; and Green, Kenneth A., to Ohio Machine Company, Inc. Tubeless tire curing method. 4,575,438, Cl. 264-36.000.

Fink, Cameron; Schram, Robert W.; and Gentile, Anthony. Seal press. 4,574,693, Cl. 101-3.0SP.

Fiocchi Munizioni Spa: *See—*
Fiocchi, Pino, 4,574,701, Cl. 102-451.000.

Fiocchi, Pino, to Fiocchi Munizioni Spa. Wad for cartridges of hunting and shooting arms. 4,574,701, Cl. 102-451.000.

Fire Savr: *See—*
Pezold, Arthur J., 4,575,704, Cl. 337-197.000.

Firestone Tire & Rubber Company, The: *See—*
Fleischman, Thomas S., 4,574,642, Cl. 73-799.000.

Fischer, Eugene B.; and Lilly, A. Clifton, to Philip Morris Incorporated. Expanded wrapper and smoking articles including same. 4,574,821, Cl. 131-365.000.

Fischer, Francis: *See—*
Periard, Jacques; Cron, Alain; and Fischer, Francis, 4,575,430, Cl. 252-12.600.

Fischer, Heinrich; Schmidkunz, Walter; and Spensberger, Johann, to Carl Hurth Maschinen- und Zahnradfabrik GmbH & Co. Apparatus for orienting the position of a machine tool carriage relative to a stationary machine part. 4,575,289, Cl. 409-33.000.

Fischer, Jochen: *See—*
Scholl, Hans; and Fischer, Jochen, 4,574,718, Cl. 112-121.120.

Fisher, Arthur D.: *See—*
Lee, John N.; and Fisher, Arthur D., 4,575,179, Cl. 350-96.130.

Fissler GmbH: *See—*
Bohl, Rainer; and Hiller, Dorothee, 4,574,777, Cl. 126-390.000.

Fister, Christian, to AFSAL Sarl. Staple remover and method of removing staples. 4,575,049, Cl. 254-28.000.

Fitting, Dale W.: *See—*
Adler, Laszlo; Fitting, Dale W.; and de Billy, Michel, 4,574,637, Cl. 73-629.000.

Fitzpatrick, Michael D., to Westinghouse Electric Corp. Electrically alterable non-volatile memory. 4,575,823, Cl. 365-184.000.

Fleck, Adolf; Kastl, Alfons; Loistl, Rudolf; Lehnert, Klaus; and Widemann, Ernst, to AGFA-Gevaert AG. Feedpipe for a refilling container. 4,574,852, Cl. 141-286.000.

Fleischman, Thomas S., to Firestone Tire & Rubber Company, The. Apparatus for automated crack growth rate measurement. 4,574,642, Cl. 73-799.000.

Fleissner, Heinz, to Vepa Aktiengesellschaft. Apparatus for cutting ribbon- or cord-like material. 4,574,668, Cl. 83-346.000.

Flexi-Coil Ltd.: *See—*
Kelm, Daniel W., 4,575,284, Cl. 406-87.000.

Flexibox Limited: *See—*
Taylor, Ivan; and Harrington, John P., 4,575,357, Cl. 464-69.000.

Flexion, Inc.: *See—*
Kleynjans, Joseph P. H., 4,574,542, Cl. 52-173.0DS.

Flowmaster, Inc.: *See—*
Flugger, Ray T., 4,574,914, Cl. 181-268.000.

Flugger, Ray T., to Flowmaster, Inc. Compact, sound-attenuating muffler for high-performance, internal combustion engine. 4,574,914, Cl. 181-268.000.

FMC Corporation: *See—*
Abbott, Seth C.; Connerley, James J.; and Klok, Arthur W., Jr., 4,574,658, Cl. 74-785.000.
Anderson, James M.; and Dean, William C., 4,574,937, Cl. 198-321.000.
Berger, Gerald P., 4,574,964, Cl. 212-149.000.
Goode, Frederick R., 4,574,904, Cl. 180-133.000.
Gunkel, Louis T., 4,575,563, Cl. 568-14.000.
Rosenhouse, Harvey; and Dore, Jeffrey C., 4,575,403, Cl. 202-153.000.

Fogarty, A. Edward; and Fogarty, Bonnie R. Pool game set. 4,575,078, Cl. 273-9.000.

Fogarty, Bonnie R.: *See—*
Fogarty, A. Edward; and Fogarty, Bonnie R., 4,575,078, Cl. 273-9.000.

Fogarty, Thomas J.: *See—*
Chin, Albert K., 4,574,781, Cl. 128-1.00R.

Fogle, Richard M.: *See—*
Schoeneberger, Carl F.; Bundens, Allan B.; Blake, Richard A.; and Fogle, Richard M., 4,575,755, Cl. 358-120.000.

Foldhazy, Zoltan; and Hellekant, Otto, to Alfa-Laval Separation AB. Bearing device. 4,575,263, Cl. 384-126.000.

Fontaine, Lucien P.; and Leonaggeo, Angelo, Jr., to Swim-Mill, Inc. Horse exercising device. 4,574,739, Cl. 119-29.000.

Ford Motor Company: *See—*
Camp, John W. A., 4,575,114, Cl. 280-673.000.
Coesfeld, Manfred; and Helbert, Friedrich, 4,575,178, Cl. 339-224.000.
Jones, Colin; and Clemens, William J., 4,574,760, Cl. 123-472.000.
Robertson, Richard E., 4,575,057, Cl. 267-47.000.
Varin, James D.; Fromm, H. Vincent; and McClelland, Henry W., 4,574,922, Cl. 188-73.350.

Forehand, Sherman D.: *See—*
Giblin, John P.; Semancik, Andrew E.; and Forehand, Sherman D., 4,575,123, Cl. 281-48.000.

Forestal, Robert J.; and Meek, John R. Attachable household service tray device for furniture. 4,575,149, Cl. 297-194.000.

Forgione, Joseph. High temperature alarm system with fusible link. 4,575,715, Cl. 340-590.000.

Forkel, Michael: *See—*
Volk, Hans-Joachim; Becker, Herbert; and Forkel, Michael, 4,575,120, Cl. 280-804.000.

Forster, Helmut. Gravity relief apparatus. 4,574,789, Cl. 128-75.000.

Foseco International Limited: *See—*
Trinkl, Gerd; and Schopp, Helmut, 4,574,869, Cl. 164-360.000.

Fouin, Jean: *See—*
Galais, Michel; Sardain, Christian; Fouin, Jean; Arnaudeau, Marcel; and Morin, Pierre, 4,575,315, Cl. 417-365.000.

Foxon, Charles T.: *See—*
Dobson, Peter J.; Foxon, Charles T.; and Neave, James H., 4,575,462, Cl. 427-9.000.

Fraas, Lewis M., to Chevron Research Company. Ternary III-V multicolor solar cells containing a quaternary window layer and a quaternary transition layer. 4,575,577, Cl. 136-249.000.

Frank, David J., to International Business Machines Corporation. Cryogenic transistor with a superconducting base and a semiconductor-isolated collector. 4,575,741, Cl. 357-6.000.

Frank, Dieter; Metcalfe, Lincoln D.; and Park, John Y. G., to Akzona Incorporated. Process for the separation of amides from nitriles. 4,575,434, Cl. 558-435.000.

Franklin Equipment Company: *See—*
Roberson, William C., 4,575,111, Cl. 280-477.000.

Franzen, Gustav, to Palitex Project Company-GmbH. Apparatus for untwisting a multi-ply yarn over a predetermined portion thereof. 4,574,570, Cl. 57-1.0UN.

Franzen, Gustav, to Palitex Project-Company GmbH. Two-for-one twisting spindle. 4,574,575, Cl. 57-80.000.

Freeman, Gerald C., to Pitney Bowes Inc. Scale having an overload protection means for attaching a platform to a load transducer and for protecting against excessive torsion loads. 4,574,898, Cl. 177-154.000.

French, Terry M., to Tamaqua Cable Products Corporation. Apparatus for calibrating extruded material. 4,575,326, Cl. 425-71.000.

Fried, Joel R.: *See—*
Brooks, Albert A.; Fried, Joel R.; Henis, Jay M. S.; Zampini, Anthony; and Raucher, Daniel, 4,575,385, Cl. 55-158.000.

Friedman, Robert B.; West, Isaac R.; and Furcsik, Susan L., to American Maize-Products Company. Emulsifying and humectant agent, method of manufacture and baked products containing same. 4,575,461, Cl. 426-549.000.

Friedrich, Claus. Measuring device for the continuous weight determination of material streams. 4,574,896, Cl. 177-16.000.

Frigeni, Viviana: *See—*
Della Bella, Davide; Frigeni, Viviana; and Carenzi, Angelo, 4,575,506, Cl. 514-282.000.

Frischmann, Albert: *See—*
Mermi, Kurt; Sternisa, Danilo; and Frischmann, Albert, 4,575,294, Cl. 411-30.000.

Fritz, Otmar, to Siemens Aktiengesellschaft. Device for protecting film-mounted integrated circuits against destruction due to electrostatic charges. 4,575,747, Cl. 357-70.000.

Froese, Harold L. Locking bars for vacuum cleaner. 4,574,421, Cl. 15-339.000.

Fromm, H. Vincent: *See—*
Varin, James D.; Fromm, H. Vincent; and McClelland, Henry W., 4,574,922, Cl. 188-73.350.

Fruit, Larry J.: *See—*
Rice, Robert P., Jr.; Fruit, Larry J.; and Trout, Gary B., 4,575,864, Cl. 375-116.000.

Fry Reglet Corporation: *See—*
Tupman, Thomas G., 4,574,548, Cl. 52-255.000.

Fry, William E.: *See—*
Young, Harold W., Jr.; Ainsworth, Oliver C., Jr.; Fry, William E.; and Neil, Lawrence E., 4,575,494, Cl. 502-243.000.

Fryer, Thomas B.: *See—*
Dymond, Anthony M.; and Fryer, Thomas B., 4,575,773, Cl. 360-32.000.

Fuji Electric Company Ltd.: *See—*
Yamamoto, Hitoshi, 4,574,785, Cl. 128-24.00R.

Fuji Jiko Kabushiki Kaisha: *See—*
Nitta, Takeshi; and Iwasaki, Hiroshi, 4,575,702, Cl. 335-286.000.

Fuji Photo Film Co., Ltd.: *See—*
Arakawa, Satoshi; and Matsuda, Terumi, 4,575,635, Cl. 250-484.100.
Ichikawa, Koji, 4,575,018, Cl. 242-66.000.
Seto, Yasuhiro, 4,575,231, Cl. 355-76.000.
Shimizu, Shigehisa, 4,574,563, Cl. 53-430.000.
Takahashi, Osamu; and Makino, Katsumi, 4,575,481, Cl. 430-214.000.

Fuji Photo Optical Co., Ltd.: *See—*
Kazuhiro, Sakamoto; Susumu, Oshiro; and Masaharu, Morioka, 4,574,783, Cl. 128-4.000.

Fuji Seiki Kabushiki Kaisha: *See—*
Ito, Kenji; and Watanabe, Masanori, 4,574,423, Cl. 16-85.000.

Fuji Seiki Machine Works, Ltd.: *See—*
Matsumoto, Katsuaki; and Taguchi, Takao, 4,575,396, Cl. 134-7.000.

Fujimaki, Tatsuo: *See—*
Oshima, Noboru; Shimizu, Isamu; Takeuchi, Mikio; Fujimaki, Tatsuo; and Yamaguchi, Shinsuke, 4,575,534, Cl. 525-99.000.

Fujimoto, Akira; Yamashita, Shigeaki; Yasuda, Hirohiko; and Yama, Yoshikazu, to Omron Tateisi Electronics, Co. Semiconductor laser. 4,575,852, Cl. 372-46.000.

Fujisawa Pharmaceutical Co., Ltd.: *See—*
Ueda, Yoshio; Shimojo, Fumio; and Yoshida, Kiyoshige, 4,575,548, Cl. 536-46.000.

Fujita, Kinya. Orthodontic appliance. 4,575,337, Cl. 433-8.000.

Fujita, Kunihiro; Tanaka, Hideaki; and Maebara, Toshiaki, to Mitsubishi Belting Ltd. Method of manufacture of long cogged V-belts. 4,575,445, Cl. 264-291.000.

Fujitani, Yugo: *See—*
Minamida, Kazukiyo; and Fujitani, Yugo, 4,574,897, Cl. 177-25.000.

Fujitsu Limited: *See—*
Miwa, Hirohide; and Reid, John M., 4,575,799, Cl. 364-414.000.
Ogata, Yusuke; Nagahama, Yasushi; Matsuura, Yoshiaki; Aoki, Kenzou; and Harada, Hidemi, 4,575,839, Cl. 370-13.000.
Tanaka, Miki; and Ooami, Kazuo, 4,575,824, Cl. 365-189.000.
Terui, Kazuo; Sugiura, Rikio; and Sugawara, Takehisa, 4,575,748, Cl. 357-74.000.

Fujiwara, Kazuyuki: *See—*
Nakahara, Teiji; Shibao, Toshinori; and Fujiwara, Kazuyuki, 4,574,576, Cl. 57-58.860.

Fujiyama, Seiichi; Minakami, Hiroyuki; Tayama, Kenji; and Masai, Hiroshi, to Nakano Vinegar Co., Ltd. Acidic heteropolysaccharide AM-2. 4,575,551, Cl. 536-123.000.

Fukatsu, Hiroshi: *See—*
Tsuge, Eiji; Yanagisawa, Taminori; Yamaguchi, Takaharu; and Fukatsu, Hiroshi, 4,574,941, Cl. 198-468.200.

Fukuda, Masao, to Kabushiki Kaisha Ishida Koki Seisakusho. Apparatus and method for controlling supply of articles. 4,574,849, Cl. 141-1.000.

Fukuda, Masuo, to Sankei Giken Kogyo Kabushiki Kaisha. Muffler with spark arresting function. 4,574,913, Cl. 181-231.000.

Fukudome, Koki: *See—*
Nakajima, Shiro; and Fukudome, Koki, 4,574,923, Cl. 188-73.450.

Fukui, Tetsu: *See—*
Miki, Hiroyuki; Kinoshita, Mikio; and Fukui, Tetsu, 4,574,910, Cl. 180-249.000.

Fukumura, Keiji: *See—*
Koe, Kiyohiko; Yamaguchi, Jun; Kubo, Noboru; Matsumoto, Hiroshi; Sugimoto, Mamoru; and Fukumura, Keiji, 4,574,950, Cl. 206-334.000.

Fullenkamp, Eugene H.; and Lohrey, Cecil R., to Hill-Rom Company, Inc. Medical service column and mounting bracket. 4,574,963, Cl. 211-190.000.

Fung, Tim C.: *See—*
Sadvary, John W.; and Fung, Tim C., 4,575,025, Cl. 244-3.270.

Furcsik, Susan L.: *See—*
Friedman, Robert B.; West, Isaac R.; and Furcsik, Susan L., 4,575,461, Cl. 426-549.000.

Furukawa, Akihiro, to NEC Corporation. Decoder for a frame or field skipped TV signal with a representative movement vector used for individual vectors. 4,575,756, Cl. 358-136.000.

Furuse, Mitsuru, to Taka-Ai Co., Ltd. Wheel locking device for automobile. 4,574,602, Cl. 70-232.000.

Fuss, Gary E.; and Spector, George. Ear muff hearing aid. 4,574,912, Cl. 181-129.000.

G.D. Societa per Azioni: *See—*
Mattei, Riccardo; and Neri, Armando, 4,574,646, Cl. 73-863.920.

Gaber Italia S.p.A.: *See—*
Olivieri, Icaro, 4,574,499, Cl. 36-117.000.

Gabinete International Consulting, S.A.: *See—*
Ysern de Arce, Vicente; and Crosti Soldatti, Giovanni, 4,575,427, Cl. 210-751.000.

Gabriel Electronics Incorporated: *See—*
Farnum, Francis H., III, 4,574,457, Cl. 29-469.500.

Gabrysch, Leslie P., to Hercules Incorporated. Self compensating ducted rocket motor fuel nozzle and method for regulating fuel generation. 4,574,586, Cl. 60-254.000.

Gadomski, Karen L.: *See—*
Lutzen, William C.; Roszak, Gerald A.; and Gadomski, Karen L., 4,574,775, Cl. 126-359.000.

Gahlau, Heinemann; Hoffmann, Manfred; and Wittenmayer, Klaus, to Dr. Alois Stankiewicz GmbH. Sound barriers. 4,574,915, Cl. 181-290.000.

Gahr, Taylor O.: *See—*
Morel, Charles P.; and Gahr, Taylor O., 4,575,793, Cl. 364-200.000.

Galais, Michel; Sardain, Christian; Fouin, Jean; Arnaudeau, Marcel; and Morin, Pierre, to Moteurs Leroy-Somer. Device for providing fluid-tightness of a submersible motor and a motor incorporating said device. 4,575,315, Cl. 417-365.000.

Gallaher Limited: *See—*
Pinkerton, William; and Hawthorne, Sherman J. A., 4,574,820, Cl. 131-339.000.

Gallup, Cindy: *See—*
Sixto, N. Chung; and Gallup, Cindy, 4,575,485, Cl. 435-7.000.
Gambetti, Mario. Method and machine for packing continuously moving articles with a strip of heat-shrinkable material. 4,574,565, Cl. 53-442.000.
Ganti, Sastry K.: *See—*
Maas, Curtis N.; and Ganti, Sastry K., 4,575,298, Cl. 414-116.000.
GAO Gesellschaft fur Automation und Organisation mbH: *See—*
Haberstroh, Markus; and Schaefer, Paul, 4,574,557, Cl. 53-118.000.
Garbuzov, Oleg. Container for fragile articles. 4,574,953, Cl. 206-522.000.
Gardiner, William H.; and Luckhurst, Geoffrey A., to Schlumberger Electronics (U.K.) Limited. RMS converters. 4,575,649, Cl. 307-492.000.
Gardner, Stephen M.: *See—*
Walsh, Peter M.; and Gardner, Stephen M., 4,575,802, Cl. 364-513.000.
Garlock Bearings, Inc.: *See—*
Jacobson, Charles B., 4,575,429, Cl. 252-12.000.
Garner, Donald R. Fishing bobber. 4,574,515, Cl. 43-43.110.
Gartner, Karl, to Yoshida Kogyo K. K. Apparatus for connecting upper and lower units in a unit type curtain wall. 4,574,546, Cl. 52-235.000.
Gaspar, Laszlo : *See—*
Alapi, Jozsef; Baldaszti, Laszlo ; Gaspar, Laszlo ; Herczegh, Marton; Javorka, Istvan; Kisberk, Ferenc; Klauser, Janos; Makk, Antal; and Pallos, Istvan, 4,575,460, Cl. 426-72.000.
Gaster, Eugene. Space combat game. 4,575,095, Cl. 273-253.000.
Gaudiana, Russell A.: *See—*
Rogers, Howard G.; Gaudiana, Russell A.; Minns, Richard A.; and Sinta, Roger F., 4,575,547, Cl. 528-191.000.
Gavin, James T., to Cincinnati Milacron Inc. Laser shielding device. 4,575,610, Cl. 219-121.00L.
Gazzara, Matthew R. Bow trigger mechanism. 4,574,767, Cl. 124-35.00A.
Gazzero, Robert: *See—*
Christian, David E.; McGraw, C. Eugene; and Gazzero, Robert, 4,575,201, Cl. 350-612.000.
Gebhardt, James L.: *See—*
Lackey, Robert W.; and Gebhardt, James L., 4,574,709, Cl. 108-111.000.
Geiger, James E. Sprinkler system retrofit mechanism and method. 4,575,004, Cl. 239-69.000.
Genequand, Pierre: *See—*
Vermot-Gaud, Jacques; and Genequand, Pierre, 4,575,737, Cl. 346-140.00R.
General Automotive Specialty Company, Inc.: *See—*
Levine, Mark; Hanes, Robert H.; Rudder, Joel; and Ditlya, David, 4,575,782, Cl. 362-61.000.
General Binding Corporation: *See—*
Vercillo, Alfredo J.; and Scharer, Roger M., 4,574,669, Cl. 83-399.000.
General Electric Company: *See—*
Bair, Eugene C., 4,574,460, Cl. 29-559.000.
Beach, John G., 4,575,654, Cl. 310-318.000.
Bertossa, Donald C., 4,575,611, Cl. 219-137.00R.
Chun, Myung K., 4,575,849, Cl. 372-9.000.
Chung, Albert S.; and Mazzocco, Carl F., 4,575,679, Cl. 324-427.000.
Hillman, Charles E., 4,574,682, Cl. 89-12.000.
Kowalczyk, Thomas A., 4,574,931, Cl. 192-106.00F.
Larson, Richard I.; and Smith, William E., 4,575,436, Cl. 264-0.500.
Martin, Hugh H., 4,575,640, Cl. 307-23.000.
Nash, Dudley O., 4,575,099, Cl. 277-12.000.
Rauch, Harry W., Sr., 4,575,493, Cl. 501-10.000.
Smashey, Russell W.; and Stoffer, Lewis J., 4,574,451, Cl. 29-423.000.
Tomlinson, Martin, 4,575,709, Cl. 340-347.0DD.
Vogelsong, Thomas L., 4,575,866, Cl. 377-62.000.
General Foods Corporation: *See—*
Halligan, John F.; Leone, Violet R.; and Kostanecki, Andrew T., 4,574,987, Cl. 222-107.000.
General Motors Corporation: *See—*
Chapin, Melodee A.; Nestor, Charles R.; and Cross, William E., 4,575,173, Cl. 339-97.00R.
Conn, Francis E., 4,574,585, Cl. 60-39.290.
Dodge, Roger C., 4,575,807, Cl. 364-558.000.
Fannin, Wayne V.; and Pees, James M., 4,574,450, Cl. 29-402.080.
Karmel, Amir, 4,575,367, Cl. 474-106.000.
LeBlanc, Richard S., 4,574,683, Cl. 89-33.040.
Lehnhoff, Richard N., 4,575,662, Cl. 318-282.000.
North, Lawrence A., 4,574,911, Cl. 180-270.000.
Welker, Edward; and Rockwell, Lynn A., 4,575,593, Cl. 200-19.0DR.
General Research, Inc.: *See—*
Black, James A.; and Munson, Gregory J., 4,575,234, Cl. 355-91.000.
General Research of Electronics, Inc.: *See—*
Imazeki, Kazuyoshi; Tanaka, Toshiyuki; and Hayashibara, Fumio, 4,575,707, Cl. 340-286.00R.
General Signal Corporation: *See—*
Porzky, Ludwig, 4,575,619, Cl. 219-542.000.
Genth, Hermann: *See—*
Kruger, Bernd-Wieland; Priesnitz, Uwe; Jager, Gerhard; Paulus, Wilfried; and Genth, Hermann, 4,575,517, Cl. 514-715.000.
Gentile, Anthony: *See—*
Fink, Cameron; Schram, Robert W.; and Gentile, Anthony, 4,574,693, Cl. 101-3.0SP.
Gentry, Ernest B., to Otis Engineering Corporation. Lubricator section. 4,575,044, Cl. 251-145.000.
Gentry, Gary L. Surfacing method and apparatus. 4,574,554, Cl. 52-741.000.
Geo-Systems, Inc.: *See—*
Rawlings, John P.; and Partin, James R., 4,574,875, Cl. 165-45.000.
George, Richard D. Container lift apparatus for a garbage truck. 4,575,300, Cl. 414-406.000.
Georges, Jawdat, to MECRON medizinische Produkte GmbH. Compression nail assembly. 4,574,795, Cl. 128-92.0BC.
Gergele, Jean, to Compagnie Generale des Etablissements Michelin. Jack for crown or disk brakes. 4,574,921, Cl. 188-71.800.
Gerriet, Jacques, to Arianex Systemse, Societe Anonyme francaise. Binder for continuous or separated computer printout sheets. 4,575,273, Cl. 402-75.000.
Giannuzzi, Louis N. Load-bearing plate. 4,574,551, Cl. 52-512.000.
Gibbs, Dale S.; Benson, Jack H.; and Fernandez, Reet T., to Dow Chemical Company, The. Dispersible vinylidene chloride polymer powders as additives for polymers. 4,575,529, Cl. 524-507.000.
Giblin, John P.; Semancik, Andrew E.; and Forehand, Sherman D., to St. Regis Corporation. Report cover. 4,575,123, Cl. 281-48.000.
Giblin, Susan B., to Lever Brothers Company. Convertible shipping case. 4,574,945, Cl. 206-44.00R.
Giesecke, Henning: *See—*
Sirinyan, Kirkor; Merten, Rudolf; Giesecke, Henning; and Wolf, Gerhard D., 4,575,467, Cl. 427-304.000.
Gilbert Engineering Company Inc.: *See—*
Hayward, Robert D., 4,575,274, Cl. 403-2.000.
Gill, Michael J. Modular power interface system for providing power to cargo containers. 4,575,595, Cl. 200-50.00B.
Gillings, Geoffrey W.: *See—*
Hensel, Paul C.; and Gillings, Geoffrey W., 4,575,182, Cl. 350-96.210.
Gilovich, Paul A.: *See—*
Allwine, Elmer C., Jr.; and Gilovich, Paul A., 4,575,022, Cl. 242-192.000.
Giori, Gualtiero, to De La Rue Giori S.A. Rotary press for the simultaneous multicolor printing on both sides of a web or sheet. 4,574,696, Cl. 101-152.000.
Giraudi, Walter, to Alfa Romeo Auto S.p.A. Electrically operated injector for an I.C. engine. 4,575,009, Cl. 239-585.000.
Girguis, Sobhy L. Constant velocity joint. 4,575,362, Cl. 464-145.000.
Glasstech, Inc.: *See—*
McMaster, Harold A., 4,575,390, Cl. 65-273.000.
Gleason Works, The: *See—*
Blakesley, Richard C., 4,575,285, Cl. 407-115.000.
Blakesley, Richard C., 4,575,286, Cl. 407-22.000.
Glick, Alvin L.: *See—*
Katz, Joseph L.; Grund, Edward C.; Cope, Richard P.; and Glick, Alvin L., 4,575,842, Cl. 370-16.000.
Global Equipment Company, Division of Continental Dynamics Corp.: *See—*
Leeds, Richard; and Roberts, Arthur, 4,575,174, Cl. 339-103.00M.
Gogue, George P., to Synektron Corporation. Permanent magnet motor having high starting torque and narrowly-defined detent zones. 4,575,652, Cl. 310-49.00R.
Gold, Kenneth S. Battery condition indicator and on-off relay circuit. 4,575,680, Cl. 324-433.000.
Goldie, Fritzi, administrator: *See—*
Goldie, Harry, deceased, 4,575,692, Cl. 333-13.000.
Goldie, Harry, deceased (by Goldie, Fritzi, administrator), to United States of America, Air Force. Microwave discharge apparatus and method with dual function priming resonator. 4,575,692, Cl. 333-13.000.
Goldman, Gottfried; and Rudolph, Volker, to International Business Machines Corporation. Transistor circuit for reducing current after ignition in a metal paper printer. 4,575,740, Cl. 346-163.000.
Goldstein, Albert: *See—*
Podell, Howard I.; Goldstein, Albert; Blackley, David C.; James, Michael H.; Bratby, David M.; and Duck, Roger, 4,575,476, Cl. 428-494.000.
Golner, Jerold J.: *See—*
Strout, Russell B.; and Golner, Jerold J., 4,575,020, Cl. 242-96.000.
Gonzalez, Cindy L. Training doll. 4,575,351, Cl. 446-371.000.
Goode, Frederick R., to FMC Corporation. Auxilliary steering system. 4,574,904, Cl. 180-133.000.
Goodyear Tire & Rubber Company, The: *See—*
Beeghly, Richard M.; Cundiff, William P.; Legas, William H.; Hurst, Lawrence B., Jr.; Crump, Robert L.; and Boore, Robert E., 4,574,857, Cl. 152-209.00B.
Graas, Maurice, 4,574,856, Cl. 152-209.00R.
Smith, William T., 4,574,859, Cl. 152-410.000.
Goorhouse, Donald E.: *See—*
Coberley, Lavan E., 4,574,765, Cl. 123-585.000.
Gordon, John H. Pipe transporting machine. 4,574,942, Cl. 198-773.000.
Gordon, Robert L.; and Bodary, Michael G., to International Paper Company. Food wrapper package. 4,575,000, Cl. 229-87.00F.
Gossmann, Willi: *See—*
Brandenstein, Manfred; Gossmann, Willi; Pape, Gebhard; Huttner, Klaus; and Ludwig, Wilfried, 4,574,448, Cl. 29-283.500.
Gotcher, Ricky G., to Weed Instrument Co., Inc. Temperature probe. 4,575,705, Cl. 338-28.000.

Goto, Hideo; and Yoshida, Naoki, to Yamato Scientific Co., Ltd. Pure water tank assembly for water distillation equipment. 4,575,404, Cl. 202-202.000.
Goto, Kuniaki: *See—*
Kataoka, Hideaki; Yamada, Toshiro; Goto, Kuniaki; and Tsuji, Jiro, 4,575,570, Cl. 568-346.000.
Gottlieb, Milton; and Conroy, John J., to Westinghouse Electric Corp. Method and apparatus for the spectral range enlargement of acousto-optic tunable filters. 4,575,186, Cl. 350-358.000.
Gottling, Helmut, to WABCO Westinghouse Steuerungstechnik GmbH. Rotary shaft speed limiting arrangement. 4,574,924, Cl. 188-187.000.
Gould, Inc.: *See—*
Aldrich, Wilbert H.; Rich, Alan; and Picker, Dennis, 4,575,806, Cl. 364-557.000.
Moore, Chester A., Jr., 4,575,687, Cl. 330-261.000.
Gounder, Raj N., to RCA Corporation. Antenna construction including two superimposed polarized parabolic reflectors. 4,575,726, Cl. 343-756.000.
Goure, William F., to Monsanto Company. Process for preparing substituted benzotrichlorides. 4,575,565, Cl. 568-655.000.
Gowda, Hanumaiah L.: *See—*
Raj, Kuldip; and Gowda, Hanumaiah L., 4,575,102, Cl. 277-80.000.
Graas, Maurice, to Goodyear Tire & Rubber Company, The. Tread for a pneumatic tire. 4,574,856, Cl. 152-209.00R.
Graffin, A. Jean-Jacques, to Serac S.A. Jet divider device for a filling head. 4,574,853, Cl. 141-286.000.
Grain, Clark F., to Arthur D. Little, Inc. Method for producing thin films of rare earth chalcogenides. 4,575,464, Cl. 427-255.000.
Gramann, Hugh D. Pizza cutter. 4,574,479, Cl. 30-142.000.
Grambo, Lawrence C.: *See—*
Dragon, Robert L., Jr.; Grambo, Lawrence C.; and Walls, John E., 4,575,409, Cl. 204-237.000.
Grant, Michael J. Method and apparatus for mounting acoustic fabric. 4,574,538, Cl. 52-144.000.
Gratzer, Louis B., to Boeing Company, The. Laminar flow control airfoil. 4,575,030, Cl. 244-209.000.
Grayek, Rose M. Method of forming a knockdown handbag and mat. 4,575,369, Cl. 493-226.000.
Greebe, Frans: *See—*
Aggour, Mohamed A.; and Greebe, Frans, 4,574,837, Cl. 137-561.00A.
Greed, Robert B., to Marconi Company Ltd., The. Microwave switch. 4,575,701, Cl. 333-258.000.
Green, Kenneth A.: *See—*
Fike, Louis T.; and Green, Kenneth A., 4,575,438, Cl. 264-36.000.
Green, Peter J., to Service Machine Company. Control system for booster type belt conveyor. 4,574,943, Cl. 198-810.000.
Greentree, James M.: *See—*
Lee, Jong B., 4,574,475, Cl. 30-28.000.
Gregory, Frank A. Tray device for contact lenses. 4,574,944, Cl. 206-5.100.
Greivenkamp, John E., Jr., to Eastman Kodak Company. Optical spatial frequency filter. 4,575,193, Cl. 350-401.000.
Grell, Wolfgang: *See—*
Sauter, Robert; Griss, Gerhart, deceased; Grell, Wolfgang; Hurnaus, Rudolf; Kobinger, Walter; and Pichler, Ludwig, 4,575,504, Cl. 514-215.000.
Greskovics, Paul: *See—*
Alanis, J. Jesus; and Greskovics, Paul, 4,575,423, Cl. 210-169.000.
GRETAG Aktiengesellschaft: *See—*
Wahli, Robert, 4,574,692, Cl. 101-2.000.
Greving, Gerhard: *See—*
Theobald, Michael; and Greving, Gerhard, 4,575,728, Cl. 343-813.000.
GRH Electronics, Inc.: *See—*
Hoberman, Kenneth H.; and Kirwan, Kim J., 4,575,801, Cl. 364-483.000.
Grieger, Dieter, to Dr. Ing. Rudolf Hell GmbH. Method and device for measuring the density of color layers of printing inks that are still wet. 4,575,249, Cl. 356-369.000.
Griepentrog, Dal F.; and Lagoni, William A., to RCA Corporation. Component video interconnection apparatus. 4,575,759, Cl. 358-181.000.
Griesinger, Rolf: *See—*
Stahlecker, Fritz; Griesinger, Rolf; and Fetzer, Gerhard, 4,574,583, Cl. 57-408.000.
Griffin, Neil C., to Reliance Electric Company. Compensated multi-load cell scale. 4,574,899, Cl. 177-211.000.
Griffiths, Edward E. Selectively engageable linear power actuator. 4,574,654, Cl. 74-625.000.
Griffiths, William A.: *See—*
Bates, Kenneth W.; and Griffiths, William A., 4,575,393, Cl. 75-53.000.
Grigar, Larry L.; and Miller, Carl B., to Halliburton Company. Tubing conveyed perforating gun electrical detonator. 4,574,892, Cl. 175-4.510.
Grima, Jean-Claude: *See—*
David, Guy A. J.; Grima, Jean-Claude; Pando, Bernard; Bretez, Gabriel C. O.; and Lommer, Daniel J. F., 4,575,843, Cl. 370-16.000.
Grimland, Charles J.; and Cheatham, Richard P., to Associates of Dallas. Pneumatically amplified conservation valve. 4,575,042, Cl. 251-46.000.
Grinolds, Hugh R.: *See—*
Marcoux, Paul J.; Murray, Eileen M.; and Grinolds, Hugh R., 4,575,402, Cl. 156-643.000.
Griss, Elisabeth, executrix: *See—*
Sauter, Robert; Griss, Gerhart, deceased; Grell, Wolfgang; Hurnaus, Rudolf; Kobinger, Walter; and Pichler, Ludwig, 4,575,504, Cl. 514-215.000.
Griss, Gerhart, deceased: *See—*
Sauter, Robert; Griss, Gerhart, deceased; Grell, Wolfgang; Hurnaus, Rudolf; Kobinger, Walter; and Pichler, Ludwig, 4,575,504, Cl. 514-215.000.
Grossart, Peter S. K., to V L Churchill Limited. Wheel alignment gauge. 4,574,489, Cl. 33-203.180.
Grosso, Donald S.; and Helm, Charles W., to Teleco Oilfield Services Inc. Insulating and electrode structure for a drill string. 4,575,681, Cl. 324-347.000.
Groth, Hugh F.; and Basile, Peter A., to Regina Corporation. Mixing control for water and cleaning fluid. 4,575,007, Cl. 239-310.000.
Grubbs, James B. Special project workbook. 4,575,126, Cl. 283-38.000.
Grund, Edward C.: *See—*
Katz, Joseph L.; Grund, Edward C.; Cope, Richard P.; and Glick, Alvin L., 4,575,842, Cl. 370-16.000.
Gruner, Ronald H.; Clancy, Gerald F.; Mundie, Craig J.; Wallach, Steven J.; Schleimer, Stephen I.; and Bratt, Richard G., to Data General Corporation. Digital data processing system incorporating object-based addressing and capable of executing instructions belonging to several instruction sets. 4,575,797, Cl. 364-200.000.
Grunert, Wolfgang; and Huber, Johann, to Knorr-Bremse GmbH. Brake control valve device for an air pressure brake system of a railway vehicle. 4,575,158, Cl. 303-57.000.
GTE Communication Systems Corporation: *See—*
Hagner, George F.; and Ravindhran, Kothandaraman, 4,574,466, Cl. 29-571.000.
Stepan, William E., 4,575,165, Cl. 339-17.00M.
GTE Laboratories Incorporated: *See—*
Palilla, Frank C., 4,575,440, Cl. 264-61.000.
GTE Products Corporation: *See—*
Anderson, John W., Jr.; and Roche, William J., 4,575,656, Cl. 313-492.000.
Bouchard, Andre C.; Maya, Jakob; Loughridge, Fred; Andress, Charles W.; and Wierzbicki, Julian, 4,575,344, Cl. 445-26.000.
Rebentisch, Hugo E., 4,575,295, Cl. 411-85.000.
Guandalini, Claudio; and Massari, Fausto. Device and process for making unclad concrete piles. 4,575,283, Cl. 405-240.000.
Gubau, Jose , to Ing. C. Olivetti & C., S.p.A. Portable electronic typewriter. 4,575,269, Cl. 400-322.000.
Gudheim, A. Robert: *See—*
Sommer, Manfred; and Gudheim, A. Robert, 4,575,324, Cl. 418-217.000.
Gundersen, Ivan, to Iolab Corporation. Intraocular lens and method of manufacture using ultrasonic bonding. 4,575,372, Cl. 623-6.000.
Gundrum, Edwin; and Reinelt, Karlheinz, to Rheinmetall GmbH. Gun barrel weapon with liquid propellant charge. 4,574,681, Cl. 89-7.000.
Gunkel, Louis T., to FMC Corporation. Liquid mixtures of trialkylphosphine oxides. 4,575,563, Cl. 568-14.000.
Gunther, Wolfgang H. H.; and Mee, John D., to Eastman Kodak Company. Photographically useful chalcogenazolium polymethine dyes. 4,575,483, Cl. 430-588.000.
Gupta, Suresh C.: *See—*
Lee, Robert H.; and Gupta, Suresh C., 4,575,671, Cl. 322-16.000.
Gurley, F. Stevenson, to Rogers Corporation. Solderless connector. 4,575,170, Cl. 339-59.00M.
Gurley, Thomas D.: *See—*
Naimpally, Saiprasad V.; and Gurley, Thomas D., 4,575,650, Cl. 307-520.000.
Gutekunst Kochengerate GmbH: *See—*
Gutekunst, Peter, 4,574,771, Cl. 126-41.00R.
Gutekunst, Peter, to Gutekunst Kochengerate GmbH. Cooking grill. 4,574,771, Cl. 126-41.00R.
Guzzoni, Gianfranco, to Mesdan S.p.A. Pneumatic splicer for textile yarns. 4,574,573, Cl. 57-22.000.
Habegger, Harold. Device for driving a bar with digital control unit in an automatic lathe. 4,574,666, Cl. 82-2.500.
Haberle, Egon; and Schwarz, Bernd, to C. & E. Fein GmbH & Co. Protective-hood fastening for portable angled grinders. 4,574,532, Cl. 51-268.000.
Haberstroh, Markus; and Schaefer, Paul, to GAO Gesellschaft fur Automation und Organisation mbH. Apparatus for storing sheets. 4,574,557, Cl. 53-118.000.
Habrard, Alain G. J.: *See—*
Castellant, Jean-Pierre J. E.; Habrard, Alain G. J.; and Pidebois, Jacques E., 4,574,619, Cl. 73-40.700.
Hackett, Edward J., to Plummer, Walter Allen, III. Dispenser for tape supported labels. 4,574,979, Cl. 221-73.000.
Hadley, Donald, Jr. Nutcracker. 4,574,691, Cl. 99-583.000.
Hagner, George F.; and Ravindhran, Kothandaraman, to GTE Communication Systems Corporation. High quality gate oxides for VLSI devices. 4,574,466, Cl. 29-571.000.
Hahn, Paul L. Gaff. 4,574,512, Cl. 43-5.000.
Hahn, Roger A.: *See—*
Moen, Bruce A.; and Hahn, Roger A., 4,575,443, Cl. 264-161.000.
Haigh Chadwick Limited: *See—*
Brunnschweiler, David, 4,574,433, Cl. 19-105.000.
Halberschmidt, Friedrich; Audi, Josef; and Schubert, Gerhard, to Saint-Gobain Vitrage. Device for bending glass plates. 4,575,389, Cl. 65-273.000.

Halfacre, Mark A.; Pan, David S.; and Huie, Wing K., to Solid State Scientific, Inc. N- well CMOS process on a P substrate with double field guard rings and a PMOS buried channel. 4,574,467, Cl. 29-571.000.
Hall, Jeffrey M.: *See—*
Sheufelt, Edward L.; Kreitlow, David B.; and Hall, Jeffrey M., 4,575,738, Cl. 346-140.00R.
Hall, Roger L.: *See—*
Henneberg, Helmut H.; Dillon, Richard R.; Romano, Domenic R.; and Hall, Roger L., 4,575,033, Cl. 248-185.000.
Hall, Steven E.; Haslanger, Martin F.; and Varma, Ravi K., to E. R. Squibb & Sons, Inc. 7-Oxabicycloheptane substituted oxa prostaglandin analogs and their anti-thrombotic compositions and methods. 4,575,512, Cl. 514-469.000.
Hallberg, John E., to Petrosystems International, Inc. Dual fuel carburetion system and method. 4,574,763, Cl. 123-527.000.
Halliburton Company: *See—*
Grigar, Larry L.; and Miller, Carl B., 4,574,892, Cl. 175-4.510.
Handke, Wayne A., 4,574,880, Cl. 166-75.100.
Rao, Prabhakar P.; Surjaatmadja, Jim B.; and Penn, Jack C., 4,575,313, Cl. 417-26.000.
Szarka, David D., 4,574,882, Cl. 166-75.100.
Young, Allen R., 4,575,260, Cl. 374-136.000.
Halligan, John F.; Leone, Violet R.; and Kostanecki, Andrew T., to General Foods Corporation. Dispenser package for soft-frozen comestibles. 4,574,987, Cl. 222-107.000.
Hallstrom, Helge, to Northern Food-Line Machines K.S. Band-saw having adjustable guide means for the band. 4,574,675, Cl. 83-804.000.
Halverson, Henry J., to Olin Corporation. High velocity ammunition sabot. 4,574,703, Cl. 102-520.000.
Hamamoto, Toru: *See—*
Kodama, Hisashi; Sato, Katsujiro; Tamura, Tetsuomi; Hamamoto, Toru; and Yamada, Kazuharu, 4,574,750, Cl. 123-90.580.
Hamano, Shoichi: *See—*
Igarashi, Yoshiaki; and Hamano, Shoichi, 4,575,171, Cl. 339-74.00R.
Hamers, Leo J. M., to U.S. Philips Corporation. Method of liquefying a gas and liquefier for carrying out the method. 4,575,386, Cl. 62-11.000.
Hammar, Algot. Stand to hold a book or the like in an oblique position. 4,575,037, Cl. 248-441.100.
Hammell, James M.: *See—*
Callahan, James J.; and Hammell, James M., 4,574,920, Cl. 184-39.100.
Hammond, Charles W.: *See—*
Bower, John R.; and Hammond, Charles W., 4,574,615, Cl. 73-24.000.
Hammond, Dennis A., to Dustbane Products Limited. Hose end sprayer. 4,575,270, Cl. 401-40.000.
Hammond, Douglas S., to Manville Service Corporation. Reflector for illuminating signs. 4,575,783, Cl. 362-145.000.
Hammond, Russell E.; and Henry, John L., to United States of America, Navy. Vector summation power amplifier. 4,575,811, Cl. 364-607.000.
Hanaki, Akira: *See—*
Hattori, Masaichi; Arakawa, Kaneyasu; and Hanaki, Akira, 4,575,590, Cl. 200-5.00B.
Hanazato, Hiroshi, to Buddy L Corp. Open-front carton for toy vehicle. 4,574,946, Cl. 206-45.190.
Hand, John J.: *See—*
Addor, Roger W.; Wright, Donald P., Jr.; Siddens, Jack K.; and Hand, John J., 4,575,560, Cl. 560-27.000.
Handke, Wayne A., to Halliburton Company. Injector unit. 4,574,880, Cl. 166-75.100.
Handler, Milton E.; Sylvan, Richard; and Baisch, Herbert, to Hirsh Company. Drill powered wet or dry abrasive apparatus. 4,574,530, Cl. 51-166.0TS.
Hanes, Robert H.: *See—*
Levine, Mark; Hanes, Robert H.; Rudder, Joel; and Ditlya, David, 4,575,782, Cl. 362-61.000.
Hans Schwarzkopf GmbH: *See—*
Seidel, Winfried; Oelschlager, Thomas; and Schlenther, Wolfgang, 4,575,378, Cl. 8-414.000.
Hans Stahlecker & Fritz Stahlecker: *See—*
Stahlecker, Fritz; Griesinger, Rolf; and Fetzer, Gerhard, 4,574,583, Cl. 57-408.000.
Hansen, Loren F.; and Lamb, Mark E., to Outboard Marine Corporation. Tine holder for turf aerating apparatus. 4,574,890, Cl. 172-22.000.
Hanssen, Carl-Otto: *See—*
Lundstrom, Thomas; and Hanssen, Carl-Otto, 4,574,796, Cl. 128-132.00D.
Harada, Hidemi: *See—*
Ogata, Yusuke; Nagahama, Yasushi; Matsuura, Yo[illegible]aki; Aoki, Kenzou; and Harada, Hidemi, 4,575,839, Cl. 370-13.000.
Harara, Mitsuhiko: *See—*
Tatemoto, Minoru; and Harara, Mitsuhiko, 4,575,115, Cl. 280-707.000.
Harben, Grover S., Jr.; and Ellis, Julius A. Neck pulling and cropping system. 4,574,427, Cl. 17-11.000.
Hargrave, Franklin; Linke, Edward J., Jr.; and Middleton, Francisco A., to ITT Corporation. Telephone line access device for main distribution frame. 4,575,840, Cl. 370-13.000.
Hariguchi, Yoshinori, to Nippon Gakki Seizo Kabushiki Kaisha. Method for producing a wood-type golf club head. 4,575,447, Cl. 264-516.000.
Harrington, John P.: *See—*
Taylor, Ivan; and Harrington, John P., 4,575,357, Cl. 464-69.000.
Harris Corporation: *See—*
Roberts, Richard D.; and Padgett, Robert S., 4,575,683, Cl. 329-50.000.
Harris, Robert E. Method for cutting sheet metal. 4,574,667, Cl. 83-49.000.
Harris, William P., Sr. Insulating roof system for manufactured homes and commercial structures. 4,574,544, Cl. 52-199.000.
Harting, Jurgen: *See—*
Jonas, Rochus; Kloft, Michael; Wurziger, Hanns; Harting, Jurgen; Enenkel, Hans J.; Minck, Klaus-Otto; and Schliep, Hans-Jochen, 4,575,505, Cl. 514-248.000.
Hartmann, Clinton S.; and Jones, William S., to Texas Instruments Incorporated. Method for using interdigital surface wave transducer to generate unidirectionally propagating surface wave. 4,575,696, Cl. 333-154.000.
Hartmann, Franz, to Nordischer Maschinenbau Rud. Baader GmbH + Co KG. Fish guiding device. 4,574,430, Cl. 17-56.000.
Harwood, Oliver P.; and Love, John A., to TRW Inc. Spacecraft for use in conjunction with a reusable space shuttle. 4,575,029, Cl. 244-172.000.
Hasegawa, Noboru: *See—*
Ueda, Koutarou; Hasegawa, Noboru; Machihara, Akio; Kusaka, Masaharu; Orii, Kohei; and Noguchi, Yoshiro, 4,575,400, Cl. 156-428.000.
Hasegawa, Norio: *See—*
Tanaka, Toshihiko; Hasegawa, Norio; and Hayashida, Tetsuya, 4,575,399, Cl. 156-272.800.
Hasegawa, Yoji; and Tokura, Naomi, to Nissan Motor Company, Limited. Exhaust particle removing system for an internal combustion engine. 4,574,589, Cl. 60-286.000.
Hashimoto, Akio; and Yasuda, Tomio, to Aisin Seiki Kabushiki Kaisha. Motor driven power steering system. 4,574,903, Cl. 180-79.100.
Hashimoto, Kouichi; Innami, Teruhisa; Kakino, Ken; and Yamamura, Yukio, to Matsushita Electric Works, Ltd. Massage apparatus. 4,574,786, Cl. 128-52.000.
Hashimoto, Masami, to Kabushiki Kaisha Suwa Seikosha. Double layer ROM integrated circuit. 4,575,743, Cl. 357-23.120.
Hashimoto, Masami: *See—*
Aoki, Hidekatsu; and Hashimoto, Masami, 4,574,900, Cl. 180-6.200.
Hashimoto, Yasuyuki; and Shimizu, Kazuo, to Ancos Co., Ltd. Writing instrument with movable closure and second sealing means. 4,575,271, Cl. 401-107.000.
Haslanger, Martin F.: *See—*
Hall, Steven E.; Haslanger, Martin F.; and Varma, Ravi K., 4,575,512, Cl. 514-469.000.
Hatfield, James C., to Union Carbide Corporation. Viscometer. 4,574,622, Cl. 73-55.000.
Hattori, Kenji: *See—*
Hayashi, Masaharu; Hattori, Kenji; and Itakura, Masato, 4,574,929, Cl. 192-58.00B.
Hattori, Masaichi; Arakawa, Kaneyasu; and Hanaki, Akira, to Kabushikikaisha Tokairikadenkiseisakusho. Thrust-in operation type switching device. 4,575,590, Cl. 200-5.00B.
Hattori, Shigenori; Ueno, Hideo; and Uchida, Toyohisa, to Brother Industries, Ltd. Thermal printer. 4,575,733, Cl. 346-76.0PH.
Hattori, Takashi: *See—*
Miura, Kazuhiko; Hattori, Takashi; Ozaki, Tadashi; and Yamaguchi, Hiroaki, 4,574,616, Cl. 73-35.000.
Haucsler, Karl H.; Steinbrecher, Heinrich; and vom Dorp, Walter, to Mannesmann AG. Adjusting the rolls in a rolling mill with obliquely oriented, conically contoured rolls. 4,574,606, Cl. 72-100.000.
Haug, Josef, to Uraca Pumpenfabrik GmbH & Co. KG. Tank cleaning apparatus. 4,574,825, Cl. 134-167.00R.
Hauni-Werke Korber & Co. KG: *See—*
Janutta, Reinhard, 4,574,768, Cl. 125-11.0CD.
Rudszinat, Willy, 4,574,816, Cl. 131-84.400.
Hawthorne, Sherman J. A.: *See—*
Pinkerton, William; and Hawthorne, Sherman J. A., 4,574,820, Cl. 131-339.000.
Hay, Robert A., II; and Dowell, Albert C., to Dow Chemical Company, The. Seal assembly which is hydraulically actuated. 4,575,100, Cl. 277-65.000.
Hayakawa, Jun: *See—*
Inoue, Kiyoshi; Onoue, Makoto; Sano, Sadao; and Hayakawa, Jun, 4,575,603, Cl. 219-69.00D.
Hayama, Nobuhiro; Yoshimura, Takeshi; and Tanikawa, Yoshitaka, to Mazda Motor Corporation. Automobile exhaust purifying system. 4,574,588, Cl. 60-284.000.
Hayashi, Katsumi: *See—*
Dorer, Casper J., Jr.; and Hayashi, Katsumi, 4,575,526, Cl. 524-96.000.
Hayashi, Masaharu; Hattori, Kenji; and Itakura, Masato, to Aisin Seiki Kabushiki Kaisha. Viscous fluid coupling. 4,574,929, Cl. 192-58.00B.
Hayashibara, Fumio: *See—*
Imazeki, Kazuyoshi; Tanaka, Toshiyuki; and Hayashibara, Fumio, 4,575,707, Cl. 340-286.00R.
Hayashida, Tetsuya: *See—*
Tanaka, Toshihiko; Hasegawa, Norio; and Hayashida, Tetsuya, 4,575,399, Cl. 156-272.800.
Hayes, Harry, to Colgate-Palmolive Company. Gel dentifrice of desirable consistency. 4,575,456, Cl. 424-49.000.
Hayes, Patrick S. Solar water heating system. 4,574,779, Cl. 126-435.000.

Haymore, Ralph B.: *See—*
Armitage, Jack R.; and Haymore, Ralph B., 4,575,256, Cl. 366-266.000.
Hayward, Robert D., to Gilbert Engineering Company Inc. Controlled torque connector assembly. 4,575,274, Cl. 403-2.000.
Hazenbroek, Jacobus E. Poultry halving method and apparatus. 4,574,429, Cl. 17-52.000.
Health Care Concepts, Inc.: *See—*
Meierhoefer, Eugene J., 4,574,965, Cl. 215-32.000.
Hebert, Richard D.; and Van Blerk, Victor B., to Ricoh Company, Ltd. Electrophotographic copying apparatus including transfer charge corona and shield. 4,575,216, Cl. 355-3.0TR.
Hedges, Winston L.: *See—*
Lee, Kyu-Wang; Hedges, Winston L.; and Baron, Kenneth S., 4,574,793, Cl. 128-90.000.
Hefner, Robert E., Jr.: *See—*
Cavitt, Michael B.; Perry, William O.; and Hefner, Robert E., Jr., 4,575,543, Cl. 525-510.000.
Hegemann, Kenneth J. Device for bending metal stock. 4,574,611, Cl. 72-389.000.
Heide, Marc O.: *See—*
Heide, Otto; Heide, Marc O.; Heide, Nicole S.; Heide, Philipp J.; and Wagner nee Heide, Christa, 4,575,204, Cl. 351-155.000.
Heide, Nicole S.: *See—*
Heide, Otto; Heide, Marc O.; Heide, Nicole S.; Heide, Philipp J.; and Wagner nee Heide, Christa, 4,575,204, Cl. 351-155.000.
Heide, Otto; Heide, Marc O.; Heide, Nicole S.; Heide, Philipp J.; and Wagner nee Heide, Christa. Spectacle-like frame. 4,575,204, Cl. 351-155.000.
Heide, Philipp J.: *See—*
Heide, Otto; Heide, Marc O.; Heide, Nicole S.; Heide, Philipp J.; and Wagner nee Heide, Christa, 4,575,204, Cl. 351-155.000.
Heidman, William A., Jr. Combined magnetic and thermal relay and circuits for timed alarms and lamps of vehicles. 4,575,706, Cl. 340-63.000.
Heinz Kaiser A.G.: *See—*
Pape, Dieter; Woerz, Hans; and Kaiser, Heinz, 4,575,292, Cl. 409-234.000.
Heitzman, William G. Surgical appliance support. 4,574,798, Cl. 128-205.220.
Helbert, Friedrich: *See—*
Coesfeld, Manfred; and Helbert, Friedrich, 4,575,178, Cl. 339-224.000.
Helinsky, Jonathan. Amusement and toiletry dispenser for babies. 4,574,822, Cl. 132-79.00R.
Helix Technology Corporation: *See—*
Bertsch, Peter K., 4,574,591, Cl. 62-6.000.
Hellekant, Otto: *See—*
Foldhazy, Zoltan; and Hellekant, Otto, 4,575,263, Cl. 384-126.000.
Heller, Wilhelm, to Krupp Stahl Aktiengesellschaft. Rail having high resistance to wear in its head and high resistance to rupture in its foot. 4,575,397, Cl. 148-12.00B.
Helm, Charles W.: *See—*
Grosso, Donald S.; and Helm, Charles W., 4,575,681, Cl. 324-347.000.
Hemphill, Dean P.; and Scott, Paul R., to Shell Oil Company. Underwater trencher with pipelaying guide. 4,575,280, Cl. 405-164.000.
Hendrickson, Thomas A.; Macauley, George C.; Pierce, Donald L.; Roefer, Robert W.; and Strickland, Alan B., to International Business Machines Corporation. Interactive transactions processor using sequence table pointers to access function table statements controlling execution of specific interactive functions. 4,575,816, Cl. 364-900.000.
Henis, Jay M. S.: *See—*
Brooks, Albert A.; Fried, Joel R.; Henis, Jay M. S.; Zampini, Anthony; and Raucher, Daniel, 4,575,385, Cl. 55-158.000.
Henkel Kommanditgesellschaft auf Aktien: *See—*
Rose, David; and Lieske, Edgar, 4,575,377, Cl. 8-408.000.
Henneberg, Helmut H.; Dillon, Richard R.; Romano, Domenic R.; and Hall, Roger L., to Honeywell Information Systems Inc. Tilt-swivel base for a CRT display terminal. 4,575,033, Cl. 248-185.000.
Hennig, Ewald; Buecherl, Emil S.; and Zartnack, Friedrich, to Hennig, Ewald. Making heart valves. 4,575,442, Cl. 264-135.000.
Henry, John L.: *See—*
Hammond, Russell E.; and Henry, John L., 4,575,811, Cl. 364-607.000.
Hensel, Paul C.; and Gillings, Geoffrey W., to Post Office, The. Dielectric optical waveguide connecting device. 4,575,182, Cl. 350-96.210.
Hensler, Ewald: *See—*
Straub, Reinhold; and Eberhard, Eugen, 4,574,802, Cl. 128-305.000.
Hercules Incorporated: *See—*
Gabrysch, Leslie P., 4,574,586, Cl. 60-254.000.
Herczegh, Marton: *See—*
Alapi, Jozsef; Baldaszti, Laszlo ; Gaspar, Laszlo ; Herczegh, Marton; Javorka, Istvan; Kisberk, Ferenc; Klauser, Janos; Makk, Antal; and Pallos, Istvan, 4,575,460, Cl. 426-72.000.
Hernandez, Sebastian: *See—*
Burg, Richard W.; Cole, Lucille J.; and Hernandez, Sebastian, 4,575,500, Cl. 514-121.000.
Heronemus, William E.: *See—*
Wolfram, Norman E.; Skalski, Frederick T.; and Heronemus, William E., 4,575,145, Cl. 295-37.000.
Heseltine, Barry E. Putting aid. 4,575,090, Cl. 273-183.00D.
Hess, Craig N.; and Potts, Robert S., to Corning Glass Works. Visible sample chamber for fluid analysis. 4,575,240, Cl. 356-246.000.
Hess, Wayne R.; and Raffenberger, James L. Foldable tank drain stop cover. 4,574,976, Cl. 220-315.000.
Hetznecker, Frank W.; and Serritella, Frank P., to Honeywell Inc. Floating restriction standards system. 4,574,617, Cl. 73-37.900.
Hewlett-Packard Company: *See—*
Marcoux, Paul J.; Murray, Eileen M.; and Grinolds, Hugh R., 4,575,402, Cl. 156-643.000.
Regan, Richard J., 4,574,813, Cl. 128-697.000.
Stephens, Thomas P., 4,574,811, Cl. 128-675.000.
Hewson, Carl; and Ridolpho, Paul F. Method and apparatus for pacing the heart employing external and internal electrodes. 4,574,807, Cl. 128-419.0PG.
Hexcel Corporation: *See—*
Lee, Kyu-Wang; Hedges, Winston L.; and Baron, Kenneth S., 4,574,793, Cl. 128-90.000.
Hickman, Albert F., to A. F. Hickman Associates, Inc. Convertible highway railroad vehicle. 4,574,707, Cl. 105-159.000.
Hider, Robert C.; Kontoghiorghes, George; and Stockham, Michael A., to National Research Development Corporation. Pharmaceutical compositions. 4,575,502, Cl. 514-184.000.
Hidle, Jerry, to Panhandle Industries, Inc. Cooking utensil. 4,574,776, Cl. 126-369.000.
Higashide, Eiji; and Horii, Satoshi, to Takeda Chemical Industries, Ltd. *Streptomyces albulus* subsp. *ochragerus* subsp. nov. culture for making peptide. 4,575,489, Cl. 435-70.000.
Higbee, Wallace C., to TRW Automotive Products, Inc. Seat belt retractor. 4,575,021, Cl. 242-107.40A.
Hignutt, Frank A. Battery charging system. 4,575,670, Cl. 320-14.000.
Higuchi, Kazuo: *See—*
Okuhara, Hisakazu; Higuchi, Kazuo; and Sasaki, Kiichi, 4,575,119, Cl. 280-801.000.
Hill-Rom Company, Inc.: *See—*
Fullenkamp, Eugene H.; and Lohrey, Cecil R., 4,574,963, Cl. 211-190.000.
Hiller, Dorothee: *See—*
Bohl, Rainer; and Hiller, Dorothee, 4,574,777, Cl. 126-390.000.
Hillman, Charles E., to General Electric Company. Torque assist device for a multi-barrel weapon. 4,574,682, Cl. 89-12.000.
Hino, Masatoshi: *See—*
Sakai, Toshiyuki; Okada, Yoshihiro; Hino, Masatoshi; and Ohta, Yuichi, 4,575,768, Cl. 358-282.000.
Hintzen, Ullrich; and Neuenburg, Michael, to Didier-Werke AG. Method of producing a refractory brick. 4,575,439, Cl. 264-43.000.
Hippely, Keith A.; and Crain, Philip W., to Mattel, Inc. Track for toy vehicles. 4,575,350, Cl. 446-368.000.
Hira, Rikuo: *See—*
Akiyama, Osamu; and Hira, Rikuo, 4,575,242, Cl. 356-331.000.
Hira, Takaaki: *See—*
Nakagawa, Kichizaemon; Hira, Takaaki; Abe, Hideo; Sasaki, Toru; and Shimoyama, Yuji, 4,575,053, Cl. 266-92.000.
Hiramitsu, Tetsushi; Sugita, Hiroshi; and Ono, Satoshi, to Toyoda Gosei Co., Ltd. Pad holder mechanism for steering wheels. 4,574,653, Cl. 74-484.00R.
Hirano, Yoshinori, to Nissan Motor Co., Ltd. Cooling system for automotive engine. 4,574,747, Cl. 123-41.270.
Hirosaki, Botaro: *See—*
Aoyagi, Hidehito; and Hirosaki, Botaro, 4,575,682, Cl. 329-50.000.
Hirose, Ichiro: *See—*
Sagawa, Takayoshi; and Hirose, Ichiro, 4,575,368, Cl. 493-49.000.
Hirose, Takao: *See—*
Uemura, Seiichi; Yamamoto, Shunichi; Hirose, Takao; Takashima, Hiroaki; and Kato, Osamu, 4,575,411, Cl. 208-44.000.
Hirota, Minoru: *See—*
Ariyama, Kenzo; Yamazaki, Hideo; Motohashi, Tamotsu; and Hirota, Minoru, 4,575,215, Cl. 355-3.00R.
Hirsh Company: *See—*
Handler, Milton E.; Sylvan, Richard; and Baisch, Herbert, 4,574,530, Cl. 51-166.0TS.
Hirt, Alfred, to MAN Maschinenfabrik Augsburg Nurnberg AG. Method and apparatus for transmitting images to a viewing screen. 4,575,765, Cl. 358-230.000.
Hirt, Ronald L.: *See—*
Ayers, Scott D.; Comley, John E.; Hirt, Ronald L.; and Kockler, Barry C., 4,575,729, Cl. 346-75.000.
Hirt, Thomas J.; and Moseman, Merlin H., to InterNorth, Inc. Apparatus and method for heating an air stream flowing through a conduit. 4,575,335, Cl. 432-29.000.
Hisatsune, Fumiyuki: *See—*
Yamagata, Shinji; Hisatsune, Fumiyuki; Terachi, Junichi; Yamaoto, Kiyomi; Murata, Shiro; and Yoshiyasu, Hajimu, 4,575,598, Cl. 200-144.00C.
Hitachi, Ltd.: *See—*
Nakagawa, Yasuo; and Ninomiya, Takanori, 4,575,304, Cl. 414-730.000.
Shinohara, Morimiti, 4,575,307, Cl. 415-150.000.
Tanaka, Toshihiko; Hasegawa, Norio; and Hayashida, Tetsuya, 4,575,399, Cl. 156-272.800.
Hladky, Karel, to University of Manchester Institute of Science and Technology, The. Corrosion monitoring. 4,575,678, Cl. 324-425.000.
Hobart Corporation: *See—*
Pester, Andrew L., 4,574,564, Cl. 53-441.000.
Hoberman, Kenneth H.; and Kirwan, Kim J., to GRH Electronics, Inc. Submetering apparatus. 4,575,801, Cl. 364-483.000.
Hochreutiner, Roger M.; and Mattheus, Walter, to International Standard Electric Corporation. Control circuit for an integrated device. 4,575,642, Cl. 307-200.00A.

Hodges, Everett L. Pressure differential mining tool. 4,575,155, Cl. 299-17.000.
Hodges, Jeffrey M. Beverage container carrier. 4,574,978, Cl. 220-403.000.
Hoelscher, Wayne L.: *See—*
Krause, Bernd; Hoelscher, Wayne L.; and Scroggin, William F., 4,575,046, Cl. 251-316.000.
Hoelzer, John S., to Square D Company. Electronic repeat cycle delay timer. 4,575,651, Cl. 307-593.000.
Hoesch Werke Aktiengesellschaft: *See—*
Bartzick, Gerd; Buhne, Gerd; and Werk, Jurgen, 4,574,848, Cl. 140-93.200.
Hoffman, Kevin R.: *See—*
Nath, Prem; and Hoffman, Kevin R., 4,574,733, Cl. 118-718.000.
Hoffmann, Horst, to Wilhelm Ruf KG, Firma. Switching contact arrangement, in particular for keyboards and a keyboard. 4,575,589, Cl. 200-5.00A.
Hoffmann, Manfred: *See—*
Gahlau, Heinemann; Hoffmann, Manfred; and Wittenmayer, Klaus, 4,574,915, Cl. 181-290.000.
Hofmeister, James P.: *See—*
Bartlett, Geoffrey M.; Hofmeister, James P.; Nye, Derald D.; and Pring, Edward J., 4,575,813, Cl. 364-900.000.
Hogue, Noel E., to Rockwell International Corporation. High speed programmable prescaler. 4,575,867, Cl. 377-110.000.
Hohenstein, Donald G. Electronic litter system. 4,574,735, Cl. 119-1.000.
Holcombe, J. L., to Mizell Bros. Co. Adjustable roof insulation system. 4,574,549, Cl. 52-404.000.
Holden, John A. Dumping mechanism. 4,575,302, Cl. 414-420.000.
Holesha, John J.: *See—*
Smith, Dennis K.; and Holesha, John J., 4,575,584, Cl. 179-81.00R.
Hollett, Ronald J., to Concorde Battery Corp. Carrier rack for electric storage battery plates. 4,574,959, Cl. 211-41.000.
Hollister, F. Harold; Le, Tri C.; and Meyer, Danny S., to Joy Manufacturing Company. High pressure sealing connection with metal seal. 4,575,106, Cl. 277-167.500.
Holman, Alfred D., to Duo-Fast Corporation. Clinching type stapler. 4,574,992, Cl. 227-83.000.
Holmer, Lance F. Storage container. 4,574,504, Cl. 40-19.000.
Holmes, Edward W.; and Swain, Judith L., to Duke University. Method for restoring depleted purine nucleotide pools. 4,575,498, Cl. 514-43.000.
Holz, George E.; and Ogle, James A., to Burroughs Corp. Method and system for operating a display panel having memory with cell re-ignition means. 4,575,716, Cl. 340-714.000.
Homma, Yuzuru; and Morihara, Kazuyuki, to Toho Yakuhin Kogyo Kabushiki Kaisha. Toxoids of elastase of *Pseudomonas aeruginosa* origin. 4,575,459, Cl. 424-87.000.
Honda Giken Kogyo Kabushiki Kaisha: *See—*
Irimajiri, Shoichiro, 4,574,902, Cl. 180-72.000.
Nishimura, Sadanori; Yamashita, Masaru; and Shimada, Hiroyuki, 4,574,925, Cl. 192-3.310.
Okuhara, Hisakazu; Higuchi, Kazuo; and Sasaki, Kiichi, 4,575,119, Cl. 280-801.000.
Sato, Toshihiko; and Doi, Shigeru, 4,574,755, Cl. 123-320.000.
Shichinohe, Takashi; Imaizumi, Masahiro; Ikejima, Ryoichi; and Oka, Yoshio, 4,574,652, Cl. 74-474.000.
Ui, Yoshio; and Kurosu, Yukio, 4,575,147, Cl. 296-154.000.
Umegawa, Koujiro, 4,575,107, Cl. 277-221.000.
Honda, Michitaka. Diagnostic X-ray apparatus having a master timing control unit. 4,575,752, Cl. 358-111.000.
Honeywell Inc.: *See—*
Hetznecker, Frank W.; and Serritella, Frank P., 4,574,617, Cl. 73-37.900.
Kay, Robert M., 4,575,658, Cl. 315-111.210.
Smith, Dennis K.; and Holesha, John J., 4,575,584, Cl. 179-81.00R.
Stamm, Thomas A., 4,575,684, Cl. 329-122.000.
Stauffer, Norman L., 4,575,764, Cl. 358-227.000.
Honeywell Information Systems Inc.: *See—*
Boothroyd, Donald C.; and Norman, Robert W., Jr., 4,575,795, Cl. 364-200.000.
Henneberg, Helmut H.; Dillon, Richard R.; Romano, Domenic R.; and Hall, Roger L., 4,575,033, Cl. 248-185.000.
Keeley, James W., 4,575,792, Cl. 364-200.000.
Tarbox, Bruce H.; Rathbun, Donald J.; and Su, Taian, 4,575,774, Cl. 360-72.200.
Hoogland, Jan. Flat field lenses. 4,575,195, Cl. 350-432.000.
Hoover Universal, Inc.: *See—*
Dundas, Dennis L.; Myers, William H.; and Kinslow, William G., Jr., 4,575,331, Cl. 425-577.000.
Hopkins, Daniel N.; and Snavely, Earl S., to Mobil Oil Corporation. Steam drive oil recovery method utilizing a downhole steam generator and anti clay-swelling agent. 4,574,886, Cl. 166-272.000.
Hopkins, Larry D., to Chevron Research Company. Device for safe on-stream addition of valve packing. 4,575,101, Cl. 277-72.0FM.
Horie, Shinji; Kakizaki, Tetsuji; and Mizutani, Toshikazu, to Mitsubishi Petrochemical Co., Ltd. Thermoplastic fluorine-containing resin blend composition. 4,575,533, Cl. 525-72.000.
Horii, Satoshi: *See—*
Higashide, Eiji; and Horii, Satoshi, 4,575,489, Cl. 435-70.000.
Horiuchi, Yoshiaki: *See—*
Kotani, Takeshi; Horiuchi, Yoshiaki; and Kamata, Yoichi, 4,575,480, Cl. 430-192.000.
Horlander, Frank J., to International Business Machines Corporation. Electro resistive printhead drive level sensing and control. 4,575,731, Cl. 346-76.0PH.
Horton, Robert L., to Phillips Petroleum Company. Agents for petroleum recovery processes. 4,574,885, Cl. 166-270.000.
Horvath, Lorand: *See—*
Kaffka, Karoly; Nadai, Bela; Czabaffy, Andras; and Horvath, Lorand, 4,575,244, Cl. 356-343.000.
Horwitz, Bruce A.; and MacGovern, Alan J., to Itek Corporation. Wavefront sensor employing novel D.C. shearing interferometer. 4,575,248, Cl. 356-353.000.
Hosokawa, Minoru, to Kabushiki Kaisha Suwa Seikosha. Magnetic recording and reproducing head. 4,575,777, Cl. 360-123.000.
Hotshot Auto Products Inc.: *See—*
Linker, Roy E.; and Linker, Matthew P., 4,575,003, Cl. 237-12.30R.
Hotta, Tomiji; and Inoue, Mitsuo, to Dainippon Screen Mfg. Co., Ltd. Measurement device of photographic density of film. 4,575,251, Cl. 356-443.000.
Houston Fearless 76, Inc: *See—*
Zwettler, Ernest, 4,575,209, Cl. 354-322.000.
Hovan, Edward J., to United Technologies Corporation. Method of operation for a gas turbine engine. 4,574,584, Cl. 60-39.020.
Hovekamp, John C.: *See—*
Verwey, William G.; and Hovekamp, John C., 4,574,732, Cl. 118-642.000.
Howard, Richard E.; Pleibel, William; and Stolen, Rogers H., to AT&T Bell Laboratories. Optical fiber with embedded metal layer. 4,575,187, Cl. 350-96.330.
Howard, Thomas B.: *See—*
Allen, James M.; and Howard, Thomas B., 4,574,645, Cl. 73-863.510.
Howmedica, Inc.: *See—*
Huck, Charles M.; and Ashley, Charles R., 4,574,948, Cl. 206-63.300.
Hoyt, John M.; and Blazey, Steven D., to National Distillers and Chemical Corporation. Partially hydrolyzed ethylene-vinyl acetate (EVA) elastomers vulcanizable with sulfur. 4,575,531, Cl. 524-563.000.
Hsieh, Henry L.; and Yeh, Gene H. C., to Phillips Petroleum Company. Olefin polymerization. 4,575,538, Cl. 525-244.000.
Hsu, Chao-Yang, to Sun Refining and Marketing Company. Catalyst and process for hydroformylation of olefins. 4,575,564, Cl. 568-454.000.
Hsu, Charles K.; and Dobinson, Frank, to Monsanto Company. Dimethyl adipate from butadiene. 4,575,562, Cl. 560-204.000.
Hu, Liang-Tung. Liquid flow controller. 4,575,041, Cl. 251-8.000.
Hub Folding Box Co., Inc.: *See—*
Dirico, Mark A., 4,574,561, Cl. 53-376.000.
Hubbell, William R., to A & W Industries, Inc. Steel slitter recoiler guard. 4,575,019, Cl. 242-78.100.
Huber, Johann: *See—*
Grunert, Wolfgang; and Huber, Johann, 4,575,158, Cl. 303-57.000.
Huck, Charles M.; and Ashley, Charles R., to Howmedica, Inc. Linear fold armed suture. 4,574,948, Cl. 206-63.300.
Huck, Robert H., to RCA Corporation. Method of improving the signal-to-noise ratio in a capacitance electronic disc system. 4,575,834, Cl. 369-126.000.
Hudak, John, Jr.: *See—*
Persak, Steven R.; and Hudak, John, Jr., 4,574,443, Cl. 29-157.10R.
Hudson, J. Albert: *See—*
Lewis, Robert L., Jr.; and Hudson, J. Albert, 4,574,973, Cl. 220-259.000.
Huemer, Franz X. Arrangement for tension control and supervision of individual warp threads on a loom, particularly a circular loom. 4,574,846, Cl. 139-353.000.
Huffaker, Roger W.: *See—*
Rickey, Wynn P.; Dobson, Deborah H.; and Huffaker, Roger W., 4,574,830, Cl. 137-242.000.
Hug, William F.: *See—*
Wang, Shing C.; and Hug, William F., 4,575,850, Cl. 372-23.000.
Hughes Aircraft Company: *See—*
de la Chapelle, Michael; and Wilhelmi, Frank A., 4,575,693, Cl. 333-20.000.
Hughes, Douglas B. Pipe thawing apparatus. 4,575,614, Cl. 219-300.000.
Hughes, Richard K., Jr.: *See—*
Schmidt, Ludwig; Hughes, Richard K., Jr.; and Nordlund, Charles A., 4,574,556, Cl. 53-69.000.
Hughes Tool Company - USA: *See—*
Dolezal, George E.; and Kelly, Joseph L., Jr., 4,574,895, Cl. 175-329.000.
Hugler, Klaus, to J. Lorch Gesellschaft & Co. KG. Rocker lever solenoid valve. 4,574,841, Cl. 137-625.440.
Huhne, Siegmar, to Munchow und Huhne Maschinenbaugesellschaft mbH. Cutting apparatus for plastic foam solids. 4,574,677, Cl. 83-870.000.
Huie, Wing K.: *See—*
Halfacre, Mark A.; Pan, David S.; and Huie, Wing K., 4,574,467, Cl. 29-571.000.
Hull, Charles W., to UVP, Inc. Apparatus for production of three-dimensional objects by stereolithography. 4,575,330, Cl. 425-174.400.
Hull, Warren L.; Leedahl, Wesley C.; and Notch, Donald R., to White Consolidated Industries, Inc. Refrigeration apparatus and method of making same. 4,574,610, Cl. 72-367.000.
Hulseweh, Terry S.: *See—*
Mastroianni, Sal; Casteel, Carroll; and Hulseweh, Terry S., 4,574,469, Cl. 29-576.00W.
Humiston, Gerald F. Flexible mirror device. 4,575,200, Cl. 350-611.000.

Humpolik, Bohumil, to Sueddeutsche Kuehlerfabrik, Julius Fr. Behr GmbH & Co. KG. Method for the joining of tubular parts in a heat exchanger and tool for practicing the method. 4,574,444, Cl. 29-157.30C.
Hung, Michael: *See—*
Diau, Golden, 4,575,784, Cl. 362-183.000.
Hunt, John T.; and Spector, George. Step to safety. 4,574,916, Cl. 182-18.000.
Hunter, David L.; and Den Besten, Leroy E., to Fansteel Inc., by said David L. Hunter. Mining block and bit. 4,575,156, Cl. 299-92.000.
Hurley, Patrick J.: *See—*
Allen, Wade H.; Cory, Theodore M.; Hurley, Patrick J.; and Thornton, Raymond A., 4,575,817, Cl. 364-900.000.
Hurnaus, Rudolf: *See—*
Sauter, Robert; Griss, Gerhart, deceased; Grell, Wolfgang; Hurnaus, Rudolf; Kobinger, Walter; and Pichler, Ludwig, 4,575,504, Cl. 514-215.000.
Hurst, Lawrence B., Jr.: *See—*
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Hutchings, Alexander W. Dispensing container with display compartment. 4,574,947, Cl. 206-45.340.
Huther, Werner: *See—*
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Huttner, Klaus: *See—*
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Hydril Company: *See—*
Breach, William D.; and Vaclavik, Edwin W., 4,575,522, Cl. 523-220.000.
Hydro-Quebec: *See—*
Raynaud, Guy; Morin, Francois; and Brossard, Louis, 4,574,778, Cl. 126-417.000.
Hylerstedt, Eric: *See—*
Nordqvist, Percy; and Hylerstedt, Eric, 4,575,371, Cl. 604-96.000.
I.S.F. S.p.A.: *See—*
Farina, Carlo; Pifferi, Giorgio; and Pinza, Mario, 4,575,552, Cl. 544-224.000.
Ibuki, Tadahiro: *See—*
Tanaka, Tadaaki; Ibuki, Tadahiro; Nakamura, Yoshiaki; and Yamamoto, Masaichi, 4,574,736, Cl. 119-14.080.
Ichihashi, Hiroshi; and Yoshioka, Hiroshi, to Sumitomo Chemical Company, Limited. Method for producing cycloolefins. 4,575,572, Cl. 585-266.000.
Ichikawa, Koji, to Fuji Photo Film Co., Ltd. Apparatus for handling photographic film. 4,575,018, Cl. 242-66.000.
Icking, Friedrich; and Stolte, Friedrich, to Westfalia Separator AG. Sampler for a milking-system volumeter. 4,574,630, Cl. 73-202.000.
Ida, Masatoshi: *See—*
Oinoue, Kenichi; Kimura, Kenji; and Ida, Masatoshi, 4,575,626, Cl. 250-201.000.
Idota, Yoshinori: *See—*
Sugiyama, Katsuhiko; Kawazoe, Hiromitsu; and Idota, Yoshinori, 4,574,751, Cl. 123-188.00M.
Igarashi, Yoshiaki; and Hamano, Shoichi, to Daiichi Denshi Kogyo Kabushiki Kaisha. Connector connectable and disconnectable without force. 4,575,171, Cl. 339-74.00R.
IGT: *See—*
Paulsen, Craig A.; and Bryan, Raymond G., 4,574,824, Cl. 133-4.00R.
Pease, Logan L.; Carmean, Wes F.; and Luciano, Robert A., 4,575,627, Cl. 250-227.000.
Ihokura, Kousuke: *See—*
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Ikai, Tadayoshi: *See—*
Sakurai, Shigenori; Kamo, Takashi; and Ikai, Tadayoshi, 4,574,627, Cl. 73-116.000.
Ikeda, Tamio, to Mead Corporation, The. Keel and lock for wrap-around article carrier. 4,574,997, Cl. 229-40.000.
Ikejima, Ryoichi: *See—*
Shichinohe, Takashi; Imaizumi, Masahiro; Ikejima, Ryoichi; and Oka, Yoshio, 4,574,652, Cl. 74-474.000.
Ikenoue, Yoshikazu: *See—*
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Ikram, Hafeez: *See—*
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Imai, Takeshi: *See—*
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Imaizumi, Masahiro: *See—*
Shichinohe, Takashi; Imaizumi, Masahiro; Ikejima, Ryoichi; and Oka, Yoshio, 4,574,652, Cl. 74-474.000.
Imazeki, Kazuyoshi; Tanaka, Toshiyuki; and Hayashibara, Fumio, to General Research of Electronics, Inc. Waiting time display system. 4,575,707, Cl. 340-286.00R.
Imperial Chemical Industries PLC: *See—*
Jones, John D.; and Schofield, David, 4,575,557, Cl. 549-366.000.
Inaba, Masahito: *See—*
Yuasa, Yoshio; Yasumoto, Hidetoshi; Naruse, Kazuhiko; Kawagoe, Nobukazu; and Inaba, Masahito, 4,575,225, Cl. 355-38.000.
Indal Technologies Inc.: *See—*
Wood, Charles F., 4,575,311, Cl. 416-170.00R.
Industrial Technology Research Institute: *See—*
Yang, Wu-ji; and Chen, Kuo-Chyuan, 4,575,268, Cl. 400-124.000.
Ing. C. Olivetti & C., S.p.A.: *See—*
Gubau, Jose , 4,575,269, Cl. 400-322.000.
Ingram, John D.; and Murray, Josephine L., to Schlumberger Technology Corporation. Indirect shearwave determination. 4,575,830, Cl. 367-26.000.
Injectall Limited: *See—*
Bates, Kenneth W.; and Griffiths, William A., 4,575,393, Cl. 75-53.000.
Inmont Corporation: *See—*
Anderson, Terry L.; Deb Roy, Tapan K.; and Chung, Ding Y., 4,575,523, Cl. 523-414.000.
Anderson, Terry L.; Deb Roy, Tapan K.; and Chung, Ding Y., 4,575,524, Cl. 523-455.000.
Innami, Teruhisa: *See—*
Hashimoto, Kouichi; Innami, Teruhisa; Kakino, Ken; and Yamamura, Yukio, 4,574,786, Cl. 128-52.000.
Innes, Charles B., Jr.: *See—*
Wentzell, Timothy H.; Lareau, John P.; and Innes, Charles B., Jr., 4,575,185, Cl. 350-96.260.
Inoue, Hidehumi, to Jidosha Kiki Co., Ltd. Passage means for hydraulic unit. 4,574,834, Cl. 137-505.250.
Inoue-Japax Research Incorporated: *See—*
Inoue, Kiyoshi; Onoue, Makoto; Sano, Sadao; and Hayakawa, Jun, 4,575,603, Cl. 219-69.00D.
Inoue, Kiyoshi; Onoue, Makoto; Sano, Sadao; and Hayakawa, Jun, to Inoue-Japax Research Incorporated. TW-Electroerosion with controlled flushing flow guidance means. 4,575,603, Cl. 219-69.00D.
Inoue, Mitsuo: *See—*
Hotta, Tomiji; and Inoue, Mitsuo, 4,575,251, Cl. 356-443.000.
Inoue, Tokuta; Oishi, Kiyohiko; Okamoto, Takamitsu; and Takeda, Keiso, to Toyota Jidosha Kabushiki Kaisha. Air intake device of an internal combustion engine. 4,574,748, Cl. 123-52.0MB.
Institut Francais du Petrole: *See—*
Larue, Joseph; and Rojey, Alexandre, 4,575,387, Cl. 62-17.000.
Institut Textile de France: *See—*
Matthelie, Jean-Pierre, 4,574,598, Cl. 66-146.000.
Interdyne Company: *See—*
Allwine, Elmer C., Jr.; and Gilovich, Paul A., 4,575,022, Cl. 242-192.000.
Interlab, Inc.: *See—*
Layton, Howard M.; and Yocis, Kenneth, 4,575,299, Cl. 414-222.000.
Intermatic Electronics Incorporated: *See—*
Pezzolo, Donald E.; Pfeiffer, James W.; and Corder, Thomas E., 4,575,659, Cl. 315-159.000.
Intermedium AG: *See—*
Wurscher, Raimund A., 4,574,528, Cl. 51-128.000.
Wurscher, Raimund A., 4,574,529, Cl. 51-128.000.
International Business Machines Corporation: *See—*
Albrecht, David W., 4,575,775, Cl. 360-77.000.
Allen, Wade H.; Cory, Theodore M.; Hurley, Patrick J.; and Thornton, Raymond A., 4,575,817, Cl. 364-900.000.
Ashton, Gerard J.; Colao, Emilio; and Cavaliere, Joseph R., 4,575,647, Cl. 307-443.000.
Bartlett, Geoffrey M.; Hofmeister, James P.; Nye, Derald D.; and Pring, Edward J., 4,575,813, Cl. 364-900.000.
Caldwell, Luther B.; Crocetti, Michael F.; and Dunham, Bradford, 4,575,744, Cl. 357-45.000.
Dean, Mark E., 4,575,826, Cl. 365-222.000.
Fallwell, Beeman N., Jr.; Kaltenbach, Matt A.; and Ott, William B., 4,575,847, Cl. 371-57.000.
Frank, David J., 4,575,741, Cl. 357-6.000.
Goldrian, Gottfried; and Rudolph, Volker, 4,575,740, Cl. 346-163.000.
Hendrickson, Thomas A.; Macauley, George C.; Pierce, Donald L.; Roefer, Robert W.; and Strickland, Alan B., 4,575,816, Cl. 364-900.000.
Horlander, Frank J., 4,575,731, Cl. 346-76.0PH.
Kasdagly, Dino G.; and Little, Robert W., 4,575,166, Cl. 339-17.00M.
Kulakowski, John E., 4,575,827, Cl. 365-230.000.
Lindstrom, Eugene E.; and Vitter, Jeffrey S., 4,575,798, Cl. 364-300.000.
Lukianoff, George V., 4,575,630, Cl. 250-307.000.
Stephens, Harold C.; and Workman, Michael L., 4,575,776, Cl. 360-78.000.
Veneski, Gerard A.; Thoma, Nandor G.; and Cases, Moises, 4,575,794, Cl. 364-200.000.
Wood, John C.; Lowe, Anthony C.; and Dowden, Barry F., 4,575,190, Cl. 350-357.000.
International Computers Limited: *See—*
Delahunt, Stephen J., 4,575,815, Cl. 364-900.000.
International Harvester Company: *See—*
Brandt, Herbert E.; and Tecco, Thomas C., 4,575,203, Cl. 350-631.000.
International Master Products Corporation: *See—*
Schmidt, Ludwig; Hughes, Richard K., Jr.; and Nordlund, Charles A., 4,574,556, Cl. 53-69.000.

International Paper Company: *See—*
Gordon, Robert L.; and Bodary, Michael G., 4,575,000, Cl. 229-87.00F.
International Remote Imaging Systems, Inc.: *See—*
Laird, Cleve W., 4,575,486, Cl. 435-7.000.
International Standard Electric Corporation: *See—*
Hochreutiner, Roger M.; and Mattheus, Walter, 4,575,642, Cl. 307-200.00A.
Satchell, David W., 4,575,631, Cl. 250-332.000.
Simon, Gerhard J.; and Schneider, Gerhard, 4,575,579, Cl. 178-4.000.
Theobald, Michael; and Greving, Gerhard, 4,575,728, Cl. 343-813.000.
InterNorth, Inc.: *See—*
Hirt, Thomas J.; and Moseman, Merlin H., 4,575,335, Cl. 432-29.000.
Mao, Chung-Rei, 4,574,861, Cl. 160-133.000.
Interntional Playtex, Inc.: *See—*
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Iny, Oliver: *See—*
Pollack, William; and Iny, Oliver, 4,575,491, Cl. 436-125.000.
Iolab Corporation: *See—*
Gundersen, Ivan, 4,575,372, Cl. 623-6.000.
Iowa State University Research Foundation, Inc.: *See—*
Spurlin, Stanford R.; and Yeung, Edward S., 4,575,433, Cl. 252-700.000.
Irie, Hiroshi: *See—*
Sugiyama, Yoshihiko; Uno, Teruo; Irie, Hiroshi; Kurachi, Teruo; and Abiko, Tetsuo, 4,574,878, Cl. 165-134.100.
Irie, Yutaka: *See—*
Ito, Masazumi; Irie, Yutaka; Ikenoue, Yoshikazu; and Nakamura, Minoru, 4,575,227, Cl. 355-56.000.
Irimajiri, Shoichiro, to Honda Giken Kogyo Kabushiki Kaisha. Vehicles. 4,574,902, Cl. 180-72.000.
ISCO, Inc.: *See—*
Allington, Robert W.; and Jones, John N., 4,575,424, Cl. 210-198.200.
Ishii, Kazunori; Kishimoto, Yoshio; and Yamamoto, Shuji, to Matsushita Electric Industrial Co., Ltd. Flexible heating wire. 4,575,620, Cl. 219-549.000.
Ishikawa, Ken, to Tokyo Shibaura Denki Kabushiki Kaisha. Optical fiber assembly with cladding light scattering means. 4,575,181, Cl. 350-96.200.
Ishikawa, Ken-ichi. Multi-wire vibratory cutting method and apparatus. 4,574,769, Cl. 125-16.00R.
Ishikawa, Norio: *See—*
Kitaura, Mashio; Ishikawa, Norio; and Ishimura, Toshihiko, 4,575,212, Cl. 354-409.000.
Ishimura, Toshihiko: *See—*
Kitaura, Mashio; Ishikawa, Norio; and Ishimura, Toshihiko, 4,575,212, Cl. 354-409.000.
Isomura, Shigenori; Kondo, Toshio; Kobayashi, Akio; and Kikuchi, Takehiro, to Nippondenso Co., Ltd. Electronic fuel injection control system for internal combustion engine. 4,574,761, Cl. 123-478.000.
Itakura, Masato: *See—*
Hayashi, Masaharu; Hattori, Kenji; and Itakura, Masato, 4,574,929, Cl. 192-58.00B.
Itek Corporation: *See—*
Horwitz, Bruce A.; and MacGovern, Alan J., 4,575,248, Cl. 356-353.000.
Ito, Hiroko: *See—*
Endo, Kazuya; and Ito, Hiroko, 4,574,398, Cl. 2-159.000.
Ito, Kenji; and Watanabe, Masanori, to Fuji Seiki Kabushiki Kaisha. Rotary damper having a clutch spring and viscous fluid. 4,574,423, Cl. 16-85.000.
Ito, Masazumi; Irie, Yutaka; Ikenoue, Yoshikazu; and Nakamura, Minoru, to Minolta Camera Kabushiki Kaisha. Copying machine having a capability of reproducing images at different magnifications. 4,575,227, Cl. 355-56.000.
Ito, Yoshiyasu; Kobayashi, Fumiaki; and Miyagi, Hideo, to Toyota Jidosha Kabushiki Kaisha. Diesel fuel injection pump with signal rotor giving reference position and rotation position signals. 4,574,756, Cl. 123-357.000.
ITT Corporation: *See—*
Biswas, Dipak R.; and Raychaudhuri, Satyabrata, 4,575,463, Cl. 427-163.000.
Hargrave, Franklin; Linke, Edward J., Jr.; and Middleton, Francisco A., 4,575,840, Cl. 370-13.000.
ITT Industries, Inc.: *See—*
Botz, Jakob; Fein, Berthold; Mutschler, Erich; and Weber, Adam, 4,575,600, Cl. 200-293.000.
Erikson, Magnus, 4,575,312, Cl. 416-179.000.
Iwai, Hiroshi; and Ohtsuka, Hideo, to Tokyo Shibaura Denki Kabushiki Kaisha. Treatment process for semiconductor wafer. 4,575,466, Cl. 427-53.100.
Iwaida, Kenichi: *See—*
Yamada, Masashi; and Iwaida, Kenichi, 4,575,210, Cl. 354-400.000.
Iwasaki, Hiroshi: *See—*
Nitta, Takeshi; and Iwasaki, Hiroshi, 4,575,702, Cl. 335-286.000.
Iwashita, Takashi: *See—*
Nakahama, Ryoji; and Iwashita, Takashi, 4,575,342, Cl. 440-56.000.
Izuta, Tadao, to Nippon Gakki Seizo Kabushiki Kaisha. Joint structure of a take-down type archery bows. 4,574,766, Cl. 124-23.00R.
J. I. Case Company: *See—*
Yeh, Rudolph E.; and Zagotta, Joseph L., 4,574,839, Cl. 137-614.160.
J. Lorch Gesellschaft & Co. KG: *See—*
Hugler, Klaus, 4,574,841, Cl. 137-625.440.
J&P Coats Limited: *See—*
Scott, Alexander, 4,574,578, Cl. 57-246.000.
J. Wagner GmbH: *See—*
Karliner, Rudolf, 4,574,988, Cl. 222-396.000.
Jablonka, Dieter: *See—*
Raidt, Heinz P.; Jablonka, Dieter; and Urban, Klaus, 4,574,541, Cl. 52-169.500.
Jackson, Rodney P., to USM Corporation. Sensor for cut-clinch head assembly. 4,574,462, Cl. 29-566.300.
Jacob, Lionel C. Multi-purpose power tool. 4,574,432, Cl. 17-67.000.
Jacobs, H. Barry. Acupressure apparatus. 4,574,787, Cl. 128-64.000.
Jacobsen, Peter E., to Danfoss A/S. Apparatus for securing a manually operable setting element against rotation. 4,574,831, Cl. 137-382.500.
Jacobson, Charles B., to Garlock Bearings, Inc. Composite self lubricating bearings. 4,575,429, Cl. 252-12.000.
Jacobson, Grodon L.: *See—*
Dunn, Lawrence M., 4,574,480, Cl. 30-240.000.
Jadwin, Reese, to Smith International, Inc. Ball actuable circulating dump valve. 4,574,894, Cl. 175-317.000.
Jager, Gerhard: *See—*
Kruger, Bernd-Wieland; Priesnitz, Uwe; Jager, Gerhard; and Behrenz, Wolfgang, 4,575,516, Cl. 514-715.000.
Kruger, Bernd-Wieland; Priesnitz, Uwe; Jager, Gerhard; Paulus, Wilfried; and Genth, Hermann, 4,575,517, Cl. 514-715.000.
Jain, Nemichand B.: *See—*
DeCrosta, Mark T.; Jain, Nemichand B.; and Rudnic, Edward M., 4,575,539, Cl. 525-283.000.
Jako, Geza J. Sealed laser. 4,575,853, Cl. 372-61.000.
James Howden & Company Ltd.: *See—*
Brown, Allan W., 4,575,309, Cl. 416-41.000.
James, Michael H.: *See—*
Podell, Howard I.; Goldstein, Albert; Blackley, David C.; James, Michael H.; Bratby, David M.; and Duck, Roger, 4,575,476, Cl. 428-494.000.
James River Corporation of Virginia: *See—*
Kuchenbecker, Morris W., 4,574,956, Cl. 206-623.000.
James River-Norwalk, Inc.: *See—*
Allen, James M.; and Howard, Thomas B., 4,574,645, Cl. 73-863.510.
Jamesbury Corporation: *See—*
Bregman, Arie P.; and Collette, Ronald J., 4,575,048, Cl. 251-360.000.
Jandrell, Louis H. M., to Astec International, Ltd. Data input device with a circuit responsive to stylus up/down position. 4,575,580, Cl. 178-18.000.
Janik, Elizabeth: *See—*
Kavadias, Gerry; Doyle, Terrance W.; Janik, Elizabeth; and Partyka, Richard A., 4,575,553, Cl. 546-106.000.
Jans, Franz W., to Jans & Heinsdorf GmbH. Latch mechanism and locking adaptor. 4,575,137, Cl. 292-169.140.
Jans & Heinsdorf GmbH: *See—*
Jans, Franz W., 4,575,137, Cl. 292-169.140.
Jansen-Herfeld, Rottger, to Rottger Jansen-Herfeld, Firma. Circular saw blade. 4,574,676, Cl. 83-835.000.
Janutta, Reinhard, to Hauni-Werke Korber & Co. KG. Support for rotary material removing tools in grinding machines. 4,574,768, Cl. 125-11.0CD.
Japan Life Co. Ltd.: *See—*
Yagi, Toshizo, 4,574,411, Cl. 5-434.000.
Japan Spectroscopic Co., Ltd.: *See—*
Nishizawa, Seizi; and Shirawachi, Kikuo, 4,575,246, Cl. 356-346.000.
Japan Synthetic Rubber Company Limited: *See—*
Oshima, Noboru; Shimizu, Isamu; Takeuchi, Mikio; Fujimaki, Tatsuo; and Yamaguchi, Shinsuke, 4,575,534, Cl. 525-99.000.
Japan Tobacco & Salt Public Corporation, The: *See—*
Sagawa, Takayoshi; and Hirose, Ichiro, 4,575,368, Cl. 493-49.000.
Suzuki, Minoru; and Tamaribuchi, Masahiro, 4,574,817, Cl. 131-94.000.
Jarricot, Jean A.: *See—*
David, Pierre; and Jarricot, Jean A., 4,575,492, Cl. 436-164.000.
Javorka, Istvan: *See—*
Alapi, Jozsef; Baldaszti, Laszlo ; Gaspar, Laszlo ; Herczegh, Marton; Javorka, Istvan; Kisberk, Ferenc; Klauser, Janos; Makk, Antal; and Pallos, Istvan, 4,575,460, Cl. 426-72.000.
Jegers, Viktor J., to Wagner Spray Tech Corporation. Combination viscosity measuring device and stirrer. 4,574,621, Cl. 73-54.000.
Jeglinski, Werner: *See—*
Bentin, Horst; Doring, Michael; Kronenberg, Horst; and Jeglinski, Werner, 4,574,445, Cl. 29-157.00C.
Jenkins, Clive N.: *See—*
Bankart, Adrian E.; and Jenkins, Clive N., 4,575,628, Cl. 250-235.000.
Jervis B. Webb Company: *See—*
Dehne, Clarence A., 4,574,706, Cl. 104-162.000.
Jewett, Harold. Apparatus for dispensing cans and the like. 4,574,981, Cl. 221-283.000.
Jidosha Kiki Co., Ltd.: *See—*
Inoue, Hidehumi, 4,574,834, Cl. 137-505.250.
Jindra, Frank J., to Endicott Johnson Corporation. Safety shoe having improved sole construction. 4,574,497, Cl. 36-77.00R.

Johannes Heidenhain GmbH: *See—*
Schwefel, Ernst, 4,575,791, Cl. 364-168.000.
Johnson, Don R. Laser adjustable intraocular lens and method of altering lens power. 4,575,373, Cl. 623-6.000.
Johnson, Dwight N., to Masco Corporation. Adjustable vacuum breaker fill valve. 4,574,826, Cl. 137-2.000.
Johnson, Frederick O., to Westinghouse Electric Corp. Tachometer check apparatus. 4,575,664, Cl. 318-327.000.
Johnson, George W., to Lockheed Corporation. Multiple angle cutting apparatus. 4,574,670, Cl. 83-409.000.
Johnson, Stanley A., Jr. Liquid level molded indicating gage portions. 4,574,631, Cl. 73-317.000.
Johnson, William M. Bicycle reflector safety device. 4,575,189, Cl. 350-99.000.
Johnston, James G., to Challenge-Cook Bros., Incorporated. Transit mixer support pedestal mounting apparatus. 4,575,254, Cl. 366-62.000.
Jonas, Rochus; Kloft, Michael; Wurziger, Hanns; Harting, Jurgen; Enenkel, Hans J.; Minck, Klaus-Otto; and Schliep, Hans-Jochen, to Merck Patent Gesellschaft mit beschrankter Haftung. Pharmaceutical compositions containing 2-aryltetraazaindenes for treating ulcers or cardiac insufficiency or blood pressure abnormalities. 4,575,505, Cl. 514-248.000.
Jones, Colin; and Clemens, William J., to Ford Motor Company. Fuel injection throttle body. 4,574,760, Cl. 123-472.000.
Jones, Dedger. High temperature engine and seal. 4,574,590, Cl. 60-676.000.
Jones, John D.; and Schofield, David, to Imperial Chemical Industries PLC. Preparation of substituted benzamides. 4,575,557, Cl. 549-366.000.
Jones, John N.: *See—*
Allington, Robert W.; and Jones, John N., 4,575,424, Cl. 210-198.200.
Jones, Marvin R., to Jones, Marvin R. Device for removing a cork or other resilient stopper from the neck of a bottle. 4,574,662, Cl. 81-3.450.
Jones, William S.: *See—*
Hartmann, Clinton S.; and Jones, William S., 4,575,696, Cl. 333-154.000.
Jonner, Wolf-Dieter: *See—*
Leiber, Heinz; and Jonner, Wolf-Dieter, 4,575,160, Cl. 303-110.000.
Jordan, Ben L. Facile back scratcher. 4,574,788, Cl. 128-67.000.
Jorgensen, Karl-Gunnar; and Magnusson, Leif, to Teknikgruppen AB. Tree processing machine. 4,574,855, Cl. 144-2.00Z.
Jouk, Leo : *See—*
Lassmann, Dieter; Vialla, Remy; and Jouk, Leo , 4,574,410, Cl. 5-81.00R.
Joy Manufacturing Company: *See—*
Hollister, F. Harold; Le, Tri C.; and Meyer, Danny S., 4,575,106, Cl. 277-167.500.
Joyner, Albert W. Wheelchair seat. 4,574,901, Cl. 180-65.100.
Juenger, Bruce H.: *See—*
DeGree, David C.; Fick, Herbert J.; and Juenger, Bruce H., 4,574,879, Cl. 165-185.000.
Julliard, Jacques; Tirilly, Louis; and Vigier, Pierre, to Cegedur Societe de Transformation de l'Aluminium Pechiney. Apparatus for the recovery of liquid aluminium by compression of hot dross. 4,575,056, Cl. 266-227.000.
Julliard, Jacques; Tirilly, Louis; and Vigier, Pierre, to Cegedur Societe de l'Aluminium Pechiney. Process for the recovery of liquid aluminium by compression of hot dross. 4,575,392, Cl. 75-24.000.
Junemann, Hubert; and Romich, Samuel, to Kochs Adler AG. Workpiece clamp for a sewing device. 4,574,717, Cl. 112-121.120.
Jung, Rolf; Buchmann, Winfried; and Buss, Albert, to Krauss u. Reichert GmbH & Co. KG, Spezialmaschinenfabrik. Web laying machine and method. 4,575,065, Cl. 270-31.000.
Kabushiki Kaisha Ishida Koki Seisakusho: *See—*
Fukuda, Masao, 4,574,849, Cl. 141-1.000.
Kitaoka, Takashi, 4,575,732, Cl. 346-76.0PH.
Minamida, Kazukiyo; and Fujitani, Yugo, 4,574,897, Cl. 177-25.000.
Kabushiki Kaisha Kawakami Seisakusho: *See—*
Nasu, Nobuo, 4,575,066, Cl. 270-31.000.
Kabushiki Kaisha Kobe Seiko Sho: *See—*
Maikuma, Yoshimata; Nojiri, Yasushi; and Oda, Ryoichi, 4,574,628, Cl. 73-146.000.
Yoshimura, Shoji, 4,575,323, Cl. 418-201.000.
Kabushiki Kaisha Komatsu Seisakusho: *See—*
Aoki, Hidekatsu; and Hashimoto, Masami, 4,574,900, Cl. 180-6.200.
Kabushiki Kaisha Miroku Seisakusho: *See—*
Nishikawa, Tadahiro, 4,574,510, Cl. 42-40.000.
Kabushiki Kaisha Nagaoka: *See—*
Yamaguchi, Izumi, 4,574,418, Cl. 15-268.000.
Kabushiki Kaisha Riken: *See—*
Umegawa, Koujiro, 4,575,107, Cl. 277-221.000.
Kabushiki Kaisha Sankyo Seiki Seisakusho: *See—*
Kitamura, Yoshio, 4,575,347, Cl. 446-301.000.
Kabushiki Kaisha Suwa Seikosha: *See—*
Hashimoto, Masami, 4,575,743, Cl. 357-23.120.
Hosokawa, Minoru, 4,575,777, Cl. 360-123.000.
Kabushiki Kaisha Toka-rika-denki-seisakusho: *See—*
Matsui, Kenji; and Sasaki, Hironori, 4,575,118, Cl. 280-801.000.
Kabushiki Kaisha Tominaga Jyushikogyosho: *See—*
Tominaga, Kazutoshi, 4,574,738, Cl. 119-18.000.
Kabushiki Kaisha Toshiba: *See—*
Murakami, Junzo, 4,575,857, Cl. 375-12.000.
Satake, Nozomi, 4,574,636, Cl. 73-607.000.
Shimono, Mamoru; Yokomori, Satoshi; and Yukinaga, Kouji, 4,575,223, Cl. 355-8.000.
Kabushiki Kaisha Toyota Chuo Kenkyusho: *See—*
Sugiyama, Katsuhiko; Kawazoe, Hiromitsu; and Idota, Yoshinori, 4,574,751, Cl. 123-188.00M.
Kabushiki Kaisha Yasakawa Denki Seisakusho: *See—*
Kimura, Kaoru; Sato, Shunji; Ogawa, Junichiro; and Nakano, Mitsuyoshi, 4,574,655, Cl. 74-665.00A.
Kabushikikaisha Tokairikadenkiseisakusho: *See—*
Hattori, Masaichi; Arakawa, Kaneyasu; and Hanaki, Akira, 4,575,590, Cl. 200-5.00B.
Kaczynski, Bernhard, to Robert Bosch GmbH. Fuel injection nozzle for internal combustion engines. 4,575,008, Cl. 239-533.300.
Kaelin, George R.: *See—*
Eden, Richard C.; and Kaelin, George R., 4,575,821, Cl. 365-154.000.
Kaffka, Karoly; Nadai, Bela; Czabaffy, Andras; and Horvath, Lorand, to Kozponti Elelmiszeripari Kutato Intezet. Detector system for measuring the intensity of a radiation scattered at a predetermined angle from a sample irradiated at a specified angle of incidence. 4,575,244, Cl. 356-343.000.
Kafka, Barbara. Kitchen appliance arrangement with portable unit. 4,575,255, Cl. 366-129.000.
KAIROS S.n.c. di Bonetti M, Manente G. e Mion A.: *See—*
Bonetti, Massimo; Manente, Giuseppe; and Mion, Abramo, 4,574,524, Cl. 49-130.000.
Kaiser Aluminum & Chemical Corporation: *See—*
Monnot, James A., 4,575,306, Cl. 415-131.000.
Kaiser, Donald B., to RCA Corporation. Photomultiplier tube having an improved centering and cathode contacting structure. 4,575,657, Cl. 313-533.000.
Kaiser, Heinz: *See—*
Pape, Dieter; Woerz, Hans; and Kaiser, Heinz, 4,575,292, Cl. 409-234.000.
Kakino, Ken: *See—*
Hashimoto, Kouichi; Innami, Teruhisa; Kakino, Ken; and Yamamura, Yukio, 4,574,786, Cl. 128-52.000.
Kakizaki, Tetsuji: *See—*
Horie, Shinji; Kakizaki, Tetsuji; and Mizutani, Toshikazu, 4,575,533, Cl. 525-72.000.
Kaltenbach, Matt A.: *See—*
Fallwell, Beeman N., Jr.; Kaltenbach, Matt A.; and Ott, William B., 4,575,847, Cl. 371-57.000.
Kamata, Yoichi: *See—*
Kotani, Takeshi; Horiuchi, Yoshiaki; and Kamata, Yoichi, 4,575,480, Cl. 430-192.000.
Kaminsky, Naum M.; and Sooy, Robert J., to USM Corporation. Component assembly table drive. 4,574,660, Cl. 74-822.000.
Kamo, Takashi: *See—*
Sakurai, Shigenori; Kamo, Takashi; and Ikai, Tadayoshi, 4,574,627, Cl. 73-116.000.
Kanamori, Ikuo: *See—*
Ogura, Toichi; Kanamori, Ikuo; and Murano, Keiichi, 4,575,257, Cl. 374-45.000.
Kaneko, Kyoichi, to Daiwa Seiko Inc. Fishing reel with shaft supported at both ends. 4,575,024, Cl. 242-218.000.
Kaneko, Nobutaka, to Olympus Optical Co., Ltd. Method of recording densitogram representing densities of fractionated substances. 4,575,808, Cl. 364-558.000.
Kaneko, Toshio: *See—*
Sakamoto, Koji; Kaneko, Toshio; Kanno, Fuchio; and Yasuda, Wataru, 4,575,220, Cl. 355-3.0DD.
Kanemitsu, Shinji: *See—*
Onoda, Shigeyoshi; Nomura, Akihiro; Mizutani, Morikazu; Kanemitsu, Shinji; Toriumi, Mototada; and Nishino, Fumio, 4,575,221, Cl. 355-3.00R.
Kanno, Fuchio: *See—*
Sakamoto, Koji; Kaneko, Toshio; Kanno, Fuchio; and Yasuda, Wataru, 4,575,220, Cl. 355-3.0DD.
Kapps, Manfred; Wiedermann, Rolf; Adam, Norbert; and Weigand, Eckehard, to Bayer Aktiengesellschaft. Rigid, closed-cell, flame-resistant polyurethane foams. 4,575,520, Cl. 521-107.000.
Karasawa, Hisashi: *See—*
Shigenobu, Hiromichi; Nakabayashi, Takao; Akiyama, Kitio; Miida, Masao; and Karasawa, Hisashi, 4,575,615, Cl. 219-314.000.
Karlin, Haldo: *See—*
Lindblom, Thore; and Karlin, Haldo, 4,574,854, Cl. 144-2.00Z.
Karliner, Rudolf, to J. Wagner GmbH. Pressure vessel for receiving liquids. 4,574,988, Cl. 222-396.000.
Karmel, Amir, to General Motors Corporation. Slip speed sensor for a multiple link belt drive system. 4,575,367, Cl. 474-106.000.
Kartalopoulos, Stamatios V., to AT&T Bell Laboratories. Programmable digital controller for generating instructions. 4,575,583, Cl. 179-18.0ES.
Kasahara, Kazuyuki: *See—*
Mizobuchi, Shotaro; Sasaki, Katsumi; Kimura, Yoshikazu; and Kasahara, Kazuyuki, 4,575,264, Cl. 384-369.000.
Kasdagly, Dino G.; and Little, Robert W., to International Business Machines Corp. Circuitry on mylar and dual durometer rubber multiple connector. 4,575,166, Cl. 339-17.00M.
Kastl, Alfons: *See—*
Fleck, Adolf; Kastl, Alfons; Loistl, Rudolf; Lehnert, Klaus; and Widemann, Ernst, 4,574,852, Cl. 141-286.000.
Kataoka, Hideaki; Yamada, Toshiro; Goto, Kuniaki; and Tsuji, Jiro, to Nippon Zeon Co., Ltd. Process for producing alpha, beta-unsaturated ketones. 4,575,570, Cl. 568-346.000.

Kato, Kenji, to NEC Corporation. Paper feeder. 4,575,068, Cl. 271-122.000.

Kato, Kiyomitsu: *See—*
Murohushi, Yoshiyuki; Kato, Kiyomitsu; and Takahashi, Mineo, 4,575,356, Cl. 464-52.000.

Kato, Osamu: *See—*
Uemura, Seiichi; Yamamoto, Shunichi; Hirose, Takao; Takashima, Hiroaki; and Kato, Osamu, 4,575,411, Cl. 208-44.000.

Katz, Joseph L.; Grund, Edward C.; Cope, Richard P.; and Glick, Alvin L., to United States of America, Air Force. Survivable local area network. 4,575,842, Cl. 370-16.000.

Kaufeldt, Roland, deceased; and by Persson, Per-Ola, executor, to Monark-Crescent AB Fack. Method and a device for enabling rapid attenuation and subsequent securing of spokes to be mounted in a spoke wheel. 4,574,446, Cl. 29-159.020.

Kauss, Wolfgang; Schulte, Heinz; and Wittich, Kurt, to Mannesmann Rexroth GmbH. Apparatus for positioning an adjusting member. 4,574,687, Cl. 91-461.000.

Kavadias, Gerry; Doyle, Terrance W.; Janik, Elizabeth; and Partyka, Richard A., to Bristol-Myers Company. Antitumor m-AMSA analog. 4,575,553, Cl. 546-106.000.

Kawabata, Takashi: *See—*
Matsumura, Susumu; Sato, Yuichi; Kawabata, Takashi; and Tsunekawa, Tokuichi, 4,575,211, Cl. 354-403.000.

Kawagoe, Nobukazu: *See—*
Yuasa, Yoshio; Yasumoto, Hidetoshi; Naruse, Kazuhiko; Kawagoe, Nobukazu; and Inaba, Masahito, 4,575,225, Cl. 355-38.000.

Kawahira, Hiroto; and Yasuda, Mitsuo, to Mitsubishi Denki Kabushiki Kaisha. Air conditioning apparatus for cars. 4,574,873, Cl. 165-42.000.

Kawano, Kiyoshi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Device for displaying data in camera viewfinder. 4,575,213, Cl. 354-474.000.

Kawasaki Steel Corporation: *See—*
Ebata, Sadao; and Bando, Seiji, 4,575,052, Cl. 266-81.000.
Nakagawa, Kichizaemon; Hira, Takaaki; Abe, Hideo; Sasaki, Toru; and Shimoyama, Yuji, 4,575,053, Cl. 266-92.000.
Yudate, Kozo; and Nagasawa, Ken, 4,575,412, Cl. 208-45.000.

Kawazoe, Hiromitsu: *See—*
Sugiyama, Katsuhiko; Kawazoe, Hiromitsu; and Idota, Yoshinori, 4,574,751, Cl. 123-188.00M.

Kay, Robert M., to Honeywell Inc. Power supply for a ring laser. 4,575,658, Cl. 315-111.210.

Kaya, Azmi; and Keyes, Marion A., IV, to Babcock & Wilcox Company, The. Enthalpy measurement for two phase substance. 4,574,626, Cl. 73-112.000.

Kazuhiro, Sakamoto; Susumu, Oshiro; and Masaharu, Morioka, to Fuji Photo Optical Co., Ltd. Endoscope. 4,574,783, Cl. 128-4.000.

Keck, Jurgen: *See—*
Kreutz, Ferdinand; Keck, Jurgen; and Bolingen, Johann, 4,574,485, Cl. 33-143.00L.

Keeley, James W., to Honeywell Information Systems Inc. Shared interface apparatus for testing the memory sections of a cache unit. 4,575,792, Cl. 364-200.000.

Keene Corporation: *See—*
Bogan, John J.; Meeks, Robert E.; and Crestfield, Arthur M., 4,575,578, Cl. 174-35.0GC.

Keiels, Peter; and Patzold, Dieter, to Leifheit AG. Airing and drying frame. 4,574,961, Cl. 211-119.010.

Keller, Jakob: *See—*
Duerig, Thomas; Escudier, Marcel; and Keller, Jakob, 4,575,325, Cl. 425-7.000.

Keller, Russell D. Tank cap having air actuated latch. 4,575,136, Cl. 292-33.000.

Kelley, Robert C.: *See—*
Mott, Jonathan C.; and Kelley, Robert C., 4,575,082, Cl. 273-73.00G.

Kelly, Joseph L., Jr.: *See—*
Dolezal, George E.; and Kelly, Joseph L., Jr., 4,574,895, Cl. 175-329.000.

Kelm, Daniel W., to Flexi-Coil Ltd. Distribution tube for pneumatic applicator. 4,575,284, Cl. 406-87.000.

Kendall Company, The: *See—*
Arkans, Edward J., 4,574,812, Cl. 128-691.000.

Kendrick, Gary R.: *See—*
Sauder, Robert A.; Kendrick, Gary R.; and Mase, John R., 4,574,995, Cl. 228-140.000.

Kennametal Inc.: *See—*
Oshnock, James A.; and Erickson, Robert A., 4,575,287, Cl. 407-41.000.

Kennecott Corporation: *See—*
Boos, Charles J.; and Kerr, Mario C., 4,575,047, Cl. 251-356.000.

Kennedy, Gary D.; and Maher, Joseph G., to Kentec, Inc. Method of fastening metered joints of a wooden picture frame. 4,574,452, Cl. 29-432.000.

Kentec, Inc.: *See—*
Kennedy, Gary D.; and Maher, Joseph G., 4,574,452, Cl. 29-432.000.

Keogh, Michael J., to Union Carbide Corporation. Water-curable, silane modified alkylene-alkyl acrylate copolymers and a process for the production thereof. 4,575,535, Cl. 525-106.000.

Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung: *See—*
Kreutz, Ferdinand; Keck, Jurgen; and Bolingen, Johann, 4,574,485, Cl. 33-143.00L.

Kerr, George T.: *See—*
Dessau, Ralph M.; and Kerr, George T., 4,575,573, Cl. 585-467.000.

Kerr, Mario C.: *See—*
Boos, Charles J.; and Kerr, Mario C., 4,575,047, Cl. 251-356.000.

Keyes, Marion A., IV; and Pocock, Robert E., to Babcock & Wilcox Company, The. Process heater control. 4,574,746, Cl. 122-448.00S.

Keyes, Marion A., IV; Lukas, Michael P.; and Pocock, Robert E., to Babcock & Wilcox Company, The. Loss minimization combustion control system. 4,575,334, Cl. 431-76.000.

Keyes, Marion A., IV: *See—*
Kaya, Azmi; and Keyes, Marion A., IV, 4,574,626, Cl. 73-112.000.

Kifune, Koji; Tanae, Hiroyuki; Yamaguchi, Yasuhiko; and Motosugi, Kenzo, to Unitika, Ltd. Porous chitin shaped article and production thereof. 4,575,519, Cl. 521-77.000.

Kikuchi, Takehiro: *See—*
Isomura, Shigenori; Kondo, Toshio; Kobayashi, Akio; and Kikuchi, Takehiro, 4,574,761, Cl. 123-478.000.

Kim, Syng N.; and Wiczer, Max, to Wico Corporation. Trackball device. 4,575,086, Cl. 273-148.00B.

Kim, Young R.: *See—*
Ornstein, Leonard; and Kim, Young R., 4,575,490, Cl. 436-63.000.

Kimura, Kaoru; Sato, Shunji; Ogawa, Junichiro; and Nakano, Mitsuyoshi, to Kabushiki Kaisha Yasakawa Denki Seisakusho. Wrist mechanism for industrial robot. 4,574,655, Cl. 74-665.00A.

Kimura, Kenji: *See—*
Oinoue, Kenichi; Kimura, Kenji; and Ida, Masatoshi, 4,575,626, Cl. 250-201.000.

Kimura, Tetsuo: *See—*
Suzuki, Takashi; Kimura, Tetsuo; and Tanaka, Seiichi, 4,575,711, Cl. 340-521.000.

Kimura, Yoshikazu: *See—*
Mizobuchi, Shotaro; Sasaki, Katsumi; Kimura, Yoshikazu; and Kasahara, Kazuyuki, 4,575,264, Cl. 384-369.000.

Kin, Nelson I.; and Payne, George T., to National Machinery Company, The. Bimetal electrode and method of making same. 4,575,343, Cl. 445-7.000.

Kinberg, Benjamin; Klawitter, Ronald R.; and Taylor, Bev W. Rotatable toy assembly. 4,575,070, Cl. 272-33.00R.

King, Bedford G. Lens mounted light system. 4,575,208, Cl. 354-126.000.

King, David R.: *See—*
Shah, Shailesh; King, David R.; and Field, Nathan D., 4,575,376, Cl. 8-116.100.

King Seeley Thermos Co.: *See—*
Nelson, Kenneth L., 4,574,593, Cl. 62-320.000.

Kingston, Charles W. Fishing lure. 4,574,514, Cl. 43-42.500.

Kinoshita, Mikio: *See—*
Miki, Hiroyuki; Kinoshita, Mikio; and Fukui, Tetsu, 4,574,910, Cl. 180-249.000.

Kinslow, William G., Jr.: *See—*
Dundas, Dennis L.; Myers, William H.; and Kinslow, William G., Jr., 4,575,331, Cl. 425-577.000.

Kirwan, Kim J.: *See—*
Hoberman, Kenneth H.; and Kirwan, Kim J., 4,575,801, Cl. 364-483.000.

Kisberk, Ferenc: *See—*
Alapi, Jozsef; Baldaszti, Laszlo ; Gaspar, Laszlo ; Herczegh, Marton; Javorka, Istvan; Kisberk, Ferenc; Klauser, Janos; Makk, Antal; and Pallos, Istvan, 4,575,460, Cl. 426-72.000.

Kishimoto, Yoshio: *See—*
Ishii, Kazunori; Kishimoto, Yoshio; and Yamamoto, Shuji, 4,575,620, Cl. 219-549.000.

Kitagawa, Hiroji, to Kitagawa Industries Co., Ltd. Fixing appliance. 4,575,060, Cl. 269-43.000.

Kitagawa Industries Co., Ltd.: *See—*
Kitagawa, Hiroji, 4,575,060, Cl. 269-43.000.
Sugiura, Haruyuki, 4,574,425, Cl. 16-225.000.

Kitamura, Yoshio, to Kabushiki Kaisha Sankyo Seiki Seisakusho. Toy music box. 4,575,347, Cl. 446-301.000.

Kitaoka, Takashi, to Kabushiki Kaisha Ishida Koki Seisakusho. Thermal printer. 4,575,732, Cl. 346-76.0PH.

Kitaura, Mashio; Ishikawa, Norio; and Ishimura, Toshihiko, to Minolta Camera Kabushiki Kaisha. Camera with an improved focus detecting system. 4,575,212, Cl. 354-409.000.

Kittelson, David B., to Optimizer Control Corporation. System for optimizing the timing of diesel or spark ignition engines. 4,575,800, Cl. 364-431.050.

Klaassen, Francois M.: *See—*
Slotboom, Jan W.; Maas, Henricus G. R.; Appels, Johannes A.; and Klaassen, Francois M., 4,574,468, Cl. 29-571.000.

Klauser, Janos: *See—*
Alapi, Jozsef; Baldaszti, Laszlo ; Gaspar, Laszlo ; Herczegh, Marton; Javorka, Istvan; Kisberk, Ferenc; Klauser, Janos; Makk, Antal; and Pallos, Istvan, 4,575,460, Cl. 426-72.000.

Klawitter, Ronald R.: *See—*
Kinberg, Benjamin; Klawitter, Ronald R.; and Taylor, Bev W., 4,575,070, Cl. 272-33.00R.

Klein, Denys C.: *See—*
Deprez, Louis E.; and Klein, Denys C., 4,575,672, Cl. 323-222.000.

Klein, Erwin, to Brown, Boveri & Cie AG. Can-type evaporative cooling device for power semiconductor elements. 4,574,877, Cl. 165-104.330.

Klemarczyk, Philip; and Lin, Samuel Q. S., to Loctite Corporation. Terminal cluster vinyl silicones and acrylate cluster silicones therefrom. 4,575,546, Cl. 526-245.000.

Kleynjans, Joseph P. H., to Flexion, Inc. Dock seal construction. 4,574,542, Cl. 52-173.0DS.

Klinger, Lance, to Klinger, Lance. Coin accepter/rejector including symmetrical dual feedback oscillator. 4,574,936, Cl. 194-318.000.

Klinkhardt, Erhard, to Rheinmetall GmbH. Arrangement for activating and/or deactivating a marker strip having a magnetizable layer. 4,575,624, Cl. 235-449.000.

Kloft, Michael: *See—*
Jonas, Rochus; Kloft, Michael; Wurziger, Hanns; Harting, Jurgen; Enenkel, Hans J.; Minck, Klaus-Otto; and Schliep, Hans-Jochen, 4,575,505, Cl. 514-248.000.

Klok, Arthur W., Jr.: *See—*
Abbott, Seth C.; Connerley, James J.; and Klok, Arthur W., Jr., 4,574,658, Cl. 74-785.000.

Kloker, Kevin L.; and Cieslak, Ronald H., to Motorola, Inc. X×Y Bit array multiplier/accumulator circuit. 4,575,812, Cl. 364-760.000.

Knaak, Hans, to Stolberger Maschinenfabrik GmbH & Co. KG. Tension regulator for a stranding machine. 4,574,574, Cl. 57-59.000.

Knickerbocker, Robert H., to Siemon Company, The. Multiple electrical connector and mounting block with boots. 4,575,177, Cl. 339-198.00R.

Knobloch, Dean A.: *See—*
Dietrich, William J., Sr.; Sizelove, Cary L., Sr.; and Knobloch, Dean A., 4,574,715, Cl. 111-7.000.

Knorr-Bremse GmbH: *See—*
Grunert, Wolfgang; and Huber, Johann, 4,575,158, Cl. 303-57.000.

Knowles, Carl H. Integral hand-held laser scanner. 4,575,625, Cl. 235-467.000.

Knuhtsen, John; and Olldag, Peder E. S., to Disa Elektronik A/S. Laser-doppler-anemometer. 4,575,238, Cl. 356-28.500.

Kobayashi, Akio: *See—*
Isomura, Shigenori; Kondo, Toshio; Kobayashi, Akio; and Kikuchi, Takehiro, 4,574,761, Cl. 123-478.000.

Kobayashi, Fumiaki: *See—*
Ito, Yoshiyasu; Kobayashi, Fumiaki; and Miyagi, Hideo, 4,574,756, Cl. 123-357.000.

Kobayashi, Kazuo: *See—*
Sakamoto, Koji; and Kobayashi, Kazuo, 4,575,218, Cl. 355-3.0DD.

Kobayashi, Norihide; Nakamura, Toshiyuki; and Sugihara, Masahiro, to Mitsubishi Denki Kabushiki Kaisha. Scroll compressor having improved lubricating structure. 4,575,320, Cl. 418-55.000.

Kobinger, Walter: *See—*
Sauter, Robert; Griss, Gerhart, deceased; Grell, Wolfgang; Hurnaus, Rudolf; Kobinger, Walter; and Pichler, Ludwig, 4,575,504, Cl. 514-215.000.

Kocev, Angel: *See—*
Palfery, Kenneth J.; Malcolm, John S.; Kocev, Angel; and Maharaj, Kenrick B., 4,574,463, Cl. 29-568.000.

Kochs Adler AG: *See—*
Junemann, Hubert; and Romich, Samuel, 4,574,717, Cl. 112-121.120.
Scholl, Hans; and Fischer, Jochen, 4,574,718, Cl. 112-121.120.

Kockler, Barry C.; Noonan, Daniel T.; and Renfrow, Donald F., to Mead Corporation, The. Apparatus and method for preparing multipage, side-stitched documents. 4,575,296, Cl. 412-6.000.

Kockler, Barry C.: *See—*
Ayers, Scott D.; Comley, John E.; Hirt, Ronald L.; and Kockler, Barry C., 4,575,729, Cl. 346-75.000.

Kodama, Hisashi; Sato, Katsujiro; Tamura, Tetsuomi; Hamamoto, Toru; and Yamada, Kazuharu, to Aisin Seiki Kabushiki Kaisha; and Toyota Jidosha Kabushiki Kaisha. Self-contained hydraulic lifter. 4,574,750, Cl. 123-90.580.

Koe, Kiyohiko; Yamaguchi, Jun; Kubo, Noboru; Matsumoto, Hiroshi; Sugimoto, Mamoru; and Fukumura, Keiji, to Sumitomo Electric Industries, Ltd. Wafer box. 4,574,950, Cl. 206-334.000.

Koebel, Sam C. J. Livestock feeder. 4,574,740, Cl. 119-60.000.

Kohashi, Yasuji; and Tsujikawa, Yoshinobu, to Mitsubishi Monsanto Chemical Co., Ltd. Epitaxial wafer for use in the production of an infrared LED. 4,575,742, Cl. 357-17.000.

Kohler Co.: *See—*
Vavra, Paul P., 4,574,998, Cl. 229-40.000.

Kohnen, Klaus; Ullrich, Norbert; and Muller, Reinhard, to Krupp-Koppers GmbH. Pin for holding and/or cooling of ceramic coatings in hot reaction chambers, and method of manufacturing the same. 4,574,713, Cl. 110-336.000.

Koitabashi, Takatoshi, to Sanden Corporation. Electromagnetic clutch. 4,574,930, Cl. 192-84.00C.

Kojima, Keiichi; and Ueno, Keiji, to Sumitomo Electric Industries, Ltd. Process for producing optical fiber for optical transmission. 4,575,437, Cl. 264-1.400.

Kojima, Tadashi: *See—*
Nishikawa, Meisei; and Kojima, Tadashi, 4,575,835, Cl. 369-50.000.

Kolpin, Thomas, to Siemens Aktiengesellschaft. Circuit arrangement for reducing the residual voltage on partially disconnected loads. 4,575,641, Cl. 307-38.000.

Koltron Corporation: *See—*
Lundstrom, Inge, 4,575,229, Cl. 355-72.000.

Komine, Hiroshi, to Northrop Corporation. Compact Raman oscillator-amplifier optical system. 4,575,645, Cl. 307-426.000.

Komiyama, Choji; and Odate, Seiji. Magnetic tape cassette. 4,575,023, Cl. 242-199.000.

Konak, A. Riza, to Exxon Production Research Co. Method and apparatus for splitting two-phase flow at pipe tees. 4,574,827, Cl. 137-89.000.

Kondo, Toshio: *See—*
Isomura, Shigenori; Kondo, Toshio; Kobayashi, Akio; and Kikuchi, Takehiro, 4,574,761, Cl. 123-478.000.

Konishiroku Photo Industry Co., Ltd.: *See—*
Yamada, Masashi; and Iwaida, Kenichi, 4,575,210, Cl. 354-400.000.

Kontoghiorghes, George: *See—*
Hider, Robert C.; Kontoghiorghes, George; and Stockham, Michael A., 4,575,502, Cl. 514-184.000.

Korth, Bernd, to Protoned B.V. Support frame. 4,574,552, Cl. 52-645.000.

Koseluk, Richard A.: *See—*
Berger, Eugene L.; and Koseluk, Richard A., 4,575,261, Cl. 374-136.000.

Kostanecki, Andrew T.: *See—*
Halligan, John F.; Leone, Violet R.; and Kostanecki, Andrew T., 4,574,987, Cl. 222-107.000.

Kosuge, Yasuharu; and Miyaho, Noriharu, to Nippon Telegraph & Telephone. Digital switching system. 4,575,844, Cl. 370-60.000.

Kotani, Takeshi; Horiuchi, Yoshiaki; and Kamata, Yoichi, to Nagase Kasei Kogyo Kabushiki Kaisha. Photoresist composition. 4,575,480, Cl. 430-192.000.

Kotera, Takuro: *See—*
Yano, Nobuyuki; Kotera, Takuro; Utagawa, Toshio; Aoki, Akira; Watanabe, Kazufumi; and Wakai, Masao, 4,574,872, Cl. 165-8.000.

Kotowicz, Cedric R., to CED's Inc. Air line to exhaust system connector. 4,575,131, Cl. 285-158.000.

Kowalczyk, Thomas A., to General Electric Company. Minimum purge volume hydraulic clutch actuator. 4,574,931, Cl. 192-106.00F.

Kozam, George. Periodontal pocket irrigating and medication delivery dispenser and gel system. 4,575,375, Cl. 604-185.000.

Kozponti Elelmiszeripari Kutato Intezet: *See—*
Kaffka, Karoly; Nadai, Bela; Czabaffy, Andras; and Horvath, Lorand, 4,575,244, Cl. 356-343.000.

Krajicek, Richard W.; Krajicek, Steven W.; and Cradeur, Robert R., to Bon Ton Rolle Limited. Truck mounted tube bundle pulling apparatus. 4,575,305, Cl. 414-746.000.

Krajicek, Steven W.: *See—*
Krajicek, Richard W.; Krajicek, Steven W.; and Cradeur, Robert R., 4,575,305, Cl. 414-746.000.

Krause, Bernd; Hoelscher, Wayne L.; and Scroggin, William F., to Xomox Corporation. Valve seat retainer having a full uninterrupted gasket face. 4,575,046, Cl. 251-316.000.

Krauss u. Reichert GmbH & Co. KG, Spezialmaschinenfabrik: *See—*
Jung, Rolf; Buchmann, Winfried; and Buss, Albert, 4,575,065, Cl. 270-31.000.

Krechmery, Roger L., to Bourns Instruments, Inc. Integrated dual-range pressure transducer. 4,574,640, Cl. 73-721.000.

Kreitlow, David B.: *See—*
Sheufelt, Edward L.; Kreitlow, David B.; and Hall, Jeffrey M., 4,575,738, Cl. 346-140.00R.

Kremer, Victor: *See—*
Mailliet, Pierre; Lonardi, Emile; Radoux, Henri; and Kremer, Victor, 4,574,494, Cl. 33-552.000.

Kresge, Edward N.; and Ver Strate, Gary W., to Exxon Research & Engineering Co. Ethylene polymer useful as a lubricating oil viscosity modifier. 4,575,574, Cl. 585-520.000.

Kreutz, Ferdinand; Keck, Jurgen; and Bolingen, Johann, to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. Bore-insertable apparatus for stationary measurement of bore-width changes in geological formations. 4,574,485, Cl. 33-143.00L.

Krieger, Steven R. Insulated panel and method of constructing same. 4,574,537, Cl. 52-127.900.

Kronenberg, Horst: *See—*
Bentin, Horst; Doring, Michael; Kronenberg, Horst; and Jeglinski, Werner, 4,574,445, Cl. 29-157.00C.

Kronfeld, Israel. Multiple stop position control apparatus for a milling machine. 4,574,441, Cl. 29-57.000.

Krouwer, Jan S.; and Lynch, Michael J., to Technicon Instruments Corp. Interference free transaminase assay. 4,575,488, Cl. 435-16.000.

Kruger, Bernd-Wieland; Priesnitz, Uwe; Jager, Gerhard; and Behrenz, Wolfgang, to Bayer Aktiengesellschaft. Cyclopropylmethyl(ene) ethers and arthropocidal use thereof. 4,575,516, Cl. 514-715.000.

Kruger, Bernd-Wieland; Priesnitz, Uwe; Jager, Gerhard; Paulus, Wilfried; and Genth, Hermann, to Bayer Aktiengesellschaft. Microbicidal agent for preserving industrial materials. 4,575,517, Cl. 514-715.000.

Kruger, Heinz W.: *See—*
Teubler, Heinz; Kruger, Heinz W.; and Schulz, Rene , 4,575,314, Cl. 417-310.000.

Kruk, Keith F.: *See—*
Littlejohn, Lee A.; Kruk, Keith F.; Williams, Robert E.; and Bailey, Thomas F., 4,575,426, Cl. 210-671.000.

Krupp-Koppers GmbH: *See—*
Kohnen, Klaus; Ullrich, Norbert; and Muller, Reinhard, 4,574,713, Cl. 110-336.000.

Krupp Stahl Aktiengesellschaft: *See—*
Heller, Wilhelm, 4,575,397, Cl. 148-12.00B.

Kruppert Enterprises, Inc.: *See—*
Kruppert, Frederick W., 4,575,054, Cl. 266-114.000.

Kruppert, Frederick W., to Kruppert Enterprises, Inc. Apparatus for quenching steel pipes. 4,575,054, Cl. 266-114.000.

Ku, Jen-Sheng: *See—*
Panek, Edward J.; Schmitt, Thomas M.; Davis, Pauls; and Ku, Jen-Sheng, 4,575,559, Cl. 556-428.000.

Kubo, Keishi: *See—*
Kurisu, Norio; and Kubo, Keishi, 4,575,734, Cl. 346-208.000.

Kubo, Noboru: *See—*
Koe, Kiyohiko; Yamaguchi, Jun; Kubo, Noboru; Matsumoto, Hiroshi; Sugimoto, Mamoru; and Fukumura, Keiji, 4,574,950, Cl. 206-334.000.

Kubota, Ltd.: *See—*
Miki, Hiroyuki; Kinoshita, Mikio; and Fukui, Tetsu, 4,574,910, Cl. 180-249.000.

Kubota, Yuichi: *See—*
Nakayama, Masatoshi; Morita, Haruyuki; Kubota, Yuichi; and Tsuchiya, Keiko, 4,575,475, Cl. 428-480.000.

Kuchenbecker, Morris W., to James River Corporation of Virginia. Food container and cover therefor. 4,574,956, Cl. 206-623.000.

Kuhl, Reinhard, to Vereinigte Fullkorper-Fabriken GmbH & Co. Packing unit for mass-transfer columns. 4,575,435, Cl. 261-94.000.

Kuhn, Wolfgang; and Richter, Karl-Heinz, to Daimler-Benz Aktiengesellschaft. Device for damping oscillations of a trailer. 4,575,110, Cl. 280-446.00R.

Kulakowski, John E., to International Business Machines Corporation. Self-archiving data recording. 4,575,827, Cl. 365-230.000.

Kunz, Alfred: *See—*
List, Jorg; and Kunz, Alfred, 4,575,253, Cl. 366-331.000.

Kunzli, Albert, to Sulzer Brothers Limited. Electrical steam generator. 4,575,613, Cl. 219-284.000.

Kuper, James D. Guide and support member for cutting torches, wire welders, and the like. 4,575,051, Cl. 266-66.000.

Kurachi, Teruo: *See—*
Sugiyama, Yoshihiko; Uno, Teruo; Irie, Hiroshi; Kurachi, Teruo; and Abiko, Tetsuo, 4,574,878, Cl. 165-134.100.

Kurakake, Mitsuo, to Fanuc Ltd. AC Motor speed control apparatus. 4,575,667, Cl. 318-803.000.

Kurisu, Norio; and Kubo, Keishi, to Ricoh Company, Ltd. Thermosensitive image transfer medium. 4,575,734, Cl. 346-208.000.

Kurosawa, Akihito; and Anazawa, Osamu, to Sanden Corporation. Vending machine dispensing mechanism. 4,574,980, Cl. 221-116.000.

Kurosu, Yukio: *See—*
Ui, Yoshio; and Kurosu, Yukio, 4,575,147, Cl. 296-154.000.

Kurwa, Badrudin, to Board of Reagents, The University of Texas System. Optic nerve clamp. 4,574,804, Cl. 128-322.000.

Kusaka, Masaharu: *See—*
Ueda, Koutarou; Hasegawa, Noboru; Machihara, Akio; Kusaka, Masaharu; Orii, Kohei; and Noguchi, Yoshiro, 4,575,400, Cl. 156-428.000.

Kyocera Corporation: *See—*
Akino, Kenichiro; and Miura, Akira, 4,574,607, Cl. 72-112.000.

Kyowa Hakko Kogyo Co., Ltd: *See—*
Omura, Satoshi; Sano, Hiroshi; Yamashita, Kinya; and Okachi, Ryo, 4,575,497, Cl. 514-30.000.

Kyster, Erik: *See—*
Petersen, Hans C.; Kyster, Erik; and Thomsen, Svend E., 4,575,321, Cl. 418-61.00B.

Kytta, Oswald O., to Allied Corporation. Method of manufacturing a shell with an integral reinforcing plate. 4,574,455, Cl. 29-445.000.

La Telemecanique Electrique: *See—*
Lerude, Gerard; and Roux, Christine, 4,575,785, Cl. 362-226.000.

Lachowicz, Donald R.: *See—*
Sweeney, William M.; and Lachowicz, Donald R., 4,575,382, Cl. 44-57.000.

Lackey, Robert W.; and Gebhardt, James L., to Mead Corporation, The. Shelf element and support therefor. 4,574,709, Cl. 108-111.000.

Lagoni, William A.: *See—*
Griepentrog, Dal F.; and Lagoni, William A., 4,575,759, Cl. 358-181.000.

Laird, Cleve W., to International Remote Imaging Systems, Inc. Process for differentiating the origin of particles in urine. 4,575,486, Cl. 435-7.000.

Lam, Roger K. Game pieces forming unique playing units. 4,575,096, Cl. 273-296.000.

Lamb, Mark E.: *See—*
Hansen, Loren F.; and Lamb, Mark E., 4,574,890, Cl. 172-22.000.

Lamers, Hendricus F., to Van Doorne's Transmissie B.V. Infinitely variable transmission. 4,575,364, Cl. 474-16.000.

LaMontagne, Peter L., to Pennwalt Corporation. Centrifuge employing variable height discharge weir. 4,575,370, Cl. 494-56.000.

Landy, Stephen D. Low-power intermittent hanging planter rotator. 4,574,521, Cl. 47-67.000.

Langberg, Edwin. Digitizer and position encoders and calibration system for same. 4,575,581, Cl. 178-18.000.

Lange, Gerhard, to U.S. Philips Corporation. Infrared viewing apparatus. 4,575,632, Cl. 250-334.000.

Langham, Jack K., to U.S. Philips Corporation. Method and apparatus for molding an electrical plug with internal protective cap. 4,574,474, Cl. 29-858.000.

Lapke, James A.; and Schmelzle, Carl W., to Allied Corporation. Coaxial connector. 4,575,694, Cl. 333-22.00R.

Lareau, John P.: *See—*
Wentzell, Timothy H.; Lareau, John P.; and Innes, Charles B., Jr., 4,575,185, Cl. 350-96.260.

Larson, Richard I.; and Smith, William E., to General Electric Company. Production of nuclear fuel products. 4,575,436, Cl. 264-0.500.

Larue, Joseph; and Rojey, Alexandre, to Institut Francais du Petrole. Process for separating a multi-component gaseous mixture. 4,575,387, Cl. 62-17.000.

Lasher, Leroy G. Ratchet plate for conversion of a wire braider carrier to a yarn braider carrier. 4,574,679, Cl. 87-57.000.

Lassmann, Dieter; Vialla, Remy; and Jouk, Leo , to Etablissements Jouk. Device for handling people. 4,574,410, Cl. 5-81.00R.

Lau, Alfred T. Y.: *See—*
Lee, James S. W.; Chow, Kwong-Wai; Lau, Alfred T. Y.; and Chow, Ming-Ngar, 4,575,355, Cl. 446-462.000.

Lauria, Vincent A.: *See—*
Wacome, Donald M.; Fazioli, Christopher T.; and Lauria, Vincent A., 4,575,525, Cl. 524-48.000.

Lawrence, Kimberly E.: *See—*
Fassel, Velmer A.; Rice, Gary W.; and Lawrence, Kimberly E., 4,575,609, Cl. 219-121.0PY.

Layton, Howard M.; and Yocis, Kenneth, to Interlab, Inc. Automated work transfer system for chemical processing baths. 4,575,299, Cl. 414-222.000.

Lazzari, Antonio, to Sasib S.p.A. Device for detecting the unbalance between the two fractions of the return traction current in the rails of a railroad track. 4,575,031, Cl. 246-34.00R.

Le Materiel Biomedical: *See—*
David, Pierre; and Jarricot, Jean A., 4,575,492, Cl. 436-164.000.

Le, Tri C.: *See—*
Hollister, F. Harold; Le, Tri C.; and Meyer, Danny S., 4,575,106, Cl. 277-167.500.

Leblanc, Jean, to Robert Bosch GmbH. Fuel injection pump. 4,574,759, Cl. 123-450.000.

LeBlanc, Richard S., to General Motors Corporation. Weapon system. 4,574,683, Cl. 89-33.040.

Le Borgne, Xavier; and Limonne, Marc, to Regie Nationale des Usines Renault. Device for operating a swiveling body element. 4,574,525, Cl. 49-324.000.

Lee, Charles M., to AT&T Bell Laboratories. Complementary field effect transistor EXCLUSIVE OR logic gates. 4,575,648, Cl. 307-471.000.

Lee, Do I.: *See—*
Werkema, Donald A.; Willency, Richard A.; and Lee, Do I., 4,575,477, Cl. 428-537.500.

Lee, Duk H.; and O'Connell, Thomas J., III, to Du Pont de Nemours, E. I., and Company. Kit for silver staining proteins and nucleic acids. 4,575,452, Cl. 422-61.000.

Lee, I-Hwa: *See—*
Fakirov, Stoyko C.; Lee, I-Hwa; and Schultz, Jerold M., 4,575,470, Cl. 428-105.000.

Lee, James S. W.; Chow, Kwong-Wai; Lau, Alfred T. Y.; and Chow, Ming-Ngar, to Zima Products, Ltd. Toy vehicle activated by moving body part. 4,575,355, Cl. 446-462.000.

Lee, John N.; and Fisher, Arthur D., to United States of America, Navy. Integrated optical signal processor using diffraction of light by magnetostatic waves. 4,575,179, Cl. 350-96.130.

Lee, Jong B., to Greentree, James M., a part interest. Nail clipper with cut nail retaining means. 4,574,475, Cl. 30-28.000.

Lee, Kyu-Wang; Hedges, Winston L.; and Baron, Kenneth S., to Hexcel Corporation. Stabilized, catalyzed water activated polyurethane systems. 4,574,793, Cl. 128-90.000.

Lee, Robert H.; and Gupta, Suresh C., to Teledyne Industries, Inc. Methods and apparatus for synchronizing multiple motor driven generators. 4,575,671, Cl. 322-16.000.

Lee, Shi-Chuan: *See—*
Bass, Alan S.; and Lee, Shi-Chuan, 4,575,674, Cl. 324-73.00R.

Leedahl, Wesley C.: *See—*
Hull, Warren L.; Leedahl, Wesley C.; and Notch, Donald R., 4,574,610, Cl. 72-367.000.

Leeds, Richard; and Roberts, Arthur, to Global Equipment Company, Division of Continental Dynamics Corp. Electrical connector hood. 4,575,174, Cl. 339-103.00M.

Lefferts, Johannes, to SITEG Siebtechnik GmbH. Double helix, spiral belts made therefrom. 4,575,472, Cl. 428-222.000.

Legas, William H.: *See—*
Beeghly, Richard M.; Cundiff, William P.; Legas, William H.; Hurst, Lawrence B., Jr.; Crump, Robert L.; and Boore, Robert E., 4,574,857, Cl. 152-209.00B.

Legille, Edouard; Thillen, Guy; and Lonardi, Emile, to Paul Wurth S.A. Method and apparatus for controlling the movement of an oscillating spout. 4,575,790, Cl. 364-130.000.

Lehnert, Klaus: *See—*
Fleck, Adolf; Kastl, Alfons; Loistl, Rudolf; Lehnert, Klaus; and Widemann, Ernst, 4,574,852, Cl. 141-286.000.

Lehnhoff, Richard N., to General Motors Corporation. Vehicle power window control circuit. 4,575,662, Cl. 318-282.000.

Lehtinen, Antti; and Lepisto , Seppo, to Valmet Oy. Ultrasonic echo sounding device for observing web formation and pulp suspension flow in a paper machine. 4,574,624, Cl. 73-63.000.

Leiber, Heinz; and Jonner, Wolf-Dieter, to Robert Bosch GmbH. Vehicle wheel controlled anti-brake lock braking arrangement. 4,575,160, Cl. 303-110.000.

Leifheit AG: *See—*
Keiels, Peter; and Patzold, Dieter, 4,574,961, Cl. 211-119.010.

Leinenger, John T. Trough for open modular chute. 4,574,933, Cl. 193-1.000.

Leland Stanford Junior University, The Board of Trustees of The: *See—*
Quate, Calvin F., 4,575,822, Cl. 365-174.000.

Lemkin, Jack L.; Zilber, Eugene A.; and Peterson, Carl A., to O. M. Scott & Sons Company, The. Hole cutter for plastic tubing. 4,574,477, Cl. 30-92.000.

Lemmey, Edgar S. Dental X-ray duplicator. 4,575,236, Cl. 355-115.000.

Lenke, Dieter: *See—*
Steiner, Gerd; Mueller, Claus D.; and Lenke, Dieter, 4,575,508, Cl. 514-292.000.

Lenoir, John, to Ciba-Geigy AG. Photographic silver dye bleach materials containing formyl substituted azo compounds as image dyes. 4,575,482, Cl. 430-431.000.

Leonaggeo, Angelo, Jr.: *See—*
Fontaine, Lucien P.; and Leonaggeo, Angelo, Jr., 4,574,739, Cl. 119-29.000.

Leonard, Carl D.: *See—*
Duthie, Joseph G. M.; Christensen, Charles R.; and Leonard, Carl D., 4,575,192, Cl. 350-3.690.

Leonard, Clayborn T. Sealing assembly for vessels. 4,574,971, Cl. 220-235.000.

Leone, Violet R.: *See—*
Halligan, John F.; Leone, Violet R.; and Kostanecki, Andrew T., 4,574,987, Cl. 222-107.000.

le Pierres, Gildas, to Vibrachoc S.A. Seal for electronic shelf of an airplane. 4,575,105, Cl. 277-166.000.

Lepisto, J. George, to Champion International Corporation. Method and apparatus for filling valved bags. 4,574,720, Cl. 141-10.000.

Lepisto, J. George, to Champion International Corporation. Apparatus for filling a valve bag. 4,574,851, Cl. 141-68.000.

Lepisto , Seppo: *See—*
Lehtinen, Antti; and Lepisto , Seppo, 4,574,624, Cl. 73-63.000.

Lerman, Bruce B. Automatic threshold defibrillator. 4,574,810, Cl. 128-419.00D.

Lerner, Seth P., to University of Iowa Research Foundation. Instrument for skin surgery and method for using same. 4,574,805, Cl. 128-334.00R.

Lerude, Gerard; and Roux, Christine, to La Telemecanique Electrique. Visual indicator support on a printed circuit. 4,575,785, Cl. 362-226.000.

Leslie, Duane W., to Burroughs Corporation. Circuit for prevention of the metastable state in flip-flops. 4,575,644, Cl. 307-291.000.

L'Etat Francais represente par le Delegue General pour l'Armement: *See—*
Valentin, Jean P., 4,575,689, Cl. 331-116.00R.

Lever Brothers Company: *See—*
Giblin, Susan B., 4,574,945, Cl. 206-44.00R.

Levine, Mark; Hanes, Robert H.; Rudder, Joel; and Ditlya, David, to General Automotive Specialty Company, Inc. Collision avoidance light. 4,575,782, Cl. 362-61.000.

Levreault, Robert P., to Charles Stark Draper Laboratory, The. Quadrature multiplexed post correlation IF channel. 4,575,861, Cl. 375-1.000.

Lew, Hyok S.; and Stranahan, Michael. Ball bearing flow meter and pump. 4,574,644, Cl. 73-861.050.

Lewin, Ian, to QL, Inc. Segmented luminaire. 4,575,788, Cl. 362-346.000.

Lewis, Joseph W., to United States of America, Air Force. Solid rocket motor with nozzle containing aromatic amide fibers. 4,574,700, Cl. 102-287.000.

Lewis, Paul H., to Texaco Inc. Process for catalytic dewaxing with mordenite. 4,575,417, Cl. 208-111.000.

Lewis, Robert L., Jr.; and Hudson, J. Albert, to Environmental Products & Services Co., Inc. Door system for precipitators and the like. 4,574,973, Cl. 220-259.000.

Lex, Franz. Device for treatment of surfaces, particularly for cleaning and polishing. 4,574,419, Cl. 15-328.000.

Librecht, Freddy M.: *See—*
De Schamphelaere, Lucien A.; Librecht, Freddy M.; Van Peteghem, Willy F.; and De Cock, Etienne M., 4,575,739, Cl. 346-160.000.

Licht, Robert H.; and Rue, Charles V., to Norton Company. Grinding wheel for grinding titanium. 4,575,384, Cl. 51-308.000.

Liebert Corporation: *See—*
Baker, Robert W., 4,575,668, Cl. 318-811.000.

Lieske, Edgar: *See—*
Rose, David; and Lieske, Edgar, 4,575,377, Cl. 8-408.000.

Liljendahl, Mikael: *See—*
Wictorin, Lennart; Carlberg, Torbjorn; and Liljendahl, Mikael, 4,575,608, Cl. 219-85.0BM.

Lilly, A. Clifton: *See—*
Fischer, Eugene B.; and Lilly, A. Clifton, 4,574,821, Cl. 131-365.000.

Limonne, Marc: *See—*
Le Borgne, Xavier; and Limonne, Marc, 4,574,525, Cl. 49-324.000.

Lin, Samuel Q. S.: *See—*
Klemarczyk, Philip; and Lin, Samuel Q. S., 4,575,546, Cl. 526-245.000.
Nakos, Steven T.; and Lin, Samuel Q. S., 4,575,545, Cl. 526-242.000.

Lin, Shiow C.; and Barber, Craig S., to W. R. Grace & Co. Conductive thermosetting compositions and process for using same. 4,575,432, Cl. 252-511.000.

Lindberg, Torsten G.: *See—*
Persson, Nils A.; and Lindberg, Torsten G., 4,575,039, Cl. 248-550.000.

Lindblom, Thore; and Karlin, Haldo, to Osa AB. Bundle limbing device. 4,574,854, Cl. 144-2.00Z.

Lindell, Bengt. Device for handling and moving cylindrical units. 4,575,303, Cl. 414-430.000.

Lindemann Maschinenfabrik GmbH: *See—*
Marx, Helmut, 4,574,674, Cl. 83-698.000.

Lindner, George H., to M&T Chemicals Inc. Constant clearance positive displacement piston pump. 4,575,317, Cl. 417-500.000.

Lindquist, Edwin A. Sliding closure. 4,574,526, Cl. 49-411.000.

Lindstrom, Eugene E.; and Vitter, Jeffrey S., to International Business Machines Corporation. External sorting using key value distribution and range formation. 4,575,798, Cl. 364-300.000.

Linear Technology Corporation: *See—*
Dobkin, Robert C.; Erdi, George; and Nelson, Carl T., 4,575,685, Cl. 330-261.000.

Linge, Reiner; Sprafke, Uwe; and Schlomer, Heinz-Jurgen, to Wegmann & Co. GmbH. Securing and ejector device on ammunition-stowage systems with storage tubes. 4,574,684, Cl. 89-34.000.

Linke, Edward J., Jr.: *See—*
Hargrave, Franklin; Linke, Edward J., Jr.; and Middleton, Francisco A., 4,575,840, Cl. 370-13.000.

Linker, Matthew P.: *See—*
Linker, Roy E.; and Linker, Matthew P., 4,575,003, Cl. 237-12.30R.

Linker, Roy E.; and Linker, Matthew P., to Hotshot Auto Products Inc. Fluid heating attachment for automobile engine cooling systems. 4,575,003, Cl. 237-12.30R.

Lipinski, Christopher A., to Pfizer Inc. Spiro-imidazolidines as aldose reductase inhibitors and their pharmaceutical use. 4,575,507, Cl. 514-278.000.

Lisec, Peter. Spacer frame and method for bending hollow shaped bar portions to form spacer frames for insulating glass. 4,574,553, Cl. 52-658.000.

Lisfeld, Robert, to Ernst Leitz Wetzlar GmbH. Focusing drive for a microscope with flexible drive shaft. 4,575,199, Cl. 350-530.000.

Liss, Bernard: *See—*
Liss, Saul; and Liss, Bernard, 4,574,808, Cl. 128-419.00R.

Liss, Saul; and Liss, Bernard, to Pain Suppression Labs, Inc. Apparatus and method for relieving symptoms of multiple sclerosis. 4,574,808, Cl. 128-419.00R.

List, Jorg; and Kunz, Alfred, to Dipl. Ing. H. List, Industrielle Verfahrenstechnik. Stirring apparatus. 4,575,253, Cl. 366-331.000.

Lista AG.: *See—*
Reis, Anton, 4,574,424, Cl. 16-114.00R.

Little, Robert W.: *See—*
Kasdagly, Dino G.; and Little, Robert W., 4,575,166, Cl. 339-17.00M.

Littlejohn, Lee A.; Kruk, Keith F.; Williams, Robert E.; and Bailey, Thomas F., to Exxon Production Research Co. Method and apparatus employing oleophilic brushes for oil spill clean-up. 4,575,426, Cl. 210-671.000.

Litton Systems, Inc.: *See—*
Anderson, Robert H., 4,575,722, Cl. 340-783.000.

Livshits, Michael: *See—*
Capek, Raymond G.; Cocco, Anthony; Dietch, Leonard; and Livshits, Michael, 4,575,691, Cl. 333-12.000.

Lobeck, Walter G., Jr.: *See—*
Temple, Davis L., Jr.; and Lobeck, Walter G., Jr., 4,575,555, Cl. 546-276.000.

Lockheed Corporation: *See—*
Cronin, Michael J., 4,575,027, Cl. 244-75.00R.
Johnson, George W., 4,574,670, Cl. 83-409.000.

Lockwood, Larry R., to Tektronix, Inc. Dielectric resonator frequency selective network. 4,575,699, Cl. 333-219.000.

Loctite Corporation: *See—*
Klemarczyk, Philip; and Lin, Samuel Q. S., 4,575,546, Cl. 526-245.000.
Nakos, Steven T.; and Lin, Samuel Q. S., 4,575,545, Cl. 526-242.000.

Loctite (Ireland) Ltd.: *See—*
Rooney, John M.; and Conway, Paul, 4,575,544, Cl. 526-118.000.

Lodetti, Attilio; Blaser, Hansueli; Medici, Brenno; and Sieg, Arno, to AG fur Industrielle Elektronik AGIE. Automatic tool changing mechanism for machine tools. 4,574,464, Cl. 29-568.000.

Lodi, Oliviero; and Armaroli, Gianni, to Sasib S.p.A. Automatic feeder device for cigarettes and similar rod-like articles. 4,575,301, Cl. 414-411.000.

Logan, David J.; and Rich, Leonard G., to Metromedia, Inc. Ink jet printing randomizing droplet placement apparatus. 4,575,730, Cl. 346-75.000.

Logemann, Robert L.: *See—*
Pinnow, Curtis C.; and Logemann, Robert L., 4,575,164, Cl. 312-350.000.

Lohrey, Cecil R.: *See—*
Fullenkamp, Eugene H.; and Lohrey, Cecil R., 4,574,963, Cl. 211-190.000.

Loistl, Rudolf: *See—*
Fleck, Adolf; Kastl, Alfons; Loistl, Rudolf; Lehnert, Klaus; and Widemann, Ernst, 4,574,852, Cl. 141-286.000.

Lommer, Daniel J. F.: *See—*
David, Guy A. J.; Grima, Jean-Claude; Pando, Bernard; Bretez, Gabriel C. O.; and Lommer, Daniel J. F., 4,575,843, Cl. 370-16.000.

Lonardi, Emile: *See—*
Legille, Edouard; Thillen, Guy; and Lonardi, Emile, 4,575,790, Cl. 364-130.000.
Mailliet, Pierre; Lonardi, Emile; Radoux, Henri; and Kremer, Victor, 4,574,494, Cl. 33-552.000.

Long, Delmar D.; and Anderson, John F., Jr., to Dayco Corporation. Polymeric-coated fabric layer and product utilizing the layer. 4,575,469, Cl. 428-86.000.

Lonza Ltd.: *See—*
Periard, Jacques; Cron, Alain; and Fischer, Francis, 4,575,430, Cl. 252-12.600.

Lopez, Denise: *See—*
Yuhas, Stephen A., Jr.; and Lopez, Denise, 4,575,568, Cl. 568-749.000.

Lorenz, Kurt; Dungs, Horst; Nashan, Gerd; Breidenbach, Dieter; and Volmark, Josef, to Carl Still GmbH & Co. KG, Firma. Waste heat boiler system, and method of generating superheated high pressure steam. 4,574,744, Cl. 122-7.00R.

Loughridge, Fred: *See—*
Bouchard, Andre C.; Maya, Jakob; Loughridge, Fred; Andress, Charles W.; and Wierzbicki, Julian, 4,575,344, Cl. 445-26.000.

Loup, Ronald L.; and Day, Curtis H., to Double A Products Co. Solenoid valve override cartridge. 4,574,843, Cl. 137-625.650.

Love, John A.: *See—*
Harwood, Oliver P.; and Love, John A., 4,575,029, Cl. 244-172.000.

Lowe, Anthony C.: *See—*
Wood, John C.; Lowe, Anthony C.; and Dowden, Barry F., 4,575,190, Cl. 350-357.000.

Lowther, Frank E.; and Voelz, Frederick L., to Atlantic Richfield Company. Process for producing acetylene using a heterogeneous mixture. 4,575,383, Cl. 48-212.000.

Lubriquip - Houdaille, Inc.: *See—*
Callahan, James J.; and Hammell, James M., 4,574,920, Cl. 184-39.100.

Lubrizol Corporation, The: *See—*
Dorer, Casper J., Jr.; and Hayashi, Katsumi, 4,575,526, Cl. 524-96.000.

Lucas Industries: *See—*
Birt, David A., 4,575,787, Cl. 362-297.000.

Lucas Industries public limited company: *See—*
Mowbray, Dorian F., 4,575,316, Cl. 417-462.000.

Luciano, Robert A.: *See—*
Pease, Logan L.; Carmean, Wes F.; and Luciano, Robert A., 4,575,627, Cl. 250-227.000.

Luciano, William A.; and Cosciani, Mary, to Albany International Corp. Seam construction for papermachine clothing. 4,574,435, Cl. 24-33.00C.

Luckhurst, Geoffrey A.: *See—*
Gardiner, William H.; and Luckhurst, Geoffrey A., 4,575,649, Cl. 307-492.000.

Ludell Manufacturing Company: *See—*
Lutzen, William C.; Roszak, Gerald A.; and Gadomski, Karen L., 4,574,775, Cl. 126-359.000.

Luderer, Albert A.: *See—*
Borrelli, Nicholas F.; Luderer, Albert A.; Mansfield, Gerald R.; and Panzarino, Joseph N., 4,574,782, Cl. 128-1.300.

Ludowise, Michael J., to United States of America, Energy. Three-junction solar cell. 4,575,576, Cl. 136-249.000.

Ludowyk, Christopher J., to Commonwealth of Australia, The. Component state monitoring. 4,575,718, Cl. 340-825.170.

Ludwig, Wilfried: *See—*
Brandenstein, Manfred; Gossmann, Willi; Pape, Gebhard; Huttner, Klaus; and Ludwig, Wilfried, 4,574,448, Cl. 29-283.500.

Lueth, Roy C., to Ultra-Temp Corporation. Metallurgical process. 4,575,449, Cl. 419-26.000.

Lugaresi, Thomas J. Joystick attachment for a computer keyboard. 4,575,591, Cl. 200-6.00A.

Lukas, Michael P.: *See—*
Keyes, Marion A., IV; Lukas, Michael P.; and Pocock, Robert E., 4,575,334, Cl. 431-76.000.

Lukianoff, George V., to International Business Machines Corporation. Electron-beam testing of semiconductor wafers. 4,575,630, Cl. 250-307.000.

Lundberg, Robert D.: *See—*
Peiffer, Dennis G.; and Lundberg, Robert D., 4,575,530, Cl. 524-548.000.

Lundstrom, Inge, to Koltron Corporation. Photoetch plate hinge. 4,575,229, Cl. 355-72.000.

Lundstrom, Thomas; and Hanssen, Carl-Otto, to Molnlycke AB. Surgical sheet. 4,574,796, Cl. 128-132.00D.

Lustig, Leopold P. Precision dental restorative system. 4,575,340, Cl. 433-173.000.

Lutron Electronics Co., Inc.: *See—*
Zaharchuk, Walter; and Spira, Joel S., 4,575,660, Cl. 315-295.000.

Lutzen, William C.; Roszak, Gerald A.; and Gadomski, Karen L., to Ludell Manufacturing Company. Direct contact water heater. 4,574,775, Cl. 126-359.000.

Lynch, Michael J.: *See—*
Krouwer, Jan S.; and Lynch, Michael J., 4,575,488, Cl. 435-16.000.

M&T Chemicals Inc.: *See—*
Lindner, George H., 4,575,317, Cl. 417-500.000.

Maas, Curtis N.; and Ganti, Sastry K., to Reichel & Drews, Inc. Apparatus for destacking sheets of material. 4,575,298, Cl. 414-116.000.

Maas, Henricus G. R.: *See—*
Slotboom, Jan W.; Maas, Henricus G. R.; Appels, Johannes A.; and Klaassen, Francois M., 4,574,468, Cl. 29-571.000.

MAC Valves, Inc.: *See—*
Neff, James A.; and Fagerlie, Richard A., 4,574,844, Cl. 137-625.650.

Macauley, George C.: *See—*
Hendrickson, Thomas A.; Macauley, George C.; Pierce, Donald L.; Roefer, Robert W.; and Strickland, Alan B., 4,575,816, Cl. 364-900.000.

MacGovern, Alan J.: *See—*
Horwitz, Bruce A.; and MacGovern, Alan J., 4,575,248, Cl. 356-353.000.

Machihara, Akio: *See—*
Ueda, Koutarou; Hasegawa, Noboru; Machihara, Akio; Kusaka, Masaharu; Orii, Kohei; and Noguchi, Yoshiro, 4,575,400, Cl. 156-428.000.

Machonis, John, Jr.: *See—*
Schmukler, Seymour; Shida, Mitsuzo; and Machonis, John, Jr., 4,575,532, Cl. 525-57.000.

MacIndoe, William C.: *See—*
Olasz, Joseph S.; and MacIndoe, William C., 4,574,625, Cl. 73-105.000.

Madden, William M., to United Technologies Corporation. Nozzle flap edge seal. 4,575,006, Cl. 239-265.290.

Maebara, Toshiaki: *See—*
Fujita, Kunihiro; Tanaka, Hideaki; and Maebara, Toshiaki, 4,575,445, Cl. 264-291.000.

Maeda, Keisuke; and Ueda, Hiroshi, to Minolta Camera Kabushiki Kaisha. Flat camera with a retractable grip member. 4,575,206, Cl. 354-82.000.

Maeda, Yoshiyasu, to Murata Kikai Kabushiki Kaisha. Nip type false twisting apparatus. 4,574,580, Cl. 57-336.000.

Magnasco, Peter L. Scraper. 4,574,417, Cl. 15-236.00R.

Magnusson, Leif: *See—*
Jorgensen, Karl-Gunnar; and Magnusson, Leif, 4,574,855, Cl. 144-2.00Z.

Maharaj, Kenrick B.: *See—*
Palfery, Kenneth J.; Malcolm, John S.; Kocev, Angel; and Maharaj, Kenrick B., 4,574,463, Cl. 29-568.000.

Maher, Joseph G.: *See—*
Kennedy, Gary D.; and Maher, Joseph G., 4,574,452, Cl. 29-432.000.

Mahler, Bob. Portable vehicle mounted stanchion. 4,574,741, Cl. 119-98.000.

Maho Werkzeugmaschinenbau Babel & Co.: *See—*
Babel, Werner, 4,575,291, Cl. 409-222.000.

Mai, Khuong H. X.; and Patil, Ghanshyam, to American Hospital Supply Corporation. Preparation of optically active 1,3-dioxolane-4-methanol compounds. 4,575,558, Cl. 549-453.000.

Maikuma, Yoshimata; Nojiri, Yasushi; and Oda, Ryoichi, to Kabushiki Kaisha Kobe Seiko Sho; and Sumitomo Rubber Industries, Ltd. Automatic rim replacing mechanism for tire uniformity inspecting machines. 4,574,628, Cl. 73-146.000.

Mailliet, Pierre; Lonardi, Emile; Radoux, Henri; and Kremer, Victor, to Paul Wurth S.A. Device for determining the profile of the charging surface of a shaft furnace. 4,574,494, Cl. 33-552.000.

Maire, Guy: *See—*
Rosaz, Guy; Maire, Guy; and Badoz, Jean-Marie, 4,574,641, Cl. 73-726.000.

Maizenberg, Leonid I., to Sybron Corporation. Ball type bur gripping mechanism for dental handpiece. 4,575,338, Cl. 433-126.000.

Makino, Katsumi: *See—*
Takahashi, Osamu; and Makino, Katsumi, 4,575,481, Cl. 430-214.000.

Makino, Masayuki, to NEC Corporation. Mobile radio communications system. 4,575,582, Cl. 179-2.0EC.

Makk, Antal: *See—*
Alapi, Jozsef; Baldaszti, Laszlo ; Gaspar, Laszlo ; Herczegh, Marton; Javorka, Istvan; Kisberk, Ferenc; Klauser, Janos; Makk, Antal; and Pallos, Istvan, 4,575,460, Cl. 426-72.000.

Malcolm, John S.: *See—*
Palfery, Kenneth J.; Malcolm, John S.; Kocev, Angel; and Maharaj, Kenrick B., 4,574,463, Cl. 29-568.000.

MAN Maschinenfabrik Augsburg Nurnberg AG: *See—*
Hirt, Alfred, 4,575,765, Cl. 358-230.000.

Mandalaywala, Ramakant H.; and Zaleski, Bogdan J., to Omnitech Electronics, Inc. Universal animal activity monitoring system. 4,574,734, Cl. 119-1.000.

Manders, Ernest K. Tissue expander and method. 4,574,780, Cl. 128-1.00R.

Manente, Giuseppe: *See—*
Bonetti, Massimo; Manente, Giuseppe; and Mion, Abramo, 4,574,524, Cl. 49-130.000.

Manes, Michael R., to Aspen Laboratories, Inc. Electrosurgical unit with regulated output. 4,574,801, Cl. 128-303.140.

Mannesmann AG: *See—*
Hauesler, Karl H.; Steinbrecher, Heinrich; and vom Dorp, Walter, 4,574,606, Cl. 72-100.000.

Mannesmann Rexroth GmbH: *See—*
Kauss, Wolfgang; Schulte, Heinz; and Wittich, Kurt, 4,574,687, Cl. 91-461.000.

Manservisi, Renato, to Sasib S.p.A. Cigarette quality control device. 4,574,958, Cl. 209-535.000.

Mansfield, Gerald R.: *See—*
Borrelli, Nicholas F.; Luderer, Albert A.; Mansfield, Gerald R.; and Panzarino, Joseph N., 4,574,782, Cl. 128-1.300.

Manttari, Erkki; and Ilmoniemi, Juha, to Valmet Oy. Means for saving energy in a hydraulic circuit. 4,574,838, Cl. 137-596.120.

Manville Service Corporation: *See—*
Hammond, Douglas S., 4,575,783, Cl. 362-145.000.

Mao, Chung-Rei, to InterNorth, Inc. Thermal shade. 4,574,861, Cl. 160-133.000.

March, T. Wayne: *See—*
Shupe, James T.; and March, T. Wayne, 4,574,434, Cl. 24-16.0PB.

Marconi Company Ltd., The: *See—*
Greed, Robert B., 4,575,701, Cl. 333-258.000.

Marcoux, Paul J.; Murray, Eileen M.; and Grinolds, Hugh R., to Hewlett-Packard Company. Method for fabricating conductors in integrated circuits. 4,575,402, Cl. 156-643.000.

Mariani, Elio A.: *See—*
Stern, Richard A.; and Mariani, Elio A., 4,575,727, Cl. 343-768.000.

Maridyne, Inc.: *See—*
Edstrom, Andrew H., 4,575,151, Cl. 297-304.000.

Marincic, Nikola: *See—*
Epstein, James; and Marincic, Nikola, 4,574,472, Cl. 29-623.100.

Marketing Displays, Inc.: *See—*
Seely, James R., 4,575,040, Cl. 248-624.000.

Markos, Dennis A., to Penda Corporation. Protective truck liner retainer. 4,575,146, Cl. 296-39.00R.

Marlatt, George R., to Westinghouse Electric Corp. Moderation of neutron energy. 4,575,448, Cl. 376-209.000.

Marler Haley Exposystems Limited: *See—*
Morgan, James N., 4,574,506, Cl. 40-603.000.

Marpac Industries, Inc.: *See—*
Sykes, Donald J., 4,574,985, Cl. 222-83.500.

Marques, Salvador A., to Andral Corporation. Ladder locking mechanism. 4,574,918, Cl. 182-164.000.

Marshall, J. John: *See—*
Shetty, Jayarama K.; and Marshall, J. John, 4,575,487, Cl. 435-15.000.

Martin, Danny W., to McDonnell Douglas Corporation. Uncooled YAG laser. 4,575,854, Cl. 372-75.000.

Martin, Hugh H., to General Electric Company. Power circuit control apparatus for primary and auxiliary loads. 4,575,640, Cl. 307-23.000.

Martin, Robert P., Jr. Bookmark. 4,574,727, Cl. 116-234.000.

Martin, Roger; and Buffa, Laurent, to Vanatome. Rotary cock with generally spherical valve member. 4,575,045, Cl. 251-172.000.

Martin, Roland, to Charmilles Technologies, S.A. Apparatus and method for detecting the location of an electrical discharge along the electrode wire of an EDM apparatus. 4,575,605, Cl. 219-69.00W.

Maruzen Kabushiki Kaisha: *See—*
Yamanoi, Noboru, 4,574,993, Cl. 227-131.000.

Marvin Glass & Associates: *See—*
Ferris, Michael J.; and Breslow, Jeffrey D., 4,575,094, Cl. 273-249.000.

Marx, Helmut, to Lindemann Maschinenfabrik GmbH. Shearing machine for cutting up miscellaneous material. 4,574,674, Cl. 83-698.000.

Masaharu, Morioka: *See—*
Kazuhiro, Sakamoto; Susumu, Oshiro; and Masaharu, Morioka, 4,574,783, Cl. 128-4.000.

Masai, Hiroshi: *See—*
Fujiyama, Seiichi; Minakami, Hiroyuki; Tayama, Kenji; and Masai, Hiroshi, 4,575,551, Cl. 536-123.000.

Maschhoff, Jack. Building wall and insulation assembly. 4,574,550, Cl. 52-405.000.

Masco Corporation: *See—*
Johnson, Dwight N., 4,574,826, Cl. 137-2.000.

Mase, John R.: *See—*
Sauder, Robert A.; Kendrick, Gary R.; and Mase, John R., 4,574,995, Cl. 228-140.000.

Massari, Fausto: *See—*
Guandalini, Claudio; and Massari, Fausto, 4,575,283, Cl. 405-240.000.

Mastroianni, Sal; Casteel, Carroll; and Hulseweh, Terry S., to Motorola, Inc. Process for self-aligned buried layer, channel-stop, and isolation. 4,574,469, Cl. 29-576.00W.

Masui, Toshimune. Box containing facial tissues. 4,574,952, Cl. 206-494.000.

Mateja, Edwin S. Apparatus for spreading liquid material. 4,575,279, Cl. 404-111.000.

Matisa Materiel Industriel S.A.: *See—*
Cicin-Sain, Ivo, 4,574,704, Cl. 104-8.000.

Matsuda, Takashi, to Takara Co., Ltd. Toy gun convertible into robot-humanoid form. 4,575,352, Cl. 446-376.000.

Matsuda, Terumi: *See—*
Arakawa, Satoshi; and Matsuda, Terumi, 4,575,635, Cl. 250-484.100.

Matsui, Kenji; and Sasaki, Hironori, to Kabushiki Kaisha Toka-rika-denki-seisakusho. Support construction of securing member for securing an occupant restraining webbing. 4,575,118, Cl. 280-801.000.

Matsumoto, Hiroshi: *See—*
Koe, Kiyohiko; Yamaguchi, Jun; Kubo, Noboru; Matsumoto, Hiroshi; Sugimoto, Mamoru; and Fukumura, Keiji, 4,574,950, Cl. 206-334.000.

Matsumoto, Hiroyasu, to Tagawa Kikai Co., Ltd. Rotary drum type weft storage apparatus. 4,574,847, Cl. 139-452.000.

Matsumoto, Katsuaki; and Taguchi, Takao, to Fuji Seiki Machine Works, Ltd. Process and blasting media for deflashing articles. 4,575,396, Cl. 134-7.000.

Matsumura, Susumu; Sato, Yuichi; Kawabata, Takashi; and Tsunekawa, Tokuichi, to Canon Kabushiki Kaisha. Distance measuring device. 4,575,211, Cl. 354-403.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
Ishii, Kazunori; Kishimoto, Yoshio; and Yamamoto, Shuji, 4,575,620, Cl. 219-549.000.
Yano, Nobuyuki; Kotera, Takuro; Utagawa, Toshio; Aoki, Akira; Watanabe, Kazufumi; and Wakai, Masao, 4,574,872, Cl. 165-8.000.

Matsushita Electric Works, Ltd.: *See—*
Hashimoto, Kouichi; Innami, Teruhisa; Kakino, Ken; and Yamamura, Yukio, 4,574,786, Cl. 128-52.000.

Matsuura, Hitoshi; Yamazaki, Etsuo; and Sakurai, Hiroshi, to Fanuc Limited. Tracer control method. 4,575,665, Cl. 318-578.000.

Matsuura, Yoshiaki: *See—*
Ogata, Yusuke; Nagahama, Yasushi; Matsuura, Yoshiaki; Aoki, Kenzou; and Harada, Hidemi, 4,575,839, Cl. 370-13.000.

Matt, Timothy S.: *See—*
Eaves, Fred W.; Matt, Timothy S.; Sommer, Wayne D.; and Wensink, James B., 4,574,566, Cl. 53-450.000.

Mattei, Riccardo; and Neri, Armando, to G.D. Societa per Azioni. Method for sampling cigarettes on a filter assembly machine. 4,574,646, Cl. 73-863.920.

Mattel, Inc.: *See—*
Hippely, Keith A.; and Crain, Philip W., 4,575,350, Cl. 446-368.000.

Matthelie, Jean-Pierre, to Institut Textile de France; and Centexbel. Device for measuring the length of yarn absorbed by a textile machine. 4,574,598, Cl. 66-146.000.

Mattheus, Walter: *See—*
Hochreutiner, Roger M.; and Mattheus, Walter, 4,575,642, Cl. 307-200.00A.

Maya, Jakob: *See—*
Bouchard, Andre C.; Maya, Jakob; Loughridge, Fred; Andress, Charles W.; and Wierzbicki, Julian, 4,575,344, Cl. 445-26.000.

Mays, Ralph E. Collapsible pail. 4,574,969, Cl. 220-8.000.

Mays, Wallace M. In situ leach method. 4,575,154, Cl. 299-4.000.

Mazarin, Sanford S., to American Home Products Corporation. Periodontal toothpaste with wound-healing properties. 4,575,457, Cl. 424-52.000.

Mazda Motor Corporation: *See—*
Hayama, Nobuhiro; Yoshimura, Takeshi; and Tanikawa, Yoshitaka, 4,574,588, Cl. 60-284.000.

Mazzocco, Carl F.: *See—*
Chung, Albert S.; and Mazzocco, Carl F., 4,575,679, Cl. 324-427.000.

McAffrey, E. Maye. Bath seat. 4,574,409, Cl. 4-579.000.

McCarthy, Brian D., to Cordis Corporation. Tunnelling device for peripheral vascular reconstruction. 4,574,806, Cl. 128-334.00R.

McCarthy, Helen, representative: *See—*
McCarthy, Milton E. H., deceased; and McCarthy, Helen, representative, 4,574,656, Cl. 74-665.00M.

McCarthy, Milton E. H., deceased; and by McCarthy, Helen, representative. Anti-skid apparatus. 4,574,656, Cl. 74-665.00M.

McClain, Herbert D.: *See—*
Cononi, Victor L.; and McClain, Herbert D., 4,575,623, Cl. 235-383.000.

McClelland, Henry W.: *See—*
Varin, James D.; Fromm, H. Vincent; and McClelland, Henry W., 4,574,922, Cl. 188-73.350.

McClung, James A.: *See—*
Bulso, Joseph D., Jr.; and McClung, James A., 4,574,608, Cl. 72-348.000.

McClung, Ronald G.: *See—*
Novak, William J.; and McClung, Ronald G., 4,575,415, Cl. 208-91.000.

McCurry, Ronald C., to Singer Company, The. Self correcting belt tracking mechanism. 4,574,531, Cl. 51-170.0EB.

McDonnell Douglas Corporation: *See—*
Martin, Danny W., 4,575,854, Cl. 372-75.000.
Palfery, Kenneth J.; Malcolm, John S.; Kocev, Angel; and Maharaj, Kenrick B., 4,574,463, Cl. 29-568.000.

McDonough, David C. Multiple axis linearly and rotationally adjustable support. 4,575,035, Cl. 248-287.000.

McGraw, C. Eugene: *See—*
Christian, David E.; McGraw, C. Eugene; and Gazzero, Robert, 4,575,201, Cl. 350-612.000.

McGuire, Arthur M. Rearview mirror for vehicles. 4,575,202, Cl. 350-627.000.

McHale, William D.: *See—*
Chester, Arthur W.; McHale, William D.; and Yen, Jeffrey H., 4,575,416, Cl. 208-111.000.

McLaughin, Thomas M., Sr. Padded member and method of making the same. 4,575,152, Cl. 297-411.000.

McMaster, Harold A., to Glasstech, Inc. Apparatus for forming glass sheets. 4,575,390, Cl. 65-273.000.

McNeilab, Inc.: *See—*
Carson, John R., 4,575,514, Cl. 514-542.000.

Mead Corporation, The: *See—*
Ayers, Scott D.; Comley, John E.; Hirt, Ronald L.; and Kockler, Barry C., 4,575,729, Cl. 346-75.000.
Ikeda, Tamio, 4,574,997, Cl. 229-40.000.
Kockler, Barry C.; Noonan, Daniel T.; and Renfrow, Donald F., 4,575,296, Cl. 412-6.000.
Lackey, Robert W.; and Gebhardt, James L., 4,574,709, Cl. 108-111.000.

Mead Johnson & Company: *See—*
Temple, Davis L., Jr.; and Lobeck, Walter G., Jr., 4,575,555, Cl. 546-276.000.

MECRON medizinische Produkte GmbH: *See—*
Georges, Jawdat, 4,574,795, Cl. 128-92.0BC.

Medi-Physics, Inc.: *See—*
Byrne, Edmund F.; and Tolman, Glen L., 4,575,556, Cl. 549-63.000.

Medical Engineering Corporation: *See—*
Trick, Robert E., 4,574,792, Cl. 128-79.000.

Medication Services Inc.: *See—*
Reid, Grahame W., 4,574,954, Cl. 206-531.000.

Medici, Brenno: *See—*
Lodetti, Attilio; Blaser, Hansueli; Medici, Brenno; and Sieg, Arno, 4,574,464, Cl. 29-568.000.
Mee, John D.: *See—*
Gunther, Wolfgang H. H.; and Mee, John D., 4,575,483, Cl. 430-588.000.
Meek, John R.: *See—*
Forestal, Robert J.; and Meek, John R., 4,575,149, Cl. 297-194.000.
Meeks, Robert E.: *See—*
Bogan, John J.; Meeks, Robert E.; and Crestfield, Arthur M., 4,575,578, Cl. 174-35.0GC.
Meierhoefer, Eugene J., to Health Care Concepts, Inc. Container with integrally formed piercing site. 4,574,965, Cl. 215-32.000.
Melrose Displays, Inc.: *See—*
Coleman, Larry; and Van Duyne, Fred, 4,574,863, Cl. 160-216.000.
Memminger GmbH: *See—*
Buck, Alfred; and Roser, Erich, 4,574,597, Cl. 66-125.00R.
Menchen, Steven M.: *See—*
Dixon, Kenneth W.; and Menchen, Steven M., 4,575,527, Cl. 524-253.000.
Menchetti, Robert J.; Safran, Robert H.; and Sauer, Gale E., to Donn, Incorporated. Window system for demountable walls. 4,574,547, Cl. 52-238.100.
Menor, George, to Siemens Medical Laboratories, Inc. Patient treatment table. 4,575,064, Cl. 269-322.000.
Merck & Co., Inc.: *See—*
Burg, Richard W.; Cole, Lucille J.; and Hernandez, Sebastian, 4,575,500, Cl. 514-121.000.
Merck Patent Gesellschaft mit beschrankter Haftung: *See—*
Jonas, Rochus; Kloft, Michael; Wurziger, Hanns; Harting, Jurgen; Enenkel, Hans J.; Minck, Klaus-Otto; and Schliep, Hans-Jochen, 4,575,505, Cl. 514-248.000.
Mermi, Kurt; Sternisa, Danilo; and Frischmann, Albert, to Upat GmbH & Co. Anchoring bolt. 4,575,294, Cl. 411-30.000.
Merrell Dow Pharmaceuticals Inc.: *See—*
Sjoerdsma, Albert, 4,575,510, Cl. 514-401.000.
Merrow, Thomas E.: *See—*
Almy, Thomas A.; and Merrow, Thomas E., 4,575,818, Cl. 365-49.000.
Merten, Rudolf: *See—*
Sirinyan, Kirkor; Merten, Rudolf; Giesecke, Henning; and Wolf, Gerhard D., 4,575,467, Cl. 427-304.000.
Merz, Herbert: *See—*
Borchert, Barbara; Schmid, Herbert; Huther, Werner; and Merz, Herbert, 4,575,327, Cl. 425-78.000.
Mesdan S.p.A.: *See—*
Guzzoni, Gianfranco, 4,574,573, Cl. 57-22.000.
Mesker, Frederick R. Apparatus for servicing printing press. 4,574,698, Cl. 101-425.000.
Metal Technologies, Inc.: *See—*
Corkill, William M., 4,575,308, Cl. 415-213.00A.
Metallic Valve Company Limited, The: *See—*
Williams, David G., 4,574,835, Cl. 137-512.150.
Metcalfe, Lincoln D.: *See—*
Frank, Dieter; Metcalfe, Lincoln D.; and Park, John Y. G., 4,575,434, Cl. 558-435.000.
Metromedia, Inc.: *See—*
Logan, David J.; and Rich, Leonard G., 4,575,730, Cl. 346-75.000.
Meunier, Jean, to Pechiney. Process for obtaining extruded semifinished products from high resistance aluminum alloy powder. 4,575,450, Cl. 419-41.000.
Meurer Nonfood Product GmbH: *See—*
Vossen, Franz, 4,574,999, Cl. 229-30.000.
Meyer, Danny S.: *See—*
Hollister, F. Harold; Le, Tri C.; and Meyer, Danny S., 4,575,106, Cl. 277-167.500.
Meyer, Franklin, Jr. Effective diameter gages. 4,574,487, Cl. 33-178.00R.
Meyer, Jacques, to Societe pour l'Etude et la Fabrication de Circuits Integres Speciaux E.F.C.I.S. Decoder of a data from a subgroup of P data belonging to a group of N data. 4,575,708, Cl. 340-347.0DD.
Meyer, Wolfgang H.; and Schweizer, Hanspeter, to RCA Corporation. Sandwich-type capacitive electronic discs. 4,575,838, Cl. 369-276.000.
Meyn, Cornelis. Poultry transferring device. 4,574,428, Cl. 17-11.000.
Michel, Thomas J., to Data Medi-Card, Inc. Medical data card having internal illumination. 4,575,127, Cl. 283-109.000.
Microdot Inc.: *See—*
Berecz, Imre, 4,574,609, Cl. 72-354.000.
Repella, James A., 4,574,461, Cl. 29-564.000.
Middleton, Francisco A.: *See—*
Hargrave, Franklin; Linke, Edward J., Jr.; and Middleton, Francisco A., 4,575,840, Cl. 370-13.000.
Mignani, Anna G.: *See—*
Bacci, Mauro; Brenci, Massimo; Conforti, Giuliano; Falciai, Riccardo; Mignani, Anna G.; and Verga-Scheggi, Anna M., 4,575,259, Cl. 374-130.000.
Miida, Masao: *See—*
Shigenobu, Hiromichi; Nakabayashi, Takao; Akiyama, Kitio; Miida, Masao; and Karasawa, Hisashi, 4,575,615, Cl. 219-314.000.
Miki, Hiroyuki; Kinoshita, Mikio; and Fukui, Tetsu, to Kubota, Ltd. Transmission for agricultural tractors. 4,574,910, Cl. 180-249.000.
Milchem Incorporated: *See—*
Clapper, Dennis K.; Perricone, Alphonse C.; and Salisbury, Darrell P., 4,575,428, Cl. 252-8.50P.
Miles Laboratories, Inc.: *See—*
Shetty, Jayarama K.; and Marshall, J. John, 4,575,487, Cl. 435-15.000.
Miles, Michael E. Air suspension batting tee apparatus. 4,575,080, Cl. 273-26.00R.
Miller, Carl B.: *See—*
Grigar, Larry L.; and Miller, Carl B., 4,574,892, Cl. 175-4.510.
Miller, Richard F., to Atlantic Richfield Company. Process for removing hydrogen sulfide with reduced fouling. 4,575,455, Cl. 423-228.000.
Miller, Tony. Combination layout tool and square. 4,574,492, Cl. 33-427.000.
Minakami, Hiroyuki: *See—*
Fujiyama, Seiichi; Minakami, Hiroyuki; Tayama, Kenji; and Masai, Hiroshi, 4,575,551, Cl. 536-123.000.
Minamida, Kazukiyo; and Fujitani, Yugo, to Kabushiki Kaisha Ishida Koki Seisakusho. Combinatorial weighing apparatus. 4,574,897, Cl. 177-25.000.
Minck, Klaus-Otto: *See—*
Jonas, Rochus; Kloft, Michael; Wurziger, Hanns; Harting, Jurgen; Enenkel, Hans J.; Minck, Klaus-Otto; and Schliep, Hans-Jochen, 4,575,505, Cl. 514-248.000.
Ministry of International Trade & Industry: *See—*
Ueda, Ken; Okajima, Kenichi; and Takami, Katsumi, 4,575,868, Cl. 378-4.000.
Minjauw, Werner G.: *See—*
DeBoodt, Marcel F.; Minjauw, Werner G.; and Oppliger, Hermann, 4,575,391, Cl. 71-28.000.
Minnesota Mining and Manufacturing Company: *See—*
Vogelgesang, Peter J., 4,575,778, Cl. 360-132.000.
Minns, Richard A.: *See—*
Rogers, Howard G.; Gaudiana, Russell A.; Minns, Richard A.; and Sinta, Roger F., 4,575,547, Cl. 528-191.000.
Minolta Camera Kabushiki Kaisha: *See—*
Ito, Masazumi; Irie, Yutaka; Ikenoue, Yoshikazu; and Nakamura, Minoru, 4,575,227, Cl. 355-56.000.
Kitaura, Mashio; Ishikawa, Norio; and Ishimura, Toshihiko, 4,575,212, Cl. 354-409.000.
Maeda, Keisuke; and Ueda, Hiroshi, 4,575,206, Cl. 354-82.000.
Yuasa, Yoshio; Yasumoto, Hidetoshi; Naruse, Kazuhiko; Kawagoe, Nobukazu; and Inaba, Masahito, 4,575,225, Cl. 355-38.000.
Minter, Jerry B. Electrical connector for printed circuit boards and the like. 4,575,167, Cl. 339-17.00L.
Mion, Abramo: *See—*
Bonetti, Massimo; Manente, Giuseppe; and Mion, Abramo, 4,574,524, Cl. 49-130.000.
Mirachem Corporation Ltee/Ltd.: *See—*
Ryan, Garth S., 4,574,695, Cl. 101-148.000.
Mistry, Kantilal; and Blonder, Isaac S., to Blonder-Tongue Laboratories, Inc. Method of and apparatus for scrambling and decoding television and similar signals with wobbulating trapping. 4,575,753, Cl. 358-118.000.
Mitchell, William J., Jr.: *See—*
Bryant, Billy O.; and Mitchell, William J., Jr., 4,575,341, Cl. 434-35.000.
Mitchener, Milton J. R. Muscle-toning device. 4,574,791, Cl. 128-79.000.
Mito, Ikuo: *See—*
Seki, Masafumi; and Mito, Ikuo, 4,575,851, Cl. 372-45.000.
Mitsubishi Belting Ltd.: *See—*
Fujita, Kunihiro; Tanaka, Hideaki; and Maebara, Toshiaki, 4,575,445, Cl. 264-291.000.
Mitsubishi Denki K.K.: *See—*
Tatemoto, Minoru; and Harara, Mitsuhiko, 4,575,115, Cl. 280-707.000.
Mitsubishi Denki Kabushiki Kaisha: *See—*
Arimoto, Satomi, 4,575,599, Cl. 200-147.00A.
Kawahira, Hiroto; and Yasuda, Mitsuo, 4,574,873, Cl. 165-42.000.
Kobayashi, Norihide; Nakamura, Toshiyuki; and Sugihara, Masahiro, 4,575,320, Cl. 418-55.000.
Naya, Eizo; and Okumura, Mitsuhiro, 4,575,451, Cl. 420-489.000.
Omae, Yoshihiro; and Sekii, Tsugio, 4,574,638, Cl. 73-637.000.
Ozaki, Hideyuki; Shimotori, Kazuhiro; and Miyatake, Hideshi, 4,575,825, Cl. 365-189.000.
Yamagata, Shinji; Hisatsune, Fumiyuki; Terachi, Junichi; Yamaoto, Kiyomi; Murata, Shiro; and Yoshiyasu, Hajimu, 4,575,598, Cl. 200-144.00C.
Mitsubishi Jidosha Kogyo K.K.: *See—*
Tatemoto, Minoru; and Harara, Mitsuhiko, 4,575,115, Cl. 280-707.000.
Mitsubishi Monsanto Chemical Co., Ltd.: *See—*
Kohashi, Yasuji; and Tsujikawa, Yoshinobu, 4,575,742, Cl. 357-17.000.
Mitsubishi Petrochemical Co., Ltd.: *See—*
Horie, Shinji; Kakizaki, Tetsuji; and Mizutani, Toshikazu, 4,575,533, Cl. 525-72.000.
Mitsui Engineering & Shipbuilding Co., Ltd.: *See—*
Onta, Ryoji; Shimatani, Shiro; and Okamoto, Hitoshi, 4,574,722, Cl. 114-222.000.
Mittelmann, Gerhard J., to Swiss Aluminium Ltd. Freight container, in particular for air freight. 4,574,968, Cl. 220-1.500.
Mittler, Martin A.; and Scowen, Kenneth J., to Voltronics Corporation. Variable electronic component. 4,575,779, Cl. 361-296.000.
Miura, Akira: *See—*
Akino, Kenichiro; and Miura, Akira, 4,574,607, Cl. 72-112.000.

Miura, Kazuhiko; Hattori, Takashi; Ozaki, Tadashi; and Yamaguchi, Hiroaki, to Nippon Soken, Inc. Vibration detecting apparatus. 4,574,616, Cl. 73-35.000.
Miwa, Hirohide; and Reid, John M., to Fujitsu Limited. Ultrasonic living body tissue characterization system. 4,575,799, Cl. 364-414.000.
Miyagi, Hideo: *See—*
Ito, Yoshiyasu; Kobayashi, Fumiaki; and Miyagi, Hideo, 4,574,756, Cl. 123-357.000.
Miyaho, Noriharu: *See—*
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Miyata, Hiroshi, to Toyota Jidosha Kabushiki Kaisha. Shock absorber control unit for use of a vehicle suspension. 4,575,116, Cl. 280-707.000.
Miyatake, Hideshi: *See—*
Ozaki, Hideyuki; Shimotori, Kazuhiro; and Miyatake, Hideshi, 4,575,825, Cl. 365-189.000.
Mizell Bros. Co.: *See—*
Holcombe, J. L., 4,574,549, Cl. 52-404.000.
Mizobuchi, Shotaro; Sasaki, Katsumi; Kimura, Yoshikazu; and Kasahara, Kazuyuki, to Ebara Corporation. Thrust bearing. 4,575,264, Cl. 384-369.000.
Mizutani, Morikazu: *See—*
Onoda, Shigeyoshi; Nomura, Akihiro; Mizutani, Morikazu; Kanemitsu, Shinji; Toriumi, Mototada; and Nishino, Fumio, 4,575,221, Cl. 355-3.00R.
Mizutani, Toshikazu: *See—*
Horie, Shinji; Kakizaki, Tetsuji; and Mizutani, Toshikazu, 4,575,533, Cl. 525-72.000.
Mobil Oil Corporation: *See—*
Abdo, Milton K., 4,574,887, Cl. 166-275.000.
Chester, Arthur W.; McHale, William D.; and Yen, Jeffrey H., 4,575,416, Cl. 208-111.000.
Dennis, Charles L., 4,575,677, Cl. 324-161.000.
Dessau, Ralph M.; and Kerr, George T., 4,575,573, Cl. 585-467.000.
Hopkins, Daniel N.; and Snavely, Earl S., 4,574,886, Cl. 166-272.000.
Oksuzler, Yalcin, 4,575,281, Cl. 405-217.000.
Williams, D. Michael, 4,575,828, Cl. 367-31.000.
Moen, Bruce A.; and Hahn, Roger A., to Adolph Coors Company. Rotary injection molding system for suppressing polymer flash. 4,575,443, Cl. 264-161.000.
Moermann, Werner H.; and Brandestini, Marco. Method and apparatus for the fabrication of custom-shaped implants. 4,575,805, Cl. 364-474.000.
Moffett, Warren, to Bangor Punta Corporation. Handcuff and lock therefor. 4,574,600, Cl. 70-16.000.
Molex Incorporated: *See—*
Walse, Alan; and Stipanuk, John, 4,575,172, Cl. 339-75.0MP.
Wilson, Bill B., 4,575,175, Cl. 339-176.0MP.
Molison, Robert E.: *See—*
Elsner, Frank, Jr.; and Molison, Robert E., 4,574,458, Cl. 29-525.000.
Molnlycke AB: *See—*
Lundstrom, Thomas; and Hanssen, Carl-Otto, 4,574,796, Cl. 128-132.00D.
Molt, Werner, to Auergesellschaft GmbH. Air conveying means for gas analysis test tubes. 4,574,647, Cl. 73-864.340.
Monark-Crescent AB Fack: *See—*
Kaufeldt, Roland, deceased; and Persson, Per-Ola, executor, 4,574,446, Cl. 29-159.020.
Moncrief, William A., to United States of America, Army. Remote control of industrial fluoroscope. 4,575,870, Cl. 378-51.000.
Monnot, James A., to Kaiser Aluminum & Chemical Corporation. Slurry pump mechanical seal mounting assembly. 4,575,306, Cl. 415-131.000.
Monsanto Company: *See—*
Brooks, Albert A.; Fried, Joel R.; Henis, Jay M. S.; Zampini, Anthony; and Raucher, Daniel, 4,575,385, Cl. 55-158.000.
Cartier, George E., 4,575,540, Cl. 525-328.700.
Goure, William F., 4,575,565, Cl. 568-655.000.
Hsu, Charles K.; and Dobinson, Frank, 4,575,562, Cl. 560-204.000.
Van Eenam, Donald N., 4,575,528, Cl. 524-287.000.
Montefiore Medical Center, Inc.: *See—*
Straus, Eugene W., 4,575,484, Cl. 435-7.000.
Moody, Leonardo. Jewelry mounting construction. 4,574,595, Cl. 63-12.000.
Moore, Chester A., Jr., to Gould Inc. Voltage adjustable capacitance for frequency response shaping. 4,575,687, Cl. 330-261.000.
Moore, M. Samuel, to Semco Instruments, Inc. Engine monitor and recorder. 4,575,803, Cl. 364-551.000.
Moore, Marvin F., to Thermalloy Incorporated. Spring clip fastener for mounting of printed circuit board components. 4,575,038, Cl. 248-505.000.
Moore, William H.; and Trosky, William J., to Westinghouse Electric Corp. Methods and apparatus for correcting a software clock from an accurate clock. 4,575,848, Cl. 371-61.000.
Moores, Gregory E.: *See—*
Dibbern, John E., Jr.; and Moores, Gregory E., 4,574,471, Cl. 29-596.000.
Mora, Camillo C., to Camillo Corvi S.p.A. Erythromycin salt of the o-carbonyl(1-thiazolidinyl)-benzoic acid and pharmaceutical compositions containing it. 4,575,496, Cl. 514-29.000.
Morel, Charles P.; and Gahr, Taylor O., to CXI, Inc. Personal-computer to 3270 system interfacing apparatus. 4,575,793, Cl. 364-200.000.
Morellini, Peter. Harvesters. 4,574,567, Cl. 56-16.500.
Morgan, Charles, Jr. Livestock tail data indicator. 4,574,742, Cl. 119-156.000.
Morgan, James N., to Marler Haley Exposystems Limited. Tensioning of flexible sheets across frames. 4,574,506, Cl. 40-603.000.
Mori, Akinori: *See—*
Ueno, Keiji; and Mori, Akinori, 4,575,184, Cl. 350-96.230.
Mori, Yutaka: *See—*
Asano, Hiroaki; Nakamura, Keiichi; and Mori, Yutaka, 4,574,905, Cl. 180-142.000.
Morihara, Kazuyuki: *See—*
Homma, Yuzuru; and Morihara, Kazuyuki, 4,575,459, Cl. 424-87.000.
Morin, Francois: *See—*
Raynaud, Guy; Morin, Francois; and Brossard, Louis, 4,574,778, Cl. 126-417.000.
Morin, Pierre: *See—*
Galais, Michel; Sardain, Christian; Fouin, Jean; Arnaudeau, Marcel; and Morin, Pierre, 4,575,315, Cl. 417-365.000.
Morita, Haruyuki: *See—*
Nakayama, Masatoshi; Morita, Haruyuki; Kubota, Yuichi; and Tsuchiya, Keiko, 4,575,475, Cl. 428-480.000.
Moriwaki, Hisayoshi: *See—*
Shimada, Keiichiro; Takahashi, Takao; Moriwaki, Hisayoshi; and Nakano, Kenji, 4,575,772, Cl. 360-19.100.
Morrison, Eric F., to Ampex Corporation. Reproducible gray scale test chart for television cameras. 4,575,124, Cl. 283-1.00A.
Moseman, Merlin H.: *See—*
Hirt, Thomas J.; and Moseman, Merlin H., 4,575,335, Cl. 432-29.000.
Moteurs Leroy-Somer: *See—*
Galais, Michel; Sardain, Christian; Fouin, Jean; Arnaudeau, Marcel; and Morin, Pierre, 4,575,315, Cl. 417-365.000.
Motohashi, Tamotsu: *See—*
Ariyama, Kenzo; Yamazaki, Hideo; Motohashi, Tamotsu; and Hirota, Minoru, 4,575,215, Cl. 355-3.00R.
Motorola, Inc.: *See—*
Amin, Pravin T., 4,575,819, Cl. 365-104.000.
Bass, Alan S.; and Lee, Shi-Chuan, 4,575,674, Cl. 324-73.00R.
Brown, Leland T., 4,575,585, Cl. 179-84.00A.
Butcher, James S.; and Rousch, Charles G., 4,575,863, Cl. 375-114.000.
Kloker, Kevin L.; and Cieslak, Ronald H., 4,575,812, Cl. 364-760.000.
Mastroianni, Sal; Casteel, Carroll; and Hulseweh, Terry S., 4,574,469, Cl. 29-576.00W.
Stokes, Rembert R.; and Priniski, David J., 4,575,587, Cl. 179-175.10A.
Motosugi, Kenzo: *See—*
Kifune, Koji; Tanae, Hiroyuki; Yamaguchi, Yasuhiko; and Motosugi, Kenzo, 4,575,519, Cl. 521-77.000.
Mott, Jonathan C.; and Kelley, Robert C., to Diversified Products Corporation. Racquet with ratchet-connected throat and handle. 4,575,082, Cl. 273-73.00G.
Moughamian, Artine. Fireplace hearth. 4,574,773, Cl. 126-121.000.
Moulin, Blaise, to Caracteres S.A. Character-carrying disc for a printing machine. 4,575,266, Cl. 400-144.200.
Mowbray, Dorian F., to Lucas Industries public limited company. Rotary distributor pump. 4,575,316, Cl. 417-462.000.
MTA Mezogazdasagi Kutato Intezet: *See—*
Alapi, Jozsef; Baldaszti, Laszlo ; Gaspar, Laszlo ; Herczegh, Marton; Javorka, Istvan; Kisberk, Ferenc; Klauser, Janos; Makk, Antal; and Pallos, Istvan, 4,575,460, Cl. 426-72.000.
MTU Motoren-und Turbinen-Union Munchen GmbH: *See—*
Borchert, Barbara; Schmid, Herbert; Huther, Werner; and Merz, Herbert, 4,575,327, Cl. 425-78.000.
Mudd, Robert E.; and Wyatt, Wendell L., to Eco Industries, Inc. Apparatus for treating oil field wastes containing hydrocarbons. 4,575,336, Cl. 432-72.000.
Mudge, Dennis; and Wood, William A., to American Machine & Science, Inc. Coupling construction and clamp therefor. 4,575,062, Cl. 269-64.000.
Mueller, Claus D.: *See—*
Steiner, Gerd; Mueller, Claus D.; and Lenke, Dieter, 4,575,508, Cl. 514-292.000.
Muller, Gerhard: *See—*
Engelfried, Werner; and Muller, Gerhard, 4,574,596, Cl. 66-104.000.
Muller, Reinhard: *See—*
Kohnen, Klaus; Ullrich, Norbert; and Muller, Reinhard, 4,574,713, Cl. 110-336.000.
Muller, Willi; Schacht, Hans; Scholz, Erich; and Straubel, Max, to Robert Bosch GmbH. Device for temperature responsive switching of overflow fuel quantities of a diesel fuel injection pump. 4,574,762, Cl. 123-510.000.
Munchow und Huhne Maschinenbaugesellschaft mbH: *See—*
Huhne, Siegmar, 4,574,677, Cl. 83-870.000.
Mundie, Craig J.: *See—*
Gruner, Ronald H.; Clancy, Gerald F.; Mundie, Craig J.; Wallach, Steven J.; Schleimer, Stephen I.; and Bratt, Richard G., 4,575,797, Cl. 364-200.000.
Munson, Gregory J.: *See—*
Black, James A.; and Munson, Gregory J., 4,575,234, Cl. 355-91.000.
Murakami, Junzo, to Kabushiki Kaisha Toshiba. Adaptive equalizer with variable tap coefficient leakage. 4,575,857, Cl. 375-12.000.

Murakami, Nobuaki; Tanaka, Katsuyuki; and Ihokura, Kousuke, to Figaro Engineering Inc. Exhaust gas sensor and process for producing same. 4,575,441, Cl. 264-61.000.

Murano, Keiichi: *See—*
Ogura, Toichi; Kanamori, Ikuo; and Murano, Keiichi, 4,575,257, Cl. 374-45.000.

Murata Kikai Kabushiki Kaisha: *See—*
Maeda, Yoshiyasu, 4,574,580, Cl. 57-336.000.
Nakahara, Teiji; Shibao, Toshinori; and Fujiwara, Kazuyuki, 4,574,576, Cl. 57-58.860.

Murata, Shiro: *See—*
Yamagata, Shinji; Hisatsune, Fumiyuki; Terachi, Junichi; Yamaoto, Kiyomi; Murata, Shiro; and Yoshiyasu, Hajimu, 4,575,598, Cl. 200-144.00C.

Murohushi, Yoshiyuki; Kato, Kiyomitsu; and Takahashi, Mineo, to Yazaki Corporation. Connection for flexible cable and speedometer. 4,575,356, Cl. 464-52.000.

Murray, Eileen M.: *See—*
Marcoux, Paul J.; Murray, Eileen M.; and Grinolds, Hugh R., 4,575,402, Cl. 156-643.000.

Murray, Josephine L.: *See—*
Ingram, John D.; and Murray, Josephine L., 4,575,830, Cl. 367-26.000.

Mutschler, Erich: *See—*
Botz, Jakob; Fein, Berthold; Mutschler, Erich; and Weber, Adam, 4,575,600, Cl. 200-293.000.

Myers, William H.: *See—*
Dundas, Dennis L.; Myers, William H.; and Kinslow, William G., Jr., 4,575,331, Cl. 425-577.000.

Nadai, Bela: *See—*
Kaffka, Karoly; Nadai, Bela; Czabaffy, Andras; and Horvath, Lorand, 4,575,244, Cl. 356-343.000.

Nagahama, Yasushi: *See—*
Ogata, Yusuke; Nagahama, Yasushi; Matsuura, Yoshiaki; Aoki, Kenzou; and Harada, Hidemi, 4,575,839, Cl. 370-13.000.

Nagamoto, Masanaka; and Suguro, Yoshihiro, to Ricoh Company, Ltd. Diazo-type thermosensitive recording material with imidazole compound. 4,575,479, Cl. 430-159.000.

Nagano, Masashi, to Shimano Industrial Company Limited. Rear derailleur for a bicycle. 4,575,365, Cl. 474-80.000.

Nagasawa, Ken: *See—*
Yudate, Kozo; and Nagasawa, Ken, 4,575,412, Cl. 208-45.000.

Nagasawa, Shinji; Ono, Toshiki; and Suehiro, Masaharu, to Nippon Oil Seal Industry Co., Ltd. Radial type liquid seal with bend preventing means. 4,575,104, Cl. 277-153.000.

Nagase Kasei Kogyo Kabushiki Kaisha: *See—*
Kotani, Takeshi; Horiuchi, Yoshiaki; and Kamata, Yoichi, 4,575,480, Cl. 430-192.000.

Nagayama, Haruhiko: *See—*
Tomita, Satoru; and Nagayama, Haruhiko, 4,575,219, Cl. 355-3.0DD.

Nagel, Christopher J.: *See—*
Bach, Robert D.; and Nagel, Christopher J., 4,574,714, Cl. 110-346.000.

Nagel, Erich: *See—*
Zahn, Wolfgang; Nagel, Erich; and Payrhammer, Bernd, 4,575,226, Cl. 355-43.000.

Nagel, Vernon. Air distributing device. 4,574,772, Cl. 126-120.000.

Naimpally, Saiprasad V.; and Gurley, Thomas D., to RCA Corporation. Signal translating circuit with compensated transient response. 4,575,650, Cl. 307-520.000.

Nakabayashi, Takao: *See—*
Shigenobu, Hiromichi; Nakabayashi, Takao; Akiyama, Kitio; Miida, Masao; and Karasawa, Hisashi, 4,575,615, Cl. 219-314.000.

Nakagaki, Shintaro; and Negishi, Ichiro, to Victor Company of Japan Ltd. Noise reduction circuit for a video signal. 4,575,760, Cl. 358-167.000.

Nakagawa, Kichizaemon; Hira, Takaaki; Abe, Hideo; Sasaki, Toru; and Shimoyama, Yuji, to Kawasaki Steel Corporation. Continuous annealing apparatus. 4,575,053, Cl. 266-92.000.

Nakagawa, Yasuo; and Ninomiya, Takanori, to Hitachi, Ltd. Robot system for recognizing three dimensional shapes. 4,575,304, Cl. 414-730.000.

Nakahama, Ryoji; and Iwashita, Takashi, to Sanshin Kogyo Kabushiki Kaisha. Tilt lock mechanism for marine propulsion device. 4,575,342, Cl. 440-56.000.

Nakahara, Teiji; Shibao, Toshinori; and Fujiwara, Kazuyuki, to Murata Kikai Kabushiki Kaisha. Tension device. 4,574,576, Cl. 57-58.860.

Nakajima, Kenji. Toilet bowl. 4,574,401, Cl. 4-251.000.

Nakajima, Shiro; and Fukudome, Koki, to Sumitomo Electric Industries, Inc. Floating disk brake. 4,574,923, Cl. 188-73.450.

Nakamura, Hitoshi; and Shimura, Ryoji, to Ohi Seisakusho Co., Ltd. Door latching device. 4,575,138, Cl. 292-216.000.

Nakamura, Keiichi: *See—*
Asano, Hiroaki; Nakamura, Keiichi; and Mori, Yutaka, 4,574,905, Cl. 180-142.000.

Nakamura, Minoru: *See—*
Ito, Masazumi; Irie, Yutaka; Ikenoue, Yoshikazu; and Nakamura, Minoru, 4,575,227, Cl. 355-56.000.

Nakamura, Toshiyuki: *See—*
Kobayashi, Norihide; Nakamura, Toshiyuki; and Sugihara, Masahiro, 4,575,320, Cl. 418-55.000.

Nakamura, Yoshiaki: *See—*
Tanaka, Tadaaki; Ibuki, Tadahiro; Nakamura, Yoshiaki; and Yamamoto, Masaichi, 4,574,736, Cl. 119-14.080.

Nakano, Kenji: *See—*
Shimada, Keiichiro; Takahashi, Takao; Moriwaki, Hisayoshi; and Nakano, Kenji, 4,575,772, Cl. 360-19.100.

Nakano, Mitsuyoshi: *See—*
Kimura, Kaoru; Sato, Shunji; Ogawa, Junichiro; and Nakano, Mitsuyoshi, 4,574,655, Cl. 74-665.00A.

Nakano Vinegar Co., Ltd.: *See—*
Fujiyama, Seiichi; Minakami, Hiroyuki; Tayama, Kenji; and Masai, Hiroshi, 4,575,551, Cl. 536-123.000.

Nakashima, Seiichiro; Toyoda, Kenichi; and Sakakibara, Shinsuke, to Fanuc Ltd. Absolute position detecting system for servocontrol system. 4,575,666, Cl. 318-661.000.

Nakayama, Masatoshi; Morita, Haruyuki; Kubota, Yuichi; and Tsuchiya, Keiko, to TDK Corporation. Magnetic recording medium. 4,575,475, Cl. 428-480.000.

Nakos, Steven T.; and Lin, Samuel Q. S., to Loctite Corporation. Terminal cluster acrylate silicones. 4,575,545, Cl. 526-242.000.

Naruse, Kazuhiko: *See—*
Yuasa, Yoshio; Yasumoto, Hidetoshi; Naruse, Kazuhiko; Kawagoe, Nobukazu; and Inaba, Masahito, 4,575,225, Cl. 355-38.000.

Nasatka, Ralph G. Vehicle barricade or maximum security barrier. 4,574,523, Cl. 49-49.000.

Nash, Dudley O., to General Electric Company. High excursion seal with flexible membrane to prevent gas leakage through hinge. 4,575,099, Cl. 277-12.000.

Nashan, Gerd: *See—*
Lorenz, Kurt; Dungs, Horst; Nashan, Gerd; Breidenbach, Dieter; and Volmark, Josef, 4,574,744, Cl. 122-7.00R.

Nast, Irving J. Pick-up tool. 4,575,143, Cl. 294-65.500.

Nasu, Nobuo, to Kabushiki Kaisha Kawakami Seisakusho. Web laying machine. 4,575,066, Cl. 270-31.000.

Nath, Prem; and Hoffman, Kevin R., to Energy Conversion Devices, Inc. Substrate shield for preventing the deposition of nonhomogeneous films. 4,574,733, Cl. 118-718.000.

National Distillers and Chemical Corporation: *See—*
Hoyt, John M.; and Blazey, Steven D., 4,575,531, Cl. 524-563.000.

National Machinery Company, The: *See—*
Kin, Nelson I.; and Payne, George T., 4,575,343, Cl. 445-7.000.

National Research Development Corporation: *See—*
Hider, Robert C.; Kontoghiorghes, George; and Stockham, Michael A., 4,575,502, Cl. 514-184.000.

National Starch and Chemical Corporation: *See—*
Wacome, Donald M.; Fazioli, Christopher T.; and Lauria, Vincent A., 4,575,525, Cl. 524-48.000.

Nattel, William, to Commander Electrical Materials, Inc. Conduit connector wedge type. 4,575,132, Cl. 285-194.000.

Nattel, William, to Commander Electrical Materials, Inc. Conduit connector. 4,575,133, Cl. 285-319.000.

Nava Milano S.p.A.: *See—*
Nava, Rinaldo, 4,575,122, Cl. 281-29.000.

Nava, Rinaldo, to Nava Milano S.p.A. Cover structure for books, diary books, and the like. 4,575,122, Cl. 281-29.000.

Naya, Eizo; and Okumura, Mitsuhiro, to Mitsubishi Denki Kabushiki Kaisha. Contact material for vacuum circuit breaker. 4,575,451, Cl. 420-489.000.

NCR Corporation: *See—*
Brull, Robert A., 4,575,267, Cl. 400-56.000.
Cononi, Victor L.; and McClain, Herbert D., 4,575,623, Cl. 235-383.000.

Neave, James H.: *See—*
Dobson, Peter J.; Foxon, Charles T.; and Neave, James H., 4,575,462, Cl. 427-9.000.

NEC Corporation: *See—*
Aoyagi, Hidehito; and Hirosaki, Botaro, 4,575,682, Cl. 329-50.000.
Furukawa, Akihiro, 4,575,756, Cl. 358-136.000.
Kato, Kenji, 4,575,068, Cl. 271-122.000.
Makino, Masayuki, 4,575,582, Cl. 179-2.0EC.
Okumura, Fujio, 4,575,638, Cl. 250-578.000.
Sakurai, Keizou, 4,575,602, Cl. 219-56.210.
Tahara, Masato; and Ryu, Toshihiko, 4,575,862, Cl. 375-102.000.

Neff, James A.; and Fagerlie, Richard A., to MAC Valves, Inc. Four-way poppet valve. 4,574,844, Cl. 137-625.650.

Negishi, Ichiro: *See—*
Nakagaki, Shintaro; and Negishi, Ichiro, 4,575,760, Cl. 358-167.000.

Negre, Guy, to Elf France. Counterbalanced piston rotary machine. 4,574,749, Cl. 123-80.00R.

Neil, Lawrence E.: *See—*
Young, Harold W., Jr.; Ainsworth, Oliver C., Jr.; Fry, William E.; and Neil, Lawrence E., 4,575,494, Cl. 502-243.000.

Nelson, Carl T.: *See—*
Dobkin, Robert C.; Erdi, George; and Nelson, Carl T., 4,575,685, Cl. 330-261.000.

Nelson, Kenneth L., to King Seeley Thermos Co. Ice making apparatus. 4,574,593, Cl. 62-320.000.

Neri, Armando: *See—*
Mattei, Riccardo; and Neri, Armando, 4,574,646, Cl. 73-863.920.

Nestor, Charles R.: *See—*
Chapin, Melodee A.; Nestor, Charles R.; and Cross, William E., 4,575,173, Cl. 339-97.00R.

Neti, Radhakrishna M., to Beckman Industrial Corporation. Solid state electrode system for measuring pH. 4,575,410, Cl. 204-422.000.

Neuenburg, Michael: *See—*
Hintzen, Ullrich; and Neuenburg, Michael, 4,575,439, Cl. 264-43.000.

Neumann, John A., to Sun Chemical Corporation. Process and apparatus for measuring the flow characteristics of a flushed pigment. 4,574,623, Cl. 73-56.000.

Neumeyer, Martin J.: *See—*
Sanborn, Steven L.; and Neumeyer, Martin J., 4,574,685, Cl. 89-37.140.

New Balance Athletic Shoe, Inc.: *See—*
Norton, Edward J.; Clay, Ronald L.; and Smotrycz, Zenon O., 4,574,498, Cl. 36-114.000.

New York Blood Center, Inc.: *See—*
Vnek, John; Prince, Alfred M.; and Ikram, Hafeez, 4,575,495, Cl. 514-16.000.

NFE International, Ltd.: *See—*
Dupre, George T., 4,574,420, Cl. 15-331.000.

Nicodemus, Joachim, to Dynamit Nobel Aktiengesellschaft. Arrangement in recoilless weapons. 4,574,680, Cl. 89-1.701.

Nihon Radiator Co., Ltd.: *See—*
Sugano, Mitsutoshi, 4,575,134, Cl. 285-353.000.

Nihon Sanso Kabushiki Kaisha: *See—*
Okada, Hidetake, 4,575,388, Cl. 62-22.000.

Ninomiya, Takanori: *See—*
Nakagawa, Yasuo; and Ninomiya, Takanori, 4,575,304, Cl. 414-730.000.

Nippon Electric Co., Ltd.: *See—*
Seki, Masafumi; and Mito, Ikuo, 4,575,851, Cl. 372-45.000.
Wako, Ikutaro, 4,575,796, Cl. 364-200.000.

Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Hariguchi, Yoshinori, 4,575,447, Cl. 264-516.000.
Izuta, Tadao, 4,574,766, Cl. 124-23.00R.

Nippon Kogaku K.K.: *See—*
Oota, Tadashi; and Sawada, Masahiro, 4,575,771, Cl. 360-10.100.

Nippon Oil Company, Limited: *See—*
Uemura, Seiichi; Yamamoto, Shunichi; Hirose, Takao; Takashima, Hiroaki; and Kato, Osamu, 4,575,411, Cl. 208-44.000.

Nippon Oil Seal Industry Co., Ltd.: *See—*
Nagasawa, Shinji; Ono, Toshiki; and Suehiro, Masaharu, 4,575,104, Cl. 277-153.000.

Nippon Paint Co., Ltd.: *See—*
Yamada, Mitsuo; and Tamasaki, Hiromichi, 4,575,536, Cl. 525-162.000.

Nippon Soken, Inc.: *See—*
Miura, Kazuhiko; Hattori, Takashi; Ozaki, Tadashi; and Yamaguchi, Hiroaki, 4,574,616, Cl. 73-35.000.

Nippon Telegraph & Telephone: *See—*
Kosuge, Yasuharu; and Miyaho, Noriharu, 4,575,844, Cl. 370-60.000.

Nippon Zeon Co., Ltd.: *See—*
Kataoka, Hideaki; Yamada, Toshiro; Goto, Kuniaki; and Tsuji, Jiro, 4,575,570, Cl. 568-346.000.

Nippondenso Co., Ltd.: *See—*
Isomura, Shigenori; Kondo, Toshio; Kobayashi, Akio; and Kikuchi, Takehiro, 4,574,761, Cl. 123-478.000.

Nishikawa, Meisei; and Kojima, Tadashi, to Tokyo Shibaura Denki Kabushiki Kaisha. Motor control circuit of data reproduction apparatus. 4,575,835, Cl. 369-50.000.

Nishikawa, Tadahiro, to Kabushiki Kaisha Miroku Seisakusho. Barrel locking mechanism for break-open-action gun. 4,574,510, Cl. 42-40.000.

Nishimura, Sadanori; Yamashita, Masaru; and Shimada, Hiroyuki, to Honda Giken Kogyo Kabushiki Kaisha. Motor and gearing controls for torque converter lock-up clutch. 4,574,925, Cl. 192-3.310.

Nishino, Fumio: *See—*
Onoda, Shigeyoshi; Nomura, Akihiro; Mizutani, Morikazu; Kanemitsu, Shinji; Toriumi, Mototada; and Nishino, Fumio, 4,575,221, Cl. 355-3.00R.

Nishizawa, Seizi; and Shirawachi, Kikuo, to Japan Spectroscopic Co., Ltd. Michelson interferometer. 4,575,246, Cl. 356-346.000.

Nissan Motor Company, Limited: *See—*
Hasegawa, Yoji; and Tokura, Naomi, 4,574,589, Cl. 60-286.000.
Hirano, Yoshinori, 4,574,747, Cl. 123-41.270.

Nitta, Takeshi; and Iwasaki, Hiroshi, to Fuji Jiko Kabushiki Kaisha. Permanent magnetic chuck. 4,575,702, Cl. 335-286.000.

Nittan Company, Limited: *See—*
Suzuki, Takashi; Kimura, Tetsuo; and Tanaka, Seiichi, 4,575,711, Cl. 340-521.000.

Nixdorf Computer AG: *See—*
Roschlein, Rolf; and Schulte, Heinz, 4,575,736, Cl. 346-140.00R.

Nixon, Ivor G. Metallurgical processes, 4,575,394, Cl. 75-59.190.

NL Industries, Inc.: *See—*
Berger, Eugene L.; and Koseluk, Richard A., 4,575,261, Cl. 374-136.000.

Noguchi, Yoshiro: *See—*
Ueda, Koutarou; Hasegawa, Noboru; Machihara, Akio; Kusaka, Masaharu; Orii, Kohei; and Noguchi, Yoshiro, 4,575,400, Cl. 156-428.000.

Nojiri, Yasushi: *See—*
Maikuma, Yoshimata; Nojiri, Yasushi; and Oda, Ryoichi, 4,574,628, Cl. 73-146.000.

Nomura, Akihiro: *See—*
Onoda, Shigeyoshi; Nomura, Akihiro; Mizutani, Morikazu; Kanemitsu, Shinji; Toriumi, Mototada; and Nishino, Fumio, 4,575,221, Cl. 355-3.00R.

Noonan, Daniel T.: *See—*
Kockler, Barry C.; Noonan, Daniel T.; and Renfrow, Donald F., 4,575,296, Cl. 412-6.000.

Norchem, Inc.: *See—*
Schmukler, Seymour; Shida, Mitsuzo; and Machonis, John, Jr., 4,575,532, Cl. 525-57.000.

Nordica S.p.A.: *See—*
Aldinio, Giuseppe; Baggio, Giorgio; and Sartor, Mariano, 4,574,500, Cl. 36-119.000.

Nordischer Maschinenbau Rud. Baader GmbH + Co KG: *See—*
Hartmann, Franz, 4,574,430, Cl. 17-56.000.

Nordlund, Charles A.: *See—*
Schmidt, Ludwig; Hughes, Richard K., Jr.; and Nordlund, Charles A., 4,574,556, Cl. 53-69.000.

Nordqvist, Percy; and Hylerstedt, Eric. Urinary catheter. 4,575,371, Cl. 604-96.000.

Nordstrom, Lennart, to Saab-Scania Aktiebolag. Control stick unit. 4,574,651, Cl. 74-471.0XY.

Norman, Robert W., Jr.: *See—*
Boothroyd, Donald C.; and Norman, Robert W., Jr., 4,575,795, Cl. 364-200.000.

North American Philips Corporation: *See—*
't Hoen, Pieter J., 4,574,635, Cl. 73-599.000.

North, Lawrence A., to General Motors Corporation. Seat belt buckle emergency release system. 4,574,911, Cl. 180-270.000.

Northern Food-Line Machines K.S.: *See—*
Hallstrom, Helge, 4,574,675, Cl. 83-804.000.

Northern Telecom Limited: *See—*
Brombal, David S.; and Bunner, Charles B. D., 4,575,780, Cl. 361-413.000.
Svilans, Mikelis N., 4,574,730, Cl. 118-412.000.

Northrop Corporation: *See—*
Komine, Hiroshi, 4,575,645, Cl. 307-426.000.

Norton Company: *See—*
Licht, Robert H.; and Rue, Charles V., 4,575,384, Cl. 51-308.000.

Norton, Edward J.; Clay, Ronald L.; and Smotrycz, Zenon O., to New Balance Athletic Shoe, Inc. Sole for athletic shoe. 4,574,498, Cl. 36-114.000.

Norton, Peter. Coupling with one-way pivoted pawl clutches for drive shaft and servomotor driven shaft. 4,574,928, Cl. 192-48.920.

Norwood Industries, Inc.: *See—*
Feeley, George F., 4,574,697, Cl. 101-401.100.

Notch, Donald R.: *See—*
Hull, Warren L.; Leedahl, Wesley C.; and Notch, Donald R., 4,574,610, Cl. 72-367.000.

Novak, William J.; and McClung, Ronald G., to Engelhard Corporation. Apparatus and process for catalytic reforming with continuous sulfur removal. 4,575,415, Cl. 208-91.000.

Nye, Derald D.: *See—*
Bartlett, Geoffrey M.; Hofmeister, James P.; Nye, Derald D.; and Pring, Edward J., 4,575,813, Cl. 364-900.000.

O. M. Scott & Sons Company, The: *See—*
Lemkin, Jack L.; Zilber, Eugene A.; and Peterson, Carl A., 4,574,477, Cl. 30-92.000.

O & S Manufacturing Co.: *See—*
Smith, Joseph E., 4,575,162, Cl. 308-2.00R.

Occidental Chemical Corporation: *See—*
Peterson, John A.; Saran, Mohan S.; and Wisnouskas, Joseph S., 4,575,419, Cl. 209-167.000.

O'Connell, Thomas J., III: *See—*
Lee, Duk H.; and O'Connell, Thomas J., III, 4,575,452, Cl. 422-61.000.

Oda, Ryoichi: *See—*
Maikuma, Yoshimata; Nojiri, Yasushi; and Oda, Ryoichi, 4,574,628, Cl. 73-146.000.

Odate, Seiji: *See—*
Komiyama, Choji; and Odate, Seiji, 4,575,023, Cl. 242-199.000.

O'Donnell & Associates, Inc.: *See—*
Porowski, Engelina, 4,575,129, Cl. 285-15.000.

Oelschlager, Thomas: *See—*
Seidel, Winfried; Oelschlager, Thomas; and Schlenther, Wolfgang, 4,575,378, Cl. 8-414.000.

Ogata, Yusuke; Nagahama, Yasushi; Matsuura, Yoshiaki; Aoki, Kenzou; and Harada, Hidemi, to Fujitsu Limited. Centralized supervisory system. 4,575,839, Cl. 370-13.000.

Ogawa, Iwakichi, to Takara Co., Ltd. Magnetic top running toy. 4,575,346, Cl. 446-259.000.

Ogawa, Junichiro: *See—*
Kimura, Kaoru; Sato, Shunji; Ogawa, Junichiro; and Nakano, Mitsuyoshi, 4,574,655, Cl. 74-665.00A.

Ogle, James A.: *See—*
Holz, George E.; and Ogle, James A., 4,575,716, Cl. 340-714.000.

Ogura, Toichi; Kanamori, Ikuo; and Murano, Keiichi, to Tabai Espec Corp. Thermal shock chamber. 4,575,257, Cl. 374-45.000.

Ohi Seisakusho Co., Ltd.: *See—*
Nakamura, Hitoshi; and Shimura, Ryoji, 4,575,138, Cl. 292-216.000.

Ohio Machine Company, Inc.: *See—*
Fike, Louis T.; and Green, Kenneth A., 4,575,438, Cl. 264-36.000.

Ohishi, Yoshiyuki, to Citizen Watch Co., Ltd. Tension mechanism for abelt drive apparatus. 4,575,366, Cl. 474-101.000.

Ohno, Junichi, to Toray Industries. Toner for use in electrophotography. 4,575,478, Cl. 430-109.000.

Ohnuki, Yasuhide; and Uchibori, Minoru, to Citizen Watch Company Limited. Apparatus for detecting tool damage in automatically controlled machine tool. 4,574,633, Cl. 73-587.000.

Ohta, Yuichi: *See—*
Sakai, Toshiyuki; Okada, Yoshihiro; Hino, Masatoshi; and Ohta, Yuichi, 4,575,768, Cl. 358-282.000.

Ohtsuka, Hideo: *See—*
Iwai, Hiroshi; and Ohtsuka, Hideo, 4,575,466, Cl. 427-53.100.
Oinoue, Kenichi; Kimura, Kenji; and Ida, Masatoshi, to Olympus Optical Co., Ltd. Apparatus for detecting focus conditions of an imaging optical system. 4,575,626, Cl. 250-201.000.
Oishi, Kiyohiko: *See—*
Inoue, Tokuta; Oishi, Kiyohiko; Okamoto, Takamitsu; and Takeda, Keiso, 4,574,748, Cl. 123-52.0MB.
Oka, Yoshio: *See—*
Shichinohe, Takashi; Imaizumi, Masahiro; Ikejima, Ryoichi; and Oka, Yoshio, 4,574,652, Cl. 74-474.000.
Okachi, Ryo: *See—*
Omura, Satoshi; Sano, Hiroshi; Yamashita, Kinya; and Okachi, Ryo, 4,575,497, Cl. 514-30.000.
Okada, Hidetake, to Nihon Sanso Kabushiki Kaisha. Process for recovering argon. 4,575,388, Cl. 62-22.000.
Okada, Yoshihiro: *See—*
Sakai, Toshiyuki; Okada, Yoshihiro; Hino, Masatoshi; and Ohta, Yuichi, 4,575,768, Cl. 358-282.000.
Okajima, Kenichi: *See—*
Ueda, Ken; Okajima, Kenichi; and Takami, Katsumi, 4,575,868, Cl. 378-4.000.
Okamoto, Hitoshi: *See—*
Orita, Ryoji; Shimatani, Shiro; and Okamoto, Hitoshi, 4,574,722, Cl. 114-222.000.
Okamoto, Takamitsu: *See—*
Inoue, Tokuta; Oishi, Kiyohiko; Okamoto, Takamitsu; and Takeda, Keiso, 4,574,748, Cl. 123-52.0MB.
Okita, Masao, to Alps Electric Co., Ltd. Medium clamp mechanism. 4,575,837, Cl. 369-270.000.
Oksuzler, Yalcin, to Mobil Oil Corporation. Method and structure for forming an offshore facility. 4,575,281, Cl. 405-217.000.
Okuhara, Hisakazu; Higuchi, Kazuo; and Sasaki, Kiichi, to Honda Giken Kogyo Kabushiki Kaisha. Seat belt device. 4,575,119, Cl. 280-801.000.
Okumura, Fujio, to NEC Corporation. Thin film photoelectric converting device. 4,575,638, Cl. 250-578.000.
Okumura, Mitsuhiro: *See—*
Naya, Eizo; and Okumura, Mitsuhiro, 4,575,451, Cl. 420-489.000.
Olasz, Joseph S.; and MacIndoe, William C., to Federal Products Corporation. Surface finish, displacement and contour scanner. 4,574,625, Cl. 73-105.000.
Oldcastle, Inc.: *See—*
Bamber, Barry H.; Brookhart, George C., Jr.; and Sabatino, Alan H., 4,574,536, Cl. 52-125.300.
Olin Corporation: *See—*
Halverson, Henry J., 4,574,703, Cl. 102-520.000.
Olivieri, Icaro, to Gaber Italia S.p.A. Fastening and locking device structure, particularly for ski boots. 4,574,499, Cl. 36-117.000.
Olldag, Peder E. S.: *See—*
Knuhtsen, John; and Olldag, Peder E. S., 4,575,238, Cl. 356-28.500.
Ollendick, Gary B., to AT&T Teletype Corporation. Receiver for digital signals. 4,575,859, Cl. 375-76.000.
Ollington, Lionel V. Casino game. 4,575,085, Cl. 273-138.00R.
Olsen, Lawrence H.; and Porterfield, Donald S., to Raytheon Company. Tester for pulsed IMPATT diode and method of operating same. 4,575,675, Cl. 324-158.00D.
Olympus Optical Co., Ltd.: *See—*
Kaneko, Nobutaka, 4,575,808, Cl. 364-558.000.
Oinoue, Kenichi; Kimura, Kenji; and Ida, Masatoshi, 4,575,626, Cl. 250-201.000.
Omae, Yoshihiro; and Sekii, Tsugio, to Mitsubishi Denki Kabushiki Kaisha. Device for detecting end-shape of steel tube. 4,574,638, Cl. 73-637.000.
Omark Industries: *See—*
Ross, Cecil J., 4,574,508, Cl. 42-1.0ST.
Omnitech Electronics, Inc.: *See—*
Mandalaywala, Ramakant H.; and Zaleski, Bogdan J., 4,574,734, Cl. 119-1.000.
Omron Tateisi Electronics, Co.: *See—*
Fujimoto, Akira; Yamashita, Shigeaki; Yasuda, Hirohiko; and Yama, Yoshikazu, 4,575,852, Cl. 372-46.000.
Omura, Satoshi; Sano, Hiroshi; Yamashita, Kinya; and Okachi, Ryo, to Kyowa Hakko Kogyo Co., Ltd. 3, 3", 4"-Tri-O-acylspiramycin I. 4,575,497, Cl. 514-30.000.
Ono, Satoshi: *See—*
Hiramitsu, Tetsushi; Sugita, Hiroshi; and Ono, Satoshi, 4,574,653, Cl. 74-484.00R.
Ono, Toshiki: *See—*
Nagasawa, Shinji; Ono, Toshiki; and Suehiro, Masaharu, 4,575,104, Cl. 277-153.000.
Onoda, Shigeyoshi; Nomura, Akihiro; Mizutani, Morikazu; Kanemitsu, Shinji; Toriumi, Mototada; and Nishino, Fumio, to Canon Kabushiki Kaisha. Process kit and an image forming apparatus using the same. 4,575,221, Cl. 355-3.00R.
Onoue, Makoto: *See—*
Inoue, Kiyoshi; Onoue, Makoto; Sano, Sadao; and Hayakawa, Jun, 4,575,603, Cl. 219-69.00D.
Ooami, Kazuo: *See—*
Tanaka, Miki; and Ooami, Kazuo, 4,575,824, Cl. 365-189.000.
Oota, Tadashi; and Sawada, Masahiro, to Nippon Kogaku K.K. Apparatus for superimposing and reproducing still picture signals. 4,575,771, Cl. 360-10.100.
Oppenberg, Rolf; and Wiehn, Helmut, to Deutsche Babcock Werke Aktiengesellschaft. Method of and burner for burning liquid or gaseous fuels with decreased NO_x formation. 4,575,332, Cl. 431-9.000.
Opperud, Hans-Jorgen; Carlsson, Sven A. L.; and Ericson, Hans G., to Volvo BM AB. Method of controlling a power transmission device and power transmission device for carrying out said method. 4,574,661, Cl. 74-856.000.
Oppliger, Hermann: *See—*
DeBoodt, Marcel F.; Minjauw, Werner G.; and Oppliger, Hermann, 4,575,391, Cl. 71-28.000.
Optimizer Control Corporation: *See—*
Kittelson, David B., 4,575,800, Cl. 364-431.050.
Orendi, Roderich R.: *See—*
Ehm, Karl H.; and Orendi, Roderich R., 4,574,672, Cl. 83-471.200.
Orii, Kohei: *See—*
Ueda, Koutarou; Hasegawa, Noboru; Machihara, Akio; Kusaka, Masaharu; Orii, Kohei; and Noguchi, Yoshiro, 4,575,400, Cl. 156-428.000.
Orita, Ryoji; Shimatani, Shiro; and Okamoto, Hitoshi, to Mitsui Engineering & Shipbuilding Co., Ltd. Underwater cleaning apparatus. 4,574,722, Cl. 114-222.000.
Orlandi, Giancarlo, to Sasib S.p.A. Buffer magazine for rod-like articles. 4,574,938, Cl. 198-347.000.
Ornstein, Leonard; and Kim, Young R., to Technicon Instruments Corporation. One step method for sphering and fixing whole blood erythrocytes. 4,575,490, Cl. 436-63.000.
Ortiz, Ernest A., to Warner-Lambert Company. Razor blade assembly. 4,574,476, Cl. 30-47.000.
Osa AB: *See—*
Lindblom, Thore; and Karlin, Haldo, 4,574,854, Cl. 144-2.00Z.
Osborne, Ralph; and Phelps, Dennis C., to Weider Health & Fitness. Exercise bench. 4,575,077, Cl. 272-134.000.
Oshima, Noboru; Shimizu, Isamu; Takeuchi, Mikio; Fujimaki, Tatsuo; and Yamaguchi, Shinsuke, to Bridgestone Tire Company Limited; and Japan Synthetic Rubber Company Limited. Styrene-butadiene copolymer rubber composition. 4,575,534, Cl. 525-99.000.
Oshnock, James A.; and Erickson, Robert A., to Kennametal Inc. Milling cutter and method of assembling therefor. 4,575,287, Cl. 407-41.000.
Oskarsson, Sven G.; and Santangelo, Salvatore, to Cantherm Heating Ltd. Heat pump system. 4,575,001, Cl. 237-2.00B.
Otani, Hiroaki, to Sanshin Kogyo Kabushiki Kaisha. Propeller shock absorber for marine propulsion device. 4,575,310, Cl. 416-134.00R.
Otis Elevator Company: *See—*
Smith, David C., 4,575,720, Cl. 340-825.540.
Otis Engineering Corporation: *See—*
Carroll, Albert W.; and Pearce, Joseph L., 4,574,883, Cl. 166-255.000.
Gentry, Ernest B., 4,575,044, Cl. 251-145.000.
Ott, William B.: *See—*
Fallwell, Beeman N., Jr.; Kaltenbach, Matt A.; and Ott, William B., 4,575,847, Cl. 371-57.000.
Otting, Billy J.: *See—*
Otting, David L.; Otting, Billy J.; and Putney, Robert B., 4,574,413, Cl. 8-149.100.
Otting, David L.; Otting, Billy J.; and Putney, Robert B., to Otting International, Inc. Methods and apparatus for employing electrical conductivity for fixing dye to carpets. 4,574,413, Cl. 8-149.100.
Otting International, Inc.: *See—*
Otting, David L.; Otting, Billy J.; and Putney, Robert B., 4,574,413, Cl. 8-149.100.
Otto Bock Orthopadische Industrie KG: *See—*
Wellershaus, Ulf, 4,574,790, Cl. 128-78.000.
Outboard Marine Corporation: *See—*
Hansen, Loren F.; and Lamb, Mark E., 4,574,890, Cl. 172-22.000.
Owens-Illinois, Inc.: *See—*
Rhoads, Roger R., 4,574,949, Cl. 206-150.000.
Ozaki, Hideyuki; Shimotori, Kazuhiro; and Miyatake, Hideshi, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor memory device. 4,575,825, Cl. 365-189.000.
Ozaki, Tadashi: *See—*
Miura, Kazuhiko; Hattori, Takashi; Ozaki, Tadashi; and Yamaguchi, Hiroaki, 4,574,616, Cl. 73-35.000.
Pabsch, Arno R. E. K., to Deutsche Forschungs- und Versuchsanstalt fur Luft- und Raumfahrt e.V. Mast-type three-dimensional framework structure. 4,574,535, Cl. 52-118.000.
Padgett, Robert S.: *See—*
Roberts, Richard D.; and Padgett, Robert S., 4,575,683, Cl. 329-50.000.
Pagnoni, Loris, to Sasib S.p.A. Device for transferring rod-like articles. 4,574,818, Cl. 131-282.000.
Pain Suppression Labs, Inc.: *See—*
Liss, Saul; and Liss, Bernard, 4,574,808, Cl. 128-419.00R.
Palara, Sergio; and Torazzina, Aldo, to SGS-ATES Componenti Elettronici S.p.A. Output stage for power amplifiers. 4,575,686, Cl. 330-273.000.
Palfery, Kenneth J.; Malcolm, John S.; Kocev, Angel; and Maharaj, Kenrick B., to McDonnell Douglas Corporation. Adjustable torque driving tool for automated machining centers. 4,574,463, Cl. 29-568.000.
Pali, Christopher, to Essex Group, Inc. Continuous ribbon feed method and system. 4,575,016, Cl. 242-58.100.
Pali, Christopher, to Essex Group, Inc. Paster tab and method of use. 4,575,017, Cl. 242-58.300.
Palilla, Frank C., to GTE Laboratories Incorporated. Process for the preparation of homogeneous metal oxide varistors. 4,575,440, Cl. 264-61.000.
Palitex Project Company-GmbH: *See—*
Franzen, Gustav, 4,574,570, Cl. 57-1.0UN.

Franzen, Gustav, 4,574,575, Cl. 57-80.000.
Palkuti, Leslie J., to Advanced Research and Applications Corporation. Method and apparatus for radiation testing of electron devices. 4,575,676, Cl. 324-158.00R.
Pallerin Milnor Corporation: *See—*
Pellerin, Norvin L., 4,574,599, Cl. 68-242.000.
Pallos, Istvan: *See—*
Alapi, Jozsef; Baldaszti, Laszlo ; Gaspar, Laszlo ; Herczegh, Marton; Javorka, Istvan; Kisberk, Ferenc; Klauser, Janos; Makk, Antal; and Pallos, Istvan, 4,575,460, Cl. 426-72.000.
Pan, David S.: *See—*
Halfacre, Mark A.; Pan, David S.; and Huie, Wing K., 4,574,467, Cl. 29-571.000.
Pan Tech Management Corp.: *See—*
Duran, Melchor, 4,574,874, Cl. 165-43.000.
Pancanowski, Ronald F.: *See—*
Schnell, Robert P.; Sampson, Robert W.; Pancanowski, Ronald F.; and Bruggema, Donald J., 4,575,629, Cl. 250-238.000.
Pando, Bernard: *See—*
David, Guy A. J.; Grima, Jean-Claude; Pando, Bernard; Bretez, Gabriel C. O.; and Lommer, Daniel J. F., 4,575,843, Cl. 370-16.000.
Panek, Edward J.; Schmitt, Thomas M.; Davis, Pauls; and Ku, Jen-Sheng, to BASF Wyandotte Corporation. Process for preparing certain sulfophenethylsiloxanes. 4,575,559, Cl. 556-428.000.
Panhandle Industries, Inc.: *See—*
Hidle, Jerry, 4,574,776, Cl. 126-369.000.
Panzarino, Joseph N.: *See—*
Borrelli, Nicholas F.; Luderer, Albert A.; Mansfield, Gerald R.; and Panzarino, Joseph N., 4,574,782, Cl. 128-1.300.
Papadopoulos, Kimon: *See—*
Carson, John F.; and Papadopoulos, Kimon, 4,575,230, Cl. 355-75.000.
Pape, Dieter; Woerz, Hans; and Kaiser, Heinz, to Heinz Kaiser A.G. Device for connecting a tool part to a connecting shaft. 4,575,292, Cl. 409-234.000.
Pape, Gebhard: *See—*
Brandenstein, Manfred; Gossmann, Willi; Pape, Gebhard; Huttner, Klaus; and Ludwig, Wilfried, 4,574,448, Cl. 29-283.500.
Pappano, Dominic A., to Westvaco Corporation. Automatic paper testing apparatus. 4,574,634, Cl. 73-597.000.
Papson, Gregory J.; and Trolli, Adolph L., to Babcock & Wilcox Company, The. Microprocessor based two speed motor control interface. 4,575,663, Cl. 318-305.000.
Paquet, Jean-Marc; and Sibuet, Rene , to Compagnie Industrielle des Telecommunications Cit-Alcatel. Oil-sealed vane pump. 4,575,322, Cl. 418-96.000.
Paradis, Joseph R. Fabrication of flexible panel with reinforcing ribs. 4,575,444, Cl. 264-291.000.
Parchet, Pierre; and Bouygues, Jean, to SOCAPEX. Multi-fiber optical connection endpiece, connector using such an endpiece and apparatus for mounting fibers in the endpiece. 4,575,183, Cl. 350-96.220.
Pardue, Charles R.: *See—*
Pardue, James H., Sr.; Pardue, James H., Jr.; and Pardue, Charles R., 4,575,282, Cl. 405-228.000.
Pardue, James H., Jr.: *See—*
Pardue, James H., Sr.; Pardue, James H., Jr.; and Pardue, Charles R., 4,575,282, Cl. 405-228.000.
Pardue, James H., Sr.; Pardue, James H., Jr.; and Pardue, Charles R. System for driving open end pipe piles on the ocean floor using pneumatic evacuation and existing hydrostatic pressure. 4,575,282, Cl. 405-228.000.
Park, John Y. G.: *See—*
Frank, Dieter; Metcalfe, Lincoln D.; and Park, John Y. G., 4,575,434, Cl. 558-435.000.
Parker, Fayne P., to Witco Chemical Corporation. Safety grip handle for a hose. 4,575,142, Cl. 294-15.000.
Parkinson, David W.; Bates, Donald E.; and Poteralski, Raymond F. Heat pump monitor apparatus for fault detection in a heat pump system. 4,574,871, Cl. 165-1.000.
Parma, Giancarlo, to SERCAS s.r.l. Dial-type combination lock. 4,574,603, Cl. 70-303.00A.
Parr, William E.: *See—*
Talish, Roger J.; Parr, William E.; and Zavros, Steven J., 4,574,809, Cl. 128-419.00F.
Partin, James R.: *See—*
Rawlings, John P.; and Partin, James R., 4,574,875, Cl. 165-45.000.
Partridge, David, to 501 Starpoint Electrics Limited. Coin-checking method and apparatus employing wave train comparison. 4,574,935, Cl. 194-319.000.
Partyka, Richard A.: *See—*
Kavadias, Gerry; Doyle, Terrance W.; Janik, Elizabeth; and Partyka, Richard A., 4,575,553, Cl. 546-106.000.
Pas, Ireneus J. T. M.: *See—*
Fierkens, Richardus H. J.; and Pas, Ireneus J. T. M., 4,575,328, Cl. 425-126.00R.
Patil, Ghanshyam: *See—*
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Patzold, Dieter: *See—*
Keiels, Peter; and Patzold, Dieter, 4,574,961, Cl. 211-119.010.
Paul, Reiner: *See—*
Rasshofer, Werner; and Paul, Reiner, 4,575,518, Cl. 521-51.000.
Paul Wurth S.A.: *See—*
Legille, Edouard; Thillen, Guy; and Lonardi, Emile, 4,575,790, Cl. 364-130.000.
Mailliet, Pierre; Lonardi, Emile; Radoux, Henri; and Kremer, Victor, 4,574,494, Cl. 33-552.000.
Paulsen, Craig A.; and Bryan, Raymond G., to IGT. Agitator for coin hopper. 4,574,824, Cl. 133-4.00R.
Paulus, Wilfried: *See—*
Kruger, Bernd-Wieland; Priesnitz, Uwe; Jager, Gerhard; Paulus, Wilfried; and Genth, Hermann, 4,575,517, Cl. 514-715.000.
Payne, George T.: *See—*
Kin, Nelson I.; and Payne, George T., 4,575,343, Cl. 445-7.000.
Payrhammer, Bernd: *See—*
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Pearce, Joseph L.: *See—*
Carroll, Albert W.; and Pearce, Joseph L., 4,574,883, Cl. 166-255.000.
Pearl, David R. Stiffened cutting blade with reversible replaceable edge member. 4,574,673, Cl. 83-697.000.
Pearson, Jonathon C., to Prospec International Limited. Flush door hinge for a cut-out. 4,574,426, Cl. 16-389.000.
Pease, Logan L.; Carmean, Wes F.; and Luciano, Robert A., to IGT. Molded light pen with lens with water impervious housing. 4,575,627, Cl. 250-227.000.
Pechiney: *See—*
Meunier, Jean, 4,575,450, Cl. 419-41.000.
Peckich, Gerald L.: *See—*
Brannigan, Patrick J.; and Peckich, Gerald L., 4,575,097, Cl. 128-402.000.
Pedu, Alexander A. Magnetic seal for magnetic particle clutches and brakes. 4,575,103, Cl. 277-80.000.
Peek, Darwin E. Three dimensional combinatorial device. 4,575,088, Cl. 273-153.00S.
Peers-Trevarton, Charles A., to Cordis Corporation. Implanted lead extractor. 4,574,800, Cl. 128-303.00R.
Pees, James M.: *See—*
Fannin, Wayne V.; and Pees, James M., 4,574,450, Cl. 29-402.080.
Peiffer, Dennis G.; and Lundberg, Robert D., to Exxon Research and Engineering Co. Multifunctional polymeric additive. 4,575,530, Cl. 524-548.000.
Pellegrini, Frank J., to ESAC, Inc. Electronic access control system for coin-operated games and like selectively accessible devices. 4,575,622, Cl. 235-382.000.
Pellerin, Norvin L., to Pallerin Milnor Corporation. Apparatus for pressing liquid from cloth goods. 4,574,599, Cl. 68-242.000.
Pemberton, Eugene B.; and Fahl, Richard L., to Dover Corporation. Coupling apparatus. 4,575,130, Cl. 285-38.000.
Penda Corporation: *See—*
Markos, Dennis A., 4,575,146, Cl. 296-39.00R.
Penn, Jack C.: *See—*
Rao, Prabhakar P.; Surjaatmadja, Jim B.; and Penn, Jack C., 4,575,313, Cl. 417-26.000.
Pennsylvania Engineering Corporation: *See—*
Persson, John A., 4,575,856, Cl. 373-89.000.
Pennwalt Corporation: *See—*
LaMontagne, Peter L., 4,575,370, Cl. 494-56.000.
Periard, Jacques; Cron, Alain; and Fischer, Francis, to Lonza Ltd. Separating-and-lubricating agent in solid form. 4,575,430, Cl. 252-12.600.
Perkitny, Jerzy. Counterweighted and self-extending mobile. 4,575,353, Cl. 446-396.000.
Perricone, Alphonse C.: *See—*
Clapper, Dennis K.; Perricone, Alphonse C.; and Salisbury, Darrell P., 4,575,428, Cl. 252-8.50P.
Perry, William O.: *See—*
Cavitt, Michael B.; Perry, William O.; and Hefner, Robert E., Jr., 4,575,543, Cl. 525-510.000.
Persak, Steven R.; and Hudak, John, Jr., to Exxon Research and Engineering Co. Pipe punch device. 4,574,443, Cl. 29-157.10R.
Persson, John A., to Pennsylvania Engineering Corporation. Iron free self baking electrode. 4,575,856, Cl. 373-89.000.
Persson, Nils A.; and Lindberg, Torsten G., to Telefonaktiebolaget L M Ericsson. Apparatus for positioning the plane of an apparatus table at an optional inclination. 4,575,039, Cl. 248-550.000.
Persson, Per-Ola, executor: *See—*
Kaufeldt, Roland, deceased; and Persson, Per-Ola, executor, 4,574,446, Cl. 29-159.020.
Persyk, Dennis E.; and Stoub, Everett W., to Siemens Gammasonics, Inc. Method and device for demounting in a radiation detector a photomultiplier tube. 4,574,478, Cl. 30-116.000.
Pester, Andrew L., to Hobart Corporation. Method and apparatus for wrapping machine. 4,574,564, Cl. 53-441.000.
Peterling, Horst: *See—*
Blachetta, Wolfram; and Peterling, Horst, 4,575,420, Cl. 209-322.000.
Peters, Donald C., to Corning Glass Works. Extrusion die manufacture. 4,574,459, Cl. 29-527.400.
Petersen, Hans C.; Kyster, Erik; and Thomsen, Svend E., to Danfoss A/S. Hydrostatic control device, particularly steering device. 4,575,321, Cl. 418-61.00B.
Peterson, Carl A.: *See—*
Lemkin, Jack L.; Zilber, Eugene A.; and Peterson, Carl A., 4,574,477, Cl. 30-92.000.
Peterson, John A.; Saran, Mohan S.; and Wisnouskas, Joseph S., to Occidental Chemical Corporation. Differential flotation reagent for molybdenum separation. 4,575,419, Cl. 209-167.000.
Petro-Fax, Inc.: *See—*
Rightmyre, Bruce M., 4,575,228, Cl. 355-71.000.

Petrosystems International, Inc.: *See*—
Hallberg, John E., 4,574,763, Cl. 123-527.000.
Pezold, Arthur J., to Fire Savr. Electrical adaptor. 4,575,704, Cl. 337-197.000.
Pezzolo, Donald E.; Pfeiffer, James W.; and Corder, Thomas E., to Intermatic Electronics Incorporated. Sensor timer for lamps. 4,575,659, Cl. 315-159.000.
Pfeiffer, James W.: *See*—
Pezzolo, Donald E.; Pfeiffer, James W.; and Corder, Thomas E., 4,575,659, Cl. 315-159.000.
Pfizer Inc.: *See*—
Lipinski, Christopher A., 4,575,507, Cl. 514-278.000.
Phelps, Dennis C.: *See*—
Osborne, Ralph; and Phelps, Dennis C., 4,575,077, Cl. 272-134.000.
Philip Morris Incorporated: *See*—
Fischer, Eugene B.; and Lilly, A. Clifton, 4,574,821, Cl. 131-365.000.
Rainer, Norman B.; and Siwiec, Dean M., 4,574,819, Cl. 131-291.000.
Phillips Petroleum Company: *See*—
Drake, Charles A.; and Reusser, Robert E., 4,575,575, Cl. 585-646.000.
Fenstermaker, Roger W., 4,575,011, Cl. 241-1.000.
Horton, Robert L., 4,574,885, Cl. 166-270.000.
Hsieh, Henry L.; and Yeh, Gene H. C., 4,575,538, Cl. 525-244.000.
Skraba, Frank W., 4,575,414, Cl. 208-157.000.
Piazza, Pietro; and Farrington, Richard I., to Coleco Industries, Inc. Winged creature. 4,575,349, Cl. 446-330.000.
Pichler, Ludwig: *See*—
Sauter, Robert; Griss, Gerhart, deceased; Grell, Wolfgang; Hurnaus, Rudolf; Kobinger, Walter; and Pichler, Ludwig, 4,575,504, Cl. 514-215.000.
Pickard, John D. Turbo burner coal powered turbine energy system. 4,574,710, Cl. 110-234.000.
Picker, Dennis: *See*—
Aldrich, Wilbert H.; Rich, Alan; and Picker, Dennis, 4,575,806, Cl. 364-557.000.
Pidebois, Jacques E.: *See*—
Castellant, Jean-Pierre J. E.; Habrard, Alain G. J.; and Pidebois, Jacques E., 4,574,619, Cl. 73-40.700.
Pierce, Donald L.: *See*—
Hendrickson, Thomas A.; Macauley, George C.; Pierce, Donald L.; Roefer, Robert W.; and Strickland, Alan B., 4,575,816, Cl. 364-900.000.
Pifferi, Giorgio: *See*—
Farina, Carlo; Pifferi, Giorgio; and Pinza, Mario, 4,575,552, Cl. 544-224.000.
Pinkerton, William; and Hawthorne, Sherman J. A., to Gallaher Limited. Buccal end device for a smoking rod. 4,574,820, Cl. 131-339.000.
Pinkhasov, Eduard, to Wedtech Corp. Method of and apparatus for the drawing of bars of monocrystalline silicon. 4,575,401, Cl. 156-602.000.
Pinnow, Curtis C.; and Logemann, Robert L., to Carter-Hoffman Corporation. Heavy duty universal adjustable slider for food service cart. 4,575,164, Cl. 312-350.000.
Pinza, Mario: *See*—
Farina, Carlo; Pifferi, Giorgio; and Pinza, Mario, 4,575,552, Cl. 544-224.000.
Pioneer Electronic Corporation: *See*—
Seto, Yasuhiko, 4,575,836, Cl. 369-265.000.
Piper, Bert W. Disturbance alarm. 4,575,713, Cl. 340-546.000.
Pitney Bowes Inc.: *See*—
Freeman, Gerald C., 4,574,898, Cl. 177-154.000.
Pittway Corporation: *See*—
Winick, Steven J., 4,575,712, Cl. 340-539.000.
Pizzoni, Vincenzo M. P.; and Randhawa, Sukhjit S., to Exxon Research & Engineering Co. Aluminum stearate and/or acetate antifoulants for refinery operations. 4,575,413, Cl. 208-48.0AA.
Pleibel, William: *See*—
Howard, Richard E.; Pleibel, William; and Stolen, Rogers H., 4,575,187, Cl. 350-96.330.
Plummer, Walter Allen, III: *See*—
Hackett, Edward J., 4,574,979, Cl. 221-73.000.
Pocock, Robert E.: *See*—
Keyes, Marion A., IV; and Pocock, Robert E., 4,574,746, Cl. 122-448.00S.
Keyes, Marion A., IV; Lukas, Michael P.; and Pocock, Robert E., 4,575,334, Cl. 431-76.000.
Podell, Howard I.; Goldstein, Albert; Blackley, David C.; James, Michael H.; Bratby, David M.; and Duck, Roger, to Podell, Howard I. Dipped rubber article. 4,575,476, Cl. 428-494.000.
Pogge, R. David: *See*—
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Polaroid Corporation: *See*—
Rogers, Howard G.; Gaudiana, Russell A.; Minns, Richard A.; and Sinta, Roger F., 4,575,547, Cl. 528-191.000.
Slafer, Warren D., 4,575,406, Cl. 204-11.000.
Sullivan, William F., Jr., 4,575,637, Cl. 250-548.000.
Viola, Michael S., 4,575,465, Cl. 427-261.000.
Pole, Charles D., to Upper Lakes Shipping Ltd. Swing gates. 4,574,989, Cl. 222-486.000.
Pollack, William; and Iny, Oliver, to Euroceltique, S.A. Method of controlling and determining germicidal activity. 4,575,491, Cl. 436-125.000.
Pongrass, Robert G.: *See*—
Rutter, Christopher C.; and Pongrass, Robert G., 4,574,559, Cl. 53-266.00R.
Porowski, Engelina, to O'Donnell & Associates, Inc. Pipelock. 4,575,129, Cl. 285-15.000.
Porta Systems Corp.: *See*—
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Porterfield, Donald S.: *See*—
Olsen, Lawrence H.; and Porterfield, Donald S., 4,575,675, Cl. 324-158.00D.
Porzky, Ludwig, to General Signal Corporation. Electrical heating unit with serpentine heating element. 4,575,619, Cl. 219-542.000.
Post Office, The: *See*—
Hensel, Paul C.; and Gillings, Geoffrey W., 4,575,182, Cl. 350-96.210.
Poteralski, Raymond F.: *See*—
Parkinson, David W.; Bates, Donald E.; and Poteralski, Raymond F., 4,574,871, Cl. 165-1.000.
Potts, Robert S.: *See*—
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Powers, John W., to Western Litho Plate & Supply Co. Photographic printing apparatus and methods. 4,575,235, Cl. 355-97.000.
Powers, John W.: *See*—
Copeland, Harry J.; and Powers, John W., 4,575,233, Cl. 355-85.000.
Price, William L.: *See*—
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Priesnitz, Uwe: *See*—
Kruger, Bernd-Wieland; Priesnitz, Uwe; Jager, Gerhard; and Behrenz, Wolfgang, 4,575,516, Cl. 514-715.000.
Kruger, Bernd-Wieland; Priesnitz, Uwe; Jager, Gerhard; Paulus, Wilfried; and Genth, Hermann, 4,575,517, Cl. 514-715.000.
Prince, Alfred M.: *See*—
Vnek, John; Prince, Alfred M.; and Ikram, Hafeez, 4,575,495, Cl. 514-16.000.
Pring, Edward J.: *See*—
Bartlett, Geoffrey M.; Hofmeister, James P.; Nye, Derald D.; and Pring, Edward J., 4,575,813, Cl. 364-900.000.
Pringle, Ronald E., to Camco, Incorporated. Method and apparatus for locking a subsurface safety valve in the open position. 4,574,889, Cl. 166-386.000.
Priniski, David J.: *See*—
Stokes, Rembert R.; and Priniski, David J., 4,575,587, Cl. 179-175.10A.
Prospec International Limited: *See*—
Pearson, Jonathon C., 4,574,426, Cl. 16-389.000.
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Korth, Bernd, 4,574,552, Cl. 52-645.000.
Prunier, Robert. Arc welding guide tube with non-adhesive tip. 4,575,612, Cl. 219-137.430.
Prutec Ltd.: *See*—
Blaine, Anthony F., 4,575,059, Cl. 269-41.000.
Puma-KG: *See*—
Adam, Gunter, 4,575,083, Cl. 273-73.00D.
Purolator Technologies Inc.: *See*—
Barnard, George B., Jr., 4,574,728, Cl. 116-267.000.
Barnard, George B., Jr., 4,574,836, Cl. 137-553.000.
Putney, Robert B.: *See*—
Otting, David L.; Otting, Billy J.; and Putney, Robert B., 4,574,413, Cl. 8-149.100.
QL, Inc.: *See*—
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Quartztronics, Inc.: *See*—
Ward, Roger W., 4,574,639, Cl. 73-702.000.
Quate, Calvin F., to Leland Stanford Junior University, The Board of Trustees of The. Method and means for data storage using tunnel current data readout. 4,575,822, Cl. 365-174.000.
Queen's University at Kingston: *See*—
Cooke, Theodore D.; Saunders, Gerald A. B.; and Siu, David, 4,574,794, Cl. 128-92.00H.
Qume Corporation: *See*—
Burkhart, Christopher W., 4,575,069, Cl. 271-186.000.
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Radoux, Henri: *See*—
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Raffenberger, James L.: *See*—
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Raidt, Heinz P.; Jablonka, Dieter; and Urban, Klaus, to Ewald Dorken GmbH & Co. KG. Foundation-drainage panel. 4,574,541, Cl. 52-169.500.
Rainer, Norman B.; and Siwiec, Dean M., to Philip Morris Incorporated. Process for increasing the filling power of tobacco. 4,574,819, Cl. 131-291.000.
Raj, Kuldip; and Gowda, Hanumaiah L., to Ferrofluidics Corporation. Coaxial, multiple-shaft ferrofluid seal apparatus. 4,575,102, Cl. 277-80.000.
Randhawa, Sukhjit S.: *See*—
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Rao, Basrur R.; and Daigle, Chris J., to Sperry Corporation. Electrically controlled phase shifter. 4,575,697, Cl. 333-157.000.
Rao, G. R. Mohan, to Texas Instruments Incorporated. Differing field oxide thicknesses in dynamic memory device. 4,574,465, Cl. 29-571.000.

Rao, Prabhakar P.; Surjaatmadja, Jim B.; and Penn, Jack C., to Halliburton Company. Digital pressure controller. 4,575,313, Cl. 417-26.000.
Rappazzo, J. Alan. Self-adherent corneal contact lens. 4,575,205, Cl. 351-219.000.
Rasshofer, Werner; and Paul, Reiner, to Bayer Aktiengesellschaft. Homogeneous storage stable salt-containing mixture. 4,575,518, Cl. 521-51.000.
Ratcliff, Lloyd P. Diet calculator. 4,575,804, Cl. 364-715.000.
Rathbun, Donald J.: *See*—
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Rauch, Harry W., Sr., to General Electric Co. Low expansion, multiband transmitting glasses and glass-ceramics. 4,575,493, Cl. 501-10.000.
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Rauchwerger, George P. High speed desoldering tool. 4,574,994, Cl. 228-20.000.
Ravindhran, Kothandaraman: *See*—
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Rawlings, John P.; and Partin, James R., to Geo-Systems, Inc. Heat exchanger for geothermal heating and cooling systems. 4,574,875, Cl. 165-45.000.
Raychaudhuri, Satyabrata: *See*—
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Raynaud, Guy; Morin, Francois; and Brossard, Louis, to Hydro-Quebec. Preparing selective surfaces for solar collectors by dry oxidation and selective surfaces so obtained. 4,574,778, Cl. 126-417.000.
Raytheon Company: *See*—
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RCA Corporation: *See*—
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Aschwanden, Felix, 4,575,757, Cl. 358-150.000.
Bar-Zohar, Meir, 4,575,754, Cl. 358-119.000.
Caprari, Fausto, 4,575,636, Cl. 250-492.100.
Carlson, David J.; and Tults, Juri, 4,575,761, Cl. 358-191.100.
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Dieterich, Charles B., 4,575,770, Cl. 358-342.000.
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Griepentrog, Dal F.; and Lagoni, William A., 4,575,759, Cl. 358-181.000.
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Kaiser, Donald B., 4,575,657, Cl. 313-533.000.
Meyer, Wolfgang H.; and Schweizer, Hanspeter, 4,575,838, Cl. 369-276.000.
Naimpally, Saiprasad V.; and Gurley, Thomas D., 4,575,650, Cl. 307-520.000.
Sharma, Shanti S.; and Borgini, Fred, 4,575,745, Cl. 357-45.000.
Sinniger, Joseph O.; and Robbi, Anthony D., 4,575,809, Cl. 364-569.000.
Rebentisch, Hugo E., to GTE Products Corporation. Fastener for channeled structural members. 4,575,295, Cl. 411-85.000.
Redicon Corporation: *See*—
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Reed, Robert L., to Amoco Corporation. Modified Claus furnace. 4,575,453, Cl. 422-149.000.
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Reid, Grahame W., to Medication Services Inc. Pill dispenser. 4,574,954, Cl. 206-531.000.
Reid, John M.: *See*—
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Reifschneider, Walter, to Dow Chemical Company, The. Phosphorus derivatives of 4-pyrimidinols. 4,575,499, Cl. 514-86.000.
Reiger, Ralph E.; and Whitcomb, Carl E. Root control bag. 4,574,522, Cl. 47-78.000.
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Reinecke, Erich, to WABCO Westinghouse Fahrzeugbremsen GmbH. Pneumatically controlled relay valve arrangements. 4,575,157, Cl. 303-40.000.
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Griffin, Neil C., 4,574,899, Cl. 177-211.000.
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Remis, C. Steven. Carrier and bag attachment for folding stools. 4,574,990, Cl. 224-255.000.
Renals, Martin: *See*—
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Research Corporation: *See*—
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Rexnord Inc.: *See*—
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Rheinmetall GmbH: *See*—
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"RHEWUM" Rheinische Werkzeug- und Maschinenfabrik GmbH: *See*—
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Rice, Robert P., Jr.; Fruit, Larry J.; and Trout, Gary B., to E-Systems, Inc. Digital programmable packet switch synchronizer. 4,575,864, Cl. 375-116.000.
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Richter, Karl-Heinz: *See*—
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Ricoh Company, Ltd.: *See*—
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Nagamoto, Masanaka; and Suguro, Yoshihiro, 4,575,479, Cl. 430-159.000.
Sakai, Toshiyuki; Okada, Yoshihiro; Hino, Masatoshi; and Ohta, Yuichi, 4,575,768, Cl. 358-282.000.
Sakamoto, Koji; and Kobayashi, Kazuo, 4,575,218, Cl. 355-3.0DD.
Sakamoto, Koji; Kaneko, Toshio; Kanno, Fuchio; and Yasuda, Wataru, 4,575,220, Cl. 355-3.0DD.
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Robbins, Lanny A., to Dow Chemical Company, The. Coal cleaning and the removal of ash from coal. 4,575,418, Cl. 209-3.000.
Roberson, William C., to Franklin Equipment Company. Quick hitch assembly. 4,575,111, Cl. 280-477.000.
Robert Bosch GmbH: *See—*
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Roberts, John C., to British Aerospace Public Limited Company. Radiation emitting apparatus. 4,575,786, Cl. 362-279.000.
Roberts, Richard D.; and Padgett, Robert S., to Harris Corporation. Apparatus and method for removing an offset signal. 4,575,683, Cl. 329-50.000.
Robertson, Michael L., to B. B. Robertson Company. Compact barbecue oven. 4,574,689, Cl. 99-337.000.
Robertson, Richard E., to Ford Motor Company. Filament wound composite material leaf spring. 4,575,057, Cl. 267-47.000.
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Hogue, Noel E., 4,575,867, Cl. 377-110.000.
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Rooney, John M.; and Conway, Paul, to Loctite (Ireland) Ltd. Fericenium salt catalysts for vinyl ethers. 4,575,544, Cl. 526-118.000.
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Rosaz, Guy; Maire, Guy; and Badoz, Jean-Marie, to Schrader S.A. Apparatus for measuring fluid pressure. 4,574,641, Cl. 73-726.000.
Roschiwal, Helmut; Schmidt, Herbert; and Schink, Karl. Method of and apparatus for working a profiled steel workpiece. 4,575,288, Cl. 408-1.00R.
Roschlein, Rolf; and Schulte, Heinz, to Nixdorf Computer AG. Print head for a dot matrix ink printer. 4,575,736, Cl. 346-140.00R.
Rose, David; and Lieske, Edgar, to Henkel Kommanditgesellschaft auf Aktien. Oxidation hair dyes comprising resorcinol derivatives as coupling components. 4,575,377, Cl. 8-408.000.
Rose, William H., to AMP Incorporated. Electrical switch. 4,575,592, Cl. 200-6.00R.
Rosenhouse, Harvey; and Dore, Jeffrey C., to FMC Corporation. Apparatus for distilling phosphorus. 4,575,403, Cl. 202-153.000.
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Rudolph, Volker: *See—*
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Rulf, Joachim. Method for producing rectified and superimposed images from multispectral photographs. 4,575,232, Cl. 355-77.000.
Rummel, Paul W., to Tegal Corporation. Module presence sensor. 4,575,714, Cl. 340-568.000.
Rusch, Ronald L.: *See—*
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Russell, Christine E., to Tiger Hug Toys, Inc. Therapeutic riding device. 4,575,072, Cl. 272-52.000.
Russell, Ethel C. Travel board game. 4,575,093, Cl. 273-244.000.
Rutter, Christopher C.; and Pongrass, Robert G. Flexible bag automatic filling and capping apparatus. 4,574,559, Cl. 53-266.00R.
Ryan, Garth S., to Mirachem Corporation Ltee/Ltd. Press dampening roll fountain. 4,574,695, Cl. 101-148.000.
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Emilsson, Fred S., 4,575,159, Cl. 303-71.000.
Sabatino, Alan H.: *See—*
Bamber, Barry H.; Brookhart, George C., Jr.; and Sabatino, Alan H., 4,574,536, Cl. 52-125.300.
Sable, Donald E. Rod guide. 4,575,163, Cl. 308-4.00A.
Sadvary, John W.; and Fung, Tim C. Fin deployment mechanism for missiles. 4,575,025, Cl. 244-3.270.
Safonnikov, Anatoly N.; and Antonov, Anatoly V. Method of electroslag welding and flux. 4,575,606, Cl. 219-73.100.
Safran, Robert H.: *See—*
Menchetti, Robert J.; Safran, Robert H.; and Sauer, Gale E., 4,574,547, Cl. 52-238.100.
Sagawa, Takayoshi; and Hirose, Ichiro, to Japan Tobacco & Salt Public Corporation, The. Method and apparatus for making filters. 4,575,368, Cl. 493-49.000.
Saha, Henry L. Protective cap for diesel fuel filter. 4,574,972, Cl. 220-254.000.
Saint-Gobain Vitrage: *See—*
Halberschmidt, Friedrich; Audi, Josef; and Schubert, Gerhard, 4,575,389, Cl. 65-273.000.
St. Regis Corporation: *See—*
Giblin, John P.; Semancik, Andrew E.; and Forehand, Sherman D., 4,575,123, Cl. 281-48.000.
Sakai, Koichi, to Toko Kabushiki Kaisha. Full-wave rectifier circuit. 4,575,643, Cl. 307-261.000.
Sakai, Toshiyuki; Okada, Yoshihiro; Hino, Masatoshi; and Ohta, Yuichi, to Ricoh Company, Ltd. Conversion to a two-valued video signal. 4,575,768, Cl. 358-282.000.
Sakakibara, Shinsuke: *See—*
Nakashima, Seiichiro; Toyoda, Kenichi; and Sakakibara, Shinsuke, 4,575,666, Cl. 318-661.000.
Sakamoto, Koji; and Kobayashi, Kazuo, to Ricoh Company, Ltd. Developing apparatus for electrostatic photography. 4,575,218, Cl. 355-3.0DD.
Sakamoto, Koji; Kaneko, Toshio; Kanno, Fuchio; and Yasuda, Wataru, to Ricoh Company, Ltd. Developing device. 4,575,220, Cl. 355-3.0DD.
Sakurai, Hiroshi: *See—*
Matsuura, Hitoshi; Yamazaki, Etsuo; and Sakurai, Hiroshi, 4,575,665, Cl. 318-578.000.
Sakurai, Keizou, to NEC Corporation. Apparatus for forming bonding balls on bonding wires. 4,575,602, Cl. 219-56.210.
Sakurai, Shigenori; Kamo, Takashi; and Ikai, Tadayoshi, to Toyota Jidosha Kabushiki Kaisha. Air-fuel ratio detector and method of measuring air-fuel ratio. 4,574,627, Cl. 73-116.000.
Sakuta, Seiji. Sealing-curing agent for protecting concrete against initial drying, shrinking and cracking. 4,575,468, Cl. 427-393.600.
Salentine, Christopher G., to Chevron Research Company. Lubricant composition containing a mixture of neutralized phosphates. 4,575,431, Cl. 252-32.70E.

Salisbury, Darrell P.: *See—*
Clapper, Dennis K.; Perricone, Alphonse C.; and Salisbury, Darrell P., 4,575,428, Cl. 252-8.50P.
Sampson, Robert W.: *See—*
Schnell, Robert P.; Sampson, Robert W.; Pancanowski, Ronald F.; and Bruggema, Donald J., 4,575,629, Cl. 250-238.000.
Sanborn, Steven L.; and Neumeyer, Martin J., to AM General Corporation. Turret system for lightweight military vehicle. 4,574,685, Cl. 89-37.140.
Sandborn, Edmund, to Clark Pharmaceutical Laboratories Ltd. Pharmaceutical solutions comprising dimethyl sulfoxide. 4,575,515, Cl. 514-708.000.
Sanden Corporation: *See—*
Koitabashi, Takatoshi, 4,574,930, Cl. 192-84.00C.
Kurosawa, Akihito; and Anazawa, Osamu, 4,574,980, Cl. 221-116.000.
Terauchi, Kiyoshi, 4,575,319, Cl. 418-55.000.
Sandhaus, Jeffrey. Plastic linerless closure. 4,574,966, Cl. 215-270.000.
Saneski, Steven P., to AT&T Bell Laboratories. High-speed buffer arrangement with no delay distortion. 4,575,646, Cl. 307-443.000.
Sankei Giken Kogyo Kabushiki Kaisha: *See—*
Fukuda, Masuo, 4,574,913, Cl. 181-231.000.
Sano, Hiroshi: *See—*
Omura, Satoshi; Sano, Hiroshi; Yamashita, Kinya; and Okachi, Ryo, 4,575,497, Cl. 514-30.000.
Sano, Sadao: *See—*
Inoue, Kiyoshi; Onoue, Makoto; Sano, Sadao; and Hayakawa, Jun, 4,575,603, Cl. 219-69.00D.
Sanofi: *See—*
Descamps, Marcel; and Berger, Yves, 4,575,513, Cl. 514-469.000.
Sanshin Kogyo Kabushiki Kaisha: *See—*
Nakahama, Ryoji; and Iwashita, Takashi, 4,575,342, Cl. 440-56.000.
Otani, Hiroaki, 4,575,310, Cl. 416-134.00R.
Santangelo, Salvatore: *See—*
Oskarsson, Sven G.; and Santangelo, Salvatore, 4,575,001, Cl. 237-2.00B.
Saran, Mohan S.: *See—*
Peterson, John A.; Saran, Mohan S.; and Wisnouskas, Joseph S., 4,575,419, Cl. 209-167.000.
Sardain, Christian: *See—*
Galais, Michel; Sardain, Christian; Fouin, Jean; Arnaudeau, Marcel; and Morin, Pierre, 4,575,315, Cl. 417-365.000.
Sartor, Mariano: *See—*
Aldinio, Giuseppe; Baggio, Giorgio; and Sartor, Mariano, 4,574,500, Cl. 36-119.000.
Sasaki, Hironori: *See—*
Matsui, Kenji; and Sasaki, Hironori, 4,575,118, Cl. 280-801.000.
Sasaki, Katsumi: *See—*
Mizobuchi, Shotaro; Sasaki, Katsumi; Kimura, Yoshikazu; and Kasahara, Kazuyuki, 4,575,264, Cl. 384-369.000.
Sasaki, Kiichi: *See—*
Okuhara, Hisakazu; Higuchi, Kazuo; and Sasaki, Kiichi, 4,575,119, Cl. 280-801.000.
Sasaki, Toru: *See—*
Nakagawa, Kichizaemon; Hira, Takaaki; Abe, Hideo; Sasaki, Toru; and Shimoyama, Yuji, 4,575,053, Cl. 266-92.000.
SASIB S.p.A.: *See—*
Cavazza, Roberto, 4,574,562, Cl. 53-381.00R.
Lazzari, Antonio, 4,575,031, Cl. 246-34.00R.
Lodi, Oliviero; and Armaroli, Gianni, 4,575,301, Cl. 414-411.000.
Manservisi, Renato, 4,574,958, Cl. 209-535.000.
Orlandi, Giancarlo, 4,574,938, Cl. 198-347.000.
Pagnoni, Loris, 4,574,818, Cl. 131-282.000.
Satake, Nozomi, to Kabushiki Kaisha Toshiba. Apparatus for examining an object by using ultrasonic beams. 4,574,636, Cl. 73-607.000.
Satchell, David W., to International Standard Electric Corporation. Infra-red detector. 4,575,631, Cl. 250-332.000.
Sato, Hirohisa: *See—*
Wakayama, Yoichi; Sato, Hirohisa; and Terui, Masumi, 4,575,354, Cl. 446-437.000.
Sato, Katsujiro: *See—*
Kodama, Hisashi; Sato, Katsujiro; Tamura, Tetsuomi; Hamamoto, Toru; and Yamada, Kazuharu, 4,574,750, Cl. 123-90.580.
Sato, Shunji: *See—*
Kimura, Kaoru; Sato, Shunji; Ogawa, Junichiro; and Nakano, Mitsuyoshi, 4,574,655, Cl. 74-665.00A.
Sato, Toshihiko; and Doi, Shigeru, to Honda Giken Kogyo Kabushiki Kaisha. Air/fuel ratio control device for a carburetor. 4,574,755, Cl. 123-320.000.
Sato, Yuichi: *See—*
Matsumura, Susumu; Sato, Yuichi; Kawabata, Takashi; and Tsunekawa, Tokuichi, 4,575,211, Cl. 354-403.000.
Sauder, Robert A.; Kendrick, Gary R.; and Mase, John R., to Babcock & Wilcox Company, The. Method for protecting the walls of a furnace at high temperature. 4,574,995, Cl. 228-140.000.
Sauer, Gale E.: *See—*
Menchetti, Robert J.; Safran, Robert H.; and Sauer, Gale E., 4,574,547, Cl. 52-238.100.
Saunders, Gerald A. B.: *See—*
Cooke, Theodore D.; Saunders, Gerald A. B.; and Siu, David, 4,574,794, Cl. 128-92.00H.
Sauter, Robert; Griss, Gerhart, deceased (by Griss, Elisabeth, executrix); Grell, Wolfgang; Hurnaus, Rudolf; Kobinger, Walter; and Pichler, Ludwig, to Dr. Karl Thomae GmbH. Thienothiazole derivatives. 4,575,504, Cl. 514-215.000.
Sawada, Masahiro: *See—*
Oota, Tadashi; and Sawada, Masahiro, 4,575,771, Cl. 360-10.100.
Sawdon, Edwin G., to BTM Corporation. Self-attaching fastener and method of securing same to sheet material. 4,574,453, Cl. 29-432.000.
Sawdon, Edwin G., to BTM Corporation. Self-attaching fastener and apparatus for securing same to sheet material. 4,574,473, Cl. 29-798.000.
Sawicki, Robert A., to Texaco Inc. Carboxyalkylation of aryl-substituted alkyl halides to the corresponding esters. 4,575,561, Cl. 560-105.000.
Schacht, Hans: *See—*
Muller, Willi; Schacht, Hans; Scholz, Erich; and Straubel, Max, 4,574,762, Cl. 123-510.000.
Schaefer, Helmut. Process for producing an insole for shoes. 4,575,446, Cl. 264-45.400.
Schaefer, Paul: *See—*
Haberstroh, Markus; and Schaefer, Paul, 4,574,557, Cl. 53-118.000.
Scharer, Roger M.: *See—*
Vercillo, Alfredo J.; and Scharer, Roger M., 4,574,669, Cl. 83-399.000.
Schewe, Herbert: *See—*
Diepers, Heinrich; and Schewe, Herbert, 4,574,438, Cl. 29-25.350.
Schick, David L.: *See—*
Schumann, Gary M.; Dolejs, Charles A.; and Schick, David L., 4,574,840, Cl. 137-625.150.
Schink, Karl: *See—*
Roschiwal, Helmut; Schmidt, Herbert; and Schink, Karl, 4,575,288, Cl. 408-1.00R.
Schlegel GmbH: *See—*
Schlegel, Wolfgang; and Wilke, Arthur, 4,575,063, Cl. 269-78.000.
Schlegel, Wolfgang; and Wilke, Arthur, to Schlegel GmbH. Vertically adjustable device. 4,575,063, Cl. 269-78.000.
Schleimer, Stephen I.: *See—*
Gruner, Ronald H.; Clancy, Gerald F.; Mundie, Craig J.; Wallach, Steven J.; Schleimer, Stephen I.; and Bratt, Richard G., 4,575,797, Cl. 364-200.000.
Schlenther, Wolfgang: *See—*
Seidel, Winfried; Oelschlager, Thomas; and Schlenther, Wolfgang, 4,575,378, Cl. 8-414.000.
Schliep, Hans-Jochen: *See—*
Jonas, Rochus; Kloft, Michael; Wurziger, Hanns; Harting, Jurgen; Enenkel, Hans J.; Minck, Klaus-Otto; and Schliep, Hans-Jochen, 4,575,505, Cl. 514-248.000.
Schloemann, Ernst F. R. A., to Raytheon Company. Method and apparatus for orientating ferrimagnetic bodies. 4,575,695, Cl. 333-24.100.
Schlomer, Heinz-Jurgen: *See—*
Linge, Reiner; Sprafke, Uwe; and Schlomer, Heinz-Jurgen, 4,574,684, Cl. 89-34.000.
Schlumberger Electronics (U.K.) Limited: *See—*
Gardiner, William H.; and Luckhurst, Geoffrey A., 4,575,649, Cl. 307-492.000.
Schlumberger Technology Corporation: *See—*
Decorps, Jean-Luc; and Delpuech, Alain, 4,575,831, Cl. 367-33.000.
Ingram, John D.; and Murray, Josephine L., 4,575,830, Cl. 367-26.000.
Schmelzle, Carl W.: *See—*
Lapke, James A.; and Schmelzle, Carl W., 4,575,694, Cl. 333-22.00R.
Schmid, Herbert: *See—*
Borchert, Barbara; Schmid, Herbert; Huther, Werner; and Merz, Herbert, 4,575,327, Cl. 425-78.000.
Schmidkunz, Walter: *See—*
Fischer, Heinrich; Schmidkunz, Walter; and Spensberger, Johann, 4,575,289, Cl. 409-33.000.
Schmidt, Herbert: *See—*
Roschiwal, Helmut; Schmidt, Herbert; and Schink, Karl, 4,575,288, Cl. 408-1.00R.
Schmidt, Joseph H., to Atlantic Richfield Company. Drainhole and downhole hot fluid generation oil recovery method. 4,574,884, Cl. 166-263.000.
Schmidt, Ludwig; Hughes, Richard K., Jr.; and Nordlund, Charles A., to International Master Products Corporation. Label inserting apparatus. 4,574,556, Cl. 53-69.000.
Schmitt, Thomas M.: *See—*
Panek, Edward J.; Schmitt, Thomas M.; Davis, Pauls; and Ku, Jen-Sheng, 4,575,559, Cl. 556-428.000.
Schmukler, Seymour; Shida, Mitsuzo; and Machonis, John, Jr., to Norchem, Inc. Polyvinyl alcohol alloys and method of making the same. 4,575,532, Cl. 525-57.000.
Schneider, Gerhard: *See—*
Simon, Gerhard J.; and Schneider, Gerhard, 4,575,579, Cl. 178-4.000.
Schnell, Robert P.; Sampson, Robert W.; Pancanowski, Ronald F.; and Bruggema, Donald J., to UOP Inc. Detector for raman spectra and other weak light. 4,575,629, Cl. 250-238.000.
Schoeneberger, Carl F.; Bundens, Allan B.; Blake, Richard A.; and Fogle, Richard M., to Tocom, Inc. Video encoder/decoder system. 4,575,755, Cl. 358-120.000.
Schofield, David: *See—*
Jones, John D.; and Schofield, David, 4,575,557, Cl. 549-366.000.
Schofield, John, to U.S. Philips Corporation. Surface acoustic wave device. 4,575,698, Cl. 333-195.000.
Scholl, Hans; and Fischer, Jochen, to Kochs Adler, AG. Sewing machine head including a rotary housing. 4,574,718, Cl. 112-121.120.

Scholz, Erich: *See—*
Muller, Willi; Schacht, Hans; Scholz, Erich; and Straubel, Max, 4,574,762, Cl. 123-510.000.
Schopp, Helmut: *See—*
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Schrader S.A.: *See—*
Rosaz, Guy; Maire, Guy; and Badoz, Jean-Marie, 4,574,641, Cl. 73-726.000.
Schram, Robert W.: *See—*
Fink, Cameron; Schram, Robert W.; and Gentile, Anthony, 4,574,693, Cl. 101-3.0SP.
Schubert, Gerhard: *See—*
Halberachmidt, Friedrich; Audi, Josef; and Schubert, Gerhard, 4,575,389, Cl. 65-273.000.
Schulman, Richard E.; and Breen, William C., to Deaccelerator Corporation, by said William C. Breen. Behavioral fuel-saving method for a motor vehicle. 4,574,757, Cl. 123-396.000.
Schulte, Heinz: *See—*
Kauss, Wolfgang; Schulte, Heinz; and Wittich, Kurt, 4,574,687, Cl. 91-461.000.
Roechlein, Rolf; and Schulte, Heinz, 4,575,736, Cl. 346-140.00R.
Schultz, Jerold M.: *See—*
Fakirov, Stoyko C.; Lee, I-Hwa; and Schultz, Jerold M., 4,575,470, Cl. 428-105.000.
Schulz, Rene : *See—*
Teubler, Heinz; Kruger, Heinz W.; and Schulz, Rene , 4,575,314, Cl. 417-310.000.
Schumann, Gary M.; Dolejs, Charles A.; and Schick, David L., to UOP Inc. Multiport axial valve with balanced rotor. 4,574,840, Cl. 137-625.150.
Schuster, Wilhelm; Stahl, Jurgen; and Scondo, Ludwig, to AHK Alkohol Handelskontor GmbH & Co. KG. Sealing cap for a safety container. 4,574,967, Cl. 215-276.000.
Schwarz, Bernd: *See—*
Haberle, Egon; and Schwarz, Bernd, 4,574,532, Cl. 51-268.000.
Schwarz, Helmut. Cap for drinking cups. 4,574,970, Cl. 220-90.400.
Schwefel, Ernst, to Johannes Heidenhain GmbH. Method for restarting a tool onto a workpiece contour. 4,575,791, Cl. 364-168.000.
Schweizer, Hanspeter: *See—*
Meyer, Wolfgang H.; and Schweizer, Hanspeter, 4,575,838, Cl. 369-276.000.
Scifres, Donald R.: *See—*
Streifer, William; Scifres, Donald R.; and Connell, G. A. Neville, 4,575,194, Cl. 350-413.000.
Scondo, Ludwig: *See—*
Schuster, Wilhelm; Stahl, Jurgen; and Scondo, Ludwig, 4,574,967, Cl. 215-276.000.
Scordo, Dominick, to AT&T Bell Laboratories. Data clock recovery circuit. 4,575,860, Cl. 375-110.000.
Scott, Alexander, to J&P Coats Limited. Synthetic yarn and yarn-like structures and a method for their production. 4,574,578, Cl. 57-246.000.
Scott, Donald S.; and Rhodes, Edward, to Alberta Oil Sands Technology and Research Authority. Two phase flowmeter. 4,574,643, Cl. 73-861.040.
Scott & Fetzer Company, The: *See—*
Akhter, Pervez, 4,575,597, Cl. 200-84.00R.
Scott, Paul R.: *See—*
Hemphill, Dean P.; and Scott, Paul R., 4,575,280, Cl. 405-164.000.
Scowen, Kenneth J.: *See—*
Mittler, Martin A.; and Scowen, Kenneth J., 4,575,779, Cl. 361-296.000.
Scroggin, William F.: *See—*
Krause, Bernd; Hoelscher, Wayne L.; and Scroggin, William F., 4,575,046, Cl. 251-316.000.
Sedlacek, Franz, to Escher Wyss GmbH. Ring-gap nozzle and its application in a fluidized bed dryer. 4,574,496, Cl. 34-57.00A.
Seely, James R., to Marketing Displays, Inc. Deflectable sign and stand. 4,575,040, Cl. 248-624.000.
Segerstad, Christer H. A.; and Vallin, Hans, to Siemens Aktiengesellschaft. Methods and device for terminating tachycardia. 4,574,437, Cl. 128-419.0PG.
Seidel, Winfried; Oelschlager, Thomas; and Schlenther, Wolfgang, to Hans Schwarzkopf GmbH. Substituted 4-amino-3-nitrophenols, processes for their preparation and hair-coloring agents containing these compounds. 4,575,378, Cl. 8-414.000.
Seki, Masafumi; and Mito, Ikuo, to Nippon Electric Co., Ltd. Double channel planar buried heterostructure laser with periodic structure formed in guide layer. 4,575,851, Cl. 372-45.000.
Sekii, Tsugio: *See—*
Omae, Yoshihiro; and Sekii, Tsugio, 4,574,638, Cl. 73-637.000.
Semancik, Andrew E.: *See—*
Giblin, John P.; Semancik, Andrew E.; and Forehand, Sherman D., 4,575,123, Cl. 281-48.000.
Semco Instruments, Inc.: *See—*
Moore, M. Samuel, 4,575,803, Cl. 364-551.000.
Senju, Tsutomu, to Dainippon Screen Mfg. Co. Measurement of degree of offset of attachment position of drafting pen in coordinate plotter. 4,574,483, Cl. 33-18.100.
Seol, Man T., to Yim, B. D. Propulsion and speed change mechanism for lever propelled bicycles. 4,574,649, Cl. 74-138.000.
Serac S.A.: *See—*
Graffin, A. Jean-Jacques, 4,574,853, Cl. 141-286.000.
SERCAS s.r.l.: *See—*
Parma, Giancarlo, 4,574,603, Cl. 70-303.00A.
Serritella, Frank P.: *See—*
Hetznecker, Frank W.; and Serritella, Frank P., 4,574,617, Cl. 73-37.900.
Service Machine Company: *See—*
Green, Peter J., 4,574,943, Cl. 198-810.000.
Seto, Yasuhiko, to Pioneer Electronic Corporation. Dual mode disc player. 4,575,836, Cl. 369-265.000.
Seto, Yasuhiro, to Fuji Photo Film Co., Ltd. Positioning device for mounted film. 4,575,231, Cl. 355-76.000.
SGS-ATES Componenti Elettronici S.p.A.: *See—*
Palara, Sergio; and Torazzina, Aldo, 4,575,686, Cl. 330-273.000.
Shah, Shailesh; King, David R.; and Field, Nathan D., to Interntional Playtex, Inc. Method for increasing the absorbency of cellulosic fibers. 4,575,376, Cl. 8-116.100.
Sharma, Shanti S.; and Borgini, Fred, to RCA Corporation. Tailorable standard cells and method for tailoring the performance of IC designs. 4,575,745, Cl. 357-45.000.
Sharp Kabushiki Kaisha: *See—*
Taguchi, Toshimichi; and Akao, Hideyuki, 4,575,601, Cl. 219-10.55B.
Shedd, William D.; and Eschbach, Robert C., to AFTCO Mfg. Co., Inc. Fishing clip. 4,574,516, Cl. 43-43.120.
Shedd, William D.; and Eschbach, Robert C., to AFTCO Mfg. Co., Inc. Fishing clip. 4,574,518, Cl. 43-43.120.
Shell Oil Company: *See—*
Duhe, Rand J., 4,575,829, Cl. 367-129.000.
Edwards, Charles L., 4,575,569, Cl. 568-45.000.
Hemphill, Dean P.; and Scott, Paul R., 4,575,280, Cl. 405-164.000.
Shetty, Jayarama K.; and Marshall, J. John, to Miles Laboratories, Inc. Method for determination of transglucosidase. 4,575,487, Cl. 435-15.000.
Sheufelt, Edward L.; Kreitlow, David B.; and Hall, Jeffrey M., to Tektronix, Inc. Ink jet printing apparatus having an ink pressure transient suppressor system. 4,575,738, Cl. 346-140.00R.
Shiau, Jgi-Jiang. Structural support system for minimizing the effects of earthquakes on buildings and the like. 4,574,540, Cl. 52-167.000.
Shibao, Toshinori: *See—*
Nakahara, Teiji; Shibao, Toshinori; and Fujiwara, Kazuyuki, 4,574,576, Cl. 57-58.860.
Shichinohe, Takashi; Imaizumi, Masahiro; Ikejima, Ryoichi; and Oka, Yoshio, to Honda Giken Kogyo Kabushiki Kaisha. Transmission for use in motor vehicles. 4,574,652, Cl. 74-474.000.
Shida, Mitsuzo: *See—*
Schmukler, Seymour; Shida, Mitsuzo; and Machonis, John, Jr., 4,575,532, Cl. 525-57.000.
Shigenobu, Hiromichi; Nakabayashi, Takao; Akiyama, Kitio; Miida, Masao; and Karasawa, Hisashi, to Toshiba Electric Appliances Co., Ltd. Hot water supplying device. 4,575,615, Cl. 219-314.000.
Shikatani, Edward R., to Don Watt + Associates Communications, Inc. Display stand. 4,574,960, Cl. 211-60.100.
Shimada, Hiroyuki: *See—*
Nishimura, Sadanori; Yamashita, Masaru; and Shimada, Hiroyuki, 4,574,925, Cl. 192-3.310.
Shimada, Keiichiro; Takahashi, Takao; Moriwaki, Hisayoshi; and Nakano, Kenji, to Sony Corporation. Apparatus for recording additional video signals in a helical scan operation. 4,575,772, Cl. 360-19.100.
Shimadzu Corporation: *See—*
Akiyama, Osamu; and Hira, Rikuo, 4,575,242, Cl. 356-331.000.
Akiyama, Osamu, 4,575,252, Cl. 356-446.000.
Shimano Industrial Company Limited: *See—*
Nagano, Masashi, 4,575,365, Cl. 474-80.000.
Shimatani, Shiro: *See—*
Orita, Ryoji; Shimatani, Shiro; and Okamoto, Hitoshi, 4,574,722, Cl. 114-222.000.
Shimbori, Hideo: *See—*
Aoki, Akira; and Shimbori, Hideo, 4,575,153, Cl. 297-452.000.
Shimizu, Isamu: *See—*
Oshima, Noboru; Shimizu, Isamu; Takeuchi, Mikio; Fujimaki, Tatsuo; and Yamaguchi, Shinsuke, 4,575,534, Cl. 525-99.000.
Shimizu, Kazuo: *See—*
Hashimoto, Yasuyuki; and Shimizu, Kazuo, 4,575,271, Cl. 401-107.000.
Shimizu, Shigehisa, to Fuji Photo Film Co., Ltd. Method and apparatus for producing photographic film. 4,574,563, Cl. 53-430.000.
Shimojo, Fumio: *See—*
Ueda, Yoshio; Shimojo, Fumio; and Yoshida, Kiyoshige, 4,575,548, Cl. 536-46.000.
Shimono, Mamoru; Yokomori, Satoshi; and Yukinaga, Kouji, to Kabushiki Kaisha Toshiba; and Toshiba Automation Engineering, Ltd. Braking mechanism for document table drive means in a copying apparatus. 4,575,223, Cl. 355-8.000.
Shimotori, Kazuhiro: *See—*
Ozaki, Hideyuki; Shimotori, Kazuhiro; and Miyatake, Hideshi, 4,575,825, Cl. 365-189.000.
Shimoyama, Yuji: *See—*
Nakagawa, Kichizaemon; Hira, Takaaki; Abe, Hideo; Sasaki, Toru; and Shimoyama, Yuji, 4,575,053, Cl. 266-92.000.
Shimura, Ryoji: *See—*
Nakamura, Hitoshi; and Shimura, Ryoji, 4,575,138, Cl. 292-216.000.
Shinal, Edward C.: *See—*
Chen, Jivn-Ren; and Shinal, Edward C., 4,575,509, Cl. 514-297.000.
Shinohara, Morimiti, to Hitachi, Ltd. Guide vane operating mechanism for hydraulic machine. 4,575,307, Cl. 415-150.000.
Shionogi & Co., Ltd.: *See—*
Totani, Tetsushi, 4,575,550, Cl. 536-121.000.

Shirawachi, Kikuo: *See—*
Nishizawa, Seizi; and Shirawachi, Kikuo, 4,575,246, Cl. 356-346.000.
Shishido, Kentaro, to Sony Corporation. Data reading device for data processing apparatus. 4,575,703, Cl. 235-479.000.
Shupe, James T.; and March, T. Wayne, to Shupe & March Manufacturing, Inc. Banding system and components thereof. 4,574,434, Cl. 24-16.0PB.
Shupe & March Manufacturing, Inc.: *See—*
Shupe, James T.; and March, T. Wayne, 4,574,434, Cl. 24-16.0PB.
SI-FLO, Inc.: *See—*
Brumfield, William B., 4,574,828, Cl. 137-149.000.
Sibuet, Rene : *See—*
Paquet, Jean-Marc; and Sibuet, Rene , 4,575,322, Cl. 418-96.000.
Siddens, Jack K.: *See—*
Addor, Roger W.; Wright, Donald P., Jr.; Siddens, Jack K.; and Hand, John J., 4,575,560, Cl. 560-27.000.
Sieg, Arno: *See—*
Lodetti, Attilio; Blaser, Hansueli; Medici, Brenno; and Sieg, Arno, 4,574,464, Cl. 29-568.000.
Siemens Aktiengesellschaft: *See—*
Diepers, Heinrich; and Schewe, Herbert, 4,574,438, Cl. 29-25.350.
Fritz, Otmar, 4,575,747, Cl. 357-70.000.
Kolpin, Thomas, 4,575,641, Cl. 307-38.000.
Segerstad, Christer H. A.; and Vallin, Hans, 4,574,437, Cl. 128-419.0PG.
Sinha, Badri, 4,575,653, Cl. 310-313.00B.
Siemens Gammasonics, Inc.: *See—*
Persyk, Dennis E.; and Stoub, Everett W., 4,574,478, Cl. 30-116.000.
Stoub, Everett W., 4,575,810, Cl. 364-581.000.
Siemens Medical Laboratories, Inc.: *See—*
Menor, George, 4,575,064, Cl. 269-322.000.
Siemon Company, The: *See—*
Knickerbocker, Robert H., 4,575,177, Cl. 339-198.00R.
Thomas, Stephen M., 4,575,168, Cl. 339-19.000.
Sih, John C., to Upjohn Company, The. Substituted 2-pyridylmethylthio- and sulfinyl-benzimidazoles as gastric antisecretory agents. 4,575,554, Cl. 546-271.000.
Silva, Edwin L.; and Silva, Fred D. Device for attaching a lifting means to a load. 4,575,144, Cl. 294-97.000.
Silva, Fred D.: *See—*
Silva, Edwin L.; and Silva, Fred D., 4,575,144, Cl. 294-97.000.
Simmerman, William D.: *See—*
Reichert, Marvion E., Jr.; and Simmerman, William D., 4,574,752, Cl. 123-198.0DB.
Simmons, Jesse K.; and Simmons, Maralyne J. Portable ice table with frictionally engageable leg locking mechanism. 4,574,594, Cl. 62-457.000.
Simmons, Maralyne J.: *See—*
Simmons, Jesse K.; and Simmons, Maralyne J., 4,574,594, Cl. 62-457.000.
SimoDow Manufacturing Ltd.: *See—*
Smith, David W., 4,575,150, Cl. 297-300.000.
Simon, Gerhard J.; and Schneider, Gerhard, to International Standard Electric Corporation. Editing arrangement for videotex system with public terminals. 4,575,579, Cl. 178-4.000.
Sinclair, Iain. Puzzle. 4,575,087, Cl. 273-153.00R.
Sine Pumps, N.V.: *See—*
Sommer, Manfred; and Gudheim, A. Robert, 4,575,324, Cl. 418-217.000.
Singer Company, The: *See—*
McCurry, Ronald C., 4,574,531, Cl. 51-170.0EB.
Sinha, Badri, to Siemens Aktiengesellschaft. Damping layer for surface wave filter. 4,575,653, Cl. 310-313.00B.
Sink, Danny R.: *See—*
Taylor, Robert L.; Sink, Danny R.; and Cudzik, Daniel F., 4,574,975, Cl. 220-306.000.
Sinniger, Joseph O.; and Robbi, Anthony D., to RCA Corporation. Digital timing method for spark advance. 4,575,809, Cl. 364-569.000.
Sinta, Roger F.: *See—*
Rogers, Howard G.; Gaudiana, Russell A.; Minns, Richard A.; and Sinta, Roger F., 4,575,547, Cl. 528-191.000.
Sirinyan, Kirkor; Merten, Rudolf; Giesecke, Henning; and Wolf, Gerhard D., to Bayer Aktiengesellschaft. Process for activating substrates for electroless metallization. 4,575,467, Cl. 427-304.000.
SITEG Siebtechnik GmbH: *See—*
Lefferts, Johannes, 4,575,472, Cl. 428-222.000.
Siu, David: *See—*
Cooke, Theodore D.; Saunders, Gerald A. B.; and Siu, David, 4,574,794, Cl. 128-92.00H.
Siwiec, Dean M.: *See—*
Rainer, Norman B.; and Siwiec, Dean M., 4,574,819, Cl. 131-291.000.
Sizelove, Cary L., Sr.: *See—*
Dietrich, William J., Sr.; Sizelove, Cary L., Sr.; and Knobloch, Dean A., 4,574,715, Cl. 111-7.000.
Sizto, N. Chung; and Gallup, Cindy, to Syntex (U.S.A.) Inc. Ultrasonic enhanced immuno-reactions. 4,575,485, Cl. 435-7.000.
Sjoerdsma, Albert, to Merrell Dow Pharmaceuticals Inc. Method of alleviating withdrawal symptoms. 4,575,510, Cl. 514-401.000.
Skalski, Frederick T.: *See—*
Wolfram, Norman E.; Skalski, Frederick T.; and Heronemus, William E., 4,575,145, Cl. 295-37.000.
SKF Kugellagerfabriken GmbH: *See—*
Brandenstein, Manfred; Gossmann, Willi; Pape, Gebhard; Huttner, Klaus; and Ludwig, Wilfried, 4,574,448, Cl. 29-283.500.
Skraba, Frank W., to Phillips Petroleum Company. Method for mixing of fluidized solids and fluids. 4,575,414, Cl. 208-157.000.
Slafer, Warren D., to Polaroid Corporation. Microporous filter. 4,575,406, Cl. 204-11.000.
Sloan, Albert H. In-place underwater dredging apparatus of the crater sink type. 4,574,501, Cl. 37-58.000.
Slotboom, Jan W.; Maas, Henricus G. R.; Appels, Johannes A.; and Klaassen, Francois M., to U.S. Philips Corporation. Method of manufacturing a semiconductor device having narrow coplanar silicon electrodes. 4,574,468, Cl. 29-571.000.
Smashey, Russell W.; and Stoffer, Lewis J., to General Electric Company. Method for producing an article with a fluid passage. 4,574,451, Cl. 29-423.000.
Smith, David C., to Otis Elevator Company. Data acquisition transmitter and receiver. 4,575,720, Cl. 340-825.540.
Smith, David E. Ambidextrous cartridge magazine retaining catch for self loading fire arms. 4,574,509, Cl. 42-7.000.
Smith, David W., to SimoDow Manufacturing Ltd. Suspension arrangement for a tilting chair. 4,575,150, Cl. 297-300.000.
Smith, Dennis K.; and Holesha, John J., to Honeywell Inc. Fail-safe digital phone. 4,575,584, Cl. 179-81.00R.
Smith, Homer H. L-Shaped anchored pillow. 4,574,412, Cl. 5-436.000.
Smith International, Inc.: *See—*
Jadwin, Reese, 4,574,894, Cl. 175-317.000.
Smith, Joseph E., to O & S Manufacturing Co. Sealed ball and socket joints capable of disassembly. 4,575,162, Cl. 308-2.00R.
Smith, William E.: *See—*
Larson, Richard I.; and Smith, William E., 4,575,436, Cl. 264-0.500.
Smith, William T., to Goodyear Tire & Rubber Company, The. Rim assembly. 4,574,859, Cl. 152-410.000.
Smotrycz, Zenon O.: *See—*
Norton, Edward J.; Clay, Ronald L.; and Smotrycz, Zenon O., 4,574,498, Cl. 36-114.000.
Smulders, Auguste: *See—*
Durand, Francois; and Smulders, Auguste, 4,574,650, Cl. 74-411.500.
Snavely, Earl S.: *See—*
Hopkins, Daniel N.; and Snavely, Earl S., 4,574,886, Cl. 166-272.000.
Snygg, Edward N.: *See—*
Corbett, William H.; and Snygg, Edward N., 4,575,089, Cl. 273-183.00B.
SOCAPEX: *See—*
Parchet, Pierre; and Bouygues, Jean, 4,575,183, Cl. 350-96.220.
Societe Carbochimique Societe Anonyme: *See—*
DeBoodt, Marcel F.; Minjauw, Werner G.; and Oppliger, Hermann, 4,575,391, Cl. 71-28.000.
Societe d'Esploitation des Machines Dubuit: *See—*
Dubuit, Jean-Louis, 4,574,694, Cl. 101-11.000.
Societe Nationale d'Etude et de Construction de Meteurs d'Aviation: *See—*
Castellant, Jean-Pierre J. E.; Habrard, Alain G. J.; and Pidebois, Jacques E., 4,574,619, Cl. 73-40.700.
Societe pour l'Etude et la Fabrication de Circuits Integres Speciaux E.F.C.I.S.: *See—*
Meyer, Jacques, 4,575,708, Cl. 340-347.0DD.
Soika, Emil H., to Baxter Travenol Laboratories, Inc. Method of manufacturing a support assembly. 4,574,456, Cl. 29-451.000.
Solid State Scientific, Inc.: *See—*
Halfacre, Mark A.; Pan, David S.; and Huie, Wing K., 4,574,467, Cl. 29-571.000.
Solomon, James E., to Buckeye International, Inc. Damping mechanism for a truck assembly. 4,574,708, Cl. 105-193.000.
Soloway, David J. Laryngoscope. 4,574,784, Cl. 128-11.000.
Sommer, Manfred; and Gudheim, A. Robert, to Sine Pumps, N.V. Rotary fluid pump. 4,575,324, Cl. 418-217.000.
Sommer, Wayne D.: *See—*
Eaves, Fred W.; Matt, Timothy S.; Sommer, Wayne D.; and Wensink, James B., 4,574,566, Cl. 53-450.000.
Sony Corporation: *See—*
Shimada, Keiichiro; Takahashi, Takao; Moriwaki, Hisayoshi; and Nakano, Kenji, 4,575,772, Cl. 360-19.100.
Shishido, Kentaro, 4,575,703, Cl. 235-479.000.
Sooy, Robert J.: *See—*
Kaminsky, Naum M.; and Sooy, Robert J., 4,574,660, Cl. 74-822.000.
Spector, George: *See—*
Fuss, Gary E.; and Spector, George, 4,574,912, Cl. 181-129.000.
Hunt, John T.; and Spector, George, 4,574,916, Cl. 182-18.000.
Sutton, Bernard; and Spector, George, 4,574,406, Cl. 4-559.000.
Spensberger, Johann: *See—*
Fischer, Heinrich; Schmidkunz, Walter; and Spensberger, Johann, 4,575,289, Cl. 409-33.000.
Sperry Corporation: *See—*
Rao, Basrur R.; and Daigle, Chris J., 4,575,697, Cl. 333-157.000.
Spira, Joel S.: *See—*
Zaharchuk, Walter; and Spira, Joel S., 4,575,660, Cl. 315-295.000.
Spitzner, Warren C.: *See—*
Dehart, Michael J.; Spitzner, Warren C.; and Estes, James M., 4,574,982, Cl. 222-1.000.
Sprafke, Uwe: *See—*
Linge, Reiner; Sprafke, Uwe; and Schlomer, Heinz-Jurgen, 4,574,684, Cl. 89-34.000.

Spurlin, Stanford R.; and Yeung, Edward S., to Iowa State University Research Foundation, Inc. Method of generating chemiluminescent light. 4,575,433, Cl. 252-700.000.

Square D Company: *See—*
Hoelzer, John S., 4,575,651, Cl. 307-593.000.

Stahl, Jurgen: *See—*
Schuster, Wilhelm; Stahl, Jurgen; and Scondo, Ludwig, 4,574,967, Cl. 215-276.000.

Stahlecker, Fritz, to Stahlecker, Fritz; and Stahlecker, Hans. Fiber feed arrangement for friction spinning. 4,574,581, Cl. 57-401.000.

Stahlecker, Fritz; Griesinger, Rolf; and Fetzer, Gerhard, to Hans Stahlecker & Fritz Stahlecker. Opening roller arrangement. 4,574,583, Cl. 57-408.000.

Stahlecker, Fritz: *See—*
Derichs, Josef; and Stahlecker, Fritz, 4,574,577, Cl. 57-100.000.

Stahlecker, Hans: *See—*
Derichs, Josef; and Stahlecker, Fritz, 4,574,577, Cl. 57-100.000.
Stahlecker, Fritz, 4,574,581, Cl. 57-401.000.

Stamm, Thomas A., to Honeywell Inc. Differential phase shift keying receiver. 4,575,684, Cl. 329-122.000.

Stanley Works, The: *See—*
Drechsler, Mark A., 4,574,486, Cl. 33-138.000.

Stark, Robert G., Sr. Airlift bulkhead. 4,574,404, Cl. 4-505.000.

Stauffer, Norman L., to Honeywell Inc. Video camera auto focus. 4,575,764, Cl. 358-227.000.

Stead, Michael J., to Ethicon, Inc. Packing of surgical needle. 4,574,957, Cl. 206-63.300.

Steck, Warren F.; Underhill, Edward W.; Chisholm, Melvin D.; and Bailey, Berton K., to Canadian Patents and Development Limited. Multicomponent attractant for armyworm moths. 4,575,458, Cl. 424-84.000.

Stein, Ronald R., to Ex-Cell-O Corporation. Forming machine with multiple work stations. 4,574,605, Cl. 72-88.000.

Steinbrecher, Heinrich: *See—*
Hauesler, Karl H.; Steinbrecher, Heinrich; and vom Dorp, Walter, 4,574,606, Cl. 72-100.000.

Steiner, Gerd; Mueller, Claus D.; and Lenke, Dieter, to BASF Aktiengesellschaft. 2-Substituted 1-(3'-aminoalkyl)-1,2,3,4-tetrahydro-β-carbolines, and their use as antiarrhythmic agents. 4,575,508, Cl. 514-292.000.

Steiner, Michel: *See—*
Dieudonne, Jean P.; and Steiner, Michel, 4,574,422, Cl. 16-85.000.

Stendel, Wilhelm: *See—*
Behner, Otto; Stendel, Wilhelm; and Andrews, Peter, 4,575,501, Cl. 514-150.000.

Stepan, William E., to GTE Communication Systems Corporation. Circuit to post interconnection device. 4,575,165, Cl. 339-17.00M.

Stephens, Harold C.; and Workman, Michael L., to International Business Machines Corporation. Magnetic recording disk file servo control system including an actuator model for generating a simulated head position error signal. 4,575,776, Cl. 360-78.000.

Stephens, Thomas P., to Hewlett-Packard Company. Pressure dome. 4,574,811, Cl. 128-675.000.

Sterlini, Jacques, to Cie Electro Mecanique. Process for the rectification of binary liquid mixtures. 4,575,405, Cl. 203-24.000.

Stern, Richard A.; and Mariani, Elio A., to United States of America, Army. Monolithic millimeter-wave electronic scan antenna using Schottky barrier control and method for making same. 4,575,727, Cl. 343-768.000.

Sternberg, Fred: *See—*
Rogow, Bruce I.; and Sternberg, Fred, 4,575,639, Cl. 290-55.000.

Sternisa, Danilo: *See—*
Mermi, Kurt; Sternisa, Danilo; and Frischmann, Albert, 4,575,294, Cl. 411-30.000.

Sterte, Ragnar. Clamping device for attaching component which is inserted into a hole. 4,575,275, Cl. 403-7.000.

Stevens, Daniel R.: *See—*
Stevens, Keith A.; Stevens, Daniel R.; and Stevens, Howard, Jr., 4,574,731, Cl. 118-504.000.

Stevens, Howard, Jr.: *See—*
Stevens, Keith A.; Stevens, Daniel R.; and Stevens, Howard, Jr., 4,574,731, Cl. 118-504.000.

Stevens, Keith A.; Stevens, Daniel R.; and Stevens, Howard, Jr. Disposable spray shield. 4,574,731, Cl. 118-504.000.

Stewart, Anne M.: *See—*
Stewart, John W.; and Stewart, Anne M., 4,574,416, Cl. 15-169.000.

Stewart, John W.; and Stewart, Anne M. Retractable brushes. 4,574,416, Cl. 15-169.000.

Stipanuk, John: *See—*
Walse, Alan; and Stipanuk, John, 4,575,172, Cl. 339-75.0MP.

Stipcevic, Franko: *See—*
Fagerstedt, Nils U. H.; Roos, Sture G.; and Stipcevic, Franko, 4,575,841, Cl. 370-14.000.

Stockham, Michael A.: *See—*
Hider, Robert C.; Kontoghiorghes, George; and Stockham, Michael A., 4,575,502, Cl. 514-184.000.

Stoddard, Evan D. Three-piece knock-down sawhorse. 4,574,917, Cl. 182-151.000.

Stoffer, Lewis J.: *See—*
Smashey, Russell W.; and Stoffer, Lewis J., 4,574,451, Cl. 29-423.000.

Stokes, Rembert R.; and Priniski, David J., to Motorola, Inc. Signal wrap for transducer fault isolation. 4,575,587, Cl. 179-175.10A.

Stolberger Maschinenfabrik GmbH & Co. KG: *See—*
Knaak, Hans, 4,574,574, Cl. 57-59.000.

Stolen, Rogers H.: *See—*
Howard, Richard E.; Pleibel, William; and Stolen, Rogers H., 4,575,187, Cl. 350-96.330.

Stolper, Peter R., to DelNero, David L., a part interest. Boat-hull construction. 4,574,724, Cl. 114-271.000.

Stolte, Friedrich: *See—*
Icking, Friedrich; and Stolte, Friedrich, 4,574,630, Cl. 73-202.000.

Storz, Karl. Tissue cutter. 4,574,803, Cl. 128-305.000.

Stoub, Everett W., to Siemens Gammasonics, Inc. Method and circuit for processing pulses by applying the technique of weighted acquisition. 4,575,810, Cl. 364-581.000.

Stoub, Everett W.: *See—*
Persyk, Dennis E.; and Stoub, Everett W., 4,574,478, Cl. 30-116.000.

Stranahan, Michael: *See—*
Lew, Hyok S.; and Stranahan, Michael, 4,574,644, Cl. 73-861.050.

Strand, Charles A., Sr. Steam heating apparatus. 4,575,002, Cl. 237-5.000.

Straub, Reinhold; and Eberhard, Eugen, to Hensler, Ewald. Surgical instrument for cutting tissue, in particular cartilage. 4,574,802, Cl. 128-305.000.

Straubel, Max: *See—*
Muller, Willi; Schacht, Hans; Scholz, Erich; and Straubel, Max, 4,574,762, Cl. 123-510.000.

Straus, Eugene W., to Montefiore Medical Center, Inc. Binding assay for the detection of mycobacteria. 4,575,484, Cl. 435-7.000.

Streifer, William; Scifres, Donald R.; and Connell, G. A. Neville, to Xerox Corporation. Semiconductor laser beam collimator. 4,575,194, Cl. 350-413.000.

Strickland, Alan B.: *See—*
Hendrickson, Thomas A.; Macauley, George C.; Pierce, Donald L.; Roefer, Robert W.; and Strickland, Alan B., 4,575,816, Cl. 364-900.000.

Strout, Russell B.; and Golner, Jerold J., to Borden, Inc. Portable chuck for dispensing wrapping material. 4,575,020, Cl. 242-96.000.

Sturtz, Charles R., Jr., to Clark Michigan Company. Forward and reverse clutch engagement parking brake. 4,574,927, Cl. 192-4.00C.

Su, Taian: *See—*
Tarbox, Bruce H.; Rathbun, Donald J.; and Su, Taian, 4,575,774, Cl. 360-72.200.

Sueddeutsche Kuehlerfabrik, Julius Fr. Behr GmbH & Co. KG: *See—*
Humpolik, Bohumil, 4,574,444, Cl. 29-157.30C.

Suehiro, Masaharu: *See—*
Nagasawa, Shinji; Ono, Toshiki; and Suehiro, Masaharu, 4,575,104, Cl. 277-153.000.

Sugano, Mitsutoshi, to Nihon Radiator Co., Ltd. Pipe joint construction. 4,575,134, Cl. 285-353.000.

Sugawara, Takehisa: *See—*
Terui, Kazuo; Sugiura, Rikio; and Sugawara, Takehisa, 4,575,748, Cl. 357-74.000.

Sugihara, Masahiro: *See—*
Kobayashi, Norihide; Nakamura, Toshiyuki; and Sugihara, Masahiro, 4,575,320, Cl. 418-55.000.

Sugimoto, Mamoru: *See—*
Koe, Kiyohiko; Yamaguchi, Jun; Kubo, Noboru; Matsumoto, Hiroshi; Sugimoto, Mamoru; and Fukumura, Keiji, 4,574,950, Cl. 206-334.000.

Sugioka, Takami; and Tanaka, Takeshi, to Teijin Seiki Company Limited. Fluid coupling device. 4,575,015, Cl. 242-46.400.

Sugita, Hiroshi: *See—*
Hiramitsu, Tetsushi; Sugita, Hiroshi; and Ono, Satoshi, 4,574,653, Cl. 74-484.00R.

Sugiura, Haruyuki, to Kitagawa Industries Co., Ltd. Flexible hinge assembly having a substrate supporting portion. 4,574,425, Cl. 16-225.000.

Sugiura, Rikio: *See—*
Terui, Kazuo; Sugiura, Rikio; and Sugawara, Takehisa, 4,575,748, Cl. 357-74.000.

Sugiyama, Katsuhiko; Kawazoe, Hiromitsu; and Idota, Yoshinori, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Inlet port for internal combustion engine. 4,574,751, Cl. 123-188.00M.

Sugiyama, Yoshihiko; Uno, Teruo; Irie, Hiroshi; Kurachi, Teruo; and Abiko, Tetsuo, to Sumitomo Light Metal Industries, Ltd.; and Sumitomo Precision Products Co., Ltd. Plate fin heat exchanger for superhigh pressure service. 4,574,878, Cl. 165-134.100.

Suguro, Yoshihiro: *See—*
Nagamoto, Masanaka; and Suguro, Yoshihiro, 4,575,479, Cl. 430-159.000.

Sullivan, Jeremiah F. Portable temporary emergency distress signal. 4,574,726, Cl. 116-28.00R.

Sullivan, Richard N. Flushing, toilet tank-fed, primer valve for sewer line drain traps. 4,574,399, Cl. 4-206.000.

Sullivan, William F., Jr., to Polaroid Corporation. Part positioning system employing a mask and photodetector array. 4,575,637, Cl. 250-548.000.

Sulzer Brothers Limited: *See—*
Kunzli, Albert, 4,575,613, Cl. 219-284.000.

Sumitomo Chemical Company, Limited: *See—*
Ichihashi, Hiroshi; and Yoshioka, Hiroshi, 4,575,572, Cl. 585-266.000.

Sumitomo Electric Industries, Inc.: *See—*
Nakajima, Shiro; and Fukudome, Koki, 4,574,923, Cl. 188-73.450.

Sumitomo Electric Industries, Ltd.: *See—*
Koe, Kiyohiko; Yamaguchi, Jun; Kubo, Noboru; Matsumoto, Hiroshi; Sugimoto, Mamoru; and Fukumura, Keiji, 4,574,950, Cl. 206-334.000.

Kojima, Keiichi; and Ueno, Keiji, 4,575,437, Cl. 264-1.400.
Ueba, Yoshinobu, 4,575,188, Cl. 350-96.340.
Ueno, Keiji; and Mori, Akinori, 4,575,184, Cl. 350-96.230.
Ueno, Keiji, 4,575,537, Cl. 525-199.000.

Sumitomo Light Metal Industries, Ltd.: *See—*
Sugiyama, Yoshihiko; Uno, Teruo; Irie, Hiroshi; Kurachi, Teruo; and Abiko, Tetsuo, 4,574,878, Cl. 165-134.100.

Sumitomo Precision Products Co., Ltd.: *See—*
Sugiyama, Yoshihiko; Uno, Teruo; Irie, Hiroshi; Kurachi, Teruo; and Abiko, Tetsuo, 4,574,878, Cl. 165-134.100.

Sumitomo Rubber Industries, Ltd.: *See—*
Maikuma, Yoshimata; Nojiri, Yasushi; and Oda, Ryoichi, 4,574,628, Cl. 73-146.000.

Sun Chemical Corporation: *See—*
Neumann, John A., 4,574,623, Cl. 73-56.000.

Sun Refining and Marketing Company: *See—*
Hsu, Chao-Yang, 4,575,564, Cl. 568-454.000.

Sundberg, Alf H. Retaining device. 4,575,139, Cl. 292-265.000.

Sundquist, Tommy, to AB Volvo. Seal, especially for a coupling between an air intake on a tilting truck cab and a pipe securely mounted on the chassis. 4,575,128, Cl. 285-9.00R.

Sundstrand Corporation: *See—*
Blain, Edward S., 4,575,318, Cl. 418-14.000.

Sundstrand Optical Technologies, Inc.: *See—*
Council, Thomas, 4,575,855, Cl. 372-87.000.

Surjaatmadja, Jim B.: *See—*
Rao, Prabhakar P.; Surjaatmadja, Jim B.; and Penn, Jack C., 4,575,313, Cl. 417-26.000.

Susumu, Oshiro: *See—*
Kazuhiro, Sakamoto; Susumu, Oshiro; and Masaharu, Morioka, 4,574,783, Cl. 128-4.000.

Sutton, Bernard; and Spector, George. Tub comforter. 4,574,406, Cl. 4-559.000.

Suzuki, Akiyoshi, to Canon Kabushiki Kaisha. Aligning apparatus and method for mitigating instability caused by interference in alignment signal. 4,575,250, Cl. 356-401.000.

Suzuki, Kenji, to Canon Kabushiki Kaisha. Distance measuring device. 4,575,237, Cl. 356-1.000.

Suzuki, Minoru; and Tamaribuchi, Masahiro, to Japan Tobacco & Salt Public Corporation, The. Cork knife cleaning apparatus. 4,574,817, Cl. 131-94.000.

Suzuki, Takashi; Kimura, Tetsuo; and Tanaka, Seiichi, to Nittan Company, Limited. Alarm terminal device. 4,575,711, Cl. 340-521.000.

Svilans, Mikelis N., to Northern Telecom Limited. Melt dispensing liquid phase epitaxy boat. 4,574,730, Cl. 118-412.000.

Swail, Carl P.: *See—*
Woolley, John H.; Westley, Robert; and Swail, Carl P., 4,574,632, Cl. 73-571.000.

Swain, Judith L.: *See—*
Holmes, Edward W.; and Swain, Judith L., 4,575,498, Cl. 514-43.000.

Sweeney, William M.; and Lachowicz, Donald R., to Texaco Inc. Thermal stabilized vegetable oil extended diesel fuels. 4,575,382, Cl. 44-57.000.

Swengel, Robert C., Jr.: *See—*
Swengel, Robert C., Sr.; and Swengel, Robert C., Jr., 4,575,071, Cl. 272-52.000.

Swengel, Robert C., Sr.; and Swengel, Robert C., Jr., to Donsco Inc. Oscillating device and compliant bearings therefor. 4,575,071, Cl. 272-52.000.

Swim-Mill, Inc.: *See—*
Fontaine, Lucien P.; and Leonaggeo, Angelo, Jr., 4,574,739, Cl. 119-29.000.

Swiss Aluminium Ltd.: *See—*
Mittelmann, Gerhard J., 4,574,968, Cl. 220-1.500.

Sybron Corporation: *See—*
Maizenberg, Leonid I., 4,575,338, Cl. 433-126.000.

Sykes, Donald J., to Marpac Industries, Inc. Dispensing valve including an elastomeric seal disposed between plastic plug and valve seat members. 4,574,985, Cl. 222-83.500.

Sylvan, Richard: *See—*
Handler, Milton E.; Sylvan, Richard; and Baisch, Herbert, 4,574,530, Cl. 51-166.0TS.

Synektron Corporation: *See—*
Gogue, George P., 4,575,652, Cl. 310-49.00R.

Syntex (U.S.A.) Inc.: *See—*
Sizto, N. Chung; and Gallup, Cindy, 4,575,485, Cl. 435-7.000.

Szalanski, Scott E.; and Tess, Kenneth, to Rexnord Inc. Vertical shaft impact crusher rings. 4,575,014, Cl. 241-275.000.

Szarka, David D., to Halliburton Company. Plug container. 4,574,882, Cl. 166-75.100.

't Hoen, Pieter J., to North American Philips Corporation. Monitoring of frequency shift of ultrasound pulses in tissue. 4,574,635, Cl. 73-599.000.

Tabai Espec Corp.: *See—*
Ogura, Toichi; Kanamori, Ikuo; and Murano, Keiichi, 4,575,257, Cl. 374-45.000.

Tabler, Charles P.; and Devins, Theodore R., to Buckhorn Material Handling Group, Inc. Storage and retrieval system. 4,574,962, Cl. 211-122.000.

Tachikawa Spring Co. Ltd.: *See—*
Aoki, Akira; and Shimbori, Hideo, 4,575,153, Cl. 297-452.000.

Tagawa Kikai Co., Ltd.: *See—*
Matsumoto, Hiroyasu, 4,574,847, Cl. 139-452.000.

Taguchi, Takao: *See—*
Matsumoto, Katsuaki; and Taguchi, Takao, 4,575,396, Cl. 134-7.000.

Taguchi, Toshimichi; and Akao, Hideyuki, to Sharp Kabushiki Kaisha. Keyboard of the membrane type. 4,575,601, Cl. 219-10.55B.

Tahara, Masato; and Ryu, Toshihiko, to NEC Corporation. Cross-polarization distortion canceller for use in digital radio communication receiver. 4,575,862, Cl. 375-102.000.

Taiho Seiki Kabushiki Kaisha: *See—*
Tsuge, Eiji; Yanagisawa, Taminori; Yamaguchi, Takaharu; and Fukatsu, Hiroshi, 4,574,941, Cl. 198-468.200.

Taka-Ai Co., Ltd.: *See—*
Furuse, Mitsuru, 4,574,602, Cl. 70-232.000.

Takahashi, Mineo: *See—*
Murohushi, Yoshiyuki; Kato, Kiyomitsu; and Takahashi, Mineo, 4,575,356, Cl. 464-52.000.

Takahashi, Osamu; and Makino, Katsumi, to Fuji Photo Film Co., Ltd. Light-sensitive material for color diffusion transfer with mixed oxidized developer scavenger particles. 4,575,481, Cl. 430-214.000.

Takahashi, Takao: *See—*
Shimada, Keiichiro; Takahashi, Takao; Moriwaki, Hisayoshi; and Nakano, Kenji, 4,575,772, Cl. 360-19.100.

Takami, Katsumi: *See—*
Ueda, Ken; Okajima, Kenichi; and Takami, Katsumi, 4,575,868, Cl. 378-4.000.

Takara Co., Ltd.: *See—*
Matsuda, Takashi, 4,575,352, Cl. 446-376.000.
Ogawa, Iwakichi, 4,575,346, Cl. 446-259.000.
Wakayama, Yoichi; Sato, Hirohisa; and Terui, Masumi, 4,575,354, Cl. 446-437.000.

Takashima, Hiroaki: *See—*
Uemura, Seiichi; Yamamoto, Shunichi; Hirose, Takao; Takashima, Hiroaki; and Kato, Osamu, 4,575,411, Cl. 208-44.000.

Takebe, Katsuhiko, to Rhythm Watch Co., Ltd. Device for timepiece electronically signalling a time by melody sounds and time striking sounds. 4,575,832, Cl. 368-272.000.

Takeda Chemical Industries, Ltd.: *See—*
Higashide, Eiji; and Horii, Satoshi, 4,575,489, Cl. 435-70.000.

Takeda, Keiso: *See—*
Inoue, Tokuta; Oishi, Kiyohiko; Okamoto, Takamitsu; and Takeda, Keiso, 4,574,748, Cl. 123-52.0MB.

Takeuchi, Mikio: *See—*
Oshima, Noboru; Shimizu, Isamu; Takeuchi, Mikio; Fujimaki, Tatsuo; and Yamaguchi, Shinsuke, 4,575,534, Cl. 525-99.000.

Talish, Roger J.; Parr, William E.; and Zavros, Steven J., to Electro-Biology, Inc. Portable non-invasive electromagnetic therapy equipment. 4,574,809, Cl. 128-419.00F.

Tamaqua Cable Products Corporation: *See—*
French, Terry M., 4,575,326, Cl. 425-71.000.

Tamaribuchi, Masahiro: *See—*
Suzuki, Minoru; and Tamaribuchi, Masahiro, 4,574,817, Cl. 131-94.000.

Tamasaki, Hiromichi: *See—*
Yamada, Mitsuo; and Tamasaki, Hiromichi, 4,575,536, Cl. 525-162.000.

Tams, Joseph. Water level control device. 4,574,405, Cl. 4-508.000.

Tamura, Tetsuomi: *See—*
Kodama, Hisashi; Sato, Katsujiro; Tamura, Tetsuomi; Hamamoto, Toru; and Yamada, Kazuharu, 4,574,750, Cl. 123-90.580.

Tanae, Hiroyuki: *See—*
Kifune, Koji; Tanae, Hiroyuki; Yamaguchi, Yasuhiko; and Motosugi, Kenzo, 4,575,519, Cl. 521-77.000.

Tanaka, Hideaki: *See—*
Fujita, Kunihiro; Tanaka, Hideaki; and Maebara, Toshiaki, 4,575,445, Cl. 264-291.000.

Tanaka, Katsuyuki: *See—*
Murakami, Nobuaki; Tanaka, Katsuyuki; and Ihokura, Kousuke, 4,575,441, Cl. 264-61.000.

Tanaka, Miki; and Ooami, Kazuo, to Fujitsu Limited. Method for controlling read-out or write in of semiconductor memory device and apparatus for the same. 4,575,824, Cl. 365-189.000.

Tanaka, Seiichi: *See—*
Suzuki, Takashi; Kimura, Tetsuo; and Tanaka, Seiichi, 4,575,711, Cl. 340-521.000.

Tanaka, Tadaaki; Ibuki, Tadahiro; Nakamura, Yoshiaki; and Yamamoto, Masaichi, to Eisai Co., Ltd. Milking apparatus. 4,574,736, Cl. 119-14.080.

Tanaka, Takeshi: *See—*
Sugioka, Takami; and Tanaka, Takeshi, 4,575,015, Cl. 242-46.400.

Tanaka, Toshihiko; Hasegawa, Norio; and Hayashida, Tetsuya, to Hitachi, Ltd. Method of pattern detection. 4,575,399, Cl. 156-272.800.

Tanaka, Toshiyuki: *See—*
Imazeki, Kazuyoshi; Tanaka, Toshiyuki; and Hayashibara, Fumio, 4,575,707, Cl. 340-286.00R.

Tanaka, Tsunefumi, to Canon Kabushiki Kaisha. Lens system. 4,575,198, Cl. 350-464.000.

Tanikawa, Osamu, to USM Corporation. Stroke adjusting mechanism of blind nut setting tool. 4,574,612, Cl. 72-391.000.

Tanikawa, Yoshitaka: *See—*
Hayama, Nobuhiro; Yoshimura, Takeshi; and Tanikawa, Yoshitaka, 4,574,588, Cl. 60-284.000.

Tansey, Richard J., to Rockwell International Corporation. Phase-measuring interferometer. 4,575,247, Cl. 356-349.000.

Tarbox, Bruce H.; Rathbun, Donald J.; and Su, Taian, to Honeywell Information Systems Inc. Disk subsystem read write control. 4,575,774, Cl. 360-72.200.

Tarbox, Inc.: *See*—
Tarbox, Max R.; and Rosales, Nancy, 4,575,075, Cl. 272-119.000.
Tarbox, Max R.; and Rosales, Nancy, to Tarbox, Inc. Hand exercise weights. 4,575,075, Cl. 272-119.000.
Tartari, Claudio: *See*—
Castello, Paolo; and Tartari, Claudio, 4,575,176, Cl. 339-195.00M.
Tatemoto, Minoru; and Harara, Mitsuhiko, to Mitsubishi Jidoeha Kogyo K.K.; and Mitsubishi Denki K.K. Vehicle height control system. 4,575,115, Cl. 280-707.000.
Tayama, Kenji: *See*—
Fujiyama, Seiichi; Minakami, Hiroyuki; Tayama, Kenji; and Masai, Hiroshi, 4,575,551, Cl. 536-123.000.
Taylor, Bev W.: *See*—
Kinberg, Benjamin; Klawitter, Ronald R.; and Taylor, Bev W., 4,575,070, Cl. 272-33.00R.
Taylor, Christopher J. C.: *See*—
Wigga, Christopher C.; and Taylor, Christopher J. C., 4,575,348, Cl. 446-310.000.
Taylor, Ivan; and Harrington, John P., to Flexibox Limited. Flexible couplings. 4,575,357, Cl. 464-69.000.
Taylor, Peter C. Rock climbing adjustable chock. 4,575,032, Cl. 248-1.000.
Taylor, Robert L.; Sink, Danny R.; and Cudzik, Daniel F., to Reynolds Metals Company. Resealable container closure. 4,574,975, Cl. 220-306.000.
TBT Tiefbohrtechnik GmbH & Co. KG: *See*—
Weiblen, Richard, 4,574,439, Cl. 29-27.00A.
TDK Corporation: *See*—
Nakayama, Masatoshi; Morita, Haruyuki; Kubota, Yuichi; and Tsuchiya, Keiko, 4,575,475, Cl. 428-480.000.
Tecco, Thomas C.: *See*—
Brandt, Herbert E.; and Tecco, Thomas C., 4,575,203, Cl. 350-631.000.
Tech Products Corporation: *See*—
Tobey, Richard D., 4,575,034, Cl. 248-188.900.
Technicon Instruments Corp.: *See*—
Krouwer, Jan S.; and Lynch, Michael J., 4,575,488, Cl. 435-16.000.
Ornstein, Leonard; and Kim, Young R., 4,575,490, Cl. 436-63.000.
Tedeschi, Rinaldo R.; Emery, Arthur R.; and Edwards, Robert A., to United Technologies Corporation. Solid state electronic switch for motor vehicles. 4,575,673, Cl. 323-351.000.
Tegal Corporation: *See*—
Rummel, Paul W., 4,575,714, Cl. 340-568.000.
Teijin Seiki Company Limited: *See*—
Sugioka, Takami; and Tanaka, Takeshi, 4,575,015, Cl. 242-46.400.
Teknikgruppen AB: *See*—
Jorgensen, Karl-Gunnar; and Magnusson, Leif, 4,574,855, Cl. 144-2.00Z.
Tektronix, Inc.: *See*—
Almy, Thomas A.; and Merrow, Thomas E., 4,575,818, Cl. 365-49.000.
Bristol, Lloyd R., 4,575,661, Cl. 315-383.000.
Lockwood, Larry R., 4,575,699, Cl. 333-219.000.
Sheufelt, Edward L.; Kreitlow, David B.; and Hall, Jeffrey M., 4,575,738, Cl. 346-140.00R.
Teleco Oilfield Services Inc.: *See*—
Grosso, Donald S.; and Helm, Charles W., 4,575,681, Cl. 324-347.000.
Teledyne Industries, Inc.: *See*—
Adair, William A., 4,575,290, Cl. 409-132.000.
Lee, Robert H.; and Gupta, Suresh C., 4,575,671, Cl. 322-16.000.
Telefonaktiebolaget L M Ericsson: *See*—
Persson, Nils A.; and Lindberg, Torsten G., 4,575,039, Cl. 248-550.000.
Telefonaktiebolaget LM Ericsson: *See*—
Egerod, Eskel; and Yngvesson, Lars Y. A., 4,575,758, Cl. 358-166.000.
Fagerstedt, Nils U. H.; Roos, Sture G.; and Stipcevic, Franko, 4,575,841, Cl. 370-14.000.
Temple, Davis L., Jr.; and Lobeck, Walter G., Jr., to Mead Johnson & Company. 4-(3-Chloropbenyl)-1,2,3,6-tetrahydropyridine derivative. 4,575,555, Cl. 546-276.000.
Terachi, Junichi: *See*—
Yamagata, Shinji; Hisatsune, Fumiyuki; Terachi, Junichi; Yamaoto, Kiyomi; Murata, Shiro; and Yoshiyasu, Hajimu, 4,575,598, Cl. 200-144.00C.
Terauchi, Kiyoshi, to Sanden Corporation. Method and apparatus for adjusting the angular relationship of spiral elements in a scroll type fluid displacement apparatus. 4,575,319, Cl. 418-55.000.
Terrot Strickmaschinen GmbH: *See*—
Engelfried, Werner; and Muller, Gerhard, 4,574,596, Cl. 66-104.000.
Terui, Kazuo; Sugiura, Rikio; and Sugawara, Takehisa, to Fujitsu Limited. Semiconductor device. 4,575,748, Cl. 357-74.000.
Terui, Masumi: *See*—
Wakayama, Yoichi; Sato, Hirohisa; and Terui, Masumi, 4,575,354, Cl. 446-437.000.
Tess, Kenneth: *See*—
Szalanski, Scott E.; and Tess, Kenneth, 4,575,014, Cl. 241-275.000.
Tetenborg, Konrad; and Huwelmann, Helmut, to Windmoller & Holscher. Apparatus for closing filled sacks. 4,574,560, Cl. 53-373.000.
Tetra Pak International Aktiebolag: *See*—
Utsumi, Yoshikazu, 4,574,558, Cl. 53-128.000.
Teubler, Heinz; Kruger, Heinz W.; and Schulz, Rene , to Vickers Systems GmbH. Deflecting insert for a rotary vane pump. 4,575,314, Cl. 417-310.000.
Texaco Inc.: *See*—
Corbeels, Roger J.; and Vasconcellos, Stephen R., 4,575,381, Cl. 44-51.000.
Lewis, Paul H., 4,575,417, Cl. 208-111.000.
Sawicki, Robert A., 4,575,561, Cl. 560-105.000.
Sweeney, William M.; and Lachowicz, Donald R., 4,575,382, Cl. 44-57.000.
Yaghmaie, Farrokh; and Vasconcellos, Stephen R., 4,575,380, Cl. 44-51.000.
Texas Instruments Incorporated: *See*—
Hartmann, Clinton S.; and Jones, William S., 4,575,696, Cl. 333-154.000.
Rao, G. R. Mohan, 4,574,465, Cl. 29-571.000.
Thacker, Robert W., to Blazon-Flexible Flyer, Inc. Child's swing seat. 4,575,073, Cl. 272-85.000.
Thatcher, David L., to Dana Corporation. Universal joint yoke. 4,575,361, Cl. 464-135.000.
Theobald, Michael; and Greving, Gerhard, to International Standard Electric Corporation. Dipole array with means for compensating feedline parasitic currents. 4,575,728, Cl. 343-813.000.
Thermalloy Incorporated: *See*—
Moore, Marvin F., 4,575,038, Cl. 248-505.000.
Thillen, Guy: *See*—
Legille, Edouard; Thillen, Guy; and Lonardi, Emile, 4,575,790, Cl. 364-130.000.
Thiokol Corporation: *See*—
Bolieau, Christopher W., 4,574,699, Cl. 102-202.000.
Thoma, Nandor G.: *See*—
Veneski, Gerard A.; Thoma, Nandor G.; and Cases, Moises, 4,575,794, Cl. 364-200.000.
Thomas, Stephen M., to Siemon Company, The. Bridging clip with centering tab. 4,575,168, Cl. 339-19.000.
Thompson, Walter F., to Ceeco Machinery Manufacturing, Ltd. Apparatus for and method of manufacturing taped products with double twist equipment. 4,574,571, Cl. 57-3.000.
Thompson, William E. Trapped gas reduction in die castings. 4,574,867, Cl. 164-113.000.
Thomsen, Svend E.: *See*—
Petersen, Hans C.; Kyster, Erik; and Thomsen, Svend E., 4,575,321, Cl. 418-61.00B.
Thomson-CSF: *See*—
Delgrange, Louis; Vialettes, Francoise; and Deschamps, Jacques, 4,575,721, Cl. 340-776.000.
Thornton, Raymond A.: *See*—
Allen, Wade H.; Cory, Theodore M.; Hurley, Patrick J.; and Thornton, Raymond A., 4,575,817, Cl. 364-900.000.
Thorsen, Elmer J., Jr., to Duo-Fast Corporation. Fastener feeding apparatus. 4,574,991, Cl. 227-3.000.
Thorsen, Niels P.; and Andersen, Per, to Danfoss A/S. Snap switch. 4,575,596, Cl. 200-67.00D.
Tiger Hug Toys, Inc.: *See*—
Russell, Christine E., 4,575,072, Cl. 272-52.000.
Tirilly, Louis: *See*—
Julliard, Jacques; Tirilly, Louis; and Vigier, Pierre, 4,575,056, Cl. 266-227.000.
Julliard, Jacques; Tirilly, Louis; and Vigier, Pierre, 4,575,392, Cl. 75-24.000.
Tobey, Richard D., to Tech Products Corporation. Isolating foot pad or mount. 4,575,034, Cl. 248-188.900.
Tocom, Inc.: *See*—
Schoeneberger, Carl F.; Bundens, Allan B.; Blake, Richard A.; and Fogle, Richard M., 4,575,755, Cl. 358-120.000.
Toho Yakuhin Kogyo Kabushiki Kaisha: *See*—
Homma, Yuzuru; and Morihara, Kazuyuki, 4,575,459, Cl. 424-87.000.
Toko Kabushiki Kaisha: *See*—
Sakai, Koichi, 4,575,643, Cl. 307-261.000.
Tokura, Naomi: *See*—
Hasegawa, Yoji; and Tokura, Naomi, 4,574,589, Cl. 60-286.000.
Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Ishikawa, Ken, 4,575,181, Cl. 350-96.200.
Iwai, Hiroshi; and Ohtsuka, Hideo, 4,575,466, Cl. 427-53.100.
Nishikawa, Meisei; and Kojima, Tadashi, 4,575,835, Cl. 369-50.000.
Tolman, Glen L.: *See*—
Byrne, Edmund F.; and Tolman, Glen L., 4,575,556, Cl. 549-63.000.
Tom, Leung. Investment casting using hollow metal form. 4,574,866, Cl. 164-35.000.
Tominaga, Kazutoshi, to Kabushiki Kaisha Tominaga Jyushikogyosho. Feed container for pet birds. 4,574,738, Cl. 119-18.000.
Tomita, Satoru; and Nagayama, Haruhiko, to Ricoh Company, Ltd. Dry process developing apparatus having detachable screening member for developing unit. 4,575,219, Cl. 355-3.0DD.
Tomlinson, Martin, to General Electric Company. Signal encoding-decoding apparatus. 4,575,709, Cl. 340-347.0DD.
Tooley, Robert W., to Reliance Electric Company. Seal for shaft bearings. 4,575,265, Cl. 384-474.000.
Topholm, Christian, to Topholm & Westermann APS. Apparatus for use in the adjustment of the secondary adjustment means of a hearing aid. 4,575,586, Cl. 179-107.00H.
Topholm & Westermann APS: *See*—
Topholm, Christian, 4,575,586, Cl. 179-107.00H.
Toray Industries: *See*—
Ohno, Junichi, 4,575,478, Cl. 430-109.000.

Toray Silicone Co., Ltd.: *See*—
Akamatsu, Shoji; and Imai, Takeshi, 4,575,474, Cl. 428-447.000.
Torazzina, Aldo: *See*—
Palara, Sergio; and Torazzina, Aldo, 4,575,686, Cl. 330-273.000.
Toriumi, Mototada: *See*—
Onoda, Shigeyoshi; Nomura, Akihiro; Mizutani, Morikazu; Kanemitsu, Shinji; Toriumi, Mototada; and Nishino, Fumio, 4,575,221, Cl. 355-3.00R.
Torrisi, Angelo M.; and Urbano, Roland, to Torrisi, Angelo M. Sample holder with handling support for X-ray spectroscopic analysis. 4,575,869, Cl. 378-47.000.
Toshiba Automation Engineering, Ltd.: *See*—
Shimono, Mamoru; Yokomori, Satoshi; and Yukinaga, Kouji, 4,575,223, Cl. 355-8.000.
Toshiba Electric Appliances Co., Ltd.: *See*—
Shigenobu, Hiromichi; Nakabayashi, Takao; Akiyama, Kitio; Miida, Masao; and Karasawa, Hisashi, 4,575,615, Cl. 219-314.000.
Totani, Tetsushi, to Shionogi & Co., Ltd. Platinum complexes. 4,575,550, Cl. 536-121.000.
Toyo Chemical Co., Ltd.: *See*—
Ueda, Koutarou; Hasegawa, Noboru; Machihara, Akio; Kusaka, Masaharu; Orii, Kohei; and Noguchi, Yoshiro, 4,575,400, Cl. 156-428.000.
Toyoda Gosei Co., Ltd.: *See*—
Hiramitsu, Tetsushi; Sugita, Hiroshi; and Ono, Satoshi, 4,574,653, Cl. 74-484.00R.
Uchida, Sadao, 4,575,117, Cl. 280-750.000.
Toyoda, Kenichi: *See*—
Nakashima, Seiichiro; Toyoda, Kenichi; and Sakakibara, Shinsuke, 4,575,666, Cl. 318-661.000.
Toyoda Koki Kabushiki Kaisha: *See*—
Asano, Hiroaki; Nakamura, Keiichi; and Mori, Yutaka, 4,574,905, Cl. 180-142.000.
Toyota Jidosha Kabushiki Kaisha: *See*—
Inoue, Tokuta; Oishi, Kiyohiko; Okamoto, Takamitsu; and Takeda, Keiso, 4,574,748, Cl. 123-52.0MB.
Ito, Yoshiyasu; Kobayashi, Fumiaki; and Miyagi, Hideo, 4,574,756, Cl. 123-357.000.
Kodama, Hisashi; Sato, Katsujiro; Tamura, Tetsuomi; Hamamoto, Toru; and Yamada, Kazuharu, 4,574,750, Cl. 123-90.580.
Miyata, Hiroshi, 4,575,116, Cl. 280-707.000.
Sakurai, Shigenori; Kamo, Takashi; and Iksi, Tadayoshi, 4,574,627, Cl. 73-116.000.
Tsuge, Eiji; Yanagisawa, Taminori; Yamaguchi, Takaharu; and Fukatsu, Hiroshi, 4,574,941, Cl. 198-468.200.
Trelford, Alan, to Black & Decker. Collecting box for a garden tool. 4,574,568, Cl. 56-202.000.
Tremblay, Jacques I. Mechanized hitch for tractor or the like. 4,575,112, Cl. 280-479.00A.
Tresselt, Carl P., to Allied Corporation. Double tuned, coupled microstrip antenna. 4,575,725, Cl. 343-700.0MS.
Treybig, Duane S., to Dow Chemical Company, The. Thermosettable polystyrylpyridine prepolymer terminated with ethylenically unsaturated groups and cured products therefrom. 4,575,542, Cl. 525-426.000.
Trick, Robert E., to Medical Engineering Corporation. Penile erectile system. 4,574,792, Cl. 128-79.000.
Trilogy Computer Development Partners, Ltd.: *See*—
Burt, Roy J., 4,574,470, Cl. 29-590.000.
Trinkl, Gerd; and Schopp, Helmut, to Foseco International Limited. Casting mould, and cavity former and sleeve for use therewith. 4,574,869, Cl. 164-360.000.
Trolli, Adolph L.: *See*—
Papson, Gregory J.; and Trolli, Adolph L., 4,575,663, Cl. 318-305.000.
Trosky, William J.: *See*—
Moore, William H.; and Trosky, William J., 4,575,848, Cl. 371-61.000.
Trout, Gary B.: *See*—
Rice, Robert P., Jr.; Fruit, Larry J.; and Trout, Gary B., 4,575,864, Cl. 375-116.000.
TRW Automotive Products, Inc.: *See*—
Higbee, Wallace C., 4,575,021, Cl. 242-107.40A.
TRW Inc.: *See*—
Harwood, Oliver P.; and Love, John A., 4,575,029, Cl. 244-172.000.
Tschishow, Michael. Method for preventing Newton ring type patterns particularly in color separation scanning of transparencies. 4,575,398, Cl. 156-99.000.
Tse, Brian H. Vertically positioning window shading system. 4,574,864, Cl. 160-259.000.
Tsuchiya, Keiko: *See*—
Nakayama, Masatoshi; Morita, Haruyuki; Kubota, Yuichi; and Tsuchiya, Keiko, 4,575,475, Cl. 428-480.000.
Tsuge, Eiji; Yanagisawa, Taminori; Yamaguchi, Takaharu; and Fukatsu, Hiroshi, to Toyota Jidosha Kabushiki Kaisha; and Taiho Seiki Kabushiki Kaisha. Workpiece conveying apparatus. 4,574,941, Cl. 198-468.200.
Tsuji, Jiro: *See*—
Kataoka, Hideaki; Yamada, Toshiro; Goto, Kuniaki; and Tsuji, Jiro, 4,575,570, Cl. 568-346.000.
Tsujikawa, Yoshinobu: *See*—
Kohashi, Yasuji; and Tsujikawa, Yoshinobu, 4,575,742, Cl. 357-17.000.
Tsunekawa, Tokuichi: *See*—
Matsumura, Susumu; Sato, Yuichi; Kawabata, Takashi; and Tsunekawa, Tokuichi, 4,575,211, Cl. 354-403.000.
Tsuyama Mfg. Co., Ltd.: *See*—
Tsuyama, Sadaharu, 4,575,789, Cl. 362-346.000.
Tsuyama, Sadaharu, to Tsuyama Mfg. Co., Ltd. Reflex reflector. 4,575,789, Cl. 362-346.000.
Tults, Juri: *See*—
Carlson, David J.; and Tults, Juri, 4,575,761, Cl. 358-191.100.
Tupman, Thomas G., to Fry Reglet Corporation. Column reglet. 4,574,548, Cl. 52-255.000.
Turner, Donald G.; and Pogge, R. David, to United States of America, Navy. Foliage clutter rejector. 4,575,723, Cl. 343-7.700.
Uchibori, Minoru: *See*—
Ohnuki, Yasuhide; and Uchibori, Minoru, 4,574,633, Cl. 73-587.000.
Uchida, Sadao, to Toyoda Gosei Co., Ltd. Striking energy absorbing structure for steering wheel and method of manufacturing the same. 4,575,117, Cl. 280-750.000.
Uchida, Toyohisa: *See*—
Hattori, Shigenori; Ueno, Hideo; and Uchida, Toyohisa, 4,575,733, Cl. 346-76.0PH.
Ueba, Yoshinobu, to Sumitomo Electric Industries, Ltd. Heat resistant plastic optical fiber. 4,575,188, Cl. 350-96.340.
Ueda, Hiroshi: *See*—
Maeda, Keisuke; and Ueda, Hiroshi, 4,575,206, Cl. 354-82.000.
Ueda, Ken; Okajima, Kenichi; and Takami, Katsumi, to Agency of Industrial Science & Technology; and Ministry of International Trade & Industry. Positron computed tomograph device. 4,575,868, Cl. 378-4.000.
Ueda, Koutarou; Hasegawa, Noboru; Machihara, Akio; Kusaka, Masaharu; Orii, Kohei; and Noguchi, Yoshiro, to Toyo Chemical Co., Ltd. Apparatus for manufacturing corrugated tubes. 4,575,400, Cl. 156-428.000.
Ueda, Yoshio; Shimojo, Fumio; and Yoshida, Kiyoshige, to Fujisawa Pharmaceutical Co., Ltd. Occlusion compound of 2-nitroxymethyl-6-chloropyridine with β-cyclodextrin and process for preparation thereof. 4,575,548, Cl. 536-46.000.
Uemura, Seiichi; Yamamoto, Shunichi; Hirose, Takao; Takashima, Hiroaki; and Kato, Osamu, to Nippon Oil Company, Limited. Process for preparing precursor pitch for carbon fibers. 4,575,411, Cl. 208-44.000.
Ueno, Hideo: *See*—
Hattori, Shigenori; Ueno, Hideo; and Uchida, Toyohisa, 4,575,733, Cl. 346-76.0PH.
Ueno, Keiji; and Mori, Akinori, to Sumitomo Electric Industries, Ltd. Flame retardant optical composite cable. 4,575,184, Cl. 350-96.230.
Ueno, Keiji, to Sumitomo Electric Industries, Ltd. Fluororubber-based composition. 4,575,537, Cl. 525-199.000.
Ueno, Keiji: *See*—
Kojima, Keiichi; and Ueno, Keiji, 4,575,437, Cl. 264-1.400.
Ui, Yoshio; and Kurosu, Yukio, to Honda Giken Kogyo Kabushiki Kaisha. Vehicle door. 4,575,147, Cl. 296-154.000.
Ullrich, Norbert: *See*—
Kohnen, Klaus; Ullrich, Norbert; and Muller, Reinhard, 4,574,713, Cl. 110-336.000.
Ultra-Temp Corporation: *See*—
Lueth, Roy C., 4,575,449, Cl. 419-26.000.
Umegawa, Koujiro, to Kabushiki Kaisha Riken; and Honda Giken Kogyo Kabushiki Kaisha. Piston rings for internal combustion engine. 4,575,107, Cl. 277-221.000.
Underhill, Edward W.: *See*—
Steck, Warren F.; Underhill, Edward W.; Chisholm, Melvin D.; and Bailey, Berton K., 4,575,458, Cl. 424-84.000.
Union Carbide Corporation: *See*—
Domeier, Linda A., 4,575,473, Cl. 428-290.000.
Hatfield, James C., 4,574,622, Cl. 73-55.000.
Keogh, Michael J., 4,575,535, Cl. 525-106.000.
Uniroyal, Inc.: *See*—
Augier, Pierre J., 4,575,125, Cl. 283-1.00R.
United States of America
Air Force: *See*—
Goldie, Harry, deceased, 4,575,692, Cl. 333-13.000.
Katz, Joseph L.; Grund, Edward C.; Cope, Richard P.; and Glick, Alvin L., 4,575,842, Cl. 370-16.000.
Lewis, Joseph W., 4,574,700, Cl. 102-287.000.
Wiener, Alan I., 4,575,724, Cl. 343-383.000.
Army: *See*—
Abramovitz, Irwin J., 4,575,191, Cl. 350-358.000.
Dean, Edward H.; and Doxey, Burnley R., 4,575,028, Cl. 244-137.00A.
Duthie, Joseph G. M.; Christensen, Charles R.; and Leonard, Carl D., 4,575,192, Cl. 350-3.690.
Moncrief, William A., 4,575,870, Cl. 378-51.000.
Stern, Richard A.; and Mariani, Elio A., 4,575,727, Cl. 343-768.000.
Walls, Fred L.; and Vig, John R., 4,575,690, Cl. 331-162.000.
Energy: *See*—
Fassel, Velmer A.; Rice, Gary W.; and Lawrence, Kimberly E., 4,575,609, Cl. 219-121.0PY.
Ludowise, Michael J., 4,575,576, Cl. 136-249.000.
Navy: *See*—
Brittain, Harold G.; and Brantley, Charles B., 4,575,026, Cl. 244-63.000.
Hammond, Russell E.; and Henry, John L., 4,575,811, Cl. 364-607.000.
Lee, John N.; and Fisher, Arthur D., 4,575,179, Cl. 350-96.130.
Turner, Donald G.; and Pogge, R. David, 4,575,723, Cl. 343-7.700.

U.S. Philips Corporation: *See—*
Bentin, Horst; Doring, Michael; Kronenberg, Horst; and Jeglinski, Werner, 4,574,445, Cl. 29-157.00C.
David, Guy A. J.; Grima, Jean-Claude; Pando, Bernard; Bretez, Gabriel C. O.; and Lommer, Daniel J. F., 4,575,843, Cl. 370-16.000.
Dobson, Peter J.; Foxon, Charles T.; and Neave, James H., 4,575,462, Cl. 427-9.000.
Hamers, Leo J. M., 4,575,386, Cl. 62-11.000.
Lange, Gerhard, 4,575,632, Cl. 250-334.000.
Langham, Jack K., 4,574,474, Cl. 29-858.000.
Schofield, John, 4,575,698, Cl. 333-195.000.
Slotboom, Jan W.; Maas, Henricus G. R.; Appels, Johannes A.; and Klaassen, Francois M., 4,574,468, Cl. 29-571.000.
United States Steel Corporation: *See—*
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United Technologies Corporation: *See—*
Ferris, Donald L., 4,575,358, Cl. 464-90.000.
Hovan, Edward J., 4,574,584, Cl. 60-39.020.
Madden, William M., 4,575,006, Cl. 239-265.290.
Tedeschi, Rinaldo R.; Emery, Arthur R.; and Edwards, Robert A., 4,575,673, Cl. 323-351.000.
Walsh, Peter M.; and Gardner, Stephen M., 4,575,802, Cl. 364-513.000.
Unitika, Ltd.: *See—*
Kifune, Koji; Tanae, Hiroyuki; Yamaguchi, Yasuhiko; and Motosugi, Kenzo, 4,575,519, Cl. 521-77.000.
University of Delaware: *See—*
Fakirov, Stoyko C.; Lee, I-Hwa; and Schultz, Jerold M., 4,575,470, Cl. 428-105.000.
University of Iowa Research Foundation: *See—*
Lerner, Seth P., 4,574,805, Cl. 128-334.00R.
University of Manchester Institute of Science and Technology, The: *See—*
Hladky, Karel, 4,575,678, Cl. 324-425.000.
Uno, Teruo: *See—*
Sugiyama, Yoshihiko; Uno, Teruo; Irie, Hiroshi; Kurachi, Teruo; and Abiko, Tetsuo, 4,574,878, Cl. 165-134.100.
UOP Inc.: *See—*
Schnell, Robert P.; Sampson, Robert W.; Pancanowski, Ronald F.; and Bruggema, Donald J., 4,575,629, Cl. 250-238.000.
Schumann, Gary M.; Dolejs, Charles A.; and Schick, David L., 4,574,840, Cl. 137-625.150.
Vora, Bipin V., 4,575,566, Cl. 568-697.000.
Vora, Bipin V., 4,575,567, Cl. 568-697.000.
Upat GmbH & Co.: *See—*
Mermi, Kurt; Sternisa, Danilo; and Frischmann, Albert, 4,575,294, Cl. 411-30.000.
Uphoff, Irvin A.; and Williams, Leon F., to Williams, Leon F. Bearing construction for snow cone machine. 4,575,012, Cl. 241-92.000.
Upjohn Company, The: *See—*
Sih, John C., 4,575,554, Cl. 546-271.000.
Upper Lakes Shipping Ltd.: *See—*
Pole, Charles D., 4,574,989, Cl. 222-486.000.
Uraca Pumpenfabrik GmbH & Co. KG: *See—*
Haug, Josef, 4,574,825, Cl. 134-167.00R.
Urban, Klaus: *See—*
Raidt, Heinz P.; Jablonka, Dieter; and Urban, Klaus, 4,574,541, Cl. 52-169.500.
Urbano, Roland: *See—*
Torrisi, Angelo M.; and Urbano, Roland, 4,575,869, Cl. 378-47.000.
Uriet, Richard: *See—*
Birnbaum, Martin; and Uriet, Richard, 4,575,766, Cl. 358-244.000.
Uriss, Michael B. Dental floss instrument. 4,574,823, Cl. 132-92.00R.
URS Corporation: *See—*
Vogen, Wayne V., 4,574,888, Cl. 166-301.000.
US Philips Corporation: *See—*
Baker, Geoffrey; Ball, Patrick J. R.; and Renals, Martin, 4,575,633, Cl. 250-338.000.
USM Corporation: *See—*
Jackson, Rodney P., 4,574,462, Cl. 29-566.300.
Kaminsky, Naum M.; and Sooy, Robert J., 4,574,660, Cl. 74-822.000.
Tanikawa, Osamu, 4,574,612, Cl. 72-391.000.
Utagawa, Toshio: *See—*
Yano, Nobuyuki; Kotera, Takuro; Utagawa, Toshio; Aoki, Akira; Watanabe, Kazufumi; and Wakai, Masao, 4,574,872, Cl. 165-8.000.
Utsumi, Yoshikazu, to Tetra Pak International Aktiebolag. Apparatus for the application of wrapped articles to package containers. 4,574,558, Cl. 53-128.000.
UVP, Inc.: *See—*
Hull, Charles W., 4,575,330, Cl. 425-174.400.
V L Churchill Limited: *See—*
Grossart, Peter S. K., 4,574,489, Cl. 33-203.180.
Vaclavik, Edwin W.: *See—*
Breach, William D.; and Vaclavik, Edwin W., 4,575,522, Cl. 523-220.000.
Valentin, Jean P., to L'Etat Francais represente par le Delegue General pour l'Armement. High frequency oscillator with a compensated isochronism deficiency. 4,575,689, Cl. 331-116.00R.
Valeo: *See—*
Despres, Dominique, 4,574,932, Cl. 192-106.200.
Valk, Nick: *See—*
Cummings, Ernie W.; and Valk, Nick, 4,574,829, Cl. 137-195.000.
Vallin, Hans: *See—*
Segerstad, Christer H. A.; and Vallin, Hans, 4,574,437, Cl. 128-419.0PG.
Valmet Oy: *See—*
Lehtinen, Antti; and Lepisto , Seppo, 4,574,624, Cl. 73-63.000.
Manttari, Erkki; and Ilmoniemi, Juha, 4,574,838, Cl. 137-596.120.
Van Doorne's Transmissie B.V.: *See—*
Lamers, Hendricus F., 4,575,364, Cl. 474-16.000.
Vanatome: *See—*
Martin, Roger; and Buffa, Laurent, 4,575,045, Cl. 251-172.000.
Van Blerk, Victor B.: *See—*
Hebert, Richard D.; and Van Blerk, Victor B., 4,575,216, Cl. 355-3.0TR.
van der Wouden, Adriaan. Tin opener. 4,574,482, Cl. 30-422.000.
Vande Vyver, Michael. Universal telephone test apparatus. 4,575,588, Cl. 179-175.30A.
Van Duyne, Fred: *See—*
Coleman, Larry; and Van Duyne, Fred, 4,574,863, Cl. 160-216.000.
Van Eenam, Donald N., to Monsanto Company. Viscosity modifiers for grafted starch polymer solutions. 4,575,528, Cl. 524-287.000.
Van Peteghem, Willy F.: *See—*
De Schamphelaere, Lucien A.; Librecht, Freddy M.; Van Peteghem, Willy F.; and De Cock, Etienne M., 4,575,739, Cl. 346-160.000.
Vanzant, Karol W.: *See—*
Vanzant, Teddy L.; and Vanzant, Karol W., 4,575,161, Cl. 303-110.000.
Vanzant, Teddy L.; and Vanzant, Karol W. Anti-spin device. 4,575,161, Cl. 303-110.000.
Varin, James D.; Fromm, H. Vincent; and McClelland, Henry W., to Ford Motor Company. Pin assembly for a caliper disc brake. 4,574,922, Cl. 188-73.350.
Varma, Ravi K.: *See—*
Hall, Steven E.; Haslanger, Martin F.; and Varma, Ravi K., 4,575,512, Cl. 514-469.000.
Vasconcellos, Stephen R.: *See—*
Corbeels, Roger J.; and Vasconcellos, Stephen R., 4,575,381, Cl. 44-51.000.
Yaghmaie, Farrokh; and Vasconcellos, Stephen R., 4,575,380, Cl. 44-51.000.
Vavra, Paul P., to Kohler Co. Open-ended carton and carton blank. 4,574,998, Cl. 229-40.000.
Veneski, Gerard A.; Thoma, Nandor G.; and Cases, Moises, to International Business Machines Corp. Clocking mechanism for multiple overlapped dynamic programmable logic arrays used in a digital control unit. 4,575,794, Cl. 364-200.000.
Vepa Aktiengesellschaft: *See—*
Fleissner, Heinz, 4,574,668, Cl. 83-346.000.
Vercillo, Alfredo J.; and Scharer, Roger M., to General Binding Corporation. Automatic punch. 4,574,669, Cl. 83-399.000.
Vereinigte Fullkorper-Fabriken GmbH & Co.: *See—*
Kuhl, Reinhard, 4,575,435, Cl. 261-94.000.
Verenigde Bedrijven van Thiel (Van Thiel United) B.V.: *See—*
Zweegers, Robertus A. J. J., 4,574,569, Cl. 56-376.000.
Verga-Scheggi, Anna M.: *See—*
Bacci, Mauro; Brenci, Massimo; Conforti, Giuliano; Falciai, Riccardo; Mignani, Anna G.; and Verga-Scheggi, Anna M., 4,575,259, Cl. 374-130.000.
Vermot-Gaud, Jacques; and Genequand, Pierre, to Battelle Memorial Institute. Device for projecting droplets of an electrically conducting liquid. 4,575,737, Cl. 346-140.00R.
Ver Strate, Gary W.: *See—*
Kresge, Edward N.; and Ver Strate, Gary W., 4,575,574, Cl. 585-520.000.
Verwey, William G.; and Hovekamp, John C., to Feco Engineered Systems, Inc. Overvarnish unit. 4,574,732, Cl. 118-642.000.
Vialettes, Francoise: *See—*
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Vialla, Remy: *See—*
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le Pierres, Gildas, 4,575,105, Cl. 277-166.000.
Vickers Systems GmbH: *See—*
Teubler, Heinz; Kruger, Heinz W.; and Schulz, Rene , 4,575,314, Cl. 417-310.000.
Victor Company of Japan Ltd.: *See—*
Nakagaki, Shintaro; and Negishi, Ichiro, 4,575,760, Cl. 358-167.000.
Vidyarthi, Sunil K.: *See—*
Cote, Jacynthe; and Vidyarthi, Sunil K., 4,575,521, Cl. 521-112.000.
Vig, John R.: *See—*
Walls, Fred L.; and Vig, John R., 4,575,690, Cl. 331-162.000.
Vigier, Pierre: *See—*
Julliard, Jacques; Tirilly, Louis; and Vigier, Pierre, 4,575,056, Cl. 266-227.000.
Julliard, Jacques; Tirilly, Louis; and Vigier, Pierre, 4,575,392, Cl. 75-24.000.
Vining, Russell W. Level with audio indicator. 4,574,491, Cl. 33-366.000.
Viola, Michael S., to Polaroid Corporation. Ink jet transparency. 4,575,465, Cl. 427-261.000.
Vitonis, Frank. Convertible blind cleaner. 4,574,415, Cl. 15-114.000.
Vitter, Jeffrey S.: *See—*
Lindstrom, Eugene E.; and Vitter, Jeffrey S., 4,575,798, Cl. 364-300.000.

VMW Industries, Inc.: *See—*
Chiles, Michael J.; and Babb, Harvey M., 4,574,723, Cl. 114-253.000.
Vnek, John; Prince, Alfred M.; and Ikram, Hafeez, to New York Blood Center, Inc. Synthetic antigenic peptide derived from Hepatitis B surface antigen. 4,575,495, Cl. 514-16.000.
Voegeli, Ronald C. Newspaper display machine. 4,574,934, Cl. 194-248.000.
Voelz, Frederick L.: *See—*
Lowther, Frank E.; and Voelz, Frederick L., 4,575,383, Cl. 48-212.000.
Vogel, Ralph A.; and Caudill, Keith E., to Essex Group, Inc. Process and apparatus for high speed fabrication of copper wire. 4,574,604, Cl. 72-38.000.
Vogelaar, Bernard F.: *See—*
West, Neil L.; and Vogelaar, Bernard F., 4,574,815, Cl. 130-27.00T.
Vogelgesang, Peter J., to Minnesota Mining and Manufacturing Company. Tape cassette containing run counter disc. 4,575,778, Cl. 360-132.000.
Vogelsong, Thomas L., to General Electric Company. Charge transfer filter structure including a splitter and equilibrator. 4,575,866, Cl. 377-62.000.
Vogen, Wayne V., to URS Corporation. Method and apparatus for removing stuck portions of a drill string. 4,574,888, Cl. 166-301.000.
Volk, Hans-Joachim; Becker, Herbert; and Forkel, Michael, to Brose Fahrzeugteile GmbH & Co. KG. Displacement entrainment and unlocking members for a passive safety belt. 4,575,120, Cl. 280-804.000.
Volmark, Josef: *See—*
Lorenz, Kurt; Dungs, Horst; Nashan, Gerd; Breidenbach, Dieter; and Volmark, Josef, 4,574,744, Cl. 122-7.00R.
Voltronics Corporation: *See—*
Mittler, Martin A.; and Scowen, Kenneth J., 4,575,779, Cl. 361-296.000.
Volvo BM AB: *See—*
Opperud, Hans-Jorgen; Carlsson, Sven A. L.; and Ericson, Hans G., 4,574,661, Cl. 74-856.000.
vom Dorp, Walter: *See—*
Hauesler, Karl H.; Steinbrecher, Heinrich; and vom Dorp, Walter, 4,574,606, Cl. 72-100.000.
von Holdt, John W. Container having a snap-on lid. 4,574,974, Cl. 220-306.000.
von Seggern, Ernest A. Method for operating a two cycle engine with dynamic stratification. 4,574,753, Cl. 123-262.000.
von Winckelmann, Emil H. Pressurized air vehicle transportation system. 4,574,705, Cl. 104-23.0FS.
Vora, Bipin V., to UOP Inc. Adsorbent regeneration in etherification processes. 4,575,566, Cl. 568-697.000.
Vora, Bipin V., to UOP Inc. Adsorbent regeneration in etherification processes. 4,575,567, Cl. 568-697.000.
Vossen, Franz, to Meurer Nonfood Product GmbH. Container. 4,574,999, Cl. 229-30.000.
W. A. Krueger Co.: *See—*
Dehart, Michael J.; Spitzner, Warren C.; and Estes, James M., 4,574,982, Cl. 222-1.000.
W. H. Brady Co.: *See—*
Wirth, Gary J.; and Behlmer, Robert F., 4,574,440, Cl. 29-33.00E.
W. R. Grace & Co.: *See—*
Lin, Shiow C.; and Barber, Craig S., 4,575,432, Cl. 252-511.000.
W. Schlafhorst & Co.: *See—*
Derichs, Josef; and Stahlecker, Fritz, 4,574,577, Cl. 57-100.000.
Derichs, Josef, 4,574,582, Cl. 57-401.000.
WABCO Westinghouse Fahrzeugbremsen GmbH: *See—*
Reinecke, Erich, 4,575,157, Cl. 303-40.000.
WABCO Westinghouse Steuerungstechnik GmbH: *See—*
Gottling, Helmut, 4,574,924, Cl. 188-187.000.
Wacome, Donald M.; Fazioli, Christopher T.; and Lauria, Vincent A., to National Starch and Chemical Corporation. Remoistenable adhesive compositions. 4,575,525, Cl. 524-48.000.
Wager, Jack B. Method of playing with dolls. 4,575,345, Cl. 446-99.000.
Wagner nee Heide, Christa: *See—*
Heide, Otto; Heide, Marc O.; Heide, Nicole S.; Heide, Philipp J.; and Wagner nee Heide, Christa, 4,575,204, Cl. 351-155.000.
Wagner Spray Tech Corporation: *See—*
Jegers, Viktor J., 4,574,621, Cl. 73-54.000.
Wahli, Robert, to GRETAG Aktiengesellschaft. Process and apparatus for the preparation of photographic copies. 4,574,692, Cl. 101-2.000.
Wakai, Masao: *See—*
Yano, Nobuyuki; Kotera, Takuro; Utagawa, Toshio; Aoki, Akira; Watanabe, Kazufumi; and Wakai, Masao, 4,574,872, Cl. 165-8.000.
Wakayama, Yoichi; Sato, Hirohisa; and Terui, Masumi, to Takara Co., Ltd. Running toy. 4,575,354, Cl. 446-437.000.
Wako, Ikutaro, to Nippon Electric Co., Ltd. Information processing unit. 4,575,796, Cl. 364-200.000.
Wall, Donald E. Steam trap failure detector. 4,575,258, Cl. 374-104.000.
Wallach, Steven J.: *See—*
Gruner, Ronald H.; Clancy, Gerald F.; Mundie, Craig J.; Wallach, Steven J.; Schleimer, Stephen I.; and Bratt, Richard G., 4,575,797, Cl. 364-200.000.
Walls, Fred L.; and Vig, John R., to United States of America, Army. Acceleration insensitive oscillator. 4,575,690, Cl. 331-162.000.
Walls, John E.: *See—*
Dragon, Robert L., Jr.; Grambo, Lawrence C.; and Walls, John E., 4,575,409, Cl. 204-237.000.
Walse, Alan; and Stipanuk, John, to Molex Incorporated. Low insertion force electrical connector with stress controlled contacts. 4,575,172, Cl. 339-75.0MP.
Walsh, Peter M.; and Gardner, Stephen M., to United Technologies Corporation. Robot/workpiece orientation. 4,575,802, Cl. 364-513.000.
Wang, Shing C.; and Hug, William F., to Xerox Corporation. Multiline emission integral mirror laser. 4,575,850, Cl. 372-23.000.
Ward, Roger W., to Quartztronics, Inc. Pressure force measurement apparatus and method. 4,574,639, Cl. 73-702.000.
Warncke, Ernst, to Dragerwerk Aktiengesellschaft. Gas mask construction. 4,574,799, Cl. 128-206.240.
Warner-Lambert Company: *See—*
Ortiz, Ernest A., 4,574,476, Cl. 30-47.000.
Watanabe, Kazufumi: *See—*
Yano, Nobuyuki; Kotera, Takuro; Utagawa, Toshio; Aoki, Akira; Watanabe, Kazufumi; and Wakai, Masao, 4,574,872, Cl. 165-8.000.
Watanabe, Masanori: *See—*
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Watson, Gavin L. Ball dispenser. 4,575,092, Cl. 273-201.000.
Watthey, Jeffrey W. H., to Ciba-Geigy Corporation. 3-Amino-[1]-benzazepin-2-one-1-alkanoic acids. 4,575,503, Cl. 514-213.000.
Wearing, John F. Collapsible net assembly. 4,574,513, Cl. 43-12.000.
Weaver, Sherry M., to Champion International Corporation. Reclosable package. 4,574,951, Cl. 206-461.000.
Weber, Adam: *See—*
Botz, Jakob; Fein, Berthold; Mutschler, Erich; and Weber, Adam, 4,575,600, Cl. 200-293.000.
Weber Gesellschaft fur Huttenelektronik mbH: *See—*
Weber, Gunther, 4,575,781, Cl. 361-380.000.
Weber, Gunther, to Weber Gesellschaft fur Huttenelektronik mbH. Proximity switch. 4,575,781, Cl. 361-380.000.
Wedtech Corp: *See—*
Pinkhasov, Eduard, 4,575,401, Cl. 156-602.000.
Weed Instrument Co., Inc.: *See—*
Gotcher, Ricky G., 4,575,705, Cl. 338-28.000.
Wegmann & Co. GmbH: *See—*
Linge, Reiner; Sprafke, Uwe; and Schlomer, Heinz-Jurgen, 4,574,684, Cl. 89-34.000.
Weiblen, Richard, to TBT Tiefbohrtechnik GmbH & Co. KG. Deep boring machine. 4,574,439, Cl. 29-27.00A.
Weider Health & Fitness: *See—*
Osborne, Ralph; and Phelps, Dennis C., 4,575,077, Cl. 272-134.000.
Weigand, Eckehard: *See—*
Kapps, Manfred; Wiedermann, Rolf; Adam, Norbert; and Weigand, Eckehard, 4,575,520, Cl. 521-107.000.
Weinberg, Hillar, to Willett International Limited. Droplet depositing viscosity line-pressure sensing control for fluid re-supply. 4,575,735, Cl. 346-1.100.
Weiss, Otto. Adjustable storm garage door. 4,574,860, Cl. 160-118.000.
Weitman, Jacob. Method and apparatus for controlling a counter-flow heat exchanger. 4,574,870, Cl. 165-1.000.
Welker, Edward; and Rockwell, Lynn A., to General Motors Corporation. Electromagnetic radiation suppressing distributor rotors. 4,575,593, Cl. 200-19.0DR.
Wellershaus, Ulf, to Otto Bock Orthopadische Industrie KG. Orthopedic device for treating hip dysplasia and hip dislocation. 4,574,790, Cl. 128-78.000.
Wells, Harold D. Fireplace accessory. 4,574,774, Cl. 126-164.000.
Wells, John R., to Du Pont de Nemours, E. I., and Company. Chamber block for a cytocentrifuge having centrifugal force responsive supernatant withdrawal means. 4,574,729, Cl. 118-52.000.
Wells, L. Paul, to Wells, Roger, a part interest. Cooking grill grease catcher. 4,574,770, Cl. 126-25.00R.
Wells, Roger: *See—*
Wells, L. Paul, 4,574,770, Cl. 126-25.00R.
Weng, Hsi-Kuang. Tire pressure gauge having on-off means and being assembled from the tail end thereof. 4,574,629, Cl. 73-146.800.
Wensink, James B.: *See—*
Eaves, Fred W.; Matt, Timothy S.; Sommer, Wayne D.; and Wensink, James B., 4,574,566, Cl. 53-450.000.
Wentzell, Timothy H.; Lareau, John P.; and Innes, Charles B., Jr., to Combustion Engineering, Inc. System for a fiber optic cable for remote inspection of internal structure of a nuclear steam generator. 4,575,185, Cl. 350-96.260.
Werk, Jurgen: *See—*
Bartzick, Gerd; Buhne, Gerd; and Werk, Jurgen, 4,574,848, Cl. 140-93.200.
Werk, Otto; and Duringer, Rudi H., to Cavalet ApS. Closure for valises or the like which is provided with a permutation lock. 4,574,601, Cl. 70-70.000.
Werkema, Donald A.; Willency, Richard A.; and Lee, Do I., to Dow Chemical Company, The. Coatings and coated papers for gravure printing. 4,575,477, Cl. 428-537.500.
West, Isaac R.: *See—*
Friedman, Robert B.; West, Isaac R.; and Furcsik, Susan L., 4,575,461, Cl. 426-549.000.
West, Neil L.; and Vogelaar, Bernard F., to Deere & Company. Rotor for an axial flow rotary separator. 4,574,815, Cl. 130-27.00T.
Western Litho Plate & Supply Co.: *See—*
Copeland, Harry J.; and Powers, John W., 4,575,233, Cl. 355-85.000.
Powers, John W., 4,575,235, Cl. 355-97.000.
Westfalia Separator AG: *See—*
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Westinghouse Electric Corp.: *See—*
Brooks, Charles W., Jr.; and Price, William L., 4,575,814, Cl. 364-900.000.
Fitzpatrick, Michael D., 4,575,823, Cl. 365-184.000.
Gottlieb, Milton; and Conroy, John J., 4,575,186, Cl. 350-358.000.
Johnson, Frederick O., 4,575,664, Cl. 318-327.000.
Marlatt, George R., 4,575,448, Cl. 376-209.000.
Moore, William H.; and Trosky, William J., 4,575,848, Cl. 371-61.000.
Westley, Robert: *See—*
Woolley, John H.; Westley, Robert; and Swail, Carl P., 4,574,632, Cl. 73-571.000.
Westvaco Corporation: *See—*
Pappano, Dominic A., 4,574,634, Cl. 73-597.000.
Whitcomb, Carl E.: *See—*
Reiger, Ralph E.; and Whitcomb, Carl E., 4,574,522, Cl. 47-78.000.
White Consolidated Industries, Inc.: *See—*
Hull, Warren L.; Leedahl, Wesley C.; and Notch, Donald R., 4,574,610, Cl. 72-367.000.
White, Jeffrey N.; and Reichel, Kenneth R., to Audio Technica U.S., Inc. Outdoor speaker. 4,574,906, Cl. 181-145.000.
Whitefoot, Alan D. Tracking oscillators. 4,575,688, Cl. 331-37.000.
Whitehead, Dennis M. Drill chuck attachments. 4,575,108, Cl. 279-59.000.
Whitney, James R. Rain draining lane marker. 4,575,278, Cl. 404-72.000.
Wico Corporation: *See—*
Kim, Syng N.; and Wiczer, Max, 4,575,086, Cl. 273-148.00B.
Wictorin, Lennart; Carlberg, Torbjorn; and Liljendahl, Mikael. Method and apparatus for spot heating a body, particularly for brazing hard solder gold alloys. 4,575,608, Cl. 219-85.0BM.
Wiczer, Max: *See—*
Kim, Syng N.; and Wiczer, Max, 4,575,086, Cl. 273-148.00B.
Widemann, Ernst: *See—*
Fleck, Adolf; Kastl, Alfons; Loistl, Rudolf; Lehnert, Klaus; and Widemann, Ernst, 4,574,852, Cl. 141-286.000.
Wiebe, Jacob R. Hose arrangement for a car wash. 4,575,005, Cl. 239-195.000.
Wiedermann, Rolf: *See—*
Kapps, Manfred; Wiedermann, Rolf; Adam, Norbert; and Weigand, Eckehard, 4,575,520, Cl. 521-107.000.
Wiehn, Helmut: *See—*
Oppenberg, Rolf; and Wiehn, Helmut, 4,575,332, Cl. 431-9.000.
Wiener, Alan I., to United States of America, Air Force. Parallel processor configuration for adaptive antenna arrays. 4,575,724, Cl. 343-383.000.
Wierzbicki, Julian: *See—*
Bouchard, Andre C.; Maya, Jakob; Loughridge, Fred; Andress, Charles W.; and Wierzbicki, Julian, 4,575,344, Cl. 445-26.000.
Wiggs, Christopher C.; and Taylor, Christopher J. C. Opening case toy or amusement device. 4,575,348, Cl. 446-310.000.
Wilhelm Ruf KG, Firma: *See—*
Hoffmann, Horst, 4,575,589, Cl. 200-5.00A.
Wilhelmi, Frank A.: *See—*
de la Chapelle, Michael; and Wilhelmi, Frank A., 4,575,693, Cl. 333-20.000.
Wilke, Arthur: *See—*
Schlegel, Wolfgang; and Wilke, Arthur, 4,575,063, Cl. 269-78.000.
Willency, Richard A.: *See—*
Werkema, Donald A.; Willency, Richard A.; and Lee, Do I., 4,575,477, Cl. 428-537.500.
Willett International Limited: *See—*
Weinberg, Hillar, 4,575,735, Cl. 346-1.100.
Williams, D. Michael, to Mobil Oil Corporation. Method for distinguishing between total formation permeability and fracture permeability. 4,575,828, Cl. 367-31.000.
Williams, David G., to Metallic Valve Company Limited, The. Valve component. 4,574,835, Cl. 137-512.150.
Williams, Leon F.: *See—*
Uphoff, Irvin A.; and Williams, Leon F., 4,575,012, Cl. 241-92.000.
Williams, Robert E.: *See—*
Littlejohn, Lee A.; Kruk, Keith F.; Williams, Robert E.; and Bailey, Thomas F., 4,575,426, Cl. 210-671.000.
Williamson, Gerald E., to Yetter Manufacturing Company. Agricultural tool clamp. 4,574,891, Cl. 172-763.000.
Wilson, Bill B., to Molex Incorporated. Edge connector for multiple printed circuit boards. 4,575,175, Cl. 339-176.0MP.
Wilson, David A., to Dow Chemical Company, The. Metal ion control agents based on dicyclopentadiene derivatives. 4,575,454, Cl. 423-139.000.
Wilson, John C., Jr.: *See—*
Cohen, Richard L.; Wilson, John C., Jr.; and Aron, Mitchell, 4,575,767, Cl. 358-250.000.
Windmoller & Holscher: *See—*
Tetenborg, Konrad; and Huwelmann, Helmut, 4,574,560, Cl. 53-373.000.
Winick, Steven J., to Pittway Corporation. Communication system. 4,575,712, Cl. 340-539.000.
Wirth, Gary J.; and Behlmer, Robert F., to W. H. Brady Co. Marker sleeve applicator machine. 4,574,440, Cl. 29-33.00E.
Wisnouskas, Joseph S.: *See—*
Peterson, John A.; Saran, Mohan S.; and Wisnouskas, Joseph S., 4,575,419, Cl. 209-167.000.
Witco Chemical Corporation: *See—*
Parker, Fayne P., 4,575,142, Cl. 294-15.000.
Witte, Wolfgang, to Bodenseewerk Perkin-Elmer & Co., GmbH. Monochromator. 4,575,243, Cl. 356-333.000.
Wittenmayer, Klaus: *See—*
Gahlau, Heinemann; Hoffmann, Manfred; and Wittenmayer, Klaus, 4,574,915, Cl. 181-290.000.
Wittich, Kurt: *See—*
Kauss, Wolfgang; Schulte, Heinz; and Wittich, Kurt, 4,574,687, Cl. 91-461.000.
Woerz, Hans: *See—*
Pape, Dieter; Woerz, Hans; and Kaiser, Heinz, 4,575,292, Cl. 409-234.000.
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Sirinyan, Kirkor; Merten, Rudolf; Giesecke, Henning; and Wolf, Gerhard D., 4,575,467, Cl. 427-304.000.
Wolfram, Norman E.; Skalski, Frederick T.; and Heronemus, William E. Differential axle for railroad car. 4,575,145, Cl. 295-37.000.
Wong, Winston W. Structure of dual-face artificial leather and method of manufacture thereof. 4,575,471, Cl. 428-137.000.
Wood, Charles F., to Indal Technologies Inc. Gear box assembly-upper head assembly. 4,575,311, Cl. 416-170.00R.
Wood, John C.; Lowe, Anthony C.; and Dowden, Barry F., to International Business Machines Corporation. Hermetic electro-optic display cell. 4,575,190, Cl. 350-357.000.
Wood, Thomas G., to E. R. Squibb & Sons, Inc. Apparatus for detecting defects in capsule shells. 4,575,239, Cl. 356-240.000.
Wood, William A.: *See—*
Mudge, Dennis; and Wood, William A., 4,575,062, Cl. 269-64.000.
Woolley, John H.; Westley, Robert; and Swail, Carl P., to Canadian Patents and Development Limited-Societe Canadienne des Brevets et d'Exploitation Limitee. Method for generating high frequency high level noise fields using low frequency excitation of aeroacoustic noise. 4,574,632, Cl. 73-571.000.
Woolsey, Steven L., to Aluminum Company of America. System for measuring flatness of rolled aluminum container sheet. 4,574,493, Cl. 33-501.000.
Workman, Michael L.: *See—*
Stephens, Harold C.; and Workman, Michael L., 4,575,776, Cl. 360-78.000.
Wright, Donald P., Jr.: *See—*
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Wright, Peter S., to F. F. Seeley Nominees Pty. Ltd. Float level adjustment means. 4,574,832, Cl. 137-426.000.
Wurscher, Raimund A., to Intermedium AG. Apparatus for grinding twist drills. 4,574,528, Cl. 51-128.000.
Wurscher, Raimund A., to Intermedium AG. Apparatus for grinding twist drills. 4,574,529, Cl. 51-128.000.
Wurziger, Hanns: *See—*
Jonas, Rochus; Kloft, Michael; Wurziger, Hanns; Harting, Jurgen; Enenkel, Hans J.; Minck, Klaus-Otto; and Schliep, Hans-Jochen, 4,575,505, Cl. 514-248.000.
Wussow, Harley E. Method for retrofitting clutch housing. 4,574,449, Cl. 29-402.060.
Wyatt, Wendell L.: *See—*
Mudd, Robert E.; and Wyatt, Wendell L., 4,575,336, Cl. 432-72.000.
Xerox Corporation: *See—*
Streifer, William; Scifres, Donald R.; and Connell, G. A. Neville, 4,575,194, Cl. 350-413.000.
Wang, Shing C.; and Hug, William F., 4,575,850, Cl. 372-23.000.
Xomox Corporation: *See—*
Krause, Bernd; Hoelscher, Wayne L.; and Scroggin, William F., 4,575,046, Cl. 251-316.000.
Yaghmaie, Farrokh; and Vasconcellos, Stephen R., to Texaco Inc. Formation of disperse-slurry of H-coal residue. 4,575,380, Cl. 44-51.000.
Yagi, Toshizo, to Japan Life Co. Ltd. Pillow. 4,574,411, Cl. 5-434.000.
Yagley, Martin G., to Chrysler Corporation. Individual cylinder spark deration. 4,574,758, Cl. 123-425.000.
Yama, Yoshikazu: *See—*
Fujimoto, Akira; Yamashita, Shigeaki; Yasuda, Hirohiko; and Yama, Yoshikazu, 4,575,852, Cl. 372-46.000.
Yamada, Kazuharu: *See—*
Kodama, Hisashi; Sato, Katsujiro; Tamura, Tetsuomi; Hamamoto, Toru; and Yamada, Kazuharu, 4,574,750, Cl. 123-90.580.
Yamada, Masashi; and Iwaida, Kenichi, to Konishiroku Photo Industry Co., Ltd. Automatic focusing device. 4,575,210, Cl. 354-400.000.
Yamada, Mitsuo; and Tamasaki, Hiromichi, to Nippon Paint Co., Ltd. Resinous coating composition curable at low temperature. 4,575,536, Cl. 525-162.000.
Yamada, Toshiro: *See—*
Kataoka, Hideaki; Yamada, Toshiro; Goto, Kuniaki; and Tsuji, Jiro, 4,575,570, Cl. 568-346.000.
Yamagata, Shinji; Hisatsune, Fumiyuki; Terachi, Junichi; Yamaoto, Kiyomi; Murata, Shiro; and Yoshiyasu, Hajimu, to Mitsubishi Denki Kabushiki Kaisha. Circuit breaker. 4,575,598, Cl. 200-144.00C.
Yamaguchi, Hiroaki: *See—*
Miura, Kazuhiko; Hattori, Takashi; Ozaki, Tadashi; and Yamaguchi, Hiroaki, 4,574,616, Cl. 73-35.000.
Yamaguchi, Izumi, to Kabushiki Kaisha Nagaoka. Disk cleaning mat. 4,574,418, Cl. 15-268.000.
Yamaguchi, Jun: *See—*
Koe, Kiyohiko; Yamaguchi, Jun; Kubo, Noboru; Matsumoto, Hiroshi; Sugimoto, Mamoru; and Fukumura, Keiji, 4,574,950, Cl. 206-334.000.
Yamaguchi, Shinsuke: *See—*
Oshima, Noboru; Shimizu, Isamu; Takeuchi, Mikio; Fujimaki, Tatsuo; and Yamaguchi, Shinsuke, 4,575,534, Cl. 525-99.000.

Yamaguchi, Takaharu: *See—*
Tsuge, Eiji; Yanagisawa, Taminori; Yamaguchi, Takaharu; and Fukatsu, Hiroshi, 4,574,941, Cl. 198-468.200.
Yamaguchi, Yasuhiko: *See—*
Kifune, Koji; Tanae, Hiroyuki; Yamaguchi, Yasuhiko; and Motosugi, Kenzo, 4,575,519, Cl. 521-77.000.
Yamamoto, Hitoshi, to Fuji Electric Company Ltd. Device for controlling the raising and lowering movement of a fluidized bed. 4,574,785, Cl. 128-24.00R.
Yamamoto, Masaichi: *See—*
Tanaka, Tadaaki; Ibuki, Tadahiro; Nakamura, Yoshiaki; and Yamamoto, Masaichi, 4,574,736, Cl. 119-14.080.
Yamamoto, Shuji: *See—*
Ishii, Kazunori; Kishimoto, Yoshio; and Yamamoto, Shuji, 4,575,620, Cl. 219-549.000.
Yamamoto, Shunichi: *See—*
Uemura, Seiichi; Yamamoto, Shunichi; Hirose, Takao; Takashima, Hiroaki; and Kato, Osamu, 4,575,411, Cl. 208-44.000.
Yamamura, Yukio: *See—*
Hashimoto, Kouichi; Innami, Teruhisa; Kakino, Ken; and Yamamura, Yukio, 4,574,786, Cl. 128-52.000.
Yamanoi, Noboru, to Maruzen Kabushiki Kaisha. Electric stapler with sliding magazine cover. 4,574,993, Cl. 227-131.000.
Yamaoto, Kiyomi: *See—*
Yamagata, Shinji; Hisatsune, Fumiyuki; Terachi, Junichi; Yamaoto, Kiyomi; Murata, Shiro; and Yoshiyasu, Hajimu, 4,575,598, Cl. 200-144.00C.
Yamashita, Kinya: *See—*
Omura, Satoshi; Sano, Hiroshi; Yamashita, Kinya; and Okachi, Ryo, 4,575,497, Cl. 514-30.000.
Yamashita, Masaru: *See—*
Nishimura, Sadanori; Yamashita, Masaru; and Shimada, Hiroyuki, 4,574,925, Cl. 192-3.310.
Yamashita, Shigeaki: *See—*
Fujimoto, Akira; Yamashita, Shigeaki; Yasuda, Hirohiko; and Yama, Yoshikazu, 4,575,852, Cl. 372-46.000.
Yamato Scientific Co., Ltd.: *See—*
Goto, Hideo; and Yoshida, Naoki, 4,575,404, Cl. 202-202.000.
Yamazaki, Etsuo: *See—*
Matsuura, Hitoshi; Yamazaki, Etsuo; and Sakurai, Hiroshi, 4,575,665, Cl. 318-578.000.
Yamazaki, Hideo: *See—*
Ariyama, Kenzo; Yamazaki, Hideo; Motohashi, Tamotsu; and Hirota, Minoru, 4,575,215, Cl. 355-3.00R.
Yanagisawa, Taminori: *See—*
Tsuge, Eiji; Yanagisawa, Taminori; Yamaguchi, Takaharu; and Fukatsu, Hiroshi, 4,574,941, Cl. 198-468.200.
Yang, Wu-ji; and Chen, Kuo-Chyuan, to Industrial Technology Research Institute. Dot matrix printer head. 4,575,268, Cl. 400-124.000.
Yano, Nobuyuki; Kotera, Takuro; Utagawa, Toshio; Aoki, Akira; Watanabe, Kazufumi; and Wakai, Masao, to Matsushita Electric Industrial Co., Ltd. Heat exchanger apparatus. 4,574,872, Cl. 165-8.000.
Yasuda, Hirohiko: *See—*
Fujimoto, Akira; Yamashita, Shigeaki; Yasuda, Hirohiko; and Yama, Yoshikazu, 4,575,852, Cl. 372-46.000.
Yasuda, Mitsuo: *See—*
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Yasuda, Tomio: *See—*
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Yasuda, Wataru: *See—*
Sakamoto, Koji; Kaneko, Toshio; Kanno, Fuchio; and Yasuda, Wataru, 4,575,220, Cl. 355-3.0DD.
Yasumoto, Hidetoshi: *See—*
Yuasa, Yoshio; Yasumoto, Hidetoshi; Naruse, Kazuhiko; Kawagoe, Nobukazu; and Inaba, Masahito, 4,575,225, Cl. 355-38.000.
Yazaki Corporation: *See—*
Murohushi, Yoshiyuki; Kato, Kiyomitsu; and Takahashi, Mineo, 4,575,356, Cl. 464-52.000.
Yeh, Gene H. C.: *See—*
Hsieh, Henry L.; and Yeh, Gene H. C., 4,575,538, Cl. 525-244.000.
Yeh, Rudolph E.; and Zagotta, Joseph L., to J. I. Case Company. Directional control valve with integral flow control valve. 4,574,839, Cl. 137-614.160.
Yen, Jeffrey H.: *See—*
Chester, Arthur W.; McHale, William D.; and Yen, Jeffrey H., 4,575,416, Cl. 208-111.000.
Yetter Manufacturing Company: *See—*
Williamson, Gerald E., 4,574,891, Cl. 172-763.000.
Yeung, Edward S.: *See—*
Spurlin, Stanford R.; and Yeung, Edward S., 4,575,433, Cl. 252-700.000.
Yim, B. D.: *See—*
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Yngvesson, Lars Y. A.: *See—*
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Yocis, Kenneth: *See—*
Layton, Howard M.; and Yocis, Kenneth, 4,575,299, Cl. 414-222.000.
Yokomizo, Yoshikazu, to Canon Kabushiki Kaisha. Data communication system. 4,575,846, Cl. 370-90.000.
Yokomori, Satoshi: *See—*
Shimono, Mamoru; Yokomori, Satoshi; and Yukinaga, Kouji, 4,575,223, Cl. 355-8.000.
Yonex Kabushiki Kaisha: *See—*
Yoneyama, Minoru, 4,575,084, Cl. 273-73.00G.
Yoneyama, Minoru, to Yonex Kabushiki Kaisha. Badminton racket having novel throat connection. 4,575,084, Cl. 273-73.00G.
Yorke, Monica A.: *See—*
Boffardi, Bennett P.; Farkas, John P.; and Yorke, Monica A., 4,575,425, Cl. 210-697.000.
Yoshida, Kiyoshige: *See—*
Ueda, Yoshio; Shimojo, Fumio; and Yoshida, Kiyoshige, 4,575,548, Cl. 536-46.000.
Yoshida Kogyo K. K.: *See—*
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Yoshida, Naoki: *See—*
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Yoshimura, Shoji, to Kabushiki Kaisha Kobe Seiko Sho. Slide valve type screw compressor. 4,575,323, Cl. 418-201.000.
Yoshimura, Takeshi: *See—*
Hayama, Nobuhiro; Yoshimura, Takeshi; and Tanikawa, Yoshitaka, 4,574,588, Cl. 60-284.000.
Yoshioka, Hiroshi: *See—*
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Yoshiyasu, Hajimu: *See—*
Yamagata, Shinji; Hisatsune, Fumiyuki; Terachi, Junichi; Yamaoto, Kiyomi; Murata, Shiro; and Yoshiyasu, Hajimu, 4,575,598, Cl. 200-144.00C.
Young, Allen R., to Halliburton Company. Thermal conductivity probe for fluid identification. 4,575,260, Cl. 374-136.000.
Young, Harold W., Jr.; Ainsworth, Oliver C., Jr.; Fry, William E.; and Neil, Lawrence E., to Dow Chemical Company, The. Alumina compositions useful as catalyst supports for ethylene oxidation. 4,575,494, Cl. 502-243.000.
Young, Horace J.; and Becker, Robert F. Compact power swivel. 4,574,893, Cl. 175-170.000.
Young, Richard H.: *See—*
Anthony, Andrew J.; and Young, Richard H., 4,574,618, Cl. 73-40.50R.
Yousko, David A.: *See—*
Faville, Paul E.; and Yousko, David A., 4,574,488, Cl. 33-201.000.
Ysern de Arce, Vicente; and Crosti Soldatti, Giovanni, to Gabinete International Consulting, S.A. Procedure for the treatment of industrial residual sludge. 4,575,427, Cl. 210-751.000.
Yuasa, Yoshio; Yasumoto, Hidetoshi; Naruse, Kazuhiko; Kawagoe, Nobukazu; and Inaba, Masahito, to Minolta Camera Kabushiki Kaisha. Color enlarger. 4,575,225, Cl. 355-38.000.
Yudate, Kozo; and Nagasawa, Ken, to Kawasaki Steel Corporation. Method for producing a precursor pitch for carbon fiber. 4,575,412, Cl. 208-45.000.
Yuhas, Stephen A., Jr.; and Lopez, Denise, to Exxon Research & Engineering Co. Removal of phenols from water. 4,575,568, Cl. 568-749.000.
Yukinaga, Kouji: *See—*
Shimono, Mamoru; Yokomori, Satoshi; and Yukinaga, Kouji, 4,575,223, Cl. 355-8.000.
Zagotta, Joseph L.: *See—*
Yeh, Rudolph E.; and Zagotta, Joseph L., 4,574,839, Cl. 137-614.160.
Zaharchuk, Walter; and Spira, Joel S., to Lutron Electronics Co., Inc. Lighting scene control panel and control circuit. 4,575,660, Cl. 315-295.000.
Zahn, Wolfgang; Nagel, Erich; and Payrhammer, Bernd, to Agfa-Gevaert AG. Photographic roller copier apparatus. 4,575,226, Cl. 355-43.000.
Zahnraderfabrik Renk, A.G.: *See—*
Arndt, Heinrich, 4,574,659, Cl. 74-804.000.
Zaleski, Bogdan J.: *See—*
Mandalaywala, Ramakant H.; and Zaleski, Bogdan J., 4,574,734, Cl. 119-1.000.
Zambon S.p.A.: *See—*
Della Bella, Davide; Frigeni, Viviana; and Carenzi, Angelo, 4,575,506, Cl. 514-282.000.
Zampini, Anthony: *See—*
Brooks, Albert A.; Fried, Joel R.; Henis, Jay M. S.; Zampini, Anthony; and Raucher, Daniel, 4,575,385, Cl. 55-158.000.
Zartnack, Friedrich: *See—*
Hennig, Ewald; Buecherl, Emil S.; and Zartnack, Friedrich, 4,575,442, Cl. 264-135.000.
Zavros, Steven J.: *See—*
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Zenith Electronics Corporation: *See—*
Capek, Raymond G.; Cocco, Anthony; Dietch, Leonard; and Livshits, Michael, 4,575,691, Cl. 333-12.000.
Zhadanov, Sam. Kitchen appliance. 4,574,414, Cl. 15-74.000.
Zilber, Eugene A.: *See—*
Lemkin, Jack L.; Zilber, Eugene A.; and Peterson, Carl A., 4,574,477, Cl. 30-92.000.
Zima Products, Ltd.: *See—*
Lee, James S. W.; Chow, Kwong-Wai; Lau, Alfred T. Y.; and Chow, Ming-Ngar, 4,575,355, Cl. 446-462.000.
Zimmer, Cornelius P. Paper roll filter structure. 4,575,422, Cl. 210-130.000.
Zimmerman, Harold M. Method and apparatus for spreading heated sand. 4,575,010, Cl. 239-650.000.
Zschokke Wartmann AG: *See—*
Brander, Stephan, 4,574,495, Cl. 34-15.000.
Zweegers, Robertus A. J. J., to Verenigde Bedrijven van Thiel (Van Thiel United) B.V. Raking apparatus. 4,574,569, Cl. 56-376.000.
Zwettler, Ernest, to Houston Fearless 76, Inc. Disc film processor. 4,575,209, Cl. 354-322.000.
501 Starpoint Electrics Limited: *See—*
Partridge, David, 4,574,935, Cl. 194-319.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 11TH DAY OF MARCH, 1986

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Medtronic, Inc.: *See*—
Stanton, David J., Re. 32,091, Cl. 128-423.00W.

Stanton, David J., to Medtronic, Inc. Neuromuscular stimulator. Re. 32,091, Cl. 128-423.00W.

LIST OF DESIGN PATENTEES

Abe, Karl H.; and Gevert, Klaus V., to Bayerische Motoren Werke AG. Upper fairing for motorcycles. 282,922, 3-11-86, Cl. D12-182.000.

Adams, Peter G., to Hestair Kiddicraft Limited. Child's ball toy. 282,950, 3-11-86, Cl. D21-204.000.

Alfa Romeo Auto S.p.A.: *See*—
Cressoni, Ermanno, 282,919, Cl. D12-92.000.

Alger, Andrew L., to Household International, Inc. Bathtub. 282,963, 3-11-86, Cl. D23-55.000.

Amcor Ltd.: *See*—
Ganor, Michael, 282,954, Cl. D22-19.000.

American Greetings Corporation: *See*—
Shaffer, Ralph; and Davidson, William, 282,945, Cl. D21-159.000.
Shaffer, Ralph; and Davidson, William, 282,946, Cl. D21-159.000.
Shaffer, Ralph; and Davidson, William, 282,947, Cl. D21-159.000.
Shaffer, Ralph; and Davidson, William, 282,948, Cl. D21-159.000.

Aota, Etsuo; Iinuma, Kanji; and Kameda, Yasuhisa, to Daiwa Seiko, Inc. Fishing reel. 282,955, 3-11-86, Cl. D22-25.000.

Araya Industrial Co., Ltd.: *See*—
Inoue, Kiyoharu, 282,924, Cl. D12-211.000.

Arve, Richard P., to Chin-Up. Facial exerciser. 282,949, 3-11-86, Cl. D21-198.000.

Asprey & Company PLC: *See*—
Stevens, Roy E., 282,913, Cl. D10-33.000.

Astra Meditec Aktiebolag: *See*—
Wellenstam, Kjell I., 282,965, Cl. D24-26.000.

Atlantic Richfield Company: *See*—
Gardner, Glen A.; and Spake, Richard C., 282,936, Cl. D20-1.000.

Baker, Knapp & Tubbs, Inc.: *See*—
Doezema, William, 282,889, Cl. D6-495.000.

Baker, Ralph. Flexible support for holding a recreational vehicle drainage hose taut, or similar article. 282,903, 3-11-86, Cl. D8-356.000.

Bangham, Lewis J., to Sydis Inc. Data terminal. 282,929, 3-11-86, Cl. D14-101.000.

Bayerische Motoren Werke AG: *See*—
Abe, Karl H.; and Gevert, Klaus V., 282,922, Cl. D12-182.000.

BecVar, Arthur N.: *See*—
Doering, Charles W.; and BecVar, Arthur N., 282,931, Cl. D15-13.000.

Bepristis, Andrew J. Toilet seat adaptor for invalids. 282,964, 3-11-86, Cl. D23-71.000.

Berkline Corporation, The: *See*—
Williams, David P. G., 282,886, Cl. D6-336.000.
Williams, David P. G., 282,888, Cl. D6-381.000.

Biesecker, Frederick N., to Drug Plastics & Glass Company, Inc. Bottle. 282,909, 3-11-86, Cl. D9-372.000.

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Black, John W., to Pemco-Kalamazoo, Inc. Caster frame. 282,905, 3-11-86, Cl. D8-375.000.

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Brown, Craig E. Paddleball paddle. 282,951, 3-11-86, Cl. D21-213.000.

Brown, Robert L. Pharmaceutical check box. 282,966, 3-11-86, Cl. D24-31.000.

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Carden, Norman F., III. Aircraft flap hinge cover. 282,925, 3-11-86, Cl. D12-345.000.

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Carlson, Arthur R. Watering can. 282,958, 3-11-86, Cl. D23-11.000.

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Cassai, Henry J.; and Cassai, Gino H. Adjustable cosmetic applicator with universal joint. 282,974, 3-11-86, Cl. D28-7.000.

Castor, Dennis B.; and Pettit, Harold R., to Scovill Inc. Combined ceiling light and vent intake for bathroom and the like. 282,972, 3-11-86, Cl. D26-59.000.

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Clepea, John A., to Sun Hill Industries, Inc. Golf clock. 282,912, 3-11-86, Cl. D10-6.000.

Conti, Rino; and Daenen, Robert H. C. M., to Dart Industries Inc. Covered food storage container or the like. 282,896, 3-11-86, Cl. D7-79.000.

Conti, Rino; and Daenen, Robert H. C. M., to Dart Industries Inc. Food storage container or the like. 282,897, 3-11-86, Cl. D7-79.000.

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Di Benedetto, Luigi; and Kakiuchi, Yoshinori, to Fujitsu Limited. Cash dispenser. 282,937, 3-11-86, Cl. D20-1.000.

Dickhudt, Eugene A., to Medtronic, Inc. Transcutaneous electrical nerve stimulator or similar article. 282,968, 3-11-86, Cl. D24-41.000.

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Faidide, Christian, to s.a.r.l. Wichard. Snap-hook for firefighting equipment or the like. 282,904, 3-11-86, Cl. D8-367.000.

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Furlan, Thomas G. Roast lifter. 282,899, 3-11-86, Cl. D7-102.000.

Ganor, Michael, to Amcor Ltd. Insect electrocution device. 282,954, 3-11-86, Cl. D22-19.000.

Gardner, Glen A.; and Spake, Richard C., to Atlantic Richfield Company. Vending machine currency acceptor. 282,936, 3-11-86, Cl. D20-1.000.

General Foods Corporation: *See*—
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Harvey, Franklin D. Combined hair pick and lift. 282,975, 3-11-86, Cl. D28-25.000.

Harvey, Franklin D. Hair pick. 282,977, 3-11-86, Cl. D28-31.000.

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Kenney, Phillip H. Hair comb. 282,976, 3-11-86, Cl. D28-30.000.

Langton, Hubert A., to Hestair Kiddicraft Limited. Simulative trundle toy. 282,943, 3-11-86, Cl. D21-150.000.

Lenhard, Richard D.; and Lindblad, Roger D., to Zot Manufacturing Co. Pin setter rake tube assembly. 282,953, 3-11-86, Cl. D21-233.000.

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Marks, Carolyn. Combination sunglasses and 3-D glasses. 282,934, 3-11-86, Cl. D16-102.000.

Maron, Jeffrey. Indicator watch. 282,914, 3-11-86, Cl. D10-39.000.

Marshall, Eric J., to British Telecommunications. Telephone handset. 282,928, 3-11-86, Cl. D14-63.000.

Marshall, Stuart R., to California Nominees Pty. Ltd. Connector for framing system. 282,906, 3-11-86, Cl. D8-382.000.

Mattingly, Charles D. Golf putter head. 282,952, 3-11-86, Cl. D21-219.000.

Medtronic, Inc.: *See*—
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Satterfield, Roy E. Beverage mug. 282,890, 3-11-86, Cl. D7-5.000.

Satterfield, Roy E. Beverage mug. 282,891, 3-11-86, Cl. D7-5.000.

Satterfield, Roy E. Beverage cup. 282,892, 3-11-86, Cl. D7-5.000.

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Soederberg, Richard W., to Dr. Ing. h.c.F. Porsche Aktiengesellschaft. Interior surface of a vehicle window. 282,923, 3-11-86, Cl. D12-183.000.
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Jackson & Perkins Company: *See*—
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Kamada, Benjamin Y. Pomegranate tree. 5,685, 3-11-86, Cl. 33.000.
Meilland, Marie L., to Conard-Pyle Company, The. Rose plant-Meifota variety. 5,683, 3-11-86, Cl. 18.000.
Moore, James N., to University of Arkansas Agricultural Experiment Station. Blackberry-Shawnee cultivar. 5,686, 3-11-86, Cl. 46.000.
University of Arkansas Agricultural Experiment Station: *See*—
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Warriner, William A., to Jackson & Perkins Company. Rose plant Jacave. 5,684, 3-11-86, Cl. 22.000.
Whiting, Hubert F. Digitaria Didactyla grass plant. 5,689, 3-11-86, Cl. 88.000.

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157 C 4,574,445
157.1 R 4,574,443
157.3 C 4,574,444
159.02 4,574,446
234 4,574,447
283.5 4,574,448
402.06 4,574,449
402.08 4,574,450
423 4,574,451
432 4,574,452
4,574,453
434 4,574,454
445 4,574,455
451 4,574,456
469.5 4,574,457
525 4,574,458
527.4 4,574,459
559 4,574,460
564 4,574,461
566.3 4,574,462
568 4,574,463
4,574,464
571 4,574,465
4,574,466
4,574,467
4,574,468
576 W 4,574,469
590 4,574,470
596 4,574,471
623.1 4,574,472
798 4,574,473
858 4,574,474

CLASS 30
28 4,574,475
47 4,574,476
92 4,574,477
116 4,574,478
142 4,574,479
240 4,574,480
296 R 4,574,481
422 4,574,482

CLASS 33
18.1 4,574,483
27.11 4,574,484
138 4,574,486
143 L 4,574,485
178 R 4,574,487
201 4,574,488
203.18 4,574,489
4,574,490
366 4,574,491
427 4,574,492
501 4,574,493
552 4,574,494

CLASS 34
15 4,574,495
57 A 4,574,496

CLASS 36
77 R 4,574,497
114 4,574,498
117 4,574,499
119 4,574,500

CLASS 37
58 4,574,501
266 4,574,502

CLASS 38
77.6 4,574,503

CLASS 40
19 4,574,504
365 4,574,505
603 4,574,506
607 4,574,507

CLASS 42
1 ST 4,574,508
7 4,574,509
40 4,574,510
87 4,574,511

CLASS 43
5 4,574,512
12 4,574,513
42.5 4,574,514
43.11 4,574,515
43.12 4,574,516
4,574,518
44.98 4,574,517
81 4,574,519

CLASS 44
7.4 4,575,379
51 4,575,380
4,575,381
57 4,575,382

CLASS 47
59 4,574,520
67 4,574,521
78 4,574,522

CLASS 48
212 4,575,383

CLASS 49
49 4,574,523
130 4,574,524
324 4,574,525
411 4,574,526

CLASS 51
33 W 4,574,527
128 4,574,528
4,574,529
166 TS 4,574,530
170 EB 4,574,531
268 4,574,532
308 4,575,384

CLASS 52
34 4,574,533
63 4,574,534
118 4,574,535
125.3 4,574,536
127.9 4,574,537
144 4,574,538
163 4,574,539
167 4,574,540
169.5 4,574,541
173 DS 4,574,542
4,574,543
199 4,574,544
223 R 4,574,545
235 4,574,546
238.1 4,574,547
255 4,574,548
404 4,574,549
405 4,574,550
512 4,574,551
645 4,574,552
658 4,574,553
741 4,574,554
785 4,574,555

CLASS 53
69 4,574,556
118 4,574,557
128 4,574,558
266 R 4,574,559
373 4,574,560
376 4,574,561
381 R 4,574,562
430 4,574,563
441 4,574,564
442 4,574,565
450 4,574,566

CLASS 55
158 4,575,385

CLASS 56
16.5 4,574,567
202 4,574,568
376 4,574,569

CLASS 57
1 UN 4,574,570
3 4,574,571
5 4,574,572
22 4,574,573
58.86 4,574,576
59 4,574,574
80 4,574,575
100 4,574,577
246 4,574,578
328 4,574,579
336 4,574,580
401 4,574,581
4,574,582
408 4,574,583

CLASS 60
39.02 4,574,584
39.29 4,574,585
254 4,574,586
284 4,574,588
286 4,574,589
676 4,574,590

CLASS 62
6 4,574,591
11 4,575,386
17 4,575,387
22 4,575,388
114 4,574,592
320 4,574,593
457 4,574,594

CLASS 63
12 4,574,595

CLASS 65
273 4,575,389
4,575,390

CLASS 66
104 4,574,596
125 R 4,574,597
146 4,574,598

CLASS 68
242 4,574,599

CLASS 70
16 4,574,600
70 4,574,601
232 4,574,602
303 A 4,574,603

CLASS 71
28 4,575,391

CLASS 72
38 4,574,604
88 4,574,605
100 4,574,606
112 4,574,607
348 4,574,608
354 4,574,609
367 4,574,610
389 4,574,611
391 4,574,612
447 4,574,613
4,574,614

CLASS 73
24 4,574,615
35 4,574,616
37.9 4,574,617
40.5 R 4,574,618
40.7 4,574,619
47 4,574,620
54 4,574,621
55 4,574,622
56 4,574,623
63 4,574,624
105 4,574,625
112 4,574,626
116 4,574,627
146 4,574,628
146.8 4,574,629
202 4,574,630
317 4,574,631
571 4,574,632
587 4,574,633
597 4,574,634
599 4,574,635
607 4,574,636
629 4,574,637
637 4,574,638
702 4,574,639
721 4,574,640
726 4,574,641
799 4,574,642
861.04 4,574,643
861.05 4,574,644
863.51 4,574,645
863.92 4,574,646
864.34 4,574,647

CLASS 74
7 A 4,574,648
138 4,574,649
411.5 4,574,650
471 XY 4,574,651
474 4,574,652
484 R 4,574,653
625 4,574,654
665 A 4,574,655
665 M 4,574,656
766 4,574,657
785 4,574,658
804 4,574,659
822 4,574,660
856 4,574,661

CLASS 75
24 4,575,392
53 4,575,393
59.19 4,575,394

CLASS 81
3.45 4,574,662
3.48 4,574,663
57.34 4,574,664
59.1 4,574,665

CLASS 82
2.5 4,574,666

CLASS 83
49 4,574,667
346 4,574,668
399 4,574,669
409 4,574,670
471.2 4,574,671
4,574,672
697 4,574,673
698 4,574,674
804 4,574,675
835 4,574,676
870 4,574,677

CLASS 84
314 N 4,574,678

CLASS 87
57 4,574,679

CLASS 89
1.701 4,574,680
7 4,574,681
12 4,574,682
33.04 4,574,683
34 4,574,684
37.14 4,574,685

CLASS 91
35 4,574,686
461 4,574,687

CLASS 99
330 4,574,688
337 4,574,689
353 4,574,690
583 4,574,691

CLASS 101
2 4,574,692
3 SP 4,574,693
11 4,574,694
148 4,574,695
152 4,574,696
401.1 4,574,697
425 4,574,698

CLASS 102
202 4,574,699
287 4,574,700
451 4,574,701
476 4,574,702
520 4,574,703

CLASS 104
8 4,574,704
23 FS 4,574,705
162 4,574,706

CLASS 105
159 4,574,707
193 4,574,708

CLASS 108
111 4,574,709

CLASS 110
234 4,574,710
264 4,574,711
288 4,574,712
336 4,574,713
346 4,574,714

CLASS 111
7 4,574,715

CLASS 112
79 R 4,574,716
121.12 4,574,717
4,574,718
272 4,574,719

CLASS 114
72 4,574,721
222 4,574,722
253 4,574,723
271 4,574,724
352 4,574,725

CLASS 116
28 R 4,574,726
234 4,574,727
267 4,574,728

CLASS 118
52 4,574,729
412 4,574,730
504 4,574,731
642 4,574,732
718 4,574,733

CLASS 119
1 4,574,734
4,574,735
14.08 4,574,736
16 4,574,737
18 4,574,738
29 4,574,739
60 4,574,740
98 4,574,741
156 4,574,742

CLASS 122
4 D 4,574,743
7 R 4,574,744
24 4,574,745
448 S 4,574,746

CLASS 123
41.27 4,574,747
52 MB 4,574,748
80 R 4,574,749
90.58 4,574,750
188 M 4,574,751
198 DB 4,574,752
262 4,574,753
298 4,574,754
320 4,574,755
357 4,574,756
396 4,574,757
425 4,574,758
450 4,574,759
472 4,574,760
478 4,574,761
510 4,574,762
527 4,574,763
545 4,574,764
585 4,574,765

CLASS 124
23 R 4,574,766
35 A 4,574,767

CLASS 125
11 CD 4,574,768
16 R 4,574,769

CLASS 126
25 R 4,574,770
41 R 4,574,771
120 4,574,772
121 4,574,773
164 4,574,774
359 4,574,775
369 4,574,776
390 4,574,777
417 4,574,778
435 4,574,779

CLASS 127
32 4,575,395

CLASS 128
1 R 4,574,780
4,574,781
1.3 4,574,782
4 4,574,783
11 4,574,784
24 R 4,574,785
52 4,574,786
64 4,574,787
67 4,574,788
75 4,574,789
78 4,574,790
79 4,574,791
4,574,792
90 4,574,793
92 BC 4,574,795
92 H 4,574,794
132 D 4,574,796
204.26 4,574,797
205.22 4,574,798
206.24 4,574,799
303 R 4,574,800
303.14 4,574,801
305 4,574,802
4,574,803
322 4,574,804
334 R 4,574,805
4,574,806
402 4,575,097
419 D 4,574,810

419 F 4,574,809
419 PG 4,574,437
4,574,807
419 R 4,574,808
423 W Re.32,091
675 4,574,811
691 4,574,812
697 4,574,813
786 4,574,814

CLASS 130

27 T 4,574,815

CLASS 131

84.4 4,574,816
94 4,574,817
282 4,574,818
291 4,574,819
339 4,574,820
365 4,574,821

CLASS 132

79 R 4,574,822
92 R 4,574,823

CLASS 133

4 R 4,574,824

CLASS 134

7 4,575,396
167 R 4,574,825

CLASS 136

249 4,575,576
4,575,577

CLASS 137

2 4,574,826
89 4,574,827
149 4,574,828
195 4,574,829
242 4,574,830
382.5 4,574,831
426 4,574,832
498 4,574,833
505.25 4,574,834
512.15 4,574,835
553 4,574,836
561 A 4,574,837
596.12 4,574,838
614.16 4,574,839
625.15 4,574,840
625.44 4,574,841
625.46 4,574,842
625.65 4,574,843
4,574,844

CLASS 139

1 R 4,574,845
353 4,574,846
452 4,574,847

CLASS 140

93.2 4,574,848

CLASS 141

1 4,574,849
9 4,574,850
10 4,574,720
68 4,574,851
286 4,574,852
4,574,853

CLASS 144

2 Z 4,574,854
4,574,855

CLASS 148

12 B 4,575,397

CLASS 152

209 B 4,574,857
209 R 4,574,856
216 4,574,858
410 4,574,859

CLASS 156

99 4,575,398
272.8 4,575,399
428 4,575,400
602 4,575,401
643 4,575,402

CLASS 160

118 4,574,860
133 4,574,861
199 4,574,862
216 4,574,863
259 4,574,864

CLASS 164

11 4,574,865
35 4,574,866
113 4,574,867
360 4,574,869

CLASS 165

1 4,574,870
4,574,871
8 4,574,872
42 4,574,873
43 4,574,874
45 4,574,875
46 4,574,876
104.33 4,574,877
134.1 4,574,878
144 4,574,868
185 4,574,879

CLASS 166

75.1 4,574,880
4,574,881
4,574,882
255 4,574,883
263 4,574,884
270 4,574,885
272 4,574,886
275 4,574,887
301 4,574,888
386 4,574,889

CLASS 172

22 4,574,890
763 4,574,891

CLASS 174

35 GC 4,575,578

CLASS 175

4.51 4,574,892
170 4,574,893
317 4,574,894
329 4,574,895

CLASS 177

16 4,574,896
25 4,574,897
154 4,574,898
211 4,574,899

CLASS 178

4 4,575,579
18 4,575,580
4,575,581

CLASS 179

2 EC 4,575,582
18 ES 4,575,583
81 R 4,575,584
84 A 4,575,585
107 H 4,575,586
175.1 A 4,575,587
175.3 A 4,575,588

CLASS 180

6.2 4,574,900
65.1 4,574,901
72 4,574,902
79.1 4,574,903
133 4,574,904
142 4,574,905
148 4,574,907
169 4,574,908
227 4,574,909
249 4,574,910
270 4,574,911

CLASS 181

129 4,574,912
145 4,574,906
231 4,574,913
268 4,574,914
290 4,574,915

CLASS 182

18 4,574,916
151 4,574,917
164 4,574,918
221 4,574,919

CLASS 184

39.1 4,574,920

CLASS 188

71.8 4,574,921
73.35 4,574,922
73.45 4,574,923
187 4,574,924

CLASS 192

3.31 4,574,925
4 C 4,574,927
18 A 4,574,926
48.92 4,574,928
58 B 4,574,929
84 C 4,574,930
106 F 4,574,931
106.2 4,574,932

CLASS 193

1 4,574,933

CLASS 194

248 4,574,934
318 4,574,936
319 4,574,935

CLASS 198

321 4,574,937
347 4,574,938
396 4,574,939
468.2 4,574,941
468.6 4,574,940
773 4,574,942
810 4,574,943

CLASS 200

5 A 4,575,589
5 B 4,575,590
6 A 4,575,591
6 R 4,575,592
19 DR 4,575,593
38 B 4,575,594
50 B 4,575,595
67 D 4,575,596
84 R 4,575,597
144 C 4,575,598
147 A 4,575,599
293 4,575,600

CLASS 202

153 4,575,403
202 4,575,404

CLASS 203

24 4,575,405

CLASS 204

11 4,575,406
67 4,575,407
192 E 4,575,408
237 4,575,409
422 4,575,410

CLASS 206

39 4,574,944
44 R 4,574,945
45.19 4,574,946
45.34 4,574,947
63.3 4,574,948
4,574,957
150 4,574,949
334 4,574,950
461 4,574,951
494 4,574,952
522 4,574,953
531 4,574,954
583 4,574,955
623 4,574,956

CLASS 208

44 4,575,411
45 4,575,412
48 AA 4,575,413
91 4,575,415
111 4,575,416
4,575,417
157 4,575,414

CLASS 209

3 4,575,418
167 4,575,419
322 4,575,420
397 4,575,421
535 4,574,958

CLASS 210

130 4,575,422
169 4,575,423
198.2 4,575,424
671 4,575,426
697 4,575,425
751 4,575,427

CLASS 211

41 4,574,959
60.1 4,574,960
119.01 4,574,961
122 4,574,962
190 4,574,963

CLASS 212

149 4,574,964

CLASS 215

32 4,574,965
270 4,574,966
276 4,574,967

CLASS 219

10.55 B 4,575,601
56.21 4,575,602
69 D 4,575,603
69 R 4,575,604
69 W 4,575,605
73.1 4,575,606
83 4,575,607
85 BM 4,575,608
121 L 4,575,610
121 PY 4,575,609
137 R 4,575,611
137.43 4,575,612
284 4,575,613
300 4,575,614
314 4,575,615
405 4,575,616
494 4,575,617
535 4,575,618
542 4,575,619
549 4,575,620

CLASS 220

1.5 4,574,968
8 4,574,969
90.4 4,574,970
235 4,574,971
254 4,574,972
259 4,574,973
306 4,574,974
4,574,975
315 4,574,976
403 4,574,977
4,574,978

CLASS 221

73 4,574,979
116 4,574,980
283 4,574,981

CLASS 222

1 4,574,982
4,574,983
61 4,574,984
83.5 4,574,985
94 4,574,986
107 4,574,987
396 4,574,988
486 4,574,989

CLASS 224

255 4,574,990

CLASS 227

3 4,574,991
83 4,574,992
131 4,574,993

CLASS 228

20 4,574,994
140 4,574,995

CLASS 229

27 4,574,996
30 4,574,999
40 4,574,997
4,574,998
87 F 4,575,000

CLASS 235

380 4,575,621
382 4,575,622
383 4,575,623
449 4,575,624
467 4,575,625
479 4,575,703

CLASS 237

2 B 4,575,001
5 4,575,002
12.3 R 4,575,003

CLASS 239

69 4,575,004
195 4,575,005
265.29 4,575,006
310 4,575,007
533.3 4,575,008
585 4,575,009
650 4,575,010

CLASS 241

1 4,575,011
92 4,575,012
275 4,575,013
4,575,014

CLASS 242

46.4 4,575,015
58.1 4,575,016
58.3 4,575,017
66 4,575,018
78.1 4,575,019
96 4,575,020
107.4 A 4,575,021
192 4,575,022
199 4,575,023
218 4,575,024

CLASS 244

3.27 4,575,025
63 4,575,026
75 R 4,575,027
137 A 4,575,028
172 4,575,029
209 4,575,030

CLASS 246

34 R 4,575,031

CLASS 248

1 4,575,032
185 4,575,033
188.9 4,575,034
287 4,575,035
289.3 4,575,036
441.1 4,575,037
505 4,575,038
550 4,575,039
624 4,575,040

CLASS 250

201 4,575,626
227 4,575,627
235 4,575,628
238 4,575,629
307 4,575,630
332 4,575,631
334 4,575,632
338 4,575,633
358.1 4,575,634
484.1 4,575,635
492.1 4,575,636
548 4,575,637
578 4,575,638

CLASS 251

8 4,575,041
46 4,575,042
122 4,575,043
145 4,575,044
172 4,575,045
316 4,575,046
356 4,575,047
360 4,575,048

CLASS 252

8.5 P 4,575,428
12 4,575,429
12.6 4,575,430
32.7 E 4,575,431
511 4,575,432
700 4,575,433

CLASS 254

28 4,575,049
286 4,575,050

CLASS 261

94 4,575,435

CLASS 264

0.5 4,575,436
1.4 4,575,437
36 4,575,438
43 4,575,439
45.4 4,575,446
61 4,575,440
4,575,441
135 4,575,442
161 4,575,443
291 4,575,444
4,575,445
516 4,575,447

CLASS 266

66 4,575,051
81 4,575,052
92 4,575,053
114 4,575,054
159 4,575,055
227 4,575,056

CLASS 267

47 4,575,057
70 4,575,058

CLASS 269

41 4,575,059
43 4,575,060
44 4,575,061
64 4,575,062
78 4,575,063
322 4,575,064

CLASS 270

31 4,575,065
4,575,066
58 4,575,067

CLASS 271

122 4,575,068
186 4,575,069

CLASS 272

33 R 4,575,070
52 4,575,071
4,575,072
85 4,575,073
119 4,575,074
4,575,075
130 4,575,076
134 4,575,077

CLASS 273

1.5 R 4,575,079
9 4,575,078
26 R 4,575,080
29 A 4,575,081
73 D 4,575,082
73 G 4,575,084
138 R 4,575,085
148 B 4,575,086
153 R 4,575,087
153 S 4,575,088
183 B 4,575,089
183 D 4,575,090
199 4,575,091
201 4,575,092
244 4,575,093
249 4,575,094
253 4,575,095
296 4,575,096

CLASS 277

9 4,575,098
12 4,575,099
65 4,575,100
72 FM 4,575,101
80 4,575,102
4,575,103
153 4,575,104
166 4,575,105
167.5 4,575,106
221 4,575,107

CLASS 279

59 4,575,108

CLASS 280

37 4,575,109
446 R 4,575,110
477 4,575,111
479 A 4,575,112
650 4,575,113
673 4,575,114
707 4,575,115
4,575,116
750 4,575,117
801 4,575,118
4,575,119
804 4,575,120

CLASS 281

2 4,575,121
29 4,575,122
48 4,575,123

CLASS 283

1 A 4,575,124
1 R 4,575,125
38 4,575,126
109 4,575,127

CLASS 285

9 R 4,575,128
15 4,575,129
38 4,575,130
158 4,575,131
194 4,575,132
319 4,575,133
353 4,575,134

CLASS 290

55 4,575,639

CLASS 291

20 4,575,135

CLASS 292

33 4,575,136
169.14 4,575,137
216 4,575,138
265 4,575,139
288 4,575,140
336.3 4,575,141

CLASS 294

15 4,575,142
65.5 4,575,143
97 4,575,144

CLASS 295

37 4,575,145

CLASS 296

39 R 4,575,146
154 4,575,147
210 4,575,148

CLASS 297

194 4,575,149
300 4,575,150
304 4,575,151
411 4,575,152
452 4,575,153

CLASS 299

4 4,575,154
17 4,575,155
92 4,575,156

CLASS 303

40 4,575,157
57 4,575,158
71 4,575,159
110 4,575,160
4,575,161

CLASS 307

23 4,575,640
38 4,575,641
200 A 4,575,642
261 4,575,643
291 4,575,644
426 4,575,645
443 4,575,646
4,575,647
471 4,575,648
492 4,575,649
520 4,575,650
593 4,575,651

CLASS 308

2 R 4,575,162
4 A 4,575,163

CLASS 310

49 R 4,575,652
313 B 4,575,653
318 4,575,654

CLASS 312

350 4,575,164

CLASS 313

417 4,575,655
492 4,575,656
533 4,575,657

CLASS 315

111.21 4,575,658
159 4,575,659
295 4,575,660
383 4,575,661

CLASS 318

282 4,575,662
305 4,575,663
327 4,575,664
578 4,575,665
661 4,575,666
803 4,575,667
811 4,575,668

CLASS 320

13 4,575,669
14 4,575,670

CLASS 322

16 4,575,671

CLASS 323

222 4,575,672
351 4,575,673

CLASS 324

73 R 4,575,674
158 D 4,575,675
158 R 4,575,676
161 4,575,677
347 4,575,681
425 4,575,678
427 4,575,679
433 4,575,680

CLASS 329

50 4,575,682
4,575,683
122 4,575,684

CLASS 330

261 4,575,685
4,575,687
273 4,575,686

CLASS 331

37 4,575,688
116 R 4,575,689
162 4,575,690

CLASS 333

12 4,575,691
13 4,575,692
20 4,575,693
22 R 4,575,694
24.1 4,575,695
154 4,575,696
157 4,575,697
195 4,575,698
219 4,575,699
238 4,575,700
258 4,575,701

CLASS 335

286 4,575,702

CLASS 337

197 4,575,704

CLASS 338

28 4,575,705

CLASS 339

17 L 4,575,167
17 M 4,575,165
4,575,166
19 4,575,168
44 M 4,575,169
59 M 4,575,170
74 R 4,575,171
75 MP 4,575,172
97 R 4,575,173
103 M 4,575,174
176 MP 4,575,175
195 M 4,575,176
198 R 4,575,177
224 4,575,178

CLASS 340

63 4,575,706
286 R 4,575,707
347 DD 4,575,708
4,575,709
514 4,575,710
521 4,575,711
539 4,575,712
546 4,575,713
568 4,575,714
590 4,575,715
714 4,575,716
728 4,575,717
776 4,575,721
783 4,575,722
825.17 4,575,718
825.35 4,575,719
825.54 4,575,720

CLASS 343

7.7 4,575,723
383 4,575,724
700 MS 4,575,725
756 4,575,726
768 4,575,727
813 4,575,728

CLASS 346

1.1 4,575,735
75 4,575,729
4,575,730
76 PH 4,575,731
4,575,732
4,575,733
140 R 4,575,736
4,575,737
4,575,738
160 4,575,739
163 4,575,740
208 4,575,734

CLASS 350

3.69 4,575,192
96.13 4,575,179
96.15 4,575,180
96.20 4,575,181
96.21 4,575,182
96.22 4,575,183
96.23 4,575,184
96.26 4,575,185
96.33 4,575,187
96.34 4,575,188
99 4,575,189
357 4,575,190
358 4,575,186
4,575,191
401 4,575,193
413 4,575,194
432 4,575,195
4,575,196
4,575,197
4,575,198
464 4,575,199
530 4,575,200
611 4,575,201
612 4,575,202
627 4,575,203
631

CLASS 351

155 4,575,204
219 4,575,205

CLASS 354

82 4,575,206
112 4,575,207
126 4,575,208
322 4,575,209
400 4,575,210
403 4,575,211
409 4,575,212
474 4,575,213

CLASS 355

3 DD 4,575,217
4,575,218
4,575,219
4,575,220
3 R 4,575,214
4,575,215
4,575,221
3 TR 4,575,216
4 4,575,222
8 4,575,223
14 R 4,575,224
38 4,575,225
43 4,575,226
56 4,575,227
71 4,575,228
72 4,575,229
75 4,575,230
76 4,575,231
77 4,575,232
85 4,575,233
91 4,575,234
97 4,575,235
115 4,575,236

CLASS 356

1 4,575,237
28.5 4,575,238
240 4,575,239
246 4,575,240
316 4,575,241
331 4,575,242
333 4,575,243
343 4,575,244
345 4,575,245
346 4,575,246
349 4,575,247
353 4,575,248
369 4,575,249
401 4,575,250
443 4,575,251
446 4,575,252

CLASS 357

6 4,575,741
17 4,575,742
23.12 4,575,743
45 4,575,744
4,575,745
49 4,575,746
70 4,575,747
74 4,575,748

CLASS 358

27 4,575,749
86 4,575,750
106 4,575,751
111 4,575,752
118 4,575,753
119 4,575,754
120 4,575,755
136 4,575,756
150 4,575,757
166 4,575,758
167 4,575,760
181 4,575,759
191.1 4,575,761
209 4,575,762
213 4,575,763
227 4,575,764
230 4,575,765
244 4,575,766
250 4,575,767
282 4,575,768
285 4,575,769
342 4,575,770

CLASS 360

10.1 4,575,771
19.1 4,575,772
32 4,575,773
72.2 4,575,774
77 4,575,775
78 4,575,776
123 4,575,777
132 4,575,778

CLASS 361

296 4,575,779
380 4,575,781
413 4,575,780

CLASS 362

61 4,575,782
145 4,575,783
183 4,575,784
226 4,575,785
279 4,575,786
297 4,575,787
346 4,575,788
4,575,789

CLASS 364

130 4,575,790
168 4,575,791
200 4,575,792
4,575,793
4,575,794
4,575,795
4,575,796
4,575,797
300 4,575,798
414 4,575,799
431.05 4,575,800
474 4,575,805
483 4,575,801
513 4,575,802
551 4,575,803
557 4,575,806
558 4,575,807
4,575,808
569 4,575,809
581 4,575,810
607 4,575,811
715 4,575,804
760 4,575,812
900 4,575,813
4,575,814
4,575,815
4,575,816
4,575,817

CLASS 365

49 4,575,818
104 4,575,819
114 4,575,820
154 4,575,821
174 4,575,822
184 4,575,823
189 4,575,824
4,575,825
222 4,575,826
230 4,575,827

CLASS 366

62 4,575,254
129 4,575,255
266 4,575,256
331 4,575,253

CLASS 367

26 4,575,830
31 4,575,828
33 4,575,831
129 4,575,829

CLASS 368

272 4,575,832
282 4,575,833

CLASS 369

50 4,575,835
126 4,575,834
265 4,575,836
270 4,575,837
276 4,575,838

CLASS 370

13 4,575,839
4,575,840
14 4,575,841
16 4,575,842
4,575,843
60 4,575,844
62 4,575,845
90 4,575,846

CLASS 371

57 4,575,847
61 4,575,848

CLASS 372

9 4,575,849
23 4,575,850
45 4,575,851
46 4,575,852
61 4,575,853
75 4,575,854
87 4,575,855

CLASS 373

89 4,575,856

CLASS 374

45 4,575,257
104 4,575,258
130 4,575,259
136 4,575,260
4,575,261
147 4,575,262

CLASS 375

1 4,575,861
12 4,575,857
53 4,575,858
76 4,575,859
102 4,575,862
110 4,575,860
114 4,575,863
116 4,575,864

CLASS 376

209 4,575,448

CLASS 377

20 4,575,865
62 4,575,866
110 4,575,867

CLASS 378

4 4,575,868
47 4,575,869
51 4,575,870

CLASS 384

126 4,575,263
369 4,575,264
474 4,575,265

CLASS 400

56 4,575,267
124 4,575,268
144.2 4,575,266
322 4,575,269

CLASS 401

40 4,575,270
107 4,575,271
195 4,575,272

CLASS 402

75 4,575,273

CLASS 403

2 4,575,274
7 4,575,275
361 4,575,277

CLASS 404

72 4,575,278
111 4,575,279

CLASS 405

164 4,575,280
217 4,575,281
228 4,575,282
240 4,575,283

CLASS 406

87 4,575,284

CLASS 407

22 4,575,286
41 4,575,287
115 4,575,285

CLASS 408

1 R 4,575,288

CLASS 409

33 4,575,289
132 4,575,290
222 4,575,291
234 4,575,292
4,575,293

CLASS 411

30 4,575,294
85 4,575,295

CLASS 412

6 4,575,296

CLASS 414

5 4,575,297
116 4,575,298
222 4,575,299
406 4,575,300
411 4,575,301
420 4,575,302
430 4,575,303
730 4,575,304
746 4,575,305

CLASS 415

131 4,575,306
150 4,575,307
213 A 4,575,308

CLASS 416

41 4,575,309
134 R 4,575,310
170 R 4,575,311
179 4,575,312

CLASS 417

26 4,575,313
310 4,575,314
365 4,575,315
462 4,575,316
500 4,575,317

CLASS 418

14 4,575,318
55 4,575,319
4,575,320
61 B 4,575,321
96 4,575,322
201 4,575,323
217 4,575,324

CLASS 419

26 4,575,449
41 4,575,450

CLASS 420

489 4,575,451

CLASS 422

61 4,575,452
149 4,575,453

CLASS 423

139 4,575,454
228 4,575,455

CLASS 424

49 4,575,456
52 4,575,457
84 4,575,458
87 4,575,459

CLASS 425

7 4,575,325
71 4,575,326
78 4,575,327
126 R 4,575,328
174 4,575,329
174.4 4,575,330
577 4,575,331

CLASS 426

72 4,575,460
549 4,575,461

CLASS 427

9 4,575,462
53.1 4,575,466
163 4,575,463
255 4,575,464
261 4,575,465
304 4,575,467
393.6 4,575,468

CLASS 428

86 4,575,469
105 4,575,470
137 4,575,471
222 4,575,472
290 4,575,473
447 4,575,474
480 4,575,475
494 4,575,476
537.5 4,575,477

CLASS 430

109 4,575,478
159 4,575,479
192 4,575,480
214 4,575,481
431 4,575,482
588 4,575,483

CLASS 431

9 4,575,332
18 4,575,333
76 4,575,334

CLASS 432

29 4,575,335
72 4,575,336

CLASS 433

8 4,575,337
126 4,575,338
167 4,575,339
173 4,575,340

CLASS 434

35 4,575,341

CLASS 435

7 4,575,484
4,575,485
4,575,486
15 4,575,487
16 4,575,488
70 4,575,489

CLASS 436

63 4,575,490
125 4,575,491
164 4,575,492

CLASS 440

56 4,575,342

CLASS 445

7 4,575,343
26 4,575,344

CLASS 446

99 4,575,345
259 4,575,346
301 4,575,347
310 4,575,348
330 4,575,349
368 4,575,350
371 4,575,351
376 4,575,352
396 4,575,353
437 4,575,354
462 4,575,355

CLASS 464

52 4,575,356
69 4,575,357
90 4,575,358
123 4,575,359
133 4,575,360
135 4,575,361
145 4,575,362

CLASS 474

14 4,575,363

CLASSIFICATION OF PATENTS

16	4,575,364	121	4,575,500	112	4,575,521	283	4,575,539	271	4,575,554	454	4,575,564
80	4,575,365	150	4,575,501		CLASS 523	328.7	4,575,540	276	4,575,555	655	4,575,565
101	4,575,366	184	4,575,502	220	4,575,522	333.5	4,575,541		CLASS 549	697	4,575,566
106	4,575,367	213	4,575,503	414	4,575,523	426	4,575,542	63	4,575,556		4,575,567
	CLASS 493	215	4,575,504	455	4,575,524	510	4,575,543	366	4,575,557	749	4,575,568
49	4,575,368	248	4,575,505		CLASS 524		CLASS 526	453	4,575,558		CLASS 570
226	4,575,369	278	4,575,507	48	4,575,525	118	4,575,544		CLASS 556	140	4,575,571
	CLASS 494	282	4,575,506	96	4,575,526	242	4,575,545	428	4,575,559		CLASS 585
56	4,575,370	292	4,575,508	253	4,575,527	245	4,575,546		CLASS 558	266	4,575,572
	CLASS 501	297	4,575,509	287	4,575,528		CLASS 528	435	4,575,434	467	4,575,573
10	4,575,493	401	4,575,510	507	4,575,529	191	4,575,547		CLASS 560	520	4,575,574
	CLASS 502	456	4,575,511	548	4,575,530		CLASS 536	27	4,575,560	646	4,575,575
243	4,575,494	469	4,575,512	563	4,575,531	46	4,575,548	105	4,575,561		CLASS 604
	CLASS 514		4,575,513		CLASS 525	117	4,575,549	204	4,575,562	96	4,575,371
16	4,575,495	542	4,575,514	57	4,575,532	121	4,575,550		CLASS 568	185	4,575,375
29	4,575,496	708	4,575,515	72	4,575,533	123	4,575,551	14	4,575,563		CLASS 623
30	4,575,497	715	4,575,516	99	4,575,534		CLASS 544	45	4,575,569	6	4,575,372
43	4,575,498		4,575,517	106	4,575,535	224	4,575,552	346	4,575,570		4,575,373
86	4,575,499		CLASS 521	162	4,575,536		CLASS 546				4,575,374
		51	4,575,518	199	4,575,537	106	4,575,553				
		77	4,575,519	244	4,575,538						
		107	4,575,520								

CLASSIFICATION OF DESIGNS

D3—	30.1	282,884	D8—	13	282,900	D11—	32	282,916	D16—	8	282,932		282,948
D6—	323	282,885		14	282,901		132	282,917		31	282,933	198	282,949
	336	282,886		34	282,902	D12—	92	282,918		102	282,934	204	282,950
	369	282,887		356	282,903			282,919	D19—	60	282,935	213	282,951
	381	282,888		367	282,904		96	282,920	D20—	1	282,936	219	282,952
	495	282,889		375	282,905		155	282,921			282,937	233	282,953
D7—	5	282,890		382	282,906		182	282,922	D21—	13	282,938	D22—	19	282,954
		282,891		499	282,907		183	282,923		37	282,939		25	282,955
		282,892	D9—	344	282,908		211	282,924		105	282,940		30	282,956
	43	282,893		372	282,909		345	282,925		121	282,941	D23—	11	282,957
	52	282,894		405	282,910	D14—	53	282,926		122	282,942			282,958
	77	282,895		434	282,911			282,927		150	282,943		17	282,959
	79	282,896	D10—	6	282,912		63	282,928		157	282,944		34	282,960
		282,897		33	282,913		101	282,929		159	282,945		40	282,961
	102	282,898		39	282,914	D15—	9.1	282,930			282,946		43	282,962
		282,899		81	282,915		13	282,931			282,947		55	282,963

	71	282,964	D24—	71	282,964						
D24—	26	282,965		26	282,965						
	31	282,966		31	282,966						
	36	282,967		36	282,967						
	41	282,968		41	282,968						
	48	282,969		48	282,969						
D25—	16	282,970	D25—	16	282,970						
D26—	3	282,971	D26—	3	282,971						
	59	282,972		59	282,972						
	140	282,973		140	282,973						
D28—	7	282,974	D28—	7	282,974						
	25	282,975		25	282,975						
	30	282,976		30	282,976						
	31	282,977		31	282,977						
	41	282,978		41	282,978						
	50	282,979		50	282,979						

CLASSIFICATION OF PLANTS

P.—	18	5,683									
	22	5,684	33	5,685	46	5,686	51	5,687	68	5,688	88	5,689

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

01 :	4,574,432	4,574,894	4,575,499	4,574,898	4,575,864	4,575,338
	4,575,192	4,574,914	4,575,556	4,574,987	13 : 4,574,413	4,575,379
04 :	4,574,449	4,574,917	4,575,576	4,575,058	4,574,427	4,575,434
	4,574,466	4,574,936	4,575,577	4,575,168	4,574,452	4,575,461
	4,574,469	4,574,953	4,575,578	4,575,177	4,574,537	4,575,532
	4,574,698	4,574,954	4,575,580	4,575,185	4,574,670	4,575,558
	4,574,765	4,574,959	4,575,591	4,575,201	4,574,763	4,575,566
	4,574,979	4,574,969	4,575,611	4,575,299	4,574,973	4,575,567
	4,575,170	4,574,977	4,575,618	4,575,349	4,575,282	4,575,622
	4,575,205	4,574,994	4,575,639	4,575,358	4,575,345	4,575,629
	4,575,274	4,575,004	4,575,644	4,575,369	16 : 4,574,513	4,575,684
	4,575,585	4,575,022	4,575,645	4,575,457	17 : 4,574,420	4,575,687
	4,575,674	4,575,026	4,575,655	4,575,491	4,574,456	4,575,691
	4,575,788	4,575,027	4,575,659	4,575,507	4,574,478	4,575,810
	4,575,795	4,575,029	4,575,671	4,575,545	4,574,480	4,575,812
	4,575,827	4,575,032	4,575,676	4,575,546	4,574,491	4,575,859
05 :	4,574,982	4,575,061	4,575,680	4,575,673	4,574,517	4,575,863
06 :	4,574,415	4,575,064	4,575,685	4,575,681	4,574,530	18 : 4,574,455
	4,574,417	4,575,069	4,575,693	4,575,694	4,574,595	4,574,493
	4,574,447	4,575,077	4,575,704	4,575,730	4,574,617	4,574,585
	4,574,470	4,575,089	4,575,706	4,575,769	4,574,667	4,574,623
	4,574,490	4,575,096	4,575,714	4,575,802	4,574,669	4,574,823
	4,574,492	4,575,101	4,575,719	4,575,813	4,574,689	4,574,867
	4,574,515	4,575,124	4,575,722	4,575,840	4,574,703	4,574,963
	4,574,516	4,575,126	4,575,723	10 : 4,574,850	4,574,715	4,575,016
	4,574,518	4,575,143	4,575,762	12 : 4,574,405	4,574,772	4,575,017
	4,574,526	4,575,151	4,575,773	4,574,441	4,574,839	4,575,148
	4,574,540	4,575,155	4,575,775	4,574,501	4,574,840	4,575,149
	4,574,544	4,575,161	4,575,776	4,574,656	4,574,868	4,575,152
	4,574,548	4,575,180	4,575,793	4,574,678	4,574,891	4,575,203
	4,574,554	4,575,194	4,575,798	4,574,776	4,574,951	4,575,265
	4,574,559	4,575,195	4,575,803	4,574,800	4,574,972	4,575,277
	4,574,609	4,575,209	4,575,811	4,574,806	4,574,974	4,575,487
	4,574,613	4,575,216	4,575,821	4,574,833	4,574,991	4,575,555
	4,574,635	4,575,229	4,575,822	4,574,876	4,574,992	4,575,593
	4,574,640	4,575,247	4,575,833	4,574,901	4,575,019	4,575,594
	4,574,690	4,575,254	4,575,850	4,574,934	4,575,035	4,575,597
	4,574,691	4,575,325	4,575,855	4,574,937	4,575,086	4,575,650
	4,574,700	4,575,330	4,575,858	4,575,006	4,575,093	4,575,759
	4,574,705	4,575,339	08 : 4,574,512	4,575,078	4,575,094	4,575,761
	4,574,728	4,575,341	4,574,644	4,575,113	4,575,098	4,575,834
	4,574,729	4,575,350	4,574,731	4,575,127	4,575,131	19 : 4,574,614
	4,574,753	4,575,351	4,574,801	4,575,196	4,575,146	4,574,725
	4,574,764	4,575,372	4,575,072	4,575,197	4,575,164	4,574,805
	4,574,779	4,575,383	4,575,443	4,575,200	4,575,165	4,574,815
	4,574,781	4,575,398	4,575,690	4,575,562	4,575,172	4,574,964
	4,574,791	4,575,402	4,575,764	4,575,658	4,575,175	4,575,433
	4,574,793	4,575,410	09 : 4,574,476	4,575,683	4,575,207	4,575,609
	4,574,797	4,575,423	4,574,486	4,575,713	4,575,228	4,575,867
	4,574,812	4,575,431	4,574,551	4,575,720	4,575,279	20 : 4,574,995
	4,574,826	4,575,438	4,574,584	4,575,794	4,575,290	21 : 4,574,658
	4,574,836	4,575,485	4,574,618	4,575,826	4,575,298	4,574,710
	4,574,888	4,575,486	4,574,673	4,575,847	4,575,318	4,574,828

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DESIGN PATENTS

06 : 282,903
282,915
282,916
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of the

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March 18 1986

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UNITED STATES PATENT AND TRADEMARK OFFICE
March 18, 1986 Volume 1064 Number 3

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1052 O.G. 52 on Mar. 26, 1985.

For use of the European Patent Office as Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Certain domestic fees for international applications have been changed effective Oct. 5, 1985 in the rule change notice titled "Revision of Patent Fees" published at 1057 O.G. 24 on Aug. 20, 1985.

The Search fee of the European Patent Office has been changed as of Feb. 9, 1986 and is announced in the *Official Gazette* at 1061 O.G. 30 on Dec. 31, 1985.

International PCT fees have been changed effective Jan. 1, 1986 and were announced in the *PCT Gazette* on Oct. 24, 1985 and in the *Official Gazette* at 1061 O.G. 30 on Dec. 31, 1985.

The current schedule of PCT fees is as follows:

Transmittal fee:	170.00
Search Fee	
U.S. Patent and Tradeniark Office as Searching Authority	
—No corresponding prior U.S. national application filed	420.00
—Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
if paid before Feb. 9, 1986	750.00
if paid on or after Feb. 9, 1986	830.00
International fees	
Basic fee (first 30 pages):	
if paid before Jan. 1, 1986	280.00
if paid on or after Jan. 1, 1986	325.00
Basic Supplemental fee (for each page over 30):	
if paid before Jan. 1, 1986	6.00
if paid on or after Jan. 1, 1986	6.00
Designation fee for the first 10 national or regional offices:	
if paid before Jan. 1, 1986	70.00
if paid on or after Jan. 1, 1986	80.00
Designation fee for 11th and subsequent designations	No charge

DONALD J. QUIGG,
Dec. 17, 1985. *Assistant Secretary and Commissioner of Patents and Trademarks.*

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), as amended effective Oct. 5, 1985. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on Mar. 15, 1983, for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,376,312 through 4,377,006
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), as amended effective Oct. 5, 1985, which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 225.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:
By a small entity (§1.9(f)) . . . . . $ 225.00
By other than a small entity . . . . . $ 450.00"

The amounts of the surcharges as amended effective Oct. 5, 1985, are set forth in 37 CFR 1.20 (k) and (l) which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . . $ 110.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:
By a small entity (§1.9(f)) . . . . . $ 55.00
By other than a small entity . . . . . $ 110.00"

Section 1.20 paragraph (m) as amended as a result of enactment of Public Law 98-622 effective Nov. 8, 1984, is reproduced below:

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . . . $ 500.00"

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED DECEMBER 29, 1985 DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
4,307,703	06/249,944	12/29/81
4,307,706	06/215,977	12/29/81
4,307,768	06/215,710	12/29/81
4,307,869	06/216,304	12/29/81
4,307,964	06/238,191	12/29/81
4,308,041	06/232,466	12/29/81

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

4,165,128, Re. S.N. 817,717, Filed Jan. 10, 1986, Cl. 297/367, INTERTIALLY LOCKED HINGE FOR MOTOR VEHICLE SEAT, Willibald Strowick, et al., Owner of Record: *Keiper U.S.A., Inc., Battle Creek, Mich.,* Attorney or Agent: Lloyd M. Forster, Ex. Gp.: 357

4,235,026, Re. S.N. 803,334, Filed Dec. 2, 1985, Cl. 036/32R, ELASTOMERIC SHOESOLE, Stanley C. Plagenhoef, Owner of Record: *Motion Analysis, Inc., Amherst, Mass.,* Attorney or Agent: Charles Hieken, Ex. Gp.: 247

4,403,541, Re. S.N. 775,408, Filed Sept. 12, 1985, Cl. 99/385, HEAT TRAPPING COOKING GRILL, Bernard B. Berger, Owner of Record: *Ducane Heating Corp., Columbia, S.C.,* Attorney or Agent: Townsend M. Belser, Jr., et al., Ex. Gp.: 242

4,427,249, Re. S.N. 821,649, Filed Jan. 23, 1986, Cl. 339/17 CF, LOW HEIGHT ADS CONNECTOR, Edward John Bright, et al., Owner of Record: *AMP, Inc., Harrisburg, Pa.,* Attorney or Agent: Jay L. Seitchik, Ex. Gp.: 322

4,496,490, Re. S.N. 798,637, Filed Nov. 15, 1985, Cl. 260/429.7, NON-TOXIC ORGANOTIN STABILIZERS FOR VINYL CHLORIDE POLYMERS, William A. Larkin, Owner of Record: *M & T Chemicals, Inc., Woodbridge, N.J.,* Attorney or Agent: Sheldon H. Parker, et al., Ex. Gp.: 124

4,528,429, Re. S.N. 772,110, Filed Sept. 3, 1985, Cl. 200/50B, ELECTRICAL SWITCH-PLUG ASSEMBLY WITH BAFFLE, William C. Dobson, Owner of Record: *Dart Industries, Inc., Northbrook, Ill.,* Attorney or Agent: Gregory J. Mancuso, et al., Ex. Gp.: 214

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

3,737,433, Reexam. No. 90/000,956, Requested: Feb. 11, 1986, Cl. 544/271, CERTAIN OXOALKYLDIMETHYLXANTHINES, Werner Mohler, et al., Owner of Record: *Hoechst AG, Frankfurt, Dex.,* Attorney or Agent: I. M. Aisenberg, Ex. Gp.: 120, Requester: James B. Costian, New York, N.Y.

3,835,118, Reexam. No. 90/000,898, Requested: Nov. 5, 1985, Cl. 523/155, SPONGE IRON FRICTION MATERIAL, Seong Kwan Rhee, et al., Owner of Record: *Allied Corp., South Bend, Ind.,* Attorney or Agent: Leo McCormick, Ex. Gp.: 123, Requester: Owner

3,864,102, Reexam. No. 90/000,892, Requested: Nov. 1, 1985, Cl. 55/30, DEHYDRATION OF A PIPELINE WITH A PORTABLE DRY AIR GENERATING PLANT, Marvin D. Powers, Owner of Record: *Pipeline Dehydration, Inc., Houston, Tex.,* Attorney or Agent: None, Ex. Gp.: 130, Requester: Coulter Services Co., Houston, Tex.

4,115,732, Reexam. No. 90/000,951, Requested: Feb. 5, 1986, Cl. 324/72, DETECTION SYSTEM FOR LIGHTNING, Edmund P. Krider, et al., Owner of Record: *The University of Ariz. Foundation, Tucson, Ariz.,* Attorney or Agent: Mason, Kolemainen, et al., Ex. Gp.: 260, Requester: Atlantic Scientific Corp., Melbourne, Fla.

4,287,015, Reexam. No. 90/000,950, Requested: Feb. 3, 1986, Cl. 156/382, VACUUM BAG USED IN MAKING LAMINATED PRODUCTS, Harold J. Danner, Owner of Record: *Zip-Vac, Inc., Auburn, Wash.,* Attorney or Agent: John O. Graybeal, Ex. Gp.: 130, Requester: Northrop Corp., Hawthorne, Calif.

4,351,172, Reexam. No. 90/000,896, Requested: Oct. 31, 1985, Cl. 70/366, CYLINDER LOCK MECHANISM, Kaarlo Martikainen, Owner of Record: *Oy Wartsila AB, Helsinki, Finland,* Attorney or Agent: Cohen, Pontani, et al., Ex. Gp.: 350, Requester: Owner

4,414,634, Reexam. No. 90/000,955, Requested: Feb. 10, 1986, Cl. 364/510, FLUID FLOW TOTALIZER, Timothy R. Louis, et al., Owner of Record: *Scott & Fetzer Co., Westlake, Ohio,* Attorney or Agent: Louis V. Granger, Ex. Gp.: 230, Requester: Owner

4,451,707, Reexam. No. 90/000,954, Requested: Feb. 7, 1986, Cl. 179/84R, RING DETECTOR AND TELEPHONE LINE MONITORING SYSTEM FOR TELEPHONE ANSWERING INSTRUMENT, Bradford E. Hanscom, Owner of Record: *Fortel Corp., Compton, Calif.,* Attorney or Agent: Keith Beecher, Ex. Gp.: 260, Requester: Phone-Mates, Inc., Torrance, Calif.

4,474,600, Reexam. No. 90/000,953, Requested: Feb. 5, 1986, Cl. 71/92, HERBICIDALLY ACTIVE NOVEL SUBSTITUTED PHENYLSULFONYLUREA DERIVATIVES, Masahiro Aya, et al., Owner of Record: *Nihon Torushu Noyaka Seizo K.K., Tokyo, Japan,* Attorney or Agent: Sprung, Horn, et al., Ex. Gp.: 120, Requester: E. I. du Pont de Nemours & Co., Wilmington, Del.

4,495,336, Reexam. No. 90/000,952, Requested: Feb. 5, 1986, Cl. 252/8.55E, MERCAPTO-POLYCARBOXYLIC ACIDS, Rudolf H. Hausler, et al., Owner of Record: *Petrolite Corp., St. Louis, Mo.,* Attorney or Agent: Sidney B. Ring, Ex. Gp.: 220, Requester: Ciba-Geigy Corp., Ardsley, N.Y.

Service by Publication

A petition to cancel each of the registrations identified below having been filed, and the notice of such proceed-

ings sent by registered mail to each registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days from the date of this publication, the cancellation will be proceeded with as in the case of default.

Rent-A-Mom, Ltd., Northlake, Ill., Reg. No. 1,172,574, for the mark "RENT-A-MOM", Canc. No. 14,758.

Econo-Car International, Inc., Coral Gables, Fla., Reg. No. 795,732, for the mark "ECONO-TRUCK", Canc. No. 14,878.

Econo-Car International, Inc., Coral Gables, Fla, Reg. No. 903,389, for the mark "ECONO-CAR", Canc. No. 14,887.

ERMA S. BROWN,
Administrator
of the Trademark Trial
and Appeal Board.
For MARGARET M. LAURENCE,
Assistant Commissioner
for Trademarks.

Trademark Expo '86

The Fourth Annual National Trademark Expo will be held on July 26–27 in the National Tourist Center at the Great Hall of the Department of Commerce in Washington, D.C. The exhibition, which is open to the public free of charge, attracted more than 20,000 visitors last year. Co-sponsored by the PTO's Trademark Examining Operation and The United States Trademark Association, the Expo demonstrates the importance of trademarks to business and consumers. The theme this year is "Trademarks: How Business Makes Its Mark."

Trademark owners and those in the trademark field are invited to participate in Expo '86. It is a unique opportunity to demonstrate the importance of trademarks and to educate consumers about proper trademark usage. The only requirement is that the exhibit involve trademarks. For example, the exhibit can show how a trademark identifies the source of goods or services, how it is used in marketing or how a trademark was adopted or has evolved. Personified trademarks, audio-visual displays, product demonstrations, product samples and informational literature are all successful attention grabbers.

The fee for an exhibit space 10 feet wide and 8 feet deep is $250. Requests for applications should be addressed to

Margaret M. Laurence
Trademark Expo '86
U.S. Patent and Trademark Office
Washington, D.C. 20231

For further information, call Gary Shaffer or Michelle Wiseman at (703) 557–5237. Applications must be submitted by May 15, 1986.

Feb. 13, 1986.

MARGARET M. LAURENCE,
Assistant Commissioner,
for Trademarks.

PATENT NOTICES

Certificates of Correction for the Week of Mar. 18, 1986

D. 276,569	4,526,983	4,546,227	4,554,838
Re. 31,254	4,531,056	4,547,495	4,554,947
3,700,681	4,532,139	4,547,511	4,554,951
4,182,763	4,532,199	4,547,553	4,554,970
4,294,879	4,532,644	4,548,286	4,555,137
4,297,346	4,532,871	4,548,478	4,555,661
4,318,043	4,533,486	4,548,904	4,556,143
4,331,575	4,533,733	4,548,924	4,557,016
4,369,446	4,535,231	4,548,944	4,557,365
4,395,462	4,535,994	4,549,153	4,557,713
4,395,478	4,536,881	4,549,368	4,557,925
4,402,744	4,537,531	4,549,422	4,558,135
4,417,059	4,537,985	4,550,290	4,558,532
4,421,719	4,538,688	4,550,455	4,559,129
4,449,227	4,538,966	4,550,595	4,559,130
4,454,108	4,540,274	4,550,736	4,559,750
4,472,328	4,540,379	4,551,311	4,559,795
4,490,371	4,540,390	4,551,488	4,560,375
4,490,707	4,540,614	4,551,504	4,560,397
4,495,340	4,540,697	4,551,531	4,560,437
4,495,659	4,540,890	4,552,021	4,560,489
4,497,551	4,541,641	4,552,353	4,560,675
4,504,745	4,542,188	4,552,771	4,561,002
4,505,988	4,542,293	4,552,866	4,561,106
4,510,505	4,542,747	4,553,172	4,561,391
4,511,353	4,542,972	4,553,225	4,562,004
4,511,632	4,543,491	4,553,308	4,562,239
4,515,977	4,543,546	4,554,101	4,562,425
4,516,812	4,543,647	4,554,174	
4,517,525	4,544,956	4,554,424	
4,526,153	4,545,161	4,554,497	

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

These patent collections are open to public use and each of the Patent Depository Libraries, in addition, offers the publications of the U.S. Patent Classification System (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the Patent Depository Libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 826-4500 Ext.21
	Birmingham Public Library	(205) 226-3680
Alaska	Anchorage Municipal Libraries	(907) 264-4481
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
Arkansas	Little Rock: Arkansas State Library	(501) 371-2090
California	Los Angeles Public Library	(213) 612-3273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale: Patent Information Clearinghouse*	(408) 730-7290
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware Library	(302) 451-2238
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami-Dade Public Library	(305) 375-2665
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 269-2865
	Springfield: Illinois State Library	(217) 782-5430
Indiana	Indianapolis-Marion County Public Library	(317) 269-1706
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 454-3037
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Transportation Library, University of Michigan	(313) 764-7494
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6570
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4283
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7815
New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 714-8529
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Oregon	Salem: Oregon State Library	(503) 378-4239
Pennsylvania	Cambridge Springs: Alliance College Library	(814) 398-2098
	Philadelphia: Franklin Institute Library	(215) 448-1227
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-8726
South Carolina	Charleston: Medical University of South Carolina Library	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8876
	Nashville: Vanderbilt University Library	(615) 322-2775
Texas	Austin: McKinney Engineering Library, University of Texas.	(512) 471-1610
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-2551
	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Virginia	Richmond: Virginia Commonwealth University Library	(804) 257-1104
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3247

All of the above-listed libraries offer CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data.

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF February 1, 1986

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	6-15-84
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	2-15-84
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	4-12-84
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	3-01-85
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG, Director	3-02-84
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	8-11-83
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	11-21-83
PACKAGES, CLEANING, TEXTILES, AND GEOMETRICAL INSTRUMENTS, GROUP 240—E. E. KUBASIEWICZ, Director	6-15-84
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	3-28-83
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	8-30-83
DESIGN, GROUP 290—K. L. CAGE, Director	4-15-83
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	7-12-83
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	7-26-84
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	3-30-83
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	10-19-83
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	1-07-85

Expiration of patents: The patents within the range of numbers indicated below expire during February 1986, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents . . . . . Numbers 3,425,060 to 3,426,359, inclusive

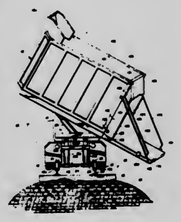
Plant Patents . . . . . Numbers 2,861 to 2,869 inclusive

REEXAMINATIONS

MARCH 18, 1986

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,077,328 (473rd)
ROTARY DUMP
Glenn Taylor, P.O. Box 93006 Martech Station, Atlanta, Ga. 30318
Reexamination Request No. 90/000,644, Oct. 4, 1984.
Reexamination Certificate for Patent No. 4,077,328, issued Mar. 7, 1978, Ser. No. 694,925, Jun. 11, 1976.
Int. Cl.⁴ B61D *7/10, 9/04, 9/12;* **B61F** *13/00;* **B60P** *1/30*
U.S. Cl. 105—261 A



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1, 6–8** and **10** are determined to be patentable as amended.

Claims **2–5** and **9** dependent on an amended claim are determined to be patentable.

1. A load carrying vehicle comprising a framework, road wheels mounted on said framework for supporting said framework from a road surface, railroad wheels mounted on said framework and movable up and down with respect to said framework for engaging the rails of a railroad and supporting said framework from a railroad, a load carrying dump body mounted on said framework, means for tilting said load carrying dump body about an approximately horizontal axis and dumping the load from said dump body, means for rotating said load carrying dump body about an approximately vertical axis for dumping the load from said dump body at various positions about the vehicle, said load carrying dump body comprising a bottom pan, sidewalls extending upwardly on opposite sides of said bottom pan and a front wall extending upwardly from said bottom pan defining an upper opening and a dump opening, a tail gate hingedly connected at its upper edge portion about an approximately horizontal axis to the upper portions of said sidewalls at the upper portion of the dump opening and *its lower edge portion being* movable to open and close the dump opening, an apron connected at one of its edge portions to the lower portion of said dump body at the lower edge of the dump opening, and a pair of wing plates each connected at edges of the dump opening *with the lower edge portion of said tail gate movable over said apron and between said wing plates,* [whereby] *said apron and wing plates being constructed so that* when the railroad wheels are engaged with the rails of a railroad *the dump body can be rotated to direct the dump opening toward the side of the rails and the dump body can be tilted and* the load dumped from the dump body can be [directed] *displaced* out [to] *beyond* the side of the rails of the railroad by the apron and wing plates.

REISSUES

MARCH 18, 1986

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 32,092

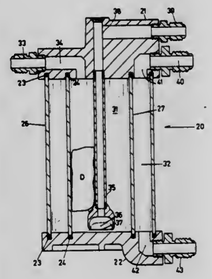
LIQUID MODULATOR

William G. Davis, Houston, Tex., assignor to Liquid Modulators, Inc., Houston, Tex.

Original No. 4,341,092, dated Jul. 27, 1982, Ser. No. 208,542, Nov. 20, 1980. Application for reissue Jul. 27, 1984, Ser. No. 635,000

Int. Cl.⁴ F25B *43/04*

U.S. Cl. 62—475 **16 Claims**



3. A receiver/drier for a compression refrigeration system having a compressor, evaporator, condenser and expansion valve,

said receiver/drier being adapted to be connected between said condenser and said expansion valve, and comprising

a hollow body,

end caps closing said hollow body,

the upper one of said end caps having an inlet for connection to said condenser to receive liquified refrigerant therefrom, and an outlet for connection to said expansion valve for discharge of liquified refrigerant thereto for expansion and vaporization in said evaporator,

the lower one of said caps comprising a bottom closure without openings,

an outlet tube secured in said outlet and extending through said hollow body with an open end adjacent to said lower closed end cap,

means supporting a dessicant material inside said hollow body in the space around said outlet tube to absorb moisture in the liquid refrigerant passing therethrough,

an outer casing surrounding and sealed to said hollow body in spaced relation thereto to define an annular chamber in heat exchange relation with said hollow body,

an inlet in a wall of said outer casing for connection to the outlet side of said evaporator to receive cold, expanded refrigerant fluid therefrom,

an outlet in a wall of said outer casing for connection to the inlet side of said compressor, whereby hot, high pressure refrigerant liquid and cold, refrigerant gas are conducted in heat exchange relation through said hollow body and said annular chamber, respectively.

Re. 32,093

ALUMINUM OXIDE COATED TITANIUM-CONTAINING CEMENTED CARBIDE PRODUCT

Thomas E. Hale, Warren, Mich., assignor to General Electric Company, Hudson Falls, N.Y.

Original No. 3,736,107, dated May 29, 1973, Ser. No. 147,240, May 26, 1971. Continuation of Ser. No. 909,699, May 25, 1978, abandoned, which is a division of Ser. No. 577,584, May 15, 1975. Application for reissue Apr. 9, 1984, Ser. No. 597,582

Int. Cl.⁴ B32B *9/04*

U.S. Cl. 428—336 **32 Claims**

1. A high strength, high-wear resistance coated cemented carbide product comprising:

a *titanium carbide-containing* cemented carbide substrate, and a *generally* fully dense *chemically vapor deposited* alpha aluminum oxide coating of from 1–20 microns thickness firmly and adherently bonded to said cemented carbide substrate through an intermediate layer *comprising:*

another non-metallic compound formed in situ by chemical vapor reaction, which acts to bond said coating to said substrate,

said coated cemented carbide product having a wear resistance substantially equivalent to aluminum oxide base cutting materials and having a transverse rupture strength of at least 150,000 p.s.i.

PLANT PATENTS

GRANTED MARCH 18, 1986

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,690

MINIATURE ROSE PLANT-SCHOBITET VARIETY

Earnest Schwartz, deceased, late of Kingsville, Md. (by Hazel E. Schwartz, executrix), assignor to The Conard-Pyle Company, West Grove, Pa.

Filed Jul. 25, 1984, Ser. No. 634,367
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—8 **1 Claim**

1. A new and distinct variety of Miniature rose plant, substantially as illustrated and described, having the following combination of characteristics: .

(a) a vigorous growth habit which forms a well-balanced, well-branched plant which commonly attains a height of less than 60 cm. and has semi-glossy foliage which exhibits a greater than usual disease resistance,

(b) produces fully double, well-formed flowers of clear yellow coloration, fading eventually to pale lemon yellow coloration, which are of good substance and which are produced in abundance, and

(c) has an ability to be used either as a fully hardy outdoor garden rose, or to be forced into bloom in a greenhouse as a flowering pot plant.

5,691

ROSE PLANT

F. Harmon Saville, Rowley, Mass., assignor to Nor'East Miniature Roses, Inc., Rowley, Mass.

Filed Sep. 24, 1984, Ser. No. 653,350
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—9 **1 Claim**

1. A new and distinct variety of rose plant of the miniature rose class, substantially as shown and described, characterized particularly by unusual spinel red flowers which are a combination of spinel red tones and are displayed against glossy green foliage.

5,692

ROSE PLANT

F. Harmon Saville, Rowley, Mass., assignor to Nor'East Miniature Roses, Inc., Rowley, Mass.

Filed Sep. 24, 1984, Ser. No. 653,351
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—10 **1 Claim**

1. A new and distinct variety of rose plant of the miniature rose class, substantially as shown and described, characterized particularly by bright red flowers of exhibition form and medium to heavy petalage with outer petals reflexing sharply upon opening and good color stability.

5,693

HYBRID TEA ROSE PLANT CV. AROLALA

Jack E. Christensen, Ontario, Calif., assignor to Armstrong Nurseries, Inc., Ontario, Calif.

Filed Jun. 25, 1984, Ser. No. 624,511
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—11 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, being particularly characterized by the blended lavender coloration of its flowers, essentially as described and illustrated herein; its abundant production of large, well-formed flowers on strong stems suitable for cutting; its vigorous growth; its attractive bush of medium height and upright habit; its abundance of deep green foliage; and its heavy petal substance that holds up well in varying climates.

5,694

ROSE PLANT—MEIROPE VARIETY

Marie L. Meilland, Antibes, France, assignor to The Conard-Pyle Company, West Grove, Pa.

Filed Jun. 19, 1984, Ser. No. 622,122
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—16 **1 Claim**

1. A new and distinct variety of Hybrid Tea rose plant characterized by the fact that:

(a) from the physical point of view, the plant has bronze green adult wood, an upright growth habit, and forms attractive double blossoms which are intense orange on the inner surfaces with the outer surfaces of the petals being orange fading to orange blended with pink, and

(b) from a biological point of view the plant has vigorous vegetation, flowers abundantly and continuously when grown under greenhouse conditions, and exhibits good resistance to diseases,

substantially as herein shown and described.

5,695

CHRYSANTHEMUM PLANT NAMED STARGAZER

Harry G. Tremaine, 13755 N. Wells La., Lodi, Calif. 95240, and Mary L. Hughes, 2320 Wagner Heights Rd., Stockton, Calif. 95209

Filed May 24, 1984, Ser. No. 613,733
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—74 **1 Claim**

1. A new and distinct cultivar of *Chrysanthemum morifolium,* Ramat., plant named Stargazer, as described and illustrated, and particularly characterized as to uniqueness by the combined characteristics of flat capitulum form; daisy capitulum type; red-purple ray floret color; diameter across face of capitulum ranging from 5 to 6.5 cm. at maturity, uniform seven week flowering response; short plant height; spreading branching pattern; average natural season flowering date of September 20, and uniform response with durable color and form in Spring for small pot flowering programs.

5,696

ANTHURIUM PLANT NAMED AMAZONE

Dirk van der Laarse, Aalsmeer, Netherlands, assignor to Anthurium Amazone Limited, Guernsey, Channel Islands

Filed May 24, 1984, Ser. No. 613,407
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—88 **1 Claim**

1. A new and distinct anthurium plant named Amazone, as described and illustrated, particularly characterized by its long and relatively narrow leaves, generally round and very large spathes, red in color, carried on long stalks, and by its spadix which initially are curled and thereafter become generally straight and relatively long, and further characterized by continuously flowering.

PATENTS

GRANTED MAR. 18, 1986

ERRATA

For CLASS	See PATENT NO.
623–006	4,575,877
623–006	4,575,878
225–104	4,576,380
558–037	4,576,760
427–288	4,576,801

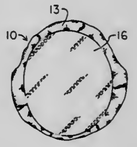
PATENTS

GRANTED MARCH 18, 1986

GENERAL AND MECHANICAL

4,575,871
HELMET LINER FOR CONTAINING WATER
Steven L. Auerbach, Fayetteville, N.C., and Sharon J. Conklin, 5434 Wichita Dr., Apt. K-2, Fayetteville, N.C. 28303, assignors to Sharon J. Conklin, Fayetteville, N.C.
Filed Apr. 21, 1983, Ser. No. 487,106
Int. Cl.[4] A42B *3/00*
U.S. Cl. 2—6 **8 Claims**





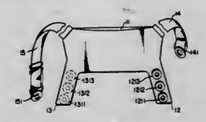
1. An improved helmet and liner combination for containing water or the like, said helmet comprising:

a rigid impact resistant shell, said shell having sides with a terminal rim, said liner comprising:

a flexible water impermeable bag-like member, said bag-like member removably positionable within said shell, said bag-like member having an open end, retaining means, said retaining means attached to said open end of said bag-like member, said bag-like member sized to extend beyond said rim when positioned within said shell for maintaining said open end of said bag-like member over the rim and against the sides of said shell whereby said shell will firmly support said bag-like member during the containment of water.

4,575,872
NECKTIE
Cheng C. Chen, 3Fl. 79, Chi Lin Rd., Taipei, Taiwan
Filed Apr. 16, 1985, Ser. No. 723,867
Int. Cl.[4] A41D *25/02*
U.S. Cl. 2—144 **2 Claims**

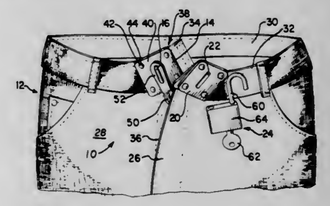
1. Improved structure of the necktie, characterised in the provision of an interim gap on the upper side of the cravat thereof to permit passage of the strap tongue thereof; also of a snatch lap on either corner on the base of the cravat, one such snatch lap provided with a row of button on the frontal side, the other lap provided with a row of counterbutton on the backside by symmetry, such that both laps can be brought together by twisting altogether in the same direction; also of a fastening belt attached to either corner on the upper side of the cravat, one such belt provided with a button on the free end, the other such belt provided with a counterbutton on the free





end, altogether serving to hold the necktie in position when worn by the user around the nape.

4,575,873
PANTS CLOSURE
James R. Smith, 5535 Blaine, SE., Grand Rapids, Mich. 49508
Filed Nov. 5, 1984, Ser. No. 668,152
Int. Cl.[4] A41D *1/06, 1/14*
U.S. Cl. 2—234 **15 Claims**



1. In a pair of pants, the combination of a pair of flaps, one of the flaps overlapping the other flap to form an overlapping flap and an underlapping flap, a pair of slide fastener elements, one secured to one flap and the other secured to the other flap, a means for joining the slide fastener elements, and a pants closure securely fastened to the pants for fastening the flaps together, wherein the pants closure comprises:

a first plate;

a retaining clasp securely fastened to and projecting from the first plate;

a means securely fastening the first plate to the underlapping flap;

a means joining the slide fastener elements and having a first hole adapted to receive the retaining clasp therethrough;

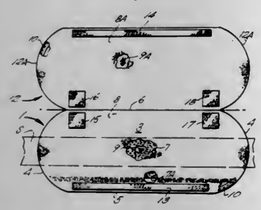
a second plate having a second hole adapted to receive the retaining clasp therethrough;

a means securely fastening the second plate to the overlapping flap so that the second plate overlaps the first plate with the retaining clasp in registry with the second hole when the flaps are closed;

a locking means engaging the retaining clasp for securing the first and second plates in an overlapping position;

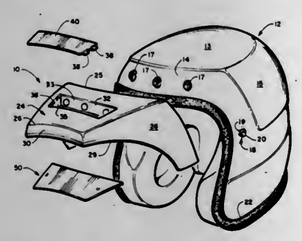
whereby the pants are secured in a closed position with the slide fastener element joining means securely locked in a sandwiched position between the overlapping first and second plates.

4,575,874
PAD FOR A SHOULDER STRAP
William M. Johnson, P.O. Box 70404, Eugene, Oreg. 97401
Filed Feb. 19, 1985, Ser. No. 702,787
Int. Cl.⁴ A41D *27/26, 13/00*
U.S. Cl. 2—268 **9 Claims**



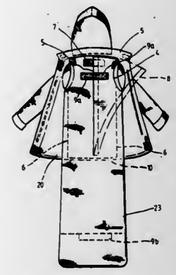
1. A pad for cushioning strap exerted loads on the shoulder of a human body, said pad comprising in combination,
an elongate base member including a cushion component,
a positionable member integral with said base member for superimposition on said base member upon movement of the positionable member about a fold line, and
fabric closure material in place on marginal areas of said base member and said positionable member adapted for engagement upon movement of the positionable member about the pad fold line, said strap confined against lateral displacement by said fabric closure material.

4,575,875
DETACHABLE VISOR FOR A MOTORCYCLE HELMET
Chris R. Dawson, San Diego, Calif.; John Dondero, Sun Valley, Id., and Gerald R. Parks, Chula Vista, Calif., assignors to John R. Gregory, Chula Vista, Calif.
Filed Jun. 18, 1984, Ser. No. 621,707
Int. Cl.⁴ A42B *3/02*; A61F *9/04*
U.S. Cl. 2—422 **5 Claims**



1. A detachable visor for a motorcycle helmet having snap fasteners on its frontal surface comprising:
a main body having a wedge-shaped side profile and including a top wall shaped and dimensioned to meet the frontal surface of the helmet above said snap fasteners;
laterally spaced side wall members that extend downwardly from the lateral edges of said top wall, said top wall having a front edge and a rear edge;
a laterally extending recess portion is formed in said top wall intermediate its front edge and its rear edge, said recess portion having a downwardly extending rear wall and a pair of laterally spaced downwardly extending side walls, said rear wall being shaped to conform with the frontal surface of the helmet mounting said fasteners and having a plurality of snap fasteners designed and positioned so that they mate with the snap fasteners that are secured to the frontal surface of the motorcycle helmet; and
an air flow detector panel that extends between said side wall members and is attached to the underside of said visor, said air flow deflector panel extends rearwardly a predetermined distance from the front of said top wall.

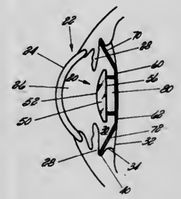
4,575,876
JACKET WITH SLEEPING BAG
David C. Weaver, 1321 E. Nevada St., El Paso, Tex. 79902
Filed Nov. 26, 1984, Ser. No. 674,968
Int. Cl.⁴ A41B *1/12*
U.S. Cl. 2—69.5 **6 Claims**



1. Outdoor apparel comprising:
(a) a garment for covering at least a portion of the human torso, the garment having a back panel, front panels, and two arm receiving passages;
(b) a liner attached to the garment adapted to enclose the human figure; said liner comprising a back section and a front section defining a first opening at the nape and two arm receiving regions; an areal portion of the back section of said, liner overlying and joined to said back panel of said garment; the remaining portions of said liner being foldable to fit against said front section of said liner and within an area defined by said back panel of said garment; and
(c) a first closure device to releasably hold said folded portions of said liner against the front section of said liner and within said back panel of said garment.

4,575,877
INTRAOCULAR LENS HAVING LOOPS DEFINING A POSTERIOR CAPSULE BARRIER
Robert S. Herrick, 1255 Via Del Rey, South Pasadena, Calif. 91030
Filed Aug. 4, 1983, Ser. No. 520,455
Int. Cl.⁴ A61F *1/16, 1/24*
U.S. Cl. 623—6 **17 Claims**

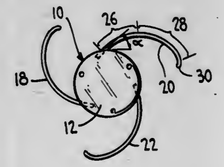
14. An intraocular lens adapted for implantation in the posterior chamber of an eye after extracapsular cataract extraction or intracapsular cataract extraction comprising
a lens body;
a plurality of pliable loops each having a mounting end which terminates in a protruberant member which is affixed to and extends a predetermined distance from the lens body and which at a predetermined point terminates at an opposite end thereof in a supporting end which commences an angular disposition having a substantially acute angle relative to the plane of said mounting end, said supporting end commencing its angular disposition relative to the mounting end at a point which is located substantially circumferential of the lens body, said mounting ends of said plurality of pliable loops having the protruberant members affixed posteriorly to the lens body at selected locations with said predetermined points located at approximately the outer peripheral edge of the lens body wherein each of the mounting ends are positioned



relative to each other to define a generally planar posterior capsule barrier which is adapted to be positioned contiguous to and to slightly stretch the posterior capsule of an eye while defining a space between the lens body and the posterior capsule

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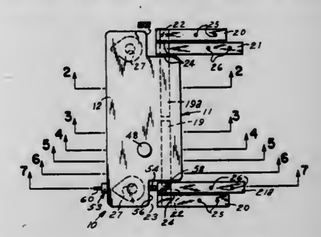
4,575,878
INTRAOCULAR LENSES
Seymour Dubroff, 3806 Thornapple, Chevy Chase, Md. 20815
Continuation-in-part of Ser. No. 230,279, Jan. 30, 1981, abandoned. This application May 13, 1983, Ser. No. 494,364
Int. Cl.⁴ A61F *1/16, 1/24*
U.S. Cl. 623—6 **10 Claims**



1. An intraocular lens for implant in an eye comprising
a lens body; and
a plurality of three or more flexible, resilient, fixation filaments extending from the periphery of said lens body to a free end, each of said fixation filaments having a proximal portion secured to said lens body, an intermediate curved portion extending from said proximal portion having a radius of curvature of from 4.5 mm to 6.0 mm and continuing in an arc of from 50° to 65°, and a distal curved portion extending from said intermediate curved portion to said free end having a radius of curvature of from 2.5 mm to 4.0 mm and continuing in an arc of from 75° to 95°.

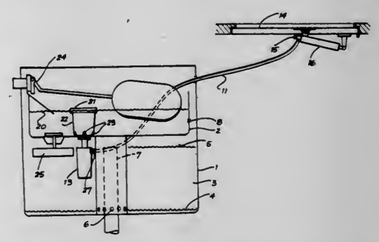
4,575,879
SAFETY SEAT CLOSURE
Chavelo Cabral, 1144 Brannick, Los Angeles, Calif. 90023; Donald E. Dean, 565 W. 5th St., San Pedro, Calif. 90731, and Armando M. Lopez, 4373 Telegraph Rd., Los Angeles, Calif. 90023
Filed Oct. 5, 1983, Ser. No. 539,150
Int. Cl.⁴ A47K *13/10*
U.S. Cl. 4—253 **1 Claim**

1. A safety seat closure for a toilet commode, comprising, in combination, a hollow housing for being mounted on top a rear portion of said toilet commode, a lid on a top of said housing, a pair of aligned shafts supported between said housing and said lid, one end of each said shaft protruding outward from opposit sides of said housing, a pair of lever arms affixed to each said shaft protruding end, a first arm of said pair being attached to a toilet seat and a second of said pair being attached to a seat lid; an interior on a first of said shafts engaging a detent to hold said seat in opened position, a crank on a second of said shafts being attached to a piston rod of a piston in air an bleed cylinder for damping a speed to pivot said seat or lid toward a closed position, an interior locking arm on said second shaft bearing against a spring-biased stem of an externally extending button when locking said lid in closed position, means to manually push said button rearwardly to unlock said



lid, an interior arm on said second shaft attached to a tension coiled return spring to move said lid to a closed position, and a plunger assembly in said housing, comprising a spring-biased lock pin, one end of said lock pin being attached to an exterior trip wire connected to a flush arm of a toilet water tank or the like, and an opposite end of said lock pin bearing against a rounded pivot end of one of said second lever arms attached to said seat lid, and a notch along said rounded end being engaged by said lock pin opposite end when said seat is lifted.

4,575,880
AUTO-FLUSH SYSTEM
Robert H. Burgess, 6 McDonald Crescent, Strathfield, N.S.W., Australia 2135, assignor to Robert Burgess and June Burgess, both of Strathfield, Australia
Filed Jan. 31, 1984, Ser. No. 575,563
Int. Cl.⁴ E03D *1/14*
U.S. Cl. 4—313 **12 Claims**



1. In a device for actuating the flushing action of an automatic flush cistern, the cistern having an upper water tank and a lower water tank, a ball-cock controlled water inlet to the upper water tank adapted to fill the upper tank to a predetermined level, a valve-operated orifice in a wall of the upper tank interconecting the tanks, the valve being adapted to open the orifice in response to a predetermined water level in the lower tank, and a syphon device in open communication with the lower tank for emptying the lower tank when the predetermined water level in the lower tank is exceeded, the improvement in the actuating device comprising:
tube means extending through a wall of the upper tank having upper and lower ends extending into said upper and lower tanks, respectively, providing communication between said

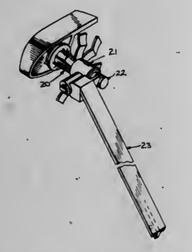
tanks and being adapted to remain filled with water when said lower tank is emptied;
a small bore hole through a sidewall of the upper end portion of said tube means;
a valve seat on said upper end of said tube means;
valve means operatively associated with said valve seat movably mounted around said upper end of said tube means;
a cup shaped member adjacent said lower end of said tube means comprising a base and an upwardly extending peripheral wall portion in surrounding spaced relationship with respect to a lower end portion of said tube means; and
remotely operated means operatively associated with said tube means for raising and unseating said valve means from said valve seat so that said valve means remains unseated until the water in said upper tank empties into said lower tank.

4,575,881

PERPENDICULAR TOILET TRIP LEVER ASSEMBLY

Roy J. Rozek, Plymouth, Wis., assignor to Kohler Co., Kohler, Wis.

Filed Dec. 28, 1984, Ser. No. 687,457
Int. Cl.[4] E03D *5/00*
U.S. Cl. 4—405 **9 Claims**



1. A toilet trip lever assembly mountable in a hole in a side wall of a toilet tank, comprising:
a bearing extendable through the hole and having an axial bore therethrough;
retaining means removably connectable to the bearing inside the toilet tank for limiting outward movement of the bearing relative to the hole;
a pivot post extendable radially from the retaining means;
a stem positionable within the bearing for rotational movement therein, the inner end of the stem extendable into the tank and including an offset surface;
a handle connectable to the outer end of the stem which is operable by a user to rotate the stem;
a boom pivotally and directly mounted on the retaining means by the pivot post so as to permit pivoting motion of the boom about the pivot post axis in a plane substantially perpendicular to the tank side wall through which the bearing is extendable; and
an arm affixed to the boom extendable from said boom to said stem offset surface;
whereby rotation of the stem and offset surface can pivot the boom.

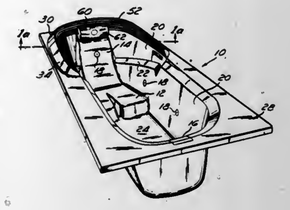
4,575,882

INTEGRATED STEREO AND BATHTUB SYSTEM II

Harvey E. Diamond, 12953 Woodbridge St., Studio City, Calif. 91604

Filed Jan. 18, 1985, Ser. No. 692,827
Int. Cl.[4] A47K *4/00*
U.S. Cl. 4—559 **12 Claims**

1. In a bathtub adapted to contain a liquid medium and provided with an overflow outlet for said liquid in a first upper wall portion of said bathtub, the improvement which comprises:
a second wall portion of said bathtub extending above said overflow outlet; and



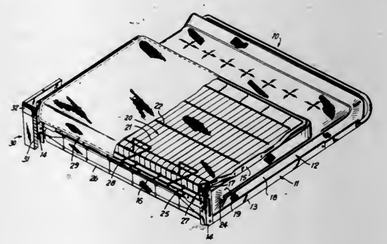
a cavity means formed in said second wall portion of said bathtub adapted to enclose at least one speaker of a sound system.

4,575,883

CONVERTIBLE SOFABED WITH IMPROVED USER COMFORT

Larry D. Powell, Mooreville, and Charles J. Tidwell, Jr., Tupelo, both of Miss., assignors to Mohasco Corporation, Amsterdam, N.Y.

Filed Jun. 22, 1984, Ser. No. 623,720
Int. Cl.[4] A47C *17/13, 17/00*
U.S. Cl. 5—13 **9 Claims**



1. In a sofabed convertible between a bed in its extended condition and a sofa in its collapsed condition and including a frame having a lower frame portion, an upper frame portion, and two upright frame portions interconnecting said lower and upper frame portions at front corners of the sofabed as considered in its collapsed condition, a deck resiliently mounted on the frame portions, a mattress supported on the deck, and a cushion supported on that portion of the deck which is mounted on the upper frame portion in the collapsed condition and having a front edge portion, a combination comprising
a raise tube rigidly connected to the upright frame portions and situated at a considerable distance from the upper regions of the latter as considered in the collapsed condition; and
means for resiliently supporting the front edge portion of the cushion in the collapsed condition ror improving the comfort of the user of the sofabed as a sofa, including
a border wire extending along a substantially U-shaped course and having a main portion extending along the front of the sofabed, and two end portions substantially normal to said main portion and connected to said upper frame portion; and
a plurality of substantially Z-shaped springs each having a first portion connected to said raise tube and a second portion connected to said border wire and operative for resiliently urging said border wire away from said raise tube and for yielding under the forces acting on the front edge portion of the cushion resting on said border wire to keep compression of the material of the cushion at the front edge portion of the

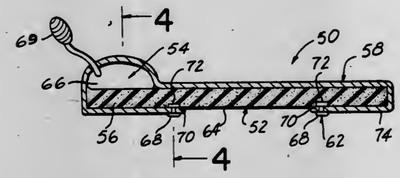
latter within acceptable limits not causing any discomfort to the user sitting on the cushion.

4,575,884

SLEEPING BAG SHEET INSERT

Willis B. Jamerson, and George Spector, both of 233 Broadway, Rm. 3615, New York, N.Y. 10007

Filed Jul. 30, 1984, Ser. No. 636,130
Int. Cl.[4] A47G *9/06, 9/04*
U.S. Cl. 5—420 **1 Claim**



1. A sleeping bag sheet insert for fitting within a sleeping bag for preventing the inside of the sleeping bag from becoming soiled, said insert comprising:
(a) a foam rubber sleeping pad with head and feet ends, and top and bottom surfaces;
(b) an inflatable pillow insert placed on the head end of said sleeping pad;
(c) an elongated sheet to cover said sleeping pad and said pillow insert, said sheet being open at the portions of the sides over said pillow insert and having opposite ends which extend over the head and feet ends of the pad to positions underlying and engaging end portions of the top and bottom surfaces;
(d) means for securing said sheet to the underside of said sleeping pad; and
(e) a hand pump connected to side of said inflatable pillow so that when said pillow is in position on said sleeping pad said hand pump can inflate said air chamber manually, wherein said means for securing said sheet to the bottom surface of said sleeping pad are a plurality of male snaps secured to said ends of said sheet and a plurality of female snaps secured to the bottom surface of said sleeping pad to mate with said make snaps when the ends of said sheet are pulled around the head and feet ends of said sleeping pad.

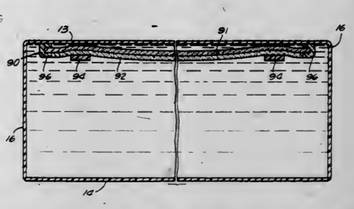
4,575,885

WATERBED MATTRESS WITH FREE FLOATING BAFFLE

Charles P. Hall, Muir Beach, Calif., assignor to Monterey Manufacturing Co., Carson, Calif.

Continuation of Ser. No. 250,888, Apr. 3, 1981, Pat. No. 4,467,485, and a continuation-in-part of Ser. No. 201,304, Oct. 27, 1980, abandoned, which is a continuation-in-part of Ser. No. 95,214, Nov. 19, 1979, Pat. No. 4,345,348, which is a continuation-in-part of Ser. No. 949,963, Oct. 10, 1978, Pat. No. 4,247,962. This application May 25, 1984, Ser. No. 613,979
The portion of the term of this patent subsequent to Feb. 3, 1999, has been disclaimed.
Int. Cl.[4] A47C *27/08*
U.S. Cl. 5—450 **28 Claims**

1. In a waterbed mattress having an enclosing structure comprising a horizontally extending top wall, a horizontally extending bottom wall, and side walls, the improvement comprising a horizontally extending baffle structure for reducing wave-like motion of water in the mattress disposed within the enclosing structure comprising at least one baffle element, the baffle element having a horizontal extent corresponding generally to the sleeping surface of the mattress, and being unattached to the enclosing structure and comprising a porous mass of bound-together fibers denser than water and means for floating the mass of fibers vertically spaced apart from the bottom wall when the mattress is filled with water, the baffle



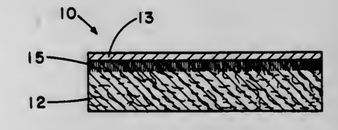
permitting water to circulate between the top wall and the bottom wall.

4,575,886

FIBEROUS WAVE-DAMPENING APPARATUS

Lynn D. Larson, 6051 Park Crest, Lincoln, Nebr. 68506

Filed Jan. 18, 1982, Ser. No. 339,906
Int. Cl.[4] A47C *27/08*
U.S. Cl. 5—450 **3 Claims**



1. In combination with a waterbed mattress bladder, a wave-dampening apparatus, comprising
a flexible fibrous member positioned within and filling a substantial portion of the waterbed mattress bladder, said fibrous member having an upper surface and a lower surface and
a foam member comprising a flexible sheet of a buoyant foam material,
said foam member being operably attached to said upper surface of said fibrous member by foam penetration of said fibrous member by said foam member,
said foam member substantially covering the upper surface of said fibrous member,
the horizontal dimensions of said wave-dampening apparatus being similar to but less than the horizontal dimensions of the mattress bladder whereby the buoyancy of said foam member tends to maintain the orientation of said dampening apparatus relative to said bladder.

4,575,887

METHOD FOR ABRADING FABRIC GARMENTS

Julio C. Viramontes, 1057 Eastside Rd., El Paso, Tex. 79915

Filed Aug. 29, 1984, Ser. No. 645,909
Int. Cl.[4] D06F *21/04*
U.S. Cl. 8—158 **9 Claims**

1. A method of abrading garments in a conventional household or commercial automatic washing machine which comprises the steps of:
a. placing said garments in a receptacle of said machine capable of agitation of said garments within said receptacle;
b. adding a predetermined amount of abrasive particles to said receptacle, said particles being less than 2 millimeters in diameter, said predetermined amount of particles sufficient to uniformly abrade said garments;
c. further adding to said receptacle a first liquid sufficient to circulate said abrasive particles within said receptacle;
d. agitating of said garments until said garments are uniformly abraded;
e. draining said receptacle through said machine's conven-

tional drainage system of substantially all of said first liquid and said abrasive particles;

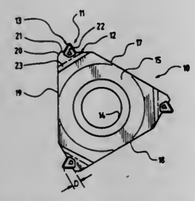
f. removing said uniformly abraded garments from said receptacle.

4,575,888

THREAD CUTTING INSERT

Sture Murén, Gävle, Sweden, assignor to Santrade Ltd., Lucerne, Switzerland

Filed Feb. 14, 1984, Ser. No. 580,015
Claims priority, application Sweden, Mar. 15, 1983, 8301396
Int. Cl.⁴ B26B 9/02
U.S. Cl. 10—101 R **12 Claims**



1. A thread cutting insert comprising a flat wafer of cutting material of generally triangular form and comprising:

an upper face, and a lower face situated opposite and generally parallel to said upper face, and

a plurality of side walls disposed between said upper and lower faces, with the juncture between a pair of said side walls defining an outwardly projecting cutting corner which is recessed downwardly with respect to said upper face, said cutting corner including

a pair of cutting edges which converge outwardly and meet to form a nose and define a maximum feed depth for the insert, and

an upper surface disposed inwardly of said cutting edges, said upper surface comprising

a pair of lands disposed immediately inwardly of respective ones of said cutting edges,

a first chipforming surface which defines a positive rake angle and extends downwardly and inwardly from said lands to a location which is disposed between said cutting edges and spaced inwardly from said nose by a distance of at least one-half of said maximum feed depth, and

a second chipforming surface spaced inwardly of said first chipforming surface and extending upwardly to said upper face.

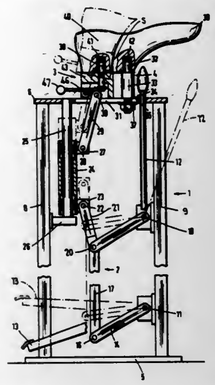
4,575,889

APPARATUS FOR LASTING SHOE UPPERS OR SHOES ONTO SHOE LASTS

Hermann Roseland, Langwedel-Etelsen, and Manfred Bark, Oyten, both of Fed. Rep. of Germany, assignors to Kloeckner Ferromatik Desma GmbH, Achim, Fed. Rep. of Germany

Filed Jan. 28, 1985, Ser. No. 695,282
Claims priority, application Fed. Rep. of Germany, Jan. 31, 1984, 3403181
Int. Cl.⁴ A43D 3/10, 3/00
U.S. Cl. 12—15 **16 Claims**

1. An apparatus for the lasting of shoe uppers and shoes onto shoe lasts, and for the removal of the completed shoes from the shoe lasts, comprising a frame, a least one two-part shoe last on an upper surface of said frame, said shoe last comprising a front toe part and a heel part, a fixing device for removably mounting said front toe part on said frame, and a coupling device for movably and releasably mounting said heel part on said frame, said coupling device including pivotable means for releasably mounting said heel part, and height-adjustable means for moving said heel part from a rest position upwardly away from said



frame and toward said front toe part, and back to said rest position.

4,575,890

LINT REMOVAL DEVICE

Jerry Hidle, Panama City, Fla., assignor to Panhandle Industries, Inc., Panama City, Fla.

Filed Jun. 5, 1984, Ser. No. 617,529
Int. Cl.⁴ A47L 25/00
U.S. Cl. 15—104 A **8 Claims**

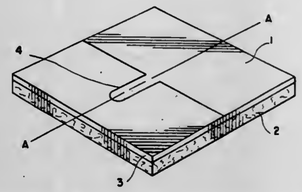
1. A device adapted for removal of lint from textiles, comprising, a cylinder having at least one longitudinal slot in the wall thereof and having end walls, a coaxial shaft extending through one of said end walls for supporting said cylinder for rotation about the central axis of said shaft, a pair of spaced rolls lying parallel to and radially spaced from said shaft, said rolls extending between said end walls and being mounted thereon for rotation about the central axis of said shaft together with said cylinder, and said rolls being mounted on said end walls for rotation about the respective axes of said rolls, a web of material having a tacky, lint removable, outer surface being stored on one of said rolls, being taken-up on the other of said rolls, extending through said slot, and having a portion overlying said cylinder wall, one end of said shaft comprising a handle extending outwardly of said one end wall, whereby lint may be removed from textiles upon manually rolling said cylinder thereover, means rotatable about said central axis in rotary engagement with at least said other roll, said shaft being shiftable along said central axis thereof from an initial position to a second position, and means on said shaft selectively engageable with said rotatable means in said second position for selectively coupling said other roll with said shaft for rotation of said other roll about said roll axis thereof upon manual rotation of said shaft about said shaft axis, whereby said web is taken-up on said other roll for advancing another portion of said web from said one roll to overlie said cylinder wall.

4,575,891

TOILET SEAT DISINFECTANT WIPE

Mark Valente, 4301 - 13th Ave. N., St. Petersburg, Fla. 33713

Filed Nov. 9, 1984, Ser. No. 670,258
Int. Cl.⁴ A47K 7/03
U.S. Cl. 15—104.93 **6 Claims**



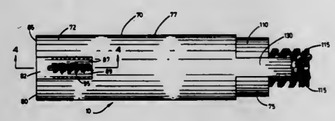
1. A disposable toilet seat wipe comprising a small non-abrasive absorbent pad moistened with an antiseptic solution and a thin, overlay protective means, said means having associated therewith a raisable thumb tab which can be raised to provide a handhold for manipulating said wipe over the outer surface of the toilet seat thereby disinfecting the toilet seat, said wipe being biodegradable and decomposable in water to the extent that the wipe will flush away in the toilet without damage thereto.

4,575,892

DEVICE FOR CLEANING ELECTRICAL CONNECTORS

Gerald W. Ross, Tulare, Calif., assignor to Norman R. Ross, Tulare, Calif., a part interest

Filed Oct. 1, 1984, Ser. No. 656,849
Int. Cl.⁴ A46B 3/18, 7/00
U.S. Cl. 15—106 **6 Claims**



1. A device for cleaning electrical connectors of the type having a female connector and a male connector dimensioned releasably to be disposed in mating relation and wherein the female connector has a body mounting an external elongated boss and having a plurality of elongated bores extending therewithin in substantially parallel relation in a predetermined pattern and wherein the male connector has a housing bounding a chamber dimensioned to receive a portion of the body of the female connector and having a slot dimensioned to receive said boss of the body of the female connector, and a plurality of rod-like terminals spaced from each other within the housing of the male connector in a pattern substantially conforming to said predetermined pattern of the bores of the body of the female connector and each terminal is dimensioned for individual receipt within one of said bores when the body of the female connector is received within said chamber of the male connector, and said housing mounting a cover pivotal between a closed attitude wherein the cover is disposed in covering relation to said chamber and an opened attitude wherein the cover is pivoted from the chamber, the device comprising:

an elongated intermediate portion having spaced, opposite ends;

a female cleaning portion borne on a first opposite end of the intermediate portion and having a substantially cylindrical wall bounding a cavity dimensioned to receive a portion of the body of a female connector therein, said wall having a slot dimensioned to receive said boss of the body of the female connector when said portion of the body is received within said cavity, and a plurality of elongated brushes mounted within said cavity in a pattern substantially conforming to said predetermined pattern of the bores of the body of the female connector for substantially simultaneous individual receipt in a plurality of the bores of the body of the female connector when said body is received within the cavity for abrasively cleaning said bores upon reciprocal movement of the device during said receipt; and

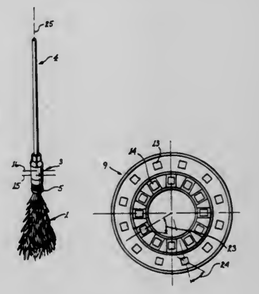
a male cleaning portion borne on a second opposite end of the intermediate portion and having a plurality of elongated brushes each being disposed in juxtaposition to at least one other of said brushes to define an interface area and said interface areas disposed in a pattern substantially conforming to said pattern of the rod-like terminals for engagement of the brushes defining the interface areas with the rod-like terminals for abrasively cleaning said rod-like terminals upon reciprocal movement of the device during said engagement.

4,575,893

BROOM WITH FIXING DEVICE FOR HOLDING BUNDLES OF PLASTIC BRANCHES

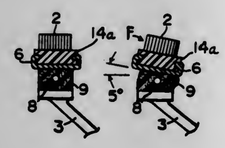
Henry Rozier, Villa Les grives, Le Monteillier, Saint Didier au Mont d'Or, Rhône, France

Filed Jan. 30, 1984, Ser. No. 575,441
Claims priority, application France, Feb. 2, 1983, 83 01908
Int. Cl.⁴ A46B 3/10
U.S. Cl. 15—171 **5 Claims**



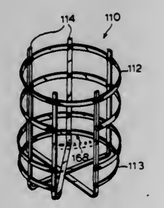
1. A broom comprising a main sheath made of plastic material locked around a handle and equipped with a series of peripheral housings used to hold stems of twigs and branches of bundles made of plastic, said main sheath being covered by a threaded, bell-shaped outer sheath, said housings for the ends of said bundles being arranged around said main sheath following at least two coaxial circumferences of different diameters located on planes and staggered along the geometric axis of said handle to which said two planes are at right angles, each housing having a female part of a locking device, each bundle having a male part of said locking device on the upper extremity of each bundle, each bundle having a tip at a top end which is part of said male part and is split lengthwise, said tip having a substantially square cross-section, said split end being surmounted by at least one swollen knob, each housing on said main sheath having a cross-section which is substantially square in order to enable said housings to receive said male parts of said bundles and to allow each of said bundles located at one of said circumferences to be oriented at approximately the same angle with respect to a corresponding one of each of said bundles located at another of said circumferences.

4,575,894
VERTICAL ACTION TOOTH BRUSH
Joy Stevens, P.O. Box 26284, Honolulu, Hi. 96825, and George T. Hemmeter, 4125 Black Point Rd., Honolulu, Hi. 96816
Filed Nov. 2, 1984, Ser. No. 667,570
Int. Cl.[4] A46B 9/04
U.S. Cl. 15—172 2 Claims



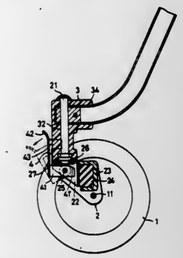
1. In a toothbrush intended for brushing action substantially in both directions of the major axis of the teeth being cleansed, said toothbrush having an elongated handle supporting at one end of its extremity a mounting platform, said platform having an axle placed at right angles to the major axis of said handle, pivotally mounted on said axle, for limited angular turning movement thereon is a bristle brush-holder, a resilient means is provided between said mounting platform and said brush-holder to allow restrictive turning movement of the brush-holder on said axle with respect to the mounting platform, both said mounting platform and said bristle brush-holder being mounted to make an obtuse angle with respect to said major axis of the handle.

4,575,895
REFUSE BAG FRAME FOR VACUUM CLEANERS
Stanley Spellman, 75 Cedar Dr., Roslyn, N.Y. 11576
Continuation-in-part of Ser. No. 613,076, May 22, 1984, Pat. No. 4,531,258. This application Feb. 20, 1985, Ser. No. 703,390
Int. Cl.[4] A47L 5/08
U.S. Cl. 15—327 R 9 Claims



1. A refuse bag frame for supporting a refuse bag in a vacuum cleaner, said vacuum cleaner having a cylindrical bin lined by said refuse bag, a cover for the cylindrical bin including a vacuum blower, the rim of the the open end of the refuse bag being clamped between the rim of the cylindrical bin and the cover, and a collection inlet extending through the sidewall of said cylindrical bin, said refuse bag frome comprising:
(a) at least one horizontal, band-like, flat hoop having a diameter substantially equal to the internal diameter of said cylindrical bin disposed at the upper region of said refuse bag frame above said collection inlet when said frame is mounted in said vacuum cleaner;
(b) at least one horizontal, band-like, flat, partial hoop having a diameter substantially equal to the internal diameter of said cylindrical bin disposed in the lower region of said refuse bag frame below the collection inlet in the side wall of said cylindrical bin;
(c) a plurality of flat, spaced-apart, rigid, vertical supports, each support having a length substantially equal to the internal height of said cylindrical bin and having vertically spaced-apart pairs of laterally aligned slots, each pair being aligned with corresponding pairs of slots in the other vertical supports, said at least one horizontal hoop being threaded through correspondingly aligned pairs of slots in the upper regions of said vertical supports, and said at least one horizontal, partial hoop being threaded through correspondingly aligned pairs of slots in the lower regions of said vertical supports below the collection inlet in the sidewall of said cylindrical bin when said refuse bag frame is inserted therein, said partial hoop interconnecting all but two adjacent vertical supports thereby resulting in a space therebetween, said space being aligned with said collection inlet in the sidewall of said cylindrical bin; and
(d) means for securing said at least one hoop and said at least one partial hoop to said plurality of spaced-apart, vertical supports at the connections therebetween to form a cylindrically-shaped frame dimensioned to fit within the refuse bag lining the cylindrical bin of said vacuum cleaner.

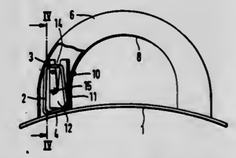
4,575,896
CASTER WITH AN OSCILLATION STOPPING MECHANISM
Shinroku Nakao, Kanagawa, and Kunimasa Tsuchiya, Tokyo, both of Japan, assignors to Combi Co., Ltd., Tokyo, Japan
Filed Mar. 31, 1983, Ser. No. 480,645
Claims priority, application Japan, Dec. 25, 1980, 55-187072
Int. Cl.[4] B60B 33/00
U.S. Cl. 16—35 R 2 Claims



1. A caster, comprising; a caster body (2), a caster holder (3), and a first rotational axle (21) extending between said caster body and said caster holder and including a base frame (22) at a lower end thereof; said base frame and said caster body jointly receiving a second rotational axle (25) therethrough; a lock clip rotatably supported by said second rotational axle for selectively locking said caster holder and said base frame, said castor body being rotatably mounted with respect to said second rotational axle, and a rubber damper disposed between said caster body and said base frame, said rubber damper being compressible between a front of said base frame and a rear, vertical face of said caster body.

4,575,897
HANDLE ATTACHMENT FOR A HOLLOW ACCESSORY HANDLE WHICH IS FORMED OF SHEET METAL
Wolfgang Fischbach, Daaden, Fed. Rep. of Germany, assignor to Heinrich Baumgarten KG Eisen- und Blechwarenfabrik, Neunkirchen, Fed. Rep. of Germany
Filed May 24, 1985, Ser. No. 738,531
Claims priority, application Fed. Rep. of Germany, Feb. 10, 1982, 3204641
Int. Cl.[4] A47J 45/10
U.S. Cl. 16—110 A 9 Claims

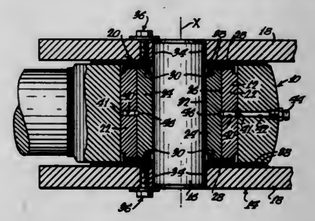
1. A handle apparatus for a dish, comprising:
a support member which is an elongate sheet metal strip bent into a substantially rigid and approximately rectangular loop, said loop having a first side which is fixedly secured to an external surface of said dish, a second side which projects outwardly from said external surface, and a third side which is opposite said first side thereof and which has a locking recess provided in an edge portion thereof, an outwardly facing side surface of said second side of said loop serving as a first guide surface on said support member, and opposite edge portions of said loop formed from said sheet metal strip which each extend along said second and third sides of said loop respectively serving as second and third guide surfaces on said support member;
a hollow handle part having an opening extending into an end thereof which faces said external surface of said dish, said handle part being formed from a single sheet metal plate which is bent into an approximately annular shape so that opposite edge portions thereof are adjacent;
a guide element which is disposed in said opening in said handle part and which is a single piece of sheet metal bent into a U-shape and having a back wall and two spaced legs, said back wall being fixedly secured to a surface of said sheet metal plate forming said handle part and said guide element being oriented so that said back wall and said legs each



extend substantially parallel to said second side of said support member, said back wall having on an inwardly facing side thereof a first guide surface and said legs respectively having on inwardly facing sides thereof second and third guide surfaces, said support member being slidably received between said legs of said guide element so that said first, second and third guide surfaces on said support member respectively slidably engage said first, second and third guide surfaces on said guide element to thereby prevent movement of said handle part relative to said external surface of said dish in said directions in which said first, second and third guide surfaces on said guide element face and to prevent rotation of said handle part relative to said dish about an axis perpendicular to said external surface of said dish, said guide element further having an elongate, resilient leaf spring element provided on and integral with one of said legs thereof and extending in a direction approximately parallel to said second side of said support member, said resilient spring element engaging said locking recess in said support member and yieldably urging said guide element and said handle part in a direction toward said external surface on said dish.

4,575,898
SEALED BUSHING ASSEMBLY FOR PIVOTAL MEMBERS
Frederick D. Carlson, Burlington, and Ronald E. Hart, Muscatine, both of Iowa, assignors to J. I. Case Company, Racine, Wis.
Filed Sep. 19, 1984, Ser. No. 651,883
Int. Cl.[4] E05D 11/02
U.S. Cl. 16—274 5 Claims

1. A bushing assembly for connecting first and second members for relative pivotal movement about an axis, wherein said first member defines an opening within which said assembly is positionable, and said second member comprises a pin extending through said bushing assembly, said assembly comprising:
first bushing means positioned within said opening and secured to said first member;
second bushing means positioned coaxially within said first bushing means to define an annular bushing interface therewith, said second bushing means defining another opening through which said pin of said second member extends, said second bushing means being secured to said pin, whereby said first and second bushing means are relatively rotatable about said axis attendant to relative pivotal movement of said first and second members;
means for retaining said second bushing means in position within said first bushing means comprising a pair of annular end caps fitted to respective opposite ends of said first



and second bushing means, said end caps being secured to one of said first and second bushing means for rotational movement relative to the other of said first and second bushing means; and
means for lubricating said bushing interface comprising at least one lubricant passage defined by said first bushing means, and an annular lubricant channel communicating with said lubricant passage, said lubricant channel being defined by said first and second bushing means and extending about said bushing interface.

4,575,899
APPARATUS FOR SEVERING THE MEAT FROM BONES
Otto Prosenbauer, Vienna, Austria, assignor to Inject Star Pokelmaschinen GmbH, Vienna
Filed May 22, 1984, Ser. No. 612,825
Claims priority, application Austria, May 27, 1983, 1956/83
Int. Cl.[4] A22C 17/04
U.S. Cl. 17—1 G 12 Claims

1. A press for severing meat from bones, comprising:
a cylindrical wall having first and second ends and defining a press cavity, said wall including openings sized to permit the passage of meat and to prevent the passage of bone therethrough;
a press piston adapted to enter said press cavity from the first end by movement in an axial direction of the cylindrical wall, said press piston including:
a first blunt front surface of smaller diameter than the diameter of said press cavity;
a cylindrical section for guiding the piston along said cylindrical wall;
a counter piston adapted to enter said press cavity from the second end by movement in axial direction of the cylindrical wall, said counter piston including:
a second blunt front surface of smaller diameter than the diameter of said press cavity;
a cylindrical section for guiding the piston along said cylindrical wall;
a discharge means for expelling pressed bones from said

press cavity, said discharge means being adapted to be opened and closed by correspondingly moving one of said pistons; and

means carried by the cylindrical section of at least one of said pistons defining an abrading edge for cleaning said openings in said cylindrical wall during each piston stroke.

4,575,900

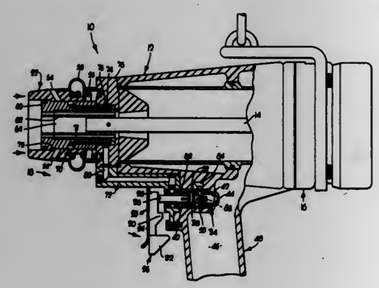
PNEUMATIC STUNNER

Jerome T. Hamel, Shawnee, and Bernard G. Huff, Shawnee Mission, both of Kans., assignors to Hantover, Inc., Kansas City, Mo.

Continuation-in-part of Ser. No. 484,938, Apr. 14, 1983, Pat. No. 4,503,585. This application Feb. 15, 1985, Ser. No. 702,374

Int. Cl.⁴ A22B *3/02*

U.S. Cl. 17—1 B **7 Claims**



1. In a stunner having a housing, a stunning element, means shiftably mounting said stunning element within said housing, said mounting means including fluid pressure operable means for projecting the end of said element from said housing for stunning an animal in response to a change in applied fluid pressure, and fluid pressure actuating means operably coupled to said projecting means, said actuating means comprising:

trigger means connected to said housing for manual shifting from an inoperative position to an operative position;

a first valve operably connected to trigger means for movement from a closed position to an open position as said trigger means is shifted from an inoperative position to an operative position;

an animal contact responsive member carried by said housing and shiftable from an inoperative position to an operative position in response to cooperative engagement with an animal to be stunned;

a second valve operably connected with said contact member for movement from a closed position to an open position as said contact member is shifted from an inoperative position to an operative position;

exhaust means operably coupling said second valve with the atmosphere; and

fluid conduit means operably coupling said first valve and said second valve to said projecting means,

said fluid conduit means also being adapted to be pressurized with air when said second valve is closed,

said projecting means being operable to project said stunning element only in response to shifting both of said trigger means and said contact member to an operative position wherein both said first valve and said second valve are open such that pressurized air within said fluid conduit is exhausted.

4,575,901

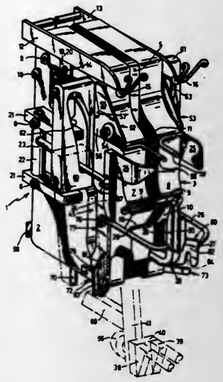
POULTRY HOLDING MECHANISM WITH IMPROVED WING HOOKS

Hershey Lerner, Aurora, Ohio, assignor to Automated Packaging Systems, Inc., Twinsburg, Ohio

Filed Jan. 20, 1984, Ser. No. 572,455

Int. Cl.⁴ A22C *21/00*

U.S. Cl. 17—11 **8 Claims**



1. A mechanism for holding slaughtered birds in a poultry cutting machine, comprising,

a support member having a support face which engages and supports a bird while the bird is being cut into pieces,

means for holding the bird at a position where it lies against said support member,

wing hook means comprising a pair of stationary wing hooks and a pair of movable wing hooks, each of said movable wing hooks being supported for movement from an open position spaced from a stationary wing hook to a closed position at which a wing of a bird is held between a movable wing hook and a stantionary wing hook, and

means for moving the movable wing hooks between their open and closed positions.

4,575,902

DEPILATING APPLIANCE

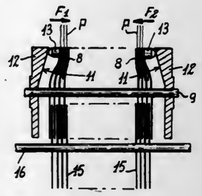
Jean Alazet, Perpignan, France, assignor to Francis Cardus, Paris, France, a part interest

Filed Dec. 12, 1984, Ser. No. 684,360

Claims priority, application France, Dec. 22, 1983, 83 20539

Int. Cl.⁴ A45D *26/00*

U.S. Cl. 19—2 **10 Claims**



1. A depilating appliance for plucking hairs to be removed by means of moving elements driven by an electric motor housed within a casing which can be held in one hand, wherein said elements for plucking hairs comprise a series of disks placed in adjacent relation with a small clearance between them and forming a roller unit rotatably mounted behind a slot, a grid or the like provided in one end of the casing and wherein

provision is made for means whereby hairs which have engaged between the disks are periodically gripped and clamped against said disks in such a manner as to ensure that said hairs are thus pulled by the disks and plucked-out as a result of rotational displacement of said disks.

4,575,903

DEVICE FOR GUIDING A SLIVER INTO A CAN COILER

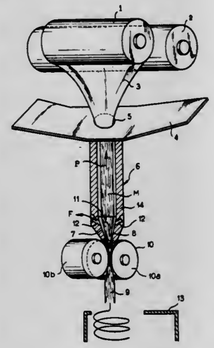
Roger Gauvain, Buhl, France, assignor to Societe Alsacienne de Construction de Material Textile, France

Filed Nov. 17, 1983, Ser. No. 552,978

Claims priority, application France, Dec. 13, 1982, 82 20831

Int. Cl.³ D04H *11/00*; D01H *5/72*

U.S. Cl. 19—159 R **2 Claims**



1. A device located downstream of a high-draft drawing machine and upstream of a can coiler for high-speed transfer of a fiber web which is guided within a guide duct in order to form a sliver which passes at the exit of said duct between takeup rollers of the can coiler, the wall of said guide duct being pierced with at least one air-escape hole which opens to the surrounding atmosphere and makes it possible for the air entrained by the interstices of the fibers to be discharged to the exterior in order to prevent any pressure rise within the guide duct which would otherwise set up an obstacle to the admission of the web of fibers into the entrance of said guide duct, wherein the air-escape hole is inclined from the exterior of the guide duct to the interior in the direction of travel of the sliver.

4,575,904

GUY HOOK

John H. Drewes, Birmingham, Ala., and Richard J. Gemra, Millington, N.J., assignors to Bell Communications Research, Inc., Livingston, N.J.

Filed Nov. 21, 1984, Ser. No. 673,585

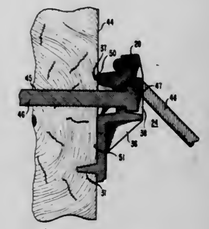
Int. Cl.⁴ F16G *11/00*

U.S. Cl. 24—115 K **1 Claim**

1. A guy hook for attachment to transmission line poles comprising

an integrally connected upper body portion, a central body portion and a lower heel portion, said upper body portion having ears and a neck for engaging a guy cable, said central body portion having a substantially vertical frontward face, an opposite rearward surface for receiving a horizontal through-bolt, said heel portion having a rearward pole-engaging surface shaped to conform with the circumference of a transmission line pole and having a plurality of spurs for engaging the fibers of said pole, and means for minimizing the overturning and downslotting of said hook when said hook is attached to the transmission line pole and the guy wire is engaged around said neck, said means comprising

said rearward pole-engaging surface of said central body portion being concavely curved upward and outward to provide an upper edge to bite onto said pole, said rearward pole-engaging surface of said heel portion being dimensioned to be approximately 50 percent of the total vertical height of said hook, and a countersunk recess



being formed in said frontward face of said central portion around said passageway and dimensioned for receiving and capturing the head of the through-bolt, the bottom countersunk surface of said recess being substantially in the same plane as the vertical line of action of said hook at the point of contact between the guy cable and said neck.

4,575,905

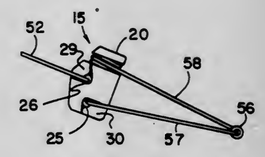
DEVICE OF UNITARY CONSTRUCTION FOR ADJUSTABLY HANGING A PICTURE

Ralph H. Torrey, 3500 Dry Creek Rd., Marietta, Ga. 30062

Filed Nov. 21, 1983, Ser. No. 553,503

Int. Cl.⁴ F16G *11/00*

U.S. Cl. 24—129 R **7 Claims**



1. A device for securing a mechanical wire connection and adjusting the length of said comprising in combination:

a body;

a cleat member, comprising a shank and a head, extending from said body and characterized by a longitudinal cleat axis;

means defining an elongated opening in said body characterized by an opening axis substantially parallel to said cleat axis;

means defining a cleat hole in said head wherein said opening axis passes through said cleat hole and above said shank;

means defining a pair of holes in said body, each of said pair of holes being characterized by a center, wherein a line connecting said center of each of said pair of holes defines a hole axis;

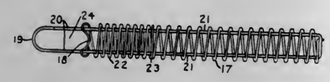
wherein said pair of holes and said cleat member are disposed on said body so that the smaller angle of intersection between said hole axis and a line perpendicular to said cleat axis is greater than 20°.

4,575,906

HOOK FASTENING DEVICE

Walter L. Larson, P.O. Box 18302, Seattle, Wash. 98118

Filed Apr. 10, 1979, Ser. No. 28,850
Int. Cl.[4] A44B *13/02*; A41D *27/22*
U.S. Cl. 24—238 66 Claims



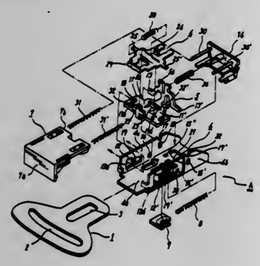
1. A fastening device for fastening a hook to a generally linear member comprising an effectively closed generally loop shaped clip in which the effective length of the loop portion of the clip is extensible and which is so constructed and arranged that it is adapted to occupy a position with respect to the hook and the linear member, when the hook is hooked to the linear member, such that the clip generally contacts the outside surface of the hook at two points, one generally on each side of the position occupied by the linear member, and the loop lies between said two points on a path which generally passes on the side of the linear member which is opposite to the side closest to the inner surface of the hook.

4,575,907

LATCH BUCKLE FOR SEAT BELT

Juichiro Takada, 12-1, 3 chome, Shinmachi, Setagaya-ku, Tokyo, Japan

Filed Sep. 7, 1984, Ser. No. 648,656
Claims priority, application Japan, Sep. 12, 1983, 58-140297[U]
Int. Cl.[4] A44B *11/25*
U.S. Cl. 24—641 2 Claims



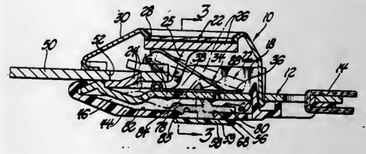
1. A seat belt latch buckle for retaining a buckle tongue in latched position and having a generally U-shaped frame that includes a base and a pair of side walls, a generally L-shaped latch plate pivotably supported in the side walls of the frame by reception of side extensions in generally triangular-shaped holes in the side walls and having a latching portion engageable with the tongue, a spring urging the latch plate to a tongue-latching position, a release member movable parallel to the frame base and engageable with the latch plate to pivot it out of the tongue-latching position to release the tongue, and a tongue ejector member resiliently urged along the frame base to push the released tongue out of the buckle body characterized in that a control member is slidable along the latch plate between a first position in which it engages a portion of the frame and prevents the latch plate from pivoting out of the latching position and a second position free of engagement with the frame to allow pivoting of the latch plate out of the latching position, and in that the release member has a portion engageable with a portion of the control member upon partial movement of the release member toward engagement with the latch plate to move the control member to the second position before moving the latch member to release the tongue.

4,575,908

LOCK FOR SEAT BELT BUCKLE

Lawrence A. Gloomis, Sterling Heights, and Wendy M. Schoof, Utica, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jul. 5, 1985, Ser. No. 751,893
Int. Cl.[4] A44B *11/26*
U.S. Cl. 24—650 3 Claims



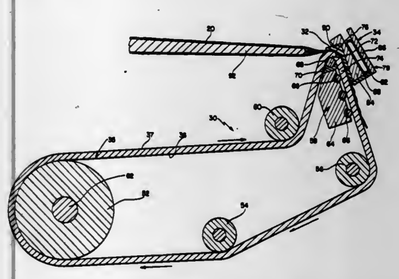
1. A seat belt buckle comprising:
a body;
a latch lever movably mounted on the body and having a locking tang and a pushbutton;
spring means acting between the body and the latch lever to normally establish the latch lever at a position establishing the locking tang in locking engagement with the latch plate, said spring being yieldable to permit the occupant to move the latch lever to an unlatching position by depressing the pushbutton; and
a locking member movably mounted on the body for occupant movement between locking and unlocking positions, said locking member having a locking abutment carried thereby adapted to block the latch lever against movement to the latch plate releasing position when the locking member is moved to its locking position and said locking member being withdrawn away from blocking the latch lever to permit normal unlatching by depression of the pushbutton whenever the locking member is moved to its unlocking position.

4,575,909

APPARATUS FOR TREATING FABRIC FOR SHRINKAGE

Richard W. O'Brien, North Wilkesboro, and Gwyn D. Rogers, Moravian Falls, both of N.C., assignors to Modern Globe, Inc., North Wilkesboro, N.C.

Filed Mar. 7, 1984, Ser. No. 587,269
Int. Cl.[4] D06C *21/00*
U.S. Cl. 26—18.6 3 Claims



1. An apparatus for treating an elongated fabric strip for shrinkage and the like comprising a continuously advancing resilient belt having inner and outer surfaces, a roller engaging the inner surface of said belt and defining a curved area in the extent thereof, said belt having an area of substantially reduced curvature immediately beyond said curved area and having a thickness which is of significant dimension relative to the radius of said roller so that the linear speed of said outer surface in said curved area is significantly greater than the linear speed of said outer surface in said area of reduced curvature, means supporting the inner surface of said belt in said area of reduced curvature, a compression shoe having a low-friction compression surface thereon, said shoe being configured and dimensioned so that said compression surface is receivable in substantially mating relation with said outer surface of said belt in a compression area which extends from an intermediate point in said curved area to a point in said area of reduced curvature which is spaced from said curved area, means for mounting said shoe so that it is disposed in substantially mating relation to said belt outer surface in said compression area and resiliently biased toward said area of reduced curvature, said mounting means comprising a buffer made of a rubberized material, an inflatable member, a backup plate and a retainer wall, said retainer wall extending angularly from said backup plate toward said area of reduced curvature and cooperating with said backup plate to mount said inflatable member and said buffer so that said inflatable member biases said buffer toward said shoe to thereby bias said shoe toward said area of reduced curvature, and means for continuously longitudinally advancing said strip to said belt and said shoe so that substantially said entire strip is received in pressurized engagement between said belt and said shoe and advanced by said belt to a point in the travel thereof which is beyond said shoe.

3. An apparatus for treating an elongated fabric strip for shrinkage and the like comprising a continuously advancing resilient belt having inner and outer surfaces, a roller engaging the inner surface of said belt and defining a curved area in the extent thereof, said belt having an area of substantially reduced curvature immediately beyond said curved area and having a thickness which is of significant dimension relative to the radius of said roller so that the linear speed of said outer surface in said curved area is significantly greater than the linear speed of said outer surface in said area of reduced curvature, means supporting the inner surface of said belt in said area of reduced curvature, a compression shoe having a low-friction compression surface thereon, said shoe being configured and dimensioned so that said compression surface is receivable in substantially mating relation with said outer surface of said belt in a compression area which extends from an intermediate point in said curved area to a point in said area of reduced curvature which is spaced from said curved area, means for mounting said shoe so that it is disposed in substantially mating relation to said belt outer surface in said compression area and resiliently biased toward said area of reduced curvature and also slightly in the direction of travel of said belt, and means for continuously longitudinally advancing said strip to said belt and said shoe so that substantially said entire strip is received in pressurized engagement between said belt and said shoe and advanced by said belt to a point in the travel thereof which is beyond said shoe, said shoe being made of a material which is slightly deformable and being of a sufficient thickness to permit it to deform slightly in the direction of travel of said strip so that the friction between said shoe and said strip as said strip is passed over said curved area causes said shoe to be deformed slightly and thereby drawn into pressurized mating relation with said strip on said belt in said curved area.

4,575,910

METHOD OF TREATING TRACTION SURFACES

Charles E. Kraus, Austin, Tex., assignor to Excelermatic Inc., Austin, Tex.

Filed Apr. 11, 1985, Ser. No. 721,992
Int. Cl.[4] B21H *1/14*
U.S. Cl. 29—148.4 D 2 Claims

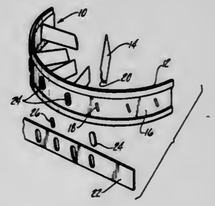
1. A method of treating the traction surfaces of traction roller transmissions having rotatable traction elements, with circular traction surfaces comprising the steps of: supporting the traction elements with their traction surfaces in engagement with one another rotating the traction elements so as to provide traction surface speeds of about 200–750 inch/minute, and applying a load of 3 to 5 times the basic dynamic surface contact design pressure to the traction elements whereby, at surface asperities the surface pressure is amplified and exceeds the yield strength of the traction element surface material, such that the asperities are forced into the traction surfaces and eliminated while any minute surface depressions remain.

4,575,911

METHOD AND APPARATUS FOR CONSTRUCTING TURBINE COMPONENTS

Oliver J. Laszlo, Dearborn, Mich., assignor to Abdite Industries, Inc., Dearborn, Mich.

Filed Feb. 8, 1985, Ser. No. 699,706
Int. Cl.[4] B21K *3/04*; B23P *15/02, 19/02, 19/08*
U.S. Cl. 29—156.8 B 4 Claims



1. A method of assembling a turbine blade or the like to a metallic mounting element wherein the blade includes an end tang and the mounting element has a slot-like aperture to receive the end tang therethrough and the end tang is of sufficient depth to project fully through and beyond the mounting element, said method comprising the steps of:
A. placing a strip of composite material adjacent a surface of the mounting element opposite the turbine blade and overlying the aperture;
B. separating out of said strip a section of material larger than the aperture; and
C. driving the tang through the separated section while urging the section into abutting contact with said mounting element surface.

4. Apparatus for assembling turbine blades and mounting bands wherein said blades are of the type having a body and an end tang and said mounting bands are of the type having spaced slots for receiving said end tangs, the apparatus comprising:
means defining a seat for a blade and for receiving said band in an assembly position with said end tang extending through a slot;
retainer means for holding stripstock material from which to form washers for surroundingly engaging said end tangs which protrude through said bands;
punch means for separating washers out of said stripstock and driving said washers onto said protruding end tang portions and flush against the surface of said band to mechanically secure said blade to said band.

4,575,912
SPRING STEEL

Carl E. Grip; Bertil J. Hagstad, and Björn H. Andersson, all of Luleå , Sweden, assignors to SSAB Svenskt Stal AB, Stockholm, Sweden

PCT No. PCT/SE83/00310, § 371 Date May 7, 1984, § 102(e) Date May 7, 1984, PCT Pub. No. WO84/00981, PCT Pub. Date Mar. 15, 1984
PCT Filed Sep. 5, 1983, Ser. No. 610,289
Int. Cl.⁴ B23P *13/00*
U.S. Cl. 29—173 **2 Claims**

1. A method of forming a spring made of a self-tempering, low carbon steel, said method comprising the sequential steps of

(1) providing in a ladle a steel melt which contains, by weight, 0.20–0.40% carbon, 0.20–0.35% silicon, 1.0–1.3% manganese, up to 0.040% sulfur, up to 0.040% phosphorus, up to 0.60% chromium, up to 20 ppm nitrogen, and oxygen,

(2) vacuum treating said steel melt,

(3) adding an amount of aluminum to said steel melt such that the non-combined oxygen therein is reduced to between 15–20 ppm,

(4) adding an amount of titanium to said steel melt such that said steel melt contains 0.020–0.045% by weight titanium, the amount of added titanium being controlled such that the product of the titanium content in the steel melt and the nitrogen content in percent by weight does not exceed 0.0004%,

(5) adding an amount of boron to said steel melt such that said steel melt contains 0.020–0.004% by weight boron,

(6) continuously casting said steel melt in the absence of air to form cast steel,

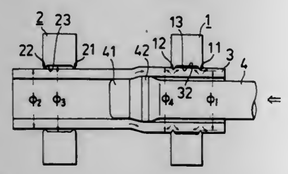
(7) hot rolling said cast steel such that its total cross sectional reduction is not less than 22:1 to form hot rolled steel, and

(8) machining said hot rolled steel into a spring without tempering.

4,575,913
METHOD OF JOINING TUBULAR MEMBER AND ANNULAR PARTS

Toshiyasu Sugiuchi, Tokyo; Susumu Aoyama, Misato, and Toshio Yoshida, Tokyo, all of Japan, assignors to Riken Corporation, Tokyo, Japan

Filed Jul. 18, 1983, Ser. No. 514,474
Claims priority, application Japan, Jul. 19, 1982, 57-125330
Int. Cl.⁴ B23P *11/00*
U.S. Cl. 29—432 **2 Claims**

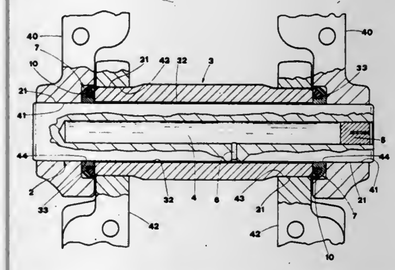


1. A method of joining metallic annular parts to the outer periphery of a separately made metallic tubular member which comprises passing the tubular member through the annular parts each of which has two spaced annular serrated engagement portions around its inner periphery, positioning said tubular member as required in relation to said annular parts, and then expanding said tubular member internally by forcing thereinto a pressing member having a diameter larger than the inner diameter of said tubular member in such a manner that substantially no pressure is exerted on a cylindrical surface between two spaced annular serrated portions on the inner periphery of each of said annular parts while imparting a shearing force and a clamping force to the outer wall of said tubular member to obtain a plastically deformed joint between said tubular member and said annular parts.

4,575,914
ASSEMBLY-PROCEDURE AND RELATIVE HINGE-ASSEMBLY FOR USE WITH LUBRICATED-TYPE CRAWLER TRACKS

Gennaro Armida, Milan; Decio Sacco, Naples, and Walter Grilli, Castelnuovo Rangone, all of Italy, assignors to Italtractor I.T.M. S.p.A., Castelvetro, Italy

Filed Jul. 5, 1983, Ser. No. 510,665
Claims priority, application Italy, Aug. 5, 1982, 40081 A/82
Int. Cl.⁴ B23P *11/00*; F16J *15/16*; B62D *55/08*; F16C *17/04*
U.S. Cl. 29—434 **7 Claims**



1. Hinge-assembly for uniting the links of lubricated crawler tracks, characterized in that it comprises:

a hinge-pin (2), having a smooth cylindrical surface (22), whose two ends (21) are designed for force-fitting into the holes (41) offered by outer respective link bosses;

a sleeve (3) disposed coaxially with and about the central section of said pin (2) and provided with a smooth inner cylindrical surface (32), able thus to rotate with respect to the cylindrical surface (22) of said pin; the breasted surfaces of said pin (2) and said sleeve (3) lubricated by oil from a reservoir located permanently in said hinge-assembly; the two ends (31) of said sleeve (3) designed for force-fitting into the holes (43) offered by inner respective link bosses;

two thrust-rings (7), each of which provided with a smooth inner cylindrical surface (8) and associated coaxially and as one by the latter (8) with surface (22) aforesaid of said pin (2) adjacent to the butt-ends (33) offered by said sleeve (3); each ring (7) furnished with an annular protrusion such as creates a housing directed toward said butt-end (33) of said sleeve (3) and designed to accommodate sealing-means (10); the pairing between ring (7) and pin (2) being such as to prevent the egress of lubricant by way of their respective mating surfaces (8) and (22); the outer link bosses aforesaid each provided with an annular recess designed to receive said thrust-ring (7) whilst making no contact therewith;

sealing-means (10) located coaxially about said hinge-pin (2) and accommodated within the housings created by said annular protrusions/thrust-rings (7), for the purpose of retaining lubricant at the butt-ends (33) of said sleeve (3); the pairing aforementioned between ring (7) and pin (2) also being such as to compress said sealing means (10) to a sufficient degree of pre-loading against the butt-ends (33) of said sleeve (3), thereby checking any egress of lubricant.

2. Method for assembling lubricated crawler track links utilizing the hinge-assembly as claimed in claim 1, comprising, in sequence, the steps of:

a providing said hinge-assembly, including said pin (2), said sleeve (3), said two thrust-rings (7), and said sealing-means (10):

b filling the hinge-pin reservoir with lubricant;

c pausing a sufficient duration to check for oil-leaks from the assembled and lubricated hinge;

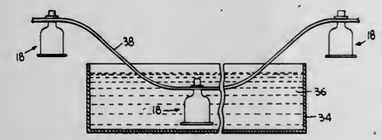
d force-fitting the two inner link bosses to the ends (31) of said sleeve (3), by exerting said force from the outsides of said hinge-assembly in a direction toward the centre of same parallel with the pin-axis;

e force-fitting the two outer link bosses to the ends (21) of said pin (2), by exerting said force likewise from the outsides of said hinge-assembly in a direction toward the center of same, parallel with the pin-axis.

4,575,915
METHOD OF FORMING A COMPOSITE CONTAINER

Richard E. Clark; Louis D. Tacito, both of Merrimack; Bryan H. Miller, Nashua, and Martin H. Beck, Brookline, all of N.H., assignors to Continental Packaging Company, Inc., Stamford, Conn.

Filed Sep. 6, 1983, Ser. No. 529,810
Int. Cl.⁴ B21D *39/00*; B29C *49/24*
U.S. Cl. 29—509 **5 Claims**



1. A method of forming a blow molded container of a biaxially orientable resin having a stable base and having an internal barrier coating; said method comprising the steps of blow molding a bottle-like container having an upper end portion including a neck finish for receiving a closure, an intermediate body, and a lower portion including an annular flange at a lower end of said body; severing all of said lower portion, with the exception of said annular flange, from said body to define an open lower end; applying an internal barrier coating to the thus formed container through the body open lower end in a dip coating operation by supporting the container by its neck finish and moving the container down into and then out of a bath of coating liquid; and then applying a separate bottom to said body utilizing said annular flange as a seaming flange to close the body open lower end.

4,575,916
METHOD FOR PREPARING A SEAT BELT BUCKLE MECHANISM

Katsumi Naitoh, Kanagawa, and Tadaaki Shimamura, Saitama, both of Japan, assignors to NSK Warner K.K., Japan

Division of Ser. No. 406,451, Aug. 9, 1982, abandoned. This application Feb. 15, 1985, Ser. No. 710,658
Claims priority, application Japan, Aug. 22, 1981, 56-124433[U]
Int. Cl.⁴ B21D *39/00*; B23P *11/00*
U.S. Cl. 29—517 **5 Claims**

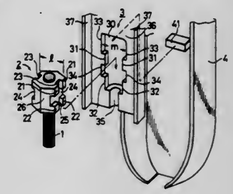
1. A method for preparing a buckle mechanism comprising;

forming a circumferential cut-out on a cylindrical tubular metal member;

compressing said tubular metal member on the end of a flexible cable;

forming a flattened longitudinal groove on opposite external sides of the metal member by pressing the metal member on both sides;

inserting said compressed metal member into a hole provided in a buckle base and having a projection corresponding to the longitudinal groove such that the flattened portion receives the projection; and



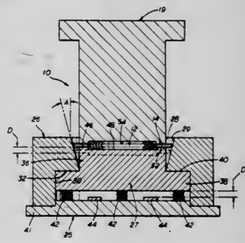


engaging the longitudinal groove of the metal member with the projection of the hole on the buckle base by applying pull to said connector.

4,575,917
METHOD AND APPARATUS FOR ASSEMBLING SPIRAL WOUND GASKET RINGS INTO GAUGE RINGS

Kenneth W. Kana; Willie H. Kana, and Francis L. Seidel, all of Houston, Tex., assignors to Fluorocarbon/Sepco, Houston, Tex.

Filed Feb. 28, 1985, Ser. No. 706,954
Int. Cl.⁴ B21D *39/00*; B23P *11/00*; B23Q *1/00, 3/00*
U.S. Cl. 29—520 **6 Claims**



1. A method of assembling a spiral wound gasket ring of the type embodying a metal strip having a radially projecting outer circumferential bead into a mating annular groove along the inner periphery of an outer gauge ring comprising:

positioning the outer gauge ring and inner spiral wound gasket ring within a tapered opening of a supporting base so that the outer periphery of said gauge ring is in engagement with the adjacent tapered surface defining the tapered opening and the inner periphery thereof is in opposed relation to the bead of said gasket ring while supported on a movable support member extending upwardly within said tapered opening beneath the gauge ring; and

then applying a downward force on said gauge ring to move said gauge ring downwardly along said tapered surface and to move said movable support member downwardly simultaneously whereby the inner periphery of said gauge ring is deformed radially inwardly so that the bead of said spiral wound gasket ring is received within said annular

groove for retaining the gasket ring within the gauge ring in assembled relation.

3. Apparatus for assembling a spiral wound gasket ring having a radially projecting outer circumferential bead thereon into a mating annular groove along the inner periphery of a concentric outer gauge ring comprising:

a support having a frusto-conical opening therein adapted to receive the concentric gasket and gauge rings therein with the frusto-conical surface defining said opening engaging the outer periphery of said gauge ring;

a support member projecting upwardly within said frusto-conical opening adapted to support the gauge ring thereon,

means mounting said support member for vertical movement relative to said support; and

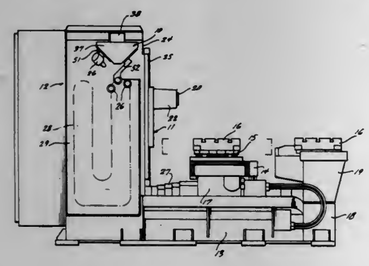
a mandrel mounted for movement downwardly within said frusto-conical opening and adapted to engage said gauge ring and press the gauge ring downwardly along the frusto-conical surface of said opening for deforming said gauge ring radially inwardly thereby to move said groove on said gauge ring radially inwardly to receive the bead on said gasket ring for retaining the gasket ring in assembled concentric relation with said gauge ring.

4,575,918

TOOL CHANGE MECHANISM

Clyde E. Mattson, Waukesha, Wis., assignor to Kearney & Trecker Corporation, West Allis, Wis.

Filed Jun. 29, 1984, Ser. No. 626,225
Int. Cl.[4] B23Q *3/157*
U.S. Cl. 29—568 **20 Claims**



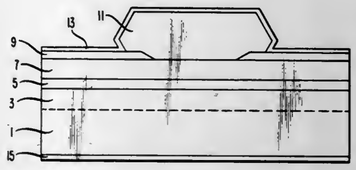
1. In a tool changing mechanism for exchanging the cutting tools in the work station of a machine tool; a frame supporting said work station; a tool ready storage magazine mounted on said frame and carrying a plurality of tools for use in the work station; a tool ready station in said magazine for receiving a selected tool to be transferred to the work station and for receiving the previously used tool transferred from the work station for storage; a tool change mechanism boby; means supporting said body for movement relative to said frame between said tool ready station and said work station; the improvement comprising a pair of tool change arms supported by said body for both pivotal and bodily movement; a grip mounted on each of said arms for securing the tools to be transferred; means disposed in said body for pivoting both of said arms simultaneously about their separate pivot points while at the same time moving the pivot points of both of said arms in a predetermined path of travel for moving one of said grips in a single continuous arcuate path of travel that extracts a previously used tool from the work station and then shifts it away from the work station while at the same time moving the second grip that is carrying a new tool in a second single continuous arcuate path of travel that moves the new tool toward the work station and then loads it into the work station.

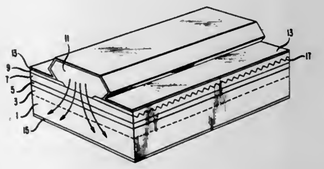
4,575,919

METHOD OF MAKING HETEROEPITAXIAL RIDGE OVERGROWN LASER

Ralph A. Logan, Morristown, and Won-Tien Tsang, New Providence, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed May 24, 1984, Ser. No. 613,468
Int. Cl.[4] G02B *6/10*; H01S *3/19*; H01L *29/205*
U.S. Cl. 29—569 L **13 Claims**





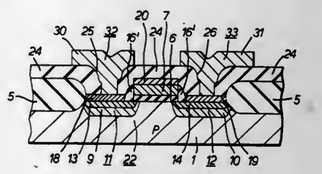
1. A method of making a laser comprising the steps of growing, on a substrate, a first cladding layer having a first conductivity type, an active layer, a second cladding layer having a second conductivity type, forming a dielectric layer with a stripe opening exposing said second cladding layer, growing a ridge in said opening, and metallizing said dielectric layer and ridge and said substrate.

4,575,920

METHOD OF MANUFACTURING AN INSULATED-GATE FIELD-EFFECT TRANSISTOR

Yoshitaka Tsunashima, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Japan

Filed May 2, 1984, Ser. No. 606,403
Claims priority, application Japan, Sep. 28, 1983, 58-179551
Int. Cl.[4] H01L *21/425*
U.S. Cl. 29—571 **14 Claims**



1. A method of manufacturing an insulated-gate field-effect transistor on a silicon substrate of a first conductivity type comprising the steps of:

(a) forming an insulating layer around a predetermined surface portion of said substrate;

(b) forming a gate insulating film and a gate electrode on a portion of said predetermined surface portion, said gate electrode being formed on said gate insulating film;

(c) implanting impurity ions into said predetermined surface portion between said insulating layer and said gate electrode to form source and drain regions of a second conductivity type having a low impurity concentration, said source and drain regions being spaced apart;

(d) heating said substrate at a first temperature in the range of 900° to 1300° C.;

(e) implanting ions of said second conductivity type into said source and drain regions;

(f) heating said substrate at a second temperature at or below 700° C.; and

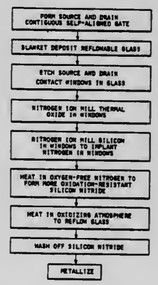
(g) forming metal electrodes in ohmic contact with said source and drain regions, respectively.

4,575,921

SILICON NITRIDE FORMATION AND USE IN SELF-ALIGNED SEMICONDUCTOR DEVICE MANUFACTURING METHOD

Jayant K. Bhagat, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 548,712, Nov. 4, 1983, Pat. No. 4,528,211.
This application Oct. 1, 1984, Ser. No. 656,182
Int. Cl.[4] H01L *21/265*
U.S. Cl. 29—571 **4 Claims**



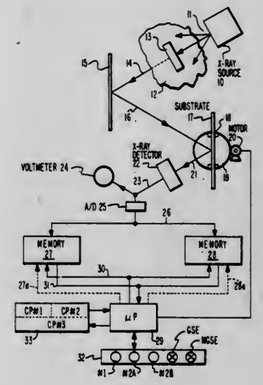
1. A method of making a self-aligned gate and self-aligned contact on an insulated gate field effect transistor in a silicon surface that provides reflow of an overlying glass coating before formation of source and drain regions, the method comprising the steps of successively forming blanket coatings of gate oxide, polycrystalline silicon, and phosphorus doped glass on a silicon surface, masking the glass coating to provide two adjacent window areas on opposite sides of a gate electrode area, where source and drain regions are to be respectively formed, etching the glass and polycrystalline silicon coatings to expose gate oxide within the windows, nitrogen ion milling the gate oxide within each window to expose its underlying silicon surface, continuing to nitrogen ion mill the silicon surface for at least about 30 seconds so as to form a continuous surface region of implanted nitrogen to a depth of about 100–120 angstroms, converting the implanted nitrogen layer into more oxidation-resistant silicon nitride coating by heating the silicon surface in an atmosphere consisting essentially of nitrogen, thereafter heating the silicon surface in wet oxygen for a sufficient duration to reflow the glass layer and oxidize edges of the polycrystalline silicon layer exposed at window edges, implanting an n-type impurity in the silicon surface within the windows beneath the silicon nitride coating, masking and etching the glass layer to form a gate electrode contact window on the polycrystalline silicon coating, preferentially etching the silicon nitride coating within the windows to expose the underlying silicon again, forming a source electrode in contact with the silicon exposed in one window, forming a drain electrode in contact with the silicon exposed within the other window, and forming a gate electrode contacting polycrystalline silicon exposed within the gate electrode contact window.

4,575,922

METHOD OF FABRICATING INTEGRATED CIRCUITS INCORPORATING STEPS TO DETECT PRESENCE OF GETTERING SITES

Michael H. Nemiroff, Del Mar, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Nov. 5, 1984, Ser. No. 668,512
Int. Cl.[4] H01L *21/265*; B01J *17/00*
U.S. Cl. 29—574 **12 Claims**



1. For use in fabricating integrated circuits on a semiconductor substrate, a method including the steps of:

directing electromagnetic radiation onto said semiconductor substrate at a small angular offset from the substrate's Bragg angle;

measuring the intensity of the radiation that is reflected from said semiconductor substrate at said offset; and

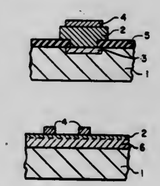
fabricating said circuits on said semiconductor substrate only if the measured intensity is substantially larger than the intensity which would reflect at said angular offset from a defect-free crystal of said semiconductor substrate.

4,575,923

METHOD OF MANUFACTURING A HIGH RESISTANCE LAYER HAVING A LOW TEMPERATURE COEFFICIENT OF RESISTANCE AND SEMICONDUCTOR DEVICE HAVING SUCH HIGH RESISTANCE LAYER

Emil Arnold, Chappaqua, N.Y., assignor to North American Philips Corporation, New York, N.Y.

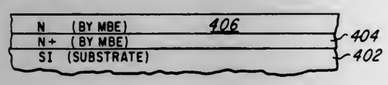
Filed Apr. 6, 1983, Ser. No. 482,671
Int. Cl.[4] H01L *21/263, 7/00, 21/26*
U.S. Cl. 29—576 B **11 Claims**

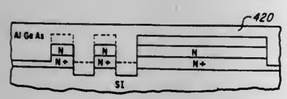


1. Method of manufacturing a solid state device having a high resistivity film with a low temperature coefficient of resistance comprising the steps of

forming a thin semi-insulating film, said film consisting of small silicon crystallites embedded in a silicon dioxide matrix,
carrying out ion implantation of said film by one of arsenic or phosphorus ions to produce a resistive layer having a low temperature coefficient of resistance,
forming electrode regions with respect to said film, and
annealing said film at approximately 900° C.

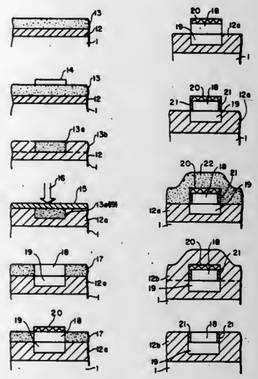
4,575,924
PROCESS FOR FABRICATING QUANTUM-WELL DEVICES UTILIZING ETCH AND REFILL TECHNIQUES
Mark A. Reed, Dallas, and Robert T. Bate, Garland, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Jul. 2, 1984, Ser. No. 626,809
Int. Cl.⁴ H01L *21/203, 21/302, 29/161*
U.S. Cl. 29—576 E **20 Claims**





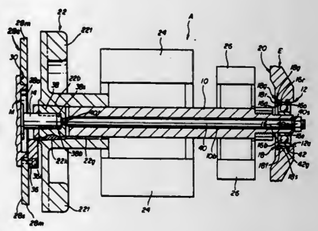
1. A process for fabricating quantum-well devices, comprising the steps of:
providing a substrate;
providing first and second epitaxial layers of a first semiconductor material on said substrate;
said first layer being doped to a concentration of at least 1E17 per cubic centimeter and being at least 200 nm thick,
and said second layer comprising a dopant concentration no greater than 5E16 per cubic centimeter and a thickness less than 300 Angstroms;
anisotropically etching trenches in a first pattern through said second layer but not entirely through said first layer;
epitaxially growing a second semiconductor material, which has a wider bandgap than said first semiconductor material and is approximately lattice-matched to said first semiconductor material, to substantially fill said trenches;
anisotropically etching trenches in a second pattern through both said first layer and said second layer into said substrate;
epitaxially growing said second semiconductor material, to substantially fill said second trenches; and
forming metallization to configure a desired circuit function;
wherein said first and second patterned trench etches jointly define a plurality of quantum wells within isolated portions of said second layer,
and wherein said second trench etch defines interconnections of said quantum wells within said first layer.

4,575,925
METHOD FOR FABRICATING A SOI TYPE SEMICONDUCTOR DEVICE
Kazuhiro Kanbara, Kawasaki, and Osamu Hatashi, Yokohama, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed Nov. 28, 1984, Ser. No. 675,613
Claims priority, application Japan, Nov. 30, 1983, 58-225654; Nov. 30, 1983, 58-225657
Int. Cl.⁴ H01L *21/324, 21/36*
U.S. Cl. 29—576 W **28 Claims**



1. A method for fabricating a SOI (Semiconductor on Insulator) type semiconductor device, comprising the steps of:
(a) forming a single crystalline island on an insulating layer formed on a substrate, the single crystalline island having one conductivity type;
(b) forming an epitaxial layer on the single crystalline island;
(c) forming a tentatively-exposed side surface of the epitaxial layer; and
(d) forming a conduction path at the exposed side surface, the conduction path extending from the upper surface of the epitaxial layer to the single crystalline island thereunder.

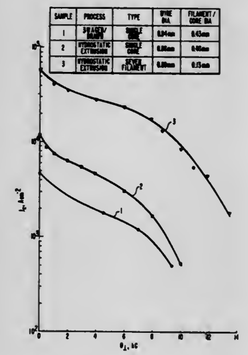
4,575,926
ELECTRIC GENERATOR WITH RAPID REPLACEABLE MOTOR AND METHOD OF MANUFACTURING SAME
Robert R. McMinn, Crosby, Tex., assignor to Harrison Equipment Co., Inc., Houston, Tex.
Division of Ser. No. 471,700, Mar. 3, 1983, Pat. No. 4,501,982.
This application Jan. 19, 1984, Ser. No. 571,937
Int. Cl.⁴ H02K *15/02, 15/10*
U.S. Cl. 29—598 **2 Claims**



1. A method for manufacturing an electrical generator with a rapidly replaceable motor of the type which comprises a housing with an end bell portion, a generator shaft rotatable within the housing, an armature connected to a shaft within the interior of the housing, an opening formed in the end bell of the housing opposite a motor with a rotating motor shaft for rotating the generator shaft, a bearing assembly frictionally mounted within the opening rotatably supporting one end of the generator shaft opposite the motor, the invention comprising the steps of:
said opening forming with an inner, annular surface and forming an annular shoulder in said inner annular surface of said opening, said shoulder comprising a first side parallel to the longitudinal axis of the generator shaft and a second side perpendicular to said first side, said second side extending between said first side and said inner annular surface of said opening;
forming an annular outer groove in said first side of said annular shoulder for mounting a removable outer retaining ring to restrict the bearing assembly against undesired longitudinal movement inward of the housing;
forming an annular inner groove in the outer surface of the bearing assembly adjacent the opening for mounting a removable inner retaining ring to restrict the bearing assembly against undesired longitudinal movement outward of the housing and locking the bearing assembly in the opening;
mounting a removable inner retaining ring onto the bearing assembly;
inserting the bearing assembly into the opening to engage said inner retaining ring with said inner annular surface of said opening such that said inner retaining ring engages said second wall of said annular shoulder; and
mounting an outer retainer ring in said first groove in said first side of said annular shoulder whereby said bearing assembly is restricted against movement longitudinal in a direction inwardly or outwardly of said housing.

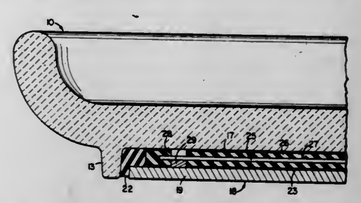
4,575,927
SUBMICRON-PARTICLE DUCTILE SUPERCONDUCTOR
Aleksander I. Braginski, Pittsburgh, and Alan T. Male, Murrysville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Division of Ser. No. 293,537, Aug. 17, 1981, Pat. No. 4,411,959.
This application Jul. 29, 1983, Ser. No. 518,597
Int. Cl.⁴ H01L *39/12, 39/24*
U.S. Cl. 29—599 **11 Claims**

SAMPLE	PROCESS	TYPE	WIRE DIA.	FILAMENT / CORE DIA.
1	[illegible]	[illegible]	0.24mm	0.43mm
2	[illegible]	[illegible]	0.08mm	0.46mm
3	[illegible]	[illegible]	0.08mm	0.15mm



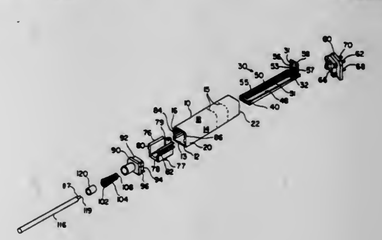
1. A method of making a ductile superconducting composite wire from a brittle superconducting compound, said method comprising:
a. encapsulating a submicron-particle superconducting powder is a ductile conducting metal tube; and
b. fabricating a wire from said tube without sintering or reaction annealing said fabricated wire, whereby the superconducting material in the fabricated wire remain as submicron particles.

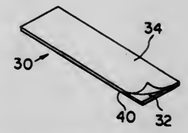
4,575,928
SERVING DISH WITH HEATING MEANS
Roger A. Starnes, 10230 Belladrum Dr., Alpharetta, Ga. 30201
Division of Ser. No. 512,550, Jul. 11, 1983, Pat. No. 4,493,978.
This application Aug. 29, 1984, Ser. No. 645,228
Int. Cl.⁴ H05B *3/00*
U.S. Cl. 29—611 **6 Claims**



1. A method for constructing a serving dish with heating means, including the steps of providing an electrical heating element comprising a resistance means laminated in heat conductive and electrical insulative means with holes in said heat conductive and electrical insulative means for electrical connection to said resistance means, placing a quantity of solder within said holes, placing said heating element on the bottom surface of said serving dish, placing a bottom plate over said heating element for covering said heating element, and applying heat to said bottom plate for fusing said solder to said bottom plate and resistance means so that said bottom plate is electrically connected to said resistance means.

4,575,929
METHOD FOR MAKING A PRECISION LINEAR POTENTIOMETER SENSOR
William F. Bleeke, North Webster, Ind., assignor to CTS Corporation, Elkhart, Ind.
Division of Ser. No. 444,181, Nov. 24, 1982, Pat. No. 4,479,107.
This application Jan. 25, 1984, Ser. No. 573,690
Int. Cl.⁴ H01C *17/06*
U.S. Cl. 29—620 **10 Claims**





1. A process for producing a linear potentiometer comprising the steps of (1) forming a uniform coating of resistance material over the surface of a flexible electrically inert sub-

strate, (2) performing in any order the following steps (a) and (b): (a) sculpting the uniform coating to produce electrical elements such as a collector element and a resistor element, each element isolated by the substrate, and (b) disposing conductive paths on said material, (3) inserting the substrate into a housing, (4) mounting for slideable movement within said housing slider means having contactor means in slideable engagement with certain ones of said elements, (5) and providing a means to transduce linear movement of the slider means to a variable voltage output related to the change of position of said slider means relative to the resistor element.

4,575,930

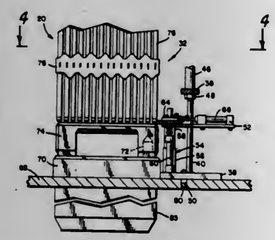
NUCLEAR REACTOR FUEL ASSEMBLY PERIPHERAL ROD LIFTING DEVICE

Jack L. Blickenderfer, Forest Hills Borough, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 21, 1983, Ser. No. 564,054

Int. Cl.⁴ B23P *19/00*

U.S. Cl. 29—723 **10 Claims**



1. Apparatus for lifting a fuel rod in a fuel assembly, comprising:

means for supporting the fuel assembly in a predetermined position;

a frame adapted for movement relative to said fuel assembly support means;

locating pins secured to said frame for registry with index holes in said fuel assembly support means for effecting adjustable predetermined alignment between said frame and the fuel rods in said fuel assembly;

a plate supported on said frame for generally longitudinal movement relative to said fuel assembly

a yoke supported on said plate for generally lateral movement relative to said fuel assembly, one end of said yoke being adapted to engage a fuel rod;

a first cylinder coupled between said plate and yoke for effecting selective lateral movement thereof between an extended position in engagement with a fuel rod, and a retracted position out of engagement with a fuel rod; and

a second cylinder coupled between said plate and frame for effecting selective longitudinal movement thereof between extended and retracted positions to lift a fuel rod as desired.

4,575,931

DEVICE FOR AUTOMATICALLY CONNECTING ELECTRIC CONDUCTORS ON A REGROUPING MEMBER

Henri V. J. Jonca, Toulouse, France, assignor to Societe Nationale Industrielle Aerospatialle, Paris, France

Filed Mar. 15, 1984, Ser. No. 589,736

Claims priority, application France, Mar. 16, 1983, 83 04323

Int. Cl.⁴ B23P *19/00*

U.S. Cl. 29—747 **8 Claims**

1. A device for automatically inserting electric conductors into a regrouping member having a plurality of connection sites disposed in a prearranged pattern, said device comprising:

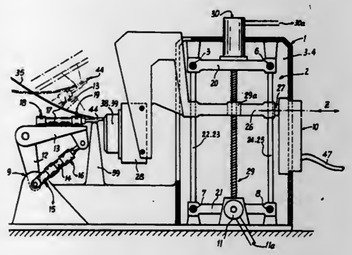
a frame;

a tool fixed to said frame for connecting an end of one of said conductors to a preselected connection site on a regrouping member;

a carriage mounted in said frame for reciprocating movement and movement perpendicular to said reciprocating movement;

an addressing pattern fixed to said frame comprising a plurality of individually controllable activation members each of which corresponds to a single one of said connection sites, said activation members being arranged in a pattern identical to that of said connection sites;

a sensor sensitive to said activation members, said sensor being mounted in said carriage in proximity to said addressing pattern;



mounting means carried by said carriage and movable therewith for holding a regrouping member in proximity to said tool for connection of a conductor to a selected connection site;

said mounting means and said sensor being so positioned on said carriage that when said sensor is in position to be activated by one of said activation members, said regrouping member is positioned adjacent said tool for insertion of a conductor into the connection site corresponding to said one of said activation members;

displacement means for moving said carriage and said sensor such that said sensor successively scans all of the activation members of the addressing pattern; and

means controlled by said sensor for actuating said tool.

4,575,932

HAND TOOL FOR TERMINATING WIRES IN A CONNECTOR

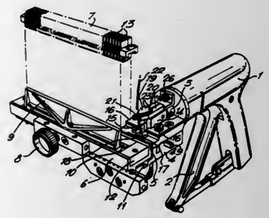
Manfred Joos, Mannheim-Wallstadt, and Werner Maack, Seeheim, both of Fed. Rep. of Germany, assignors to AMP Incorporated, Harrisburg, Pa.

Filed Nov. 25, 1983, Ser. No. 555,092

Claims priority, application United Kingdom, Nov. 27, 1982, 8233876

Int. Cl.⁴ B23P *19/02*

U.S. Cl. 29—751 **6 Claims**



1. A hand tool for terminating wires (22) successively in

respective electrical contacts arranged at intervals (13) in a row in an electrical connector (7), the tool comprising a wire inserting ram (3) movable along a ram path, a frame (4) having a guideway (5) therein for a connector support (6), the guideway extending transversely of the ram path wherein said ram is reciprocable relative to said frame, and connector support indexing means (10, 33, 38) mounted on the frame (4) and operably connected to the ram (3) to index the connector support (7) along the guideway (5) by movement of the ram (3), characterized in that the indexing means comprises: a toothed indexing wheel (33) rotatably mounted in the frame (4) and about an axis extending transversely of the ram path and transversely of the guideway (5), the wheel (33) being engageable with a complementary rack (10), the rack being carried by and extending longitudinally of the connector support (6) so that rotation of the wheel (33) effects movement of the connector support (6); a forked driving member (43) provided for the wheel (33), the driving member (43) being slidably mounted in the frame (4) and having a rear stem portion (46) pivotally coupled to the ram (3) by a lost motion coupling (47, 48), the driving member (43) having two arms (44, 45) extending forwardly from the stem portion (46), one arm being located on each side of the wheel (33) and spaced apart by a distance greater than the wheel (33) diameter, each arm (44, 45) having at its forward end an inwardly directed tooth (54, 55) adapted drivingly to engage the wheel (33) on rearward movement of the driving member (43); a slide member (49) mounted in the frame (4) for sliding movement transversely of the ram path and effective selectively to pivot the driving member (43) about the coupling (47, 48) on sliding movement in opposite directions, in order to engage either arm (44, 45) of the driving member (43) with the wheel (33), and wherein the teeth (54, 55) of the arms (44, 45) are shaped at their forward sides to engage the wheel teeth with a camming action to cam the arms (44, 45) out of engagement with the wheel (33) on forward movement of the driving member.

4,575,933

APPARATUS FOR PLACING OR MOUNTING RING TRAVELERS ON SPINNING OR TWISTING RINGS

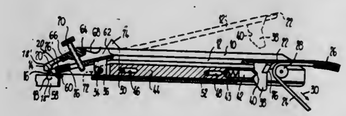
Andreas Neff, Pfäffikon, Switzerland, assignor to Brücker AG, Pfäffikon, Switzerland

Filed Oct. 1, 1984, Ser. No. 656,674

Claims priority, application Switzerland, Oct. 5, 1983, 5421/83

Int. Cl.⁴ B23P *19/04*

U.S. Cl. 29—765 **13 Claims**



1. An apparatus for mounting ring travelers on a spinning or twisting ring, comprising:

a housing structured as a handle and defining at least one open end face;

a magazine bar arranged in said housing and serving to receive a supply of the ring travelers;

said magazine bar defining an end adjacent said at said at least one open end face of said housing;

said end of said magazine bar being tapered and being bent-off in the manner of a hook;

a stop connected to said magazine bar and outwardly displaceable out of a traveling path of said ring travelers;

a separator element comprising a separating edge and serving for forwardly displacing a foremost ring traveler of said supply of ring travelers while overcoming said stop connected to said magazine bar;

said magazine bar and said separator element being displaceable relative to each other at least in lengthwise direction between an inoperative position and an operative position;

said end of said magazine bar, which is bent-off in the manner of a hook, defining a longitudinal side; and

said separator element comprising a clamping jaw which coacts with said longitudinal side of said end of said magazine bar in order to temporarily and fixedly clamp said foremost ring traveler, which is forwardly displaced from said supply of ring travelers, at one curved portion thereof.

4,575,934

METHOD AND SYSTEM FOR AUTOMATICALLY ATTACHING SUB-ASSEMBLY TO MAIN ASSEMBLY USING INDUSTRIAL ROBOTS

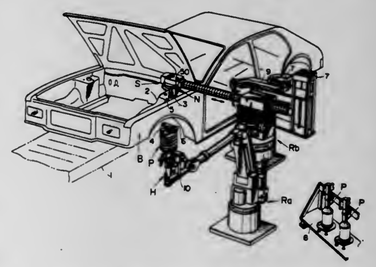
Kengo Kitamura, Koshigaya, and Hitoshi Murata, Zama, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Sep. 21, 1983, Ser. No. 534,241

Claims priority, application Japan, Sep. 22, 1982, 57-163960; Sep. 22, 1982, 57-163961; Sep. 22, 1982, 57-163962; Dec. 29, 1982, 57-230298

Int. Cl.⁴ B23P *21/00*

U.S. Cl. 29—787 **19 Claims**



1. A system for automatically attaching a workpiece to a main workpiece, the main workpiece being transported on a transporting means, comprising:

(a) first means for automatically carrying the workpiece toward a predetermined position of the main workpiece at which the workpiece is to be attached to the main workpiece, the main workpiece being stopped on the transporting means;

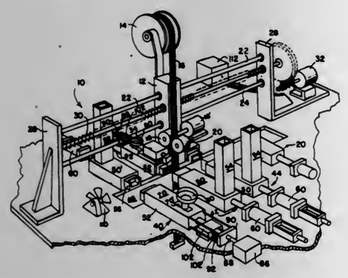
(b) second means for automatically carrying an automatic fastening tool holding fastening means toward the predetermined position of the main workpiece so that the main workpiece is sandwiched between said fastening tool and workpiece;

(c) third means for engaging said second means with said first means so as to position the workpiece with respect to the fastening tool;

(d) fourth means for slidably engaging said second means positioned with respect to the workpiece with the main workpiece so as to position the workpiece and fastening tool with respect to the main workpiece; and

(e) fifth means for actuating said fastening tool positioned with respect to the main workpiece to fasten the workpiece to the predetermined position of the main workpiece with said fastening means.

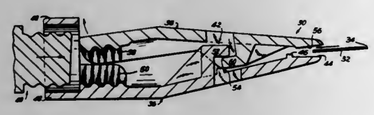
4,575,935
METHOD AND APPARATUS FOR APPLYING A CONNECTOR HAVING AN INJECTION MOLDED COVER TO MULTICONDUCTOR CABLE
Charles E. Shields, 655 Woodland St., Crystal Lake, Ill. 60014
Continuation-in-part of Ser. No. 351,595, Feb. 23, 1982. This application Jun. 20, 1983, Ser. No. 505,915
Int. Cl.⁴ H01R *43/00*; B23P *19/00*
U.S. Cl. 29—858 **71 Claims**



1. A method of attaching at least one connector to a flat multiconductor cable, said method comprising:
staking a first connector half to a portion of a flat multiconductor cable which includes a plurality of spaced conductors covered with insulation such that contact pins of the first connector half contact corresponding conductors of the cable; and
molding an insulating second connector half to the staked first connector half, whereby a complete connector staked to a portion of a flat multiconductor cable is provided.

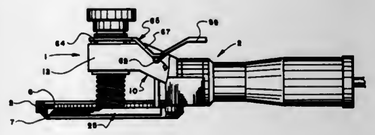
35. An apparatus for attaching connectors to a flat multiconductor cable, the apparatus comprising:
an attaching means for selectively attaching a first connector portion to a flat multiconductor disposed thereadjacent;
a molding means operatively connected with the attaching means for selectively molding a second connector portion attached to the first connector portion and a portion of the flat multiconductor cable disposed thereadjacent; and,
a positioning means operatively connected with attaching means and the molding means for selectively positioning the flat multiconductor cable adjacent the attaching means and the molding means in an operative relationship therewith, whereby a first connector portion is attached to the flat multiconductor cable and a second connector portion is molded to the first connector portion and a cable portion thereadjacent.

4,575,936
BLADE RETAINING TOOL HEAD
Donald Gringer, One Bishop Rd., Bedford, N.Y. 10506
Filed Feb. 6, 1985, Ser. No. 698,780
Int. Cl.⁴ B26B *5/00*
U.S. Cl. 30—169 **20 Claims**



1. A tool head for releasably retaining a blade, comprising:
a body having a first blade receiving lip and first thread means remote from said lip;
a clamping member having a second blade receiving lip and second thread means remote from said second lip;
cooperatively interengaging hinge means on said body and clamping member for enabling connected relative pivotal movement therebetween to carry said first and second lips into and out of relative blade retaining proximity, said hinge means on each of said body and clamping member being disposed intermediate said respective lip and thread means;
a threaded operating member rotatably engageable with said first and second thread means; and
camming means on at least one of said clamping member and operating member and engageable with the other of said clamping member and operating member as the operating member is rotated to a locking position to cause said relative pivotal movement of the clamping member and body about said hinge means thereby carrying said lips into blade retaining proximity for securely clamping a blade between said lips.

4,575,937
DEPTH CONTROL GAUGE FOR MEAT TRIMMING KNIFE
Timothy J. McCullough, 833 Aurora Rd., Vermilion, Ohio 44089
Filed Oct. 22, 1984, Ser. No. 663,499
Int. Cl.⁴ B26B *25/00*
U.S. Cl. 30—276 **20 Claims**

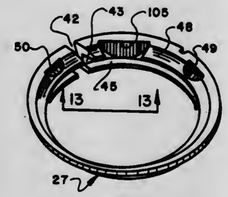


1. An improved depth control gauge for use with a meat trimming knife of the type having a ring-shaped blade holder mounted on the front end of a handpiece with a ring-shaped cutting blade having a central opening being rotatably mounted on the blade holder; said depth control gauge including:
(a) depth control plate means adapted to be disposed within the central opening of the cutting blade for controlling the thickness of a section of meat severed from a larger body of meat passing between the plate means and cutting blade;
(b) mounting means adapted to be attached to the handpiece for movably mounting the plate means on the handpiece for axial movement with respect to the ring-shaped blade opening; and
(c) lever means adapted to be pivotally mounted on the handpiece and operatively engageable with the plate means for manually moving the plate means on the mounting means between a lowered depth control position and a raised non-control position.

4,575,938
MEAT TRIMMING KNIFE
Timothy J. McCullough, 833 Aurora Rd., Vermilion, Ohio 44089
Filed Jul. 12, 1984, Ser. No. 630,005
Int. Cl.⁴ A22C *17/04*; B26B *15/00*
U.S. Cl. 30—276 **22 Claims**

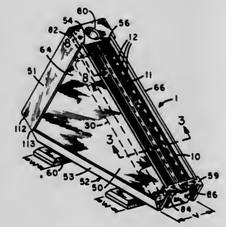
1. An improved meat trimming knife including:
(a) a handle;
(b) a frame secured to the front end of the handle having a central portion and a pair of outwardly extending arms providing a concave front end to the frame, with one of said arms being removably mounted with respect to the other of said arms and central portion of the frame for

movement between a blade securing position and a blade removal position;
(c) a ring-like blade holder mounted on the frame, said holder being split at one location on its circumference located at the concave front end of the frame adjacent the mounting location of the removable arm on the central portion;
(d) a pair of attachment means, each being associated with a respective one of the arms, for attaching the blade holder to a respective one of said arms on opposite sides of the split;



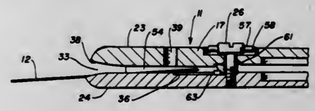
(e) a ring blade rotatably mounted on the blade holder having gear teeth formed circumferentially about one edge,
(f) a power driven gear rotatably mounted within the central portion of the frame for meshing driving engagement with the gear teeth of the ring blade for rotating said ring blade on the blade holder;
(g) said split location being circumferentially spaced from said power driven gear; and
(h) clamping means engageable with the frame and removably mounted arm for securing said removably mounted arm the blade securing position on the frame.

4,575,939
CUTLERY STORAGE APPARATUS
Michael E. Buchtel, 2467 Norse Ave., Costa Mesa, Calif. 92627
Filed Jul. 6, 1984, Ser. No. 628,620
Int. Cl.⁴ A47F *5/16*
U.S. Cl. 30—296 A **9 Claims**



1. An apparatus for holding thin objects comprising:
a filler including a plurality of thin flexible sheets placed in side by side relation;
pressure means applying a force to the outer sheets of said filler, said pressure means producing a compression force between the individual sheets of said filler for gripping thin objects;
a means for causing the sheets of said filler proximate one edge of said filler to flare outward;
a housing shaped to receive said filler, said pressure means applying the compression force independent of said housing; and
a pair of movable rectangular bases on the housing capable of an inward and an outward position, said bases being wider than the thickness of the housing when in an outward position, said bases being thinner than the thickness of said housing when in an inward position.

4,575,940
REPLACEABLE BLADE KNIFE
Michael D. Wenzel, 2251 Clinton Ave., Apt. #E, Alameda, Calif. 94501
Continuation of Ser. No. 172,200, Jul. 25, 1980, abandoned, which is a continuation-in-part of Ser. No. 175, Jan. 2, 1979, abandoned, which is a continuation-in-part of Ser. No. 931,556, Aug. 7, 1978, abandoned. This application Mar. 13, 1985, Ser. No. 711,589
Int. Cl.⁴ B26B *1/00*
U.S. Cl. 30—335 **9 Claims**

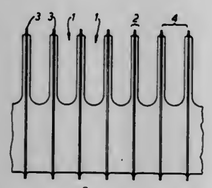


1. A knife blade holder for a thin elongated blade having two sharpened longitudinally extending edges on opposed sides of said blade and an elongated open center portion having its longitudinal axis parallel to said edge, said holder comprising:
a first and a second body section, each having a handle portion and a blade-holding portion with each blade holding portion having a flange;
connecting means for connecting said sections together, said connecting means being located adjacent said blade-holding portions and having a tightened position for clamping said blade between said blade-holding portions and a first loosened position permitting separation while still connected together of said blade holding portions to define a passageway therebetween said passageway having one open end for slidable insertion and withdrawal of said blade into and out of said passageway and with said flanges forming walls which at least partly enclose said passaeway;
said first blade-holding portion having a first ramped end at the opening of said passageway, a lip extending beyond said second blade holding portion and an internal elongated shoulder extending longitudinally in said passageway, said shoulder being ramped to blend smoothly with said first ramped end and dimensioned to engage said blade open center portion and positioned to hold the edges of said blade out of dulling contact with the walls of said passageway during insertion and withdrawal of said blade, said shoulder also formed to hold the edges of said blade out of dulling contact with the walls of said passageway when force is applied to said blade while work is performed with said blade; and
said second blade-holding portion having a second ramped end at the opening of said passageway, a channel for receiving said shoulder when said connecting means is in tightened position and a flat face for frictionally engaging said blade when said connecting means is in said tightened positioned.

4,575,941
DRY SHAVERS
Charles C. Packham, Wokingham, United Kingdom, assignor to The Gillette Company, Boston, Mass.
Continuation of Ser. No. 443,974, Nov. 23, 1982, abandoned. This application Jan. 14, 1985, Ser. No. 691,365
Claims priority, application United Kingdom, Nov. 23, 1981, 8135234; Nov. 23, 1981, 8225907
Int. Cl.⁴ B26B *19/04*
U.S. Cl. 30—346.51 **6 Claims**

1. An inner cutter for a dry shaver, comprising an annular metallic hollow tube having a 360° right-circular cross-section,

a plurality of slots formed transversely at intervals along the length of said tube to provide fluid communication between the exterior of said tube and the hollow interior of said tube to define a series of arcuate bridge members, a plurality of arcuate teeth of lesser axial extent than said bridge members formed on said bridge members by shallow annular grooves formed at finite depth in the external circumference of said tube, said grooves reducing the thickness of said bridge members, each of



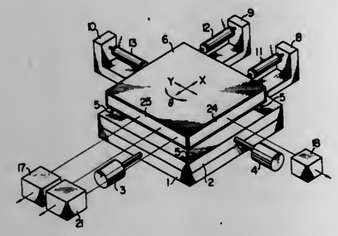
said bridge members having a single tooth formed thereon, the thickness of said bridge members to either side of said tooth being reduced by the depth of said grooves, wherein each of said grooves span a respective slot and an axial margin of the adjacent said bridge member on each side of the said slot, so that each of said arcuate teeth form part of an annular band extending commpletely around said tube between adjacent said grooves.

4,575,942

ULTRA-PRECISION TWO-DIMENSIONAL MOVING APPARATUS

Shigeo Moriyama, Hachioji, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 18, 1983, Ser. No. 542,991
Claims priority, application Japan, Oct. 18, 1982, 57-181338
Int. Cl.⁴ G01B *5/25*
U.S. Cl. 33—1 M **15 Claims**



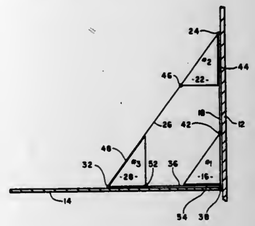
1. An ultra-precision two-dimensional moving apparatus comprising:
- a coarse-moving carriage movable two-dimensionally;
- a coarse drive mechanism for moving said coarse-moving carriage two-dimensionally;
- a fine-moving table adapted to finely move two-dimensionally on said coarse-moving carriage;
- a mechanism for finely-movably holding said fine-moving table on said coarse-moving carriage with a gap therebetween, the gap being filled with a viscous fluid; and
- at least three linear-actuating means interposed between said coarse-moving carriage and said fine-moving table for finely driving said fine-moving table, each of said linear-actuating means being provided with at least one member which is rigid in the direction of the central axis thereof and flexible in a direction tilted with respect to the central axis thereof.

4,575,943

RIGHT ANGLE MEASURING APPARATUS

Fredrick W. Baum, Jr., 1541 Ocean Ave. #308, Santa Monica, Calif. 90401

Filed Mar. 29, 1985, Ser. No. 717,910
Int. Cl.⁴ G01B *3/10*
U.S. Cl. 33—138 **3 Claims**



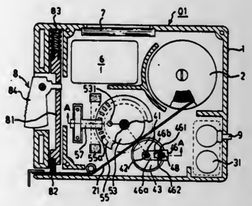
1. An angle measuring apparatus comprising:
- three tape measures each having a housing and a tape extending therefrom;
- the tape of the first of said tape measures being connected to the housing of said second tape measure;
- the tape of said second tape measure being connected to the housing of said third tape measure; and
- the tape of said third tape measure being connected to the housing of said first tape measure;
- said tape measures being adjustable such that the indicia output on each are identical when said apparatus indicates a right triangle.

4,575,944

ELECTRONIC DIGITAL TAPE-RULE

Patrick Lin, 12th Fl., No. 1034, Min Sheng East Rd., Taipei, Taiwan

Filed Jun. 19, 1985, Ser. No. 746,410
Int. Cl.⁴ G01B *3/10*
U.S. Cl. 33—138 **3 Claims**



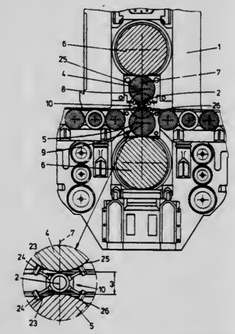
1. An electronic digital tape. rule consisting of a housing, a rotatable tape reel encased within said housing and having a flexible and extensible measuring tape, a power source for supplying electric power to the electronic circuit, an actuator acting as a switch means for selecting a forwarding or backwarding count of a counter, a detector for sensing the number of revolutions of a disc as the tape is extended and for generating a signal in response thereto, a counter responsive to the signal generated by said detector for accumulating a count representative of the length of said tape, a display for displaying the count accumulated by said counter, a brake for stopping and releasing said tape and a power switch; characterized by that said actuator comprising:
- a friction roll rotatably mounted on a shaft fixed at an inner wall of said housing;
- a disc disposed on the upper end of said roll and rotatable by the friction of the roll;
- a plate fixed on the upper end of said roll and having a hole with a pair of contact plates attached on the two side walls thereof;
- a spring mounted between said disc and said plate for constantly pressing the disc against said roll; and
- an actuating rod disposed upright on the upper side of said disc and being arranged in such a manner that its upper end passes through the hole of said plate and is able to contact one of said two contact plates depending on the rotating direction of said disc.

4,575,945

MEASURING ARRANGEMENT, AND A METHOD, FOR MEASURING THE GAP FORMED BETWEEN A FIRST AND A SECOND ROLL OR ROLLER

Günter Rigler, Linz, Austria, and Friedrich Vollmer, Hagen, Fed. Rep. of Germany, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria and Friedrich Vollmer Fienmessgeratebau GmbH, Fed. Rep. of Germany

Filed Mar. 29, 1985, Ser. No. 717,717
Claims priority, application Austria, Apr. 6, 1984, 1183/84
Int. Cl.⁴ G01B *7/14*
U.S. Cl. 33—182 **9 Claims**



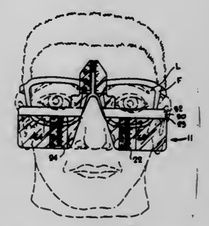
1. In a measuring arrangement for measuring the gap formed between a first and a second roll or roller and of the type including a measuring body, at least three support rollers provided on said measuring body on one side thereof for adjusting said measuring body between said first and second rolls or rollers and getting into contact with a surface of one of said first and second rolls or rollers, two of said support rollers being arranged on either side of said gap to be measured, symmetrical with respect to the gap plane, at least two support rollers being provided on the opposite side of said measuring body to get into contact with the surface of the second roll or roller, contacting the surface of said second roll or roller in contact points located symmetrical to the gap plane, wherein at least two support rollers arranged symmetrical to the gap plane and provided for one of said first and second rolls or rollers are synchronously movable towards the surface of said one of said first and second rolls or rollers and are pressable thereat, two diametrically oppositely arranged measuring tracers being provided on said measuring body and including measuring heads movable towards the surfaces of said rolls or rollers in a symmetrical plane between said support rollers getting into contact with the surfaces of said rolls or rollers on either side of said gap plane, i.e., in the gap plane, the improvement wherein said support rollers have support roller axles that are directed perpendicular to the axes of said rolls or rollers and are pivotably mounted on said measuring body.

4,575,946

OPHTHALMIC GUIDE FOR MULTI-FOCAL SPECTACLES

Paul F. Bommarito, 10684 Martinwood Way, Cupertino, Calif. 95014

Continuation-in-part of Ser. No. 534,491, Sep. 3, 1983, abandoned. This application Aug. 17, 1984, Ser. No. 642,052
Int. Cl.⁴ A61B *3/10*
U.S. Cl. 33—200 **12 Claims**



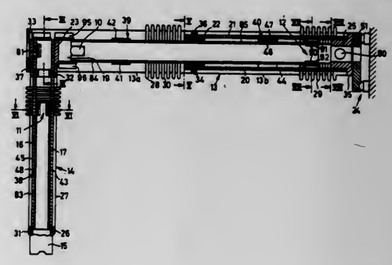
1. A guide for prescribing multifocal spectacles comprising,
- a transparent fixture to be placed over spectacles having a pair of zero power, planar, transparent members disposed in spectacle relationship, the fixture having a lengthwise axis spanning spectacle frames at least from hinge-to-hinge,
- a first stripe with defined edges disposed across portions of the fixture parallel to the lengthwise axis, the stipe having a vertical width corresponding to an apparent dimension of a video display terminal seen at a terminal viewing distance, and
- a second stripe with defined edges disposed parallel and adjacent to said first stripe, said second stripe having a width, when added to the vertical width of the first stripe, corresponding to an apparent dimension of a video display terminal seen at a distance.

4,575,947

MEASURING ARM FOR A MULTIPLE COORDINATE MEASURING MACHINE

Siegfried T. Stauber, Zurich, Switzerland, assignor to Wyler AG, Switzerland

Filed Mar. 9, 1984, Ser. No. 587,971
Claims priority, application Switzerland, Mar. 30, 1983, 1775/83
Int. Cl.⁴ G01B *5/00*
U.S. Cl. 33—561 **16 Claims**



1. A measuring arm for a multiple coordinate measuring machine, comprising:
- a vertical arm part;
- a horizontal arm part fixedly connected to said vertical arm part, said horizontal arm part including first and second horizontal arm portions arranged end to end and being

bendable in only first and second planes, respectively, said first and second planes being perpendicular;

chuck means for rigidly coupling a mechanically acting probe member to a free end of one of said arm parts; and

first and second primary elements, with sensor means for producing signals, mounted in said vertical and horizontal arm parts, respectively, and spaced from said chuck means such that said primary elements react to bending movements of said arm parts along different measuring coordinates and said sensor means produce signals in response to said bending movements;

whereby bending of said horizontal arm portions causes said primary elements and sensor means to produce signals corresponding to X and Z axes, respectively.

4,575,948

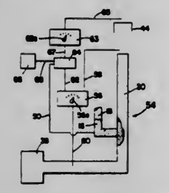
PNEUMATIC TRANSPORT AND HEAT EXCHANGE SYSTEMS

Lester G. Massey, Moreland Hills, Ohio; Lawrence G. Clawson, Dover, and Andrew J. Syska, Marblehead, both of Mass., assignors to Consolidated Natural Gas Service Company, Inc., Cleveland, Ohio

Division of Ser. No. 76,289, Sep. 7, 1979, Pat. No. 4,374,540, which is a continuation-in-part of Ser. No. 942,677, Sep. 15, 1978, abandoned. This application Feb. 17, 1983, Ser. No. 467,392

Int. Cl.⁴ F26B *3/10*; F28D *19/02*

U.S. Cl. 34—10 **12 Claims**



1. A method of cocurrent heat exchange between a gaseous medium and a particulate material which provides a heat exchange surface for direct heat transfer with said gaseous medium comprising providing a stream of said gaseous medium, withdrawing particulate material from a supply thereof through flow restricting means including adjustment means to form an accumulation of particulate material sloping in its natural angle of repose a predetermined distance toward said stream, introducing said particulate material into said stream at a controlled flow rate by biasing said particulate material from said accumulation thereof into said stream, pneumatically conveying said particulate material with said stream, said stream undergoing a pressure drop during the pneumatic conveyance of said particulate material proportional to the weight flow rate of said particulate material, the step of introducing said particulate material into said stream including sensing said pressure drop and varying the biasing of particulate material into said stream as a direct function of the sensed pressure drop to control the flow rate of said particulate material, transferring heat between said stream and particulate material as a direct function of the weight flow rate of said particulate material during pneumatic conveyance, and maximizing the quantity of heat transferred for a preselected pressure drop by violently mixing said stream and particulate material in at least one localized zone during pneumatic conveyance.

9. A heat exchanger apparatus for heat transfer between a gaseous medium and a particulate material comprising a lift line for confining a stream of said gaseous medium as it pneumatically conveys said particulate material to a separation chamber while undergoing cocurrent heat transfer therewith, a downcomer defining a substantially unobstructed passageway for the flow of particulate material from an inventory of particulate material to said lift line, said downcomer including an upper inlet for receiving particulate material from said inventory thereof under the influence of gravity and a lower outlet for transferring particulate material to said lift line, said downcomer having a substantially vertical portion intermediate said upper inlet and lower outlet for confining said particulate material in a loose packed bed column and a laterally extending portion adjacent said lower outlet for restricting the flow of particulate material through said downcomer and forming an accumulation of particulate material sloping in its natural angle of repose toward said lower outlet, said laterally extending portion including adjustment means for varying the cross-sectional area of said laterally extending portion and causing said accumulation of particulate material sloping in its natural angle of repose to extend along said laterally extending portion a predetermined distance, and biasing means for disturbing said accumulation of particulate material from its natural angle of repose and causing said particulate material to directly flow through said lower outlet and into said lift line and stream of gaseous medium, said lift line having a substantially vertical orientation whereby the relative velocity difference between said particulate material and stream is maximized with violent mixing of said particulate material and stream in at least one localized zone during pneumatic conveyance to provide corresponding maximization of heat transfer.

4,575,949

PRESS FOR PRESSING BATCHES OF ARTICLES DRY

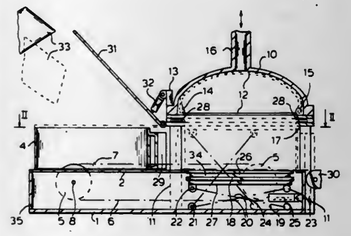
Gerhard Bernecker, Heilbronn, Fed. Rep. of Germany, assignor to Passat Maschinenbau GmbH, Heilbronn/Frankenbach, Fed. Rep. of Germany

Filed Nov. 14, 1984, Ser. No. 671,225

Claims priority, application Fed. Rep. of Germany, Nov. 18, 1983, 3341683

Int. Cl.⁴ D06F *47/06*

U.S. Cl. 34—14 **7 Claims**



1. A continuous method for pressing batches of articles dry, particularly batches of laundry, in a press, comprising the steps of:

(a) filling a receiving vessel having an open top and bottom with the batch of articles at a filling station with a plate disposed below the vessel;

(b) moving the receiving vessel along the plate to a pressing station where the plate is provided with an orifice in which is disposed a counterplate;

(c) raising the counterplate with a lifting device through the open bottom and top of the receiving vessel into a pressure vessel disposed thereabove;

(d) locking the counterplate into a pressing position, closing the pressure vessel;

(e) lowering the lifting device;

(f) withdrawing the receiving vessel from the pressing station to the filling station to receive the next batch of articles; and

(g) pressing the articles on the counterplate.

4,575,950

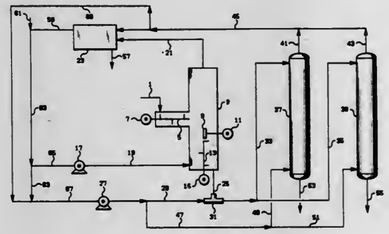
METHOD FOR REMOVAL OF RESIDUAL SOLVENT FROM PARTICULATE CRUMB MADE BY SOLUTION POLYMERIZATION

John M. Miles, Overijse, Belgium, assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 8, 1983, Ser. No. 549,719

Int. Cl.⁴ F26B *3/06*

U.S. Cl. 34—27 **6 Claims**



1. A method for removing residual solvent dissolved in non-sticky crumb particles of polymer produced by solution polymerization said particles having been treated substantially to remove solvent from the surface of the polymer crumb particles, said method comprising:

(1) transferring said particles containing residual dissolved solvent into a closed storage zone in an inert atmosphere,

(2) maintaining said particles containing residual solvent in said zone in a quiescent state at a temperature below the softening point of the polymer for a period of time sufficient for accumulation of solvent diffused from said particles as free solvent,

(3) passing inert gas through said polymer particles in said storage zone at a temperature below the softening point of the polymer in an amount sufficient substantially to remove the accumulation thereof free solvent from said storage zone, and

(4) repeating steps (2) and (3) alternately until solvent content in the polymer particles in the storage zone is reduced to the desired level.

4,575,951

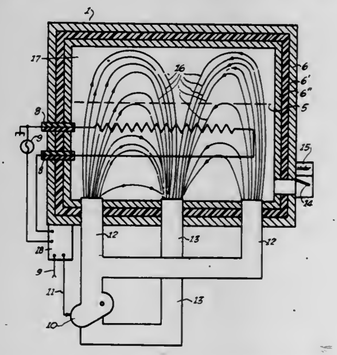
CLOSED CHAMBER DRYER

Ramon C. Eyzaguirre, 5217 Harrison St., Hollywood, Fla. 33021

Filed Apr. 4, 1984, Ser. No. 596,727

Int. Cl.⁴ F26B *3/04*

U.S. Cl. 34—30 **13 Claims**



1. A method for drying articles comprising the steps of:

providing an air-containing environment closed to the ambient;

including articles in said air-containing closed environment;

directly heating the air in said environment;

thereafter circulating said heated air in said environment in a circulation circuit closed to the ambient for drying said articles whereby effecting more efficieint drying of said articles;

said step for heating includes the step for directly preheating said air in said environment to a preselected preheat temperature prior to said step for circulating; and cooling said environment after said step for circulating by introducing cool air from the ambient.

4,575,952

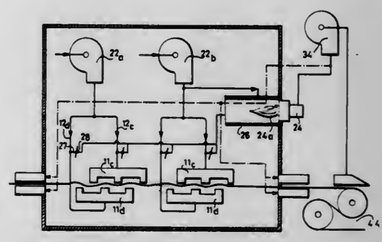
HOT AIR DRYER STRUCTURE

Rene Bodenan, Ballancourt/Essonne, and Nicholas Teculescu, Meudon, both of France, assignors to M.E.G., S.A., Morangis, France

Continuation-in-part of Ser. No. 303,488, Sep. 18, 1981, abandoned. This application Sep. 12, 1984, Ser. No. 649,601

Int. Cl.⁴ F26B *13/20*

U.S. Cl. 34—54 **41 Claims**



1. Apparatus for simultaneously drying in hot air a continuous web of flexible material carrying a solvent to be evaporated and supporting said continuous web of flexible material; said apparatus comprising:

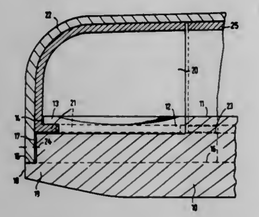
a casing having a web inlet opening and a web outlet opening for said web, said web traveling between said inlet opening and said outlet opening in a general path (D) which extends longitudinally through the interior of said casing; said casing comprising at least two modular sections which contain respective chambers in adjacent relation longitudinally of said casing; each of said two sections having an upper set of nozzles and a lower set of nozzles disposed respectively above and below said general path; each of said two sections including air recycling means having input means communicating with said interior of said casing and output means; heater means; air exhaust means for extracting air from the interior of said casing; duct means coupled between said output means and said upper set of nozzles and said lower set of nozzles of the respective said section; conduit means for placing said heater means in communication with said duct means for preheating the air recycled to said sets of nozzles by said output means of said recycling means; and solvent concentration sensing means for sensing the concentration of said solvent in the atmosphere within said casing; said solvent concentration sensing means being connected to said air exhaust means for controlling said air exhaust means, and second pressure sensing means sensitive to the pressure difference between the inside and the outside of said casing; said second pressure sensing means connected to said air exhaust means for further controlling the flow through said exhaust means.

4,575,953

SAFETY SHOE WITH TOE PROTECTING CAP

Gerhard Hetzel, Zeilhofweg 50, 7104 Obersulm 2, Fed. Rep. of Germany

Filed Mar. 12, 1984, Ser. No. 588,714
Claims priority, application Fed. Rep. of Germany, Mar. 10, 1983, 3308511
Int. Cl.⁴ A43C *13/14*
U.S. Cl. 36—77 R **15 Claims**



1. Safety shoe comprising a toe protecting cap (20) shaped to conform substantially to the tip of said shoe and provided at its portion facing the sole of said shoe with an inwardly directed flanged rim (21) which is inserted into a groove (12) provided in the vertical end face of a one piece sole (10) and is retained therein by the upper (22) of said shoe, an upper groove wall (13) being set back with respect to a lower groove wall (19) by at least the thickness of said toe protecting cap (20), said lower grove wall (19) provided with an offset portion (16) at the end facing said toe protecting cap (20) extending parallel to and offset a distance from said groove (12) and said shoe upper (22) being attached to a vertically extending section (17) of said lower groove wall (19) which is flush with the outer surface of said toe protecting cap (20), a front face (18) of said lower groove wall (19) being flush with the outer surface of said shoe upper (22) attached to said vertically extending section (17), said one piece sole (10) is provided with said groove (12) therein and that at least one of the height and depth of said groove (12) is slightly less than the corresponding thickness and length of said flanged rim (21) of said toe protecting cap (20) and said flanged rim (21) of said toe protecting cap (20) is tightly inserted into said groove (12) provided in said one piece sole (10) until said toe protecting cap (20) bears against a front face (14) of said upper groove wall (13) so that said toe protecting cap is retained immovably in said groove (12).

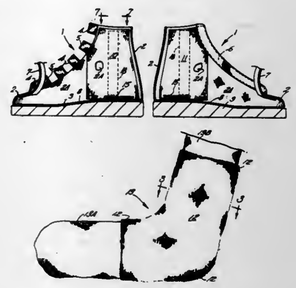
4,575,954

SHOE CONSTRUCTION WITH FOOT AND ANKLE RESTRAINING MEANS

Michael E. Bye, 13910 SE. Aldridge Rd., Portland, Oreg. 97236

Filed Feb. 16, 1984, Ser. No. 580,937
Int. Cl.⁴ A43B *7/20*
U.S. Cl. 36—89 **4 Claims**

1. In combination,
high-top athletic footwear having an upper and an insole,
a foot covering of fabric construction including interior adhesive means for adhering contact with the epidermis of the wearer's foot, and
an expanse of closure material carried interiorly by the footwear upper and extending substantially between the shoe insole and the top edge of the upper, additional closure material carried by the exterior of the foot covering and engageable with said expanse of closure material to prevent slippage between the upper and the foot covering whereby extreme lateral rolling movement of the foot



is inhibited by the footwear by reason of the upper thereof being put into tension.

4,575,955

SHOE, IN PARTICULAR A SKI SHOE, INCORPORATING A FLEX AND SIDE AND FORWARD LEAN ADJUSTMENT DEVICE

Bruno Borsoi, Conegliano Veneto, Italy, assignor to NORDICA S.p.A., Montebelluna, Italy

Filed Jul. 9, 1982, Ser. No. 396,548
Claims priority, application Italy, Jul. 23, 1981, 23099 A/73
Int. Cl.⁴ A43B *5/04, 11/00*
U.S. Cl. 36—117 **2 Claims**



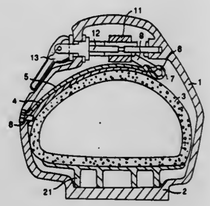
1. A composite front gaiter for a shoe, in particular a ski shoe with a flex and side and forward lean adjustment device, said front gaiter having a longitudinal extension, a widthwise extension and an upwards extension and being adapted to be mounted on a shell portion of the ski shoe, said front gaiter including a first gaiter portion having a front side and an open rear side and a second gaiter portion, said first gaiter portion having an overall upwards extension offset to the overall upwards extension of said second gaiter portion, said second gaiter portion overlapping the front side of said first gaiter portion, said first gaiter portion having first hinge means on a lower end thereof with a first hinge axis extending in said widthwise direction, said second gaiter portion having second hinge means on a lower extremity thereof with a second hinge axis extending in said widthwise direction, said second hinge axis being upwardly offset with respect to said first hinge axis thereby to allow independent swinging of said second gaiter portion relative to said first gaiter portion and means for positioning and mutually securing said first and second gaiter portions together.

4,575,956

FOOT RETENTION DEVICE FOR SKI BOOT

Jean Paris, Chemin de la Côte, Sevrier, F - 74410 Saint-Jorioz, France

Filed Aug. 29, 1984, Ser. No. 645,183
Int. Cl.⁴ A43B *5/04*
U.S. Cl. 36—119 **5 Claims**



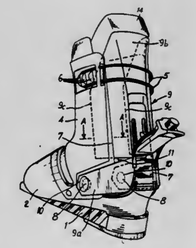
1. Device for tightening a foot in a boot (1) having a rigid shell and containing an inner slipper (3), particularly for the practice of skiing, comprising
(a) a screw-nut system (12, 11) actuatable by a user;
(b) a strap (5) arranged transversely of said boot (1) and having a lower end (6) attached to a lower interior portion of said boot;
(c) a small, substantially rectangular transmission rod (9) articulated at one (10) of its sides to a nut (11) of said screw-nut system, and connected at a side (8) opposite said one side to an upper end (7) of said strap (5);
(d) whereby displacement of said nut (11) transversely of said boot (1) is transmitted via said rod (9) to said upper end (7) of said strap (5), causing the same to move along an upper contour (14) of said slipper (3) corresponding to a selected region for tightening said foot.

4,575,957

REAR ENTRY SKI BOOT

Roland Petrini, Chambery, France, assignor to Salomon S.A., Annecy, France

Filed Jun. 4, 1984, Ser. No. 617,204
Claims priority, application France, Jun. 8, 1983, 83 09487
Int. Cl.⁴ A43B *5/04*
U.S. Cl. 36—121 **4 Claims**



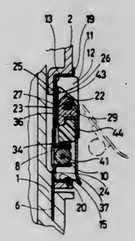
1. Rear entry type ski boot having a shell, comprising
(a) an upper comprising a forward cuff (4) having edges (7) and solid with said shell and open to the rear, and a rear hood (9) swingable about two axes of articulation (8) located on either side of the lower portions of said shell, said cuff and hood being assembled to one another by a single tightening means located near the top of said upper;
(b) said rear hood comprising an upper, channel-shaped portion (9*b*) for insertion into said cuff between said edges of the latter, and a yoke-shaped lower portion (9*a*) covering the lower portion of said edges (7) of said cuff (4) and pivotally attached to the exterior of said cuff on said axes of articulation (8), a join between said portions (9*b*, 9*a*) straddling, on each side, the corresponding edge of said cuff;
(c) said upper portion (9*b*) extending inside said boot, substantially to the level of said lower portion (9*a*) outside said boot.

4,575,958

SKI BOOT

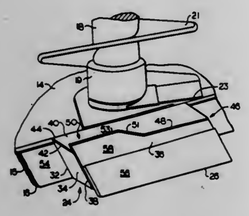
Simon Arieh, and Guy Courvoisier, both of Geneva, Switzerland, assignors to Lange International S.A., Fribourg, Switzerland

Filed Jul. 30, 1984, Ser. No. 635,900
Claims priority, application Switzerland, Aug. 29, 1983, 4711/83
Int. Cl.⁴ A43B *5/04*
U.S. Cl. 36—121 **11 Claims**



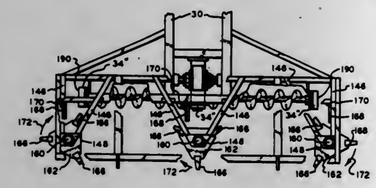
1. A ski boot consisting of at least a lower portion adapted to encompass the foot and of an upper pivotally connected to said lower portion, and comprising at the rear means for interconnecting said upper and said lower portion, said interconnecting means being located in a notch formed in one portion of the upper which surrounds at least partially said lower portion of the boot, said interconnecting means comprising a lever adapted to be set in at least two positons, a first position in which said upper is turned down for engagement with the boot, so that said upper is fastened to said lower portion with a predetermined angle of cant, and a second or raised position in which said upper can pivot freely within certain limits with respect to said lower portion, means being provided for altering the angle of cant of said upper in said first position, wherein said interconnecting means comprise a rack rigid with, and extends along, said upper, a lever having an eccentric hub journalled about a horizontal trunnion mounted in two lateral guide means parallel to, and formed in two side wall rigid with, said rack, in which said trunnion can move in a direction parallel to said rack, a strap mounted on said trunnion and having a toothed central face registering with said rack, a male element rigid with said lever and cooperating by mutual engagement with a female element rigid with said lower portion of the boot, or inversely, said lever being adapted to be set in three specific positions, namely a first position in which said lever is turned down on the boot and its eccentric hub urges said strap against said rack and said male and female elements are partially engaged into each other, a partially raised position in which said male and female elements are released from each other but said eccentric hub is still bearing against said strap, and a position in which said lever is raised by at least 90 degrees and wherein said strap is not urged against said rack.

4,575,959
MATERIAL DIRECTING DEVICE FOR AN AUGER SCRAPER
James E. Gee, Washington, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed Apr. 30, 1984, Ser. No. 605,542
Int. Cl.[4] E02F 3/62
U.S. Cl. 37—4 5 Claims



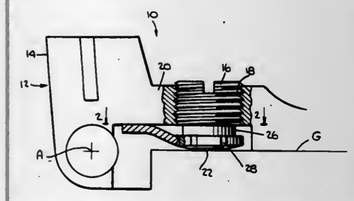
1. A material directing device for an auger scraper including a bowl providing a floor having an elongated transversely oriented main cutting edge with at least one screw auger rotatably mounted in upstanding relation within the bowl, said auger having a spiral flight providing a lower leading edge located in closely spaced relation to said bowl floor and in overhanging relation to said main cutting edge which defines a material compaction zone between said lower leading edge of the auger and said bowl floor as the leading edge sweeps along the main cutting edge and rearwardly into the bowl, the material directing device comprising;
an auxiliary cutting edge; and
mounting structure means for supporting said auxiliary cutting edge in forwardly spaced longitudinally aligned relation to said auger and in parallel forwardly located relation to said main cutting edge, said mounting structure means defines a guiding surface for directing material uniformly upwardly in parallel relation to said cutting edge past said compaction zone located between the leading edge of the auger and the bowl floor, and onto the flight of the auger above said lower leading edge of the auger.

4,575,960
DREDGE CUTTERHEAD
Troy M. Deal, 277 Trismen Ter., Winter Park, Fla. 32789
Continuation of Ser. No. 472,974, Mar. 7, 1983, abandoned, which is a continuation-in-part of Ser. No. 221,219, Dec. 30, 1980, abandoned. This application Nov. 7, 1984, Ser. No. 669,058
Int. Cl.[4] E02F 3/88
U.S. Cl. 37—63 2 Claims



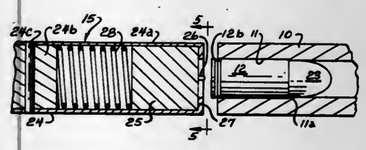
2. Dredging apparatus comprising flotation structure, a cutterhead mounted on the forward end of said structure, means on said cutterhead for cutting a swath of one width in an interface between consolidated soil and a water source and for moving a slurry along paths angularly disposed to the longitudinal axis of said swath toward an intake zone, said means for cutting a swath including a plurality of horizontally disposed rotating shafts having cutting elements mounted thereon, and each having outer ends and a central region, a vertically oriented case defined on said cutterhead at each outer end and at said central region of said shafts rotatably supporting said shafts and housing shaft bearing and drive means, a plurality of jets mounted on each case for directing high pressure water jets in a forward direction of said cutterhead, said jets being vertically spaced along the entire vertical dimension of the associated case, and suction means defining an intake zone rearwardly of said shafts' central region.

4,575,961
GUNSIGHT ELEVATING APPARATUS
Richard Mikuta, East Hampton, Mass., and Roger Curran, Stratford, Conn., assignors to Bangor Punta Corporation, Greenwich, Conn.
Filed Sep. 9, 1983, Ser. No. 530,559
Int. Cl.[4] F41G 1/16
U.S. Cl. 42—1 S 6 Claims



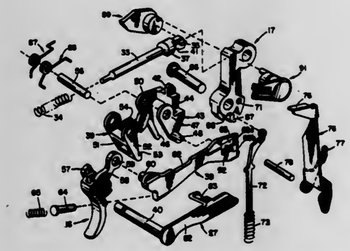
1. Apparatus for adjusting the elevation of the sight on a gun comprising:
a movable sight body for securement to a gun,
a sight elevation adjusting screw threadedly engaged with said sight body and cooperable with the gun for displacing said sight body relative to the gun in response to threading said screw relative to the sight body, said adjusting screw having an annular groove and a plurality of indentations circumferentially spaced about said screw, and
a generally U-shaped clip having a pair of laterally spaced legs engageable in said groove for retaining said clip in engagement with said screw and preventing removal of said screw from said sight body, said clip having a detent disposed between said clip legs for engaging in said indentations and detenting said screw in an adjusted threaded position thereof, and said body having means for retaining the clip against rotation.

4,575,962
UNITARY BOLT FACE AND FIRING PIN DEVICE
Michael Rogak, Antioch; Leonard W. Golan, Winnetka; Charles Witbeck, Mundelein, and Stephen L. Golan, Chicago, all of Ill., assignors to Hawk Industries, Inc., Chicago, Ill.
Continuation-in-part of Ser. No. 290,606, Aug. 6, 1981, Pat. No. 4,462,179. This application Mar. 16, 1984, Ser. No. 590,011
The portion of the term of this patent subsequent to Jul. 31, 2001, has been disclaimed.
Int. Cl.[4] F41C 11/00; F41D 7/08
U.S. Cl. 42—1 Q 10 Claims



1. A unitary bolt face and firing pin device for a firearm having a chamber for receiving a cartridge, one end of said cartridge having a primer, and a bolt face and firing pin device facing said chamber adapted for striking said primer end, said device comprising: a body movable toward and away from said chamber, a contact block at one end and within the confines of said body facing said chamber, a recess in said body aligned over said contact block adapted to bear upon said cartridge end at multiple points thereof, spring means in said body biasing said contact block toward said chamber for snugly engaging said cartridge end and seating said cartridge in firing position in said chamber, and firing pin means integral with and arranged centrally of said block projecting therefrom in alignment with said cartridge end adapted for firing said cartridge when said firing pin means strikes said cartridge end.

4,575,963
PISTOL MECHANISM FOR BLOCKING FIRING PIN
William B. Ruger, Croydon, N.H., and Roy L. Melcher, Stratford, Conn., assignors to Sturm, Ruger & Company, Inc., Southport, Conn.
Filed Jun. 25, 1984, Ser. No. 624,185
Int. Cl.[4] F41C 17/04
U.S. Cl. 42—70 F 6 Claims



5. In a semi-automatic pistol having a reciprocating slide with firing pin mounted therein, a trigger, a trigger bar, a firing pin blocking piece, a sear and a hammer, the improvement in which
(a) the firing pin blocking piece is pivotably operable to block the firing pin in all operable positions of the trigger bar except the just-prior-to-firing position and the firing position; the firing pin blocking means in turn comprising
(i) a housing including two spaced apart flange elements and a central body section between the two flange elements;
(ii) a firing pin blocking projection upstanding from the central body section;
(iii) a lug projection extending from a flange element engageable at times with the trigger bar;
(b) an opening in the trigger bar to receive the blocking piece lug which opening is configured such that as the trigger bar moves through its cycle the blocking piece lug is activated to rotate the blocking piece only just prior to and during the descent of the hammer; and
(c) a sear nested between the flange elements of the blocking piece which sear is rotated by rotating the blocking piece to release the hammer for its descent to strike the firing pin and fire the pistol.

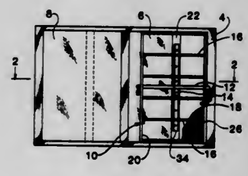
4,575,964
GUN REST
Donnie R. Griffin, Emerson, Ark., assignor to PKG Trading Company, Inc.
Filed Apr. 25, 1984, Ser. No. 603,773
Int. Cl.[4] F41C 29/00
U.S. Cl. 42—94 20 Claims

1. A portable gun rest comprising first and second oppositely directed substantially U-shaped saddle members on opposite ends respectively of an elongate support assembly, one of said saddle members being effectively shaped and dimensioned to fit on a user's thigh, and the other of said saddle members being



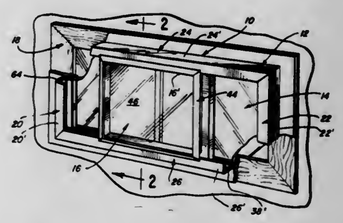
effectively shaped and dimensioned to receive a rifle forearm and the like.

4,575,965
SECURITY GRILLE APPARATUS FOR DOORS AND WINDOWS
Elmer A. Iversen, Theatre Dr. 2, Paso Robles, Calif. 93446
Filed Dec. 20, 1984, Ser. No. 684,380
Int. Cl.[4] E06B 7/00
U.S. Cl. 49—50 6 Claims



1. Apparatus for securing a window that has a slidable sash mounted in a window frame, said apparatus comprising:
a grille including a set of parallel bars and attached to the window frame with said parallel bars extending in the direction of motion of the slidable sash; and,
a flange extending from said slidable sash into the space between the parallel bars and including clearance holes that permit the parallel bars to extend through said flange so that said flange is slidable along said parallel bars.

4,575,966
MAGNETICALLY SEALED SLIDING WINDOW ASSEMBLY
John T. Gerritsen, Hanover Park, Ill., assignor to Jarrow Products, Inc., Chicago, Ill.
Filed Aug. 27, 1984, Ser. No. 644,933
Int. Cl.[4] E05D 15/10
U.S. Cl. 49—209 14 Claims



1. A sliding window system comprising a perimetric frame

including channel means and at least one double faced panel received within said channel means for sliding movement therein, cooperable longitudinally disposed magnetic means within said channel means and carried by said panel for establishing a sealed engagement therebetween on a static condition of the panel to immobilize said panel and being disengageable in a slidable condition of the panel offset vertically from the static condition to permit sliding movement of said panel, said magnetic means comprising elongate magnets poled longitudinally, means for adhering said magnets to said panel on one face thereof adjacent the edges thereof and pull means on the opposite face of said panel capable of being grasped for translating said panel in a first direction to disengage said magnets displacing said panel to the slidable condition, and thereafter to enable translation in a second direction to a selected location along the length of said channel means, said latter means being releasable to reestablish said sealed engagement at the selected location.

4,575,967

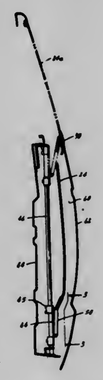
FLUSH GLASS WINDOW REGULATOR

David J. Bickerstaff, West Bloomfield, Mich., assignor to Ferro Manufacturing Corporation, Southfield, Mich.

Filed Jun. 22, 1984, Ser. No. 623,452

Int. Cl.⁴ E05F *11/52, 11/38*

U.S. Cl. 49—211 **11 Claims**



1. A vehicle window construction comprising a generally continuous outer panel having a window opening therein defined by top, side and bottom edges, said panel forming the outer wall of a cavity for receiving a window glass movable into and out of said cavity through the bottom edge of said window opening, sealing means surrounding the window opening including a bottom seal having an inwardly facing sealing surface, guide means for guiding the upper edge of said window glass continuously upward into engagement with the sealing means at the upper edge of said window opening and for guiding the lower edge portion of said glass first upwardly into substantially closed position and then upwardly and laterally outwardly into sealing engagement with the inwardly facing sealing surface of said bottom seal to position the outer surface of the lower portion of said glass substantially flush with the outer panel surface beneath said window opening, said guide means comprising a main guide portion continuous from adjacent an upper corner of said window opening to a point within said cavity adjacent a lower corner of said glass when in fully lower position, said guide means having a separate short diversion guide portion connected to said guide portion intermediate its ends and angled upwardly and outwardly therefrom adjacent the lower edge of said opening, an upper follower carried by said glass adjacent an upper corner thereof and movable along said main guide portion and including means which prevents said upper follower from following said short diversion guide portion, a lower follower movable along said main guide portion below said short diversion guide portion and adapted to follow said short diversion guide portion, means connected to the lower edge of said window glass and adapted to raise said glass and to bias the lower edge of said glass outwardly to cause said lower follower to enter and follow said short diversion guide portions, said short diversion guide portion being shaped to move the lower edge of said glass outwardly into engagement with the inwardly facing sealing surface and to position the outer surface of said glass as a continuation of the outer surface of said panel beneath said window opening.

4,575,968

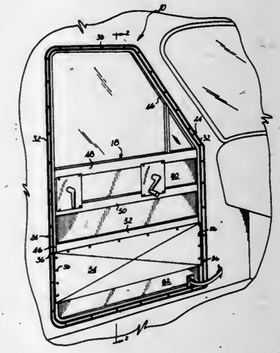
VEHICLE DOOR ASSEMBLY

James G. Mariel, Mishawaka, Ind., assignor to Excel Industries, Inc., Elkhart, Ind.

Filed Nov. 14, 1983, Ser. No. 550,785

Int. Cl.⁴ B60J *5/04*

U.S. Cl. 49—502 **5 Claims**



1. A door assembly for installation in a vehicle, said vehicle including a wall, said wall having an opening formed therein, said door assembly including a frame, hinge means for supporting a door in said frame, the improvement wherein said door frame includes first and second sections, each first and second door frame section having a flange, said first door frame section fitting into said vehicle wall opening with its said flange abutting one side of the vehicle wall, said second door frame section confronting said first door frame section at said wall opening with its said flange abutting the other side of said vehicle wall, said first door frame section being connected to said second door frame section to compress said vehicle wall therebetween, and said door includes an outer circumferential frame, an upper cross brace connected to said circumferential frame, a first flange at an outer edge of said circumferential frame and said upper cross brace, and a second flange at along said circumferential frame and upper cross brace spaced from and adjacent to said first flange to form a channel, and an outer door panel fitted at its peripheral edges into said channel.

4,575,969

GRINDING MACHINE FOR PUNCHING TOOLS

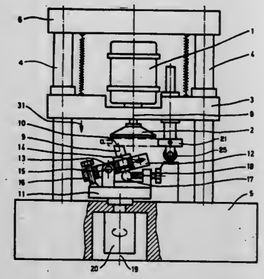
Hans Klingel, Moglingen, and Erich Brekle, Benningen a.N., both of Fed. Rep. of Germany, assignors to Trumpf GmbH & Co., Ditzingen, Fed. Rep. of Germany

Filed Sep. 12, 1983, Ser. No. 531,606

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1982, 3234215

Int. Cl.⁴ B24B *5/00*

U.S. Cl. 51—131.1 **18 Claims**



1. In a surface grinding machine for punches, dies and like cutting tools, the combination comprising:

A. a base;

B. a workpiece holder supported on said base for rotation about an axis and including a support fixture for holding the cutting tool to be ground and which is movable into angular positions relative to said base;

C. a carrier member;

D. means on said base supporting said carrier member above said workpiece holder for movement relative to said base and said workpiece holder; and

E. a grinding disc assembly carried by said carrier member including a grinding disc below said carrier member and aligned with said support fixture and a motor for rotating said grinding disc about an axis parallel to that of said workpiece holder, said workpiece holder being movable to bring the surface of a tool supported therein into a predetermined position relative to said grinding disc.

4,575,970

METAL STRIP EDGE GRINDING APPARATUS

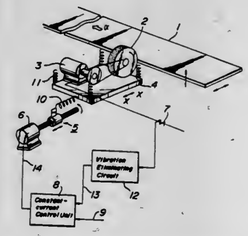
Shinji Kozai; Suenobu Shiiba, both of Kobe, and Yoshitaka Higashitani, Tokyo, all of Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Filed Jul. 18, 1984, Ser. No. 631,989

Claims priority, application Japan, Sep. 10, 1983, 58-165883[U]

Int. Cl.⁴ B24B *9/04*

U.S. Cl. 51—165.92 **1 Claim**



1. An apparatus for grinding edges of running metal strips by a rotating grinding wheel comprising a grinding wheel supporting table carrying thereon said grinding wheel, a motor for driving said grinding wheel mounted on said table, driving means for forward and backward driving said table toward and away from the edges of the metal strips, resiliently urging means arranged between said table and said driving means, a plurality of springs for suspending said table and cooperating with said resiliently urging means to bring said grinding wheel into resilient contact with the edges of the metal strips, load current detecting means for detecting a load current of said motor for driving said grinding wheel, a vibration frequency eliminating circuit for receiving load current signals from said load current detecting means, cutting off vibration components of the received signals, and generating signals representative of only load current for grinding, and a constant current control unit for receiving signals representative of only load current for grinding, comparing the received signal with a set value signal for grinding current and ge nerating in response to a compared result a control signal for controlling said driving means for forward and backward driving said table so as to substantially reduce the variation in load current of said motor for driving said grinding wheel and substantially eliminate uneven grinding of the edges of the metal strips, said resiliently urging means comprising a spring and said driving means comprising a feeding screw, a motor for rotatively driving the feeding screw and a nut threadedly engaged with the feeding screw and connected to said table through said spring of said resiliently urging means, said spring having one end thereof connected to said table and the other end thereof connected to the nut.

4,575,971

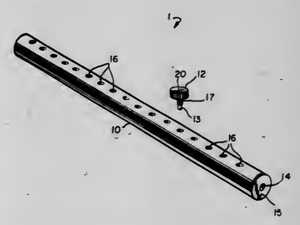
DEVICE FOR HOLDING AND AIDING IN THE SHARPENING OF WELDING RODS

Jerry L. Keneson, 3200 Hospital Rd., #34, Tacagoula, Miss. 39567

Continuation-in-part of Ser. No. 442,303, Nov. 17, 1982, abandoned. This application Oct. 31, 1983, Ser. No. 546,951

Int. Cl.⁴ B24B *5/18*

U.S. Cl. 51—236 **18 Claims**



1. A device for assisting in the sharpening of an end of an elongated workpiece, said device comprising:

an elongated member including means defining an axial cavity into which one end of said workpiece is receivable, means defining an interior surface bounding said cavity, and means defining plural axially spaced apart apertures transverse to and communicating with said cavity; and

adjusting means, selectively engageable with any selected one of said apertures and movable between said selected one and another one of said apertures, for adjusting the length that another end of said workpiece is exposed beyond the terminal end of said member, said adjusting means including means defining a determining nib occluding substantially all of a cross-section of said cavity when said adjusting means is engaged with said selected aperture, said workpiece one end abutting against said determining nib, said nib including means for permitting said workpiece to axially spin in contact with said interior surface and said nib to thereby evenly sharpen said an-

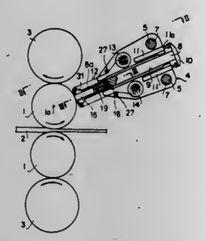
other end of said workpiece when said member is manually brought into sharpening proximity with a sharpening tool, said spin-permitting means including means defining a smooth, convex curved surface terminating in a hemispherical portion, said terminating hemispherical portion contacting said interior surface at a point on said interior surface opposite said selected aperture when said adjusting means is engaged with said selected aperture.

4,575,972

GRINDING MACHINE FOR USE WITH ROLLING MILL

Toshio Ohki; Masaomi Matsumoto, both of Chiba; Takashi Sakuraya, Higashimurayama; Keinosuke Tokushige, and Shuji Hoshino, both of Funabashi, all of Japan, assignors to Kawasaki Seitetsu Kabushiki Kaisha, Hyogo and Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo, both of, Japan

Filed Feb. 6, 1984, Ser. No. 577,248
Claims priority, application Japan, Feb. 25, 1983, 58-29236
Int. Cl.⁴ B21B *28/02*; B24B *21/02*
U.S. Cl. 51—251 **17 Claims**



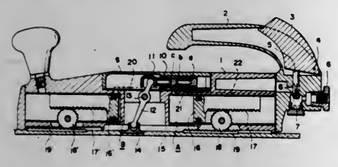
1. A grinding machine for use with a rolling mill having a work roll with a longitudinal axis, comprising: a main body, means for displacing said main body essentially parallel to said axis, a supporting rod slidably mounted in said main body so as to be movable transverse to said axis and having a leading end, an abrasive belt mounted on said main body and supported by said leading end of said supporting rod, and means for extending or retracting said supporting rod relative to said main body, for pressing said abrasive belt against a circumferential rolling surface of said work roll.

4,575,973

GRINDING MACHINE

Nobuyuki Izumisawa, 2-19-27, Azusawa, Itabashi-ku, Tokyo, Japan

Filed Jun. 13, 1984, Ser. No. 620,097
Claims priority, application Japan, Jun. 22, 1983, 58-110990
Int. Cl.⁴ B24B *23/04*; F01L *31/04*; B23D *67/00*
U.S. Cl. 51—170 TL **1 Claim**



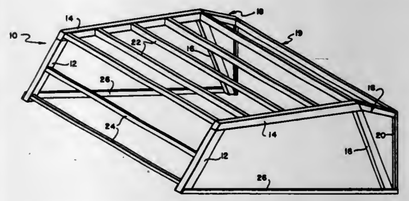
1. A grinding machine comprising:
a main body;
a directional control valve case provided on said main body;
a directional control sleeve fixedly secured within said directional control valve case;
a valve for feeding compressed air into said directional control sleeve;
first and second cylinders provided within said main body at front and rear ends thereof;
a directional control valve slidable back and forth within said directional control sleeve for communicating said first and second cylinders;
first and second pistons for reciprocating within said first and second cylinders, respectively;
first and second rack gears provided on said first and second pistons, respectively;
first and second pinions meshing with said first and second rack gears, respectively;
an operating plate having a grinding body attached to a lower surface thereof;
third and fourth rack gears provided on said operating plate and meshing with said first and second pinions 18, 18', respectively, for reciprocating said operating plate;
a guide provided on said operating plate; and
a valve operating arm 12 having one end engaging said guide and another end engaging said directional control valve, said valve operating arm being pivotally supported on said main body by a pin for switching said directional control valve in response to reciprocation of the said operating plate.

4,575,974

BUILDING STRUCTURE

William H. Porter, P.O. Box 249, Saugatuck, Mich. 49453

Filed Mar. 19, 1984, Ser. No. 591,266
Int. Cl.⁴ E04B *1/32*
U.S. Cl. 52—86 **14 Claims**



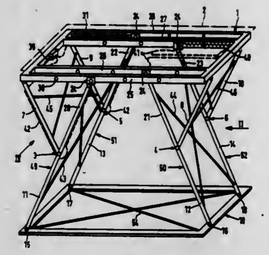
1. A building structure comprising:
a pair of parallel, linear, inclined forward support columns, each fixedly positioned at a lower end thereof;
a pair of parallel, linear, aft support columns, each fixedly positioned at a lower end thereof and inclined toward a respective forward support column;
a pair of linear, nonhorizontal trusses, each securely coupled at a respective end thereof to the upper end portions of a forward support column and an aft support column;
a plurality of first purlins coupled at respective ends thereof to a respective one of said trusses along the length thereof;
at least one second purlin securely coupled at respective ends thereof to one of said aft support columns;
a generally vertical frame mounted to the forward portion of the building structure and extending substantially the width thereof;
a rear wall positioned upon and supported by said aft support columns and said at least one second purlin; and
a roof panel positioned upon and supported by said plurality of first purlins and trusses and said vertical frame, said roof panel including a single roof section having an angled ridge portion defined by the joinder of the building structure and said generally vertical frame mounted to a forward portion thereof.

4,575,975

PORTABLE PLATFORM TRESTLE FOR STAGES, PLATFORMS, PEDESTALS OR THE LIKE

Hans J. Eisenberg, Iriebelsheide 59, 5600 Wuppertal 1, Fed. Rep. of Germany

Filed Apr. 3, 1985, Ser. No. 719,510
Claims priority, application Fed. Rep. of Germany, Apr. 4, 1984, 3412549
Int. Cl.⁴ E04H *12/18*
U.S. Cl. 52—109 **16 Claims**



1. A portable platform trestle for assembly with similar platform trestles to form stages for public events,
the platform trestle being manually adjustable as to height and adapted to be folded up into a flat package stackable with similar folded platform trestles to compact storage piles, comprising
a platform, carried by a rectangular upper frame means,
a lower frame means,
four scissors, each made up of a long leg and further of an arm articulated with one end at the middle part of the leg, each scissors being articulated within the reach of corresponding trestle corners with the other end of said arm at the upper frame means and with the lower end of said leg at the lower frame means, the upper end of said leg being movable,
wherein all of said four scissors are arranged side by side and respectively two of the scissors are arranged by pairs of respectively outer and inner scissors at the longitudinal sides of the platform trestle, the two outer scissors and the two inner scissors being articulated at opposite front sides of the platform trestle,
four parallel scissor guideways, provided at the upper frame,
four slide means, each running along one of said guideways and being connected with the upper movable end of the leg of the respective scissors,
arresting means for arresting the slide means at the guideways and thereby adjusting the height of the platform,
operating means arranged at the front sides of the platform trestle for actuating the arresting means during the manual height adjustment of the platform,
flexible force transmission means connecting the operating means and the arresting means, the transmission means for the arresting means of the two outer scissors being installed along the arm and the upper part of the leg of the respective scissors,
a first cross bracing means between the legs of the two inner scissors, and
a second cross bracing means between the legs of the two outer scissors, wherein the second cross bracing means defines a passage for receiving the inner scissors, folded between the legs of the outer scissors.

4,575,976

EXTENSION AND RETRACTION SYSTEM FOR BOOM APPARATUS

Charles McDermott, Lakewood, and Magbool A. Zafar, Fontana, both of Calif., assignors to Machine Products Corporation, Kansas City, Kans.

Filed Jun. 24, 1983, Ser. No. 507,349
Int. Cl.⁴ E04H *12/34*
U.S. Cl. 52—118 **11 Claims**



1. In a boom apparatus comprising elongated, telescoping boom sections, certain of said sections being extensible and retractable relative to a base section adapted for mounting to a mobile platform for pivotal movement about a horizontal axis, said certain sections including an inner section carried by said base section; an intermediate section carried by said inner section; an outer section carried by said intermediate section; an inner extension sprocket carried by said inner section; a base-to-intermediate extension chain trained about said inner extension sprocket and attached at its opposite ends to said base and intermediate sections, respectively; an intermediate extension sprocket carried by said intermediate section; and an inner-to-outer extension chain trained about said intermediate extension sprocket and attached at its opposite ends to said inner and outer sections, respectively, an improved extension and retraction system comprising:
an inner retraction sprocket carried by said inner section;
a base-to-intermediate retraction chain trained about said inner retraction sprocket and attached at its opposite ends to said base and intermediate sections, respectively;
an intermediate retraction sprocket carried by said intermediate section;
an inner-to-outer retraction chain trained about said intermediate retraction sprocket and attached at its opposite ends to said inner and outer sections, respectively, said means for extending being further actuable for retracting said inner section whereby said intermediate and outer sections are automatically retracted through the action of said base-to-intermediate and inner to outer retraction chain; and
a fluid actuated boom extension cylinder assembly including a longitudinally extending guideway fixed to said base section, an inner mount longitudinally slidably carried by said guideway, an outer mount fixed to said inner section, an inner cylinder connected to said inner mount and actuable to outwardly slide said inner mount along said guideway, an outer cylinder connected to said inner mount and to said outer mount and actuable to extend said inner section for automatically extending said intermediate and outer sections.

4,575,977

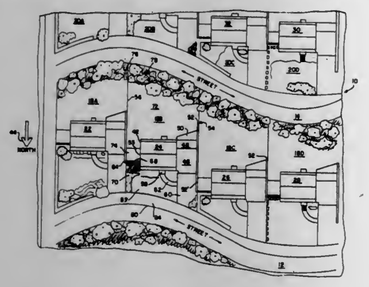
HOUSING DEVELOPMENT BUILDING ARRANGEMENT

Lawrence H. Taylor, P.O. Box 49-58, 48th Street Sta., Union City, N.J. 07087

Continuation-in-part of Ser. No. 644,455, Aug. 27, 1984. This application Apr. 22, 1985, Ser. No. 725,758
Int. Cl.⁴ E04B *1/00*
U.S. Cl. 52—169.3 **4 Claims**

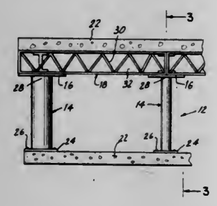
1. A housing land and fencing arrangement for at least two adjacent streets having particular utility for houses having solar energy collecting panels positioned on the south facing part of the house; each of the at least two adjacent streets being directed in a generally east and west direction and serving a

plurality of adjacent lots; each of said lots having north and south directed side boundaries into walls of said boundaries adjacent to the buildings and adapted to receive a single north facing house with the rear thereof supporting south facing



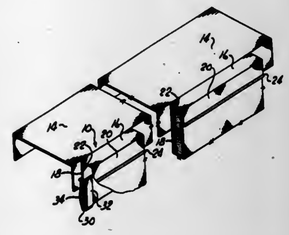
solar collecting panels; a wooded screen acting as a wind, privacy and security barrier of substantial depth parallel to the southern property line along the north side of each of the at least two adjacent streets.

4,575,978
POLE SHELL BUILDING
John H. Huhn, and George Spector, both of 233 Broadway, RM 3615, New York, N.Y. 10007
Filed Mar. 28, 1984, Ser. No. 594,368
Int. Cl.⁴ E04B *1/18*
U.S. Cl. 52—234 **1 Claim**



1. A pole shell building having a plurality of floors wherein each floor comprises:
(a) a plurality of pole shell columns, each column affixed at bottom to concrete slab;
(b) a plurality of support plates, each plate affixed to top of each column;
(c) a plurality of trusses, each truss supported at short spans between two support plates; and
(d) a plurality of beams, each beam supported at long spans between two support plates; and
(e) a concrete slab supported by the trusses and beams;
(f) a means for adjusting plate elevation wherein each support plate further includes a collar affixed to underside having a plurality of reinforcement ribs formed thereof at the underside of said plate extending from the collar to the edges of said plate to reinforce said plate, said collar fitting over the top of each column for easy assembly, in further combination with shims fitting inside said collar to engage said columns.

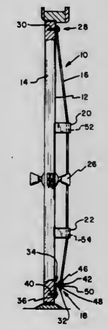
4,575,979
BRACKET ASSEMBLY FOR SECURING WALL MEMBERS
Leonardo Mariani, 2528 Penn Ave., Pittsburgh, Pa. 15222
Filed Aug. 8, 1984, Ser. No. 638,910
Int. Cl.⁴ E04B *2/74*
U.S. Cl. 52—24 **1 Claim**



1. In combination with a channel type ceiling track used in forming room partitions, a bracket assembly for securing a planar wall member to the ceiling track, comprising:
a housing having first and second spaced apart generally parallel elongated face members, and a flange member interconnecting said face members at one of their respective ends to define an opening at the other of the respective ends of the face members and said first and second face members and said flange member being constructed and arranged such that at least a portion of the upper section of a planar wall member may be snugly and slideably received within the confines defined by said members;
said first and second face members having respective height dimensions considerably less than their respective length dimensions;
said first face member having a height dimension greater than the height dimension of said second member, whereby said housing has a generally J-shaped cross-section;
a lip member fixed to the free end of said second face member and extending at an acute angle away from the confines defined by said face members and said flange members; and
at least one clip means removable from and engagable with said first face member of said housing for securing said housing to a side section of the ceiling track, said clip means having a planar front face and a curved rear face pivotably joined at one end to said front face, and said rear face being spring-biased in the direction of said front face.

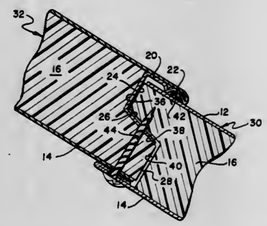
4,575,980
APPARATUS AND METHOD FOR STRAIGHTENING WARPED DOORS
George C. Shuler, 2116 Gilmore Dr., Fort Wayne, Ind. 46818
Filed Nov. 9, 1984, Ser. No. 670,343
Int. Cl.⁴ E04G *23/00*
U.S. Cl. 52—291 **20 Claims**

1. An apparatus for straightening warped doors, said apparatus comprising:
an elongate member having opposite end portions, said opposite end portions adapted for mounting said elongate member on a warped door;
means on said elongate member for adjusting the length of said elongate member between said opposite end portions; and
spaced pressure block means slidably mounted on said elongate member for pressing against a selected portion of a warped door and for increasing tension on said elongate member by causing said elongate member to bow outwardly and pull the warp out of the door, said pressure block means each including a plurality of sides and an opening therethrough positioned closer to one of said sides than to another of said sides, said opening slidably receiving said elongate member therethrough and enabling said spaced pressure block means to rotate about the axis of said elongate member.
14. A method for straightening a warped door, comprising the steps of:
anchoring opposite end portions of an elongate member to top and bottom end portions of a warped door, said elongate member having spaced pressure block means including a block having a plurality of sides and an opening therethrough closer to one of said sides than to another of said



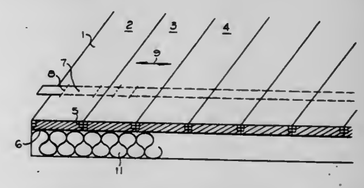
sides, said opening slidably and rotatably receiving said elongate member;
adjusting the length of said elongate member between said opposite end portions;
sliding and positioning said spaced pressure block means over the warped portion of the door; and
then rotating said spaced pressure block means to positions bridging between said elongate member and said warped portion of the door to increase tension on said elongate member by bowing said elongate member outwardly away from the door and causing said spaced pressure block means to press against said door to straighten out the warp.

4,575,981
ROOF PANEL CONSTRUCTION
William H. Porter, P.O. Box 249, Saugatuck, Mich. 49453
Filed Feb. 13, 1984, Ser. No. 579,681
Int. Cl.⁴ C04D *1/00*
U.S. Cl. 52—309.9 **9 Claims**



1. A shiplapped joint between first and second edge-abutting panels each having upper and lower faces and a core material therebetween for use in a pitched roof including said first and second panels, wherein said first panel is positioned higher on the pitched roof than the second panel, said joint comprising:
an extended edge portion of the upper face of said first panel and an extended edge portion of the lower face of said second panel wherein said respective edge portions of each of said first and second panels are mutually complementary in configuration and each overlaps the immediately adjacent, abutting portion of the other panel;
a recessed portion located on an inner edge portion of the upper face of said first panel and extending the length thereof, said recessed portion adapted to receive a sealant positioned therein; and
coupling means inserted through the extended edge portion of the lower face of said second panel for engaging an overlapping edge portion of said first panel in abutting contact with a corresponding overlapping edge portion of said second panel and for displacing said second panel upward whereby said sealant is compressed in tight fitting relation between the extended edge portion of the upper face of said first panel and said overlapping edge portion of said second panel and seals said joint.

4,575,982
PANEL UNIT
Hans Wenger, CH-8574, Lengwil/TG, Switzerland
Continuation-in-part of Ser. No. 409,143, Aug. 18, 1982, abandoned. This application Nov. 28, 1984, Ser. No. 675,614
Int. Cl.⁴ E04B *1/38, 1/62*
U.S. Cl. 52—509 **8 Claims**

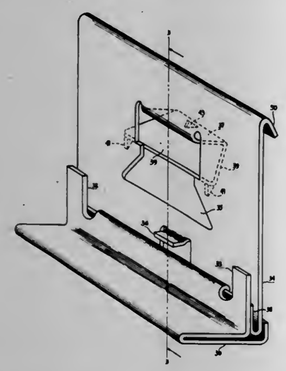


1. A panel unit including a plurality of boards fitted together by tongue-and-groove elements, adapted to be applied to a wall with other panel units in mutual edge-to-edge engagement, and having an outer surface, and an inner surface directed to the wall,
characterized in that,
a fastening strip is secured to said inner surface, extending across the long axes of the boards,
a mat of insulating material is glued to said inner surface,
mounting screws are secured in the wall adjacent to but outwardly beyond the edge of a panel unit, extending transverse to the plane of the panel unit and wall and confined between said inner surface and the wall, and thereby covered by the adjacent panel unit,
the fastening strips on adjacent panel units have mutually oppositely directed offsets of differet depths, extending parallel to the inner surface of adjacent panel units, an inner offset being adjacent the wall and an outer offset adjacent to but spaced from said inner surface,
said offsets having slotted end elements engaging the securing screw spaced apart substantially the thickness of the mat of insulating material.

4,575,983
SLIDING HOLD-DOWN CLIP FOR STANDING SEAM METAL ROOF
Hamilton Lott, Jr., Fort Wayne, and Lynn E. Strock, Waterloo, both of Ind., assignors to Nucor Corporation, Charlotte, N.C.
Filed Feb. 1, 1985, Ser. No. 697,148
Int. Cl.⁴ E04D *1/34*
U.S. Cl. 52—544 **5 Claims**

1. In a standing seam roof for an infrastructure, said roof having a pair of adjacent roof panels formed with interleaved upwardly directed portions providing a standing seam, a compound clip having a lower base part adapted to be attached to

said infrastructure and an upper hold-down part, said hold-down part positioned between said adjacent upwardly directed roof panel portions and coacting with said seam to prevent the seam from moving upwardly away from the hold-down part of said clip, a slidably interlocking joint between said hold-down part and said base part adapted to permit sliding motion between said upper and lower clip parts, means carried by said upper clip part to prevent relative longitudinal movement between said roof panel seam and said upper clip part, a projection carried by said upper clip part, a pair of stops positioned on opposite sides of said projection and adapted to coact with said projection to limit its sliding motion, and means for fixing



one point of each of said roof panels against longitudinal motion while allowing the opposite points of the panels floating movement owing to thermal expansion and contraction, the distance between said projection and the stop nearer the floating points of the panel being less than the distance between said projection and the stop nearer the fixed point of the panel, the construction being such that it will accommodate excessive thermal expansion by allowing the roof panels to buckle, thus preventing permanent damage to the roofing system, while permitting contraction without placing the roof panels in tension, thus also preventing permanent damage to the roofing system.

4,575,984

CONSTRUCTION ELEMENT

Gijsbert Versteeg, Nunspeet, Netherlands, assignor to IMEX AG, Zurich, Switzerland

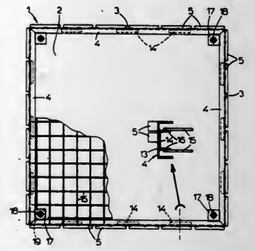
Filed Jun. 9, 1983, Ser. No. 502,744

Claims priority, application Netherlands, Jun. 16, 1982, 8202430

Int. Cl.⁴ E04C *1/10, 1/30*

U.S. Cl. 52—589 **8 Claims**

1. Construction element for constructing a supporting floor or the like, comprising a slab made of reinforced concrete having an upper and a lower surface, each of the side walls of the slab being provided with an upper and lower series of aligned, alternating projections and complementary recesses, each projection having an upper and a lower surface, the bottom wall of each recess being flush with the corresponding side wall of the slab, wherein the recesses of the upper series lie above the projections of the lower series, wherein the recesses of the lower series lie below the projections of the upper series and, wherein the recesses and projections of the lower series lie at a distance from the lower surface of the slab, and wherein the side walls of the slab are provided with protection profiles connected with each other, the projections being carried by the protection profiles and wherein a corner plate is mounted



in each corner formed by two of said protection profiles joining each other, a hole being formed in each corner plate.

4,575,985

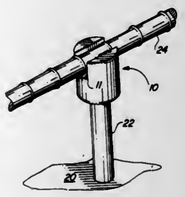
REBAR SADDLE

Richard H. Eckenrodt, 9660 N. Ridge View Pl., Oro Valley, Ariz. 85704

Filed Jun. 24, 1985, Ser. No. 747,917

Int. Cl.⁴ E04C *5/16*

U.S. Cl. 52—677 **17 Claims**



1. A rebar saddle for securing and suspending above ground reinforcing bars used in strengthening concrete comprising:
an elongated solid cylinder having a first and second end, sides, and longitudinal axis;
said elongated solid cylinder first end defining a saddle formed therein adapted to receive and secure the reinforcing bar; and
said elongated solid cylinder second end defining a blind hole formed therein adapted to receive a stake driven into the ground whereby the rebar saddle suspends the reinforcing bar in position to have concrete poured around it and cured.

4,575,986

METHOD AND APPARATUS FOR PACKAGING GARMENTS

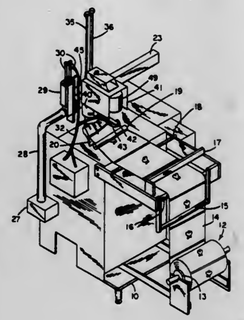
Richard A. Willett, Snellville; Fred J. Faletti, Atlanta, and Paul A. Faletti, Lilburn, all of Ga., assignors to All-Pak, Inc., Decatur, Ga.

Filed Jan. 6, 1984, Ser. No. 568,704

Int. Cl.⁴ B65B *63/04*

U.S. Cl. 53—118 **1 Claim**

1. Apparatus for packaging garments comprising, in combination, a generally vertically oriented tubular packing chamber; a spindle mounted for rotary movement within said packing chamber about a generally vertical axis to wind a garment about said spindle; a vacuum in-feed channel extending laterally from said packing chamber ; means for placing under vacuum said channel and packing chamber to draw a garment through said channel and into said packing chamber for bundling about said spindle; means for forming flexible packaging material into an elongated tube that extends downwardly from said tubular packing chamber and for successively drawing, sealing and severing end portions of said tube at a fill station located beneath said packing chamber; and plunger means



mounted for generally vertical reciprocal movement over said spindle to and from said fill station for urging in direct contact therewith bundled garments off of said spindle and down into end portions of the tube of packaging material.

4,575,987

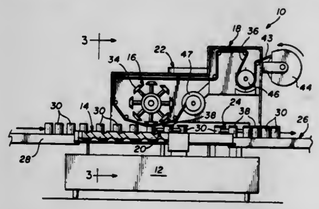
APPARATUS FOR CLOSING A CONTAINER

Vincent E. Fortuna, Huntington Beach, Calif., assignor to Vercon, Inc., Dallas, Tex.

Filed Apr. 25, 1985, Ser. No. 727,328

Int. Cl.⁴ B65B *7/28, 51/14*

U.S. Cl. 53—298 **8 Claims**



1. Improved apparatus for closing and sealing the open top of a container with a cover having a heat responsive adhesive polymer thereon, said apparatus comprising in combination:
a housing;
container feed means on said housing for receiving the containers and for positioning each container;
cover applying means on said housing for locating a cover on each positioned container to close the open top;
container discharge means; and,
means for activating said adhesive polymer including means for moving said container from said container feed means to said discharge means.

4,575,988

METHOD AND APPARATUS FOR STORING CONTINUOUSLY ARRIVING FLAT PRODUCTS, ESPECIALLY PRINTED PRODUCTS, AND PRODUCT PACKAGE FORMED FROM SUCH PRODUCTS

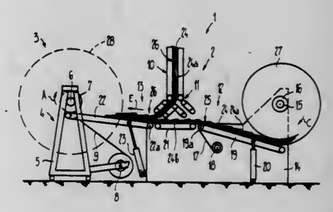
Jacques Meier, Büretswil, Switzerland, assignor to FERAG AG, Hinwil, Switzerland

Filed Nov. 29, 1982, Ser. No. 445,565

Claims priority, application Switzerland, Dec. 9, 1981, 7854/81

Int. Cl.⁴ B65B *63/04*

U.S. Cl. 53—399 **21 Claims**



1. A method of storing continuously arriving substantially flat products, especially printed products, preferably arriving in an imbricated product formation, comprising the steps of:
conveying a continuous stream of products towards a wind-up station including a wind-up location equipped with a winding core;
forming from said stream of products a leading first product portion and a subsequent second product portion;
delivering said first product portion after a predetermined delay time to said wind-up location; and
simultaneously winding-up said first product portion and said second product portion of said stream of products at said wind-up location.

4,575,989

METHOD AND DEVICE FOR PACKAGING PALLETIZED STACKS OF GOODS

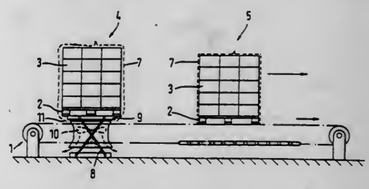
Rainer W. Hannen, Goch, Fed. Rep. of Germany, assignor to MSK-Verpackungs-Systeme GmbH, Kalkar-Wissel, Fed. Rep. of Germany

Filed Oct. 15, 1982, Ser. No. 434,703

Claims priority, application Fed. Rep. of Germany, Oct. 16, 1981, 3141100; Jan. 14, 1982, 3200832; Feb. 6, 1982, 3204171

Int. Cl.⁴ B65B *31/04, 53/06*

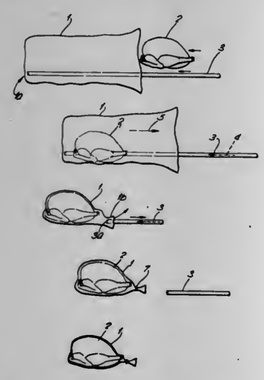
U.S. Cl. 53—434 **28 Claims**



1. The method of packaging palletized stacks of goods, comprising the steps of:
(a) providing a pallet with peripheral edges and a stack of goods resting on said pallet;
(b) providing a support means disposed beneath said pallet and extending short of said edges;
(c) placing said pallet on a support disposed above said support means;

(d) raising said pallet from said support with said support means;
(e) wrapping said stack of goods with a shrink wrap material so that a portion of said shrink wrap material extends under said edges and short of said support means;
(f) lowering said pallet onto said support for thereby clamping said portion of said shrink wrap material between said support and the underside of said pallet; and,
(g) shrinking said shrink wrap material while maintaining said portion clamped for thereby tightly encasing said stack of goods onto said pallet.

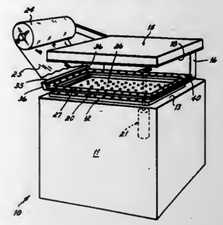
4,575,990
SHRINK PACKAGING PROCESS
Gottfried von Bismarck, Lutry, Switzerland, assignor to W. R. Grace & Co., Cryovac Div., Duncan, S.C.
Filed Jan. 11, 1985, Ser. No. 690,789
Claims priority, application United Kingdom, Jan. 19, 1982, 8401383
Int. Cl.⁴ B65B *31/04*
U.S. Cl. 53—434 **16 Claims**



1. A process for packaging comprising:
(a) placing a product article in a heat shrinkable plastics bag having an opening and a closed end remote from the opening;
(b) inserting a nozzle into the bag through the opening so that the nozzle extends approximately to the closed end;
(c) flushing air from the bag interior by injecting a hot gas into the bag interior so as to impart shrinking heat to the bag thereby
(d) shrinking the region of the bag in contact with the discharging hot gas;
(e) withdrawing the nozzle to cause the regions of the bag in contact with the discharging hot flushing medium to shrink progressively as the nozzle is withdrawn as the medium contacts the bag walls; and
(f) sealing the bag to provide a heat-shrunk, at least substantially air-free, package.

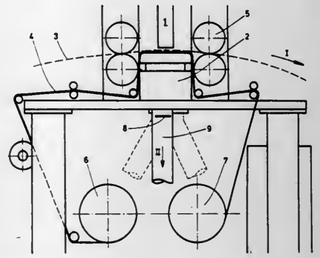
4,575,991
SKIN PACKAGING MACHINE WITH VACUUM FRAME
Alexander Hollingsworth, Anderson, S.C., assignor to Nordson Corporation, Amherst, Ohio
Filed Oct. 12, 1984, Ser. No. 660,109
Int. Cl.⁴ B65B *11/52*
U.S. Cl. 53—509 **6 Claims**

1. In a skin packaging machine having a base, a vacuum box having a perforated platen onto which a substrate and articles to be packages are placed, vacuum means for applying a vacuum to said vacuum box, an oven mounted to said base and overlying said vacuum box and a support for a roll of film adjacent said base, the improvement comprising
a film frame surrounding said perforated platen and mounted between said platen and said oven,
said frame being hollow and having a plurality of holes in its upper surface and spaced around said frame,



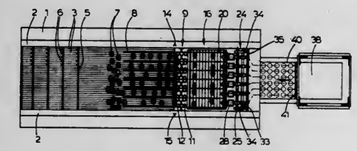
means for applying a vacuum to said frame sufficient to hold said film on said upper surface by said holes on said frame, and means for moving said frame between a position adjacent said platen and a position adjacent said oven so that said film on said upper surface juxtaposes said oven without any interposed elements.

4,575,992
APPARATUS FOR PRODUCING CLOTH CUT OUTS FOR PACKAGING IN A CONTAINER TOGETHER WITH THE PRODUCTION AT A DIFFERENT RATE OF CLOSURE CUT OUT FOR THE CONTAINER
Jean-Francois Caumont, Brionne, France, assignor to Tempo Sanys, Paris, France
Filed Jun. 27, 1980, Ser. No. 163,706
Claims priority, application France, Oct. 11, 1979, 79 25358
Int. Cl.⁴ B65B *7/28, 63/00*
U.S. Cl. 53—520 **1 Claim**



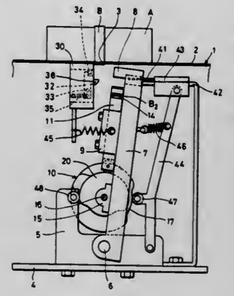
1. Apparatus for cutting out discs or other shapes from a cloth sheet, for filling containers with the cut-outs, and for cutting out a closure member of the same shape from a sheet of closure material, said apparatus comprising
(a) a die having an opening of the requisite shape,
(b) a punch arranged to cooperate with the die to cut out material disposed in the gap between the punch and the die
(c) first stepping means for stepping the sheet of cloth material through the gap between the punch and die at a first frequency, and
(d) second stepping means for stepping the sheet of closure material through the gap between the punch and die at a second frequency lower than said first frequency,
said first and second stepping means including means for causing the two sheets of material to be disposed one over the other when in the gap between the punch and the die whereby a cloth cut out and a closure cut out are produced in one stroke of the punch followed by a sequence of strokes in which only cloth cut outs are produced.

4,575,993
MACHINE FOR PACKAGING EGGS
Pieter Meyn, Noordeinde 68C, 1511 AE Oostzaan, Netherlands
Filed Jun. 15, 1983, Ser. No. 504,526
Claims priority, application Netherlands, Jun. 16, 1982, 8202431
Int. Cl.⁴ B65B *23/06*
U.S. Cl. 53—534 **9 Claims**



1. Machine for packaging eggs comprising:
means for supplying eggs arranged in successive cross rows of a predetermined number,
said eggs being equally spaced in said cross rows at a first distance between their longitudinal axes, and aligned and oriented with their blunt ends facing in the direction of supply movement,
means for supplying egg container means having egg holding recesses, said recesses being arranged in parallel cross rows of a number equal to said predetermined number of cross rows of said eggs and equally spaced in said cross rows at a second distance between their centers smaller than said first distance, and
transfer means for receiving said successive cross rows of oriented eggs to transfer said rows to successive corresponding cross rows of said egg holding recesses of said egg container means, said transfer means comprises,
(i) a horizontally extending cross row of egg holders mounted for common rotation and supported for transverse sliding movement with respect to each other,
(ii) driving means for rotating said rotatable row of egg holders between an egg receiving position and an egg discharging position, and
(iii) egg holder control means cooperating with said egg holders to shift said egg holders laterally with respect to each other during said rotating movement so that,
the centers of said egg holders in said receiving position being relatively spaced by said control means at said first distance and said egg holders facing upwards for receiving a row of said oriented eggs from said egg supply means and the centers of said egg holders in said discharging position being relatively spaced by said control means at said second distance and facing downwards for dropping the eggs received therein into said row of egg holding recesses wherein said first distance is larger than said second distance, and
a cross row of ejector means, and egg holders having an open bottom and said ejector means being arranged to project through said open bottoms of said egg holders in the egg discharging position of the latter for ejecting the eggs therefrom.

4,575,994
PACKAGE STRAPPING MACHINE
Masaho Takami, Hirakata, Japan, assignor to Shoko Kiko Co., Ltd., Shijonawate, Japan
Filed Nov. 29, 1984, Ser. No. 676,404
Claims priority, application Japan, Dec. 5, 1983, 58-229637; Jun. 30, 1984, 59-136872; Sep. 21, 1984, 59-144024
Int. Cl.⁴ B65B *13/02*
U.S. Cl. 53—582 **3 Claims**



1. A package strapping machine comprising a top board on which a package to be strapped is loaded and having an elongated opening therein for allowing a strap which is to be strapped around a package to be pulled therethrough, a base plate disposed under said top board, a main shaft held on said base plate in parallel with the elongation of said opening, a pivotal member adapted to transversely turn pivotally on said main shaft and having a lateral projection on its upper free end for allowing an overlapping portion of said strap to be fed beneath said lateral projection parallel to said elongated opening to be pressed against the under surface of said lateral projection, the length of said lateral projection measured in the direction traversing the path along which said strap is fed being substantially equal to the breadth of said strap, two clamps and a pressing means mounted on said pivotal member under said lateral projection and adapted to move up and down so as to press said strap against the under surface of said lateral projection, a cam mechanism mounted on said pivotal member under said two clamps and said pressing means so as to impart up-and-down motion to said two clamps and said pressing means, a welding means for welding said overlapping portion, and a sidepiece secured to the under surface of said top board and having a surface flush with a longitudinal edge of said elongated opening, means for pivoting said pivotal member to an upright position so that the end face of said lateral projection contacts said surface of said sidepiece thereby forming a guideway through which the strap is inserted beneath said lateral projection.

4,575,995
AUTOMATIC PRODUCING APPARATUS OF CHIP-FORM ELECTRONIC PARTS AGGREGATE
Makoto Tabuchi, and Kiyoshi Imanishi, both of Kyoto, Japan, assignors to Murata Manufacturing Co., Ltd., Japan
Continuation of Ser. No. 250,660, Apr. 3, 1981, abandoned. This application Apr. 13, 1984, Ser. No. 599,597
Claims priority, application Japan, Apr. 3, 1980, 55-44168; Apr. 29, 1980, 55-58103; Apr. 29, 1980, 55-58102
Int. Cl.⁴ B65B *27/10, 47/00*
U.S. Cl. 53—591 **21 Claims**

1. Apparatus, comprising:
an intermittent feed device for intermittently feeding a tape-like housing body on a rail, said tape-like housing body having a plurality of housing holes and a plurality of feed holes formed at respective predetermined intervals

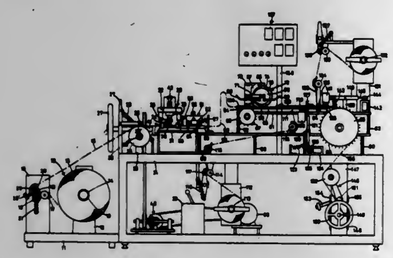
therein, said tape-like housing body being fed along said rail by feed pins of said intermittent feed device which engage said feed holes;

a loading device provided along the traveling path of the tape-like housing body and adapted to load a respective chip-form electronic part into that one of said housing holes which is located at a predetermined chip insertion position each time said tape-like housing body is in a dwell period of its intermittent feed;

a cover sheet supply device for supplying at least one tape-like cover sheet to the surface of the tape-like housing body in a manner which encloses each said housing hole after a respective chip-form electronic part has been placed therein;

a cover sheet adhering device for adhering said at least one cover sheet to said housing body so as to form a strip-like container housing chip-form electronic parts; and

a winding device for intermittently winding the strip-like container being fed from said intermittent feed device around a reel, said winding device being intermittently driven at a rate which is different than that of said intermittent feed device, said feed pins of said intermittent feed device being located downstream of said chip insertion position but upstream of said winding device relative to the path of travel of said tape-like housing body whereby said feed pins prevent forces placed on said container by said winding device from adversely affecting the relative positions of said housing hole located at said loading position and said loading device.



16. Apparatus, comprising:

(A) an intermittent feed device for intermittently feeding a tape-like housing body having a plurality of housing holes formed therein at predetermined intervals;

(B) a loading device provided along the traveling path of the tape-like housing body and adapted to load a respective chip-form electronic part into each of the housing holes;

(C) a cover sheet supply device for supplying at least one tape-like cover sheet to the surface of the tapelike housing body so as to enclose each said housing hole after a respective chip-form electronic part has been placed therein;

(D) a cover sheet adhering device for adhering said at least one cover sheet to said housing body so as to form a strip-like container housing chip-form electronic parts;

(E) a winding device for winding the strip-like container around a reel;

(F) said loading device comprising:

(1) a chip-form electronic part loading body which includes an annular rotary body having an outer peripheral surface and an inner peripheral surface, said inner cylindrical surface being rotatably fitted onto an outer peripheral surface of a circular fixed head located above said tape-like housing body, said axis of rotation of said rotary body lying perpendicular to the plane of said tape-like housing body as said tape-like housing body travels past said loading device, a plurality of chip-form electronic part housing grooves open on one side thereof being provided on said outer peripheral surface of said annular rotary body with a predetermined spacing interposed therebetween, a plurality of through holes, each said through hole extending from a respective said housing groove to said inner peripheral surface;

(2) a drive means for intermittently rotating said annular rotary body of said chip-form electronic part loading body;

(3) a vibration supply device for consecutively placing chip-form electronic parts into respective housing grooves at the top of said chip-form electronic part loading body through said lateral openings thereof;

(4) a suction holding device comprising a first recess provided in said peripheral surface of said fixed head in an area facing said tape-like housing body, and in a position which sequentially communicates with said through hole as said annular rotatable body is rotated about said fixed head, and a vacuum source for absorbing the air in said first recess thereby enabling the electronic part housed in each said housing groove whose through hole communicates with said first recess to be suction-held in said housing groove; and

(5) a forced falling device including a second recess provided in said peripheral surface of said fixed head in an area adjacent said first recess, and in a position which sequentially communicates with each said through hole as said annular rotatable body is rotated about said fixed head, and an air pressure source for supplying air pressure into said second recess, as each said housing groove reaches a position wherein its said through hole comunicates with said second recess, the said electronic part housed in said housing groove is forced to fall by said air pressure out of said housing groove and into said housing hole of the tape-like housing body.

17. Apparatus, comprising:

(A) an intermittent feed device for intermittently feeding a tape-like housing body having a plurality of housing holes formed therein at predetermined intervals, said intermittent feed device including a rail along which said tape-like housing body travels;

(B) a loading device provided along the traveling path of said tape-like housing body and adapted to load a respective chip-form electronic part into each housing hole when that housing hole is located at a chip insertion position, said electronic part loading device comprising:

(1) a through hole provided in the rail at a location corresponding to said chip insertion position;

(2) an electronic part supplying device for supplying a chip-form electronic part to a first position adjacent and below the through hole;

(3) a push-up device adapted to push up the chip-form electronic part located at said first position through said through hole and into said chip insertion position when a housing hole of said tape-like housing body is located at said chip insertion position such that a chip-form electronic part is placed in that housing hole; and

(4) a suction holding device disposed above the through hole for suction-holding the chip-form electronic part pushed up into the housing hole located at said chip insertion position;

(C) a cover sheet supply device for supplying at least one tape-like cover sheet to a surface of the tape-like housing body so as to enclose each said housing hole after a respective chip-form electronic part has been placed therein;

(D) a cover sheet adhering device for adhering said at least one cover sheet to said housing body so as to form a strip-like container housing chip-form electronic part; and

(E) a winding device for winding the strip-like container around the reel.

18. Apparatus, comprising:

(A) an intermittent feed device for intermittently feeding a tape-like housing body having a plurality of housing holes formed therein at predetermined intervals;

(B) a loading device provided along the traveling path of the tape-like housing body and adapted to load a respective chip-form electronic part into each of said housing holes;

(C) a cover sheet supply device for supplying at least one tape-like cover sheet to a surface of said tape-like housing body so as to enclose each said housing hole after a respective chip-form electronic part has been placed therein;

(D) a cover sheet adhering device for adhering said at least one cover sheet to said housing body so as to form a strip-like container housing chip-form electronic part; and

(E) a winding device for winding said strip-like container around a reel, said winding device comprising:

(1) a reel for taking up the strip-like container housing chip-form electronic parts transported by the intermittent feed device, said reel being rotatably provided on a first axis body;

(2) a motor connected to the first axis body for rotating the reel;

(3) a tension roll provided on one end of an arm fixed to a rotatable second axis body for pressure tightening the strip-like container transported by the intermittent feed device;

(4) a cam body mounted on the second axis body so as to be rotatable integrally with the arm of the tension roll; and

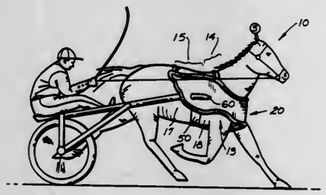
(5) a pair of switches provided in locations in which they are pressed by the cam body, the location of the tension roll pressing the strip-like container being shifted as a function of the length of the portion of the strip-like container disposed between the intermittent feed device and the reel, the switches thus pressed by the cam body being actuated thereby intermittently driving the motor for rotating the reel.

4,575,996

HORSE WIND AND MUD DEFLECTOR

Glenn R. Ferguson, Rte. 1 Box 305, Cusick, Wash. 99119, and Kenneth R. Ferguson, 1184 Foothill Rd., Box 283, Moscow, Id. 83843

Filed Jan. 11, 1985, Ser. No. 690,779
Int. Cl.⁴ B68C *5/00*
U.S. Cl. 54—80 **19 Claims**



1. A wind and mud deflector for horses, comprising:

an elongated flexible body formed of sheet material including opposed side panels joined at a front section;

said side panels and front section including longitudinal top and bottom edges spaced apart by a distance at the front section such that the front section will cover substantially the entire breast of a horse;

wherein the side panels extend longitudinally from the front section and taper to reduced rearward ends;

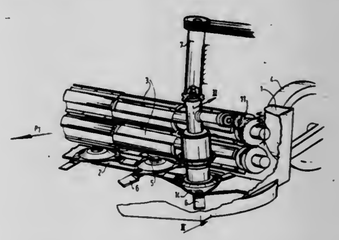
strap means on the body for attaching the body to a horse with the frontal section centered on the horse's breast, with the side panels extending rearwardly from the frontal section over the shoulders and ribs on opposite sides of the horse, and with the rearward side panel ends situated adjacent the horse's back and forward of the hips.

4,575,997

MOWING DEVICE HAVING IMPROVED DRIVE AND/OR A CROP SEPARATING DRUM

Hendrikus J. A. Van Paradijs, St. Oedenrode, and Gysbert J. Mynders, Nieuw-Vennep, both of Netherlands, assignors to Multinorm B.V., Nieuw Vennep, Netherlands

Filed Mar. 2, 1984, Ser. No. 585,543
Claims priority, application Netherlands, Mar. 4, 1983, 8300800
Int. Cl.⁴ A01D *43/10*
U.S. Cl. 56—16.4 **9 Claims**



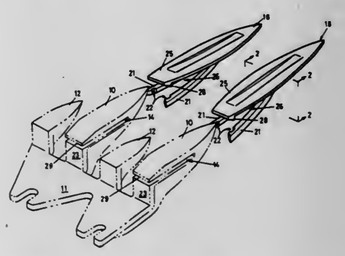
1. A mowing device comprising a frame movable across the field and a cutter bar carried by the frame and having a plurality of cutter members rotatable about standing shafts by means of a transmission arranged in said bar, said frame being adapted to accommodate rotatable crop crushing means at a higher level than the cutter bar, whilst at least one of the outermost cutting members is provided with a drum characterized in that the drum comprises two coaxially aligned parts, said aligned parts having overlapped end portions in which one of said end portions is disposed within the other of the end portions and said end portions terminating in generally parallel edges inclined with respect to the axes of said parts to protect the interior of the drum from dirt or other material, a main drive rotates said crushing means and said one cutting member through an intermediate drive disposed in said drum, said intermediate drive including length-compensating means and being formed by a shaft of non-metallic material.

4,575,998

HARVESTER COMB FINGERS

Donald G. Brooks, 12 O'Malley St., Osborne Park, Australia 6017

Filed Mar. 26, 1985, Ser. No. 716,058
Claims priority, application Australia, Mar. 26, 1984, PG4250
Int. Cl.⁴ A01D *55/12*
U.S. Cl. 56—312 **6 Claims**



1. A grain harvester comb finger extension for a knife guard finger of a cutter bar/harvester comb assembly, comprising an upper portion, a lower portion, an aperture in the lower portion the surface walls of which are complementary in

size and shape to the knife guard finger so that the finger extension can fit in a glove-like manner over the front end of the knife guard finger,

the lower portion comprising at least one rearwardly extending latching portion engageable with an abutment surface at the rear end of the knife guard finger,

said finger extension being of flexible and resilient polymeric material.

4,575,999

PNEUMATIC NOZZLE UTILIZED IN THE PROCESS OF PRODUCING A FASCIATED YARN

Meiji Anahara, Kariya, and Hiroshi Omori, Aichi, both of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi, Japan

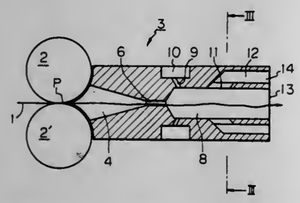
Filed Jul. 14, 1983, Ser. No. 513,412

Claims priority, application Japan, Jul. 21, 1982, 57-125853

The portion of the term of this patent subsequent to Mar. 20, 2001, has been disclaimed.

Int. Cl.⁴ D01H *5/28*; D02G *1/04*

U.S. Cl. 57—333 **6 Claims**



1. In a pneumatic nozzle utilized in the process of producing a fasciated yarn, provided with a passage for transporting a bundle of fibers in which an inlet portion, a small channel, and a large channel having an outlet opening communicating to the outside at a downstream end thereof are successively arranged from the upstream end thereof to the downstream end thereof and at least one air-supply aperture for tangentially ejecting compressed air toward a restricted region of said passage in said large channel, an improvement comprising a supplemental connecting means formed in said nozzle for connecting said large channel with the outside of said nozzle, said connecting means being formed downstream of said restricted region in said large channel where said air stream from said air-supply aperture is directed, whereby a part of the air in said large channel is capable of discharging through said connecting means while the remaining volume of air in said large channel is discharged through said outlet opening of said large channel.

4,576,000

SPINNING ROTOR FOR AN OPEN-END SPINNING DEVICE AND PROCESS OF MAKING SAME

Rolf Griesinger, Göppingen-Faurndau, and Gerhard Fetzer, Süssen, both of Fed. Rep. of Germany, assignors to Hans Stahlecker, Fed. Rep. of Germany and Fritz Stahlecker, Fed. Rep. of Germany

Filed Jul. 2, 1984, Ser. No. 626,931

Claims priority, application Fed. Rep. of Germany, Jul. 5, 1983, 3324128

Int. Cl.⁴ D01H *1/12*

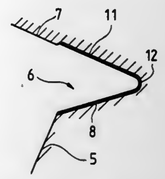
U.S. Cl. 57—416 **10 Claims**

1. Spinning rotor construction for an open-end spinning machine including a rotor made from a plastically deformable material, comprising:

a rotor bottom,

a fiber collecting groove adjoining the rotor bottom and exhibiting the maximum rotor internal diameter, said fiber collecting groove being uncoated and being made from said material,

and a sliding wall commencing at an open face side of the rotor, and extending in a conically widening manner to the fiber collecting groove,



wherein the surfaces of the fiber collecting groove are hardened by being plastically deformed.

4,576,001

GAS TURBINE ENGINE OIL SYSTEMS

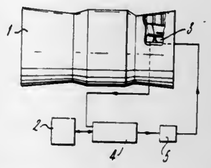
Stanley Smith, Gloucestershire, England, assignor to Rolls-Royce Limited, London, England

Filed Jan. 24, 1984, Ser. No. 573,312

Claims priority, application United Kingdom, Feb. 11, 1983, 8303903

Int. Cl.⁴ F02C *7/06*; F02G *3/00*

U.S. Cl. 60—39.08 **8 Claims**



1. A gas turbine engine oil system comprising an oil storage tank, a rotatable centrifugal separator, bearing chambers of an engine, scavenge means which operatively removes oil from the bearing chambers and directs it to the centrifugal separator, means for pressurizing said tank to a first pressure, conduit means which operatively conveys oil from the interior of said tank to the centrifugal separator oil circulating means which operatively directs at least a portion of the oil from the separator to the engine bearing chambers by centrifugal action of the centrifugal separator without passing the oil through said tank, and where said conduit means also operatively directs oil in excess of that required by the oil circulating means, back to said tank, at a pressure higher than the first pressure, whereby the bearing chambers and the tank are in separate flow circuits with each said circuit having said separator as an element thereof.

4,576,002

EXHAUST MIXER FOR TURBOFAN AEROENGINE

George Mavrocostas, Lanarca, Cyprus, assignor to Rolls-Royce Limited, London, England

Filed Aug. 22, 1984, Ser. No. 643,183

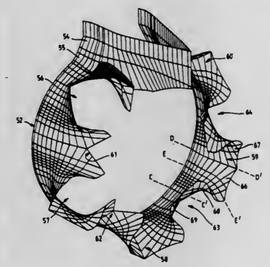
Claims priority, application United Kingdom, Sep. 14, 1983, 8324669

Int. Cl.⁴ F02K *3/02*

U.S. Cl. 60—262 **8 Claims**

1. An exhaust mixer of the multi-lobed type for a bypass gas turbine aeroengine whereby during operation of said aeroengine there is established a vortex system downstream of said exhaust mixer to encourage mixing between a bypass airstream and a turbine exhaust stream, said mixer comprising:

a plurality of troughs and lobes, said troughs being located between said lobes, said troughs and said lobes comprising confronting pairs of flow surfaces, said flow surfaces having a progressive twist between their upstream and downstream ends such that said vortex system is established, said vortex system including vortices of said bypass air and said turbine exhaust trailing from said downstream ends of said flow surfaces, and vortex destabilising means including said twisted flow surfaces having downstream edges in the form of sinuous curves each having a single



point of inflection, said sinuous curves producing substantial variations in the degree of twist of the downstream ends of the flow surfaces relative to their upstream ends, said bypass airstream and said turbine exhaust stream leaving the downstream edges of said flow surfaces with a substantial range of rotational velocity components and a substantial range of velocity components transverse to the streamwise direction of air and exhaust flow whereby said vortex system is rendered unstable and said vortices interact with one another to burst.

4,576,003

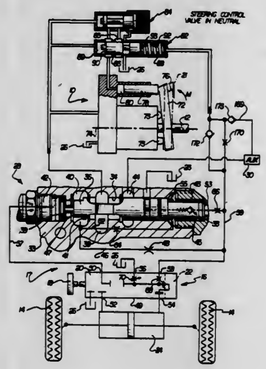
HYBRID LOAD-SENSE VEHICLE HYDROSTATIC STEERING SYSTEM

Jim L. Rau, Lafayette, and Ronald L. LaHue, West Lafayette, both of Ind., assignors to TRW Inc., Cleveland, Ohio

Continuation of Ser. No. 437,633, Oct. 29, 1982, abandoned. This application Mar. 18, 1985, Ser. No. 713,085

Int. Cl.⁴ F16D *31/02*

U.S. Cl. 60—384 **11 Claims**



1. A hydrostatic steering system for operating a vehicle steering motor comprising

a source of fluid,

a hydrostatic steering controller having an inlet port, a load sense port, a metering unit, and a control valve,

a main fluid circuit communicating fluid from said source to the inlet port of the controller,

a pilot fluid circuit for directing pilot fluid from said source to the load sense port of the controller, and

means responsive to fluid pressure in the pilot fluid circuit for controlling fluid flow in the main fluid circuit to the inlet port of the controller,

said control valve having a neutral position and being movable away from said neutral position in accordance with an operator's demand and a steering load for directing and controlling fluid flow from the inlet port and the load sense port to the metering unit and from the metering unit to the steering motor, the control valve directing pilot fluid from the load sense port to a reservoir when the control valve is in its neutral position and communicating pilot fluid from the load sense port to the metering unit as the control valve moves away from its neutral position,

said metering unit being operable at a rate which corresponds to the operator's demand and the steering load when the rate of fluid being directed to the metering unit equals the rate at which metered fluid is being directed to the steering motor, the pilot fluid circuit directing sufficient pilot fluid to the load sense port for the metering unit to operate at a rate which corresponds to the operator's demand and the steering load over a range of operator demands and steering loads, said control valve, when in said neutral position, blocking fluid at said inlet port of said hydrostatic steering controller, said control valve being biased to said neutral position and, in response to rotation of the vehicle's steering wheel, being movable away from said neutral position and to an operating condition in which it establishes a main flow control orifice communicating said inlet port with said metering unit, said control valve as it moves away from said neutral position restricting the flow of pilot fluid to the reservoir and communicating pilot fluid to the metering unit at a rate such that the pilot fluid directed to the metering unit is sufficient for the metering unit to operate at a rate which corresponds to the operator's demand and the steering load over said range of operator demands and steering loads,

said source including a variable displacement pump having an outlet,

said pilot fluid circuit including a main pilot conduit communicating with the load sense port of the controller, and first and second branch pilot conduits, and

said means responsive to fluid pressure in the pilot fluid circuit including actuator means for controlling the displacement of the pump, a flow compensator valve for effecting operation of the actuator means, and a priority valve which communicates fluid from the pump to the inlet port of the controller,

said priority valve including an inlet communicating with the source, a priority outlet communicating with the inlet port of the hydrostatic steering controller, an auxiliary outlet, a pilot outlet connected to the main pilot conduit, a priority valve element for controlling a flow of fluid communicated to the inlet port of the controller, first biasing means biasing the priority valve element to a priority position in which it communicates the inlet with the priority outlet and blocks communication between the inlet and the auxiliary outlet, and means defining a pilot fluid pressure cavity at one end of the valve element so that fluid in said cavity produces a fluid pressure force acting on the valve element, the priority outlet of the priority valve being communicated with the other end of the priority valve element,

the priority valve element being movable away from its priority position when fluid pressure force on said other end of the priority valve element exceeds the force of the first biasing means and the fluid pressure force on said one end of the valve element, the priority valve element as it

moves away from its priority position (i) gradually restricting communication between the inlet and the priority outlet and (ii) establishing and gradually increasing communication between the inlet and the auxiliary outlet,

said first branch pilot conduit branching from the priority outlet of the priority valve and directing pilot fluid through the pilot fluid pressure cavity to the pilot outlet, the first branch pilot conduit including a first orifice located between the priority outlet and the pilot fluid pressure cavity and a second orifice located between the pilot fluid pressure cavity and the pilot outlet,

said second branch pilot conduit branching from the priority outlet of the priority valve in parallel with the first branch pilot conduit and directing additional pilot fluid from the priority outlet to the main pilot conduit,

said actuator means including second biasing means urging the actuator means to a maximum displacement position and fluid actuated means for opposing the second biasing means,

said flow compensator valve including a flow compensator valve element, third biasing means for biasing the flow compensator valve element to a first position in which the displacement of the pump is at a maximum value, and means defining pressure cavities at opposite ends of the flow compensator valve element,

the outlet of the pump communicating with the pressure cavity at one end of the flow compensator valve element and fluid pressure in the main pilot circuit being communicated to the pressure cavity at the other end of the flow compensator valve element, said flow compensator valve element being movable away from its first position when a net fluid pressure force on the element exceeds the force of said third biasing means,

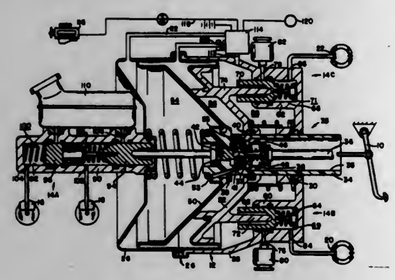
said flow compensator valve element when moved away from its first position communicating fluid from the fluid pressure cavity at said one end of said flow compensator valve element to the fluid actuated means which opposes the second biasing means, thereby to reduce the displacement of the pump.

4,576,004

BRAKING DEVICE WITH OPPOSITELY MOVABLE DIAPHRAGMS

Lloyd G. Bach, South Bend, Ind., assignor to Allied Corporation, Morristown, N.J.

Filed Jul. 2, 1984, Ser. No. 627,012
Int. Cl.⁴ B60T *13/00*
U.S. Cl. 60—547.1 **8 Claims**



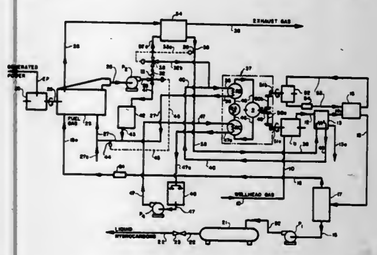
1. A brake system comprising a vacuum brake booster and master cylinder assembly, in combination, wherein the booster generates a power assist to actuate the master cylinder and communicate fluid pressure to a plurality of vehicle brake assemblies, the booster defining a housing with a pair of movable diaphragms therein; the diaphragms cooperating with the housing to substantially define three pressure cavities, and a valve assembly operable during braking to create a fluid pressure differential across the pair of diaphragms which biases the latter to move in opposite directions, and the housing includes a front shell adjacent a first master cylinder with one of the pair of diaphragms operatively coupled to the first master cylinder via suitable means so that movement of the one diaphragm generates fluid pressure in the first master cylinder for communication with one of the brake assemblies, characterized in that the housing includes a rear shell supporting a second master cylinder remote from the first master cylinder and the other diaphragm is operatively coupled to the second master cylinder to generate fluid pressure in the second master cylinder in response to movement of the other diaphragm.

4,576,005

WELLHEAD GAS TREATMENT AND CO-GENERATION METHOD AND SYSTEM

Louis W. Force, 718 North Dr., New Buffalo, Mich. 49117

Filed Jan. 7, 1985, Ser. No. 689,151
Int. Cl.⁴ F01K *23/06*
U.S. Cl. 60—618 **14 Claims**



1. In the method of treating raw wellhead gas to recover liquefiable hydrocarbons therefrom and of utilizing the remaining non-condensible hydrocarbon gas as fuel in an internal combustion engine - generator system to produce electric power, the steps comprising:

(a) compressing raw wellhead gas to a pressure and cooling said compressed wellhead gas to a temperature sufficient to condense the ethane and higher molecular weight hydrocarbon components of said wellhead gas;

(b) separating the condensed components of said wellhead gas from the non-condensible methane and lower molecular weight components thereof in a pressure chamber and removing said condensed components of said wellhead gas from said chamber as a bottoms stream of liquefied hydrocarbon product;

(c) removing the non-condensible methane and lower molecular weight components of said wellhead gas from said pressure chamber as a combustible gaseous stream and utilizing said gaseous stream as fuel in the engine of an internal combustion engine - generator system to produce electric power;

(d) introducing water coolant to the cooling section of the engine of said engine - generator system to cool said engine with the attendant heating of said coolant;

(e) removing the heated water coolant from the cooling section of said engine and utilizing said heated coolant as a waste heat source for heating the circulating fluid medium in a closed circuit organic Rankine cycle engine to produce work energy; and

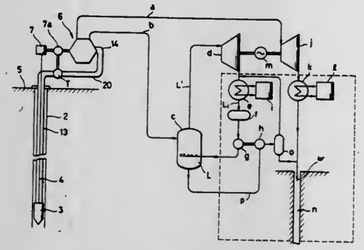
(f) utilizing a first portion of the work energy produced by said Rankine cycle engine to compress said wellhead gas and a second portion of the work energy produced by said Rankine cycle engine to cool said compressed wellhead gas to condense the ethane and higher molecular weight hydrocarbon components of said wellhead gas.

4,576,006

GEOTHERMAL HOT WATER TRANSPORTATION AND UTILIZATION SYSTEM

Keijiro Yamaoka, Tokyo, Japan, assignor to Mitsui Engineering & Shipbuilding Co., Ltd., Tokyo, Japan

Filed Jun. 11, 1984, Ser. No. 619,223
Int. Cl.⁴ F03G *7/04*
U.S. Cl. 60—641.5 **5 Claims**



1. A geothermal hot water transportation system for transporting geothermal hot water from underground to above ground, comprising

means for pressurizing and pumping hot water from a geothermal production well to a location above ground including a downhole pump for installation in the geothermal production well, and a long downhole pump shaft;

a pump casing having a below surface end connected to said down hole pump and an above surface end;

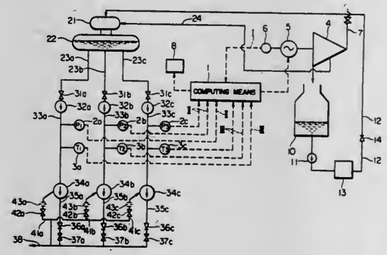
means for separating steam and hot water brought to the surface from the well by said downhole pump through said pump casing, including an above ground rotary separation two-phase flow turbine communicating with said above surface end of said pump casing, said two-phase flow turbine having a power output shaft means for directly powering said downhole pump through said downhole pump shaft.

4,576,007

METHOD AND APPARATUS FOR CONTROLLING AN OPERATION OF PLANT

Tadao Arakawa; Takeshi Ueno; Hiroshi Tsunematsu; Keiichi Toyoda, and Tsuguo Hashimoto, all of Hitachi, Japan, assignors to Hitachi, Ltd. and Hitachi Engineering Co., Ltd., both of Tokyo, Japan

Filed Mar. 26, 1985, Ser. No. 716,150
Claims priority, application Japan, Mar. 26, 1984, 59-55991
Int. Cl.⁴ F01K *13/02*
U.S. Cl. 60—660 **18 Claims**



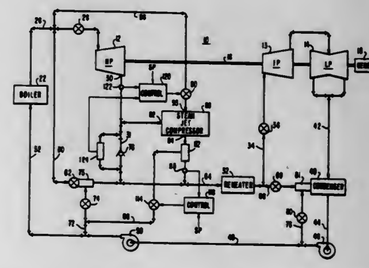
1. A method of controlling an operation of a turbine plant on a reduction of the load on a turbine, said turbine plant including a condenser for condensating the steam extracted from said turbine, a deaerator for deaerating a condensate from said condenser, feedwater pumps for supplying the deaerated feedwater to a boiler which evaporates the feedwater and supplies the steam to said turbine, and downcomer pipes through which said feedwater pumps are connected to said deaerator, said method comprising: measuring a load on said turbine and a pressure and a temperature of the feedwater in said downcomer pipes; computing an operational turbine load by means of computing means in accordance with the measured values, a demand load and a time duration in which the load has to be reduced; and controlling the load on said turbine while maintaining the pressure in said downcomer pipes higher than the saturation pressure corresponding to the temperature in said downcomer pipes.

4,576,008

TURBINE PROTECTION SYSTEM FOR BYPASS OPERATION

George J. Silvestri, Jr., Winter Park, Fla., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 11, 1984, Ser. No. 569,866
Int. Cl.⁴ F01K *13/02*
U.S. Cl. 60—662 **6 Claims**



1. In a steam turbine installation having a high pressure turbine, a steam generator for providing steam to said turbine, at least a lower pressure turbine, a reheater in the steam path between said high and lower pressure turbines, and a steam bypass path for bypassing said turbines, said high pressure turbine having a one-way check valve in its output steam line to prevent bypass steam from entering its output, the improvement comprising:

(A) a second bypass path for passing steam around said high pressure turbine;

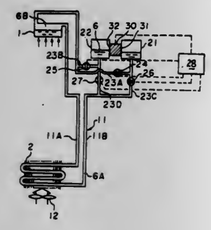
(B) said second bypass path including,

(i) steam jet compressor means including two input sections and an output section, with one said input section being connected to said high pressure turbine output, the other said input section being connected to receive steam from said steam generator and said output section being connected to the input of said reheater,

(ii) valving means for controlling the steam supply from said steam generator to said steam jet compressor means; and

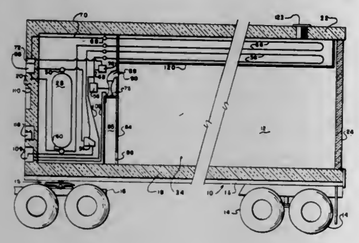
(C) control means responsive to an output condition at said high pressure turbine output for controlling said valving means.

4,576,009
HEAT TRANSMISSION DEVICE
Tetsurou Ogushi, Kawanishi, and Masaaki Murakami, Itami, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 22, 1985, Ser. No. 693,151
Claims priority, application Japan, Jan. 31, 1984, 59-15887; Jan. 31, 1984, 59-15888; Feb. 15, 1984, 59-26473
Int. Cl.[4] F25B *21/02*
U.S. Cl. 62—3 **15 Claims**



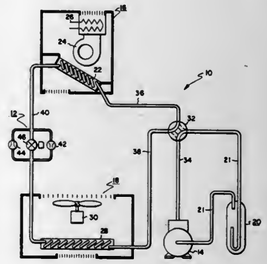
1. A heat transmission device comprising:
(a) a heat receiving part;
(b) a heat radiating part;
(c) a looped pipeline connecting said heat receiving part and said heat radiating part, said looped pipeline containing, during use, a working fluid having condensing properties as a heat transferring medium;
(d) a plurality of accumulators interposed in a parallel arrangement in said pipeline upstream of said heat receiving part but downstream of said heat radiating part;
(e) a heating/cooling means for heating and cooling said accumulators;
(f) a control means which performs alternately the first, operation of feeding said working fluid condensed at said heat radiating part to a first one of said accumulators and the second operation of circulating said working fluid in said first one of said accumulators to said heat receiving part and performs alternately said first and second operations in the reverse order in a second one of said accumulators.

4,576,010
CRYOGENIC REFRIGERATION CONTROL SYSTEM
Robert J. Windecker, Palm Beach, Fla., assignor to Nhy-Temp, Inc., West Palm Beach, Fla.
Filed Oct. 18, 1983, Ser. No. 543,059
Int. Cl.[4] F25D *17/02*
U.S. Cl. 62—64 **9 Claims**



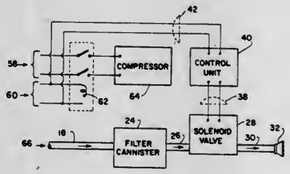
1. A process involving a refrigeration container having
a. an insulated compartment having a compartment temperature,
b. at least one cryogenic tank in the compartment,
c. cryogenic fluid coolant in the liquid and vapor states in the cryogenic tank,
d. a vapor conduit fluidly connected to the coolant vapor in the tank,
e. a liquid conduit fluidly connected to the coolant liquid in the tank;
wherein the improved method of refrigerating the container comprises the following steps in combination with the above:
f. selecting a minimum temperature such that when the compartment temperature is below the minimum temperature, no cooling of the compartment is desired,
g. selecting a maximum temperature that is higher than the minimum temperature, then
h. sensing the compartment temperature,
i. comparing the compartment temperature with the minimum and maximum temperatures, and then
j. venting excess coolant vapor from the vapor conduit to outside the compartment when the compartment temperature is below the minimum temperature, and
k. flowing coolant vapor from the vapor conduit into the compartment when the compartment temperature is above the minimum temperature and below the maximum temperature, and
l. vaporizing the coolant liquid in a vaporization section of the liquid conduit, and
m. releasing the vaporized coolant liquid into the compartment when the compartment temperature is above the maximum temperature.

4,576,011
AIR CONDITIONING SYSTEM AND METHOD OF OPERATION
Paul R. Glamm, and James C. Wendschlag, both of La Crosse, Wis., assignors to Electric Power Research Institute, Palo Alto, Calif.
Continuation of Ser. No. 437,903, Nov. 1, 1982, abandoned. This application Aug. 16, 1984, Ser. No. 641,413
Int. Cl.[4] F25B *1/00*
U.S. Cl. 62—115 **12 Claims**



1. A method for rapidly achieving steady state operation in a desired operating mode of an air conditioning device having a compressor, a heat exchanger which operates as a condenser in the mode and a heat exchanger which operates as an evaporator in the mode, said method comprising the sequential steps at start up of:
a. providing a substantially unrestricted path for the flow of refrigerant from said evaporator to said condenser;
b. flooding refrigerant from said evaporator to said condenser through the unrestricted path; and
c. providing a restricted path for metering refrigerant flow from said condenser to said evaporator during the desired operating mode.

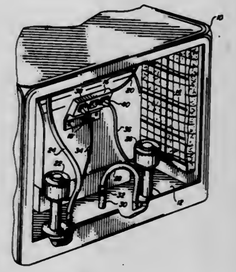
4,576,012
EVAPORATIVE COOLER
Robert S. Luzenberg, Tierra Verde, Fla., assignor to Computer Air Corp., Pompano Beach, Fla.
Filed Mar. 26, 1984, Ser. No. 593,706
Int. Cl.[4] G05D *23/32*
U.S. Cl. 62—157 **3 Claims**



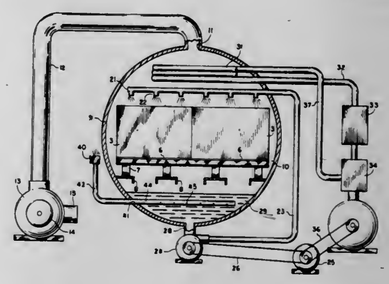
1. An apparatus for applying water in the form of a cooling water spray to the heat exchanger of an air conditioning condenser unit, comprising in combination:
a solenoid valve for controlling the flow of the water;
a spray nozzle positioned so as to direct the cooling water spray onto the heat exchanger;
a first water line to conduct water to said solenoid valve;
a second water line to conduct water from said solenoid valve to said spray nozzle;
a control unit for controlling said solenoid valve;
a water filter interposed in said first water line for filtering the water supplied to said solenoid valve, wherein said water filter includes a filter element which is replaceable;
wherein said solenoid valve contains bias means for urging said solenoid valve into the closed position and for preventing the flow of water through said solenoid valve except when said solenoid valve is actuated by said control unit and wherein said control unit actuates said solenoid valve only when the heat exchanger is in operation;
wherein said control unit is an oscillator the period of which is selectable;
wherein the duration of the "OFF" portion of said period of said oscillator is selectable and the "ON" portion of said period of said oscillator is also selectable with the durations of the "OFF" and "ON" portions of the control unit being in the range from 2 seconds to 1 minute; and
a sacrificial anode in contact with the heat exchanger.

4,576,013
EVAPORATIVE COOLING
Charles J. Sperr; Douglas C. Sperr, both of 8432 E. Wilshire Dr., Scottsdale, Ariz. 85257, and Thad J. Genrich, Mesa, all of Ariz., assignors to Charles J. Sperr and Douglas C. Sperr, both of Phoenix, Ariz.
Filed Mar. 22, 1984, Ser. No. 592,464
Int. Cl.[4] F28D *3/00*
U.S. Cl. 62—171 **14 Claims**

1. An improved evaporative cooler of the type which includes a housing, at least one air pervious liquid absorbing pad spanning an opening in said housing through which a stream of air is drawn to cool the air, and a sump pan at a lower portion of said housing for serving as a reservoir of cooling liquid, said improved evaporative cooler comprising:
a drain pipe;
pump means for supplying liquid to said at least one evaporative pad and for draining liquid through said drain pipe; and
control means coupled to said pump means for causing said pump means to supply liquid to said at least one evaporative pad for a first predetermined period of time out of each successive second predetermined period of time and for causing said pump means to drain said liquid through said drain pipe for a third predetermined period of time following the first occurence of said first predetermined period of time after said evaporative cooler is turned on.



4,576,014
PRODUCE VACUUM COOLER WITH IMPROVED VENTING
Craig A. Miller, and Floyd E. Miller, both of Fremont, Calif., assignors to Western Precooling Systems, Inc., Fremont, Calif.
Filed Jan. 31, 1985, Ser. No. 697,050
Int. Cl.[4] F25B *19/00*
U.S. Cl. 62—268 **5 Claims**



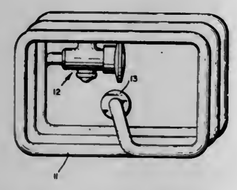
1. A produce cooler comprising:
a vacuum chamber,
means in said chamber for supporting produce therein,
means for pumping out said chamber to provide at least a partial vacuum therein,
means in said chamber for discharging water into said chamber at a location above said produce to allow said water to flow downward over said produce,
means for cooling and condensing water vapor in said chamber at a location above said produce to cause cool condensed water to flow downward over said produce,
a sump in the bottom of said chamber for collecting and holding water,
a pipe extending into said vacuum chamber from the outside to vent the outside air into said chamber through an inner end to relieve the vacuum therein so the chamber can be opened and the cooled produce removed,
said pipe including means to regulate the flow of incoming air into said vacuum chamber to slow the rate of increase of air pressure in said vacuum chamber.

4,576,015

LIGHTWEIGHT HIGH PRESSURE TUBULAR STORAGE SYSTEM FOR COMPRESSED GAS AND METHOD FOR CRYOGENIC PRESSURIZATION

A. Gerrit Crawford, 6223 Bakman St., North Hollywood, Calif. 91606

Filed Apr. 14, 1983, Ser. No. 484,878
Int. Cl.⁴ F25B *45/00*
U.S. Cl. 62—292 **4 Claims**



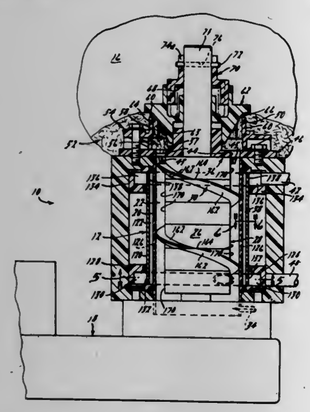
1. A lightweight high pressure tubular storage system for storing and transporting a gas comprising:
   a. a thin-walled tubular member of uniform diameter throughout being formed from a metallic or composite material and having an open first end and an open second end to which fittings, valves, coupling and/or closure can be affixed;
   b. inletting means for bringing a cryogenic fluid into said tubular member wherein said inletting means is fluidly coupled to said first end; and
   c. outletting means for regulating the flow of a compressed gas from said tubular member wherein said outletting means is fluidly coupled to said second end whereby the cyrogenic fluid is allowed to warm up within said tubular member and change into the compressed gas.

4,576,016

ICE MAKING APPARATUS

Keaneth L. Nelson, Albert Lea, Minn., assignor to King Seeley Thermos Co., Prospect Heights, Ill.

Filed Jan. 13, 1984, Ser. No. 570,610
Int. Cl.⁴ F25C *5/14, 1/14*
U.S. Cl. 62—320 **49 Claims**



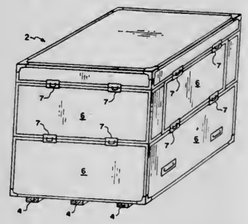
34. An ice-making apparatus comprising:
a refrigeration system including a combination evaporator and ice-forming assembly adapted to receive ice make-up water communicated thereto and to produce relatively wet and loosely associated ice particles from said ice make-up water, said combination evaporator and ice-forming assembly further including an inner housing defining a substantially cylindrical freezing chamber, refrigeration means adjacent said freezing chamber, an axially-extending auger rotatably mounted in said freezing chamber, and an outlet through which said wet and loosely associated ice particles are forcibly urged by said combination evaporator and ice-forming assembly;
a first interchangeable head assembly removably connectable to said combination evaporator and ice-forming assembly, said first head assembly including compression means in communication with said outlet for forcibly compressing quantities of said wet and loosely associated ice particles in order to remove a substantial portion of the unfrozen water therefrom and form relatively dry and loosely associated flaked ice particles, said compression means including means for discharging said flaked ice particles from said first head assembly; and
a second interchangeable head assembly preselectively interchangeable with said first head assembly and being removably connectable to said combination evaporator and ice-forming assembly, said second head assembly including compacting means in communication with said outlet means for forcibly compressing quantities of said wet and loosely associated ice particles in order to remove a substantial portion of the unfrozen water therefrom and to compact said wet and loosely associated ice particles into substantially monolithic relatively hard compacted ice, means for discharging said compacted ice from said second head assembly in a substantially continuous elongated ice form having a predetermined cross-section, and ice breaker means for breaking said elongated compacted ice form into discrete compacted ice pieces of a predetermined length and having substantially the same cross-section as said discharged elongated compacted ice form, said ice making apparatus thereby being preselectively adaptable to produce either relatively dry loosely associated flaked ice particles or discrete compacted ice pieces by selectively connecting either said first or second head assembly to said combination evaporator and ice-forming assembly;
said axially-extending auger including a central body portion, at least one flight portion extending in a generally spiral path along at least a substantial part of the periphery of said central body portion with an outer edge of said flight portion being adapted to be disposed closely adjacent the inner surface of said housing in order to scrape ice particles therefrom as said auger is rotated, said flight portion being defined by a plurality of discontinuous flight segments disposed generally end-to-end adjacent one another along said generally spiral path, adjacent pairs of said discontinuous flight segments being spirally misaligned relative to one another in order to form spiral non-uniformities therebetween, said spiral misalignment of said adjacent discontinuous flight segments tending to break up the mass of ice particles scraped from the inner surface of the housing as said auger is rotated, said auger further comprising a rotatable shaft member, a plurality of discrete disc elements axially stacked on said shaft member and secured for rotation therewith, the axial length of each of said disc elements being substantially less than the axial length of said auger, said discrete disc elements defining said central body portion and said flight portion; and
said refrigeration means including an outer jacket member substantially surrounding the outer surface of said inner housing and disposed in a radially spaced relationship therewith to define a generally annular refrigerant chamber therebetween, said refrigerant chamber being closed at opposite ends thereof, a refrigerant inlet for communicating a flowable refrigerant material therethrough into said refrigerant chamber, a refrigerant outlet for discharging the refrigerant material therethrough from said refrigerant chamber, the outer surface of said inner housing having a plurality of fin-like members thereon, said fin-like members protruding into said refrigerant chamber and being circumferentially-spaced relative to one another around substantially the entire outer surface of said inner housing, said fin-like members being adapted to enhance the turbulent flow of said refrigerant material through said refrigerant chamber and to substantially maximize the heat transfer surface area of said outer surface of said inner housing.

4,576,017

INSULATED SHIPPING CONTAINER

Cathy M. Combs, Antioch; Joseph K. Duffy, Lake Forest, and Mark Thoene, Ingleside, all of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Feb. 26, 1985, Ser. No. 705,584
Int. Cl.⁴ F25D *3/08*
U.S. Cl. 62—372 **11 Claims**



1. A container for maintaining its contents at a desired temperature for an extended period of time, comprising:
   an outer shell which is substantially airtight and which has side walls and inner surfaces;
   a passive heat exchange medium;
   a support structure for the heat exchange medium; and
   means for maintaining a space between the contents of the container and substantially the entire inner surface of the sides and bottom of the outer shell of the container and between the contents of the container and the support structure for the heat exchange medium for allowing convection in said space to maintain a substantially uniform temperature throughout the contents of the conter;
   said spacer means comprising blocks, each block having a side which faces said side wall of said container and a side which faces said contents, each of said sides of said blocks having a surface area which is less than 70% of the surface area of the adjacent side wall of said container.

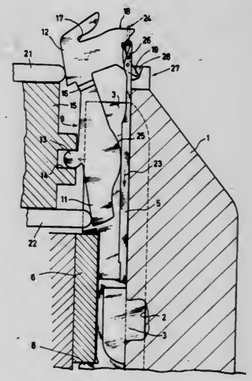
4,576,018

STITCH-FORMING MACHINE

Alfred Schindele, Filderstadt, Fed. Rep. of Germany, assignor to Terrot Strickmaschinen GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 25, 1984, Ser. No. 613,957
Claims priority, application Fed. Rep. of Germany, Jun. 3, 1983, 3320043
Int. Cl.⁴ D04B *15/06*
U.S. Cl. 66—106 **2 Claims**

1. A stitch-forming machine comprising needles (5) having needle shafts and needle heads (26), needle support means (1) for guiding said needles for longitudinal inward and outward displacement, needle cams (6,7) for controlling said needles, sinkers having sinker throats (17) and knitting surfaces (18), sinker support means (15) separate from said needle support means for guiding said sinkers, sinker cams (21, 22) for controlling said sinkers, said sinkers having shaft portions and head portions and protruding swivel butts, said sinker support means having a plane cam guideway (14) for receiving said protruding swivel butts to mount said sinkers for pivotal movement while restraining said sinkers against movement in the longitudinal direction, the geometrical relation of the swivel butts (13) on the sinkers with relation to the knitting surfaces (18) being such that by pivoting the sinkers the knitting surfaces thereof are raised through a predetermined distance with reference to a given point on the edge of the needle support means (1) in the region of the knitting heads to move the knitting surfaces (18) in a direction opposite to the inward displacement of the needles, said needle support means having



slits (4), one sinker (9) being arranged behind one needle (5) in each of said slits as viewed from said needle support means in the direction of said sinker support means, said sinkers (9) having crank-like bendings (16) between their shafts (11) and heads (12) to allow the sinker heads (12) to penetrate between two adjacent needle heads (26), said sinker shafts (11) having curved portions (25) on their edges opposite to the swivel butts (13), said curved portions facing said needle shafts and resting slideably thereon only in a narrow line-like area.

4,576,019

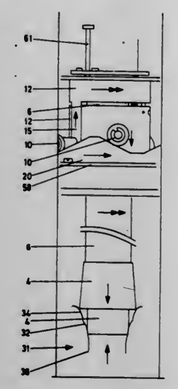
CIRCULAR KNITTING MACHINE HAVING IMPROVED TAKE-DOWN APPARATUS

Frederick Keel; Keith G. Townsend, and Marshall C. Carter, all of Leicester, United Kingdom, assignors to Bentley Engineering Company Limited, Leicester, England

Filed Aug. 13, 1984, Ser. No. 639,795
Claims priority, application United Kingdom, Aug. 27, 1983, 8323128
Int. Cl.⁴ D04B *15/92*
U.S. Cl. 66—147 **10 Claims**

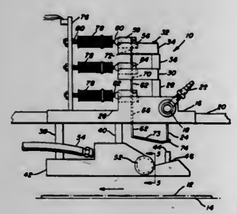
1. In a circular knitting machine having at least a first revolving knitting cylinder, knitting cam means being located peripherally of the cylinder, an improved take-down mechanism comprising:
   a take-down throat located inside of the cylinder;
   a pair of take-down members, each of said take-down members having an annular resilient cup arranged concentrically with respect to said take-down throat;

take-down cam means for reciprocating said resilient cups toward and away from said take-down throat; and



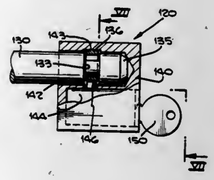
means for revolving the take-down cam means at a speed different from that of the first knitting cylinder.

4,576,020
JET PRINTER
Lamar Thurman; Billy J. Otting, and David L. Otting, all of LaFayette, Ga., assignors to Otting International, Inc., LaFayette, Ga.
Filed Jan. 22, 1985, Ser. No. 693,457
Int. Cl.[4] D06B *1/02, 11/00*
U.S. Cl. 68—205 R **29 Claims**



1. Apparatus for printing a moving web of sheet material by the selective application of a plurality of spaced streams of liquid dye onto the web, said apparatus comprising a bank of dye supply members spaced above the web, means for supplying dye to said members, a dye discharge member corresponding to each dye supply member, support means for supporting said discharge members intermediate said supply members and said web in flow communication with a corresponding supply member for receiving dye therefrom and discharging same onto said web, deflector support means disposed above said web, a plurality of deflecting members having a deflecting finger and a mounting portion, said deflector support means including means for constraining said mounting portions for pivotable movement about a pivot axis, each of said deflecting fingers being disposed for movement into and out of a disposition deflecting flow communication between a corresponding dye supply member and dye discharge member, a pivot block corresponding to each deflecting member carried by said deflector support means, each of said mounting portions being fastened to a corresponding pivot block so that the pivot block may pivot about said axis, a signal responsive member carried by each pivot block, signal generating means spaced from a respective signal responsive member for generating a control signal in accordance with a preselected pattern for selectively moving the respective signal responsive member about said pivot axis, whereby said pivot block and deflecting finger pivot about said axis to move the deflecting finger into and out of deflecting relationship with the stream of dye exiting the corresponding supply member to deflect the dye stream out of flow communication with the corresponding discharge member selectively, and means for catching and removing the dye deflected by the fingers.

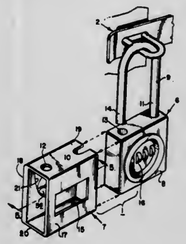
4,576,021
TRAILER LOCK
Kenneth M. Holden, Zephyr Cove, Nev., assignor to 501 W B Lock Company, Stateline, Nev.
Filed Apr. 11, 1983, Ser. No. 483,824
Int. Cl.[4] E05B *67/36*
U.S. Cl. 70—34 **3 Claims**



1. A lock comprising:
an elongate member having a movement limiting means on one end for limiting the axial movement of the member in one direction and an inserting means on the second end for being slidably inserted into a lock housing; and
a lock housing having a means for lockingly receiving the inserting means on the second end of the elongate member, and a means for limiting the axial movement of the elongate member in the other direction;
wherein said receiving means comprises:
an elongate opening adapted to receive the inserting means of the elongate member;
means for locking the elongate member in the elongate opening, said locking means including:
a first annular recess in the inserting means;
an annular ring loosely retained within said first annular recess;
a second recess disposed in the elongate opening so as to be adjacent the annular ring when the elongate member is inserted; and
movable means associated with the lock housing for extending into the first annular recess and moving the annular ring into the second recess to lock the elongate member in the elongate opening and for withdrawing from said first recess to allow the elongate member to be withdrawn from the elongate opening.

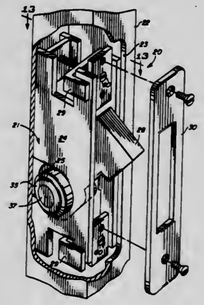
4,576,022
OBJECT SECURING SLEEVE FOR PADLOCK DEVICES
William E. Gamble, P.O. Box 220598, Charlotte, N.C. 28222
Filed Aug. 29, 1984, Ser. No. 645,179
Int. Cl.[4] E05B *67/53*
U.S. Cl. 70—55 **8 Claims**

1. An object-securing sleeve means for use with a host padlock of the type having a shank member and a body portion, said sleeve means comprising front, rear, top and bottom walls and being open at least at one end and so sized as to permit sliding thereof into close-fitting covering relation to said padlock body portion when said padlock is open, said sleeve means containing object-retaining means accessible from within said sleeve means when said sleeve means is free of said body portion for releasably holding within it an object to be held secure when said sleeve means is on said body portion and said padlock is closed, said sleeve means also having locking aperture means in said top wall for permitting passage therethrough of said shank member to permit locking of said padlock and simultaneous locking of said sleeve means to said body portion, said sleeve means being so configured that when



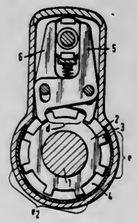
in locked position on said body portion said object cannot be removed from said object-retaining means, and wherein said sleeve means comprises window means for permitting sufficient access to said body portion to permit unlocking it while said sleeve means is in place.

4,576,023
DOOR STILE LOCK AND LATCH BOLT ASSEMBLY
Alois Crepinsek, 97 N. Arizona Pl., Chandler, Ariz.
Filed Sep. 16, 1983, Ser. No. 532,918
Int. Cl.[4] E05B *65/06, 9/08*
U.S. Cl. 70—137 **19 Claims**



1. In a lock for mounting in a hollow door-stile, said lock having a lock body engagedly supporting a cylinder and keyway block housing, said housing in turn engaging a latch bar for rotation about said housing, and further including a first lock cylinder and keyway block assembly within said housing; the improvement comprising:
a compression loaded anvil slidingly disposed within said latch bar said anvil being slidingly directed by compression loading toward the axis of said cylinder and keyway block housing when said latch bar is rotatingly engaged about said housing; and
retention means formed in the surface of said housing for lockingly engaging said anvil so as to prevent rotation of said latch bar about said housing while said anvil is so lockingly engaged.
17. A door lock comprising:
a lock cylinder housing;
an assembly comprising a lock cylinder and a keyway block within said housing;
a latch bar actuator within said housing coupled for rotation with said keyway block about the axis of said housing when a key is inserted into said keyway;
a latch bar rotatingly coupled to said housing and further drivingly coupled to said latch bar actuator for rotation about said housing when said actuator is so rotated;
a compression loaded anvil housed within said latch bar and compressively driven toward the axis of said housing;
retention means on said housing for lockingly engaging said anvil to prevent rotation of said latch bar about said housing; and
an anvil actuator coupled to said latch bar actuator for raising said anvil from engagement with said retention means to permit said latch bar to be driven about said housing by said latch bar actuator when a key is inserted in said keyway.

4,576,024
DEVICE FOR BLOCKING THE ROTARY MOVEMENT OF A STEERING COLUMN IN A MOTOR VEHICLE
Günter Weber, Wuppertal, Fed. Rep. of Germany, assignor to Neimann S.A., Courbevoie, France
PCT No. PCT/EP83/00098, § 371 Date Dec. 2, 1983, § 102(e) Date Dec. 2, 1983, PCT Pub. No. WO83/03580, PCT Pub. Date Oct. 27, 1983
PCT Filed Apr. 2, 1983, Ser. No. 563,398
Claims priority, application Fed. Rep. of Germany, Apr. 14, 1982, 3213719
Int. Cl.[4] B60R *25/02*
U.S. Cl. 70—252 **20 Claims**



1. Device for blocking the rotary movement of a steering column (1) in a motor vehicle comprising:
a steering column (1);
a blocking bolt (5) which is actuated by a lock and in the blocking position engages in a recess (4) in the steering column;
at least one further blocking bolt (6) which can be actuated by the same lock and, like the first blocking bolt (5), in the blocking position engages in recesses (4) arranged at regular spacings around the periphery of the steering column;
protrusions (3) formed from material located between the recesses (4) having side faces (Z) for blocking the blocking bolts (5, 6); and
wherein the blocking bolts (5, 6) are arranged on only one side of the steering column (1) within no more than a 90° angle sector of the steering column.

4,576,025
MAGNETIC LOCK INSERT FOR LOCK MECHANISMS
Tibor Kassza; Gyula Kákonyi, both of Budapest, and Gábor Molnár, Sátoraljaujhely, all of Hungary, assignors to ELZETT Muvek, Budapest, Hungary
Filed Dec. 19, 1983, Ser. No. 562,713
Claims priority, application Hungary, Jul. 6, 1983, 2427/83
Int. Cl.[4] E05B *47/00*
U.S. Cl. 70—276 **7 Claims**

1. A magnetic-type cylinder lock mechanism comprising an internal cylinder rotatable between a locking and an opening

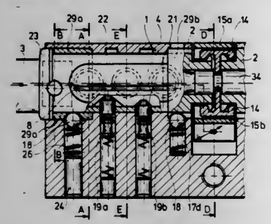
position by means of a key that includes magnetic bodies, said cylinder being provided at only one side, or at both sides of an opening such as a door, the cylinder being accommodated in a housing and formed with a keyhole;

said housing containing a plurality of tumblers of varying length radially displaceable into said keyhole, each tumbler having a housing part and a cylinder part slidable between a locked and an open position respectively preventing and permitting rotation of said cylinder;

latch grooves formed on mutually opposite sides of said cylinder; latch elements in said grooves rotatable with the said cylinder; magnetic rotor elements disposed in notches formed in said cylinder and journalled for rotation about their own axes;

latch channels formed in the magnetic rotor elements and disposed along a chord for receiving said latch elements which in their latched or wedged position constitute a means for preventing angular displacement of the cylinder by means of a foreign object;

an orienting element for determining rotatability of the lock and the removal position of the proper key;



and two control rings arranged between the cylinder and the lock housing, each control ring being provided with a latch groove receiving that part of the latch which prevents rotation of the cylinder;

the said chordally disposed latch channel being capable of receiving the other part of the latch only in a state of magnetic equilibrium determined by the polarisation of the magnetic elements in the proper key and the magnetic elements of the rotor;

the arrangement being such that when a proper key is fitted into the keyhole the latch is disposed partly in the rotor housing and partly in the rotor support and in this position the cylinder is freely rotatable while when the proper key has been removed the latch channel in the housing of the rotor is disposed outside the line of action of the latch and the latch is disposed in the rotor support and in the latch grooves of the control rings and a latch groove for ensuring the locking position of the latches is formed in the lock housing along the line of the latch grooves of the control rings.

4,576,026

CYLINDER LOCK HAVING COUPLING MEANS

Prunbauer Kurt, Herzogenburg, and Erich Csapo, Vienna, both of Austria, assignors to EVVA-Werk Spezialerzeugung von Zylinder- und Sicherheitsschloessern Gesellschaft m.b.H. & Co. Kommanditgesellschaft, Vienna, Austria

Filed Sep. 24, 1984, Ser. No. 653,913

Claims priority, application Austria, Oct. 18, 1983, 3714/83

Int. Cl.⁴ E05B *17/04*

U.S. Cl. 70—380 **4 Claims**

1. A cylinder lock having a housing, a cylinder core supported in the housing for rotation about an axis, and a coupling device for transmitting the rotary movement of the cylinder core to an additional lock structure, the coupling device comprising a radial bore in a free end portion of the cylinder core; a spring biased snap pin arranged in the radial bore; a coupling sleeve slidably mounted on the free end portion of the core; a radial slot formed in a circumferential portion of the sleeve to engage in an angular position of the sleeve the snap pin and to permit a free angular displacement of the cylinder core relative to the sleeve over the length of the radial slot; a bore formed in



the sleeve to engage in another angular position of the cylinder core the snap pin and connect the coupling sleeve for joint rotation with the cylinder core; and a locking beam connected to the coupling sleeve for rotation about said axis.

4,576,027

ROLLING MILL

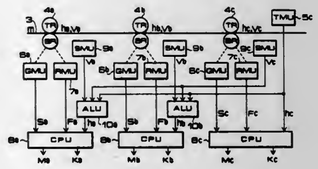
Fumio Yoshida, and Yoshikazu Kotera, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 10, 1983, Ser. No. 550,545

Claims priority, application Japan, Feb. 25, 1983, 58-31202

Int. Cl.⁴ B21B *37/12*

U.S. Cl. 72—11 **9 Claims**



1. A rolling mill for rolling an elongated transferring material continuously through at least a pair of rolls opposed to each other with a gap forming therebetween, said rolling mill including:

a plurality of measuring means for measuring data, including size of the material, the gap between the rolls, and the reaction force exerted on the rolls, associated with said rolls; and

arithmetic processing means connected to said measuring means for receiving and utilizing said data during a plurality of successive sampling periods from said measuring means to execute a predetermined arithmetic processing to separately calculate the most reliable values of a mill modulus which said rolling mill possesses and an offset of said gap, and providing the values as input data for controlling said rolls, said arithmetic processing means being provided for each of said pair of rolls.

4,576,028

METHOD OF MAKING A COIL SPRING AND APPARATUS THEREFOR

Motoo Morita, Nagoya, Japan, assignor to Morita Iron Works Co., Ltd., Aichi, Japan

Filed Aug. 31, 1984, Ser. No. 646,018

Claims priority, application Japan, Sep. 1, 1983, 58-160625

Int. Cl.⁴ B21F *3/04*

U.S. Cl. 72—143 **35 Claims**

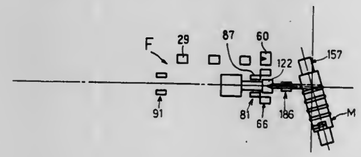
1. A method of making a coil spring wherein a wire material taken from a heating furnace is fed on a line of feed and formed

into a spring by use of a mandrel adapted to rotate on the basis of chucking position to wind the wire material, the mandrel being controlled to pivot into a predetermined angular winding position relative to the line of feed and to move in the axial direction thereof, comprising the steps of:

feeding the wire material at a selected speed continually in alignment with the line of feed;

regulating the orientation and position of the head end of the wire material in the forward part of the line of feed;

directing the wire material regulated on its head end to a chucking position established on the outer periphery of the mandrel and aligned with the line of feed;



controlling the mandrel to pivot about a fulcrum aligned with the chucking position and to shift between a reference position perpendicular to the plane of the line of feed and a winding position forming an acute angle relative to the reference position;

moving the mandrel toward and away from the predetermined winding position while removably holding the material; and

regulating the tail end of the wire material at a predetermined time during winding process so as to control the orientation of the tail end to an angle commensurate with the angle of twist of the wire material which will necessarily be developed before the remaining unwound length of the wire material is wound.

4,576,029

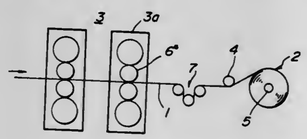
METHOD OF COILING THIN STRIPS

Hidenori Miyake; Shunji Fujiwara; Yoshio Nakazato; Fumiya Yanagishima, and Toko Teshiba, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Filed Jul. 20, 1984, Ser. No. 633,130

Int. Cl.⁴ B21B *39/08*

U.S. Cl. 72—205 **1 Claim**



1. In a method of coiling a thin strip, the method being of the type comprising cold rolling a hot rolled steel strip through a last stand of a cold tandem mill, and coiling the cold rolled strip on a tension reel to form a coil, the improvement which comprises cold rolling the strip to a thickness of not more than 0.3 mm through the last stand of the cold tandem mill with the same roll diameter and the same speed between upper and lower work rolls thereof, and coiling the cold-rolled strip under a condition that tension bridle rolls are arranged between the last stand of the cold tandem mill and the tension reel to control delivery side tension of the last stand within a range of 5–16 kg/mm², and coiling tension within a range of 4–7 kg/mm².

4,576,030

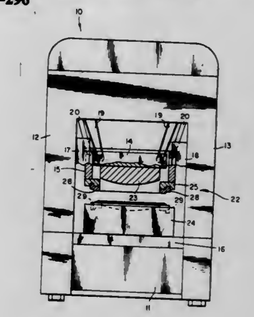
STRETCH FORM DIE

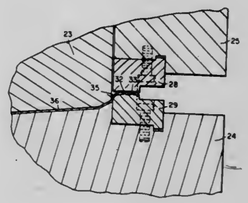
Ralph E. Roper, Indianapolis, Ind., assignor to Wallace Expanding Machines, Inc., Indianapolis, Ind.

Filed Aug. 31, 1983, Ser. No. 528,067

Int. Cl.⁴ B21D *11/02*

U.S. Cl. 72—296 **14 Claims**





1. A stretch forming apparatus, comprising:

complementary male and female die halves moveable between open and closed positions, said dies being arranged to stamp a blank therebetween with the female die half being of a closed configuration;

a blank holder member moveable between open and closed positions relative to said female die half and mounted about the entire periphery of the male and female die halves; and

means on said blank holder, including a pair of grippers having mutually facing surfaces, one of said surfaces defining a blank holding surface and exactly two circumferential beads extending outwardly from and fixed relative to said blank holding surface in a direction towards the other of said facing surfaces, each of said beads including a sharp edge for biting into a sheet metal blank and the other of said facing surfaces lying entirely in a plane, for homogeneously stretching said sheet metal blank to form as said die halves are closed with the peripheral portions of the sheet metal blank extending outwardly of said beads fixedly held in position relative to said beads.

4,576,031

QUICK DISCONNECT ARBOR AND DIE HEAD FOR TUBE STOCK SIZING APPARATUS

Kenneth L. Resener, Indianapolis, Ind., assignor to Resener Machine & Tool Co., Inc., Indianapolis, Ind.

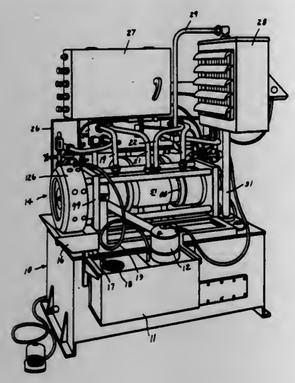
Filed Dec. 31, 1984, Ser. No. 688,068

Int. Cl.⁴ B21D *22/00*

U.S. Cl. 72—355 **7 Claims**

1. A tube stock sizing apparatus comprising a stationary annular member, a plurality of spaced finger members for

movement toward and away from the central axis of the annular member and spring biased toward said axis, said finger members extending parallel to the annular member axis with their outer surfaces being adapted to engage the inner bore of a section of tube stock to be sized, the inner surfaces of said finger members being inclined, spring biased quick disconnect means releasably engageable with said finger members and operable to mount said finger members to said annular member, a tapered spindle extending centrally through said finger members and engaging the inclined inner surfaces thereof, said spindle being movable along the axis of said annular member to displace said finger elements outwardly therefrom and into engagement with the tube stock, a plurality of spaced die elements for movement toward and away from the central axis of the annular member and spring biased away from said axis, the inner surfaces of said die elements being adapted to engage



the outer surface of a section of tube stock to be sized, the outer surfaces of said die elements being inclined, removable tool means releasably engageable with said die elements and operable to mount said die elements to said annular members, a ring member encircling said annular member and having an inclined inner surface engaging the inclined outer surfaces of said die elements, said ring member being movable along the axis of said annular member to displace said die elements inwardly toward said axis and into engagement with the tube stock, and means for moving said spindle and said ring member independently of each other, said means comprising a hydraulic cylinder centrally divided into a first and second working chamber and mounted coaxially with said stationary annular member, a piston in said first chamber having an operative connection to said spindle, a piston in said second chamber having an operative connection to said ring member.

4,576,032

CRIMPING PRESS CAPABLE OF CRIMPING TERMINALS ONTO A RANGE OF WIRE SIZES

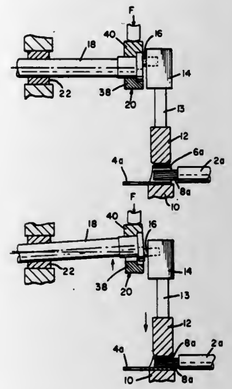
Werner Maack, Seeheim; Georg Kampfmann, Darmstadt, and Peter Foerster, Egelsbach, all of Fed. Rep. of Germany, assignors to AMP Incorporated, Harrisburg, Pa.

Filed Jul. 30, 1984, Ser. No. 635,780
Int. Cl.[4] B21J *7/12*
U.S. Cl. 72—431 **5 Claims**

1. Crimping apparatus for crimping a terminal onto a wire, the apparatus being of the type comprising an anvil for supporting the terminal, a crimping die which is movable along a path of reciprocation towards and away from the anvil between a remote position and a shut height position, a rotatable power shaft having an axis which extends normally of the path of reciprocation, a mechanical coupling between the power shaft and the crimping die for moving the crimping die to and fro along the path of reciprocation during each revolution of the power shaft and for transmitting the crimping force from the power shaft to the crimping die, the apparatus being characterized in that:

the power shaft is pivotally movable in a direction perpendicular to its axis along the path away from the crimping die, the power shaft being supported against such movement by a resiliently yieldable shaft support,

the resiliently yieldable shaft support comprising a first shaft bearing which is located adjacent to the mechanical coupling and the biasing means, at least a portion of the first shaft bearing being movable with the power shaft away from the anvil, the biasing means being in engagement with the first bearing and biasing the first bearing towards the anvil,



the power shaft being pivotally movable with respect to a pivot axis which is spaced along the shaft axis from the first bearing, and

the yieldable shaft support is calibrated to resiliently yield upon development of a predetermined reaction force thereon during the final stages of a crimping operation, the predetermined reaction force being the force which is sufficient to crimp terminals onto wires which lie within a predetermined range of sizes whereby,

the apparatus can be used without adjustment or modification to crimp terminals onto wires within the range and the shut height of the crimping die will vary for wires and terminals of different sizes within the range.

4,576,033

THREAD ROLLING DIE CONSTRUCTION

Richard H. Corrette, Cleveland, Ohio, assignor to Colt Industries Operating Corp., Cleveland, Ohio

Continuation-in-part of Ser. No. 366,979, Apr. 9, 1982, abandoned. This application Dec. 7, 1983, Ser. No. 558,947
Int. Cl.[4] B21H *3/06*
U.S. Cl. 72—469 **2 Claims**

1. A cut-off die for pointing and threading unpointed blanks having a cylindrical shank comprising a block having a working face extending from a start end to a finish end, said working face providing:

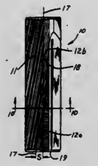
a G-surface extending from said start end to said finish end operable to produce threads on a cylindrical portion of a fastener produced from said blanks;

a rise angle surface angled forwardly from one edge of said G-surface operable to form and thread a point on said fastener, said rise angle surface terminating in an edge extending along the length of said block, said G-surface being located in a forward area of said die such that the forwardly angled rise angle faces toward said forward area; and

a cut-off surface operable to separate a slug of excess material at the pointed end of said fastener from said blanks, said cut-off surface being angled rearwardly from the edge of said rise angle surface remote from said G-surface, said cut-off surface being in nonparallel relationship to said G-surface;

said G-surface and said rise angle surfaces intersecting along a heel line;





said G-surface providing increasing width in the direction toward said finish end along at least a portion thereof laterally aligned with said rise angle surface causing said heel line to be angulated with respect to the length of said working face along said portion and operating to reduce pressure on said G-surface and rise angle surface, said G-surface having a uniform width along a second portion thereof laterally aligned with said rise angle surface substantially adjacent to said start end.

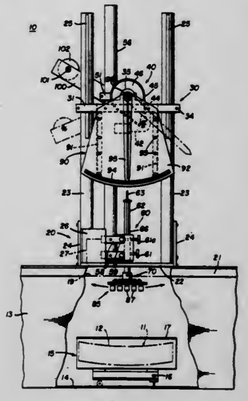
4,576,034

ADJUSTABLE RADIUS APPARATUS FOR CALIBRATING ULTRASONIC TRANSDUCER ARRAY

Herbert E. Ferree, Hempfield Twp.; Daniel E. Klinvex, McKeesport, and Robert P. Vestovich, Monroeville, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 27, 1984, Ser. No. 584,226
Int. Cl.[4] G01C *25/00*
U.S. Cl. 73—1 DV **15 Claims**

1. Calibration apparatus for calibrating an ultrasonic transducer array by moving it along an arcuate calibration test member, said apparatus comprising: a frame including four upstanding posts in a rectangular arrangement disposable adjacent to the test member, carriage means including a framework extending between and interconnecting said posts and being mounted for sliding vertical movement there along and defining a pivot axis extending through the center of curvature of the test member, means for changing the position of said carriage means on said frame for varying the position of said pivot axis with respect to the test member thereby to accommodate test members with different radii of curvature, an elongated pendulum arm mounted on said carriage and depending therefrom for pivotal movement about said pivot axis, drive means for effecting pivotal movement of said pendulum arm, and attachment means for mounting the transducer array on the lower end of said pendulum arm, whereby pivoting of said pendulum arm effects movement of the transducer array along



the arcuate test member at a fixed predetermined distance therefrom.

4,576,035

SELF-CALIBRATING DIFFERENTIAL CONDITION SENSOR

Michael D. Hooven, and Stanley H. Saulson, both of Miami, Fla., assignors to Cordis Corporation, Miami, Fla.

Continuation of Ser. No. 568,537, Jan. 5, 1984, abandoned. This application Aug. 9, 1985, Ser. No. 763,891
Int. Cl.[4] G01L *27/00*
U.S. Cl. 73—4 R **8 Claims**

1. A method for calibrating a differential physical condition measurement, which comprises the steps of:

coupling, to a first element having a first variable physical condition, a first sensing device adapted to detect the magnitude of said first condition;

coupling, to said first element, a first valve and a second sensing device adapted to detect the magnitude of said first condition when said first valve is open, said second sensing device being operable independent of said first sensing device;

coupling, between a second element having a second variable physical condition and said second sensing device, a second valve whereby said second sensing device is adapted to detect the magnitude of said second condition when said second valve is open;

controlling said first valve and said second valve to (a) open said first valve and close said second valve whereby said first sensing device and said second sensing device both

sense said first variable physical condition to obtain an error factor, and (b) close said first valve and open said second valve whereby said first sensing device senses said first variable physical condition and said second sensing device senses said second variable physical condition in order to obtain a condition difference amount; and

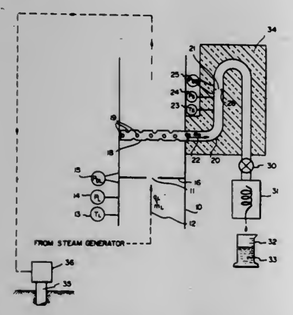
algebraically subtracting said error factor from said condition difference amount to obtain a corrected differential condition amount.

4,576,036

METHOD AND APPARATUS FOR DETERMINING QUALITY AND MASS FLOW RATE OF FLOWING STEAM

Wann-Sheng Huang; Donald S. Mims, and Richard S. Allen, all of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed May 3, 1984, Ser. No. 606,789
Int. Cl.⁴ G01N *25/60*
U.S. Cl. 73—29 **9 Claims**



8. Apparatus for determining the quality and the two-phase mass flow rate of steam containing both liquid and vapor components and flowing in an orifice-containing steam line comprising:

steam sampling means for drawing off through an orifice-containing sample conduit from said steam line a sample of said steam having substantially the same quality as said line steam,

means for measuring the temperature in said sample conduit,

means for measuring the static pressure in said sample conduit,

means for measuring the differential pressure across said sample conduit orifice,

means connected to said sample conduit for measuring the two-phase mass flow rate of said drawn off sample of steam,

such that said sample steam quality may be determined by means of an equation relating said measured sample conduit temperature, static pressure, differential pressure, and two-phase mass flow rate, said determined sample steam quality being substantially the same as said desired line steam quality,

means for measuring the temperature in said steam line,

means for measuring the static pressure in said steam line, and

means for measuring the differential pressure across said steam line orifice,

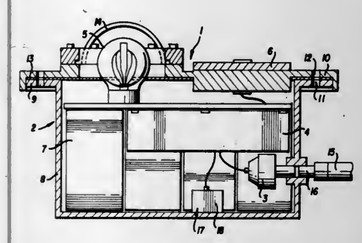
such that said line steam two-phase mass flow rate may be determined by means of an equation relating said measured steam line temperature, static pressure, and differential pressure, and said line steam quality which is substantially the same as said determined sample steam quality.

4,576,037

LEAK DETECTORS

Andrew P. D. Cox, Grimsby, England, assignor to Dunlop Limited, London, England

Filed Apr. 19, 1984, Ser. No. 601,913
Claims priority, application United Kingdom, Apr. 27, 1983, 8311474
Int. Cl.⁴ G01M *3/28*
U.S. Cl. 73—40.5 R **11 Claims**



1. A leak detector for mounting externally of a flexible hose and operable in response to the pressure of fluid leaking through at least a part of the flexible hose to generate warning signal, said leak detector comprising test means for checking the operating capability of the detector, and means for operating said test means from outside of the detector.

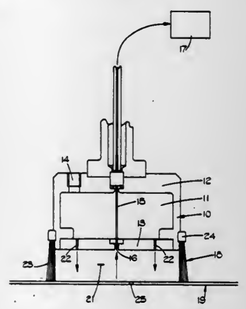
11. A flexible hose assembly comprising a flexible hose having main fluid retaining carcass and a secondary fluid retaining carcass secured to a rigid end fitting, and mounted externally of the hose a leak detector operable in response to the pressure of fluid leaking through at least a part of the flexible hose to generate warning signal, said leak detector comprising test means for checking the operating capability of the detector, and means to operate said test means from outside of the detector.

4,576,038

APPARATUS FOR USE IN LEAK DETECTION

Derek Dixon, Liecester, and Barry A. Richardson, Rugby, both of England, assignors to John Brown Automation Limited, Binley, England

Filed Sep. 14, 1984, Ser. No. 650,725
Claims priority, application United Kingdom, Sep. 20, 1983, 8325107; Jan. 11, 1984, 8400643
Int. Cl.⁴ G01M *3/20*
U.S. Cl. 73—40.7 **7 Claims**



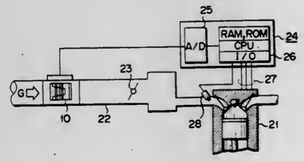
1. Apparatus for use in the detection of leaks comprising an annular flexible, gas permeable skirt carried by and projecting from a carrier member which closes one axial end of the skirt, the opposite axial end of the skirt being closed in use by engagement with the surface being searched, such that said surface and said carrier member contain between them a sample volume bounded by said skirt, and, a sensing probe communicating with said sample volume for detecting the presence of a signal gas in said sample volume wherein the region of the carrier member with the confines of the skirt, which defines a closure for said one axial end of the skirt, is formed with one or more apertures through which gas can be supplied to or drawn from said sample volume.

4,576,039

AIR-FLOW DETECTING APPARATUS

Yukio Muto, Oobu; Masumi Kinugawa, Okazaki, and Tomoaki Abe, Oobu, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Mar. 20, 1984, Ser. No. 591,378
Claims priority, application Japan, Mar. 24, 1983, 58-49423
Int. Cl.⁴ G01M *15/00*
U.S. Cl. 73—118 **9 Claims**



1. An air-flow detecting apparatus comprising:

(a) an air-flow detecting sensor including a support frame made of heat-resistant insulating material, a heating line supported by the support frame, and a resistance line also supported by the support frame and located on the lower side, in relation to the heating line when viewed from the direction in which air flows, said resistance line having a temperature resistance characteristic which allows it to serve as a thermometer;

(b) means for measuring and detecting an output signal of the sensor at predetermined intervals, said output signal being changed corresponding to changes in the air-flow;

(c) means for setting transmitting coefficients, corresponding to a transmitting characteristic of the sensor, based on the time delay for the amount of actual input air to appear as an output of the sensor in relation to the coefficients for a delay line; and

(d) means for obtaining an air-flow measuring output signal in such a way that a detection signal supplied from the sensor is subjected to inverse transformation using the transmitting coefficients set by setting means in response to the previously determined air-flow measuring output signal.

4,576,040

DEVICE FOR MEASURING EXTRANEOUS LOSSES IN APPARATUS FOR MEASURING THE ROLLING RESISTANCE OF TIRES

Barry D. Cargould, Akron, Ohio, assignor to Eagle-Picher Industries, Inc., Cincinnati, Ohio

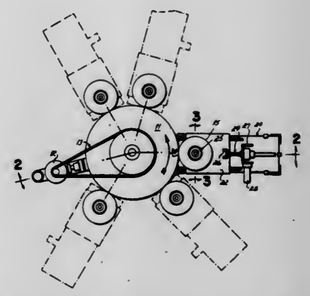
Filed Jun. 29, 1983, Ser. No. 508,939
Int. Cl.⁴ G01M *17/02*
U.S. Cl. 73—146 **3 Claims**

1. In apparatus for measuring the rolling resistance of tires, having a mechanism for mounting a tire against a moving surface and means for measuring the tire's rolling resistance, a spindle drag measuring mechanism comprising,

a spindle on which said tire is mounted,

an inner bearing housing in which said spindle is rotatably mounted,

an outer bearing housing in which said inner housing is mounted for limited rotation, said outer housing being fixedly mounted,



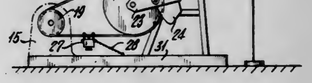
and a load cell restraining rotary movement of said inner housing with respect to said outer housing, said load cell determining the drag forces associated with the rotating spindle and caused by bearings and the like.

4,576,041

DYNAMIC BALANCING MEANS FOR AN OIL WELL PUMPING UNIT

Roy D. Martin, Albert, Kans., assignor to Texaco Inc., White Plains, N.Y.

Filed Jun. 11, 1984, Ser. No. 619,441
Int. Cl.⁴ G01L *3/14, 5/06*
U.S. Cl. 73—151 **3 Claims**



1. In combination with an oil well pumping unit having a pump jack driven by an internal combustion engine with a belt connecting said pump jack to said engine,

means for dynamically balancing said pumping unit, comprising

means for indicating tension being applied to said belt while said pumping unit is running throughout at least one full cycle of said pump jack, and

means for restraining said tension indicating means against movement with said belt,

said tension indicating means comprising

(a) a frame having a pair of guide pulleys thereon,

(b) a tension pulley between said guide pulleys,

(c) pantograph means for attaching said tension pulley to said frame,

(d) spring means for biasing said tension pulley toward said belt,

(e) means for adjusting said spring bias,

(f) an elongated pointer pivotally mounted at the base thereof,

(g) a crank arm attached to said pointer at said base thereof, and

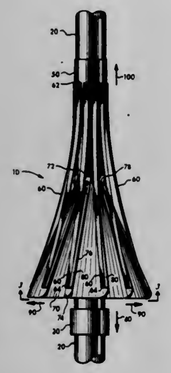
(h) pivotal linkage means connecting said pantograph means to said crank arm for indicating the tension on said belt.

4,576,042

FLOW BASKET

Irvin D. Johnson, Englewood, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Filed Dec. 26, 1984, Ser. No. 686,514
Int. Cl.[4] E21B *47/00*
U.S. Cl. 73—155 **16 Claims**



1. A flow basket (**10**) connected to a shaft (**20**) for use in a bore hole to measure flow rates, said flow basket (**10**) comprising:

a plurality of petals (**70**), each of said petals being substantially triangular in shape and having one linear edge (**76**) located between an enlarged petal end (**74**) and a narrow terminal end (**72**), said plurality of petals (**70**) being arranged around said shaft (**20**) so that said petals overlap each other in order for said petals to open and close about said shaft,

first means (**78**) connected to said terminal end (**72**) of said petals (**70**) for engaging said shaft (**20**) at a first predetermined location (B) on said shaft (**20**),

a plurality of support ridges (**80**) with each support ridge (**80**) attached to one of said petals (**70**) along said linear edge (**76**), each said support ridge (**80**) being an elongated rectangle in shape and extending from a region near said terminal end (**72**) to a region near said petal end (**74**) of each said petal (**70**),

a plurality of support bows (**60**) with each support bow (**60**) attached at one end (**64**) to said petal end (**74**) of said petal at a predetermined location (A) next to said attached support ridge (**80**), said support bow (**60**) extending over said first predetermined location (B) on said shaft (**20**) and having its opposing end (**62**) engaging said shaft (**20**) at a second predetermined location (C) on said shaft (**20**), and

second means (**50**) connected to the opposing end (**62**) of said support bow (**60**) for engaging said shaft (**20**) at said second predetermined location, said first (**78**) and second engaging means (**50**) being capable of relative movement with respect to each other along said shaft (**20**) as said petals (**70**) open and close so that each said petal (**70**) is opened in an outward radial direction (**600**) only.

4,576,043

METHODS FOR METERING TWO-PHASE FLOW

Tanh V. Nguyen, Fullerton, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed May 17, 1984, Ser. No. 611,455
Int. Cl.[4] G01F *1/76, 1/36*
U.S. Cl. 73—195 **2 Claims**

1. A method for metering two-phase flow in a pipeline comprising the steps of:

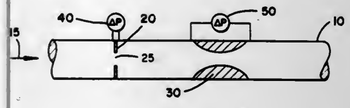
installing a venturi in the pipeline;

coupling an orifice plate in series with the venturi in the pipeline;

introducing two-phase flow into the pipeline;

measuring the two-phase pressure drop across the venturi;

measuring the two-phase pressure drop across the orifice plate; and



correlating the two-phase pressure drop across the venturi as determined by a first set of equations with the two-phase pressure drop across the orifice plate as determined by a second set of equations to obtain one or more two-phase flow rate parameters, wherein said first set of equations comprises:

$$\frac{1}{X} = \left(\sqrt{\frac{\rho_l}{\rho_g}}\right)\left(\frac{x}{1-x}\right),$$

$$\Delta p_l = \frac{\Delta p}{1 + C\left(\frac{1}{X}\right) + \left(\frac{1}{X}\right)^2}, \text{ and}$$

$$W = \frac{K\sqrt{\rho_l \Delta p_l}}{1-x},$$

and wherein said second set of equations comprises:

$$F_p = D^2\left(\frac{\sqrt{\rho_g \Delta p}}{W}\right),$$

$$F_p = ax^b, \text{ and}$$

$$W = \frac{D^2}{a}\left(\sqrt{\rho_g \Delta p}\right)x^{-b}$$

where:

$1/X$ = Martinelli's parameter,

x = quality,

ρ_l = the density of a liquid phase,

ρ_g = the density of a gaseous phase,

Δp = the measured two-phase pressure drop across the device to which the equation is applied,

C = a correlation coefficient based upon calibration data,

W = the two-phase mass-flow rate,

K = an orifice coefficient for the venturi,

F_p = a flow parameter,

D = the diameter of the orifice,

a = a first constant determined from calibration data, and

b = a second constant based on calibration data.

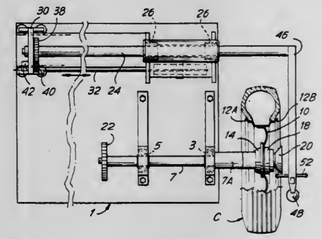
4,576,044

WHEEL BALANCING APPARATUS

Fabio Boni, Via Faentina 96, 50030 Ronta fraz. Borgo S. Lorenzo, Firenze, Italy

Filed Apr. 25, 1984, Ser. No. 603,582
Claims priority, application Italy, May 6, 1983, 9418 A/83
Int. Cl.[4] G01M *1/22*
U.S. Cl. 73—462 **2 Claims**

1. In an apparatus for balancing wheels including a hub disc defining a wheel axis and having inner and outer peripheral edges and a pneumatic tire mounted between said edges, the apparatus including, a frame, a shaft mounted in said frame on said wheel axis for rotating the wheel, sensing means spaced from one another along said shaft for obtaining dynamic and positional data on any imbalance of the wheel, and computing means, the improvement comprising a feeler arm mounted to said frame so as to be angularly movable about an arm axis and also movable along said arm axis, said arm axis being parallel to said wheel axis and spaced radial therefrom by at least a distance corresponding to a maximum radius of a wheel with tire to be measured, said feeler arm having contact means for contacting said edges of said hub disc, means for detecting the axial and angular position of said arm, to obtain data on the



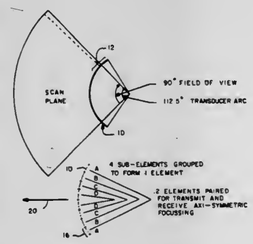
diameter of said hub disc and the axial distance between said edges, said computing means receiving data from said sensing means and said detecting means and deriving information therefrom on the position and the amount of imbalance in the wheel, a slidable and angularly movable rod mounted in said frame, extending on said arm axis and by means of which said arm is mounted to said frame, said detecting means including two potentiometers associated with said rod for detecting the axial and angular position of said rod and therefore of said feeler arm, and said contact means including two opposite, transversely extending feelers intended to rest respectively and in succession on the two edges of the hub disc of the wheel, substantially at one and the same radial position of the wheel.

4,576,045

WIDE APERTURE ULTRASONIC SCANNER EMPLOYING CONVEX TRANSDUCER ARRAY

Stockton M. Miller-Jones, Rancho Cordova, Calif., assignor to General Electric Company, Milwaukee, Wis.

Filed Dec. 29, 1983, Ser. No. 566,865
Int. Cl.[4] G01N *29/04*
U.S. Cl. 73—626 **2 Claims**



1. A wide aperture ultrasonic scanner comprising

a plurality of transducer sub-elements arranged in a convex array, each sub-element having a major surface for transmitting and receiving ultrasonic waves, said major surfaces being positioned outwardly in said convex array,

means for activating adjacent sub-elements in a group as a plurality of phase activated elements to define a scan vector, each phase activated element comprising an equal number of adjacent sub-elements having the same phase, said means for activating said sub-elements including a plurality of switching circuits connected to said plurality of sub-elements, each switching circuit including a plurality of first switch means connected in parallel, each of said first switch means being controllable by a phase signal, and a second switch means connected in series with said plurality of first switch means and a sub-element, said second switch means being controllable by a vector address signal, and

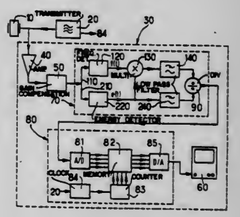
means for incrementing sub-elements in said group from one vector to the next vector by one sub-element to thereby define a plurality of vectors.

4,576,046

DEVICE FOR THE EXAMINATION OF OBJECTS BY MEANS OF ULTRASOUND ECHOGRAPHY

Mathias A. Fink, Strasbourg, and Jean-Francois Cardoso, Paris, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 11, 1984, Ser. No. 680,415
Claims priority, application France, Dec. 14, 1983, 83 20042
Int. Cl.[4] G01N *29/04*
U.S. Cl. 73—631 **4 Claims**



1. A device for the scanning of objects by means of ultrasound echography, comprising at least one ultrasound transducer which is connected to a transmitter stage for the transmission of electric signals which are to be converted into acoustic waves by the transducer, and also to a receiver and processing stage for the reception and processing of ultrasound echoes which occur after reflection of said waves from obstacles encountered in their propagation direction, said receiver and processing stage comprising an amplifier, a correction circuit for the correction of the gain as a function of time, and a processing stage for processing of the results of the echographic examination, wherein as an improvement the receiver and processing stage comprises, connected to the assembly formed by the amplifier and the gain correction circuit, means for determining the instantaneous frequency and the instantaneous energy of the echographic signal, means for weighting the instantaneous frequency with the instantaneous energy, and means for diffraction correction.

4,576,047

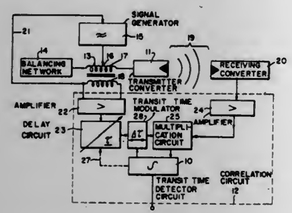
APPARATUS FOR DETERMINING THE TRANSIT TIME OF ULTRASONIC PULSES IN A FLUID

Reinhard Lauer, Waldkirch, and Werner Hartmann, Emmendingen, both of Fed. Rep. of Germany, assignors to Erwin Sick GmbH Optik-Elektronik, Waldkirch, Fed. Rep. of Germany

Filed May 2, 1984, Ser. No. 606,250
Claims priority, application Fed. Rep. of Germany, May 6, 1983, 3316631
Int. Cl.[4] G01F *1/66;* G01N *29/02*
U.S. Cl. 73—597 **4 Claims**

1. Apparatus for determining the transit times of ultrasonic

pulses in a fluid, in particular in a gas, the apparatus comprising at least two electroacoustic converters arranged spaced apart from each other along a measurement path extending through the fluid, one converter transmitting ultrasonic pulses along the measurement path while the other converter receives the



pulses which have tranvelled along the measurement path, both converters being connected to a correlation circuit having an input, in order to determined the transit times of the pulses, an electrical signal proportional to generated sound pressure being derived from the respective transmitting converter and applied to the input of the correlation circuit.

4,576,048

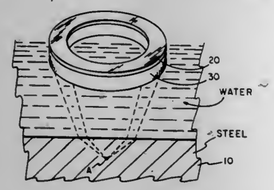
METHOD AND APPARATUS FOR ULTRASONIC INSPECTION OF A SOLID WORKPIECE

William E. Glenn, Ft. Lauderdale, Fla., assignor to New York Institute of Technology, Old Westbury, N.Y.

Continuation-in-part of Ser. No. 429,013, Sep. 30, 1982, abandoned. This application Jun. 19, 1984, Ser. No. 622,227

Int. Cl.⁴ G01N *29/00*

U.S. Cl. 73—642 **35 Claims**



1. A method for non-destructive inspection of a solid workpiece, comprising the steps of:
   - generating ultrasound energy at a curved arc;
   - focusing said ultrasound energy into a substantially cone-shaped hollow sector beam;
   - directing said beam at a surface of the workpiece so as to establish shear mode ultrasound energy in the workpiece;
   - receiving ultrasound energy from within the workpiece.

4,576,049

PRESSURE SENSOR WITH RINGED CHAMBER

Rainer Köhnlechner, Schloss-Holte, Fed. Rep. of Germany, assignor to Ermeto Armaturen GmbH, Bielefeld, Fed. Rep. of Germany

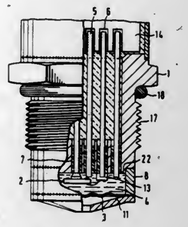
Filed Apr. 12, 1984, Ser. No. 599,394

Claims priority, application Fed. Rep. of Germany, Apr. 13, 1983, 3313261

Int. Cl.⁴ G01L *7/08, 9/06*

U.S. Cl. 73—706 **14 Claims**

1. A device for measuring pressure in a fluid system, said device comprising:
   - a housing that includes a ring system having a radial boring, said housing having a pressure chamber and a non-pressurized chamber, said pressure chamber being connected to said non-pressurized chamber by borings;
   - electrical contacts and connecting posts that are located in said borings;
   - an electronic circuit that is located in the non-pressurized chamber of said housing and that is electrically connected to said electrical contacts;
   - a pressure sensor located in the pressure chamber of said housing and that is electrically connected to said electrical contacts;



   - a pressure transferring membrane that separates said pressure chamber from the fluid system, said membrane contacting the ring system of said housing and cooperates with said ring system to define the pressure chamber;
   - an incompressible, pressure transmitting medium that fills said pressure chamber; and
   - an element that seals the radial boring of said ring system.

4,576,050

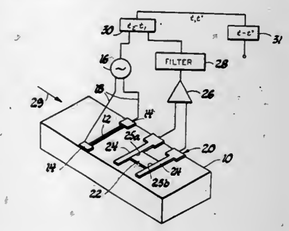
THERMAL DIFFUSION FLUID FLOW SENSOR

David K. Lambert, Sterling Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 29, 1984, Ser. No. 645,253

Int. Cl.⁴ G01F *1/68;* G01P *5/10*

U.S. Cl. 73—861.05 **10 Claims**



1. A gas flow sensor for location contiguous to a body of gaseous fluid subject to flow to be measured, comprising:
   - a substrate having a thermal diffusivity substantially less than that of the fluid and having a thermal conductivity substantially greater than the fluid;
   - a thermal oscillation source on the surface of the substrate for generating thermal oscillations in the fluid, whereby thermal oscillations are propagated through still fluid at a first rate and through flowing fluid at a second rate dependent on fluid flow to substrate surface locations spaced from the source;
   - thermal oscillation detector means on the substrate surface near the oscillation source for providing at least one signal corresponding to the thermal oscillations at the detector means; and
   - signal responsive means coupled to the detector means for sensing the first and second rates and producing an output correlated to the mass gas flow near the substrate surface.

4,576,051

ERGOMETER HAVING AN EDDY CURRENT BRAKE SERVING AS A LOADING DEVICE

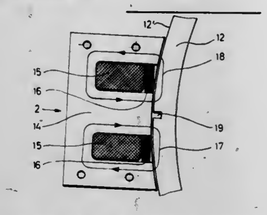
Peter Lautenschläger, Gonbach, Fed. Rep. of Germany, assignor to Keiper Dynavit GmbH & Co., Fed. Rep. of Germany

Filed Apr. 17, 1984, Ser. No. 601,178

Claims priority, application Fed. Rep. of Germany, Apr. 28, 1983, 3315441

Int. Cl.⁴ G01L *3/10*

U.S. Cl. 73—862.36 **16 Claims**



1. An ergometer having an eddy current brake serving as a loading device, comprising:
   - a rotatably mounted brake wheel placed into rotation by means of a drive device and having a cylindrical ring made from an electrically conductive material; and
   - a stationary magnet system having an air gap disposed between the poles of the magnet system directed toward the ring and the ring itself;
   - wherein the air gap is provided between the outer cover surface of the ring and the poles of the magnet system facing the outer cover surface;
   - wherein depressions running laterally to the direction of movement are provided in the surface of the brake wheel arranged at one side of the air gap opposite the poles to the magnet system, and that the magnet system supports a measurement coil permeated by the magnetic flux which closes over the brake wheel.

4,576,052

SEMICONDUCTOR TRANSDUCER

Susumu Sugiyama, Aichi, Japan, assignor to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi, Japan

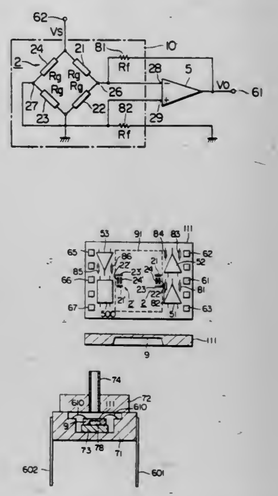
Filed May 24, 1984, Ser. No. 613,968

Claims priority, application Japan, May 26, 1983, 58-91443

Int. Cl.⁴ G01D *3/04;* G01L *9/06*

U.S. Cl. 73—862.63 **24 Claims**

1. A semiconductor transducer comprising,
   - a monocrystalline silicon substrate,
   - a strain sensitive region formed on said monocrystalline silicon substrate and having a major surface,
   - at least one strain gage integrally formed on the major surface of said strain sensitive region,
   - a bridge circuit including said strain gage, said bridge circuit having an output terminal,
   - an operational amplifier having an inverting input terminal connected to the output terminal of the bridge circuit, and at least one first parallel-connected resistor having two ends one connected to said inverting input terminal and the other to an output terminal of said operational amplifier, said parallel-connected resistor having a temperature coefficient of resistance set to be substantially the same as the difference between the temperature coefficient of resistance of said strain gage and the temperature coefficient of sensitivity thereof, said bridge circuit, said operational amplifier and said first parallel-connected resistor being formed on said monocrystalline silicon substrate.



4,576,053

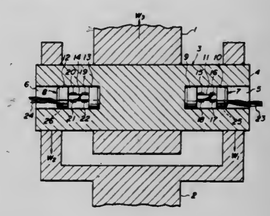
LOAD DETECTOR

Yotaro Hatamura, 12-11, Kohinata 2-chome, Bunkyo-ku, Tokyo, Japan

Filed Mar. 20, 1984, Ser. No. 591,490

Int. Cl.⁴ G01L *1/22*

U.S. Cl. 73—862.66 **8 Claims**



1. A load detector, comprising:
   - a pin-like member arranged between force-transmitting members and adapted to receive a load;
   - a hole formed in the pin-like member along a neutral axis thereof for bending deformations thereof;
   - an insertion member inserted in the hole and having at both end parts thereof undeformable securement portions coupled for surface-to-surface contact with the pin-like member and including at a central part thereof at least one deformation-sensing portion which is located between said undeformable securement portions and is provided with an axis of symmetry thereof coincident or nearly coincident with the neutral axis of the pin-like member, wherein said at least one deformation sensing portion is responsive to each load applied to the pin-like member and undergoes deformation and hence enlarges resulting strain; and

means for converting the extent of deformation of the deformation-sensing portion of the insertion member into signals so as to obtain only a portion of the resulting strain which portion has been produced by each shear deformation of the pin-like member.

4,576,054

DUAL MODE GAS SAMPLER AND PNEUMATIC FLOW CONTROL SYSTEM

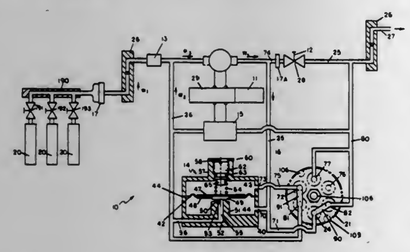
Hill S. Lalin, 10 Bonita Ter., Wayne, N.J. 07470

Continuation-in-part of Ser. No. 512,935, Jul. 12, 1983, Pat. No. 4,532,814. This application May 21, 1984, Ser. No. 612,334

The portion of the term of this patent subsequent to Aug. 6, 2002, has been disclaimed.

Int. Cl.[4] G01N *1/24, 1/26*

U.S. Cl. 73—863.03 **17 Claims**



1. A pneumtic flow control system for collecting gas samples in a collecting device at a constant preselected flow rate comprising a vacuum pump having a suction side and a discharge side, with said collecting device connected to the suction side of said pump, a flow control valve having a flow restricting orifice with one side connected to the atmosphere and with the other side connected to the discharge side of said pump in series with said pump and said collecting device and a flow controller including means connected across the pump for diverting a supplementary flow of gas from the discharge side of the pump into the pump suction side and valve means responsive to the pressure differential across said flow control valve for regulating said supplementary flow so as to maintain the gas flow rate through said collecting device constant at said preselected flow rate independent of load variations.

4,576,055

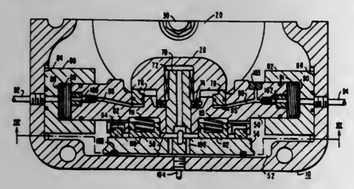
HYDRAULICALLY CONTROLLED INFINITELY VARIABLE TRACTION ROLLER TRANSMISSION

Charles E. Kraus, Austin, Tex., assignor to Excelermatic, Inc., Austin, Tex.

Filed Aug. 15, 1984, Ser. No. 641,046

Int. Cl.[4] F16H *15/08, 15/00*

U.S. Cl. 74—200 **10 Claims**



1. An infinitely variable traction roller transmission comprising a housing, coaxial, input and output shafts rotatably supported in said housing; two toric discs supported opposite each other, one by said input and the other by said output shaft; said toric discs having opposite toric surfaces defining therebetween a toric cavity of circular cross-section, at least two motion transmitting traction rollers disposed between, and in engagement with, said toric discs for the transmission of motion therebetween; each of said traction rollers being rotatably supported by trunnions retained in said housing pivotally about pivot axes so as to permit changing of the ratio of motion transmission between said input and output toric discs, said housing having a partially cylindrical wall forming a support cavity adjacent each trunnion and having a center of curvature coinciding essentially with the pivot axis of the adjacent trunnion, and a seal plate disposed in said support cavity adjacent said trunnion, said seal plate having on one side a first fluid cavity defined by a partially cylindrical seal area in sealing engagement with said partically cylindrical housing wall and, on the other side, a flat sealing area engaged by a trunnion seal defining a second fluid cavity, so as to seal said trunnion relative to said seal plate while permitting relative movement between said trunnion and said seal plate; and means for admitting pressurized fluid to said support cavity.

4,576,056

ROTARY ASSISTANCE MECHANISM, PARTICULARLY FOR VEHICLE STEERING

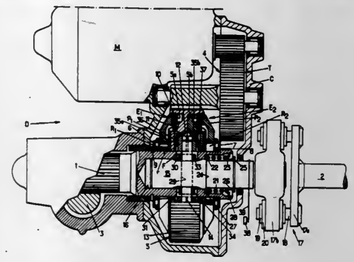
André Barthélemy, Saint Remy-lès-Chevreuse, France, assignor to Automobiles Citroen and Automobiles Peugeot, both of Paris, France

Filed Jul. 16, 1982, Ser. No. 398,873

The portion of the term of this patent subsequent to Oct. 11, 2000, has been disclaimed.

Int. Cl.[4] F16H *35/00;* **B62D** *3/00, 7/00, 9/00*

U.S. Cl. 74—388 PS **10 Claims**



1. A rotary assistance mechanism adapted to be coupled to a driven member capable of rotating alternately in two directions in response to the rotation of a drive shaft, comprising:

(a) a rotary assistance motor,

(b) reducing means for reducing a speed of said motor,

(c) two clutches associated respectively with said two rotational directions and each having a drive clutch member capable of being driven by said motor and a driven clutch member, and

(d) control means for controlling said clutches to actuate one of said clutches depending on a direction and amplitude of a torque applied to the drive shaft such that said driven member is driven by said motor through said reducing means in a desired direction by means of said actuated clutch, said driven clutch members of said two clutches being rotatably connected to the driven member by means of two respective unidirectional coupling means corresponding respectively to both said opposite rotation directions of said driven member such that said respective unidirectional coupling means operate respectively to impart opposite directions of rotation to said driven member and such that the driven member is rotatably driven by an actuated clutch but a non-actuated clutch will not be driven by the driven member.

4,576,057

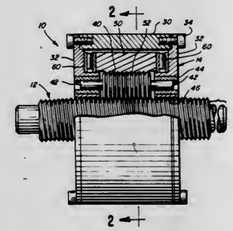
ANTI-FRICTION NUT/SCREW DRIVE

Oliver Saari, Minneapolis, Minn., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Jun. 13, 1984, Ser. No. 620,355

Int. Cl.[4] F16H *1/18, 1/20, 27/02, 29/02*

U.S. Cl. 74—424.8 C **19 Claims**



1. An improved anti-friction screw-nut device including a nut assembly, a threaded screw having a plurality of leads extending through said nut assembly, said nut assembly including housing means, a plurality of elongate rollers equal in number to the number of leads on said screw, each of said rollers having a plurality of annular grooves forming a plurality of annular ring-like teeth conjugate to the threads of said screw, means cooperatingly locating said rollers in circumferentially spaced relation to said nut assembly and said screw, a freely rotatable ring having annular grooves for engaging and retaining said rollers in radial engagement with said screw, said ring being positioned intermediate the length of said rollers and having a width selected to provide sufficient contact between it and said rollers at a position intermediate the length of said rollers to distribute thrust over a selected area, and bearing means for transmitting thrust from said ring to said nut assembly.

4,576,058

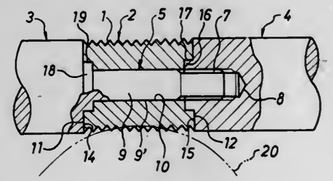
WORM ASSEMBLY

Masakazu Matumoto, Osaka, Japan, assignor to Kabushiki Kaisha Nikken Kousakusho, Osaka, Japan

Filed May 14, 1984, Ser. No. 610,048

Int. Cl.[4] F16H *1/16, 1/20, 1/18, 55/17*

U.S. Cl. 74—425 **8 Claims**



1. A worm assembly comprising:

a first shaft adapted to be supported in a bearing and including an end and a bolt projecting coaxially from said end, said bolt including an intermediate portion and terminating in a screw portion,

a second shaft arranged coaxially with respect to said first shaft and adapted to be supported

in a bearing, said second shaft including an end spaced from said end of said first shaft and including a screw hole extending coaxially therein and threadedly receiving said screw portion of said bolt, and

a hollow cylindrical worm formed of hard metal which is harder than said first and second shafts, said worm sandwiched axially between said ends of said first and second shafts and including an inner throughbore which lies closely adjacent to said intermediate portion of said bolt which passes coaxially through said worm,

said worm being fixed against rotation relative to said first and second shafts.

4,576,059

SHIFT LEVER SUPPORT MECHANISM FOR TRANSMISSIONS

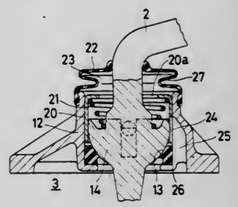
Mitsufumi Nishu, Chiryu; Kenji Takeuchi, Aichi; Masanori Sato, Nagoya; Ichiro Horiuchi, Chiryu; Katsuhiko Muramatsu, Toyota, and Koji Kiryu, Anjo, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Jan. 23, 1984, Ser. No. 572,843

Claims priority, application Japan, Feb. 4, 1983, 58-014455[U]

Int. Cl.[4] G05G *9/12;* **B25G** *3/38*

U.S. Cl. 74—473 P **4 Claims**



1. A shift lever support mechanism for a transmission having a transmission casing and a gear shifting actuator shaft, comprising:

(a) a shift lever having a partly spherical pivot body and a distal end extending from said partly spherical pivot body for engagement with the gear shifting actuator shaft;

(b) a retainer member mountable on the transmission casing and having a bore accommodating said spherical pivot body therein, said retainer member including a partly spherical seat supporting said partly spherical pivot body, said retainer member having a central opening through which said distal end extends;

(c) resilient means disposed in said bore in said retainer member for normally urging said partly spherical pivot body against said partly spherical seat;

(d) a boot mounted on said shift lever and said retainer member and defining a space therein communicating with said bore in said retainer member; and

(e) said retainer member having a passage defined in a wall thereof adjacent to said partly spherical seat for communication between said space and the interior of the transmission casing.

4,576,060

BALANCES RUNNING ON GEARS FOR A MOTOR VEHICLE ENGINE

Nicholas Gristina, 4401 Knight Dr., New Orleans, La. 70127

Filed Oct. 1, 1984, Ser. No. 656,764

Int. Cl.[4] F16F *15/26;* **F02B** *75/06*

U.S. Cl. 74—573 R **20 Claims**

1. A mechanical mechanism comprising:

a crankshaft having first and second opposite end portions mounted for rotation about an axis, and having a third portion offset from said axis;

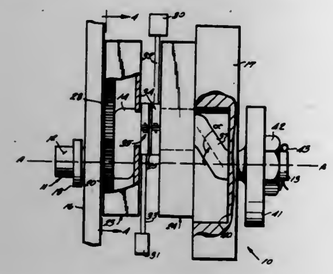
a first gear having teeth formed on the external circumferential periphery thereof, said gear mounted so that it is stationary with respect to said crankshaft;

a second gear having teeth extending inwardly from an internal peripheral portion thereof;

balancing means comprising said second gear, another body,

and a collar interconnecting said body and said second gear;

said third portion of said crankshaft received within said collar and rotatable with respect to said collar; and



said first and second gears intermeshing as said second gear revolves around said crankshaft axis.

4,576,061

SYSTEM FOR CONTROLLING THE TRANSMISSION OF A FOUR-WHEEL DRIVE VEHICLE

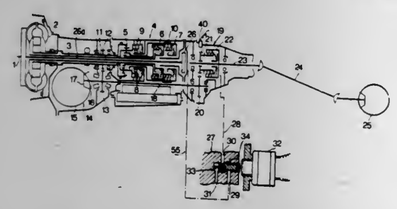
Toru Yamakawa; Fujio Makita, both of Hachioji; Mitsuo Umezawa, and Ryuzo Sakakiyama, both of Tokyo, all of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 15, 1983, Ser. No. 561,719

Claims priority, application Japan, Dec. 16, 1982, 57-221347

Int. Cl.⁴ F16H *37/06*

U.S. Cl. 74—665 T **6 Claims**



1. A system for controlling power transmission of a four-wheel drive vehicle powered by an engine comprising:

a transmission for transmitting power of said engine to main wheels of the vehicle;

a clutch for selectively transmitting said power to auxiliary wheels of the vehicle, whereby said main and auxiliary wheels are power driven;

first sensing means for sensing the speed of the vehicle and for producing vehicle speed signals as a function of the speed;

second sensing means for sensing the steering angle of the vehicle and for producing steering angle signals as a function of the steering angle;

control means responsive to said vehicle speed and steering angle signals for producing a clutch signal as a function of the vehicle speed and steering angle such that when the vehicle speed is low, said clutch signal is produced at a first steering angle, and as the vehicle speed increases, the steering angle for said clutch signal increases; and

switch means responsive to said clutch signal for disengaging said clutch, whereby the four-wheel drive is changed to the two-wheel drive.

4,576,062

HIGH EFFICIENCY GEAR TRANSMISSION

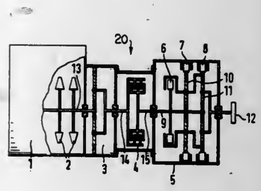
Rudi Reppert, Fussen; Franz X. Zaunberger, and Artur Kugler, both of Augsburg, all of Fed. Rep. of Germany, assignors to Zahnraderfabrik Renk, A.G., Augsburg, Fed. Rep. of Germany

Filed Mar. 3, 1983, Ser. No. 471,848

Claims priority, application Fed. Rep. of Germany, Mar. 5, 1982, 3207938

Int. Cl.⁴ F16H *37/00*; F16D *23/00*

U.S. Cl. 74—740 **15 Claims**



1. A mechanical transmission comprising a speed change gearing shiftable under load, the speed change gearing having input means, output means and mechanical speed shift torque transmissible means interconnecting the input and output means, the speed shift torque transmissible means being selectively disengageable to provide a slip mode of operation between the input means and the output means, and a main synchronization means, the speed shift torque transmissible means including a mechanical wear component, the mechanical wear component being subject to increased wear during the slip mode of operation, the main synchronization means including a primary part drivable by an engine output shaft and a secondary part drivingly engaging the speed change gearing input means, mechanical main torque transmissible means interconnecting the primary and secondary parts, the main torque transmissible means including a non-fluid torque coupling operable from a driving nonslip mode of operation wherein its transmissible torque is at least as great as the engine output load torque and shiftable to a slip mode of operation wherein reduced torque is transmitted from the primary part to the secondary part, the non-fluid torque coupling including a mechanical wear component subject to increased wear during the slip mode of operation, the wear component of the torque coupling being constructed to withstand greater wear than the wear component of the speed shift torque transmissible means, the main torque transmissible means uninterruptedly transmitting no less than a minimal torque between the primary part and the secondary part, the transmissible torque of the main torque transmissible means being less than the transmissible torque of the speed shift torque transmissible means, the main synchronization means providing the greatest proportion of synchronization work required for a shifting cycle when changing gear speeds, the remainder of such synchronization work being provided by the speed shift torque transmissible means so that reduced size speed shift torque transmissible means are employable thereby maximizing speed change gear efficiencies, the transmission further including means for automatically regulating the transmission whereby the non-fluid torque coupling is automatically shiftable from the nonslip mode to the slip mode during each speed change shift of the speed change gearing.

4,576,063

TRANSMISSION MECHANISM WITH PARALLEL TRANSMISSION SYSTEMS INCLUDING ONE WAY CLUTCHES, ONE BEING LOCKABLE

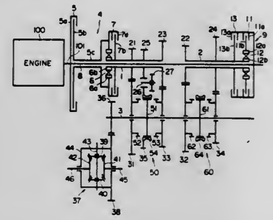
Teruo Akashi; Hiroshi Ito, and Shigemichi Yamada, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Feb. 11, 1983, Ser. No. 465,762

Claims priority, application Japan, Feb. 27, 1982, 57-31607; Jun. 22, 1982, 57-107086; Jun. 22, 1982, 57-107087

Int. Cl.⁴ F16H *3/10*

U.S. Cl. 74—745 **6 Claims**



1. A transmission mechanism comprising: an input shaft; an output shaft; a first on-off clutch; a second on-off clutch; a first one way clutch; a second one way clutch; a first gear train having a first reduction gear ratio; a second gear train having a second reduction gear ratio smaller than said first reduction gear ratio; a third gear train having a third reduction gear ratio smaller than said second reduction gear ratio; a fourth gear train having a fourth gear reduction gear ratio smaller than said third reduction gear ratio; a first synchronizer which connects said input shaft and said output shaft via a series connection of said first on-off clutch, said first one way clutch, and said first gear train when said first synchronizer is shifted to a first side of a neutral position thereof so as to transmit rotational power from said input shaft to said output shaft in a normal rotational direction and which connects said input shaft and said output shaft via a series connection of said first on-off clutch, said first one way clutch, and said third gear train when said first synchronizer is shifted to a second side of said neutral position so as to transmit rotational power from said input shaft to said output shaft in said normal rotational direction; and a second synchronizer which connects said input shaft and said output shaft via a series connection of said second on-off clutch, said second one way clutch, and said second gear train when said second synchronizer is shifted to a first side of a neutral position thereof so as to transmit rotational power from said input shaft to said output shaft in said normal rotational direction and which connects said input shaft and said output shaft via a series connection of said second on-off clutch, said second one way clutch, and said fourth gear train when said second synchronizer is shifted to a second side of said neutral position of said second synchronizer so as to transmit rotational power from said input shaft to said output shaft in said normal rotational direction.

4,576,064

COUPLING MECHANISM FOR WIND TURBINE

John A. C. Kentfield, Calgary, Canada, assignor to Her Majesty the Queen in Right of the Province of Alberta as represented by the Minister of Energy and Natural Resources, Edmonton, Canada

Filed Jul. 9, 1984, Ser. No. 628,880

Claims priority, application Canada, Aug. 6, 1984, 456,151

Int. Cl.⁴ F16H *35/08*; F04B *49/00*

U.S. Cl. 74—833 **4 Claims**

1. A coupling mechanism for connecting the rotating output shaft of a wind turbine, mounted on a tower, with a load rod to be reciprocated, comprising:

(a) means, connected with the shaft, for converting the variable speed rotational output of the shaft to a fixed amplitude reciprocating output, which has a variable frequency substantially proportional to the rotational speed of the shaft, and transmitting said output;

(b) a ground-supported pivot member and a first member pivotally mounted on said pivot member for pivoting in a vertical plane, said first member being connected to the means (a) for oscillation thereby;

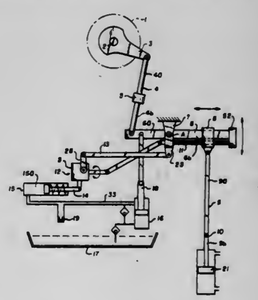
(c) a connector pivotally connected with the first member and being movable therealong, said connector further being connected with the load rod, whereby the load rod may be reciprocated at an amplitude varying with the position of the connection point of the connector with the first member and at a variable frequency substantially proportional to the rotational speed of the shaft;

(d) said means (a), (b), and (c) together forming means for driving the load rod; and

(e) a control and actuating assembly for varying the stroke length of the output of the driving means by adjusting the position of the aforesaid connection point, said assembly comprising:

(i) means, connected with the driving means, for transmitting a reciprocating power input from said driving means to the control and actuating assembly;

(ii) means, connected with and operating by the means (i), for generating a first force whose magnitude varies



substantially proportionally with the square of the wind velocity;

(iii) means for generating a second force whose magnitude is directly proportional to the position of the connection point of the connector with the first member;

(iv) a clutch assembly movable between first and second engaging positions and a neutral position;

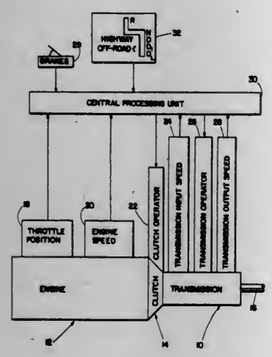
(v) first and second drive assemblies connected with the connector and the clutch assembly, whereby the first drive assembly is operative to move the aforesaid connection point outwardly from the pivot member when the clutch assembly engages it in the first engaging position, and the second drive assembly is operative to move the aforesaid connection point inwardly toward the pivot member when the clutch assembly engages it in the second engaging position;

(vi) said means (ii) and (iii) being arranged to direct their forces in opposite directions on the clutch assembly so that a dominant force will cause the clutch assembly to engage one of the drive assemblies to move the connector in a particular direction until equilibrium of the forces causes the clutch assembly to assume the neutral position, whereby the amplitude of the reciprocating stroke of the load rod is maintained substantially in proportion with the square of the velocity of the wind at a frequency substantially proportional to the rotational speed of the shaft.

4,576,065
AUTOMATIC TRANSMISSION CONTROLS WITH MULTIPLE DOWNSHIFT OFF-HIGHWAY MODE

Donald Speranza, Canton; E. James Lane, Highland, and Ronald K. Markyvech, Allen Park, all of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Sep. 12, 1984, Ser. No. 649,630
Int. Cl.[4] B60K *41/18, 41/10*
U.S. Cl. 74—866 51 Claims



1. An improved automatic transmission system for vehicles having a throttle-controlled engine, an operator actuated throttling control means and a transmission having a plurality of gear ratio combinations selectively engageable between a transmission input shaft and a transmission output shaft, said transmission input shaft being operatively connected to said engine, said transmission system including an information processing unit having means for receiving a plurality of input signals including (1) an input signal indicative of the position of said throttle controlling means, (2) an input signal indicative of the rotational speed of said engine, and (3) an input signal indicative of the speed of said vehicle, said processing unit including means for processing said input signals in accordance with a program to select a desirable gear ratio for a given combination of input signals and for generating output signals whereby said transmission system is operated in accordance with said program, and means associated with said transmission effective to actuate said transmission to effect engagement of one of said gear ratio combinations in response to said output signals from said processing unit, the improvement characterized by:

said processing unit including means for processing said input signals to provide a calculated expected engine speed value indicative of the expected rotational speed of the engine at a selected vehicle speed in various selectable gear ratio combinations;

said program having a first mode of operation wherein upon sensing an engine speed equal to or less than the engine speed at which downshifts to a lower gear ratio are required is effective to:

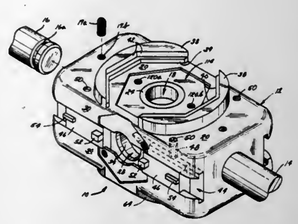
(a) first compute a first expected engine speed value at the current vehicle speed and in the Nth lower gear ratio where N is an integer greater than 1;

(b) then to command initiation of a downshift into a gear ratio intermediate the currently engaged gear ratio and the Nth lower than the currently engaged gear ratio if the first computed expected engine speed value is equal to or greater than the magnitude thereof at the maximum allowable speed of the engine and to command initiation of a downshift into the Nth lower gear ratio if the first computed expected engine speed value is less than the maximum allowable engine speed magnitude.

4,576,066
TOOL FOR REMOVING FASTENERS FROM SHOCK ABSORBER CYLINDERS

Kenneth D. Kloster, 6649 Millridge, Maumee, Ohio 43537

Continuation-in-part of Ser. No. 242,378, Mar. 10, 1981, abandoned. This application Mar. 16, 1983, Ser. No. 475,894
Int. Cl.[4] B25B *13/10, 13/56*
U.S. Cl. 81—176.3 8 Claims



1. A tool for removing a threaded fastener of the type employed to contain a vehicular shock absorber in an associated shroud, the shock absorber having a piston rod extending axially from one end of the shroud and through the associated fastener, the tool comprising:

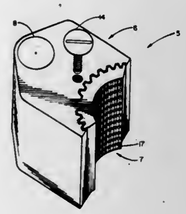
a main body having at least one keyway formed to extend along a portion of the outer surface of said main body, a first piston rod receiving channel extending through said main body and terminating in said keyway, and a second piston rod receiving channel extending through said main body and intersecting said first channel; and

a pair of spaced apart keys slidably mounted in said keyway of said main body, each of said keys having a fastener engaging means formed thereon for engagement with the threaded fastener to effect removal of the fastener.

4,576,067
JAW ASSEMBLY

David A. Buck, 225 Highway 90 East, Broussard, La. 70518

Filed Jun. 21, 1984, Ser. No. 623,040
Int. Cl.[4] B25B *13/58*
U.S. Cl. 81—185.1 5 Claims



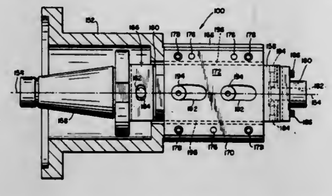
1. A jaw assembly for gripping tubular members, comprising:

(a) a jaw member, attachable to a gripping mechanism, said jaw member having a concave surface which is provided with a plurality of parallel cog-shaped splines radially spaced over said concave surface, forming parallel cog-shaped grooves between said splines, each said spline extending outward substantially perpendicular from said concave surface.

4,576,068
CAM-CONTROLLED BORING BAR

Raymond H. Glatthorn, St. Petersburg, Fla., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Feb. 3, 1984, Ser. No. 576,646
Int. Cl.[4] B23B *29/034, 3/26*
U.S. Cl. 82—1.4 20 Claims



1. Boring apparatus for generating a bore within a workpiece, comprising:

a first housing including means for attachment of said first housing to a first means for rotating said first housing about a predetermined axis;

a second housing, disposed within said first housing and having a cutting tool mounted thereon, including means for attachment of said second housing to a second means for rotating said second housing about, and translating said second housing in an axial direction;

means defined between said first and second housings supporting said second housing for axial and transverse movement; and

means defined between said first and second housings controlling the transverse movement of said second housing and said cutting tool relative to said predetermined axis and said first housing in response to said axial movement of said second housing so as to generate a bore within said workpiece having a predetermined configuration as determined by said controlling means.

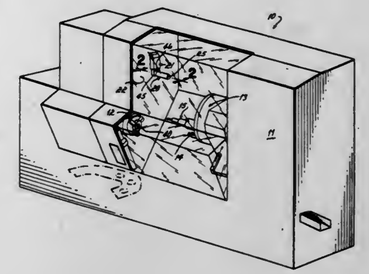
4,576,069
TURRET LATHE HAVING PROBE AND PROTECTIVE COVER

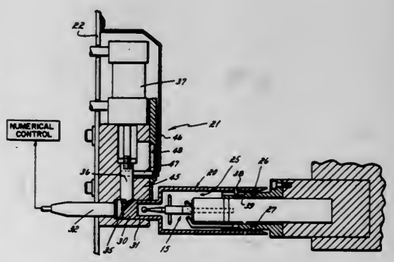
Johannes Bazuin, Cincinnati, Ohio, assignor to LeBlond Makino Machine Tool Co., Cincinnati, Ohio

Filed Feb. 2, 1984, Ser. No. 576,320
Int. Cl.[4] B23B *25/06*
U.S. Cl. 82—2 R 6 Claims

1. In a lathe having a housing, a chuck for holding a workpiece, said chuck being mounted at one side of said housing, a tool-holding turret opposite said chuck, said turret having a plurality of tool-holding positions, and a probe mounted in one of those positions, means for rotating said turret to bring the proper tool into position and means for moving said turret longitudinally and transversely to bring tools into engagement with said workpiece, the improvement comprising:

a probe cover separable from the probe and covering the probe when said probe is not in use, and means for removing said cover from said probe automatically and retaining



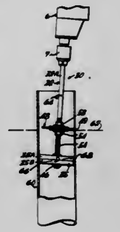


said probe cover on said one side of said lathe housing when said probe is to be used.

4,576,070
PIPE CUTTER AND METHOD

Fitz E. Fitzgerald, 3274 NW. 93rd St., Miami, Fla. 33147

Continuation-in-part of Ser. No. 972,529, Dec. 22, 1978, abandoned. This application Jul. 21, 1980, Ser. No. 169,522
Int. Cl.[4] B23D *21/14*
U.S. Cl. 82—82 21 Claims



1. A pipe cutter, comprising, in combination,

an elongate shaft,

a guidance member centrally and rotatably secured to one end of said shaft,

a disc-shaped cutting blade mounted on said shaft so that the longitudinal axis of the shaft is perpendicular to the plane of the cutting blade and passes through the center of the cutting blade,

power tool means for imparting a rotational torque to said shaft at the end of the shaft remote from the guidance member,

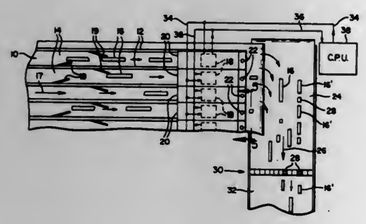
whereby the power tool causes said shaft and cutting blade to rotate about the longitudinal axis of the shaft while the cutting blade cuts a pipe as constrained by the guidance member against the inner walls of the pipe when the longitudinal axis of the shaft is constrained to precess about the longitudinal axis of the pipe in an orbital motion.

4,576,071

FOOD PRODUCT DEFECT SENSOR AND TRIMMER APPARATUS

Arthur G. Rayment, Santa Clara, Calif., assignor to Lamb-Weston, Inc., Portland, Oreg.

Filed Aug. 4, 1983, Ser. No. 520,244
Int. Cl.⁴ B26D *5/34*
U.S. Cl. 83—71 **10 Claims**
MICROFICHE APPENDIX INCLUDED
(2 Microfiche, 79 Pages)



1. Elongated food product defect removal apparatus, comprising:

conveyor means for conveying elongated food product strips longitudinally through separate channels;

sensor means for sensing said food product strips as they are conveyed through said channels by directing radiation of at least two different frequency bands at said strips, including first detector means for detecting a first radiation frequency band which senses the opposite ends of each strip and certain defects in said strip to produce a first output signal, and a second detector means for detecting a second radiation frequency band which senses the opposite ends of said strip but does not sense said defects to produce a second output signal;

electrical circuit means for comparing said first and second output signals to determine the presence of a defect, determine the location of said defect on the strip and produce corresponding defect removal cutting signals; and

cutter means for cutting said strips to remove any of said defects in said strips in response to receipt of said cutting signal.

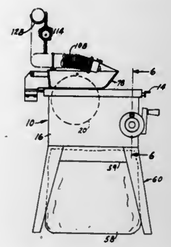
4,576,072

SAWDUST COLLECTION APPARATUS FOR A TABLE SAW

Daniel A. Terpstra, Kirkwood, and Richard B. Brundage, Ladue, both of Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Division of Ser. No. 312,002, Oct. 16, 1981, abandoned. This application May 14, 1984, Ser. No. 581,331
Int. Cl.⁴ B27G *19/02, 19/08*
U.S. Cl. 83—102.1 **4 Claims**

1. In a table saw having a horizontal worktable with front and rear sides, a circular saw blade mounted below the worktable and having a peripheral portion thereof extending above the worktable rotating toward the front side of said worktable and a spreader having a portion extending above the rear side of the worktable; the improvement which comprises the provision and hinged attachment to said spreader portion of an elongated saw blade guard and table top sawdust collector having rear and forward ends and extending between said rear and front sides of said worktable and normally resting on said worktable and shrouding said peripheral saw blade portion, said hinged attachment including an arm pivotally connected at one end to said guard intermediately of its length and pivotally connected at its other end to said spreader portion whereby the forward end of said guard or said entire guard may be elevated above said worktable, said guard comprising a pair of vertical sidewalls having upper and lower horizontal edges and extending the length of said guard, an inclined forward end wall and a horizontal top wall connecting said upper sidewall edge and extending from the rear end of said guard to a forward end spaced rearward from said forward end wall, a



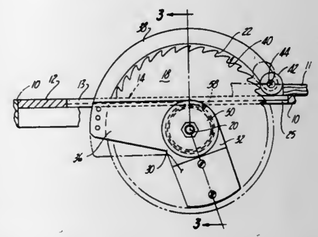
pair of sidewall portions extending upward from the upper edges of said sidewalls and extending longitudinally from said forward end of said top wall to said forward end wall, and a top wall portion connecting the longitudinally extending upper edges of said sidewall portions whereby said top wall, said sidewall portions and said top wall portion defines a rearward facing opening, and a length of flexible hose having one end connected via a hose connected to a wall defining said opening and said hose having an adjoining end portion extending rearward and resting on and attached to said horizontal top wall.

4,576,073

SAW BLADE GUARD

Robert J. Stinson, 2055 Lathers Ave., Garden City, Mich. 48135

Filed Jul. 1, 1983, Ser. No. 509,918
Int. Cl.⁴ B27B *5/29*
U.S. Cl. 83—102.1 **16 Claims**



1. For use with a saw of the type including a circular cutting blade mounted for rotation with a motor driven arbor and a flat workpiece support surface having an opening therein through which a portion of the blade extends, a guard for the blade comprising:

a blade guard arm having a thickness no greater than the thickness of the blade whereby said arm may pass through a cut in a workpiece made by the blade, said arm extending through the support surface opening rearwardly of the blade and extending therefrom in curvilinear fashion over the blade to dispose the free leading end of said arm adjacent the support surface at the front of the blade so as to protectively cover the entire cutting edge of the blade portion;

means for mounting said arm on the saw for yieldable pivotal movement relative to said support surface about the rotational axis of the blade in response to engagement of said leading end thereof with a workpiece so as to expose a section of the blade portion to the leading edge of the approaching workpiece and allow cutting of the workpiece by the blade; and

means biasing said arm for pivotal movement about said blade axis in the direction of blade rotation so as to maintain said leading end of said arm adjacent the support surface at the front of the blade and maintain said arm in protectively covering relation to the entire cutting edge of the blade portion subject to selective and limited yieldable displacement by the leading edge of the approaching workpiece;

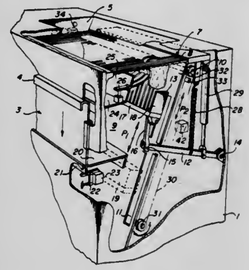
said mounting means including a first member mounted on said arbor for rotation with said arbor and a second member rotatably mounted on said first member whereby to rotate independently of the rotation of said arbor, said second member including a portion extending radially outward from said first member, said arm being secured to the outer extremity of said radially extending portion.

4,576,074

APPARATUS FOR SLICING BREAD PRODUCTS

Jacobus C. Van der Togt, Voorburg, Netherlands, assignor to B.V. Haagse Bakkerijmachinefabriek, Netherlands

Filed Aug. 9, 1983, Ser. No. 521,561
Claims priority, application Netherlands, Aug. 9, 1982, 8203143
Int. Cl.⁴ B26D *5/00*
U.S. Cl. 83—358 **4 Claims**



1. An apparatus for slicing breadproducts or the like, comprising a substantially horizontal oscillated driven cutting frame having parallel cutting strips, a support surface for said product to be cut leading to said cutting frame, a member for propelling said product movable across said surface said propelling member being loaded by means of a resilient force towards said frame opposite to action of a damping member, said propelling means being further adapted to be reset, opposite to a spring action, by a reset motor controlled by a detecting means positioned above said cutting frame.

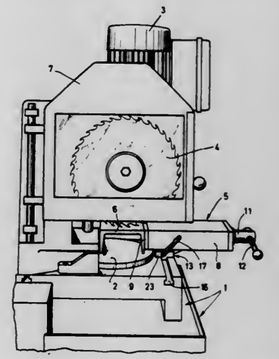
4,576,075

CIRCULAR SAW MACHINE

Kurt Holder, Koengen, Fed. Rep. of Germany, assignor to Chr. Eisele Maschinenfabrik GmbH & Co. KG, Koengen, Fed. Rep. of Germany

Filed Feb. 8, 1984, Ser. No. 577,953
Claims priority, application Fed. Rep. of Germany, Feb. 25, 1983, 3306743
Int. Cl.⁴ B26D *7/02*
U.S. Cl. 83—464 **2 Claims**

1. A circular saw machine comprising a frame, a workpiece support mounted on said frame; a rotatable saw mounted adjacent to said workpiece support; a shaped groove formed in said frame; workpiece clamping means having a lower support portion slidably mounted in, and interfitting with said shaped groove whereby said clamping means is slidably keyed to said frame; means for locking the clamping means support portion in a desired, fixed position along the length of said shaped groove comprising a rotatable shaft having its longitudinal axis extending over and in substantially parallel relation with said groove; said workpiece clamping means also having a bore; said shaft having a first portion rotatably mounted in said bore; a slot formed in the workpiece clamping means portion defining said bore; means engaging said shaft first portion and disposed in said slot for preventing axial movement of said shaft in both directions relative to said workpiece clamping means; a second portion of said shaft being formed so as to define an eccentric cylindrical surface of smaller diameter than the diameter of said shaft first portion and which rotates eccentrically relative to the shaft central longitudinal axis; said clamping means lower support portion being connected to the eccentric surface of said shaft whereby rotation of said shaft locks said support portion relative to the portion of said shaped groove in which disposed.

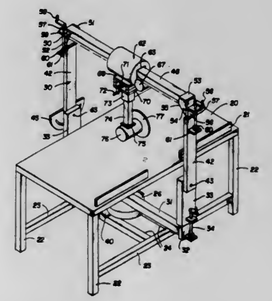


4,576,076

MULTIPLE INTERSECTING PLANES CUTTING DEVICE

Stoddard H. Pyle, Corvallis, Oreg., assignor to Speed Cut, Inc., Corvallis, Oreg.

Filed Oct. 16, 1984, Ser. No. 661,392
Int. Cl.⁴ B27B *5/20*
U.S. Cl. 83—471.3 **18 Claims**



1. A machine for making diverse cuts in workpieces comprising a table having a horizontal workpiece support surface and a workpiece fence, a powered rotary workpiece cutter

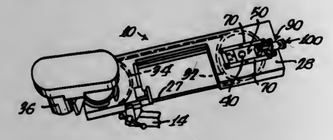
above said support surface, carriage means for said cutter, means carrying the carriage means and cutter along a first horizontal path of movement parallel to the workpiece support surface, means to move the cutter on the carriage means on a second horizontal path of movement parallel to the workpiece support surface and perpendicular to said first horizontal path of movement, means connected with said table and with said carrying means for swinging said carrying means on an arcuate path around a horizontal axis lying in a plane defined by the workpiece support surface in opposite directions to adjust the angle of inclination of said rotary cutter with respect to the vertical and to lock the cutter in a chosen inclined position relative to said workpiece support surface, means to rotate said cutter around an axis perpendicular to said workpiece support surface, and means connected with said cutter and said carriage means to reciprocate the cutter on the last-named axis.

4,576,077

SPRING-BIASED TENSIONING DEVICE FOR A BAND SAW BLADE

Timothy C. Titus, Three Rivers, Mich., assignor to Wells Manufacturing Corporation, Three Rivers, Mich.

Filed Sep. 4, 1984, Ser. No. 647,142
Int. Cl.⁴ B23D *55/06, 55/10*
U.S. Cl. 83—816 **17 Claims**



1. In a band saw having a frame, spaced-apart band wheels rotatably mounted to said frame in a common plane of rotation and adapted to receive and carry an endless band saw blade thereon, a blade drive means operably associated with one of said band wheels to drive said one band wheel in rotation, and another of said band wheels being an idler wheel and additionally being mounted for movement in said plane of rotation relative to said driven band wheel to tension said endless band saw blade, an improved blade tensioning mechanism which comprises:

a block slidably mounted on said frame and carrying said idler band wheel rotatably mounted thereon, said block defining an internally threaded bore;

a housing carried in fixed relationship on said frame, said housing defining first, second, and third bores coaxially aligned with said block bore, said second bore communicating at one end with said first bore and at the other end with said third bore, said third bore having a larger diameter than said second bore to define an annular shoulder around said second bore, said housing defining an internal thread in said first bore;

an externally threaded link having one end extending into said block bore and threadingly engaged therein with said block, said link extending through said first, second, and third bores of said housing with the other end of said link being disposed adjacent said third bore, said link including a drive pin projecting radially outwardly within said housing;

a handle connected to said other end of said link for rotating said link;

a thrust bearing disposed on said link in said housing third bore for rotation relative to said link and for being driven by said link toward said housing annular shoulder, said thrust bearing having on one end at least a first bearing surface facing toward said housing shoulder;

an adjustable retainer and stop member threadingly engaged with said housing first bore thread, said retainer and stop member defining first and second bores coaxially aligned with said link, said retainer and stop member being disposed with said member first bore closer to said block bore than said member second bore and with said member second bore concentrically oriented within said housing first bore, said member second bore having a larger diameter than said member first bore to define an annular retaining surface around said member first bore, said retainer and stop member also defining a generally annular abutment surface around said member second bore within said housing first bore;

a collar disposed on said link to accommodate axial movement within said housing bores, said collar having a generally hollow configuration with an externally threaded cylindrical periphery for engaging said internal thread in said housing first bore, said collar having oppositely facing first and second annular end surfaces, said collar first end surface being adapted to abut said member abutment surface, said collar second end surface being adapted to bear directly or indirectly against said first bearing surface of said thrust bearing, said collar defining a channel oriented longitudinally of the collar length and opening inwardly to the hollow interior of said collar for receiving said projecting drive pin of said link; and

a compression spring disposed around said link within said housing with one end of said spring abutting said member retaining surface and with the other end of said spring abutting said collar first end surface whereby said link can be rotated by said handle to

(1) apply an increasing initial tension on said band saw blade in response to the movement of said block along said link toward said handle until said collar overcomes the bias of said spring and engages said housing first bore threads,

(2) further thread said collar into said housing first bore against said spring and to thread said link further into said block bore to carry said thrust bearing toward said housing annular shoulder until the axial movement of said rotating link relative to said frame and housing annular shoulder is terminated by the engagement of said thrust bearing with said housing annular shoulder, and

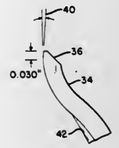
(3) subsequently apply an increasing final tension on said saw blade as said block moves along said rotating link toward said handle until said collar abuts said annular abutment surface on said retainer and stop member to prevent further rotation of said link.

4,576,078

REINFORCED SAW CHAIN TOOTH

Gerald C. Kolve, 5833 SW. Lane Ct., Portland, Oreg. 97221

Continuation-in-part of Ser. No. 503,334, Jun. 10, 1983. This application Apr. 13, 1984, Ser. No. 599,769
Int. Cl.⁴ B27B *33/14*
U.S. Cl. 83—833 **11 Claims**



1. A chain saw side cutter tooth comprising:

(a) a link having

(i) a body defining a plane for the tooth and two half-spaces separated by the plane;

(ii) a root, extending from the body in the plane, capable of engaging a sprocket of the chain saw;

(iii) a leading depth gauge extending laterally outwardly from the body in a direction substantially opposite the root but in the plane;

(iv) a trailing cutter element extending laterally outwardly from the body in a direction substantially opposite the root, yet spaced behind the depth gauge, ending in a cutter tip, the element curling out of the plane into one half-space, the tip extending upwardly substantially vertically and substantially parallel to the plane of the body and the tip sloping back inwardly toward the plane of the body; and

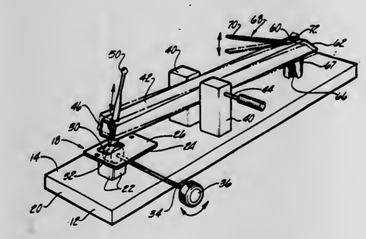
(b) a second link, being substantially a mirror image of the first link, positioned adjacent the first link in substantial alignment with the first link to form a side cutter tooth capable of simultaneously cutting slits on both sides of a kerf when moving as part of the saw chain.

4,576,079

GLASS SCRIBER ASSEMBLY

Pat Donofrio, 1725 Westfield, Trenton, Mich. 48183

Filed Dec. 3, 1984, Ser. No. 677,689
Int. Cl.⁴ C03B *33/02*
U.S. Cl. 83—886 **10 Claims**



1. A glass scriber assembly comprising:

a base,

a support attached to said base, said support having a surface adapted to support a sheet of glass,

an elongated arm,

means for pivotally mounting a midpoint of said arm to said base so that one end of said arm is positioned over said support surface,

a conventional glass scriber,

means for detachably securing said glass scriber to said one end of said arm so that said glass scriber engages a sheet of glass on said support surface,

means for resiliently urging the other end of said arm away from said base,

means for moving a sheet of glass on said support surface, and

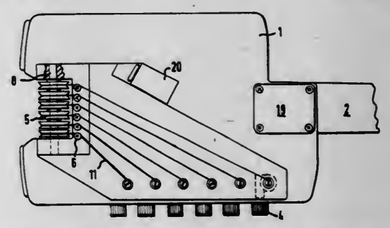
wherein said arm includes a throughbore at said one end, said throughbore being open to said surface and adapted to slidably receive said conventional glass scriber and corresponding in shape to said conventional scriber, and wherein said detachable securing means comprises a locking tube slidably mounted in said arm and adapted to flatly abut against said scriber at longitudinally spaced positions, and means for detachably securing said tube and said arm together.

4,576,080

GUITARS

William S. McLellan, and Alan G. Marriott, both of London, United Kingdom, assignors to Marriott McLellan Limited, London, England

PCT No. PCT/GB82/00215, § 371 Date Mar. 12, 1984, § 102(e) Date Mar. 12, 1984, PCT Pub. No. WO84/00433, PCT Pub. Date Feb. 2, 1984
PCT Filed Jul. 16, 1982, Ser. No. 598,343
Int. Cl.⁴ G10D *1/08*
U.S. Cl. 84—267 **10 Claims**



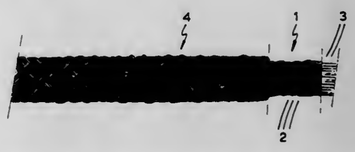
1. A guitar comprising a head (9), a body (1), means (10) for anchoring one end of each of a plurality of strings (11) to the head (9), and a plurality of tuning machines (3) mounted on the body (1) for retaining the non-anchored end of a string (11), characterised in that each tuning machine (3) is located on the back of the body (1) and that the arrangement of the guitar is such that, when strung, the strings pass from the front to the back of the body about the bottom edge thereof.

4,576,081

CERAMIC SEALING ROPE

Jacob Felthuis, Oudorp, and Joseph H. Touraier, Rotterdam, both of Netherlands, assignors to Hoogovens Groep B.V., Ijmuiden and Keralox B.V., Rotterdam, both of Netherlands

Claims priority, application Netherlands, Jul. 4, 1983, 8302366
Filed Jul. 3, 1984, Ser. No. 627,670
Int. Cl.⁴ D04C *1/02, 1/12*
U.S. Cl. 87—6 **7 Claims**



1. Ceramic sealing rope comprising a core and at least one sleeve surrounding said core, said core comprising a plurality of solid metal wires and ceramic yarn wrapped around each of said solid metal wires, said sleeve comprising a plurality of ceramic yarns cross-woven about said core, each of said ceramic yarns cross-woven about said core being wrapped about a solid metal wire.

6. The rope according to claim 1, wherein the number of cross-woven yarns of the sleeve amounts to one pair of two intertwined yarns.

4,576,082

LINEAR FIBER ARMATURE FOR ELECTROMAGNETIC LAUNCHERS

Samuel J. Scuro, Verona, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

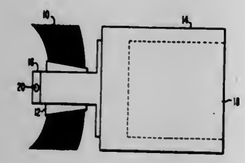
Filed Dec. 23, 1982, Ser. No. 453,687
Int. Cl.³ F41F *1/02*
U.S. Cl. 89—8 **12 Claims**

1. An armature for conducting DC current between a pair of

electrically conductive rails while being driven along the rails under the influence of electromagnetic forces generated by the application of said DC current, said armature comprising:

an insulating support structure;

a plurality of conductive copper fibers;



a cylindrical sleeve having an opening through which said conductive fibers pass, wherein said conductive fibers are compacted to form a solid mass within said sleeve; and

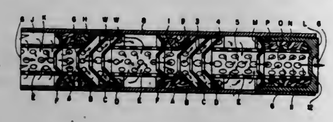
means for mounting said sleeve on said support structure; wherein said conductive fibers are spirally disposed with respect to the axis of said sleeve.

4,576,083

DEVICE FOR SILENCING FIREARMS

Oswald P. Seberger, Jr., P.O. Box 377, Shingletown, Calif. 96088

Filed Dec. 5, 1983, Ser. No. 558,375
Int. Cl.⁴ F41C *21/18*
U.S. Cl. 89—14.4 **9 Claims**



1. A silencer for a firearm comprising:

(a) a cylindrical tube having a longitudinal axis;

(b) means for attaching said tube to a muzzle of said firearm such tat said axis is coaxially aligned with the bore of said firearm;

(c) said tube having positioned in its interior a plurality of elements disposed for guiding of expanded gases and transmitting of sound waves from the end of said muzzle towards the outside of said tube, said elements being concentrically positioned along said axis of said tube, said elements including:

(1) a first flange member positioned within the interior of said tube; said flange member having a central conical portion with an opening within the apex end of said conical portion, said apex end facing the muzzle of said firearm, said opening concentric to said central conical portion, said flange member further having a truncated cone shaped surface located on the outer diameter of said member, the wider end of said truncated cone shaped surface facing said muzzle and being concentric with said tube axis; (2) a first hollow cylindrical member having an outer diameter smaller than the inside diameter of said tube and having a plurality of radial holes through its periphery; (3) a plurality of hollow conical baffling members in the form of truncated cones with their apexes facing said muzzle of said firearm, each said conical member positioned in sequence along the axis in the interior of said tube, each of said conical members having an array of holes substantially circularly disposed around the periphery of said conical members, said conical members having their widest end extended close to the interior surface of said tube, each said array of holes being located farther from the apex of its respective conical member than the array of the previous conical member;

(4) a second hollow cylindrical member having an outside diameter of said first cylinder and less than the inside diameter of said tube and having a array of radial holes disposed around the periphery, of said cylindrical member positioned such that the ends of said cylindrical member abuts the sides of said conical member;

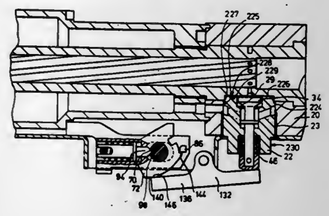
(d) all of said elements firmly bonded together to form a first unit, said unit being fitted into said interior of said tube.

4,576,084

SMALL ARM HAVING A BARREL WITH A TRANSVERSE BORE AND A DETACHABLE SILENCER

Rudolf Brandl, Dornhan-Weiden, and Helmut Danner, Sulz-Sigmarswanger, both of Fed. Rep. of Germany, assignors to Heckler & Koxh GmbH, Oberndorf/Neckar, Fed. Rep. of Germany

Filed Jul. 12, 1984, Ser. No. 630,080
Claims priority, application Fed. Rep. of Germany, Jul. 15, 1983, 3325623; Jul. 15, 1983, 3325671
Int. Cl.⁴ F41C *21/18*
U.S. Cl. 89—14.4 **19 Claims**



1. A small arm having a barrel (11) with at least one transverse bore (14) and a detachable silencer (9, 62) including an expansion chamber (58) communicating with the transverse bore, comprising selectively operable closure means (34) arranged in the path of the combustion gases between the interior of the barrel and the expansion chamber, characterized by an arrangement in which the closure means (34) is prevented from being opened or from remaining in the open position when the silencer (9, 62) is not in place.

4,576,085

SLIP RING ASSEMBLY

Richard S. LeBlanc, Mt. Clemens, Mich., assignor to General Motors Corporation, Detroit, Mich.

Continuation of Ser. No. 437,854, Oct. 29, 1982, abandoned. This application Sep. 26, 1984, Ser. No. 654,713
Int. Cl.⁴ F41H *7/02*
U.S. Cl. 89—36.13 **2 Claims**

1. An armored vehicle comprising:

a turret assembly;

a vehicle body;

said turret assembly being supported by and rotatable relative to said vehicle body and including a cage having a cage floor;

an electrical source and a source of pressurized fluid in said vehicle body;

terminals for electrical equipment in said turret assembly;

a slip ring assembly located in the center of said cage floor for electrically connecting said terminals in said turret assembly to said electrical source in said vehicle body;

said slip ring assembly including,

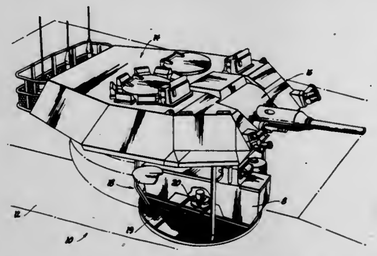
a. a planar disk carried by said vehicle body and having concentric electrical conductive grooves insulated from one another, at least some of said grooves being connected to said electrical source;

b. a circular platter member fixed to said turret assembly and rotatable therewith and having a depending skirt circumferentially surrounding the periphery of said planar disk;

c. bearing means between said periphery of said planar disk and said skirt of said platter member for allowing relative rotational movement therebetween;

d. said platter member having a plurality of circumferentially spaced cavities formed therein offset from the center of said platter member and in vertical alignment with said electrical conductive grooves of said planar disk;

e. plug-in type brush means removably located in said cavities of said platter member for engaging said electrical



conductive grooves, said brush means being formed of electrically conductive material and connected to said electrical equipment in said turret assembly to conduct electricity from said electrical source to said planar disk and to said electrical equipment as said brush means is rotated about the surface of said planar disk;

f. said planar disk and said platter member each having a centrally located opening formed therein;

g. a coupling located in said centrally located opening in said planar disk and said platter member for delivering pressurized fluid from said source of pressurized fluid to said turret assembly; and

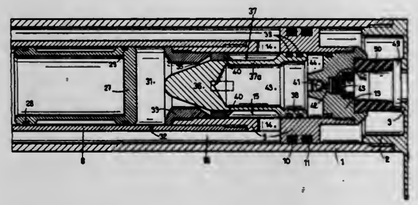
h. an ammunition box for holding ammunition employed by said turret assembly and extending diametrically through the center of said cage floor over said slip ring assembly.

4,576,086

HYDROPNEUMATIC ENERGY-RECUPERATING RECOIL BRAKE FOR ARTILLERY PIECES AND FIREARMS

Francois Brandt, Chalet Le Caribou, 1884 Villars sur Ollon, Vaud, Switzerland

Filed Oct. 11, 1983, Ser. No. 540,472
Claims priority, application France, Oct. 14, 1982, 82 17233
Int. Cl.⁴ F41F *19/02*
U.S. Cl. 89—43.01 **22 Claims**



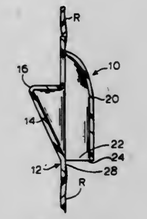
1. A hydropneumatic energy-recuperating recoil brake for artillery, infantry and other weapons, comprising a cylindrical tubular body (1) connected to a fixed frame of the weapon and inside which sealingly slides a hollow rod (8) connected to the recoiling mass of the weapon, an annular space (16) between said body (1) and said rod (8) being filled with a hydraulic liquid and connecting with a first chamber (31) delimited inside said rod (8) by a movable energyrecuperating piston means (27) which also delimits a second chamber (30) filled with a gas, a flowregulating valve (37) having a body movably mounted inside said hollow rod and acted on elastically in a closing direction, said valve cooperating with a seat (33) fixed to said rod and so defining a passageway having a cross-section which varies during the recoil movement of said rod inside said body, wherein said valve body is located upstream of the liquid flow with respect to said valve seat (33), with the valve (37) moving in the opposite direction to said flow in order to open the above-mentioned passage during recoil of said rod (8).

4,576,087

AIR VENT FOR AN ARTICLE

Henry S. Wolfe, St. Petersberg, Fla., assignor to Swell-Wear, Inc., New York, N.Y.

Filed Jan. 8, 1985, Ser. No. 689,646
Int. Cl.⁴ A41D *3/04*
U.S. Cl. 98—1 **7 Claims**



1. An air vent for an article adapted to cover a device wherein said article has at least a planar surface having an aperture; said air vent comprising:

a planar member having a rearwardly extending projection adapted to engage the device to space the aperture therefrom to permit the flow of air therethrough;

a through opening in said member spaced above said projection;

a forwardly projecting cover on the other side of said member covering said opening to prevent the entry of rain therethrough, said cover extending outwardly from a point above said opening and downwardly therefrom to a point spaced below said opening, said cover having a skirt portion which is spaced from said member to define a bottom opening therebetween;

and a peripheral flange on said member adapted to engage the edges of said article adjacent said aperture to position said air vent in said aperture.

4,576,088

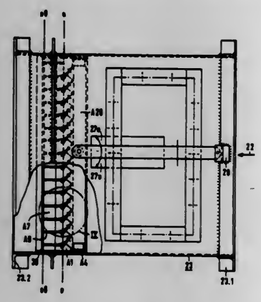
PRESSURE-WAVE PROTECTIVE FLAP (OR DAMPER)

Wolfgang Mathewes, Giessen; Klaus Fitzner, Betzdorf, and Uwe Plitt, Kirchen, all of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim an der Ruhr, Fed. Rep. of Germany

PCT No. PCT/DE83/00061, § 371 Date Nov. 21, 1983, § 102(e) Date Nov. 21, 1983, PCT Pub. No. WO83/03462, PCT Pub. Date Oct. 13, 1983
PCT Filed Mar. 29, 1983, Ser. No. 558,032
Claims priority, application Fed. Rep. of Germany, Mar. 29, 1982, 8208932[U]
Int. Cl.⁴ F23L *17/00*
U.S. Cl. 98—119 **33 Claims**

1. Shutter for protecting against pressure wave devices through which a gaseous or vaporous medium flows, the shutter having a frame structure and being formed of a multiplicity of slats pivotable about parallel axes in a common plane, the

slats being maintained by restoring forces in an open position thereof and being braced against stops on the frame structure, the slats individually being formed of substantially planar strips, respectively, with opposite pairs of relatively long and short edges, the respective axes of the slats extending in direction and in vicinity of one of the relatively long edges thereof, and a supporting device disposed downstream of the slats in pressure surge direction of the medium and secured to the frame structure, the supporting device being formed of support elements disposed in a support raster and having a mutual division spacing matched to the width of the strips, the support elements having support locations thereon with which the slats are in engagement in a closed position thereof, the slats, in the open position thereof, being inclined away from the supporting device so that the free relatively long edges thereof are in engagement with the stops on the frame structure, the shutter further comprising a support grid forming the supporting device and covering the multiplicity of slats, said support grid



including at least two groups of the support elements which are formed as grid bars, said groups of grid bars both extending in different directions, the grid bars of each of said two groups extending parallel to one another and having a plurality of the support locations thereon distributed over the entire length thereof, respectively, and engaged by the respective slats in the closed position thereof, and respective pretensioned leaf springs for generating torque about the respective pivot axes of the slats and applying restoring forces to the slats, on respective sides thereof facing towards said support grid, and in vicinity of the respective free, relatively long edges thereof, said leaf springs having, at one end thereof, a respective first force engagement point with the respective slats and, at the other end thereof, a respective second force engagement at a grid bar adjacent thereto, said leaf springs being fastened at one of said first and second force engagement points, and having a sliding seat at the other of said first and second force sliding seat at the other of said first and second force engagement points.

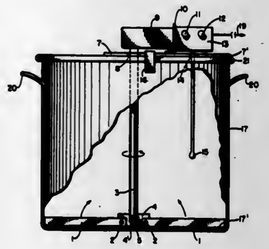
4,576,089

AUTOMATIC ROUX MAKER

John A. Chauvin, 921 Solon, Gretna, La. 70054

Division of Ser. No. 422,570, Sep. 24, 1982, Pat. No. 4,492,713.
This application Nov. 1, 1984, Ser. No. 667,321
Int. Cl.[4] A47J *27/62*
U.S. Cl. 99—332 **5 Claims**

1. An automatic cooker system for preparing a roux or the like, comprising:
- a cooking pot having a bottom and cylindrically shaped side walls;
- heat source means for heating and cooking fluid contents of said pot;
- agitator means associated with the pot for mixing and moving the fluid contents of said pot, said agitator means including
- a centrally located rotor shaft extending down to a position in juxtaposition to the pot bottom;
- at least one paddle arm located at the bottom of said rotor shaft and extending radially out from said shaft with its bottom edge in sweeping contact with the upper surface of the pot bottom;
- a floating connector connecting said paddle arm to said rotor shaft by means of a connection which allows said paddle arm to move up and down and to pivot in the axial plane with respect to said rotor shaft; and
- a powered motor attached to said rotor shaft for rotatively driving it to move said paddle arms in sweeping contact across the bottom of said pot; and
- controller system means associated with said agitator means



and said heat source for controlling the amount and duration of heating energy supplied to said heat source for said pot and for automatically controlling the power to said motor, said controller system including
- temperature sensing means for sensing the temperature of the contents of pot;
- controller circuitry means associated with said temperature sensing means for controlling the heat level and duration of heating of said heat source to the pot until the desired set degree of color level of the roux is reached; and
- motor control circuitry means associated with said motor for maintaining the motor in operation while the roux is being cooked and for a significant period of time thereafter while the cooked roux is cooking down until a safe, lowered temperature is reached.

4,576,090

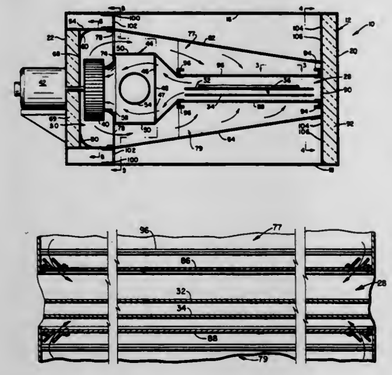
TUNNEL HEATER

Constantin Burtea, Melrose Park, Ill., assignor to Mastermatic, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 379,738, May 19, 1982, Pat. No. 4,471,750. This application May 2, 1984, Ser. No. 606,138
The portion of the term of this patent subsequent to Sep. 18, 2001, has been disclaimed.
Int. Cl.[4] A23L *3/00*; A21B *1/00*
U.S. Cl. 99—443 C **11 Claims**

1. An apparatus for heating food products by convection, comprising:
- a housing having a tunnel-like cavity adapted to receive said food products and an inlet and outlet thereto;
- means for conveying said food products through said cavity;
- foraminous plate means disposed above and below said cavity;
- blower means for circulating air drawn from said cavity through said plate means and against said food products;
- heating means for selectively heating said circulating air; and
- aerodynamically efficient duct means for guiding air flow from said blower means to said plate means, said duct means defining scroll-shaped passage means associated with said blower means, and venturi means disposed downstream of said passage means and upstream of said plate means for creating a relative increase in the pressure

of the circulated air before passage through said plate means for heating said food products;
- said scross-shaped passage means comprising a pair of scroll-shaped passages associated with said blower means arranged to respectively duct circulated air above and



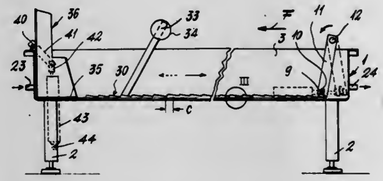
below said cavity for passage through said plate means, and
- air curtain means associated with said blower means and heating means for directing a curtain of heated air across the inlet and outlet to said cavity.

4,576,091

APPARATUS FOR CHEESE COMPACTING

Gabriele Muzzarelli, Via Marzabotto, 116-41100 Modena, Italy

Filed Jul. 30, 1984, Ser. No. 636,024
Int. Cl.[4] A23C *19/00*
U.S. Cl. 99—455 **11 Claims**



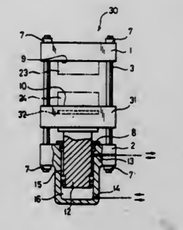
1. Apparatus for compacting whole cheese by contact with water, comprising
- a container having cheese inlet and outlet ends,
- conveyor means situated in said container for receiving and conveying the cheese from said inlet to said outlet end,
- said conveyor means being mounted for reciprocating movement in first and second directions towards and away from said outlet end respectively,
- inertial means associated with said conveyor means for moving the cheese in said first direction when said conveyor means are moving in said first direction, and for maintaining the cheese substantially in position under its own inertia when said conveyor means are moving in said second direction,
- said inertial means comprising means for moving said conveyor means in said first direction at a speed lower than the speed of said conveyor means in said second direction, whereby the cheese moves in the direction of the slower speed and is substantially retained in position by its own inertia during the reverse movement of said conveyor means at the faster speed, and
- a bascule element disposed at an end of said conveyor means and adapted to receive the cheese moved therealong and to remove same from said container by rotating about an axis.

4,576,092

UNIFORM-PRESSURE PRESS APPARATUS

Yoshiharu Yamato, Numazu, Japan, assignor to Kohtaki & Co., Ltd., Tokyo, Japan

Filed Mar. 5, 1984, Ser. No. 586,516
Claims priority, application Japan, Aug. 22, 1983, 58-151697
Int. Cl.[4] B30B *15/32*
U.S. Cl. 100—218 **13 Claims**



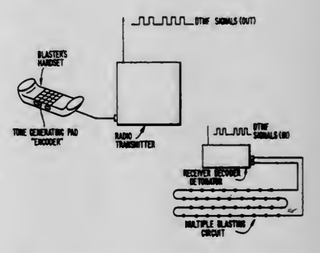
1. A uniform-pressure press apparatus comprising:
- a pressure-receiving frame provided with a first operation surface having an upper die mounted thereon;
- a movable table provided with a second operation surface having a lower die mounted thereon;
- a plurality of liquid-containing, pressure equalizing chambers independently formed in at least one of said pressure-receiving frame and said movable table and arranged in a planar array thereacross, said pressure equalizing chambers occupying an area corresponding to that of the operation surface for mounting either of said upper and lower dies, so that said operation surface is supported through said pressure equalizing chambers; and
- passage means for communicating said chambers with each other.

4,576,093

REMOTE RADIO BLASTING

Richard N. Snyder, P.O. Box 295, Lorton, Va. 22079

Filed Apr. 12, 1984, Ser. No. 599,690
Int. Cl.[4] F42D *1/00*
U.S. Cl. 102—200 **7 Claims**



1. A remote control detonation system comprising a radio transmitter operable to transmit a radio signal on a carrier, encoder means at said transmitter operable to generate encoded signals in sequence, means at said transmitter responsive to said coded signals to modulate said carrier in accordance

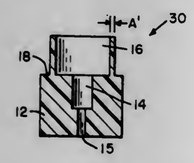
with said encoded signals, a radio receiver operable to receive the carrier signal transmitted by said transmitter, a detonating circuit operable when activated to detonate an explosive, and decoding means connected to said receiver responsive to a predetermined sequence of encoded signals received by said receiver to activate said detonating circuit only when said predetermined sequence of encoded signals have been received by said receiver.

4,576,094

FABRICATION OF EXPANDABLE POLYSTYRENE PLASTIC IGNITION CONTAINERS

Jacqueline C. Meador, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 28, 1985, Ser. No. 770,050
Int. Cl.⁴ F42B *3/10*
U.S. Cl. 102—202.12 **4 Claims**



1. A method for fabrication of an expandable polystyrene plastic ignition container, said container having the weight, density, and strength requirements to function in a high length to diameter rocket flight motor and to remain intact until all parts of a contained ignitor charge is ignited and which said expandable polystyrene plastic ignition container subsequently breaks up into small pieces to that plugging of the nozzle of said rocket flight motor does not occur, said method comprising completing the method steps set forth under parts A, B, and C stages as follows:

Part A, pre-expanding stage consisting of:

(i) selecting a first predetermined quantity of a heat expandable polystyrene in the form of minute unexpanded beads;

(ii) placing said predetermined quantity of heat expandable beads in boiling water;

(iii) expanding said beads to approximately three times their original size;

(iv) draining off excess water;

Part B, blending stage consisting of:

(i) selecting a second predetermined quantity of a heat expandable polystyrene in the form of minute beads;

(ii) combining said first predetermined quantity of a heat expandable polystyrene in said pre-expanded form with said second predetermined quantity of a heat expandable polystyrene and mixing thoroughly to yield a twinned polystyrene beads blend consisting of about 4.5 parts by weight of said pre-expanded polystyrene beads and of about 10 parts by weight of said heat expandable polystyrene in the form of minute beads; and,

Part C, molding and heat forming stage consisting of:

(i) adding a predetermined quantity of said blend of twinned polystyrene beads into a casting mold of a predetermined shape for said ignitor casting container component;

(ii) placing said mold containing said twinned polystyrene beads into a steam chamber;

(iii) admitting steam to said steam chamber to pressurize to 250° F. with 15 psig steam;

(iv) retaining said mold containing said twinned polystyrene beads under said pressurized steam for about three miutes;

(v) removing said mold from said steam chamber;

(vi) placing said mold containing said twinned polystyrene beads in an expanded stage into cold water for about one minute; and

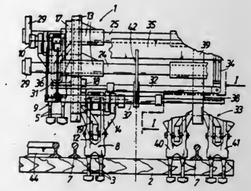
(vii) removing polystyrene plastic ignitor casing container from said mold.

4,576,095

BALLAST TAMPING MACHINE

Josef Theurer, Vienna, Austria, assignor to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria

Filed Sep. 10, 1984, Ser. No. 648,715
Claims priority, application Austria, Nov. 2, 1983, 3874/83
Int. Cl.⁴ E01B *27/16*
U.S. Cl. 104—12 **8 Claims**



1. A machine for tamping ballast under a respective one of a succession of ties of a railroad track comprised of two rails fastened to the ties at points of intersection therebetween, each track rail having a field side and a gage side, the tamping machine comprising a machine frame movable along, and extending in the direction of, the track and having guide means extending transversely to the machine frame and track, and a tamping tool unit comprising

(a) a frame associated with one of the rails and mounted for transverse displacement on the guide means, the frame having two pairs of vertical guide columns disposed in a common vertical plane defined by the associated rail,

(b) power drive means for transversely displacing the frame on the guide means,

(c) a respective tamping tool carrier mounted on each pair of vertical guide columns for vertical adjustment with respect to the frame,

(d) a respective drive for vertically adjusting each one of the tamping tool carriers independently on the pair of vertical guide columns whereon the respective tamping tool carrier is mounted,

(e) a respective pair of tamping tools mounted on each one of the tamping tool carriers for immersion at the field side and the gage side, respectively, of the associated rail at a respective one of the points of intersection,

(f) hydraulic drive means for independently reciprocating each one of the tamping tools of each one of the pairs of tamping tools, and

(g) a respective drive means for vibrating the tamping tools of each pair of tamping tools.

4,576,096

WHEELED LOCKING CARRIER

Ellis I. Toder, 431 Militia Hill Rd., Fort Washington, Pa. 19034

Filed Aug. 13, 1984, Ser. No. 639,695
Int. Cl.⁴ B61H *7/04*; B61B *3/00*
U.S. Cl. 104—94 **16 Claims**

1. A locking wheeled carrier for use in conjunction with a suspended hollow track, said track being of the type having a top, sides and a pair of bottom walls turned inward toward one another from the bottoms of the sides and terminating in parallel spaced apart slot defining sidewalls which define a continuous longitudinally extending slot, said carrier comprising in combination,

(a) a wheeled carriage in which the wheels are seatable upon the track bottom walls for movement of the carriage through the track,

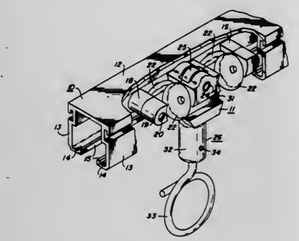
(b) a pair of spaced apart locking blocks carried by said carriage and extending downward between the track slot defining sidewalls, said locking blocks

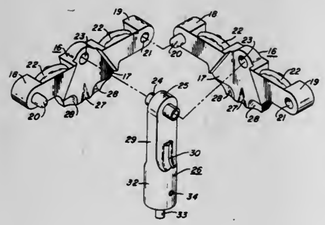
(1) being free to move within limits toward and away from one another widthwise of the track,

(2) carrying camming elements, and

(3) having locking surfaces facing the track slot defining sidewalls, and

(c) a shiftable carrier element depending from said wheeled carriage, said carrier element carrying camming elements adapted to coact with the said camming elements of said





locking blocks so that movement of said carrier element in a first way relatively to said locking blocks causes said coacting camming elements to engage and move said locking blocks into engagement with the track slot defining sidewalls to thereby lock the carriage in the track, and movement of said carrier element in a second way relatively to said locking blocks causes said coacting camming elements to disengage sufficiently to release said locking blocks from engagement with the track slot defining sidewalls to thereby release the carriage for movement in the track.

4,576,097

PIPELINE INSPECTION VEHICLES

John L. Foster, 49 Oakland Rd., Monkseaton, Tyne & Wear, England

Continuation of Ser. No. 276,889, Jun. 24, 1981, abandoned.
This application Nov. 2, 1984, Ser. No. 667,392
Claims priority, application United Kingdom, Apr. 27, 1981, 8112915
Int. Cl.⁴ B61B *13/10*; B65G *51/00*
U.S. Cl. 104—138 G **6 Claims**

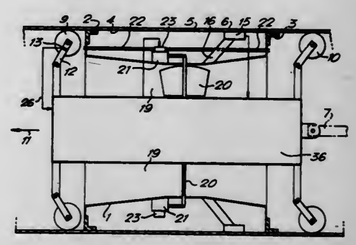
1. A pipeline inspection vehicle which is propelled along the pipeline by pressure produced by fluid flowing along the pipeline and which comprises:

(a) a vehicle body;

(b) at least one resilient driving cup mounted around said vehicle body so as to contact the interior wall of the pipeline and thus provide a fluid pressure differential across the driving cup which will propel the vehicle along the pipeline;

(c) an annular array of ducts disposed around the periphery of said vehicle body and extending through said vehicle body to by-pass fluid through said driving cup;

(d) a butterfly valve in each said duct for regulating the flow of fluid through said duct; and



(e) a means operatively connected to said butterfly valves to open and close said butterfly valves in a manner so as to maintain a steady speed of said vehicle body in the pipeline which speed is less than that of the fluid flow in the pipeline.

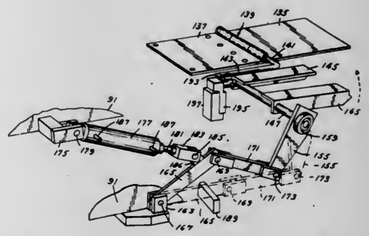
4,576,098

AUTOMOBILE CONVEYOR

James A. Belanger, Northville; Robert Wentworth, Ann Arbor, and James M. Lapham, Northville, all of Mich., assignors to Belanger, Inc., Northville, Mich.

Filed May 26, 1983, Ser. No. 498,254
Int. Cl.⁴ B61B *10/00*; B65G *17/24*
U.S. Cl. 104—172 B **19 Claims**





1. In an automobile conveyor having an elongated framework including a pair of spaced top plates for supporting the tire of an automobile movable thereover, an endless sprocket chain having upper and lower runs movably positioned within said framework below said top plates and extending around drive and driven sprockets within and adjacent opposite ends of said framework, and a plurality of roller dollies within said framework spaced along the length of, connected to and projecting outwardly of said sprocket chain;

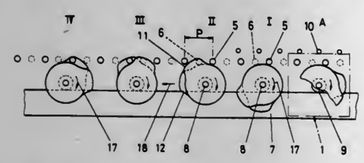
the improvement comprising a pair of bottom plates spaced below and extending in the same direction as said top plates;

the roller dollies connected to said lower run being movably supported upon said bottom plates;

a plurality of parallel spaced transverse rollers journaled

upon said framework intermediate said top and bottom plates;
said upper run of said sprocket chain being movably supported upon said rollers;
there being an aperture in said top plates adjacent one end of said framework adapted to selectively receive one of the roller dollies;
an elevator ramp pivotally mounted upon said framework, underlying said aperture below said top plates and having a horizontal clearance position below said upper run and an upwardly inclined position in the path of forward movement of the selected roller dolly for guiding said dolly through said aperture onto said top plates for advancing movement thereon to operably engage the automobile tire;
said elevator ramp being secured to a ramp mount shaft rotatably journaled and supported upon said frame,
a crank member connected at one end to said ramp mount shaft and connected at the opposite end to a first linkage such that said crank member rotates said ramp mount shaft upon movement of said first linkage;
said first linkage having an opposite end pivotally connected to a second linkage pivotally mounted to said frame, said first and second linkages forming a mechanical lock at said pivotal connection to lock said elevator ramp in said upwardly inclined position;
and power operated means connected to said second linkage and effective when energized to rotate said ramp to its upwardly inclined position.

4,576,099
PALLET TRANSPORT APPARATUS
Hiroshi Makino, No. 1013, Haguro-cho, Koufu, Yamanashi, Japan 400, and Shigeyuki Shinohara, 9-7-303, Shimouma 6-chome, Setagaya-ku, Tokyo, Japan 154
Filed Aug. 3, 1984, Ser. No. 637,538
Claims priority, application Japan, Aug. 5, 1983, 58-143393
Int. Cl.[4] B61C *11/04;* B60L *11/14;* F16H *27/00*
U.S. Cl. 104—287 **6 Claims**



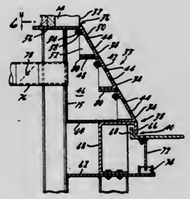
1. A cam-controlled pallet transport apparatus which comprises:
individual box-type pallets each containing in-line indexing cam means consisting of one upper plate cam and one lower plate cam and a drive motor for driving said in-line indexing cam means; and
a pallet running way on which said pallets travel, including cam follower pairs each arranged at equally spaced intervals along said pallet running way, whereby said in-line indexing cam means and corresponding cam followers facing said cam means control the pallet so that it can travel and be stopped every one pitch as determined by the intervals between the cam follower pairs.

4,576,100
CRANE FOR NUCLEAR WASTE HANDLING FACILITIES
Michael A. Zanin, Cuyahoga Falls, Ohio, assignor to AMCA International Corporation, Hanover, N.H.
Filed Sep. 17, 1982, Ser. No. 419,168
Int. Cl.[4] G21C *19/32;* B61D *15/00;* B66C *17/06*
U.S. Cl. 105—49 **20 Claims**



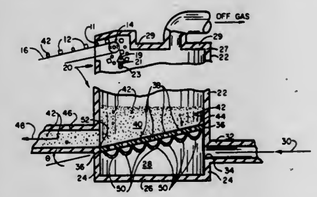
1. A crane for use in a nuclear waste handling facility comprising:
a bridge of sufficient transverse dimension to span the width of the area being serviced by said crane;
means for moving said bridge along spaced rails extending longitudinally along opposite sides of said area being serviced; and
crane control means including a control cabinet depending from cantilever means extending from said bridge;
said facility including stationary radiation barrier means extending longitudinally in spaced relationship to one of said rails, said barrier means being positioned between said bridge and said crane control means;
said barrier means including wall means with a horizontally elongated opening, said cantilever means extending from said bridge through said opening in said wall means, said wall means being positioned between said bridge and said control cabinet, the side of said wall means on which said control cabinet is positioned being adapted for operating at a positive pressure relative to the pressure of the side of said wall means on which said bridge is positioned;
said means for moving said bridge including:
main wheels comprising first and second primary wheel means, first and second secondary wheels means and first and second tertiary wheel means;
primary drive means including: a first primary drive comprising first primary wound rotor motor means and adapted for driving said first primary wheel means along one of said spaced rails; and a second primary drive comprising second primary wound rotor motor means and adapted for driving said second primary wheel means along the other of said spaced rails;
secondary drive means including: a first secondary drive comprising first secondary wound rotor motor means and adapted for driving said first secondary wheels means along one of said spaced rails; and a second secondary drive comprising second secondary wound rotor motor means and adapted for driving said second secondary wheel means along the other of said spaced rails; and
teritary drive means including a first tertiary hydraulic motor adapted for driving said first teritiary wheel means along one of said spaced rails and a second tertiary hydraulic motor adapted for driving said second tertiary wheel means along the other of said spaced rails;
said primary, secondary and tertiary drive means being operatively independent of each other.

4,576,101
STOKER
David C. Reschly, Monroe, Mich., assignor to Detroit Stoker Company, Monroe, Mich.
Filed Feb. 27, 1984, Ser. No. 583,981
Int. Cl.[4] F23L *5/00*
U.S. Cl. 110—182.5 **34 Claims**



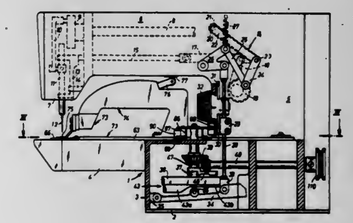
1. A stoker for use within a wall structure defining a combustion chamber, comprising:
a grate for supporting burning fuel and having an outer periphery disposed in spaced relation to said wall structure; and
tuyere defining means disposed around and secured to said wall structure generally above said grate;
said tuyere defining means comprising a plurality of distinct tiered modules, each having a substantially smooth and downwardly converging face with apertures therein, the combined faces together forming a downwardly converging surface for containing and inwardly directing said fuel and having means receptive of pressurized air communicating with said apertures for directing said air into said combustion chamber; and
said tuyere defining means and said grate overlapping to define a baffle about the outer periphery of said grate for confining said fuel within the outer periphery of said grate.

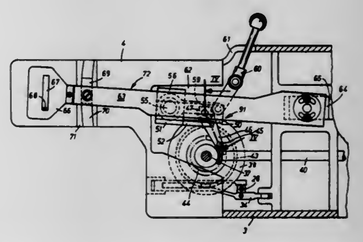
4,576,102
REMOVAL OF TRAMP MATERIAL FROM FLUID BED VESSELS
George P. Rasmussen, and Earl S. Grimmett, both of Idaho Falls, Id., assignors to Waste-Tech Services, Inc., Idaho Falls, Id.
Division of Ser. No. 619,678, Jun. 11, 1984, Pat. No. 4,553,487, which is a continuation-in-part of Ser. No. 528,815, Sep. 2, 1983, abandoned. This application Jul. 22, 1985, Ser. No. 757,813
Int. Cl.[4] F23G *5/30*
U.S. Cl. 110—346 **4 Claims**



1. A method of uniformly fluidizing a variable depth fluid bed while progressively removing tramp material from the bed without use of moving parts comprising the steps of:
providing a single fluid bed in a vessel so that the depth of the bed varies along the transverse cross section of the bed;
supporting the entire fluid bed upon an inclined stationary grid plate having an array of fluidizing apertures but no moving parts, the stationary grid plate having an angle with respect to the horizontal less than the angle of repose of the bed material;
introducing a plurality of separate fuel particles and non-combustible tramp material into the vessel and the fluid bed;
providing fluidizing air under pressure to a plenum beneath the stationary grid plate and directing the air through the array of apertures in the grid plate to uniformly vertically fluidize the entire bed and to gently walk the tramp down the incline of the stationary grid plate to a vessel discharge site solely by the forces of gravity and fluidizing air;
preventing flow loss of bed particles through the apertures into the plenum both while the bed is fluidized and not fluidized.

4,576,103
FEED DRIVE FOR A STITCH GROUP SEWING MACHINE
Ernst Albrecht, Hochspeyer, and Edgar Busch, Trippstadt, both of Fed. Rep. of Germany, assignors to Pfaff Industriemaschinen GmbH, Fed. Rep. of Germany
Continuation-in-part of Ser. No. 615,461, May 30, 1984, Pat. No. 4,549,491. This application Jul. 15, 1985, Ser. No. 755,064
Claims priority, application Fed. Rep. of Germany, Jun. 3, 1983, 3320158; Dec. 3, 1984, 3444061
Int. Cl.[4] D05B *3/02*
U.S. Cl. 112—73 **7 Claims**





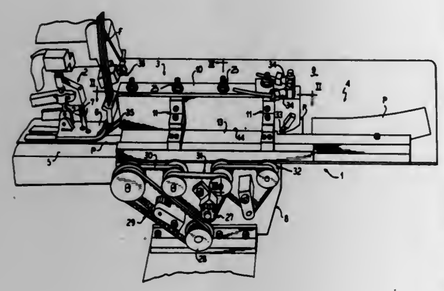
1. A stitch group sewing machine comprising a housing, a sewing needle mounted in said housing for upward and downward movement and for lateral swinging movement in a swinging plane, a sewing machine main drive motor for moving said needle in upward and downward and swinging motion, a work holder mounted on said housing for swinging movement across the swinging plane of said needle, a cam plate rotatable in said housing connected to said work holder by a transmission having a variable transmission ratio for controlling the swinging movement of said work holder, a controllable clutch device connected to said cam plate for rotating said cam plate, said drive motor being connected to said clutch device for driving said clutch device and said cam plate, and a control device connected to said main drive motor for controlling an output speed of said clutch device as a function of one of the speed of said sewing machine main drive motor, a ratio of said transmission and a length of the stitches to be formed, for varying a resultant stitch length.

4,576,104

METHOD AND APPARATUS FOR ATTACHING FLY STRIPS TO A SLIDE FASTENER CHAIN

Kazuo Miyakawa, Marietta, Ga., assignor to Yoshida Kogyo K. K., Tokyo, Japan

Filed Sep. 14, 1984, Ser. No. 650,803
Int. Cl.⁴ D05B *19/00, 3/22, 27/16*
U.S. Cl. 112—265.2 **32 Claims**



1. An automated method of transfering successive individual pieces to a sewing machine to form a continuous series of said pieces in end-to-end relation comprising:

sewing a preceding piece in said sewing machine with a leading end of said preceding piece sewn first and a trailing end of said preceding piece sewn last,

continuously operating a drive means for driving a succeeding piece toward said sewing machine at a speed substantially faster than the rate of feed of said sewing machine until a leading end of said succeeding piece abuts the trailing end of said preceding piece as said preceding piece is being sewn, and

supporting said succeeding piece during said driving such that the leading end of said succeeding piece does not overlap or bunch at said preceding piece trailing end upon abutting despite continuous operation of said drive means.

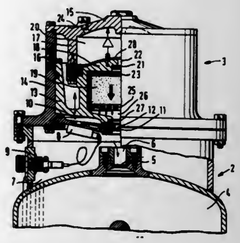
27. Apparatus for automatically attaching successive fly strips to a continuous length slide fastener chain, comprising a sewing machine, means for feeding said slide fastener chain to said sewing machine for sewing onto said fly strips, means for commencing sewing of a preceding fly strip in said sewing machine, a feed station upstream of said sewing machine for delivering a succeeding fly strip towards said sewing machine, said feed station having a continuously operating drive means for conducting said succeeding fly strip through said feed station at a speed substantially faster than the rate of feed of said sewing machine until a leading end of said succeeding fly strip abuts the trailing end of said preceding fly strip as said preceding fly strip is being sewn and having a guide means for guiding said succeeding fly strip through said feed station, and means for passing successive fly strips consecutively to said feed station, such that the leading end of said succeeding fly strip does not overlap or bunch at said preceding fly strip trailing end upon abutting despite continuous operation of said drive means.

4,576,105

RESCUE EQUIPMENT FOR SUBMARINE VEHICLES

Hermann Erdmann, Weyhe, and Hermann Ramaker, Stuhr, both of Fed. Rep. of Germany, assignors to ERNO Raumfahrttechnik GmbH, Bremen, Fed. Rep. of Germany

Filed May 29, 1984, Ser. No. 614,521
Claims priority, application Fed. Rep. of Germany, Jun. 3, 1983, 3320159
Int. Cl.⁴ B63G *8/24*
U.S. Cl. 114—333 **13 Claims**



1. In a rescue equipment for submarine vehicle, a gas generator device for blowing ballast tanks including a storage facility for a liquidous decomposable medium and a first principal gas generator; an auxiliary propulsion facility for driving the liquidous medium into the principal gas generator comprising:

a second, pilot gas generator;

feedback and amplification means having an input connected to be responsive to gas pressure generated by the pilot generator and having an output effective for controlling the operation of the pilot generator; and

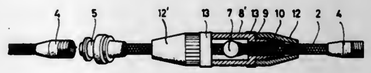
the pilot gas generator being connected for driving the liquidous medium out of its storage facility.

4,576,106

MARKER ROPE

Mitsuo Takagi, Takamatsu, Japan, assignor to Takagi Kogyo Co., Ltd., Kagawa, Japan

Filed Mar. 21, 1984, Ser. No. 592,340
Claims priority, application Japan, Jan. 30, 1984, 59-12594[U]
Int. Cl.⁴ G08B *7/00*; E04H *17/00*; E01F *9/00*
U.S. Cl. 116—63 R **7 Claims**



1. A marker rope which serves as a warning of danger and which is adapted to be stretched around a danger zone, comprising:

a plurality of first cords, each having a plurality of electric wires;

a plurality of luminous bodies, each connected to and spaced along the plurality of the electric wires for the first cords;

a plurality of second cords, each also having a plurality of electric wires;

a plurality of warning-sound producing units, each connected to and spaced along the plurality of the electric wires for the second cords;

means, wrapped around the plurality of electric wires for both the first and second cords, for covering both pluralities of electric wires;

each of the plurality of luminous bodies and each of the plurality of warning-sound producing units being disposed outside of the covering means;

a plurality of protective tube means, aligned coaxially with the pluralities of the first and second cords outside of the covering means, for surrounding the plurality of luminous bodies and the plurality of warning-sound producing units; and

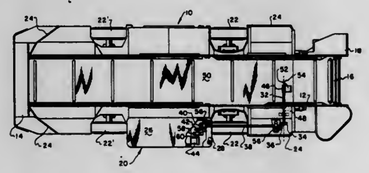
a plurality of tapered tube means, arranged coaxially on opposite ends of each one of the plurality of protective tube means, for sealing the protective tube means against leakage of rainwater coming into contact with the luminous bodies and the warning-sound producing units.

4,576,107

APPARATUS FOR DETECTING THE LEVEL OF PARTICULATE SOLIDS IN A SHUTTLE CAR

John K. Brasher, Helper, Utah, assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed May 17, 1984, Ser. No. 611,279
Int. Cl.⁴ G01F *23/00*
U.S. Cl. 116—227 **8 Claims**



1. An apparatus for detecting an increase to a selected level of the height of a bed of particulate solids in a shuttle car for the transportation of said particulate solids, said shuttle car including a body means adapted to contain and transport said particulate solids, means for receiving said particulate solids in a first end of said shuttle car, conveyor means for moving said particulate solids along the length of said shuttle car toward a second end of said shuttle car to substantially fill said shuttle car with said particulate solids and an operator compartment for a shuttle car operator, said apparatus being positioned near said second end of said shuttle car and comprising a support member adapted to be rotatably supported on a wall of said body means for rotation about its longitudinal axis with its first end inside said body means and its second end outside said body means, a relatively flat plate member positioned on said first end of said support member in a plane generally parallel to said longitudinal axis of said support member so that said plate member is biased to extend vertically downwardly from said support member and a level indicator, said level indicator comprising an indicator member, positioned on said second end of said support member so that said indicator member is substantially horizontal when said plate member is in its vertical position and rotates generally about said longitudinal axis of said support member to a substantially vertical position when said plate member is rotatably urged toward a horizontal position by the increased height and movement of said particulate solids thereby providing an indication of such increased height to said operator.

4,576,108

APPARATUS FOR APPLYING VISCOUS SEASONING EVENLY TO TUMBLING FOOD ARTICLES

Helen M. Socola, Irving, and Michael G. Topor, Carrollton, both of Tex., assignors to Frito-Lay, Inc., Dallas, Tex.

Filed Oct. 3, 1984, Ser. No. 657,130
Int. Cl.⁴ B05C *5/00*
U.S. Cl. 118—19 **3 Claims**

1. An apparatus for applying a viscous slurry of seasoning or flavoring material to a moving, tumbling bed of snack food in a tumbler drum, the apparatus comprising:

(a) a reservoir containing the viscous material;

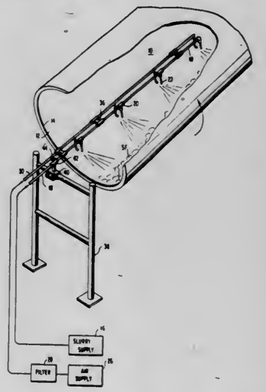
(b) a slurry pipe connected to the reservoir and extending into the interior of the tumbling drum for carrying the viscous material;

(c) a source of compressed air;

(d) a conduit and manifold connected to the source of compressed air, the conduit and manifold extending into the interior of the tumbling drum parallel and adjacent to the slurry pipe;

(e) slurry nozzles connected to the slurry pipe at spaced portions along the length thereof and inside the drum;

(f) air nozzles connected to the air manifold at spaced portions thereon along the length thereof and inside the drum, the air nozzles being spaced apart from and directed



toward streams of slurry exiting from the outlet of the slurry nozzles so that viscous slurry exiting from the slurry nozzles is atomized and dispersed by air from the air nozzles to spread the viscous slurry onto the tumbling, moving material in the drum in a relatively uniform fashion;

(g) a mechanical means connecting the air manifold to the slurry pipe as a unitary assembly; and

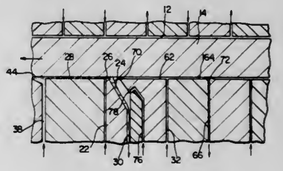
(h) a mechanical means allowing adjustment of the air manifold and slurry pipe assembly as a unit to position the same axially and rotatably relative to the slurry pipe axis for maximum affect within the tumbler drum.

4,576,109

APPARATUS FOR APPLYING A COATING ON A SUBSTRATE

Edward Bok, Burg. Amersfoordtlaan 82, 1171 DR Badhoevedorp, Netherlands

Division of Ser. No. 551,992, Oct. 24, 1983, filed as PCT NL 83/00006 on Mar. 7, 1983, published as WO 83/02910 on Sep. 1, 1983, § 102(e) Pat. No. 4,560,590.
This application May 22, 1985, Ser. No. 736,739
Int. Cl.⁴ C23C *14/00, 16/00*
U.S. Cl. 118—50 **22 Claims**



1. Apparatus for applying a coating upon an advancing substrate comprising:

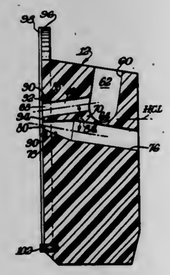
a. a housing;

b. a longitudinal coating passage defined within said housing by a plurality of pairs of superposed segment blocks;
c. a plurality of transversely arrayed gaseous medium supply channels communicant with a pressurized gaseous medium supply, and defined within said segment blocks so as to intersect the top and bottom of said passage and advance the substrate through said passage;
d. a plurality of vacuum discharge channels defined within said segment blocks, so as to intersect said passage;
e. a plurality of transversely arrayed coating medium supply channels communicant with a coating medium supply and defined within segment blocks so as to intersect said intersecting at a processing side of said passageway, adjacent said vacuum discharge channels; and
f. a first restriction gap defined in said passage intermediate said coating material supply channels and said vacuum discharge channels, so as to ensure filling of a first coating passage with coating material.

4,576,110
ROTOR HAVING A CHAMBER BLOCK WITH AN ABSORBANT PLUG

John R. Wells, Culver City, Calif., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 19, 1983, Ser. No. 496,099
Int. Cl.⁴ B05C *11/08*
U.S. Cl. 118—52 **18 Claims**



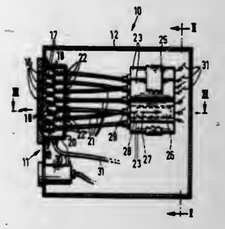
1. A chamber block of the type having an inlet channel adapted to receive a sample of cells suspended in a supernatant and an outlet orifice opening on a face of the block through which the cells and supernatant pass under the influence of a centrifugal force field toward a deposition surface, wherein the improvement comprises a recess formed in the chamber block, the recess having an outlet which opens onto the same face as but is spaced from the outlet orifice, the recess having a first predetermined dimension over a first portion of its length which reduces to a lesser dimensioned portion adjacent the end of its length, the recess being sized to receive a plug of an absorbant material itself having a reduced dimensioned portion near an end thereof and to support the reduced dimensioned portion of the plug against the lesser dimensioned portion of the recess such that the end of the plug lies within a predetermined close dimension of the deposition surface.

4,576,111
MARKING JET DISCHARGING HEAD

Jan Slomianny, Cologne, Fed. Rep. of Germany, assignor to Domino Printing Sciences Plc, England

Filed Jan. 23, 1984, Ser. No. 573,303
Claims priority, application Fed. Rep. of Germany, Jan. 27, 1983, 3302617
Int. Cl.⁴ B05C *5/02*; B05B *1/02*
U.S. Cl. 118—313 **8 Claims**

1. A printing jet discharge head assembly for applying characters to an article, said head assembly comprising:
a chamber for receiving and holding printing liquid under pressure;
a plurality of outlet orifices in said chamber for discharging printing liquid therefrom, said outlet orifices being arranged sufficiently close together to form legible characters from the discharges of said orifices;
a plurality of closure elements within said chamber and operatively associated with respective outlet orifices, said closure elements being selectively displaceable toward and away from said outlet orifices for closing and opening respective orifices;
resilient means to urge said closure elements toward said outlet orifices for closing said orifices;
a plurality of pulling means for selectively moving said



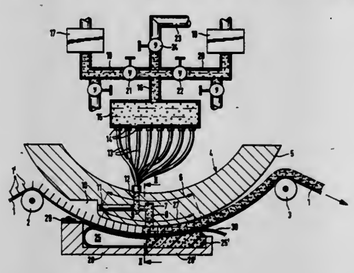
closure elements away from said outlet orifices for opening said orifices to discharge printing liquid therefrom to form the characters, said pulling means comprising a plurality of selectively operable actuators located outside said chamber, said actuators being of a size too large to enable direct coupling to said closely spaced closure elements, and a corresponding plurality of flexible pulling elements, each of said flexible pulling elements connecting a respective one of said actuators with a respective one of said closure elements to enable said actuators to selectively withdraw said closure elements from said orifices, the flexible pulling elements obtaining the coupling of the actuators to the closure element while permitting a substantially unrestricted location of said actuators relative to said chamber and closure elements.

4,576,112
DEVICE FOR APPLYING A TREATMENT MEDIUM, ESPECIALLY IN FOAM FORM, TO A RUNNING WEB OF MATERIAL

Bernhard Funger, Krefeld; Heinz Grüber, Tonisvorst; Werner Hartmann, Krefeld; Julius Kohnen; Johannes Kütz, both of Tonisvorst, and Manfred Moser, Krefeld-Fischeln, all of Fed. Rep. of Germany, assignors to Eduard Küsters, Krefeld-Forstwald, Fed. Rep. of Germany

Filed Apr. 23, 1984, Ser. No. 602,677
Claims priority, application Fed. Rep. of Germany, Apr. 30, 1983, 3315770
Int. Cl.⁴ B05C *3/02*
U.S. Cl. 118—415 **33 Claims**

1. In a device for applying a treatment medium to a running web of material comprising a stationary application beam which extends transversely to the web of material and parallel to its surface, said beam resting with a sliding surface against the surface of the web of material directly in contact therewith and containing an inner chamber extended over its length; feed lines for the treatment medium leading into said chamber; a slot extending along the application beam, opening into the sliding surface; and a support arranged opposite the slot on the other side of the web of material for supporting the web of material travelling past the slot, the improvement comprising: the sliding surface having a convex shape; the support formed by a cushion with a closed surface which extends over the length and width of the slot; said cushion covering the edge of the slot; said cushion elastically resilient at least perpendicular to the sliding surface but support to be stationary overall; said cushion pressing the web of material against the sliding surface in the vicinity of the slot; and said web of material looped



under the application beam on a looping angle such that the contact area of the web of material at the convex sliding surface is at least as large as the contact area of the cushion at the web of material.

4,576,113
APPARATUS FOR COATING VISCOUS MATERIAL ON A SEAL EDGE SURFACE OF A CATHODE RAY TUBE

Goro Kambara, Valley Center, and Makoto Fujii, Escondido, both of Calif., assignors to Sony Corporation, Tokyo, Japan

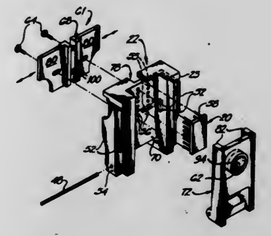
Filed Jul. 12, 1984, Ser. No. 630,229
Int. Cl.⁴ B05C *5/02*
U.S. Cl. 118—697 **14 Claims**

1. Apparatus for applying a viscous material to a surface of an article comprising:
a source of supply of said viscous material under pressure having an outlet,
hose means extending from said outlet,
nozzle means,
bellows means connecting said hose means with said nozzle means and continuously communicating with the latter for supplying said viscous material under pressure from said source through said hose means and said bellows means so as to be discharged at said nozzle means, said bellows means being expansible and contractible for influencing the discharge of the viscous material from said nozzle means,
valve means at said outlet of the source for controlling the flow of the viscous material from said source to said hose means,
valve control means for opening and closing said valve means, and
means for contracting and expanding said bellows means in correspondence with the opening and closing, respectively, of said valve means.

4,576,114
CRYSTAL PLATING SLUG APPARATUS

Alan Kaplan, West Caldwell, and James Amato, Bloomfield, both of N.J., assignors to Emkay Manufacturing Co., East Hanover, N.J.

Continuation of Ser. No. 394,434, Jul. 1, 1982, abandoned. This application Aug. 27, 1984, Ser. No. 644,154
Int. Cl.⁴ C23C *13/08*
U.S. Cl. 118—720 **21 Claims**

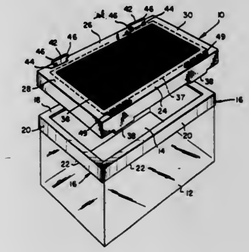


1. A crystal plating device comprising:
a block adapted to be removeably positioned within a plating chamber;
means on said block adapted to receive the electrical contacts of a circuit board having more than two contacts, said board having a crystal to be plated;
a plating mask moveably connected to said block to be disposed in one position for masking the crystal in a circuit board and in another position for receiving a circuit board;
conducting means on said block adapted to conduct between less than all means adapted to receive the electrical contacts of circuit board and a crystal energizing circuit in a plating chamber to conduct between the electrical contacts for the crystal and crystal energizing circuit; and contacting means connected to said block to contact electrical contacts for the circuit board received in said block and electrically connect the electrical contacts associated with the crystal with said conducting means.

4,576,115
TANK COVER

Richard A. Gordon, 95 W. 3rd St., Freeport, N.Y. 11520

Filed Nov. 5, 1984, Ser. No. 668,283
Int. Cl.⁴ A01K *64/00*
U.S. Cl. 119—5 **11 Claims**



7. A cover for an animal tank, fish tank or the like having an open top and an engageable rim comprising a screen integral with and surrounded by a continuous frame having a border member, the cross section of which comprises a horizontal wall adapted to rest on top of said tank and a vertical skirt wall adapted to loosely fit over the edge portion of the top of the tank, said frame having a plurality of resilient tabs integrally

depending from the border member and a plurality of tabs movably depending from and through another portion of said border member, said movable tabs being adjustable relative to said horizontal wall, and each of said tabs having rim engaging means thereon for engagement with the engageable rim, and means for biasing the movable tabs into engagement with the tank to secure said cover on said tank and in engagement with the engageable rim.

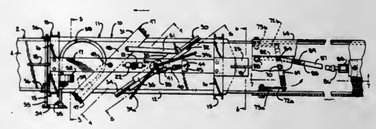
4,576,116
COLLAPSIBLE HOUSE FOR CATS
Gerald A. Binkert, 308 Gould Ave. SE., Bemidji, Minn. 56601
Filed Feb. 7, 1985, Ser. No. 699,012
Int. Cl.[4] A01K *1/02*
U.S. Cl. 119—19 **10 Claims**



1. A collapsible A-frame house providing a common site for a cat to rest, exercise and play, comprising
(a) a roof formed of a single unitary continuous flexible layer-type material having a backside and a cushiony outward face, said roof including an elongate peak and two roof panels integral with the peak and depending downwardly and outwardly from the peak, each said roof panel having a bottom edge, the outward face of the flexible layer-type material being the outward face of the roof and being adapted to withstand cat clawing, the peak of the roof being adapted for flexing in a hinge-like manner to permit inward movement of the roof panels toward one another when the house is to be collapsed;
(b) a stiffening means on the backside of each roof panel for supporting the same;
(c) a floor panel formed of a single unitary continuous flexible layer-type material having a bottom side and a cushiony top side, said floor panel having opposing edges thereof affixed to the bottom edges of the roof panels to limit the separation distance between said bottom edges, the floor panel being adapted for folding along its longitudinal center line generally parallel to its opposing edges, and the flexible layer-type material adjacent the junction of the bottom edges of the roof panels and the opposing edges of the floor panel being such as to serve a hinge function for allowing the floor panel to fold as the roof panels move inwardly towards one another in collapsing the house into a folded condition; and
(d) a cord having two ends slidably passing through opposite end portions of the peak into the house, said cord having at least one object connected to each end for cat amusement and for preventing the cord ends from passing out of the peak when the cord is employed as a manual handle for lifting the house.

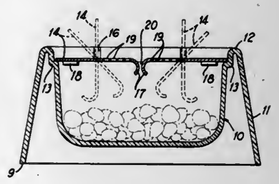
4,576,117
LIVESTOCK FEEDING APPARATUS
Gary L. Garber, Metamora, and Marcus N. Allhands, Sycamore, both of Ill., assignors to A. O. Smith Harvestore Products, Inc., Arlington Heights, Ill.
Filed Jun. 25, 1984, Ser. No. 624,451
Int. Cl.[4] A01K *5/00*; B65G *47/46*
U.S. Cl. 119—52 B **16 Claims**

1. A livestock feed apparatus, comprising a supporting structure, an endless conveyor belt mounted to travel on said supporting structure in an upper run and a lower run, feed supply means for supplying feed to the upper run of the belt, a feed discharge unit disposed above said upper run for selectively discharging feed from either side edge of said belt, said unit including a frame, plow means carried by the frame and having a blade disposed to ride against the upper run of said belt, brush means carried by the frame and including a rotatable brush disposed generally parallel to said plow means, pivot means for pivoting said plow means and said brush means from a first diagonal position in which said blade and said brush extend



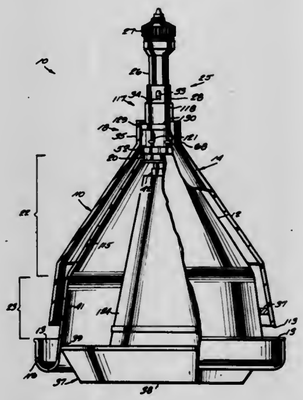
diagonally to a side edge of the belt to a second position in which said blade and said brush extend at a second angle to the side edge of the belt, means responsive to movement of the belt for rotating the brush about its axis, drive means for moving said unit in a reciprocating path along the length of the conveyor, and shifting means responsive to said unit reaching a predetermined location in its reciprocating path of travel for pivoting the plow means and said brush means from the first position to the second position to thereby discharge feed from the opposite side edge of the belt.

4,576,118
PET FEEDING BOWL
Winston R. Meadows, 2961 Collier Dr., N.W., Atlanta, Ga. 30318
Filed Mar. 4, 1985, Ser. No. 707,880
Int. Cl.[4] A01K *5/00*
U.S. Cl. 119—62 **7 Claims**



1. A pet feeding bowl of the type having a bowl body portion defining an interior at about ground level for receiving and retaining food therein, said bowl body portion having an open top through which the pet can have access to the food retained in said bowl body portion, the improvement comprising:
(a) a cover for essentially closing the top portion of said bowl body portion, said cover having a pair of opposed moveable cover plate sections which in their closed position respectively extend from opposite sides of said bowl body portion over the open top of said bowl body portion for covering the food in said bowl body portion said cover plate sections when in their closed positions having adjacent edge portions abutting each other in the central portion of said bowl cover plate sections and being carried in a common horizontal plane by said bowl body portion, said edge portions of said cover plate sections curved downwardly for being engageable by the nose or snout of a pet to urge the cover plate sections away from each and thereby move them to their open positions as the pet inserts his snout or nose between said plates and through said open top toward said food; and
(b) means for biasing said cover plate sections for returning said cover plate sections to their closed positions when the pet removes his snout or nose from said bowl body position.

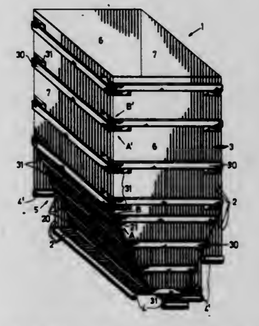
4,576,119
DRINKER SHROUD
Helmut Rader, 1182 Dolly Madison Blvd., McLean, Va. 22101
Filed Jul. 19, 1983, Ser. No. 515,268
Int. Cl.[3] A01K *7/00*
U.S. Cl. 119—81 **19 Claims**



1. A poultry drinker comprising:
a bell including a watering trough formed at the bottom thereof and including means defining a substantially central opening at the top thereof;
valve means including a valve body having a valve member for allowing or preventing flow of liquid through the valve body to the trough;
means for operatively interconnecting said bell and valve means so that said bell is movable with respect to said valve body to actuate or deactuate said valve member depending upon the amount of water in said trough, water from said valve means flowing to said trough; and
a shroud generally concentric with said bell and disposed exteriorly of the exterior periphery of said bell, said shroud substantially coextensive with said bell over the entire length thereof except for said trough and for preventing contamination of said bell exterior surface over substantially the entire extent thereof, and mounted with respect to said bell and valve means so that operation of said valve means by said movement of said bell with respect to said valve body is substantially unimpeded.

4,576,120
HEAT EXCHANGER
Heinz Ammann, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland
Filed Aug. 30, 1984, Ser. No. 645,718
Claims priority, application Switzerland, Sep. 8, 1983, 4903/83
Int. Cl.[4] F22B *37/00*
U.S. Cl. 122—6 A **11 Claims**

1. A heat exchanger comprising
a plurality of walls defining a vertical flue, each said wall including a plurality of interconnected tubes;
at least one first flanged girder extending parallel to one of said walls at a first level of said flue for receiving flexural stresses from said wall;
a first tension band rigidly connected in parallel to a second wall adjacent said one wall;
at least one first connecting element rigidly connected to said first tension band at predetermined fixing points disposed symmetrically of a central plane of said first tension band;
at least one first link mounted on said first connecting element and pivotally connected to one end of said first girder on an axis parallel to said second wall and perpendicular to said first girder, said first link being disposed to transfer a flexural stress from said first girder to said first tension band within said central plane of said first tension band;
at least one second flanged girder extending parallel to said second wall at a second level of said flue for receiving flexural stresses from said second wall;

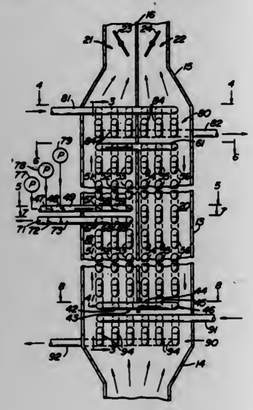


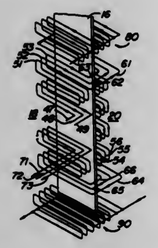
a second tension band rigidly connected in parallel to said one wall;
at least one second connecting element rigidly connected to said second tension band at predetermined fixing points disposed symmetrically of a central plane of said second tension band; and
at least one second link mounted on said second connecting element and pivotally connected to one end of said second girder on an axis parallel to said first wall and perpendicular to said second girder, said second link being disposed to transfer a flexural stress from said second girder to said second tension band within said central plane of said second tension band.

4,576,121
CONVECTIVE HEATER
Robert M. Thorogood, Macungie, Pa., assignor to International Coal Refining Company, Allentown, Pa.
Filed Jan. 27, 1984, Ser. No. 540,232
The portion of the term of this patent subsequent to Dec. 27, 2000, has been disclaimed.
Int. Cl.[4] F22D *1/00*
U.S. Cl. 122—7 R **9 Claims**

1. A convective heater downstream of a radiant burner for heating fluids such as a slurry or the like comprising:
(a) means defining an elongated heating chamber having an inlet at one end and an outlet at its other end, imperforate means dividing said elongated chamber along its length and extending the total length of said chamber into two parallel heating gas flow paths, each of said flow paths being in the same direction wherein the heated gases passing from said inlet to said outlet are divided into two heating gas streams passing upwardly in the same direction;
(b) conduit means for passing said fluid to be heated in a continuous series flow through said heating chamber in heat exchange relationship with the heating gases passing from said inlet to said outlet;
(c) said conduit means being constructed and arranged to provide a continuous series mixed flow tube circuit in which the fluid to be heated enters one of said heating gas

flow paths at a location between said inlet and said outlet to flow in a co-current direction with said heating gases through said one path to a location near said outlet whereat said tube circuit transfers in series flow to said other heating gas path to then flow in a counter-current direction relative to said heating gas through said other path to a location near said inlet whereat said tube circuit transfers in series flow back to said one path to flow in a co-current direction to said entry location whereat said tube circuit leaves said one path, and





wherein said tube circuit comprises tubes arranged in a serpentine-like arrangement passing back and forth transversely through said heating chamber as the fluid to be heated flows in said co-current and counter-current flow paths, said serpentine arrangement of tubes comprising return bends located externally of said heating chamber, said tube circuit comprising a plurality of parallel stacks of tubes in each of said paths.

4,576,122

ROAD-MARKING MATERIAL HEATING SYSTEM

Forrest C. Marcato, 823 James Ct., Pike Road, Ala. 36064

Filed Mar. 20, 1984, Ser. No. 591,415
Int. Cl.⁴ F22B *9/02*
U.S. Cl. 122—26 **26 Claims**

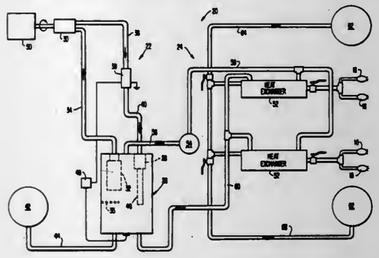
1. A mechanical heat-generating system for indirectly heating a road-marking material being applied onto a road surface from a vehicle comprising:

heat exchanger means for placing a road-marking material in indirect contact with a heat exchange fluid at an elevated temperature to raise the temperature of the road-marking material;

heat exchange fluid storage tank means for storing a reservoir of the heat exchange fluid at a preselected elevated temperature during road-marking material application;

heat-generator means for mechanically heating the heat exchange fluid during the passage of the fluid through the generator to raise the temperature of the heat exchange fluid to be passed to said heat exchange fluid storage tank means;

conduit means for connecting in fluid communication said heat exchanger means, said storage tank means and said heat-generator means; and



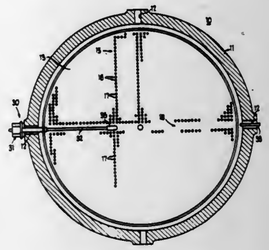
pump means for pumping the heat exchange fluid through said heat exchanger means, said storage tank means and said heat-generator means so that the temperature of the heat exchange fluid is raised during its passage through said heat-generator means, the heat exchange fluid is passed from said heat-generator means to said storage tank means to be stored therein at the preselected elevated temperature and is passed from said storage tank means to said heat exchanger means.

4,576,123

WORKPIECE POSITIONING APPARATUS WITH PLURAL SENSORS

Edward J. Lahoda, Edgewood, and David A. Eckhardt, Penn Hills, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 20, 1984, Ser. No. 632,976
Int. Cl.⁴ F22B *37/54*; F28F *15/00*; F28G *9/00*
U.S. Cl. 122—382 **20 Claims**



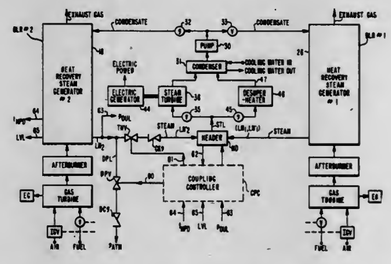
1. Apparatus for accurately positioning a workpiece with respect to the vertical tubes of a nuclear steam generator wherein the tubes are disposed in an array of parallel rows and parallel columns, with the tubes in each column having their axes aligned in a common column plane with a predetermined spacing between the tubes of adjacent columns, said apparatus comprising transport means for moving the workpiece past the columns of tubes closely adjacent thereto in directions perpendicular to the column planes thereof, a plurality of sensing means associated with the workpiece for movement therewith, each of said sensing means being responsive to adjacent tubes for producing a detection signal which varies as a function of the distance between said sensing means and the closest one of the tubes, said sensing means being positioned so that the detection signals therefrom are related by a predetermined function, and reprocessing means coupled to each of said sensing means and responsive to the detection signals therefrom for producing in accordance with said predetermined function a position-indicating signal which is a maximum when the workpiece is in a predetermined position with respect to one of the column planes.

4,576,124

APPARATUS AND METHOD FOR FLUIDLY CONNECTING A BOILER INTO PRESSURIZED STEAM FEED LINE AND COMBINED-CYCLE STEAM GENERATOR POWER PLANT EMBODYING THE SAME

Alan Martens, Berwyn; Kermit R. Wescott, Kennett Square, and Bennie E. Snow, West Chester, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 25, 1984, Ser. No. 664,638
Int. Cl.⁴ F22D *7/00*
U.S. Cl. 122—406 ST **4 Claims**



1. Apparatus for starting a steam boiler and for coupling a steam output thereof through a throttle valve and a header to a steam feed line at an operative pressure and temperature comprising:

means for draining through a bypass line steam from said steam output before said throttle valve with said throttle valve being closed initially;

with said draining means including a controlled drain valve and control means controlling said drain valve in a first mode for admitting a derivation flow at predetermined minimal constant flow level in said bypass line as the pressure of said steam output is increasing from substantially zero level; said controlled valve in a second mode admitting in said bypass line from said steam output a derivation flow increasing in relation to the increase of said steam output;

said control means controlling said draining means in the second mode to pass a derivation flow corresponding substantially to said operative pressure at said steam output for closing said drain valve and subsequently for opening said throttle valve, whereby said header receives steam concurrently from said feed line and from said boiler at substantially the same operative pressure;

with first means for sensing the operative pressure in said header;

second means for sensing pressure of said output steam;

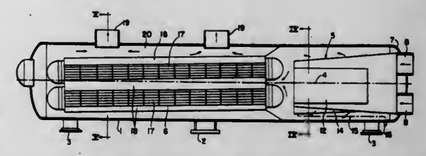
said control means being responsive to a pressure intermediate between said substantially zero level pressure and said operative pressure to shift operation from said first mode to said second mode.

4,576,125

WATER SEPARATOR FOR DRYING WET VAPOR, WITH SUBSEQUENT SUPERHEATING OF THE DRIED VAPOR

Günter Keintzel, and Klaus Westebbe, both of Gummersbach, Fed. Rep. of Germany, assignors to L. & C. Steinmüller GmbH, Gummersbach, Fed. Rep. of Germany

Filed Mar. 2, 1984, Ser. No. 586,008
Claims priority, application Fed. Rep. of Germany, Mar. 1, 1983, 3307101
Int. Cl.⁴ F23G *1/00*
U.S. Cl. 122—483 **1 Claim**



1. An arrangement containing a water separator for drying wet vapor, and a superheater for subsequently superheating the dried vapor; said arrangement including:

a horizontal, cylindrical tank having a central axis, at least one inlet for wet vapor, at least one outlet for superheated dry vapor, and at least one outlet for separated water;

a water separator disposed in said tank and, in the direction of said central tank axis, having the shape of a truncated pyramid or cone; said water separator being in communication with said at least one inlet for receiveing wet vapor therefrom; said water separator having improvement in combination therewith which comprises bundles of laminations arranged in pairs and in two rows extending in a horizontal plane substantially in the axis of the cylindrical tank as well as having vapor discharge surfaces that are disposed symmetrically, vertically, and in tiers relative to said central tank axis, and that are disposed at an angle generally in a range of from 10–170° preferably in a range of from 50–70° relative thereto; said at least one outlet for separated water being in communication with said bundles of laminations for receiving separated water therefrom;

a superheater disposed in said tank coaxially with said water separator and in communication therewith for receiving dried vapor therefrom; said superheater having improvement in combination therewith which comprises tube bundles which are uniformly disposed about said central tank axis and can vary in number and type of construction; said at least one outlet for superheated dry vapor being in communication with said tube bundles for receiving superheated dry vapor therefrom, said bundles of laminations being symmetrically arranged relative to the axis of the cylindrical tank with a distance spacing decreasing in a direction towards said superheater; and

connecting plates located between said bundles of laminations and interconnecting said bundles of laminations for predetermined flow guidance therewith.

4,576,126

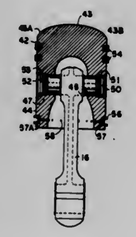
TWO-STROKE INTERNAL COMBUSTION ENGINE

Antonio D. Ancheta, 446 Toronto St., Winnipeg, Manitoba, Canada R3G 1S5

Continuation-in-part of Ser. No. 418,277, Sep. 15, 1982, abandoned, which is a continuation-in-part of Ser. No. 197,003, Oct. 14, 1980, abandoned, which is a continuation-in-part of Ser. No. 59,687, Jul. 23, 1979, abandoned. This application Mar. 16, 1984, Ser. No. 590,416
Int. Cl.⁴ F01P *1/04*
U.S. Cl. 123—41.38 **9 Claims**

1. A two-stroke supercharged multi-cylinder internal combustion engine, comprising in combination a cylinder block having cylinder bores formed therein, a cylinder head on an upper end of the cylindrical bores defining a main combustion chamber, a piston assembly in each of said cylinder bores and

including a piston having a domed head and a connecting rod operatively connected to said piston for reciprocating same between top dead center and bottom dead center, said piston including means to reduce and control the escape of lubricating oil therepast, said means including said piston assembly having a piston skirt extending from said head, a pair of diametrically opposed wrist pin bosses in said skirt below said domed head, a wrist pin mounted within said bosses with a retainer ring installed in an annular groove formed in an outermost edge portion of each of said bosses adjacent outer ends of the wrist pin for restricting endwise movement of said wrist pin, said wrist pin operatively connecting said connecting rod to said piston, sealing "O" rings having high temperature resistance properties installed in an annular groove formed in each of said bosses of the piston adjacent to each end portion of the wrist pin after assembly to prevent the escape and discharge of lubricating oil therepast, at least two compression piston rings situated in spaced and parallel grooves in the head of said piston above said wrist pin bosses and at least one oil scraper ring mounted within an annular groove around the skirt close



to a lower edge portion of said skirt, drain holes extending from said groove through said skirt to control and prevent the escape of lubricating oil past individual scavenging port and exhaust port openings, said oil scraper ring always remaining below lowermost edges of said scavenging port and said exhaust port opening when said piston is at top dead center of its stroke, a crankshaft mounted for rotation at a base of the said cylinder block, a re-circulating type constant pressure feed oil pump mounted in the base of said cylinder block and being operatively driven by said crankshaft, an oil pan enclosing the lower side of the cylinder block, said crankshaft and said oil pump, said pump being operatively connected to the lubricating system of said engine, said cylindrical bores having said individual scavenging port and exhaust port openings formed in the lower side of each cylindrical wall in the same plane and axial position, said scavenging port lower side opening inclining inwardly and upwardly towards the walls of the cylinder, said scavenging port and exhaust port openings being both uncovered and covered simultaneously by the reciprocating piston passing thereby.

4,576,127

VALVE TIMING CONTROL DEVICE FOR AN INTERNAL COMBUSTION ENGINE

Isao Doi, Isehara; Takashi Mihashi, Yokosuka, and Shoichiro Yokota, Yokohama, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama City, Japan

Filed May 10, 1985, Ser. No. 732,716
Claims priority, application Japan, May 14, 1984, 59-94669
Int. Cl.⁴ F01L *1/12*
U.S. Cl. 123—90.15 **7 Claims**

1. A valve timing control device for an engine having a crankshaft and a pair of camshafts for operating intake and exhaust valves, comprising:

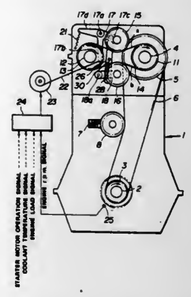
a driving wheel mounted on the crankshaft to rotate together therewith;

a pair of first and second driven wheels mounted on one of the camshafts to rotate together therewith;

a third driven wheel mounted on the other of the camshafts to rotate therewith;

a first power transmitting member passing about said driving wheel and said first driven wheel to transmit rotation of the former to the latter;

a second power transmitting member passing about said second driven wheel and said third driven wheel to transmit rotation of the former to the latter and having a tension side section and a slack side section extending between said second and third driven wheels;



a pair of first and second adjusting wheels respectively brought into contact with said tension side section and said slack side section of said second power transmitting member and shiftable in unison with each other toward and away from said tension side section and said slack side section so as to vary the lengths of same; and

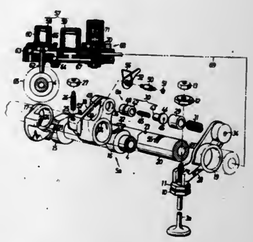
means for driving said adjusting wheels to shift in accordance with operating conditions of the engine.

4,576,128

VALVE OPERATION STOPPING MEANS FOR MULTI-CYLINDER ENGINE

Kenich Nagahiro, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 17, 1984, Ser. No. 682,424
Claims priority, application Japan, Dec. 17, 1983, 58-238424
Int. Cl.⁴ F02D *13/06*
U.S. Cl. 123—198 F **19 Claims**



1. In a valve operating mechanism for multi-cylinder internal combustion engine including a cam shaft with a plurality of cams formed integrally with said cam shaft at positions corresponding to suction valves and exhaust valves for each cylinder, a valve operation stopping device comprising a drive rocker arm engaging one of said cams, a driven rocker arm engaging one of either the suction valves or the exhaust valves, said drive rocker arm and said driven rocker arm being pivotably supported on the same axis to permit relative angular displacement, a synchro pin slidably mounted in said driven rocker arm to engage with said drive rocker arm to prevent

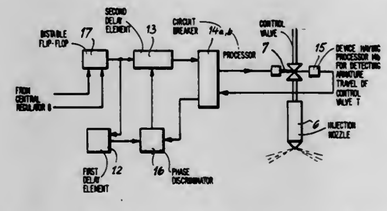
said relative axial displacement, means biasing said synchro pin toward engagement with said drive rocker arm, and a timing piston provided in said drive rocker arm at a position corresponding to said synchro pin and acting to urge said synchro pin toward said driven rocker arm by hydraulic pressure to release connection between said drive rocker arm and said driven rocker arm.

4,576,129

FUEL INJECTION SYSTEM FOR INTERNAL COMBUSTION ENGINES

Gerd Wallenfang, Cologne, and Manfred Glöckner, Pulheim, both of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Filed Jan. 25, 1984, Ser. No. 573,802
Claims priority, application Fed. Rep. of Germany, Jan. 25, 1983, 3302293
Int. Cl.⁴ F02M *39/00*
U.S. Cl. 123—357 **24 Claims**



1. A fuel injection system for an air-compressing, spontaneous-ignition, reciprocating piston internal combustion engine which is provided with a fuel injection pump and an injection nozzle respectively for each cylinder unit, each of which is provided on a high pressure side of the fuel injection pump with at least one electromagnetic control valve for regulating at least one parameter which characterizes the injection process; each control valve is adapted to be controlled from an electrically operating data processor by means of a control pulse as a function of characteristic operating parameters of said internal combustion engine; the improvement comprises:

a delaying device for and associated with each of said electromagnetic control valves; each delaying device, while taking into account the transmission characteristics of its control valve, transmits said control pulse of said data processor to said control valve in such a way that the latter opens and/or closes with a constant time delay during each control procedure; this constant time delay of said control valve is adapted to be established as a function of the actual speed of said internal combustion engine; the control time point of said control valve, as determined by said data processor, for opening and/or closing said control valve, is adapted to be varied as a function of said constant time delay; each delaying device comprising:

a first delay element having a constant time delay as a reference time for said control valve;

a second delay element having a variable time delay for said control valve;

a circuit breaker;

a device, which is provided with a processor, for detecting the armature travel of said control valve;

a phase discriminator; and

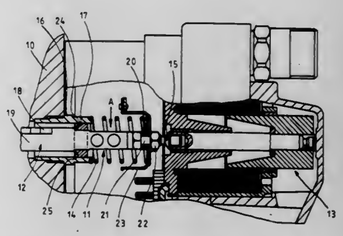
said control pulse of said data processor can be conveyed to said first and said second delay elements; in which said control valve can be controlled by said second delay element; and in which said device for detecting the armature travel of said control valve delivers an actual value to said phase discriminator, and said first delay element delivers a desired value to said phase discriminator, which, as a function of the desired value/actual value comparison, generates a control value for regulating said second delay element such that summation of adjusted delay time of said second delay element and response time of said control valve corresponds to the constant time delay of said first delay element.

4,576,130

FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES

Walter Hafele, Fellbach, and Peter Knorreck, Weissach, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 671,264, Nov. 14, 1984, abandoned. This application Dec. 12, 1984, Ser. No. 680,970
Claims priority, application Fed. Rep. of Germany, Nov. 24, 1984, 3442953
Int. Cl.⁴ F02M *39/00*
U.S. Cl. 123—372 **14 Claims**



1. A fuel injection pump for internal combustion engines, comprising a pump housing and a supply quantity adjusting member adjustable by an electrically controlled final control element, said supply quantity adjusting member having a profiled governor rod supported in said pump housing, said profiled governor rod includes a main body portion with a shank end in proximity to said final control element, said rod further having an end arranged to extend out of the pump housing toward the final control element, a cylindrical slide bearing sheath secured in said pump housing in proximity to said profiled governor rod, and a displaceably disposed cylindrical governor rod guide ring having a tilt-proof minimal axial length firmly seated on said shank end of said main body portion and secured to said profiled governor rod to close off said governor rod in a sealing manner relative to said cylindrical slide bearing sheath and to the final control element to thereby achieve the least possible radial play in the slide bearing sheath to prevent an overflow of oil from said pump housing to the final control element and a coupling element secured to said shank end of said profiled governor rod for transmitting adjusting forces to said profiled governor rod and further that said guide ring is secured to said shank end between a front face of said coupling element and a shoulder provided on said main body portion of said profiled governor rod.

4,576,131

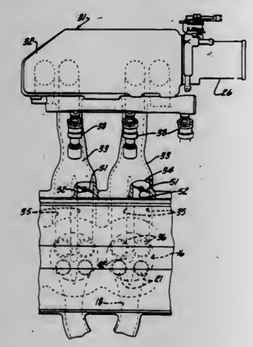
INTAKE CONTROL SYSTEM FOR MULTI-VALVE TYPE INTERNAL COMBUSTION ENGINE

Keiichi Sugiyama, Shizuoka, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Japan

Division of Ser. No. 588,358, Mar. 2, 1984, Pat. No. 4,512,311, which is a continuation of Ser. No. 312,673, Oct. 19, 1981, abandoned. This application Feb. 15, 1985, Ser. No. 701,958
Claims priority, application Japan, Oct. 20, 1980, 55-147150
Int. Cl.⁴ F02M *35/10*; F02D *9/08*
U.S. Cl. 123—432 **4 Claims**

1. In an induction system for a chamber of an internal combustion engine having inlet means communicating with said chamber for delivering a charge thereto, said inlet means com-

prising a pair of intake passages each serving said chamber, main throttle valve means in said inlet means upstream of said intake passages for controlling the flow therethrough, exhaust means communicating with said chamber for receiving a burnt charge therefrom, means for controlling the communication of said inlet means and said exhaust means with said chamber for providing for opening of said inlet means prior to full closure of said exhaust means, the improvement comprising means for limiting the effective area of said inlet means during idle for minimizing the backflow of exhaust products into said inlet means when said inlet means and said exhaust means are both



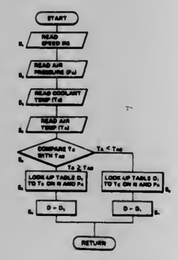
open and for reducing said restriction when said engine is in an off idle condition comprising single throttle valve positioned in only one of said intake passages downstream of said main throttle valve means and means for commencing the opening of said single throttle valve immediately upon opening said main throttle valve past its idle condition, said means for opening said single throttle valve comprises linkage means interconnecting said single throttle valve with said main throttle valve and adapted to open said single throttle valve at a faster rate than said main throttle valve is opened so that said single throttle valve is in its fully open position prior to full opening of said main throttle valve.

4,576,132

ENGINE STARTING AIR FUEL RATIO CONTROL SYSTEM

Masataka Nakajima, Tokyo; Yasushi Mase, Hachioji, and Yoshiharu Tamura, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Oct. 29, 1984, Ser. No. 666,038
Int. Cl.⁴ F02D *41/06*
U.S. Cl. 123—438 **7 Claims**



1. An engine-starting air-to-fuel ratio control system incorporated with a carburetor for supplying the amount of fuel into an engine according to the amount of intake air, which comprises:

(a) an engine speed sensor for outputting an engine speed signal;

(b) an intake air pressure sensor for outputting an intake air pressure signal;

(c) an engine coolant temperature sensor for outputting an engine coolant temperature signal;

(d) an intake air temperature sensor for outputting an intake air temperature signal;

(e) fuel control means for determining the amount by which fuel is to be increased in response to the detected engine speed signal, the detected intake air pressure signal, the detected engine coolant temperature signal and the detected intake air temperature signal, and for outputting a control signal representative of the amount of fuel to be increased, said control means comprising a microcomputer for outputting a control pulse signal, the duty factor thereof being controlled in accordance with table look-up method with the detected engine speed, intake air pressure, coolant temperature and intake air temperature as parameters, said duty factor of the control pulse signal being retrieved according to the detected coolant temperature T_C from a lower air temperature table D_1 selected with the detected engine speed N and intake air pressure P_A as parameters when the detected intake air temperature T_A is lower than a reference intake air temperature T_{AO}, and from a higher air temperature table D_2 selected with the detected engine speed N and intake air pressure P_A as parameters when the detected intake air temperature T_A is equal to or higher than the reference intake air temperature T_{AO}; and

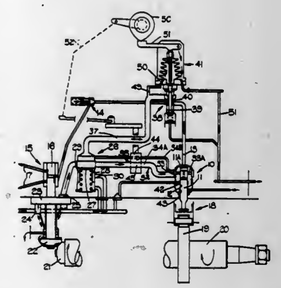
(f) an actuator associated with the carburetor and activated in response to the control signal outputted from said control means for increasing the amount of fuel to be supplied to the engine through the carburetor.

4,576,133

LIQUID FUEL INJECTION PUMPING APPARATUS

Terence M. B. Silcock, Pinner, and Colin T. Timms, Harrow Weald, both of England, assignors to Lucas Industries Public Limited Company, Birmingham, England

Filed Jan. 3, 1985, Ser. No. 688,516
Claims priority, application United Kingdom, Jan. 21, 1984, 8401626
Int. Cl.⁴ F02M *39/00*
U.S. Cl. 123—458 **10 Claims**



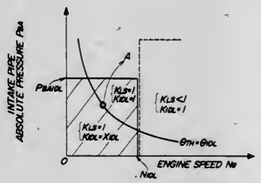
1. A liquid fuel injection pumping apparatus for supplying fuel to an internal combustion engine, comprising a high pressure reciprocable plunger fuel injection pump having a pumping chamber and an outlet connected in use, to an injection nozzle of an associated engine, a low pressure supply pump for supplying fuel under pressure to the high pressure pump during the filling periods thereof, passage means connecting the supply pump to an inlet of the high pressure pump, an electrically controlled spill valve operable to divert fuel at high pressure from the high pressure pump during inward movement of the plunger, thereby to control the amount of fuel supplied through said outlet, manual means operable to prevent flow of fuel through the spill valve in the event of electrical failure, a valve associated with said passage means and operable in the event of electrical failure to provide a variable restriction to the flow of fuel through said passage means to the high pressure pump whereby the apparatus can continue to supply fuel to an associated engine, a spill path from the pumping chamber of the high pressure pump, fuel flowing through said spill path flowing along said passage means, said spill path being uncovered at a predetermined position during inward movement of the plunger to terminate delivery of fuel by the apparatus.

4,576,134

FUEL SUPPLY CONTROL METHOD FOR INTERNAL COMBUSTION ENGINES CAPABLE OF IMPROVING ACCELERABILITY OF THE ENGINE FROM AN IDLING REGION THEREOF

Akihiro Yamato, and Yutaka Otobe, both of Shiki, Japan, assignors to Honda Giken Kogyo K.K., Tokyo, Japan

Filed Jun. 8, 1984, Ser. No. 618,532
Claims priority, application Japan, Jun. 21, 1983, 58-111664
Int. Cl.⁴ F02D *41/08*
U.S. Cl. 123—480 **9 Claims**



1. A fuel supply control method for an internal combustion engine having an intake passage and an exhaust passage, a throttle valve arranged in said intake passage, and exhaust gas purifying means arranged in said exhaust passage, the method being adapted to store a plurality of predetermined basic fuel quantity values which correspond, respectively, to a plurality of predetermined values of at least one operating parameter of said engine indicative of intake air flow rate, other than throttle valve opening, and the rotational speed of the engine, read out one of said predetermined basic fuel quantity values which corresponds to the detected value of said at least one operating parameter, determine from said read one basic fuel quantity value a quantity of fuel appropriate to an operating condition in which said engine is operating, and supply the determined quantity of fuel to said engine, the method comprising the steps of:

(a) setting at least part of said basic fuel quantity values which correspond to ones of said predetermined values of said at least one operating parameter that are to be assumed when said engine is operating in an idling region, at such predetermined values as to obtain an air-fuel mixture having a predetermined air-fuel ratio at which said exhaust gas purifying means can exhibit an optimum conversion efficiency thereof;

(b) detecting the valve opening of said throttle valve, determining whether or not the detected valve opening of said throttle valve is equal to or smaller than a predetermined value corresponding to a substantially fully closed position of said throttle valve, and determining that said engine is operating in said idling region when the detected valve opening of said throttle valve is equal to or smaller than said predetermined value; and

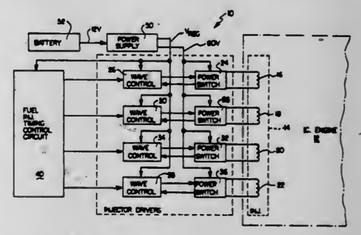
(c) decreasing by a predetermined correction value each of said at least part of said basic fuel quantity values set to said predetermined values, which is read out, when it is determined that said engine is operating in said idling region.

4,576,135

FUEL INJECTION APPARATUS EMPLOYING ELECTRIC POWER CONVERTER

Ronald M. Johnson, Rochester, Mich., assignor to TRW Inc., Cleveland, Ohio

Filed Apr. 24, 1984, Ser. No. 603,492
Int. Cl.⁴ F02D *41/20*
U.S. Cl. 123—490 **9 Claims**



1. Apparatus for use in conjunction with an internal combustion engine including electrically operated fuel injectors and a battery for providing electrical power to operate said injectors comprising:

means for converting the DC voltage signal provided by said battery into a first oscillating voltage signal and responsive to a feedback signal for controlling at least one characteristic of said first oscillating voltage signal;

transformer means responsive to said first oscillating voltage signal for generating a second oscillating voltage signal of higher amplitude therefrom;

rectifier means for converting said second oscillating voltage signal into a second DC voltage signal;

means for providing said feedback signal in accordance with said second DC voltage signal and for applying said feedback signal to said converting means, said feedback signal causing said converting means to adjust said characteristic of said first oscillating voltage signal such that said second DC signal remains substantially constant at a value substantially greater than said DC voltage signal from said battery; and,

means for applying said second DC signal to said electrically operated fuel injectors, said means for applying said second DC signal including actuatable switch means connected to said fuel injectors and having an input directly connected to said substantially constant, second DC voltage signal for, when said switch means is actuated, connecting said substantially constant, second DC voltage signal to said electrically operated fuel injectors to thereby cause fuel to be injected into said engine and means for actuating said switch means.

4,576,136

FUEL DISPENSER FOR INTERNAL COMBUSTION ENGINE

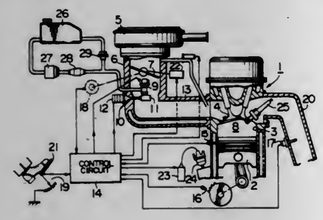
Teruo Yamauchi, Katsuta; Toshiharu Nogi, Hitachi, and Yoshishige Oyama, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 28, 1985, Ser. No. 716,942

Claims priority, application Japan, Mar. 28, 1984, 59-58484; Jul. 26, 1984, 59-156352

Int. Cl.⁴ F02M *29/00*

U.S. Cl. 123—590 **13 Claims**



1. A fuel dispensing device used in an internal combustion engine comprising:

throttle valve means;

a sensor for detecting an operational state of the engine;

a control circuit which produces an engine control signal based on the output of said sensor;

an even number of intake tubes connected to an intake passage on the downstream side of said throttle valve means, with each of said tubes branching at the downstream end thereof into two parts that are connected to two cylinders of the engine;

at least one atomizer provided for at least a pair of said intake tubes, said atomizer comprising a pair of cylindrical atomizer rings disposed in said intake tube pair and a driver for driving said atomizer ring pair in response to the control signal from said control circuit; and

an even number of injection valves each provided for each of said atomizer ring so as to inject fuel onto the interior wall of said atomizer ring through a hole formed in the wall of said atomizer ring, so that the fuel is atomized by the vibration of said atomizer rings, while intermixing with air, and delivered to respective cylinders.

4,576,137

GAS-DIESEL DUAL FUEL ENGINE

Mitsuo Tanaka, Ibaraki, Japan, assignor to Yanmar Diesel Engine Co., Ltd., Osaka, Japan

Division of Ser. No. 389,093, Jun. 16, 1982, abandoned. This application Jul. 19, 1985, Ser. No. 757,072

Claims priority, application Japan, Jun. 19, 1981, 56-89486[U]; Jun. 19, 1981, 56-89487[U]; Jun. 19, 1981, 56-89488[U]; Jun. 19, 1981, 56-89489[U]; Jun. 19, 1981, 56-89490[U]

Int. Cl.⁴ F02M *39/00*

U.S. Cl. 123—575 **3 Claims**

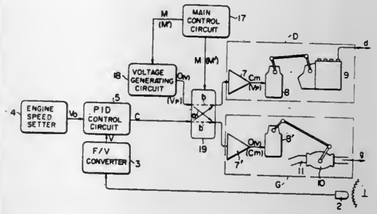
1. In a gas-diesel dual fuel engine apparatus having a diesel engine, a diesel fuel supply system including a diesel fuel injection pump, a gaseous fuel supply system including a gaseous fuel regulating valve, and a governing and controlling device for governing the speed of said engine through the control of fuel supplied to said engine and controlling the switchover of the operation of said engine between a diesel fuel mode and a gaseous fuel mode; the improvement that said governing and controlling device comprises:

(a) at least one electronic governor means adapted to compare a speed signal representing the actual operating speed of said diesel engine with a set speed signal representing the set speed thereof and to perform a proportional plus integral plus differential operation on the basis of the difference therebetween for outputting a control signal according to the difference between said two speed signals;

(b) a pair of electric actuator means having respective power amplifier circuits and mechanically connected to said diesel fuel injection pump and said gaseous fuel regulating valve, respectively, for the actuation thereof;

(c) mode switching control means for controlling the switchover of said governing and controlling device between the engine's diesel fuel operation mode and gaseous fuel operation mode, said mode switching control means being adapted to generate command signals for fully closing said gaseous fuel regulating valve when the engine is in the diesel fuel operation mode and for operating said diesel fuel injection pump to feed said diesel engine with a predetermined amount of a diesel fuel as pilot injection fuel when the engine is in the gaseous fuel operation mode; and

(d) signal selecting means connecting said electronic governor means and said mode switching control means to said pair of electric actuator means for selectively delivering said control signal and said command signals, said signal selecting means being controlled by said mode switching control means so that when the engine is in the diesel fuel operation mode, said control signal is delivered to said electric actuator means connected with said diesel fuel injection pump to operate said pump and a command signal is delivered to said electric actuator means connected with said gaseous fuel regulating valve to close said valve, while when the engine is in the gaseous fuel



operation mode, said control signal is delivered to said electric actuator means connected with said gaseous fuel regulating valve and a command signal is delivered to said electric actuator means connected with said diesel fuel injection pump to operate said pump for the pilot injection;

(e) said mode switching control means comprising a main control circuit, a voltage generating circuit adapted to receive an instructional signal from said main control circuit to generate any desired voltage for said command signals, and a mode switching circuit connected to said voltage generating circuit and said main control circuit and serving as said signal selecting means, said electronic governor means including a PID control circuit adapted to generate said control signal according to the difference between said speed signal and said set speed signal, said pair of power amplifier circuits being connected to receive the control signal from said PID control circuit through said mode switching circuit, one of said power amplifier circuits being operable in response to an input from said mode switching circuit to produce an output for driving said electric actuator means for said fuel injection pump, and the other power amplifier circuit being operable in response to a different input from said mode switching circuit to produce an output for driving said electric actuator means for said gaseous fuel regulating valve, said mode switching control means being adapted, when the engine is in the diesel fuel operation mode, to deliver the control signal from said PID control circuit to said power amplifier circuit associated with said diesel fuel injection pump while leading the output of said voltage generating circuit, after converting said output of said voltage generating circuit into zero volt, to said power amplifier circuit associated with said gaseous fuel regulating valve, and said mode switching control means being further adapted, when the engine is in the gaseous fuel operation mode, to deliver the control signal from said PID control circuit to said power amplifier circuit associated with said gaseous fuel regulating valve while delivering the output from said voltage generating circuit, after converting said output of said voltage generating circuit into a voltage proportional to the rate of pilot injection of diesel fuel, to said power amplifier circuit associated with said diesel fuel injection pump.

4,576,138

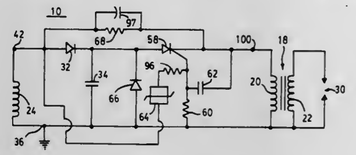
CAPACITOR DISCHARGE IGNITION SYSTEM WITH IMPROVED CONTROL CIRCUIT

Ronald J. Wolf, Zanesville, Ind., assignor to Wabash, Inc., Huntington, Ind.

Continuation of Ser. No. 488,212, Apr. 25, 1983, abandoned, and a continuation-in-part of Ser. No. 382,679, Mar. 27, 1982, abandoned, which is a continuation-in-part of Ser. No. 331,293, Dec. 16, 1981, abandoned. This application Jul. 12, 1985, Ser. No. 755,208

Int. Cl.⁴ F02P *5/145*

U.S. Cl. 123—600 **36 Claims**



1. In a capacitor discharge ignition system for use with and positioned adjacent a rotating magnetic field in synchronism with the operation of an engine the combination of:

means for generating a charging supply and for generating a triggering supply in response to induced voltages and currents resulting from the rotating magnetic field, said charging supply and said triggering supply including a respective charing voltage waveform and a triggering voltage waveform having increased amplitudes in accordance with increased engine speed, said generating means comprising a control winding;

storage means connected to said generating means and being charged in response to said charging supply for storing said energy delivered from said charging supply;

ignition coil means for receiving energy and for generating an ignition voltage in response to said received energy; and

means responsive to said storage means and said generating means for controlling the discharge of said storage means into said ignition coil means, said discharge controlling means comprising control circuit means and electronic switch semiconductor means having anode, cathode and control connections, said anode being connected to said storage means and said cathode being connected to said ignition coil means, said control circuit means comprising controlled conduction means connected between said control connection and a first end of said control winding, a resistor connected between said cathode and said first end of said control winding, a resistor connected between said control connection and a second end of said control winding, a capacitor connected between said control connection and said cathode connection, said control circuit means providing a predetermined change in ignition timing characteristics when the speed of the engine exceeds a predetermined speed and said charging voltage exceeds a predetermined voltage; wherein said predetermined change in ignition timing characteristics is an abrupt advance in ignition timing when said predetermined speed is exceeded, wherein said generating means further generates a second triggering supply, said second triggering supply being generated before said charging supply, said triggering supply being generated after said charging supply, said electronic switch semiconductor means being rendered conductive by said second triggering supply for engine speeds exceeding said predetermined engine speed and being rendered conductive by said triggering supply for engine speeds less than said predetermined engine speed.

4,576,139

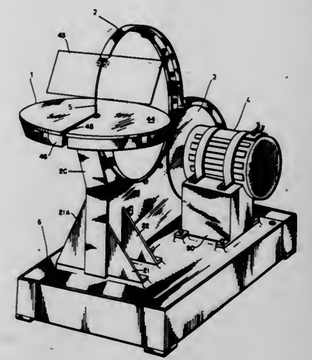
RIGID WIRE SAW WHEEL APPARATUS FOR VERY HARD MATERIALS

Jesse G. Cogswell, 2823 Main St., Santa Monica, Calif. 90405

Filed May 6, 1985, Ser. No. 730,869

Int. Cl.⁴ B28D *1/08*

U.S. Cl. 125—21 **13 Claims**



1. Aparatus for sawing particularly hard materials, such as glass, ceramics, refractories and stone, the apparatus comprising:

(a) a base;

(b) a back-plate assembly mounted on said base, said back-plate assembly comprising a back-plate, front support struts and side support struts, a face shield assembly, water tray bracket supports, horizontal roller-guides and a plurality of saw-guides, said back-plate assembly acting as a splatter shield and providing operator safety protection;

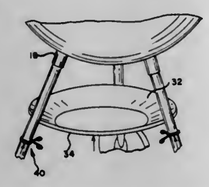
(c) a rigid circular wire saw comprising a single strand of high tensile strength metal and coated with fixedly secured bonded super-abrasive particles such as diamonds, cubic boron nitride and mixtures thereof, said rigid circular wire saw being mounted on said back-plate assembly and guided by said saw-guides, so that when being rotated at its operating high speed, said rigid circular wire saw will abrade a workpiece brought into abrading contact therewith;

(d) means for driving said rigid circular wire saw, causing it to rotate at high speed;

(e) a motor assembly;

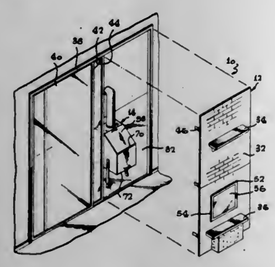
(f) means for wetting and cooling said rigid circular wire saw, providing a surface for supporting and locating the workpiece.

4,576,140
ASH CATCHER FOR CHARCOAL GRILL
Erich J. Schlosser, Lindenhurst, Ill., assignor to Weber-Stephen Products Co., Palatine, Ill.
Filed Jul. 8, 1985, Ser. No. 752,948
Int. Cl.[4] A47J *37/00*
U.S. Cl. 126—25 R 4 Claims



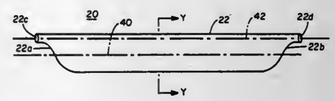
1. A portable grill including a spherical bowl having three supporting legs arranged in a tripod configuration and an ash catcher supported by said legs, said ash catcher comprising a circular disk having a peripheral edge engaging inner surfaces of said legs and a plurality of adjustable clips supported on said legs and having portions extending under and engaging a lower portion of said circular disk so that said circular disk is held in a wedged position in said tripod leg configuration by said adjustable clips.

4,576,141
FIREPLACE APPARATUS FOR SLIDING DOOR APERTURE
Robert M. Lillard, 3708 Watseka Ave., #316, Los Angeles, Calif. 90034
Filed Jan. 17, 1985, Ser. No. 692,215
Int. Cl.[4] F24B *1/18*
U.S. Cl. 126—120 5 Claims



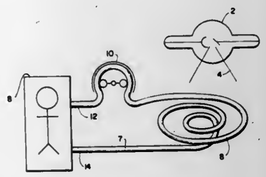
1. A fireplace apparatus comprising in combination:
a panel, said panel being substantially flat and being sized to be removably positioned within a sliding door aperture, said panel having a panel opening therein;
a firebox comprising a substantially closed box having a front opening therein, said firebox being positionable with respect to said panel so that said front opening in said firebox is in substantial alignment with said panel opening so that the interior of said firebox can be viewed through said panel and front openings, said firebox including a lower door for removably positioning over said front opening and including an upper door positioned above said lower door for access to the upper part of the interior of said firebox, said upper door being angularly oriented with respect to the vertical; and means for supporting said firebox so that it is removably positioned with said panel and front openings in substantial alignment.

4,576,142
PERCUTANEOUS INTRA-AORTIC BALLOON AND METHOD FOR USING SAME
Peter Schiff, Rte. 7, Cookeville, Tenn. 38501
Filed Nov. 19, 1982, Ser. No. 442,958
Int. Cl.[4] A61M *29/02*
U.S. Cl. 128—1 D 34 Claims



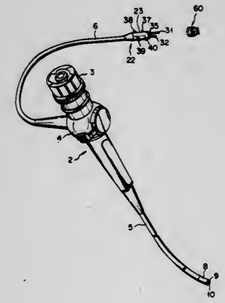
1. A balloon assembly adapted for facilitating insertion in a vessel comprising:
an elongated catheter tube;
an elongated balloon having a proximal end joined to one end of said catheter tube and having an opposite, distal end terminating in a tip;
a stylet having a distal end terminating in said tip and extending through said balloon and into said catheter tube;
said balloon comprising a sleeve having a tapered distal and proximal end respectively joined to said tip and said catheter tube;
said balloon assuming an annular cross-section when uninflated and being generally symmetric about an imaginary longitudinal axis; and
said tapered distal and proximal ends joining said balloon to said tip and said catheter tube and aligning said stylet so that said stylet is substantially displaced from the longitudinal axis of said balloon to facilitate tight wrapping of the balloon about said stylet.

4,576,143
METHOD OF IMMUNE MODIFICATION BY MEANS OF EXTRACORPOREAL IRRADIATION OF THE BLOOD
William T. Clark, III, No. 6 Davis Blvd., New Orleans, La. 70121
Filed Oct. 5, 1984, Ser. No. 658,436
The portion of the term of this patent subsequent to Mar. 30, 1999, has been disclaimed.
Int. Cl.[4] D61M *1/03*
U.S. Cl. 128—1 R 3 Claims



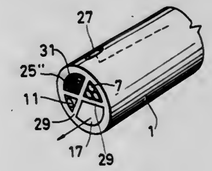
1. A method for immune modification in a human patient having symptoms of a disorder of the immune system characterized by the presence of lymphocytes which are not appropriately activated which comprises:
deactivating those lymphocytes which are not appropriately activated by passing the patient's blood through an extracoporeal link, and irradiating it while in transit through the link with a transit dose to render the not appropriately activated lymphocytes inactive but less than that required to significantly diminish the patient's lymphocyte count, and continuing such irradiation until a different lymphocyte population emerges, which different lymphocyte population is characterized by lymphocytes which have not been inappropriately activated, said irradiation continuing until the symptoms of the disorder have subsided, and further continuing the aforesaid irradiation of the patient's blood if the symptoms of disorder reappear.

4,576,144
ENDOSCOPE CONNECTING DEVICE
Fumiaki Ishii, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 470,603, Feb. 28, 1983, abandoned.
This application Apr. 19, 1985, Ser. No. 724,938
Claims priority, application Japan, Mar. 8, 1982, 57-36004
Int. Cl.[4] A61B *1/00*
U.S. Cl. 128—4 6 Claims



1. A connecting device for selectively connecting a first endoscope and a second endoscope to the same socket of a power source mechanically and electrically, said first endoscope having a connector including contact pins projecting at an end recessed surface thereof in a direction in which the pins can be inserted into the socket and said second endoscope having a connector with a flat end surface and including contact pins projecting at an outer peripheral surface thereof comprising:
a first adapter constructed such that it is capable of mechanically being connected to the connector of said second endoscope; and
a second adapter constructed such that it is capable of being connected to the socket of said power source, said second adapter being also constructed such that it it capable of being selectively connected to said connector of said first endoscope and said connector of said second endoscope with said first adapter thereon mechanically and electrically, said second adapter being formed in a cylindrical shape and comprising a body capable of receiving therein said first adapter and the connector of said second endoscope; and
said second adapter comprises first terminal boards elastically projecting from inner peripheral surfaces thereof and located to be electrically connected to the contact pins of said second endoscope when said second adapter is connected to said second endoscope and second terminal boards elastically projecting from inner peripheral surfaces of said second adapter electrically connected to said first terminal boards; and said first adapter comprises a cylinder having an outer diameter substantially smaller than the inner diameter of said second adapter, first terminal pins projected from the outer peripheral surface of the cylinder to be electrically connected to said second terminal boards of said second adapter when said second adapter is connected to said first adapter and second terminal pins projected from one end surface of the cylinder electrically connected to said first terminal pins of said first adapter to be electrically connected to the socket when said second adapter is connected to said socket and first adapter; and
the body of said second adapter comprises a plurality of guide grooves formed on the inner peripheral surface thereof and extending along an axial direction, the first terminal pins of said first adapter being slidable along the guide grooves in the grooves upon insertion of the first adapter into the second adapter, and the second terminal boards of said second adapter projecting into the guide grooves.

4,576,145
FIBERSCOPE
Koichi Tsuno, and Akira Nishimura, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan
Filed Feb. 22, 1984, Ser. No. 582,517
Claims priority, application Japan, Feb. 22, 1983, 58-27875
Int. Cl.[4] A61B *1/06*
U.S. Cl. 128—6 3 Claims

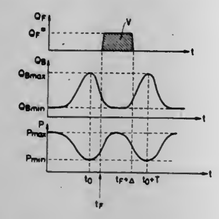


1. A fiberscope adapted to be inserted into a passage through which an opaque liquid passes for observing the interior of said passage, comprising: a flexible tube; a first optical fiber passing through said flexible tube for carrying illuminating light from a light source to an object to be observed, said flexible tube having plural passages defined by longitudinally extending partitioning walls formed interior to said flexible tube; a second optical fiber for carrying image light reflected from said object to image viewing means; and liquid guiding passage means for guiding a transparent flushing liquid to a tip of said tube; an inflatable balloon provided rearwardly of said tip of said tube surrounding a portion of an outer wall of said tube; and fluid passage means for providing an inflating fluid to said balloon, said fluid passage means being disposed in said tube and communicating with said balloon, said fluid passage means comprising one of said plural passages.

4,576,146
FIBERSCOPE
Chisato Kawazoe; Kenichi Yoshida, and Koichi Tsuno, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan
Filed Mar. 22, 1984, Ser. No. 592,210
Claims priority, application Japan, Mar. 22, 1983, 58-48205
Int. Cl.[4] A61B *1/06*
U.S. Cl. 128—6 8 Claims

1. In a fiberscope for conducting observations in a region ordinarily filled with an opaque liquid and including a fiber bundle comprising an image transmitting image fiber having an optical system at a forward end thereof for forming an image of an object under observation and illuminating light transmitting light guides arranged beside said image fiber; a cover tube covering said fiber bundle; and a liquid passageway formed between an inner wall of said cover tube and outer surfaces of said fiber bundle, the improvement comprising: means for

injecting transparent liquid from a hole near the end of said fiberscope at a flow rate in synchronization with variations in



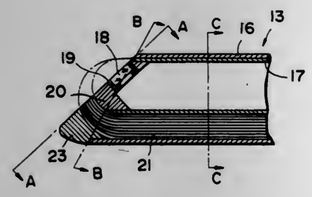
a flow rate of said opaque liquid to temporarily displace some of said opaque liquid, thereby to permit observation.

4,576,147

HARD ENDOSCOPE WITH IMPROVED LIGHT DISPERSION

Toshihiko Hashiguchi, Sagamihara, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 395,662, Jul. 6, 1982, abandoned. This application Jul. 30, 1984, Ser. No. 634,673
Claims priority, application Japan, Jul. 16, 1981, 56-111448
Int. Cl.⁴ A61B *1/06*
U.S. Cl. 128—6 **7 Claims**



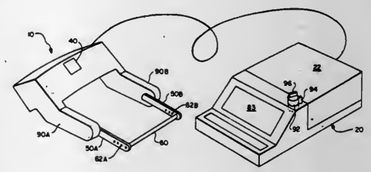
1. A hard endoscope, comprising:
a hard outer tube having an inner peripheral surface;
an inner tube disposed eccentrically within said outer tube such that said inner tube contacts a portion, defined as the upper portion, of said inner peripheral surface of said outer tube, thereby forming a cresent-shaped space in cross-section, between the inner peripheral surface of said outer tube and the outer surface of said inner tube,
an observing optical system disposed within said inner tube;
a plurality of light guide fibers disposed within said space for transmitting light therealong;
a tip surface for emitting and receiving light, said tip surface disposed on a tip part formed by the inner and outer tubes, said tip part having an eliptical upper surface and a visual field direction forward of said tip surface;
an end portion of said inner tube disposed at the tip part, said end portion having a curved outer surface in contact with said light guide fibers;
an end portion of said outer tube disposed at the tip part, said end portion having at its lower side, diametrically opposite the upper portion of the tube, an inner curved surface in contact with said light guide fibers; and
a saddle-shaped pressing part disposed in between said inner and outer tubes at the upper portions thereof and near said tip part, said pressing part having edges for pressing said light guide fibers together in the circumferential direction with respect to said inner tube, such that said light guide fibers are concentrated in the visual field direction.

4,576,148

CONTINUOUS PASSIVE MOTION HAND DEVICE

Richard J. Koerner, Encinitas; Christopher C. Dumas, San Diego; Philip J. Filia, San Diego; Ronald L. Lawrence, San Diego, and David B. Petch, San Diego, all of Calif., assignors to Sutter Biomedical, Inc., San Diego, Calif.

Filed Feb. 3, 1984, Ser. No. 576,592
Int. Cl.⁴ A61H *1/02*
U.S. Cl. 128—26 **23 Claims**



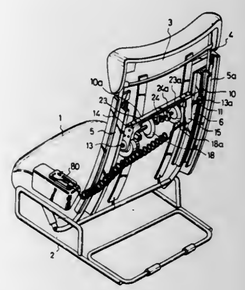
1. A device for providing continuous passive motion therapy to one or more fingers of a patient's hand including drive means carried on the patient's hand or arm including drive gear means extending at least partially down the side of the patient's hand
and drive arm means coupled to said drive gear means and to at least one finger of the patient's hand for causing flexion and extension of the finger joint with rotation of said drive gears.

4,576,149

MASSAGER

Shinpei Otuka, Hikone; Kozo Kawai, Hirakata, and Toshio Kusunoki, Hikone, all of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Jun. 29, 1984, Ser. No. 626,384
Claims priority, application Japan, Jul. 20, 1983, 58-132200
Int. Cl.⁴ A61H *1/00*; A47C *7/62*
U.S. Cl. 128—33 **3 Claims**



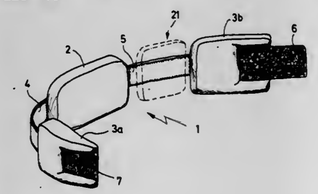
1. A massager comprising:
a supporting frame,
a reversible rotary driving source supported by said supporting frame,
a shaft means including a main shaft and a driving shaft, said main and driving shafts rotatably supported by the supporting frame for independent rotation,
a pair of massaging wheels mounted eccentrically and symmetrically slanted on said main shaft to be rotatable with said main shaft and shiftable relative to each other in the axial direction of said main shaft,
first drive transmitting means for transmitting rotary drive power from said driving source to said main shaft to rotate said main shaft and said eccentric massaging wheels such that said wheels move toward a user's body to a proximate position, and away from a user's body to a remote position,
spacing-varying means connected with said first drive transmitting means and said massaging wheels for varying the spacing between said massaging wheels by shifting them relative to each other on said main shaft between minimum and maximum spacing positions, during rotation of said main shaft,
displacement means coupled to end portions of said driving shaft for displacing said shaft means perpendicularly to the longitudinal axes of said main and driving shafts between two extreme positions, in response to rotation of said driving shaft,
second drive transmitting means for transmitting rotary drive power from said driving source to said driving shaft for effecting said displacement of said shaft means,
control means for controlling the positions of said shaft means and said massaging wheels, comprising:
first detecting means for detecting the spacing of said massaging wheels between said minimum and maximum spacing positions,
second detecting means for detecting the position of said shaft means between said two extreme positions,
third detecting means for detecting the position of said massaging wheels between said remote and proximate positions,
means connected to said first detecting means and said first drive transmitting means for actuating the latter in response to a termination of a massaging operation for moving said massaging wheels to said remote position,
means connected to said second detecting means and said second drive transmitting means for actuating the latter in response to a termination of a massaging operation for displacing said shaft means to one of said extreme positions,
means connected to said third detecting means for said spacing-varying means for actuating the latter in response to a termination of a massaging operation for shifting said massaging wheels to said minimum spacing position, and
means connected to said first detecting means and said first drive transmitting means for actuating the latter in response to an initiation of a massaging operation for moving said massaging wheels to said proximate position.

4,576,150

ORTHOPAEDIC SUPPORT FOR THE HEAD AND NECK

Walter Auracher, Colmarer Strasse 45, 7000 Stuttgart 40, Fed. Rep. of Germany

Filed Feb. 29, 1984, Ser. No. 584,649
Claims priority, application Fed. Rep. of Germany, Mar. 10, 1983, 3308571
Int. Cl.⁴ A61H *1/02*
U.S. Cl. 128—75 **3 Claims**



1. An orthopaedic support for the head and neck of a patient comprising a chin pad element having a face for engaging the wearer's neck in the chin region thereof, a nape pad element for engaging the wearer's neck in the nape region thereof, each of said chin and nape pad elements being so dimensioned as to engage the wearer's neck over substantially the entire height thereof, a pair of flexible tapes attached to said chin and nape pad elements for holding said chin and nape elements in spaced relationship when said support is in operative position on a patient's neck, said tapes being narrower than the height of the patient's neck, said tapes bridging the spaces between said chin and nape pads, releasable fastener elements for releasably holding said support in said operative position, and additional pad elements detachably connected to the portions of said tapes bridging said spaces between said chin and nape pad elements.

4,576,151

ORTHOPEDIC LEG APPLIANCE

Hoagy C. Carmichael, Box 877, Whitefish, Mont. 59937, and Miles R. Schooler, 250 Brenner Rd., Columbia Falls, Mont. 59912

Filed Mar. 19, 1984, Ser. No. 591,502
Int. Cl.⁴ A61F *3/00*
U.S. Cl. 128—80 C **20 Claims**

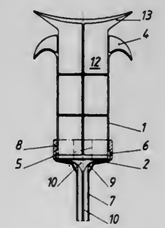
1. An orthopedic leg appliance mountable to a patient's legs adjacent the knees, for applying rotational forces to at least one of the legs, the appliance comprising:
first leg cuffs mountable to the patient's upper legs adjacent to the knees;
second leg cuffs mountable to the patients lower legs;
means interconnecting the first and second cuffs to form two cuff pairs with each cuff pair including one first cuff and one second cuff;
a cross member joining the cuff pairs;
breakaway hinge means on the cross member selectively operable for:
(a) releasing the cuffs to pivot relative to one another about a midsagittal pivot axis between inoperative positions wherein the cuff pairs are positioned to facilitate application or removal of the cuffs to or from the patient's legs and operative positions wherein the cuffs are positioned to apply corrective torsional forces to at least one of the patient's legs; and
(b) locking the cuff pairs in their operative positions; and
adjustable torsion means on the cross member operatively engaging at least one of the cuffs for selectively rotating the one cuff to apply corrective torsion to the patient's leg on which the one cuff is mounted.

4,576,152

INJECTOR FOR BONE CEMENT

Maurice E. Müller, Berne, and Otto Frey, Winterthur, both of Switzerland, assignors to Sulzer Brothers Limited, Winterthur, Switzerland

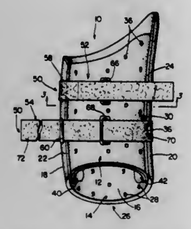
Filed Oct. 18, 1983, Ser. No. 543,238
Claims priority, application Switzerland, Oct. 21, 1982, 6118/82
Int. Cl.⁴ A61F *5/04*
U.S. Cl. 128—92 R **8 Claims**



1. An injector for an expandable bone implant cement, said injector comprising

a cylinder tube for receiving bone cement, said tube having a bottom and an injection nozzle in said bottom for expelling bone cement therethrough;
a piston movably mounted in said tube for displacing bone cement in said tube through said injection nozzle;
a nozzle element secured to and extending from said tube, said nozzle element having a nozzle tube aligned with and of smaller cross-section than said injection nozzle to pass bone cement therethrough; and
a ram movably mounted in said nozzle tube to eject bone cement therefrom.

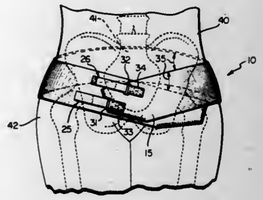
4,576,153
BOWED UPPER ARM BRACE
Joseph Zagorski, 355 Marquesa Dr., Coral Gables, Fla. 33156, and Alan Finnieston, 2480 W. 82nd St., Hialeah, Fla. 33016
Filed Feb. 13, 1984, Ser. No. 579,543
Int. Cl.[4] A61F *5/04*
U.S. Cl. 128—87 R **5 Claims**



1. An upper arm brace for maintaining broken bones segments in an acceptable healing orientation by protecting and reinforcing the surfaces of the upper arm of the wearer between the shoulder zone and the elbow zone, said brace comprising:
an elongate, generally U-shaped posterior member having a base and sidewalls extending around the posterior surface of the upper arm, said sidewalls being bowed inwardly toward the body of the wearer; and
an elongate generally C-shaped anterior member having a base and sidewalls extending around the anterior surface of the upper arm, said sidewalls being bowed inwardly to mate with the sidewalls of said posterior member with the longitudinal side edges of said anterior member being disposed in overlapping relationship with the longitudinal side edges of said posterior member whereby said anterior and posterior members encase the upper arm with the inner surfaces of said anterior and posterior members being in contact with the surface of the upper arm;
said anterior and posterior members being made of a semi-rigid material with said sidewalls of said members capable of being flexed whereby said broken bone fragments are urged toward an acceptable healing orientation by a slight valgus force.

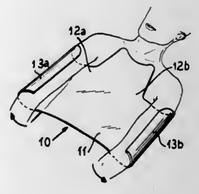
4,576,154
SACROILIAC BELT
Alan A. Hyman, 2800 N. Sheridan Rd., #610, and Julie E. Goldberg, 3930 N. Pine Grove, both of Chicago, Ill. 60657
Filed Apr. 2, 1984, Ser. No. 595,590
Int. Cl.[4] A61F *5/02*
U.S. Cl. 128—78 **1 Claim**

1. A belt for easing sacroiliac pain or discomfort in a patient, said belt comprising:
a uniform band of flexible, flat, washable, inelastic, woven fiber webbing material, being generally about 4 to 6 inches in width and having opposite ends spaced apart by a length sufficient to encircle the pelvis of said patient, and wherein the width of said band at each of said ends is tapered at an acute angle to reduce exposure of the free corners at the ends of said band,
fastening means comprising at least two hook and loop type pad fasteners, each hook and loop type pad fastener being provided with a strap at one end of the fastener and a buckle at the other end of the fastener whereby each strap is attached to the band parallel to the longitudinal axis of the belt and is inset at a distance from one end of the band sufficient to allow overlapping support in the abdominal region of the user and whereby each buckle is attached substantially at the opposite end of the band at said acute angle to the longitudinal axis of the belt to allow the band to pass horizontally across the patient's pelvis for maintaining compression by the band of the soft tissues of the pelvis firmly against the sacrum, ilium, and coccyx bones



of the patient when said straps are passed from one end of said band through the buckle and back upon themselves to be adjustably fastened to themselves with the hook and loop pad fasteners,
whereby pain or discomfort in the sacroiliac joint of the human patient may be relieved by a method comprising the steps:
extending the center of said belt horizontally across said patient at the pelvis outwardly of the sacrum,
wrapping the ends of said band about the patient at his pelvis,
applying sufficient tension to said band at the ends thereof to compress the soft tissue of the pelvis of the patient against the sacrum and ilium to support and substantially immobilize them against relative movement, and
joining the ends of the bands together at the front of the patient at an angle to maintain said tension and placement.

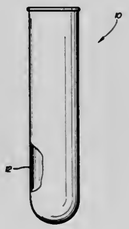
4,576,155
EXTERNAL PULMONARY BRACE AND METHOD FOR USING SAME
Aaron I. Levy, Chicago, Ill., assignor to Thomas G. Baffes, Skokie, Ill., a part interest
Filed Nov. 9, 1983, Ser. No. 549,880
Int. Cl.[4] A61F *13/00*
U.S. Cl. 128—132 R **6 Claims**



1. An external brace for use by a patient for applying user-controlled pressure to a section of the patient's body comprising:
a pair of spaced brackets respectively surrounding the patient's triceps;

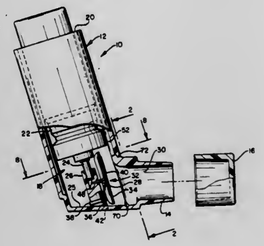
a central section consisting of elastic flexible material connected to each of and spanning the distance between said brackets, and extending across such substantially covering said body section to which pressure is to be applied;
means connecting opposite sides of said central section to said spaced brackets;
and said brackets and said central section being relatively disposed for applying selected pressure by the patient to said body section by effecting arm movement in a downward direction away from the patient's body pivoting the arms at the patient's body pivoting the arms at the patient's shoulders.

4,576,156
PROPHYLACTIC DEVICE AND METHOD
Manfred F. Dyck, Somerville, and Walter A. Haine, Bridgewater, both of N.J., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.
Filed Apr. 17, 1978, Ser. No. 896,844
Int. Cl.[4] A61B *19/00*; B29D *51/00*
U.S. Cl. 128—132 R **7 Claims**



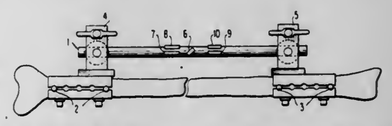
1. The method of preparing a prophylactic device comprising a thin body of substantially homogeneous elastomeric theremoplastic polyurethane material having a substantially cylindrical principal portion which is closed at one end, said cylindrical portion providing a wall of substantially uniform thickness, which method comprises deforming a sheet of a thermoplastic polyurethane elastomer with a preformed mandril at an elevated temperature, whereby said polyurethane elastomer assumes the shape of said mandril forming a polyurethane prophylactic device having a substantially cylindrical principal portion and a wall of substantially uniform thickness.

4,576,157
ORAL INHALATION APPARATUS
Puthalath K. Raghuprasad, 315 N. Golder, Suite A, Odessa, Tex. 79761
Filed Oct. 24, 1983, Ser. No. 544,777
Int. Cl.[4] A61M *15/00*
U.S. Cl. 128—200.23 **13 Claims**



1. An inhaler apparatus having a main housing, a canister of treatment fluid removably mounted within said main housing, said canister has an outlet means through which treatment fluid can flow; a valve means, means supporting said valve means within said main housing at a location downstream of said canister, said valve means is connected to the canister outlet means for regulating flow of treatment fluid therefrom;
said valve means includes a valve element, a said means supporting said valve means includes a standpipe attached to said housing, said standpipe having a hollow upper marginal inlet end within which said outlet means of said canister is received, with there being an outlet nozzle communicating with said hollow upper end through which treatment fluid can flow when said valve means is opened; said nozzle being oriented in the direction of said mouthpiece to form a mixture of air and treatment fluid within said mouthpiece; said valve means includes a sail and a needle valve connected to said nozzle for throttling flow through said nozzle in accordance with the magnitude of the pressure drop across the sail, and means associated with said sail for actuating said valve means from a closed to the open position in response to pressure differential effected across said sail; means providing a source of ambient air upstream of said sail;
a mouthpiece connected to said housing at a location downstream of said valve means, said sail being arranged transversely to the direction of flow through said mouthpiece so that when the mouthpiece is placed in one's mouth and a breath of air is taken through said mouthpiece, said sail is forced to move in a downstream direction thereby opening said valve means an amount which is proportional to the pressure differential effected across the sail.

4,576,158
METHOD FOR DETERMINING THE STABILITY OF AN ORTHOPEDIC DEVICE COMPOSED OF AN EXTERNAL FIXATION BAR DURING SETTING OF BONE FRACTURES
Michel A. G. Boland, Ham-sur-Heure, Belgium, assignor to Region Wallone, Brussels, Belgium
Filed Jan. 10, 1984, Ser. No. 569,558
Claims priority, application Belgium, Jan. 28, 1983, 895728
Int. Cl.[4] A61F *5/04*
U.S. Cl. 128—92 R **2 Claims**



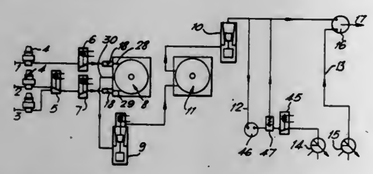
1. A method for determining the stability of an orthopedic assembly produced by means of an external fixation, characterized by the use of a fixation bar connected by clamps to pins within bone fragments provided with five assemblies of strain gauges having at least one gauge each; said method comprising the steps of measuring the torsion of the bar via one of said five assemblies, measuring two perpendicular components of the bending of the bar at two points of said bar via the remaining two pairs of said assemblies, and determining by means of said strain gauges the amount of the torsion and the amount of the bending at the level of the clamps which connect the fixation bar to the pins, and by the comparison of the determined levels of torsion and bending with those capable of causing sliding in the clamps, determining the extent of stability of said orthopedic assembly.

4,576,159

GAS MIXING AND FLOW SMOOTHING APPARATUS

Clive E. W. Hahn, Oxon; Eileen Palayiwa, Oxford; David J. Lindsay-Scott, Oxon; Basil R. Sugg, Oxford, and Paul J. Tyrrell, Oxon, all of England, assignors to Penlon Limited, England

Filed Feb. 23, 1984, Ser. No. 582,912
Claims priority, application United Kingdom, Feb. 24, 1983, 8305117
Int. Cl.[4] A61M *16/00*
U.S. Cl. 128—203.14 20 Claims



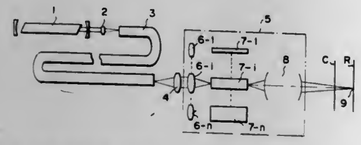
1. Apparatus for mixing and smoothing fluctuating flows of two or more gases, comprising a mixing chamber with at least two inlet ducts and an outlet duct, means for delivering a fluctuating flow of gas to each of said inlet ducts, the mixing chamber including means for absorbing fluctuations in the pressure of the gases therein, and a valve connected to said outlet duct downstream of the chamber for maintaining a substantially constant pressure at said chamber outlet duct.

4,576,160

PHOTOTHERAPEUTIC APPARATUS WITH SPOT SIZE REGULATING MEANS

Shinya Tanaka, Tokyo, Japan, assignor to Tokyo Kogaku Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 6, 1983, Ser. No. 511,330
Claims priority, application Japan, Jul. 15, 1982, 57-123398
Int. Cl.[4] A61B *1/06*
U.S. Cl. 128—303.1 7 Claims



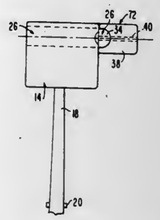
1. A phototherapeutic apparatus comprising:
a therapeutic light source for projecting light beams of a selected spot size onto a therapeutic region of a patient;
spot size regulating means located between said light source and the therapeutic region for regulating the spot size of the light beams projected onto the therapeutic region;
said regulating means including coarse regulating means for effecting a coarse stepwise change in the spot size and fine regulating means for effecting a fine adjustment in the spot size;
said coarse regulating means being provided adjacent said light source and including a plurality of illuminating fiber optical elements having different emitting end diameters respectively and means for selecting one of said fiber optical elements so that the light beams from said light source are passed through and emitted from the emitting end of the selected one of the fiber optical elements, whereby said emitting end of said selected fiber optical element functions as a secondary light conduit whose size is determined by the diameter of said emitting end;
said fine regulating means being located between said coarse regulating means and the therapeutic region and including a variable magnification optical system for projecting and imaging the light beams from said emitting end of the selected one of the fiber optical elements onto the therapeutic region, said magnification optical system having a range of magnification change which is sufficient to substantially cover the differences between emitting end diameters of the fiber optical elements which are adjacent to each other.

4,576,161

INSTRUMENT FOR USE IN OBSTRUCTING THE VAS DEFERENS

Vernon E. Mikkelson, 27001 Calaroga Ave., Hayward, Calif. 94545

Filed Mar. 22, 1984, Ser. No. 592,136
Int. Cl.[4] A61B *17/00*
U.S. Cl. 128—303 R 10 Claims



1. An instrument for use in performing a vasectomy comprising:
a pair of clamp members; and
means coupled to the clamp members for moving the same into and out of positions adjacent to each other, said clamp members having means defining an elongated space when the clamp members are in said positions, said space having a shape adapted to receive and to confine an elongated portion of the scrotum containing the vas deferens, one of the clamp members having means for guiding a hypodermic needle into and longitudinally of the space and into the scrotum portion and the vas deferens when the scrotum portion is in the space.

4,576,162

APPARATUS AND METHOD FOR SEPARATION OF SCAR TISSUE IN VENOUS PATHWAY

Charles E. McCorkle, 1427 E. Bayview Dr., Tempe, Ariz. 85283

Continuation-in-part of Ser. No. 480,412, Mar. 30, 1983, Pat. No. 4,471,777. This application Sep. 17, 1984, Ser. No. 651,438
Int. Cl.[4] A61B *17/50*
U.S. Cl. 128—303 R 14 Claims

8. An apparatus for passing a lead extraction apparatus over an endocardial lead extending through a venous path and surrounded by scar tissue that impedes advancement of said lead extraction apparatus through said venous path to a tip of said endocardial lead lodged in scar tissue in the heart of a patient, said apparatus comprising:
(a) lead grasping means for grasping a portion of said endocardial lead to secure it to said lead grasping means;
(b) cannula means having a distal end and a proximal end and concentrically disposed about said lead grasping means for controlled advancement into said venous path along said lead grasping means and said endocardial lead, and a first catheter having a distal end connected to said proximal end of said cannula means and a proximal end controllable from outside of said venous path;
(c) locking means connected to said cannula means for releasably engaging said endocardial lead to lock said cannula means to said endocardial lead means; and
(d) shearing cylinder means having a distal end and a proximal end disposed concentrically about said first catheter and having a plurality of pointed teeth extending from said distal end of said shearing cylinder means toward said distal end of said cannula means for controlled advancement over said cannula means to separate scar tissue into which said distal end of said cannula means is advanced, said advancement of said shearing cylinder means over said canula means causing said locking means to lock said cannula means to said endocardial lead and thereby causing said endocardial lead to present said advancement of said shearing cylinder means from pushing said scar tissue and endocardial lead further into said venous path and thereby causing said teeth of said shearing cylinder means to separate said scar tissue to form a pathway through said scar tissue through which said cannula means can be further advanced, and a second catheter having a distal end connected to said proximal end of said shearing cylinder means and a proximal end controllable from outside of said venous path.

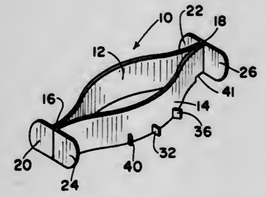


4,576,163

SKIN MARKER FOR USE IN BIOPSY EXCISIONS

Robert J. Bliss, 925 W. H St., Jenks, Okla. 74037

Filed Aug. 8, 1983, Ser. No. 521,334
Int. Cl.[4] A61F *17/32*
U.S. Cl. 128—305 3 Claims



1. A skin marker for surgical purposes, comprising a hollow member of material sufficiently rigid to leave a marking on the skin of a patient after being pressed edgewise thereagainst,
said members being formed of a pair of initially flat blanks disposed on edge with their ends secured tightly together and each blank being outwardly bowed centrally thereof to define a bottom edge having an excision pattern converging to a point at each end from a widened central area to leave a defect after incision that may be closed to provide a fine line straight scar,
each blank of said pair being a mirror image of each other with each blank having at least one suture guide marker extending outwardly of each blank, the bottom edge of said marker being in the same plane as said bottom edge of said blank.

4,576,164

KNIFE WITH LOCKING SHROUD

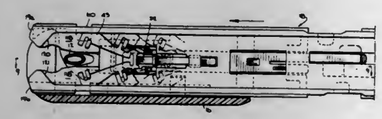
W. George Richeson, 182 Mountain Brook Dr. NW., Marietta, Ga. 30064

Filed Nov. 14, 1983, Ser. No. 551,344
Int. Cl.[4] A61B *17/32*
U.S. Cl. 128—305 4 Claims



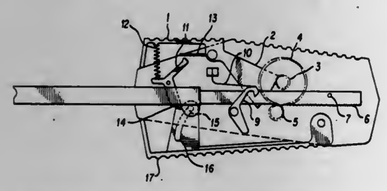
1. A microsurgical knife, said knife including an elongate knife body, a cutting blade extending from one end of said knife body, and a selectively slidable shroud received over said knife body, said shroud defining a generally cylindrical bore therethrough for receiving said elongate body, said knife body defining a longitudinal groove therein, a projection carried by said shroud and slidably receivable within said longitudinal groove, said projection being located within said bore and projecting radially thereof, said longitudinal groove extending along said knife body parallel to the axis of said knife body, said body further including a cap at the end of said knife body opposite said one end, said cap being sufficiently large to prevent movement of said shroud beyond said cap, said body further defining a first locking groove extending circumferentially of said knife body and communicating with said longitudinal groove, said first locking groove being located so that, when said shroud is in a first position surrounding said cutting blade, said projection is receivable within said first locking groove by rotation of said shroud with respect to said knife body, a second locking groove extending circumferentially of said knife body and communicating with said longitudinal groove, said second locking groove being located so that, when said shroud is in a second position exposing said cutting blade and adjacent to said cap, said projection is receivable within said second locking groove by rotation of said shroud with respect to said knife body, and a third locking groove extending circumferentially of said knife body and communicating with said longitudinal groove, said third locking groove being located so that, when said shroud is in a third position exposing said cutting blade with said shroud in an intermediate position on said knife body, said projection is receivable within said third locking groove by rotation of said shroud with respect to said knife body, said knife body being tapered towards said one end, said knife body including a ring for centering said shroud on said knife body when said shroud is in said first position.

4,576,165
SURGICAL LIGATION AND CUTTING DEVICE WITH SAFETY MEANS
David T. Green, and Richard A. McGarry, both of Norwalk, Conn., assignors to United States Surgical Corporation, Norwalk, Conn.
Filed Jan. 23, 1984, Ser. No. 573,066
Int. Cl.⁴ A61B *17/11*
U.S. Cl. 128—305 **34 Claims**



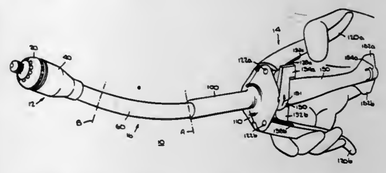
1. An apparatus for ligating and cutting body tissue comprising:
means for ligating body tissue at two spaced apart locations with two plastic clips separated from a pair of clip trains;
means for cutting said body tissue between said spaced apart locations after said body tissue has been ligated by said ligating means, wherein said cutting means operates along a predetermined path in the apparatus;
pusher means for advancing said clip trains and for separating said clips from said clip trains; and
safety means responsive to said pusher means for preventing said cutting means from cutting said body tissue, wherein said safety means has a means for blocking said path when said safety means responds to said pusher means.

4,576,166
SURGICAL LIGATING INSTRUMENT
John R. Montgomery, Fairfield; Milton W. Brumaghim, Newton, and Jose C. Deniega, Brookfield, all of Conn., assignors to American Cyanamid Company, Stamford, Conn.
Filed Jun. 29, 1981, Ser. No. 278,258
Int. Cl.⁴ A61B *17/12*
U.S. Cl. 128—325 **5 Claims**



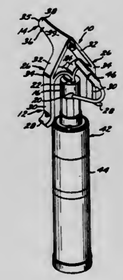
1. A surgical ligating instrument comprising
A. a housing having
I. a trigger, which can be activated by at least one thumb to cause a first force;
II. a sector gear on the distal end of said trigger, at least one reduction gear which meshes with said sector gear, and a rack which meshes with said reduction gear, to effect said first force;
III. a handle, which can be activated by at least one finger to cause a second force;
IV. means for translating said second force from said handle to a movable pin, to effect said second force; and
V. an interlock between said trigger and said handle such that said trigger is completely compressed before said handle is compressible; and
B. a probe having
I. means for advancing a plurality of ligating clips comprising
a. a pair of aligned members, each member containing an internal slot, the proximal end of said members contained in said housing and the distal end having canted jaws, said jaws during compression of said handle having no rectilinear motion relative to said housing;
b. a single clip actuator rotatably mounted adjacent the proximal end of said jaws, said actuator having a first and a second pawl in alternate relationship such that said actuator can repeatedly release the frontmost clip from said plurality of clips;
c. a spring, the proximal end contained to said housing;
d. a pusher at the distal end of said spring; and
e. a plurality of clips, the rearmost clip adjacent said pusher and the frontmost clip contained by said actuator, said spring, pusher and clips contained by the internal slots of said aligned members;
II. means for loading a ligating clip from the proximal end of said jaws comprising an injector, said injector having holding means such that said injector can be held adjacent to a single clip in said jaws, the proximal end of said injector adjacent said rack in said housing and the distal end adjacent a single clip, said injector adjoining said aligned members; and
III. means for crimping a single clip in said jaws comprising a movable crimp bar, the proximal end adjacent said movable pin in said housing and the distal end adjacent said jaws.

4,576,167
SURGICAL STAPLER APPARATUS WITH CURVED SHAFT
Douglas G. Noiles, New Canaan, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.
Filed Sep. 3, 1981, Ser. No. 299,106
Int. Cl.⁴ A61B *17/11*
U.S. Cl. 128—334 R **3 Claims**



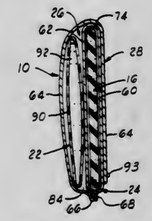
1. Apparatus for applying surgical staples to body tissue comprising:
an anvil assembly;
a staple holding assembly containing a plurality of surgical staples and including (a) a first body, (b) anvil support means for supporting the anvil assembly for motion relative to the first body to allow the tissue to be stapled to be clamped between the anvil assembly and the first body, and (c) pusher means movably mounted relative to the first body for driving the staples from the staple holding assembly through the clamped tissue and against the anvil assembly;
an actuator assembly remote from the staple holding assembly and including (a) a second body, (b) first actuator means movably mounted on the second body for controlling the anvil support means, and (c) second actuator meaans movably mounted on the second body for controlling the pusher means; and
a longitudinal shaft assembly including (a) a rigid longitudinal shaft member connected at one end to the first body and at the other end to the second body, the shaft member being a hollow tube having a longitudinally curved section intermediate its ends, at least a portion of the curved section having uniform radius, the shaft member also including a longitudinally straight section substantially tangent to one end of the portion of uniform radius, (b) a longitudinal tension member disposed in the shaft member for longitudinal motion relative to the shaft member for transmitting longitudinal tension force and longitudinal motion from the first actuator means to the anvil support means to pull the anvil assembly toward the first body to clamp the tissue and to resist the force of the staples being driven through the tissue and against the anvil assembly, the tension member being longitudinally flexible and longitudinally inextensible and incompressible, (c) a longitudinal compression member disposed in the shaft member for longitudinal motion relative to the shaft member for transmitting longitudinal compression force and longitudinal motion from the second actuator means to the pusher means to cause the pusher means to drive the staples, the compression member being a longitudinally inextensible and incompressible hollow tube concentric with the shaft member tube, the compression member tube being articulated adjacent the point of tangency of the straight section of the shaft assembly to permit some relative longitudinal motion between the tubes without binding of the tubes relative to one another, the tension member being disposed in the interior of the compression member tube, and (d) means associated with the curved section of the shaft assembly for maintaining each of the tension member and the compression member coaxial with respective predetermined longitudinal axes in the shaft member while allowing the tension member and the compression member to move longitudinally relative to one another and relative to the shaft member, the means for maintaining comprising spacer means between the concave side of the tension member and the opposite inner surface of the compression member tube in the curved section of the shaft assembly.

4,576,168
NASAL DILATOR
Alfredo A. Jalowayski, 6864 Lipmann St., San Diego, Calif. 92122
Filed Jan. 5, 1983, Ser. No. 455,651
Int. Cl.⁴ A61M *29/00*
U.S. Cl. 128—342 **11 Claims**



1. A disposable nasal dilator which comprises:
a pair of elongated, spaced-apart, generally bilaterally symmetrical lever arms having proximal and distal ends;
a pair of opposed, generally parallel, elongated dilating members projecting from said distal ends of the respective said lever arms; and
spring means extending laterally between said lever arms, said spring means and said pair of dilating members being of unitary molded plastic construction with said spring means being substantially rigidly secured to both of said lever arms at substantially the same locations along their lengths intermediate their ends;
said spring means constituting the sole supporting means for said lever arms;
said spring means supporting said lever arms in a normal position of repose in which said dilating members are in a substantially closed-together position;
movement of said proximal ends of said lever arms toward each other against the force of said spring means causing said dilating members to spread apart to an open position for dilating a nasal passage.

4,576,169
COMFORT COLLAR
Annie J. Williams, 3015 N. Stockton, Ada, Okla. 74820
Filed Jul. 26, 1984, Ser. No. 634,746
Int. Cl.⁴ A61F *7/10*
U.S. Cl. 128—402 **8 Claims**



1. An improved comfort collar adapted to be worn about the neck of a person subjected to high ambient heat conditions comprising:
(a) a unitary body member formed of a water-absorbent textile material and having a first and a second elongated cavity formed therein, the second cavity being divided into a plurality of segments, the unitary body member adapted to substantially encompass and form a continuous collar about the neck of the wearer, the unitary body member further characterized as having a first side portion, a medial portion and a second side portion, the first side portion and the medial portion being connected along a lower, adjacently disposed longitudinally extending edge so as to define the first elongated cavity therebetween, the second side portion of the body member extending from the medial portion and cooperating with the medial portion to define the second elongated cavity therebetween, the second side portion of the body member further provided with a closure flap portion positionable in one of a first position and a second position, in the first position the closure flap portion extending away from the medial portion of the unitary body member such that substantially unrestricted access is permitted to the second elongated cavity, in the second position the closure flap portion extending over an uppermost portion of the body member defining the first elongated cavity such that the closure flap portion is disposed substantially adjacent the first side portion of the body member and closes off the second elongated cavity;
(b) an elongated insulation member disposed within the first elongated cavity so as to be substantially encapsulated therein, the elongated insulation member being fabricated of a sufficiently pliable material such that the insulation member is adapted to substantially encompass the neck of the wearer; and,
(c) cooling means disposable within the segments of the second elongated cavity for providing a comfort zone to receive heat from the wearer's neck.

4,576,170
HEART MONITOR AND DEFIBRILLATOR DEVICE
Robert F. Bradley, and Lindell P. Bradley, both of New Buffalo, Mich., assignors to Micro-Circuits Company, New Buffalo, Mich.
Filed Jul. 9, 1980, Ser. No. 167,382
Int. Cl.⁴ A61N *1/32*
U.S. Cl. 128—419 D **15 Claims**

1. A heart monitor and defibrillator device for continuously monitoring heart functions and automatically administering defibrillating shock charges, comprising sensing electrodes for

continuously detecting heart impulses, amplification means for intensifying and sorting the heart impulses detected by said sensing electrodes, microprocessor means receiving the impulses from said amplification means for analyzing the impulses and determining when a defibrillation shock charge is required, defibrillation circuitry controlled by said microproces-



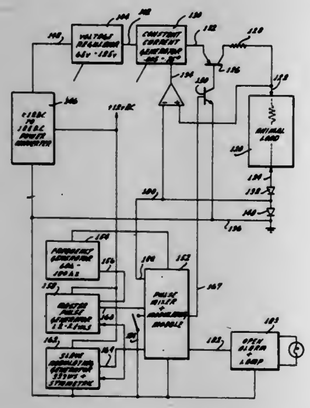
sor means having automatic recharge capabilities, a delay means for discharging a defbrillation charge a short time after the necessity of defibrillation is detected by said microprocessor means, warning means for notifying the patient before a defibrillation shock charge is administered, and defibrillator electrodes to be attached to the patient's chest for administering the defibrillation shock charge to the patient's heart.

4,576,171

ANIMAL IMMOBILIZING APPARATUS AND METHOD

Richard Key, 1807 Iowa St., Costa Mesa, Calif. 92626

Filed Feb. 8, 1984, Ser. No. 578,269
Int. Cl.⁴ A61N *1/32*
U.S. Cl. 128—421 **10 Claims**



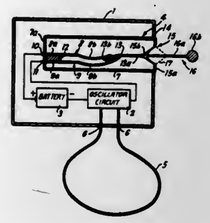
1. An apparatus for applying an electronarcotic signal to an animal comprising:
electrode means for making and maintaining electrical contact with said animal; and
a source for generating said electronarcotic signal, said source coupled to said electrode means, said source comprising a feedback loop coupled to said electrode means for adjusting said electronarcotic signal in accordance with the intrinsic electrical resistance path through said animal is included as a part of said feedback loop of said source,
whereby individual variations among animals is automatically compensated by adjustment of said source for generating said electronarcotic signal by inclusion of the intrinsic resistance through said animal within said feedback loop of said source.

4,576,172

SWITCHED ELECTRICAL APPARATUS FOR MEDICAL USE

Richard H. C. Bentall, The Basement, 7 Penzance Pl., London W11 4PE, Great Britain

Filed May 18, 1983, Ser. No. 495,619
Claims priority, application United Kingdom, May 26, 1982, 8215296; May 26, 1982, 8215301
Int. Cl.⁴ A61N *1/32*
U.S. Cl. 128—422 **12 Claims**



1. Switched electrical apparatus for medical use, comprising:
a closed sealed container;
an electrical power source disposed in the container;
an electrical circuit disposed in the container for being powered by the source;
an electrical switch including first and second electrical contacts;
means urging said contacts towards one another to establish an electrically conductive condition therebetween;
an elongate flexible electrically insulating member between the contacts and holding them apart to establish a non-conductive condition therebetween, said member having an end exteriorly of the contacts for being pulled longitudinally to remove the member from between the contacts to allow them to engage one another and establish said conductive condition; and,
a flexible wall region in said sealed container to which said end of the member is coupled so that by pulling said wall region outwardly of the container said member is removed from between said contacts, said member possessing insufficient longitudinal rigidity in longitudinal compression that upon urging said wall region inwardly of the container toward said contacts, after removal of said member from between said contacts, the member cannot be re-inserted between the contacts, whereby said conductive condition can be established without breaking the seal of the container, and cannot thereafter be interrupted.

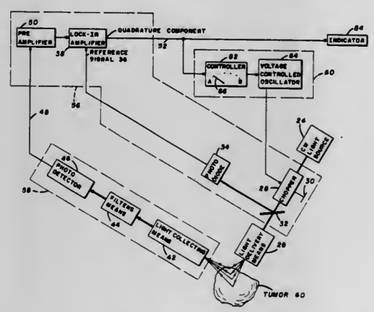
4,576,173

ELECTRO-OPTICAL DEVICE AND METHOD FOR MONITORING INSTANTEOUS SINGLET OXYGEN CONCENTRATION PRODUCED DURING PHOTORADIATION USING A CW EXCITATION SOURCE

John G. Parker, Olney, and William D. Stanbro, Columbia, both of Md., assignors to The Johns Hopkins University, Baltimore, Md.

Continuation-in-part of Ser. No. 393,188, Jun. 28, 1982. This application Jul. 11, 1984, Ser. No. 629,854
Int. Cl.⁴ A61B *6/00*; A61N *5/00*
U.S. Cl. 128—633 **38 Claims**

1. An apparatus for detecting singlet oxygen emission produced during photoradiation:
an optical excitation means for illuminating a particular portion of a medium containing a photodynamic sensitizer with chopped optical radiation of a wavelength capable of at least causing generation of a singlet oxygen emission;
an optical detection means for collecting light emitted from said medium and for detecting a composite optical signal in a 1.27 micron singlet oxygen emission band, the band having a bandwidth including a sensitizer fluorescent emission signal component and a singlet oxygen emission signal component that is out of phase with the fluorescent signal component;
a signal processing means, operably associated with said optical detection means, for processing said composite optical signal and for separating said singlet oxygen signal component from said sensitizer fluorescent signal component by utilizing a difference in phase between the two signal components; and,
a responsive means, operably associated with said signal processing means, for providing an indication of the magnitude of said singlet oxygen signal component.



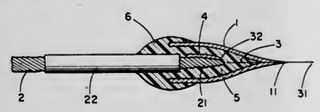
23. A therapeutic light dosimetry procedure for use in the photoradiation therapeutic treatment of a living body, wherein said living body is injected with a photosensitive dye capable of generating singlet oxygen in said living body, said dosimetry procedure comprising the steps of:
irradiating the injected photosensitizing dye with a certain light dosage, causing said photosensitizing dye to energize available local oxygen existing in said living body to generate singlet oxygen;
detecting the emission produced from singlet oxygen radiative decay in the 1.27 micron singlet oxygen emission band from a plurality of different emissions in the same band that are caused by the light in the step of irradiating;
determining the magnitude of the detected emissions to indicate the extent available local oxygen depletion has reduced singlet oxygen production.

4,576,174

MICRO ELECTRODE

Hiroshi Miyazaki, and Masato Ikeda, both of Nara, Japan, assignors to Shionogi & Company, Ltd., Osaka, Japan

Filed Jun. 29, 1983, Ser. No. 509,034
Claims priority, application Japan, Jul. 8, 1982, 57-119035
Int. Cl.⁴ A61B *5/04*
U.S. Cl. 128—639 **1 Claim**



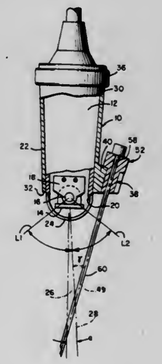
1. A micro electrode consisting of a tapered glass capillary tube forming a cavity, said tube having a thick end with an outside diameter of 2 mm or smaller and a needle end, an outer lead wire within said tube and extending from said thick end thereof, a carbon fiber conductive filament having an outside diameter of 50 μm or smaller and having a first end and a second end, a conductive resin containing carbon powder within said cavity of said capillary tube connecting said outer lead wire to said first end of said conductive filament, a second end of said conductive filament projecting from said needle end of said capillary tube, an insulative resin filler packed in said cavity of said capillary tube around said outer lead wire where said wire is connected to said conductive filament, and a protective resin at said thick end of said capillary tube formed about said lead wire and said tube.

4,576,175

BIOPSY ATTACHMENT FOR ULTRASONIC PROBE

Moshe Epstein, 1530 Beacon St., Brookline, Mass. 02146

Filed Sep. 6, 1983, Ser. No. 529,624
Int. Cl.⁴ A61B *10/00*
U.S. Cl. 128—660 **11 Claims**



1. A biopsy attachment for a probe having a transducer for producing a beam of ultrasonic energy, said attachment comprising:
(a) a housing associated with the probe and having a recess;
(b) a bushing having an axial aperture of given length for receiving a biopsy needle and surrounding, engaging and supporting said needle throughout said length; and
(c) said bushing and said housing having cooperable means responsive to positioning the bushing in a first angular position relative to the housing for effecting displacement of the bushing into the recess to an inserted position, and responsive to the rotation of the bushing in one direction, when in its inserted position, from its first angular position, for frictionally holding the bushing in a second angular position.

4,576,176

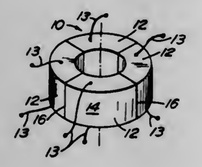
TRANSDUCER FOR MEASUREMENT OF CORNEAL THICKNESS

George H. Myers, Maplewood, N.J., assignor to Medsys, Inc., Rutherford, N.J.

Division of Ser. No. 521,132, Aug. 8, 1983, Pat. No. 4,508,121. This application Dec. 21, 1984, Ser. No. 672,497
Int. Cl.⁴ G01N *29/00*
U.S. Cl. 128—660 **7 Claims**

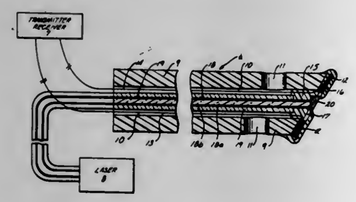
1. A transducer for use in corneal measurements, said transducer comprising:
a plurality of peizo-electric arcuate segments for producing ultra-sonic signals, said segments arranged in a circle to form a toroidal member having upper and lower surfaces lying in a plane perpendicular to the axis of the toroid,

each one of said segments having a vibratory axis, the vibratory axis of each segment being oriented so that the ultrasonic signals produced by said plurality of segments are propagated along a path substantially parallel to the axis of said toroid, whereby said ultrasonic signals are directed toward an eye located adjacent one of said surfaces;



insulation means for electrically isolating each of said plurality of segments from the other;
acoustic means for acoustically isolating each of said plurality of segments from the other; and
lead means connected to each of the plurality of segments for transmission of electrical signals.

4,576,177
CATHETER FOR REMOVING ARTERIOSCLEROTIC PLAQUE
Wilton W. Webster, Jr., 1388 Crest Dr., Altadena, Calif. 91001
Continuation-in-part of Ser. No. 467,754, Feb. 18, 1983, abandoned. This application Aug. 1, 1983, Ser. No. 518,817
Int. Cl.⁴ A61B *10/00*
U.S. Cl. 128—660 **27 Claims**



1. A catheter adapted to be inserted into a blood vessel for identifying and removing arteriosclerotic plaque deposits in said blood vessel, said catheter having proximal and distal ends and a lumen comprising:
an elongated optical fiber having proximal and distal ends disposed within the lumen of the catheter tube and extending the length of the catheter tube for transmitting laser irradiation;
an ultrasonic transducer mounted at the distal end of the catheter adjacent the distal end of the optical fiber for transmitting the receiving ultrasonic signals; and
a pair of wires electrically connected to the ultrasonic transducer extending the length of the catheter.

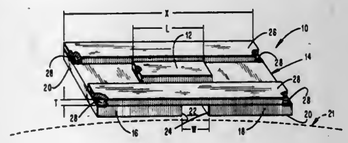
4,576,178
AUDIO SIGNAL GENERATOR
David Johnson, 436 E. 69th St., New York, N.Y. 10021
Filed Mar. 28, 1983, Ser. No. 479,203
Int. Cl.⁴ A61B *5/02*
U.S. Cl. 128—670 **10 Claims**

1. A system for providing a distinguishable audible output varying in accordance with a condition to be monitored comprising first means for generating a signal that varies in accordance with variations of a monitored condition, and audio signal generator means receiving said signal from said first



means and generating an audible output that varies in n discrete steps corresponding to a range of variation of said signal.

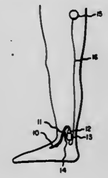
4,576,179
RESPIRATION AND HEART RATE MONITORING APPARATUS
Eugene A. Manus, 1005 Kentwood Dr., Blacksburg, Va. 24060, and Paris H. Wiley, 1907 Ceder Brooke Dr., Lutz, Fla. 33549
Filed May 6, 1983, Ser. No. 492,056
Int. Cl.⁴ A61B *5/08, 5/04*
U.S. Cl. 128—671 **29 Claims**



1. A respiration sensing apparatus adapted to be held adjacent the chest of a patient and convert movements of the chest during respiration to an electrical signal, comprising:
a first, rigid pier having a principal surface adapted to be disposed generally parallel to the outer surface of the chest of the patient;
a second, rigid pier having a principal surface adapted to be disposed generally parallel to the outer surface of the chest of the patient, said second pier being separated from the first pier to define a gap therebetween;
a first elongated flexible beam bridging the gap between the first and second piers;
a second, elongated flexible beam bridging the gap between the first and second piers, and lying in spaced, parallel relation to the first beam;
a piezoelectric crystal, located between the first and second beams and bridging the gap between the first and second beams; and
a flexible belt adapted to encircle the chest of the patient, said beams, piers and crystal being attached to said belt, and said belt together with said beams and piers, apply a bending stress to said piezoelectric crystal in response to expansion of the chest during respiration.

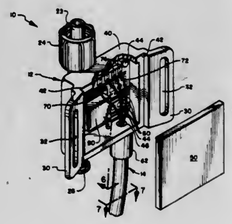
4,576,180
METHOD AND APPARATUS FOR MONITORING LEG BLOOD PRESSURE OF AN AMBULATORY PATIENT
Syde A. Taheri, 268 Dan Troy, Williamsville, N.Y. 14221
Filed Aug. 8, 1983, Ser. No. 521,148
Int. Cl.⁴ A61B *5/02*
U.S. Cl. 128—673 **22 Claims**

1. A blood pressure monitor for monitoring the venous blood pressure in the leg of an ambulatory patient for a period of time which includes the normal daily activities of said patient to aid in the diagnosis of vascular disease of the leg comprising a catheter for insertion into a venous blood vessel in the leg, means coupled to said catheter for measuring blood pressure in said venous blood vessel, first means for recording said blood pressure, and second means associated with said first means for recording the attitude of at least one of the patient's leg, thigh and side with respect to said blood pressure in said



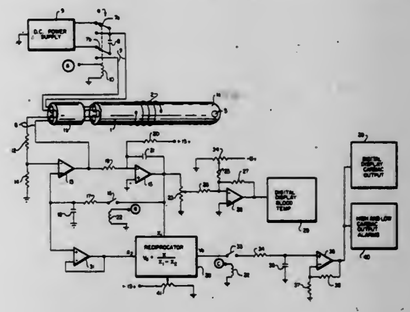
venous blood vessel in the leg to thereby correlate said attitude with said blood pressure.

4,576,181
DISPOSABLE PRESSURE TRANSDUCER APPARATUS FOR MEDICAL USE
William D. Wallace, Salt Lake City, and Christopher A. Cutler, Bountiful, both of Utah, assignors to Utah Medical Products, Salt Lake City, Utah
Filed May 9, 1984, Ser. No. 608,761
Int. Cl.⁴ A61B *5/02*
U.S. Cl. 128—675 **25 Claims**



1. In a direct blood pressure measurement system having a monitor device coupled to an indwelling, fluid-filling catheter adapted to be inserted into a patient, a disposable pressure transducer apparatus with a dielectric substrate having first and second sides and a pressure transducer having a piezoresistive pressure diaphragm secured to said first side of said substrate, said apparatus comprising:
means circuit for temperature compensation provided on said first side of said substrate, said circuit means being electrically connected to said pressure diaphragm;
means for electrically connecting said circuit means for temperature compensation and said pressure transducer to said monitor device, said connecting means being attached to said circuit means and said pressure transducer on said first side of the substrate;
means for housing said substrate, said housing means comprising a first passageway communicating with said fluid-filled catheter, a second passageway providing fluid communication between said pressure diaphragm and said first passageway, and means for mounting said substrate in said housing means such that said second side of the substrate faces toward said second passageway and said first side of the substrate faces away from said second passageway; and
means for hydraulically coupling said pressure diaphragm through said second passageway to said first passageway and the fluid-filled catheter communicating with said first passageway.

4,576,182
METHOD AND APPARATUS FOR MEASURING LIQUID FLOW
Richard A. Normann, Salt Lake City, Utah, assignor to University of Utah, Salt Lake City, Utah
Filed Apr. 23, 1981, Ser. No. 256,689
Int. Cl.⁴ A61B *5/02*
U.S. Cl. 128—692 **11 Claims**

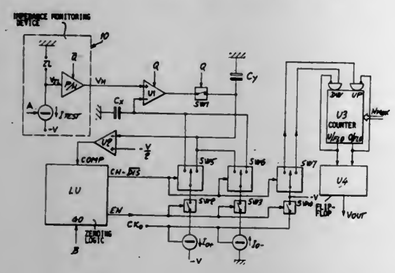


1. Apparatus for measuring liquid flow through a channel comprising
an elongate body member dimensioned for insertion into the channel,
means disposed on the said body member for producing heat in response to receipt of electrical energy,
means for successively delivering to said heat producing means a predetermined amount of electrical energy, said delivering means including
means for storing a predetermined electrical charge,
power supply means for supplying electrical current, and
switch means for alternately connecting the storing means to the power supply means and to the heat producing means, and
temperature measuring means disposed on the said body member and spaced downstream of said heat producing means for measuring the change in temperature of the liquid flowing thereby through the channel, said change occurring as a result of heat produced by said heat producing means.

4,576,183
ELECTRONIC CIRCUIT FOR MONITORING RESPIRATORY PARAMETER FOR CONTROLLING OPERATION OF IMPLANTABLE MEDICAL DEVICE
Gianni Plicchi, 77/7, Via Mascarella, and Giancarlo Canducci, 27, Via Cesare Pavese, both of Bologna, Italy
Filed Sep. 17, 1984, Ser. No. 651,354
Claims priority, application Italy, Sep. 21, 1983, 12624 A/83; Jun. 28, 1984, 12550 A/84
Int. Cl.⁴ A61B *5/08*
U.S. Cl. 128—723 **9 Claims**

1. An electronic circuit for detecting a respiratory parameter in a device which is implantable in a patient's body and which is operable in response to such respiratory parameter, said circuit comprising: a measurement and impedance/voltage conversion unit for detecting the impedance of a part of the patient's body where the impedance varies in dependence on respiration, said unit including sampling means which effects sampling of the impedance during discrete sampling times occurring at selected time intervals, and means for producing an output signal representative of the sampled impedance values; signal processing circuit means connected to said unit for producing, in response to the output signal from said unit, a clean, regular signal representative of deviations of the impedance from a selected base impedance value, said signal pro-

cessing circuit means comprising signal processing means operable for causing the clean, regular signal to vary between two selected amplitude values each time that, and only when,



the difference between successive peak values of the output signal exceeds a selected value; and means for deriving from the clean, regular signal a control signal for controlling the operation of the implantable device.

4,576,184

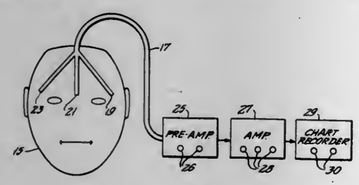
DRUG ABUSE DETECTION

S. Thomas Westerman, Shrewsbury, N.J., assignor to Pharmometrics Corporation, New Brunswick, N.J.

Continuation of Ser. No. 297,997, Aug. 31, 1981, abandoned. This application Apr. 23, 1984, Ser. No. 603,243

Int. Cl.⁴ A61B *5/04*

U.S. Cl. 128—733 **11 Claims**



1. A non-invasive method of detecting drug ingestion by a subject comprising the steps of:

(a) non-invasively establishing a plurality of reference waveforms by separately recording time-varying fluctuations in cornea-retinal potential (CRP) and/or brainwaves for each of a series of selected drugs administered to an individual who has been pre-examined for freedom from drugs, said recordings for each drug in the series being made in a standardized set of at-rest conditions;

(b) non-invasively measuring the subject's waveform, by recording time-varying fluctuations in cornea-retinal potential (CPR) and/or brainwaves, for each of the at-rest conditions of said standardized set; and

(c) comparing the subject's measured waveforms with said plurality of reference waveforms to ascertain the existence vel non of any correlation therebetween, thereby determining the presence or absence in said subject of any of said selected drugs.

4,576,185

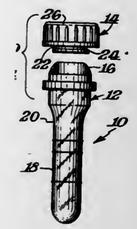
COLLECTION DEVICE FOR CAPILLARY BLOOD

Todd A. Proud, Claymont; Tom F. Lin, Bear, both of Del.; Wayne J. Mitchell, Elkton, Md., and James D. Kasper, Montpeller, Ohio, assignors to Terumo Medical Corporation, Elkton, Md.

Filed Dec. 5, 1983, Ser. No. 557,962

Int. Cl.⁴ A61B *5/14*

U.S. Cl. 128—760 **8 Claims**



1. A collection device for capillary blood comprising a container portion in the form of a tube having an open uper end and a closed lower end, a collector portion secured to said upper end of said tube in flow communication therewith, said collector portion having upper and lower ends, inner and outer surfaces, and further including means for conveying blood from a user and into said container portion, closure means for selectively sealing the upper end of said collector portion during non-collecting use of said device, said closure means having a recess of a shape and dimension whereby said lower end of said tube is selectively nested into said closure recess during collecting use of said device, said collector portion being integral with said container portion, said upper end of said collector portion being in the form of an arcuate lip extending coaxially therefrom to comprise said blood conveying means, said closure means including an overcap, an axial plug extending downwardly away from said overcap with an annular channel therebetween formed by a wall bridging said overcap and said axial plug, a resilient annular flange extending radially outwardly from said axial plug, said resilient annular flange being dimensioned to snugly slide in said collector portion, said resilient annular flange comprising wipe means for wiping the inner surface of said collector portion when said closure means is applied thereto, said plug sealing said collector portion, said lip fitting in said annular channel whereby said overcap comprises a shield for said collector portion during non-collecting use of said device, stop means on the outer surface of said collector portion located to limit the downward movement of said overcap to maintain said lip spaced from said wall bridging said overcap and said plug, and said plug being hollow with an open upper end to comprise said recess.

4,576,186

USE OF PENTAMETHYLINDANOL DERIVATIVES IN AUGMENTING OR ENHANCING THE AROMA OR TASTE OF SMOKING TOBACCO COMPOSITIONS OR SMOKING TOBACCO ARTICLES

John B. Hall, Rumson, and Takao Yoshida, West Long Branch, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

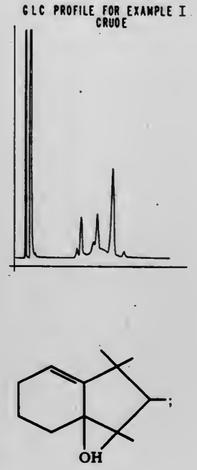
Division of Ser. No. 589,662, Mar. 14, 1984, Pat. No. 4,520,032. This application Nov. 14, 1984, Ser. No. 671,331

Int. Cl.⁴ A24B *15/30*

U.S. Cl. 131—276 **7 Claims**

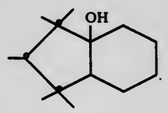
1. A process for augmenting or enhancing the aroma or taste of a smoking tobacco composition comprising the step of adding to said smoking tobacco composition an aroma augmenting or enhancing quantity of a composition of matter selected from the group consisting of:

(i) the compound having the structure:



and

(ii) the compound having the structure:



4,576,187

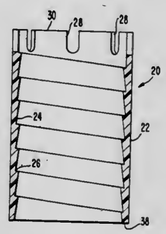
VARIABLE AIR DILUTION CIGARETTE FILTER

Philip A. Deal, Winston-Salem, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Oct. 22, 1984, Ser. No. 663,681

Int. Cl.⁴ A24D *3/04*

U.S. Cl. 131—336 **8 Claims**



1. A variable air dilution cigarette filter assembly for attachment to a tobacco rod to form a variable air dilution cigarette, said filter assembly comprising:

a thin, generally rigid cylindrical sleeve having at least one air slot passing through a circumferential wall of said sleeve;

a filter rod positioned within said sleeve;

retention means in said sleeve, including a plurality of radially inwardly-extending steps on an inner wall of said sleeve, for retaining said filter rod within said sleeve while allowing rotation between said sleeve and said filter rod; and

means for varying dilution air flow through said air slot to said filter rod in response to relative rotation of said sleeve and said filter rod.

4,576,188

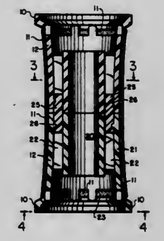
HEATABLE ROLLER FOR CURLING HAIR

George Barradas, 15 Riverview Ct., Glenville, Conn. 06830

Filed Feb. 23, 1984, Ser. No. 582,902

Int. Cl.⁴ A45D *2/02*

U.S. Cl. 132—39 **14 Claims**



1. A roller for curling hair comprising a pair of coaxial tubular members having the same outer diameters and being axially affixed together at one respective end whereby said ends abut each other and each having a flange of enlarged diameter at the other respective end thereof, the flanges being partially separate from the respective tubular members by vents extending through the tubular members, and a removable foam sleeve covering the outer radial surface of said tubular members between the flanges thereof and non-adhesively held thereon.

4,576,189

PARTIAL WIG ASSEMBLY WITH EXTENSION PORTION

Ruth Regina, 1050 Kane Concourse, Bay Harbor Island, Fla. 33154

Continuation of Ser. No. 572,304, Jan. 20, 1984, abandoned. This application Feb. 28, 1985, Ser. No. 706,697

Int. Cl.⁴ A41G *3/00*

U.S. Cl. 132—53 **9 Claims**



1. A partial wig assembly comprising:

(a) a foundation of flexible sheet material being of predetermined density and including a substantially elliptical configuration generally conforming to the shape of the top of the frontal portion of a human head,

(b) said foundation including a front boundary edge and a rear boundary edge both joined at the correspondingly positioned opposite ends thereof and at opposite ends of a major axis of said elliptical configuration,

(c) said rear boundary edge extending over the top of the head, between the temple portions thereof, when said front boundary edge is in general registry and alignment with the front hairline,

(d) side bands extending from opposite ends of said major axis and said joined boundary edges in spaced relation to one another and rearwardly of said foundation,
(e) a back band disposed in interconnected relation between distal ends of said side bands to at least partially define therewith a central opening, said back band extending downwardly and rearwardly to encompass the lower rear portion of the head,
(f) said central opening having a substantially closed periphery and being of sufficient dimension to allow passage of natural hair of the wearer therethrough,
(g) an extension portion secured to said foundation along said rear boundary edge and disposed to extend into said central aperture therefrom rearwardly of said foundation,
(h) said extension portion comprising a frontal portion fixedly secured continuously along a major portion of the length of said rear boundary edge, a rear peripheral edge having a curvilinear configuration, said rear peripheral edge disposed along its length in inwardly spaced relation from said back band and said side bands,
(i) said extension portion formed of substantially flexible, porous, air permeable material having a density substantially less than that of said foundation and structured to allow ventilation of the wearer's scalp therethrough,
(j) hair secured in selected density to and distributed over an outer surface area of both said foundation and said extension portion,
(k) said rear peripheral edge cooperatively disposed with said side bands and said back band to collectively define said closed periphery of said central opening;
(l) said frontal portion of said extension portion mounted contiguous to said rear boundary edge of said foundation and along therewith configured to correspond to the shape of a top portion of the human head,
(m) an adjustable fastening means secured to said back band for accomplishing an effective shortening of said back band between said side bands and comprising a strip element movably mounted in hidden disposition on the interior of said back band.

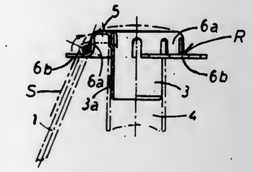
4,576,190
TOOTHSTICKS "TOOSTIX"
Kamal A. Youssef, P.O. Box 6548, W. Palm Beach, Fla. 33405
Filed Dec. 21, 1982, Ser. No. 451,978
Int. Cl.⁴ A61C *15/00*
U.S. Cl. 132—89 **6 Claims**





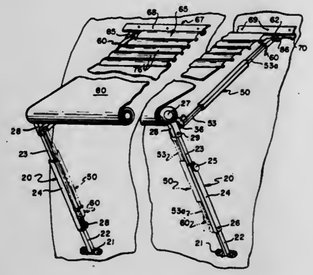
1. A complete, disposable, dental hygienic instrument, comprising:
an elongate handle means;
a resilient, open-cell foam scrubbing and brushing means fastened to a first end of said elongate handle means;
scraping and stain removing means provided by a generally wedge shaped second end of said elongate handle means;
dental floss having one end thereof permanently attached to said elongate handle means at a point intermediate the ends of said elongate handle means, the balance of said dental floss is wrapped around said elongate handle means for storage, the other end of said dental floss being unrestrained and free for grasping;
toothpick means removably and conformably wound about said elongate handle means, said toothpick means comprising an elongate malleable wire core completely covered by flexible plastic coating means further projecting laterally into a pair of diametrically opposed thin plastic ribs, said ribs being substantially in the same plane as said wire core and thinner at their distal edge than the coated wire and extending more than a millimeter laterally.

4,576,191
UMBRELLA FRAME
Tilmann Schultes, and Joachim Seidel, both of Solingen, Fed. Rep. of Germany, assignors to Kortenback & Rauh KG, Soligen, Fed. Rep. of Germany
Filed Nov. 19, 1984, Ser. No. 672,893
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1983, 3346672
Int. Cl.⁴ A45B *25/00, 25/18, 25/08*
U.S. Cl. 135—30 **6 Claims**



1. In an umbrella frame comprising a stick, a crown and a slider, a first pivotal connection of a plurality spokes to said crown, a second pivotal connection of a plurality of struts to said slider, at least one of said first and second pivotal connections comprising a substantially cylindrical sheet metal sleeve carried by said stick and provided at one end with a star-like array of radially outwardly projecting, inwardly curled lobes, said lobes having edge means defining slits therebetween, members constituted by one of said plurality of canopy spokes and struts hinged at inner ends thereof in respective ones of said slits by means of at least one pivot pin located within said inwardly curled lobes; the improvement comprising a single, one-piece element including an annular flange extending radially outwards from said one sleeve end; each of said lobes comprising an inner section connected to said flange and being of a greater length than the cross section of said one pivot pin and extending substantially axially of said sleeve at a location spaced from said sleeve, and an outer section positioned outwardly of said inner section prior to assembly and connected thereto via a radius portion corresponding substantially to a cross section profile of the pivot pin, free ends of said outer lobe sections being permanently curled inwardly to locate said at least one pivot pin resting in said radius portions, said curled lobe outer sections having a free outer edge disposed substantially adjacent to said inner section and spaced from and confronting the outer surface of said inner section.

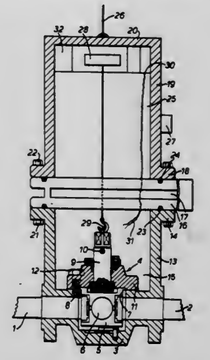
4,576,192
AWNING ASSEMBLY
Henry J. Duda, Elk Grove Village, Ill., assignor to Randall Equipment Company, Chicago, Ill.
Filed Jan. 24, 1983, Ser. No. 460,178
Int. Cl.⁴ E04F *10/00*
U.S. Cl. 135—89 **10 Claims**



1. An awning for a vehicle, said awning comprising: a pair of spaced apart support arms each having one end thereof pivotally secured to the vehicle, two caps respectively carried by said support arms at the other ends thereof, a roller rotatably supported between said caps, at least one end of said roller having a plurality of alternating detents and ribs formed therein facing the adjacent one of said caps, said cap facing said one end of said roller having a threaded aperture therethrough, a screw threadedly engaged in said aperture and extending therethrough for engagement with said ribs to prevent rotation of said roller with respect to said cap regardless of the positions of said support arms, a flexible covering having one end thereof secured to said roller to be wound therearound, a flexible strip secured to the opposite end of said flexible covering to form a casing therefor when said flexible covering is completely rolled around said roller, latch receivers carried by said flexible strip respectively adjacent to the opposite ends thereof, means on said roller to cause said roller to roll said flexible covering therearound, a pair of brace arms each having one end thereof pivotally mounted on a corresponding one of said support arms, and latches respectively carried by said brace arms at the other ends thereof for latching engagement with said receivers when said flexible covering is unrolled for maintaining it in an unrolled condition.

4,576,193
DEVICE FOR WORKING ON A SUBMERGED VALVE
Jean-Luc A. Hervé, Noisy-Le-Roi, France, assignor to Compagnie Francaise des Petroles, Paris, France
Filed Mar. 13, 1985, Ser. No. 711,128
Claims priority, application France, Mar. 22, 1984, 84 04428
Int. Cl.⁴ F16K *43/00*
U.S. Cl. 137—15 **2 Claims**

1. An apparatus for servicing a submerged valve which comprises a valve body (3), a closure member (5) movable within said body, and actuating means (9) for said closure member, said actuating means projecting upwardly from said valve body, said apparatus comprising: a lower box means (13) adapted for vertical installation and having an open upper end and a lower end sealingly fixed to said valve body such that said lower box means surrounds said actuating means; an upper box means (19) adapted to be installed vertically and having a closed upper end (20) and an open lower end, said upper box means containing lifting means (28) for removing and replacing said actuating means, a screwing and unscrewing robot (32) for assembling and disassembling said submerged valve and a camera (30, 31), pumping means (27) provided on said upper box means for moving fluids into and out of said box means; an intermediate valve (17) slidably disposed in a generally flat body (16); and means (21–24) for sealingly connecting said flat body of said intermediate valve between said open upper end



of said lower box means and said open lower end of said upper box means.

4,576,194
PNEUMATIC CONTROL SYSTEM, CONTROL MEANS THEREFOR AND METHOD OF MAKING THE SAME
William L. Lucas, Henrico County; Clarence M. Asbill, III, Richmond; Gerald L. Frank, and David M. Miller, both of Henrico County, all of Va., assignors to Robertshaw Controls Company, Richmond, Va.
Filed Apr. 19, 1984, Ser. No. 602,018
Int. Cl.⁴ G05D *16/00*
U.S. Cl. 137—84 **6 Claims**

1. In a pneumatic control system comprising a pneumatic source, a pneumatically operated device that produces an output, and a control means for interconnecting said source to said device, said control means having an input means interconnected to said source and an output means interconnected to said device, said control means having set point means for selecting a desired output of said device, said control means having valve means for controlling the interconnection between said input means and said output means so as to regulate the pressure value in said output means, said control means having regulating means for operating said valve means to tend to produce an output of said device that corresponds to said selected output of said set point means, said regulating means having means that senses said pressure value in said output means and operates said valve means so as to produce a pressure value in said output means that is substantially equal to a pressure value that will cause said device to produce said selected output, said control means comprising a relay means having said input means and said output means, said relay

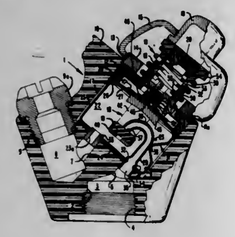
means having a pilot input and a valve unit for interconnecting said input means to said output means in relation to the pressure value in said pilot input, said valve means being interconnected to said source and to said pilot input whereby said regulating means operates said valve means to create said pressure value in said pilot input in relation to the sensed pressure value in said output means, said control means comprising an accumulator means interconnected to said pilot input intermediate said valve means and said relay means, and a restrictor means disposed intermediate said valve means and said accumulator means, the improvement wherein said regulating means also has means that is remote from said relay means and senses the pressure value in said pilot input at a point intermediate said accumulator means and said relay means.

4,576,195

CARTRIDGE TYPE CONTROL VALVE WITH INVERTED J-SHAPED INLET DUCT

Richard C. Dreibelbis, Fair Lawn, N.J., assignor to Emerson Electric Co. (H&H Precision Prod. Div.), Cedar Grove, N.J.

Filed Mar. 13, 1985, Ser. No. 711,295
Int. Cl.⁴ F16K *43/00*
U.S. Cl. 137—315 **5 Claims**



1. A cartridge type control valve for use in a fluid dispensing system, including a cup-like member having a bottom wall and a side wall defining a fluid transfer chamber, the combination with said cup-like member of, an inlet duct comprising,

a. a tubular member formed into a J-shaped configuration having an elongated inlet leg and an outlet leg continuous with said inlet leg,

b. said outlet leg defining an outlet port at the end remote from the inlet leg,

c. the inlet leg at the end remote from the outlet leg stacked into the bottom wall of the cup-like member a predetermined distance from the side wall so that a portion thereof projects to the exterior of the bottom wall to form an inlet port for the inlet duct,

d. said inlet duct disposed in assembled position in the cup-like member in inverted position and the outlet leg cantilevered so that the outlet port lies in the longitudinal centerline of the control valve and faces the bottom wall of the cup-like member,

e. reenforcing means in said control valve to prevent misalignment of the outlet port in assembled position,

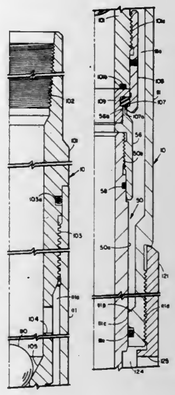
f. said reenforcing means comprising, an inwardly directed indentation in the side wall of the cup-like member sized for intimate contact with the inlet duct.

4,576,196

UNLOADING INJECTION CONTROL VALVE

Richard J. Ross, and David J. Speller, both of Houston, Tex., assignors to Baker Oil Tools, Inc., Orange, Calif.

Continuation-in-part of Ser. No. 535,409, Sep. 26, 1983. This application Feb. 25, 1985, Ser. No. 704,606
The portion of the term of this patent subsequent to Nov. 12, 2002, has been disclaimed.
Int. Cl.⁴ F16K *31/12*
U.S. Cl. 137—508 **11 Claims**



7. Fluid pressure responsive valving apparatus for use with an annular downhole tool having a packing element responsive to a pressure differential between the bore of the tool and the surrounding annulus within the well bore, comprising; a tubular assembly connectable in series relation between a surface-connected well conduit and the downhole tool; removable plug means for closing said tubular assembly for permitting fluid pressure within said tubular assembly to be increased; a valve mounted in said tubular assembly and shiftable from a first position to a second position in response to increased fluid pressure within said tubular assembly; said valve in said first position connecting the bore of said tubular assembly to the annulus; resilient means urging said valve to said first position; said valve in said second position directing conduit fluid pressure into the bore of the downhole tool to expand the packing element thereof; and means responsive to the conduit fluid pressure for shifting said valve to said second position against the bias of said resilient means.

4,576,197

PUMP SUCTION VACUUM LIFT VORTEX CONTROL

Eugene K. Kempers, Sioux City, Iowa, assignor to Midwest Energy Services Company, Sioux City, Iowa

Filed Sep. 29, 1982, Ser. No. 426,905
Int. Cl.⁴ E03B *11/00*
U.S. Cl. 137—565 **9 Claims**

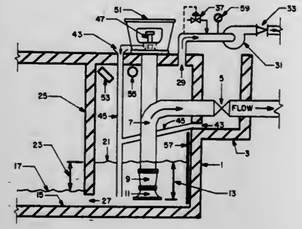
1. A suction pump vortex control system which comprises:

a. means defining an enclosure having at least one opening to a fluid reservoir and with other openings sealed from the atmosphere,

b. vacuum lift wall means in the enclosure communicating sealably with the other walls of the enclosure to form a pumping chamber wherein said wall means includes said at least one opening into the chamber and being disposed below the surface of the reservoir between said chamber and said fluid reservoir,

c. a suction pump intake positioned in the enclosure above the bottom of the chamber of said enclosure for a pump

connected to said intake which has a required submergence depth for prevention of vortexing,



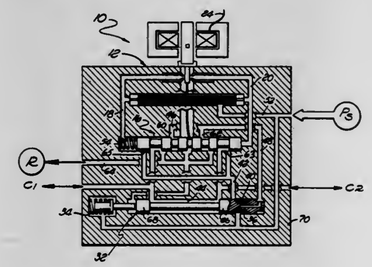
d. means for introducing and maintaining a vacuum in said chamber which is sufficient to lift the fluid level in the enclosure to the required submergence depth of the pump while fluid is pumped.

4,576,198

SERVOVALVE WITH INTEGRATED FAILURE MONITORING

James L. Coakley, Fillmore, Calif., and Richard J. Haydt, deceased, late of Los Angeles, Calif. (by Mette Haydt, legal representative), assignors to HR Textron Inc., Valencia, Calif.

Filed May 8, 1984, Ser. No. 608,328
Int. Cl.⁴ F15B *13/043, 20/00*
U.S. Cl. 137—596 **8 Claims**



8. In an electrohydraulic control valve system for applying hydraulic fluid from a pressurized source thereof to a load responsive to electrical signals applied to the torque motor of said electrohydraulic valve through first and second ports controlled by a control spool valve, said source including a return, an integrated hydromechanically operated mechanism for sensing failures and deactivating load control responsive thereto comprising:

failure detection means including valve means disposed to provide fluid under pressure from a source thereof to said control valve,

means biasing said torque motor so that upon application of non-operative electrical input signals thereto said control valve moves to a limit position indicative of a failure; and

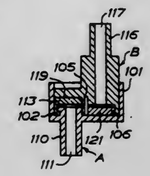
means including said control valve for connecting said failure detection means to said return responsive to said control valve moving to said limit position thereby to deactivate load control.

4,576,199

SLIDE VALVE AND COUPLING UNIT

Jan A. Svensson, Solhemsgatan 12, Huskvarna, Sweden (S-561 35), and Robert Axelsson, P.O. Box 4010, Huskvarna, Sweden S-561 04

Filed Mar. 12, 1984, Ser. No. 588,533
Claims priority, application Sweden, Dec. 19, 1983, 8307017
Int. Cl.⁴ F16L *37/28*
U.S. Cl. 137—614.04 **4 Claims**



1. Slide valve and coupling unit for flow control, comprising a slide valve including a valve housing forming a first fluid flow passage, and a first slide valve element in said valve housing, guided for lateral displacement between a closed position in which the first slide valve element is positioned across said first passage to keep it closed, and an open position in which said passage is uncovered by said first slide element; and a coupling element including a coupling housing forming a second fluid flow passage which can be connected to said first passage, a second slide valve element in said coupling housing, guided for displacement between a closed position in which the second slide valve element is positioned across said second passage to keep it closed, and an open position in which said second passage is uncovered by the second slide element, said coupling housing also forming a recess to receive therein at least the portion of the valve housing containing the first slide valve element, a sealing element located in the coupling housing around the opening of said second fluid flow passage, said valve housing being displaceable in relation to the coupling housing to a displaced position to engage said second slide valve element for displacement thereof to the open position, and forming an interface surface to be engaged by the sealing element at said surface in said displaced position, said valve housing further including means for retaining the first slide valve element in said recess during the displacement of the first slide valve element, a sealed fluid flow connection being established through said first and second fluid flow passages in said displaced position.

4,576,200

HYDRAULIC PRESSURE REDUCING CONTROL VALVE

James P. Janecke, Waukesha, and Kishor J. Patel, Mukwonago, both of Wis., assignors to Applied Power Inc., Milwaukee, Wis.

Filed Mar. 26, 1985, Ser. No. 716,037
Int. Cl.⁴ G05D *16/00*
U.S. Cl. 137—624.13 **11 Claims**

1. A pressure reducing hydraulic control valve comprising:

an elongate valve body having a spool receiving bore, said bore having a longitudinal axis and first and second ends;

a hydraulic chamber at a first end of said bore;

a fluid inlet to said bore for admitting hydraulic fluid under pressure thereto;

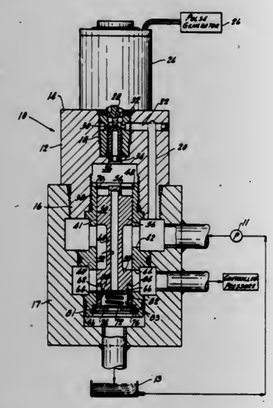
a fluid outlet from said bore;

a spool means slidably disposed within said bore, said spool including a first land adjacent said chamber, a second land located intermediate the ends of said spool means, said second land being constructed to selectively control the pressure within said outlet depending on the axial displacement of said spool means;

means for selectively controlling the hydraulic pressure within said chamber and hence the hydraulic pressure

acting upon the area of said first land exposed to said chamber;

means for biasing said spool means toward said chamber whereby said second land prevents the passage of hydraulic fluid from said fluid inlet to said fluid outlet unless the pressure within said chamber exceeds a predetermined value;



cylindrical sleeve means disposed within the second end of said bore, said second end of said bore communicating with tank;

a reduced diameter portion of said spool means located at the end of said spool means remote from said first land and within said outlet, said portion having an outer surface adapted to form a sliding seal with the inner bore of said sleeve means when said spool is axially displaced toward said bore second end.

4,576,201

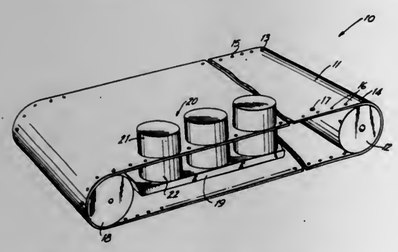
MULTI-PORT VALVE ASSEMBLY

S. Frederic Guggenheim, Teaneck, N.J., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 16, 1984, Ser. No. 672,229

Int. Cl.⁴ F15B *21/02*

U.S. Cl. 137—624.18 **8 Claims**



1. A multi-port valve apparatus comprising:

a base, a plurality of pairs of valve block means, each valve block means being adapted to conduct fluid through a bore therewithin, each valve block means having an orifice at the face of its bore, and having first and second seals surrounding its orifice;

each pair of valve block means being mounted on said base within the valve block means of each pair aligned so that their orifices are aligned, the valve block means face each other and they are positioned with a gap therebetween;

web means positioned in said gap and slidable therein, said web means being in sealing contact with said first and second seals of each pair of valve block means, said web means having at least one aperture therethrough;

each of said first and second seals respectively comprising an "O" ring positioned in a groove in the face of said valve block means, sealingly engaged therewith, and a washer seal also positioned in said groove, sealingly engaged with said "O" ring and with said web, said "O" ring and said washer seal being elastomeric, and compression of said "O" ring urges said washer seal against said web;

said first and second seals being positioned such that the distance between them is at least as great as the size of said web aperture, said size being measured in the direction coincident with the direction of motion of said aperture;

motor means to move said web means in order to progress its aperture from alignment with the orifices of one pairs of valve block means and into alignment with the orifices of a different pair of valve block means.

4,576,202

MIXING VALVE

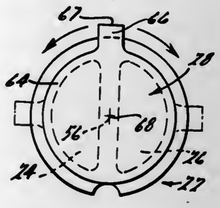
Alfons Knapp, Biberach an der Riss, Fed. Rep. of Germany, assignor to Masco Corporation, Taylor, Mich.

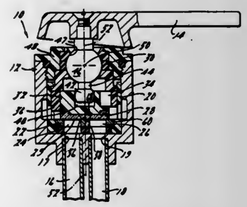
Filed Jul. 12, 1983, Ser. No. 513,109

Claims priority, application Italy, Jul. 16, 1982, 67906 A/82; Jan. 28, 1983, 67096 A/83; Mar. 7, 1983, 67253 A/83

Int. Cl.⁴ F16K *11/06*

U.S. Cl. 137—625.17 **6 Claims**





1. A flow control mixing valve characterized by:

a housing structure; a fixed plate being operatively fixed within said housing structure, having an upper surface, and having at least two openings for the passage of a first and second fluid respectively; a movable plate having a lower surface positioned in sliding contact with said upper surface of the fixed plate and cooperating with said openings of the first plate for adjusting the flow of said first and second fluid, respectively; a control mechanism operatively connected to said movable plate for moving said valve plate in both a translational mode and rotational mode for a limited angle between closed and open positions and first and second end positions;

the movable plate having its lower surface free from openings and recesses, said valve plate having a center portion with a basic configuration free from concave sides and concave angles, said valve plate center portion sized to cover said openings when in said closed position independently of the position of said valve plate between said first and said second end positions; said valve plate being free of any projection that spans more than approximately one-half the perimeter of said valve plate center portion;

said control means translationally moving said movable plate between said closed and open positions and rotating said plate between said first and second end positions;

said movable plate having its lower surface shaped and cooperating with said openings such that the angle of rotation between the first and second end positions is approximately ninety degrees or greater;

said movable plate having a circular center portion covering said openings when said valve is in said closed position;

a toothed projection extending from said center portion; and

said toothed projection covering a portion of one of said openings when said valve is in an open position and slidable to a position not covering said one opening when said movable plate is rotated at approximately a midpoint between said first and second end positions while simultaneously said center portion covers approximately an area equal to or greater than the area uncovered by said toothed projection.

4,576,203

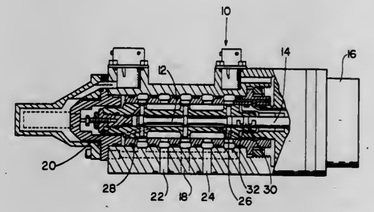
PRESSURE-OPERATED ECCENTRIC SHAFT COUPLING

Kent R. Boyer, Valencia, and Clyde E. Cobb, Lakeview Terrace, both of Calif., assignors to HR Textron Inc., Valencia, Calif.

Filed May 15, 1984, Ser. No. 610,531

Int. Cl.⁴ F15B *13/043*

U.S. Cl. 137—625.63 **9 Claims**



1. In a fluid pressure operated valve having a separate drive member and a separate driven member having juxtaposed ends, each of said members being reciprocally movable, the driven member controlling fluid flow responsive to signals applied to the drive member the improvement for coupling the drive and driven members comprising:

(A) a first recess having opposed side walls and a bottom wall disposed transversely of the longitudinal axis of said drive member and displaced from the end thereof;

(B) a second recess having opposed side walls and a bottom wall disposed transversely of the longitudinal axis of said driven member and displaced from the end thereof;

(C) a unitary coupler means including first and second arms for insertion into said first and second recesses;

(D) a cavity defined by said valve;

(E) a source of fluid under pressure; and

(F) means connecting said cavity to said source of fluid during operation of said valve, said coupler means and the ends of said members being disposed in said cavity for placing said coupling under tensile preload to prevent backlash between said drive and driven members.

4,576,204

LAMINAR FLOW ELEMENT

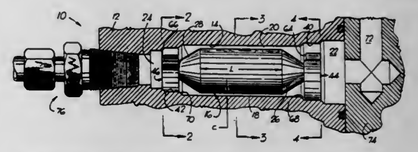
Edward A. Smallhorn, and John B. Oliver, both of Dartmouth, Canada, assignors to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Ottawa, Canada

Filed Mar. 9, 1984, Ser. No. 587,830

Claims priority, application Canada, Aug. 31, 1983, 435,759

Int. Cl.⁴ F16L *1/02, 1/06*

U.S. Cl. 138—44 **5 Claims**



1. A laminar flow element for use in a cylindrical fluid passage for providing a constant volume rate of flow through said passage for a predetermined pressure differential range across said element, said element comprising:

a primary body portion having a cylindrical peripheral surface of predetermined length and predetermined diameter, said surface defining with said cylindrical fluid passage an annular fluid passage when said body portion is disposed in said cylindrical fluid passage;

fluid directing means extending axially from opposite ends of body portion for smoothly directing fluid flow in said cylindrical fluid passage to and from said annular passage, said fluid directing means including a tapered body portion extending axially from each end of said primary body portion, each tapered body portion having a base adjacent said primary body portion;

maintaining means extending from said element for engaging with a surface in said cylindrical fluid passage for maintaining said peripheral surface concentrically disposed within said cylindrical fluid passage, said maintaining means including a disc-shaped body portion extending axially from an end of each said tapered body portion remote from said primary body portion, each said disc-shaped body portion having axial fluid passage means extending therethrough for communicating said cylindrical fluid passage and said annular passage;

said predetermined length and said predetermined diameter being dimensioned such that fluid passes through said annular passage at a volume rate of flow which is linearly proportional to a pressure drop along said annular passage.

4,576,205

TUBULAR LINING MATERIAL FOR PIPE LINES HAVING BENDS

Akio Morinaga, Kanagawa; Yoichi Sakaguchi, Tokyo; Masakatsu Hyodo, and Isaburo Yagi, both of Osaka, all of Japan, assignors to Tokyo Gas Co., Ltd., Tokyo, and Ashimori Industry Co., Ltd., Osaka, both of Japan

Filed Apr. 18, 1984, Ser. No. 601,713

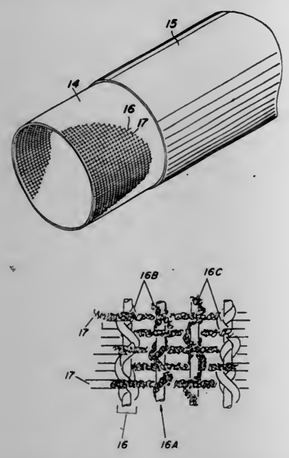
Claims priority, application Japan, Apr. 18, 1983, 58-68944

Int. Cl.⁴ F16L *55/16*; B29C *27/16*

U.S. Cl. 138—98 **14 Claims**

1. A tubular lining material for pipe lines having bent or curved portions, which comprises a tubular textile jacket made of warps and wefts woven in a tubular form overlaid with a coating of a flexible synthetic resin and adapted to be applied to the inner surface of a pipe line having bends or curved portions in such a manner that the tubular lining material containing a binder disposed on the inner surface thereof is inserted into the pipe line and allowed to advance within the pipe line while turning the tubular lining material inside out through the application of fluid pressure to apply the tubular

lining material onto the inner surface of the pipe line with the interposition of the binder between the pipe line and the tubular lining material, wherein a part of the warps are composed of an elastic yarn around which at least one synthetic yarn is coiled over the full length of the elastic yarn.

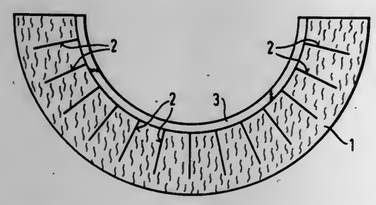


4,576,206

PIPE INSULATION SLEEVE

Henning J. E. Lauren, Regnagen 8, SF-21600 Parainen, Finland

Continuation-in-part of Ser. No. 394,286, Jul. 1, 1982, abandoned. This application Jul. 31, 1984, Ser. No. 636,077
Claims priority, application Finland, Jul. 6, 1981, 812123
Int. Cl.⁴ B32B *17/04*
U.S. Cl. 138—149 **3 Claims**



1. A pipe insulation sleeve of mineral wool bound by a thermosetting binder, comprising an outer insulating main layer having an inner diameter of at least 300 mm and a thickness of at least 100 mm, a surface forming the inner side of the main layer, and consisting of a slab of mineral wool hardened all through, said slab having a plurality of radial slits extending outwardly in an axial direction from said surface forming the inner side of the main layer, said slits being essentially closed, said surface being a slitted polygonal surface, and an inner layer of mineral wool compressed into contact with said main layer, said inner layer being free of radial slits and containing a thermosetting binder, said inner layer being bonded to said slitted polygonal surface of said main layer by said thermosetting binder, and wherein said binder has been hardened by a hot gas being blown through said inner layer after the said inner layer has been compressed into contact with the main layer, said inner layer having in its compressed condition a thickness of maximum 10–20% of the outer layer and a density in its compressed condition which is higher than the density of the main layer, thereby contributing to the rigidity of the sleeve.

4,576,207

TEXTURIZED HEAT SHRINKABLE TUBING HAVING RADIAL AND LONGITUDINAL SHRINKAGE MEMORY

Herbert R. Levine, Dover; Stephen G. Gerrato, Greenland, and Benoit L. Poulin, Hudson, all of N.H., assignors to Essex Group, Inc., Fort Wayne, Ind.

Filed Feb. 11, 1983, Ser. No. 465,719
Int. Cl.⁴ F16L *9/00*
U.S. Cl. 138—177 **1 Claim**



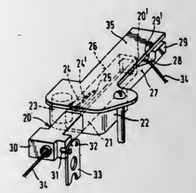
1. Heat shrinkable tubing comprising tubular polymeric material having radial shrinkage memory and about 5% to about 30% longitudinal shrinkage memory and having substantially parallel raised portions extending along its entire length, such tubing capable of shrinking in response to heat over bent, expanded and depressed substrate material in uniform, unwrinkled fashion while maintaining the substantially parallel raised portions extending along its entire length.

4,576,208

WEFT SEVERING DEVICE FOR A WEAVING MACHINE

Alois Steiner, Rieden, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Nov. 27, 1984, Ser. No. 675,235
Claims priority, application European Pat. Off., Dec. 1, 1983, 83.112063.9
Int. Cl.⁴ D03D *47/00*
U.S. Cl. 139—429 **9 Claims**



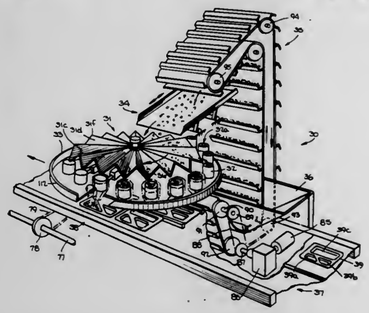
1. A weft severing device for a weaving machine comprising
a blowing tube for pneumatically conveying a to be inserted weft thread therethrough;
a cutting element for severing a weft thread extending out of said tube in cooperation with said blowing tube; and
means for moving at least one of said tube and said element relative to each other to effect severing of a weft thread between and by said tube and said element.

4,576,209

METHOD AND APPARATUS FOR DELIVERING A PREDETERMINED AMOUNT OF MATERIAL TO A CONTAINER

Bernard C. Eisenberg, Rockaway, N.J., assignor to Solbern Corp., Fairfield, N.J.

Filed Feb. 6, 1985, Ser. No. 698,810
Int. Cl.⁴ B65B *1/04*
U.S. Cl. 141—1 **49 Claims**



1. Apparatus for delivering a predetermined amount of material to a predetermined location comprising:
a turntable pivotally mounted about a substantially vertical axis, the turntable being crowned with the periphery thereof disposed lower than the central portion thereof;
means for depositing a flow of material upon the turntable inwardly of the periphery thereof, the material being adapted to move radially outwardly over the periphery of the turntable as the turntable rotates;
means for rotating the turntable about its pivotal axis;
a plurality of hoppers;
means for mounting the plurality of hoppers spaced apart from one another with the mouth of each hopper facing upwardly beneath the periphery of the turntable;
means for moving the plurality of hoppers in the direction of rotation of the turntable to enable each of the plurality of hoppers to receive material moving radially outwardly over the periphery of the turntable;
means located at a predetermined arcuate extent about the periphery of the turntable from a location in advance of the depositing means in the direction of rotation of the turntable for releasing material from each of the plurality of hoppers, the moving of the plurality of hoppers from adjacent the depositing means to adjacent the releasing means enabling each hopper to receive the predetermined amount of material from the periphery of the turntable.

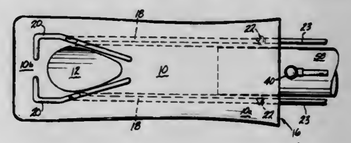
4,576,210

DUCK BILL FILLER NOZZLE

J. George Lepisto, Middletown, Ohio, assignor to Champion International Corporation, Stamford, Conn.

Continuation of Ser. No. 540,378, Oct. 11, 1983, abandoned, which is a continuation-in-part of Ser. No. 424,893, Sep. 28, 1982, Pat. No. 4,498,511. This application Jun. 17, 1985, Ser. No. 745,380
Int. Cl.⁴ B65B *1/18*
U.S. Cl. 141—115 **1 Claim**

1. A nozzle for use in filling a bag having a valve sleeve, said nozzle comprising:
(a) a body member adapted for insertion into the valve sleeve, said body member having a material passage therethrough for passage of product into the bag, said body member being substantially rectangular in plan form, and said body member having a product discharge opening disposed at a discharge end of said body member, said discharge opening communicating with said material passage;
(b) at least one vacuum conduit in said body member, said vacuum conduit being operable to be connected to a vacuum source to allow drawing of a vacuum in said vacuum conduit;
(c) groove means comprising a pair of grooves flanking said



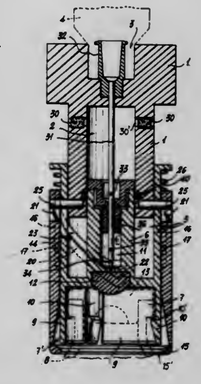
product discharge opening and formed in an outer surface of said body member, said groove means being connected to said vacuum conduit whereby said groove means is operable to distribute the vacuum drawn in said vacuum conduit to remove product residue from within the valve sleeve after the bag is filled; and
(d) means for removing residual product from said material passage after the bag is filled.

4,576,211

SAFETY DEVICE FOR CONNECTION OF A SYRINGE WITH THE MOUTH OR OPENING OF A BOTTLE CONTAINING A DRUG OR A SMALL TUBE FOR DRUG DELIVERY FROM THE SYRINGE

Luigi Valentini, Milan, and Mario Coccia, Cesano Boscone, both of Italy, assignors to Farmitalia Carlo Erba S.p.A., Milan, Italy

Filed May 7, 1984, Ser. No. 607,502
Claims priority, application Italy, Feb. 24, 1984, 19785 A/84
Int. Cl.⁴ B65B *3/04*; A61M *5/00*
U.S. Cl. 141—329 **8 Claims**



1. A safety device for connection of a syringe to the mouth or opening of a bottle containing a drug or a small tube for drug delivery from the syringe, comprising an elongated inner body defining a cylindrical cavity, at one end of which a seat is formed for housing the free end of a syringe, an intermediate body having a hollow cylindrical extension which is housed and movable within the cavity of the inner body between a first end of stroke position defined by a retaining element limiting relative displacement of said inner body and said intermediate body in a first direction and a second end of stroke position defined by a retaining element limiting relative displacement of said inner body and said intermediate body in a second direc-

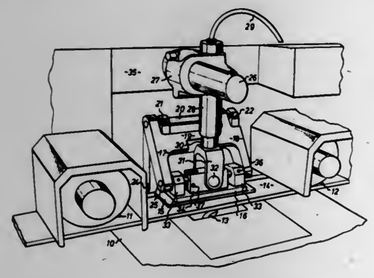
tion, opposite to the first direction, a shaped resilient plug sealingly closing the outward facing end of the cavity of said cylindrical extension, the other end of which opens into the cavity of the inner body, a housing seat for the mouth or opening of a bottle or a small tube formed at the free end of the intermediate body with said resilient plug projecting at the center of said seat, at least one flexible extension integral with said intermediate body and having a shaped portion thereof projecting to said housing seat for the bottle mouth or opening, an outer body superimposed to said intermediate and inner bodies, members restraining said outer body to the intermediate body enabling a mutual displacement between a position at which said extension is allowed to outwardly deflect, and a position at which the outer body interferes with said extension preventing the outward deflection thereof, elements restraining both said outer body and said intermediate body to the inner body, enabling the axial displacement of said outer body and said intermediate body relative to the inner body only when the outer body is located at the position at which it interferes with said extension preventing the outward deflection thereof, the cavities of said intermediate and inner bodies being adapted to house a hollow needle which can be connected to a syringe inserted in said seat of the inner body, the tip of said needle being positioned adjacent said resilient plug at the inoperative condition of the device and the top of said needle protruding through said resilient plug at the operative condition of the device.

4,576,212

DEVICE IN A MACHINE TOOL FOR MAINTAINING A WORKPIECE DISPLACED IN ITS LONGITUDINAL DIRECTION, IN ENGAGEMENT WITH THE TOOL

Bengt Andersson, Halmstad, Sweden, assignor to Waco Jonserreds AB, Halmstad, Sweden

Filed Mar. 9, 1984, Ser. No. 588,112
Claims priority, application Sweden, Mar. 15, 1983, 8301382
Int. Cl.⁴ B27C *5/02*
U.S. Cl. 144—243 **6 Claims**



1. In a machine tool a device for maintaining a workpiece which is displaced in its longitudinal direction in engagement with the tool, comprising in combination

a machine frame,

a pressure plate,

two arms,

said arms being rigidly interconnected by an intermediate member, means for horizontally and vertically adjustably mounting the arms on the machine frame comprising a bearing means on the machine frame mounting said arms about an axis extending in the direction of movement of the workpiece,

said arms being pivotally connected at one end to said pressure plate,

a first bearing shaft on said pressure plate extending in said direction of movement, and

a pressure-exerting assembly,

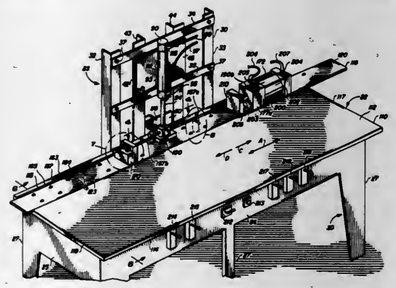
said assembly being horizontally adjustable mounted on said frame transversely of said direction of movement and pivotally connected to said pressure plate by means of said bearing shaft to exert a pressure on said pressure plate on the side thereof facing away from the tool.

4,576,213

METHOD AND APPARATUS FOR MACHINING A DOOR OR THE LIKE

Frank A. Miller, 4347 E. Maldonado, Phoenix, Ariz. 85040

Filed Jun. 4, 1984, Ser. No. 617,302
Int. Cl.⁴ B27M *1/00*
U.S. Cl. 144—371 **41 Claims**



1. An apparatus for receiving a workpiece, which workpiece includes:

first and second sides,

first and second lateral edges, and

a longitudinal edge,

and for forming a recess into said longitudinal edge at a predetermined location, said apparatus comprising:

a. a stationary base;

b. a support means carried by said base for locationally holding and supporting said workpiece, said support means being reciprocally movable in opposite first and second directions along an axis substantially parallel to the longitudinal edge of said workpiece when locationally held;

c. milling means carried by said base for forming a recess into the longitudinal edge of said workpiece; and

d. positioning means for locating said support means at a preselected location along said axis relative to said said milling means.

30. The method of forming a recess of selected length into a longitudinal edge of a workpiece, which workpiece further includes

first and second sides, and first and second lateral edges, said method comprising the steps of:

a. securing said workpiece to a support means;

b. positioning said support means at a preselected location relative a milling means having a cutting tool;

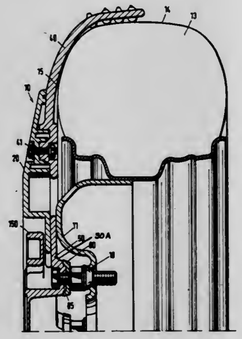
c. moving said milling means in a direction whereby said cutting tool intercepts said workpiece and cuts said recess into said longitudinal edge.

4,576,214

NON-SKID DEVICE, PARTICULARLY FOR PNEUMATICALLY TIRED VEHICLE WHEELS USED ON ICE AND SNOW

Werner Preusker, Atzelgift, Fed. Rep. of Germany, assignor to Niveau AG, Basel, Switzerland

Filed Jan. 5, 1984, Ser. No. 568,492
Claims priority, application Fed. Rep. of Germany, Sep. 3, 1983, 3331855; Sep. 23, 1983, 8327385
Int. Cl.⁴ B60C *27/00*
U.S. Cl. 152—213 A **5 Claims**



1. A non-skid device, particularly for pneumatic tires mounted on vehicle wheels for use on ice and snow, comprising a supporting disk arranged to be fixed to a wheel disk or rim of a vehicle wheel having a central axis about which the wheel rotates, said supporting disk having a plurality of equiangularly spaced, radially outwardly extending non-skid arms provided with a prebent profile so that said arms extend outwardly from said supporting disk to the circumferential periphery of the tire on the wheel and then are bent and project inwardly over the tire tread, said arms carrying thereon spike-like profiles arranged to extend over and outwardly from the tread, said arms being formed of a resilient elastic material, said anti-skid arms being pivotally mounted on said supporting disk for pivotal movement in a small range about axes parallel to the axis of the wheel; and further comprising

(a) a circular fixing disk arranged for fixing said supporting disk to the wheel, said fixing disk having a central axis extending transversely of said fixing disk, said fixing disk having a plurality of openings therethrough, means positionable within the openings in said fixing disk for securing said fixing disk to the wheel, said fixing disk having a radially outer diameter, said fixing disk having an outwardly facing surface, extending transversely of said fixing disk central axis, said fixing disk includes a centrally located circular hub having a smaller diameter than the radially outer diameter of said fixing disk and projecting outwardly from said outwardly facing surface of said fixing disk, said hub having a plurality of bulge-like shoulders spaced circumferentially apart on said hub and spaced in the axial direction of said fixing disk from the outwardly facing surface of said fixing disk, each said bulge-like shoulder forming a sliding and guiding path located inwardly between said shoulder and said outwardly facing surface of said fixing disk and each of said paths extending in the circumferential direction of said hub, said sliding and guiding paths each having an insertion opening and an end area spaced apart in the circumferential direction of said hub with each said path having a wedge-like shape converging inwardly from the insertion opening toward the end area in the circumferential direction around said hub, a retaining ring mounted on said hub for securing said supporting disk thereon, said retaining ring having a radially inner wall surface with locking webs formed on the radially inner wall surface and each said locking web being insertable into a corresponding said sliding and guiding path for effecting a bayonet-like engagement of said retaining ring in said paths, each said locking web being tapered inwardly in the circumferential direction extending from the insertion opening toward the end area of the corresponding said sliding and guiding path, said retaining ring having at least one leaf spring latch formed on the inner wall surface thereof, said hub having at least one first recess in the outer circumferential surface thereof, said latch being displaceable generally in the radial direction relative to the axis of the wheel between a locked position in engagement within said at least one first recess in said hub and an unlocked position, said first recess having a stop member therein for engagement by said latch in the locked position, said retaining ring having a second recess therein aligned opposite said first recess in said hub so that in the unlocked position said latch can be displaced into said second recess;

(b) said supporting disk being fitted on said hub of said fixing disk with a certain clearance therebetween so that said supporting disk can perform eccentric rotary movements about said hub; and

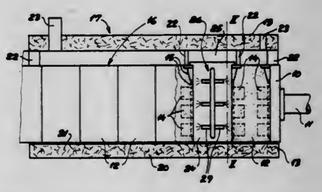
(c) said inner surface of said retaining ring is provided with two equiangularly spaced said leaf spring latches with said latches being pivoted in the locked position into corresponding said first recesses in said hub and in the unlocked position being displaceable into said second recesses in the inner wall face of said retaining ring, a key is arranged for displacing said leaf spring latches between the locked and unlocked position and said key comprises a grip-like handle having a first end and a second end, two laterally spaced pressure tongues located on the first end of said handle and extending generally perpendicular to said handle, and said pressure tongues being spaced apart corresponding to the spacing of said leaf spring latches.

4,576,215

METHOD FOR THE PRODUCTION OF FROZEN MOULD BODIES AND APPARATUS FOR USE IN THE CARRYING OUT OF THE METHOD

Hakon Kauserud, Ballerup, Denmark, assignor to Dansk Industri Syndikat A/S, Herlev, Denmark

PCT No. PCT/DK82/00027, § 371 Date Dec. 8, 1982, § 102(e) Date Dec. 8, 1982, PCT Pub. No. WO82/03580, PCT Pub. Date Oct. 28, 1982
PCT Filed Apr. 7, 1982, Ser. No. 448,897
Claims priority, application Denmark, Apr. 13, 1981, 1663/81
Int. Cl.⁴ B22C *9/00*
U.S. Cl. 164—15 **8 Claims**



1. A method of producing a frozen mould body which includes granular material and a binder, which comprises the steps of:

forming the mould body of the granular material and the binder in a moulding apparatus which defines a mould cavity and which includes a plurality of separate mould parts, a first one of the mould parts being in the form of a movable pattern plate for forming impressions in the adjacent face of the mould body;

introducing a freezing agent into the mould cavity through the movable pattern plate; and

simultaneously applying a vacuum to at least part of an outer wall portion of a second mould part to draw the freezing agent into the mould body in the mould cavity so as to freeze the binder in the mould body.

4,576,216

PROCESS FOR MANUFACTURING INVESTMENT MOLDS

Giorgino Perna, Turin, Italy, assignor to Newellpharma s.r.l., Turin, Italy

Filed Nov. 8, 1984, Ser. No. 669,295

Claims priority, application Italy, Nov. 8, 1983, 68159 A/83

Int. Cl.⁴ B22C *15/20;* **B28B** *7/36*

U.S. Cl. 164—21 **6 Claims**

1. In a process for manufacturing an investment mold of refractory material for casting metal alloys comprising applying a layer of a paste composition to the inner surface of a metal container prior to forming the mold therein, wherein said layer is suitable for separating said mold from said container; the improvement comprising, as said paste composition,

(A) an organic component which can be eliminated by thermal degradation at a temperature above 200° C., and

(B) a powdered, refractory-mineral component which is stable at the casting temperature of said alloy used in said casting process.

4,576,217

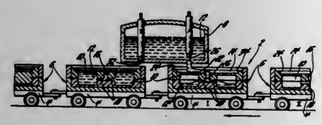
STATIONARY CONTINUOUS AUTOMATIC POURING PROCESS

Daniel Shaw, Saginaw, Mich., assignor to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 348,287, Feb. 12, 1982, Pat. No. 4,509,578. This application Jul. 2, 1984, Ser. No. 627,222

Int. Cl.⁴ B22D *23/00*

U.S. Cl. 164—130 **4 Claims**



1. A method of pouring metal melt into each of a plurality of successive molds moving substantially continuously through a pouring zone comprising the steps of:

passing said molds successively beneath a series of pouring outlets for sequentially dispensing increments of said melt to each of said molds, said series having a first and a last outlet aligned substantially in the direction of said moving, and said molds each having a cavity for shaping the melt and an extended pouring basin aligned substantially in the direction of said moving for receiving the melt from said outlets and directing it into said cavity;

first pouring melt from said first outlet as said pouring basin moves beneath said first outlet, said first poured melt being sufficient only to partially fill said cavity;

discontinuing said first pouring before said pouring basin passes out from beneath said first outlet;

last pouring melt from said last outlet as said pouring basin moves beneath said last outlet, said last poured melt being sufficient to completely fill said cavity; and

discontinuing said last pouring before said pouring basin passes out from beneath said last outlet.

4,576,218

FEEDING DEVICE FOR INTRODUCING STEEL MELT INTO TWIN-BELT CASTERS

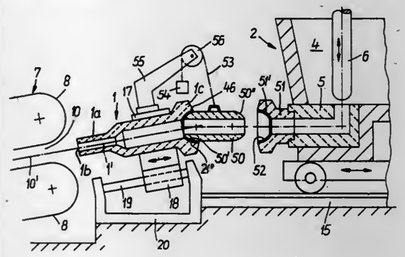
Gerd Artz, Ratingen; Gerhard Beckmann; Dieter Figge, both of Essen, and Clemens Philipp, Meerbusch, all of Fed. Rep. of Germany, assignors to Fried. Krupp Gesellschaft mit beschränkter Haftung, Essen, Fed. Rep. of Germany

Filed Apr. 19, 1985, Ser. No. 724,809

Claims priority, application Fed. Rep. of Germany, Apr. 21, 1984, 3415235

Int. Cl.⁴ B22D *11/02*

U.S. Cl. 164—431 **15 Claims**



1. A feeding device for introducing molten steel into a twin-belt caster having mold walls which move exclusively in the casting direction, said feeding device comprising: a casting unit including a pouring pipe having a mouthpiece at one end which can extend between and form a sealing gap with the mold walls of a twin-belt caster, a first carriage means disposed for movement toward and away from the locus of a twin-belt caster, and means for mounting said pouring pipe on said first carriage means so that said pouring pipe is rotatable about a horizontal pivot axis and is laterally adjustable transversely to its longitudinal extent; a tundish having an outlet; a second carriage means, disposed upstream of said first carriage means and independently moveable toward and away from said first carriage means, for supporting said tundish so that it is adjustable in height; and means for connecting said outlet of said tundish to the other end of said pouring pipe to permit molten steel to flow from said tundish through said pouring pipe, said connecting means including a compensating pipe having first and second sealing surfaces at its opposed ends, first sealing means, including said first sealing surface and a cooperating correspondingly shaped sealing surface on the other end of said pouring pipe, for sealingly connecting said compensating pipe to said pouring pipe such that said first sealing surface and said sealing surface on said pouring pipe are moveable relative to one another, and a second sealing means, including said second sealing surface and a correspondingly shaped sealing surface at said outlet of said tundish, for sealingly connecting said compensating pipe to said tundish such that said second sealing surface and said sealing surface on said tundish are moveable relative to one another.

4,576,219

MOLTEN METALS FILTER APPARATUS

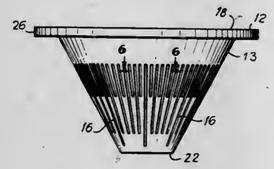
Stuart Z. Uram, Alpine, N.J., assignor to Certech Incorporated, Wood-Ridge, N.J.

Filed Oct. 22, 1982, Ser. No. 435,980

Int. Cl.⁴ B22C *9/08*

U.S. Cl. 164—358 **5 Claims**

1. A molten metal filter apparatus comprising: a hollow frusto-conical strainer means for selectively restraining particulant impurities in molten metal, said strainer means having a plurality of slot apertures disposed longitudinally about its conical surface and an inlet port, said slot apertures being of uniform width and of staggered lengths so that there are relatively fewer slots which extend to the smaller diameter portion



of said strainer means than which extend to the larger diameter portion of said strainer means.

4,576,220

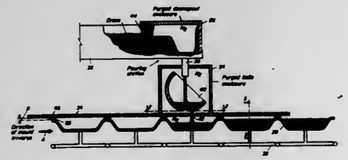
METHOD AND APPARATUS FOR MAINTAINING AN ATMOSPHERE AROUND A PREDETERMINED PORTION OF AN ENDLESS DISCRETE OBJECT CONVEYOR

Laurence C. Smyth, Beaconsfield, and George Deep, Pointe-Claire, both of Canada, assignors to Noranda Inc., Toronto, Canada

Filed Dec. 23, 1983, Ser. No. 564,823

Int. Cl.⁴ B22D *7/00, 23/00*

U.S. Cl. 164—66.1 **16 Claims**



1. An apparatus for maintaining a particular atmosphere above a predetermined portion of a train of closely spaced open top containers mounted on an endless conveyor chain, comprising:

(a) a cover plate located above a number of said containers and extending before and after said predetermined portion at a predetermined gap height between the top edge of each of the containers and the plate all around each container;

(b) a plurality of ports longitudinally spaced in said cover plate so that there is always at least one port over each container as the train of containers moves underneath the cover plate; and

(c) means for feeding a gas through the ports in said cover plate to progressively develop a particular atmosphere in said containers as they approach the predetermined portion of the endless conveyor and to maintain said atmosphere in the containers as they pass through said predetermined portion without the use of contacting seals between the containers and the cover plate.

5. An apparatus for maintaining a particular atmosphere above a predetermined portion of a train of closely spaced open top containers mounted on an endless conveyor chain, comprising:

(a) a cover plate located above a number of said containers and extending before and after said predetermined portion at a predetermined gap height between the top edge of each of the containers and the cover plated all around each container;

(b) a plurality of ports longitudinally spaced in said cover plate so that there is always at least one port over each container as the train of containers passes underneath the cover plate;

(c) manifold means attached to said ports, and

(d) a source of gas feeding a gas to said manifold means whereby said gas is fed through the ports in said cover plate to progressively develop a particular atmosphere in the containers as they approach the predetermined portion of the endless conveyor, and to maintain said atmosphere in the containers as said containers pass through said predetermined portion without the use of contacting seals between the containers and the cover plate.

4,576,221

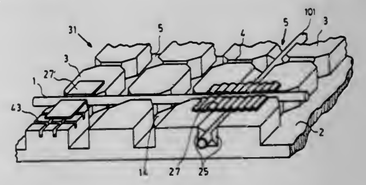
SYSTEM FOR TEMPERING A ROOM

Manfred Fennesz, Damböckgasse 4, A 1060 Vienna, Austria

Filed Nov. 21, 1983, Ser. No. 554,093

Int. Cl.⁴ F24D *19/02*

U.S. Cl. 165—49 **15 Claims**



1. A construction for use in a temperature control system, comprising:

surface means for defining a surface, the surface including projections having tops and boundary surfaces, the surface having defined therein recess sections, each recess section being defined by boundary surfaces of the projections, at least one recess section being a channel-like interspace having an air inlet for entering air and an air outlet for permitting air to exit, the air flowing through the recess sections from the air inlet to the air outlet;

means for tempering extending within at least part of at least one of the recess sections; and

covering means for covering the tops of the projections;

boundary surfaces including parts spaced apart for defining clamping elements for clamping the tempering means, the boundary surfaces further defining baffle means for deflecting the flowing air within at least one recess section in which the tempering means extends for providing temperature equalization.

4,576,222

FLUID DISTRIBUTOR FOR HEAT EXCHANGER INLET NOZZLE

Samuel J. Granata, Jr., Greensburg, and John A. Rylatt, Monroeville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

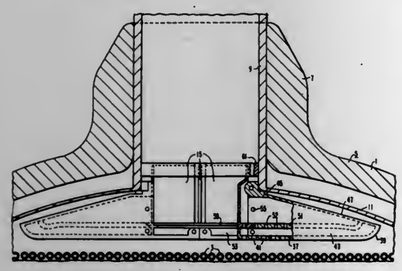
Filed Aug. 31, 1982, Ser. No. 413,584

Int. Cl.⁴ F28F *7/00, 9/22;* **F28D** *7/00*

U.S. Cl. 165—76 **8 Claims**

1. A flow distributor for an inlet nozzle of a shell and tube heat exchanger, said flow distributor comprising a plurality of vanes disposed in said inlet nozzle and radially with respect to the axis thereof so as to form a plurality of separate parallel fluid flow paths within said inlet nozzle, a plurality of enclosures separate from said shell, disposed within said shell, and connected to said vanes so that each separate parallel fluid flow path formed in said inlet nozzle is in communication with a separate enclosure, each enclosure having a plurality of apertures disposed in at least one wall of said enclosure in fluid communication with the shell portion of the heat exchanger and being disposed so that said apertures are directly adjacent said tubes the flow distributor being bigger than the inlet noz-

zle and the enclosures being separate and sized to fit through the nozzle whereby when within the heat exchanger the fluid



emitting from said apertures in the flow distributor flows directly on the tubes.

4,576,223

HEAT EXCHANGER AND PROCESS FOR ITS MANUFACTURE

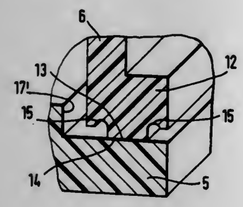
Bohumil Humpolik, Ludwigsburg; Vlastimil Kluna, Kornwestheim; Wilfried Winterer, Leinfelden; Reinhold Kuchelmeister, Waldenbuch, and Jürgen Bayer, Esslingen, all of Fed. Rep. of Germany, assignors to Sueddeutsche Kuehlerfabrik Julius Fr. Behr GmbH & Co. KG, Stuttgart, Fed. Rep. of Germany

Filed Dec. 19, 1983, Ser. No. 562,819

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1982, 3247502

Int. Cl.⁴ F28F *9/26*

U.S. Cl. 165—79 **16 Claims**



1. A heat exchanger comprising:

at least one tube plate comprising synthetic resin material, said tube plate including one side having a plurality of projections, a plurality of orifices located, respectively, in said projections, and an edge area having a first continuous flat surface;

a plurality of tubes, said tubes having ends mounted, respectively, in said orifices, said tube ends being pressure fitted into said orifices;

a plurality of fins connected to said tubes, said fins and said tubes defining a heat exchanger block;

a water tank comprising synthetic resin material and having a rim with a second continuous flat surface resting on said first continuous flat surface of said tube plate;

a first vibration weld for connecting said first and second continuous flat surfaces, and disposed between the first and second surfaces;

at least one side groove formed along at least one of said flat surfaces, wherein said first vibration weld includes a weld bead disposed in said groove.

4,576,224

DIAMOND HEATSINK ASSEMBLIES

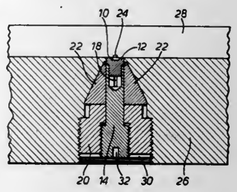
Ralph M. Eaton, and Michael W. Geen, both of Northampton, England, assignors to Plessey Overseas Limited, Ilford, England

Filed Sep. 17, 1984, Ser. No. 651,466

Claims priority, application United Kingdom, Sep. 21, 1983, 8325320

Int. Cl.⁴ H01L *23/40*

U.S. Cl. 165—80.2 **7 Claims**



1. A diamond heatsink assembly comprising:

(a) a mounting member including an outer surface in which is positioned a diamond;

(b) a holder member for holding said mounting member;

(c) a clamping member for securing said mouning member and said holder member, said clamping member being of split frusto-conical shape and including a base surface and a bore in which said mounting member and said holder member are inserted;

(d) a locking member; and

(e) a base member including

(i) a recess of corresponding shape to that of said clamping member and

(ii) first and second openings on respective sides of said recess, said first opening receiving said mounting member and said second opening receiving said locking member, said locking member axially movably positioned within said base member and adjacent said base surface of said clamping member for forcing said clamping member against said recess to clamp said clamping member against said holder member and to clamp said holder member against said mounting member to prevent rotation of said mounting member and to retain said mounting member with its outer surface substantially planar with a surface of said base member.

4,576,225

HEAT EXCHANGER FOR COOLING HOT GASES, ESPECIALLY THOSE DERIVING FROM THE SYNTHESIS OF AMMONIA

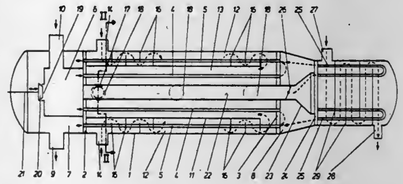
Konrad Nassauer, Berlin, Fed. Rep. of Germany, assignor to Borsig GmbH, Berlin, Fed. Rep. of Germany

Filed Aug. 13, 1984, Ser. No. 639,994

Claims priority, application Fed. Rep. of Germany, Sep. 17, 1983, 3333735

Int. Cl.⁴ F28F *27/02, 9/22;* **F28D** *7/00*

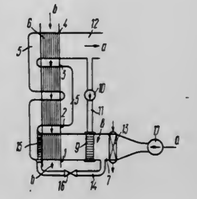
U.S. Cl. 165—101 **3 Claims**



1. Heat exchanger for cooling hot gases, particularly those deriving from the synthesis of ammonia, by preheated and evaporating water, comprising: a shell with bundles of tubes positioned therein; tube sheets connected to said shell, said tubes being secured in said tube sheets; outlet and inlet means for gases to be cooled comprising an outgoing chamber and an incoming chamber inside said outgoing chamber, said chambers being connected to a first one of said tube sheets; partitions forming at least one chamber within said shell, a reversing chamber connected to a second one of said tube sheets; a first bundle of said tubes being secured in said second tube sheet connected to said reversing chamber; said first bundle of said tubes being connected between said reversing chamber and said incoming and outgoing chambers; a second bundle of said tubes being positioned inside said shell, said second bundle of said tubes having outgoing ends emptying into said reversing chamber; valve means for regulating relative quantities of gases passed to said first bundle of tubes and said second bundle of tubes; means for cooling said first bundle of tubes and said second bundle of tubes by different cooling mediums for regulating the temperature of gases leaving said outgoing chamber; a third tube sheet connected to said shell, tubes in said second bundle being secured in said third sheet, said third sheet in conjunction with said second sheet and said shell forming borders of said reversing chamber; a section of said shell surrounding said second bundle of tubes having connections for a separate medium to flow through; said incoming chamber being connected to said third tube sheet by a connecting pipe, said second bundle having tubes with incoming ends opening into said connecting pipe; said valve means positioned in said connecting pipe; said connecting pipe being positioned along a longitudinal axis of said shell; said first bundle of tubes comprising two separate cooling means and said second bundle of tubes comprising a third separate cooling means, each of said cooling means being located in a separate chamber within said shell and each having its own inlet means and its own outlet means for allowing different cooling media to be used in the chambers of said three cooling means, gases to be cooled being divided into two partial flows, one partial flow being passed through a first one of said three cooling means, said partial flows when united passing through a second one of said three cooling means, the other partial flow being also passed through a third one of said three cooling means, each partial flow being cooled separately before the partial flows after being united are cooled in common cooling means for varying the final temperature of the gases to be cooled between substantially wide limits; said incoming chamber having means for releasing a portion of uncooled gas to said outgoing chamber to increase further variability of said final temperature.

a first heat exchanger for initially substantially pre-heating the air flowing through said supply line;

a second heat exchanger for further heating the air flowing through said supply line to a higher level, said second heat exchanger situated in said supply line downstream of said first heat exchanger in the direction of air flow through said supply line;



a bypass line communicating with said supply line at a point between said first and second heat exchangers, and communicating with said at least one connecting line; and

means for mixing air flowing through said bypass line with air flowing into said at least one connecting line from at least one of said plurality of passes, said mixing means being disposed in said at least one connecting line.

4,576,226

MULTIPASS CORROSION-PROOF AIR PREHEATER

Adolf U. Lipets, prospekt Lenina, 150 a, Kv. 38; Svetlana M. Kuznetsova, Revprospekt, 16, kv. 21; Vadim B. Galuskin, Juzhny proezd, 9, kv. 58; Jury I. Lafa, ulitsa Mashinostroitelei, 28b, kv. 58; Ivan A. Sotnikov, ulitsa Mashinostroitelei, 32, kv. 114; Vladimir G. Ovchar, ulitsa Parkovaya, 49, kv. 43, all of Podolsk Moskovskoi oblasti, and Alexei Z. Fedosov, ulitsa Burakova, 7, korpus 2, kv. 18, Moscow, all of U.S.S.R.

Filed Apr. 18, 1983, Ser. No. 486,073

Int. Cl.⁴ F28F *19/00, 9/22*

U.S. Cl. 165—134.1 **11 Claims**

1. A multipass, corrosion-proof, air heater, comprising:

heat transfer tubes adapted to carry heating gases therein;

a plurality of ducts adapted to carry air to be heated, each duct being disposed about said heat transfer tubes;

a plurality of passes for air to be heated, each such pass formed by a respective duct;

at least one connecting line, communicating with and interconnecting said plurality of passes in series;

a line for supplying air into a first one of said passes and communicating with said first pass;

4,576,227

HEAT EXCHANGER, IN PARTICULAR FOR A MOTOR VEHICLE, AND SIDE SEALING DEVICE THEREFOR

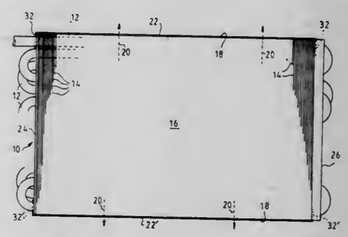
Patrick Cadars, Montigny, France, assignor to Valeo, Paris, France

Filed Jun. 14, 1983, Ser. No. 504,144

Claims priority, application France, Jun. 29, 1982, 82 11419

Int. Cl.⁴ F28D *1/00;* **F28F** *9/02*

U.S. Cl. 165—149 **8 Claims**



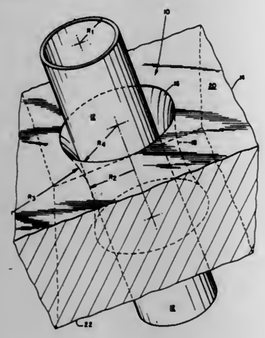
1. A side sealing device for a heat exchanger, in particular of the type intended for use in a motor vehicle and comprising a bundle of tubes fitted with fins, the tubes in the bundle having opposed ends, said bundle having first and second large faces for inlet and outlet of an external heat exchanger fluid and two opposite side faces lying parallel to the general direction of the tubes in the bundle, the improvement wherein the side sealing device comprises a plate substantially in the shape of an elongate rectangle having a longitudinal extent and opposed ends, and resilient snap-fitting means on said plate opposed ends for snap-fitting engagement with the tubes on the heat exchanger, said snap-fitting means comprising pivoted tabs at the opposed ends of the plate resiliently deformable to engage between the ends of the tubes in the bundle in a manner whereby the engaged snap-fitting means precludes movement of said sealing device relative to the heat exchanger independent of other means, said plate being engageable over one of said side faces of the bundle.

4,576,228

MINIMUM WEAR TUBE SUPPORT HOLE DESIGN

Raymond H. Glatthorn, St. Petersburg, Fla., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Feb. 3, 1984, Ser. No. 576,679
Int. Cl.⁴ F28F *1/00*; F28D *7/00*
U.S. Cl. 165—162 **19 Claims**



1. A heat exchanger, comprising:

a heat exchange tube, having a first diametrical extent, through which a first fluid is conducted in connection with a heat exchange process conducted within said heat exchanger; and

a tube support plate having means defining a circumferentially continuous through-bore integrally within said tube support plate so as to extend from the upper surface of said tube support plate to the lower surface of said tube support plate for passage therethrough of said heat exchange tube, said through-bore having a second diametrical extent which is substantially greater than said first diametrical extent of said heat exchange tube so as to define a passageway between said heat exchange tube and the sidewalls of said tube support plate defining said through-bore for flow therethrough of a second fluid in connection with said heat exchange process conducted within said heat exchanger and which permits substantial axial, radial, and angular relative movements between said heat exchange tube and said tube support plate,

said through-bore furthermore having an hour-glass shaped configuartion defined between said upper and lower surfaces of said tube support plate so as to substantially reduce and eliminate excessive wear upon said heat exchange tube as a result of said axial, radial, and angular relative movements being experienced between said heat exchange tube and said tube support plate.

4,576,229

DEVICE FOR FACILITATING RELEASE OF STUCK DRILL COLLARS

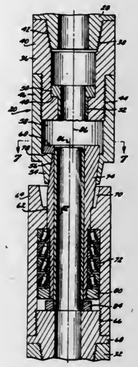
Robert L. Brown, Buena Park, Calif., assignor to DMI Wireline, Inc., Broussard, La.

Filed Jul. 20, 1984, Ser. No. 632,811
Int. Cl.⁴ E21B *31/00*
U.S. Cl. 166—177 **22 Claims**

1. A device adapted to be incorporated into a drill string used in subterranean drilling, for normally functioning as a rigid element capable of transmitting torsional force from a portion of the drill string which is disposed above the device to the portion of the drill string which is disposed below the device, and for facilitating release of stuck portion of the drill string, the device comprising:

first means for fixedly but removably mounting the device intermediately into the drill string to normally occupy a first operative position therein, the entire device being substantially concentric with the longitudinal axis of the drill string in said first operative position;

second means incorporated into the device for placing the device into a second operative position when a greater than predetermined substantially axial force is applied to the device, in the second operative position the portion of the drill string disposed above the device being off-center relative to the portion of the drill string disposed below the device, and



third means incorporated in the device to permit, in the second operative position, free rotation of the portion of the drill string disposed above the device relative to the portion of the drill string disposed below the device, whereby rotation of the portion above the device causes a camming action against walls of the bore hole and a vibration, said camming action and vibration facilitating release of stuck portion of the drill string below the device.

4,576,230

RETRIEVABLE SUBSURFACE WELL CASING SLIP AND PACKER APPARATUS AND METHOD

William T. Tapp, Rte. 2, Box 119E2, Yorktown, Tex. 78164, and Ranson R. Fullinwider, 15922 Haven Hills, Houston, Tex. 77084

Continuation of Ser. No. 555,945, Nov. 29, 1983, abandoned. This application May 6, 1985, Ser. No. 731,592
Int. Cl.⁴ E21B *23/00, 33/129*
U.S. Cl. 166—382 **14 Claims**

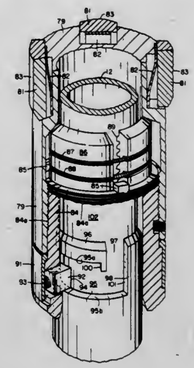
1. A method for running in, setting and retrieving a subsurface well conduit engaging apparatus comprising:

lowering the well conduit engaging apparatus into a well conduit to a desired location;

rotating the well conduit engaging apparatus in clockwise and counterclockwise directions without unlocking the engaging means for setting the apparatus in the well casing;

unlocking the engaging means for engagement with a well conduit by raising and then rotating an elongate support means upon which engaging means are mounted to position a radially biased key to its unlocked position for allowing relative longitudinal motion between the support means and the engaging means;

thereafter raising the support means to fully engage the well casing; and



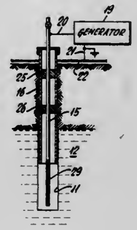
relocking the engaging means from engagement with the well casing by raising the support means without rotation to position the key in its locked position.

4,576,231

METHOD AND APPARATUS FOR COMBATING ENCROACHMENT BY IN SITU TREATED FORMATIONS

Donald J. Dowling, Houston, and Harold A. Palmer, Nacogdoches, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Sep. 13, 1984, Ser. No. 650,140
Int. Cl.⁴ E21B *37/02, 36/04, 43/24*
U.S. Cl. 166—248 **12 Claims**



1. In radio frequency heating of oil shale or tar sand formations in situ wherein a central conductor and a coaxial shield are employed down hole,

a method of combating the encroachment of said heated formation, comprising

applying relative motion to said central conductor periodically for removing said encroaching formation.

5. In radio frequency heating of oil shale or tar sand formations in situ, in combination with

an applicator for electromagnetic propagation of radio frequency energy into said formation,

said applicator comprising a central conductor extending a predetermined distance beyond the end of a coaxial shielding conductor, and

a radio frequency generator for supplying said radio frequency energy to said applicator,

the improvement comprising means associated with said central conductor for moving it relative to said formation whereby encroachment by said formation may be prevented.

4,576,232

NON-CONDENSIBLE GAS INJECTION INCLUDING ALPHA-OLEFIN SULFONATE DIMER SURFACTANT ADDITIVES AND A PROCESS OF STIMULATING HYDROCARBON RECOVERY FROM A SUBTERRANEAN FORMATION

John H. Duerksen, Fullerton; Robert G. Wall, Pinole, and Jack D. Knight, Berkeley, all of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Jun. 24, 1983, Ser. No. 507,835
Int. Cl.⁴ E21B *43/22*
U.S. Cl. 166—274 **26 Claims**

1. A non-condensible gas process of recovering hydrocarbons from a subterranean formation in the absence of steam, wherein said formation is penetrated by at least one injection well and at least one production well, said process comprising:

(a) injecting a non-condensible gas and, including therewith and in the absence of steam, a sufficient amount of an alpha-olefin sulfonate dimer to form a non-condensible gas and alpha-olefin sulfonate dimer foam at an injection well;

(b) continuing to inject said non-condensible gas and alpha-olefin sulfonate dimer foam to assist the movement of hydrocarbons toward said production well, and

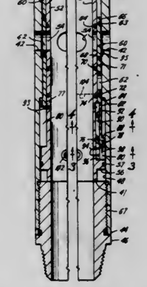
(c) recovering hydrocarbons from a production well.

4,576,233

DIFFERENTIAL PRESSURE ACTUATED VENT ASSEMBLY

Flint R. George, Katy, Tex., assignor to Geo Vann, Inc., Houston, Tex.

Filed Sep. 28, 1982, Ser. No. 425,626
Int. Cl.⁴ E21B *43/112*
U.S. Cl. 166—297 **5 Claims**



1. A method of backsurging a well comprising the steps of:

(1) lowering a tubing string series connected with a vent assembly and a perforating gun into a well;

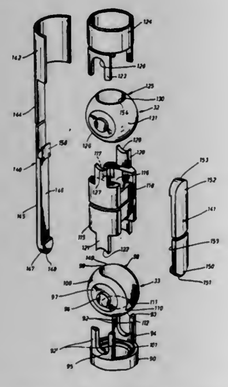
(2) filling the tubing string with a fluid to a predetermined level as the tubing string is lowered into the well thereby creating a hydrostatic head within the tubing string, the hydrostatic head being lower than an anticipated pressure in a portion of the well to be backsurged;

(3) passing fluid pressure from the hydrostatic head through a passageway in the vent assembly;

(4) applying the fluid pressure through the passageway onto a piston reciprocably mounted in the vent assembly;

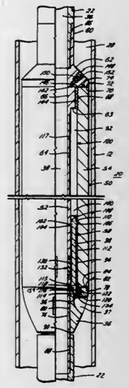
(5) moving the piston from a closed position to an open position for opening a flow path between the interior and exterior of the tubing string; and
(6) detonating the perforating gun to perforate the well.

4,576,234
FULL BORE SAMPLER VALVE
James M. Upchurch, Sugar Land, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.
Continuation of Ser. No. 419,251, Sep. 17, 1982, abandoned. This application Apr. 29, 1985, Ser. No. 727,609
Int. Cl.[4] E21B *34/10, 43/12*
U.S. Cl. 166—319 14 Claims



1. A well tool adapted to be connected in a pipe string and positioned in a well bore for collecting a sample of fluids within said pipe string and comprising: an outer tubular member:
first and second inner members cooperatively arranged within said outer member for defining an axial passage therein and enabling at least said first inner member to move longitudinally within said outer member;
valve means controlling communication through said axial passage and including first and second valve members cooperatively mounted on said first and second inner members and respectively arranged to pivot about a transverse axis between a passage-opening position and a passage-closing position, each of said valve members having an outwardly-facing opening bounded by first and second transverse edge portions that are spatially disposed on opposite sides of said transverse axis of that valve member and laterally offset therefrom;
pressure-responsive means cooperatively arranged for moving said first inner member longitudinally within said outer member;
first actuator means on said outer member and cooperatively arranged to be engaged with said first transverse edge portion of said first valve member upon longitudinal movement of said first inner member for rotating said first valve member to its said passage-closing position; and
second actuator means on said outer member and cooperatively arranged to be engaged with said second transverse edge portion of said first valve member upon rotation thereof toward its said passage-closing position and moved against said first transverse edge portion of said second valve member for rotating said second valve member to its said passage-closing position.

4,576,235
DOWNHOLE RELIEF VALVE
William B. Slaughter, Angleton, and Henry C. Haynie, Sr., Houston, both of Tex., assignors to S & B Engineers, Houston, Tex.
Filed Sep. 30, 1983, Ser. No. 537,969
Int. Cl.[4] E21B *34/10, 34/08*
U.S. Cl. 166—374 27 Claims

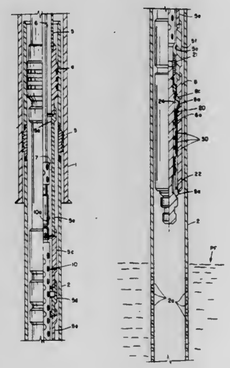


1. A well apparatus adapted for connection in series with a pipe string, the pipe string extending into a producing well and forming a casing annulus with the casing and having a flow passage therethrough for the flow of hydrocarbons through the pipe string to the surface, comprising:
a tubular member having connection means at each end for connection in series with the pipe string, said member having an outer barrel and an inner mandrel forming a chamber therebetween and having fluid communication means providing fluid communication through said barrel and mandrel and between the casing annulus and the flow passage;
said inner mandrel having an internal flow bore having a common inner diameter with the flow passage through the pipe string and being coaxial with the flow passage so as to become a part of the flow passage;
said barrel having an outer surface exposed to the well fluids in the casing annulus;
said chamber circumscribing the flow passage for the hydrocarbons;
barrier means for closing and opening said fluid communication means;
said barrier means responsive to an increase in the pressure in the casing annulus for opening said fluid communication means and allowing well fluids from the casing annulus to flow through said barrel and mandrel and into the flow passage to control the well.

23. A method for controlling a producing well having production tubing and casing extending downwardly therein and a packer sealing the annulus formed by the tubing and the casing, comprising the steps of:
series connecting a relief valve in the production tubing adjacent and above the packer;
closing a fluid passage in the relief valve extending between the flowbore of the tubing and the annulus;
running in the well the relief valve and the production tubing concurrently;
passing hydrocarbons through the relief valve and up the production tubing to the surface;
increasing the static head pressure in the annulus;
activating the relief valve;

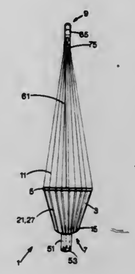
increasing the magnitude of the hydraulic force exerted on the valve following activation of the valve;
opening said fluid passage;
flowing drilling fluids from the annulus into the flowbore of the tubing;
forming a flowbore static head pressure which is higher than the formation pressure thereby killing the well.

4,576,236
PERFORATION AND ISOLATION APPARATUS
Gregg W. Stout, Montgomery; John A. Nelson, Algernon Spring, both of Tex., and John H. Crisp, Aberdeen, Scotland, assignors to Baker Oil Tools, Inc., Orange, Calif.
Filed May 10, 1984, Ser. No. 608,900
Int. Cl.[4] E21B *33/12*
U.S. Cl. 166—386 22 Claims



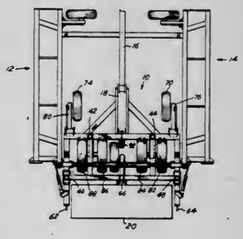
1. Apparatus for plugging a subterranean well conduit above a perforated zone, comprising: insertable means in the well conduit above the perforated zone; said insertable means defining a seal bore and a first upwardly facing shoulder above said seal bore and a second downwardly facing shoulder below said seal bore; a plug assembly comprising a central body portion carried by a work string; a downwardly extending sleeve assembly slidably and sealably mounted on said central body portion and secured to said central body portion by a first releasing means; sealing means mounted on the exterior of said sleeve assembly and cooperating with said seal bore in slidable, sealable relationship; means closing the bore of said sleeve assembly; a first radially shiftable latching means mounted on said sleeve assembly below said sealing means, said first latching means being freely passable in one direction through said seal bore and said second shoulder in said nipple but lockingly engagable with said second shoulder upon movement of said sleeve assembly in said nipple in another direction whereby an applied upward force to said central body portion releases said first releasing means; means including a second releasable means for connecting the upper portions of said central body portion to a work string; a second radially shiftable latching means mounted on said sleeve assembly and normally positioned in a retracted, inoperative position relative to said first shoulder; means for camming said second radially shiftable latching means outwardly to an engaged position with said first shoulder by upward movement of said central body portion relative to said sleeve assembly subsequent to release activation of said first releasing means, whereby said plug assembly is securely and sealably latched in said nipple and may be left in position by releasing said second releasing means.

4,576,237
FIRE FIGHTING BUCKET ASSEMBLY FOR AIRCRAFT
Donald B. Arney, Suite 1001, 2191 W. 39th Ave., Vancouver, British Columbia, Canada V6M 1T7
Continuation-in-part of Ser. No. 374,790, May 4, 1982, Pat. No. 4,474,245. This application Jul. 16, 1984, Ser. No. 631,083
Claims priority, application United Kingdom, Aug. 31, 1983, 8323286
Int. Cl.[4] A62C *28/00*
U.S. Cl. 169—53 23 Claims



1. A collapsible fire fighting bucket to be suspended from an aircraft and to be filled from an open body of water, the bucket having suspending means for suspending the bucket from the aircraft, a dump valve and associated valve operating means, the bucket being characterized by:
(a) an open bucket body made of pliable material and having an upper rim defining an upper opening, a side wall, and a bottom,
(b) upper rim stiffening means cooperating with the upper rim to maintain the upper opening at an essentially constant size so that the bucket remains open while operative,
(c) capacity adjusting means cooperating with the side wall for adjustably varying side wall circumference remote from the rim, so as to vary the capacity of the bucket with a negligible change in size of the opening, water within the bucket extending essentially all of the side wall axially for all capacities of the bucket so that there is a negligible change in length of the bucket as the capacity of the bucket is varied.

4,576,238
FOLDING OUTRIGGER ATTACHMENT FOR FARM IMPLEMENTS
Michael L. Spencer, Jonesboro, Ark., assignor to Marliss Industries, Inc., Jonesboro, Ark.
Filed Aug. 22, 1983, Ser. No. 525,118
Int. Cl.[4] A01B *73/00*
U.S. Cl. 172—311 9 Claims



1. A folding implement comprising, in combination:

a center carriage having ground engaging wheels to support the carriage;

at least one wing section cooperative with and hingedly attached to the carriage for pivoting the wing section between a field travel, extended position substantially transverse to the direction of carriage travel and a road travel, folded position substantially aligned with the direction of carriage travel;

means for connecting the wing section to the carriage, said means for connecting having an upstanding wing support member and a first hinge connection defining an axis substantially aligned with the direction of carriage travel, said first hinge connection connecting the carriage to the wing support member and defining means for pivoting the wing section to follow the contour of the ground independent of the carriage when the wing section is in the extended position;

said means for connecting further including a second hinge connection defining a substantially upright axis, said second hinge connection connecting the wing section to the wing support member and defining means for pivoting the wing section about the upright axis between the extended position and the folded position; and

a flexible linking member connected between the wing support member and the carriage including means for altering the length of the linking member, said linking member controlling the extent of pivotal motion of the wing support member about an axis substantially aligned with the direction of carriage travel and further providing cantilever support for the wing section when the wing section is in the folded position.

4,576,239

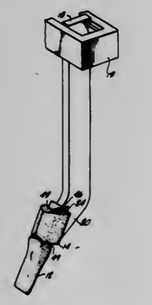
SCARIFIER TOOTH ASSEMBLY

Richard L. Launder, 8107 San Lucas Dr., Whittier, Calif. 90605

Filed Aug. 27, 1984, Ser. No. 644,627

Int. Cl.⁴ E02F *9/28*; A01B *23/02*

U.S. Cl. 172—751 **15 Claims**



1. A scarifier tooth assembly adapted to be carried by a shank mounted on earth excavation equipment, said assembly comprising an integrally formed point defining a forward digging portion and a rear shaft portion, said shaft portion defining a lower flat elongated bearing surface adapted to mate with and bear against a portion of the shank and an upper curvilinear bearing surface, said point defining means integrally formed therewith and projecting therefrom for extending laterally about portions of the shank to prevent lateral movement of said point with respect to the shank upon said lower flat bearing surface being brought into a mating relationship with the shank, and an integrally formed clamp member defining a curvilinear interior bearing surface and flange means, said interior bearing surface being adapted to abut and mate with said upper curvilinear bearing surface on said shaft portion of said point, said flange means being adapted to engage the shank upon said clamp member being disposed about said shaft portion of said point and said curvilinear interior bearing surface being brought into abutment and mating relationship with said curvilinear bearing surface on said shank portion of said point such that upon urging said point and clamp member onto said shank, said shaft portion of said point is wedged between the shank and said curvilinear interior bearing surface of said clamp member thereby releaseably securing said point to said clamp member and said shank.

4,576,240

HYDRAULIC IMPACT DEVICE

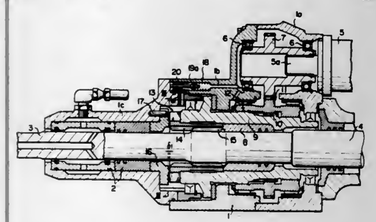
Minoru Matsumoto, Katano, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Oct. 19, 1982, Ser. No. 435,247

Claims priority, application Japan, Oct. 19, 1981, 56-154055

Int. Cl.⁴ B23B *45/16*

U.S. Cl. 173—105 **2 Claims**



1. A hydraulic impact device for rock drilling, comprising:

a housing comprising a main casing, a gear casing containing a lubricating fluid, and a cover removably mounted to said main casing;

an impact piston slidably mounted within said housing main casing;

hydraulic means for driving said impact piston;

a shank rod mounted within said removable housing cover, said shank rod being adapted to be struck at one end thereof by said impact piston;

motor means for imparting a rotary motion to said shank rod, said motor means being mounted to said housing;

a sleeve rotatably mounted around said shank rod and having a peripheral end face;

a chuck having a peripheral end face and being splined to said shank rod;

clutch means for engaging said sleeve with said chuck comprising a dog clutch positioned in a chamber of said main casing and formed by alternating projections and recesses on said peripheral end face of said sleeve and corresponding alternating projections and recesses on said peripheral end face of said chuck adapted to engage said alternating projections and recesses to said sleeve;

transmission means accommodated in a chamber of said gear casing for transmitting the rotary motion of said motor means to said sleeve;

a passage formed in said main casing between said gear casing chamber and said chamber accommodating said dog clutch; and

valve means mounted in said passage and operating to establish communication between said gear casing chamber and said dog clutch chamber when said cover is mounted to said main casing, and to block communication therebetween when said cover is removed from said main casing, whereby said lubricating fluid is introduced into said dog clutch chamber as long as said cover is mounted to said main casing.

4,576,241

TOOL ASSEMBLY AND HANDLE ASSEMBLY THEREFOR

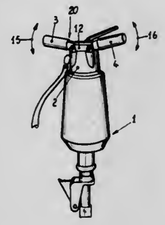
Henri Emonet, 12 Rue R.P. Couturier, Montbrison (Loire), France

Filed Nov. 21, 1983, Ser. No. 553,409

Claims priority, application European Pat. Off., Feb. 3, 1983, 83420020.6

Int. Cl.⁴ B25D *17/04*

U.S. Cl. 173—162 H **10 Claims**



1. A tool assembly comprising:

a tool having a longitudinal axis;

a head fixedly interconnected with said tool;

first handle means having a first end pivotally interconnected with said head such as to pivot about a first pivot axis perpendicular to said longitudinal axis, and a second end opposite said first end;

second handle means formed non-integrally with said first handle means and having a first end pivotally interconnected with said head such as to pivot about a second pivot axis parallel to said first pivot axis and spaced away therefrom, and a second end opposite said first end, the plane of said first pivot axis being disposed between said first end and said second end of said second handle means, and the plane of said second pivot axis being disposed between said first end and said second end of said first handle means, whereby said first handle means crosses said second handle means, said first and second pivot axes together defining a plane perpendicular to said longitudinal axis;

first biasing means interposed said first handle means and said head and biasing said second end of said first handle means away from said head in a direction such that said first handle means extends from said first end towards said second end thereof in a direction generally towards said second pivot axis; and

second biasing means interposed said second handle means and said head and biasing said second end of said second handle means away from said head in a direction such that said second handle means extends from said first end towards said second end thereof in a direction generally towards said first pivot axis.

4,576,242

PERISTALTIC DOWN-HOLE DRILLING MOTOR

Richard H. Mundell, Rijswijk, Netherlands, assignor to Shell Oil Company, Houston, Tex.

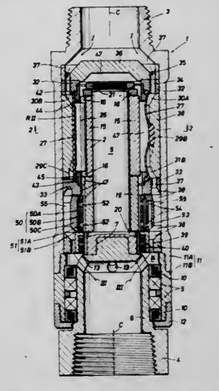
Filed Aug. 17, 1984, Ser. No. 641,636

Claims priority, application United Kingdom, Oct. 26, 1983, 8328633

Int. Cl.⁴ E21B *3/12*; F04B *43/08*

U.S. Cl. 175—107 **18 Claims**

1. Peristaltic motor comprising motor parts including a stator suitable to be operatively coupled to the lower end of a drill string and a rotor suitable to be operatively coupled to a drill bit, said motor parts being rotatable relative to each other about a central axis, one of said motor parts comprising a co-axial tubular section and a single membrane being secured to said section in such a manner that therebetween a series of breathing working chambers are created, the other of said motor parts comprising a carrier body having grooves therein and a plurality of rollers of a number greater than the number of working chambers, each of said rollers contacting the membrane at regular intervals with said tubular section, wherein the rollers are rotatably supported in said grooves of the carrier body such that each roller is rotatable relative to said carrier body about an axis of rotation being substantially parallel to and at a fixed distance from the central axis of the motor.



4,576,243

METHOD AND APPARATUS FOR WEIGHING BULK MATERIALS

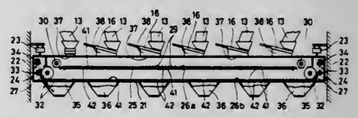
Masato Matsumoto, Osaka, Japan, assignor to Automatic Mechanical System Engineering Co., Osaka, Japan

Filed Apr. 27, 1984, Ser. No. 604,764

Claims priority, application Japan, Dec. 13, 1983, 58-236576[U]; Dec. 13, 1983, 58-193469[U]; Dec. 22, 1983, 58-198015[U]; Dec. 22, 1983, 58-198016[U]

Int. Cl.⁴ G01G *13/02, 19/22, 23/14*

U.S. Cl. 177—119 **8 Claims**



1. A method for weighing a bulk material, comprising the steps of:

supplying the material from a supply port disposed over a conveyor surface on to said conveyor surface until said supply port gets blocked by the material itself,

moving said conveyor surface so that the material will fall through said supply port continuously and so that the pressure applied by the material above said supply port to said conveyor surface will be constant and while measuring the weight of the material stacked on said conveyor surface, and

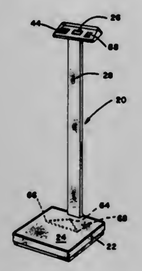
shutting said supply port as soon as the weight of the material reaches a predetermined value.

4,576,244

DIETER'S WEIGHING SCALE

Willard L. Zeigner, San Ramon, and John A. MacIntosh, Cupertino, both of Calif., assignors to Zemco, Inc., San Ramon, Calif.

Filed Feb. 23, 1984, Ser. No. 582,892
Int. Cl.⁴ G01G *19/00, 19/22, 23/18, 23/38*
U.S. Cl. 177—245 **4 Claims**



1. A talking electronic scale for encouraging the use of and adherence to a preset diet program, comprising:
- weighing means for determining the weight of a person on the scale,
- display means connected to said weighing means for displaying said weight,
- comparison means for comparing his present weight, his most recent past weight, and his goal weight,
- memory means connected to said weighing means for storing a goal weight for the person and his weight each time he weighs, along with the date of each stored weight, and a series of comments to be voiced,
- voice synthesis means connected to said comparison means and said memory means for providing preselected said comments appropriate to said comparison,
- audio means connected to said voice synthesis means for speaking those comments audibly to the user,
- manually activated individual identification means, for use by the user in his first weighing of a diet program coupling his scale identify and initial weight and placing them in said memory means,
- recognition means connected to said memory means for subsequently identifying that user each time he weighs by the relative closeness of his weight to his last previous weight, so long as he does not vary from that weight by more than a preselected amount, and
- address means connecting said recognition means to said voice synthesis means so that the comments are addressed to the user audibly by stating his scale identity.

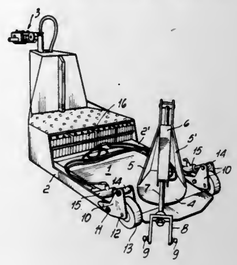
4,576,245

SELF-PROPELLED PEDESTRIAN-CONTROLLED TRACTOR FOR TOWING HELICOPTERS

Gaetano Oldani, Via Stromboli, 20, 20089 - Rozzano (Milano), Italy

Filed Mar. 1, 1984, Ser. No. 584,997
Claims priority, application Italy, Mar. 21, 1983, 21198/83[U]
Int. Cl.⁴ B62D *51/04, 21/14;* **B64C** *25/50*
U.S. Cl. 180—14.1 **1 Claim**

1. In a self-propelled pedestrian-controlled tractor for towing helicopters comprising essentially a platform mounted on three wheels, one of which is a driving and steering wheel, the two other of said wheels being swivel mounted on the side of said platform by means of pairs of parallel shaped plates being pivotally connected and provided with bearings, said plates being connected by means of an upper cross member to double-acting hydraulic jacks, said drive wheel having an electromagnetic brake and being effective to move at a controllable speed under control by an electronic unit the controls whereof are accomodated on a steerable control bar, the improvement wherein on said platform there is pivotally mounted a saddle plate piece having shaped uprights which form a supporting structure for a double-acting hydraulic jack the piston rod



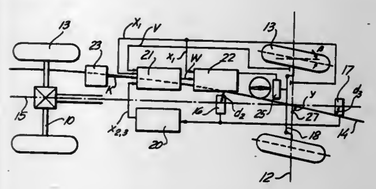
whereof has a yoke having two legs attached thereto, the said two legs of said yoke being adapted to securely engage with the front wheel of a helicopter to be towed so as to drag said wheel along on said saddle plate piece to be pivotally supported thereby about a substantially vertical axis.

4,576,246

METHOD AND DEVICE FOR AUTOMATICALLY STEERING A VEHICLE

Michael Stieber, Weston, Canada; Peter Meinke, Steinebach, and Gunther Dreher, Munich, both of Fed. Rep. of Germany, assignors to M.A.N. Maschinenfabrik Augsburg-Nurnberg AG, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 320,785, Nov. 12, 1981, abandoned. This application Dec. 28, 1984, Ser. No. 687,193
Claims priority, application Fed. Rep. of Germany, Nov. 13, 1980, 3042723
Int. Cl.⁴ G05D *1/00*
U.S. Cl. 180—168 **7 Claims**



1. A method for automatically steering a trackless vehicle along a routing or guide line, comprising the steps of:
- sensing the distance between a reference point on the vehicle and the guide line, and producing a position signal representative thereof, the position signal being affected by interference encountered by the vehicle, such as disturbances caused by winds and rough roads,
- producing a datum signal corresponding to the position signal which would be produced if the vehicle traveled in an undisturbed manner along the guide line,
- producing a curvature-sensitive steering signal component which varies only with the shape of the guide line,
- using the position signal and datum signal to produce an interference-sensitive steering signal component which varies only with the interference encountered by the vehicle,
- combining the curvature-sensitive steering signal component and the interference-sensitive steering signal component to produce a steering signal, and
- using the steering signal to control the steering of the vehicle

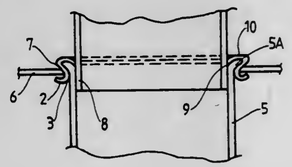
so as to minimize the distance between the reference point on the vehicle and the guide line.

4,576,247

LOCKING MEMBER

Denis Thorpe, Titahi Bay, New Zealand, assignor to Development Finance Corporation of New Zealand, Wellington, New Zealand

Filed Sep. 22, 1983, Ser. No. 534,831
Int. Cl.⁴ F01N *7/18*
U.S. Cl. 181—243 **6 Claims**



1. A muffler including:
- a baffle plate having at least one aperture;
- at least one muffler tube extending into the aperture in the baffle plate; and
- a locking collar formed separately from both the baffle plate and the muffler tube, and connecting the muffler tube to the baffle plate, the locking collar including
- a side wall of a substantially circular cross section located between the plate and the tube,
- a first flange extending inwardly from a first end of the side wall, deformed over a first end of the tube, and capturing the first end of the tube between the side wall and the first flange thereby to mechanically join the tube to the locking collar, and
- a second flange spaced from the first flange, extending outward from a second end of the side wall, seating against the plate, and capturing the plate between the second flange and the side wall thereby to mechanically join the plate to the locking collar.

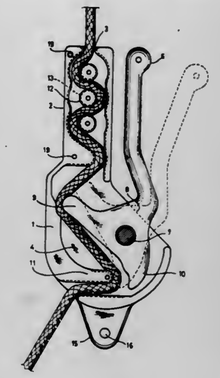
4,576,248

RESCUE AND GLIDER DEVICE

Dan Marom, Tamar Street 32/1, Neve Monosson, Israel

Filed Apr. 19, 1985, Ser. No. 725,008
Claims priority, application Israel, May 2, 1984, 71719
Int. Cl.⁴ A62B *1/14*
U.S. Cl. 182—5 **6 Claims**

1. A rescue and glider device for the purpose aforesaid comprising a shallow housing, a cable, an inlet opening for the cable and an outlet opening for the cable, a substantially T-shaped lever, the leg of the T-shape extending to the outside being pivotally mounted within the housing at the juncture of the leg and webs of the T-shape, one part of the web of the lever which is at one side of the leg extending toward said inlet opening and being longer than the distance from said pivot to the corresponding side wall of the housing, the other part of the web at the opposite side of the leg extending towards the outlet opening, guide means being provided to guide the cable from the inlet towards the web of said lever, the automatic rotation of said lever into a cable locking position being caused



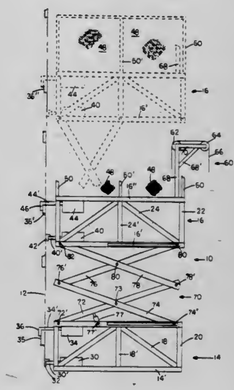
and accomplished by a load on said cable, while the release thereof is effected by the manual rotation of said lever.

4,576,249

DEVICE FOR FIGHTING FIRES IN HIGHRISE BUILDINGS AND TOWERS

John P. Zima, 25058 N. Chestnut St., Newhall, Calif. 91321

Filed Sep. 24, 1984, Ser. No. 653,160
Int. Cl.⁴ E04G *3/16, 5/04*
U.S. Cl. 182—82 **5 Claims**



1. A device for fighting fires in highrise buildings and towers, comprising:
- a first lower platform frame means upon which firefighters may stand for support;
- a second upper platform frame means upon which firefighters may stand for support above said first lower platform frame means and interconnected therewith;
- means interconnecting said first lower platform frame means and said second upper platform frame means for adjustably varying the distance between said first and second supporting frame means for selective use thereby;
- said first and second platform frame means comprising means for releasably and fixedly mounting said platform

frame means to a portion of a building adjacent a particular story of a building on fire such that the upper platform frame means and lower platform frame means may be moved along the side of the building;

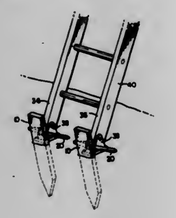
each of said means for releasably and fixedly mounting comprising a retractable hook means movable between a first locking position and a second unlocking position, said hook means being attached to a story of a building on fire in said first position; and a first and second extensible and retractable support means mounted to said first and second platform frame means, respectively, for movement between two positions;

said support means being mounted below said hook means on each respective platform frame means.

4,576,250
LADDER STOP

Robert Marish, 330 Boro Rd., Primos, Pa. 19018

Filed Jun. 3, 1985, Ser. No. 740,585
Int. Cl.⁴ E06C *7/46*
U.S. Cl. 182—108 **5 Claims**

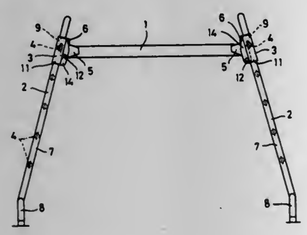


1. A device for effectively preventing ladder slippage for use with ladders that are positioned against structures, for use on non solid surfaces, consisting of a pointed anchoring spike upon which are mounted a pair of parallel arms wherein the said parallel projecting arms are formed from a single bracket welded to the back of said spike and bent downward to an angle ranging from 10° to 45° in reference to said spike.

4,576,251
FOLDING SCAFFOLD

Masahiro Matsuura, 19-21, Toyono-cho, and Eiichi Aikawa, 16-10, Ikedahigashimachi, both of Neyagawa-shi, Osaka, Japan

Filed Jul. 15, 1985, Ser. No. 755,143
Int. Cl.⁴ E04G *1/34*
U.S. Cl. 182—152 **1 Claim**



1. A scaffold comprising:

a scaffold plate;

a pair of ladders each having a plurality of crossbars and mounted at each end of said scaffold plate;

hook members each secured to each corner of said scaffold plate; and

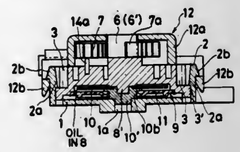
holder members each pivotally mounted on said respective hook members for holding said ladder;

said hook members each formed with a notch to receive one of the crossbars on said ladder and having a means for holding said holder member to limit the tilting of said holder member toward said scaffold plate.

4,576,252
ROTATION DAMPER

Nobuaki Omata, Yokohama, Japan, assignor to Nifco Inc., Yokohama, Japan

Filed Apr. 10, 1984, Ser. No. 598,534
Claims priority, application Japan, Apr. 15, 1983, 58-55429[U]
Int. Cl.⁴ F03G *1/00;* **F16D** *57/00;* **E05F** *3/14*
U.S. Cl. 185—39 **4 Claims**



1. A rotation damper comprising:

a base member;

a gear wheel rotatably mounted on said base member;

damping means affixed to one side of said gear wheel for braking gear wheel rotation in both directions;

a cap member covering said gear member and said damping means secured to said base member;

spring means within said cap member affixed to the other side of said gear wheel on one end and affixed to said cap member at its other end for providing a restoring force in a direction opposite that of desired rotation of said gear wheel; and

means for locking said gear wheel in a desired position and preventing said restoring force of said spring means from rotating said gear wheel in a direction opposite that of the desired rotation of said gear wheel and being capable of releasing said gear wheel to allow said restoring force to rotate said gear wheel.

4,576,253
VELOCITY CONTROL APPARATUS FOR AN ELEVATOR

Tooru Tanahashi, Gifu, and Isao Tadenuma, Inazawa, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 16, 1984, Ser. No. 631,303
Claims priority, application Japan, Jul. 18, 1983, 58-130711
Int. Cl.³ B66B *1/44*
U.S. Cl. 187—29 R **11 Claims**

1. A velocity control apparatus for an elevator wherein a motor for running a cage is controlled thereby to perform a velocity control; comprising:

(a) a converter which converts alternating current fed from a power source, into direct current;

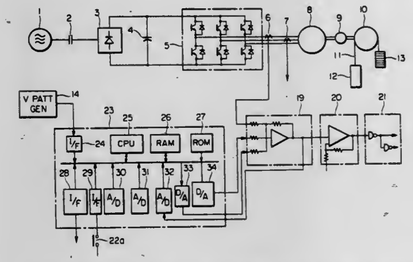
(b) a capacitor which is connected across D.C. output terminals of said converter and which smooths the D.C. output;

(c) an inverter which receives the smoothed D.C. output and which inverts it into alternating current so as to supply the A.C. output to said motor;

(d) a detector which detects the A.C. output of said inverter;

(e) a control device which delivers a signal for controlling

said inverter, while varying it on the basis of the detected output of said detector; and

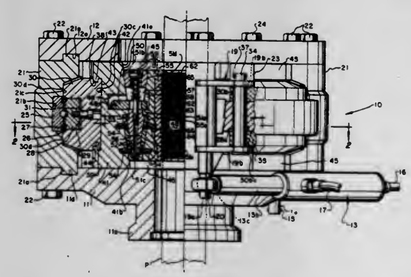


(f) a storage device which detects the output of said detector when said inverter is not generating the A.C. output and which sends it to said control device.

4,576,254
HYDRAULICALLY ACTUATED SLIP ASSEMBLY

Don C. Cox, Roanoke, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Feb. 6, 1984, Ser. No. 577,015
Int. Cl.⁴ B23Q *5/033*
U.S. Cl. 188—67 **18 Claims**



1. An improved hydraulically actuated double acting slip assembly comprising:

(a) housing means including

a lower plate with a connector thereon and a passage for pipe therethrough,

an upper plate with a passage for pipe therethough, and

ring segments, each having a horizontal groove therein, positioned between said plates and around said pipe passages and connected to said plates;

(b) radial guiding means disposed in said housing means around said pipe passages;

(c) gripping means, slidably mounted in said guiding means for gripping pipe passing through said plate passages, including double acting slip means for gripping gripped pipe tighter, automatically actuated by thrust on gripped pipe sufficient to cause vertical movement of the gripped pipe including,

wedges mounted in said guiding means, each wedge having a female 'T' slot across its outer surface and upper and lower downwardly and inwardly inclined surfaces on its inner face and a recess in the upper inclined surface, said recess having a lower planar surface, secondary wedges, mounted on said wedges, each having upper and lower downwardly and inwardly inclined surfaces on its outer face, engaging said wedge inclined surfaces,

means slidably connecting said secondary wedges to said wedge for downward movement, each secondary wedge also having upper and lower downwardly and outwardly inclined surfaces on its inner face and a hole between said secondary wedge upper inclined surfaces on its inner and outer faces, said hole having a lower planar surface,

slip means, mounted on said seconary wedges, including a slip having upper and lower downwardly and outwardly inclined surfaces on its outer face and a recess in said slip upper inclined surface, said recess having a lower planar surface and said slip inclined surfaces engaging said secondary wedge inner face inclined surfaces,

means for slidably connecting said slip means to said secondary wedges for upward movement, a bar having a first hole therethrough, pivotally mounted in each wedge recess, and extending through the secondary wedge hole and into the slip recess, and

biasing means, disposed in each secondary wedge, biasing said bar downwardly and aligning the lower planar surfaces of the wedge recess, the secondary wedge hole and slip recess, to position the secondary wedge and slip means in position for pipe grip tightening actuation;

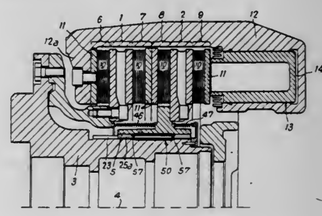
(d) single cylinder actuating means for moving said gripping means inwardly and outwardly in said guiding means to grip and ungrip pipe; and

(e) means preventing said actuating means from being actuated to release gripped pipe when thrust on gripped pipe has actuated said slip means.

4,576,255
MULTI-DISC BRAKES

Jean-Claude Méry, Pavillons sous Bois; Jean-Jacques Carré, Le Raincy, and Alain Thioux, Chennevières, all of France, assignors to Societe Anonyme D.B.A., Paris, France

Filed Jun. 21, 1984, Ser. No. 622,916
Claims priority, application France, Jun. 30, 1983, 83 10918
Int. Cl.⁴ F16D *55/36*
U.S. Cl. 188—71.5 **7 Claims**



1. A multi-disc brake comprising a first rotary disc fixed to a hub which is connected to a component to be braked, a second rotary disc mounted on the hub and slidable in a direction parallel to an axis of the hub, axes of the hub and discs coinciding with one another to form a common axis, and an assembly of friction pads incorporating friction linings for engaging faces of the discs by means of an actuating device, the second disc carried by an internally splined sleeve slidable on an externally splined part of the hub, mutual engagement of the splines insuring that second disc rotates with the hub, characterized in that the brake includes an elastic element disposed between the sleeve and hub to generate a circumferential preload torque about the common axis and engage flanks of the splines of the hub and sleeve so that braking force is transmitted from the discs to the hub, the elastic element disposed and expanded within a housing formed by elimination of at least one spline between a spline of the hub and a spline of the sleeve, the elastic element comprising a block of resilient material having a lateral width approximating a circumferential width of the housing and expanded circumferentially as a result of insertion of a pin into a longitudinal inner opening extending in the block, the elastic element bearing on adjacent splines which define radial sides of the housing and biasing the adjacent

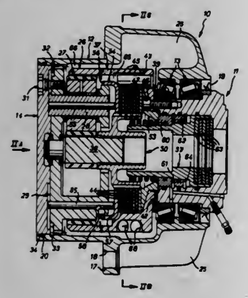
splines circumferentially apart from one another, and the block being formed by two half-blocks coupled symmetrically along a central radial plane of the housing each half-block including half of the longitudinal inner opening receiving the pin.

4,576,256

WHEEL HUB WITH BUILT-IN BRAKE

Léonce Rogier, Saint Denis, France, assignor to SO.M.A. Europe Transmissions Societe Nouvelle Mecanique et Automobile, Saint Etienne, France

Filed Nov. 2, 1983, Ser. No. 548,008
Claims priority, application France, Nov. 3, 1982, 82 18401
Int. Cl.⁴ B60B *27/00*; F16D *55/40*
U.S. Cl. 188—71.6 **13 Claims**



1. A hub for a wheel, said hub having a built-in brake assembly and comprising a fixed support sleeve, a hollow body which is mounted rotatably on said sleeve and constitutes a casing adapted to contain a hydraulic lubrication and cooling fluid, an annulus disposed within said hollow body so as to leave an annular space between said annulus and said body, said brake assembly being within said annulus and featuring at least one rotary disk which is adapted to be constrained to rotate with an associated wheel shaft, and scooping means associated with said annulus for force feeding the hydraulic fluid radially inwardly from said annular space between said annulus and said hollow body into the interior of said annulus in order to cool and lubricate the brake disk therein.

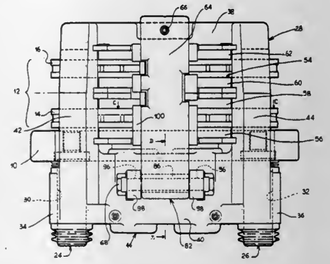
4,576,257

DISC BRAKE WITH REMOVABLE CALIPER REINFORCING ARM

Jean J. Carré, Le Raincy, and Guy Meynier, Aulnay Sous Bois, both of France, assignors to Societe Anonyme D.B.A., Paris, France

Filed Jul. 11, 1984, Ser. No. 629,931
Claims priority, application France, Jul. 13, 1983, 83 11664
Int. Cl.⁴ F16D *55/00*
U.S. Cl. 188—73.32 **7 Claims**

1. A disc brake, of the type incorporating a caliper astride a rotating assembly to be braked, the caliper being formed by two axially spaced-apart beams positioned axially on each side of the rotating assembly and by two circumferentially spaced-apart arms passing over the periphery of the rotating assembly and joining the two beams to one another, the two spaced-apart arms and the two axially spaced-apart beams defining a radial opening for mounting and removing friction components which cooperate with the rotating assembly to be braked, characterized in that the brake comprises a third caliper arm providing a rigid connection between the axially spaced-apart beams in order to strengthen the caliper, the third caliper arm lying above and extending over the opening and having one end pivotally mounted about a hinge shaft on one of the beams and the other end rigidly joined without play to the other beam, the brake having an eccentric system coaxial with the hinge shaft of the third arm, the hinge shaft formed by a bolt having a cylindrical shaft portion cooperating with a bore formed in the one beam, said cylindrical shaft portion including a longitudinal groove receiving a longitudinal key which fixes firmly in rotation thereto a cylindrical bush having



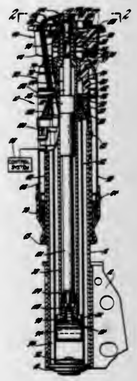
a key-receiving groove in an eccentric bore in which the cylindrical shaft portion is disposed, the bush having an outer cylindrical surface disposed within a bore formed in the third arm so that rotation of the bolt and rotationally fixed bush causes said third arm to be displaced axially and provide said rigid connection.

4,576,258

ADAPTIVE RIDE HYDRAULIC DAMPER

Andrew M. Spisak, Youngstown, and Robert L. Adduci, Girard, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 24, 1984, Ser. No. 685,857
Int. Cl.⁴ F16F *9/50*
U.S. Cl. 188—299 **5 Claims**



1. A hydraulic damper for connection between sprung and unsprung portions of a wheeled vehicle and operative to dampen the ride motions of the vehicle comprising: a first tubular member having a hydraulic fluid therein operatively connected to one of said portions of said vehicle, a piston operatively mounted in said first tubular member and having valve means moved to selected positions therein to vary control the flow of fluid therethrough when stroking within said cylinder tube, a hollow piston rod operatively connected to said piston and extending upwardly through the end of said damper for connection with the other of said portions of said vehicle, electrically energizeable actuator means operative mounted within said hollow piston rod for moving said valve

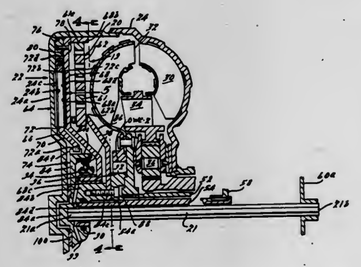
means to said selected positions, control means for electrically energizing and controlling said actuator means, conductor means electrically connecting said controls to said actuator means, said conductor means comprising an insulated bulkhead fixed within said hollow piston rod and electrically connected to said actuator means, and seal means carried by said insulated bulkhead with sealing contact with the inner wall of said hollow piston rod to provide fluid sealing of said piston rod to block the escape of fluid from said damper during operation thereof.

4,576,259

TORSION DAMPING MECHANISM WITH VARIABLE DAMPING

Warren G. Bopp, Farmington Hills, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed May 29, 1984, Ser. No. 615,017
Int. Cl.⁴ F16D *3/80, 35/00*
U.S. Cl. 192—3.21 **10 Claims**



1. A torsional damping mechanism adapted for connection between input and output drives of a torque transmitting driveline; first and second members mounted for relative rotation about a common axis for clutching coaction therebetween to damp driveline torsionals; resilient means interconnecting the members in parallel with the clutching coaction for transmitting steady-state driveline torque between the drives and for isolating driveline torsionals; the improvement comprising:

clutching surfaces defined by the members and retained against axial and radial movement relative to each other, said surfaces operative to effect the clutching coaction between the members and shaped to vary the amount of clutching coaction for varying the amount of damping of said driveline torsionals in response to the level of steady-state driveline torque being transmitted by the resilient means.

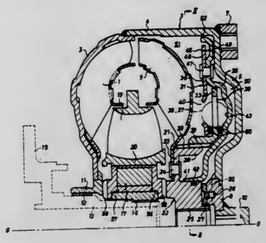
4,576,260

LOCK-UP CLUTCH OF A TORQUE CONVERTER

Masahiko Koshimo, Higashi-Osaka, Japan, assignor to Kabushiki Kaisha Daikin Seisakusho, Neyagawa, Japan

Filed Oct. 19, 1983, Ser. No. 543,645
Claims priority, application Japan, Oct. 20, 1982, 57-185691
Int. Cl.⁴ F16H *45/02*; F16D *3/14, 3/66*
U.S. Cl. 192—3.31 **5 Claims**

1. A lock-up clutch of a torque converter comprising a disc hub adapted to be connected slidably only in an axial direction to a turbine hub of a torque converter and having a radial hub flange, a pair of annular side plates disposed at both sides of the hub flange, a plurality of torsion springs arranged in sets disposed in openings and hollows in the hub flange and the side plates for connecting the side plates to the hub flange, each set of torsion springs being adapted to engage at both ends thereof with the side plates and the hub flange, a friction portion provided on a radially outer portion of one of said annular side plates and adapted to be axially pressed to an inner surface of



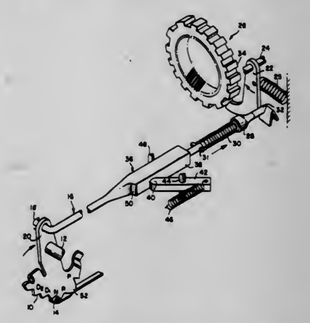
a front cover of the torque converter, and a forcing means for forcing and pressing the friction portion to said front cover.

4,576,261

SAFETY PARKING BRAKE FOR AUTOMATIC TRANSMISSIONS

William A. Barr, Gibson Island, Md. 21056, assignor to William A. Barr Memorial Trust; Barr-Scarlett Trust and Barr-Truitt Trust, all of Gibson Island, Md., by William A. Barr, trustee, part interest to each

Continuation of Ser. No. 585,397, Mar. 2, 1984, abandoned, which is a continuation-in-part of Ser. No. 485,513, Apr. 15, 1983, abandoned. This application Jun. 4, 1985, Ser. No. 741,203
Int. Cl.⁴ B60K *41/26*
U.S. Cl. 192—4 A **11 Claims**



1. In a parking brake for an automatic transmission having a toothed parking gear secured to an output shaft journaled in a stationary housing of a vehicle, a pawl movable in said housing between a park position in which said pawl engages said toothed gear and a non-park position in which it is clear of said gear, driver operated means movable in one direction from reverse towards park position and in the opposite direction from park towards reverse position, a control rod operably connected to said driver operated means, cam means operated in response to movement of said control rod and engageable with said pawl to control its movement towards said parking gear when said driver operated means is moved towards its park position, and to control its movement away from said parking gear when said driver operated means is moved away from its park position, and yieldable resilient means operable on said cam means to enable said driver operated means and said control rod to be moved to their full park positions independently of said cam means when said pawl is prevented by engagement with the surface of a tooth from entering the space between two teeth of said parking gear, the improvement comprising an element operatively connected to said driver operated means for movement therewith, said element having

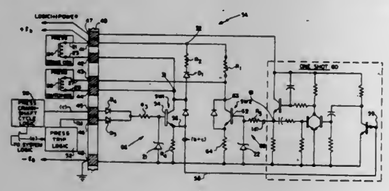
a sliding surface, a member having first and second ends, means pivoting said member at a fixed position remote from one end of said member, and second resilient means urging said one end of said member into sliding engagement with said sliding surface, said surface having a first part which is uniform and continuous so that when said element is moved in response to movement of said driver operated means to every position except between park and reverse positions said surface slides relative to said member without effecting movement thereof, said surface having a second part which is engaged by said member when said element is moved in response to movement of said driver operated means to a position between park and reverse to restrain through said element movement of said driver operated means towards its reverse position when said driver operated means has been accidently positioned between its reverse and park positions.

4,576,262

METHOD AND APPARATUS FOR OPERATING A MAGNETIC CLUTCH

William L. Mohan, and Samuel P. Willits, both of Barrington, Ill., assignors to Spartanics Ltd., Rolling Meadows, Ill.

Filed Dec. 27, 1983, Ser. No. 565,990
Int. Cl.⁴ F16D *67/06*
U.S. Cl. 192—18 B **12 Claims**



1. A method for operating a magnetic clutch and brake system of the type which includes a magnetic clutch having a clutch magnetizing coil which can be actuated to couple a first rotatable element to a second rotatable element when voltage is applied across the clutch magnetizing coil and which disengages the second rotatable member when voltage is disconnected from, or connected momentarily in the reverse polarity across, the clutch magnetizing coil, and a magnetic brake associated with the second rotatable element and having a brake magnetizing coil which is in a non-braking mode of operation when energized and which is in a braking mode of operation when de-energized, said method including the steps of:

providing a DC voltage source;

applying a voltage from said voltage source across the brake magnetizing coil for a first time period;

applying a voltage from said voltage source across the clutch magnetizing coil for the first time period with both of said coils being connected in parallel across said voltage source;

providing a unidirectional current path across said coils;

simultaneously and momentarily disconnecting the voltage source across both coils without causing an open circuit of either coil and thereby causing the coils to reverse polarity with the current generated in each coil flowing through said undirectional current path;

reconnecting the voltage source across said clutch magnetizing coil and in series with the brake magnetizing coil but with said clutch magnetizing coil connected in reverse polarity to the first connection thereof across said voltage source and said voltage source connected across said brake magnetizing coil in the same polarity as it was when voltage was first applied across said brake magnetizing coil for a second time period thereby to accelerate a rapid change of magnetic polarity of the clutch magnetizing coil to repel a flywheel coupling disc of the magnetic clutch while maintaining the brake magnetizing coil energized; and

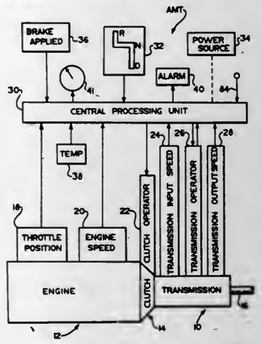
after the second time period, again disconnecting the coils from said voltage source to allow said brake to be actuated to stop movement of said second element.

4,576,263

CLUTCH CONTROL

E. James Lane, Highland; Russell C. Holmes, Troy, and Ronald K. Markyvech, Canton, all of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Mar. 23, 1984, Ser. No. 592,505
Int. Cl.⁴ B60K *41/08, 41/02*
U.S. Cl. 192—0.044 **40 Claims**



1. An automatic control system for automatically operating a vehicle master clutch interconnected between a throttle controlled engine and a change gear transmission, said control system including means for receiving sensed or calculated input signals indicative of clutch, engine and transmission operating conditions and means for providing output signals to command the operation of said clutch to a first fully engaged condition, a second fully disengaged condition and a third partially engaged condition, said control system including means for simulating the current operating temperature of the clutch operating surfaces including means for increasing the simulated temperature at a first rate in response to predetermined sensed excessive clutch slippage conditions and means for decreasing the simulated temperature at a second rate in response to the absence of said predeterined excessive sensed clutch slippage conditions.

4,576,264

SERVO CLUTCH MECHANISM, AND THE DRIVE GEAR INCORPORATING SAME

Giorgio Lupo, Rivalta; Pier C. Capra, and Aldo Marcarino, both of Turin, all of Italy, assignors to S.O.M., S.p.A., Reggio Emilia, Italy

Filed Dec. 1, 1983, Ser. No. 556,852
Int. Cl.⁴ F16D *21/06, 13/42*
U.S. Cl. 192—48.91 **8 Claims**

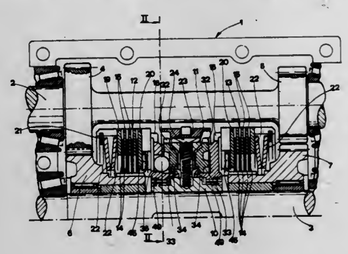
1. A servo-assisted clutch mechanism comprising an input shaft, an output shaft, a primary wheel or gear driven by said input shaft, a secondary gear turning with said output shaft as one, a clutch mechanism whose engaging component may shift axially against the agency of sprung means so as to engage said primary and secondary gears, a clutch control collar turning as one with said secondary gear, shifting axially with respect thereto, and assuming both a non-working and a working position, the latter being that in which its action on said clutch engaging-component is brought to bear,

an intermediate wheel fitted to said secondary gear and

capable of turning through a limited angle with respect thereto against the agency of sprung means so as to reach a limit beyond which said secondary gear will be driven by said intermediate wheel;

a number of thrust elements located in axial holes at said intermediate wheel and sliding therein whilst having one end in contact with a frontal cam offered by said ring and the remaining end directed toward said clutch-mechanism's engaging-component;

said clutch-mechanism being designed to engage said primary gear with said intermediate wheel into working position, thus causing said intermediate wheel following shift of said control collar into working position, thus



causing said intermediate wheel to turn through a limited angle with respect to said secondary gear; said frontal cam being of shape such that in bringing about turn through a limited angle of intermediate wheel as aforesaid, said thrust elements will each travel an incline disposed in such a way as to urge same in an axial direction against the clutch-mechanism's said engaging component; the improvement comprising—

a ring mounted free-wheel in fixed axial position on said secondary gear and having the frontal cam profile; and means for causing said ring to rotate as one with said secondary gear when said control collar is in said working position.

4,576,265

CONTROL SYSTEM FOR HYDRAULIC AUTOMATIC CLUTCH

Haruyoshi Kumura; Yoshikazu Tanaka, both of Yokohama; Keiju Abo; Hiroyuki Hirano, both of Yokosuka, and Sigeaki Yamamuro, Zushi, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Oct. 20, 1983, Ser. No. 543,838
Claims priority, application Japan, Oct. 22, 1982, 57-184627; Mar. 14, 1983, 58-40808; Apr. 22, 1983, 58-70095; May 27, 1983, 58-92418
Int. Cl.⁴ B60K *41/28*
U.S. Cl. 192—0.055 **13 Claims**

1. A control system for a hydraulic automatic clutch of a vehicle having an engine, comprising:

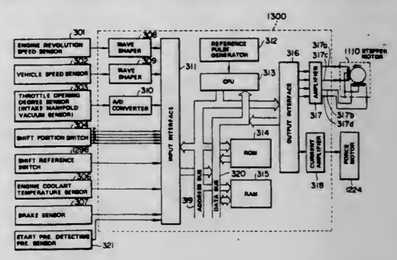
a hydraulic clutch;

an engine revolution means for generating an engine revolution fluid pressure signal indicative of a revolution speed of the engine;

a start adjustment valve means for generating a start adjustment fluid pressure signal in response to an electric signal;

a starting valve means coupled with said engine revolution means and said start adjustment valve means for generating a start fluid pressure in response to said engine revolution fluid pressure signal and said start adjustment fluid pressure signal, said start fluid pressure being supplied to said clutch to engage same; and

an electronic control unit means for controlling said electric signal to keep said clutch in a predetermined state regardless of a variation in said engine revolution fluid pressure



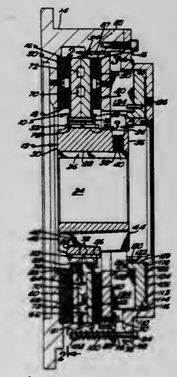
signal when the engine idles with the vehicle at a standstill.

4,576,266

ROTATIONAL CONTROL APPARATUS

Hugh K. Schilling, St. Paul; Leonid Dayen, Blaine, and Charles D. Raines, Plymouth, all of Minn., assignors to Horton Manufacturing Co., Inc., Minneapolis, Minn.

Filed Jul. 12, 1984, Ser. No. 630,364
Int. Cl.⁴ F16D *13/72, 65/827*
U.S. Cl. 192—70.12 **24 Claims**



1. Drive disc comprising, in combination: a ventilated hub comprising, in combination: a generally cylindrical portion having a first end and a second end; axially extending air cooling bores extending through the cylindrical portion; axially extending fins extending from the second end of the cylindrical portion and located between and out of circumferential alignment with the axially extending air cooling bores, with the axially extending fins of the hub having a decreasing radial size and a decreasing axial thickness in a direction extending away from the cylindrical portion, with the axially extending air cooling bores having a decreasing radial size over its axial length from the second end of the cylindrical portion to the first end of the cylindrical portion; and axially extending shoulders extending from the second end of the cylindrical portion, with the axially extending bores and the axially extending fins being located between and out of circumferential alignment with the axially extending shoulders, and radially extending threaded bores formed in the axially extending shoulders for receiving set screws for abutting with a shaft to be connected to the hub; and animproved ventilated friction disc intercon-

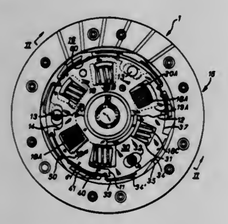
nected to the hub, with the friction disc comprising, in combination: a first individual component disc, a second, individual component disc, means for interconnecting the first and second component discs together to form the friction disc, heat radiating fins extending generally longitudinally between the internal surfaces of the component disc and internally of the friction disc, with the heat radiating fins extending radially from the hub in a circumferentially spaced relation throughout the circumference of the friction disc to thus divide the friction disc into wedge shaped areas, at least one cooling air entry port formed through the component disc adjacent the hub and located in the wedge shaped areas, with the heat radiating fins including at least three columns in a spaced relation forming fin openings therebetween to define an air cooling chamber internally of the friction disc, between the air entry port, through the fin openings of the heat radiating fins, and out of the periphery of the friction disc to allow passage of cooling air radially and also circumferentially inside the friction disc to allow increased heat transfer, cooling, and apparatus efficiency, with the fin openings being in circumferential alignment to form an obstruction free annular air path around the entire circumference of the friction disc.

4,576,267

CENTRIFUGAL ACTUATOR DEVICE, IN PARTICULAR FOR A CLUTCH DISK ASSEMBLY

Pierre Loizeau, Ville D'Avray, France, assignor to Valeo, Paris, France

PCT No. PCT/FR83/00187, § 371 Date May 18, 1984, § 102(e) Date May 18, 1984
PCT Filed Sep. 20, 1983, Ser. No. 616,221
Claims priority, application France, Sep. 21, 1982, 82 15866
Int. Cl.⁴ F16D *3/66*
U.S. Cl. 192—70.17 **20 Claims**



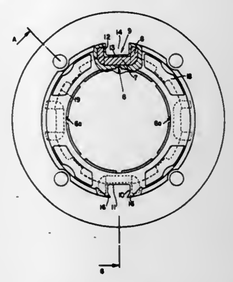
1. A centrifugal actuator device comprising two rotary members mounted for relative angular movement, a circumferential support track provided on one of said rotary members, a radial lug extending radially from said one member relative to said track, a cantilevered retaining tab extended from said lug, an actuator member of generally arcuate shape adapted to overlie a portion of said circumferential track, said actuator member being substantially rigid and having a slot by which said actuator member is engaged around said lug with radial and circumferential play, and said actuator member being received partially under said retaining tab so that said actuator member can tilt around said lug in response to centrifugal force, and a spring radially interposed between said retaining tab and said actuator member for elastically normally biasing said actuator member into contact with said track.

4,576,268

SLIDING SLEEVE FOR CLUTCH SHIFTERS

Manfred Brandenstein, Eussenheim; Lothar Walter, Schweinfurt; Roland Haas, Lendershausen, and Herbert Dobhan, Bergrheinfeld, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Dec. 2, 1982, Ser. No. 446,399
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1981, 8137226[U]
Int. Cl.⁴ F16D *23/14*
U.S. Cl. 192—98 **3 Claims**



1. A sliding sleeve for a clutch shifter particularly for automotive clutches comprising an elongated generally tubular hub body made of a plastic material, an annular metallic thrust collar projecting radially outwardly from the hub body and connected thereto by connecting means, said connecting means including at least two lugs projecting axially from one radial face of said thrust collar, each lug being of generally U-shaped cross section consisting of a base section and generally radially directed upstanding leg portions, said leg portions spaced axially from said radial face of the thrust collar to provide a web of plastic material therebetween, said lug defining a groove for the shift lever extending in an axial direction, a thin plastic layer overlying the base and upstanding leg portions of each of said lugs and said radial face of the thrust collar at the inner axial end of the groove being uncoated and presenting a direct metallic contact surface for the shift lever.

4,576,269

AUTOMATIC MULTISPEED TRANSMISSION FOR VEHICLES WITH MANUAL MEANS FOR PROHIBITION OF ENGAGEMENT OF A CENTRIFUGAL CLUTCH

Masumi Hamane, Kawagoe, and Kaoru Hanawa, Asaka, both of Japan, assignors to Honda Giken Kogyo K.K., Japan

Filed Jan. 12, 1983, Ser. No. 457,355
Claims priority, application Japan, Jan. 13, 1982, 57-3777; Jan. 13, 1982, 57-3778
Int. Cl.⁴ F16D *23/10*
U.S. Cl. 192—103 A **12 Claims**

1. An automatic multispeed transmission for combination with a vehicle equipped with an engine having a throttle value adjusting means for manually controlling the quantity of intake air being supplied to the engine, said quantity corresponding to the opening of a throttle valve of said engine, and an output shaft, comprising:

at least two centrifugal clutches each arranged on a corresponding rotary shaft arranged to be rotatively driven by said output shaft of said engine, said centrifugal clutches being adapted to engage at predetermined different rotational speeds of said output shaft of said engine, each of said centrifugal clutches including:

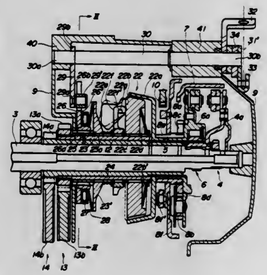
an input member arranged to be rotatively driven by the rotary shaft upon which the corresponding centrifugal clutch is arranged,

an output member disposed for engagement with said input member, and

weight means disposed for centrifugal opening action in response to rotation of said rotary shaft for causing engagement of said input member with said output member at one of said predetermined different rotational speeds of said output shaft of said engine;

at least two reduction gear means each drivingly coupled with one of the output members and the input member of a corresponding one of said centrifugal clutches for carrying out speed reduction of the rotational speed of said engine with predetermine different reduction ratios, dependent upon engagement and disengagement of said respective centrifugal clutches;

prohibiting means for prohibiting the centrifugal opening action of said weight means of one of said centrifugal



clutches which is adapted to engage at one of said predetermined rotational speeds of said output shaft of said engine, higher than the lowest one thereof;

wherein when said one of said centrifugal clutches is engaged, one of said reduction gear means operates, which has a reduction ratio smaller than that of another one of said reduction gear means which operates when another one of said centrifugal clutches engages at the lowest one of said predetermined rotational speeds of said output shaft; and

manually operatable control means for driving said prohibiting means,

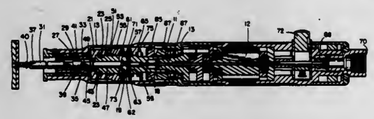
said manually operatable control means being operatively connected with said throttle valve adjusting means in such a manner that said control means operates to drive said prohibiting means when said throttle valve adjusting means assumes a position corresponding to an intake air quantity greater than a predetermined value.

4,576,270

TORQUE CONTROL AND FLUID SHUTOFF MECHANISM FOR A FLUID OPERATED TOOL

James P. Baltz, and Richard E. Plouck, both of Bryan, Ohio, assignors to The Aro Corporation, Bryan, Ohio

Filed Feb. 28, 1983, Ser. No. 470,509
Int. Cl.⁴ B25B *23/145*
U.S. Cl. 192—150 **13 Claims**



1. In a fluid power tool of the type including a fluid driven motor with a rotary output shaft, a fluid inlet to the motor, an inlet control mechanism to control fluid flow to the motor, and a clutch mechanism, connecting the output shaft with a tool bit, the improvement comprising, in combination:

a fluid shutoff mechanism associated with the clutch mechanism, said fluid shutoff mechanism including a throughbore axially extending through the shaft; a throttle rod in the throughbore translatable in one axial direction to terminate fluid flow through the fluid inlet to the motor and in the opposite axial direction to allow fluid flow to the motor;

a passage in the shaft transverse to the throughbore intermediate the ends of the throughbore and adjacent an end of the throttle rod positioned in the throughbore;

at least one radially displaceable member positioned in the transverse passage for engagement with the throttle rod;

a slidable kickout sleeve on the shaft for retaining the radially displaceable member positioned in the passage for engaging the throttle rod;

means biasing the slidable kickout sleeve to the position for retaining the radially displaceable member to engage the throttle rod;

a thrust pin coaxial with the throttle rod and in the throughbore on the opposite side of the transverse passage from the throttle rod, said thrust pin engageable with the tool bit and translatable against the radially displaceable member to drive the throttle rod to open fluid flow through the fluid inlet; and

a torque responsive sleeve release mechanism on the shaft slidable axially to release the slidable kickout sleeve from retaining the radially displaceable member, said radially displaceable member movable in the passage to permit axial translation of the throttle rod to terminate fluid flow to the fluid inlet, said sleeve release mechanism including a tool bit holder mounted on the shaft and rotatable with respect thereto, and a cam sleeve slidably mounted on the shaft for axial movement, said cam sleeve biased for engagement with a cam surface on the tool bit holder whereby during normal operation of the tool, the tool bit holder remains fixed relative to the cam sleeve, said tool bit holder rotating relative to said cam sleeve to axially drive the cam sleeve when a threshold torque acts on the tool bit holder.

4,576,271

COIN OPERATED PULL-DOWN DOOR AND DOOR SPRING MECHANISM FOR VENDING MACHINE

Jack S. Chalabian, Huntington Beach, Calif., assignor to K-Jack Engineering Company, Inc., Gardena, Calif.

Filed Aug. 5, 1983, Ser. No. 520,718
Int. Cl.⁴ G07F *5/08*
U.S. Cl. 194—233 **24 Claims**

1. A pull down door assembly and coin mechanism for a vending machine comprising:

a frame;

a pull down door having a lower edge hingedly mounted to said frame for movement between a closed and an open position;

latch means including a camming surface affixed to an upper portion of said door for normally releasably locking said door against opening;

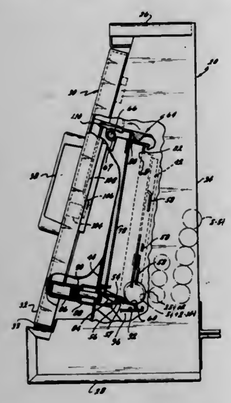
coin seat means;

a coin receiving and sorting mechanism disposed intermediate said latch means and said coin seat means for wedging proper coinage against said coin seat means;

a rod mounted for normally yielding to said camming surface when an attempt is made to open said door; and

means cooperating with coinage and wedged against said coin seat means so as to urge said rod into camming en-

gagement with said camming surface in response to opening movement of said door thereby biasing said latch



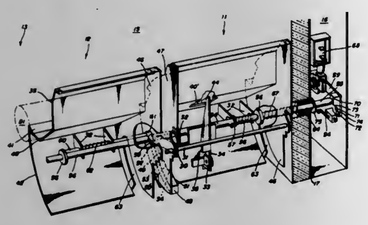
means out of locking engagement to allow opening of said door.

4,576,272

COUNTER-TOP OR WALL-MOUNTED VENDING MACHINE

Annis R. Morgan, Jr., Atlanta, Ga.; Bernd Mehlan, Herrieden; Josef Gress, Bechhofen, both of Fed. Rep. of Germany, and Hugh S. Williford, Atlanta, Ga., assignors to The Coca-Cola Company, Atlanta, Ga.

Filed Jun. 21, 1984, Ser. No. 623,027
Int. Cl.[4] G07F *5/16*
U.S. Cl. 194—215 **19 Claims**



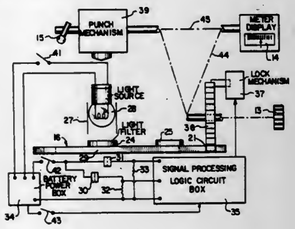
1. An automatic vending machine comprising:
a cabinet having a front wall with at least two openings therein through which products may be vended;
at least two product storage chutes disposed within said cabinet in a side-by-side, parallel relationship behind said openings;
a cradle disposed in each of said openings forming a row of adjacent cradles for receiving products from said at least two chutes when in a closed position with respect to the associated opening and vending said products in fully open positions;
indexing means for moving and stopping said cradle at a partially-open position intermediate to said closed and fully open position, said partially-open position permitting products to be viewed but not removed by a customer from said cradle; and
mechanical interlock means responsive to the opening of any of said cradles for blocking the opening of any other cradle.

4,576,273

OPTICAL CARD AND CARD READER SYSTEM FOR PURCHASE OF PARKING TIME

Arthur G. Milnes, 1417 Inverness Ave., Pittsburgh, Pa. 15217

Filed Jun. 11, 1984, Ser. No. 619,609
Int. Cl.[4] G07F *1/06*
U.S. Cl. 194—209 **9 Claims**



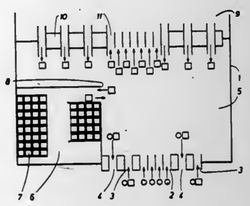
1. An automatic system for dispensing services controlled by cards carrying successively positioned individual light filters comprising a card reader including a light source, light sensing means positioned to receive light from said light source, means successively positioning said card in said reader to station each said individual light filter between said light source and said light sensing means, means actuated by the output of said light sensing means for triggering said dispensing means to dispense a predetermined quantum of services in response to the light transmitted by said individual light filter, and disabling means triggered by the output of said light sensing means for altering the light-transmitting characteristics of said light filter after the predetermined quantum of services has been dispensed, to prevent reuse of said filter in said card reader.

4,576,274

MEANS FOR THE STORING OF CARTS SUCH AS SHOPPING CARTS

Kjeld Thorsen, Floda, Sweden, assignor to Cart-O-Matic Aktiebolag, Stenungsund, Sweden

Filed May 26, 1983, Ser. No. 498,589
Int. Cl.[4] G07F *7/00*
U.S. Cl. 194—210 **5 Claims**



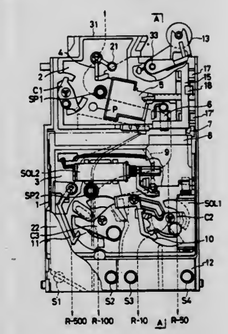
1. A system for the disposition of shopping carts including an entrance area and at least one storage area for such carts which are intended to be removed from and returned to the storage area by users of the carts, comprising, for each storage area, at least one outlet gate and first control means to permit a cart to pass through said outlet gate only if a deposit is registered by said first control means, at least one inlet passage provided with an inlet gate and second control means to permit a cart to pass through said inlet gate only if said cart is identified as an authorized cart, said second control means being provided with sensing means responsive to actuating means carried by said cart to identify an authorized cart and to permit passage of said cart through said gate only when said sensing means so identifies an authorized cart and to refund at least part of the deposit, said storage area being open for free positioning of said carts in and out of said storage area, and at least one passage for permitting persons without carts free access to and from said entrance area, each gate comprising a housing forming on each side thereof a passage, each passage being provided with stopping means displaceable between an open position for free access of a cart and a closed position to prevent passage of a cart, means for the receiving of a deposit at said outlet gate, means for refunding a deposit at said inlet gate, active sensing means on a wall of said inlet passage formed by said housing to identify a cart presented in said passage, said cart being provided with a passive sensing means to actuate said active sensing means, and actuating means to control the stopping means in said outlet passage to an open position when a deposit is inserted in said deposit receiving means and to position said stopping means in said inlet passage to an open position when said sensing means has identified an authorized cart and to refund a deposit made when said cart was passed through an outlet gate.

4,576,275

COIN DISCRIMINATION APPARATUS

Osamu Kobayashi; Masanori Tanaka, and Jun Ishii, all of Saitama, Japan, assignors to Kabushiki Kaisha Nipponcoinco, Tokyo, Japan

Filed Aug. 23, 1984, Ser. No. 643,845
Claims priority, application Japan, Aug. 25, 1983, 58-130362[U]; Aug. 30, 1983, 58-133048[U]; Aug. 30, 1983, 58-133049[U]
Int. Cl.[4] G07F *3/02*
U.S. Cl. 194—203 **7 Claims**



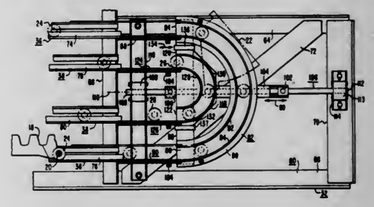
1. A coin discrimination apparatus for discriminating coins by denomination and for guiding coins of respective denominations to respective denomination coin paths by means of an electronic discrimination unit which is formed by two plates provided in a coin path, a coin selection member which is actuated in response to signals from said electronic discrimination unit and cradles, said coin discrimination apparatus being characterized by:
said electronic discrimination unit provided at an upstream side of said coin path;
a first coin selection member, which is actuated in response to signals from said electronic discrimination unit, provided for selecting authentic and counterfeit coins;
at least one second coin selection member provided at a downstream side of said first coin selection member, said second coin selection member being actuated in response to signals from said electronic discrimination unit for separating authentic coins into two denomination coin paths depending upon the differences in diameter of coins; and
cradles provided at a downstream side of said second coin selection member, said cradles for separating by denomination said coins of each one of the two coin paths which are separated by said second coin selection member.

4,576,276

ESCALATOR

Henry Boltrek, Freeport, N.Y., and Peter J. Coakley, Jr, Hackettstown, N.J., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 8, 1984, Ser. No. 618,842
Int. Cl.[4] B65G *23/12*
U.S. Cl. 198—332 **5 Claims**

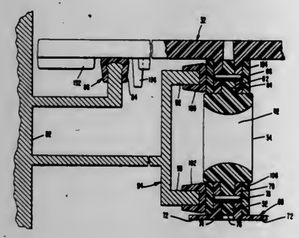


1. An escalator, comprising:
a conveyor having first and second spaced loops constructed of pivotally interconnected, rigid, toothed links,
step axles interconnecting said first and second loops,
axle rollers on said step axles,
steps connected to said step axles,
step rollers on said steps,
a guide arrangement for guiding said conveyor in an endless loop including a truss having axle roller guides and step roller guides,
drive means mounted in said truss, said drive means engaging toothed links of said conveyor,
said truss having movable, free floating, self-adjusting, upper and lower turnaround guide portions mounted for rectilinear movement, and a fixed intermediate guide portion,
and non-binding sliding joints in the axle and step roller guides, between the fixed and movable guide portions of said truss,
said self-adjusting upper and lower turnaround guide portions each including first mounting means and axle roller guide tracks,
said axle roller guide tracks being fixed to said first mounting means,
said first mounting means being rectilinearly adjusted by said axle rollers in response to positioning forces in said conveyor,
said self-adjusting upper and lower turnaround guide portions further including second mounting means and step roller guide tracks,
said second mounting means being fixed to said first mounting means such that rectilinear movement of said first mounting means also adjusts the position of said second mounting means,
said step roller guide tracks being mounted for rectilinear movement relative to said second mounting means, such that positioning forces in the step rollers and associated steps independently position said step roller guide tracks relative to said axle roller guide tracks,
whereby the step and axle roller guide portions of the upper and lower turnaround guide portions are each free to move independently to positions of least resistance in response to instantaneous forces in the conveyor and steps.

4,576,277
CONVEYOR SYSTEM WITH REMOVABLE WEAR MEMBERS

David B. Park, R.D. #2, Box 2730, Spring Grove, Pa. 17362; James R. Snyder, York, Pa.; Gerard J. McDonald, York, Pa., and Roland Hoet, York, Pa., assignors to David B. Park, Middleboro, Mass.

Filed Oct. 11, 1983, Ser. No. 541,008
Int. Cl.[4] B65G 47/84
U.S. Cl. 198—803.01 5 Claims



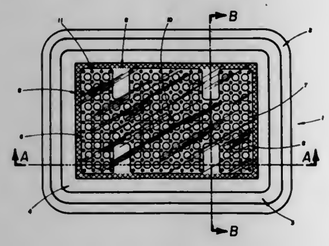
1. In a conveyor of the type comprising a chain including a plurality of links connected together for relative pivotal movement at least some of said links including an upwardly projecting first coupling element, a plurality of carriers mounted on at least some of said links, said carriers each including integral downwardly projecting second coupling elements, one of said first and second coupling elements comprising a socket and the other of said first and second coupling elements comprising a post received in said socket, and a dowel pin frictionally disposed in aligned holes in each socket and post assembly, the improvement comprising:

a U-shaped wear sleeve mounted on each said socket and comprising a pair of legs interconnected by a bight, said wear sleeve being releasably mounted on its associated socket by a snap-on fit such that said legs are situated on opposite sides of said socket and overlie said holes in said socket to retain the associated pin.

4,576,278
PURGE TRAP TRAY

Stanislaus Laiewski, Reading; Thomas A. Hessen, Ephrata; Thomas R. Hardy, Lebanon, and Allie F. Gilvin, Sinking Spring, all of Pa., assignors to W. R. Grace & Co., Cryovac Div., Duncan, S.C.

Continuation of Ser. No. 443,993, Nov. 23, 1982, abandoned.
This application Sep. 13, 1984, Ser. No. 650,560
Int. Cl.[4] B65D 81/26
U.S. Cl. 206—204 5 Claims



1. A purge trap tray adapted to display a product which exudes a purge, said tray comprising:

(I.) a sunken reservoir area adapted to contain the liquid purge;

(II.) a support portion adapted to support said product, said support portion comprising:

(A) a shoulder area raised from and completely surrounding said sunken reservoir area;

(B) standoff means rising from said sunken reservoir area;

(C) a product supporting, perforated, liquid impermeable thermoplastic film supported by said standoff means, said film comprising:

(i) a border area adhered to said shoulder in a liquid tight manner;

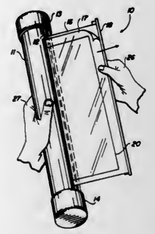
(ii) a plurality of perforations having diameters adapted to allow capillary flow of purge into said reservoir; and,

(iii) a centrally located perforation having a diameter adapted to allow free flow of the purge into said reservoir, said centrally located perforation having a greater diameter than that of any other perforation whereby flow of purge into the reservoir is increased and reverse flow of purge upon tilting of the tray is minimized.

4,576,279
DRAWING SUPPORT AND STORAGE APPARATUS

Fred F. Ferderber, 4863 Redwillow Ave., Orlando, Fla. 32808

Filed Nov. 26, 1984, Ser. No. 674,780
Int. Cl.[4] A45C 11/24; B65D 85/67
U.S. Cl. 206—225 2 Claims



1. A drawing support and storage apparatus comprising in combination:

an elongated outer casing having an elongated opening therein;

a pair of end caps, at least one end cap being removably mounted to said elongated outer casing;

a flexible planar surface rotably mounted in said casing and protruding through said elongated opening for removably supporting a drawing thereon is said casing, said flexible planar surface having one edge attached to an elongated shaft in said elongated outer casing;

said elongated shaft comprising a center-shaft connected between said end caps in said elongated outer casing, said center shaft including a hollow center tube having a slot therein for attaching the end of said flexible planar surface thereinto and said center shaft having one smooth end for rotably attachng to one said end cap and the other end of said center shaft being threadably connected to a threaded hub on the other said end cap;

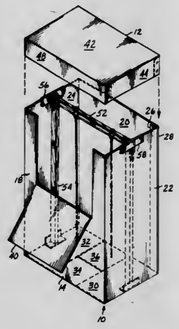
a flexible, transparent cover attached to said center shaft over said flexible planar surface for supporting a drawing, or the like, between said flexible planar surface and said flexible transparent cover; and

grip means attached to said flexible planar surface exterior of said casing for gripping and removing a portion of said planar surface and flexible, transparent cover from said casing, said grip means having an elongated handle having a generally T-shaped cross section.

4,576,280
HANGING GARMENT CONTAINER

Doublas J. A. Dove, Snohomish County, and Raymond F. Nelson, King County, both of Wash., assignors to Anna Lena Dove, Edmonds, Wash.

Filed Apr. 5, 1984, Ser. No. 597,223
Int. Cl.[4] B65D 85/18; A47F 7/19
U.S. Cl. 206—289 51 Claims



1. A hanging garment container comprising:

(a) a panel structure forming a front wall, a rear wall and a pair of opposite side walls connecting the front and rear walls and having a connected planar bottom structure for the container to create an open top container;

(b) a hanging garment support structure including a horizontal support member extendable across the top of the open top container between opposite side walls;

(c) a pair of vertical support members each for supporting an opposite end of the horizontal member and each supportable on the bottom of the open top container at their lower ends; and

(d) means for securing the ends of the horizontal member to the side walls to prevent relative movement and for securing the tops of the vertical members to prevent relative movement wherein the securement means comprises a pair of brackets, one at each end of the horizontal support member, each bracket connected to one of the vertical support members, and each bracket simultaneously securing the horizontal support member to the associated side wall and securing the top of the associated vertical support members against movement relative to the horizontal member.

4,576,281
DISPOSABLE SYRINGE NEEDLE SEPARATION AND STORAGE BOX

Patricia E. Kirksey, Harlem, Ga., assignor to University Hospital, Augusta, Ga.

Filed Aug. 29, 1984, Ser. No. 645,208
Int. Cl.[4] A61M 5/32; B65F 7/00; B26F 3/00
U.S. Cl. 206—370 4 Claims

1. A disposable syringe needle separation and storage box comprising a vertically upright outer enclosure, said outer enclosure including an externally lockable door for providing access to the interior thereof, an upwardly open syringe needle storage and disposal container positioned therein through said lockable door when open, said enclosure including a hole within the top thereof aligned with the open end of the upwardly open container, the improvement comprising:

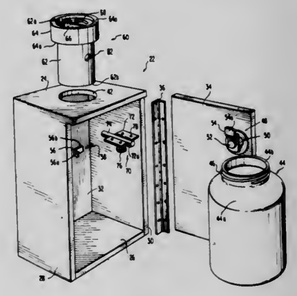
a tubular drop chute, removably axially positioned within said hole within the top of said enclosure,

means internally of said storage box for locking said tubular drop chute to said enclosure in alignment with said container opening,

a needle extractor fixedly mounted to the interior of said tubular chute, said needle extractor comprising a slotted plate at least partially closing off the interior of said drop chute, said plate including a tapered slot having a portion sized in excess to the diameter of the needle to permit manual penetration of the needle into said drop chute, below said extractor plate, permitting lateral movement of the sytinge to a position where the upper end of the needle contacts the bottom of said slotted plate,

whereby, the syringe barrel may be separated from the needle through single hand manipulation, movement laterally within the tapered slot, and by single handed pull of the syringe upwardly to separate the needle, such that the needle falls by gravity into the interior of said container;

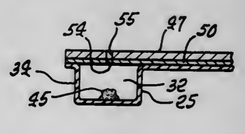
whereby, when said syringe needle separation and storage box is in use, said tubular drop chute cannot be removed, since it is latched from the inside, and its removal from said needle separation and storage box and the removal of the disposal container bearing sharps can be accomplished only by unlocking the door, and unlocking of said drop chute from the storage box, thereby insuring the safety of the system.



4,576,282
REINFORCED LIGHTWEIGHT PLASTIC PACKAGES

Imants P. Kapralis, 3020 S. Punta Del Este Dr., Hacienda Heights, Calif. 91745

Filed May 14, 1984, Ser. No. 609,717
Int. Cl.[4] B29D 27/04
U.S. Cl. 206—524 15 Claims



1. In a thin walled, light-weight, relatively flexible, molded plastic package having first and second re-entrant recesses respectively at opposite sides of the package, the package stiffened against crushing, comprising

(a) said first re-entrant recess at one side of the package containing sufficient of a predetermined quanity of an expanded synthetic resin as to substantially fill said recess,

(b) said expanded resin cured to form a hardened re-inforcing core in said first re-entrant recess and integrally with the package to stiffen same against crushing, whereby an article or articles placed in the second re-entrant recess at the opposite side of the package are protected against crushing,

(c) said first recess extending lengthwise at least part way about said second recess having rectangular frame configuration,

(d) and including a base sheet supporting said frame core, and there being a second frame core consisting of expanded resin and supported on the base sheet within another first re-entrant recess defined by the package which also defines another second re-entrant recess surrounded by the second frame, the base sheet being foldable to bring said frames into superposed relation protecting articles in said second re-entrant recesses.

(e) and including a cover sheet over a side of the package to cover said first re-entrant recess and said core, and attached to the package.

4,576,283

BAG FOR VACUUM PACKAGING OF ARTICLES

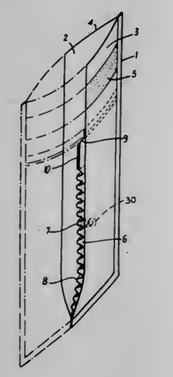
Bernard Fafournoux, 12ter, route de St-Germain, 78560 Le Port Marly, France

Filed Jan. 25, 1984, Ser. No. 573,668

Claims priority, application France, Jan. 25, 1983, 83 01077

Int. Cl.⁴ B65D *81/20*

U.S. Cl. 206—524.8 **10 Claims**



1. A bag for vacuum packaging of articles, said bag comprising:

flexible walls;

a sealable closure, said flexible walls and sealable closure defining an interior of said bag for receiving articles;

an auxiliary chamber;

a wall common to said interior and said auxiliary chamber, said auxiliary chamber being evacuated at the time of the manufacture of the bag;

communicating means for establishing communication through said wall common to said interior of said bag and said auxiliary chamber to permit residual air in said interior to flow into said auxiliary chamber after said bag has been filled, closed and sealed.

4,576,284

CLOSING OF FILLED CAPSULES

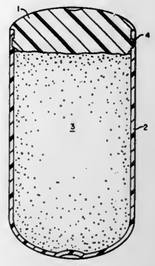
Fritz Wittwer, Lupsingen, and Thomas Raible, Mohlin, both of Switzerland, assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Dec. 2, 1983, Ser. No. 557,306

Int. Cl.⁴ B65D *53/06, 85/00*

U.S. Cl. 206—530 **5 Claims**

1. A hard shell capsule for the exact dosage of solid, creamy and liquid substances which comprises a body part, said body part having a closed end, a sidewall extending from said closed end, and an open end, said sidewall having an internal recess extending circumferentially around said sidewall, adjacent said open end and a cap molded in situ, said cap being in engagement with said recess, whereby said open end of said capsule is sealed subsequent to filling.



4,576,285

SEALED FLEXIBLE CONTAINER WITH NON-DESTRUCTIVE PEELABLE OPENING AND APPARATUS AND METHOD FOR FORMING SAME

Luigi Goglio, Milan, Italy, assignor to Fres-co System USA, Inc., Telford, Pa.

Continuation-in-part of Ser. No. 496,770, May 20, 1983, Pat. No. 4,518,087. This application Feb. 29, 1984, Ser. No. 584,587

Int. Cl.⁴ B65D *33/16*

U.S. Cl. 206—632 **5 Claims**



1. A sealed container comprising a flexible sheet material closing off the interior of the container from the ambient atmosphere, said sheet material being resistant to tearing, said container having an opposed pair of walls formed by said sheet material, each of said walls including an inner surface and an outer surface, said container comprising a releaseably sealed mouth portion formed between said walls and of a predetermined length, each of said walls including a first layer on said entire inner surface, said first layer comprising at least two plastic material layers permanently adhered to each other, a portion of one of said first layers at said mouth portion on one of said walls being disposed opposite to a corresponding portion of the first layers at said mouth of the other of said walls, said mouth portion being sealed by the application of a predetermined amount of energy thereto, whereupon portions of the same plastic layer of each of said first layers join in releaseable engagement with each other to form an air-tight interfacial seal therebetween for the entire predetermined length of said mouth portion, said interfacial seal being readily openable by peeling said engaging portions of said first layers from each other to provide ready access to the interior of said container through said mouth portion without tearing said sheet material, said container additionally comprising at least one permanently sealed seam formed by the application of energy in excess of said predetermined amount to other abutting portions of said first layers of said walls.

4,576,286

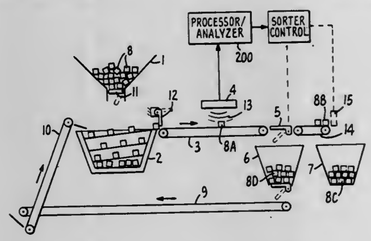
PARTS SORTING SYSTEMS

Bruce S. Buckley, San Jose; Edward M. Buckley, Milpitas, and Roy H. Reichwein, San Jose, all of Calif., assignors to Cochlea Corporation, San Jose, Calif.

Filed Jun. 27, 1983, Ser. No. 508,121

Int. Cl.⁴ B07C *5/344*

U.S. Cl. 209—558 **26 Claims**



1. Apparatus for parts sorting, that comprises:

parts feeding means to feed a part into a sensing region;

means for transmitting continuous wave energy of a single frequency through the medium surrounding the part in the sensing region where wave energy ineracts with said part;

sensor means positioned to detect wave energy that interacts with the part by virtue of the wave energy directed thereupon, said sensor means comprising a multiplicity of spaced-apart sensors disposed in an array to receive the wave energy at a multiplicity of places after interaction with the part and propagation through said medium to the sensor means;

means for processing the received wave energy into information for each sensor of the sensor means;

means for analyzing said information from the multiplicity of sensors and operable to generate a single sampling signal output representative of a characteristic of said part; and

means for sorting connected to receive said single sampling signal output and operable to sort said part in response to said characteristic;

in which the continuous wave energy is sinusoidal wave energy of a single frequency and in which the multiplicity of spaced-apart sensors are sensitive to specific regions of the part, each sensor providing an electrical output containing at least one of amplitude and phase information which is weighted for each sensor on the basis of the characteristic being sensed, said electrical output being sinusoidal signals whose amplitude and phase vary according to the characteristics of the part.

4,576,287

APPARATUS AND METHOD FOR CHECKING THE CONTENTS OF ENVELOPES AND SORTING DOCUMENTS BY THICKNESS

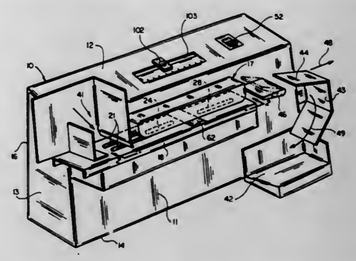
George H. Bingham; Edward A. Krupotich, both of Los Altos, and Burton J. Rosensweig, Mountain View, all of Calif., assignors to Omation Corporation, Mountain View, Calif.

Continuation-in-part of Ser. No. 416,668, Sep. 10, 1982, abandoned. This application May 11, 1983, Ser. No. 493,638

Int. Cl.⁴ B07C *1/16, 5/06*

U.S. Cl. 209—601 **6 Claims**

5. In apparatus for determining whether an object is thicker than a predetermined thickness: means for feeding the object along a path, a gauging element positioned for deflection by the object as it travels along the path, the amount of deflection corresponding to the thickness of the object, a pivot arm, means connecting the gauging element to the arm so that the arm is displaced from a rest position by an amount corresponding to the thickness of the object, a first sensor for providing a first signal when the arm is displaced by an amount corresponding to the predetermined thickness, a feeler, means responsive to the first signal for urging the feeler toward the arm,



means responsive to the position of the feeler for providing a second signal when the arm is displaced by an amount corresponding to a thickness greater than the predetermined thickness, and means responsive to the second signal for diverting the object from the path.

4,576,288

CARD SORTING MACHINE

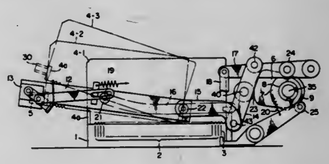
Tomomasa Tanaka, Tokyo, Japan, assignor to Tanaka Seiko Co. Ltd., Tokyo, Japan

Filed Apr. 2, 1984, Ser. No. 595,974

Claims priority, application Japan, May 10, 1983, 58-69528[U]

Int. Cl.⁴ B07C *5/36*; G06F *7/10*

U.S. Cl. 209—609 **5 Claims**



1. In a card sorting machine having a number of selectively raisable select bars supporting thereon a number of coded cards, each of the cards having a coded tooth train at the lower edge thereof and a magnetic piece attached at its front edge and a selecting magnet to move selected coded cards for one pitch of the select bar in the horizontal direction by attracting thereto the magnetic piece and to further move said selected coded cards in an oblique upward direction, while stopping unselected cards, the card sorting machine further comprising:

a card holding magnet provided above and in parallel with the selecting magnet at the time of the separation of the selected coded cards in the oblique upward direction;

a card raising plate movable from a lower position near the magnetic piece of the selected coded cards already separated in the oblique upward direction to an upper position; and

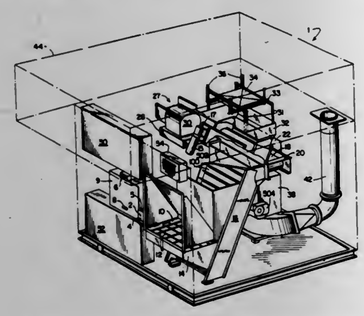
a card raising plate driving mechanism to raise the card raising plate to release the selected coded cards attracted to the card selecting magnet at the time when moved in the oblique upward direction and to have said selected coded cards held by the card holding magnet.

4,576,289

METHOD AND APPARATUS FOR RECYCLING CANS

Steve A. Jarrett, and John F. Krzyston, both of Chesterfield County, Va., assignors to Reynolds Metals Company, Richmond, Va.

Filed Nov. 23, 1983, Ser. No. 554,565
Int. Cl.[4] B07C 9/00; G07F 7/06
U.S. Cl. 209—631 17 Claims



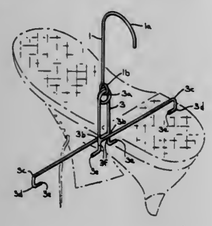
1. In a method for recycling conductive material from a material input comprising separating magnetic material from said material input, separating said conductive material from the balance of said material input and recombining said magnetic material and said conductive material the improvement comprising separating overweight magnetic material from said magnetic material and/or overweight conductive material from said conductive material and recombining either the remainder of said magnetic material and said conductive material, the remainder of said conductive material and said magnetic material or the remainders of said magnetic material and said conductive material.

4,576,290

GRIP HANGER

Donald J. Zigman, 5569 S. 116th St., Hales Corners, Wis. 53130

Filed Feb. 10, 1984, Ser. No. 579,194
Int. Cl.[4] A47F 5/01, 7/08
U.S. Cl. 211—34 1 Claim



1. A single-coil hanger for suspending footwear in an inverted position, comprising:

a hook having a lower end formed as an eye;

a torsion spring having a coil at its upper end which is received by the eye at the lower end of the hook and having a first leg and a second leg which extend downwardly from the coil;

wherein each of said first and second legs is formed inwardly toward the other leg to cross the other leg in approximately the same horizontal plane and each leg is formed downwardly and inwardly and terminates in a first end gripper and a second end gripper, respectively; and

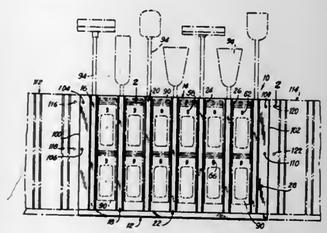
an appendage extends downwardly from each of the first and second legs, said appendage extending downwardly from the first leg being formed toward the second end gripper and terminating in a third end gripper facing the second end gripper and said appendage extending downwardly from the second leg being formed toward the first end gripper and terminating in a fourth end gripper facing the first end gripper so that one article of footwear can be clamped between the first and fourth end grippers and another article of footwear can be clamped between the second and third end grippers.

4,576,291

GRAVITY FEED MERCHANDISE DISPLAY FIXTURE

Robert Stein, Sharon, Mass., assignor to Vining Broom Company, Inc., Springfield, Ohio

Filed Apr. 18, 1983, Ser. No. 485,961
Int. Cl.[4] A47F 7/00
U.S. Cl. 211—49.1 12 Claims



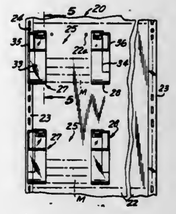
1. Apparatus providing a display stand comprising a plurality of elements each mounting in a plane which extends substantially perpendicular to a base surface, a first portion of said elements being a double walled structure including longitudinally extending walls connected in a substantially parallel relatively closely spaced relation and constructed and arranged to mount a plurality of brooms, brushes, mops or other tools distinguished by a long handle for their operation, with their handles therebetween, a second portion of said elements being formed for the releasable mount thereto of "peg" type merchanidse, said first and second portions of said elements including means providing an interfit thereof and by means of said interfit per se an interconnection of said elements producing a free standing display structure without need for fasteners.

4,576,292

MODULAR DISPLAY UNIT FOR ARTICLES OF MERCHANDISE

George E. Percival, 10 Twain St., Bloomfield, N.J. 07003

Filed Jul. 11, 1985, Ser. No. 754,348
Int. Cl.[4] A47F 5/08
U.S. Cl. 211—49.1 8 Claims



1. A modular display unit for supporting articles of merchandise and adapted to be secured to an upright support structure, said display unit comprising:

(a) a pair of elongated, laterally grooved, posts adapted to be secured to the support structure in vertical orientation and at a horizontally spacing from one another with one groove of one post facing and aligned with one groove of the other post,

(b) an apertured carrier board having a front surface and a back surface, said carrier board being adapted to be engaged by and extend between said posts, with each of the opposite side edges of said board being fitted into the proximate one of said grooves of the adjacent one of said posts, and to be secured thereby to said support structure with said front surface of said carrier board facing away from said support structure and with at least a portion of each of said vertical posts projecting frontwardly of said front surface of said carrier board; and

(c) at least one pair of article-supporting fixture members adapted to be mounted on said carrier board, said fixture members each having a front end wall, a rear end wall, a bottom wall and a side wall extending along one side of said bottom wall between said front and rear end walls,

(i) said side wall of one of said fixture members being located to the left of its associated bottom wall, and said side wall of the other of said fixture members being located to the right of its associated bottom wall, when said fixture members are viewed in the front to rear direction,

(ii) a respective pair of generally hook-shaped prongs extending rearwardly from said rear end wall of each fixture member, said prongs being adapted to enter respective apertures in said carrier board for mounting said fixture members on said carrier board, and

(iii) said side wall of each fixture member and its associated rear end wall being foreshortened at their juncture with each other to define over the entire height of the respective fixture member a step region, the depth of said step region of each fixture member frontwardly of said rear end wall of that fixture member being sufficient, when said prongs of that fixture member are received in a pair of said apertures adjacent and either to the left or to the right of a respective one of said posts depending on whether the side wall of that fixture member is located to the right or to the left of the associated bottom wall, to accommodate the portion of said respective one of said posts which projects frontwardly of said front surface of said carrier board when the latter is engaged by said respective one of said posts,

(iv) said fixture members, when mounted on said carrier board and having their bottom walls substantially in transverse alignment with each other and having their side walls located at the sides of said bottom walls which are directed away from each other, cooperating to define an upwardly open compartment having a split article-supporting surface constituted by said bottom walls and having lateral boundary surfaces constituted by said side walls.

4,576,293

PRODUCE SUPPORT TRAY ASSEMBLAGE

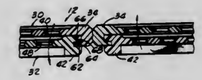
Michael Hinton, 11121 Brenda La., La Habra, Calif. 90631

Filed Feb. 9, 1984, Ser. No. 578,765
Int. Cl.[4] A47F 5/00
U.S. Cl. 211—127 7 Claims

1. A non-metallic support tray assemblage for use in connection with refrigerated produce display cases and the like comprising:

(a) a first tray including a pair of sides and a pair of ends connected to said sides to define a central portion having a multiplicity of spaced apart first apertures adapted for the passage of air therethrough along predetermined paths, at least one of said end portions having first support means for removably supporting said end portion of said first tray within the display case; and

(b) a second tray slidably interconnected with said first tray, said second tray including a pair of sides and a pair of ends connected to said sides to define a central portion having a multiplicity of spaced apart second apertures adapted for the passage of air therethrough along predetermined paths, at least a portion of said second apertures being adapted to be aligned with a portion of said first apertures



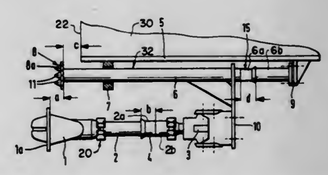
in said first tray, at least one of said end portions having second support means for removably supporting said end portion of said second tray within the display case said second tray comprising first and second interconnected portions, said portions being disposed in spaced apart generally parallel planes.

4,576,294

VEHICLE COUPLER DEVICE HAVING MEANS FOR TAKING EXCESS IMPACTS

Hilmar Forster, Wolfenbüttel, Fed. Rep. of Germany, assignor to Scharfenbergkupplung GmbH, Fed. Rep. of Germany

Filed Feb. 28, 1983, Ser. No. 470,307
Claims priority, application Fed. Rep. of Germany, Aug. 3, 1982, 3228941
Int. Cl.[4] B61G 9/04
U.S. Cl. 213—9 1 Claim



1. A coupler device for a rail vehicle, comprising a shock absorbing bar assembly comprising a plurality of telescopic elements including a shock bar, said shock absorbing bar assembly having one end adapted to be secured to the vehicle and an opposite end extending outwardly from the vehicle, a fender secured to said opposite end and having a plate part spaced from the end of the vehicle by a first amount, said telescopic elements including a first impact safety between said shock bar and the end of said shock absorbing bar assembly which is connected to the vehicle, said first impact safety comprising one first impact element movable in respect to another first impact element and permanently deformable upon the occurrence of an emergency impact force, a web plate secured to said shock absorbing bar assembly, a central buffer coupler carried by said web plate, said central buffer coupler having a second impact safety comprising one second impact element movable relative to another second impact element and permanently deformable upon the occurrence of another emergency impact force, said central buffer coupler having one end with a coupler head having a plate part extending outwardly of the vehicle beyond said fender plate part and by

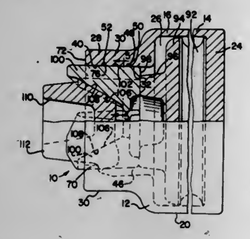
a second amount substantially equal to an amount of movement of said one second impact element relative to said other second impact element, said fender plate part being spaced ahead of said vehicle by said first amount which is at least greater than an amount of movement of said one first impact element relative to said other first impact element, the emergency impact force needed to permanently deform said first impact safety being greater than the emergency impact force needed to permanently deform said second impact safety so that said second impact safety yields before said first impact safety, said central buffer coupler including a resilient buffer device connected between said web plate and said second impact safety for resiliently absorbing normal impacct force which is less than either of the emergency impact forces, said fender including the central fender part connected to said shock bar and a side fender part hinged ot each side of said central fender part, and a shock rod connecting said web plate to each side fender part, said shock rod comprising a plurality of telescopic parts including at least one deformable excess impact part movable in respect to another excess impact part, said shock rod hinged to said web plate for substantially horizontal pivotal movement.

4,576,295

DRAFT GEAR FOR RAILROAD CAR COUPLER SYSTEM

Richard A. Carlstedt, Wheaton, Ill., assignor to Miner Enterprises, Inc., Geneva, Ill.

Filed Feb. 27, 1984, Ser. No. 583,915
Int. Cl.⁴ B61G *9/10*
U.S. Cl. 213—32 R **7 Claims**



1. A draft gear for a railroad car coupler system, said draft gear comprising:

a cast housing having an inner section to hold a spring package and an outer friction bore section connecting with said inner section, said friction bore section defined by sidewalls set in a hexagon shaped array with inner surfaces of said sidewalls positioned to form a top and two side equispaced friction shoe seats from adjacent pairs of said sidewall inner surfaces and a radiused corner between said adjacent sides, each said friction shoe seat having a grooved recess defined by an inner and outer groove portion joined by a connecting groove portion positioned substantially perpendicular to said inner and outer groove portions with said connecting groove portion of each said recess being in proximate alignment with said corner of said friction shoe seat respectively and said connecting groove portions of said recesses of said side friction shoe seats having walls positioned on an angle to form an enlarged opening into said side friction shoe seat connecting groove portions; and

insert means forming a rigid unit disposed in each said friction shoe seat grooved recess to provide a film of lubricant between said surfaces of said friction shoe seats and wear surfaces of friction shoes disposable in said housing outer friction bore section,

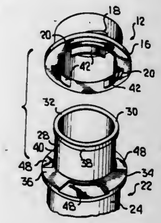
wherein said friction bore recesses may be cast as part of said housing friction bore section by a mold core from a two-piece core box, and a coefficient of friction between said friction shoes and said friction shoe seats is continuously regulated by said film of lubricant to control frictional restraint to movement of said shoes in said seats.

4,576,296

COMBINATION RADIAL LOCKING DEVICE AND INFESTATION SEAL FOR PRESS-SEAL TYPE TRANSFER NECK FINISH

Frank H. Lecinski, Harwood Heights, Ill., assignor to Continental White Cap, Inc., Northbrook, Ill.

Filed Apr. 2, 1985, Ser. No. 719,119
Int. Cl.⁴ B65D *41/04*
U.S. Cl. 215—31 **12 Claims**



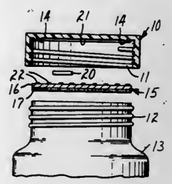
12. In a container, a tubular neck portion, said tubular neck portion having a neck finish including an outer annular recess for receiving a tubular member of a fitment, said recess being defined at ends thereof by upper and lower shoulders for opposing opposite ends of such a fitment tubular member, and said lower shoulder having recessed seats therein for receiving in interlocking relation flap means of a fitment.

4,576,297

TAMPER RESISTANT CLOSURE

Curtis L. Larson, Hudson, Wis., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 553,988, Nov. 21, 1983, abandoned.
This application Jun. 6, 1985, Ser. No. 742,131
Int. Cl.⁴ B65D *41/34*
U.S. Cl. 215—250 **6 Claims**



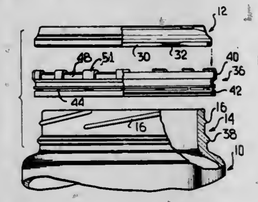
1. A closure for a container having a surface surrounding an opening to the container, a removable translucant cover member removably mounted over said opening in the container, a membrane defining a seal for said container which is bonded in fixed relationship to said surface of said container surrounding said opening, and a deposit of adhesive adhered to the inside of said cover member and to said membrane, said deposit of adhesive being spaced from the surface surrounding said opening and being spaced from the center of said cover whereby relative movement between the cover member and said container will cause a tearing of said membrane by said deposit of adhesive within the area of said opening.

4,576,298

TAMPER INDICATING FITMENT

Elmer J. Boik, Lombard, Ill., assignor to Continental White Cap, Inc., Northbrook, Ill.

Filed May 8, 1984, Ser. No. 608,305
Int. Cl.⁴ B65G *67/02*
U.S. Cl. 215—252 **5 Claims**



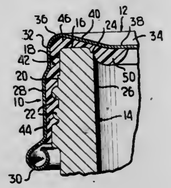
1. A tamper indicating fitment for use in combination with a metal closure of the type having a flared lower skirt portion, said fitment comprising a plastic ring having a lower tamper indicating band secured thereto by circumferentially spaced bridges, said ring having at its end and internal seat for seating against a metal closure lower skirt portion, and releasable locking means disposed above said seat for locking above a metal closure lower skirt portion, said ring having a sleeve extending around and projecting above said seat, and said locking means are carried by said sleeve, said locking means being in the form of a plurality of circumferentially spaced fingers.

4,576,299

CLOSURE CAP WITH IMPROVED TOP-LOAD LEAKAGE RESISTANCE

Frank H. Lecinski, Jr., Harwood Heights, Ill., assignor to Continental White Cap, Inc., Northbrook, Ill.

Filed Oct. 29, 1984, Ser. No. 665,887
Int. Cl.⁴ B65D *41/22*
U.S. Cl. 215—318 **5 Claims**



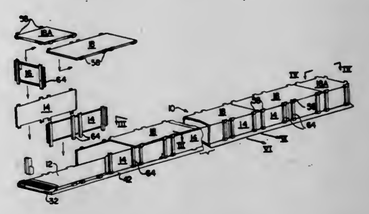
1. A closure cap of the press on/twist off type wherein there is a shell including a skirt and an end panel, and within said shell there is a sealant of a generally inverted L-shape cross section including a generally cylindrical portion adjacent said skirt and an annular portion adjacent said end panel, said annular sealant portion being specifically adapted to engage in sealing relation an end sealing surface of a container in sealed relation, said closure cap being improved by at least that part of said annular sealant portion remote from said skirt being of an increased thickness with the thickness of said part of said annular sealant portion remote from said skirt being sufficient to form a seal with an internal cylindrical surface of a container finish, the thickness of said part of said annular sealant portion being such as to have a container neck finish engaging depth ranging from 0.025 to 0.045 inch as compared to a depth on the order of 0.015 inch for existing closure caps of the same size and shape.

4,576,300

REUSABLE SHIPPING CONTAINER

Edward S. Kedzior, Claremore, Okla., assignor to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa.

Filed Jul. 3, 1984, Ser. No. 627,377
Int. Cl.⁴ B65D *9/18*
U.S. Cl. 217—13 **23 Claims**



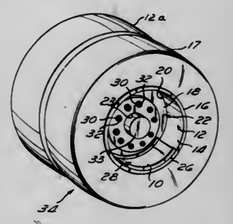
1. A reusable shipping container, particularly adapted for the shipment of tubular product, said container comprising a generally rectangular base adapted to support said product during shipment, generally rectangular side components and end components, with said side components being adapted for edge-to-edge, series connection longitudinally along opposite edges of said base, a plurality of exterior receptacles provided in said base whereby said side and top components can be used to vary the length of said shipping container, a plurality of projecting members provided on said side components and said end components, said projecting members being adapted to mate with and extend into said receptacles provided in said base to removably secure said side components and said end components to said base during assembly of said container and generally rectangular top components having a plurality of receptacles, said projecting members being adapted to mate with said receptacles of said top components to removably secure said components and said end components to said top components during assembly of said container in edge-to-edge, series connection longitudinally relative to said base.

4,576,301

WHEEL PROTECTOR

Bob L. Tedder, 18864 Northam, West Covina, Calif. 91792

Filed Sep. 30, 1983, Ser. No. 537,680
Int. Cl.⁴ F16N *31/00*
U.S. Cl. 220—1 C **4 Claims**



1. A wheel protector tray for shielding a dish-type wheel of a vehicle from contact with lubricants and other material during removal and replacement of an axle of the vehicle through a central opening in the wheel, comprising:

a tray formed to fit inside the dish-shaped portion of the wheel, said tray including a bottom portion, said tray having an inner lip portion and an outer lip portion extending away from said bottom portion and cooperating therewith to form a container for placement in the dish-shaped portion of the wheel below an axle to which the

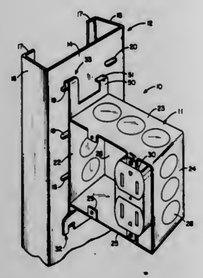
wheel is mounted for receiving lubricants and objects as the axle is removed from the vehicle to prevent such lubricants and objects from contacting the outer surface of the wheel.

4,576,302

ELECTRICAL RECEPTACLE BOX ASSEMBLY

Robert A. Smolik, 670 West Seventh St., St. Paul, Minn. 55102

Filed May 6, 1985, Ser. No. 730,490
Int. Cl.⁴ H02G 3/10
U.S. Cl. 220—3.5 **16 Claims**



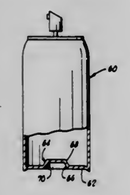
13. An electrical receptacle box assembly comprising:
a wall stud with a relatively thin-walled major side member having a mounting hole pattern including first and second longitudinally spaced-apart mounting holes;
an electrical receptacle box having a first side wall carrying first and second fastening means connectable to first and second holes of the mounting hole pattern of the wall stud;
said first fastening means including first, second, and third laterally spaced longitudinal fingers, said second finger being outwardly offset with respect to the first and third fingers forming a wedge-shaped gap for engagement with a lateral edge of the first mounting hole;
said second fastening means including linear means extendible through and engageable with the second mounting hole when the first fastening means is engaged with the first mounting hole of the hole pattern on the major side member of the wall stud.

4,576,303

RUPTURABLE PRESSURE RELIEVING FLUID CONTAINERS

Arnold L. Mundt; Charles E. Beair, both of Tulsa; Leo J. Naumann, Broken Arrow; Alan T. Roberts, and Ronald J. LaPelle, both of Tulsa, all of Okla., assignors to BS&B Safety Systems, Inc., Tulsa, Okla.

Filed Feb. 21, 1985, Ser. No. 703,867
Int. Cl.⁴ F17B 1/14; B65D 51/16
U.S. Cl. 220—89 A **22 Claims**



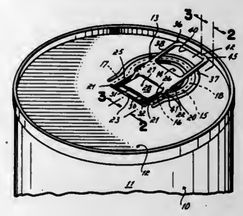
1. A rupturable pressure relieving fluid container apparatus comprising:
an enclosure forming said container which includes a wall of substantially uniform thickness;
a substantially frustum-shaped indentation in said wall which forms a recess therein exteriorly of said container and a corresponding protuberance interiorly of said container;
at least one score formed on the indented part of said wall defining a rupture detachable blowout area; and
said frustum-shaped indentation being of a size with respect to the thickness of said wall whereby when a predetermined fluid pressure is exerted from within said container on said wall, said indentation inverts and tears along the line of weakness created by said score thereby detaching a wall portion corresponding to said blowout area and relieving fluid pressure therethrough.

4,576,304

EASY-OPEN CLOSURE

John C. Henning, Fairfield, Ohio, assignor to Product Investment Incorporated, Cincinnati, Ohio

Filed May 15, 1985, Ser. No. 734,041
Int. Cl.⁴ B65D 17/34
U.S. Cl. 220—269 **21 Claims**



1. A closure for beverage containers, said closure comprising:
a top wall adapted to be secured to the container;
a sealing tab defined by a score line within said top wall;
a lifting tab lying within the periphery of said top wall and overlying at least a portion of said sealing tab, said lifting tab comprising a main portion and an arm portion angled downwardly from said main portion;
recessed means carried by said lid portion for restraining and supporting said arm portion for pivotal movement;
fulcrum means disposed on said top wall for engagement with an area of said lifting tab remote from the ends thereof;
a projection on said sealing tab disposed for engagement with the arm portion of said lifting tab when said tab is rotated about said fulcrum means, whereby when said lifting tab is pivoted about said fulcrum means, said arm portion engages said abutment, shearing said sealing tab along said line of weakening and forcing said tab outwardly away from the opening formed in said top wall.

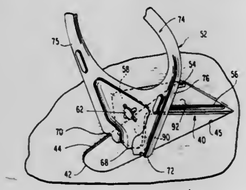
4,576,305

SHEET METAL WALL PANEL AND INTEGRAL OPENER STRUCTURE

William T. Saunders, Weirton, W. Va., assignor to Weirton Steel Corporation, Weirton, W. Va.

Filed May 20, 1985, Ser. No. 736,080
Int. Cl.⁴ B65D 17/34
U.S. Cl. 220—269 **20 Claims**

1. Easy-access sheet metal wall panel and integral opener structure for a can which provides for Class 1 and Class 2 lever action in severing a portion of such wall panel to provide an opening, comprising
a sheet metal wall panel for a can,
such wall panel having a predetermined contour,
scoreline means of reduced sheet metal thickness defining the scored periphery of an elongated tear strip in the sheet metal wall panel,
such tear strip being symmetrical about its central longitudinal axis,
an elongated sheet metal opener for severing residual metal of such scoreline means to make such tear strip movable from the predetermined contour of such wall panel,
such elongated opener having a working end and a handle end located at opposite longitudinal ends of its central longitudinal axis, and
unitary rivet means for securing such elongated opener to such elongated sheet metal tear strip with the central longitudinal axis of such opener overlaying and having the same direction as the central longitudinal axis of such tear strip;
such scoreline means including
an arcuate-shaped scoreline defining one longitudinal end of such elongated tear strip and a pair of elongated scoreline legs extending toward the remaining longitudinal end of such elongated tear strip,
such centerline longitudinal axis of the elongated tear strip intersecting such arcuate-shaped scoreline substantially at its midpoint,
such elongated scoreline legs extending from such arcuate-shaped scoreline, one each on opposite lateral sides of its midpoint,
such scoreline legs being spaced laterally from the central longitudinal axis of the tear strip with the major component of direction of each of such pair of scoreline legs being substantially the same as that of the centerline longitudinal axis of such tear strip;



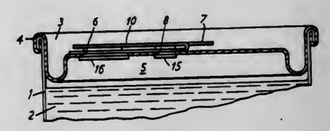
the unitary rivet means joining sheet metal contiguous to the working end of such opener to sheet metal within the scored periphery of such tear strip contiguous to such arcuate-shaped scoreline end of such tear strip,
such unitary rivet means being symmetrically disposed in relation to the central longitudinal axis of the elongated sheet metal opener and the centerline longitudinal axis of the elongated tear strip;
such working end of the elongated opener including
an initial-contact edge located at its distal end contiguous to its centerline longitudinal axis, and
pivot point contact means located in longitudinally recessed relationship to such initial-contact edge including one pivot point contact on each lateral side of such opener in laterally spaced relationship from the central longitudinal axis of such elongated opener;
such elongated opener being secured to sheet metal of the elongated tear strip such that its initial-contact edge is contiguous to and in overlaying relationship to a portion of such sheet metal tear strip which is contiguous to such arcuate-shaped scoreline at its midpoint so as to cause initial rupturing of such arcuate-shaped scoreline by Class 1 lever action upon movement of such opener handle end in an arc in a direction away from the external surface of such wall panel,
such unitary rivet means being positioned to act as the fulcrum for such Class 1 lever action during such initial rupture;
such scoreline means being further severed after such initial rupture by contact of such working end pivot point means with wall panel sheet metal externally of such tear strip to cause further severing along such scoreline means by Class 2 lever action with such pivot point contact means acting as the fulcrum for such Class 2 lever action as the handle end of the tab opener is continued to be moved in such arc externally of such can.

4,576,306

CLOSURE FOR A CONTAINER HAVING VENT AND TETHERED MEANS

Stephen F. Kelsey, Ilford, and Andrzej J. J. Juty, Harrow, both of England, assignors to Metal Box plc, England

Filed Feb. 7, 1985, Ser. No. 699,243
Claims priority, application United Kingdom, Feb. 18, 1984, 8404320
Int. Cl.⁴ B65D 17/34
U.S. Cl. 220—271 **10 Claims**



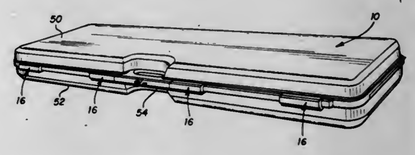
1. A closure for a container of the kind having a pouring aperture and a venting aperture in one end of the container, said closure being moulded in one piece of plastics material and comprising respective annular collar portions adapted to fit tightly within the said apertures, and respective plugs each attached by a rupturable section of the plastics material to the mouth of its annular collar portion to seal the respective aperture, each plug being shaped so that, after breaking of the rupturable section to open the aperture, the plug can be forced back into the collar portion to re-seal the aperture, the two plugs being connected to one another by a connecting member which is flexibly connected to one of the collar portions so as to retain the plugs after opening of the apertures, wherein the connecting member is extended beyond the vent plug to form a pull tab, which is thereby connected directly to the vent plug and through the connecting member to the pouring aperture plug, and the flexible connection of the connecting member to the said one collar portion is provided by flexible tie means extending from a side or sides of the pouring aperture plug to the said one collar portion.

4,576,307

SEPARABLE ELEMENTS HELD TOGETHER BY A SLIDING LATCH

Donald V. Frydenberg, Arlington, Tex., assignor to Doskocil Manufacturing Co., Inc., Arlington, Tex.

Filed Jan. 5, 1984, Ser. No. 568,387
Int. Cl.⁴ B65D 45/16
U.S. Cl. 220—324 **10 Claims**



1. A container, comprising:
(a) first and second container portions which are relatively movable between an open configuration and a closed configuration, and the container portions cooperating when they are in a closed configuration to define a compartment, and the container portions having first edges which are juxtaposed when the compartment is closed and separated when the compartment is open;
(b) a rail fixed to the first edge of a first one of the container portions, said rail extending linearly along said edge for a significant length but being interrupted by two adjacent gaps;

(c) a pair of posts fixed to the first edge of the second container portion and positioned so as to be insertable within the two rail gaps when the two container portions are in their closed configuration, and said posts having a transverse configuration which matches the transverse configuration of the rail, whereby said posts may be described as forming geometric extensions of the rail when the two container portions are closed; and

(d) the first and second container portions being configured identically and each portion having both a rail at one location and a pair of posts at another location, and wherein the container portions are oriented during assembly of the container so that they are 180 degrees apart, and the first and second container portions having second edges which are permanently joined together with at least one hinge pin, and the posts affixed to one container portion are located at one end of the container and the posts affixed to the other container portion are located at the opposite end of the container; and

(e) slide closure means mounted on the first and second container portions so as to be carried thereby at all times, and said slide closure means having an interiorly facing opening adapted for engaging said linear rail and for being captured by said rail, and said slide closure means having an interior configuration which is slightly larger than the transverse cross section of the rail so as to be slideable along the rail, and said slide closure means having a first position at which the pair of posts are free to move transversely with respect to the rail such that the two container portions may be opened, and the slide closure means being movable to a second position at which it completely envelope the two posts and at least a portion of the rail, whereby the slide closure means may preclude opening of the container by virtue of preventing transverse movement of the posts with respect to the rail.

5. A slide-type latching mechanism, comprising the combination of:

(a) a non-planar rail affixed to a base, and the rail being interrupted by a gap and the gap being sufficiently long as to receive a slide, whereby the slide and rail may become engaged so as to hold the slide on the rail but permit relative movement of the slide with respect to the rail;

(b) an elongated slide having a length which is at least slightly greater than the length of the gap in the rail, and the slide having a longitudinal cavity that opens downwardly into the bottom of the slide, and the cavity being partially bounded by at least one locking element that is configured and positioned so as to establish in the slide a transverse cross-section which complements the cross section of the non-planar rail, and the bottom of the slide having a short and centrally located transverse opening that is as wide as the top of the rail;

(c) a post extending upwardly from the base at approximately the center of the rail gap, and the post being configured so that it functions as a geometric extension of the rail;

(d) the rail and the slide constituting two structural members having an inherent resilience, and the resilience of at least one of said two members being sufficient as to permit temporary deformation in order that one end of the slide may be inserted into the rail gap and the slide may be positioned so that its transverse opening may be juxtaposed with and envelop the post, and the memory of the temporarily deformed member being such as to cause it to return to its original configuration after the slide has been forced into engagement with the rail, whereby the slide may become captured so as to envelop the rail and be slidable therealong;

(e) structural means for filling at least a portion of the rail gap when the captured slide has been moved longitudinally along the rail and away from the rail gap, and said structural means having an external shape which permits it to fit within the longitudinal cavity of the slide, and said structural means being captured and held by the slide when the slide has been subsequently moved to a latching position wherein it rests over the rail gap, whereby anything that is fixed to said structural means will be held adjacent the base when the slide is moved to its latching position over the structural means; and

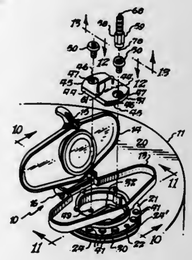
(f) the post in the center of the rail gap having a top that is offset in a longitudinal direction with respect to the lower portion of the post, such that the vertical face of the post is not linear, whereby any structural means that matches the configuration of the post and fills the rail gap will be secured against movement in at least two directions along different axes before the slide is moved to its latching position and secured against movement in three directions after the slide is moved to its latching position.

4,576,308

TANK HATCH OPENING OBSTRUCTING CONSTRUCTION

Jeffrey R. Sullivan, Boston, N.Y., assignor to McGard, Inc., Buffalo, N.Y.

Filed May 10, 1985, Ser. No. 732,671
Int. Cl.⁴ B65D *45/00*
U.S. Cl. 220—327 **35 Claims**



1. In a thief hatch construction mounted on the top wall of a tank having a wall opening therein, said thief hatch construction including a base plate, a base plate opening in said base plate overlying said wall opening, a plurality of first holes in said top wall surrounding said wall opening, and a plurality of second holes in said base plate in alignment with said first holes for receiving bolts for fastening said base plate to said top wall, an obstructing structure for obstructing said wall opening comprising an adapter plate mounted between said top wall and said base plate, first bolt means extending downwardly from said adapter plate and through at least one of said first holes for securing said adapter plate to said top wall, an adapter plate opening in said adapter plate in registry with said base plate opening and said wall opening, a plurality of third holes in said adapter plate in registry with said first and second holes, second bolt means extending through said first, second and third holes for securing said base plate and said adapter plate to said top wall, an obstructing plate, and locking means for selectively locking said obstructing plate to said adapter plate in obstructing relationship to said adapter plate opening to thereby obstruct said wall opening.

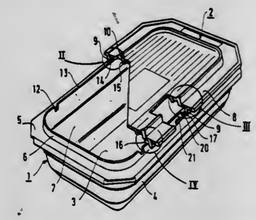
4,576,309

FOOD CONTAINER

Guy Tzifkansky, Fontenay aux Roses, and Jean-Claude Marchais, L'Hay les Roses, both of France, assignors to Cidelcem, Paris, France

Filed Jul. 17, 1985, Ser. No. 755,990
Claims priority, application France, Jul. 20, 1984, 84 11575
Int. Cl.⁴ B65D *51/16*
U.S. Cl. 220—366 **7 Claims**

1. A vertically upwardly open food container having a substantially rectangular horizontal bottom and integral flared upright walls terminating in a substantially rectangular horizontal opening and including a horizontal rim near the top thereof which is outwardly rectangular in shape and which surrounds the opening to the container, and a vertical rib extending the walls above the rim, said container being provided with a horizontal cover including firstly a horizontal rim and secondly a vertical rib projecting beneath the rim and engaging around the vertical rib of the container, with the vertical rib of the container having substantially the same height as the vertical rib of the cover, the container including



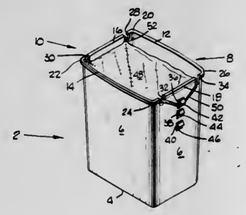
the improvement whereby the cover rib includes a plurality of shoulders adjacent its top connection to the cover for engaging with the container rib in such a manner that in a first position the cover is in a high position with the bottom of the cover rib being raised above the container rim, and in a second position with the cover being low relative to the first position, the bottom of the cover rib comes close to or into contact with the container rim, whereby, with the cover rib being at a distance from the container rib in the first position considerable ventilation of the container interior occurs.

4,576,310

CONTAINER FOR USE WITH PLASTIC BAGS

Charles B. Isgar, 1014 S. Ogden St., Denver, Colo. 80209, and Shirley K. Isgar, 1104 Maxwell, Boulder, Colo. 80302

Filed Jul. 13, 1984, Ser. No. 630,495
Int. Cl.⁴ B65D *90/04*
U.S. Cl. 220—404 **10 Claims**



1. In a container supporting a limp, nonself-supporting plastic bag wherein the plastic bag has at least two handles adjacent the open end thereof and wherein each handle forms an opening between the handle and the body of the plastic bag, the improvement comprising:

a hollow container having a bottom and an upstanding peripheral wall secured to said bottom and defining an opening at the top end of said peripheral wall;

a peripheral edge defined by the termination of said peripheral wall;

a first pair of spaced apart notches extending downwardly from said edge into said peripheral wall;

spaced apart portions of one of said handles inserted and retained in said first pair of notches;

a second pair of spaced apart notches located opposite to said first pair of notches and extending downwardly from said edge into said peripheral wall;

spaced apart portions of the second of said handles inserted and retained in said second pair of notches; and

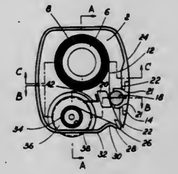
means for securing a portion of each of said handles located between said spaced apart portions to said peripheral wall so that the bottom of said plastic bag is adjacent to said bottom of said container and the open end of said plastic bag is held in an open position so that items may be placed therein.

4,576,311

TAB DISPENSER WITH ODOR APPLICATOR

Stuart L. Horton, 9 Woodward Rd., Cromer, New South Wales 2099, and Frederick P. Kann, 2/6 Elizabeth Parade, Lane Cove, New South Wales 2066, both of Australia

Filed Aug. 30, 1983, Ser. No. 527,793
Int. Cl.⁴ B65D *83/08*; B65H *5/28*
U.S. Cl. 221—73 **6 Claims**



1. A dispenser device having a housing with a discharge opening, a supply reel within the housing incorporating a mounting tape and a series of tabs releasably and adhesively mounted on the mounting tape, the mounting tape extending from the supply reel to an applicator containing perfume or deodorant and being arranged to apply a coating of the perfume or deodorant to the top surface of the tabs, said applicator being in continuous bearing contact with the mounting tape, the mounting tape extending from the applicator to a discharge means arranged such that the mounting tape is sharply redirected adjacent the discharge opening, the mounting tape extending from the discharge opening to a take-up reel, the arrangement being such that in use as the mounting tape is sharply redirected adjacent the discharge opening, one of said tabs having its top surface coated with perfume or deodorant is released from the mounting tape and is discharged from the discharge opening, the mounting tape from which tabs have been released being taken up by the take-up reel.

4,576,312

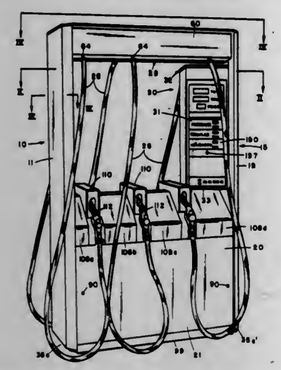
FUEL DISPENSING STATION

George E. Swick, Jr., Muskegon, Mich., assignor to Bennett Pump Company, Muskegon, Mich.

Filed Mar. 19, 1984, Ser. No. 591,000
Int. Cl.⁴ B67D *5/06*
U.S. Cl. 222—27 **13 Claims**

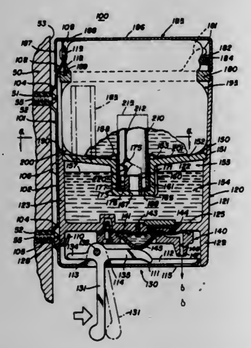
1. A fuel dispenser having plural dispensing hoses on each of two faces, said dispenser having a pair of spaced, upright end standards, means for metering and supplying fuel and a housing enclosing said metering means in a chamber positioned between and rigidly connected to the lower portions of said standards; a hollow header extending between and rigidly connected to the tops of said end standards; each of said end standards being formed to provide a vertical passage and a removable cover to enclose the same; fuel dispensing hoses depending from each face of said header; fuel conduits connecting each of said hoses to said metering means, all of said conduits extending upwardly through one of said end vertical passages; an electrical power supply for said metering means and electrical conductors therefor; the conductors for said

electrical power supply being located in the vertical passage of the other end standard and said passage in said other standard.



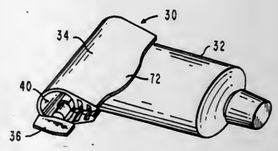
being isolated and sealed from said chamber, said first passage and said header.

4,576,313
FLUID REFILL POUCH AND DISPENSER
Randel P. Smith, and Robert L. Steiner, both of Chicago, Ill., assignors to Steiner Corporation, Salt Lake City, Utah
Filed May 8, 1980, Ser. No. 146,641
Int. Cl.⁴ B65D *17/42*
U.S. Cl. 222—81 **48 Claims**



10. A refillable fluid dispenser comprising a closed wall structure defining a vessel, partition means separating said vessel into a lower fluid reservoir and an upper refill compartment, dispensing means carried by said vessel for dispensing fluid from said reservoir, a refill well extending from said partition means into said reservoir and having a side wall and an inner wall closing the end of said side wall extending into said reservoir, and a piercing member carried by said inner wall and projecting therefrom into said refill well, said inner wall having a refill aperture therethrough providing direct communication between said reservoir and said refill compartment, the inner surface of said side wall having a plurality of longitudinally extending projections thereon extending inwardly toward the associated piercing member and being spaced therefrom a predetermined distance.

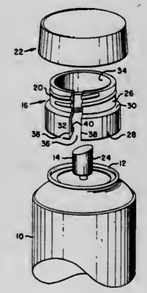
4,576,314
DEVICE FOR SQUEEZING AND WINDING COLLAPSIBLE TUBES
Abe G. Elias, 3300 Skyline Blvd., Apartment 208, Reno, Nev. 89509, and Peter G. Elias, 6 Wedgewood Dr., Winnipeg, Manitoba, Canada R3T 2J8
Filed Nov. 16, 1983, Ser. No. 552,349
Int. Cl.⁴ B65D *35/28*
U.S. Cl. 222—97 **18 Claims**



1. A device for squeezing and winding a collapsible tube, the device comprising:
a body including a tubular portion and a pair of jaw portions which are integrally supported on the tubular portion wherein the tubular portion defines a cavity for receiving an empty collapsible tube portion and wherein the jaw portions define an axially extending opening into the cavity and the jaw portions extend outward from the tubular portion on respective opposite sides of the opening,
a slotted elongated key for extending axially in the cavity and having a handle portion for winding and pulling an empty portion of the collapsible tube through the opening into the cavity,
said tubular portion also having a thickness defining a flexible and resilient wall portion spaced from the opening which permits the jaw portions at the opening to separate and admit a content containing tube portion of the collapsible tube therebetween,
said jaw portions having a thickness substantially greater than the flexible wall portion thickness to render the jaw portions more rigid than the flexible wall portion,
said jaw portions having inner planar surfaces which extend in parallel planes when the jaw portions are squeezed against the collapsible tube portions to express the contents from the content containing tube portion admitted between the jaw portions, and
said jaw portions having outer surfaces for being readily engaged and squeezed by fingers of a user to squeeze the inner surface against the content containing tube portion between the jaws.

18. A device for squeezing and winding a collapsible tube, the device comprising:
a body including a tubular portion and a pair of jaw portions which are integrally supported on the tubular portion wherein the tubular portion has an axially extending opening and the jaw portions extend outward from the tubular portion on respective opposite sides of the opening for expressing contents from a content containing portion of the collapsible tube,
said tubular portion defining a cavity for receiving an empty portion of the collapsible tube,
a slotted elongated key for extending axially in the cavity and having a handle portion for winding and pulling an empty portion of the collapsible tube through the opening into the cavity,
said key including a tubular shank with a longitudinal slot therein for receiving the closed end of the collapsible tube,
a pin for insertion into and for withdrawal from the tubular shank to secure and to release, respectively, the closed end of the collaspsible tube therein, and
said pin including a shaft with a point on one end and a head on the opposite end wherein the shaft has a diameter sufficiently large so that, upon insertion of the shaft into the tubular shank, the closed end of the collapsible tube is clamped between the shaft and the tubular shank, the point on the shaft is designed to bend the closed end of the collapsible tube during insertion of the pin into the tubular shank, and the head is designed to facilitate grasping and withdrawal of the pin from the tubular shank.

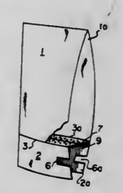
4,576,315
SAFETY CLOSURE FOR AEROSOL CANS
Ralph A. Vitale, P.O. Box 15736, Sarasota, Fla. 33579
Filed May 10, 1984, Ser. No. 609,512
Int. Cl.⁴ B67D *5/32, 5/06*
U.S. Cl. 222—153 **16 Claims**



1. A safety closure for an aerosol can having a peripheral rim, comprising:
a split sleeve having top and bottom openings and a continuous slit extending the height of the sleeve between said openings, said slit forming first and second edges in said sleeve;
said sleeve having externally thereon a screw thread;
said sleeve being normally biased such that the slit is closed and said edges are in contact;
an inwardly extending flange at the bottom of said sleeve defining said bottom opening, whereby said flange can engage below the peripheral rim of the aerosol can after said sleeve has been temporarily flexed apart along said slit to enable said flange to pass over said rim;
a safety cap having an internal screw thread engageable with said external screw thread to prevent said sleeve from flexing apart along said slit and to lock said flange under said rim; and
means, incorporated in said safety cap, for preventing said cap from being simply unscrewed from said sleeve without performing additionally a safety operation.

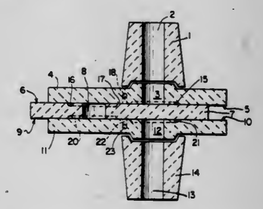
4,576,316
DISPENSING BAG
Robert D. Foster, St. Anns, Canada, assignor to Spred-A-Bag Inc., St. Anns, Canada
Division of Ser. No. 386,537, Jun. 9, 1982, Pat. No. 4,486,187, which is a continuation-in-part of Ser. No. 159,438, Jun. 13, 1980, abandoned. This application Aug. 16, 1984, Ser. No. 641,479
Int. Cl.⁴ B65D *47/10*
U.S. Cl. 222—541 **8 Claims**

1. A bag for packaging and dispensing particulate matter, comprising:
flexible front and back sections joined together along the side edges thereof and a flexible double end closure, the double end closure comprising an openable outer closure and a flexible inner gusset having a plurality of apertures therethrough, wherein the outer closure may be opened, to expose the apertures of the inner gusset and to permit dispensing of particulate matter therethrough,
wherein the front and back sections and double end closure are integral portions of the same section of flexible sheet material, the double end closure being the central portion and the front and back sections being folded over and superimposed end portions having folded end edges,
wherein the inner gusset of the double end closure comprises an inwardly folded middle portion of the double end closure joined to the insides of the front and back sections along joining lines generally parallel to and approximately equidistant from the folded end edges of the front and back sections, and



wherein the outer closure comprises portions of the double end closure adjacent the folded end edges of the front and back sections, which are sealed together and also sealed to the front and back sections along a sealing line generally parallel to the folded end edges of the front and back sections and remote from the joining lines of the inner gusset, whereby the outer closure is openable by severing the outer closure along a line between the sealing line and the joining lines of the inner gusset.

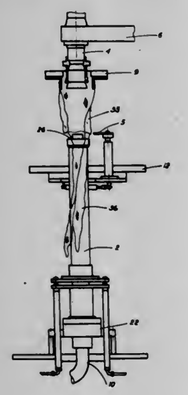
4,576,317
APPARATUS FOR PREVENTING AIR FROM CONTACTING MOLTEN METAL DURING DISCHARGE THROUGH A SLIDING CLOSURE UNIT
Otto Wenger, Zürich, Switzerland, assignor to Metacon Aktiengesellschaft, Zürich, Switzerland
Filed Aug. 2, 1984, Ser. No. 637,010
Claims priority, application Fed. Rep. of Germany, Sep. 1, 1983, 3331483
Int. Cl.⁴ B22D *41/08*
U.S. Cl. 222—600 **11 Claims**



1. In a sliding closure unit for regulating the discharge flow of molten metal from a metallurgical vessel, said unit being of the type including at least two refractory plates having therethrough discharge openings, said plates abutting on respective planar sliding surfaces, and said plates being relatively displaceable between open and closed positions to bring said discharge openings into and out of alignment, respectively, the improvement of means for preventing air from flowing to said discharge openings and contacting molten metal therein, said preventing means comprising:
a generally U-shaped recess formed in each said sliding surface, each said recess including a pair of free arms extending toward the other said recess, said recesses being dimensioned such that, when said plates are in said open position, said arms of said recesses overlap, thereby form-

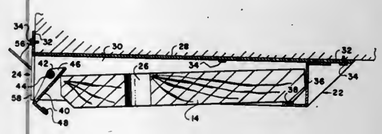
ing a connected recessed area encircling said discharge openings;
one of said plates having therethrough a channel opening into said recessed area; and
means for connecting said channel to a vacuum source and thereby for, when said plates are in said open position, creating a vacuum in said recessed area and preventing air from contacting molten metal passing through said discharge openings.

4,576,318
PANTYHOSE CROTCH EDGE STRETCHING APPARATUS AND METHOD
Vinicio Gazzarrini, Impruneta, Italy, assignor to Solis s.r.l., Florence, Italy
Filed Jul. 27, 1984, Ser. No. 634,953
Claims priority, application Italy, Aug. 5, 1983, 9494 A/83
Int. Cl.⁴ D05B *21/00, 35/08;* D06C *15/00*
U.S. Cl. 223—52 **20 Claims**



1. Apparatus for removing wrinkles from pantyhose portion surrounding a crotch area to which a gusset is applied, the pantyhose having a pair of leg portions and a panty portion, comprising:
edge stretching means for stretching the edge portion of the pantyhose surrounding said crotch area;
guide means for receiving the pantyhose from a feeding mechanism and transferring the pantyhose to the edge stretching means;
said edge stretching means including receiving means for receiving the pantyhose and means for holding the leg portions in a fixed position, movable means associated with said receiving means for moving the panty portion towards a hollow head associated with a gusset sewing machine for moving the panty portion into said hollow head;
said receiving means including a single vertical tube aligned with said hollow head for receiving both of said legs portions of said pair of leg portions; and
suction means cooperating with said holding means for maintaining the pantyhose portion surrounding the crotch area stretched on said hollow head.

4,576,319
BLOCK STORAGE
Bill G. Brown, Box 1258, Levelland, Tex. 79336
Filed Oct. 5, 1984, Ser. No. 658,320
Int. Cl.⁴ B60R *9/00*
U.S. Cl. 224—42.41 **3 Claims**

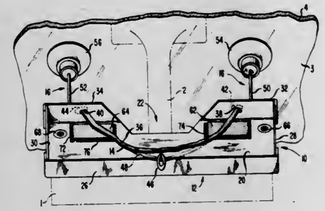


1. In combination with
a. a vehicle having
b. an underside spaced above the ground,
c. a periphery of the underside, and
d. at least one leveling jack mounted on the vehicle;
the improved structure comprising:
e. a block for supporting the jack on the ground,
f. a rack attached to the underside of the vehicle, having
g. a top,
h. an open bottom, and
i. sides connected to the top and spaced apart more than the block width,
j. a stationary inboard plate of the rack spaced away from the vehicle periphery,
k. the inboard plate having an inboard lip that extends toward the vehicle periphery,
l. a movable catch plate journaled to the sides of the rack by a pivot rod near the vehicle periphery for movement about a horizontal pivot axis between
m. an open position wherein a catch lip of the catch plate is spaced from the inboard lip sufficiently for one end of the block to be inserted between the inboard lip and the top of the rack and for the other end of the block to be moved past the catch lip toward the rack top, and
n. a closed position wherein the catch lip is biased toward the inboard lip sufficiently to engage the block so that the block is retained at its ends between the respective lips and the top,
o. a crank rod eccentric to the pivot axis on at least one end of the pivot rod,
p. the catch plate connected to the pivot rod and the crank rod so that the catch plate revolves about the pivot axis responsive to movement of the crank rod, and
q. a spring connected at one end to the crank rod and at another end to the rack at a point spaced away from the periphery and the pivot axis so that the spring biases the catch lip as defined above and acts through a straight centerline extending from the crank rod away from the vehicle periphery,
r. the crank rod oriented to the catch plate so that the spring centerline extends above the pivot axis and the catch lip is biased away from the inboard lip when the catch plate is in the open position, and so that the spring centerline extends below the pivot axis and the catch lip is biased toward the inboard lip when the catch plate is in the closed position.

4,576,320
EYEGLASS HOLDER FOR OPERATIVE ASSOCIATION WITH THE REAR VIEW MIRROR ON A VEHICLE
F. Jerome Mead, 37 Clinton Pl., Morristown, N.J. 07960
Filed Nov. 29, 1984, Ser. No. 676,520
Int. Cl.⁴ B60R *7/00*
U.S. Cl. 224—311 **3 Claims**

1. A spectacle holder for use in conjunction with a rear view mirror of a vehicle, comrpising:
a. receptacle means for supporting a pair of spectacles;

b. means connected to said receptacle means for releasably engaging said pair of spectacles to retain the latter on said receptacle means; and
c. mounting means for mounting said receptacle means adjacent the top of said rear view mirror so the receptacle means is positioned in a substantially horizontal plane,



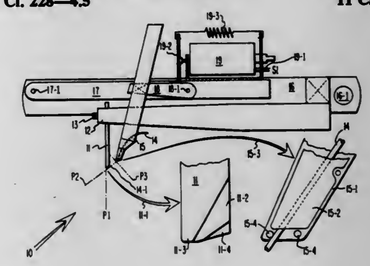
d. said mounting means including, suction cup means for engagement with a front windshield of said vehicle, stem means connected to said suction cup means and slidably connected to said receptacle means, and
e. strap means connected to said receptacle means for releasably securing said stem means to said receptacle means for slidable movement relative said receptacle means.

4,576,321
APPARATUS FOR CONNECTING A STRIP OF PHOTOGRAPHIC PAPER TO A FLAT CONVEYOR BELT
Roberto Marson, Pordenone, Italy, assignor to Gretag San Marco S.p.A., Pordenone, Italy
Filed Jul. 19, 1983, Ser. No. 515,172
Claims priority, application Italy, Jul. 20, 1982, 34031/82[U]
Int. Cl.⁴ B65H *17/34;* G03B *3/13*
U.S. Cl. 226—173 **3 Claims**



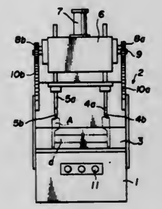
1. An apparatus for connecting a strip of material to a flat conveyor belt employed to convey the strip along a path, said apparatus comprising:
an elongated member having a first end thereof hook means for fitting over one edge of a flat conveyor belt, said elongated member having a supporting portion spaced from said hook means and adapted to have attached thereto a strip of material;
a slide member mounted for longitudinal sliding movement along a portion of the length of said elongated member between said hook means and said supporting portion, said slide member having projecting therefrom means for engaging the other edge of the flat conveyor belt, said slide member being movable along said elongated member between an open position relatively away from said hook means, whereat the conveyor belt may be introduced between said hook means and said engaging means, and a clamping position relatively toward said hook means, whereat respective opposite edges of the conveyor belt are engaged by said hook means and said engaging means; and
means for urging said slide member constantly toward said clamping position thereof, said urging means comprising first and second levers hinged to each other and hinged respectively to said elongated member and to said slide member, and a spring acting between said second lever and said slide member to move said slide member to said clamping position thereof.

4,576,322
MACHINE FOR ULTRASONICALLY BONDING WIRES TO CAVITY-DOWN INTEGRATED CIRCUIT PACKAGES
Jorge H. Figueredo, Chula Vista, Calif., assignor to Burroughs Corporation, Detroit, Mich.
Filed Sep. 14, 1984, Ser. No. 650,445
Int. Cl.⁴ B23K *37/00*
U.S. Cl. 228—4.5 **11 Claims**



8. An improved machine for bonding a wire between pads on an integrated circuit die and an integrated circuit package; said machine being of the type that includes a wedge means for transferring heat energy to one part of said wire of sufficient magnitude to bond it to said pads, a clamping means for grasping and pulling on another part of said wire to break it after said bonding operation, and a positioning means for moving said wedge means and clamping means to selectable bonding locations over said die and said package; wherein
both said wedge and said clamping means include respective passageways through which said wire is threaded and slides;
said clamping means moves the portion of said wire between said passageways to a first position where it makes a large angle with said wedge means, and to a second position where it makes a substantially smaller angle with said wedge means; wherein said large angle and said smaller angle differ by at least 15° and
said wedge means is adapted to pass said wire without bending at both said large and small angles.

4,576,323
FILLET-WELDING EQUIPMENT FOR PIPE MATERIALS
Yutaka Ohnishi, Akishima, Japan, assignor to Tachikawa Spring Co., Ltd., Tokyo, Japan
Filed Dec. 6, 1983, Ser. No. 558,529
Claims priority, application Japan, Dec. 9, 1982, 57-186305[U]
Int. Cl.⁴ B23K *27/00*
U.S. Cl. 228—29 **2 Claims**



1. A fillet welding device for welding each end of a first workpiece of circular cross-section to respective separated portions of a second workpiece so that said first workpiece is

transversely rigidly welded between said separated portions, said device comprising:

a base for holding said first and second workpieces such that said first workpiece transversely extends between said first and second separated portions;

a pair of arcuate gear racks separated from one another along the axis of said first workpiece and having a radius of curvature whose center is coincident to the axis of said first workpiece;

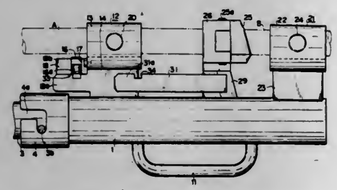
a movable member disposed between and supported by said pair of gear racks and including (a) a pair of pinion gears each intermeshed with a respective one of said gear racks, (b) forward and rearward pairs welding torch means extending from said movable member each having a welding tip disposed 90° from the other welding tip relative to the circular first workpiece, each said pair of welding torch means for welding one end of said first workpiece to a respective one of said separated portions of said second workpiece along a 180° weld line therebetween, (c) motor means housed within said movable member and having a pair of shafts respectively connected to said pair of pinion gears for rotatably driving said pair of pinion gears to cause said movable member to traverse an arc defined by said pair of gear racks wherein each said forward and rearward pairs of welding torch means responsively traverses a respective 90° of said respective weld lines to thereby collectively traverse 180° of said respective weld lines whereby said ends of said first workpiece are welded to said respective separated portions of said second workpiece.

4,576,324

GAS PRESSURE WELDING MACHINE

Tadashi Takimoto, Fuchu; Hirotsugu Oishibashi, Musashino; Katsuyoshi Ueyama, Musashino; Muneyuki Ohara, Musashino; Akio Kobayashi, Hachiohji; Keiichi Aoki, Tokyo; Mitsuo Nakamura, Higashi-Kurume, and Kenzo Hagiwara, Hachiohji, all of Japan, assignors to Japanese National Railways and Hakusan Seisakusho Co., Ltd., both of Tokyo, Japan

Filed Jan. 23, 1985, Ser. No. 694,167
Claims priority, application Japan, Feb. 22, 1984, 59-33273
Int. Cl.⁴ B23K *37/00*
U.S. Cl. 228—44.3 **4 Claims**



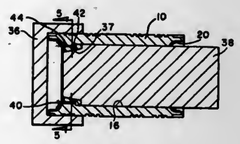
1. A gas pressure welding machine comprising a movable clamp means for clamping one of reinforcing rods to be joined together; a stationary clamp means for clamping the other reinforcing rod; a punching die for punching-shearing a bulge being formed around a joint portion of the reinforcing rods; a bottomed guide cylinder; a pressure application cylinder connected to one end of said guide cylinder and provided with a ram which is advanced or retreated within said guide cylinder; an outer cylinder slidably accommodated within said guide cylinder; an inner cylinder slidably accommodated within said outer cylinder, elastically energized toward said ram by means of a return spring, and adapted to come into collision contact with said ram so as to be movable in one direction in which said return spring is compressed when said ram is advanced and in the other direction in which said return spring is restored to its original position when said ram is retreated; a support leg portion firmly fixed to said guide cylinder for supporting thereon said stationary clamp means; a second support leg portion passed through a guide slot in said guide cylinder and firmly fixed to said outer cylinder for supporting thereon said movable clamp means; a third support leg portion passed through said guide slot in said guide cylinder and a second guide slot in said outer cylinder, and firmly fixed to said inner cylinder for supporting thereon said punching die; said movable clamp means being disposed as opposed to said stationary clamp means and moved close to or apart from said stationary clamp means with said guide slot in said guide cylinder and the inner circumference of said guide cylinder as its guides, and said punching die being interposed between said movable clamp means and said stationary clamp means and advanced or retreated it conjunction with said inner cylinder which is moved by said ram; and a key connection mechanism for detachably connecting said movable clamp means and said punching die; said movable clamp means being advanced in conjunction with said punching die by the advancement of said ram in a state wherein said movable clamp means and said punching die are connected by said key connection mechanism, thereby subjecting the reinforcing rods to gas pressure welding in a butted state to form a bulge around a joint portion of the reinforcing rods; only said die holder and said punching die thereon, upon detached from said movable clamp means, being advanced by the advancement of said ram to punchingshear the bulge.

4,576,325

METHOD OF MANUFACTURING A BICYCLE HUB

Walter F. Maurice, San Luis Potosi, Mexico, assignor to Allied Corporation, Morristown, N.J.

Filed Feb. 28, 1985, Ser. No. 706,815
Int. Cl.⁴ B23P *11/00*
U.S. Cl. 228—135 **5 Claims**



1. A method of manufacturing a hub for retaining a clutch and expandable shoes of a coaster brake, comprising the steps of:

transportating a supply of tubular material to a work station;

machining the interior of said tubular material to establish first and second diameters therein separated by a first shoulder;

cutting a cylindrical member from said tubular material;

placing said cylindrical member in a first fixture;

placing a ring member having a peripheral surface with a serrated section separated from a second shoulder by a groove in a second fixture;

moving said second fixture with respect to said first fixture to align said ring member with said second diameter of said cylindrical member;

applying a force to said second fixture to bring said serrated section into engagement with said first diameter of the cylindrical member; and

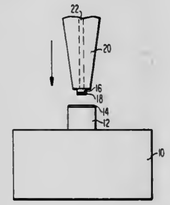
continuing to move said second fixture toward said first fixture to control the distortion of material from said first diameter by said serrated section until said second shoulder engages said first shoulder and thereby establishes a mechanical joint therebetween.

4,576,326

METHOD OF BONDING SEMICONDUCTOR DEVICES TO HEATSINKS

Frank Z. Hawrylo, Hamilton Township, Mercer County, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed May 14, 1984, Ser. No. 610,008
Int. Cl.⁴ B21D *39/00*; B23K *31/02, 1/20*
U.S. Cl. 228—171 **3 Claims**



1. A method of thermocompression bonding a semiconductor device having a bonding pad to a heatsink having a bonding pad using a die bonding machine which comprises:

(1) placing the heatsink on a main workstage including heating means of the machine;

(2) aligning a vacuum collet with the top surface of the heatsink bonding pad and locking in that alignment;

(3) burnishing the heatsink bonding pad with the collet so it is parallel to the collet;

(4) transporting the collet to a second workstage to pick up and burnish the device so it is parallel to the collet;

(5) transporting the collet with the burnished device back to the main workstage;

(6) placing the device on the heatsink so that the burnished, parallel bonding pads are in contact with each other; and

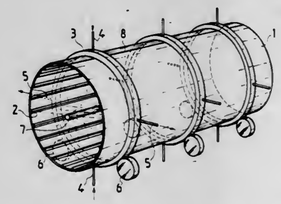
(7) applying a desired pressure from the collet and desired heat from the heating means for a time sufficient to provide a bond between the device and the heatsink.

4,576,327

PROCEDURE FOR AFFIXING BEARING HOOPS ON OUTER SURFACE OF LARGE DIAMETER DRUM

Matti Kahilathi, Lahti; Keijo Ventola; Matti Virtanen, both of Kartano, and Pentti Huhta, Salpakangas, all of Finland, assignors to Kone Oy, Helsinki, Finland

Filed Jun. 20, 1984, Ser. No. 622,542
Claims priority, application Finland, Jun. 20, 1983, 832248
Int. Cl.⁴ B23K *31/02*
U.S. Cl. 228—212 **11 Claims**



1. A procedure for affixing bearing hoops to the outer surface of a large diameter drum, so that said bearing hoops rest on carrier wheels thereunder and by the aid of which wheels the drum is rotated, said procedure comprising:

providing at least two hollow bearing hoops encircling a drum having an open longitudinal joint gap, the bearing hoops and the carrier wheels being placed in proper register with each other;

flowing a heating fluid through said hollow bearing hoops to warm and expand the hoops;

cooling the inner surface of the drum with a cooling fluid flowing from a centrally disposed pipe within the drum to cool and shrink the drum;

mechanically loading the drum in a direction such as to dilate the longitudinal joint gap, so that the drum is urged against the inner surface of the bearing hoops;

securing the drum in this dilated position by the aid of wedges pushed into the longitudinal joint gap;

welding inserts into the open longitudinal joint of the drum; and then

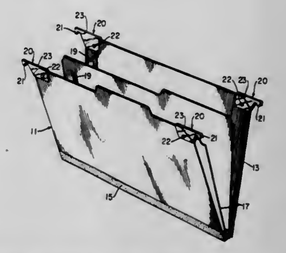
stopping the flow of heating fluid to the bearing hoops and allowing the hoops to cool and become affixed onto the drum.

4,576,328

HANGING PARTITION FOLDER

Alan D. Snider, Kew Gardens; Andrzej L. Soporowski, Freeport, and Manfred O. Herbst, Levittown, all of N.Y., assignors to Esselte Pendaflex Corporation, Garden City, N.Y.

Filed Nov. 16, 1984, Ser. No. 672,331
Int. Cl.⁴ B65D *27/00*
U.S. Cl. 229—1.5 R **6 Claims**



1. A hanging document folder comprising:

at least one generally rigid member adpated to retain documents and having two spaced-apart corners at one edge, two sides extending obliquely from the edge at the corners; and

hanging devices pivotally connected at each of said corners such that said hanging devices can be pivoted between a retracted position in which they are substantially flush with the respective two sides of said rigid member, which sides extend significantly beyond said hanging devices, and an extended position in which the hanging devices project from the sides of said rigid member in such a manner that they may engage and slide along rails arranged parallel to each other and perpendicular to the rigid member, a portion of each of said hanging devices contacting a stop in the form of a portion of the edge of said rigid member when in the extended position so as to prevent further pivotal movement beyond the extended position.

4,576,329

COLLAPSIBLE CONTAINER

Paul C. Wright, Brookland House, 46 Kneesworth St., Royston, Hertfordshire, and Robert Gault, 12 Ranmoor Cliffe Rd., Sheffield, both of England

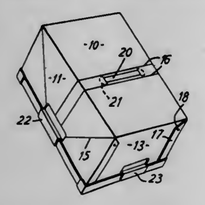
Filed Apr. 26, 1984, Ser. No. 604,011
Int. Cl.⁴ B65D *5/36*
U.S. Cl. 229—41 R **6 Claims**

1. A collapsible container formed from a stiff material comprising:

a bottom having a first end, a second end, two side edges and a middle portion;

a plurality of sides each connected to one of said first end, second end and two edges and said plurality of sides being operatively affixed to adjoining sides for forming a container when in the erected condition;

said middle portion of said bottom includes a spaced pair of fold lines which extend across said bottom and along each of said sides connected to said bottom side edges for permitting said container to be folded substantially in half;



fold lines extending diagonally along each of said sides connected to said bottom side edges from a point adjacent to the intersection of said side edges and said first and second ends to a point adjacent to the intersection of said pair of fold lines and an upper surface of said sides connected to said bottom side edges to permit said sides to be folded inwardly to form a substantially flat article when collapsed; and

a strap operatively connected to said bottom at a position between said pair of fold lines for providing a handle mounted exteriorly of said container when said container is in the collapsed position.

4,576,330

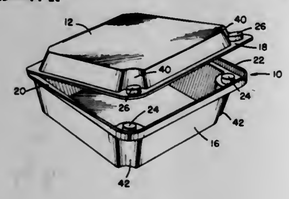
FOOD TRAY WITH LOCKABLE LID

Frank Schepp, Milford, Conn., assignor to Inline Plastics Corporation, Milford, Conn.

Filed Mar. 11, 1985, Ser. No. 710,398

Int. Cl.⁴ B65D *1/34*

U.S. Cl. 229—44 R **8 Claims**



1. A container comprising:

a tray portion,

an upper lid portion directly hinged to the rear of said tray portion for movement towards and away from said tray portion to open and close the same,

means for locking said lid portion to said tray portion, said locking means including:

a horizontal flange extending around the periphery of said tray portion,

a horizontal flange on said lid portion adapted to be seated on the horizontal flange of said tray portion, at least one upright cylindrical male element having a cylindrical side wall, a closed end, and an enlarged diameter portion at said closed end, said male element extending upwardly from the horizontal flange on said tray portion towards the lid portion, and

a cylindrical female element having a substantially cylindrical side wall,

a closed end, and an annular rim of a slightly smaller diameter than the enlarged diameter portion of said male element extending towards the tray portion from the corresponding position on the horizontal flange extending about the periphery of said lid portion for receiving the enlarged portion of said male element in snap engagement past said annular rim into frictional engagement with said side wall of said female element and providing a space defined by the bottom outer surface of the enlarged diameter portion of the male element, the inner surface of the cylindrical side wall of the female element, the upper surface of the annular rim of the female element and the exterior surface of the cylindrical side wall of the male element.

4,576,331

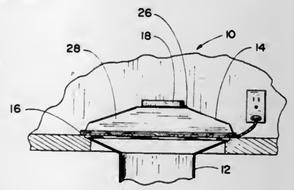
BOOSTER FAN AND AIR DEFLECTOR FOR FLOOR VENTS

Betty L. Harwell, 9643 E. 26th St., Tulsa, Okla. 74129

Filed Nov. 21, 1984, Ser. No. 673,602

Int. Cl.⁴ F24F *7/007*

U.S. Cl. 236—49 **1 Claim**



1. A booster fan and deflector for floor vents comprising:

(a) an essentially rectangular open grilled bottom member with a plurality of substantially vertical support legs with openings therebetween wherein the legs are attached to the underside of the outer perimeter of and extend downwardly from said rectangular bottom member and wherein said bottom member is adapted to rest on said legs suspended above and substantially covering a furnace floor vent;

(b) a first substantially vertical sidewall attached along and extending upwardly from one long side of said rectangular bottom member;

(c) a second substantially vertical sidewall attached along and extending upwardly from the other long side of said rectangular bottom member;

(d) a first inwardly and upwardly sloped sidewall attached along one of the short sides of the perimeter of said bottom member;

(e) a second inwardly and upwardly sloped sidewall attached along the other short side of the perimeter of said bottom member;

(f) an essentially square, horizontal top member attached along the upper edges of said sidewalls wherein said top member contains a circular opening;

(g) an essentially circular rotatable grill deflector means operatively attached to said opening in said top member wherein the parallel bars making up said grill deflector means are sloped such as to deflect air passing through said grill deflector means;

(h) an electric fan and motor means operatively positioned within said booster fan for moving air from the floor furnace vent through said circular rotatable grill deflector means; and

(i) a thermostatic switch means responsive to temperature wherein said switch means turn said electric fan and motor means on and off depending on the temperature of the air passing through said booster fan.

4,576,332

HEATING INSTALLATION WITH HEAT PUMP

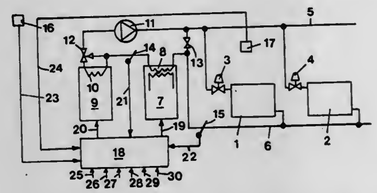
Poul Neldeberg, Sonderborg, and Steen H. Olsen, Nordborg, both of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Filed Feb. 19, 1985, Ser. No. 702,941

Claims priority, application Fed. Rep. of Germany, Mar. 2, 1984, 3407795

Int. Cl.⁴ G05D *23/00*

U.S. Cl. 237—2 B **4 Claims**



1. A heating installation of the type having a heat pump, radiators having valves, and a control device having a desired value generator for controlling the upstream temperature of said radiators that delivers an effective desired value which is by controlled parameters such as the external temperature and/or a reference room temperature, characterized in that said control device includes means responsive to said external temperature and/or said room temperature to produce a controlled upstream temperature value, a comparator which compares said controlled value with a variable limiting value which is larger than the downstream temperature by a predetermined temperature difference, and that said desired value generator reduces said effective desired value at least down to said variable limiting value when the latter is exceeded by said controlled value.

4,576,333

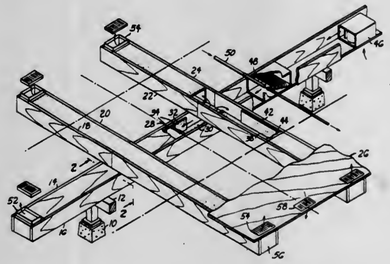
HEATING SYSTEM

James R. Piper, 9581 Featherhill Dr., Villa Park, Calif. 92661

Filed Aug. 3, 1981, Ser. No. 289,401

Int. Cl.⁴ F24F *7/06, 3/044, 3/08;* F24D *5/04*

U.S. Cl. 237—49 **2 Claims**



1. A centralized warm air heating system for heating a building having a crawl space beneath the floor which forms a return plenum spaced joists supporting the floor and spaced girders supporting the joists, comprising

first panels extending between two of the spaced girders to form a manifold conduit between the spaced girders;

second panels extending between at least two of the spaced joists to form distribution conduits between the spaced joists, said manifold conduit and said distribution conduits being in communication for airflow therebetween;

at least one inlet from the crawl space beneath the floor into said manifold conduit;

outlets from said distribution conduits to the building through the floor;

return vents through the floor from the building to the crawl space beneath the floor;

blower means to force air from said inlet to said outlets; and

a heat exchange coil positioned across said manifold conduit.

4,576,334

CAST SHOULDER

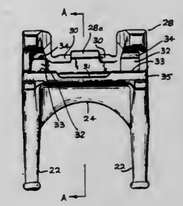
Hartley F. Young, West Melton, Australia, assignor to Ralph McKay Limited, Maidstone, Australia

Filed Apr. 26, 1984, Ser. No. 604,182

Claims priority, application Australia, Apr. 29, 1983, PF9119

Int. Cl.⁴ E01B *9/30*

U.S. Cl. 238—310 **5 Claims**



1. A support for an elastic rail clip comprising a first portion adapted to secure said support to a rail tie and a second portion adapted to receive and hold a base portion of a rail clip of the kind having two free arms which lie on the rail flange, said second portion of said support comprising a recess laterally disposed to said rail flange and having an entry remote from said rail flange, said recess being adapted to receive said base portion of a rail clip and includeing a face adjacent said rail flange which incorporates a channel for each free arm of said elastic clip to pass through when moving onto or off said rail flange, said channels being separated by an upstanding portion on said face which prevents accidental ejection of said rail clip.

4,576,335

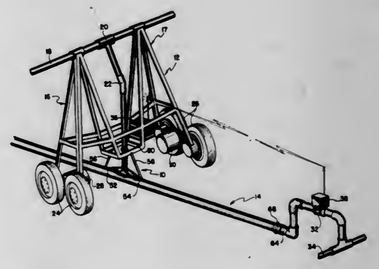
SLIDING VALVE ASSEMBLY

Robert S. McAbery, Box 1937, Aspen, Colo. 81612

Filed Mar. 30, 1984, Ser. No. 595,559

Int. Cl.⁴ B05B *17/00, 3/18;* F16L *9/14*

U.S. Cl. 239—1 **9 Claims**



9. A method of irrigating a field comprising the steps of:

placing a main water supply line across the field to be irrigated, which supply line has a slide valve with a discharge

tube for movement along the supply line for selectively irrigating different portions of the field,

said supply line having an inner water-carrying resilient conduit with normally overlapping longitudinal edges and a cylindrical outer flexible cover which is generally coaxial with and surrounds the conduit and has facing longitudinal edges generally aligned with the overlapping portion of the conduit edges, the cover having slide fastener means to hold the facing edges of the cover in abutting relationship to normally prevent separation of the overlapping edges of the conduit, the discharge tube extending between the overlapping edges for the discharge of water from the main supply line into the field;

flowing water through the supply line and into the field through the discharge tube;

clamping the overlapping edges together adjacent the discharge tube during flow of water through the supply line;

periodically interrupting the flow of water through the supply line;

releasing the overlapping edges during interruption of the flow of water;

moving the slide valve and discharge tube along the supply line an incremental distance each time the flow of water through the supply line is interrupted; and

moving the slide fastener means when moving the slide valve and discharge tube to selectively open and close the abutting edges of the cover adjacent the discharge tube.

4,576,336

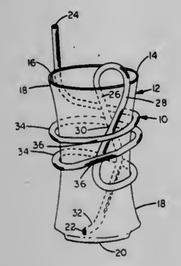
DRINKING STRAW

Nathan Cohen, deceased, late of Jamaica, N.Y., and Mary Cohen, executrix, 147-57 Village Rd., Jamaica, N.Y. 11435

Filed Mar. 29, 1984, Ser. No. 594,996

Int. Cl.⁴ A47G *21/18*

U.S. Cl. 239—33 **14 Claims**



1. A drinking straw for use with a drinking vessel, said straw comprising

a hollow tube having a continuous fluid flow path between inlet and exhaust ends,

and a plurality of turns intermediate said ends and interconnecting said ends into a unitary straw having a fluid path of singular uninterrupted construction in which certain of said intermediate turns cross each other to engage therebetween and with the inner and outer walls of a drinking vessel to grip the walls of the drinking vessel theretween to retain the straw connected with the drinking vessel.

4,576,337

ARRANGEMENT FOR OPERATING DUAL FLUID SYSTEMS

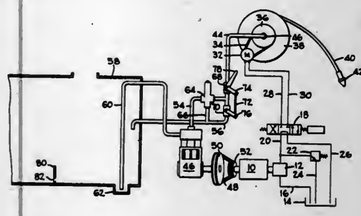
Steven W. Post, Jonesboro, Ark., assignor to FMC Corporation, Chicago, Ill.

Filed Feb. 24, 1984, Ser. No. 583,519

Int. Cl.⁴ B67D *5/365*; B05B *9/00*

U.S. Cl. 239—127 **1 Claim**

1. In a sewer cleaner having an engine, a water tank, a hose reel, a water pump having an operating output connected to draw water from said tank, and a hydraulic pump and motor connected to rotate the hose reel in either direction, drive means uninterruptably connected to said engine and said pumps to continuously drive both of said pumps, supply and return conduits connecting said water pump to said hose reel and said tank respectively, and valve means in said conduits and having a supply position in which said output is directed only to said hose reel and a recirculate position in which said output is directed only to said return conduit; the improvement comprising:



a baffle having a continuously open orifice in the bottom of said tank, the orifice having a cross sectional area to restrict flow therethrough to a rate less than said output; whereby when operating with said valve means in said supply position and said water pump breaks its prime, moving said valve means to its recirculate position permits the rescirculated water to combine with the water discharged through said orifice to provide water volume sufficeint to re-establish prime to said water pump.

4,576,338

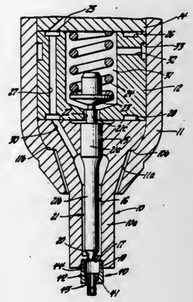
FUEL INJECTOR WITH HOOP NOZZLE SPRAY TIP

Edward D. Klomp, Mount Clemens, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 29, 1984, Ser. No. 645,278

Int. Cl.⁴ B05B *1/32*; F02M *47/00*

U.S. Cl. 239—452 **3 Claims**



1. A fuel injection nozzle with hoop nozzle spray tip including a valve body means having a stepped bore therethrough to define at one end of said valve body means an outlet passage with a valve seat encircling the inboard end of said outlet passage; a passage means in said valve body means in flow communication at one end with said stepped bore inboard of said valve seat and being connectable at its opposite end to a source or pressurized fuel; an injector valve means movable in said valve body means relative to said valve seat to control flow to said outlet passage; a hollow, closed end, inner plug valve element operatively fixed to said valve body means so as to serve as an extension of said outlet passage; said inner plug valve element having an outer peripheral valve seat surface with an annular groove therein and having spaced apart port passages for effecting flow communication between said outlet passage and said annular groove; and, a cylindrical outer hoop valve element with a straight thin annular hoop-skirt valve of predetermined radial thickness operatively fixed to said valve body means with said hoop-skirt valve in shrink-fit encirclement of said inner plug valve element so as to overlie said annular groove whereby said hoop-skirt valve is prestressed and is operative as an integral hoop valve which is adapted to expand radially relative to said inner plug valve element, when said passage means and said outlet passage are supplied with fuel at a predetermined high pressure as controlled by said injector valve means, to form therewith a fuel discharge annulus.

4,576,339

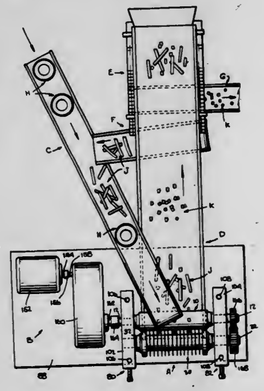
SCRAP TIRE CUTTING APPARATUS

Robert H. Snyder, Grosse Pointe Park, and Eric O. Tolonen, Gladwin, both of Mich., assignors to Uniroyal, Inc., Middlebury, Conn.

Filed May 10, 1983, Ser. No. 493,400

Int. Cl.⁴ B02C *4/00*

U.S. Cl. 241—120 **21 Claims**



1. Apparatus for cutting scrap tires, comprising:

(A) a frame;

(B) a cylindrical anvil roll mounted in said frame for rotation about its longitudinal axis;

(C) a blade roll mounted in said frame for rotation about an axis parallel to the rotational axis of said anvil roll;

(D) a plurality of axially spaced roller blades of predetermined diameter fixed to said blade roll and rotatable therewith so that said blades and said anvil roll define a nip therebetween into which tires to be cut can be drawn,

(E) a pair of axially spaced thrust wheels carried by said blade roll,

(1) said thrust wheels being positioned outboard of said roller blades,

(2) said thrust wheels being at least equal in diameter to said predetermined diameter of said roller blades;

(F) drive means for rotating said rolls in opposite directions to draw scrap tires into the nip between said roller blades and said anvil roll; and

(G) biasing means constructed and arranged to force one of said rolls relatively toward the other of said rolls to bring the outer peripheries of said anvil roll and said thrust wheels into hard contact with one another, thereby to maintain a predetermined positional relationship between the peripheral surfaces of the roller blades and the peipheral surface of the anvil roll notwithstanding the separating forces generated therebetween due to the movement therethrough of scrap tires being cut between such surfaces.

4,576,340

DEVICE FOR DEPOSITING AND KEEPING THE THREAD END IN THE COP TUBE OF A SPINNING COP PASSED ON FROM A COP PREPARATION STATION TO TRANSPORTING MEANS

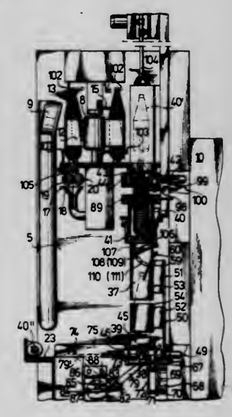
Ulrich Aretz, Korschenbroich, and Heinz Bühren, Moenchen-Gladbach, both of Fed. Rep. of Germany, assignors to W. Schlafhorst & Co., Monchen-Gladbach, Fed. Rep. of Germany

Filed Nov. 30, 1983, Ser. No. 556,627

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1982, 3244378

Int. Cl.⁴ B65H *67/06*

U.S. Cl. 242—35.5 A **11 Claims**



1. Device for depositing and keeping a thread end in a cop tube of a spinning cop from a cop delivery point of a cop preparation station to cop transporting means, comprising a pivotable chute with upper and lower ends disposed between the cop delivery point and the cop transporting means for receiving a spinning cop with a dragged-along thread end, a switchable suction device disposed at said lower end of said chute for supplying the cop tube with suction, and a device for tilting said chute from a vertical position to a horizontal position, said tilting device including means for limiting acceleration and deceleration of the spinning cop in said chute during tilting.

4,576,341

COP TRANSPORTING SYSTEMS FOR AN AUTOMATIC WINDER

Isamu Matsui, Kyoto; Hiroshi Uchida, Shiga; Kazuo Nakanishi, Uji; Masaharu Kiriake, and Akira Shimano, both of Kyoto, all of Japan, assignors to Murata Kikai Kabushiki Kaisha, Japan

Filed Mar. 4, 1983, Ser. No. 472,156

Claims priority, application Japan, Mar. 8, 1982, 57-36197; Apr. 15, 1982, 57-63078; Jul. 19, 1982, 57-12654

Int. Cl.⁴ B65H *67/06*

U.S. Cl. 242—35.5 A **18 Claims**

1. A cop transporting system for an automatic yarn winder including a number of winding units, comprising:

means for dividing said automatic winder into a plurality of sections, each section including a plurality of said winding units, each of said sections being adapted to wind a different type of yarn;

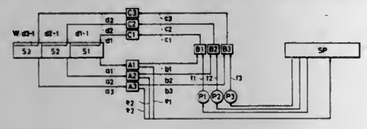
a plurality of cop supplying passages, in like number as the

plurality of sections, each of said cop supplying passages being formed along said winding units so as to supply a differing section of the automatic winder;

a plurality of cop supply devices, in like number as the plurality of sections;

a plurality, in like number as the plurality of sections, of means for transporting cops fed out from said cop supply devices to the cop supply passages;

said plurality of means for transporting cops corresponding to said plurality of cop supply devices, to said plurality of cop supplying passages, and to said plurality of sections, in



a specific one-to-one correspondence such that different kinds of yarns may be wound in the respective sections of the winder; and

a plurality of hollow disk-formed trays for transporting cops, each of said trays including a hollow peg formed uprightly at the center of said tray, said pegs being adapted to removably fit within and support hollow wooden bobbins forming cores of said cops;

whereby said trays are transported on said means for transporting cops such that said bobbins are substantially vertically oriented.

4,576,342

APPARATUS FOR LIFTING A WOUND YARN PACKAGE

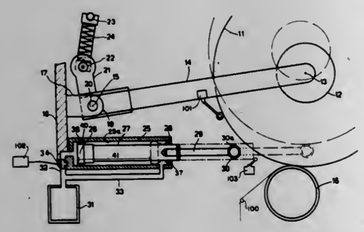
Peter Schwengeler, Winterthur, Switzerland, assignor to Rieter Machine Works Limited, Winterthur, Switzerland

Filed Jun. 4, 1984, Ser. No. 616,675

Claims priority, application Switzerland, Jun. 10, 1983, 3190/83

Int. Cl.⁴ B65H *63/00, 63/024, 63/08*

U.S. Cl. 242—36 **20 Claims**



1. An apparatus for lifting a wound yarn package having an outer surface and a lengthwise axis from a drive roll serving for the drive thereof on a textile machine, comprising:

a package support member for lifting and supporting the yarn package;

said package support member being provided with a forward package contact region for contacting the yarn package and extending substantially parallel to the lengthwise axis of the yarn package;

means cooperating with said package support member for moving said package contact region into a package lifting position against a lower portion of the outer surface of the yarn package during a yarn package lift-off movement involving a movement of the package support member substantially normal to the package contact region;

said means for moving the package support member comprising a piston-and-cylinder unit composed of a cylinder and a piston reciprocatable within said cylinder;

said piston being provided with a piston rod fixedly connected at an end thereof remote from the piston with said package support member;

means for subjecting said piston to a drive force effective during a predetermined time interval in order to accomplish the yarn package lift-off movement;

means for returning the package support member into an initial position where it does not support the yarn package by applying a continually operative return force which is small relative to the drive force produced by said subjecting means;

said piston, said piston rod and said cylinder of said piston-and-cylinder unit coacting with one another such that a pressure of the wound yarn package upon said forward package contact region produces a tendency to rotate said piston and said piston rod within said cylinder in a plane extending substantially perpendicular to the lengthwise axis of the wound yarn package;

said cylinder coacting with said piston and said piston rod to produce forces countering said tendency to rotate; and

said forces overriding said continually operative return force and thereby restraining said package support member in said package lifting position.

4,576,343

DOUBLE SUPPORTING ROLLER WINDING MACHINE

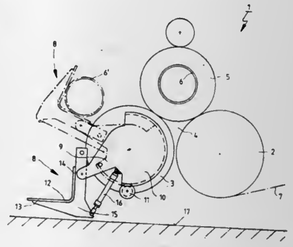
Siegbert Scheuter, Herbrechtingen, and Friedrich Kuhn, Heidenheim, both of Fed. Rep. of Germany, assignors to J. M. Voith GmbH, Heidenheim, Fed. Rep. of Germany

Filed Jul. 31, 1984, Ser. No. 636,160

Claims priority, application Fed. Rep. of Germany, Aug. 6, 1983, 3328517

Int. Cl.⁴ B65H *17/12, 19/26*

U.S. Cl. 242—66 **6 Claims**



1. A double supporting roller winding machine adapted for winding material webs, such as paper or board webs, onto core tubes disposed in a roller bed by a core tube insertion device, said core tube insertion device being mounted on pivot levers and extending along one of said supporting rollers and having an insertion trough with an angular cross-section, characterized in that said one supporting roller along which said core tube insertion device extends is not looped by the web, and said insertion trough is mounted pivotally between said insertion trough and said pivot levers so that said insertion trough is operable in a selected one of an insertion mode and an access mode, when in the insertio mode said insertion trough is movable to insert a new core tube and when in the access mode said insertion trough is swivelled relative to said levers so as to be selectively moveable to any one of a plurality of vertical positions wherein one of the sides of said trough is continually maintained in a generally horizontal disposition.

4,576,344

POLYESTER FILM ROLL

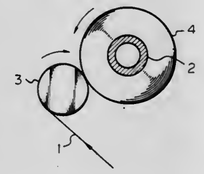
Ichitaro Sasaki, Izumi; Takashi Mori, and Tadao Tsuyuguchi, both of Ogaki, all of Japan, assignors to Teijin Limited, Osaka, Japan

Continuation of Ser. No. 633,082, Jul. 23, 1984, abandoned, which is a continuation-in-part of Ser. No. 372,842, Apr. 29, 1982, abandoned. This application Jul. 18, 1985, Ser. No. 756,920

Claims priority, application Japan, May 6, 1981, 56-66937; Mar. 9, 1982, 57-35760

Int. Cl.⁴ B65H *18/10, 18/16*

U.S. Cl. 242—67.1 R **2 Claims**



1. In a process for producing a polyester film roll by winding a polyester film having a thickness not greater than 25 microns and a centerline average surface roughness (Ra) of from 0.001 to 0.5 microns; the improvement for preventing the formation of wrinkles in the film roll over a long period of storage, comprising controlling the hardness (H) of the film roll to a value satisfying the relationship:

$$H \geqq 0.67x^3 - 10.61x^2 + 55.54x - 1.16$$

wherein $x = ln\ (1/Ra)$, by bringing a touch roll into contact with the film roll in accordance with a surface-center-winding method, said touch roll having a peripheral surface hardness (F) satisfying the following relationships (II) and (III):

$$F \leqq 239.14 \times (Ra)^{0.28} \text{ when } Ra \leqq 0.044 \text{ microns} \quad \text{(II)}$$

and

$$F \leqq 100 \text{ when } Ra > 0.044 \text{ microns} \quad \text{(III)}.$$

4,576,345

MAGNETIC-TAPE CASSETTE WITH A LATCHING COVER PLATE

Karel G. M. Koken; Hubertus F. W. van de Kerkhof; John C. J. Olierook, and Cornelis M. Be ersbergen van Henegouwen, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

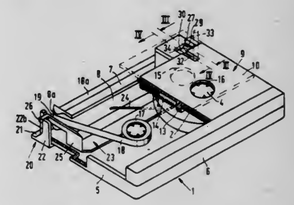
Continuation-in-part of Ser. No. 623,587, Jun. 22, 1984, abandoned. This application Mar. 29, 1985, Ser. No. 717,766

Claims priority, application Netherlands, Apr. 2, 1984, 8401028

Int. Cl.⁴ G11B *23/04*

U.S. Cl. 242—198 **19 Claims**

1. A magnetic-tape cassette comprising: a housing having first and second major walls which are parallel to one another, two side walls, a rear wall, an opening at the front which extends back into the first major wall, and a partition which separates this front opening from the interior of the housing; two reel hubs supported between the major walls so as to be rotatable about axes which extend perpendicularly to the major walls, the first major wall having two openings through which the drive spindles of a magnetic-tape-cassette apparatus can be coupled to the reel hubs, and a magnetic tape being wound around the reel hubs with a part of the tape extending across the front opening; a front cover movable between closed and open positions and comprising a main portion which in the closed position of the front cover covers the front opening and the part of the magnetic tape which extends across the front opening, and side flanges which are situated one adjacent each side wall of the housing and which are pivotally connected to said side walls; and a sliding plate which is situated on the outside of the housing and which comprises a main portion which is situated adjacent the first major wall of the housing, the sliding plate being slidably guided on the housing for movement parallel to the first major wall towards the rear wall from a closed position in which it latches the front cover in the closed position and in which the main portion of the sliding plate covers the front opening where this opening extends back into the first major wall to an open position to unlatch the front cover and to give access to the front opening for the passage thereinto of tape-withdrawal means of a mag-



netic-tape-cassette apparatus, characterized in that the second major wall is imperforate over its entire area and the main portion of the front cover is contiguous with this wall in the closed position of said cover and in that the main portion of the sliding plate extends rearwardly beyond the openings in the first major wall in the closed position of the sliding plate to cover said openings and has two apertures which expose said openings when the sliding plate is in the open position, the sliding plate being latched in the closed position by at least one latching member which comprises a latching portion and an actuating portion, the main portion of the sliding plate being provided with a slot or groove which extends rearwardly from the front edge of the main portion of the plate, and the actuating portion being arranged to project into the slot or groove near the rear end thereof in the closed position of the sliding plate.

4,576,346

SEEKER HEAD FOR A TARGET SEEKING MISSILE

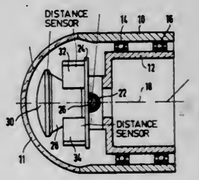
Roland Gauggel, Salem-Grasbeuren, and Reiner Eckhardt, überlingen, both of Fed. Rep. of Germany, assignors to Bodenseewerk Geratetechnic GmbH, Überlingen, Fed. Rep. of Germany

Filed May 9, 1984, Ser. No. 608,383

Claims priority, application Fed. Rep. of Germany, May 11, 1983, 3317232

Int. Cl.⁴ F41G *7/22*

U.S. Cl. 244—3.16 **5 Claims**



1. Seeker head for a target seeking missile, which comprises a seeker adapted to be directed to a target, characterized in that several distance sensors (32,34) are angularly spaced about the

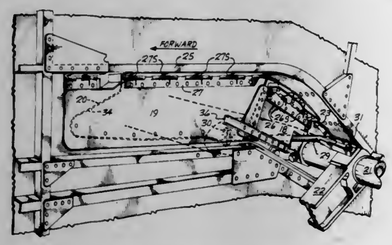
optical axis of the seeker (28) on a part (24) in the seeker head (10), the seeker (28) being mounted on said part (24), and said part (24) being adapted to be directd to the target together with the seeker (28).

4,576,347

FLAP TORQUE TUBE SLOT SEAL

Allan W. Opsahl, Renton, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Oct. 30, 1984, Ser. No. 666,524
Int. Cl.[4] B64C 7/00
U.S. Cl. 244—130 3 Claims



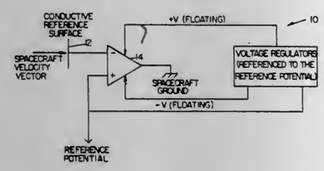
1. Apparatus for blocking airflow through an opening in the side of an aircraft fuselage adjacent to an inboard wing trailing edge flap, comprising: said flap having a torque tube and being translatable between a forward position and an aft position spaced from said forward position; said fuselage side opening being a curved slot for receiving said flap torque tube therethrough and providing clearance for said flap torque tube during extension and retraction of said flap: doors mounted adjacent to the curved slot opening for blocking passage of air through the slot to the upper surface of said flap when said flap is in a fully extended position; and cam means mounted to said flap torque tube for opening said doors to expose the curved slot opening in response to retraction movement of said flap.

4,576,348

METHOD AND APPARATUS FOR ESTABLISHING A REFERENCE POTENTIAL ON SATELLITES IN PLANETARY IONOSPHERES

Don R. Zuccaro, Garland, Tex., assignor to Board of Regents, University of Texas System, Austin, Tex.

Filed Jun. 28, 1983, Ser. No. 508,470
Int. Cl.[4] B64G 1/54, 1/44; H01G 1/08
U.S. Cl. 244—173 5 Claims



1. Apparatus for use on spacecraft having a ground reference and having a solar array, to establish a reference potential near the ionospheric plasma potential, comprising:

a conductive reference surface for disposition on the spacecraft to face in the direction of motion, for collecting ions and adjusting to a plasma potential;

an operational amplifier having inverting and noninverting inputs and an output, with the inverting input being connected to the conductive reference surface; and

a power source for powering the amplifier, said power source providing floating positive and negative voltages referenced to the potential at the noninverting input of the amplifier;

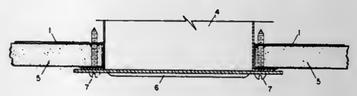
the output of said amplifier being connected to drive against spacecraft ground until the voltage at the noninverting input is substantially equal to the voltage at the inverting input, whereby the reference potential established at the noninverting input is the same as the potential on the reference surface.

4,576,349

AIR DUCT REGISTER MOUNTING CLIP

James C. Dearing, P.O. Box 178, Talbott, Tenn. 37877

Filed Mar. 24, 1983, Ser. No. 478,632
Int. Cl.[4] G12B 9/00
U.S. Cl. 248—27.1 2 Claims



1. A one-piece, self-contained mounting clip for attaching an air duct register to an air duct installed in an opening in a wall having a front surface and a back surface, wherein said air duct extends through said wall opening beyond said front wall surface, comprising a thin rectangular sheet of pliable metal having at one end a first portion with a circular hole arranged therein, said circular hole having a center point located on the longitudinal center line of said sheet; and a second portion with a narrow, elongated slot having the same longitudinal center line as said sheet and extending from a first point adjacent said circular hole to a second point adjacent an end of said sheet opposite said one end, the width of the narrow slot being less than the diameter of said circular hole; said clip bendable in a transverse direction relative to the longitudinal centerline of said clip such that said first portion forms a mounting tab on the first surface of said wall and said second portion extends into the wall opening for a distance corresponding to the thickness of the wall at said opening and across the back wall surface directly behind said mounting tab to thereby substantially conform to the wall opening, so that the portion of the air duct extending beyond said wall opening may be bent over said mounting tab and a threaded fastener installed through aligned mounting holes in said register and said air duct, and through said circular hole and said elongated slot, said slot defining an infinite range of positions along the length of the slot which engage said threaded fastener, the edges of said elongated slot deformed upon installation of said threaded fastener to form burrs which hold the clip in place when the threaded fastener is removed.

4,576,350

PORTABLE BAG FILLING STAND

James Bond, 527 W. South St., Anaheim, Calif. 92805

Filed May 24, 1984, Ser. No. 613,738
Int. Cl.[4] B65B 67/12
U.S. Cl. 248—97 18 Claims

18. A low-cost light-weight portable modular multi-bag filling stand adapted to quick field assembly and easy disassembly for compact transport and storage comprising:

a single vertical support tube having an upper end and a lower end;

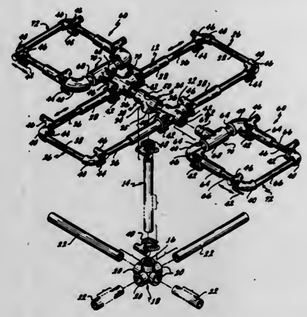
a first fitting at said lower end for removably accepting a plurality of co-planar tubular legs in perpendicular relationship to said vertical support to thereby define a base;

a dual bag support frame on said vertical support, said frame comprising a tubular cross-member having opposite ends and including a central fitting slidable along said vertical support for selectively positioning said frame therealong and an end fitting at each said end, each end fitting accepting two tubular arms perpendicular to said cross-member to thereby form a horizontally planar H-shaped structure, a U-shaped section telescopically slidable into each pair of arms of said H-shaped structure form two bag supports of independently adjustable dimensions and provided with hook means for suspending a bag on each side of said cross-member thereby imposing a balanced load on the single vertical support;

each of said end fittings including an end socket adapted to receive a mating fitting on a detachable single bag holder module; and

two single bag holder modules each comprising two mutually telescoping U-shaped sections forming a rectangle of variable length, one of said U-sections including a fitting mateable to one of said end sockets on the cross-member;

whereby said bag stand is readily field-convertible between a dual and a quadruple bag stand while maintaining a balanced load on said single vertical support in either dual or quad configurations.



4,576,351

PORTABLE STROKE VICTIMS ARM REST

T. A. Brink, Rembrandstraat 96, 5301 SA Zaltbommel, Netherlands

Filed Jun. 15, 1984, Ser. No. 621,156
Int. Cl.[4] A47C 7/54
U.S. Cl. 248—118 7 Claims



1. A portable stroke victim's arm rest adapted to provide multi-positional means of comfort for the user's forearm in a position with the hand elevated above the elbow to prevent the accumulation of fluids in the hand and wrist area, the improvement comprising:

a support member having a generally horizontal shelf member and a generally vertical brace member eminating downwardly therefrom at substantially right angles from one side of said shelf member;

u-shaped height adjusting members operatively mounted with said support member being adapted to securely position said portable stroke victims arm rest on an arm of a chair, sofa or the like and further adapted to raise and lower the ends of said support member to achieve various heights and angles;

said u-shaped height adjusting members include spaced parallel leg members having a cross member therebetween at one end thereof;

a stub shaft located medially between the ends of the leg members, connected therebetween and forming with said leg members a guide for stably receiving an arm of a chair;

a contoured, cushioned arm support moveably coupled to said support member including a cushioned substantially horizontal support and a cushioned upwardly extending wall along said horizontal's support outer edge and being substantially at right angles therewith; and

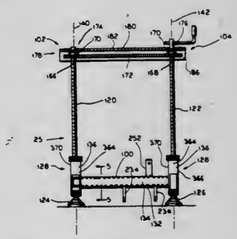
said substantially horizontal support evolving into an elevated arcuate end portion which is contoured for and accommodates the hand and wrist area in an elevated position with respect to the horizontal to thereby enhance the natural gravity encouraged flow of fluids necessary for the physical well being of stroke victims.

4,576,352

EXERCISE TREADMILL

Ralph Ogden, Munster, Ind., assignor to Ajay Enterprises Corp., Delaran, Wis.

Division of Ser. No. 226,766, Jan. 21, 1981, Pat. No. 4,374,587, which is a continuation-in-part of Ser. No. 175,516, Aug. 5, 1980, Pat. No. 4,344,616. This application Sep. 27, 1982, Ser. No. 425,058
The portion of the term of this patent subsequent to Feb. 22, 2000, has been disclaimed.
Int. Cl.[4] F16M 11/00
U.S. Cl. 248—188.4 5 Claims



1. In a screw and nut load support device, including a rotatable rectilinear screw member including an externally threaded portion, means for supporting the screw member in an upright position against loads acting longitudinally and downwardly of said screw member, a load bearing nut assembly threadedly mounted on said screw member threaded portion in load transmitting relation thereto for applying to said screw member loads acting longitudinally and downwardly of said screw member, means for rotating said screw member about its said longitudinal axis for threadedly shifting said nut assembly longitudinally of said screw member threaded portion, and means for holding said nut assembly against rotation with said screw member,

the improvement wherein said nut assembly comprises:

a tubular member received about said screw member threaded portion and including means for applying to same said loads acting downwardly of said screw member,

a first nut member threadedly received on said screw member threaded portion,

said nut member being keyed to said tubular member adjacent the lower end of said tubular member against rotational movement relative thereto,

and a second nut member threadedly received on said screw member threaded portion,

said second nut member being keyed to said tubular member above said first nut member for lost motion movement

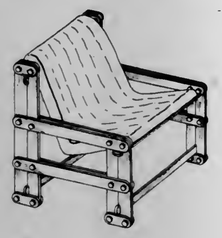
thereof longitudinally of said tubular member and against rotational movement relative to said tubular member,
with said tubular member being in load transmitting relation to said first nut member to the exclusion of said second nut member,
and said first nut member being in threaded load transmitting relation to said screw member to the exclusion of said second nut member.

4,576,353

CARCASE, FAVORABLY FURNITURE-CARCASE

Hidvégi Valéria, Budapest, Hungary, assignor to Kozponti Valto-Es Hitelbank RT, Budapest, Hungary

PCT No. PCT/HU82/00062, § 371 Date Jul. 26, 1983, § 102(e) Date Jul. 26, 1983, PCT Pub. No. WO83/01890, PCT Pub. Date Jun. 9, 1983
PCT Filed Nov. 25, 1982, Ser. No. 522,375
Claims priority, application Hungary, Nov. 26, 1981, 3544/81
Int. Cl.⁴ F16M *11/00*
U.S. Cl. 248—165 **9 Claims**



1. A furniture framework comprising:
column members constituting elongated flat bars having narrow sides, two end regions, and wherein each of said column members has notches within a narrow side thereof remote from said end regions;
columns formed by respective pairs of said column members attached to each other in a narrow side-by-side arrangement, each of said column members including respective through holes normal to flat faces thereof in at least said two end regions;
coupling members constituting elongated flat bars extending normal to said pairs of column members and overlapping said end regions, said coupling members having respective through holes;
releasable clamps insertably carried by said through holes of said coupling members and said column members, whereby said pairs of column members are connected together in both end regions in said side-by-side arrangement, said columns comprising drift holes defined by said notches in the mutually facing narrow sides of opposing column members, said drift holes being arranged inwardly from and in proximity to said clamp connection of said column members;
and interconnecting pieces constituting flat bars for interconnecting respective pairs of said columns, said interconnecting pieces comprising respective neck portions of said flat bars fitting said drift holes, whereby said columns engage and hold said interconnecting pieces.

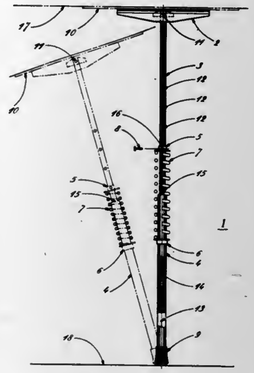
4,576,354

PANEL OVERHEAD SUPPORT APPARATUS

William R. Blessing, Sr., 95 Saddle Mountain Rd., Colorado Springs, Colo. 80919

Filed Jun. 14, 1984, Ser. No. 620,557
Int. Cl.⁴ B25J *3/00*
U.S. Cl. 248—354.5 **1 Claim**

1. An apparatus for supporting workpieces in position during fixed attachment of the workpieces in position, said apparatus comprised of:
a load bearing support plate for flatly engaging and supporting the workpiece in position;
a support rod, said support rod having a circular cross section, having the support plate rotatably attached to the upper end thereof, and having the lower portion thereof disposed in a cavity, for that purpose, in a support barrel and further having a plurality of equally spaced holes for accepting an adjusting pin;
a support barrel, said barrel having a circular cross sectioned interior cavity of sufficient diameter as to closely accept the lower portion of the support rod, said support barrel having a non-slip means attached to the lower end thereof, and further having a means for the fixed attachment of a lower spring retaining clamp at the lower end thereof;
a helical compression spring, said spring having a diameter



sufficient to be disposed around the lower end of the support rod and the upper end of the support barrel;
an upper spring retaining clamp, said upper clamp adjustably attached to the support rod, and having a means to retain the upper end of the spring, and further having a passage of diameter sufficient to allow passage of the adjusting pin;
a lower spring retaining clamp, said lower clamp fixedly attached to the outer diameter of the barrel, and having a flange which supports the lower end of the spring, said upper and lower retaining clamps positioned so as to cooperate with the spring to push the support rod out of the support barrel a distance sufficient to transmit a force through the rod to the support plate so as to hold the workpiece in position, and;
the adjusting pin for fastening the upper clamp in the appropriate hole in the support rod to extend the support rod out of the support barrel to the distance necessary to support the workpiece in position.

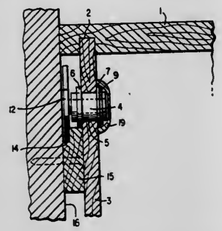
4,576,355

SUSPENSION HARDWARE FOR SUSPENDED CABINETS

Erhard Graf, Überlingen, Fed. Rep. of Germany, assignor to Alno-Möbelwerke GmbH & Co. KG, Pfullendorf, Fed. Rep. of Germany

Filed Aug. 31, 1984, Ser. No. 646,227
Claims priority, application Fed. Rep. of Germany, Sep. 3, 1983, 3331836
Int. Cl.⁴ F16M *1/00*
U.S. Cl. 248—544 **9 Claims**

1. In a suspension hardware device for suspending a cabinet having a rear wall from a supporting strip mounted on a building wall in a horizontal orientation and having a recessed configuration, which hardware device includes a hardware housing member disposed in the rear wall of the cabinet and adjustment means operatively associated with the housing member for an at least two-dimensional adjustment of the housing member with respect to the building wall, the adjustment means including an adjustment screw mounted in the housing member and extending perpendicularly to the plane of the rear wall of the cabinet, with one end of the screw being disposed in the interior of the cabinet and provided with engagement faces for an adjustment tool and the other end of the screw extending behind the rear wall of the cabinet, and a head member fixed to the other end of the screw for engaging behind the supporting strip, the improvement wherein:



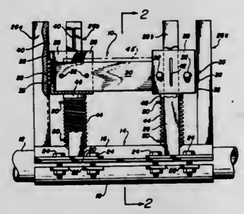
the length of said housing member approximately corresponds to the thickness of the rear wall of the cabinet;
said hardware device comprises holding elements associated with said housing member, resting against the front and rear elements of the rear wall, and holding said housing member in a manner to allow said housing member to rotate in the rear wall of the cabinet;
said housing member is provided with a threaded through bore in which said screw threadedly engages; and
said head member is a disc-shaped member provided along its circumference with a plurality of contact faces at different respective distances from the axis of said through bore.

4,576,356

PIPE-VIBRATION REDUCER

Richard J. Kucera, 3861 Balsa St., Irvine, Calif. 92714

Continuation-in-part of Ser. No. 444,540, Feb. 3, 1983, abandoned. This application Oct. 26, 1984, Ser. No. 665,564
Int. Cl.⁴ F16M *13/00*
U.S. Cl. 248—559 **9 Claims**



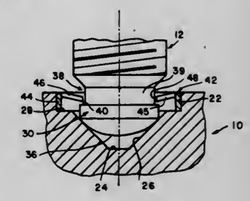
1. A frequency-tunable, vibration-reducer device for pipes and the like, comprising:
a mounting bracket defined by a first clamp member and a second clamp member, means for securing said first and second clamp members together wherein said clamp members are adapted to be fixedly secured to a pipe at any desired radial position thereon;
a dynamic mass freely mounted to said first clamp member;
guide means secured to and extending transversely of said first clamp member;
a pair of carriage members slidably received in said guide means, and supporting said dynamic mass within said guide means said entire dynamic mass being linearly moveable along with said carriage members in directions toward and away from said first clamp member;
bearing means interposed between said carriage members and said guide means, whereby said dynamic mass may move freely without restriction;
resilient means interposed between said carriage members and said first clamp member; and
means for securing said resilient means to said carriage members and said first clamp member, whereby the resonant vibration of said pipe is directly transferred through said resilient means and into said dynamic mass, thus allowing said dynamic mass to be located radially outward from said pipe at a selective angular position relative to said pipe.

4,576,357

LEVELING ELEMENT

Rudolf Schrepfer, Eigenheimstr. 22, Küsnacht/ZH, Switzerland 8700

Filed Nov. 9, 1983, Ser. No. 550,489
Claims priority, application Switzerland, Feb. 7, 1983, 685/83
Int. Cl.⁴ F16M *3/00*
U.S. Cl. 248—662 **9 Claims**



1. A leveling element comprising a post, a support plate containing an opening defining a seat for receiving the end of the post, bearing means at said end of the post structured to be received in said opening in tangential engagement with the seat, retaining means embodying a flexibly yieldable flange defining an opening bounded by an annular edge centered with respect to said bearing opening and of a smaller diameter than said opening, spaced from the place of tangency of the bearing means with the seat, said flange being rigidly resistant to lateral displacement of the bearing means relative to the seat while permitting angular movement of the bearing means relative to the seat and being resiliently yieldable in a direction toward the seat to expand the opening defined by said edge to a diameter larger than said bearing means to admit the bearing means through the opening therein into tangential engagement with the seat and limitedly yieldable in the opposite direction to contract the opening to a diameter smaller than the diameter of the bearing means to prevent withdrawal of the bearing means through said opening and, hence, disengagement of the bearing means from the seat.

4,576,358

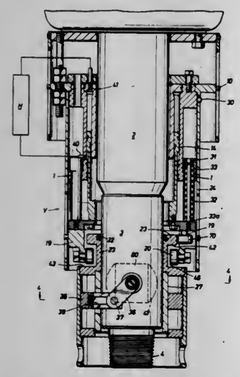
REMOTELY OPERABLE SAFETY VALVE

James D. Mott, Houston, and Danny K. Wolff, Cleveland, both of Tex., assignors to Hydril Company, Los Angeles, Calif.

Filed Apr. 20, 1983, Ser. No. 486,909
Int. Cl.⁴ F16K *31/143*
U.S. Cl. 251—14 **16 Claims**

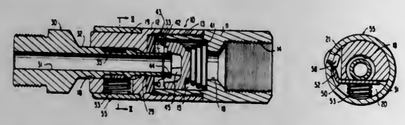
1. An improved remotely operable valve for controlling fluid flow through a rotating tubular member having,
a stationary housing,
a remotely disposed source of pressurized hydraulic fluid,
a tubular rotatable housing, having a flow passage formed

therein, which is rotatably mounted with respect to the stationary housing section,
valve means mounted within said rotatable housing for controlling fluid flow through said flow passage by rotation of a valve shaft between an open position for enabling fluid flow and a closed position for blocking fluid flow,
piston means disposed in said stationary housing and operably connected to said source of hydraulic fluid and connected to a bearing means,
an actuating assembly means having a bearing contact surface, said actuating assembly means for operably connecting said stationary housing to said valve shaft in order to open or close the valve means, said actuating assembly means being rotatable with said rotatable housing and mounted for axial movement with respect to said rotatable



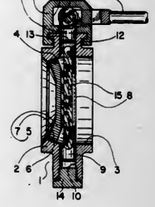
housing to control said valve, said bearing means connected to said piston means rotatably contacting said bearing contact surface of said actuating assembly means for axially operably moving the actuating assembly,
the valve being remotely operable to permit opening or closing of the flow path while enabling relative rotation between the rotatable housing and the stationary housing,
wherein the improvement comprises,
means for removing said source of pressurized fluid on said piston means after said valve has been opened, and
means for automatically preventing contact between the bearing contact surface of the rotating actuating assembly means and the bearing means when the valve is in the open position and said source of pressurized fluid has been removed from said piston means.

4,576,359
COUPLING FOR PRESSURE GAS LINES
Hans Oetiker, Oberdorfstrasse 21, CH-8810 Horgen, Switzerland
Filed Mar. 15, 1984, Ser. No. 589,702
Int. Cl.⁴ F16L *37/28*
U.S. Cl. 251—149.6 **14 Claims**



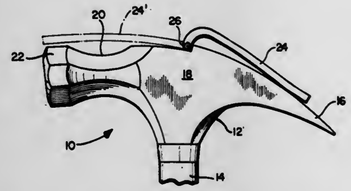
1. A coupling for a pressure gas line, comprising a sleeve-like first means intended to receive gas under pressure at one end thereof and including spring-loaded valve means for normally closing off said one end with respect to a bore leading to the other end of said first means, a tubularly shaped second means for conducting-on the gas under pressure, said tubularly shaped second means being provided with an annular groove, and further means for detachably connecting said first and second means with each other by inserting said tubularly shaped second means into the bore of said sleeve-like first means while at the same time opening said valve means to thereby establish a through-flow path for gas under pressure from the one end of the sleeve-like first means by way of the now-opened valve means into the interior of said tubularly shaped second means, said further means including a latching means operable to engage in the annular groove provided in said second means, said latching means being formed by a plate-like member operable to be guided in a cut-out provided in the part of said sleeve-like first means containing said bore and extending from the outside of said part to said bore substantially transversely to the axis of the coupling, a ring-like member rotatable on said part of the sleeve-like first means and having an inwardly projecting actuating means for engagement with said plate-like member to displace the same upon rotation of said ring-like member in its disengaging direction, and a spring between said ring-like member and said plate-like member for urging the plate-like member into its engaging position, characterized in that said part of the sleeve-like first means has a reduced diametric dimension relative to the diametric dimension of the section of the sleeve-like first means containing said valve means, and in that said plate-like member has a first substantially flat main portion in engagement with said spring and operable to engage in said annular groove and a second shorter leg portion bent at such obtuse angle to said flat main portion as to extend generally in the direction toward said inwardly projecting actuating means whereby the external diametric dimension of said ring-like member can be kept relatively small.

4,576,360
FLOATING DISC BUTTERFLY VALVES
Hyok S. Lew, 7890 Oak St., Arvada, Colo. 80005
Continuation-in-part of Ser. No. 413,531, Aug. 31, 1982, Pat. No. 4,520,995. This application Dec. 24, 1984, Ser. No. 685,753
Int. Cl.⁴ F16K *1/22*
U.S. Cl. 251—162 **6 Claims**



1. A floating disc valve comprising in combination:
(a) a valve body including a fluid passage having an inner surface including an annular seat disposed on a plane substantially perpendicular to the central axis of said fluid passage wherein said annular seat substantially coincides with a hypothetical spherical surface with the center substantially located on the central axis of said fluid passage;
(b) a stem with the central axis substantially passing through the center of said hypothetical spherical surface and intersecting the central axis of said fluid passage in a substantially perpendicular angle, said stem including two sets of rack teeth respectively disposed on two opposite sides of said stem intermediate two extremities of said stem wherein said rack teeth are disposed in an oblique angle with respect to the central axis of said stem, said stem rotatably and slidably supported at two extremities by said valve body wherein at least one extremity of said stem extends through said valve body rotatably and slidably in a leak-proof manner; and
(c) a disc pivotably disposed within said fluid passage adjacent to said annular seat having a rim substantially conforming to said annular seat when said disc is rotated to the fully closed position, said disc slidably connected to said stem by means of said two sets of rack teeth included in said stem slidably engaging two sets of rack teeth disposed on one side of said disc wherein said disc rack teeth are disposed in an oblique angle with respect to the plane including the rim of said disc, wherein the only possible movement of said disc relative to said stem is a sliding movement on a plane substantially including the central axis of said disc and the central axis of said stem;
whereby, a small amount of axial movement of said stem in one direction relieves the seating pressure between said annular seat and the rim of said disc and a small amount of axial movement of said stem in the other direction opposite to said one direction establishes said seating pressure.

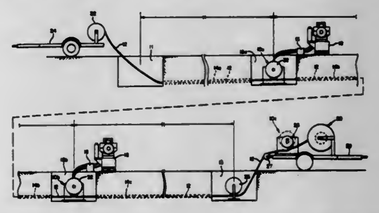
4,576,361
CLAW HAMMER WITH PROTECTIVE CUSHION
Alan C. Knight, 243 E. 18th Ave., Columbus, Ohio 43201
Filed Feb. 27, 1981, Ser. No. 238,906
Int. Cl.⁴ B66F *15/00*
U.S. Cl. 254—26 R **6 Claims**



1. A claw hammer having a handle and a hammer head with a claw end and a bell end, said hammer having permanently attached thereto a protective cushion which during nail driving is in a resting position which will not interfere with nail driving but at least a portion of which is readily movable into a working position over said bell end whereby damage to the nail bearing surface is prevented or minimized when said claw end is used for nail pulling and which is retractable from said working position to said resting position, and wherein said protective cushion has a means to pivot at least a portion of said protective cushion to move it into the working position over said bell end.

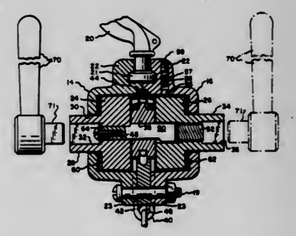
4,576,362
METHOD FOR PULLING LONG RUNS OF FIBER OPTIC CABLE
Ralph C. Langston, 13588 SE. 152nd Ave., Clackamas, Oreg. 97015
Filed Sep. 7, 1984, Ser. No. 648,757
Int. Cl.⁴ H02G *1/08*
U.S. Cl. 254—134.3 FT **13 Claims**

1. A method for pulling a long run of fiber optic cable through an underground conduit having an entry at one end and an exit at an opposite end, the method comprising:
providing at least one intermediate access point spaced between the entrance and exit to divide the length of the conduit into segments each having a length such that a pulling tension applied to the cable sufficient to pull the cable through each conduit segment is less than a predetermined tension at which the fiber optic cable could be damaged;
placing a continuous long run of fiber optic cable at the conduit entry;
placing at each intermediate access point a first pulling means and at the conduit exit a second pulling means, for pulling the cable through each segment of the conduit;
extending a pull rope from the conduit entry through the conduit via each intermediate access point to the conduit exit;
connecting a lead end of the pull rope to the fiber optic cable and an opposite end thereof to the second pulling means and engaging an intermediate portion thereof with the first pulling means;
engaging the first pulling means in gripping contact with the cable for applying an upstream pulling tension to a portion of the cable upstream from the first pulling means;



simultaneously driving each pulling means to pull the rope and the cable through the conduit;
controlling each of the first and second pulling means to pull the cable at a predetermined pulling speed and to limit the upstream pulling tension on the portion of the cable upstream from each pulling means so as not to exceed a predetermined tension through each conduit segment from the conduit entry to the conduit exit but sufficient to provide a positive downstream tension in a downstream portion of the cable adjacent each first pulling means, and;
responsive to a slackening of the downstream tension in the downstream portion of the cable, temporarily disengaging the first pulling means from said gripping contact with the cable so as to interrupt applying said upstream pulling tension to the portion of cable upstream therefrom until the downstream pulling tension is restored.

4,576,363
LEVER-OPERATED HOIST OR PULLER
James J. Pancook, Tonawanda, N.Y., assignor to Columbus McKinnon Corporation, Amherst, N.Y.
Filed May 15, 1985, Ser. No. 734,159
Int. Cl.⁴ B66D *1/30, 1/48, 3/12, 5/22*
U.S. Cl. 254—372 **10 Claims**



1. A lever-operated type chain hoist or load puller comprising a housing having a support hook extending therefrom and a drive shaft rotatably mounted in said housing and carrying a load engaging sprocket wheel thereon and a load chain passing in and out of said housing and training over said sprocket

wheel for load hoisting and lowering and/or pulling in response to reverse rotations of said shaft, the improvement comprising:

said housing being composed of a pair of oppositely facing half shell members having means locking them together at upper and lower opposite flange portions thereof and defining interiorly thereof a cylindrical chamber with said drive shaft and sprocket wheel being disposed centrally therein;

a pair of rollers disposed within said chamber at opposite sides of said sprocket wheel, said rollers having hub portions extending in rotatable relation through apertured end wall portions of said shell members, and washer-shaped friction discs encompassing said hub members interiorly of said chamber and being thereby positioned between outside surfaces of said rollers and inside end surfaces of said housing shell members;

one of said rollers being keyed to one end of said drive shaft, and the other of said rollers being screw-threaded upon the other end of said drive shaft;

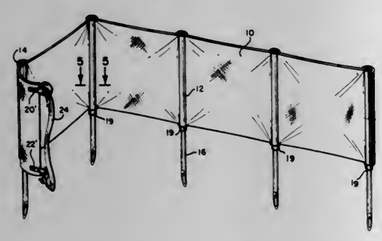
the outer extending end portions of said hubs being shaped to accommodate detachable engagements therewith externally of said housing by means of a wrench type lever or the like.

4,576,364

PORTABLE WIND SCREEN

Patrick J. O'Fearna, 12449 ½Short Ave., Los Angeles, Calif. 90066

Filed Feb. 29, 1984, Ser. No. 584,853
Int. Cl.⁴ E04H *17/16*
U.S. Cl. 256—24 **6 Claims**



1. A portable beach screen comprised of a rectangular sheet of fabric, a plurality of hollow poles disposed parallel to each other along the length of the sheet, each pole being placed against said sheet, a plurality of C clamps, at least one clamp placed over each pole with said sheet clamped therebetween, a plurality of stakes, a separate stake telescoped within each pole, each stake having a point at one end and resilient sleeve near the end thereof remote from said point, said sleeve being of sufficient thickness to be compressed between said stake and the hollow pole into which said stake is inserted.

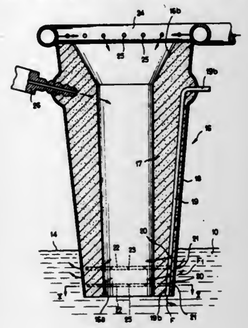
4,576,365

DEVICE FOR THE REMOVAL OF INCLUSIONS CONTAINED IN MOLTEN METALS

Jean-Charles Daussan, Metz; André Daussan, Longeville les Metz, and Gérard Daussan, Metz, all of France, assignors to Daussan et Compagnie, Woippy, France

Division of Ser. No. 438,491, Nov. 2, 1982, Pat. No. 4,468,012. This application Apr. 27, 1984, Ser. No. 604,602
Claims priority, application France, Nov. 13, 1981, 8121229
Int. Cl.⁴ C21C *5/48*
U.S. Cl. 266—220 **2 Claims**

1. A device for removing inclusions from molten metal, in which the molten metal is poured into a casting tundish through a casting tube immersed in the molten metal contained in said tundish, said casting tube being provided internally with a lining of heat-insulating material, which is sinterable at the temperature of the molten metal poured into said casting tube and becomes porous after sintering, wherein said casting tube comprises a pipe embedded in the sinterable heat-insulating lining, one end of said pipe being adapted to be connected to an inert gas supply and being located at the upper portion of said tube and the other end of the pipe having a gas outlet at the lower end of the casting tube in contact with the molten metal



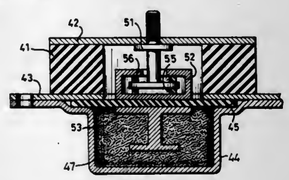
which is poured into the casting tundish, the pipe adjacent said other end having at least one gas outlet orifice (20) in contact with the sinterable heat-insulating lining, the pores formed in the lining after sintering enabling gas to flow from said orifice to the external surface of said lining, and a protective casing externally surrounding said sinterable heat-insulating lining, said casing having openings located opposite the orifices of the inner gas feed pipe.

4,576,366

ANTIVIBRATION ELASTIC SUPPORT

Gérard Gallas; Loic Raher, and Bernard Renzo, all of Nantes, France, assignors to Compagnie des Produits Industriels de l'Quest (C.P.I.O), Nantes Cedex, France

Filed Sep. 28, 1983, Ser. No. 536,649
Claims priority, application France, Sep. 28, 1982, 82 16279
Int. Cl.⁴ B60G *13/00*; F16F *9/30*
U.S. Cl. 267—8 R **2 Claims**



1. An antivibration elastic support comprising:

a first and second reinforcement member;

an elastomeric unit interconnecting said first and second reinforcement member and having a first fluid tight chamber formed therein;

a movable member connected to said first reinforcement member and including a base;

a housing connected to said second reinforcement member and forming a second fluid tight chamber, said second fluid tight chamber having a damping material positioned therein;

a container within which said base of said movable member is positioned;

a piston located within said housing;

an elastomeric element secured between said housing and said second reinforcement member wherein said elastomeric element further interconnects said container and said piston; and

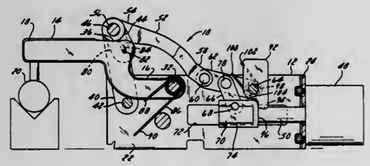
at least one elastomer member positioned between said base of said movable member and an inner wall of said container.

4,576,367

PNEUMATIC MECHANICAL CLAMP INCLUDING LOCKING MEANS

Edward R. Horn, Germantown, and Norbert J. Kot, II, Milwaukee, both of Wis., assignors to Aladdin Engineering & Mfg. Co., Brookfield, Wis.

Filed Jan. 2, 1985, Ser. No. 688,189
Int. Cl.⁴ B23Q *3/08*
U.S. Cl. 269—32 **13 Claims**



1. A mechanical clamp for use in clampingly engaging a workpiece, the mechanical clamp comprising:

a frame,

a clamp member having an end portion supported for movement toward and away from a supporting surface and adapted to clampingly engage a workpiece against the supporting surface, said clamp member including a cam surface,

means for pivotally connecting said clamp member to the frame such that the clamp member is pivotally movable between a clamping position wherein the end portion of the clamp member clampingly engages the workpiece against the supporting surface and a release position wherein the end portion releases the workpiece,

means for selectively forcing said end portion of said clamp member into clamping engagement with the workpiece, said means for selectively forcing including a force applying member engageable with said cam surface,

a first toggle lever having opposite ends, one of said opposite ends being pivotally connected to said force applying member, a second toggle lever having opposite ends, one of said second toggle lever opposite ends being pivotally connected to said frame and the other of said second toggle member opposite ends being pivotally connected to the other of said opposite ends of said first toggle lever, and a third toggle lever having opposite ends, one of said third toggle lever opposite ends being pivotally connected to said second toggle lever intermediate its opposite ends, and the other of said third toggle lever opposite ends being pivotally connected to a piston for reciprocal movement with said piston between an extended position wherein said clamp member is in said clamping position and a retracted position wherein said clamp member is in said release position, and

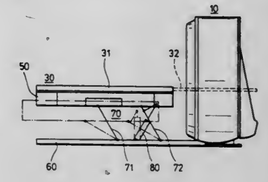
means for releaseably locking said third toggle lever in said extended position.

4,576,368

TABLE MECHANISM

Yoshiyuki Ogawa; Hideaki Uno, and Misao Baba, all of Tokyo, Japan, assignors to Yokogawa Medical Systems, Limited, Toyko, Japan

Filed Mar. 7, 1984, Ser. No. 587,138
Claims priority, application Japan, Dec. 9, 1983, 58-233317
Int. Cl.⁴ A61G *13/00*
U.S. Cl. 269—322 **8 Claims**



6. A table mechanism usuable in medical diagnostic systems, said table mechanism comprising

a table resting on a floor and comprising a table top, and a cradle movably mounted on said table top, said cradle having space for holding a patient longitudinally thereon, and wherein at one longitudinal end of said table is defined a work space, both said table top and said cradle being movable into said work space;

table top lifting means for concurrently moving said table top vertically and horizontally while maintaining said table top parallel to said floor, said moving of said table top being from a rest position near said floor and most distant from said work space to a work position different from said rest position and closest to and into said work space;

cradle moving means for moving said cradle from a rest position on said table top to a position extended from said table top and into said work space;

wherein said table top lifing means comprises a parallel link mechanism and a driving mechanism, said driving mechanism being expandable and contractable to drive said parallel link mechanism to cause concurrent vertical and horizontal movement of said table top while maintaining said table top parallel to said floor;

wherein said parallel link mechanism comprises a plurality of links of substantially the same length and spaced parallel to each other at a predetermined distance from each other, one end of each link being rotatably connected to said table to be angularly movable relative to said table without any lateral movement relative to said table, another end of each link being rotatably connected to said floor to be angularly movable relative to said floor without any lateral movement relative to said floor;

wherein said driving mechanism has one end pivotally connected to a portion of said parallel link mechanism and another end pivotally connected to said floor, whereby said driving mechanism fully contracts to move said links of said parallel link mechanism downwardly to a position closest to said floor and consequently moves said table top to said rest position most distant from said work space, and fully expands to move said one ends of said links of said parallel link mechanism upwardly to a position away from said floor, and consequently moves said table top to said work position closest to and into said work space; and

wherein said cradle moving means comprises an angle detecting means for detecting the angle of said links of said parallel link mechanism with respect to said floor and for providing an output signal indicative of said angle; a control means responsive to said output signal for calculating the distance travelled by said cradle from said rest position on said table top and for providing a distance signal indicative of said travelled distance; and adjusting means re-

sponsive to said distance signal for adjusting the distance travelled by said cradle.

4,576,369

METHOD IN PRODUCING STITCHED PRINTED MATTERS AND FEEDER FOR WORKING THE METHOD

Carl G. A. Flensburg, Per Albin Hanssons väg 52B, S-214 63 Malmö, and Rolf H. V. Isaksson, Diakongatan 59, S-216 23 Malmö, both of Sweden

Continuation of Ser. No. 386,515, Jun. 9, 1982, abandoned. This application Jul. 29, 1983, Ser. No. 517,993
Int. Cl.⁴ B65H *39/02*
U.S. Cl. 270—54 **7 Claims**



1. A method for producing stitched printed matters comprising the steps of laying signatures on a saddle at a plurality of spaced apart stations arranged along a conveyor path, advancing said signatures along said conveyor path between and through said stations wherein at least some of said signatures are being laid one upon the other as said signatures are advanced through said stations, cyclically increasing and decreasing the speed of said advancing of said signatures along said conveyor path between a first lower speed and a second higher speed, said signatures being advanced through said stations at said first lower speed and between said stations at said second higher speed, and stapling and trimming said signatures laid one upon the other as said signatures are continuously advanced along said conveyor path.

6. An apparatus for producing stitched printed matters, said apparatus comprising a saddle conveyor for advancing signatures having a back there along, means for cyclically increasing and decreasing the speed of said conveyor between a first lower speed and a second higher speed, and a plurality of signature feeders arranged along said conveyor for laying signatures thereon, said signatures being advanced past said feeders at said first lower speed and between said feeders at said second higher speed, each of said feeders including a magazine for storage of said signatures, rotative gripping means for gripping one at a time said signatures in said magazine at the back thereof and for withdrawing said signatures therefrom, a fixed abutment for engagement with the withdrawn signatures, and a pair of rotative gripping members, one of said rotative gripping members arranged coaxial with said rotative gripping means and located adjacent one side thereof and the other of said rotative gripping members positioned radially outside said rotative gripping means, said rotative gripping members gripping opposite sides of said signatures in engagement with said fixed abutment for separating said signatures while laying said signatures astride said conveyor.

4,576,370

METHOD AND APPARATUS FOR TIPPING CLOSELY INCIDENTAL MAIL TO MAGAZINES OR THE LIKE

Dale H. Jackson, Plattsburgh, N.Y., assignor to Harris Graphics Corporation, Melbourne, Fla.

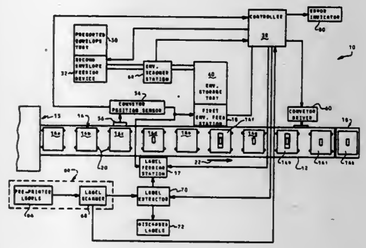
Filed Dec. 24, 1984, Ser. No. 685,712
Int. Cl.⁴ B65H *39/02*
U.S. Cl. 270—54 **17 Claims**

1. A method for automatically tipping mail pieces to certain magazines sequentially fed from a first location to a second location, said method comprising the steps of:

(a) sorting said mail pieces into groups according to geographic regions, each mail piece having machine readable geographic information thereon;

(b) sorting subscriber labelling information into groups according to geographic regions, said subscriber labelling information including machine readable geographic information and mail piece attachment indicia indicating whether a subscriber is to receive a mail piece;

(c) machine scanning subscriber labelling information corresponding to each magazine fed from the first location to the second location;



(d) generating a signal in response to the scanning mail piece attachment indicia indicating the subscriber is to receive a mail piece on the subscriber labelling information;

(e) automatically transferring at least some of said subscriber labelling information to selected some of said magazines feeding from the first location to the second location in response to said signal;

(f) automatically actuating tipping means for attaching mail pieces to selected others of said magazines fed from the first location to the second location in response to said signal.

4,576,371

SORTER HAVING GUIDE MEMBERS

Koji Takahashi, and Akira Mochizuki, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed May 25, 1983, Ser. No. 497,974
Claims priority, application Japan, May 31, 1982, 57-92413
Int. Cl.⁴ B65H *39/10*
U.S. Cl. 271—296 **7 Claims**

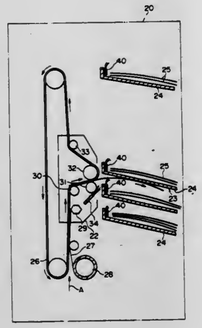
1. A sorter for sorting copy sheets made from an original by a copying machine, comprising:

a plurality of trays vertically arranged in multiple stages at predetermined intervals;

a vertically movable indexer for delivering copy sheets to predetermined trays, said indexer including means for upwardly curving said copy sheets as said copy sheets are delivered into said predetermined trays so that ends of said upwardly curved copy sheets curve downwardly with respect to a bottom surface of said trays;

a conveyor for conveying said copy sheets to said indexer; and

a flexible guide member provided at an inlet portion of a first tray for guiding a copy sheet discharged from said indexer into said first tray along a bottom surface of a second tray located above said first tray, said flexible guide member being capable of yielding under force of contact with one of said copy sheets.

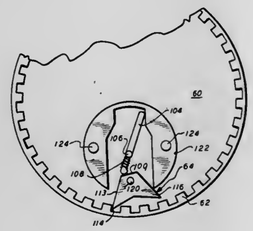


4,576,372

TURNTABLE EXERCISE MACHINE

Michael Rinaldi, 193 Norwood Ave., Lodi, N.J. 07644

Filed Nov. 29, 1984, Ser. No. 676,489
Int. Cl.⁴ A63B *23/04*
U.S. Cl. 272—146 **13 Claims**



1. A turntable exercise machine; comprising:

(a) machine body means;

(b) pressure plate means rotatively carried by said machine body means;

(c) top plate means rotatively carried by said pressure plate means; and

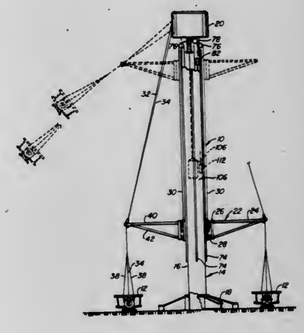
(d) ratchet means disposed between said pressure plate means and said top plate means and coacting with said pressure plate means and top plate means to effect concurrent rotation of said top plate means and said pressure plate means upon rotation of said top plate means in a first predetermined direction, and rotation of said top plate means and not said pressure plate means upon rotation of said top plate means in a second predetermined direction.

4,576,373

AERIAL AMUSEMENT RIDE

Robert Spieldiener, Im Winkel #13, FL 9496 Balziers, Liechtenstein; Alfons Saiko, Speerstrasse 26 A, 8942 Oberrieden, and Reinhold Spieldiener, Aussichtssrasse 23, 8704 Herrliberg, both of Switzerland

Filed Oct. 24, 1983, Ser. No. 544,634
Int. Cl.⁴ A63G *1/28*
U.S. Cl. 272—41 **12 Claims**



1. An aerial amusement ride comprising:

(a) a central tower;

(b) a plurality of passenger vehicles;

(c) an outrigger structure having coupling means for coupling said outrigger structure to said tower, wherein said outrigger structure is both rotatable about said tower and vertically displaceable on said tower, said outrigger structure having the same number of boom members as said plurlity of vehicles;

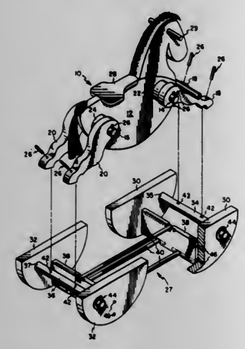
(d) first drive means on said tower for vertically displacing said outrigger structure on said tower;

(e) second drive means associated with said coupling means for rotating said outrigger structure about said tower concurrently with the raising and lowering of said outrigger structure;

(f) cable means having vehicle suspension cables connected to said vehicles for suspending said passenger vehicles and,

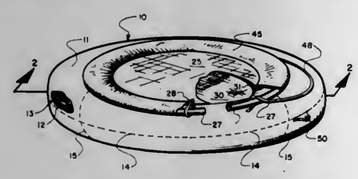
(g) which means mounted on a support structure rotatably coupled to said tower for reeling said cables and displacing said suspended vehicles, wherein said outrigger structure has cable tracking means on the distal ends of said boom members over which said cables are guided, said winch support structure being rotated by third drive means on said tower in unison with said outrigger structure with the rotating and displacing of said outrigger structure being coordinated with reeling said vehicles in and out for a desired ride pattern.

4,576,374
ROCKING HORSE WITH INTERCONNECTED ROCKERS
Gary M. Thomas, 1513 Bob Smith, El Paso, Tex. 79936
Filed Aug. 17, 1984, Ser. No. 641,700
Int. Cl.⁴ A63G *13/06*
U.S. Cl. 272—57.5 **5 Claims**



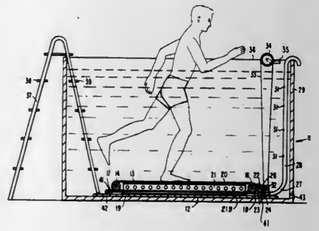
1. A rocking toy comprising:
a body portion for supporting a rider,
front leg means fixedly connected to said body portion,
rear leg means rotatably connected to said body portion,
rocker means including
a first circular shaped rocker member rotatably connected with said front leg means eccentric and relatively forward of the center of rotation of said first rocker member,
a second circular shaped rocker member rotatably connected with said rear leg means eccentric and relatively rearward of the center of rotation of said second rocker member, and
tie rod means connecting said first and second rocker members for synchronizing rotation of said first and second rocker members during movement of said rider,
said tie rod means including at least two parallel tie rods each pivotally mounted a different distance along a radius of said first rocker member and pivotally connected the same different distance along a corresponding parallel radius of said second rocker member on the same side of said centers of rotation,
said at least two parallel tie rods having opposed relative motion with respect to one another for said synchronizing rotation.

4,576,375
FLOTATION TRAMPOLINE
Donald K. Roberts, 488 W. 2000 South Building 4, Orem, Utah 84057
Filed Jan. 30, 1984, Ser. No. 575,464
Int. Cl.⁴ A63B *5/00*; A63G *31/00*
U.S. Cl. 272—65 **11 Claims**



1. A flotation trampoline adapted for use on a body of water, comprising:
a non-elastic, collapsible encasement having a symmetrical configuration resembling an innertube when fully expanded and which includes a lower, interior tube surface commencing at the innermost perimeter of the tube opening and continuing downward to a second perimeter occuring on the lower tube surface at the innermost locus of contacts which would occur with water when the fully inflated tube is positioned on a still water surface, said tube having a diameter of at least three feet;
inflatable support means contained within the encasement and adapted with means for receiving air therein to expand and support the collapsible encasement;
a base cover attached and sealed at a perimeter on the lower, interior tube surface to seal off rapid air flow through the tube opening to the base of the tube to thereby create a substantially closed volume between the base cover, lower interior tube surface and a water surface upon which the tube is placed; and
a resilient, trampoline mat positioned over the tube opening near the top of the tube encasement and attached to the encasement and displayed above said base cover thereby defining a second closed volume for use as a trampoline jumping surface.

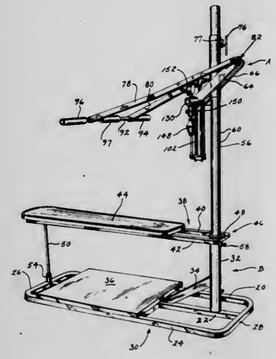
4,576,376
EXERCISING APPARATUS
Paul H. Miller, 8 Pheasant Run Dr., Batesville, Ind. 47006
Filed Nov. 23, 1984, Ser. No. 674,184
Int. Cl.⁴ A63B *23/06*
U.S. Cl. 272—69 **8 Claims**



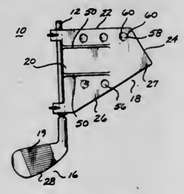
1. An exercising apparatus comprising an open topped tank of sufficient size for entry of an individual to exercise therein:
a treadmill located in said tank;
a pump coupled to said treadmill and operable by said treadmill to pump a fluid in said tank in response to operation of the treadmill by an individual exercising in the tank.

4,576,377
ATHLETIC EXERCISER ASSEMBLY
Leslie C. Wolff, Box 188, Lakeview Dr., Hackensack, Minn. 56452
Continuation of Ser. No. 554,820, Nov. 23, 1983, abandoned. This application Aug. 15, 1985, Ser. No. 765,717
Int. Cl.⁴ A63B *21/00*
U.S. Cl. 272—130 **8 Claims**

1. Athletic exercise apparatus comprising a ground-supported base and a stationary upstanding post carried by and extending upwardly from said base with the base being mainly on an exercise side of said post, an exercise arm supported by and having a pivotal connection with respect to said post with the axis of the pivot of the pivotal connection being horizontal whereby the arm can be swung by the user of the apparatus toward and away from the main portion of the base, said pivot being spaced horizontally from said post in the direction opposite from said main portion of said base, and a hydraulic piston-cylinder assembly extending substantially parallel with said post and having pivotal connections with said arm and said post and spaced from said post on the side of the post above said main portion of said base with the connection of the piston-cylinder assembly with said arm traversing from a position at a level higher than said pivot to a position at a level lower than said pivot and with the mid-point of travel of said connection of said piston-cylinder assembly and arm being about at the same level as said pivot as the piston moves longitudinally in said cylinder from one end of the cylinder to the other for restraining the swinging movement of said arm about said pivot so that force can be put manually on said arm to move it against the hydraulic action of said piston-cylinder assembly to thereby exercise the user of the apparatus.

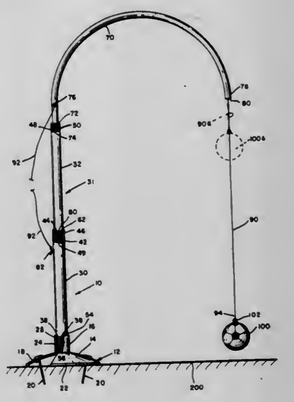


4,576,378
GOLF PRONATION TRAINING DEVICE
George S. Backus, 745 Hillrise Pl. NE., Bremerton, Wash. 98310
Filed Jun. 13, 1984, Ser. No. 620,036
Int. Cl.⁴ A63B *69/36*
U.S. Cl. 273—186 A **12 Claims**



1. In combination with a golf club, a lightweight training device, comprising:
(a) a lightweight, thin, substantially planar, singular airfoil portion;
(b) a first, elongated, marginal side edge portion extending along one side edge of said singular airfoil portion, said side edge portion being substantially thicker than the thickness of said singular airfoil portion; and,
(c) means for detachably attaching said first side edge portion to the shaft of the golf club to:
dispose said first side edge portion longitudinally adjacent the length of the golf club shaft; and,
adjustably, angularly orientate said airfoil portion about the longitudinal axis of the golf club shaft alternatively between a first variable position wherein said airfoil portion extends in a selective orientation about the longitudinal axis of the golf club shaft generally in a direction opposite to and parallel to the face of the head of the golf club and a second variable position wherein said airfoil portion extends in a selective orientation about the longitudinal axis of the golf club shaft generally in the same direction as and parallel to the face of the head of the golf club thereby to selectively alter the magnitude and the direction of the torque load that is applied to the club shaft during the swinging of the club.

4,576,379
SOCCER PRACTICE APPARATUS
Istvan Juhasz, 6578 Bell Bluff Ave., San Diego, Calif. 92119
Filed Apr. 26, 1984, Ser. No. 604,372
Int. Cl.⁴ A63B *69/00*
U.S. Cl. 273—411 **2 Claims**



1. A soccer practice apparatus comprising:
a. a generally vertically disposed support member which is supported at ground level at its lowermost end;
b. said generally vertically disposed support member further comprising a multiplicity of sections which are interconnected at adjoining ends;
c. said generally vertically disposed support member being supported at its lowermost end by a base which is removably secured to the ground;
d. a continuously curved arcuate hollow member having its rear end supported at the opposite end of said generally vertically disposed support member;
e. said continuously curved arcuate hollow member further comprising a multiplicity of interconnected sections;
f. the front end of said continuously curved arcuate hollow member extending away from said generally vertically disposed support member;
g. the front end of said continuously curved arcuate hollow member being open and extending generally toward the ground;
h. a ball height adjustment means supported through said continuously curved arcuate hollow member and having its front end extending through the opening at the front end of said continuously curved arcuate hollow member;
i. the front tip of said ball height adjustment means being secured to a soccer ball;
j. the rear portion of said ball height adjustment means extending through an opening in the surface of said hollow arcuate member and being secured to a location on said generally vertically disposed support member at any multiplciity of locations along the length of said ball height adjustment means; and
k. said continuously curved arcuate hollow member extending for a horizontal arc length of at least 110 centimeters;
l. whereby the height at which said ball is extended above the ground can be adjusted by varying the location along

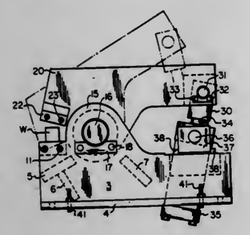
the length of said ball height adjustment means where it is secured to said vertically disposed support member, said soccer ball is permitted to hang freely in the air at any multiplicity of locations above the ground, and said soccer ball is suspended at a sufficient horizontal distance from said vertically disposed support member to permit a user to safely kick said soccer ball with the foot or hit said soccer ball with his head or chest without incurring a risk of accidentally hitting said vertically disposed support member.

4,576,380

CAST METAL BREAKER APPARATUS

D. Leet Shields, P.O. Box 125, Edgeworth, Pa. 15056

Filed Apr. 12, 1984, Ser. No. 599,662
Int. Cl.[4] B23P *17/02*
U.S. Cl. 225—104 **12 Claims**



1. Breaker apparatus having a fixed base including a bottom plate and spaced substantially parallel side members having their lower edges attached to said bottom plate, a fixed king pin extending between and supported by said side members, a breaker arm rotatably mounted on said fixed king pin, a hydraulic cylinder located between said side members, means on each of said side members pivotally mounting said hydraulic cylinder on said side members, a shear lug welded to each of said side members at the forward end and the rear end of each of said means pivotally mounting said hydraulic cylinder on said side members to prevent chatter of said means pivotally mounting said hydraulic cylinder on said side members when said hydraulic cylinder rotates about said means pivotally mounting said hydraulic cylinder, a rod extending from said cylinder and pivotally connected to the rear end of said breaker arm and a knife at the forward end of said breaker arm, whereby extension of said rod from said cylinder pivots said breaker arm about said fixed king pin to rotate said knife in a downward arc to contact a metal piece extending between the forward upper corners of said side members to break the metal piece.

4,576,381

SPIRAL PISTON RING WITH TAPERED ENDS AND RECESSES

Don S. Slack, Mill Valley, Calif., assignor to Rix Industries, Emeryville, Calif.

Filed Nov. 23, 1984, Ser. No. 674,297
Int. Cl.[4] F16J *9/04, 9/14*
U.S. Cl. 277—1 **4 Claims**



1. A spiral piston ring comprising:

a cylindrical spiral of continuous, elastic, self-lubricating material having a rectangular cross section,

said spiral having end portions tapered around at least 90° of the angle of rotation of said cylinder, said end portions being tapered at a very acute angle to a plane perpendicular to the axis of rotation of said cylinder,

each tapered end portion having a tapered terminal portion with the terminal portion being tapered at a less acute angle than said end portion taper with respect to said plane perpendicular to the axis of rotation,

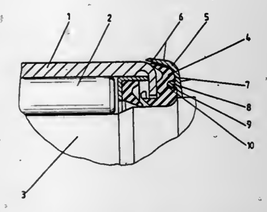
a recess in a convolution adjacent said terminal portion positioned to receive said terminal portion and having the exact size and shape to receive said terminal portion.

4,576,382

PROTECTIVE CAP FOR THE SEALING OF A BUSHING AROUND A PIN IN A CARDAN JOINT

Günter Scharting, Gochsheim, and Steffen Neugebauer, Hesselbach, both of Fed. Rep. of Germany, assignors to FAG Kugelfischer Georg Schafer (KGaA), Fed. Rep. of Germany

Filed Jul. 10, 1985, Ser. No. 753,413
Claims priority, application Fed. Rep. of Germany, Aug. 1, 1984, 3428389
Int. Cl.[4] F16J *15/24;* F16C *33/76*
U.S. Cl. 277—12 **9 Claims**



1. A protective cap for a packing for a bushing, which comprises an outer bushing carrying an outer race, an inner race inside and spaced away from the outer race for defining a free space between the races; a protective packing of generally elastic material for covering and filling the free space between the outer bushing and the inner race; the packing being at the axial end of the bushing; a plurality of rollers disposed in the free space and rollingly contacting the outer race of the bushing and the inner race;

the cap having a radial section extending radially inward over the packing and having an axial section extending axially down along the packing toward the bushing;

one of the packing and the cap having a groove defined therein on the radially extending section thereof and the other of the packing and the cap having a rib defined thereon placed thereon for engaging into the groove, for holding the cap to the packing.

4,576,383

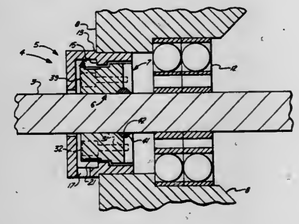
RING SEAL WITH OVERLAPPING FLANGES FOR CONTAMINANT TRAPPING

Michael J. Ballard, P.O. Box 73915, Baton Rouge, La. 70897

Continuation-in-part of Ser. No. 575,709, Jan. 31, 1984, Pat. No. 4,484,754. This application Nov. 26, 1984, Ser. No. 674,563
Int. Cl.[4] F16J *15/447*
U.S. Cl. 277—53 **22 Claims**

1. A ring seal between a housing and a rotatable shaft, comprising:

(a) a first ring member generally concentric with a rotatable shaft and fixedly and sealingly attachable to a housing between said housing and said shaft, said first member having an outer annular surface facing externally of said housing and an inner annular surface facing internally of said housing; an annular recess in said inner surface, forming an outer first annular flange axially adjacent to said housing and an inner second annular flange axially adjacent to said shaft; an annular third flange extending perpendicular to and radially inward from said first flange partially into said recess, forming an annular channel; and an opening from said channel to the exterior of said first member; and



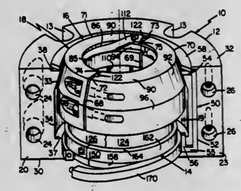
(b) a second ring member generally concentric with said shaft, being fixedly and sealingly attachable to said shaft, and having an outer annular surface facing said inner surface of said first member and an inner annular surface facing internally of said housing; and an annular flange extending axially from said outer surface of said second member and extending into said recess in said first member between said second and third flanges of said first member.

4,576,384

SPLIT MECHANICAL FACE SEAL

Henri V. Azibert, Stoneham, Mass., assignor to A. W. Chesterton Company, Stoneham, Mass.

Filed Jan. 3, 1985, Ser. No. 688,659
Int. Cl.[4] F16J *15/38*
U.S. Cl. 277—81 S **19 Claims**



1. A split mechanical face seal comprising:

a pair of seal ring assemblies, each said ring assembly comprising a rigid seal ring of split ring segments and securing means extending about the outer circumference of each said ring holding said segments thereof together;

said rings each having a flat radially extending sealing surface, the sealing surfaces of said rings being in sealing contact with each other; characterized in that

said rings are axially non-rigidly supported in said seal by resilient support means resiliently contacting and supporting each said ring axially on a side opposite the sealing surface thereof; and

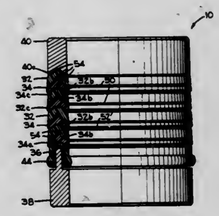
at least one of said support means comprises biasing means axially biasing said rings and said sealing surfaces thereof together.

4,576,385

FLUID PACKING ASSEMBLY WITH ALTERNATING DIVERSE SEAL RING ELEMENTS

Tep Ungchusri, The Woodlands, and William J. Jakubowski, Houston, both of Tex., assignors to FMC Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 680,070, Dec. 12, 1984, Pat. No. 4,527,806. This application Jul. 9, 1985, Ser. No. 753,296
Int. Cl.[4] F16J *15/18*
U.S. Cl. 277—124 **7 Claims**



1. A fluid packing assembly in the form of a stacked array for statically and dynamically sealing a cylindrical element to a surrounding cylindrical surface, said assembly comprising:

(a) at least one seal ring element having a generally V-shaped cross-sectional configuration;

(b) at least one backup/energizing ring in supportive relationship with the seal ring element, said backup/energizing ring having a generally Y-shaped cross-sectional configuration;

(c) a spring-energized lip seal ring adjacent the backup/energizing ring, said lip seal ring including a central base and a pair of sealing lips extending therefrom whereby the lip seal ring has a generally U-shaped cross-sectional configuration; and

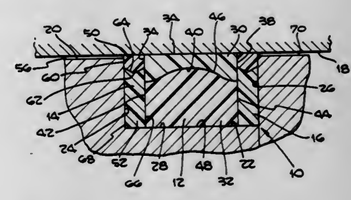
(d) an adapter ring having a generally T-shaped cross-sectional configuration and extending into a supportive relationship with the lip seal ring to prevent dislocation of said seal ring when the packing assembly is in functional position between said cylindrical element and said surrounding cylindrical surface.

4,576,386

ANTI-EXTRUSION BACK-UP RING ASSEMBLY

Alan M. Benson, Lawndale; John D. Mawer, Culver City, and Alan V. Ruzicka, Santa Monica, all of Calif., assignors to W. S. Shamban & Company, Santa Monica, Calif.

Filed Jan. 16, 1985, Ser. No. 692,354
Int. Cl.[4] F16J *9/00, 15/24*
U.S. Cl. 277—165 **21 Claims**



1. A seal back-up assembly adapted for use in preventing the extrusion of the cap seal of an elastomer energized seal between two mating surfaces being sealed by said elastomer energized seal, one of said surfaces having a groove with sidewalls in which said elastomer energized seal is housed for sealing contact with the other surface, said cap seal including

a sealing surface for sealing contact with said other surface, first and second edges and a supporting surface, said elastomer energized seal further including a resilient expander element located below said cap seal in said groove and in contact with said supporting surface of said cap seal to bias said cap seal into sealing engagement with said other surface, said expander element including first and second edges, said seal back-up assembly comprising:

a first back-up ring located in said groove adjacent said cap seal first edge and a second back-up ring located in said groove adjacent said cap seal second edge, wherein each of said back-up rings includes:

an outer member made from a relatively hard, nonresilient material which is sufficiently strong to prevent extrusion of said cap seal;

an inner member made from a relatively soft elastic material which is sufficiently soft to prevent abrasion of said expander element; and

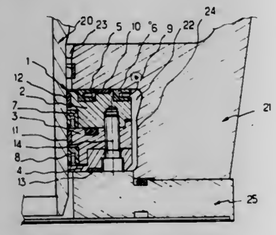
means for connecting said inner member to said outer member so that said outer member is prevented from contacting said expander element to provide said back-up ring for use in preventing the extrusion of said elastomer energized seal between the two mating surfaces being sealed.

4,576,387

ROTARY JOINT DEVICE WITH FLOATING SEAL RING FOR A CRYOGENIC FLUID

Jean P. R. F. Ghilardi, Montlignon, and Rémi F. Forget, Breval, both of France, assignors to Entreprise d'Equipements Mecaniques et Hydrauliques (E.M.H.), France

Filed Jul. 24, 1985, Ser. No. 758,458
Claims priority, application France, Jul. 26, 1984, 84 11901
Int. Cl.⁴ F16J *15/18, 15/54*
U.S. Cl. 277—176 **7 Claims**



1. A device forming a rotary joint for a fluid, in particular a cryogenic fluid, comprising a stationary part and a rotary part rotatably mounted in relation to the stationary part, each one of the stationary and rotary parts comprising at least a corresponding duct adapted to the flow of the cryogenic fluid through the joint, fluid-tight means providing heat insulation of at least those walls of the joint which are contacted by the cryogenic fluid and which form the vital portions of the joints as in particular the walls located at the plane between the stationary part and the rotary part in relation to the surrounding medium, said heat insulating means comprising at least one fluid-tight annular chamber arranged in concentric relation to the cryogenic fluid flow duct surrounding same radially outwards, said annular chamber being closed in fluid-tight relationship by sealing means which at the connection between the rotary part and the stationary part include a floating ring providing fluid-tightness through radial and face-bound engagements, respectively, wherein the improvement consists in that said floating ring consists of at least two annular members assembled together and formed with recesses for accommodating the radially and face-wise acting sealing gaskets without any previous deformation of same for that purpose.

4,576,388

RECEPTACLE SUPPORT

Douglas R. Pope, 146 Warren Rd., Modbury North, South Australia, Australia 5092

PCT No. PCT/AU83/00115, § 371 Date Apr. 24, 1984, § 102(e) Date Apr. 24, 1984, PCT Pub. No. WO84/00940, PCT Pub. Date Mar. 15, 1984
PCT Filed Aug. 24, 1983, Ser. No. 606,833
Claims priority, application Australia, Aug. 24, 1982, PF5540
Int. Cl.⁴ B65B *67/04*
U.S. Cl. 280—33.99 F **11 Claims**



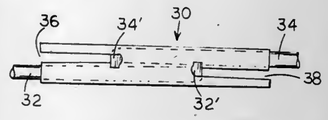
1. A supermarket trolley of the type including a handle, wheels, an article support shelf and an upper frame, the trolley being characterised by a plurality of loop hooks adapted to engage with and support handles of a non-rigid handled container having an open top, said handles being located near the open top of the container for opening and closing the same, the hooks being arranged on the upper frame in pairs on opposite sides of and situated above the shelf, a first one of each of the pairs of hooks being movable from a first position to a second position relative to a second one of each of the pairs of hooks such that a container engaged by the hooks is opened when said first hooks are in said second position and is closed when said first hooks are in said first position, resilient means for biasing and moving said first hooks from said second position to said first position, actuating means for moving said first hooks to said second position and means for releasably retaining the first hooks in said second position whereby empty containers can be put in the trolley and engaged with said hooks with the container handles in an unstretched condition when said hooks are in said first position and then held open for loading by moving said first hooks to said second position, and loaded containers are closed by releasing said retaining means and for permitting loaded containers to be easily taken out of the trolley.

4,576,389

CART FOR TRANSPORTING SHOCK SENSITIVE LOADS, OR UNSTABLE LOADS

James Villaveces, 3300 San Luis St., Ventura, Calif. 93003, and Steven T. Golden, 822 Teaque Dr., Santa Paula, Calif. 93060

Filed Jan. 25, 1985, Ser. No. 695,253
Int. Cl.⁴ B62B *1/04*
U.S. Cl. 280—43.16 **8 Claims**



1. A cart axle for transporting shock-sensitive computer equipment, components, and the like, comprising:

a main carrying base upon which is supported items to be transported, said main carrying base having a first axle with a wheel attached thereon, and a second axle with another wheel attached thereon, said wheels rollingly supporting said main carrying base for movement;

said main carrying base further comprising means for mounting each of said first and second axles for selective and independent extension and retraction of said axles with respect to said main carrying base so as to accommodate various sizes and various weights of loads carried by said main carrying base;

said means for mounting comprising tube means for mounting said axles in overlapping relationship therein, said tube means having a first open end and a second open end spaced from said first open end, and a first slot adjacent said first open end and a second slot adjacent said second open end, each said slot being formed along a portion of the circumference of said tube means and extending from adjacent a respective said open end toward the center of said tube means, said tube means causing said axles to be held at a selected extension by friction between the inner surface of said tube means and the outer surfaces of said axles;

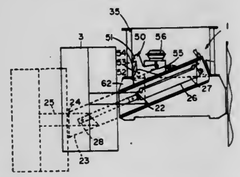
each of said first and second axles comprising a hook means at the end thereof remote from the end tc which said wheel is attached, said hook means riding in a respective one of said slots disposed opposite thereto at one of said open ends opposite to the open end adjacent said attached wheel of said axle, whereby upon extension of said axle, said hook means abuts against the closed end of the respective slot to stop movement thereof, said axles overlapping in said tube means for at least some of the extensions thereof.

4,576,390

COMBINATION OUTRIGGER STABILIZER AND LIFT AXLE FOR VEHICLES

Henry J. Vos, 313 Baldwin, Jenison, Mich. 49428

Filed Sep. 13, 1983, Ser. No. 531,675
Int. Cl.⁴ B60G *17/00*
U.S. Cl. 280—43.23 **21 Claims**



1. In a vehicle including a main frame portion and wheels, the improvement of a combination outrigger stabilizer and lift axle, comprising:

an extensible lift axle, having a ground engaging lift wheel rotatably mounted on an outer end thereof;

a retractable suspension arrangement, resiliently supporting said lift axle on a main frame portion of said vehicle;

means for bodily translating said lift axle in a vertical direction, between a raised, storage position wherein said lift wheel is lifted above the ground and is laterally aligned with other conventional wheels of said vehicle, and a lowered, weight supporting position wherein said lift wheel engages the ground in lateral alignment with said other conventional wheels, and supports the weight of the vehicle through said suspension arrangement;

means for longitudinally shifting said lift axle between an extended, outrigger position wherein said lift wheel contacts the ground at a location spaced laterally outwardly from said other conventional wheels of the vehicle to provide lateral stabilization to the vehicle, and a retracted, storage position wherein said lift wheel is raised above the ground and is drawn into lateral alignment with the other conventional wheels of the vehicle;

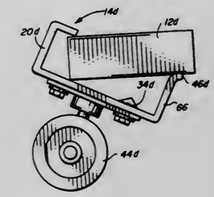
means for selectively deactivating said suspension arrangement and detachably connecting said lift axle directly with the main frame of said vehicle when said lift axle is in the raised, storage position, whereby said lift wheel provides lateral support directly to the main frame of said vehicle when said lift axle is in the extended, outrigger position, as well as resilient weight support when said suspension arrangement is reactivated, and said lift axle is moved into the lowered, retracted position to assist vehicle transport.

4,576,391

ROLLABLE PALLET ASSEMBLY AND CASTER DEVICE

Michael Gerstner, 11555 Hamlin, #3, North Hollywood, Calif. 91606

Filed Jul. 15, 1983, Ser. No. 513,811
Int. Cl.⁴ B62B *1/04*
U.S. Cl. 280—79.1 R **4 Claims**



3. An improved knock-off caster device for a pallet, said device comprising, in combination:

(a) an upper generally horizontal plate,

(b) a lower generally horizontal plate,

(c) a first generally vertical web interconnecting said plates at one end thereof,

(d) a second generally vertically extending plate connected to the opposite end of said lower plate, said second plate lying opposite said web and extending upwardly from said lower plate,

(e) said upper plate having a length substantially shorter than the length of said lower plate, whereby a member of said pallet can be inserted into the cavity formed by said plates and web,

(f) a caster bracket connected to the underside of said second plate,

(g) a caster rotatably secured to and depending from said bracket,

(h) wherein said device includes a flange adapted to be struck to facilitate knocking off said device from a pallet, and

(i) wherein said flange is secured to the top of said second vertically extending plate.

4,576,392

HEIGHT ADJUSTMENT APPARATUS

Robert L. Quinlan, Jr., Cuyahoga Falls, Ohio, assignor to Gerber Products Company, Fremont, Mich.

Filed Dec. 7, 1984, Ser. No. 679,166
Int. Cl.⁴ A47D *13/04*; B62B *7/06*
U.S. Cl. 280—87.02 W **6 Claims**

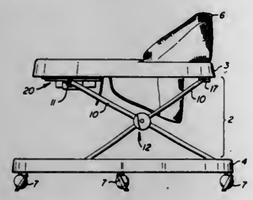
1. A catch assembly for adjustably fixing the height of an object mounted on first and second legs pivotally secured together to form a scissors frame collapsible in a longitudinal direction and attached thereto by a hinge joint at the top of said first leg, said assembly comprising:

a slide pivotally attached to the top of said second leg, and having first and second series of ratchet stops, each said series aligned parallel to said longitudinal direction;

a guide on said object for receiving said slide and permitting sliding thereof along said longtiudinal direction;

first and second pawls pivotally attached to aid object and biased to engage said first and second series of ratchet

stops, respectively, from opposite sides of said slide and to limit the motion of said slide in the direction away from said hinge joint; and



a handle extending backward from the rear of each of said first and second pawls to permit simultaneous release of said pawls by squeezing said handles together.

4,576,393

BICYCLE SUSPENSION

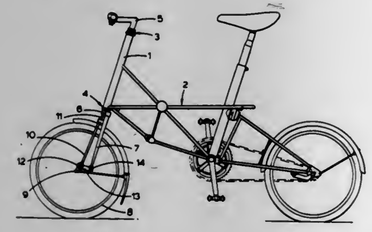
Alexander E. Moulton, and Philip B. Uncles, both of Bradford on Avon, United Kingdom, assignors to Alex Moulton Limited, Wiltshire, England

Filed Dec. 1, 1983, Ser. No. 556,935

Claims priority, application United Kingdom, Dec. 1, 1982, 8234232

Int. Cl.⁴ B62K *21/16, 21/22*

U.S. Cl. 280—276 **1 Claim**



1. A resilient suspension system for the front wheel of a bicycle comprising a supporting frame (1), a steering column (1A) rotatably mounted within said frame and carrying a first crown (6) element at one end thereof, and a stem (5) supporting a handle bar (5A) at the other end, a primary fork including a pair of primary fork arms (7) mounted on said crown (6) with its longitudinal axis displaced to the rear and generally parallel to the axis of said steering column (1A), said primary fork extending downwardly from said crown and terminating in a hinge pin support (14), a subsidiary fork assembly includes a second crown (10A) from which a pair of subsidiary fork arms (10) extend downwardly and supporting at their lowermost end an articulated connection configured to receive and support each end of a wheel spindle (9), a pair of links (13) pivotally interconnecting the primary and subsidiary forks adjacent each end of the spindle, a push rod (11) mounted on said second crown (10A) and extending vertically therefrom into the lower end of said steering column, and a compression assembly including a compression spring (22) within said steering column and connected to said push rod (11) for controlling resilient vertical movement of said suspension system, and wherein a slidable buffer (23) is interposed between said compression spring (22) and said second crown (10A), said buffer (23) being slidable within the steering column (1*a*) in response to movement of the crown (10A) and said push rod (11), said buffer (23) being threaded on to the push rod (11) and being adjustable axially of the rod.

4,576,394

TRACTOR

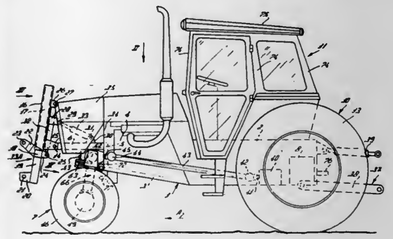
Cornelis van der Lely, 7 Brüschenrain, Zug, Switzerland

Filed Aug. 30, 1983, Ser. No. 527,682

Claims priority, application Netherlands, Aug. 31, 1982, 8203382

Int. Cl.⁴ B60D *1/00*

U.S. Cl. 280—490 A **20 Claims**



1. Agricultural tractor for operating at least a tillage machine for seed bed preparation, said machine being connected to a three-point lifting device of the tractor, said lifting device comprising:

a hitching frame extending transverse to the tractor's plane of symmetry, said hitching frame having three coupling points, the lower two of said points being at the same level and below as seen in side elevation an upper of said points;

upstanding beam means rigidly connected at its lower end to the upper aspect of said hitching frame;

guiding beam means which surrounds at least in part said upstanding beam means so that said upstanding beam means is movable both upwardly and downwardly in said guiding beam means, said guiding beam means being in all positions completely spaced higher than said lower coupling points;

said guiding beam means being pivotally connected to the remaining part of the tractor by pivot means;

first hydraulic jack means between said guiding beam means and said hitching frame for moving the latter relatively to the former upwardly and downwardly; and

second hydraulic jack means connected with said guiding means at a location relative to said pivot means so that on actuation said lower two points move fore and aft at approximately the same level relative to the remaining part of the tractor in an arcuate path, said level being determined by said first hydraulic jack means;

said first and second hydraulic jack means having control means which can be reached by the tractor's operator from the tractor's driver's seat.

4,576,395

TRAILER HITCH MOUNTED TOOL SUPPORT

Heron Longoria, 713 N. 16th St., McAllen, Tex. 78501

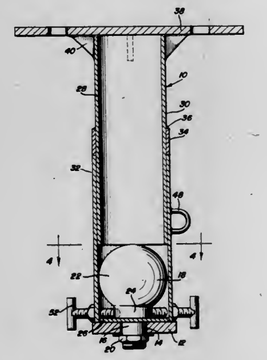
Filed Apr. 26, 1984, Ser. No. 604,361

Int. Cl.⁴ B60R *9/06*

U.S. Cl. 280—511 **12 Claims**

1. A support for use in conjunction with a conventional trailer hitch of the type including a horizontally projecting bar portion having an upper surface and a hitch ball projecting upwardly from said bar portion including an upper generally spherical ball portion, a shank depending downwardly from said ball portion and extending and secured downwardly through said bar portion and an enlarged abutment disc on an intermediate portion of said shank downwardly abutted against the upper surface of said bar portion and being of substantially the same outside diameter as the diameter of said ball portion and with said upper surface projecting horizontally outwardly of an upstanding cylindrical zone containing the outer periph-

eries of said ball portion and abutment disc, said support including an upstanding support whose lower end defines a downwardly opening cylindrical cavity therein for snug downward telescoping of the lower end of said support member over said ball portion and abutment disc and with the lower end of said support member downwardly abutted against said upper surface, said support member including a



plurality of peripherally spaced setscrews threadingly supported therefrom and projectable and retractable generally radially of said cylindrical cavity at a predetermined level above the lower end of said cavity for clamp engagement with said shank intermediate said ball portion and disc, the upper end of said support including mounting means for mounting various different objects from the upper end of said support.

4,576,396

ELECTRONIC SKI-BINDING

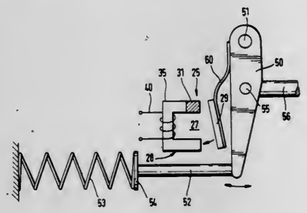
Lorenz Stempfhuber, Oberau, Fed. Rep. of Germany, assignor to Marker International Company, Salt Lake City, Utah

Filed Mar. 5, 1985, Ser. No. 708,273

Claims priority, application Fed. Rep. of Germany, Mar. 7, 1984, 3408335

Int. Cl.⁴ A63C *9/08*

U.S. Cl. 280—612 **10 Claims**



1. An electronic ski binding having a release mechanism for releasing a ski boot from the binding in response to electrical release signals reflective of the application of forces of a predeterined value applied to the binding, said binding comprising:

an electrical load for generating and processing electrical signals reflective of the value of forces applied to the binding and for generating the electrical release signals; an electrical energy source connectable to the electrical load;

an electronic switch actuable to an on condition for connecting the electrical source to the electrical load in response to control signals;

a movable part which is movable in response to a ski boot entering the binding;

control signal generating means for generating control signals for actuating the electronic switch to the on condition, said control generating means comprising induction coil means and magnet means; and

processing means electrically connected to the electronic switch, one of said induction coil means and said magnet means being mounted on said movable part for movement relative to the other of said coil means and said magnet means in response to the entry of the ski boot into the binding for inducing an electrical control signal in said induction coil means for actuating said electronic switch to the on condition, and said processing means generating an output signal to the electronic switch for maintaining said electronic switch in the on condition in response to the generation of said control signals.

4,576,397

ADJUSTMENT DISPLAY FOR SKI BINDING

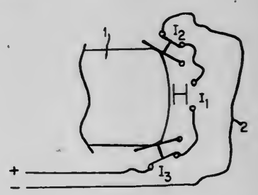
Pierre Rullier, Annecy, France, assignor to Salomon S.A., Annecy, France

Filed Jan. 25, 1984, Ser. No. 573,643

Claims priority, application France, Feb. 11, 1983, 83 02726

Int. Cl.⁴ A63C *9/08*

U.S. Cl. 280—625 **56 Claims**



1. An apparatus for displaying the state of adjustment of a ski binding having at least one maintenance element adapted to be displaced with respect to a boot in a horizontal plane into first and second states of adjustment, wherein in said first state of adjustment said at least one maintenance element is properly adjusted with respect to said boot in a horizontal plane, wherein in said second state of adjustment said at least one maintenance element is improperly adjusted with respect to said boot in a horizontal plane, wherein said apparatus comprises:

(a) sensor means for sensing the first and second states of adjustment of said at least one maintenance element with respect to said boot in a horizontal plane; and

(b) indicator means for emitting a percepticle signal to indicate the horizontal state of adjustment of said at least one maintenance element with respect to said boot in response to said sensor sensing at least one of said states of adjustment of said at least one maintenance element.

4,576,398

TRAILER FRAME STRUCTURE

Stanley F. Kinne, Portland, Oreg., assignor to Lear Siegler, Inc., Santa Monica, Calif.

Filed Aug. 20, 1984, Ser. No. 642,490

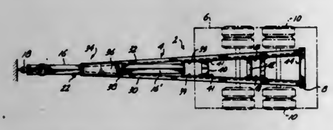
Int. Cl.⁴ B62D *63/06*

U.S. Cl. 280—789 **8 Claims**

1. A trailer unit which comprises:

a. a frame comprising a pair of substantially side-by-side longitudinally extending, generally gable-shaped solid web truss members, said members diverging laterally in V-shaped fashion from a proximal end apex zone to a distal end, lower flanges of said truss members being inclined from a lower level adjacent to the apex zone to a relatively higher wheel means engaging level, said web truss members having a body supporting rear portion with

an upper flange member substantially parallel to the ground, whereby the web of said rear portion increases in vertical dimension from said distal end to a gable peak, and said web truss members further having a converging portion extending forwardly from said gable peak whereby the web of said converging portion decreases in vertical dimension from said gable peak toward said apex,



said longitudinal membefs being cross-braced by at least one transverse bridging member;

b. a body supported by the rear portion of the frame with the forward portion of the body located adjacent to the gable peak of the truss members;

c. wheel means supporting the rear portion of the frame; and

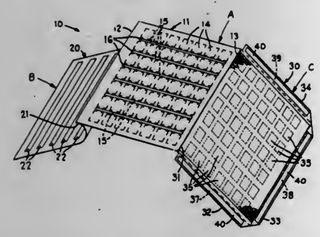
d. hitch means located at the apex zone of the frame.

4,576,399

BLINDED CODE SHEET FORMAT AND METHOD FOR ITS USE

Cathleen A. White, Lawton; Richard K. Senne, Scotts, and Harry Rutherford, Kentwood, all of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Nov. 7, 1983, Ser. No. 549,706
Int. Cl.⁴ B41L *1/20*; B42D *11/00, 15/00, 15/04*
U.S. Cl. 282—8 R **5 Claims**



1. A three-paneled code sheet construction form useful to control blinded clinical trials of drugs and chemicals, which comprises (A) a first panel for test messages of generally single ply configuration having a number of substantially spaced writing areas on one writing mode side thereof, with room in the spaced writing areas sufficient for writing code designations and an appropriate test message

said panel (A) having one or more lines of adhesive bonded to said writing mode side of said first panel (A),

said adhesive being covered by removable strips of an adhesive protective liner to prevent the adhesive from sticking until ready for closing of said code sheet construction form,

the other side of said first panel (A) being covered with a security format;

(B) a removable, second panel of generally single ply construction removably connected to said panel (A) at one edge thereof, and

said panel (B) having spaces of writing transference substance printed or otherwise adhering to the side of said second panel which places the writing transference substance in a position to transfer said code designation writing therethrough from panel (A) to a third panel (C), without transferring any said message to said third panel (C) in a writing mode when writing is made on panel (A); and

(C) said third panel of generally single ply configuration hingedly interconnected with said first panel (A) along a second edge thereof;

said third panel (C) having a number of spaced perforated perimeter areas thereon,

said perforated perimeter areas approximating the size, shape, and area of the spaced writing areas on said panel (A), and

which perforated perimeter areas are spaced on said third panel (C) to line up essentially coextensively in essential registered relationship with the spaced writing areas on said first panel (A), when said panels (A), (B) and (C) are folded together for said writing mode;

said panels (A), (B) and (C) being arranged so that when said code designations and tests messages are written on said first panel (A) said code designation writings will be impressed through said first panel (A) and said second panel (B) to the corresponding perforated perimeter areas of said third panel (C) but the test message will not be transferred to said panel (C), and

means to fold panels (A) and (C) approximately 360 degrees after the writing mode is completed to an in-line, closed, sealed relationship to each other, so that the spaced writing areas of panel (A) will be essentially covered and be in an essentially in-line relationship with the the perforated perimeter areas of panel (C), and

means to seal the outer edges of said folded, closed, in-line panels (A) and (C) into essentially a folded construction, having the written-on writing areas of panel (A) in-line with and being covered by perforated perimeter areas of panel (C).

3. A method for arranging test sample code and sample identity designations using a multi-panel format which comprises

(1) folding the three panel format of claim 1 to the writing mode,

(2) writing the code designations and the message to be hidden in a number of said spaced writing areas of panel (A), so that the code designation will be impressed through the transfer substance spaces of the second panel (B) to the corresponding perforated perimeter area of the third panel (C), but so that the message to be hidden will not be transferred from panel (A),

(3) removing the transfer panel (B) from the above three panel format and any protective liner strips from any adhesive lines on panel (A),

(4) fold or turn panel (A) or (C) in an essential 360 degree arc along the hingedly connected edge of panel (A) and (C) to line up panels (A) immediately behind panel (C) so that the spaced writing areas of panel (A) are in registered relationship with the corresponding perforated perimeter areas of panel (C), and

(5) sealing the resulting folded panel (A)/panel (C) format to ensure integrity of the blinded hidden messages on panel (A) under the corresponding perforated areas of panel (C).

4,576,400

RISER REPAIR ASSEMBLY FOR UNDERGROUND IRRIGATION SYSTEMS

Von D. Allred, P.O. Box 24, and Don B. Harmon, P.O. Box 546, both of Afton, Wyo. 83110

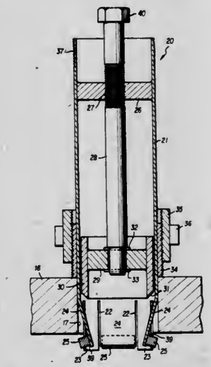
Filed Feb. 10, 1984, Ser. No. 578,978
Int. Cl.⁴ F16L *19/00*
U.S. Cl. 285—5 **11 Claims**

1. A repair assembly for broken or leaking risers in underground irrigation systems comprising:

an elongated cylindrical casing having a top end and a bottom end, said botton end adapted for insertion into a circular hole through the wall of a buried water distribution line;

a plurality of slots cut into said botton end parallel to the axis of said cylindrical casing, said slots defining a plurality of tang members, each of said tang members having an attached end and a free end;

outwardly extending lugs fixed to the exterior of alternate tang members, the free ends of said tang members with affixed lugs bent inwardly a sufficient degree that said lugs



do not project beyond the diameter of said cylindrical casing;

wedge means disposed within said casing and adapted to move downwardly to spread said lug affixed tang members outwardly, and

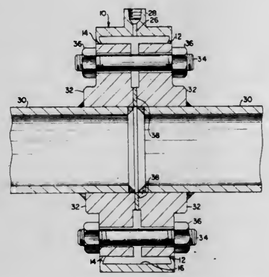
a retaining flange disposed about the exterior of said casing at a lower section thereof above said tang members.

4,576,401

LEAK REPAIR CLAMP

George W. Harrison, Houston, Tex., assignor to Team, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 925,425, Jan. 17, 1978, abandoned, which is a continuation-in-part of Ser. No. 832,112, Sep. 12, 1977, Pat. No. 4,049,296. This application Sep. 17, 1984, Ser. No. 650,842
The portion of the term of this patent subsequent to Oct. 16, 1996, has been disclaimed.
Int. Cl.⁴ F16L *55/18*
U.S. Cl. 285—15 **5 Claims**



1. In an improved self-contained leak repair clamp, the combination comprising:

(a) a circular metal frame formed of at lease two frame segments adapted for forceful connection around and against a cylindrical surface;

(b) said frame defining two integral deformable metal lips extending radially inwardly and disposed in parallel relation about the inner periphery of each frame segment of said frame to form an annular cavity between said frame and said cylindrical surface;

(c) each of said metal lips being adapted to be deformed inwardly toward the other of said lips in response to said forceful connection to form a respective fluid tight seal between an edge of each said metal lip and said cylindrical surface;

(d) said sealing force of each said respective fluid tight seal being adapted to be increased in response to fluid pressure applied to within said annular cavity;

(e) said annular cavity being adapted to receive a liquid sealant cured while under fluid pressure to form a seal between said lips in addition to each said respective seal; and

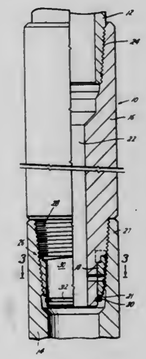
(f) means for forcefully connecting said frame segments together to form said circular metal frame and said sealed annular cavity.

4,576,402

LOCKING PIPE SUB

W. Kirby Murray, and David O. Sullivan, both of Bossier City, La., assignors to Tri-State Oil Tool Industries, Inc., Bossier City, La.

Filed Mar. 21, 1983, Ser. No. 477,164
Int. Cl.⁴ F16L *35/00*
U.S. Cl. 285—39 **9 Claims**



1. An apparatus for making a locked threaded connection between said apparatus and a threaded object, said apparatus comprising:

a body;

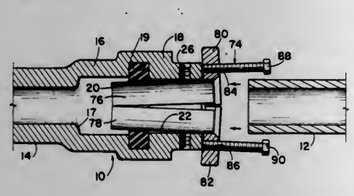
a first threaded portion on said body;

a second threaded portion adjacent to said first threaded portion and mounted on said body for axial movement relative to said first threaded portion;

said first and second threaded portions adapted to form a continuous threaded surface and to rotate together to threadedly engage said first and second threaded portions with said object when said body is rotated in a first direction relative to said object; and,

means for axially displacing said first and second threaded portions relative to each other when said body is rotated in a direction opposite to said first direction, whereby said first and second threaded portions may not be removed from threaded engagement with said object by rotation of said body in a direction opposite to said first direction.

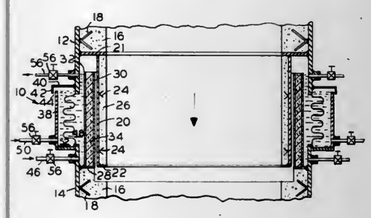
4,576,403
PRESSURE FITTING
Jack Burkholder, Rte. 2, Box 170AA, Eastland, Tex. 76448
Continuation of Ser. No. 446,462, Dec. 3, 1982, abandoned. This application Feb. 4, 1985, Ser. No. 698,083
Int. Cl.⁴ F16L *55/00*
U.S. Cl. 285—39 **1 Claim**



1. Pipe fitting means for connecting a pair of adjacent pipe joints in tandem relation and comprising bell means integral with one end of the pipe joint for receiving one end of the other pipe joint therein, sealing means disposed between the inner periphery of the other pipe joint, clamping means extending through the side wall of the bell means and engagable with the other pipe joint for securing the bell means on the other pipe joint, the clamping means comprising axially extending means provided at one end of the bell means, and set screw means extending through the axially extending means for engagement with the outer periphery of the pipe to secure the fitting on the pipe, and wherein the axially extending means comprises a plurality of circumferentially spaced axially extending lug means, each lug means being provided with a threaded aperture for receiving a set screw therethrough, said set screw being selectively engagable with the outer periphery of the pipe for securing the fitting to the pipe, and including helper tool means adapted for removable insertion between the bell means and the pipe for facilitating insertion of the pipe into the bell means to preclude damage of the sealing means, said helper tool means comprising a pair of substantially identical oppositely disposed semi-cylindrical sleeve members adapted to be disposed within the ball means prior to insertion of the pipe therein, and removal means provided on each semi-cylindrical sleeve member for facilitating removal of the helper tool means subsequent to the insertion of the pipe into the ball means and wherein the removal means additionally includes outwardly extending flange means provided around the outer periphery of each semi-cylindrical sleeve member and jack screw means extending longitudinally through each flange means and engagable with the outer end of the bell means for facilitating removal of the helper tool means subsequent to the insertion of the pipe into the barrel means.

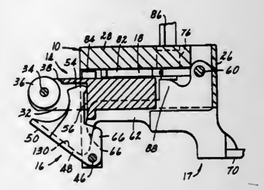
4,576,404
BELLOWS EXPANSION JOINT
Paul S. Weber, Baytown, Tex., assignor to Exxon Research and Engineering Co., Florham Park, N.J.
Filed Aug. 4, 1983, Ser. No. 520,433
Int. Cl.⁴ F16L *53/00*
U.S. Cl. 285—41 **8 Claims**

1. An improved expansion joint for use in a high temperature gas vertically oriented conduit containing acid producing compounds comprising, flexible cylindrical bellows means, upper and lower rigid conduit means secured to the opposite ends of said bellows means, inner cylindrical sleeve means attached to said lower conduit means and spaced from said bellows means extending toward said upper conduit means to terminate in an upper rim portion at a point in overlapping relation with said upper conduit means to define a first chamber for containing an acid neutralizing solution in contact with the inner surface of said bellows means, external cylindrical jacket means attached to said lower conduit means and spaced from said bellows means to terminate in an upper rim portion above said bellows means to define a second chamber for containing an acid neutralizing solution in contact with the outer surface of said bellows means, means for introducing said acid neutralizing solution into lower portions of each of said first and second chambers, and means for discharging solution



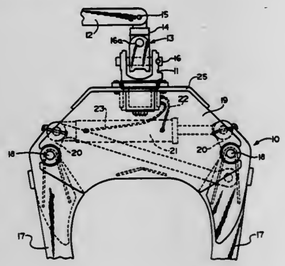
from said chambers above the upper end of said bellows means, whereby said solution may be introduced into said chambers to purge and neutralize any acid in contact with said bellows means during any cooldown of said expansion joint from its normal high temperature of operation.

4,576,405
DOOR LATCH MECHANISM
George Wartian, East Detroit, Mich., assignor to Wartian Lock Co., St. Clair Shores, Mich.
Continuation of Ser. No. 457,497, Jan. 12, 1983, abandoned. This application Jul. 26, 1985, Ser. No. 759,512
Int. Cl.⁴ E05C *1/16*
U.S. Cl. 292—191 **2 Claims**



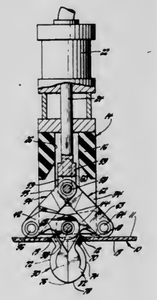
1. A door latch mechanism comprising a housing adapted to be mounted on the inner side of a door, a sliding latch mounted on said housing for sliding movement from a retracted position to an extended position in which it is adapted to engage behind a keeper to hold the door closed, said latch having an abutment surface, spring means urging said latch to its extended position, an actuator pivoted on said housing for pivotal movement from a retracted to an extended position, said actuator having a first arm engageable with said abutment surface of said latch to retract said latch when said actuator is pivoted to its retracted position, said actuator having a second arm positioned and adapted, when said housing is mounted on the door as aforesaid, to cam past said keeper during closing of the door and in the process to pivot said actuator to its retracted position, said actuator having a third arm, an operator pivoted on said housing and having a part engageable with said third arm of said actuator to pivot said actuator to its retracted position when said operator is pivoted in one direction, said operator having a handle portion located on the inner side of the door when said housing is mounted on said door as aforesaid to enable manually pivoting said operator in said one direction from the inner side of the door, said operator having an abutment surface, a manually operated pushed rod extending into said housing from the outer side of said door when said housing is mounted on said door as aforesaid, and means on said housing mounting said push rod for axial sliding movement, said push rod having an end engageable with said abutment surface of said operator to pivot said operator in said one direction in response to axial movement of said push rod in one direction.

4,576,406
ROTATIONAL GRAPPLE
Thomas E. Johnson, and Terrance D. Spencer, both of Woodstock, Canada, assignors to Timberjack Inc., Woodstock, Canada
Filed May 7, 1984, Ser. No. 607,881
Int. Cl.⁴ B66C *3/00*
U.S. Cl. 294—86.41 **7 Claims**



1. An apparatus for rotating a suspended material handling unit comprising an elongated housing, means to suspend the upper end of said housing from a pivotable support, a rotor member having a material handling unit mounted thereto, a bearing means mounted externally of said housing and between the ends of said elongated housing for rotationally supporting said rotor member relative to said housing, a fluid operated rotary motor mounted internally of said housing and having a vertical drive shaft depending from the bottom of said housing, drive means operatively connected to said vertical drive shaft for rotating the rotor member and material handling unit relative to the housing, a hydraulic swivel sleeve mounted on the external surface of said housing below said bearing means, said sleeve mounted on said housing for rotation relative thereto, a fluid operated motor for actuating said material handling unit, and fluid conducting means interconnecting said fluid operated motor, said swivel sleeve and a source of operating fluid.

4,576,407
ROBOT HAND FOR LIFTING APERTURED PANEL
George F. Lambert, Fenton, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Jan. 23, 1985, Ser. No. 694,022
Int. Cl.⁴ B25J *15/08;* **B66C** *1/66*
U.S. Cl. 294—97 **1 Claim**



1. A hand for a robot adapted particularly to pick up and hold a panel having a topside, an underside, and an aperture therethrough defined by an aperture wall, comprising:
a housing mounted on an arm of the robot and having a locating surface;
first and second tong fingers having upper ends, pivot portions pivotally mounted on the housing and lower ends depending beyond the locating surface of the housing;
each of said tong fingers having a generally spherical knuckle facing in the opposite direction from the knuckle of the other tong finger and cooperating therewith to define opposing upper hemispherical cam faces and opposing lower hemispherical cam faces;
operating means associated with the upper ends of the first and second tong fingers and adapted to pivotally move the tong fingers between pinched together contracted positions in which the upper ends of the tong fingers also depend below the locating surface of the housing and the knuckles are smaller than the aperture to permit insertion of the tong fingers through the panel aperture, and spread apart positions in which the upper ends of the tong fingers are raised above the locating surface of the housing and the panel is captured between the upper hemispherical cam faces of the tong finger knuckles and the housing locating surface;
said lower hemispherical cam faces cooperating upon insertion of the tong fingers to engage the aperture wall in the event that the panel is misaligned with respect to the tong fingers to shift the panel to facilitate insertion, and said upper heimspherical cam faces cooperating upon movement of the tong fingers to the spread apart position to engage against the underside of the panel and lift the panel into engagement with the locating surface of the housing; and subsequent return movement of the tong fingers to the pinched together contracted position again moving the tong finger upper ends to the position depending below the locating surface of the housing to engage with the topside of the panel and thereby assure that the panel is dislodge from the locating surface and ejected from the robot hand.

4,576,408
CHOPSTICK HOLDER
Satome Maneki, 3445 N. Verdugo Rd., Glendale, Calif. 91208
Filed Dec. 15, 1983, Ser. No. 561,834
Int. Cl.⁴ A47G *21/10;* **A47J** *43/28*
U.S. Cl. 294—99.2 **2 Claims**



1. A chopstick holder consisting of a unitary interrupted generally circular uniform dimension ring of resilient material;
said interrupted ring having a pair of ends defining a gap therebetween;
said interrupted ring further defining a pair of elongated arc-like slots in the wall thereof;
said elongated arc-like slots having a width corresponding to the thickness of a chopstick and having a length sufficient to confine one chopstick in each of said slots by frictional engagement of the sides of the chopstick with the sides of said slots after lateral insertion of chopsticks in said slots;

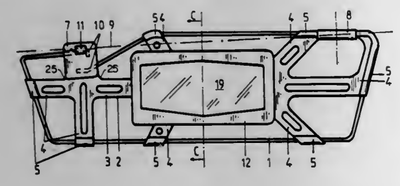
said slots positioned whereby a pair of chopsticks secured in respective slots are angled towards each other but with the ends out of contact and having sufficient spacing therebetween to allow the user to place a morsel of food therebetween;
said holder being compressible by the user sufficiently to allow the morsel to be picked up without the ends of the gap closing; and
the pressure of the user in picking up a morsel being applied in a direction which urges the chopsticks into their respective slots.

4,576,409

SUN VISOR WITH MOLDED STIFFENING FRAME

Charles Ebert, Luxeuil, France, assignor to Gebr. Happich GmbH, Fed. Rep. of Germany

Filed Dec. 13, 1983, Ser. No. 561,051
Claims priority, application Fed. Rep. of Germany, Dec. 17, 1982, 3246784
Int. Cl.⁴ B60J *3/00*
U.S. Cl. 296—97 H **20 Claims**



1. A sun visor for vehicles, or the like, comprising:
a generally flat visor body;
a reinforcing insert embedded in the visor body for reinforcing the visor body against deformation; the insert being in the form of an elongate thin strip extending around the visor body and the insert defining a generally rectangular frame with an area surrounded by the frame; the generally rectangular frame having opposite long arms joined by opposite short arms for defining the generally rectangular shape thereof;
a frame stiffener for the reinforcing insert, the frame stiffener being a single piece plastic injection molding located in the area surrounded by the frame; the stiffener including a longitudinal brace having opposite ends which are on the opposite short arms of the reinforcing insert and the stiffener also including a plurality of transversely extending braces extending transversely of the longitudinal brace and each also having ends which are on the long arms of the reinforcing insert;
the ends of the longitudinal brace and of the transverse braces being injection molded directly on the respective arms of the reinforcing insert.

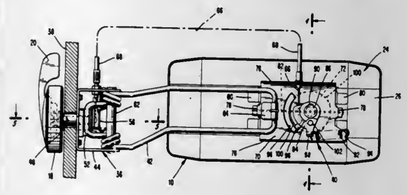
4,576,410

LUMBAR SUPPORT FOR A BACKREST

Takemi Hattori, Kariya, Japan, assignor to Aisen Seiki Kabushika Kaisha, Japan

Filed May 25, 1983, Ser. No. 497,758
Claims priority, application Japan, May 26, 1982, 57-88114
Int. Cl.⁴ A47C *3/36*
U.S. Cl. 297—284 **14 Claims**

1. A lumbar support for a backrest having a lumbar portion designed to be vertically aligned with the lumbar region of a user of the backrest, said lumbar support being adjustable according to a desired adjustment setting operated by regulating means and comprising:
a. a support plate having front and rear surfaces, at least a portion of said front surface engaging the rear of said lumbar portion of said backrest to define an effective contact region, the vertical position of which on said backrest varies with the vertical inclination of said support plate;
b. bracket means in fixed vertical position relative said backrest, said first bracket means pivotally supporting said support plate to permit changes in the vertical inclination of said support plate, said bracket means including a pawl rotatably connected thereto;
c. a cam member disposed between said support plate and said bracket means and rotatably fixed to said bracket means and rotatable to rotate said support plate to change said vertical inclination of said support plate, said cam



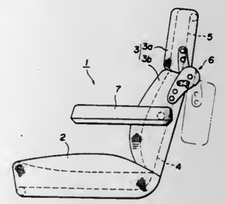
member having at least one ratchet tooth at the periphery thereof;
d. control means for rotating said cam member by an amount determined by the regulating means to vertically align said effective contact region with said lumbar region of a user said control means also including:
transmission means connected to the regulating means for producing an activating force;
means connected between said transmission means and said pawl for rotating said pawl in response to said activating force produced by said transmission means; and
means for engaging said pawl and said at least one ratchet tooth to rotate said cam.

4,576,411

VEHICLE SEAT

Masahiro Kitamura, Akishima, Japan, assignor to Tachikawa Spring Co., Ltd., Japan

Filed Feb. 2, 1984, Ser. No. 576,482
Int. Cl.⁴ A47C *1/00*; E05D *11/10*
U.S. Cl. 297—353 **8 Claims**



1. A vehicle seat comprising:
upper and lower seat back portions respectively including upper and lower side plates;
connecting means for connecting said upper side plate of said upper seat back portion to said lower side plate of said lower seat back portion so that said upper seat back portion is capable of pivotal movements relative to said lower seat back portion about a pivot axis between an extended position wherein said upper seat back portion extends above said lower seat back portion, and a folded position wherein said upper seat back portion is adjacently folded against said lower seat back portion;

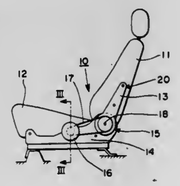
a lock guide plate, said connecting means pivotally coupling said lock guide plate to said upper side plate and said lower side plate for independent pivotal movements relative thereto about said pivot axis;
said upper side plate including means defining first and second recesses for respectively establishing said extended and retracted positions of said upper seat back portion, and projection means rigidly carried with said upper side plate during said rotational movements about said pivot axis;
said lock guide plate including means defining a lock recess selectively registrable with said first and second recesses when said upper seat back portion is pivoted into said extended and folded positions, respectively, and first and second opposing engagement surfaces; and
locking means for removably locking said upper seat back portion in said extended and retracted positions, said locking means including engagement means movable between (i) an engaged position wherein said engagement means is accepted in said lock recess and one of said first and second recesses in registry therewith to removably lock said upper seat back portion in said extended and folded positions, respectively, and (ii) a disengaged position wherein said engagement means is operatively separated from said lock recess and said one of said first and second recesses in registry therewith;
said projection means (a) for engaging said first surface of said lock guide plate in response to pivotal movement of said upper seat back portion in a first direction forwardly of said extended position to cause said lock guide plate to also be pivotally moved in said first direction together with said upper side plate such that said registered first recess and said lock recess become misaligned with said engagement means to thereby move said engagement means from said engaged position and into said disengaged position, (b) said engagement means being maintained in said disengaged position to permit said upper seat back portion to be pivoted in a second direction, opposite to said first direction, until said projection means engages said second engagement surface, (c) said projection means thereafter for pivoting said guide lock plate in said second direction together with said pivotal movement of said upper side plate to register said lock recess and said second recess with said engagement means to release said engagement means from said maintained disengaged position and to cause said engagement means to move into engagement with said lock recess and said second recess whereby said upper seat back portion is removably locked in said folded position.

4,576,412

SEAT RECLINING MECHANISM

Takami Terada, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha and Toyota Jidosha Kabushiki Kaisha, both of, Japan

Filed Mar. 14, 1985, Ser. No. 711,648
Claims priority, application Japan, Mar. 15, 1984, 59-50718
Int. Cl.⁴ B60N *1/02*
U.S. Cl. 297—362 **5 Claims**



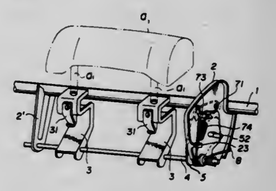
1. A seat reclining mechanism comprising an uppr bracket adapted to be secured to a seat back of a seat assembly, a lower bracket adapted to be secured to a seat cushion of the seat assembly, an internal gear provided on one of said upper and lower brackets, an external gear provided on the other of the upper and lower brackets and adapted for meshing engagement with said internal gear, said external gear being smaller in number of gear teeth than said internal gear, an eccentric shaft having a shaft portion journalling one of said gears and an eccentric portion journalling the other of said gears so that the gears are engaged with each other at a circumferential position, said eccentric shaft being journalled through bearing means on said other of said brackets, a manually operable knob shaft rotatably carried by said other braket, rotation transmitting means between said knob shaft and said eccentric shaft for transmitting rotation of said knob shaft to said eccentric shaft, rotation restricting means provided between said knob shaft and said other bracket for restricting said knob shaft against rotation under a force applied from said eccentric shaft but permitting a rotation of said knob shaft under a manual actuating force directly applied thereto.

4,576,413

HEAD-REST INCLUDING A DEVICE TO PERMIT PIVOTAL ADJUSTMENT THEREOF RELATIVE TO A VEHICLE SEAT

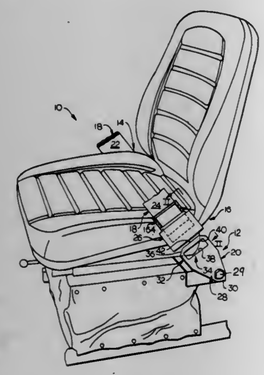
Susumu Hatta, Akishima, Japan, assignor to Tachikawa Spring Co. Ltd., Japan

Filed Feb. 23, 1984, Ser. No. 583,031
Int. Cl.⁴ A47C *7/36*
U.S. Cl. 297—408 **10 Claims**



1. A head-rest for a vehicle seat wherein stays of a head-rest body are pivotally mounted to a seat back frame so as to permit the head-rest to be pivotally moved longitudinally of the vehicle, said head-rest comprising:
mounting brackets associated with said seat back frame of said vehicle seat and defining a large-sized elongated slot;
a rotation shaft rotatably mounted to said back frame through said bracket;
a lock plate fixed to said shaft and defining a plurality of locking grooves;
support means fixed to said shaft for supporting said stays of said head-rest body;
said lock plate and support means thereby being rotated when said shaft rotates;
said bracket including a stopper selectively engageable with said locking grooves defined in said lock plate; and,
lock release means rotatably mounted to said shaft to release the engagement of said stopper with said locking grooves, said lock release means including
(a) a return plate rotatably mounted to said shaft on an opposite side of said lock plate relative to said bracket and defining an engaging step portion and a small-sized elongated slot in registry with said large-sized elongated slot;
(b) said stopper including a first pin engageable with said engaging step portion of said return plate; and
(c) a second pin provided on a side surface of said lock plate and inserted through said large-sized and small-sized elongated slots.

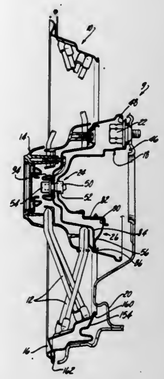
4,576,414
SEAT BELT APPARATUS
John Molnar, Aurora, and Robert B. Porter, Jr., Elburn, both of Ill., assignors to Caterpiller Tractor Co., Peoria, Ill.
Filed Jan. 27, 1984, Ser. No. 574,793
Int. Cl.⁴ B60R *21/10*
U.S. Cl. 297—476 **17 Claims**



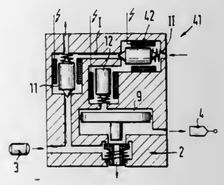
1. In a seat belt apparatus adapted for use with a seat assembly having a first belt portion anchored to a first side of the seat assembly and a second belt portion anchored to a second side of the seat assembly, a tongue member associated with a free end of the second belt portion, and a buckle member having a recoil spool mounted therein associated with a free end of the first belt portion in a manner to wind the free end of the first belt portion around the recoil spool, said buckle member having a receptacle defined on one end thereof and being movable toward the tongue member for engagement of said tongue member within said receptacle, the improvement comprising:
- a latch member mounted on said buckle member and being positionable for holding the tongue member within the buckle member; and
- a latch release member having an aperture formed therein and being mounted on the buckle member to extend from an end thereof opposite the end defining said receptacle and being slidably movable in a linear direction away from the tongue member to release the latch member from engagement with the tongue member and to move the buckle member away from the tongue member in a single motion.

4,576,415
WHEEL TRIM RETENTION SYSTEM
Heinrich J. Hempelmann, Livonia, Mich., assignor to NI Industries, Inc., Novi, Mich.
Continuation-in-part of Ser. No. 352,570, Feb. 26, 1982, abandoned. This application Feb. 15, 1983, Ser. No. 465,222
Int. Cl.⁴ B60B *7/00*
U.S. Cl. 301—37 S **47 Claims**

1. A wheel trim assembly for a vehicle wheel, comprising:
- a trim member;
- a lock bracket adapted to be secured to an axially outwardly facing surface of said wheel;
- retention means for detachably securing said trim member to said lock bracket; and
- anti-rotation means for preventing relative rotation between said trim member and said vehicle wheel, said anti-rotation means including first means on said trim member and second means on said lock bracket engageable with said first means to allow said trim member to be initially angularly positioned with respect to said lock bracket in any one of a number of relative angular positions and to thereafter resist relative rotation therebetween, one of said first and second means being operable to move generally radially into non-slipping engagement with the other in response to axial movement of said trim member toward said lock bracket and wheel.

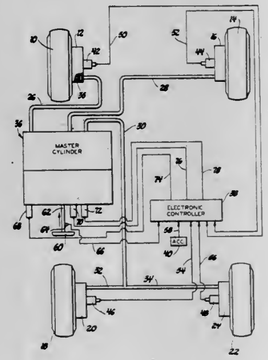


4,576,416
MULTI-CIRCUIT PRESSURE MEDIUM BRAKE SYSTEM
Egbert Müller, Hochdorf, and Werner Stumpe, Kornwestheim, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Continuation of Ser. No. 415,951, Sep. 8, 1982, abandoned. This application Dec. 3, 1984, Ser. No. 676,606
Claims priority, application Fed. Rep. of Germany, Feb. 13, 1982, 3205228
Int. Cl.⁴ B60T *8/02, 15/18*
U.S. Cl. 303—15 **19 Claims**



1. A brake system comprising a fluid pressure source from a fluid pressure line, at least one brake cylinder connected to said fluid pressure line which is initiated in accordance with a brake pedal position, at least one fluid pressure control valve in said fluid pressure line in said brake system which controls fluid under pressure from said fluid pressure source to said at least one brake cylinder, a relay control valve in said at least one fluid pressure control valve that controls fluid flow from said fluid pressure source to said at least one brake cylinder, first and second pressure control lines in said at least one fluid pressure control valve that applies fluid under pressure which operates said relay control valve, said at least one fluid pressure control valve including electromagnetic switching valves therein connected to and controlled by a first of two simultaneously operated brake control circuits which controls fluid under pressure from said first fluid pressure control line to said relay control valve for controlling flow of fluid under pressure through said at least one pressure control valve to said at least one pressure brake cylinder for operation thereof, and said second fluid pressure control line is connected to a second of said two simultaneously operated brake control circuits for operation of said relay control valve in the event said electromagnetic switching valves malfunction.

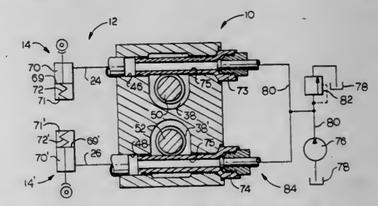
4,576,417
POWER ASSISTED BRAKING SYSTEM WITH WHEEL LOCK CONTROL
Donald J. Dobner, Utica, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Feb. 4, 1985, Ser. No. 697,743
Int. Cl.⁴ B60T *8/44;* F15B *7/00, 15/18*
U.S. Cl. 303—15 **4 Claims**



1. For use in a vehicle having front wheels and rear wheels and a wheel brake for braking each of said wheels, a wheel brake actuating and control system comprising:
wheel speed sensors sensing wheel speed of each of said wheels and generating wheel speed signals corresponding to the wheel speeds of said wheels;
a master cylinder for generating wheel brake fluid actuating pressures when actuated and having a brake pedal input member adapted to be moved by the vehicle operator, said master cylinder comprising:
- a housing having formed therein a plurality of pairs of brake fluid pressurizing chambers, each of said pairs formed by first and second chambers, each chamber having therein a brake fluid pressurizing piston movable in one direction to increase brake fluid actuating pressures and movable in an opposite direction to decrease brake fluid actuating pressures in said chambers, the first chamber of each of said pairs of chambers having a cross section area different from the cross section area of the second chamber of each of said pairs of chambers;
- each of said pairs of chambers having a brake fluid actuating pressure outlet fluid connected to receive brake fluid pressure from said first and second chambers of each of said pairs of chambers, each of said brake fluid actuating pressure outlets being fluid connected to at least one of said wheel brakes so that each of said wheel brakes receives brake fluid actuating pressure from one of said pairs of chambers;

said brake pedal input member being connected to move said brake fluid pressurizing pistons in said first chambers to pressurize brake fluid in said first chambers and said brake fluid actuating pressure outlets;
a servomotor connected to each of said brake fluid pressurizing pistons in said second chambers to independently move said pistons in said second chambers and selectively increase, decrease or maintain the brake fluid actuating pressures in said brake fluid actuating pressure outlets;
means sensing the force exerted on said brake pedal input member by the vehicle operator when said brake pedal input member is urged in the brake actuating direction by force exerted by the vehicle operator, said sensing means generating a vehicle brake force demand signal;
accelerometer means generating a vehicle acceleration signal;
and a controller receiving each of said signals and independently controlling each of said servomotors to provide brake actuating pressure boost and to modify the brake actuating pressures delivered to appropriate ones of said wheel brakes by said master cylinder to control wheel lock of said wheels due to excessive brake actuation for the vehicle operating conditions at each wheel.

4,576,418
BRAKE RELEASE MECHANISM FOR VEHICLE TOWING
Charles E. Holzinger, Peoria, and David M. Fee, Groveland, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Jul. 13, 1984, Ser. No. 630,566
Int. Cl.⁴ B60T *17/18*
U.S. Cl. 303—71 **11 Claims**



1. In a brake release mechanism adapted for use in a vehicle having a spring-applied, pressure-released brake, a primary source of pressurized fluid, a reservoir, and a brake valve having a housing and a valving element, said housing having a bore defined in the housing, an inlet port connected to said source, a work port connected to said brake, and a drain port connected to said reservoir, each of said ports intersecting the bore at axially spaced locations, and said valving element being selectively movable in said bore between a first position at which said work port is in open communication with said inlet port while being blocked from said drain port and a second position at which said work port is blocked from said inlet port while being in open communication with said drain port, the improvement comprising:
- means for isolating said work port from said valving element and said drain port, said isolating means being adaptable to connect an alternate source of pressurized fluid to said brake so that said brake is released upon failure of said primary source.

4,576,419
VEHICLE ANTI-SKID OR ANTI-BRAKE-LOCK SYSTEM, AND BRAKE CONTROL METHOD
Heinz Leiber, Oberriexingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed Apr. 10, 1984, Ser. No. 598,889
Claims priority, application Fed. Rep. of Germany, Apr. 12, 1983, 3313097
Int. Cl.⁴ B60T *8/58, 8/64*
U.S. Cl. 303—100 **21 Claims**

1. In a vehicle anti-skid or anti-brake-lock system having
- an electronic control unit (14, 60) receiving wheel speed signals, processing said wheel speed signals and providing brake pressure control signals for both wheels on the front axle of the vehicle and, separately, in a rear axle brake system (II) for both wheels of the rear axle of the vehicle,
- and wherein the electronic control unit is operable, selectively, in a "select-low" control range and a "select-high" control range,

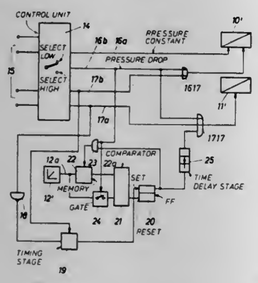
a method of controlling the brake pressure control signals, comprising, in accordance with the invention, the steps of

sensing (12; 57, 58) the braking pressure applied to the front wheels (50) of the vehicle and delivering a front wheel pressure signal;

applying said front wheel pressure signal to the electronic control unit;

generating, in the electronic control unit, pressure control signals to control the braking pressure of the rear wheels (51);

sensing if, in response to a tendency of the rear wheels to block or skid, the braking pressure in at least one of the rear wheels has dropped,



and, if so, providing a pressure drop signal;

controlling the pressure to said at least one rear wheel to have a value or level (P_{oHA}) which is below the pressure at which the tendency to block was sensed;

sensing if a controlled maximum pressure (P_{1VA}) at the front wheels (50) in a subsequent control cycle has increased above a maximum pressure (P_{oVA}) of the preceding cycle, and, if so, providing a comparison signal;

controlling the pressure in the rear wheel braking system at a steady or constant level until said comparison signal is received;

and then increasing the pressure in the rear wheel braking system (II).

4,576,420

LINEAR BEARING ARRANGEMENT FOR GUIDING A CARRIAGE IN A STRAIGHT LINE ALONG A GUIDE RAIL

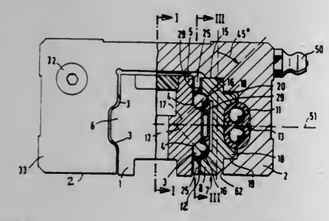
Wolfgang Lehmann, Stuttgart, and Hans-Walter Aab, Waiblingen, both of Fed. Rep. of Germany, assignors to Neff Gewindespindeln GmbH, Waldenbuch, Fed. Rep. of Germany

Filed Mar. 28, 1984, Ser. No. 594,207

Claims priority, application Fed. Rep. of Germany, Apr. 12, 1983, 3313129

Int. Cl.⁴ F16C *29/06*

U.S. Cl. 308—6 C **28 Claims**



1. Linear bearing arrangement for guiding an elongated carriage (2) in a straight line along a guide rail (1), having an endless course of balls (3) disposed between the carriage and the guide rail, wherein

the guide rail (1) has at least one ball race (4) for rolling contact with load bearing balls of the ball course and at least one longitudinal track element (7) is provided, having at least one load bearing ball race (16) and at least one diversion and return track (11, 11*a*) for unloaded balls secured to the elongated carriage (2), and

wherein

the carriage (2) comprises an essentially C-shaped structure which fits over and in part around and encompassing the guide rail (1);

the track element (7) comprises a subassembly including an elongated track carrier element (8) formed with the load bearing ball race or track (16) facing the ball race (4) on the rail (1),

and the diversion and return track includes a return track guide means (11, 11*a*) located remote from the load bearing ball race of the track (16);

a diversion track guide means (9, 10) located at each of the ends of the carrier element and diverting the balls from the load bearing ball race or track to the return track guide means;

and means (12, 11, 11*a*) for captively retaining the balls on the track carrier element including a return track ball return structure, extending longitudinally of the return track, said structure, at least in part, circumferentially surrounding the balls (3) in the subassembly;

wherein said track element subassembly (7) of the track carrier elements (8), the diversion track guide means (11, 11*a*) and the ball retention means (12, 11, 11*a*) is retained in the carriage structure; and

wherein the ball return structure comprises at least one pipe element.

4,576,421

LINEAR SLIDE BEARING

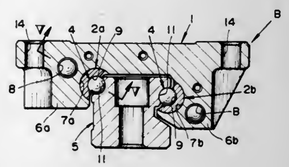
Hiroshi Teramachi, 2-34-8, Higashi-Tamagawa, Setagaya-ku, Tokyo, Japan

Filed Aug. 9, 1984, Ser. No. 639,368

Claims priority, application Japan, Aug. 12, 1983, 58-146530

Int. Cl.⁴ F16C *29/06*

U.S. Cl. 308—6 C **3 Claims**



1. A linear slide bearing comprising:

a bearing body having

two skirts which straddle a rail track along which said bearing body is adapted to reciprocate, one of said skirts transferring downward and horizontal loads to said track rail and the other of said skirts transferring upward and horizontal loads to said track rail;

a first race receiving groove formed in an inner surface of one of said skirts, said first race receiving groove having a substantially semicircular configuration in cross-section and opening obliquely in a downwardly facing direction;

a second race receiving groove formed in an inner surface of the other of said skirts, said second race receiving groove having a substantially semicircular configuration in cross-section and opening obliquely in an upwardly facing direction;

said two race receiving grooves permitting twisting of said bearing body with respect to said track rail to allow preloading to said linear slide bearing;

two bearing races, each fitted in a respective race receiving groove, each bearing race having a substantially semicylindrical configuration in cross-section with an outer configuration thereof conforming to the substantially semicircular configuration of the respective race receiving groove in which it is fit, each bearing race having an inner surface with a loaded ball groove positioned so as to face a corresponding ball rolling groove formed on said track rail, and the center of the outside diameter of each bearing race being substantially coincident with the center of a ball which bears a load between said loaded ball groove on the related bearing race and the corresponding ball rolling groove on said track rail.

4,576,422

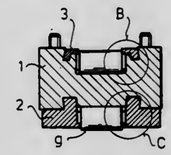
ROLLER SHOE STRUCTURE

Fiák László; Derzsényi Sándor, and Darin Sándor, all of Debrecen, Hungary, assignors to Magyar Gordulocsapagy Muvek, Debrecen, Hungary

Filed Feb. 27, 1985, Ser. No. 705,971

Int. Cl.⁴ F16C *29/06*

U.S. Cl. 308—6 C **3 Claims**



1. A roller shoe structure for high-accuracy straight-line guiding of construction units moving on each other comprising a main body with component parts forming straight-line sections of a self-recurrent closed roller guiding raceway, raceway sections reversing the motion of the rollers, and a train of load bearing roller elements with recirculation motion, characterized in that side-guide clamping grooves (z_1) and retaining insert clamping grooves (z_2) are shaped in the main body (1) for engaging said main body (1) with side-guides (2), which ensure a straight-line guiding of the rolling elements (5), and retaining inserts (3), which prevent said rolling elements from dropping out of the roller shoe structure if not built in, respectively, without using any binding element.

4,576,423

CABINET DRAWERS SECURITY LOCKING DEVICE

John G. Hendriks, 608 Martha, Decatur, Ala. 35601

Filed Oct. 4, 1984, Ser. No. 657,550

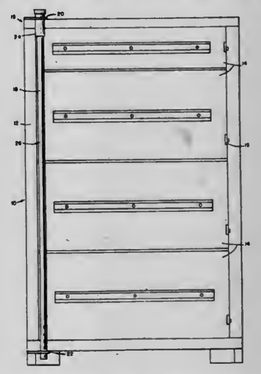
Int. Cl.⁴ E05B *65/46*

U.S. Cl. 312—216 **1 Claim**

1. A locking device for releasably securing a plurality of drawers in a cabinet, said locking device comprising:

a. a pair of upper and lower support brackets, said upper and lower support brackets respectively secured to upper and lower surfaces of said cabinet, said upper support bracket having a pair of semi-circular openings therein joined by a connecting slot having a width smaller than the diameters of said semi-circular openings, said lower bracket having a pair of spaced openings therein, said openings of said lower bracket having a smaller diameter than said semi-circular openings of said upper bracket; and,

b. a rod slidably supported in said brackets, said rod disposed for engagement with said drawers for retention thereof in secured relation, said rod being positioned in a first of said semi-circular openings of said upper bracket and a first of said pair of spaced openings of said lower bracket for secured relation of said drawers and movable to a second of said semi-circular openings of said upper bracket and a second of said pair of spaced openings of said lower bracket for release of said drawers, said rod having an upper section provided with a diameter larger than the diameter of a lower section thereof, said lower section having a diameter smaller than said connecting slot of said upper bracket.



4,576,424

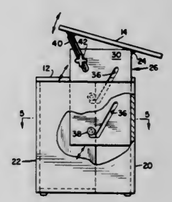
ARTIST'S WORK AND STORAGE STATION

John E. Nelson, Mountaintop, Pa., assignor to Eberhard Faber, Inc., Wilkes-Barre, Pa.

Filed Mar. 27, 1984, Ser. No. 593,834

Int. Cl.⁴ A47B *46/00*

U.S. Cl. 312—231 **6 Claims**



1. A drawing board and support assembly collapsible into a cabinet wherein the drawing board forms at least a part of the upper surface thereof comprising:

an outer support having upstanding front, rear and side walls;

inner support means including mutually spaced wall members disposed parallel to the side walls of the outer support and fixed at an edge thereof to the inner surface of the outer support;

U-shaped member slidably disposed within said outer support with the wall members received therewithin; the outer surface of each of said wall members being disposed adjacent the inner surface of a corresponding leg of said U, the base of said U being disposed parallel to the front wall of said outer support;

a drawing board hingedly attached to the upper surface of said U-shaped member at the base thereof;

releasable guide means for guidinig sliding movement of said U-shaped member and drawing board between a lowered position wherein said board is disposed in a horizontal position resting on at least a portion of the upper surface of said outer support, and a raised position wherein said board is

fixed in a position above the outer support with a portion thereof extending outwardly of the front wall of the outer support and the U-shaped member abuts a corresponding portion of the inner surface of the front wall of the outer support to lock said member against downward movement; and

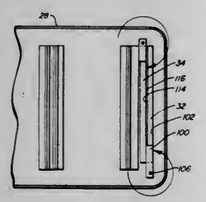
adjustment means connected between the U-shaped member and said drawing board for permitting rotation thereof about the hinge connection between a first position wherein the board is horizontal and a second position wherein the board is disposed at a predetermined angle to the horizontal, including lock means for releasably holding said board in a predetermined position.

4,576,425

FOOD SERVICE CART DOOR STRUCTURE

Curtis C. Pinnow, Libertyville, and Brian Gill, Mundelein, both of Ill., assignors to Carter-Hoffman Corporation, Mundelein, Ill.

Filed Mar. 5, 1984, Ser. No. 586,301
Int. Cl.⁴ A47B *63/00*
U.S. Cl. 312—324 **6 Claims**



1. In a food service cart having a cabinet with first and second oppositely facing sidewalls and a opening in each said sidewall, a tray storage area within the cabinet, and a flat endwall joining between the first and second sidewalls, improved structure for selectively sealing said opening and allowing unobstructed access to said tray storage area through said openings for inserting or removing trays comprising:

a first door having substantially flat, inside and outside wall surfaces, said inside wall surface extending at least partially across said opening of the first sidewall with the first door in a closed position;

first hinge means pivotally mounting the first door to the cabinet to pivot about a first pivot to an open position in which said outside wall surface of the first door is in parallel juxtaposition with the endwall;

a second door substantially similar to said first door and having substantially flat, inside and outside wall surfaces, each of said first and second doors having distal edges, said inside surface of the second door extending at least partially across said opening of the second sidewall with the second door in a closed position; and

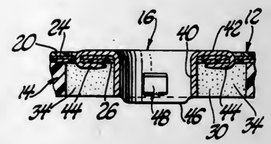
second hinge means pivotally mounting the second door to the cabinet to pivot about a second pivot, said second hinge having a length greater than said first hinge by substantially the thickness of said first door, the second door being disposed in an open position in overlapping relationship with the first door with the outside surface of the second door being in substantially parallel juxtaposition with the inside surface of the first door in the open position, said first pivot being spaced from the plane of said endwall approximately one-half the thickness of said first door and said second pivot being spaced from the plane of said endwall approximately the thickness of said first door plus approximately one-half the thickness of said second door, thereby disposing said distal edges of the doors in alignment at said opposite sidewalls when the doors are in the cloed position.

4,576,426

FLEXIBLE PRINTED CIRCUIT CONNECTOR AND CONTACT EYELET THEREFOR

Alan J. Herrmann, Brook Park, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 11, 1985, Ser. No. 721,997
Int. Cl.⁴ H01R *9/07*
U.S. Cl. 339—17 F **8 Claims**



7. A contact eyelet for attaching a flexible printed circuit to a stabilizer plate or the like comprising;

a tubular body which has a flange at one end for engaging a surface of a flexible printed circuit,

a plurality of depending crimp ears at the rim of the flange for piercing through the flexible printed circuit and which are bendable inwardly for engaging an opposite surface of the flexible printed circuit to clamp the flexible printed circuit against the flange, and

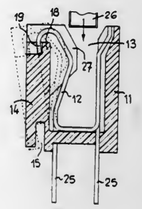
a second plurality of crimp ears at the opposite end of the tubular body which are bendable outwardly for engaging a stabilizer plate and clamping it between the second plurality of crimp ears and the flange.

4,576,427

ZERO INSERTION AND EXTRACTION FORCE CONNECTOR

Marcel Verbruggen, Londerzeil, Belgium, assignor to Burndy Corporation, Norwalk, Conn.

Filed Nov. 26, 1980, Ser. No. 210,719
Claims priority, application Belgium, Nov. 30, 1979, 198361
Int. Cl.⁴ H01R *9/09*
U.S. Cl. 339—61 M **4 Claims**



1. In a hand-actuated zero insertion and extraction force electrical connector having a molded one piece housing and at least one pair of resilient conductive contacts lodged within a channel of such housing, the improvement comprising:

said molded one piece housing having said elongated channel defined by opposing side walls and a base of said housing, one such side wall of said housing being substantially more flexible than the opposing side wall and adapted for hand actuation independant of a tool so as to engage one of the pair of the resilient contacts upon the displacement thereof, said one side wall having an integral abutment means which prevents excessive bending of said one side wall due to hand actuation to displace said one contact,

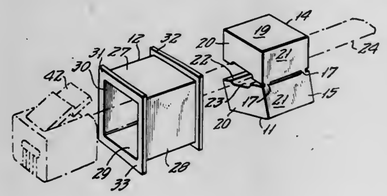
thereby effecting a corresponding displacement of said one resilient conductive contact within the elongated channel away from the opposing contact so as to permit insertion and/or extraction of a printed circuit within said channel with zero force.

4,576,428

PROTECTIVE BOOT FOR TELEPHONE SUBSCRIBER JACKS

Paul V. DeLuca, Plandome Manor, and Peter Hung, Huntington, both of N.Y., assignors to Porta Systems Corp., Syosset, N.Y.

Filed Oct. 29, 1984, Ser. No. 665,661
Int. Cl.⁴ H01R *4/00*
U.S. Cl. 339—94 R **4 Claims**



1. An improved protective boot for effecting a seal in the area of interconnection of a mutually engaged telephone subscriber jack and plug comprising: a first boot element of relatively thick cross-section including first and second abutting members adapted to surround a flat electrical conductor engaged with a rear end of said plug, said first boot element being of rectangular configuration; a second boot element of relatively thin cross section of generally rectangular configuration, and defining a recess corresponding in configuration to the outer configuration of said plug, said second boot element having a laterally extending peripheral flange surrounding an engaged plug when in installed condition, movement of said plug into engagement with said jack serving to distort said second boot element to effect a sealing action against a transversely extending surface of said jack surrounding a plug opening therein; said first and second boot elements in engaged condition being in juxtaposed relation to effect a seal in the area of interconnection between said conductor and said plug.

4,576,429

CONNECTION DEVICE FOR ELECTRIC CONDUCTOR

Pierre Hardouin, Asnieres; Felix Lameyre, Rueil Malmaison, and Claude Paris, Ermont, all of France, assignors to La Telemecanique Electrique, France

Filed Oct. 17, 1983, Ser. No. 542,844
Claims priority, application France, Oct. 15, 1982, 82 17256
Int. Cl.⁴ H01R *4/26*
U.S. Cl. 339—95 D **7 Claims**

1. A connecting device for at least one electric conductor, said device comprising:

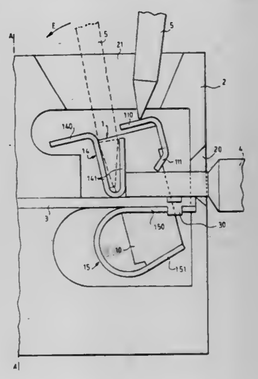
a housing provided with at least one first opening for passing said electric conductor therethrough in an introducing direction, and at least one second opening for introduction of a tool, said second opening having a first axis of symmetry;

a flat contact member fixedly mounted within said housing and extending in a first plane, said flat contact member having first and second opposite faces;

a one-piece made tilting member cooperating with said flat contact member for resiliently jamming the electric conductor, said tilting member comprising:

(i) a plane support part having first and second end portions respectively located on the respective sides of the flat contact member, said plane support part extending in a second plane adjacent to the flat contact member, said plane support member substantially extending at right angle to the first plane and parallel to said introducing direction;

(ii) a presser tongue part extending from said first end portion in a third plane making an acute angle with said first plane;



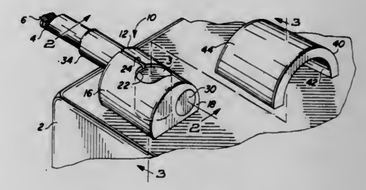
(iii) a resilient part extending from said second end portion at right angle thereto and bearing on said first face of the flat contact member, said resilient part acting on said plane support part in such a way that said presser tongue part will tend to come into abutment with said second face of the contact member for jamming the electric conductor.

4,576,430

SNAP CABLE CLAMP APPARATUS FOR BATTERY TERMINALS

Raymond A. Dufresne, 527 W. Townley, Phoenix, Ariz. 85021

Filed May 30, 1984, Ser. No. 615,287
Int. Cl.⁴ H01R *11/26, 11/11*
U.S. Cl. 339—100 **13 Claims**



1. Cable clamp apparatus for connecting an electrical cable to a terminal post, comprising, in combination:

dielectric block means, including

a dielectric block,

a bore in the dielectric block for receiving the terminal post, and

an expansion slot extending through the dielectric block,

a relieved portion communicating with the bore in the dielectric block for providing electrical contact with the terminal post,

means for electrically connecting the conductive block to the electrical cable, and

means for connecting a jumper cable to the conductive block including a jumper face on the conductive block; and

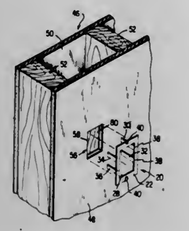
clamping means disposed on the dielectric block for securing the dielectric block to the terminal post.

4,576,431

FIXTURE FOR SECURING AN ELECTRICAL CONNECTOR

C. Kenneth Thayer, 11141 Georgia Ave., Silver Spring, Md. 20902

Filed May 1, 1985, Ser. No. 729,402
Int. Cl.[4] G04D *7/00*; H01R *13/74*
U.S. Cl. 339—131 9 Claims



1. A fixture for mounting an electrical connector element in an opening in a panel, the connector element having a plurality of openings to accommodate mounting screws, comprising:

a sheet metal element having

a substantially flat portion with an opening therein, said opening having first and second spaced-apart ends and first and second spaced-apart sides that are substantially parallel,

a plurality of first elongated legs joining said substantially flat portion at respective first bent regions that are disposed along said first side of said opening at first predetermined distances from said first end, each first leg being longer than half the distance between said first and second sides, and

a plurality of second elongated legs joining said substantially flat portion at respective second bent regions that are disposed along said second side of said opening at second predetermined distances from said first end, said second predetermined distances being different from said first predetermined distances to stagger said second legs with respect to said first legs so that said legs so that said legs alternate from a first leg to a second leg, for all of said legs, from one of said ends to the other of said ends, each second leg being longer than half the distance between said first and second sides; and

screw securing means disposed on said substantially flat portion for securing the mounting screws.

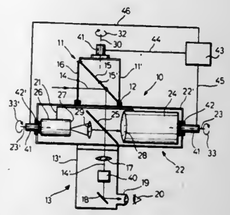
4,576,432

AIMING OR SIGHTING APPARATUS WITH SYNCHRONOUSLY ROTATING THERMAL IMAGER AND AIMING HEAD

Roderich Rüger, Munich, Fed. Rep. of Germany, assignor to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

Filed Aug. 13, 1984, Ser. No. 640,510
Claims priority, application Fed. Rep. of Germany, Aug. 17, 1983, 3329671
Int. Cl.[4] G02B *23/04, 23/08, 23/12*
U.S. Cl. 350—1.2 6 Claims

1. An aiming or sighting apparatus for aiming at a target, comprising an aiming head (11) having a vertically extending axis (30), an ocular unit (13) and a display section (22), means mounting said aiming head for rotation normally around said vertically extending axis (30), means linking said ocular unit (13) with said display section (22), said aiming head (11) having a first housing (11') with an inlet window (16) and a tiltable aiming mirror (15), said ocular unit (13) having a second housing (13') and lens means (17), a deflection-mirror (18) and an ocular (19) in said second housing (13'), said display section (22) normally extending horizontally and having a third housing (22'), a beam splitter (25), a thermal imager (24) having a first horizontal axis (23), a cathode ray tube (26) having a screen (27) and a second horizontal axis (23'), and an optical lens (29) operatively arranged in said third housing, a cable (21) operatively connecting said thermal imager (24) to said cathode ray tube (26), and interconnected drive means (41) operatively connected to said aiming head (11) and to said



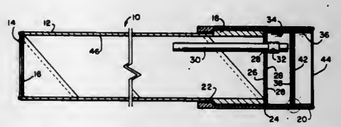
thermal imager (24) for rotating said aiming head and said thermal imager (24) in synchronism with each other about said vertically extending axis (30) and about said first horizontal axis (23) respectively, whereby an image with the target (2) and line structures (3) of a screen (1) are maintained in an original horizontal orientation on said screen (27) of said cathode ray tube (26) relative to an image received even after an azimuth rotation of said aiming head (11).

4,576,433

MEANS FOR CREATING RANDOM PATTERNS OF VARIEGATED LIGHT, AND LIGHT-REFLECTIVE MEANS THEREFOR

McKevin Shaughnessy, 359 Second St., Hoboken, N.J. 07030

Filed Jul. 5, 1984, Ser. No. 628,294
Int. Cl.[4] G02B *23/00*
U.S. Cl. 350—4.1 17 Claims



1. Means for creating random patterns of variegated light, comprising:

a housing having opposite ends, with an end cap rotatably journalled on one of said ends;

a transparent window set in one of said ends;

a single, variegated object movably disposed within said housing intermediate said ends thereof; and

means confined within said housing, intermediate said object and said window, for (a) close-proximity scanning of said object, and (b) conducting variegated images of light from said object toward said window; wherein

said end cap has an annular surface therewithin which has a given inside diameter;

said object comprises a circular disc;

said object is confined within said annular surface; and

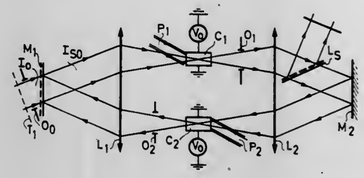
said object has an overall diameter of less than said given inside diameter and, consequently, freely rolls upon said annular surface coincident with rotation of said end cap.

4,576,434

DEVICE FOR RECORDING A COHERENT IMAGE IN A MULTIMODE OPTICAL CAVITY

Jean P. Huignard, Paris; Henri Rajbenbach, Montrouge; Brigitte Loiseaux, and Jean P. Herriau, both of Orsay, all of France, assignors to Thomson-CSF, Paris, France

Filed Sep. 19, 1984, Ser. No. 652,034
Claims priority, application France, Sep. 23, 1983, 83 15156
Int. Cl.[4] G03H *1/16, 1/28*
U.S. Cl. 350—3.64 8 Claims



1. A device for recording a coherent image in a multimode optical cavity, comprising a coherent source having a wavelength λ which generates a signal wave, optical guiding means for forming a closed loop in which the signal wave circulates, said guiding means being provided with focusing means, wherein said device further comprises two interactive amplifying media placed on the path of the signal wave within the cavity having terminals to which are applied respectively two voltages such that electric fields are in the direction 001 of each crystal, the coherent source being adapted to deliver in addition two reference beams which interfere with the signal wave in each of the two crystals so as to form two diffraction gratings and at least two shutters placed on the path of the signal wave within the cavity, each of said two interactive media being such as to have an optimum exponential gain coefficient, the angles θ_i formed between the signal wave and each reference beam being determined by the formula

$$\Lambda_i = \frac{\lambda}{2 \sin \theta_i}$$

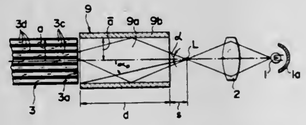
where Λ_i is the pitch of the strata within the medium considered, at least one phase modulator being placed on the path of one of the reference beams, said interactive media being placed in the vicinity of the Fourier plane of said cavity, a semitransparent plate being placed on the path of the signal wave in order to extract part of the energy of the multimode optical cavity.

4,576,435

ENDOSCOPE INCLUDING A REFLECTOR RELATED BY AN INEQUALITY FOR UNIFORM LIGHT DISTRIBUTION

Kimihiko Nishioka, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Japan

Filed Jul. 14, 1983, Ser. No. 513,771
Claims priority, application Japan, Aug. 5, 1982, 57-136479
Int. Cl.[4] G02B *23/26*
U.S. Cl. 350—96.26 5 Claims



1. A light transmitting device comprising: a light guide formed by a bundle of optical fibres, a light source, a condenser lens disposed between the source and an incident end of the light guide, and a pipe-shaped reflector disosed between the condenser lens and the incident end of the light guide such that light from said light source passes through the condenser lens, through the pipe-shaped reflector and then through the light guide, the pipe-shaped reflector satisfying the following inequality:

$$(-S+(d/n)) \tan \alpha > \bar{a}$$

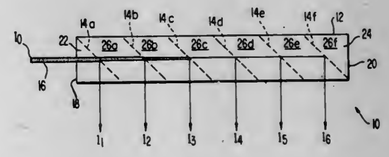
where S representa a distance from the incident face of the pipe-shaped reflector to a point which is conjugate to the source with respect to the condenser lens, d the length of the reflector, n the refractive index of a portion of the reflector which allows the passage of light therethrough, $\bar{a}$ the radius of the portion of the reflector and α the minimum numerical aperture of a light flux which impinges upon the reflector.

4,576,436

LIGHT DISTRIBUTION AND COLLECTION ASSEMBLIES AND METHODS

Maurice Daniel, 550 Jaycox Rd., Avon Lake, Ohio 44012

Filed Jan. 31, 1983, Ser. No. 462,676
Int. Cl.[4] G02B *5/172*
U.S. Cl. 350—96.10 21 Claims



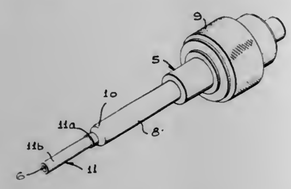
1. In a light distribution assembly for distributing light from a beam of light provided by a light source of the type comprising a light transmitting means for receiving light from said light source and transmitting said light along at least one path within said light transmitting means, and mirror means including a plurality of spaced, beam splitting mirror means positioned to intercept light travelling along said path, a group of said beam splitting mirror means each operating to deflect a portion of said light outwardly from said light transmitting means while permitting the remainder of said light to continue along said path the improvement for enabling said group of beam splitting mirror means operate to deflect light of substantially equal intensity outwardly from said light transmitting means wherein each beam splitting mirror means in said group of beam splitting mirror means is formed to provide a reflectivity which differs from that of the remaining beam splitting mirror means, the reflectivity of each said beam splitting mirror means progressively increasing as the distance of said mirror means from the light source increases and wherein said light transmitting means is a rod into which said mirror means are incorporated at equally spaced intervals in a manner such that said group of beam splitting mirrors collectively fill a length of said rod without adjacent mirror means overlapping, said rod having a length that corresponds to the width thereof multiplied by the number of said beam splitting mirror means.

4,576,437

CONNECTOR FOR FIBRE OPTIC CABLE

Yukitake Ohta, and Yasuo Fukunaga, both of Mooka, Japan, assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Mar. 1, 1982, Ser. No. 353,281
Claims priority, application Japan, Mar. 6, 1981, 56-30290[U]
Int. Cl.⁴ G02B *6/36, 6/44*
U.S. Cl. 350—96.20 **10 Claims**



1. A connector for fiber optic cable having a fiber optic element, a fiber core surrounding said fiber element, reinforcing fibers arranged around the circumferential surface of the fiber core, and an outer cover disposed about said reinforcing fibers, said connector comprising:

a main elongate body having first and second ends and a first annular opening at said first end, said first annular opening being sized to just receive said fiber core of said cable;

a relatively thin insertion section for inserting into an end of said cable and extending forwardly of said main body, said insertion section having a diameter and cross-section smaller than said main body and a second annular opening sized to just receive said fiber core of said cable, the outer diameter of said insertion section being sized to be inserted between said fiber core and said reinforcing fibers; and

a brim on said insertion section adjacent said main body for limiting the length of insertion of said insertion section into said cable, the outside diameter of said brim being greater than the outside diameter of said insertion section but less than the outside diameter of said main body, said brim being adapted to contact an end of said outer cover of said cable through said reinforcing fibers to deflect said reinforcing fibers from said fiber core and to substantially evenly space said reinforcing fibers radially about said cable.

4,576,438

HEAT-RESISTING OPTICAL FIBER

Yoshiharu Tatsukami, Toyonaka; Yasuyuki Kato, Niihama, and Shigeo Wake, Saijo, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Jun. 16, 1983, Ser. No. 504,861
Claims priority, application Japan, Jun. 17, 1982, 57-105069; Mar. 2, 1983, 58-34990; Mar. 7, 1983, 58-37741
Int. Cl.⁴ G02B *5/14*
U.S. Cl. 350—96.34 **10 Claims**

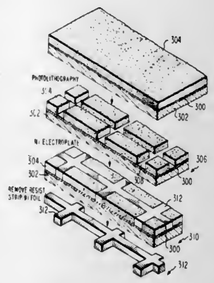
1. A heat-resisting optical fiber comprising a core and a cladding, characterized in that the core is made of a polymer comprising 3 to 100% by weight of units of the methacrylic ester and 97 to 0% by weight of units of at least one member selected from the group consisting of C_1-C_6 alkyl acrylate and C_1-C_6 alkyl methacrylate, of which the ester moiety has an alicyclic hydrocarbon group of not less than 8 carbon atoms, and the cladding is made of a transparent polymeric material having a refractive index of at least 3% smaller than that of the core.

4,576,439

REFLECTIVE DIFFRACTIVE AUTHENTICATING DEVICE

Michael T. Gale, Wettswil; Karl H. Knop, Zurich, and Martin Ebnöther, Affoltern a. Albis, all of Switzerland, assignors to RCA Corporation, Princeton, N.J.

Filed Aug. 5, 1983, Ser. No. 520,824
Claims priority, application United Kingdom, Sep. 15, 1982, 8226232
Int. Cl.⁴ G02B *5/18;* B32B *3/30*
U.S. Cl. 350—162.23 **11 Claims**



1. In an authenticating device for use in authenticating an item of sheet material when said device is bonded to said item; wherein said device comprises an integrated structure of a substrate layer and a transparent overcoat layer separated from one another by a coating layer that is situated in intimate contact with said substrate and overcoat layers at the interface therebetween, said interface including a reflective diffraction grating in the form of a relief pattern, said grating having specified grating-profile, physical-amplitude and line-period parameters that operate to separate polychromatic illuminating light incident thereon into at least one pair of light beams of contrasting colors, and wherein the bond of said coating layer to said respective substrate and overcoat layers at said interface is significantly less secure than is a direct bond of said substrate to said overcoat layer; the improvement wherein:

said coating layer is divided in at least one dimension into a set of separated regions, adjacent ones of said regions being separated from one another in at least one dimension by a spacing distance a, the center-to-center distance of adjacent ones of said regions in at least said one dimension being b;

the respective values of a and b being characterized in that b is on the order of ten times larger than a, a is significantly larger than the line-period of said diffraction grating, and b is sufficiently small as to be at most barely noticeable to the naked eye of an observer; and

said overcoat layer being directly bonded to said substrate layer within the separation between adjacent ones of said regions of said coating layer.

4,576,440

SKYLIGHT WITH A REMOTELY OPERABLE LIGHT INTENSITY REDUCING MECHANISM

Mark N. Worthington, 10227 White Mountain Rd., Sun City, Ariz. 85351

Filed Jan. 11, 1985, Ser. No. 690,631
Int. Cl.⁴ G02B *17/00, 27/00*
U.S. Cl. 350—258 **16 Claims**

1. A light intensity reducing mechanism for use with a skylight structure of the type having a light shaft enclosure extending between a light admitting window mounted in a roof of a building and an opening formed in a ceiling of a room in the building, said light intensity reducing mechanism comprising:

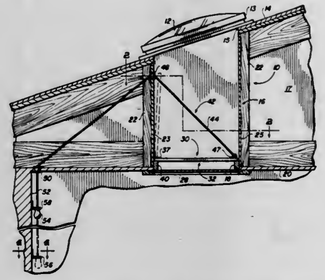
(a) a sheet of translucent material for mounting in the light shaft enclosure of the skylight;

(b) an axle shaft defining an axis of rotation;

(c) means interconnecting said axle shaft and said sheet of translucent material;

(d) bearing means for rotatably journaling said axle shaft in the light shaft enclosure of the skylight for movement of said sheet of translucent material about the axis of rotation between a first full light passing position and a second reduced intensity light passing position;

(e) said axle shaft having one end which extends through the light shaft enclosure when installed therein;



(f) a drive shaft for rotatable mounting on the exterior of the light shaft enclosure, said drive shaft having one end proximate said axle shaft but its opposite end located in an opening defined by a ceiling in a building in which the skylight is mounted when said drive shaft is mounted on the light shaft enclosure;

(g) gear drive means mounted on said axle shaft and on said drive shaft for coupling said axle shaft to said drive shaft;

(h) coupling means on the opposite end of said drive shaft; and

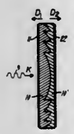
(i) tool means selectively connectable to said coupling means for rotatable driving of said drive shaft.

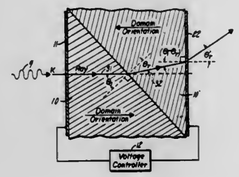
4,576,441

VARIABLE FRESNEL LENS DEVICE

Frederick Kubick, White Plains, N.Y., assignor to United Technologies Corporation, Hartford, Conn.

Filed Mar. 2, 1984, Ser. No. 585,815
Int. Cl.⁴ G02B *3/08, 27/44;* G02F *1/05*
U.S. Cl. 350—355 **10 Claims**





1. A device for focussing and defocussing a beam of radiation in the range of millimeter wavelength radiation, comprising:

first and second material media having adjoining complementary sides with Fresnel lens contours, each having a flat outer side as well, said media being birefringent and having coincident optic axes with opposing domain orientations, said axes being disposed in the direction of propagation of said beam of millimeter wavelength radiation;

a pair of electrodes adjoining said material media, said electrodes being orthogonal to said optic axes; and

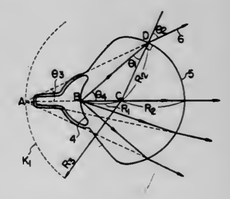
electric means for providing a voltage between said pair of electrodes to establish a continuously changeable and reversible electric field across said media for controllably directing the focussing and defocussing activity of the device.

4,576,442

IMAGE PROJECTION APPARATUS

Masanori Oguino, Yokohama, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 3, 1984, Ser. No. 576,958
Claims priority, application Japan, Feb. 4, 1983, 58-16156
Int. Cl.⁴ G02B *1/06, 3/12*
U.S. Cl. 350—418 **2 Claims**



1. An image projection apparatus comprising:

a concave radiant plane for forming an original image, the radius of curvature of said concave radiant plane being one unit of length;

a transparent medium layer having a refractive index of n, where $n>1$;

a convex light exit plane having a radius of curvature of approximately n units of length, said convex light exit plane being placed forwardly in the normal direction of said radiant plane at a distance of approximately $(n+1)$ units of length therefrom;

said transparent medium layer filling substantially the space between said concave radiant plane and said convex exit plane; and

a vertex angle θ_3 of the diverging light emitted from said light exit plane being $\theta_3=\sin^{-1}(1/n^2)$.

4,576,443

ZOOM LENS WITH HIGH VARIABLE POWER RATIO INCLUDING WIDE-ANGLE CAPABILITY

Takayuki Itoh, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 25, 1983, Ser. No. 526,315
Claims priority, application Japan, Aug. 25, 1982, 57-147273
Int. Cl.⁴ G02B *15/14*
U.S. Cl. 350—427 **15 Claims**

1. A zoom lens with a high variable power ratio including wide-angle lens capability, comprising, in order from the object, a first lens unit having a positive focal length, a second lens unit having a negative focal length, and a third lens unit having a positive focal length, said first, second and third lens units being mechanically movable to change the overall focal length and keep an image plane constant, said third lens unit being composed of, in order from the object, a third sub-lens unit a having a positive lens, a negative lens and a positive lens

in order from the object and a third sub-lens unit b having a positive lens, a negative lens and a positive lens in order from the object, and said third lens unit meeting the following conditions:

$$0.25 < f_{min}/f_I < 0.65; \quad (1)$$

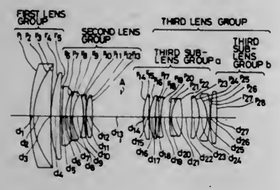
$$-1.25 < f_{min}/f_{I\,II} < -0.7; \quad (2)$$

$$0.5 < f_{min}/f_{I\sim IIIa} < 1.0; \quad (3)$$

$$1.3 < f_{min}/f_{I\sim IIIb} < 2.1; \quad (4)$$

$$0.35 < |r_{IIIbN}|/f_{min} < 0.7; \text{ and } (r_{IIIbN} < 0) \quad (5)$$

$$1.7 < N_{IIIbN} \quad (6)$$



where

f_{min} is the minimum focal length of the overall system, f_I is the focal length of the first lens unit, $f_{I\,II}$ is the combined focal length of the first and second lens units at the minimum focal length,

$f_{I\sim IIIb}$ is the focal length of the first lens unit through third sub-lens unit at at the minimum focal length,

$f_{I\sim IIIb}$ is the focal length of the first lens unit through the positive lens, closer to the object, of the third sub-lens unit b at the minimum focal length,

r_{IIIbN} is the radius of curvature of a surface, closer to the object, of the negative lens of the third sub-lens unit b, and

N_{IIIbN} is the refractive index at d-line of the negative lens of the third sub-lens unit b.

4,576,444

MACRO-FOCUS ZOOM LENS

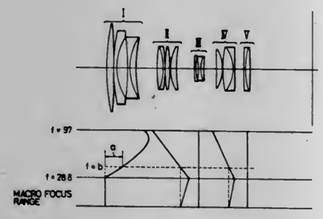
Atsushi Kawamura, Yokosuka, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed May 11, 1984, Ser. No. 609,357

Claims priority, application Japan, May 12, 1983, 58-81727

Int. Cl.⁴ G02B *9/36, 15/22*

U.S. Cl. 350—428 **2 Claims**



1. A macro focusing zoom lens comprising:

a first lens group positioned near the object side and having a negative refractive power;

a second lens group positioned after said first lens group and having a positive refractive power;

a third lens group positioned after said second lens group and having a negative refractive power;

a fourth lens group positioned after said third lens group and having a positive refractive power;

a fifth lens group positioned after said fourth lens group and having a positive refractive power;

zooming means coupled to said lens groups for zooming from a telephoto side to a wide angle wherein said second and fourth lens groups are moved as a variator towards an image, and where said first lens group is moved as a compensator with said third and fifth lens groups being fixed and wherein a macro-zoom focusing is performed by said focusing means by movement of said second and fourth lens groups from the wide angle side of said lens towards the object side.

4,576,445

ZOOM LENS

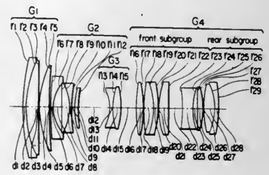
Kiyotaka Inadome, Kawasaki, Japan, assignor to Nippon Kogaku K. K., Tokyo, Japan

Filed May 18, 1984, Ser. No. 612,069

Claims priority, application Japan, May 27, 1983, 58-93648; May 27, 1983, 58-93649

Int. Cl.⁴ G02B *9/36, 15/14*

U.S. Cl. 350—427 **17 Claims**



1. A zoom lens having a change-magnification range ranging from wide angle to telephoto comprising, in succession from the object side:

a first lens group of positive refractive power movable on the optical axis;

a second lens group of negative refractive power fixed relative to the image plane at a predetermined position;

a third lens group of negative refractive power movable on the optical axis; and

a fourth lens group of positive refractive power movable on the optical axis,

said first and fourth lens groups being movable toward the object side in linear fashion to change magnification from the wide angle end to the telephoto end while said third lens group being movable toward the object side at the same time in non-linear fashion to keep the image plane at said determined position.

4,576,446

ZOOM LENS MOUNTING

Shigeru Kamata, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 8, 1984, Ser. No. 638,742

Claims priority, application Japan, Aug. 16, 1983, 58-148788

Int. Cl.⁴ G02B *7/10, 11/08*

U.S. Cl. 350—429 **3 Claims**

1. A zoom lens mounting comprising:

(a) a first optical member having a focusing function and a zooming function and a first holder member;

(b) a second optical member cooperating with said first optical member and a second holder member;

(c) a body tube having first and second straight slots each elongated in a parallel direction to an optical axis;

(d) a stop member arranged to move axially when zooming is performed;

(e) a cam cyclinder,

said cam cyclinder having first, second and third cam portions for controlling the movements of said first and second optical members and said stop member, said first and third cam portions crossing said first straight slot and said second cam portions crossing said second straight slot; and

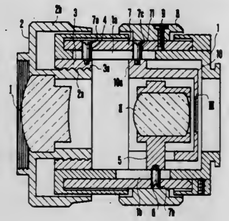
(f) cam follower means,

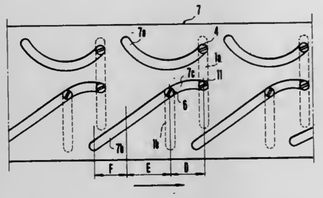
said cam follower means having guide pins fixedly secured to said first and second optical members and said stop member,

said guide pins including a first guide pin engaging at a cross point of the first straight slot and the first cam portion,

a second guide pin engaging at a cross point of the second straight slot and the second cam portion, and

a third guide pin engaging at a cross point of said first straight slot and the third cam portion.





4,576,447

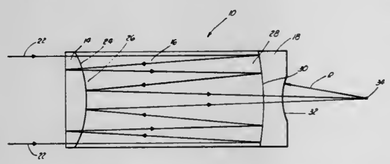
COMPACT, SINGLE PIECE LASER BEAM ANALYZER

Dietrich G. Korsch, Huntsville, Ala., assignor to The Boeing Company, Seattle, Wash.

Filed Sep. 26, 1983, Ser. No. 535,404

Int. Cl.⁴ G02B *17/00*

U.S. Cl. 350—444 **4 Claims**



1. A laser beam analyzer for measuring a laser light beam, the analyzer comprising:

a solid cylinder of glass, the cylinder having two internally convex and concave partially transmitting, partially reflecting spherical surfaces, a flat entrance surface for receiving the entire beam across the surface thereof and a concave spherical exit surface.

4,576,448

PHOTOGRAPHIC LENS SYSTEM FOR COMPACT CAMERAS

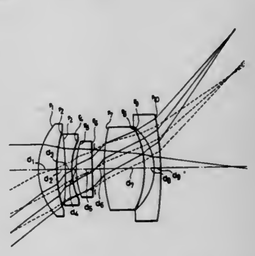
Kazuo Ikari, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jun. 7, 1983, Ser. No. 501,787

Claims priority, application Japan, Jun. 16, 1982, 57-102171; Oct. 28, 1982, 57-188181; Dec. 15, 1982, 57-218271

Int. Cl.⁴ G02B *9/60, 9/62*

U.S. Cl. 350—465 **21 Claims**



1. A photographic lens system comprising a front lens group and a rear lens group, said front lens group comprising a first, second and third lenses, said first lens being a positive meniscus lens arranged to be convex toward the object side, said second lens being a biconcave lens, said third lens being a positive lens, said rear lens group comprising a fourth and fifth lens, said fourth lens being a biconvex lens, said fifth lens being a negative meniscus lens arranged to be convex toward the image side, said photographic lens system being arranged to fulfill the condition (1) shown below:

$$0.15f < d_7 < 0.4f \quad (1)$$

where, reference symbol d_7 represents the thickness of the fourth lens, and reference symbol f represents the focal length of the lens system as a whole.

4,576,449

SIGHTING MIRROR INCLUDING A STABILIZING DEVICE

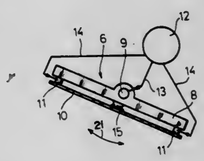
Roderich Rüger, Munich, Fed. Rep. of Germany, assignor to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

Filed Aug. 14, 1984, Ser. No. 640,610

Claims priority, application Fed. Rep. of Germany, Sep. 8, 1983, 3332416

Int. Cl.⁴ G02B *27/64*

U.S. Cl. 350—500 **3 Claims**



1. A sighting mirror including a stabilizing device, comprising controllable drive means (9) for tilting said sighting mirror toward a target, mirror position adjustment means (12) for stabilizing a mirror position independently of operating conditions under which said sighting mirror is used, said mirror position adjustment means comprising a pivoted frame (8) for holding said sighting mirror in a roughly adjusted position in response to said controllable means (9), journal means (15)

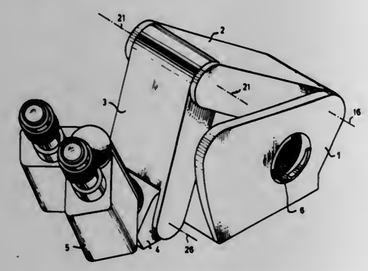
adjustably securing said sighting mirror to said pivoted frame, piezoelectric means operatively interposed between said pivoted frame and said sighting mirror for a fine adjustment of said sighting mirror relative to said frame, and wherein said mirror position adjustment means further comprise gyro means for providing electrical position control signals for said controllable drive means (9) and for said piezoelectric means, first conductor means (13) for electrically connecting said controllable drive means to said gyro means for a rough adjustment of said frame in response to said position control signals, and second conductor means (14) for electrically connecting said piezoelectric means to said gyro means for also energizing said piezoelectric means in response to said position control signals for said fine adjustment of said sighting mirror.

4,576,450

MICROSCOPE TUBE HAVING RELATIVELY SWINGING SECTIONS

Klaus Westphal, Oberkochen, Fed. Rep. of Germany, assignor to Carl-Zeiss-Stiftung, Heidenheim on the Brenz, Fed. Rep. of Germany

Filed Feb. 10, 1984, Ser. No. 579,161
Int. Cl.⁴ G02B *21/00*
U.S. Cl. 350—522 **13 Claims**



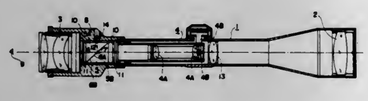
1. An articulated microscope tube including optical means for conducting an optical beam from a microscope objective to an eyepiece, said tube comprising a plurality of sections including a first section (1), a second section (2) mounted to swing relative to the first section about a first hinge axis (16), and at least one additional section (3) mounted on said second section to swing relative thereto about a second hinge axis (21) spaced from and parallel to said first hinge axis.

4,576,451

AIMING TELESCOPE

Katsuya Tominaga, Tokyo, Japan, assignor to Hakko Seiki Kabushiki Kaisha, Japan

Filed Dec. 20, 1982, Ser. No. 451,434
Claims priority, application Japan, Jan. 8, 1982, 57-1585[U]
Int. Cl.⁴ G02B *23/10*
U.S. Cl. 350—566 **9 Claims**



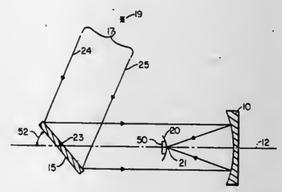
1. An aiming telescope having an optical axis and comprising a pair of glass blocks having complementary surfaces cut at an angle of 45° and joined together;
each glass block having an end surface perpendicular to the optical axis and parallel to each other;
a reflective film having the shape of a reticle and centrally provided on at least one of said cut surfaces midway between said end surfaces to form an aiming pattern;
said glass blocks being cemented together along said complementary surfaces; and
an illuminating means positioned so that light rays are transmitted through one of the glass blocks and reflected off the reflective film in the shape of a reticle to be visible through an occular system by a user and wherein the illuminating means is positioned so that the light rays incident to the reflective film are perpendicular to the optical axis.

4,576,452

REFLECTIVE SCHMIDT SYSTEM WITH NONROTATIONALLY SYMMETRIC CORRECTOR

Irving R. Abel, Lexington, and Marcus R. Hatch, Waltham, both of Mass., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jun. 2, 1983, Ser. No. 500,462
Int. Cl.⁴ G02B *5/10*
U.S. Cl. 350—620 **9 Claims**



1. An optical system for imaging energy from a desired scene of interest, said system having an optical axis and comprising:
A. a first substantially spherical concave mirror means positioned substantially about said optical axis;
B. an optical detection means located substantially at the position of best focus of said first spherical mirror means; and
C. corrector fold mirror means located substantially at the center of curvature of said first spherical mirror means substantially along or parallel to said optical axis, wherein said corrector fold mirror means is tilted relative to said optical axis in order to receive energy from said scene of interest and reflect said received energy substantially along said optical axis onto said first spherical mirror means, and wherein said corrector fold mirror means comprises nonrotationally symmetric deformations for the correction of optical aberrations of said optical system, said nonrotationally symmetric deformations thereby providing said corrector fold mirror means with substantially no symmetry of its surface around said optical axis.

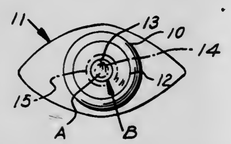
4,576,453

LIGHT-OCCLUDING CONTACT LENS

Richard Borowsky, 17 Amherst Ct., Rockville Centre, N.Y. 11570

Filed Aug. 3, 1984, Ser. No. 637,597
Int. Cl.⁴ G02C *7/04, 7/10*
U.S. Cl. 351—162 **16 Claims**

1. A light-occluding contact lens having a shaded portion that has a progressive graded optical density whose gradation extends across the lens from a relatively darker center portion to a relatively lighter peripheral portion, and said gradation extending across the lens to a diameter between that of a dilated and contracted pupil of said lens wearer, said gradation adapted to vary optical density substantially imperceptibly to the wearer of said lens, whereby said lens is a benefit to lens wearers having a sensitivity to light.

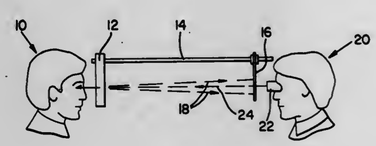


4,576,454

EYE FATIGUE SIMULATOR FOR OPTOMETRY

Gregory S. Charney; Terrance D. Hohner, both of Portland, and Cosmo Salibello, Forest Grove, all of Oreg., assignors to Terrance D. Hohner, Portland, Oreg.

Filed Nov. 22, 1983, Ser. No. 555,036
Int. Cl.⁴ A61B *3/02*
U.S. Cl. 351—243 **5 Claims**



1. A system for simulating the eye fatigue of a video display screen user and for determining the desired corrective lenses for that user comprising; a lens changing apparatus adapted to mount in front of a patient's eyes whereby different lenses can be selectively positioned into the patient's line of sight, a simulation device mounted in spaced relation to the lens changing apparatus and in the patient's line of sight, said simulation device having a viewing surface in the patient's line of sight surrounding a center opening through which the patient's eyes can be examined by an eye doctor, and images formed on the viewing surface adjacent said opening, said simulation device including a multilayer card-like member having a patient viewing side providing said viewing surface, a diffuser screen forming a layer of the member, an opaque coating forming a layer over the screen on the viewing side of the member, and said images provided by the discriminate removal of the opaque coating in the desired image areas to expose the underlying diffuser screen, and a light source on the opposite side of the member for projecting light through the diffuser screen in the image areas to project nonfocused images on said viewing surface simulating the images of a video display screen.

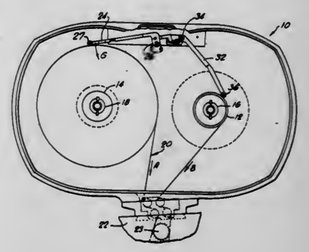
4,576,455

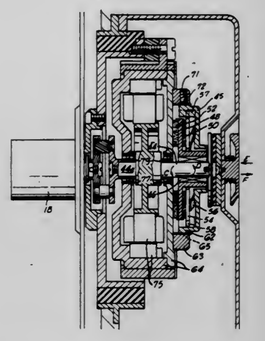
DUAL MOTOR REVERSIBLE DRIVE FILM MAGAZINE

Carl F. Fazekas, Tarzana, Calif., assignor to Panavision, Inc., Tarzana, Calif.

Filed Feb. 10, 1984, Ser. No. 578,890
Int. Cl.⁴ G03B *23/02*
U.S. Cl. 352—78 R **21 Claims**

1. A film magazine comprising:
a supply hub adapted to support a supply reel of film;
a shaft adapted to couple with the supply hub;
a one way clutch adapted to couple with the shaft, the one way clutch adapted to permit free and independent rotation of the shaft relative to the one way clutch when the shaft is rotating in a first direction, the one way clutch adapted to rotate in response to shaft rotation when the shaft is rotating in a second direction opposite the first direction;





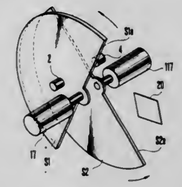
drag means for applying a torque to the one way clutch for causing resistance to the rotation of said shaft only in the second direction; and
motor means for driving the shaft in the first direction.

4,576,456

IMAGE SENSING SYSTEM

Tadashi Okino, Tokyo, and Syuichiro Saito, Kanagawa, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 8, 1983, Ser. No. 550,237
Claims priority, application Japan, Nov. 10, 1982, 57-196927
Int. Cl.⁴ G03B *9/10*
U.S. Cl. 352—216 **7 Claims**



1. An image sensing system comprising:
image sensing means for sensing the image of an object to be photographed;
two shutter blades which block image light coming toward said image sensing means;
two rotative driving means for driving said two shutter blades respectively;
control means for controlling the difference in rotating

phase between said two rotative driving means to keep the difference unvarying;

wherein said control means includes detecting means for detecting the rotating phases of said two rotative driving means;

wherein said detecting means is arranged to detect a time at which the first shutter blade completes a light blocking action and to detect a time at which the second shutter blade commences a light blocking action;

wherein said control means includes a first signal generating means for producing a first signal which varies with the lapse of time after completion of the light blocking action and a second signal generating means for producing a second signal which varies with the lapse of time after the commencement of the light blocking action; and

wherein each of said first and second signal generating means includes a constant current circuit and a capacitor which stores electric charge of a current flowing from said constant current circuit.

4,576,457

MOTOR DRIVEN WINDING MECHANISM FOR CAMERA

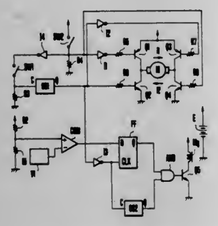
Tsuyoshi Fukuda, Kanagawa, and Yoshihiko Aihara, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Japan

Filed Jan. 31, 1985, Ser. No. 696,741

Claims priority, application Japan, Feb. 3, 1984, 59-14829[U]

Int. Cl.⁴ G03B *1/18*

U.S. Cl. 354—173.11 **11 Claims**



1. A motor driven winding-up mechanism for a camera comprising:

(a) an electric motor;

(b) a drive circuit for rotating said motor in a winding-up direction;

(c) a film winding-up member;

(d) a transmitting and driving system for transmitting rotation of said motor to said film winding-up member;

(e) winding-up stopping means for stopping rotation of said motor and said transmitting and driving system each time a film has been wound up by a prescribed number of frames; and

(f) backward motion driving means for driving at least said transmitting and driving system to rotate to a few degrees of angle in the reversed direction to that in which it rotated when in winding at a time after the film has been wound up by the prescribed frame and before the initiation of the next film frame winding operation.

4,576,458

CAMERA FINDER EMPLOYING HOLOGRAPHIC VIEW FIELD FRAMES

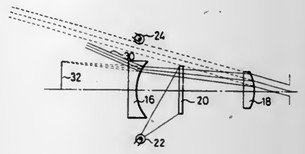
Michio Cho, Tokyo; Masane Suzuki, and Takayuki Saito, both of Oomiya, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 2, 1984, Ser. No. 596,196

Claims priority, application Japan, Apr. 5, 1983, 58-59728; Dec. 1, 1983, 58-227542

Int. Cl.⁴ G03B *13/12, 13/14*

U.S. Cl. 354—199 **18 Claims**



1. In a camera comprising a camera body and a camera lens, said lens having a distance ring disposed thereon for focusing said lens, a camera finder comprising:

a finder optical system; a hologram provided in said finder optical system and having therein multiple-recorded at least two view field frames each corresponding to an object distance;

means for generating a plurality of reference beams; and

means for selecting one of said plurality of reference beams in accordance with the object distance, whereby one of said view field frames corresponding to the object distance is regenerated.

4,576,459

EYE-CUP FOR CAMERA

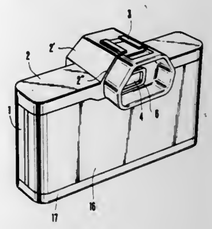
Yuzo Miura, and Akira Yamada, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 17, 1984, Ser. No. 571,471

Claims priority, application Japan, Jan. 31, 1983, 58-12560[U]

Int. Cl.⁴ G03B *11/04*

U.S. Cl. 354—287 **16 Claims**



1. An eye-cup for a camera having a projection formed on the contour for mounting viewfinder optics and a viewfinder, comprising:

an engagement part to be mounted in the neighborhood of the projection of the camera;

a see-through window for directing light from the eyepiece of the camera; and

an outer face part surrounding said see-through window so as to form a light shielding hood; said outer face part being formed so as not to protrude beyond the contour of said projection with at least a part of said outer face part being made to coincide with said contour of the projection of the camera.

4,576,460

PHOTOGRAPHING LENS POSITION DEVICE IN AUTOMATIC FOCUSING CAMERA

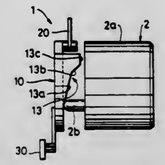
Koichi Daitoku, and Daiki Tsukahara, both of Kanagawa, Japan, assignors to Nippon Kogaku K. K., Tokyo, Japan

Filed Oct. 26, 1984, Ser. No. 665,397

Claims priority, application Japan, Oct. 28, 1983, 58-167132[U]

Int. Cl.⁴ G03B *3/10*

U.S. Cl. 354—400 **5 Claims**



1. A device for positioning a photographing lens to focus said lens on an object, which comprises:

distance detecting means for detecting a distance to an object to provide an output signal, said distance detecting means detecting said distance when said object is positioned in the range of ordinary photographing distances and in the range of distances shorter than said ordinary photographing distances;

position determining means for determining the position of said photographing lens in the direction of the optical axis according to said output signal; and

drive means for responding to (an output of) said position determining means, said drive means including cam mans which is displaced to move said photographing lens along the optical axis,

said cam means having a first displacement region for operating said photographing lens when said object is in the range of ordinary photographing distances, and a second displacement region for operating said photographing lens when said object is in the range of distances shorter than said ordinary photographing distances, said first and second displacement regions being so shaped that, with respect to an amount of displacement of said cam means the amount of movement of said photographing lens with said second displacement region is larger than that with said first displacement region.

4,576,461

SHEET HINGE FORMING APPARATUS

Morton Silverberg, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 2, 1984, Ser. No. 585,466

Int. Cl.⁴ G03G *21/00*

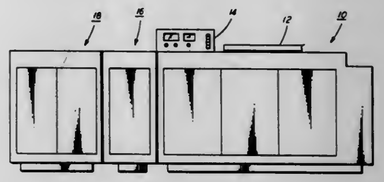
U.S. Cl. 355—3 R **10 Claims**

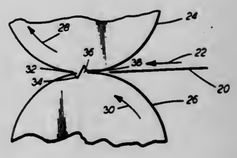
6. A printing system, including:

means for reproducing information on successive sheets;

means, in communication with said reproducing means, for forming a hinge in each sheet having information reproduced thereon said hinge forming means including means for advancing successive sheets in seriatim, and means, operatively associated with said advancing means, for reducing the stiffness of successive advancing sheets in a marginal region along a line substantially parallel to an edge of the sheet with the line of reduced stiffness for successive sheets being progressively offset from one another so as to facilitate bending of the sheets along the line of reduced stiffness; and

means, adapted to receive successive sheets from said forming means, for binding the sheets to form a booklet with the booklet opening at the hinge formed on each sheet and





the sheets laying substantially flat with the booklet being opened.

4,576,462

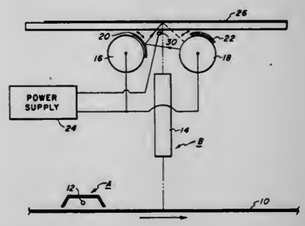
ILLUMINATION SYSTEM FOR AN ELECTROPHOTOGRAPHIC PRINTING DEVICE

Richard F. Lehman, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 5, 1984, Ser. No. 678,316

Int. Cl.⁴ G03G *15/01*

U.S. Cl. 355—14 R **3 Claims**



1. A document imaging system including an illumination source for illuminating original documents having differing copyability requirements to be placed in an object plane, said illumination source comprising a first and second apertured lamp placed on opposite sides of a scan strip beneath said object plane,

said first lamp adapted to direct a band of light of a first spectral emission to said scan strip, said second lamp adapted to direct a band of light of a second spectral emission, complementory to said first emission to said scan strip,

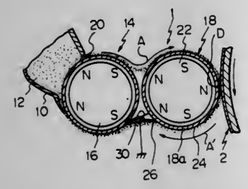
a first and second faceted reflector associated with said first and second lamp respectively, said reflectors rotatably mounted and adapted to cover or uncover the aperture of said associated lamp in response to original document color conditions, and

means for moving said reflectors into and out of an operative position in response to said document copyability requirements.

4,576,463
DEVELOPING APPARATUS FOR ELECTROSTATIC PHOTOGRAPHY

Koji Sakamoto, and Kazuo Kobayashi, both of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Division of Ser. No. 326,098, Nov. 30, 1981, Pat. No. 4,445,771.
This application Apr. 23, 1984, Ser. No. 603,260
Claims priority, application Japan, Dec. 5, 1980, 55-170846; Dec. 12, 1980, 55-174610; Dec. 30, 1980, 55-185726
The portion of the term of this patent subsequent to May 1, 2001, has been disclaimed.
Int. Cl.⁴ G03G *15/08*
U.S. Cl. 355—3 DD **21 Claims**

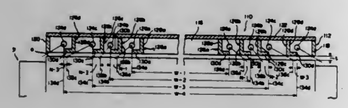


1. An electrostatographic apparatus including a photoconductive member and means for forming an electrostatic image on the photoconductive member, constituted by comprising:
applicator means having an electrically insulative surface adapted to electrostatically adhere a toner thereto, the insulative surface being movable relative to the photoconductive member for applying the toner thereto for developing the electrostatic image into a toner image;
removal means for removing residual toner from the insulative surface after said development; and
discharging means for electrically discharging the insulative surface after removal of the residual toner.

4,576,464
CHARGE ELIMINATING LAMP DEVICE

Hiromi Sakata, Neyagawa; Nobuhiko Kozuka, Suita, and Hiroshi Hiraoka, Sakai, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Dec. 17, 1984, Ser. No. 682,763
Claims priority, application Japan, Dec. 28, 1983, 58-245438
Int. Cl.⁴ G03G *15/00*
U.S. Cl. 355—3 R **19 Claims**

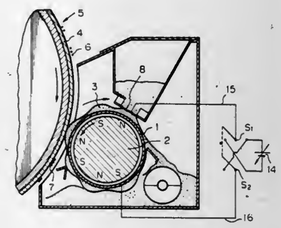


1. A charge eliminating lamp device comprising a light shielding frame member positioned in proximity to at least one side portion of the surface of an electrostatographic material from which an electric charge is to be eliminated, said frame member having a light transmission opening at that surface which faces the surface of the electrostatographic material, a plurality of illuminating lamps adapted to be selectively energized and disposed within said frame member in spaced-apart relationship in the width direction of the electrostatographic material, and a plurality of inside edge restricting light shielding walls within said frame member, said inside edge restricting light shielding walls being positioned adjacent to the insides of said illuminating lamps respectively as viewed in said width direction and adapted to restrict the inside edges, in said width direction, of light-irradiated areas formed on the electrostatographic material by said illuminating lamps; wherein
each said inside edge restricting light shielding wall restricts the outside edge, in said width direction, of a light-irradiated area formed on the electrostatographic material by an illuminating lamp located inwardly of said inside edge restricting light shielding wall as viewed in said width direction to a site inwardly of the inside edge, in said width direction, of a light-irradiated area formed on the electrostatographic material by an illuminating lamp located outwardly of said inside edge restricting light shielding wall, and
selctively energizable auxiliary lamps are disposed among said illuminating lamps in said width direction for irradiating an area on the electrostatographic material which ranges from its inside edge positioned between the inside edge and outside edge, in said width direction, of a light-irradiated area formed on the electrostatographic material by an illuminating lamp located inwardly of each said inside edge restricting light shielding wall in said width direction to its outside edge positioned at, or outwardly of, the inside edge, in said width direction, of a light-irradiated area formed on the electrostatographic material by an illuminating lamp located outwardly of said inside edge restricting light shielding wall in said width direction.

4,576,465
METHOD AND APPARATUS FOR ADJUSTING TONER CONCENTRATION OF TWO-COMPONENT TYPE DEVELOPER

Akira Fushida, Suita; Yuuji Hasegawa, Kishiwada, and Toshikazu Matsui, Nishinomiya, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Sep. 26, 1983, Ser. No. 535,637
Claims priority, application Japan, Sep. 24, 1982, 57-165062
Int. Cl.⁴ G03G *15/09*
U.S. Cl. 355—3 DD **6 Claims**

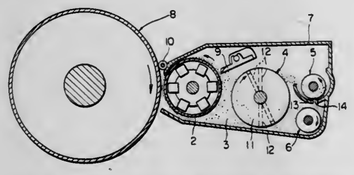


1. An apparatus for adjusting the toner concentration in a two-component type developer, which comprises a mechanism for forming a magnetic brush comprising a mixture of a magnetic carrier and an electroscopic toner and delivering said magnetic brush, said mechanism including a support formed of an electroconductive non-magnetic material and a magnet having a plurality of poles and being built in the interior of the support, at least one of said support and magnet being movable, mesh screen which is formed of an electroconductive material and arranged to support the electroscopic toner on the upper surface side thereof and to have sliding contact with the magnetic brush on the lower surface side thereof, and a bias voltage applying mechanism for applying a bias voltage between said support and mesh screen, and adjusting means for adjusting the polarity and intensity of the bias voltage to set a standard toner concentration of the magnetic brush, said standard toner concentration being defined as the toner concentration where the moving quantity of the toner through the mesh screen is substantially zero, wherein the toner concentration of the magnetic brush is adjusted by moving the toner toward the magnetic brush side through apertures of the mesh screen when the toner concentration is lower than the standard toner concentration and by moving the toner toward the opposite side when the toner concentration is higher than the standard toner concentration.

4,576,466
DEVELOPING SYSTEM FOR AN ELECTROSTATIC COPYING APPARATUS

Masakazu Fukuchi, Hachioji, and Keiji Oishi, Hino, both of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Mar. 21, 1983, Ser. No. 477,016
Claims priority, application Japan, Mar. 24, 1982, 57-46999
Int. Cl.⁴ G03G *15/08*
U.S. Cl. 355—3 DD **7 Claims**



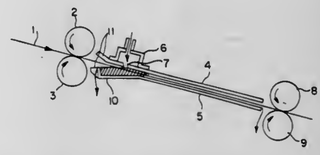
1. In an electrostatic copying apparatus, a developing system comprising a developing means including means defining an area to be developed, and means for supplying developers which include toners to said area to be developed, the improvement comprising:
a primary conveyance means in communication with supplying means for conveying said developers comprising at least toners in one direction with respect to the width of said area to be developed;
a secondary conveyance means arranged substantially under said primary conveyance means for receiving said developers from said primary conveyance means and for conveying said received developers in a direction opposite to the conveyance direction of said primary conveyance means;
a receptacle having a plurality of holes therein, said receptacle being arranged under said primary conveyance means and interposed between said primary and secondary conveyance means for receiving conveyed developers from said primary conveyance means and dropping said received developers through said holes to said secondary conveyance means, said holes being spaced along the conveyance direction of said developers;
said primary and secondary conveyance means having different conveyance capacities; and
agitating means arranged between said second conveyance means and said developing means, said agitating means including means for scooping up developers and causing scooped up developers to fly onto the primary conveyance means to mix with developers supplied from said supplying means.

4,576,467
LIQUID DEVELOPING APPARATUS

Masshiro Yamasaki, Otsu; Iwao Hirose, Hikone; Masao Fukushima, Echi, and Ichiro Yoshida, Shizuoka, all of Japan, assignors to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan

Filed Jun. 7, 1984, Ser. No. 618,188
Claims priority, application Japan, Jun. 27, 1983, 58-116709
Int. Cl.⁴ G03G *15/10*
U.S. Cl. 355—10 **5 Claims**

1. A liquid developing apparatus designed for electrophotography comprising a main electrode and an auxiliary electrode whose opposed surfaces define a passage for a photosensitive sheet having a latent image on its front surface which is to be developed by contact with a developing solution liquid, means for passing the photosensitive sheet through the passage with its front surface proximate the main electrode, means for filling the passage with liquid and characterized in that the surface of at least one of the electrodes defining the passage is

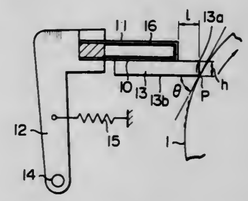


rough and coated with a resin film containing an electroconductive component.

4,576,468
CLEANING APPARATUS OF ELECTROPHOTOGRAPHIC COPYING MACHINE

Kinzi Saito, Kawasaki, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Apr. 24, 1984, Ser. No. 603,397
Claims priority, application Japan, May 12, 1983, 58-81633; Jun. 10, 1983, 58-102730
Int. Cl.⁴ G03G *21/00*
U.S. Cl. 355—15 **4 Claims**



1. A cleaning apparatus of an electrophotographic copying machine for cleaning a photoconductor drum of the electrophotographic copying machine comprising:
a pair of parallel elastic plates, one end portion of said elastic plates being integrally connected to each other, and the other end portion of said elastic plates being fixed to an arm member which is urged towards said photoconductor drum, and
a cleaning blade member which is fixed to one of said elastic plates, with a free end portion of said cleaning blade member projecting from said one elastic plate toward the surface of said photoconductor drum and being in pressure contact with the surface of said photoconductor drum with a predetermined pressure, and the angle between the upstream side of said cleaning blade in terms of the rotation of said photoconductor drum and the tangent at the contact point of said blade with the surface of said photoconductor drum is less than $\pi/2$.

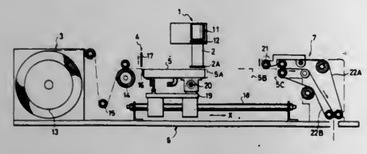
4,576,469
SENSITIVE MATERIAL CUTTING AND TRANSPORTING MECHANISM

Koji Shiga, and Tatsunari Arito, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd. and Fuji Micro Graphics Co., Ltd., both of Kanagawa, Japan

Filed Jan. 25, 1984, Ser. No. 573,755
Claims priority, application Japan, Jan. 25, 1983, 58-10236
Int. Cl.⁴ G03B *29/00*
U.S. Cl. 355—29 **7 Claims**

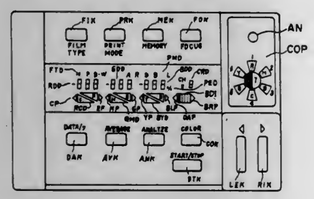
1. A mechanism for cutting and transporting segments of material cut from an elongated web of material comprising:
(i) means for supplying said material;

(ii) means for feeding segments of said web of a predetermined length;
(iii) cutter means for cutting said segments from said web into cut segments;
(iv) a take-out section for receiving said cut segments of said web;
(v) suction and transporting means for receiving said cut



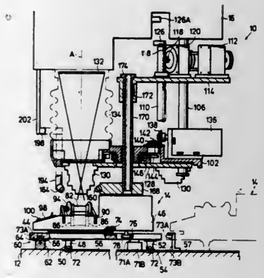
segments of said web supplied from said feeding means, said suction and transporting means being horizontally reciprocably mounted to be selectively reciprocal between a position adjacent said cutter means and a position adjacent said take-out section; and
(vi) means for selectively reciprocating said suction and transporting means between said cutter means and said take-out section.

4,576,470
ENLARGER FOR USE IN PHOTOGRAPHY
Yoshio Yuasa, Kawachinagano; Hidetoshi Yasumoto, Tondabayashi; Kazuhiko Naruse, Nabari; Nobukazu Kawagoe, Sakai, and Masahito Inaba, Ikeda, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed Sep. 14, 1983, Ser. No. 532,717
Claims priority, application Japan, Sep. 16, 1982, 57-161754
Int. Cl.⁴ G03B *27/80*
U.S. Cl. 355—38 **22 Claims**



1. An enlarger for use in photography capable of printing a color copy from a color original film comprising:
means for providing a plurality of exposure data corresponding to a plurality of primary colors;
means for designating at least one of the primary colors;
means for altering the exposure data corresponding to the designated primary color;
means for displaying information relating to the exposure data to be altered;
means for indicating the direction of change in tone of the color copy caused by altering the exposure data;
means for selecting between a negative type and a positive type of original film; and means responsive to said selecting means for controlling the relation between the direction of change in tone of the color copy indicated by said indicating means and the direction of change in the exposure data displayed by said displaying means.

4,576,471
PHOTOGRAPHIC PRINTING APPARATUS
Mikio Kogane, and Mizuho Nishimura, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Mar. 29, 1985, Ser. No. 718,055
Claims priority, application Japan, Mar. 30, 1984, 59-64803
Int. Cl.⁴ G03B *27/48, 27/50*
U.S. Cl. 355—50 **21 Claims**

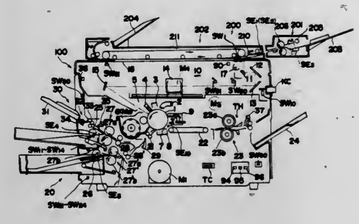


1. A photographic printing apparatus which prints the images of a negative film onto photographic paper, comprising;
(a) a negative film carrier for successively guiding an intermediate portion of a negative film of continuous length on a printing light axis, said negative film carrier being capable of retracting from said printing light axis;
(b) a light receiver disposed such as to oppose said printing light axis of said negative film carrier;
(c) an optical system movable onto said printing light axis; and
(d) lifting guide means which permits said light receiver and said optical system to move in directions in which they come toward and away from said negative film carrier independently of each other and moves both said light receiver and said optical system in a direction in which they separate from said negative film carrier when said negative film carrier is retracted, whereby the retraction of said negative film carrier from said printing light axis is facilitated.

4,576,472
CONTROL APPARATUS FOR COPYING MACHINE
Masazumi Ito, Toyohashi, and Tomoji Murata, Toyokawa, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed Oct. 30, 1984, Ser. No. 666,368
Claims priority, application Japan, Nov. 5, 1983, 58-208134; Mar. 1, 1984, 59-40216
Int. Cl.⁴ G03B *27/48*
U.S. Cl. 355—50 **3 Claims**

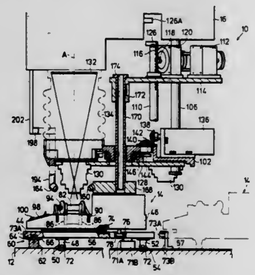
1. In a copying machine to which an automatic document feeder is attachable, a control apparatus therefor comprising:
first means for providing an input of an operation starting means for initiating a copying operation wherein said operation starting means is provided in said copying machine;
second means for determining that a document to be copied is placed at a document supporting table of the copying machine;
third means for determining whether said automatic document feeder is at a set position or at an open position relative to said document supporting table of the copying machine;
fourth means for determining that a document to be copied is set in said automatic document feeder for feeding onto said document supporting table; and

control means responsive to said operation starting means for starting copying operation of the copying machine when the document is determined to be placed at said document supporting table but without operating said automatic document feeder, and for operating said automatic document feeder for feeding the document onto the document supporting table to thereby effect the copying operation when the



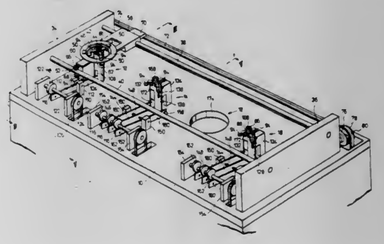
document to be copied is determined to be set at said automatic document feeder but not at said document supporting table, and for preventing operations of both of said copying machine and automatic document feeder when the document to be copied is determined to be not at the document supporting table as well as at the automatic document feeder.

4,576,473
PHOTOGRAPHIC PRINTING APPARATUS
Mikio Kogane; Mizuho Nishimura, and Takashi Yamamoto, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Mar. 29, 1985, Ser. No. 718,121
Claims priority, application Japan, May 4, 1984, 59-89732; May 4, 1984, 59-89733; May 4, 1984, 59-89734
Int. Cl.⁴ G03B *27/74, 27/80*
U.S. Cl. 355—68 **20 Claims**



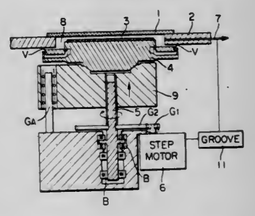
1. A photographic printing apparatus in which a plurality of optical systems are successively disposed on a printing light axis to thereby cope with a change in magnification during a printing operation, comprising:
(a) rotating means having said optical systems arranged about the center of rotation thereof to permit said optical systems to successively coincide with said printing light axis;
(b) an inner light receiver disposed inside the moving locus of said optical systems about the center of rotation thereof to effect photometry in relation to a negative film on said printing light axis; and
(c) an outer light receiver disposed outside the moving locus of said optical systems about the center of rotation thereof to effect photometry in relation to the negative film on said printing light axis, whereby a space for movement of said optical systems is provided between said inner and outer light receivers, thereby facilitating the operation of changing said optical systems one with another.

4,576,474
INFORMATION INPUT/OUTPUT APPARATUS FOR DISK FILM
Atsushi Shiraishi, and Mizuho Nishimura, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Nov. 9, 1984, Ser. No. 669,718
Claims priority, application Japan, Nov. 28, 1983, 58-223755; Nov. 28, 1983, 58-223756; Nov. 28, 1983, 58-223757
Int. Cl.⁴ G03B *27/62*
U.S. Cl. 355—75 **34 Claims**



1. An information input/output apparatus for a disk film used for effecting inputting and outputting of information in relation to the disk film in which a film disk is attached around a hub, said apparatus comprising:
(a) a hollow moving table on which the peripheral edge of said disk film is mounted;
(b) retainer means which retains the peripheral edge of said disk film on said moving table; and
(c) guide means which moves said moving table to predetermined stations, whereby it is possible to simultaneously project all the image frames of said film disk in a projecting operation at a predetermined station.

4,576,475
CONTACTING METHOD AND APPARATUS IN CONTACT COPYING
Takahiro Kitagawa, Yokohama, and Masao Totsuka, Ohmiya, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 480,829, Mar. 31, 1983, abandoned. This application Jul. 18, 1985, Ser. No. 756,568
Claims priority, application Japan, Apr. 5, 1982, 57-56322
Int. Cl.⁴ G03B *27/20, 27/02*
U.S. Cl. 355—91 **2 Claims**



1. A method of bringing a mask and a wafer into intimate contact, said method comprising the steps of:

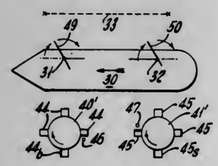
holding a marginal portion of the mask on a mask holder;
holding a wafer on a wafer chuck;
locating the mask holder and the wafer chuck so that the mask and wafer are out of contact;
exhausting gas from between the mask and the wafer while substantially preventing relative movement between the mask holder and the wafer chuck and concurrently permitting atmospheric pressure to act on a surface of the mask at its side opposite to the wafer thereby to cause the mask to become convex relative to the wafer; and
thereafter moving the mask holder and the wafer chuck relative to each other thereby to bring the mask and the wafer into intimate contact with each other.

4,576,476

METHOD AND SYSTEM FOR ACCURATELY MEASURING SPEED OF A SHIP RELATIVE TO A BODY OF WATER

Hubert T. Marshall, II, Fishkill; Eugene W. Vest, Wappingers Falls, and Frederick J. Villforth, III, Fishkill, all of N.Y., assignors to Texaco, Inc., White Plains, N.Y.

Filed Apr. 29, 1983, Ser. No. 489,994
Int. Cl.⁴ G01P *3/36*; G01C *21/00*
U.S. Cl. 356—28 **3 Claims**



1. Method of measuring the speed of a ship relative to a body of water through which said ship is being propelled, comprising the steps of
launching a free floating buoy near the front of said ship,
tracking said buoy with sighting scopes from two locations spaced apart a predetermined distance along the length of said ship,
said tracking comprising rotation said scopes in azimuth and in elevation while training them upon said buoy,
timing the relative movement of said buoy from the beginning to the end of said predetermined distance,
said step of timing comprising commencing a timed interval when the forward sighting scope has been rotated to reach a predetermined azimuth angle relative to the centerline of said ship, and
terminating said timed interval when the after sighting scope has been rotated to reach said same predetermined azimuth angle,
said speed being determined by dividing said predetermined distance by said time of the relative movements.

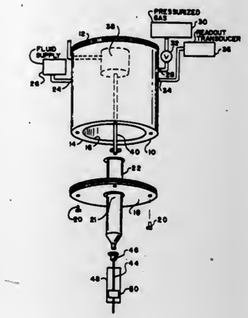
4,576,477

METHOD AND APPARATUS FOR MEASURING DENSITY PROFILES IN MICROSCOPIC TUBE FLOW

Aaron B. Corbet, Palo Alto, Calif.; Christoph Holliger, Boniswil, Switzerland, and Bruno Strul, Palo Alto, Calif., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Jun. 22, 1982, Ser. No. 390,876
Int. Cl.⁴ G01N *33/48, 21/05*
U.S. Cl. 356—39 **23 Claims**

1. Apparatus for use in determining the density profile of a flowing concentrated suspension test fluid, said apparatus comprising:
a transparent capillary tube;
means for flowing said concentrated suspsension test fluid vertically downward through said capillary tube;
light microscope means for transmitting light through said capillary tube and said flowing concentrated suspension test fluid in a horizontal direction perpendicular to the flow direction of said concentrated suspension test fluid, said microscope means comprising an array of photodiodes and means for focusing on said array an image of the



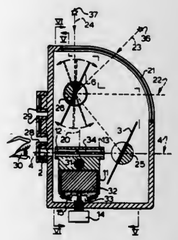
concentrated suspension test fluid flowing through said capillary tube and said transmitted light;
wherein said array of photodiodes is a horizontal linear array which extends to a greater length than the horizontal dimension of said test fluid image focused on said array; and
data acquisition and display means responsive to said photodiodes for displaying density profile information for said concentrated suspension test fluid.

4,576,478

OPTICAL INSTRUMENT FOR MEASURING ANGLES

Edwin J. Cohen, 20 Moreland Ct., Lyndale Ave., London NW2, England

Filed Aug. 24, 1982, Ser. No. 410,949
Claims priority, application United Kingdom, Sep. 11, 1981, 8127492
Int. Cl.⁴ G01C *1/10*
U.S. Cl. 356—149 **1 Claim**



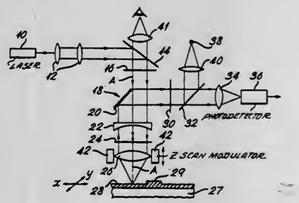
1. An optical instrument for measuring angles, comprising:
support means defining an enclosure;
an eye piece mounted externally on the support means;
a first reflector mounted internally of the support means in alignment with a horizontal axis of the eye piece;
an adjustment member pivotally mounted externally on the support means;
a movable reflector mounted on the adjustment member and disposed internally of the support means in an orientation so as to face toward the first reflector, the support means having a window intersecting lines of sight extending from the movable reflector;
measuring means for measuring pivotal movement of the adjustment member;
pendulum means mounted internally of the support means and located between the eye piece and the first reflector for pendulous movement in a swinging plane extending in the same direction as the axis of the eye piece;
and means for temporarily locking the pendulum in its lowermost, rest position relative to the support means,
said pendulum having first and second pairs of sight guide pins attached thereto at spaced locations along a guide axis which lies coincident with the axis of the eye piece when the pendulum is in its lowermost, rest position, each pair of sight guide pins including two pins spaced from the guide axis on opposite sides thereof and aligned axially with one another perpendicular to the guide axis,
whereby each of said pairs of guide pins aligns horizontally with the axis of the eye piece when the pendulum is in its lowermost, rest position.

4,576,479

APPARATUS AND METHOD FOR INVESTIGATION OF A SURFACE

Michael J. Downs, 'Karibu', Furze Hill Road, Headley Down, Hampshire, England

Filed May 16, 1983, Ser. No. 495,129
Claims priority, application United Kingdom, May 17, 1982, 8214256
Int. Cl.⁴ G01B *9/02*
U.S. Cl. 356—351 **8 Claims**



1. Apparatus for investigating the properties of a surface comprising means for generating a collimated beam of radiation having components of equal amplitude in two orthogonal directions of polarisation, birefringent focusing means for focusing radiation in two directions of polarisation at different positions along the optical axis of the apparatus, axial scanning means for altering said positions with respect to the surface under investigation and phase-sensitive detector means to receive radiation from the surface and comparator means to compare corresponding parameters of radiation received from the surface in each of said two orthogonal directions of polarisation.

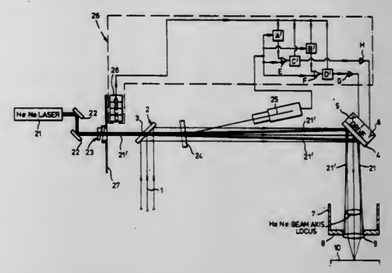
4,576,480

OPTICAL ALIGNMENT SYSTEM

Alan J. B. Travis, Abingdon, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed Jul. 18, 1983, Ser. No. 514,594
Claims priority, application United Kingdom, Jul. 26, 1982, 8221520
Int. Cl.⁴ G01B *11/26*; B23K *9/00*
U.S. Cl. 356—152 **10 Claims**

1. An optical alignment system comprising means for projecting an alignment beam of radiation along a path which forms part of an optical system including a mobile element having an alignment aperture, means for causing the alignment beam to scan around the periphery of the alignment aperture, means for receiving light returned from the periphery of the alignment aperture and producing an electrical signal related to the intensity thereof, means for determining the amplitude and phase of the electrical signal relative to those of the motion of the alignment beam around the periphery of the alignment



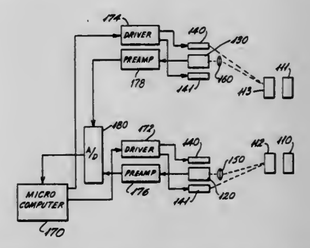
aperture and producing an alignment signal, and a servo mechanism adapted to respond to the alignment signal so as to bring the axis of the motion of the alignment beam and the center of the alignment aperture into coincidence.

4,576,481

PASSIVE OPTICAL POSITION MEASUREMENT SYSTEM

Per K. Hansen, Burlington, Vt., assignor to Position Orientation Systems, Ltd., S. Burlington, Vt.

Filed Dec. 13, 1982, Ser. No. 449,235
Int. Cl.⁴ G01B *7/03*
U.S. Cl. 356—375 **11 Claims**



1. A passive optical position measurement system for determining and displaying the position of an object within a three-dimensional work area comprising:
(a) at least two position sensing detectors positioned a predetermined spaced distance apart from one another and positioned in substantially a common plane substantially adjacent to the periphery of said work area;
(b) first reflecting means located within said work area and adapted to be attached to a first object, the position of which is to be detected;
(c) second reflecting means located within said work area and adapted to be attached to a second object, the position of which is to be detected;
(d) light source means positioned adjacent each position sensing detector, said light source means including distinct light sources, each generating a distinct different light wavelength, the number of distinct light sources corresponding to the number of objects;
(e) each reflecting means including distinct filter means positioned in front of the reflective portion, each filter means allowing light therethrough with only one of said

wavelengths and each said filter means corresponding to a wavelength different from all other filter means;

(f) means controlling said position sensing detectors and light source means whereby said light source means may be activated to emit light therefrom, said controlling means sequentially pulsing said light sources of distinct different wavelengths, said light from each respective said light source means reflecting from said reflecting means directly back to the position sensing detector adjacent to the respective said light source means and said controlling means receiving signals from said position sensing detectors to calculate and display the position of said first and second objects in three dimensions;

(g) a further light source means generating light at a distanct wavelength from the wavelengths of said light sources corresponding to said objects; said further light source means each being positioned adjacent a position sensing detector; and

(h) said controlling means pulsing said further light source means and including means for interpreting signals received by said position sensing detectors from said further light source means to allow compensation for scattering objects within said work area, the position of which is not desired to be detected and displayed.

4,576,482

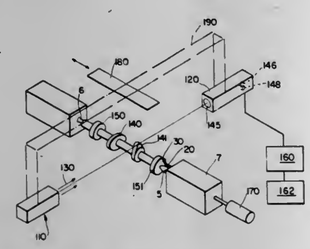
ELECTRO-OPTICAL INSPECTION

Timothy R. Pryor, Ontario, Canada, assignor to Diffracto Ltd., Canada

Continuation of Ser. No. 73,226, Sep. 7, 1979, abandoned. This application Jun. 2, 1981, Ser. No. 269,614

Int. Cl.⁴ G01B *11/24*

U.S. Cl. 356—376 **70 Claims**



1. Apparatus for determining a dimension of an object to an accuracy of at least ±0.0004 inches comprising:

an electro-optical sensor unit for sensing the positon of a portion of an object, said sensor unit comprising:

light source means for illuminating an edge of said portion of an object; lens means for forming an image of the illuminated edge of an object; a photosensitive array comprising a plurality of light sensitive elements capable of producing a signal in response to light incident thereon, said array being positioned to receive the image of an illuminated edge of an object;

electronic means for magnifying the resolution provided by said photosensitive array to a fraction of an individual light sensitive element, said electronic means including means for producing a fractional distance signal having a value indicative of the fractional distance between adjacent light sensitive elements; and

means for analyzing the signals from said light sensitive elements and said fractional distance signal to determine a dimension of said portion of said object to an accuracy of at least 0.0004 inches.

4,576,483

APPARATUS FOR MIXING AND METERING FLOWABLE SOLID MATERIALS

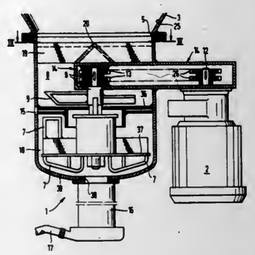
Paul Mathis; Bernhard Mathis; Franz Mathis, all of Merdingen, and Wilhelm Zimmerer, Münstertal, all of Fed. Rep. of Germany, assignors to Mathis System-Technik GmbH, Neuenburg, Fed. Rep. of Germany

Filed Jul. 19, 1984, Ser. No. 632,431

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1983, 3326247

Int. Cl.⁴ B28C *5/08*

U.S. Cl. 366—65 **41 Claims**



1. A mixing and metering apparatus for flowable solid materials, such as building materials, fertilizers, mixtures of two or more flowable solid ingredients and the like, comprising a source of supply of flowable material, said source having a lower portion and an outlet in said lower portion; and a mixing unit for the material which issues by way of said outlet, said unit having a first mixing chamber receiving flowable material from said outlet, first mixing means including at least one mobile first mixing tool in said chamber, a second mixing chamber arranged to receive material from said first chamber, a vertical drive shaft at a level below said outlet, second mixing means including at least one second mixing tool disposed in said second chamber and receiving motion from said shaft, a prime mover for said shaft, said prime mover including a motor disposed laterally of said shaft, and transmission means connecting said motor with said shaft; and an at least substantially closed case for said transmission means, said case including a portion extending into said unit.

4,576,484

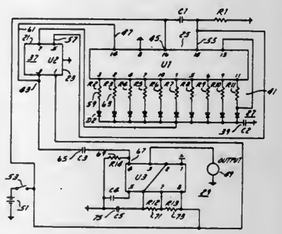
MEMORY ENHANCING APPARATUS

Mark C. Grossmeyer, N49 W6757 Western Rd., Cedarburg, Wis. 53012

Filed Jul. 5, 1984, Ser. No. 628,169

Int. Cl.⁴ G04B *23/02*

U.S. Cl. 368—245 **9 Claims**



1. Memory enhancing apparatus including:

a solid state oscillating section for generating a plurality of sequentially occurring first signals, each of said first signals having a frequency different from that of the immediately preceding signal;

a solid state frequency counting section for receiving said plurality of first signals and responsively generating a plurality of sequentially occurring second signals having a duration substantially identical one to the other, each sequential pair of said second signals being spaced by time intervals of differing durations;

a solid state dividing section coupled to said counting section and including means for determining the frequencies of said first signals;

an output section coupled to said counting section for providing a sequence of reminding signals, each of said reminding signals being in response to one of said second signals, said remining signals being of equivalent duration and of equivalent pitch one to the other, and;

a switch coupled to said counting section, said oscillating section, said dividing section and said output section and operable by a user for actuating said apparatus, said apparatus automatically and indefinitely emitting a plurality of reminding signals upon actuation of said switch, the time of occurrence of said reminding signals being independent of the actual time, said reminding signals being initiated relatively soon after actuation by said user, said signals having a substantially constant volume.

4,576,485

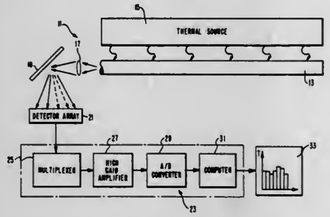
METHOD AND APPARATUS FOR MEASURING TEMPERATURE PROFILE WITH A SINGLE OPTICAL FIBER

James L. Lambert, Shaler, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 490,262, Apr. 29, 1983, abandoned. This application May 28, 1985, Ser. No. 738,517

Int. Cl.⁴ G01J *5/08*

U.S. Cl. 374—130 **10 Claims**



1. A temperature monitoring apparatus for determining a temperature profile along a single optical fiber comprising:

an optical fiber capable of internally generating a thermal radiation output in response to an ambient temperature proximate said fiber, said fiber characterized by a discrete absorption value for each wavelength of a spectral power density of the thermal radiation which absorption value for each wavelength is constant along the length of said fiber, and means for measuring the spectral power density of the internally generated thermal radiation operably associated with one end of said optical fiber, said means for measuring the spectral power density including means for separating the thermal radiation output into a predetermined number of spectral bandwidths wherein the output power of each spectral bandwidth is analyzed to provide the spectral power density of a plurality of individual spectral bandwidths wherein a temperature distribution along at least a part of the length of the optical fiber is reflected by the spectral content of the output radiation.

4,576,486

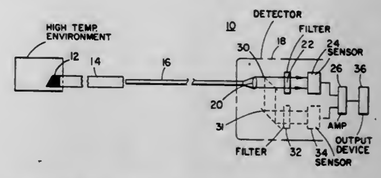
OPTICAL FIBER THERMOMETER

Ray R. Dils, Vancouver, Wash., assignor to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Filed Aug. 23, 1983, Ser. No. 525,771

Int. Cl.⁴ G01J *5/08, 9/00*

U.S. Cl. 374—131 **17 Claims**



1. A temperature measuring device comprising:

(a) an elongated high temperature optical fiber,

(b) one end of said high temperature fiber having an optically dense film covering the outer surface thereof, thereby defining a region of the covered end of said fiber exhibiting blackbody radiation behavior, said blackbody region and said high temperature fiber able to measure temperatures in the range of 500°-2400° C., said blackbody region having a length to diameter ratio in the range 1/1 to 20/1,

(c) said blackbody region emitting radiation primarily in the range of 0.3 μm-1.0 μm within said temperature range of 500°-2400° C.,

(d) said high temperature fiber having a diameter in the range of 0.025 mm to 2.5 mm and transmitting radiation in said temperature range without substantial absorption thereof,

(e) a low temperature fiber having a different diameter than said high temperature fiber and coupled to the other end of said high temperature fiber,

(f) a light detector coupled to receive light transmitted by said low temperature fiber and including a narrow-band filter for selecting a narrow optical band wherein relatively small changes in temperature within said band result in relatively large changes in intensity emitted by said blackbody region, said narrow optical band within said 0.3 μm-1.0 μm range, said light detector providing an output signal proportional to the intensity of said received light, and

(g) means responsive to said output signal for providing an indication of said temperature measurement.

4,576,487

THERMALLY RESPONSIVE ELECTRICAL CONTROL DEVICE AND MONITORING CIRCUIT THEREFOR

Gilbert Conover, Jr., Providence, and Gary R. Richard, West Greenwich, both of R.I., assignors to Independent Energy, Inc., East Greenwich, R.I.

Filed Jan. 23, 1984, Ser. No. 573,047

Int. Cl.⁴ G01K *7/00*

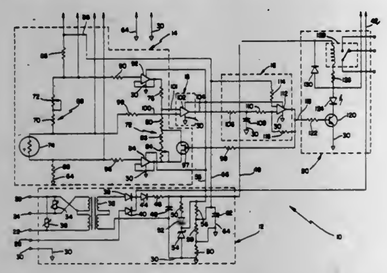
U.S. Cl. 374—183 **5 Claims**

1. A thermally responsive electrical control device for producing an electrical signal having first and second voltage levels for controlling the operation of a system actuating device for first and second operating modes thereof, respectively, said control device comprising:

(a) a DC power supply circuit;

(b) a thermally responsive bridge circuit powered by said power supply circuit, said bridge circuit having first, second, third and fourth resistance elements, said first resistance element comprising a thermistor, said second resistance element residing on the same side of said bridge circuit as said first resistance element and comprising a

variable resistance element which is manually adjustable for varying the resistance thereof over a predetermined resistance range, the degree of manual movement required for varying the resistance of said second resistance element corresponding in a substantially linear relation over substantially said entire resistance range thereof to the degree of temperature change required for varying the resistance of said thermistor over a corresponding resistance range of said thermistor in order to match said second resistance element to said thermistor, said bridge circuit being operative for producing a first electrical signal having a voltage which is related to the ratio of the



resistance of said first resistance element to the resistance of said second resistance element and a second electrical signal which is related to the ratio of the resistance of said third resistance element to the resistance of said fourth resistance element; and

(c) a comparator circuit for comparing said first signal voltage to said second signal voltage and for producing an electrical control signal having a voltage which is substantially equal to said first voltage level when said first signal voltage is greater than said second signal voltage, and a voltage which is substantially equal to said second voltage level when said second signal voltage is greater than said first signal voltage.

4,576,488

BEARING BUSHING

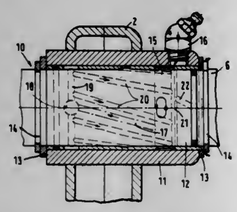
Helmut Steiner; Wilfried Ebbinghaus, both of Wiehl, and Hartmut Paech, Waldbröl, all of Fed. Rep. of Germany, assignors to Bergische Achsenfabrik Fr. Kotz & Söhne, Wiehl, Fed. Rep. of Germany

Filed Mar. 1, 1985, Ser. No. 707,094

Claims priority, application Fed. Rep. of Germany,

Int. Cl.⁴ F16C *33/10*

U.S. Cl. 384—291 **8 Claims**



1. A bearing bushing for a journal bearing of a brake shaft of a drum brake, said bearing bushing having an inside and an outside, and two ends; the bearing bushing further comprises:

a circumferential, annular grease recess disposed in the outside of said bearing bushing at one end thereof for receiving grease;

distributing channels disposed in the outside of said bearing bushing and extending essentially in the axial direction thereof; each of said distributing channels communicates with said grease recess and extends toward the other end of said bearing bushing;

respective holes in said bearing bushing; each of said holes communicates with one of said distributing channels, and is disposed at that end thereof remote from said grease recess;

a circumferential, first annular channel disposed in the inside of said bearing bushing at that end thereof remote from said grease recess; said first annular channel interconnects all of said holes;

lubricating channels disposed in the inside of said bearing bushing and extending parallel to, and between, said distributing channels; said lubricating channels communicate with said first annular channel between said holes;

a circumferential, second annular channel disposed in the inside of said bearing bushing at that end thereof remote from said holes and said first annular channel, at that end where said grease recess is provided; said lubricating channels also communicate with said second annular channel; and

at least one outlet channel provided in said bearing bushing and communicating with said second annular channel.

4,576,489

SYSTEM FOR THE CONTINUOUS LUBRICATION OF A ROLLING BEARING

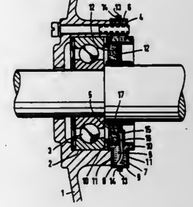
Benedikt Bentele, Hohenroth, and Manfred Heerlein, Bad Neustadt, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich and Berlin, Fed. Rep. of Germany

Filed Jun. 18, 1984, Ser. No. 621,643

Claims priority, application Fed. Rep. of Germany, Jul. 4, 1983, 3324075

Int. Cl.⁴ F16C *33/66*

U.S. Cl. 384—469 **2 Claims**



1. In a system for the continuous lubrication of a rolling bearing arranged in a bearing bore provided at a bearing bracket, which comprises a reservoir containing a supply of lubricating oil and at least one wick leading from this reservoir containing a supply of lubricating oil being suppliable to the bearing through said wick, the improvement wherein:

at least one oilproof cavity filled with oil is formed in a separate bearing cover attachable on the bearing bracket and covering the bearing bore;

a felt ring is located between the bearing cover and the rolling bearing, contacting the rolling bearing and communicating with the wick; and

said bearing cover further comprises two interconnectable cover halves having depressions extending in axial and circumferential directions, said depressions being opposite each other after the two halves have been fitted together.

4,576,490

MULTIHEAD SERIAL PRINTER

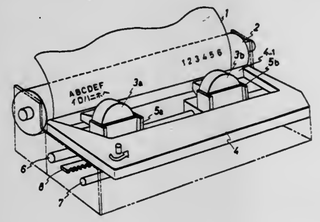
Minoru Isobe, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Dec. 10, 1984, Ser. No. 679,904

Claims priority, application Japan, Dec. 14, 1983, 58-234311; May 14, 1984, 59-88376

Int. Cl.⁴ B41J *3/44, 3/58, 3/04*

U.S. Cl. 400—82 **5 Claims**



1. A multihead serial printer comprising a plurality of printing heads mounted on a plurality of different carriages, means defining a high-speed printing mode in which a plurality of printing heads print different letters, means defining a high-density printing mode in which a plurality of printing heads print different parts of one letter, and means for changing over between said high-speed printing mode and said high-density printing mode, wherein said plurality of carriages are independently supported by a common guide, each of said carriages has mounted thereon a printing head and is respectively movable in a letter spacing direction by a different and independent driving motor, and at least one carriage comprises a shift mechanism for independently moving a printing head mounted thereon along a surface of a platen in a paper feed direction a selectable distance relative to said other carriage before its driving motor moves the carriage in said letter spacing direction said selectable movement in the paper feed direction enabling either printing of a single letter by both print heads in the high density mode or printing of two lines simultaneously in the high speed mode.

4,576,491

PRINTING HEAD

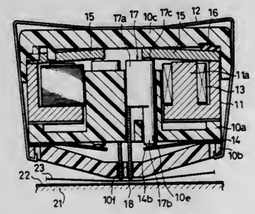
Hiroshi Mishio, Morioka, Japan, assignor to Alps Electric Co., Ltd., Japan

Filed Jun. 21, 1984, Ser. No. 622,848

Claims priority, application Japan, Jun. 21, 1983, 58-95481[U]; Oct. 20, 1983, 58-162298[U]

Int. Cl.⁴ B41J *3/12*

U.S. Cl. 400—124 **5 Claims**



1. A printing head for printing on a recording medium by impacts from the ends of linear printing wires comprising a casing defining a plurality of linear passageways arranged around a central axis, respective depressing members axially linearly movable within each of said passageways and having integral therewith centrally extending portions carrying the ends of the respective printing wires for purely linear movement, means including a resilient member for urging said depressing members in a first direction within said casing, and means including a plurality of electromagnets arranged around said passageways and magnetic armatures each contacting an end portion of a respective depressing member for selectively moving said depressing members linearly in a second direction within said passageways for projecting the other ends of selective printing wires out from said casing by linear movement thereof, and wherein the axes of said linear printing wires moved by the depressing members are located nearer to said central axis of said printing head than the axes of said depressing members.

4,576,492

MULTI-STAGE PRINTER

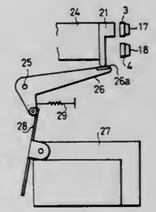
Fukuo Sugawara, Yokohama; Yasuhiko Iwane, Morioka; Fumihisa Hori, and Takashi Onozato, both of Tamayama, all of Japan, assignors to Alps Electric Co., Ltd., Japan

Filed Nov. 23, 1983, Ser. No. 554,604

Claims priority, application Japan, Nov. 24, 1982, 57-204531

Int. Cl.⁴ B41J *9/12, 11/36, 19/76, 27/08*

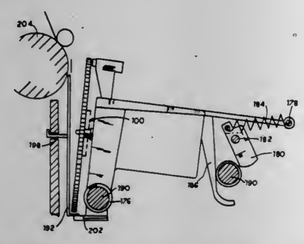
U.S. Cl. 400—146 **9 Claims**



1. In a multi-stage printer having paper moving means for moving a printing paper along a paper moving direction, a plurality of type belts including at least an upper and a lower type belt spaced apart in successive stages along said paper moving direction, each type belt having a group of types arranged thereon, means for selecting one of said plurality of type belts for printing at a line position, successive line positions being spaced apart by an inter-line pitch on said paper, hammer means for pushing out type from said selected belt to effect a desired printing operation on the paper at a line position in front of the selected belt, hammer moving means for moving said hammer means to a printing position with respect to a selected one of said plurality of type belts, and type belt moving means for moving the types on a selected belt to the printing position to be pushed out by said hammer means for printing selected characters,

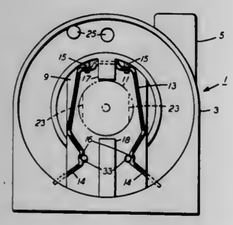
the improvement comprising control means connected to said paper moving means for advancing the paper to a visually confirmable position above said belts after printing from a first selected one of said belts at a first line position on the paper, and subsequently computing a paper moving amount and moving said paper by said computed paper moving amount for printing from a next selected one of said plurality type of belts at a second line position spaced from the first line position by said inter-line pitch, wherein said computed paper moving amount is the distance from the visually confirmable position to the second line position subtracted from the inter-line pitch, said computed paper moving amount is a variable depending upon which of the plurality of type belts is selected for printing at each of said first and second line positions.

4,576,493
LOCKING ASSEMBLY FOR PRINT WHEEL
Tadeusz Staniszewski, Budd Lake, N.J., assignor to Ziyad Incorporated, Denville, N.J.
Filed Sep. 20, 1983, Ser. No. 534,128
Int. Cl.[4] B41J *1/60*
U.S. Cl. 400—175 **6 Claims**



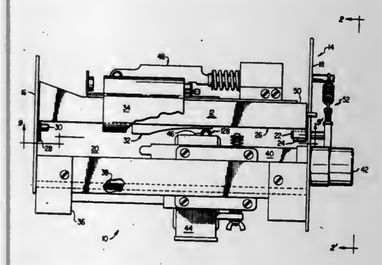
1. A carriage assembly including a print element for use in a printing device, said printing device having advancing means for advancing a sheet of paper past said carriage assembly to effect printing thereon by said print element, said carriage assembly comprising support means for supporting said print element adjacent said advancing means, said support means arranged within said printing device for tilting said print element away from said advancing means, and biasing means in operative association with said printing device for biasing said support means towards said advancing means when said print element is tilted away from said advancing means and when said printing device is operated, to thereby cause said print element to return to a position adjacent said advancing means to effect printing on a sheet of paper, said biasing means including gripping means for gripping said printing device to maintain said biasing means in a vertical orientation upon tilting of said mechanism away from said advancing means.

4,576,494
PRINT WHEEL CARTRIDGE
Henry E. Smith, Pleasanton, Calif., assignor to Xerox Corporation, Stamford, Conn.
Continuation of Ser. No. 559,540, Dec. 8, 1983, abandoned. This application Apr. 24, 1985, Ser. No. 726,916
Int. Cl.[4] B41J *1/04*
U.S. Cl. 400—175 **1 Claim**



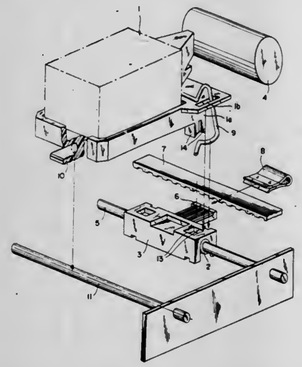
1. A printwheel cartridge for use in a printer having a carriage including printwheel release means thereon, said cartridge comprising:
a printwheel having a hub, and a pair of substantially parallel flat portions on said hub, said printwheel being housed within said cartridge for protection during handling and for being rotationally oriented for usage,
a pair of opposed abutment means each having a driving face for acting on said hub, one abutment means drives said printwheel in one direction insertion and the other abutment means drives said printwheel in a direction opposite to said one direction during removal of said cartridge from said carriage, the distance between the driving faces of said abutment means being slightly greater than the diameter of said hub for allowing free rotation of said printwheel within said cartridge during operation of said printer, and
spring retaining means having a pair of arms biased radially toward said printwheel hub for engaging said flat portions to prevent rotation of said printwheel, said arms extending substantially parallel to said one direction for allowing said cartridge to slide relative to said printwheel in order that the driving faces of said abutment means may engage said hub, and each of said spring arms includes detent means for receiving said printwheel release means for moving said arms away from said hub to free said printwheel for rotation within said cartridge.

4,576,495
DEPOSITORY/PRINTER MECHANISM FOR AN AUTOMATED TELLER MACHINE
Thomas G. Fulbright, Keller, and G. Houson Payne, III, Carrollton, both of Tex., assignors to Docutel/Olivetti Corporation, Irving, Tex.
Filed May 10, 1984, Ser. No. 608,970
Int. Cl.[4] E05G *3/00*; B41J *19/20*
U.S. Cl. 400—328 **18 Claims**



1. A depository/printer mechanism for an automated teller machine (ATM) having a depository bin, comprising:
an envelope tray means for receiving a customer envelope to be deposited in the depository bin;
a support assembly means for supporting said envelope tray means for rotation between a horizontal position and a vertical position;
a printer frame secured to said support assembly means and including a lead screw;
a printer carriage having a motor means for reciprocating said printer carriage on said lead screw between a first position and a second position, and from said second position back to said first position, said printer carriage further including:
a printer means having a printwheel for printing indicia on said envelope; and
drive means connected to said motor means for driving said printwheel against said envelope as said printer carriage reciprocates on said lead screw between said first and second positions; and
means supported by the printer carriage and the envelope tray means for rotating said envelope tray means from said horizontal position to said vertical position to thereby deposit the customer envelope in the depository bin as said motor means drives said printer carriage from said second position back to said first position following printing of said indicia.

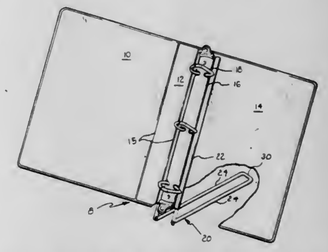
4,576,496
DEVICE FOR GUIDING A PRINT ELEMENT
Helmut Schwarz, Dachau, and Heinz Stickel, Groebenzell, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany
Filed Mar. 7, 1984, Ser. No. 586,986
Claims priority, application Fed. Rep. of Germany, Apr. 12, 1983, 3313205
Int. Cl.[4] B41J *19/00, 11/22*
U.S. Cl. 400—352 **9 Claims**



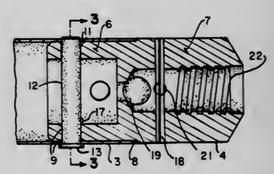
1. Apparatus for guiding a print head parallel to and facing a platen, comprising:
first and second guide rails extending parallel to the platen;
a fork-shape guide projection on the print head for receiving said first guide rail, said guide projection pivotal about and slidably movable along said first guide rail;
a guide bushing slidably mounted on and movable along said second guide rail;
a support mount seating said guide bushing therein;
connecting means for connecting said support mount to a traction device;
first latching means for accurately positioning the print head with respect to said support mount including first latching elements carried on the print head and second latch elements carried on said support mount, said first and second latch elements engaging when aligned and the print head is pivoted towards said support mount; and
second latching means carried by the print head and releasably engageable with said guide bushing.

4,576,497
EASEL TYPE RING BINDER CONSTRUCTION
Vytautas K. Beleckis, East Longmeadow, Mass., assignor to Dennison National Company, Holyoke, Mass.
Filed Aug. 15, 1985, Ser. No. 765,846
Int. Cl.[4] B42F *13/00*; A47B *23/00*
U.S. Cl. 402—73 **6 Claims**

1. Easel type ring binder which has front and back covers, a ring mechanism affixed within said binder and a binder support comprising a generally U-shaped member having a cross-bar portion at its outer end and two parallel, laterally spaced leg portions, each of said leg portions include a hinge at corresponding locations along the length thereof whereby an outer end portion of the support is pivotable relative to the inner portion thereof, at least one of said hinges including stop means for limiting the pivotable movement of the outer end portion of the support to a predetermined acute angle relative to the inner portion, said binder including means for telescopically receiving therein substantially the full length of the leg portions of said support member.



4,576,498
ASSEMBLY STRUCTURE FOR A SOIL SAMPLER
Charles L. Rassieur, St. Louis County, Mo., assignor to Central Mine Equipment, St. Louis, Mo.
Filed Feb. 14, 1985, Ser. No. 701,731
Int. Cl.[4] F16B *19/00*
U.S. Cl. 403—24 **8 Claims**

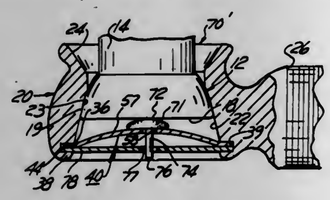


1. An improved assembly structure for a soil sampler comprising: a soil sampling tube and a head support therefor, said head support having an apertured tubular wall lower section and said sampling tube having an apertured tubular wall upper section, said sections of said tubular walls being sized to nest in male-female relation with the apertures thereof in alignment said apertures providing a passage extending substantially diametrically and completely through said head support and sample tube, and pin means removably extending completely through said passage to engage said sample tube wall apertures on substantially diametric sides of said head support, said means including a stop member and a movably mounted detent axially spaced therefrom a sufficient distance to position nesting walls of the head support and sample tube therebetween to maintain said pin means in position.

4,576,499
BALL AND SOCKET JOINTS WITH WEAR INDICATOR
Joseph E. Smith, Birmingham, Mich., assignor to O & S Manufacturing Company, Whitmore Lake, Mich.
Continuation-in-part of Ser. No. 251,253, Apr. 6, 1981, Pat. No. 4,419,027, and a continuation-in-part of Ser. No. 251,254, Apr. 6, 1981, Pat. No. 4,415,291, and a continuation-in-part of Ser. No. 263,778, May 14, 1980, Pat. No. 4,431,328, and a continuation-in-part of Ser. No. 292,634, Aug. 13, 1981, Pat. No. 4,466,755. This application Sep. 30, 1982, Ser. No. 431,635
Int. Cl.[4] B25G *3/00*
U.S. Cl. 403—27 **16 Claims**

1. A knuckle joint comprising a socket member, a bore in said socket member, a spherical surface in said bore, a ball and stud integral assembly disposed through said bore with said stud projecting through one end of said bore, a spherical surface on said ball in swivelling bearing engagement with said

spherical surface in said bore, a flat surface in said ball opposite to said stud, a cup-shaped retainer cap having an end closed by an end wall and another end open, a partially spherical surface on said end wall of said retainer cap in engagement with said flat surface on said ball, biasing means urging said retainer cap



in a direstion urging all said spherical surfaces in mutual engagement and an elongate member attached at said end wall and projecting from said retainer cap through the open end thereof a finite distance when said joint is new and of a lesser finite distance when said joint needs replacement due to wear of said bearing spherical surfaces.

4,576,500

SCAFFOLDING SYSTEM

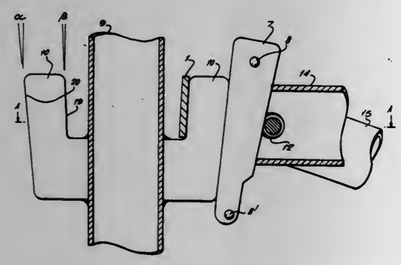
Wah Wong, 6 Sing Woo Road, 5/F, Happy Valley, Hong Kong

Filed Dec. 21, 1983, Ser. No. 564,433

Claims priority, application United Kingdom, Dec. 24, 1982, 8236848

Int. Cl.⁴ E04G *7/00*; F16B *7/00*

U.S. Cl. 403—49 **22 Claims**



1. A scaffolding system comprising:

a tubular ledger member having an end plate at at least one end and being provided with a pair of aligned slots, a first slot of said pair extending from said end plate parallel with an axis of said tubular ledge member and a second slot of said pair also extending from said end plate parallel with the axis of said tubular ledger member and located opposite said first slot, said second slot having an enlarged inner end;

a wedge for each pair of slots, said wedge being arranged to pass through said first and second slots and having a relatively wider end and a relatively narrower end and first and second retaining means located adjacent the ends of said wedge, said first and second retaining means being adapted to prevent said wedge from being removed from said first slot, said enlarged inner end of said second slot having a sufficient width to permit said narrower end of said wedge with said second retaining means to pass freely therethrough;

and a standard having at least one L-shaped hook attached to and protruding generally radially from said standard, the hook having a shorter arm attached to said standard and a longer arm arranged to receive said tubular ledger member and extend through the pair of slots thereof, said longer arm having an inner edge and an outer edge, the inner and outer edges being angularly inclined with respect to each other so that said longer arm is relatively wider at its free end than at the end attached to the shorter arm;

the wedge being tapered so that its edges simultaneously engage the inner ends of the slots and at least a substantial portion of the entire length of the outer edge of the long arm when the wedge and the long arm are disposed in the pair of slots and their relatively wider ends are proximate each other;

whereby said tubular ledger member can be secured to said hook member by extending the longer arm through said first and second slots and tapping the wedge into place between said longer arm and the inner ends of said first and second slots.

4,576,501

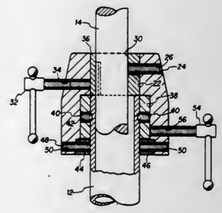
TELESCOPING ROD CLAMP

Bernard E. McConnell, Rte. 2, Box 87, Greenville, Tex. 75401

Filed Sep. 21, 1984, Ser. No. 652,667

Int. Cl.⁴ F16B *7/10*

U.S. Cl. 403—59 **9 Claims**



1. Clamping apparatus for use with a tubular member having an extension member telescopically extendable therefrom, said apparatus for retaining said extension member in a fixed position relative to said tubular member, said apparatus comprising:

a main body member having

a first bore for receiving therein an end of said tubular member; and

a second bore concentric with said first bore, the diameter of said second bore being less than the diameter of said first bore, said second bore for receiving telescopically therein said extension member;

first means for attaching said body member to said tubular member in a manner to permit rotation of said body member relative to said tubular member, yet prevent removal of said body member from said tubular member;

second means for preventing rotation of said extension member relative to said body member, yet permit telescopic extension of said extension member relative to said body member;

third means for selectively preventing rotation of said body member relative to said tubular member, independent of axial movement of said extension member relative to said body member; and

fourth means for selectively preventing axial movement of said extension member relative to said body member, independent of rotational movement of said body member relative to said tubular member.

4,576,502

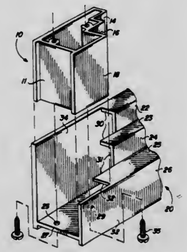
EXTRUDED METAL CORNER CONSTRUCTION

Joseph C. Bancroft, 102 Sweetwater Club Blvd., Longwood, Fla. 32750

Continuation-in-part of Ser. No. 237,394, Feb. 23, 1984. This application Jan. 16, 1984, Ser. No. 570,941

Int. Cl.⁴ E04C *2/38*

U.S. Cl. 403—231 **7 Claims**



1. A structural corner comprising:

(a) a first hollow elongate longitudinal tubing member having:

(i) a first pair of spaced apart parellel planar walls, each wall having a narrow dimension lateral to the longitudinal direction of said first tubing member, in which said narrow dimension of a first one of said pair is less than said narrow dimension of the second one of said first pair;

(ii) a planar first web integrally and orthogonally connected to and extending between said first paid of walls;

(iii) a second web spaced apart from said first web, said second web forming a first plurality of steps extending laterally away from said first web in a staggered, non-overlapping relationship with each other and integrally connected to and extending between said first pair of walls;

(b) a second hollow elongate longitudinal tubing member having:

(i) a second pair of spaced apart parallel planar walls, each wall having a narrow dimension lateral to the longitudinal direction of said second tube member, and having the same difference therebetween in said narrow dimensions as said first pair, said second pair of walls spaced apart to receive said first pair of planar walls slidably therebetween;

(ii) a planar third web integrally and orthogonally connected to and extending between said second pair of walls;

(iii) a fourth web spaced apart from said second web, said fourth web forming a second plurality of steps extending laterally away from said third web in a staggered, non-overlapping relationship with each other and integrally connected to and extending between said second pair of walls, said fourth web cut away at its terminal end in a third plurality of cut-away steps complimentary to said first plurality of steps of said second web wherein a first one of said cut-away steps is equal in height to said first one of said first pair of walls and a last one of said cut-away steps is equal in height to said second one of said first pair of walls; (iv) said first member disposed between said second pair of walls of said second member with a terminal end thereof in abutting relation with said planar third web and with said first plurality of steps of said second web disposed in abutting orthogonal relation with said third plurality of cut-away steps of said fourth web, and such that said second walls of both of said first and second wall pairs of said first and second members are in abutting relationship; and

(c) securing means for maintaining said first member in said abutting relation with said second member.

4,576,503

TORQUE TRANSMISSION ASSEMBLY

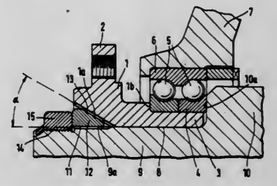
Michel A. Orain, Conflans-Sainte-Honorine, France, assignor to Uni-Cardan Aktiengesellschaft, Siegburg, Fed. Rep. of Germany

Filed Dec. 8, 1983, Ser. No. 559,205

Claims priority, application Fed. Rep. of Germany, Dec. 14, 1982, 3246233

Int. Cl.⁴ F16D *1/06*; F16C *19/08*

U.S. Cl. 403—259 **4 Claims**



1. In a device for transferring torque from a driving part to a driven part, especially from a rotary constant velocity joint of a driven motor vehicle wheel onto a wheel hub provided for the purpose of fixing said wheel, said two parts defining an axis of rotation and being at least partially coaxial relative to each other with one of said parts being provided with circumferentially spaced teeth extending parallel to said axis of the two parts and with the other of said parts being provided with a widening area in the shape of a truncated cone shell equipped with teeth arranged on said shell surface which extend at an angle relative to said axis of the two parts whose imagined extensions intersect the axis at a point, said device further including a ring having an approximately triangular cross-sectional configuration being provided between said two sets of teeth, said ring having a bore arranged coaxially with said axis and an outer surface forming a triangular area which has been provided with teeth which correspond to the teeth of the other two parts and tightening screw means threadedly engaged so as to be pressed against said ring, the improvement comprising:

that said outer surface of said ring is equipped with outer teeth which engage with said teeth on said shell surface of said truncated cone shell;

that said bore of said ring is provided with inner teeth which engage with said teeth extending parallel to said axis;

that said outer surface of said ring encloses with respect to said bore an acute angle of approximately 30°;

that between said teeth extending parallel to said axis and said inner teeth in said bore of said ring engaging therewith there is provided a radial clearance of between 0.05 and 0.2 mm when said tightening screw means is not tightened so as to be pressed against said ring; and

said ring is elastically and plastically deformed when said tightening screw means is in the tightened state.

4,576,504

ELASTICALLY CONFORMABLE TAPERED PIN-KEY

Thomas A. Hartman, 700 Capac, St. Louis, Mo. 63125

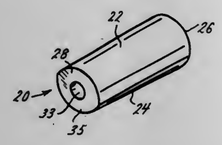
Continuation-in-part of Ser. No. 496,003, May 19, 1983. This application Apr. 29, 1985, Ser. No. 728,265

Int. Cl.⁴ F16D *1/06*

U.S. Cl. 403—318 **19 Claims**

1. An elastically conformable tangential tapered pin-key for securing a part to a shaft extending through a bore in the part, the pin-key adapted to fit into a cylindrical keyway tangentially intersecting the bore and to engage a tangential cylindri-

cal groove in the shaft shallower than the intersection of the keyway and the bore, the pin-key comprising a first cylindrical face and a second cylindrical face that converge toward the bottom of the pin-key, and a longitudinally extending cavity



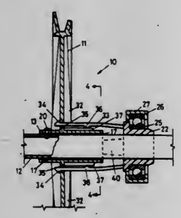
defining sidewalls sufficiently thin to allow the faces to elastically deform, the first face conforming to and engaging the surface of the keyway and the second face conforming to and engaging the surface of the groove in the shaft.

4,576,505

PULLEY MOUNTING MEANS

Robert W. Wrightson, and Anthony D. Colliver, both of St. Marys, Australia, assignors to Coolair Corporation Pte. Ltd., Singapore, Malaysia

Filed Dec. 16, 1983, Ser. No. 562,380
Claims priority, application Australia, Dec. 23, 1982, PF7388
Int. Cl.⁴ F16D *1/06*; F16B *7/10*
U.S. Cl. 403—362 **6 Claims**



1. Pulley mounting means for the mounting of a pulley moulding of polymeric material on a shaft with flat surfaces defining a square cross-sectional shape, wherein said pulley comprises a boss,

said boss having surfaces defining an aperture also of square cross-sectional shape complementary to the shape of the shaft, said surfaces comprising radially inwardly directed interference lobes which extend in an axial direction and which, upon assembly, bear centrally against respective said flat surfaces of said shaft and cause consequential deformation of the boss,

said moulding means further comprising an axially extending moulding, means joining the moulding to the boss, the moulding having tongues separated by slits, the inner surfaces of the tongues defining an aperture of said square cross-sectional shape, the outer surfaces of the tongues defining a cylindrical shape,

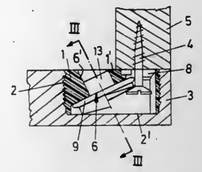
and a bearing having an inner bearing member carried by said tongue outer surfaces.

4,576,506

JOINING DEVICE

Erich Röck, Höchst, and Helmut Hollenstein, Dornbirn, both of Austria, assignors to Julius Blum Gesellschaft m.b.H., Höchst, Austria

Continuation of Ser. No. 499,430, May 31, 1983. This application Jun. 7, 1985, Ser. No. 742,129
Int. Cl.⁴ B25G *3/00*
U.S. Cl. 403—407.1 **3 Claims**



1. A joining device for joining at right angles two furniture parts, said joining device comprising:

a plastic cylindrical dowel casing adapted to be inserted into a bore in one furniture part;

said dowel casing having an open first end to be directed into the bore and a second end closed by an integral transverse portion;

an aperture extending eccentrically through said transverse portion for receipt therethrough of a head of a connecting pin to be fastened to the other furniture part;

a holding member rotatably mounted in said transverse portion of said dowel casing, said holding member including a base accessible from said second end of said dowel casing and engageable by a tool for rotation of said holding member about said base;

said holding member having a cam surface portion facing said open first end and adapted to press on the head of the connecting pin upon rotation of said holding member;

said holding member having an annular rim extending outwardly beyond said cam surface portion and abutting on said transverse portion of said dowel casing;

said dowel casing comprising an integral one-piece member of rigid construction throughout;

said dowel casing including at least one integral projection fitting over said annular rim of said holding member; and

a portion of the plastic material of said transverse portion being deformed over said annular rim, thereby retaining said holding member in said dowel casing to prevent relative axial movement therebetween.

4,576,507

TERRORIST VEHICLE BARRIER

Charles J. Terio, 3171 S. Stafford St., Arlington, Va. 22206

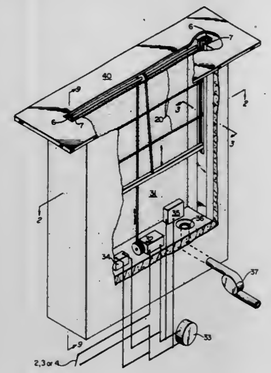
Filed Nov. 28, 1984, Ser. No. 675,556
Int. Cl.⁴ E01F *13/00*
U.S. Cl. 404—6 **11 Claims**

1. A vehicle barrier comprising:

a pair of spaced upright supports positionable in the path of a vehicle,

at least one pair of opposed shock absorbers having telescoping inner and outer portions, one of said pair attached to one of said supports, the other of said pair attached to the other said support, each said shock absorber mounted in a first aperture in one of said supports, one said portion fixed to said support, the other said portion free to reciprocate in said one portion, and

cable means connecting said at least one pair of shock absorbers, said cable means passing through a second aperture in said support adjacent said shock absorber, attaching to said reciprocating portion of said shock absorber, and passing through a third aperture in said support adjacent said shock absorber and opposite said second aperture to join itself to provide a loop around said shock absorber and around a portion of said support.

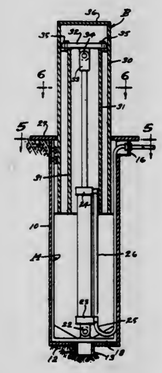


4,576,508

BOLLARD TRAFFICWAY BARRIER AND VEHICLE ARREST SYSTEM

Harry D. Dickinson, 1681 Larco Way, Glendale, Calif. 91302

Filed Dec. 6, 1984, Ser. No. 679,079
Int. Cl.⁴ E01F *13/00, 15/00*
U.S. Cl. 404—6 **30 Claims**



1. A vertically extensible and retractile bollard type trafficway barrier for arresting vehicles, and including;

a below grade level foundation of substantial depth and having an open upper end at grade level and having a vertically disposed guide means extending between said open upper end and a bottom thereof,

a mounting frame removeably inserted into the foundation through and suspended from the open upper end of the foundation and having a support over the bottom of the foundation, the support having a centered attachment carrying a power operable lift means disposed on a vertical operational axis,

a bollard of tube form centered over the power operable lift means and within the foundation and slideably engageable with said guide means for vertical disposition, the upper end of the bollard being accesible and coupled to a reciprocating rod of the power operable lift means to extend the top of the bollard from a retracted position flush with the grade level,

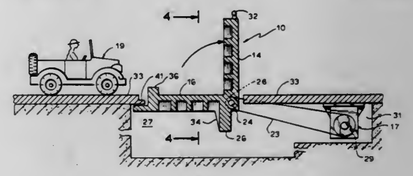
and controlled power means to actuate the power operable lift means for reciprocation of the rod and bollard between extended and retracted positions.

4,576,509

SECURITY GATE

John E. Beaty, Sr., 107 Miami Gardens Rd., Hollywood, Fla. 33023

Filed Sep. 17, 1984, Ser. No. 651,328
Int. Cl.⁴ E01F *13/00*
U.S. Cl. 404—6 **8 Claims**



1. A security gate for a vehicular driveway consisting of two sections of pavement spaced apart by an opening, the security gate comprising:

a substantially planar barrier having a straight horizontal pivot axis disposed substantially at a right angle to the direction of the driveway and at a level no higher than the surface of the pavement, the barrier pivotably supported at said pivot axis between an upper vertical postion with a side facing and for stopping approaching traffic and a lower position in which it fills the opening for providing a driving surface flush with the pavement;

a substantially planar surface element disposed perpendicularly to said barrier and rigidly attached thereto along said pivot axis, the surface element substantially congruent with said opening and operating to fill the opening when said barrier is in its upper position;

said barrier and said surface element providing an L-shaped structure having an open side above said surface element and in front of said barrier, so that a vehicle crashing into said barrier rests on said surface element and the weight of the vehicle counteracts the force of the vehicle crashing into the barrier;

a pit below the opening for receiving the surface element when the barrier is in its lower position;

means for rotating said barrier with the surface element between its upper vertical and its lower horizontal position;

means for pivotably supporting the barrier with the surface element along said pivot axis.

4,576,510

TECHNIQUE FOR THE LOCATION OF EXPANSION JOINTS WHEN CASTING A CONCRETE BED

Stig-ake Ljungkvist, Bäckvägen 26, S-541 35 Skövde, and Lennart Johansson, Snuggenäsgatan 3, S-542 00 Mariestad, both of Sweden

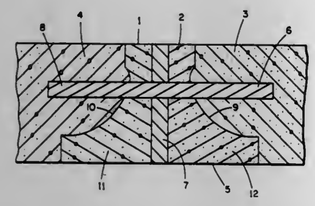
PCT No. PCT/SE83/00162, § 371 Date Dec. 28, 1983, § 102(e) Date Dec. 28, 1983, PCT Pub. No. WO83/03862, PCT Pub. Date Nov. 10, 1983
PCT Filed Apr. 25, 1983, Ser. No. 568,182
Claims priority, application Sweden, May 3, 1982, 8202755
Int. Cl.⁴ E01C *10/04*
U.S. Cl. 404—49 **7 Claims**

1. A method of forming an expansion joint when casting a concrete floor on a surface to be concreted, the method comprising:

precasting a pair of elongated concrete rails, each concrete rail having a smooth top surface, a first vertical surface being planar, and an opposite second vertical surface with an upper tongue, a lower tongue, and an intermediate groove;

locating the pair of elongated concrete rails with the first vertical surfaces of the rails facing each other and defining a space therebetween, the rails being separated by the space;

filling the space between the first vertical surfaces of the rails with filler material;



permanently positioning and levelling the pair of rails and filler material on the surface to be concreted where an expansion joint is desired, with the top surfaces of the rails at the height of the desired concrete floor surface;

pouring cement adjacent the pair of rails;

levelling the cement adjacent the pair of rails utilizing the top surfaces of the rails as a levelling guide; and

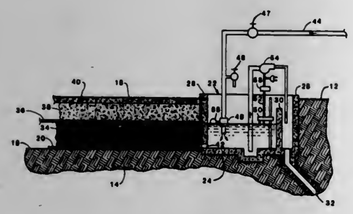
hardening the cement adjacent the pair of rails to form the concrete floor adjacent the pair of rails, with the pair of rails remaining in place as positioned and levelled, such that the pair of rails become a permanent, integral part of the concrete floor and form an expansion joint in the concrete floor.

4,576,511

APPARATUS AND METHOD OF CREATING AND CONTROLLING AN ARTIFICIAL WATER TABLE

Stephen P. Vidal, Jr., 30020 Santa Cecilia, Temecula, Calif. 93430

Filed Jul. 25, 1983, Ser. No. 517,012
Int. Cl.⁴ A01G *25/00*
U.S. Cl. 405—37 **9 Claims**



1. A structure for creating and controlling an artificial water table, comprising in combination:

a substantially watertight basin having a floor;

a ballast layer covering the floor of said substantially watertight basin to a substantially uniform thickness and including interstices through which water can flow in any direction;

a fine layer composed predominatly of fine particulate matter through which water is dispersed by capillary action;

permeable means through which water can pass readily but through which the fine particulate matter of said fine layer cannot pass, disposed on top of said ballast layer, and on which said fine layer is overlaid, whereby said permeable means prevent the fine particulate matter of said fine layer from settling into said ballast layer and clogging the interstices of said ballast layer thereby choking off the flow of water through said ballast layer; and,

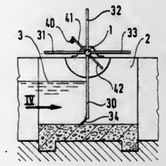
control means for maintaining in said ballast layer a present water level that is lower than said permeable means, and for raising the water level at least as high as said permeable means when subsurface irrigation is to be applied, whereby water that contacts said permeable means is drawn upward through said fine layer by capillary action.

4,576,512

ROTARY SLUICE GATE

Gilles Combes, Grenoble, and Germain Delage, Montbonnot, both of France, assignors to Alsthom-Atlantique, Paris, France

Filed Jun. 28, 1984, Ser. No. 625,477
Claims priority, application France, Jul. 4, 1983, 83 11086
Int. Cl.⁴ E02B *7/40*
U.S. Cl. 405—100 **9 Claims**



1. A rotary sluice gate for controlling the flow through a canal sluice wherein it is installed, said gate consisting of a vane wheel, said wheel including a horizontal shaft mounted transversely across the top of the sluice for rotation about its axis, said wheel having at least three radial vanes fixed about said shaft at circumferential positions, said vanes being of a length so as to be partially and sequentially immersible for operating the gate using the hydraulic energy of the canal for rotating said wheel and means for establishing within the sluice different closing surface areas, and said sluice gate including gate locking means for successively maintaining said wheel at positions where at least two of said vanes are fixedly immersed in the canal sluice.

4,576,513

PROCESS FOR TERMINAL STORAGE OF PUMPABLE WASTES

Walter Lindörfer, Kassel, and Wilhelm Jahn-Held, Staufenberg, both of Fed. Rep. of Germany, assignors to Wintershall AG, Kassel, Fed. Rep. of Germany

Filed Sep. 28, 1982, Ser. No. 425,899
Claims priority, application Fed. Rep. of Germany, Oct. 22, 1981, 3141884
Int. Cl.⁴ B65G *5/00*; B09B *1/00*; C02F *7/00*; G21F *9/24*
U.S. Cl. 405—128 **15 Claims**

1. A process for terminal storage of a water-containing pumpable waste containing a liquid phase comprising the steps of pumping said waste into a salt cavern and increasing the specific gravity of said liquid phase with a material selected from the group consisting of soluble salts which crystallize at cavern temperature with incorporation of water of crystallization from the liquid phase and are selected from the group consisting of $MgCl_2$, $MgSO_4$ and mixtures thereof in an amount sufficient to form, in the $NaCl—MgSO_4—H_2O$ system, a solid salt selected from the group consisting of (3156 g Na_2SO_4+3124 g Mg_2SO_4+1000H_2O) and (1972 g Na_2SO_4+1673 g $MgSO_4$+1000H_2O) and in the $NaCl—MgCl_2—H_2O$ system, the solid salt (1880 g $MgCl_2$+1000H_2O); solutions of said salts; organic materials which solidify at cavern temperature in the

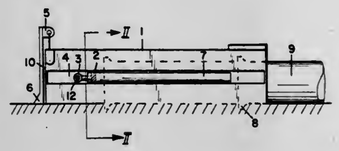
liquid phase of the pumpable waste or increase the specific gravity thereof; and adsorbents, in order to minimize convergence of the salt cavern by narrowing the difference between the specific gravity of the salt cavern walls and the specific gravity of the liquid phase of the pumpable waste by converting the liquid phase to a paste-like or solid consistency.

4,576,514

DEVICE FOR LAYING OUT A PIPELINE

Karl I. Nielsen, Hundstrupvej 42, 5750 Ringe, Denmark

PCT No. PCT/DK82/00044, § 371 Date Dec. 30, 1982, § 102(e) Date Dec. 30, 1982, PCT Pub. No. WO82/04110, PCT Pub. Date Nov. 25, 1982
PCT Filed May 19, 1982, Ser. No. 459,694
Int. Cl.⁴ F16L *1/02*
U.S. Cl. 405—154 **3 Claims**



1. A device for laying down a pipeline on land consisting of pipe sections which are pushed together, the device comprising:

a frame of sufficient cross-section to encompass the diameter of a pipe section,

a cutter mounted on the front of the frame and engageable with the earth below the frame to create a smooth bed for the pipe,

a pair of engines having two parts movable relative to each other with one part connected to said frame,

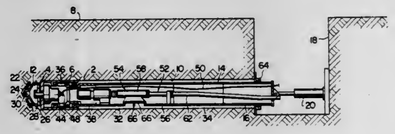
a cross member connected at each end to said other part of said engines and extending therebetween and located to engage an end of a pipe section when said engines are activated forcing the frame forward, so that said frame will be moved away from said pipe section in a longitudinal direction, thereby preparing the underlying bearing surface for said pipe section.

4,576,515

PIPE LAYING APPARATUS

Keiji Morimoto, Yokohama; Shuichi Satoh, Ibaraki; Yoshiyuki Iwai, Ibaraki; Osamu Ae, Ibaraki; Masao Suda, Tsuchira; Kiyoshi Tsuchiya, Ibaraki; Kojiro Ogata, Ishioka, and Naoki Miyanagi, Ibaraki, all of Japan, assignors to Nippon Telegraph & Telephone Public Corp. and Hitachi Construction Machinery Co., Ltd., both of Tokyo, Japan

Filed Sep. 19, 1983, Ser. No. 533,744
Claims priority, application Japan, Sep. 20, 1982, 57-162130; Sep. 20, 1982, 57-162131
Int. Cl.⁴ F16L *1/02*
U.S. Cl. 405—184 **12 Claims**



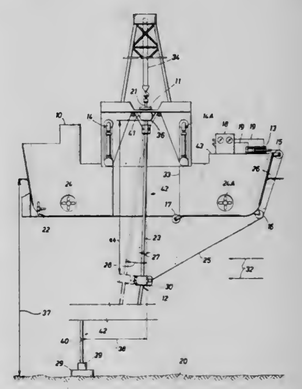
1. A pipe laying apparatus comprising: excavator means for forming a substantially horizontally extending hole in the earth, said excavator means having connected to a trailing end thereof a leading end of at least one underground pipe at least partially located in said horizontally extending hole; injector means for injecting a viscosity imparting liquid into the earth in which evacuation is being performed by the evacuator means to produce viscosity imparting liquid containing soil particles, propulsion means positioned against a trailing end of the pipe and located in a starting pit whereby, said viscosity imparting liquid containing soil particles produced by said evacuator means are conveyed rearwardly of the excavator means past an outer periphery thereof and filled in an annular gap defined between the horizontally extending hole and the pipe while said excavator means and pipe are advanced by said propulsion means; soil particle discharging means located between the trailing edge of said excavator means and the leading end of said pipe and within said pipe for introducing into said pipe the viscosity imparting liquid containing soil particles conveyed rearwardly of the excavator means past the outer periphery thereof and discharging the soil particles into the starting pit through said pipe; said excavator means including an excavator main body and rotary excavating tool means rotatably mounted at a forward end of said excavator main body, said excavator main body having drive means mounted therein for rotatably driving said tool means, said drive means including a hollow rotary drive shaft connected to said rotary excavating tool means for driving thereof; and conduit means for supplying said viscosity imparting liquid to said injector means, said conduit means including said hollow rotary drive shaft opening at one end outside said excavator main body so as to communicate with the injector means whereby the hollow rotary drive shaft is commonly used for forming a portion of the conduit means.

4,576,516

RISER ANGLE CONTROL APPARATUS AND METHOD

Early B. Denison, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Nov. 28, 1984, Ser. No. 675,668
Int. Cl.⁴ E21B *7/12*
U.S. Cl. 405—195 **8 Claims**



1. For use with a floating vessel having well drilling equipment, including an elongated riser having upper elements connected to said floating vessel by vessel connection means, and first flexible coupling means located adjacent said vessel connection means, said riser extending down from said vessel connection means to a point adjacent the ocean floor, the improvement comprising riser angle control apparatus comprising:

second flexible coupling means operatively engaged with a portion of said upper elements of said riser below said first flexible coupling means,

flexible element prime mover means carried by said vessel, and

at least one flexible element means having a first end and a second end, said first end operatively engaged with said second flexible coupling means, said second end operatively engaged with said flexible element prime mover means.

4,576,517

MARINE HEAVE COMPENSATING DEVICE

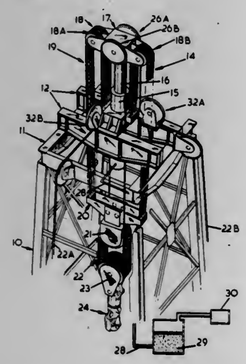
James McCann, West Lothian; James Langley, Midlothian; Ian Hopper; Steven Durham, both of Edinburgh; Thomas Scott, E. Lothian, and Eric R. McOmish, Edinburgh, all of Scotland, assignors to 501 Vickers PLC, London, England

Filed Oct. 19, 1984, Ser. No. 663,055

Claims priority, application United Kingdom, Oct. 21, 1983, 8328147

Int. Cl.⁴ B63B *35/44*

U.S. Cl. 405—195 **4 Claims**



1. A marine heave compensating device comprising

a support structure,

a hydraulic piston and cylinder unit of which the cylinder is fixedly mounted on the support structure, the piston being connected to a piston rod carrying a cross-head, first pulley means rotatably mounted on the cross-head, a yoke suspended by one or more substantially inextensible flexible members secured at one end to the yoke and passing around said first pulley means, the other end or ends of said flexible members being secured to said support structure,

and a suspension system comprising a crown block mounted on the yoke, a cable reeved around the crown block and around a travelling block on which is mounted a tool carrier, the two ends of said cable being respectively reeved around two second pulley means rotatably mounted on said cross-head, one end of the cable thereafter being connected to a draw-works and the other end of the cable thereafter being connected to a tie-down on said support structure, the number of pulley wheels in said first pulley means being the same as the number of pulley wheels in said second pulley means.

4,576,518

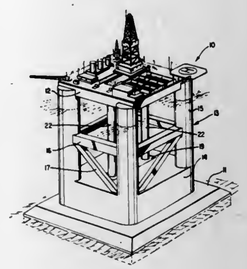
FIXED/MOVABLE MARINE STRUCTURE SYSTEM

William J. Cooke, Kelowna; James N. Dancey, Calgary; George B. DeBoon, Calgary; Norman W. Miller, Calgary, and Glen R. Yungblut, Ottawa, all of Canada, assignors to EPI Resources Ltd., Calgary, Canada

Filed Feb. 22, 1984, Ser. No. 582,257

Int. Cl.⁴ E02B *17/00*

U.S. Cl. 405—205 **28 Claims**



1. A platform for use in combination with a foundation affixable to a sea bed to provide a marine structure system for use at selected offshore locations, said platform being capable of alternately existing in a fixed mode in which the platform is releasably coupled to the foundation, and in a floating mode in which the platform is uncoupled from the foundation, said platform comprising:

at least one working deck; and

a supporting structure for supporting the deck above the water when the platform is in floating mode or in fixed mode;

said supporting structure including:

buoyancy adjustment means capable of adjusting the buoyancy of the platform from a first pre-selected buoyancy value correlatable with a first draught value suitable for floating mode operation to a second pre-selected lower buoyancy value correlatable with a second greater draught value, so that the base of the platform may be positioned sufficiently close to the foundation to permit conversion to fixed mode operation, and subsequently, while the platform remains coupled to the foundation, to a third pre-selected buoyancy value greater than the second buoyancy value, correlatable with an equivalent draught value less than the second draught value; and

securing means for releasably engaging the foundation so as to convert the platform from floating mode to fixed mode and vice-versa, by controllably releasably rigidly coupling the platform to the foundation to substantially eliminate heave, pitch and roll of the platform due to sea and wind forces, and by controllably uncoupling the platform from connection with the foundation;

wherein the securing means is capable of keeping the platform coupled to the foundation when the buoyancy value of the platform is equal to said third pre-selected buoyancy value.

4,576,519

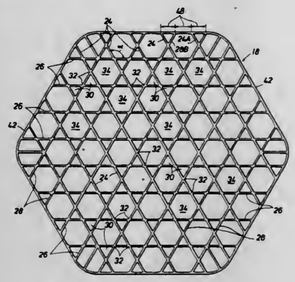
OFFSHORE PLATFORM BASE

Robert F. Mast, Auburn; William J. Cichanski, Tacoma; Francis R. Walker, Federal Way, all of Wash., and Donald D. Magura, Vancouver, Canada, assignors to Exxon Production Research Co., Houston, Tex.

Filed May 23, 1983, Ser. No. 497,389

Int. Cl.⁴ E02B *17/00*

U.S. Cl. 405—207 **3 Claims**



1. An improved base for an offshore platform, said base comprising:

a bottom plate contacting the ocean floor;

three sets of continuous, substantially parallel bulkheads, each said bulkhead having a top, bottom and outer edges, said bulkheads being attached along said bottom edge to said bottom plate, the bulkheads of each set intersecting at least a portion of the bulkheads of the other two sets at an angle of about 120° to form a substantially repeatable grid pattern of contiguous triangular and hexagonal-shaped chambers;

top plate means contacting the top edge of said bulkheads; and

perimeter wall means attached to said bottom plate and cotacting said top plate means and circumscribing and attached to the outer edges of said three sets of bulkheads so that the outer edges of said bulkheads attach to said perimeter wall means at substantially equally spaced intervals along the length of said wall means.

4,576,520

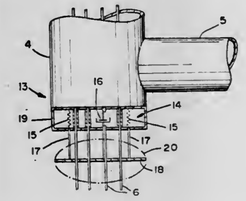
MOTION DAMPING APPARATUS

Sung L. Suh, Orinda; Gerald E. Burns, Walnut Creek, and William H. Silcox, San Francisco, all of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 464,247, Feb. 7, 1983, abandoned. This application Oct. 11, 1984, Ser. No. 659,601

Int. Cl.⁴ E02B *17/00*

U.S. Cl. 405—224 **27 Claims**



1. A motion damping apparatus for substantially dampening structural motion in an offshore structure due to secondary wave excitation, comprising:

an offshore structure; and

means for damping motion due to secondary wave excitation, comprising a mechanical energy absorbing means fixedly connected to said offshore structure and a suspended submerged mass fixedly connected to said mechanical energy absorbing means;

said submerged mass and said mechanical energy absorbing means being selected to substantially dampen the structural motion of said structure due to secondary wave excitation.

4,576,521

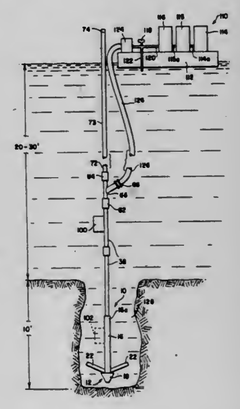
PERMANENT MOORING METHOD AND ARRANGEMENT

Joseph Conrad, 2929 Campbell St., Kansas City, Mo. 64109

Filed Dec. 30, 1983, Ser. No. 567,068

Int. Cl.⁴ B63B *21/26*; E02D *5/54*

U.S. Cl. 405—225 **29 Claims**



1. A permanent mooring method for embedding a permanent mooring device in a sea bottom, comprising the steps of:

(a) providing the permanent mooring device with a hollow tubular body having a bottom end including a nozzle;

(b) lowering the permanent mooring device into the sea until the bottom end contacts the sea bottom;

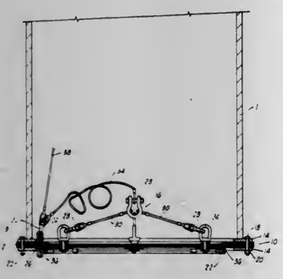
(c) transmitting fluid under high pressure, via said hollow tubular body, to said nozzle during a first time interval so as to create a fluidized area in the sea bottom around the permanent mooring device and to wash said permanent mooring device into the sea bottom;

(d) transmitting a cementitious substance, via said hollow tubular body, to said nozzle during a second time interval so as to fill the fluidized area in the sea bottom with said cementitious substance; and

(e) halting the transmission of the cementitious substance at the end of said second time interval so as to allow said cementitious substance to consolidate around the permanent mooring device, whereby to form said permanent mooring;

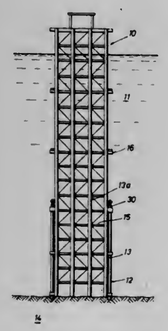
wherein, during at least one of said steps (d) and (e), the permanent mooring device is vibrated to assist in homogenizing the cementitious substance during transmission thereof to said nozzle during the second time interval in the case of vibration during step (d), and to assist in settling of the cementitious substance as it consolidates around the permanent mooring device in the case of vibration during step (e).

4,576,522
RUPTURABLE CLOSURE
Tommie A. Freeman, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.
Filed Sep. 21, 1984, Ser. No. 653,803
Int. Cl.⁴ E02B *17/00*
U.S. Cl. 405—225 **18 Claims**



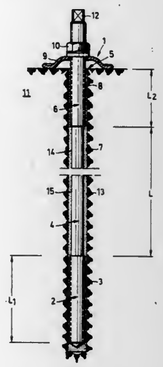
1. A diaphragm assembly for use on annular members of marine structures, said diaphragm assembly comprising:
a diaphragm;
a pair of flat annular plates retaining the diaphragm therebetween, one of the flat annular plates being secured to said annular member; and
a diaphragm rip-out assembly for removing a portion of the diaphragm from between the pair of flat annular plates, the rip-out assembly comprises:
a rip-out shim;
a rip-out eyebolt; and
a rip-out cable having one end thereof secured to the rip-out eyebolt and the other end thereof secured to the rip-out shim.

4,576,523
PILE RELEASE MECHANISM
Edward C. Smetak, Harvey, La., assignor to Exxon Production Research Co., Houston, Tex.
Filed Nov. 25, 1983, Ser. No. 555,228
Int. Cl.⁴ E02B *17/02*; E02D *5/00*
U.S. Cl. 405—227 **12 Claims**



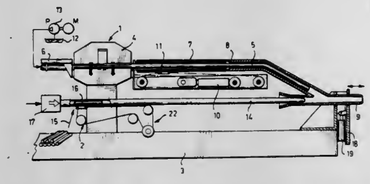
1. Apparatus, capable of releasing under load, for releasably connecting a pre-installed pile to a pile guide connected to an offshore platform and surrounding the upper end of said pile, said pile having an opening adjacent the upper end of said pile guide comprising:
a pile releasable latch mechanism supported in said pile including:
latch support means mounted in said pile;
latch support pins arranged on said latch support means;
a pair of latches rotatable on said latch support pins from a latch position in which one end of each of said latches extends through said opening in said pile to latch onto the upper end of said pile guide to an unlatched position in which said latches are retracted to positions within said pile;
a pile latch assembly connected to each of the other ends of said latches and supported on said latch support means capable of collapsing to move said latches from their extended latch positions to their retracted unlatched positions;
a slide plate capable of moving downwardly from a first to a second position releasably retainable on said latch support means in said first position; and
means on said slide plate capable of engaging said pile latch assembly cause said linkage means to collapse when said slide plate moves from its first to its second position.

4,576,524
ROCK ANCHOR ARRANGEMENT
Peter Heintzmann, Bochum; Manfred Koppers, Duisburg; Karlheinz Bohnes, and Gerhard Hecken, both of Bochum, all of Fed. Rep. of Germany, assignors to Bochumer Eisenhuette Heintzmann GmbH & Co. KG, Bochum, Fed. Rep. of Germany
Filed Apr. 11, 1984, Ser. No. 599,563
Claims priority, application Fed. Rep. of Germany, Apr. 20, 1983, 8311672[U]
Int. Cl.⁴ E21D *20/02*
U.S. Cl. 405—260 **7 Claims**



1. A rock anchor arrangement adapted to be inserted into and held by a body of hardenable adhesive in a bore provided in a rock structure, particularly in a rock formation of a tunnel or a mine construction, comprising an elongated anchoring rod including a leading end elongated portion and a trailing end elongated portion as considered in the direction of insertion of the anchoring rod into the bore, said leading end portion having at least one circumferential projection at its outer circumference; and a supporting plate arranged to contact the rock formation around the bore at an open end thereof, said trailing end portion having an end extended through said supporting plate and being displaceable relative to said plate, said anchoring rod further including an intermediate longitudinal portion extended between said leading end portion and said trailing end portion, said intermediate portion having a smooth outer surface and the length which is substantially greater than the length of said trailing end portion and said leading end portion, respectively, said leading end portion and said trailing end portion being adhesively secured with said bore by said hardenable adhesive, and said intermediate portion having on its surface and over the entire length thereof an adhesive repellent means whereby a relative displacement between said intermediate portion and said hardenable adhesive is possible, said intermediate portion being free of projections on the outer surface thereof and extending between said circumferential projection on said leading end portion and said trailing end portion, said trailing portion including a sleeve extending inwardly of the rock structure towards said leading end portion and partially surrounding said intermediate portion with a play so that said intermediate portion is guided in the sleeve and has a length additionally increased by a value corresponding to the length of said sleeve.

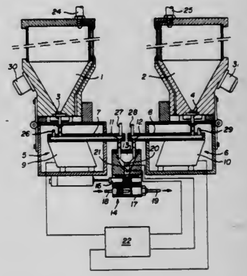
4,576,525
METHOD AND EQUIPMENT FOR PERFORMING ROCK BOLTING
Onni Issakainen, and Pertti Heikkilä, both of Tampere, Finland, assignors to Oy Tampella AB, Tampere, Finland
Filed Feb. 23, 1984, Ser. No. 583,023
Claims priority, application Finland, Apr. 26, 1983, 831423
Int. Cl.⁴ E21C *11/00*
U.S. Cl. 405—269 **3 Claims**



1. Equipment for performing cement bolting for reinforcement of rock, which equipment comprises
a feeding pipe (5) for feeding a cementing agent (12) into a drill hole (20), and
means (4 to 10) for shifting the feeding pipe (5) into the drill hole (20), characterized in that the equipment comprises
a guide (14) for shifting a capsule/capsules (16) from a charging station (15) into the drill hole (20),
means (22) for moving the guide axially back and forth,
means (17) for shifting the capsule/capsules (16) along the guide (14), and
a nozzle (9) to be positioned at the mouth of the drill hole (20), through which nozzle both the guide (14) and the feeding pipe can be shifted alternatingly into the drill hole (20).

4,576,526
ARRANGEMENT FOR SUPPLYING POWDERED MATERIAL TO A SPRAYING DEVICE
Niklaus Müller, Rosenau, France, and Daniel Audemars, Echandens, Switzerland, assignors to Castolin S.A., Saint-Sulpice, Switzerland
Continuation of Ser. No. 361,890, Mar. 25, 1982, abandoned. This application Jan. 18, 1985, Ser. No. 693,220
Claims priority, application Switzerland, Apr. 1, 1981, 2216/81
Int. Cl.⁴ B65G *53/40*
U.S. Cl. 406—75 **5 Claims**

1. A powder transport system for supplying powdered material to a flame spray device for thermal spraying which comprises,
at least two powder storage containers,
each having an exit orifice for delivering powder therefrom,
at least two powder feed means each comprising a substantially horizontally disposed elongated enclosed channel member, each having means for supplying inert protective gas therethrough,
each coupled at one end to the exit orifice of a corresponding storage container for receiving powder therefrom,
each of said enclosed channel members having an exit port at its other end coupled to a single buffer chamber of a substantially frustonconical shape which opens upwardly,
each of said enclosed channel members being adapted to vibrate along its length to effect powder delivery to said buffer chamber,
vibrating means mechanically coupled to each of said enclosed channel members for adjustably controlling the vibration along the length of each of said enclosed channel members,
level-detecting means disposed within said buffer chamber

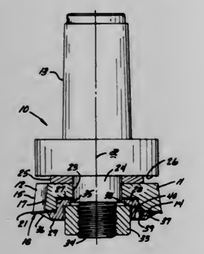


adapted to provide a level range over which the depth of said powder in said chamber is to be controlled,
an exit orifice at the bottom of said buffer chamber,
a powder-injection device having a transfer duct for receiving said powder coupled to said chamber exit orifice and a selector device cooperating therewith for varying the flow of powder between the buffer chamber and the injection device,
said injection device having an inlet end for receiving carrier gas and an outlet end for delivering powder suspended in said carrier gas to a flame spray device,
and a control device coupled to each of the vibrating means and responsive to the level-detecting device in the buffer chamber for regulating powder feed to said buffer chamber via said vibrating means either together or separately, whereby to maintain the powder level in the buffer chamber at the desired level and thus achieve substantially constant rate of powder flow to said flame spray device.

4,576,527
SHAPER CUTTER
Edward W. Haug, Rockford, Ill., assignor to Barber-Colman Company, Rockford, Ill.
Continuation-in-part of Ser. No. 515,795, Jul. 21, 1983, abandoned. This application May 31, 1984, Ser. No. 615,775
Int. Cl.⁴ B23F *21/28*
U.S. Cl. 407—28 **36 Claims**

1. A tool for cutting metal, said tool comprising, an elongated body having a circular cross section and a forward end, a plurality of outwardly projecting teeth formed on the periphery of said forward end portion of said body and angularly spaced around the latter, the forward end of said body being concave and forming a non-planar surface, a thin sheet metal wafer overlying said forward end surface of said body and having a plurality of cutting teeth formed along the periphery thereof and being equal in number to the teeth on said body, each cutting tooth on said wafer being larger at its ends, sides

and roots than the corresponding tooth on said body whereby the cutting teeth on the wafer extend slightly beyond the ends, sides and roots of the teeth on the body, said wafer being flexible to confrom to the shape of said forward end surface and to lie against the latter, and means adjacent the forward end portion of said body and disposed radially inwardly of the cutting teeth on said wafer for flexing said wafer to cause the



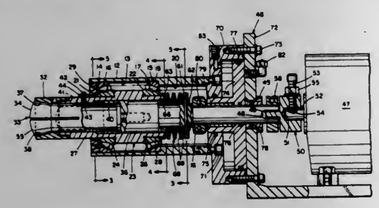
wafer to lie against said concave forward end surface and to clamp the wafer to said body, the cutting teeth on said wafer when the wafer is flexed generally conforming to the teeth on said body whereby the cutting teeth on the wafer are backed by the teeth on the body and are operable to cut a workpiece as the body is advanced longitudinally in such a direction as to maintain said wafer cutting teeth against said body teeth.

4,576,528

ROTARY TOOL HOLDER

Phillip A. Sollami, 1300 E. Pine, Herrin, Ill. 62948

Filed Mar. 13, 1984, Ser. No. 588,922
Int. Cl.[4] B24B *19/00*; B23Q *5/22*; B23B *31/24*
U.S. Cl. 408—140 13 Claims



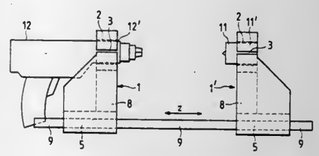
1. A rotary tool holder comprising:
a housing;
a substantially cylindrical spindle mounted for rotation within said housing;
a collet within said spindle moveable between an open and a closed position for holding the tool;
a shaft connected to said collet for moving said collet between the open and closed positions and for rotating said collet;
means for rotating said shaft;
means for longitudinally moving said shaft into said open and closed positions; and
means for transferring torque from said rotating shaft to said spindle for rotating said spindle, said means for transferring torque including means for limiting said torque transmitted to a predetermined maximum level providing for protection of the holder from an overload force on said spindle.

4,576,529

MULTIPURPOSE CLAMPING DEVICE FOR WORKPIECES, PARTICULARLY OF WOOD

Hans Forrer, Feldweg 854, Oberhelfenschwil, Switzerland

Filed Mar. 9, 1984, Ser. No. 588,042
Claims priority, application Switzerland, Mar. 9, 1983, 1274/83
Int. Cl.[4] B23P *23/09*
U.S. Cl. 408—240 7 Claims



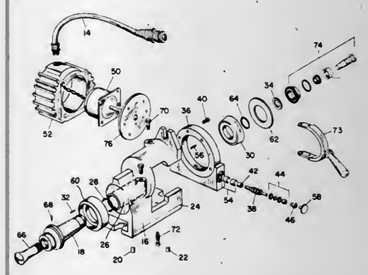
1. A multi-purpose clamping device for a modular tool comprising:
first and second clamping jaw members each having a front face with a modular tool clamping receiving opening which are each aligned with each other, guide means on which said jaw members are movable toward and away from each other without canting, securing means for securing a tool in the respective receiving opening, said first and second clamping jaw members each having a spindle opening therethrough extending parallel to the direction of movement of said jaw members, a spindle with opposite threads in said spindle openings of said jaw members, and a quick-action clamping mechanism in each jaw member engageable with said spindle for movement of a respective jaw member along said spindle with rotation of said spindle.

4,576,530

INDEXING DEVICE

Gene F. Haas, 18819 Dylan St., Northridge, Calif. 91324, and Kurt P. Zierhut, 10155 Nevada Ave., Chatsworth, Calif. 91311

Filed Mar. 5, 1984, Ser. No. 586,425
Int. Cl.[4] B23D *7/08*
U.S. Cl. 409—223 5 Claims



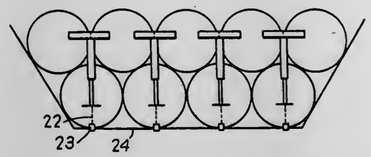
1. An indexing fixture for rotative positioning of a work comprising a casting mounting, a rotating spindle mounted in said mounting, a collet in said spindle, a worm and worm gear adapted to rotate said spindle, a synchronous stepping motor adapted to control the rotation of said worm, the motor and worm connected by a universal joint, wherein the worm and worm gear are contained in a housing, O-rings inside the housing adapted to exert pressure between the worm gear and worm gear housing.

4,576,531

DEVICE FOR STOWING LOADS OF LARGE-SIZED BALES OF FODDER ON A VEHICLE

Pascal Cosnet, "Le Patis", 72550 Coulans sur Gee, France

Filed May 6, 1985, Ser. No. 731,144
Claims priority, application France, May 9, 1984, 84 07147
Int. Cl.[4] B60P *7/08, 1/64*; B61D *3/16*; A01D *85/00*
U.S. Cl. 410—36 10 Claims



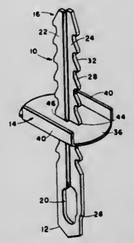
1. Device for stowing loads of large-sized bales of fodder, and in particular round bales, on a vehicle, wherein said device is composed of a T-shaped movable member constituted of at least one horizontally-extending elongated element in the middle part of which is perpendicularly fixed the upper end of a vertical arm, said horizontal element being equipped at each end with at least one needle which is engaged in two juxtaposed bales and said arm being equipped at its lower end with an anchoring member adapted to be engaged in at least one bale situated below two juxtaposed bales receiving the needles of the horizontal element, said device comprising two guiding members for a strap, one member of which is situated in the center of the horizontal element along the vertical axis thereof, the other member being situated at the lower end of the arm on the opposite side of the anchoring member and, said strap being provided with means of stretching it and fastening it to the vehicle chassis.

4,576,532

INSULATION STUD

Michael R. Hanson, Tulsa, and Frank C. Bryant, Sapulpa, both of Okla., assignors to Hanlock, Inc., Tulsa, Okla.

Continuation-in-part of Ser. No. 529,559, Sep. 6, 1983, abandoned. This application Mar. 13, 1985, Ser. No. 711,187
Int. Cl.[4] E04B *1/62*; F16B *21/04*
U.S. Cl. 411—352 12 Claims



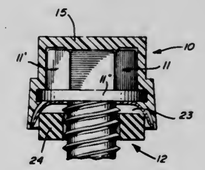
1. A retainer assembly for securing a sheet-like material to a wall comprising an elongated stud having an inner end adapted to be welded to said wall and extending outwardly therefrom so as to be perpendicular to said wall, said stud having a pointed outer end whereby said sheet-like material can be impaled thereon and positioned so as to be adjacent said wall, said stud being provided with a longitudinal slit extending from the outer pointed end to a location adjacent the inner end so as to form a pair of longitudinal fingers, said stud being bent adjacent said location whereby said fingers are laterally offset from each other, said fingers being provided with alternate outwardly extending teeth and recessed notches along the longitudinal sides of the fingers opposite from said slit, and a thin flat plate provided with a central opening therein such that the pointed end of said stud can be inserted through said central opening to permit the plate to be slidably received on said stud, said central opening in said plate being formed by a pair of rectangular openings laterally offset with respect to each other and overlapping, the maximum dimension of the opening across the opposite ends of the rectangular openings being approximately equal to the distance between the notch on one finger and an opposed notch on the other finger, whereby, when said plate is urged in a direction from the pointed end of the stud towards the inner end thereof, said fingers will move in a scissors fashion as the plate passes over the teeth on the fingers, and whereby, when the plate comes to rest in a desired position in a pair of opposed notches on the fingers, the fingers will spring back towards their original disposition to lock the plate in the desired position.

4,576,533

ATTACHMENT CAP FOR FASTENER HEAD

George R. Chartier, Laval, Canada, assignor to O. J. Ouellette Inc., Quebec, Canada

Filed Jun. 25, 1984, Ser. No. 624,364
Int. Cl.[4] F16B *19/00, 33/00*
U.S. Cl. 411—373 5 Claims



1. A cap for securement over the head of a fastener, and wherein an annular dome-shaped cover is located under said fastener head to compress a flexible annular washer disposed about a fastener shank, said cap being molded of synthetic resinous material and having a hollow head portion and a cap attachment portion, said head portion having a top wall and an integral annular side wall, said attachment portion being formed integral with said annular side wall and disposed circumferentially below said side wall, said attachment portion having an annular channel in an inner wall thereof for receiving in snap-fit engagement therein a circumferential flange of a fastener head to secure said cap over the fastener head, a circumferential shoulder portion formed below said inner annular channel, and an outwardly flared annular tapering skirt depending from said shoulder portion, said skirt having a concave outwardly tapering inner wall and a straight sloped outer wall whereby said skirt is of decreasing thickness in a direction away from said shoulder portion to define a flexible lip, said skirt being of a length sufficiently long to receive thereunder said dome-shaped cover and flexible annular washer, said skirt being thinner in thickness than said head portion and more resilient for greater flexibility.

4,576,534

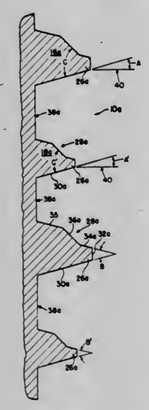
THREAD FORM FOR SOFT MATERIAL

Gerald D. Barth, South Elgin, and David P. Wagner, Geneva, both of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

Filed Aug. 4, 1983, Ser. No. 520,108
Int. Cl.[4] F16B *33/02*
U.S. Cl. 411—412 13 Claims

1. A threaded fastener comprising a shank having an enlarged head at one end and an entering portion at the other end, at least one thead on said shank, said thread including an upper and a lower flank, said upper flank having a compound surface larger in area than that of said lower flank, said compound surface comprising a plurality of three smooth helical

surfaces, two inner surfaces of said three helical surfaces forming an obtuse included angle and forming a continuous helical protrusion on said thread, an outer end of said three surfaces forming an acute angle with said lower flank, whereby said



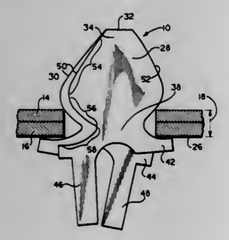
thread has an assymetrical transverse cross-section adapted to increase surface friction between said upper flank and workpiece material which is deformed upon tightening of said fastener after contact between said head and a workpiece.

4,576,535

NONRESILIENTLY DEFORMABLE FASTENER

Robert Howering, Montville, N.J., assignor to Eaton Corporation, Cleveland, Ohio

Filed Nov. 16, 1983, Ser. No. 552,534
Int. Cl.⁴ F16B *19/08*
U.S. Cl. 411—503 **4 Claims**



1. A one-piece sheet metal dart type fastener for joining and retaining two or more panels having a combined axial thickness within a given range and aligned apertures of a given diameter, said fastener comprising:

first and second generally flat sidewall portions folded over upon themselves in close side-by-side relation and defining a bight portion therebetween, each of said sidewall portions comprising a nose section adjacent said bight portion, a panel engaging section extending downwardly from the nose section, a base section extending downwardly from the panel engaging section and a tab section extending downwardly from said base section, the two tab sections extending downwardly from opposite transverse ends of the base portions, the sidewalls of said engaging sections each defined by an edge on at least the transverse side thereof opposite the transverse base end from which the tab portion extends comprising a first segment extending transversely outwardly and downwardly from said nose section, a second segment extending transversely inwardly and downwardly from said second segment and a third segment extending transversely outwardly and downwardly from said second segment;

in the initial nondeformed configuration of said fastener, said sidewall portions aligned to define in projection a dart shape wherein the junctions of said first and second edge segments of said first and second sidewall portions are transversely separated by a distance equal to or less than the diameter of said apertures in said panels and at least the lower parts of said third edge segments on said first and second sidewall portions are transversely separated by a distance greater than the diameter of said apertures in said panels;

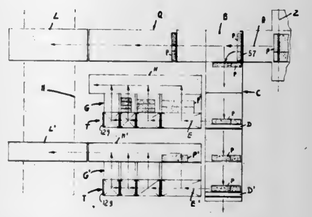
said tab portions adapted to be transversely moved relative to one another to nonresiliently deform said bight portion with said first and second sidewall portions defining in projection a configuration wherein axially aligned parts of the second edge segments of said first and second wall portions are transversely separated by a distance greater than the diameter of said apertures and said panel.

4,576,536

MACHINE FOR STACKING AUTOMATICALLY PACKS OF PANELS OF DIFFERENT SIZES ON RESPECTIVE LIFTING PLATFORMS

Gino Benuzzi, Bologna, Italy, assignor to Giben Impianti S.p.A., Pianoro, Italy

Filed Jun. 22, 1983, Ser. No. 506,939
Claims priority, application Italy, Jun. 24, 1982, 3461 A/82
Int. Cl.⁴ B65H *31/24, 35/00*
U.S. Cl. 414—51 **20 Claims**



1. A machine for stacking automatically on respective lifting platforms packs of panels (P) of different sizes coming, for example, from a cutting line of a dividing machine (Z) having a working plane, comprising

(a) means (A) for removing, from a cutting line of a last said dividing machine, the packs of panels cyclically resulting from each dividing operation and arranged side by side;

(b) switching station means (B) for simultaneously and selectively feeding the packs of panels, arranged side by side, to a stacking machine (Q), or, after an optional 90° rotation of the packs, to a transport runway (C) where said packs will be arranged either side by side if they have been previously rotated, or in sequence;

(c) at least one lifting platform (T) arranged in one or more rows at right angles to said transport runway (C) to which said packs of panels are fed after said optional 90° rotation;

(d) means (D, D') operating transversely of said transport runway (C), in registry with each lifting platform, to stop the packs of panels and to feed said packs of panels, in a single row and properly spaced apart, to receiving means (E, E');

(e) said receiving means (E, E') operating longitudinally above each row of lifting tables, and adapted to sort and stack softly said packs onto the platforms (T), so that

panels of the same size will be stacked at one time on each lifting platform; and

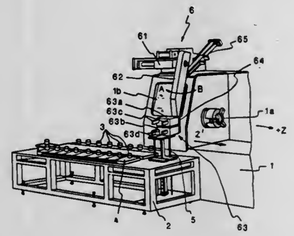
(f) means (G, H) for removing the stacks of panels formed on the lifting platforms.

4,576,537

ROBOT SYSTEM

Hajimu Inaba, Hino, and Nobutoshi Torii, Hachioji, both of Japan, assignors to Fanuc Ltd., Minamitsuru, Japan

Continuation-in-part of Ser. No. 396,613, Jul. 9, 1982, abandoned. This application Mar. 21, 1985, Ser. No. 714,345
Claims priority, application Japan, Jul. 14, 1981, 56-109567
Int. Cl.⁴ B25J *9/00*; B23Q *7/04*
U.S. Cl. 414—222 **2 Claims**



1. A robot system for use with a machine tool having a spindle, comprising:

a robot having a body for being mounted on the machine tool, an arm pivotally mounted on said body and rotatable in a plane transverse to an axial direction of the spindle of the machine tool, and a hand mounted on a distal end of said arm for gripping a workpiece and transferring the workpiece to the machine tool;

a workpiece feeder disposed adjacent to said robot and movably supporting a succession of pallets for carrying unmachined and machined workpiece thereon, said workpiece feeder including a first mechanism for moving said pallets along a path on said workpiece feeder and for positioning said pallets, one at a time, in a first position in which an unmachined workpiece can be picked up from the pallet by said hand or a machined workpiece can be unloaded from said hand onto the pallet, and a second mechanism for moving the pallet toward said hand in said first position for allowing said hand to pick up the unmachined workpiece and unload the machined workpiece, and for moving said pallet away from said hand, and a DC motor for driving said second mechanism;

a first circuit for controlling said DC motor; and

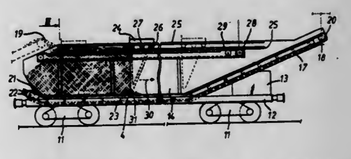
a second circuit for controlling said first circuit on the basis of a distance L of movement of said pallet toward and away from said hand, said distance L being derived from the number N which is the maximum number of workpieces carried on said pallet, the distance Zn that said pallet with the N workpieces carried thereon moves until an uppermost workpiece reaches a second position in which the uppermost workpiece can be picked up by said hand, the distance Z1 that said pallet moves until a lowermost workpiece reaches said second position, and the number m of workpieces currently being carried on said pallet, said second circuit being capable of storing, in advance, data on said number N and said distances Zn, Z1 and monitoring said number m.

4,576,538

BOX CAR

Josef Theurer, Vienna, and Manfred Brunninger, Linz, both of Austria, assignors to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria

Filed Aug. 15, 1983, Ser. No. 523,125
Claims priority, application Austria, Sep. 23, 1982, 3554/82; Mar. 11, 1983, 879/83
Int. Cl.⁴ B65G *67/00*
U.S. Cl. 414—339 **14 Claims**



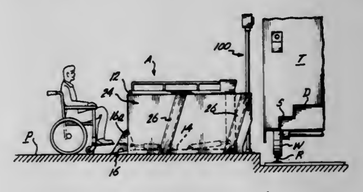
1. A box car for storing bulk material and useful for incorporation in a freight train preceding a ballast cleaning machine for transporting waste material coming from the machine, the box car comprising a frame defining a plane, a box open on top and at the bottom, the box being mounted on the frame for storing the bulk material and having fixed input and output ends for respectively charging the bulk material into the box and discharging the bulk material from the box, a conveyor band arrangement forming a bottom wall of the box immediately below the open bottom and extending in the direction of elongation of the box car, the conveyor band arrangement having a width substantially equal to that of the lower box portion and comprising a first portion adjacent the input end and extending in the plane, the first portion being arranged to receive the bulk material charged into the box at the fixed input end, and an ascending portion extending in said direction from the first portion of the conveyor band arrangement and projecting beyond the output end, a drive means for the conveyor band arrangement, a bulkhead partition extending in the box transversely to said direction, the bulkhead partition being arranged above the first portion of the conveyor band arrangement, and means for displaceably moving said bulkhead partition in said direction for dividing the box into compartments, the bulkhead partition having a lower end fixedly spaced from the first conveyor band arrangement portion to define a port therewith.

4,576,539

WHEELCHAIR PASSENGER LIFT APPARATUS FOR TRANSIT STATIONS

Harold R. Williams, Maple Valley, Wash., assignor to Lift-U-Inc., Kent, Wash.

Filed Jan. 17, 1984, Ser. No. 571,903
Int. Cl.⁴ B66B *11/04*
U.S. Cl. 414—391 **14 Claims**



1. A curbside lift for transferring wheelchair passengers between ground at curbside and the deck of a transit vehicle stopped with its pedestrian entryway aligned with said curbside lift comprising:

(a) a spaced pair of wall members defining a wheelchair

passenger corridor alignable with the entryway of a stopped transit vehicle, each of said wall members housing elongate guide tracks, the elongate guide tracks housed in one of said wall members being aligned with the elongate guide tracks housed in the other of said wall members;

(b) a lift car positioned between said wall members, said lift car including:

(1) a wheelchair platform; and,

(2) guided elements mounted on said wheelchair platform, said guided elements being mounted in said elongate guide tracks, said elongate guide tracks being positioned such that the combination of said elongate guide tracks and said guided elements controls the path of motion of said lift car between a lowered position substantially at ground level and a raised position substantially at transit vehicle deck level; and,

(c) elevator means for supporting the loaded weight of said lift car and raising and lowering said lift car between said lowered position and said raised position, said elevator means including:

(1) driven chain-engaging sprockets rotatably mounted on said lift car and positioned in said elongate guide tracks;

(2) driving means coupled to said driven chain-engaging sprockets for rotating said driven chain-engaging sprockets in synchronism;

(3) idler chain-engaging sprockets rotatably mounted and positioned in said elongate guide tracks; and,

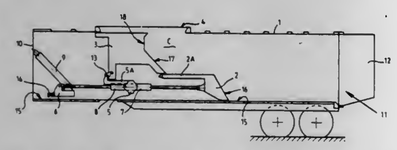
(4) stretches of roller chains mounted in said elongate guide tracks, said stretches of roller chains being sized and positioned such that a stretch of roller chain partially encircles a pair of chain-engaging sprockets formed from one of said driven chain-engaging sprockets and one of said idler chain-engaging sprockets, said stretches of roller chains partially encircling their respective pairs of chain-engaging sprockets such that a Z-shaped reversal of direction occurs as the roller chain wraps around the pair of chain-engaging sprockets.

4,576,540

DEVICE FOR COMPACTING CONTENTS OF HIGH CAPACITY SEMITRAILER BODY

Christian Derain, Conches, and Henri R. Saint-Marc, Evreux, both of France, assignors to Societe Nouvelle des Bennes Saphem, La Barre-en-Ouche, France

Filed Mar. 15, 1984, Ser. No. 589,837
Claims priority, application France, Mar. 16, 1983, 83 04313
Int. Cl.⁴ B60P *1/00*
U.S. Cl. 414—511 **11 Claims**



1. A compacting device located forwardly of a body, especially a closed body of a high capacity semitrailer for receiving by gravity mainly household or industrial waste products as well as any other products of low density, through an opening formed in a forward upper part of such body, comprising two parts moveable one with respect to the other including a compacting shield capable of moving above the bottom of the body and an apron capable of moving above said shield, controls of motions of said shield and said apron, in a first phase move, and of motion of said shield and said apron, in a second phase move, for total ejection of the waste products after transportation, and two other moveable supporting parts including a supporting carriage and a slider supporting said controls, said controls including jacks, one jack supported both on said supporting carriage and said shield, another jack supported on said supporting carriage and said slider, and a further jack supported on said slider and said body.

4,576,541

SAFETY LATCH FOR A CARGO PLATFORM

Jeffery L. Dunn, Covington, Ky., and Michael W. Durham, Milford, Ohio, assignors to Leyman Manufacturing Corp., Cincinnati, Ohio

Filed Feb. 29, 1984, Ser. No. 584,595
Int. Cl.⁴ B60P *1/46*
U.S. Cl. 414—545 **13 Claims**



1. A cargo platform assembly comprising

a mast assembly having a mast guide and a mast movably supported by said guide,

a motor for moving said mast relative to said mast guide,

a platform pivotally connected to said mast, said platform being swingable relative to said mast between an open position and a closed position,

a flexible tension member having one end connected to said platform and the other end connected to said mast, and a compounding wheel rotatably mounted at a stationary position relative to ground, said compounding wheel and said flexible tension member being relatively selectively positionable between a first position where the tension member is engaged by the compounding wheel for swinging the platform between open and closed positions as said mast moves relative to said mast guide and relative to ground, and a second position where the tension member cannot be engaged by the compounding wheel when the mast is moved relative to the mast guide for raising and lowering the platform as an elevator, and

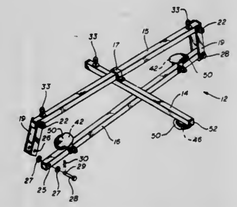
a safety latch having one portion mounted on said mast and another portion mounted on said cargo platform, one of said two portions of said safety latch being biased against said flexible tension member so that it is latchingly connected with the other of said two portions when said platform is in its closed position and when said tension member is relaxed to prevent swinging movement of said platform toward its open position, and so that when said tension member is taut one of said two portions of said safety latch is disconnected from the other of said two portions of said safety latch to permit swinging movement of said platform toward its open position from its closed position.

4,576,542

DEVICE FOR LIFTING REMOVABLE AUTOMOBILE TOPS

James M. Brasell, 20515 Marilyn La., Spring, Tex. 77388, and Ernest Nichols, Jr., 11610 Taylorcrest, Houston, Tex. 77024

Filed Apr. 23, 1984, Ser. No. 603,153
Int. Cl.⁴ B66C *1/62*
U.S. Cl. 414—626 **20 Claims**



1. Apparatus for lifting removable tops from vehicles comprising;

a frame releasably attachable to a vehicle top,

said frame having substantially parallel upper and lower members connected together and operable to be positioned with said lower member beneath said top and said upper member above said top,

a pair of supporting and lifting members supported in spaced relation along said lower frame member and extending upward therefrom for engaging the underside of the roof portion of said top,

at least one member supported on said upper frame member and spaced laterally therefrom for engaging the top of the roof portion of said top, and

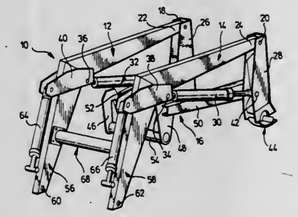
said pair of supporting and lifting members and said one engaging member being operable on application of an upward lifting force to lift said top and balance the same in an elevated position.

4,576,543

KNOCK-DOWN CONSTRUCTION FOR FRONT END LOADER

James R. Kuchyt, Fort Erie, and Paul G. High, St. Catharines, both of Canada, assignors to KMW Products Limited, St. Catharines, Canada

Filed Nov. 7, 1983, Ser. No. 549,065
Int. Cl.⁴ B66F *9/00*
U.S. Cl. 414—722 **19 Claims**



1. In a power loader arrangement having two spaced-apart boom members, a sub-frame assembly for mounting said boom members at their rearward portions on a power vehicle and at least one cross-member for mechanically interconnecting said boom members at their forward portions and maintaining a predetermined spacing therebetween, said sub-frame assembly including two side arms for positioning alongside a power vehicle and mechanically interconnected at their front portions to support vertical loads when in use, each boom member being hollow and having spaced-apart inner and outer plates secured together along corresponding upper and lower edges, means at each cross-member end portion for mechanically securing the respective cross-member end portions to the respective inner and outer plates,

said securing means comprising:

means associated with said inner plate of said boom arm and means associated with a respective end portion of said cross-member which are adapted to cooperate to resist shear and torsional forces exerted on said interconnection during usage of said loader,

means associated with said respective cooperating means of said boom arm and cross member end portion to provide for a transfer of a portion of said torsional and shear forces and longitudinal forces exerted along said cross-member during loader use from said inner plate to said outer plate of each boom arm and

mechanically releasable fastener means at both end portions of said cross member for coupling said respective cooperating means and in conjunction with said

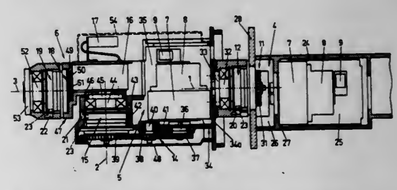
transfer means providing a secure interconnection, said mechanical securement of the at least one cross-member to said boom arms and the mechanical interconnection of the sub-frame providing for a compact disassembled loader arrangement.

4,576,544

SWIVELLING HANDLE WITH THREE AXES OF ROTATION FOR AN INDUSTRIAL ROBOT

Jean-Robert Passemard, Bailly Romainvilliers, and Gaston Keledjian, Boulogne Billancourt, both of France, assignors to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Continuation of Ser. No. 417,851, Sep. 14, 1982, Pat. No. 4,527,945. This application Apr. 19, 1985, Ser. No. 724,896
Claims priority, application France, Sep. 15, 1981, 81 17426
Int. Cl.⁴ B25J *17/02*
U.S. Cl. 414—735 **6 Claims**



1. A swivelling handle for a robot arm, comprising:

an attachment element adapted to be connected to and end of a robot arm;

a first reduction gear assembly mounted in said attachment element and having an output shaft defining a first axis of movement;

a first motor and a first coding system mounted in said attachment element for driving said first reduction gear assembly, said first motor having an output shaft parallel to said first axis;

an intermediate element rotatably driven about said first axis by said first reduction gear assembly output shaft;

a second gear assembly mounted in said intermediate element and having an output shaft defining a second axis of movement;

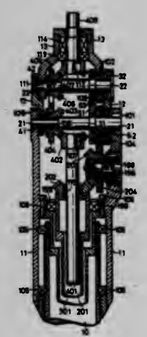
a second motor and a second coding system mounted in said intermediate element for driving said second reduction gear assembly, said second motor having an output shaft parallel to said second axis;

an end element rotatably driven about said second axis by said second reduction gear assembly output shaft;

a third reduction gear assembly mounted in said end element

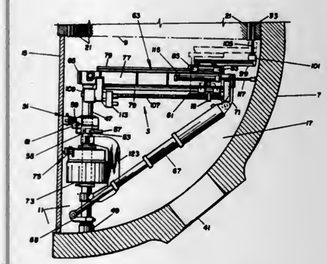
and having an output shaft defining a third axis of movement;
a third motor and a third coding system mounted in said end element for driving said third reduction gear assembly, said third motor having an output shaft parallel to said third axis;
a tool support rotatably driven about said third axis by said third reduction gear assembly output shaft; and
means for detecting an initial position of each of said reduction gear assembly output shafts,
wherein said second axis intersects both said first and third axes, and wherein said first, second and third axes are coplanar when said first and third axes are colinear.

4,576,545
WRIST OF ROBOT
Kenji Maeda, Funabashi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan
PCT No. PCT/JP82/00398, § 371 Date Jun. 7, 1983, § 102(e) Date Jun. 7, 1983, PCT Pub. No. WO83/01223, PCT Pub. Date Apr. 14, 1983
PCT Filed Oct. 4, 1982, Ser. No. 503,142
Claims priority, application Japan, Oct. 7, 1981, 56-158843
Int. Cl.⁴ B25J *11/00*
U.S. Cl. 414—735 **5 Claims**



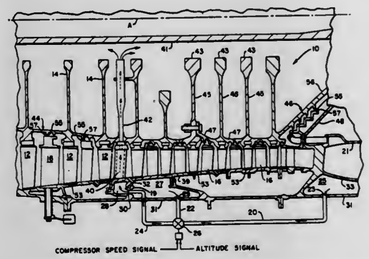
1. A wrist of a robot comprising at least a first wrist frame, a second wrist frame, and a nth wrist frame, characterized in that:
the first wrist frame of a first stage is attached to an arm of the robot;
the second wrist frame, located at a stage following that of the first wrist frame, is supported for pivotal movement with respect to the first wrist frame in such a manner that the intersection angle between the first wrist frame and the second wrist frame can be varied;
the nth wrist frame, located at a stage following that of the second wrist frame, is supported for pivotal movement with respect to the second wrist frame in such a manner that the intersection angle between the second wrist frame and the nth wrist frame can be varies;
a main stationary gear is affixed to the first wrist frame, said main stationary gear being disposed inwardly of the first wrist frame to which it is affixed and also inwardly of the second wrist frame, said main stationary gear being arranged concentrically with a first pivot axis for moving the second wrist frame of the next following stage in pivotal movement, and said main stationary gear being in meshing engagement, in a position inwardly of the second wrist frame, with an auxiliary stationary gear affixed to the nth wrist frame, said auxiliary stationary gear being arranged coaxially with a second pivot axis for pivotally moving the nth wrist frame to which said auxiliary stationary gear is affixed;
drive means for driving said second wrist frame to move in pivotal movement, said drive means being located inwardly of the first wrist frame;
said wrist frame at the first stage is connected to the arm of the robot in such a manner that the first wrist frame is moved in a rotating movement with respect to the arm of the robot by drive means located inside the arm; and
an output shaft of said drive means for pivotally driving the second wrist frame and an output shaft of said drive means for driving the first wrist frame to move in a rotating movement are located coaxially with respect to each other.

4,576,546
METHOD FOR SERVICING A STEAM GENERATOR
Frank W. Copper, Jr., and Raymond P. Castner, both of Monroeville, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Division of Ser. No. 311,712, Oct. 15, 1981. This application May 17, 1984, Ser. No. 611,262
Int. Cl.⁴ B25J *3/04*
U.S. Cl. 414—744 R **7 Claims**



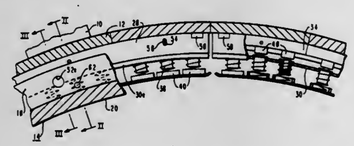
1. A method of mapping the precise location of holes in a semicircular substantially planar tubesheet of a steam generator with a probe mounted on a carriage movable along an arm rotatable in a plane parallel to the tubesheet and wherein said holes are arranged in rows and columns with a first nominal distance between centers along rows and a second nominal distance between centers on the columns, said method comprising the steps of:
(a) generating signals to maneuver the angular position of the arm and the position of the carriage along the arm to generally align the probe with one of said holes;
(b) adjusting the angular position of the arm and the position of the carriage along the arm in response to signals generated by the probe to precisely locate the center of the hole;
(c) generating signals representative of the precise location of the center of the hole from the angular position of the arm and the location of the carriage along the arm and storing the same;
(d) generating signals to adjust the positions of the arm and carriage to move the probe a first preselected distance in a direction parallel to the row to generally align the probe with another hole in the row;
(e) repeating steps b, c and d until the precise location of each hole at said preselected distances in the row has been generated and stored;
(f) generating signals to adjust the position of the arm and carriage to move the probe a second preselected distance parallel to the columns and to generally align the probe with a hole at less than said first preselected distance from one end of another row;
(g) repeating steps b through e;
(h) repeating steps f and g until all of the holes spaced at said preselected distances have been precisely located.

4,576,547
ACTIVE CLEARANCE CONTROL
Harvey I. Weiner, South Windsor, Conn., and Kenneth L. Allard, Wilbraham, Mass., assignors to United Technologies Corporation, Hartford, Conn.
Filed Nov. 3, 1983, Ser. No. 548,466
Int. Cl.⁴ F02C *7/16*
U.S. Cl. 415—116 **4 Claims**



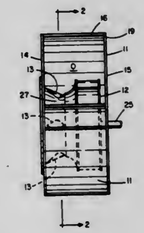
1. An active clearance control for a gas turbine engine powering aircraft over and operating envelope including high powered and low powered conditions, said engine having a compressor section comprising a plurality of stages of axial compressors rotatably supported in the bore area of the compressor section, each of said stages including a plurality of blades supported in a disc and each blade having a tip, an air seal circumscribing the tips of said blades and defining a gap between said tips and said air seal, and a row of stator vanes mounted ahead of the blades, means for selectively bleeding compressed air from one of said stages substantially at the middle of said stages and at another of said stages downstream therefrom relative to the air flow through said stages, means for feeding said bled air into the bore area adjacent the rotating axis of said plurality of stages of axial compressors, said feeding means including at least one hollow stator vane in one of said rows of stator vanes, and an anti-vortex tube extending from the inner diameter of the hollow stator vane radially inward toward said rotating axis, and control means for modulating said selective bleeding means for admitting compressed air to said bore by said feeding means to heat said discs so that said discs expand toward the air seal and close said gap between said air seal and the tips of said blades during the lower powered condition of said engine.

4,576,548
SELF-ALIGNING STATIC SEAL FOR GAS TURBINE STATOR VANES
Jan P. Smed, West Chester, Pa.; Kenneth E. Seltzer, Tempe, Ariz., and Kent G. Hultgren, Swarthmore, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Jan. 17, 1984, Ser. No. 571,612
Int. Cl.⁴ F01D *11/08*
U.S. Cl. 415—137 **6 Claims**



1. An arrangement for statically sealing between the inner shrouds of an annular array of stationary stator vanes and a radially-inner, annular seal housing of a gas turbine, comprising:
first, outer seal means carried by said housing and comprising a first plurality of arcuate segments in end-to-end relation substantially completing a circle, each said segment being generally channel-shaped in cross section throughout its length, and being radially movably disposed in a radially-outwardly-open channel in said housing;
second, inner seal means radially movably disposed in said first seal means channel and including a second plurality of arcuate segments equalling the number of said shrouds, in end-to-end relation substantially completing a circle;
first resilient means biasing said first seal means radially outwardly in said housing channel; and
second resilient means independently biasing said second seal means radially outwardly in said first seal means channel.

4,576,549
VORTEX GENERATOR FOR CENTRIFUGAL FANS
Robert L. Lanier, Niles, Mich., assignor to Garden City Fan & Blower Co., Niles, Mich.
Continuation of Ser. No. 165,767, Jul. 3, 1980, abandoned. This application Feb. 28, 1983, Ser. No. 470,398
Int. Cl.⁴ F04D *17/08*
U.S. Cl. 415—209 **10 Claims**



1. A centrifugal fan comprising:
(a) a scroll type housing,
(b) a bladed fan-wheel mounted for rotational movement within said housing said fan-wheel having a side plate with an axial air-inlet to the wheel,
(c) an air-inlet in one wall of the housing,
(d) an annular member connecting the housing inlet with the fan-wheel air-inlet,
(e) a series of formed vortex generators secured to the outer wall of the annular member in circumferentially spaced apart relation between the air-inlet wall of the fan-wheel and the air-inlet housing wall with the axial ends spaced a short distance from said walls, said vortex generators having a spine in substantial alignment with the axis of the fan-wheel and having a continuous surface defined within a closed circumference, the circumference being substantially in tight engagement with the exterior surface of the annular element wherein air is restricted from entry into the interior of the vortex generator, the vortex generators having a profile defined above the level of the annular member and along the axis of the spine, said profile having a maximum displacement from the annular member intermediate said axial ends and said profile decreasing to substantially zero at both ends of the vortex generators whereby the vortex generators interrupt an air current created by skin friction of the air-inlet wall of the fan-wheel as the current passes axially outward over the annular member, the vortex generator creates turbulence and mixing between the slower moving air current discharged from the wheel blades and the air current created

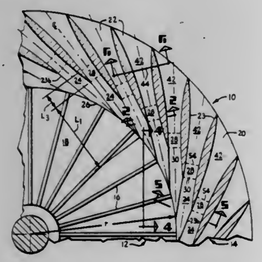
by skin friction of the air-inlet wall of the fan-wheel but without interfering with the recirculation of air between the air-inlet of the fan-wheel and the innermost portion of the annular inlet, restricting the recirculation of the velocity air currents within the housing by causing mixing thereof with slower velocity air discharged from the fan outlet.

4,576,550

DIFFUSER FOR A CENTRIFUGAL COMPRESSOR

Alexander C. Bryans, Reading, Mass., assignor to General Electric Company, Lynn, Mass.

Filed Dec. 2, 1983, Ser. No. 557,561
Int. Cl.⁴ F04D *29/44*
U.S. Cl. 415—211 **20 Claims**



12. In a diffuser of a centrifugal compressor including an impeller, said diffuser including a plurality of tangentially disposed passages each having a throat portion of cross-sectional area A, the improvement comprising:

said throat portion having a quadrilateral cross section defined by two substantially parallel opposing linear sidewalls and two substantially arcuate opposing sidewalls, said two linear sidewalls being spaced from each other to define a minor dimension extending therebetween, said two arcuate sidewalls being sapced from each other to define a major dimension therebetween, said major dimension being greater in length than said minor dimension, and said linear sidewalls being disposed substantially normal with respect to a radial axis of said diffuser.

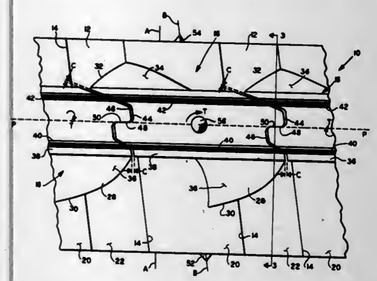
4,576,551

TURBO MACHINE BLADING

Paul D. Olivier, Scottsdale, Ariz., and Lester E. Chadbourne, deceased, late of Scottsdale, Ariz. (by Mary T. Chadbourne, personal representative), assignors to The Garrett Corporation, Los Angeles, Calif.

Filed Jun. 17, 1982, Ser. No. 389,519
Int. Cl.⁴ F01D *5/22*
U.S. Cl. 416—191 **15 Claims**

1. On a turbo machine blade wheel, a multitude of circumferentially disposed fluid energy reactive blade members engaging one another only at abutment surfaces defined thereon



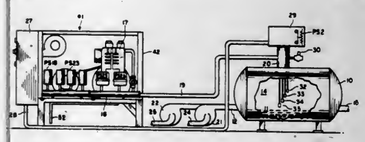
which lie in a transverse radial plane relative to the rotational axis of said blade wheel.

4,576,552

AIR AND WATER VOLUME CONTROL APPARATUS FOR HYDROPNEUMATIC TANKS

Dresden G. Smith, 1621 English Dr., San Jose, Calif. 95129

Filed May 6, 1985, Ser. No. 730,438
Int. Cl.⁴ F04B *41/06*
U.S. Cl. 417—2 **6 Claims**



1. A hydropneumatic tank control for a water supply system having a closed water tank with a water inlet and outlet, an air compressor to supply pressurized air through a manifold and into said tank and a water pump connected to a water supply to supply water to said tank, said control comprising:

a tank adapter mounted directly on said water tank,

a first pressure limit switch mounted on said manifold to detect a low and high air pressure threshold in said tank,

a second pressure limit switch mounted on said manifold to detect a low air pressure threshold in said tank,

a first water level electrode for detecting a high water level threshold in said tank,

a first circuit means for energizing said water pump in response to said first pressure limit switch detecting a low air pressure threshold and deenergizing said water pump when said first pressure limit switch detects a high air pressure threshold in said tank,

a second circuit means for energizing said water pump in response to said second pressure limit switch detecting a low air pressure threshold in said tank and deenergizing said pump in response to said first water level electrode detecting a high water level threshold in said tank,

means to connect the first or second circuit means in said control exclusively to select the mode in which the water pump is controlled,

a third pressure limit switch located in said tank adapter to detect when the air pressure in said tank exceeds a dangerous pressure level threshold, and

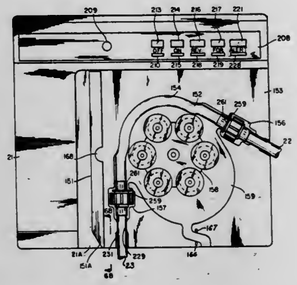
a third circuit means for deenergizing said first and second circuit means responsive to the third pressure limit switch detecting a dangerous pressure level in said tank.

4,576,553

PAINTING APPLICATOR WITH REMOTE SUPPLY

Walter E. Winston, Carmel, and Lowell G. Atkinson, Indianapolis, both of Ind., assignors to Black & Decker Inc., Newark, Del.

Division of Ser. No. 218,354, Dec. 22, 1980, Pat. No. 4,424,011.
This application Dec. 23, 1983, Ser. No. 564,724
Int. Cl.⁴ F04B *49/10*
U.S. Cl. 417—9 **2 Claims**



1. In painting apparatus, paint mover means comprising:

a pump housing;

a pump in said housing and including a pump face, a paint pumping tube, a tube support cam, pumping roller carrier means, pumping rollers circularly spaced on said carrier means, and motor means for driving said roller carrier means;

leakage detection means in said housing and including a leakage directing passageway in said pump face, and photoelectric sensor means and light source means associated with said passageway;

said pump face being comprised principally of upstanding horizontally facing surfaces, and including a cavity receiving said pumping tube, said passageway communicating with the lowermost point in said cavity and extending downward therefrom;

said passageway having a horizontally extending portion;

said light source means comprising a light emitter at the bottom of said portion; and

said photoelectric sensor means including a light sensitive receiver above said emitter for interference with light passage from said emitter to said receiver by leakage paint in said portion.

4,576,554

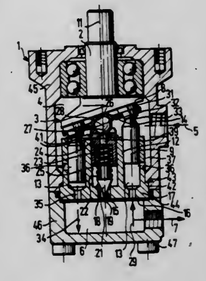
SWASHPLATE AXIAL PISTON PUMP

Ludwig Wagenseil, Vöhringen, and Manfred Lotter, Neu-Ulm, both of Fed. Rep. of Germany, assignors to Hydromatik GmbH, Elchingen, Fed. Rep. of Germany

Filed Nov. 7, 1984, Ser. No. 669,106
Claims priority, application Fed. Rep. of Germany, Nov. 8, 1983, 3340333
Int. Cl.⁴ F04B *1/28*
U.S. Cl. 417—270 **13 Claims**

1. A swashplate axial piston pump comprising a housing including a suction chamber and a discharge chamber, a pump block extending inside the housing and including a plurality of piston bores, a plurality of pistons supported for reciprocating movement in the piston bores, each piston including a piston head, a swashplate supported in the housing to reciprocate the piston, a retraction plate for holding the piston heads against the swashplate, a pressure-regulating valve assembly in communication with the suction and discharge chambers to conduct fluid therebetween, said valve assembly including a valving body disposed centrally between the pistons to control fluid flow through the valve assembly, and moving to a position opening the pressure-regulating valve assembly when the pressure in the discharge chamber exceeds the pressure in the suction chamber by a predetermined pressure; and

means consisting of a single spring disposed and clamped



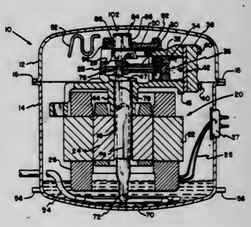
between the valving body and the retraction plate, and both urging the retraction plate to a position securely holding the piston heads against the swashplate and simultaneously urging the valving body to a position closing the pressure-regulating valve assembly.

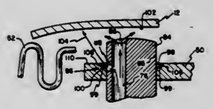
4,576,555

OIL DISPERSING DEVICE

Roger N. Ashenfelter, Adrian, Mich., assignor to Tecumseh Products Company, Tecumseh, Mich.

Filed Nov. 13, 1984, Ser. No. 670,314
Int. Cl.⁴ F04B *39/02, 39/06*
U.S. Cl. 417—372 **13 Claims**





1. In a hermetic compressor including a housing and rotatable vertical crankshaft and a bearing for journalling said crankshaft, means for cooling compressor lubricant oil comprising:

an axial bore in said crankshaft;

means for pumping oil from an oil sump upwardly through said bore;

an annular cavity in said bearing concentric with and surrounding said crankshaft, said cavity being open upwardly through substantially 360° towards said housing and defining a circumferential shoulder spaced radially outwardly from the outer surface of said crankshaft; and

a radial passage in said crankshaft, said passage open at one end to said bore and open at the other end to said cavity, whereby oil passes radially outwardly through said pas-

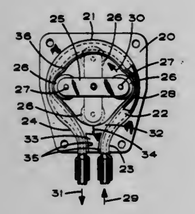
sage into said cavity as said crankshaft rotates and is deflected upwardly through substantially 360° towards said housing by said shoulder.

4,576,556

ROLLER PUMP

Howard J. Thompson, New Richmond, Wis., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Apr. 2, 1980, Ser. No. 136,812
Int. Cl.⁴ F04B *43/12*
U.S. Cl. 417—477 **2 Claims**



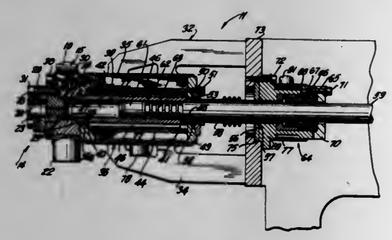
1. In a medical roller pump of the type having a stator, including hose inlet and outlet means and a generally arcuate bearing surface, having hose means extending from said hose inlet means to said hose outlet means along said bearing surface, and having rotor means rotatable through 360°, said rotor means carrying a plurality of roller means for compressing said hose means against said bearing surface, the improvement which comprises shim means including backing support means in generally opposing relation to said bearing surface for imparting a hose compression counterbalancing force to said rotor means thereby equalizing the forces imparted to said rotor means throughout its 360° rotation.

4,576,557

CRYOGENIC LIQUID PUMP

Boris Pevzner, Williamsville, N.Y., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 15, 1983, Ser. No. 504,435
Int. Cl.⁴ F16J *10/02*; F04B *15/06*
U.S. Cl. 417—539 **27 Claims**



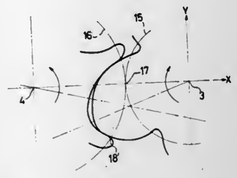
1. In a reciprocating-type pump adapted for the pumping of cryogenic liquids and including at least one: (1) pump body having a forward end, a rearward end and a cylindrical bore forming a pumping chamber therein; (2) power frame having a crank shaft comprising the driving means for said pump; (3) reciprocating plunger means connected to the crank shaft of said power frame and extending into the pumping chamber of said pump body through the rearward end thereof and adapted for reciprocating motion therein; (4) valve means in fluid communication with the pumping chamber and adapted for controllably introducing cryogenic liquid into the pumping chamber during each suction stroke of said plunger and for controllably discharging cryogenic liquid from the pumping chamber during each discharge stroke thereof; and (5) sealing means surrounding said plunger means for sealing the pump against fluid leakage, the improvement comprising a unitary, rigid pump body support structure connected to said power frame, said unitary support structure having a forward end pump body mounting plate, a rearward pump body mounting plate spaced apart from said forward plate, and a power frame mounting plate, said plates being secured together in permanent, non-mechanical joining by means of rigid connecting members, said plates having bores therein for each pump body secured thereto and for said sealing means, whereby said unitary support structure can be precisely aligned with and securely connected to said power frame, each pump body mounted on said forward and rearward mounting plates advantageously being of relatively light weight and size providing overall cost savings and enhanced performance capability for said pump.

4,576,558

SCREW ROTOR ASSEMBLY

Masanori Tanaka, Niigata; Atsushi Maehara, Bunsuimachi, and Junichi Kanai, Yoshidamachi, all of Japan, assignors to Hokuetsu Industries Co., Ltd., Niigata, Japan

Filed Mar. 21, 1985, Ser. No. 714,540
Claims priority, application Japan, Apr. 7, 1984, 59-69699
Int. Cl.⁴ F01C *1/16*
U.S. Cl. 418—150 **1 Claim**



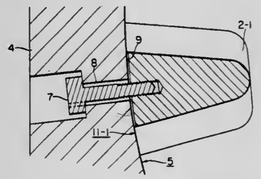
1. A screw rotor assembly, comprising:
a male rotor (1) having hellical lands and a female rotor (2) having helical grooves which mesh with each other and rotate about two parallel axes, a major portion of each tooth profile of said female rotor being formed inside a pitch circle of said female rotor, and a major portion of each tooth profile of said male rotor being formed outside a pitch circle of said male rotor, wherein in a plane perpendicular to rotating axes of said rotors:
a tooth profile of said female rotor (2) is formed such that a first curve (H_2-A_2) connecting an outermost point (H_2) at a tip of an addendum (Af) and a first point (A_2) located on the pitch circle is a generated curve of a second point (A_1) located on the pitch circle of the male rotor tooth profile; a portion between said first point (A_2) and a third point (B_2) is formed by a first circular arc having a first radius (R_7) and a center (O_7) of said first arc which is located on a line tangent to the pitch circle of the female rotor at said first point (A_2) and located outside the concave of the groove; a portion between said second point (B_2) and a fourth point (C'_2) is formed by a first envelope (B_2-C_2) developed by a second circular arc (B_1-C_1) which is a part of the male rotor tooth profile; a portion between fifth and sixth points (D'_2) and (E_2) is formed by a third circular arc (D'_2-E_2) having a second radius (R_1) and a center (O_1) of said third arc is located on a line (3-4) connecting centers of rotation of said male and female rotors and outside the pitch circle of said female rotor; a portion between said fourth and fifth points (C'_2) and (D'_2) is formed by a common tangent of the first envelope (B_2-C'_2) and said third circular arc (D'_2-E_2) and connected with said third arc (D'_2-E_2) at the fifth point (D'_2); a portion between the sixth point (E_2) and a seventh point (F_2) is formed by a fourth circular arc (E_2-F_2) connected with the third arc (D'_2-E_2) at the sixth point (E_2) and having a radius (R_2) and a center (O_2) of a fifth arc located on an extension of a line (O_1-E_2) intersecting at an angle (O_1) with said line (3-4) passing through the centers of the rotors and connecting the centers of rotation of said male and female rotors at a position opposite to the center (O_1) of the third arc (D'_2-E_2) with respect to the sixth point (E_2); and a portion between the sixth point (F_2) and a seventh (G_2) is formed by a sixth circular arc (F_2-G_2) connected with a seventh circular arc (G_2-H_2) having a radius equal to the outer diameter of said female rotor at an eighth point (G_2) and having a radius (R_8) and a center (O_8) of the arc being located on a line connecting the center (O_2) of the fourth arc and the seventh point (F_2) and located outside of the groove of the female rotor tooth profile; and
a tooth profile of the male rotor (1) is formed such that a second curve (H_1-A_1) connecting a ninth point (H_1) located on a bottom land of a dedendum (Dm) and said second point (A_1) located on said pitch circle is a generated curve of a tenth point (H_2) located on the female rotor tooth profile, a portion between said second points (A_1) and third (B_1) is a second envelope developed by an eighth arc (A_2-B_2) which is a part of the female rotor tooth profile; a portion between an eleventh point (B_1) and a twelfth (C_1) is formed by a circular arc (B_1-C_1) connected with said second envelope (A_1-B_1) at said eleventh point (B_1) and having a radius (R_4) and a center O_4 of the second arc located on a line intersecting at an angle (θ_{r5}) with said line (3-4) connecting the rotating centers (3, 4) of said male and female rotors (1, 2) and located at a predetermined distance from said line (3-4) connecting the rotating centers of said male and female rotors (1, 2); a portion between said twelfth point (C_1) and a thirteenth point (D_1) is formed by a circular arc (C_1-D_1) having a radius (R_5) and a center of the arc (3) at the rotating center of said male rotor; a portion between the thirteenth point (D_1) and a fourteenth point (E_1) is formed by a third evelope (D_1-E_1) developed by a ninth arc (D_2-E_2) which is a part of the female rotor tooth profile; a portion between the fourteenth point (E_1) and a fifteenth point (F_1) is formed by a fourth envelope (E_1-F_1) developed by a tenth arc (E_2-F_2) which is a part of the female rotor tooth profile; a portion between the points (F_1) and G_1) is formed by a fifth envelope (F_1-G_1) developed by the arc (F_2-G_2); and tooth profiles of said male and female rotors (1, 2) are formed by smoothly and tangentially connecting said arcs and curves.

4,576,559

VENTED TIRE MOLDING MOLD

Yasutada Yoča; Seisuke Sueyasu; Michihiro Orikawa, all of Higashimurayama, and Shoji Futamura, Kawasaki, all of Japan, assignors to Bridgestone Tire Co. Ltd. and Institute of Technology Precision Electrical Discharge Works, both of Japan

Continuation of Ser. No. 566,716, Dec. 29, 1983. This application Jun. 24, 1985, Ser. No. 748,143
Claims priority, application Japan, Dec. 29, 1982, 57-231912; Dec. 29, 1982, 57-231913
Int. Cl.⁴ B29H *5/02*
U.S. Cl. 425—28 R **10 Claims**



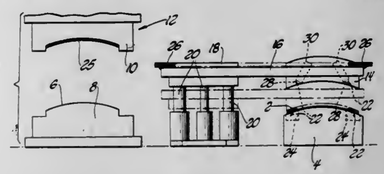
1. A tire molding mold comprising a mold body having an inner circumferential surface corresponding to the contour of a tire to be molded, including at least the tread thereof, and mold attachments each having a surface mating with said inner circumferential surface and for forming recesses of the tire to be molded, and characterized in that each mold attachment is made of a metal block and is joined and mated with said inner circumferential surface of said mold body and detachably fitted to said mold body, and wherein venting gaps are provided on said surface of said mold attachments which mates with said circumferential surface so as to be in the mating surface of and underlie said mold attachments, said mold attachments having outer surfaces which include no portion of said inner circumferential surface of said mold body and no portion of said contour of said tire to be molded.

4,576,560

SMC LOADER FOR COMPRESSION MOLDING PRESS

Edmund A. Herman, Mt. Clemens, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 15, 1984, Ser. No. 671,767
Int. Cl.⁴ B29C *43/34*
U.S. Cl. 425—103 **6 Claims**



1. An apparatus for automatically delivering sheet molding compound (SMC) into a compression press having top and bottom molds between which the SMC is molded comprising a buck for forming the SMC in the molding configuration before it is delivered into the mold; a plurality of pins which are mounted in a plate of a shape conforming substantially to said buck; means to reciprocate said pins between extended and retracted positions such that in the extended position they can pierce the SMC and pick it up from the buck and retain it as it is moved into the mold and such that in the pin retracted position the SMC can be dropped onto the bottom mold in the compression press and means to lift and transfer said compound from above said buck to above said mold.

4,576,561

DEVICE FOR ADJUSTING THE HEIGHT OF BUILDING BLOCKS

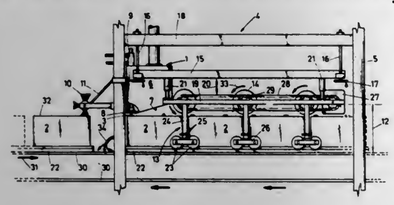
Yves Van de Caveye, Waterloo, Belgium, and Henri Schaeflé, Clermont, France, assignors to Hanota Holdings S.A., Luxembourg, Luxembourg

PCT No. PCT/BE82/00016, § 371 Date Feb. 18, 1983, § 102(e) Date Feb. 18, 1984, PCT Pub. No. WO83/00028, PCT Pub. Date Jan. 6, 1983
PCT Filed Jun. 11, 1982, Ser. No. 467,830
Claims priority, application Belgium, Jun. 22, 1981, 205169
Int. Cl.⁴ B28B *11/04*
U.S. Cl. 425—104 **20 Claims**

1. In a device for adjusting to a predetermined height building blocks and similar blocks, notably hollow blocks to be laid dry upon one another, said blocks having been formed in a mould and then unmoulded, which comprises a metering means for laying over a top of a succession of said unmoulded blocks an amount of material which is hardenable and bindable thereon, a levelling means for tamping down said material over the blocks for imparting to said blocks a total height which substantially corresponds to said predetermined height, and conveyor means adapted for moving the blocks from the mould inside which said blocks are formed and through said levelling means, an improved levelling means comprising,
a levelling member spaced above a location wherein said unmoulded blocks are brought by the conveyor means to

tamp down the material laid down on said blocks by said metering means, and

guiding means cooperating with a top surface directly bearing the blocks to be adjusted for spacing said member at a

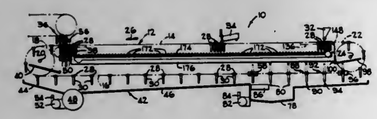


fixed distance relative to and in accordance with the bottom of the blocks which substantially corresponds to said predetermined height, during the levelling of said material laid over the blocks.

4,576,562
APPARATUS FOR PRODUCING FROZEN CONFECTIONS

David N. Anderson, Lakeland, Fla., assignor to FMC Corporation, Chicago, Ill.

Filed Apr. 27, 1984, Ser. No. 604,776
Int. Cl.[4] A23G *9/26, 9/30*
U.S. Cl. 425—126 S **21 Claims**



1. In an apparatus for producing frozen confections, the improvement comprising;

a pair of endless laterally spaced chains traveling in a closed path defining upper and lower horizontal reaches;

means for intermittently advancing said chains;

elongate mold bars formed with a plurality of cavities for retaining confection material;

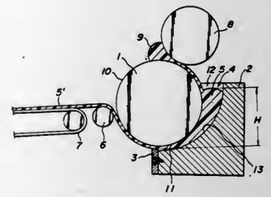
means for pivotally connecting the ends of said mold bars to every other pin connection of the links of said chains so that the mouth of the cavities face upwardly during movement in the closed path, means for decreasing and maintaining constant the pitch of said chains during their passage along the upper reach of the closed path.

4,576,563
ROTARY ROLL-TYPE RUBBER EXTRUDER

Jumei Harada, Kodaira; Keiji Yamamoto, Tokorozawa, and Takashi Yokoi, Kodaira, all of Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed Dec. 14, 1984, Ser. No. 681,752
Claims priority, application Japan, Dec. 21, 1983, 58-239682
Int. Cl.[4] B21C *23/32*
U.S. Cl. 425—194 **4 Claims**

1. A rotary roll-type rubber extruder including a roll having an outer cylindrical surface rotatively driven by driving means, a housing having a stationary concave surface spaced from and in opposition to the rotating outer cylindrical surface of said roll between a pair of sidewalls close to said outer cylindrical surface of the roll to form a define chamber with the roll, and a mouthpiece detachably secured to said housing to form a defined extruding opening with said roll at an outlet of said defined chamber, wherein said concave surface of said housing is constructed such that with a rubberlike material being supplied with the same rubberlike material to meet amounts of the material extruded from said mouthpiece under action of the atmospheric pressure at an inlet of said defined chamber opposite to said mouthpiece, pressure gradients at mouthpieces in extruding the rubberlike material having thicknesses of 1-5 mm are within a quadrilateral area having four



corners, said corners corresponding to pressure gradients 65 and 150 (kg/cm^3) at a 1 mm opening mouthpiece and pressure gradients 11 and 23 (kg/cm^3) at a 5 mm opening mouthpiece in a graph having an ordinate in logarithm showing the pressure gradients

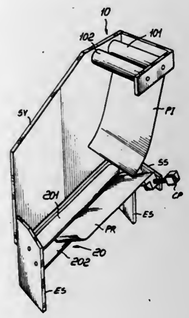
$$\left(-\frac{dP}{dX}\right)$$

and an abscissa in logarithm showing heights (mm) of openings of the mouthpieces.

4,576,564
DEVICE FOR SPREADING LAYERS OF DOUGH OF CIRCULAR SHAPE FROM DOUGH MASSES OF NEAR SPHERICAL SHAPE

Dario Bernardi, Via Mazzini, 5 - Cattolica (Province of Forli), and Maurizio Pettinari, Viale Puglia, 14 - Riccione (Province of Forli), both of Italy

Filed Feb. 15, 1984, Ser. No. 580,488
Claims priority, application Italy, Feb. 17, 1983, 44010 A/83
Int. Cl.[4] A21C *3/02*
U.S. Cl. 425—337 **1 Claim**

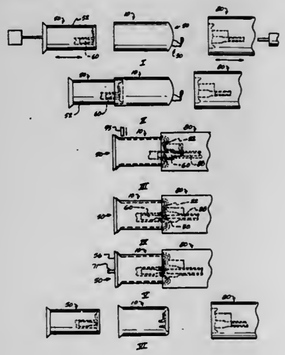


1. A device for spreading out amounts of dough of near spherical shape into layers of circular shape comprising one first pair of rolling rollers, one second pair of rolling rollers arranged at a lower level and at right angle with respect to said first pair, a sloping plane having an upper and a lower portion, said upper portion being arranged under said first pair of rollers for taking up a dough layer getting out of said first pair, a rotatable tray arranged below said lower portion and tiltable around a horizontal axis parallel to said second pair of rollers between a first initial position whereat said rotatable tray is aligned with said lower portion of the sloping plane to receive an amount of dough after being passed the first pair of rollers and a second position whereat said rotatable tray is aligned with said second pair of rollers to introduce the amount of dough therebetween, a counterweight being associated to said tray for returning the latter from said second to the initial position.

4,576,565
APPARATUS FOR FORMING A DISPENSING CONTAINER

Walter K. Chlystun, 327 St. James Dr., Spartanburg, S.C. 29301

Division of Ser. No. 131,248, Mar. 17, 1980, Pat. No. 4,529,108.
This application Nov. 19, 1984, Ser. No. 673,140
Int. Cl.[4] B29C *51/08, 51/30*
U.S. Cl. 425—383 **15 Claims**



1. Apparatus for reforming a portion of a container, said portion having been molded of a thermoplastic polymeric material, comprising:

(a) a first mandrel, said first mandrel having a body, said body having a die recess at an end of said body defining a contour of one side of a pressure dome section to be formed in said molded container portion said body of said first mandrel further having means adjacent an end of same opposite said die section to make sealing engagement with an open end of said container, and further has at least one fluid passageway therein, whereby after a seal is produced between said mandrel body and said open end of said container, fluid under pressure may be admitted to said fluid passageway to pressure test said container;

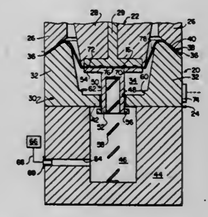
(b) a male mandrel, said male mandrel having a body, said body having a die section at an end of said body, said male mandrel die section defining a contour of an opposite side of a pressure dome section as defined by said die recess on said first mandrel, said die section of said male mandrel extending at least partially along the side of said die section in said first mandrel when said mandrels are in registry with a container portion therebetween; and

(c) means for moving said mandrels into and out of registry.

4,576,566
APPARATUS FOR FORMING A PAPERBOARD RECEPTACLE

Paul O. Hain, Hamilton, Ohio, assignor to Champion International Corporation, Stamford, Conn.

Continuation of Ser. No. 550,512, Nov. 10, 1983, abandoned, which is a continuation of Ser. No. 408,477, Jul. 16, 1982, abandoned, which is a division of Ser. No. 217,092, Dec. 16, 1980. This application Jan. 31, 1985, Ser. No. 697,415
Int. Cl.[4] B29C *17/00*
U.S. Cl. 425—400 **5 Claims**



1. An apparatus for drawing a flat paperboard blank to form a dished receptacle having corner areas of maximum stress, during drawing, at the juncture of the receptacle base and sidewall structure, and apparatus comprising:

(a) a male die having a central plunger portion for engaging a central portion of the blank and having a peripheral portion for engaging a peripheral portion of the blank;

(b) a female die having a peripheral portion for engaging a peripheral portion of the blank and having a central cavity into which a central portion of the blank is drawn;

(c) means forming a steam cavity adjacent said female die;

(d) means for introducing steam into said steam cavity;

(e) a passage extending between said female die cavity and said steam cavity;

(f) a reciprocating plunger disposed in said female die cavity, said reciprocating plunger having a portion extending through said passage and into said steam cavity, said reciprocating plunger being removable between first and second positions;

(g) means on said reciprocating plunger operable to close said passage when said reciprocating plunger is in said first position; and

(h) said male die having means operable when extended into said female die cavity to move said reciprocating plunger to said second position to allow passage of steam into said female die cavity to impinge, upon and thereby plasticize and lubricate areas of the blank which are subject to maximum stress during drawing of the blank.

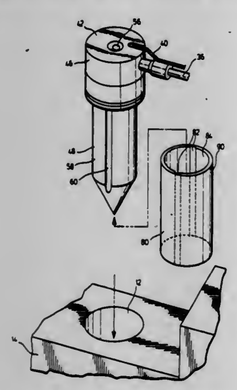
4,576,567
INJECTION MOLDING SYSTEM HAVING AN INSULATION SLEEVE

Jobst U. Gellert, 7A Prince St., Georgetown, Ontario, Canada L7G 2X1

Filed Sep. 29, 1983, Ser. No. 537,054
Claims priority, application Canada, Sep. 12, 1983, 436502
Int. Cl.[4] B29C *45/03*
U.S. Cl. 425—549 **7 Claims**

1. In a hot runner injection molding system with a hot runner passage extending to convey pressurized melt from a molding machine to a gate in a cooled cavity plate leading to a cavity, and having an integral elongated heated probe seated in a well in the cavity plate, the probe having an outer surface and the well in the cavity plate having a wall which extends around said outer surface to form a space therebetween, the probe having at least one generally longitudinally extending melt channel which the hot runner passage extends, the improvement wherein the outer surface of the probe has at least one

longitudinally extending outwardly open groove, and a thermal insulating sleeve is located in the space between the probe and the cavity plate, the insulating sleeve having an inner surface abutting the outer surface of the probe, the inner surface of the sleeve having at least one longitudinally extending



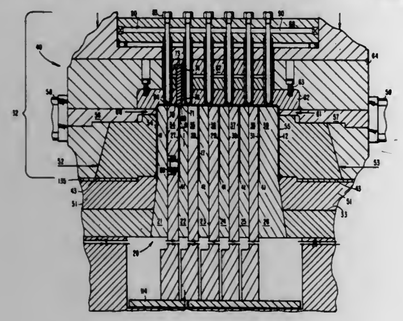
inwardly open groove which is in alignmemt with said outwardly open groove extending along the outer surface of the probe to form at least a portion of the melt channel, the insulating sleeve being formed of a plastic material having a melting temperature substantially higher than that of the melt.

4,576,568

INJECTION MOLD WITH THIN WALL HOLE FORMING MEANS

Walter A. Grannen, III, Bargersville, Ind., assignor to E-W Mold & Tool Company, Inc., Indianapolis, Ind.

Filed Feb. 25, 1985, Ser. No. 705,130
Int. Cl.[4] B29C *1/06*; B29F *1/022*
U.S. Cl. 425—577 **15 Claims**



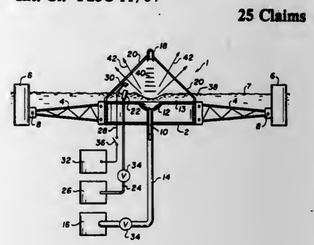
1. A case mold assembly comprising:
a frame;
a female mold mounted on said frame and having a cavity for the plastic injection molding of a case;
a male mold mounted on said frame and positionable into said female mold for a first time period for the formation of said case therebetween, said male mold including a plurality of cores located apart forming spaces, said cores having bottom ends mounted to said frame with said cores extendable into said cavity to form interior walls extending across said case upon said plastic injection;
injection means operable to inject molten plastic between said female mold and said male mold and into said spaces and to maintain said plastic under pressure for a second time period of a duration less than said first time period;
wedge lock means mounted to said female mold and extending between said cores and into said spaces operable to limit relative motion between cores during said plastic injection but being movable apart from said cores to allow said molten plastic under pressure to fill spaces vacated by said wedge lock means;
a plurality of lifters slidable mounted on said cores and extending into said cavity;
a plurality of pins mounted to said lifters and extending laterally across said spaces toward adjacent cores forming holes through said interior walls as said spaces between cores are filled with plastic;
pin control means associated with said cores, said lifters and said pins being operable to cause said pins to extend outwardly into said spaces to form said holes within said walls and to allow said pins to withdraw into said cores from said spaces upon expiration of a third time period subsequent to said second time period; and,
timing means operably associated with said injection means and said lifters and being operable to establish said second time period during which said pressure is maintained in said spaces and to establish said third time period during which said molten plastic cools to a non-flowable state and upon expiration thereof said lifters slide relative to said cores retracting said pins and forming said holes.

4,576,569

APPARATUS TO REMOVE OIL SLICKS

John N. Koblanski, Burnaby, Canada, assignor to Ocean Ecology Ltd., Vancouver, Canada

Filed Nov. 29, 1984, Ser. No. 676,373
Int. Cl.[4] F23C *11/04*
U.S. Cl. 431—1 **25 Claims**



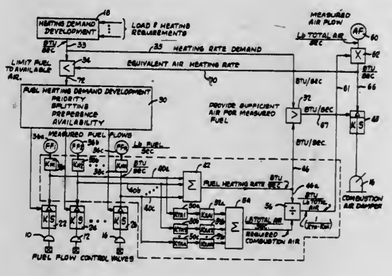
1. Apparatus to burn a combustible pollutant floating on the surface of a body of water the apparatus comprising:
a first body;
buoyancy means to maintain the first body beneath the surface of the water;
a first chamber in the first body;
a resonation chamber, fixed relative to the surface of the first body and above the first chamber and positioned to be above the surface of the water when the apparatus is in use;
means to project a high velocity fluid up from the first body and through said chamber to the resonation chamber to develop a shock wave that is directed back towards the pollutant to atomize the pollutant; and
means to combust the atomized pollutant.

4,576,570

AUTOMATIC COMBUSTION CONTROL APPARATUS AND METHOD

James Adams, Highland Heights, and Felix Belin, Mayfield Heights, both of Ohio, assignors to Republic Steel Corporation, Cleveland, Ohio

Filed Jun. 8, 1984, Ser. No. 618,706
Int. Cl.[4] F23N *1/02*
U.S. Cl. 431—12 **19 Claims**



1. For a combustion process using multiple fuels having diverse combustion air requirements, a method for controlling the fuel-to-air ratio, comprising the steps of:
(a) generating a heating rate demand signal indicative of the amount of heating required;
(b) measuring the current fuel flow rate for each fuel being burned and generating a fuel heating rate signal indicative of the heating capacity of said fuels;
(c) generating individual fuel demand signals in a fuel heating rate demand development subsystem;
(d) adjusting the flow of individual fuels in response to their individual demand signal;
(e) generating an air requirement signal for measured fuel flows and their air requirements;
(f) generating a feedforward signal related to said air requirement signal;
(g) comparing said heating rate demand signal with said fuel heating rate signal and communicating the higher of said signals to a combustion air flow controller;
(h) adjusting said air controller in response to said communicated signal;
(i) measuring the actual air flow;
(j) generating an equivalent air heating rate signal which is a function of the measured air flow and said feedforward signal; and,
(k) comparing said equivalent air heating rate signal with said heating rate demand signal and communicating the lower of said signals to said fuel heating rate demand development subsystem.

12. Apparatus for controlling the combustion of multiple fuels having diverse excess air requirements, comprising:
(a) means for generating a heating rate demand signal;
(b) sensors for monitoring the flow rates of fuels being burned;
(c) scaling means for converting signals received from said sensors to signals representing the heating value per unit time of each of said fuels;
(d) first summing means for summing said signals to arrive at a gross fuel heating rate signal;
(e) other scaling means for converting said sensed signals to signals representing the theoretical air required per unit time for each of said fuels;
(f) other summing means for summing said signals;
(g) means for generating a feedforward signal as a function of the fuel mixture being burned and the heating values of said fuels;
(h) multiplying means for combining said feedforward signal with a signal representing the measured combustion air flow to produce an equivalent air heating rate signal;
(i) a low select comparator for comparing said heating rate signal with said equivalent air heating rate signal, said low select comparator operative to selectively communicate the lower of heating rate demand and equivalent to a fuel demand development subsystem;
(j) a high select comparator for generating an air demand signal for communication to a combustion air controller, said high select comparator operative to select the higher of said heating rate demand signal and said gross heating rate signal; and
(k) continuously recalibrated cross-limiting means for limiting the fuel flow rates to the available combustion air and for assuring sufficient combustion air for the measured fuel flows.

4,576,571

METHOD OF POLISHING THE SURFACE OF GLASS ARTICLES

Luc Mouffiet, Vanves; Michel Roux, Marnes La Coquette, and Jean Valadier, Viry Chatillon, all of France, assignors to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

Filed Sep. 6, 1984, Ser. No. 648,252
Claims priority, application France, Sep. 6, 1983, 83 14181
Int. Cl.[4] F27D *3/00*; F27B *14/00*; C03B *25/00*
U.S. Cl. 432—9 **5 Claims**

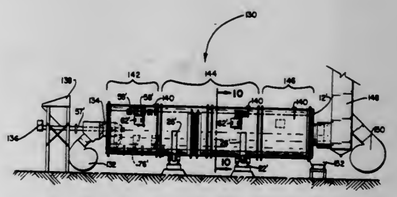
1. A method of polishing the surface of a glass article, comprising exposing said surface to a flame of oxygen and a fuel gas, said flame having a thermal energy originating from the transfer of heat by convection and a thermal energy originating from the transfer of heat by radiation, the fraction of the total energy transmitted by said flame to said surface by radiation being at most equal to 25% and the value of $H/Re^{0.5}$ being at least equal to 32 W/m^2K, h being the convection exchange coefficient and Re the Reynolds number, said flame containing OH^- ions and being an oxidizing flame.

4,576,572

APPARATUS AND METHOD FOR CLEANING CONTAMINATED SOIL

Edward E. Mueller, Tonka Bay, and Paul L. Jensen, Minneapolis, both of Minn., assignors to Whirl-Air-Flow Corporation, Minneapolis, Minn.

Continuation-in-part of Ser. No. 594,557, Mar. 29, 1984, Pat. No. 4,518,350. This application May 20, 1985, Ser. No. 736,429
Int. Cl.[4] F27B *14/00, 7/36, 7/14, 9/14*
U.S. Cl. 432—13 **15 Claims**



14. A method for reclaiming soil contaminated with combustible liquid, comprising the steps of:
providing a generally horizontal refractory-lined drum having burners along the upper side adapted to heat the interior of the drum, and having predetermined internal indexing structure along the lower side of the drum adapted to mix and advance soil responsive to oscillation of the drum about its longitudinal axis;
supporting the drum for partial rotation about its longitudinal axis;

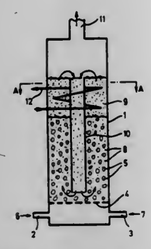
feeding contaminated soil through an inlet located in one end of said drum;
blowing additional combustion air through the drum inlet;
oscillating said drum over a predetermined arc centered on its longitudinal axis;
heating the interior of said drum with the burners sufficiently to incinerate any hydrocarbons in the soil and thereby effect thermal reclamation of the soil;
discharging the hot, reclaimed soil out of an outlet located in the other end of said drum; and
discharging the combustion products through an exhaust stack connected to the drum outlet.

4,576,573

HEATING A FIXED-BED CHARGE IN A TUBE REACTOR, AND AN ARRANGEMENT FOR CARRYING OUT THE METHOD

Wolfgang Ruehenbeck, Birkenau, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 23, 1983, Ser. No. 565,219
Claims priority, application Fed. Rep. of Germany, Dec. 29, 1982, 3248502
Int. Cl.⁴ F27B *15/00*; C10G *35/00*
U.S. Cl. 432—15 **6 Claims**



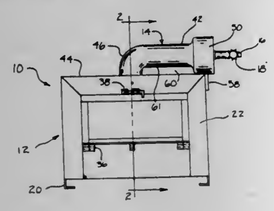
1. A method of heating a reactive fixed-bed charge having voids contained in a tube reactor which comprises: passing a fluidized heat transfer material through the voids in said reactive fixed bed charge whereby heat is added to or carried away from the fixed bed; passing said fluidized material from the voids in the fixed bed to a heat exchanger wherein the temperature of said fluidized material is regulated and, thereafter recycling the fluidized material through said voids in said fixed bed.

4,576,574

GAS HORSESHOE FORGE

Robert E. Schantz, 1226 Mead Dr., St. Louis, Mo. 63137

Filed Jan. 25, 1985, Ser. No. 694,785
Int. Cl.⁴ F24J *3/00*; F27D *1/00*; F23D *14/62*; F23M *7/00*
U.S. Cl. 432—120 **11 Claims**



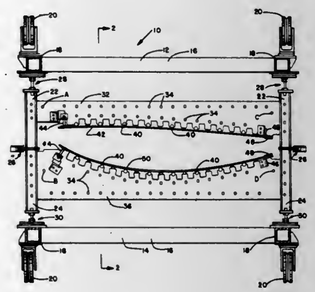
1. In a gas forge comprised of box-like housing having an insulated interior lining and an opening in a front wall for insertion of an article to be heated, the improvement comprising a wind-resistant low pressure burner having a burner outlet opening in a top wall of the housing, said burner having an imperforate tubular main body extending from a connection in said top wall rearwardly to a gas source of supply, said gas source of supply being connected to a restricted orifice supported in an enlarged annular rear primary air opening at a rear portion of the burner main body and said burner having a secondary air opening communicating with ambient air exteriorly of said housing, said burner outlet extending through an opening in said top wall of said housing and said secondary air opening comprising an annular opening between said top wall and said burner main body extending through said top wall to said outlet, said burner body being connected by a circumferential weldment means to a protective metallic shell enclosing said interior lining and said secondary opening being comprised of an opening means between said weldment means and said metallic shell and said burner body.

4,576,575

SLIP JOINT TOOLING FIXTURE FOR AIRFRAME STRUCTURE AND THE LIKE

Everett E. Jones, Wichita, Kans., assignor to The Boeing Company, Seattle, Wash.

Filed Jun. 3, 1985, Ser. No. 740,563
Int. Cl.⁴ F27D *5/00*, *1/00*
U.S. Cl. 432—253 **7 Claims**



1. A slip joint tooling fixture for providing unrestricted growth of material of a structure under construction and received in the fixture, the fixture and structure subjected to high temperatures, the fixture comprising:
an upper horizontal frame;
a plurality of upper bulk heads disposed vertically and in a spaced relationship to each other with the opposite ends of the bulk heads attached to bulk head supports;
a plurality of upper floating connectors attaching the upper bulk head supports to the upper frame;
a plurality of rollers attached to roller arms integrally formed along the length of the upper bulk heads for receiving the upper caul plate, one end of the caul plate attached on one side of the bulk heads, the other end of the caul plate slidably received in an expansion means attached on the other side of the bulk heads for allowing the caul plate to expand and contract therein;
a lower horizontal frame;
a plurality of lower bulk heads disposed vertically and in a spaced relationship to each other with the opposite ends of the bulk heads attached to lower bulk head supports;
a plurality of lower floating connectors attaching the lower bulk head supports to the lower frame;
a plurality of rollers attached to roller arms integrally formed along the length of the lower bulk heads for receiving a lower caul plate, one end of the caul plate attached on one side of the bulk heads, the other end slidably received in an expansion means attached on the other

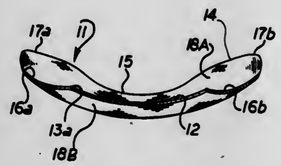
side of the bulk heads for allowing the caul plate to expand and contract; and
attachment means for securing together the upper and lower bulk head supports.

4,576,576

MEASUREMENT TEMPLATES FOR A DENTAL RESTORATION

Jacob E. Spanko, The Bigelow, 622, Pittsburgh, Pa. 15219

Filed Feb. 21, 1985, Ser. No. 703,757
Int. Cl.⁴ A61C *19/04*
U.S. Cl. 433—72 **8 Claims**



1. An article of manufacture for planning the restoration of an irregular dentition involving determination of the actual curves defined by the cusps of the teeth of the natural dentition and being adapted for bilateral use on a dentition model comprising:
a. an essentially rigid, preformed template presenting a first and second surface with said first and lower surface being convex in relation to said second surface and being spaced apart therefrom but substantially conforming to the curvature of said second surface;
b. the mesial edge of the template being substantially linear and spaced apart in use from the lingual face of the anterior teeth;
c. the distal edge of the template being spaced apart from the mesial edge sufficiently to extend distally beyond the third molar;
d. the opposing lateral edges of the template being flanged outwardly from the mesial edge to the distal edge to parallel the diverging quadrants of the dentition model with both joining the distal edge in non-pointed corners; and
e. in which at least said first surface presents a preset substantially uniform curvature with the radius of said convex surface chosen to correspond to one of the variable radius curves limited by and to be established for the existing dentition under analysis, and further wherein the anterior to posterior curvature thereof corresponds to an ideal curve of Spee of a defined radius, and wherein the cross-denture arch curvature thereof corresponds to an ideal curve of Wilson of a defined radius.

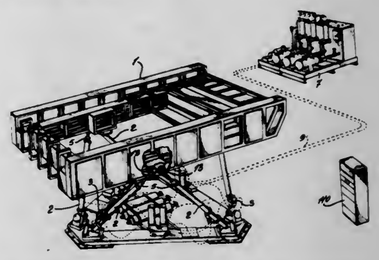
4,576,577

BLENDED MODE CONCEPT FOR CONTROL OF FLIGHT SIMULATOR MOTION SYSTEMS

Wim J. Lam, Apalachin, N.Y.; Luitzen Devries, Amstelveen, Netherlands; Gordon M. McKinnon, Montreal, and Jean J. Baribeau, St. Laurent, both of Canada, assignors to CAE Electronics, Ltd., Montreal, Canada

Continuation-in-part of Ser. No. 217,701, Dec. 18, 1980, abandoned. This application Apr. 25, 1983, Ser. No. 488,426
Int. Cl.⁴ G09B *9/08*
U.S. Cl. 434—58 **8 Claims**

1. A motion simulator system comprising:
a platform unit;
means for imparting motion to said platform unit;
means for driving said means for imparting motion; and
circuit means for providing a command signal to said means for driving;
said circuit means comprising:
means for receiving an acceleration command signal;
means for receiving a position command signal; and
means for combining the acceleration and position command signals to provide a signal for driving said means for imparting motion; and
wherein said command signals comprise varying signals, and further comprising:
means for eliminating the effects of slowly varying acceleration command signals;



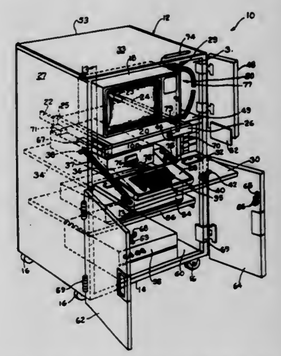
means for eliminating quickly varying position command signals; and
means for processing and combining the uneliminated acceleration command signals and position command signals; and
wherein:
the low cut-off frequency of said acceleration command signal is less than the high cut-off frequency of said position command signal; and
compensation means for removing distortions in the range between said high cut-off frequency and said low cut-off frequency.

4,576,578

INTERACTIVE TRAINING APPARATUS

Robert R. Parker, Wheeling, and Dominic J. DiGianfilippo, Mount Prospect, both of Ill., assignors to Bell & Howell Company, Skokie, Ill.

Filed Mar. 31, 1983, Ser. No. 480,989
Int. Cl.⁴ G09B *5/06*
U.S. Cl. 434—307 **13 Claims**



1. An improved interactive training apparatus including a video display device for displaying visual information, an audio device for providing audio information, a program control device for controlling the operation of the interactive

training apparatus, and a keyboard and a light pen input devices, said interactive training apparatus comprising:

a mobile enclosure for containing the interactive training apparatus;

means for movably carrying the video display device with respect to said enclosure to provide movement of a carried video display device outward from a first predetermined front plane of said enclosure;

operable means for inhibiting movement of said movable carrying means with respect to said enclosure;

means for inhibiting movement of said movable carrying means beyond a second, predetermined outwardly extended position;

means for movably mounting the keyboard input device between a first generally vertical position and a second generally horizontal position, such that the keyboard input device is accessible to an operator only in said second generally horizontal position; and

means for limiting access to the keyboard input device and for preventing movement of the keyboard input device from said first vertical position to said second horizontal position.

4,576,579

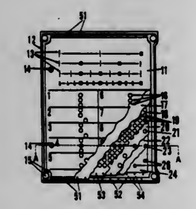
INSTRUCTIONAL AND TESTING APPARATUS WITH SWITCH CLOSURE AT TWO DIFFERENT DEPTHS

J. Richard Harte, 10 W. Concord, Kansas City, Mo. 64112

Filed Jul. 23, 1984, Ser. No. 633,578

Int. Cl.[4] G09B *7/06*

U.S. Cl. 434—334 **4 Claims**



1. An instructional apparatus comprising:

an instructional sheet having zones thereon indicating at least two types of answer choices,

holding means provided with an upper surface for receiving said instructional sheet, and including a support member presenting said surface and having holes therein in alignment with corresponding zones on said instructional sheet,

an electrically conductive, elastic sheet element sandwiched between said instructional sheet and said upper surface and having a normal, planar disposition, said sheet element being capable of substantial deflection into an individual hole in said member when a stylus is applied to a selected zone on said instructional sheet,

electrical contact structure beneath said member and engageable by a deflected portion of said sheet element when said portion is pushed through a corresponding hole in said member by said stylus,

said structure having contact means disposed at two different depths relative to said surface corresponding to said two types of answer choices, said contact means including a second electrically conductive sheet element underlying said member and engageable by said deflected portion of the elastic sheet element upon deflection thereof to one of said two different depths,

said structure further having a third sheet element underlying said second element and provided with openings therein corresponding to the type of answer choice represented by the greater of said two different depths, and said contact means further including components thereof beneath said third sheet element at said greater depth in alignment with respective openings in said third sheet element for engagement by said conductive sheet element upon deflection of a part thereof by a stylus through a corresponding opening in said third element in response to the selection of an answer choice corresponding to the greater depth, and

circuit means connected to said elastic sheet element and said contact means for communicating the types of responses of a student to electrical apparatus for feedback or information processing.

4,576,580

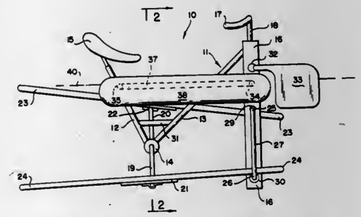
PEDAL POWERED WATERCRAFT

Arnold G. Gulko, 1835 Arcola Ave., Silver Spring, Md. 20902

Filed Aug. 10, 1984, Ser. No. 639,313

Int. Cl.[4] B63H *16/12*

U.S. Cl. 440—21 **12 Claims**



1. A pedal powered watercraft comprising a centrally disposed longitudinally extending frame carrying a centrally positioned pedal housing having one pedal movable from an uppermost to a lowermost position on each side of said frame, a pair of longitudinally extending laterally horizontal boards, one mounted on each of said pedals, said frame carrying a pair of vertically spaced apart stops positioned outwardly of said frame on each side of the watercraft at the forward end thereof, said boards extending forwardly of said pedals beyond said stops with said stops being positioned so that the upper stops are below the upper surface of said boards when the pedal carrying the same is at the upper limit of its path of movement, and the lower stops are above the lower surface of said boards when the pedal carrying the same is at the lower limit of its path of movement.

4,576,581

REVERSIBLE MAGNUS PROPELLER

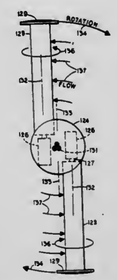
John L. Borg, 8200 Toro Creek Rd., Atascadero, Calif. 93422

Continuation-in-part of Ser. No. 325,741, Nov. 30, 1981, abandoned. This application Mar. 30, 1984, Ser. No. 595,306

Int. Cl.[4] B63H *23/16*

U.S. Cl. 440—86 **11 Claims**

5. The method of reversing the thrust of a Magnus propeller having a hub rotatable in either direction about an axis and a Magnus cylinder connected to the hub and continuously rotatable in either direction about an axis that is generally radial to the hub axis comprising:



(a) driving continuously through multiple 360° rotations the hub and the cylinder with independent reversible power means;

(b) and reversing one of said power means.

4,576,582

TOY BUBBLE-BLOWING LAWN MOWER

James S. Panzarella, Fast Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.

Filed Jan. 25, 1985, Ser. No. 695,177

Int. Cl.[4] A63H *33/28*

U.S. Cl. 446—16 **5 Claims**

1. A toy bubble-blowing lawn mower comprising in combination:

a lawn mower body;

wheels rotatably mounted on said body to support said body for back and forth movement;

a propeller mounted for rotation on said body;

a housing on said body enclosing said propeller, said housing having a first opening through which a continuous stream of air is directed upon rotation of said propeller;

a reservoir formed in said body below the stream of air for receiving a bubble-forming liquid;

a bubble disk mounted on said body for rotation in a first plane normal to the stream of air with a portion of said disk immersed in the bubble-forming liquid in said reservoir, said disk having a plurality of radially and equi-angularly spaced apertures adapted to pass through the liquid in succession upon rotation of said bubble disk to form liquid films across said apertures;

an impeller mounted for rotation on said body, said impeller having a cam;

means coupling said impeller to said propeller for unidirectionally rotating said propeller during rotation of said impeller in either direction;

means coupling at least one of said wheels to said impeller for rotating said impeller upon rotational movement of said wheel; and

means intermittently coupling said impeller cam to said bubble disk for advancing said bubble disk upon rotation of said impeller to successively position film covered apertures into alignment with the stream of air which blows the liquid films into bubbles.

4,576,583

TOY CAPABLE OF EXECUTING MULTIPLE MOVING MODES

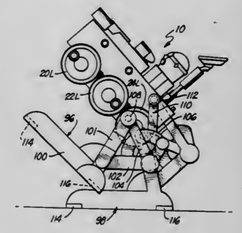
Yosuke Yoneda, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan

Filed Sep. 24, 1984, Ser. No. 654,167

Claims priority, application Japan, Sep. 29, 1983, 58-150771

Int. Cl.[4] A63H *17/00*

U.S. Cl. 446—94 **11 Claims**



1. A moving toy which comprises:

a unitary body;

motor means mounted on said body;

at least two rotating elements permanently rotatively mounted on said body, each of said rotating elements operatively connected to said motor means so as to be rotated on said body by said motor means;

at least two sets of moving members, each of said sets of moving members independently temporarily connectable to said rotating elements, and when said moving members are connected to said rotating elements said moving member supporting said toy on a support surface, each of said sets of moving members differing from the other of said sets of moving members whereby one of said sets of moving members moves said toy on said support surface in a rolling manner and a further of said sets of moving members moves said toy on said support surface in a walking manner.

4,576,584

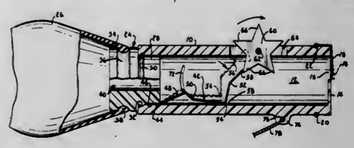
WILD TURKEY CALL

T. Don Hill, Platte County, Mo., assignor to Ferguson Manufacturing, Inc., Richmond, Mo.

Filed Dec. 27, 1983, Ser. No. 565,584

Int. Cl.[4] A63H *5/00*; G10K *5/00, 9/00*

U.S. Cl. 446—193 **15 Claims**



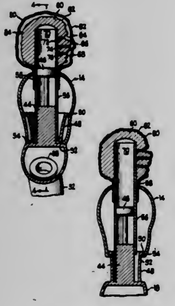
1. A device for attracting game birds such as wild turkeys, said device comprising:

a hollow body presenting a cavity therein and having opposite ends, said body having an opening permitting sound to be transmitted out of said cavity;

a diaphragm on one end of said body, said one end of the body forming a mouthpiece to effect vibration of said diaphragm and said diaphragm having one side exposed to

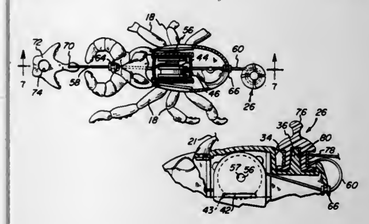
said cavity and being vibratile in response to blowing on the mouthpiece to produce sound in said cavity;
an air bulb on the other end of said body, said bulb being compressible to pressurize said cavity to vary the sound produced therein by said diaphragm in a manner to simulate a gobbling sound of game birds;
an anvil surface in said cavity, said anvil surface being a rigid surface which is rigid with said body;
a spring element in said cavity having one end fixed to said body and an opposite free end, said spring element having a pair of arm portions which intersect between said ends to present at the point of intersection a sharp corner forming a hammer for generating a clucking sound simulating a clucking sound of game birds upon successively striking said anvil surface, said arm portions being oriented and arranged to remain out of contact with said anvil surface to avoid interfering with the sound generated by said hammer; and
activating means for said hammer having a plurality of projecting fingers acting in succession on said free end of the spring element in a manner to displace the hammer from the anvil surface and to then release said free end to permit said spring element to successively strike the hammer against the anvil surface, thereby generating said clucking sound to attract game birds.

4,576,585
TOY FIGURES WITH VACUUM CHANGEABLE FEATURES
John M. Balogh, and Rouben T. Terzian, both of Chicago, Ill., assignors to Marvin Glass & Associates, Chicago, Ill.
Filed Jan. 24, 1985, Ser. No. 694,616
Int. Cl.⁴ A63H *13/00, 3/20*
U.S. Cl. 446—199 **16 Claims**



1. A toy having a body portion comprising:
a head having a substantially rigid outer surface of a first appearance;
a relatively flexible outer mask that is self-supporting in normal atmospheric pressure with a second appearance;
the head being hollow with an interior and conduits extending from the interior through to the substantially rigid outer surface;
substantially airtight attachment of the mask to the toy, covering, but spaced from, the substantially rigid outer surface;
air at generally normal atmospheric pressure in the space between the substantially rigid outer surface and the flexible mask; and
means for reducing the pressure in the space between the substantially rigid outer surface and the flexible mask to collapse the flexible mask and change the second appearance of the flexible mask to conform to the first appearance of the substantially rigid outer surface.

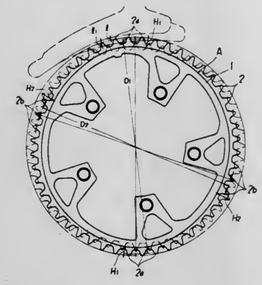
4,576,586
CORD-CLIMBING CREATURE
Francis R. Amici, Northford; Hans S. Berger, Plainville; Richard L. Farrington, New Britain, and Pietro Piazza, Prospect, all of Conn., assignors to Coleco Industries, Inc., West Hartford, Conn.
Filed Feb. 20, 1985, Ser. No. 703,333
Int. Cl.⁴ A63H *11/04*
U.S. Cl. 446—315 **14 Claims**



1. A cord-climbing simulated creature comprising:
A. a creature figure having a head, a body and legs, said creature body being comprised of a bottom section and a top section secured together along transversely disposed abutting surfaces and defining a body cavity therebetween, said sections providing apertures along each side thereof, a pair of leg forming elements including a web portion in said body cavity extending along a side of said body and flexible leg portions extending outwardly of said apertures from said web portion, said top section also providing an upstanding post on its outer surface adjacent its rearward end;
B. a winch assembly seated in said body and including a housing and a winch with a shaft supported for rotation within said housing, said winch having a first winch portion adjacent one axial end thereof and a second winch portion adjacent the other axial end thereof having a diameter greater than that of said first winch portion;
C. an elongated, flexible string-like member having a first portion extending about said first winch portion of said winch and outwardly of an aperture in the front of said winch assembly housing and thence through an aperture in the head of said creature figure, said string-like member having a second portion extending about said second winch portion of said winch and thence outwardly through an aperture in the rear of said winch housing and thence through the rear portion of said creature figure;
D. a hook element secured to the outer end of said first portion of said string-like member, said hook element being configured to permit suspension of said creature thereby; and
E. a spool secured to the outer end of said second portion of said string-like member and adapted to coil the string-like member thereabout, said spool having a recess therein seating said post therein.

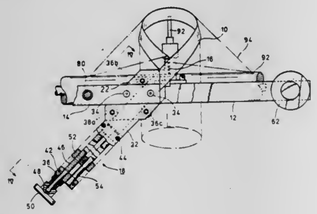
4,576,587
FRONT CHAIN GEAR FOR A BICYCLE
Masashi Nagano, Izumi, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan
Filed Feb. 14, 1984, Ser. No. 579,970
Claims priority, application Japan, Feb. 19, 1983, 58-26783
Int. Cl.⁴ F16H *55/30*
U.S. Cl. 474—152 **3 Claims**

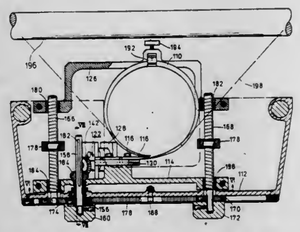
1. A front chain gear for a bicycle, comprising a combination of at least one larger diameter chain gear with at least one smaller diameter chain gear, both said chain gears being different in tooth number from each other, at least said larger diameter chain gear being non-round in shape to provide a largest pitch diameter portion and a smallest pitch diameter portion, teeth at said largest pitch diameter portion being smaller in height than teeth at said smallest pitch diameter portion,



whereby an addendum circle of said chain gear is of nearly exact circularity.

4,576,588
ADJUSTABLE TUBE FORMING APPARATUS
Yoshiaki Umeda; Ryouhei Matsumoto; Hiroyasu Isomura, and Hisakuni Shimotaka, all of Nagoya, Japan, assignors to Fuji Machinery Company, Ltd., Nagoya, Japan
Filed Oct. 3, 1984, Ser. No. 657,250
Claims priority, application Japan, Nov. 30, 1983, 58-227679; Apr. 16, 1984, 59-77012
Int. Cl.⁴ B31B *1/40, 27/26;* **B65B** *9/06*
U.S. Cl. 493—475 **4 Claims**

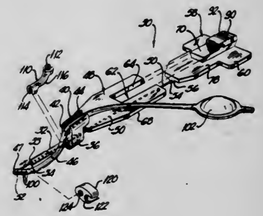




1. An apparatus for forming a web or wrapping material comprising:
a rectangular frame with an open center;
a first and a second transversely spaced apart support members mounted within said frame;
a highly flexible, elongated elastic sheet material fixedly connected at one end to said first support member, said sheet material extending obliquely upwardly from said fixed one end toward said second support member and then returning to form a loop, the returning other end of said sheet material intersecting in front of said fixed one end and extending obliquely downwardly; and
means for freely contracting and expanding said loop formed by said sheet material, by advancing and retracting said sheet material, comprising actuating means fixedly mounted to and disposed generally below said first support member and connected to said downwardly extending other end of said sheet material.

4. In an apparatus for forming a web of wrapping material including a frame, a support member mounted within the frame, and a highly flexible, elongated elastic sheet material fixedly connected at one end to the support member, the sheet material extending obliquely upwardly from the fixed one end and then returning to form a loop, the returning other end of the sheet material intersecting in front of the fixed one end and extending obliquely downwardly, actuating means for advancing and retracting said elastic sheet material comprising:
a pair of support plates secured at right angles to said support member;
a pair of rollers disposed between and rotatably carried by said support plates through rotary shafts, said rollers being operatively connected relative to each other for rotation in opposite directions and adapted to pressingly hold the downwardly extending other end of said sheet material;
a first bevel gear secured to one end of one of said rotary shafts;
a second bevel gear secured to said support member at right angles relative to said first bevel gear and meshed with said first bevel gear; and
a shaft with a knob splined to said second bevel gear, whereby rotation of said shaft in either direction causes said sheet material held between said rollers to be advanced and retracted, thereby freely contacting and expanding the loop formed by said sheet material.

4,576,589
TROCAR
Robert G. Kraus, Attleboro; Enora S. Kunica, Wellesley, and Joseph J. Praderio, Quincy, all of Mass., assignors to Codman & Shurtleff, Inc., Randolph, Mass.
Filed Mar. 28, 1983, Ser. No. 479,303
Int. Cl.⁴ A61M *5/00*
U.S. Cl. 604—8 **11 Claims**



1. A trocar comprising:
a cannula having a lumen extending axially throughout its length and having a distal end and a proximal end;
a generally U-shaped flange affixed to the proximal end of said cannula and aligned generally parallel to and radially offset from the longitudinal axis of said cannula;
said U-shaped flange including a first mating surface, and the confronting surfaces of the interior of said U-shaped flange forming a portion of a V-bed;
a rod having a closed distal end and a proximal end and adapted for slidable insertion into said cannula lumen, said rod having a length greater than said cannula;
a generally planar flange attached to the proximal end of said rod;
said rod flange including a second mating surface adapted to mate with said first mating surface and including a projec-

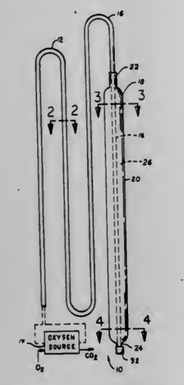
tion extending from said second mating surface having surfaces forming a second portion of said V-bed and cooperating with said first portion of said V-bed to form an interfitting V-bed for restraining relative rotation between said rod and said cannula and for restraining said rod from receding into said cannula as said trocar is advanced through body tissue during insertion.

4,576,590

INTRALUMINAL MEMBRANE OXYGENATOR METHOD FOR A TUBULAR ORGAN OF THE GASTROINTESTINAL TRACT

Richard G. Fiddian-Green, 311 Awixa, Ann Arbor, Mich. 48104

Filed Dec. 29, 1983, Ser. No. 566,649
Int. Cl.⁴ A61M *25/00, 37/00*
U.S. Cl. 604—26 **6 Claims**



1. A method for intraluminal membrane oxygenation of a tubular internal organ of the gastrointestinal tract independently of the vascular blood supply to the organ which comprises introducing a catheter having a closed cylindrical walled chamber on a tube into the organ so as to dispose the wall of the chamber in contact with and against the lumen of the organ, said tube having an entrance to and an exit from said chamber which are disposed axially spaced apart along the length of the catheter, the wall of said chamber comprising a material which is freely permeable to gas but poorly permeable to liquid, perfusing the interior of the chamber via said tube with oxygen to create a pressure gradient between the chamber and the lumen of the organ so as to cause oxygen to diffuse through the wall of the chamber to the lumen of the organ by introducing oxygen into the tube at an external inlet, conducting the oxygen through the tube and into the chamber, thence axially through the chamber along the wall thereof, and thence from the chamber through the tube to an external outlet, and continuing the perfusion step for a sufficient time to conduct the oxygenation procedure.

4,576,591

MEDICAMENT IMPLANT APPLICATOR

Gordon E. Kaye, Garrison, N.Y.; Eugene B. Schwartz, Altamonte Springs, Fla., and Irving V. Sollins, Jiutepec Morelos, Mexico, assignors to Ivy-Gene Co., Inc., Overland Park, Kans.

Continuation-in-part of Ser. No. 511,251, Jul. 6, 1983, Pat. No. 4,531,938. This application Apr. 6, 1984, Ser. No. 597,376
Int. Cl.⁴ A61M *31/00, 5/00;* F42B *37/00;* B65D *85/24*
U.S. Cl. 604—62 **3 Claims**

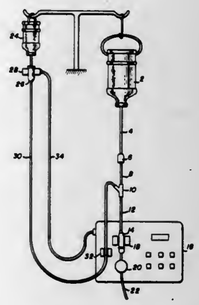
1. A pistol-like medicament implanter comprising:
(a) a hollow needle and a plunger in axial alignment, said plunger being movable into said hollow needle;
(b) storage means for at least one medicament implant dosage unit interposed between needle and plunger, such dosage unit being disposed in a passthrough chamber indexed in line with needle and plunger whereby said plunger may travel through the indexed dosage unit chamber to expel the medicament therefrom; and
(c) a trigger means and a plunger means operatively connected so that when said trigger means is pulled, said plunger advances through said chamber into the bore of said needle expelling thereby the implant dosage unit therefrom, and thereafter retracts when said trigger means is released;
(d) the connection between trigger means and plunger means being an endless belt mounted between and interengaged with a drive gear driven by said trigger means and an idler sprocket, the plunger being disposed above said endless belt, riding thereon and being secured thereto, whereby said plunger is advanced and retracted through the movement of said endless belt around the drive gear upon pulling and retracting of said trigger means.

4,576,592

DUAL SOURCE PARENTERAL INFUSION APPARATUS

Hal C. Danby, Palo Alto, Calif., assignor to Anatros Corporation, San Jose, Calif.

Filed Mar. 30, 1983, Ser. No. 480,527
Int. Cl.⁴ A61M *5/16*
U.S. Cl. 604—80 **8 Claims**



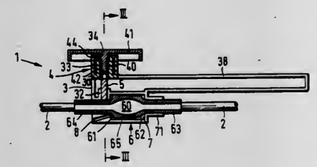
1. A parenteral infusion apparatus for delivering parenteral solutions from two sources comprising a first drip chamber with a primary flow sensor means associated therewith for detecting liquid flow rate through the primary drip chamber, a supplemental solution drip chamber with supplemental solution flow sensor means associated therewith for detecting liquid flow rate through the supplemental solution drip chamber, the outlet of the supplemental solution drip chamber being connected with the primary drip chamber inlet by conduit means having a shut-off control system means associated therewith for terminating supplemental solution flow through the conduit when the measured flow detected in the supplemental solution drip chamber is less than the flow detected in the primary drip chamber.

4,576,593

DOSING DEVICE FOR INFUSION OR TRANSFUSION OF FLUIDS

Heinrich Mommer, Stolberg, Fed. Rep. of Germany, assignor to M. Faensen and Iphas Pharma-Verpackung, both of, Fed. Rep. of Germany

Filed Feb. 8, 1984, Ser. No. 577,967
Claims priority, application Fed. Rep. of Germany, Feb. 11, 1983, 3304831
Int. Cl.⁴ A01F *2/80*
U.S. Cl. 604—250 **11 Claims**



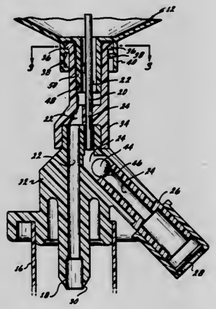
1. A dosing device used in the infusion or transfusion of fluids connected in a flexible fluid line said device comprising a housing, a tubular element comprising an elastomeric material having leading and trailing sections which traverses said housing to interconnect respective ends of said fluid line, said tubular element comprising a thicker portion between said leading and trailing sections thereof, which thicker portion protects against longitudinal displacement of said housing, and a pressing element supported in said housing for compressing said tubular element, said pressing element engaging said tubular element at said leading section of said tubular element outside the region of said thicker portion.

4,576,594

VENTED DRIP CHAMBER FOR USE WITH A SYRINGE

John S. Greenland, Encinitas, Calif., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Jul. 26, 1984, Ser. No. 634,838
Int. Cl.⁴ A61M *5/16*
U.S. Cl. 604—251 **15 Claims**



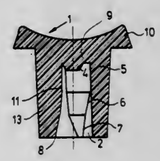
1. A vented drip chamber for engaging with a syringe comprising:
a container;
an adapter mounted on said container for engaging said drip chamber to said syringe, said adapter having a drop former disposed in said container and having a fluid passageway therethrough for fluid communication between said syringe and said drop former; and
a cannula with a first end and a second end and having said first end attached to said adapter with said second end coaxially aligned within a portion of said fluid passageway and extending therefrom for insertion into said syringe for defining an air passageway to vent air from outside said drip chamber into said syringe.

4,576,595

METHOD AND A CLOSURE CAP FOR SEALING A CAPILLARY TUBE

Flemming Aas, Soborg, and Borge Jeppesen, Glostrup, both of Denmark, assignors to Radiometer A/S, Copenhagen, Denmark

Continuation of Ser. No. 316,141, Oct. 29, 1981, abandoned. This application Dec. 24, 1984, Ser. No. 685,962
Claims priority, application Denmark, Oct. 31, 1980, 4618/80
Int. Cl.⁴ A61B *10/00;* A61J *1/00*
U.S. Cl. 604—256 **15 Claims**



1. A closure cap for anaerobicly sealing an open end of a capillary tube having an inner and outer surface and being filled with a blood sample, said cap comprising an end wall having an inner surface and an annular skirt portion extending axially therefrom, the inner surface of said end wall comprising means for sealingly engaging with said open tube end the annular skirt having an inner surface of the skirt exceeding the cross section of the outer surface of the capillary tube thereby defining an annular space between the inner surface of the skirt portion and the outer surface of the capillary tube in the mounted position of the cap, said closure cap further comprising a skirt compression member having a passage defined therein for receiving said cap when mounted on said capillary tube, the cross section of said passage being sized so as to compress said skirt portion radially inwardly into frictional contact with the outer peripheral surface of the capillary tube when said cap skirt portion is inserted into said passage, whereby said end wall may be maintained in sealing engagement with said open tube end.

4,576,596

RESILIENT SHAPE-RETAINING SANITARY NAPKIN

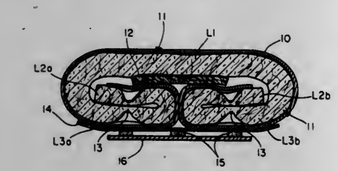
David M. Jackson, Gwinnett County, Ga.; Billie J. Matthews, Winnebago County, and S. Richard Bornslaeger, Outagamie County, both of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

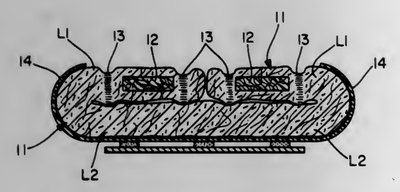
Filed Mar. 3, 1983, Ser. No. 471,582
Int. Cl.⁴ A61F *13/16*
U.S. Cl. 604—370 **6 Claims**

1. A sanitary napkin comprising:
a generally planar absorbent batt containing a fusible thermoplastic component, said batt being folded upon itself a first time along a first pair of generally parallel longitudinally extending fold lines to form a first and a second layer for said napkin, and folded upon itself a second time along a second pair of generally parallel longitudinally extending fold lines to form a third layer for said napkin,
said first and second layers being fixed together adjacent each of said first pair of fold lines by fusing said first and second layers along longitudinally extending fuse lines.

6. A sanitary napkin comprising:
a generally planar absorbent batt containing a fusible thermoplastic component, said batt having a pair of longitudinal side edges and being folded upon itself along a pair of generally parallel longitudinally extending fold lines to

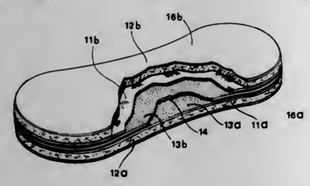
form a first and a second layer for said napkin with said side edges generally meeting in the middle of said napkin, two inserts of material having a higher absorbency than said batt carried within said batt, each insert being located adjacent and extending along a respective side edge of said





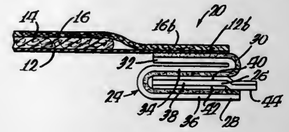
batt such that said inserts are generally centered on said folded batt on either side of a midline to said napkin, and a pair of longitudinally extending fuse lines associated with each insert, with a respective insert located between its pair of fuse lines.

4,576,597
SANITARY NAPKIN SET
James J. Hlaban, Winnebago County, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed Sep. 30, 1983, Ser. No. 537,922
Int. Cl.[4] A61F *13/16*
U.S. Cl. 604—390 **5 Claims**



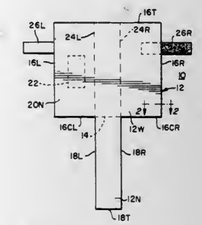
4. A method for making sets of sanitary napkins comprising:
providing first and second webs each comprised of a layer of fluid absorbent material having two faces and a layer of fluid impermeable baffle material affixed to one face of said layer of absorbent material, and a third web of a release liner material having two faces,
coating both faces of said release liner web with an adhesive pattern,
combining said first web with said release liner by placing the adhesive pattern on one face of said release liner web against said baffle material of said first web,
combining said second web with said release liner web by placing said baffle material of said second web against the adhesive pattern on the other face of said release liner web,
applying pressure to removably attach said combined first and second webs to said release paper, and
die-cutting said attached first, second and third webs to form sets of sanitary napkin pairs sharing a common release liner.

4,576,598
DISPOSABLE DIAPER WITH IMPROVED ADHESIVE TAB SYSTEM
Ludwig Tritsch, Wilmette, Ill., assignor to Personal Products Company, Milltown, N.J.
Filed Oct. 27, 1983, Ser. No. 545,986
Int. Cl.[4] A61F *13/16*
U.S. Cl. 604—390 **6 Claims**



1. In combination with a disposable diaper having an absorbent layer and a moisture-impervious backing sheet, an improved adhesive tab system for fastening said diaper about an infant, comprising: an adhesive tab having a tacky adhesive surface extending substantially the entire length thereof in facing relationship to said backing sheet; said adhesive tab having an anchoring end portion, an intermediate portion and a free end portion; said anchoring end portion of said tab being permanently secured to an outside surface of said backing sheet at a marginal location thereof; a release liner having release surfaces on both sides thereof; one of said release liner surfaces having a portion thereof which is permanently secured to an outermost portion of said free end portion of said tab such that the remaining portions of the release surface on said one side of said release liner is releasably attached to and covers the tacky surface of said free end portion of said tab; said intermediate portion of said tab being folded back under said backing sheet with the tacky surface thereof facing outward of said backing sheet in preparation for use of said adhesive tab; and said free end portion of said tab and the release liner affixed thereto being further folded back such that the release surface on the other side of said release liner is releasably attached to and covers the tacky surface of said intermediate portion of said tab.

4,576,599
SANITARY PADS FOR MEN
Harry Lipner, Tallahassee, Fla., assignor to Florida State University, Tallahassee, Fla.
Filed May 14, 1984, Ser. No. 609,651
Int. Cl.[4] A61F *13/16*
U.S. Cl. 604—390 **12 Claims**



4. A sanitary pad for men comprising: a layered body portion including a relatively thick layer of absorbent material disposed on a first face of said body portion and having an internal surface opposite to said first face, a fluid-barrier layer

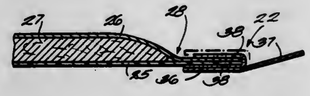
parallel and attached to said internal surface, and a relatively thin layer of absorbent material disposed on a second face of said body portion opposite said first face and attached to said fluid barrier layer, and first adhesive means mounted to said body portion; and wherein said body portion is completely bounded by a plurality of edges, said body portion ending at said plurality of edges, and wherein said sanitary pad is adapted for disposal in:

I. a storage mode with said body portion non-overlapping, flat in a plane, and said plurality of edges all in said plane; and

II. an enveloping mode with said body portion folded to be non-planar and at least partially envelope a wearer's penis and said adhesive means operable to maintain said body portion in proper position, and

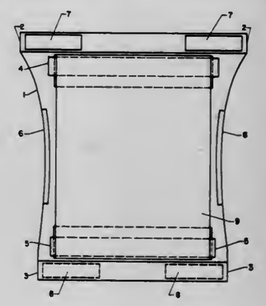
wherein, in said enveloping mode, said body portion is folded to include an inner arm adapted for disposal at least partially between the wearer's penis and skin and an outer arm adapted for disposal between the wearer's penis and his clothes and each arm extending lengthwise along the wearer's penis and wherein, in said storage mode, said body portion includes a relatively wide portion and a relatively narrow portion, said relatively wide portion having right and left wings; and, in said enveloping mode, said narrow portion is folded to form a narrow generally semi-cylindrical portion constituting one of said inner and outer arms, and said wide portion is folded to form a wide generally semi-cylindrical portion constituting the other of said inner and outer arms and disposed at least partly around said narrow generally semi-cylindrical portion, and said wide portion is separated from said narrow portion by a fold disposed at an end of the pad nearest the tip of the wearer's penis.

4,576,600
FASTENERS FOR DIAPERS
Curt G. Joa, Ocean Ridge, Fla., assignor to Curt G. Joa, Inc., Sheboygan Falls, Wis.
Filed Mar. 18, 1985, Ser. No. 713,336
Int. Cl.[4] A61F *13/16*
U.S. Cl. 604—390 **10 Claims**



1. A fastener for a disposable diaper, the diaper comprising a fluid permeable inside sheet for interfacing with the body, a moisture-impermeable outer backing sheet substantially coextensive with the inner sheet and bonded about its margins to said inner sheet, and absorbent material interposed between said inner and outer sheets, said fastener comprising:
a strip of tape having an inner surface and an outer surface, said inner surface having a first zone constituting a release zone that has a low affinity for an adhesive and a second zone that has a high affinity for said adhesive adjacent said first zone,
a coat of adhesive on said inner surface of said strip over said first release zone and over said second zone, the part of said strip containing said second zone being adhered tenaciously to said impermeable outer backing sheet of the diaper at the margin of the diaper and the part of said strip containing said first release zone being folded around the edge of said diaper to place the adhesive coated release zone of the inner surface of said strip in contact with the margin of said inside fluid permeable sheet of the diaper to conceal the adhesive for facilitating storage of the diaper,
peeling the part of said fastener strip having the release zone from said inside sheet causing said adhesive to transfer from said release zone of the fastener strip to the margin of said inside sheet so the resulting adhesive coated area on said inside sheet may be pressed onto said outer sheet remotely from said area to secure the diaper on a body.

4,576,601
DIAPER MAGIC, OPEN PLASTIC PANTS TO HOLD CLOTH DIAPERS OR DISPOSABLE LINER
Lucille M. Brain, Rte. 1 Box 309 C, Hawthorne, Fla. 32640
Continuation of Ser. No. 304,319, Sep. 21, 1981, abandoned. This application Sep. 4, 1984, Ser. No. 646,489
Int. Cl.[4] A41B *9/04*
U.S. Cl. 604—398 **9 Claims**



1. A diaper holder comprising a plastic piece extending between an inextensible back waistband portion and an inextensible front waistband portion along two sides, each waistband portion having two ends, each side having an elastic member to provide elastic contractable leg portions by gathering at least part of the side, front and back inextensible bands attached to said plastic piece to extend lengthwise along and adjacent to said respective front and back waistband portions and operable to hold a cloth diaper or disposable pad placed over and under the bands, each of said waistband portions having a releasable hook/pile fabric fastening portion at least at each of its ends, and wherein said diaper holder forms pants upon each of said fastening portions of said front waistband portion being secured to a complimentary one of said fastening portions of said back waistband portion with each contractable leg portion defining a leg opening, each side having an overlapping portion disposed to overlap a corresponding overlapped portion of the same side, each overlapping portion movable relative to the corresponding overlapped portion from the leg opening up to the waistband portions such that air may circulate under the overlapping portions, and wherein said fabric fastening portions on said waistbands are fastenable so as to adjust the diaper holder for different sized waists.

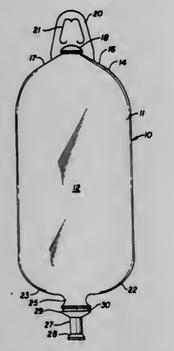
4,576,602
BLOW MOLDED CONTAINER WITH INTEGRAL ADMINISTRATION PORT
Harold A. Levin, Grayslake, and Mark E. Larkin, Lindenhurst, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.
Filed Feb. 8, 1984, Ser. No. 578,161
Int. Cl.[4] A61B *19/00*
U.S. Cl. 604—408 **10 Claims**

1. A flexible, collapsible container for medical fluids composed of a flexible, inert, plastic material, said container comprising:
a body section of generally tubular configuration, said body section defining front, back, side and opposing end wall portions;
said end wall portions defining a hanger section at one end and a tubular portion with a diaphragm extending from the opposing end, said tubular portion being formed with

a stepped parting line and said diaphragm being formed without a stepped parting line and having its thinnest dimension at the center thereof;

said body section being blow molded from a plastic resinous material with said tubular portion and said diaphragm being formed in a one-piece construction with said container, said diaphragm being positioned adjacent the outward end of said tubular portion, said tubular portion and said diaphragm being constructed and arranged to receive a piercing pin with portions of said pierced diaphragm in a fluid-tight manner;

whereby a fluid-tight connection can be effected between a flexible, collapsible container for medical fluids and an I.V. administration set.

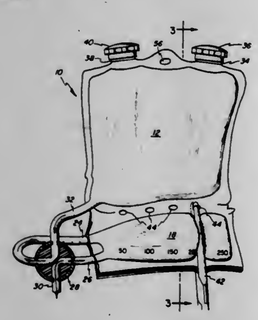


4,576,603

FEEDING DEVICE FOR ENTERALLY ADMINISTERING LIQUIDS INTO A HUMAN BODY

Gerald Moss, R.D. #1, West Sand Lake, N.Y. 12196

Filed Jun. 18, 1984, Ser. No. 621,675
Int. Cl.[4] A61J 7/00
U.S. Cl. 604—410 **4 Claims**



1. A device for the enteral introduction of liquids into a human body comprising:

a reservoir;

an inextensible, collapsible feeding container communicating with said reservoir, said feeding container being variable in volume between an expanded state containing a predetermined maximum volume and a contracted state wherein said container is substantially empty;

an inextensible divider separating the feeding container into two substantially equal chambers, said divider being sufficiently flaccid to conform to the opposite wall of either chamber such that the maximum volume of either chamber is substantially equal to the maximum volume of the container in its expanded state, each chamber having a passageway for the introduction and expulsion of liquids; and

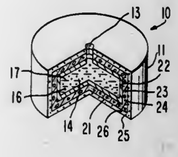
a flow alternating means connected between the reservoir and the chambers for selectively directing the liquid flow from the reservoir to one of the chambers while simultaneously directing the flow from the other chamber to the patient.

4,576,604

OSMOTIC SYSTEM WITH INSTANT DRUG AVAILABILITY

George V. Guittard, Cupertino; Joseph C. Deters, Mountain View; Felix Theeuwes, Los Altos, and Richard Cortese, San Jose, all of Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Filed Mar. 4, 1983, Ser. No. 472,333
Int. Cl.[4] A61K 9/22, 9/00
U.S. Cl. 604—890 **34 Claims**



1. An osmotic device for delivering a beneficial agent to an environment of use, the osmotic device comprising:

(a) a wall at least in part formed of a substantially inert material which surrounds and forms a compartment containing a beneficial agent formulation, said substantially inert material being permeable to the passage of an exterior fluid present in the environment of use and substantially impermeable to the passage of the beneficial agent in the compartment;

(b) a beneficial agent in the wall, said agent being released from the wall when the osmotic device is in operation in a fluid environment of use; and,

(c) an osmotic passageway in the wall communicating with the compartment and the exterior of the device for dispensing the beneficial agent from the compartment when the device is in the environment of use wherein fluid passes through the wall, causes the formation of an osmotic pressure gradient across the wall and dispenses the beneficial agent from the compartment to the environment via the osmotic passageway.

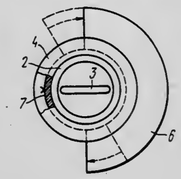
4,576,605

CARDIAC VALVE PROSTHESIS

Arnold N. Kaidash; Naum A. Iofis; Semen G. Khurtsilava; Alexandr S. Bukatov, and Zinaida P. Danilova, all of Moscow, U.S.S.R., assignors to Nauchno-Issledovatelsky Institut Khirurgii Imeni A.V. Vishnevskogo, Moscow, U.S.S.R.

Filed Mar. 1, 1985, Ser. No. 707,145
Int. Cl.[4] A61F 2/24
U.S. Cl. 623—2 **3 Claims**

1. In a cardiac valve prosthesis including an annular body having a valving member and an annular suturing collar disposed outside the annular body, the improvement comprising an annular suturing collar having an outer periphery and a groove extending along the entire outer periphery thereof, and a disc segment made of an elastic material, said disc segment mounted in said groove for angular displacement therewithin relative to the axis of the suturing collar to permit positioning of said disc segment in a desired angular position.

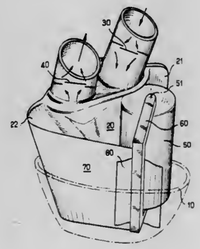


4,576,606

IMPLANTABLE BLOOD PUMP

Vincent Pol, Marseille, and Jean-Claude Dumas, Auriol, both of France, assignors to Clinique de la Residence du Parc, Marseille, France

Filed Dec. 19, 1984, Ser. No. 684,348
Claims priority, application France, Dec. 28, 1983, 83 20933
Int. Cl.[4] A61F 2/22
U.S. Cl. 623—3 **10 Claims**



1. A blood pump, comprising:

an outer shell;

at least one closed elastically deformable pocket which is fed with blood fluid via an inlet valve and which is capable of ejecting said fluid via an outlet valve;

said pocket being substantially flat when unstressed and being placed against the inside wall of the shell in such a manner as to present two walls, which, following the curve of the shell both have their concave sides directed towards the interior of the shell, these two walls extending between two longitudinal elongate regions forming proximal and distal ends;

a drum, with the proximal end of the pocket connected to the periphery thereof;

a bracket rotatably mounted on the longitudinal axis of the drum;

means for providing a traction link between the bracket and the distal end of the pocket; and

means for driving the bracket and the drum in mutual antagonistic rotation over a fraction of a turn in a direction enabling the drum to come into rolling contact with the wall of the pocket while the bracket maintains the distal end and tends to bring it closer to the drum;

in such a manner as to enable the pocket to be compressed under the effect of its being wound around the drum; and

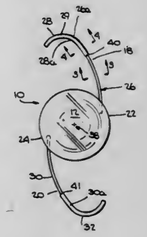
in such a manner that the successive positions of the drum-bracket assembly follow a movement of least resistance between the compression reaction of the pocket and the traction reaction of the distal end of the pocket.

4,576,607

INTRAOCULAR LENSES

Charles D. Kelman, North Shore Towers - 269 Grand Central Pkwy., Bldg. 3, Floral Park, N.Y.

Filed Jul. 13, 1984, Ser. No. 630,695
Int. Cl.[4] A61F 2/16
U.S. Cl. 623—6 **10 Claims**



1. An intraocular lens suitable for use as an artifical lens implant, the lens comprising:

a medial, light-focusing, lens body intended to be positioned adjacent to the pupil in the anterior or posterior chamber of the eye, and a pair of position fixation members connected with said lens body;

one of the said position fixation members adapted to extend to and seat in the vascular tissue of a first groove portion of the eye adjacent ot the periphery of the iris;

the other of said position fixation members adapted to extend to and seat in the vascular tissue of a second groove portion of the eye adjacent to the periphery of the iris;

at least said one position fixation member comprising a resilient leg portion connected at one end with said lens body and a seating portion extending from the other end of said leg portion, said seating portion comprising a first material which is substantially biologically inert to the environment within the eye and exhibits a given springiness and said leg portion comprising a second material which is substantially less biologically inert to the environment within the eye than said first material and exhibits a substantially greater springiness than said first material.

4,576,608

POROUS BODY-IMPLANTABLE POLYTETRAFLUOROETHYLENE

Charles A. Homsy, 11526 Raintree Cir., Houston, Tex. 77024

Continuation-in-part of Ser. No. 204,528, Nov. 6, 1980, abandoned. This application Nov. 8, 1983, Ser. No. 549,805
Int. Cl.[4] A61F 2/02, 2/08, 2/30
U.S. Cl. 623—11 **7 Claims**

1. A composite in vivo implantation material comprising:

a porous, compacted, sintered blend of biocompatible resin fibers and a biocompatible resin binder, said resin fibers consisting entirely of polytetrafluoroethylene fibers and said resin binder consisting entirely of particles of polytetrafluoroethylene resin, said resin fibers and said resin binder being fused together to form a continuous porous matrix with said resin binder retaining said resin fibers therein, said material having a porosity between around fifty (50) percent to ninety (90) percent by volume, the majority of the pores in said porous sintered blend having a size in the range between eighty (80) and four hundred (400) microns.

5. A laminated material suitable for in vivo implantation and having at least two layers, one of said layers comprising:

a porous compacted, sintered blend of a biocompatible fiber component and a biocompatible binder component, said fiber component consisting entirely of polytetrafluoroethylene fibers and said binder component consisting entirely of particles of polytetrafluoroethylene resin, said compo-

nents being fused together to form a continuous porous matrix with said polytetrafluoroethylene resin retaining said polytetrafluoroethylene fibers therein, said porous sintered blend having a porosity between around fifty (50) percent to ninety (90) percent by volume, the majority of the pores in said porous sintered blend having a size in the range between eighty (80) and four hundred (400) microns; and

the other layer being formed of a suitable biocompatible material and secured to said one layer to form the laminated material.

4,576,609

PROCESS FOR THE TREATMENT OF CELLULOSIC MATERIALS WITH OXIDIZING AGENTS AND MICROWAVES

Jacques Hageman, Corbais; Lucien Plumet, Vilvoorde, and Marcel Robberechts, Beersel, all of Belgium, assignors to INTEROX (Societe Anonyme), Brussels, Belgium

Filed Sep. 13, 1984, Ser. No. 650,066
Claims priority, application France, Sep. 16, 1983, 83 14900
Int. Cl.⁴ D06L *3/04*
U.S. Cl. 8—103 **11 Claims**

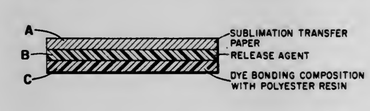
1. A process for the treatment of cellulosic materials with oxidising agents, wherein the cellulosic materials are exposed to the combined action of microwaves and at least one oxidising agent.

4,576,610

SUBLIMATION DYE TRANSFER PRINTING OF FABRICS

Henry Donenfeld, Melbourne, Australia, assignor to Doncroft Colors & Chemicals, Inc., Del.

Continuation of Ser. No. 228,735, Jan. 27, 1981, abandoned. This application Apr. 8, 1983, Ser. No. 482,014
Claims priority, application Australia, Mar. 25, 1980, PE2911
Int. Cl.⁴ C09B *67/00*
U.S. Cl. 8—471 **18 Claims**



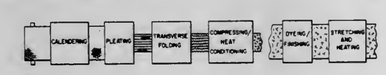
1. In a one step method for sublimation dye transfer printing of a sublimable dye onto fabric by applied heat from a sublimation dye transfer paper the improvement comprising applying a composition comprising a polyester resin having free carboxyl groups, a hardener and a dye binder which is a polymer of one or more monomers selected from the group consisting of unsaturated aliphatic hydrocarbons, acrylic acid esters, methacrylic acid esters, vinyl chloride, vinyl propionate, vinyl isobutyl ether, vinyl acetate, styrene and acrylonitrile, by transfer from the sublimation dye transfer paper to the fabric, in which the polyester resin securely bonds the dye to the fabric to yield a fabric having a soft hand and deep color which is fast to repeated laundering.

4,576,611

METHOD FOR PRODUCING RANDOM-APPEARING PATTERNS ON FABRIC: NODES AND LINE SEGMENTS

William M. Pascoe, Sr., Inman, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Filed May 31, 1984, Ser. No. 615,988
Int. Cl.⁴ D06P *5/00*
U.S. Cl. 8—482 **13 Claims**



1. A method for imparting a pattern of nodes and interconnecting line segments having a random appearance to a moving web of textile fabric comprising synthetic yarns and having a relatively hard calendered surface comprising the steps of:

(a) introducing pleats into said calendered fabric in a warp direction;

(b) introducing folds into said pleated fabric, which folds extend in a transverse direction relative to said pleats;

(c) wadding said pleated and folded fabric into a confined space in a manner which creates random-appearing creases in said fabric; and

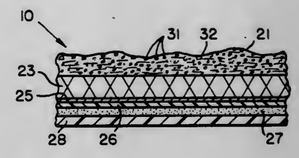
(d) heating said wadded and creased fabric in said confined space under conditions sufficient to heat set said creases in said fabric while moving said fabric through said confined space.

4,576,612

FIXED OPHTHALMIC LENS POLISHING PAD

Jayendra G. Shukla, Marietta, Ga.; Ki G. Sohn, Penn Yan, N.Y.; Carl Twickler, Milford, and Otto S. de Pierne, E. Norwalk, both of Conn., assignors to Ferro Corporation, Cleveland, Ohio

Filed Jun. 1, 1984, Ser. No. 616,175
Int. Cl.⁴ B24D *11/00*
U.S. Cl. 51—295 **10 Claims**



1. A pad for polishing optical quality surfaces, including a flexible support, and a flexible layer of polishing material secured to one surface of said support, said layer of polishing material comprising,

a flexible matrix secured to said one surface of said support and containing a plurality of polishing particles ranging in size of from less than 0.5 microns to approximately 15 microns,

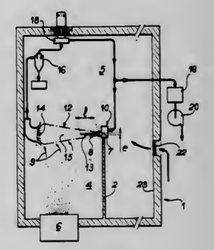
said matrix comprising in combination a latex material and a water soluble polymer, said polymer being present in a quantity approximately equal to or greater than that of said latex material, said matrix being water soluble, allowing a gradual release of said polishing particles as the matrix is dissolved by water used in a polishing operation.

4,576,613

PROCESS FOR CONFINING THE POLLUTION IN AN AREA

Francois Miline, Paris, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Jul. 11, 1983, Ser. No. 512,619
Claims priority, application France, Jul. 15, 1982, 82 12382
Int. Cl.⁴ B61D *45/12*
U.S. Cl. 55—1 **4 Claims**



1. A process for the confinement of pollution of an area communicating with an external atmosphere through at least one opening, wherein a first gaseous jet is circulated along said opening, said gaseous jet covering the entire surface of said opening and being formed by a transition zone and a full jet development zone, the transition zone comprising a dart, said gaseous jet having a first side facing said area and a second side facing said external atmosphere, wherein the transition zone is

given a length equal to the range of the jet and wherein a second gaseous jet is circulated along said second face of the first jet, in the same sense of direction, said second gaseous jet having a first side adjacent to the second side of the first jet and a second side facing said external atmosphere, the injection flow rate of the second jet being greater than the injection flow rate of the first jet and the air flow induced by the first side of the second jet being substantially equal to the injection flow rate of the first jet.

4,576,614

PROCESS AND APPARATUS FOR SEPARATION OF A GASEOUS MIXTURE

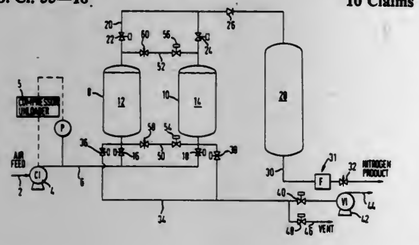
John W. Armond, Buckhurst Hill, and Kenneth C. Smith, Roydon, both of England, assignors to The BOC Group, Inc., Murray Hill, N.J.

Filed Oct. 26, 1981, Ser. No. 314,949

Claims priority, application United Kingdom, Oct. 30, 1980, 8035003

Int. Cl.⁴ B01D *53/04*

U.S. Cl. 55—18 **10 Claims**



1. An improved process for the separation of a gas mixture comprising the steps of:

(a) repeatedly performing a cycle of operations employing a first vessel containing adsorbent which adsorbs one component of the gas mixture more readily then another or the other component of the gas mixture, the cycle of operations comprising:

(i) passing the gaseous mixture at super-atmospheric pressure through the vessel whereby said one component is adsorbed and a gas stream relatively lean in the adsorbed component flows out of the bed, this adsorption step of the cycle of operations lasting a chosen constant period of time;

(ii) regenerating the adsorbent by desorbing gas therefrom and causing a gas stream relatively rich in the desorbed gas to flow out of the vessel;

(b) repeatedly performing such a cycle of operations employing a second vessel containing said adsorbent, the cycles being phased relative to one another, such that at no time is step (i) or step (ii) in one cycle performed simultaneously with the corresponding steps in the other cycle; and

(c) passing the gas stream relatively lean in the adsorbed component into a reservoir; the improvement which comprises continously withdrawing the gas from the reservoir, measuring the flow of gas from the reservoir, and controlling the commencement of the adsorption step in one cycle, such that said adsorption step starts after completion of a preceding adsorption step in the other cycle but only upon the volume of gas withdrawn from the reservoir, measured from the commencement of the preceding adsorption step, having reached a predetemined value.

8. An improved process for the separation of air, comprising the steps of:

(a) repeatedly performing a cycle of operation employing a first vessel containing molecular sieve coke which adsorbs oxygen, carbon dioxide and water vapour more readily than nitrogen, the cycle of operations comprising;

(i) passing air at super-atmospheric pressure through the vessel whereby oxygen, carbon dioxide and water vapour are adsorbed and a gas stream relatively rich in nitrogen flows out of the bed, this adsorption step of the cycle of operations lasting a chosen constant period of time;

(ii) regenerating the molecular sieve coke by desorbing oxygen, carbon dioxide and water vapour therefrom and causing a gas stream relatively rich in said oxygen, carbon dioxide and water vapour to flow out of the vessel;

(b) repeatedly performing such a cycle of operations employing a second vessel containing molecular sieve coke, the cycles being phased relative to one another, such that at no time is step (i) or step (ii) in one cycle performed simultaneously with the corresponding step in the other cycle; and

(c) passing the nitrogen into at least one reservoir; the impovement comprising continuously withdrawing the nitrogen from the reservoir and measuring its flow rate by means of an integrating flowmeter, controlling the commencement of th adsorption step in one cycle, such that said adsorption step starts after a preceding adsorption step in the other cycle is completed but only upon the nitrogn withdrawn from the reservoir, measured from the commencement of the preceding adsorption step, having reached a predetermined value.

4,576,615

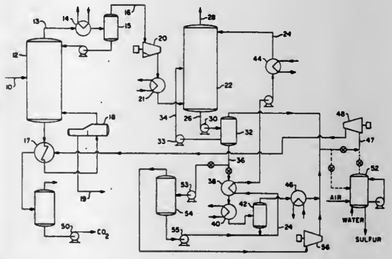
CARBON DIOXIDE HYDROCARBONS SEPARATION PROCESS

David Netzer, and Robert R. Huebel, both of Houston, Tex., assignors to The Randall Corporation, Houston, Tex.

Filed Aug. 20, 1984, Ser. No. 642,308

Int. Cl.⁴ B01D *53/14*

U.S. Cl. 55—43 **7 Claims**



1. A process for the separation and recovery of CO_2 from an enhanced oil recovery or naturally occurring gas stream containing a mixture of at least 45 mol % CO_2 and less than 0.2 mol % H_2S with light hydrocarbons containing ethane as a primary light hydrocarbon component comprising the steps of:

(a) providing a gas stream of said mixture at a pressure of at least 500 psia,

(b) introducing said gas stream into the lower portion of an absorption system,

(c) introducing a first liquid water phase containing at least 65 mol % water and containing less than about 1.4 weight % CO_2 into the top portion of said absorption system and a second liquid water phase containing at least 65 mol % water and containing between about 1.4 and 3.0 weight % CO_2 into the middle portion of said absorption system to form a downwardly flowing liquid water phase whereby said gas stream flows upwardly in contact with said downwardly flowing liquid water phase and said downwardly flowing liquid water phase absorbs CO_2 from said gas stream to form a CO_2-rich liquid water phase,

(d.) withdrawing said gas stream depleted in CO_2 from the top portion of said absorption system,

(e.) withdrawing said CO_2-rich liquid water phase from the bottom portion of said absorption system at a pressure of at least 500 psia,

(f.) separating gaseous CO_2 from said withdrawn CO_2-rich liquid water phase to form said recovered CO_2 and said first liquid water phase containing less than 1.4 mol % CO_2 and said second liquid water phase containing between about 1.4 and 3.0 weight % CO_2, and

(g.) recycling said separated first and second liquid water phases to the top and middle portions of said absorption system respectively.

4,576,616

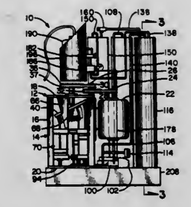
METHOD AND APPARATUS FOR CONCENTRATING OXYGEN

William R. Mottram, Boulder; Gene A. Fisher, Lafayette, and Louis Feierabend, Boulder, all of Colo., assignors to Proto-Med. Inc., Boulder, Colo.

Continuation of Ser. No. 465,479, Feb. 10, 1983, abandoned, which is a continuation-in-part of Ser. No. 402,270, Jul. 27, 1982, Pat. No. 4,502,873. This application Sep. 4, 1984, Ser. No. 647,857

Int. Cl.⁴ B01D *53/04*

U.S. Cl. 55—68 **21 Claims**



1. Oxygen concentrator apparatus, comprising:

two beds of zeolitic material, each bed being in an enclosed container;

a pump for pumping air into said zeolitic bed, said pump having an internal chamber, an intake port for conducting air into said chamber, an exhaust port for conducting air out of said chamber, and air moving means for moving air from said intake port to said exhaust port, said exhaust port being sufficiently large in relation to said chamber to result in substantially isothermal air flow through said pump;

sequence valve means for directing air from said pump first to one of said zeolitic beds while exhausting the other zeolitic bed to the atmosphere, and alternately, for directing air from said pump to said other zeolitic bed while exhausting said one zeolitic bed to the atmosphere, said valve means having internal ducts and ports therein at least as large in cross-sectional area as said exhaust port on said pump such that there is no restriction to air flow therethrough, and

air flow pipes connecting said exhaust port to said sequence valve means and connecting said sequence valve means to said beds, all of said air flow pipes having cross-sectional areas at least as large as the cross-sectional of said exhaust port such that there is no restriction to air flow therethrough.

9. In the method of concentrating oxygen, utilizing the steps of pumping air through one zeolitic bed while purging and exhausting air from a second zeolitic bed by venting said second zeolitic bed to the atmosphere from one end and directing a portion of oxygen-enriched air from said first bed into the opposite end of said second bed and vice versa in sequential steps, the improvements comprising the steps of pumping and flowing the air isothermally into said beds through conduits and valves, all of which have no restrictions in cross-sectional area therethrough from the air pump to the beds.

4,576,617

APPARATUS COMPRISING THE COMBINATION OF FILTER APPARATUS AND REGENERATION APPARATUS AND PROCESS FOR REGENERATING THE FILTER APPARATUS USING THE REGENERATION APPARATUS

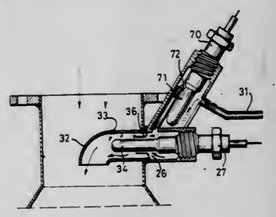
Gérard Renevot, Paris, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Jun. 7, 1984, Ser. No. 618,261

Claims priority, application France, Jun. 16, 1983, 83 09951

Int. Cl.⁴ B01D *46/04*; F01N *3/18, 3/36*

U.S. Cl. 55—96 **15 Claims**



1. Apparatus for regenerating a clogged particle filter into which exhaust gas containing carbon particles from a hydrocarbon engine is introduced by way of a conduit in fluid communication with the particle filter, said apparatus comprising:

(a) a tank for containing an organic liquid;

(b) a first prechamber in which the organic liquid is cracked;

(c) a first fluid passageway in fluid communication with said tank and with said first prechamber;

(d) a first glow plug disposed in said first prechamber;

(e) a second prechamber located in said first fluid passageway between said tank and said first prechamber;

(f) a second glow plug disposed in said second prechamber; and

(g) a second fluid passageway in fluid communication with said first prechamber and adapted to be placed in communication with the conduit.

4,576,618

SELF-CLEANING COLLECTING DEVICE

James E. Wooldridge; Robert E. Osborne, and Robert W. Sexton, all of Louisville, Ky., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Continuation-in-part of Ser. No. 408,611, Aug. 16, 1982, abandoned. This application Aug. 9, 1984, Ser. No. 639,534

Int. Cl.⁴ B03C *3/01*

U.S. Cl. 55—122 **8 Claims**

1. A self-cleaning collecting device in a recirculating gas system for removing noxious vapors and particulates from a dirty gas stream comprising:

A flow-through housing having a base and a top with a dirty gas inlet at the base of the housing, a clean gas outlet at the top of the housing, and a gas treating passage extending upwardly through the housing between the gas inlet and the gas outlet for conducting the gas stream through the housing, at least one access door on said housing for servicing filters and collecting units;

a liquid bath treating section including, an apertured plate

having an upper surface secured in flow-through relation across the passage;

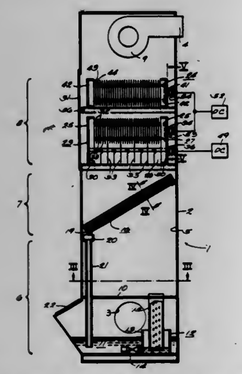
a reservoir receiving gas treating liquid aligned within the housing beneath the apertured plate;

pump means aspirating a predetermined flow of treating liquid from the reservoir and dispersing it on the upper surface of the apertured plate so as to migrate to the apertures in the plate to effect entrainment of the noxious vapors and larger particulates in a mist of liquid droplets formed in the gas stream as it passes through the plate;

a self-cleaning separating section including,

a filter panel support defining a drain trough on one side of said housing;

a planar filter panel carried on said filter panel support and formed of a fiberous material secured in flow-through relation diagonally across the passage for convenient



replacement above the apertured plate separating the entrained particulates and the liquid from the gas stream as it flows through the panel and draining accumulated liquid carrying particulates to the lower edge of the filter panel;

liquid return means including said drain trough and a drain passage circulating liquid accumulating from the filter panel back to the reservoir to maintain a flow of liquid within the panel which acts to wash the particulates from the panel; and

at least one electrostatic collecting unit including a plurality of spaced parallel collecting electrode plates secured in flow-through relation across the passage between the filter panel and the gas outlet separating the smaller particulates from the gas stream and thereby clean the gas stream for recirculation in the gas system.

4,576,619

DUST RECOVERY APPARATUS

Graham P. Manning, Welwyn, England, assignor to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

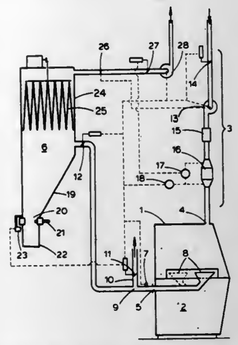
Filed Jan. 17, 1984, Ser. No. 571,604

Claims priority, application United Kingdom, Feb. 2, 1983, 8302835

Int. Cl.⁴ B01D *46/46, 50/00*

U.S. Cl. 55—213 **6 Claims**

1. A dust recovery apparatus comprising a housing and a collector; said housing having an outlet and outlet; means for passing air through the apparatus at a predetermined rate while maintaining a slight positive pressure in the housing, said means including an inlet duct having a shut off damper and being connected to said inlet, an air supply fan and a regulator disposed in spaced relationship for introducing air into said housing; an outlet duct in said housing connected to said collector, said outlet duct containing an air flow rate sensor between the outlet and the collector and a valve between the sensor and collector, said sensor being connected to the shut



off damper, air supply fan, and valve in order to maintain a constant air flow and said collector being connected to an exhaust outlet.

4,576,620

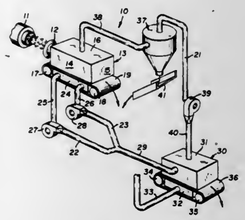
APPARATUS FOR THE PRODUCTION OF MINERAL FIBERS HAVING SUPPLEMENTAL COLLECTION CHAMBER EXHAUST

William F. Porter, Lake Zurich; Michael J. Porter, Hanover Park, and Dwight E. Johnson, Villa Park, all of Ill., assignors to United States Gypsum Company, Chicago, Ill.

Filed Dec. 4, 1984, Ser. No. 677,728

Int. Cl.⁴ C03B *37/06*

U.S. Cl. 65—9 **4 Claims**



1. An apparatus for forming and collecting mineral fibers, comprising:

(a) an apparatus for melting mineral slag and producing mineral fibers,

(b) a collection chamber having an inlet adapted to receive a mixture of air and mineral fibers from said fiber producing apparatus, separating the mineral fibers from the air and depositing the fibers in a packaging area, said collection chamber comprising a housing, a foraminous conveyor means for moving collected mineral fibers out of said chamber mounted below said housing and comprising an endless foraminous belt mounted on rotatable rollers and having an exhaust plenum mounted within said endless belt adapted to exhaust air from said collection chamber through said foraminous belt and thereby reducing the air pressure within said collection chamber, effluent duct means connected to said plenum and means for exhausting air from said effluent duct means,

(c) a cyclone exhaust apparatus having a duct connected to an upper wall of said collection chamber for exhausting air and mineral fibers therefrom, thereby further reducing the pressure within said chamber, said cyclone exhaust apparatus being adapted to discharge collected mineral fibers therefrom.

4,576,621

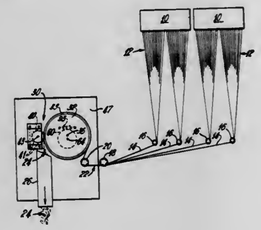
APPARATUS FOR PRODUCING CHOPPED STRANDS OF GLASS FIBERS

Robert N. Chappelear, Anderson, and Alex P. Symborski, Pendleton, both of S.C., assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jan. 7, 1985, Ser. No. 689,425

Int. Cl.⁴ C03B *37/16*

U.S. Cl. 65—10.2 **8 Claims**



1. Apparatus for drawing molten streams of glass into filaments and severing the filaments into discrete segments comprising:

a first rotatable member having an axis of rotation;

a second rotatable member positioned adjacent said first member adapted to sever said filaments to form said discrete segments as the filaments advance between the first and second rotatable members;

means for rotating said first member about said axis to attenuate said streams into said filaments;

a rotatable carriage means having an axis of rotation, the axis of rotation of said first rotatable member being spaced from the axis of rotation of said carriage;

actuator means for rotating said carriage means to laterally move the axis of rotation of said first member along a predetermined path to increase or decrease the distance between the axis of rotation of the first member and the axis of rotation of the second member.

4,576,622

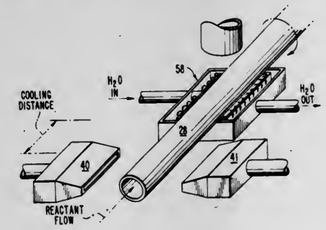
MANUFACTURE OF PREFORMS FOR ENERGY TRANSMITTING FIBERS

Lothar Jung, 1355 Plymouth Rd., Bridgewater, N.J. 08807

Filed Nov. 28, 1983, Ser. No. 555,484

Int. Cl.⁴ C03B *37/02*

U.S. Cl. 65—13 **6 Claims**



1. A glass lathe for producing a fused quartz preform capable of being drawn into an energy transmitting fiber, said lathe comprising:

a lathe bed and a tail stock and a head stock mounted on said bed and means for moving said tail stock along the length of said bed;

chuck means associated with said head stock and said tail stock for mounting a starter tube and the fused quartz preform formed therefrom and means for rotating the tube or preform while mounted in said chuck;

a carriage slidably mounted on said lathe bed and means for driving said carriage back and forth along the length of said lathe bed;

means for introducing gases into the lumen of the rotating tube mounted on said lathe;

burner means mounted on said carriage for heating the tube or preform to decompose said introduced gases, said burner means comprising a burner mounted vertically above said rotating tube or preform;

a reservoir for a coolant mounted on said carriage and means for establishing a fountain in said reservoir to immerse a section of the lower portion of the rotating tube or preform in the coolant when said vertically mounted burner is not operating on said tube or preform; and

means for feeding solid quartz particles downwardly through the flame of said vertically mounted burner onto said rotating tube or preform.

4. The apparatus of claim 1 wherein said burner means further comprises burners mounted in a facing relationship on either side of the rotating tube and horizontally spaced from said reservoir to allow for cooling prior to contact to said coolant.

4,576,623

METHOD FOR MAKING MULTIFOCAL OPHTHALMIC LENS

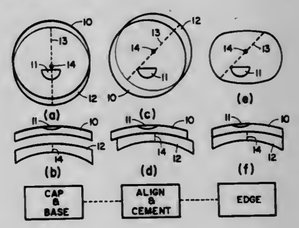
George H. Mann, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Mar. 23, 1984, Ser. No. 592,940

The portion of the term of this patent subsequent to Feb. 12, 2002, has been disclaimed.

Int. Cl.⁴ C03C *21/00*

U.S. Cl. 65—30.14 **1 Claim**



1. A method for making a laminated, chemically strengthened multifocal ophthalmic lens which comprises the steps of:

(a) selecting a glass blank for a multifocal cap element, the blank consisting of a spherical miniscus lens with a concave back surface and with a convex front surface having a recess into which an ophthalmic multifocal segment glass element has been fused;

(b) finishing the front and back surfaces of the blank to provide a finished multifocal cap element with front and back surfaces of matching diopter curvature and a finished thickness not exceeding about 1.5 mm;

(c) providing a glass base element consisting of a spherical miniscus lens with a convex front surface and a concave back surface, the surface curvature of said front surface matching the curvature of the concave back surface of said cap element, and the concave back surface having

been ground to provide at least cylinder corrective power about a cylinder axis in the element;

(d) temporarily bonding the cap element to the base element with a soluble bonding adhesive to provide a bonded composite, the back surface of the cap element being bonded to the front surface of the base element and the relative positions of said elements being adjusted prior to bonding to provide a prescribed angular relationship between the cylinder axis of the base element and the multifocal segment of the cap element;

(e) edging the bonded composite to provide an edge configuration for a selected eyeglass frame;

(f) separating the edged cap and base elements and subjecting the separate cap and base elements to a chemical ion-exchange tempering process to provide strengthened elements; and

(g) permanently cementing the strengthened cap and base elements together to provide a finished laminated, chemically strengthened multifocal ophthalmic lens.

4,576,624

MACHINE FOR FORMING HOLLOW ARTICLES OF VITREOUS MATERIAL

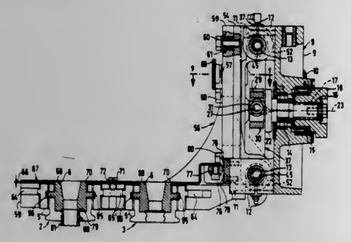
Hans-Georg Seidel, Rinteln, Fed. Rep. of Germany, assignor to Hermann Heye, Obernkirchen, Fed. Rep. of Germany

Filed Jun. 19, 1981, Ser. No. 275,238

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1980, 3024428

Int. Cl.⁴ C03B *9/14, 9/40*

U.S. Cl. 65—300 **12 Claims**



1. A machine for forming a hollow article of vitreous material, comprising at least one forming means having a neck ring including a pair of separable neck ring halves; holding means for holding said at least one forming means and including a pair of holding elements each holding a respective one of said neck ring halves; transporting means for transporting said forming means along a predetermined path and having guide bars; carriages displaceably mounted on said guide bars of said transporting means, each of said holding elements for holding a respective one of said neck ring halves being releasably connected with one of said carriages so that said holding elements can be removed from any hung on said carriages, each of said holding elements being provided with at least one hook and suspended by said at least one hook on the respective one of said carriages; driving means connected with said carriages for moving each of said holding elements relative to said guide bars of said transporting means, between closed and open end positions; and locking means connected with said carriages for locking each of said holding elements in at least said closed end position.

4,576,625

FERTILIZERS CONTAINING UREA WITH UREASE INHIBITORS

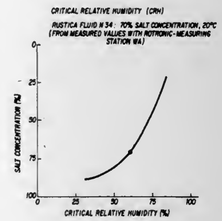
Jürgen Norden, Bochum; Heinrich Aigner, Duelman; Fritz Schindler, Gelsenkirchen, and Reinhard Samblebe, Herne, all of Fed. Rep. of Germany, assignors to Huls Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed Jun. 19, 1984, Ser. No. 622,282

Claims priority, application Fed. Rep. of Germany, Jun. 24, 1983, 3322724

Int. Cl.⁴ C05G *3/02, 3/08*

U.S. Cl. 71—3 **27 Claims**



1. Fertilizers containing urea with urease inhibitors, wherein the urease inhibitors are bromo-nitro compounds having the formula:



wherein A_1 is $(CH_2)_{n1}X_1$, and A_2 is $(CH_2)_{n2}X_2$, wherein both n_1 and n_2 and X_1 and X_2 are the same or different, the alkyl groups of A_1 and A_2 are straight-chain or branched-chain alkyl groups, and the substituents X_1 and X_2 are attached to any one of the carbon atoms of the alkyl groups, and n_1 and n_2 are 0 to 6, X_1 and X_2 are H or YR, wherein Y is —O—, —S— or —NH— and R is H or a straight or branched chain C_1–C_6 alkyl, cyclopent(en)yl, cyclohex(en)yl or phenyl group having one to three methyl groups or



attached thereto, and R_1 is H or a straight or branched chain C_1–C_6 alkyl, cyclopent(en)yl or cyclohex(en)yl group having one to three methyl groups or



attached thereto.

4,576,626

FOLIAGE FERTILIZERS

Kurt H. Bauer, Freiburg; Miklos Ghyczy; Eugen Etschenberg, both of Cologne, and Heinrich Osthoff, Huerth, all of Fed. Rep. of Germany, assignors to A. Nattermann & Cie GmbH, Cologne, Fed. Rep. of Germany

Continuation of Ser. No. 490,968, May 2, 1983, abandoned. This application Apr. 15, 1985, Ser. No. 722,985

Claims priority, application Fed. Rep. of Germany, May 13, 1982, 3218028

Int. Cl.⁴ C05C *9/00*

U.S. Cl. 71—28 **4 Claims**

1. A process for the preparation of phospholipid containing foliage fertilizers comprising one or several macronutrients and 10 to 50% by weight (based on the total weight of the nutrients) of one or several phospholipids consisting of the steps of:

(1) dissolving said one or several phospholipids in a solvent by stirring the phospholipids and solvent until a first solution is formed;

(2) dissolving said one or several macronutrients together with any conventional adjuvants in a solvent in the presence of a polyol by stirring the macronutrients, any adjuvants, solvent and polyol until a second solution is formed; and

(3) combining and stirring said first and second solutions with water to provide upon the blending thereof an aqueous emulsion or suspension useful as a foliage fertilizer.

4,576,627

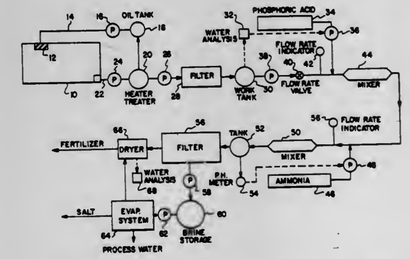
METHOD OF PROVIDING FERTILIZER FROM BRINES

William B. Hughes, 6605 Bob-O-Link Dr., Dallas, Tex. 75214

Filed Sep. 4, 1984, Ser. No. 647,085

Int. Cl.⁴ C05B *11/10*

U.S. Cl. 71—41 **14 Claims**



1. A method for recovering a fertilizer from a brine containing divalent metal cations comprising the steps of:

(a) first adding phosphoric acid to said brine and agitating said phosphoric acid and said brine to form a mixture;

(b) then adding ammonia to said mixture to adjust the pH of said mixture to between 4.5 and 6.0 and agitating said mixture to precipitate substantially all of the divalent metal cations contained in said mixture, the precipitate comprising divalent metal ammonium phosphates which are useful as a fertilizer; and

(c) separating said precipitate from said mixture.

4,576,628

OXIME ETHERS, COMPOSITIONS CONTAINING THEM AND THE USE THEREOF

Henry Martin, Allschwil, and Urs Fricker, Gelterkinden, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

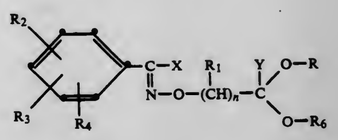
Division of Ser. No. 473,905, Mar. 10, 1983, Pat. No. 4,530,716. This application May 13, 1985, Ser. No. 733,352

Claims priority, application Switzerland, Mar. 15, 1982, 1609/82

Int. Cl.⁴ C07C *131/00*; A01N *33/06, 37/00, 37/10, 37/18, 37/34, 37/36, 43/08, 43/28, 43/40, 43/64, 43/82*

U.S. Cl. 71—88 **16 Claims**

1. An oxime ether of the formula



wherein n is 1 or 2

each of R_1 and R_2 is hydrogen or C_1–C_4-alkyl,

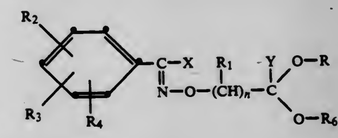
each of R_3 and R_4 is hydrogen, halogen, C_1–C_4 alkyl, C_1–C_4 haloalkyl, C_1–C_4 alkoxy, C_1–C_4 haloalkoxy or nitro

R_5 and R_6 are independently of each other C_1–C_4 alkyl or C_3–C_4 alkenyl

X is a fluorinated C_1–C_3 alkyl radical which may also additionally contain chlorine and

Y is hydrogen, C_1–C_4 alkyl or C_1–C_4 alkoxy.

9. A composition for controlling weeds in crops of culture plants which comprises (a) a herbicidally effective amount of a herbicide selected from the group consisting of thiocarbamates, haloacetanilides, phenoxyphenoxypropionates, pyridyloxyphenoxypropionates and dinitroanilines, and (b) as crop safening agent an oxime ether of the formula



wherein n is 1 or 2

each of R_1 and R_2 is hydrogen or C_1–C_4-alkyl,

each of R_3 and R_4 is hydrogen, halogen, C_1–C_4 alkyl, C_1–C_4 haloalkyl, C_1–C_4 alkoxy, C_1–C_4 haloalkyoxy or nitro,

R_5 and R_6 are independently of each other C_1–C_4 alkyl or C_3–C_4 alkenyl

X is a fluorinated C_1–C_3 alkyl radical which may also additionally contain chlorine and

Y is hydrogen, C_1–C_4 alkyl or C_1–C_4 alkoxy.

4,576,629

HERBICIDAL THIADIAZOLE UREAS

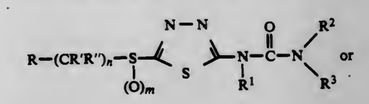
Robert B. Morland; Anson R. Cooke, both of Durham, N.C., and John R. Bishop, Hatfield, Pa., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Mar. 15, 1984, Ser. No. 589,724

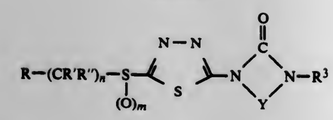
Int. Cl.⁴ A01N *43/02*

U.S. Cl. 71—90 **28 Claims**

1. Compounds having the structural formula:



-continued



wherein
R is:

(a) a substituted or unsubstituted radical having the structural formula:



wherein A is an alkylene or alkenylene chain having 5, 6 or 7 ring members which are replaced by one to three heteroatoms, in any location and in any combination, selected from the groups of oxygen, nitrogen and sulfur, wherein the permissible substituents are one or more alkyl, alkoxy, carboalkoxy, monoalkylamino, dialkylamino, amido, alkylthio, phenyl, halogen, trihalomethyl hydroxy, cyano, mercapto or nitro substituents provided that any substituent may not have more than eight aliphatic carbon atoms: or

(b) a substituted or unsubstituted radical having a structural formula:



wherein A is as defined above and A′ is an alkylene or alkenylene chain having 3, 4 or 5 members which may be replaced by up to three hetero atoms, in any location and in any combination, selected from the group of oxygen, nitrogen and sulfur, or A′ is a 4-membered polyunsaturated chain, wherein the permissible substituents are one or more alkyl, alkoxy, carboalkoxy, monoalkylamino, dialkylamino, amido, alkylthio, phenyl, halogen, trihalomethyl hydroxy, cyano, mercapto or nitro substituents;

R′ and R″ are independently hydrogen, alkyl, cycloalkyl, alkoxy, carboalkoxy or halogen, provided that R′ and R″ independently may not contain more than four carbon atoms;

n is an integer from 1 to 5;

m may be 0, 1 or 2

R^1, R^2 and R^3 are independently hydrogen, cylopentyl, cyclohexyl, cyclopropyl, phenyl, alkyl or alkoxy each containing no more than eight carbon atoms; and

Y is a substituted or unsubstituted divalent alkylene or alkenylene chain having two or three members wherein any one carbon atom in said chain may be replaced with an amino group and any one or two carbon atoms in said chain may be replaced with a carbonyl group, and wherein the permissible substituents are one or more halo, alkoxy or hydroxy.

4,576,630

SUBSTITUTED 4,5-DIMETHOXYPYRIDAZONES, HERBICIDES CONTAINING THESE COMPOUNDS, AND THEIR USE FOR CONTROLLING UNDESIRABLE PLANT GROWTH

Adolf Parg, Bad Durkheim; Gerhard Hamprecht, Weinheim; Hubert Sauter, Mannheim, and Bruno Wuerzer, Otterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

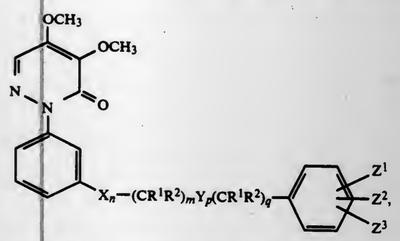
Filed Jun. 6, 1984, Ser. No. 617,929

Claims priority, application Fed. Rep. of Germany, Jun. 10, 1983, 3321007

Int. Cl.⁴ A01N *43/58*; C07D *237/16*

U.S. Cl. 71—92 **15 Claims**

1. A substituted 4,5-dimethoxypyridazone of the formula



(I)

where X and Y independently of one another are each oxygen, sulfur, a sulfinyl group or a sulfonyl group, R^1 and R^2 independently of one another are each hydrogen or C_1–C_4-alkyl, Z^1, Z^2 and Z^3 independently of one another are each hydrogen, halogen, nitro, cyano, C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkylmercapto, C_1–C_4-haloalkylmercapto, C_1–C_4-alkylsulfinyl or C_1–C_4-alkylsulfonyl, n and p are each 0 or 1, m is 1 to 8 and q is 0 to 8.

6. A herbicide containing inert additives and an effective amount of a 4,5-dimethoxypyridazone of the formula I as defined in claim 1.

4,576,631

CERTAIN ARYLOXYPHENOXY OXOIMIDAZOLIDINES AND METHOD OF USE

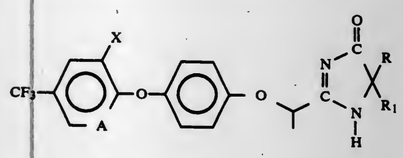
Charles G. Carter, San Francisco, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Jun. 25, 1984, Ser. No. 624,066

Int. Cl.⁴ A01N *43/50*; C07D *401/02*

U.S. Cl. 71—92 **15 Claims**

1. An aryloxyphenoxyoxoimidazoline having the formula



wherein
A is CH or nitrogen;
X is hydrogen or chlorine; and
R and R_1 are alkyl groups having from 1 to 4 carbon atoms.

4,576,632

BENZOFURAN SULFAMATES

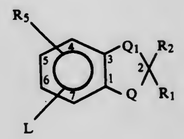
Morris P. Rorer, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 387,951, Jun. 15, 1982, Pat. No. 4,494,979, which is a continuation-in-part of Ser. No. 286,602, Jul. 24, 1981, abandoned. This application Nov. 7, 1984, Ser. No. 669,016

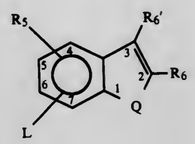
Int. Cl.⁴ C07D *405/12*; A01N *43/66, 43/68, 43/70*

U.S. Cl. 71—93 **33 Claims**

1. A compound of the formula:

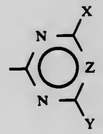


or

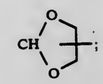


(I)

wherein
Q is O, S or SO_2;
Q_1 is CR_3R_4 or O;
L is $OSO_2NHCONHA$;
R_1 is H or C_1–C_3 alkyl;
R_2 is H or CH_3;
R_3 is H or CH_3;
R_4 is H or CH_3;
R_5 is H, CH_3; OCH_3; Cl, Br, NO_2, CO_2R_7, SO_2R_8, OSO_2R_9 or $SO_2NR_{10}R_{11}$;
R_6 is H or C_1–C_3 alkyl;
R_6' is H or CH_3;
R_7 is C_1–C_3 alkyl, $CH_2CH{=}CH_2$, $CH_2CH_2OCH_3$ or CH_2CH_2Cl;
R_8 is C_1–C_3 alkyl;
R_9 is C_1–C_3 alkyl or CF_3;
R_{10} and R_{11} are independently C_1–C_2 alkyl;
A is



X is CH_3 or OCH_3;
Y is Cl, CH_3, OCH_3, OC_2H_5, CH_2OCH_3, NH_2, $NHCH_3$, $N(CH_3)_2$, $CH(OCH_3)_2$ or



and
Z is N;
provided that
(1) L is fixed at the 4- or 7-position; and when L is at the 4-position, then R_5 is at the 5-position, and when L is at the 7-position, then R_5 is at the 6-position;
(2) in Formulae I and II, when Q is O and L is in the 4position, and R_5 is other than H, then R_1 and R_6 are other than H;
(3) in Formula II, when Q is O and L is in the 7-position, and R_5 is other than H, then R_6 and R_6' are other than H;
(4) in Formula II, when Q is S or SO_2 and R_5 is other than H, Br or NO_2, then R_6 and R_6' are other than H;
(5) in Formula I, when Q is S, then R_5 is other than SO_2R_8;
(6) when Q_1 is O, then Q is O and R_5 is H; and
(7) the total number of carbon atoms in R_1 to R_4 are less than or equal to 4.

4,576,633

HERBICIDAL SULFONAMIDES

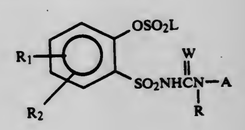
James J. Reap, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 477,969, Mar. 23, 1983, Pat. No. 4,515,624. This application Feb. 1, 1985, Ser. No. 697,375

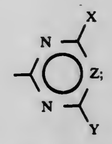
Int. Cl.⁴ C07D *25/18, 401/12*; A01N *43/70, 43/68*

U.S. Cl. 71—93 **17 Claims**

(II) 1. A compound of the formula:



wherein
W is O or S;
R is H or CH_3;
Q is O, or NR_3;
L is NR_5R_6 or $N(OCH_3)CH_3$;
R_1 is H, F, Cl, Br, CH_3, OCH_3, CF_3 or NO_2;
R_2 is H or Cl;
R_3 is H or C_1–C_3 alkyl;
R_5 and R_6 are independently C_1–C_3 alkyl, or R_5 and R_6 may be taken together to be $-(CH_2)_4-$, $-(CH_2)_5-$ or $-(CH_2)_2O(CH_2)_2-$;
A is



A-1

X is CH_3, OCH_3, CH_2CH_3, OCH_2CH_3 or OCF_2H;
Y is H, NH_2, $NHCH_3$, $N(CH_3)_2$, C_1–C_4 alkyl, C_1–C_4 alkyl substituted with 1–3 atoms of (a) F, (b) Cl or (c) Br, CH_2OCH_3, $CH_2OCH_2CH_3$, C_1–C_4 alkoxy, C_1–C_2 alkylthio, C_3–C_4 alkenyloxy, C_3–C_4 alkynyloxy, $OCH_2CH_2OCH_3$, $CH(OCH_3)_2$, $CH(OCH_2CH_3)_2$,



OCH_2CF_3, OCH_2CH_2F, OCH_2CH_2Cl, OCH_2CH_2Br or GCF_2T wherein G is O or S and T is H, CHClF, CHBrF, CF_2H or $CHFCF_3$;
Z is N;
provided that
when W is S, then R is H;
and their agriculturally suitable salts.

4,576,634
PROCESS FOR THE PREPARATION OF CHALCOGENIDE ALLOYS

Santokh S. Badesha, Pittsford; Damodar M. Pai, Fairport; Kathleen M. Carmichael, Williamson, and Ihor W. Tarnawskyj, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 15, 1985, Ser. No. 765,758
Int. Cl.⁴ C01B *19/00*
U.S. Cl. 75—0.5 A **30 Claims**

1. A process for the preparation of high purity chalcogenide alloys which comprises providing an acid mixture of chalcogens; forming a solution thereof; and thereafter reacting the solution with a reducing agent.

4,576,635
PROCESS FOR PRODUCING FERROMAGNETIC METAL POWDER

Hiroaki Araki, and Tatsuji Kitamoto, both of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 27, 1985, Ser. No. 705,975
Claims priority, application Japan, Feb. 27, 1984, 59-35582
Int. Cl.⁴ B22F *1/02*; H01F *1/33*
U.S. Cl. 75—0.5 AA **7 Claims**

1. In a process for producing a ferromagnetic metal powder comprising treating acicular iron oxyhydroxide or an acicular metal oxyhydroxide composed mainly of iron with a silicon compound, dehydrating the treated material by heating the material in a non-reducing atmosphere to produce iron oxide particles or metal oxide particles composed mainly of iron, and reducing the resulting iron oxide particles or metal oxide particles composed mainly of iron by heating in a reducing atmosphere to produce iron powder or a metal powder composed mainly of iron, the improvement in which the dehydration by heating in a non-reducing atmosphere is performed at a temperature of from 300° to 800° C. and the iron oxide particles or the metal oxide particles composed mainly of iron are treated with a silicon compound prior to the reduction by heating in a reducing atmosphere.

4,576,636
PROCESS FOR BENEFICIATING OXIDIC ORES

Michael Robinson, Wooton, and Harry B. Wilson, North Thoresby, both of England, assignors to SCM Chemicals Limited, London, England

Filed Feb. 17, 1981, Ser. No. 234,987
Claims priority, application United Kingdom, Feb. 19, 1980, 8005517
Int. Cl.⁴ C01G *49/10*
U.S. Cl. 75—1 R **19 Claims**

1. A process for the beneficiation of an iron-containing oxidic material, which comprises;

(a) chlorinating iron values of the material by forming a fluidised bed of particles of the material in admixture with particles of carbon, the carbon being present in the fluidised bed in at least sufficient quantity to react with any oxygen added to or evolved in the bed, and the temperature of the fluidised bed being from 800° C. to 1100° C., admitting to the fluidised bed a chlorine containing gas giving a concentration of chlorine of from 20% to 60% by volume of gases added to the bed and reacting the chlorine with iron values present in the ore to produce iron chloride predominantly in the form of ferrous chloride,

(b) contacting the gaseous effluent from the fluidised bed in which iron values in the material have been chlorinated; hereafter referred to as the chlorination fluidised bed; the said effluent containing the said ferrous chloride in vapour form, with a quantity of oxygen controlled to oxidise more than 50% but less than 100% on a molar basis, of the ferrous chloride in the effluent according to the equation $3FeCl_2+0.75O_2=0.5Fe_2O_3+2FeCl_3$ to produce a mixture of iron chloride and ferric oxide

(c) condensing iron chloride contained in the said mixture and separating the condensed iron chloride from the gaseous effluent from the fluidised bed,

(d) revolatilising condensed iron chloride,

(e) contacting revolatilised iron chloride with oxygen to oxidise the iron chloride so contacted to ferric oxide with the evolution of chloride and

(f) recycling chlorine so evolved, as chlorine containing-gas, to the chlorination fliuidised bed.

4,576,637
PROCESS FOR PREPARING SILICON-BASE COMPLEX FERROUS ALLOYS

Istvan Tamas; Szilard Riederauer, both of Budapest, and Janos Kovacs, Salgotarjan, all of Hungary, assignors to Vasipari Kutato es Fejleszto Vallalat, Budapest, Hungary

Filed Sep. 18, 1984, Ser. No. 651,849
Int. Cl.⁴ C22B *4/00*
U.S. Cl. 75—10 R **2 Claims**

1. A process for the preparation of alloys of at least three metals of which two are iron and silicon, comprising

forming pellets containing at least about 50% by weight of an oxide of at least one said metal and a carbonaceous reducing agent in an amount such that the quantity of carbon is either 1.05 to 1.35 times higher than that required to transform said oxide to carbide or 0.66 to 0.02 times the quantity required to reduce said oxide, the pellets melting upon heating at a temperature no lower than 1600° C.;

assembling a charge comprised of

(a) said pellets

(b) carbon-deficient lumps or pellets of an oxide of a said metal other than the metal of the first-mentioned pellets, and

(c) a lumpy carbonaceous material;

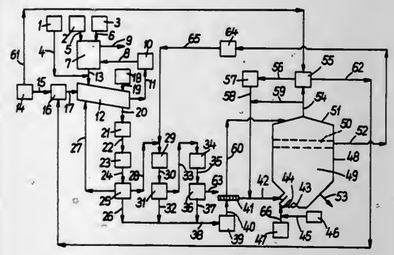
the charge being free from boron trioxide and containing carbon in an amount equal to 0.82 to 0.99 times the quantity necessary to reduce all oxides of the charge; and

reducing the charge in an electric arc furnace.

4,576,638
PROCESS FOR THE PRODUCTION OF FERROMANGANESE

Hermann Doerr, Muelheim; Thomas Hoster; Dieter Neuschuetz, both of Essen; Dietrich Radke, Ratingen; Wilhelm Janssen, Muelheim, and Klaus Ulrich, Heiligenhaus, all of Fed. Rep. of Germany, assignors to Fried. Krupp Gesellschaft mit beschraenkter Haftung, Fed. Rep. of Germany

Filed Dec. 20, 1984, Ser. No. 684,324
Claims priority, application Fed. Rep. of Germany, Dec. 31, 1983, 3347685
Int. Cl.⁴ C22B *47/00*
U.S. Cl. 75—80 **20 Claims**



1. Process for the production of ferromanganese with a carbon content of from 0.05 to 8% from iron-containing manganese ore by heating a mixture of manganese ore, solid carbon-containing fuel and slag-forming constituents in a rotary kiln, and subsequently melting, in a melting furnace, ferromanganese from the reaction product that is removed from the rotary kiln and cooled down, comprising:

(a) forming a mixture of manganese ore, coal and slag-forming constituents at an ore-coal ratio of 1:0:4 to 1:2, in which mixture slag-forming constituents CaO, MgO, Al_2O_3 and SiO_2 are present in an amount such that in the slag a $(CaO+MgO)/(Al_2O_3+SiO_2)$ ratio exists of 1:0:3 to 1:4 and the Al_2O_3/SiO_2 ratio is 1:0:3 to 1:9;

(b) heating the mixture in the rotary kiln from 20 to 240 minutes in a CO-containing atmosphere at a temperature of from 1200° to 1350° C. to form a reaction product and removing the reaction product from the rotary kiln;

(c) crushing the reaction product removed from the rotary kiln to a particle diameter of less than 15 mm;

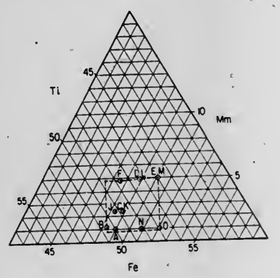
(d) separating the crushed reaction product by density separation into a coal-containing fraction which is reintroduced into the rotary kiln, at least one metal-containing slag-rich fraction and an alloy fraction to be delivered to the melting furnace; and

(e) delivering the alloy fraction to the melting furnace and melting the alloy fraction in the melting furnace at temperatures of from 1400° to 1600° C.

4,576,639
HYDROGEN STORAGE METAL MATERIAL

Ryoichi Suzuki; Jiro Ohno, and Hisashi Gondo, all of Kawasaki, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed May 23, 1984, Ser. No. 613,343
Claims priority, application Japan, May 26, 1983, 58-93273
The portion of the term of this patent subsequent to Dec. 18, 2001, has been disclaimed.
Int. Cl.⁴ C22C *30/00, 38/00*
U.S. Cl. 75—123 E **2 Claims**



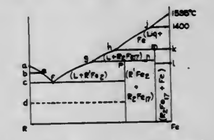
1. A hydrogen storage metal material, namely Ti—Fe—Mm, consisting essentially of Ti in an atomic ratio in the range of from 0.90 to 1.05 with respect to Fe, Mm in an atomic ratio in the range of from 0.015 to 0.1 with respect to Fe, and the remainder Fe.

4,576,640
HYDROGEN STORAGE MATERIAL

Malcolm J. Wootton, and Ivor R. Harris, both of Birmingham, England, assignors to Lucas Industries Public Limited Company, Birmingham, England

Filed Jun. 29, 1984, Ser. No. 626,235
Claims priority, application United Kingdom, Jul. 2, 1983, 8318009
Int. Cl.⁴ C22C *38/00*
U.S. Cl. 75—123 E **19 Claims**

1. A hydrogen storage material for releasably storing hydrogen having a microstructure comprising an alloy phase of the general formula R_2Fe_{17}, wherein R comprises cerium and lanthanum and, optionally, at least one other rare earth element, and wherein a microstructure also contains from about 2 to 35% by weight based on the total weight of all phases a eutectic of the formula $R'/R'Fe_2$, wherein R' is lanthanum-starved R; wherein said alloy phase of the generalised formula R_2Fe_{17} is present in an amount of not less than 40% by weight



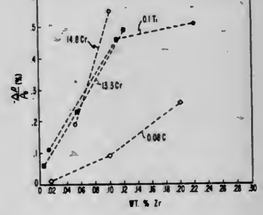
	°C	wt %	°C	wt %	°C	wt %
a	795	-	917	-	1050	-
b	715	-	790	-	860	-
c	882	-	~660	-	640	-
d	357	-	-	-	-	-
e	715	~85	790	~91	860	~84
f	882	88	~660	80–85	640	~75
g	552	~88	675	80–85	1150	~47
h	1066	~50	1105	45	1156	~36
i	1400	~13	1400	~14	1400	~17
k	1066	-	1105	-	1155	-
l	911	-	950	-	535	-
m	1066	~11	1106	~11	1155	~11
n	552	-	670	-	1150	-
p	552	~54	670	~35	1150	~35

of the material, and said material contains less than 60% by weight of cerium based on the total amount of cerium, lanthanum and, if present, said at least one other rare earth element.

4,576,641
AUSTENITIC ALLOY AND REACTOR COMPONENTS MADE THEREOF

John F. Bates, Ogden, Utah; Howard R. Brager, Richland, Wash., and Michael K. Korenko, Wexford, Pa., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 2, 1982, Ser. No. 414,167
Int. Cl.⁴ C22C *38/22*
U.S. Cl. 75—128 P **27 Claims**



1. An austenitic nickel-chromium-iron base alloy consisting essentially of:

about 0.04 to 0.09 wt.% carbon;
about 1.5 to 2.5 wt.% manganese;
about 0.5 to 1.6 wt.% silicon;
about 0.035 to 0.08 wt.% phosphorus;
about 13.3 to 16.5 wt.% chromium;
about 13.7 to 16.0 wt.% nickel;
about 1.0 to 3.0 wt.% molybdenum;
about 0.10 to 0.35 wt.% titanium;
up to about 0.20 wt.% zirconium;
wherein for zirconium contents from 0.02 to 0.20 wt.% the carbon and phosphorus contents are selected from the group consisting of about 0.05 to 0.08 wt.% phosphorus and about 0.04 to 0.09 wt.% carbon, about 0.035 to 0.08 wt.% phosphorus and about 0.07 to 0.09 wt.% carbon, and about 0.05 to 0.08 wt.% phosphorus and about 0.07 to 0.09 wt.% carbon; and the balance of said alloy being essentially iron.

4,576,642

ALLOY COMPOSITION AND PROCESS

Frederick C. Holtz, Jr., Birmingham, Mich., assignor to Crucible Materials Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 513,058, Oct. 8, 1974, Pat. No. 4,469,514, which is a continuation of Ser. No. 279,942, Aug. 11, 1972, abandoned, which is a continuation of Ser. No. 435,733, Feb. 26, 1965, Pat. No. 3,746,518. This application Jul. 19, 1984, Ser. No. 632,385

The portion of the term of this patent subsequent to Jul. 17, 1990, has been disclaimed.

Int. Cl.⁴ C22C *29/02*

U.S. Cl. 75—239 **6 Claims**

1. A consolidated integral high speed steel alloy body which is essentially fully dense formed of a hot worked supersaturated solid solution of an inherently alloying composition, said alloy body consisting essentially of a continuous metallurgical phase with a uniformly dispersed hard phase of minute dispersed hard phase particle sizes that are essentially entirely less than 3 microns, said alloying composition consisting essentially by weight of from about 0.8% to about 3.4% carbon, at least about 17% of a hard phase-forming element selected from the group consisting of Cr, W, Mo, Ti, Ta, Cb, and V, and mixtures thereof, and the remainder base metal and incidental impurities, wherein said base metal is iron or a mixture of iron and cobalt, and wherein the amount of iron is at least about 35% and the amount of cobalt is 0% to about 27%.

4,576,643

RUST PREVENTIVE AND PROCESS FOR THE PREPARATION THEREOF

Kaj M. Skantz, Nikkilae, and Ari R. E. Christiansen, Espoo, both of Finland, assignors to Shell Internationale Research Maatschappij B.V., The Hague, Netherlands

Filed Jun. 28, 1984, Ser. No. 625,498

Claims priority, application Finland, Jul. 1, 1983, 832428

Int. Cl.⁴ C04B *9/02*

U.S. Cl. 106—14.24 **7 Claims**

1. Rust preventative containing, as a binder agent, a tall oil pitch ester having an acid number between 0 and 15 mg KOH/g wherein the tall oil pitch ester is produced by esterifying tall oil pitch having an acid number between 17 and 50 mg KOH/g with alcohol comprising alcohol derived from unsaponifiable fraction of tall oil.

4,576,644

METHOD OF PRODUCING CEMENT FROM RAW MATERIAL CONTAINING HARMFUL SUBSTANCES

Wolf Goldmann, Beckum, Fed. Rep. of Germany, assignor to Krupp Polysius AG, Beckum, Fed. Rep. of Germany

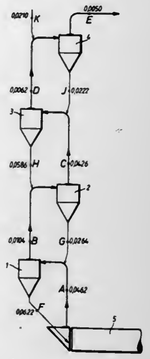
Filed Nov. 14, 1983, Ser. No. 551,677

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1982, 3244241

Int. Cl.⁴ C04B *7/02*

U.S. Cl. 106—100 **8 Claims**

1. In a method of producing cement from raw material containing sulphur, alkali, chlorine or other harmful substance wherein such material is delivered in a stream via a multi-stage cyclone preheater to a kiln separate from said preheater and from which kiln exhaust gas flows in a stream through the preheater countercurrent to such material stream, and wherein a proportion of the material stream or the gas stream is extracted to reduce the circulation of such harmful substance, the improvement comprising extracting from the preheater a sufficient quantity of one of said streams to obtain a selected reduction in the content of said harmful substance, the extraction of said one of said streams occurring at a zone of said preheater



which results in the reduction of the highest quantity of said harmful substance at the least heat loss.

4,576,645

WHIPPED GEL COMPOSITION

Kanak K. R. Ravel, Perth Amboy; Bhupendra R. Vaidya, Kendall Park, and Nelly A. Nerizon, Belleville, all of N.J., assignors to Block Drug Co., Inc., Jersey City, N.J.

Filed Dec. 6, 1984, Ser. No. 678,697

Int. Cl.⁴ A01N *31/00*; A61F *13/00*; A23C *11/00*; A61K *9/10*

U.S. Cl. 106—125 **23 Claims**

1. An edible thixotropic, spoonable soft gel comprising an aerated multiphase composition of emulsified glyceride dispersed in a continuous hydrocolloid phase, said gel having an RVT Brookfield viscosity of about 100,000–500,000 centipoises at room temperature and a TD spindle speed of 2.5 rpm.

4,576,646

FILM-FORMING COMPOSITIONS FOR ENVELOPING SOLID FORMS, PARTICULARLY PHARMACEUTICAL OR FOOD PRODUCTS OR SEEDS, AND PRODUCTS OBTAINED, COATED WITH SAID COMPOSITIONS

Bernard Branco, Le Chesnay, and Michel Malandain, Marly le Roi, both of France, assignors to Seppic, Paris, France

Division of Ser. No. 627,665, Jul. 3, 1984, Pat. No. 4,513,019. This application Oct. 31, 1984, Ser. No. 666,762

Int. Cl.⁴ A61K *9/36*; C08L *1/00*

U.S. Cl. 106—163.1 **7 Claims**

1. Film-forming compositions for enveloping solid forms such as pharmaceutical or food products or seeds, wherein said compositions comprise, by weight:

15 to 85% of a cellulosic film-forming substance,

10 to 70% of at least one alpha-cellulose,

5 to 30% of at least one plasticizer suitable for consumption.

4,576,647

OLEOPHILIC COMPOSITION COMPRISING A POWDERY OR GRANULAR SUBSTANCE HAVING A HYDROPHILIC SURFACE AND AN ALUMINUM CHELATE COMPOUND

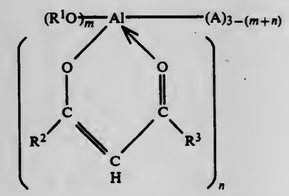
Noritaka Matsushita, Takefu, Japan, assignor to Kawaken Fine Chemicals Co., Ltd. and Ajinomoto Co., Inc., both of Tokyo, Japan

Continuation of Ser. No. 424,452, Sep. 27, 1982. This application Aug. 24, 1984, Ser. No. 629,709

Int. Cl.⁴ C04B *14/00*; C07F *5/06*

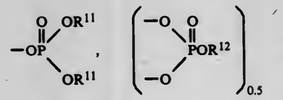
U.S. Cl. 106—193 R **20 Claims**

1. An oleophilic composition comprising a powdery or granular substance having a hydrophilic surface and 0.1% to 20% by weight, based on the weight of said powdery or granular substance, of at least one aluminum chelate compound represented by the following general formula (I):

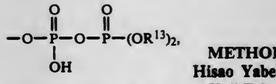


(I)

wherein R^1 is at least one member selected from a hydrogen atom and an alkyl group having 1 to 6 carbon atoms, R^2 is at least one member selected from methyl and phenyl groups, R^3 is at least one member selected from R^4—, R^5O— and R^6NH—, A is at least one member selected from R^7O—, R^8COO—, R^9SO_3—, $R^{10}OSO_3$—,



and



R^4, R^5, R^6, R^7, R^8, R^9, R^{10}, R^{11}, R^{12} and R^{13} stand for an alkyl group having 1 to 22 carbon atoms or an alkenyl, aryl, aralkyl or alkylaryl group having 3 to 22 carbon atoms, R^3 may be the same as or different from R^7, R^8, R^9, R^{10}, R^{11}, R^{12} and R^{13}, with the proviso that at least one of R^3, R^7, R^8, R^9, R^{10}, R^{11}, R^{12} and R^{13} is a substituent having at least 8 carbon atoms or a polymerizable alkenyl group, and m and n are means values per molecule which satisfy the requirements of m=0.5 to 2.7, n=0.3 to 2.5 and m+n=0.8 to 3.

4,576,648

CATIONIC EMULSIONS OF BITUMINOUS BINDERS OF THE BITUMEN TYPE AND THEIR PROCESS OF PREPARATION

Francis Demangeon, Dardilly; Germain Hagenbach, Vernaison, and Paul Maldonado, Saint Symphorien d'Ozon, all of France, assignors to Elf France, Paris, France

Continuation of Ser. No. 637,323, Aug. 2, 1984, abandoned, which is a continuation of Ser. No. 445,255, Nov. 29, 1982, abandoned. This application Jun. 7, 1985, Ser. No. 742,635

Claims priority, application France, Nov. 27, 1981, 81 22275

Int. Cl.⁴ C08L *5/00, 95/00*

U.S. Cl. 106—269 **17 Claims**

1. A cationic emulsion of a bituminous binder comprising: a bituminous binder dispersed in an aqueous phase containing a cationic emulsifying agent and an acid, said acid being present in an amount sufficient to provide an aqueous phase having a pH of from 1 to 7, wherein the bituminous binder is at least one member selected from the group consisting of a homogeneous solution of bitumen and at least one polymer, bitumen modified by at least one polymer, bitumen modified by at least one polymer in the presence of a reactive agent, and bitumen modified by at least one polymer in the presence of a reactive agent and an additive, and wherein the acid consists essentially of at least one carboxylic acid selected from the group consisting of C_1 to C_{20} saturated aliphatic monocarboxylic acids, C_2 to C_{20} saturated aliphatic polycarboxylic acids, C_2 to C_{20} unsaturated aliphatic monocarboxylic acids, C_2 to C_{20} unsaturated aliphatic polycarboxylic acids, saturated C_4 to C_{12} alicyclic monocarboxylic acids, saturated C_4 to C_{12} alicyclic polycarboxylic acids, unsaturated C_4 to C_{12} alicyclic monocarboxylic acids, unsaturated C_4 to C_{12} alicyclic polycarboxylic acids, C_7 to C_{12} aromatic monocarboxylic acids, C_7 to C_{12} aromatic polycarboxylic acids and hydroxyl derivatives of said acids.

4,576,649

COLOR ENHANCED PERMANENT PIGMENTS FROM PRECIPITATED CATIONIC DYES

Vincent S. Oliver, West Orange; Walter Tames, Hillside; Helmuth H. Prochaska, and Karl-Heinz Wieser, both of Wayne, all of N.J., assignors to Mobay Chemical Corporation, Pittsburgh, Pa.

Filed Oct. 31, 1984, Ser. No. 666,947

Int. Cl.⁴ C09C *3/00*

U.S. Cl. 106—308 Q **24 Claims**

1. A pigment composition comprising a cationic dye selected from the group consisting of

Color Index Basic Red 12

Color Index Basic Red 28

Color Index Basic Red 14

Color Index Basic Violet 10

which has been precipitated from aqueous solution by reaction with a complex heteropoly acid in the presence of a color enhancing agent selected from the group consisting of quaternary ammonium salts and ammonium salts of amines derived from abietic acid or natural or synthetic derivatives of abietic acid.

4,576,650

METHOD OF CLEANING ENDOSCOPE CHANNELS

Hisao Yabe; Hiroyuki Sasa; Yukio Nakajima; Fumiaki Ishii; Koji Takamura, and Takeaki Nakamura, all of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

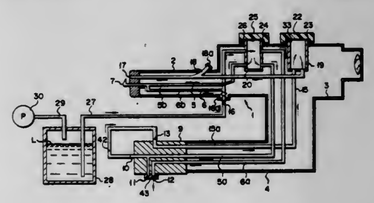
Filed Apr. 18, 1984, Ser. No. 601,575

Claims priority, application Japan, Apr. 22, 1983, 58-71204; Apr. 22, 1983, 58-71205; Apr. 25, 1983, 58-72522; May 2, 1983, 58-77897

The portion of the term of this patent subsequent to Jun. 25, 2002, has been disclaimed.

Int. Cl.⁴ B08B *3/04, 9/00*

U.S. Cl. 134—22.12 **3 Claims**



1. A method of cleaning an endoscope; said endoscope including a control section, an insertion section extending from the control section and having a nozzle at a distal end thereof,

a light guide cable extending from the control section and having a connector at a distal end thereof, an air supply channel extending in the endoscope and having one end communicating with the nozzle and another end opening into the connector, a liquid supply channel extending in the endoscope and having one end communicating with the nozzle and another end opening into the connector, a suction channel extending in the endoscope and having one end opening to the distal end of the insertion section and another end opening into the connector, an air/liquid supply valve cylinder arranged in the control section to communicate with the air supply channel and liquid supply channel and having one end opening to the outside of the control section, a suction valve cylinder arranged in the control section to communicate with the suction channel and having one end opening to the outside of the control section, and a sub-liquid supply port communicating with the liquid supply channel; said method comprising the steps of:

closing said open ends of the air/liquid supply valve cylinder and the suction valve cylinder;

connecting said other ends of the air supply channel and the suction channel to each other through connecting means; and

supplying liquid to the sub-liquid supply port and discharging the liquid from the nozzle, said other end of the liquid supply channel and said one end of the suction channel through the three channels, the valve cylinders and the connecting means, thereby cleaning the interior of these channels and the valve cylinders with the liquid.

4,576,651

TREATMENT OF SCRAP LINING MATERIAL FROM ALUMINIUM REDUCTION CELLS

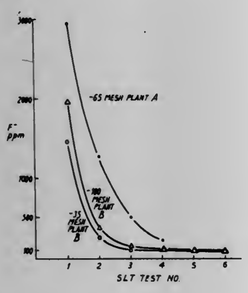
John E. Deutschman, Kingston, Canada, assignor to Alcan International Limited, Montreal, Canada

Filed Feb. 28, 1984, Ser. No. 584,534

Claims priority, application United Kingdom, Mar. 1, 1983, 8305583

Int. Cl.⁴ B08B *3/08, 7/04*

U.S. Cl. 134—25.1 **8 Claims**



1. A process for treating fluoride-contaminated scrap lining material from electrolytic reduction cells which consists essentially of mixing the lining material with at least 7 parts sulphuric acid by weight per 100 parts scrap lining material to produce a slurry, mixing into said slurry an amount of lime in amount at least sufficient to completely neutralise the sulphuric acid, but insufficient to raise pH of said slurry above 10, said slurry having a total liquid content sufficient to bring it to a paste-like consistency, the slurry then being allowed to set into a solid mass bound by hydrated calcium sulphate.

4,576,652

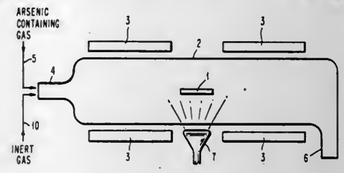
INCOHERENT LIGHT ANNEALING OF GALLIUM ARSENIDE SUBSTRATE

Harold J. Hovel, Katonah, and Thomas F. Kuech, Ossining, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 12, 1984, Ser. No. 630,057

Int. Cl.⁴ H01L *21/263*

U.S. Cl. 148—1.5 **19 Claims**



1. A process for annealing an ion implanted gallium arsenide substrate which comprises maintaining said gallium arsenide substrate on all sides above about 400° C. in an arsenic-containing gaseous ambient on all sides of said substrate;

heating said gallium arsenide substrate with broad area incoherent light for a time sufficient for annealing said ion implanted gallium arsenide substrate.

4,576,653

METHOD OF MAKING COMPLEX BORIDE PARTICLE CONTAINING ALLOYS

Ranjan Ray, Randolph, N.J., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Continuation of Ser. No. 549,025, Nov. 7, 1983, abandoned, which is a division of Ser. No. 371,758, Apr. 26, 1982, Pat. No. 4,439,236, which is a division of Ser. No. 23,378, Mar. 23, 1979, Pat. No. 4,365,994. This application Apr. 3, 1985, Ser. No. 718,208

Int. Cl.⁴ C22C *1/10, 33/00*

U.S. Cl. 148—3 **3 Claims**



1. A method for making boron-containing transition metal alloys, based on one or more of iron, cobalt and nickel, containing at least two metal components, comprising the steps of:

a. rapidly quenching alloys having composition of the formula:

$$R_uR'_vCr_wM_xB_y(P, C, Si)_z \quad (A)$$

wherein

R is one of iron, cobalt or nickel;

R′ is one or two of iron, cobalt or nickel other than R;

Cr, B, P, C and Si respectively represent chromium, boron, phosphorus, carbon and silicon;

M is one or more of molybdenum, tungsten, vanadium, niobium, titanium, tantalum, aluminum, tin, germanium, antimony, beryllium, zirconium, manganese and copper;

u, v, w, x t and z represent atom percent of R, R′, Cr, M, B and (P, C, Si), respectively, and have the following values:

u=30–85
v=0–30
w=0–45
x=0–30
y=5–12
z=0–7.5

with the provisos that (1) the sum of v+w+x is at least 5; (2) when x is larger than 20, then w must be less than 20; and (3) the amount of each of vanadium, manganese, copper, tin, germanium, antimony and magnesium may not exceed 10 atom percent, to form an amorphous alloy having the aforestated formula (A), said amorphous alloy being at least about 50 percent amorphous, as determined by X-ray diffractometry; and

b. heating said amorphous alloy to temperature between about, 0.7 and about 0.8 of the solidus temperature of said alloy in degrees centigrade for a time period of about 1 to about 20 hours, to effect devitrification of said alloy, so that, upon devitrification, said alloy is composed of ultrafine grains of a primary solid solution phase randomly interspersed with particles of complex borides, wherein said complex boride particles are predominantly located at the junctions of at least three grains of said ultrafine grain solid solution phase.

4,576,654

HEAT TREATED TUBE

Fletcher C. Eddens; David W. White, and John L. Harmon, all of Wilmington, N.C., assignors to General Electric Company, San Jose, Calif.

Continuation-in-part of Ser. No. 368,715, Apr. 15, 1982, abandoned. This application Nov. 1, 1982, Ser. No. 438,515

Int. Cl.⁴ C22F *1/18*

U.S. Cl. 148—11.5 F **40 Claims**

1. A process for producing a zirconuim alloy tube having a metallurgical gradient having a less corrosion-resistant metallurgical condition at the inner circumference of the tube and a more corrosion-resistant metallurgical condition at the outer circumference of the tube comprising:

forming a zirconium alloy tube having said less corrosion-resistant metallurgical condition;

heating an outer circumferential portion of the tube to the high alpha range, or mixed alpha plus beta range for a time sufficient to transform the outer circumferential portion of the tube to said more corrosion-resistant metallurgical condition while cooling to maintain the inner circumferential portion of the tube at a temperature sufficiently low that essentially no metallurgical change occurs at the inner surface;

cooling the tube sufficiently rapidly to retain said more corrosion-resistant metallurgical condition at the outer circumference portion; and

reducing the diameter of the thus heat treated tube with multiple cold working reduction passes in a reduction mill.

4,576,655

METHOD FOR PRODUCING HIGH STRENGTH STEEL WITH GOOD DUCTILITY

Erik A. A. Josefsson, Borlänge, Sweden, assignor to SSAB Svenskt Stal AB, Stockholm, Sweden

Continuation of Ser. No. 621,457, Jun. 18, 1984, abandoned. This application Aug. 27, 1985, Ser. No. 769,807

Claims priority, application Sweden, Jun. 23, 1983, 8303606

Int. Cl.⁴ C21D *7/14*

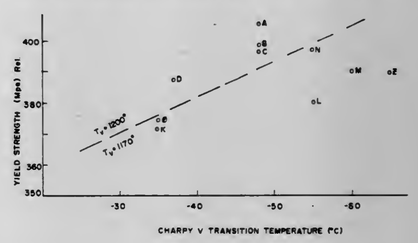
U.S. Cl. 148—12 F **5 Claims**

1. A process for manufacturing hot rolled steel products having a high strength and good ductility as hot rolled, said method comprising

(a) producing a low-alloy steel having a carbon content within the range of about 0.02 to 0.15 wt %, a niobium content within the range of about 0.015 to 0.100 wt %, and a titanium content within the range of about 0.005 to 0.040 wt %,

(b) heating said low-alloy steel of step (a) to a temperature between about 1150° and 1250° C.,

(c) subjecting said low-alloy steel produced in step (b) to a first rolling sequence which includes at least one rolling pass, one rolling pass of said first rolling sequence being a final rolling pass, such that said low-alloy steel has a an average austenite grain size therein of less than 50 μm and such that said low-alloy steel, after said final rolling pas, has a temperature of between about 950° and 1100° C.,



(d) subjecting said low-alloy steel produced in step (c) to a second rolling sequence which includes at least one rolling pass, each said rolling pass in said second rolling sequence being conducted at a temperature between about 900° and 1100° C. and one of said rolling passes being conducted at a temperature between about 950° C. and 1100° C., each said rolling pass producing an area reduction in said low-alloy steel of less than 15%, the total area reduction of said low-alloy steel in said second rolling sequence being less than about 39%, and

(e) cooling the low-alloy steel produced in step (d).

4,576,656

METHOD OF PRODUCING COLD ROLLED STEEL SHEETS FOR DEEP DRAWING

Susumu Satoh; Takashi Obara, and Minoru Nishida, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

PCT No. PCT/JP83/00334, § 371 Date Mar. 15, 1984, § 102(e) Date Mar. 15, 1984, PCT Pub. No. WO84/01585, PCT Pub. Date Apr. 26, 1984

Continuation of Ser. No. 596,451, Mar. 15, 1984, abandoned. This PCT application Oct. 7, 1983, Ser. No. 768,927

Claims priority, application Japan, Oct. 8, 1982, 57-177046

Int. Cl.⁴ C21D *9/48*

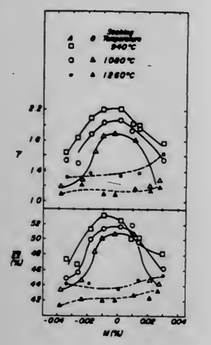
U.S. Cl. 148—12 C **3 Claims**

1. A method of producing cold rolled steel sheets for deep drawing, comprising soaking at a temperature lower than 1,100° C. a steel slab having a composition consisting of, in % by weight, not more than 0.015% of C, not more than 0.40% of Mn, not more than 0.03% of P, 0.005–0.100% of sol. Al, not more than 0.010% of N, Ti in an amount within the range satisfying the following formula

$$-0.020\% \leqq Ti - \left(\frac{48}{32}S + \frac{48}{14}N\right) < 0.004\%$$

provided that the Ti in the formula does not include Ti present in the slab in the form of oxide, and the remainder being Fe and incidental impurities; finishing a hot rolling of the soaked slab at a temperature of 600°–780° C.; cold rolling the hot rolled sheet; and annealing the cold rolled sheet, so as to produce a

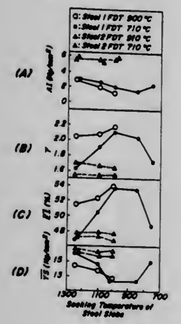
cold rolled steel sheet having an elongation higher than 51%, and a r-value higher than 1.6.



4,576,657
PROCESS OF MANUFACTURING A COLD ROLLED STEEL SHEET HAVING EXCELLENT PRESS FORMABILITY

Susumu Satoh, Chiba; Osamu Hashimoto, Kurashiki, and Toshio Irie, Chiba, all of Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

PCT No. PCT/JP83/00050, § 371 Date Oct. 13, 1983, § 102(e) Date Oct. 13, 1983, PCT Pub. No. WO83/02957, PCT Pub. Date Sep. 1, 1983
Continuation of Ser. No. 545,396, Oct. 13, 1983, abandoned.
This PCT application Feb. 18, 1983, Ser. No. 765,557
Claims priority, application Japan, Feb. 19, 1982, 57-25567
Int. Cl.[4] C21D *9/48*
U.S. Cl. 148—12 C 4 Claims

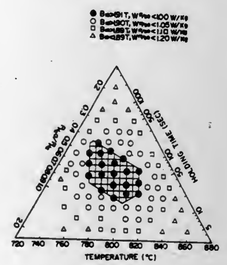


1. A process of manufacturing a cold rolled steel sheet having excellent press-formability, which comprises soaking a steel slab consisting of not more than 0.005% by weight of C, not more than 1.20% by weight of Si, 0.05–1.00% by weight of Mn, not more than 0.150% by weight of P, at least one element selected from the group consisting of Nb, Cr, Ti, Al, B, and W in a total amount of 0.002–0.150% by weight, and the balance being Fe and incidental impurities at a temperature range of 800°–1,080° C., followed by a hot rolling, a cold rolling, and a recrystallization annealing consecutively, whereby the resulting cold rolled steel sheet has an elongation of over 50% and an $\bar{r}$ value $\geqq 1.8$.

4,576,658
METHOD FOR MANUFACTURING GRAIN-ORIENTED SILICON STEEL SHEET

Yukio Inokuti, 664-25, Hagidai-cho, Chiba, Japan 260; Yasuhiro Kobayashi, 1876, Tantakabayashi, Higashi-Nada-ku, Kobe-shi, Japan 658, and Yo Ito, 500-1, Kawata-cho, Chiba, Japan 280

Filed Nov. 30, 1984, Ser. No. 677,675
Claims priority, application Japan, Dec. 2, 1983, 58-228174
Int. Cl.[3] H01F *1/04*
U.S. Cl. 148—111 2 Claims



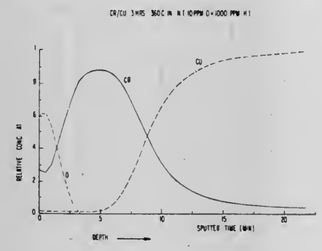
1. A method of manufacturing grain-oriented silicon steel sheet comprising the successive steps of:
hot-rolling silicon steel material containing 0.01 to 0.06 wt % carbon, 2.0 to 4.0 wt % silicon, 0.01 to 0.2 wt % manganese, and a total of 0.005 to 0.1 wt % of sulfur and/or selenium;
setting the final sheet thickness by cold rolling once, or cold rolling two or more times, while interspersing an intermediate annealing step between each cold rolling step;
decarburization and primary recrystallization annealing; and
final finish annealing to induce the growth of secondary recrystallization grains having a {110}<001> orientation, wherein said decarburization and primary recrystallization annealing process comprises rapid-heating in the temperature range of 400° C. to 750° C. at an average temperature rise rate of at least 10° C./sec, annealing for 50 seconds to 10 minutes within a temperature range of 780° to 820° C. in an oxidizing atmosphere having a ratio of the partial pressure of H_2O to the partial pressure of H_2, P_{H2O}/P_{H2}, of from 0.4 to 0.7, then annealing for 10 seconds to 5 minutes within a temperature range of 830° to 870° C. in an oxidizing atmosphere for which the ratio in partial pressures P_{H2O}/P_{H2} ranges from 0.08 to 0.4.

2. A process for manufacturing grain-oriented silicon steel sheet comprising the successive steps of:
hot-rolling silicon steel containing 0.01 to 0.06 wt % carbon, 2.0 to 4.0 wt % silicon, 0.01 to 0.2 wt % manganese, a total of 0.005 to 0.1 wt % of sulfur and/or selenium, and also 0.005 to 0.1 wt % of molybdenum and/or 0.005 to 0.2 wt % of antimony;
setting the final sheet thickness by cold rolling once, or cold rolling two or more times, while interspersing an intermediate annealing step between each cold rolling step;
decarburization and primary recrystallization annealing; and
final finish annealing to induce the growth of secondary recrystallization grains with a {110}<001> orientation, wherein said decarburization and primary recrystallization annealing process comprises rapid-heating in the temperature range of 400° C. to 750° C. at an average temperature rise rate of at least 10° C./sec, annealing for 50 seconds to 10 minutes within a temperature range of 780° to 820° C. in an oxidizing atmosphere having a ratio of the partial pressure of H_2O to the partial pressure of H_2, P_{H2O}/P_{H2}, of from 0.4 to 0.7, then annealing for 10 seconds to 5 minutes within a temperature range of 830° to 870° C. in an oxidizing atmosphere for which the ratio in partial pressures P_{H2O}/P_{H2} ranges from 0.08 to 0.4.

4,576,659
PROCESS FOR INHIBITING METAL MIGRATION DURING HEAT CYCLING OF MULTILAYER THIN METAL FILM STRUCTURES

Robert K. Lewis, and Sudipta K. Ray, both of Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 2, 1982, Ser. No. 446,300
Int. Cl.[4] B23K *31/02;* C21D *1/74*
U.S. Cl. 148—127 10 Claims

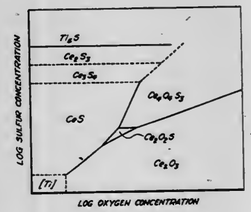


1. A process for inhibiting the diffusion of metal from a metal underlayer through a thin metal overlayer when the two layers, while in contact, are heated in the temperature range of 200°–400° C., comprising conducting said heating in the presence of an ambient gas mixture comprising an inert gas and an amount of active gas sufficient substantially to prevent metal from the underlayer from diffusing through to the surface of the thin metal overlayer and onto the surface of the metal overlayer during said heating, wherein said active gas is hydrogen and is present in the mixture in a concentration of from about 0.1% up to less than 4%, wherein the thickness of the overlayer is in the range of 500 to 2,000 Å and the underlayer has a thickness of from 50,000 to 100,000 Å, wherein the underlayer and overlayer combinations are selected from the group consisting of copper coated with cobalt, copper coated with chromium and copper coated with titanium.

4,576,660
OXYSULFIDE DISPERSION STRENGTHENED TITANIUM COMPOSITIONS

Raymond G. Rowe, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Feb. 15, 1985, Ser. No. 702,204
Int. Cl.[4] C22C *14/00, 1/18*
U.S. Cl. 148—407 7 Claims

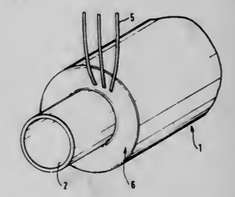


3. A titanium base composition having distributed therein a fine dispersoid of a metal compound of high chemical stability, said compound being formed of at least one metal and at least one nonmetal,
said nonmetal being oxysulfide,
said metal being selected from the group consisting of calcium, cerium, gadolinium, praesodynium, lanthanum, yttrium and strontium.

4,576,661
PROCESS FOR SEALING THE END OF INSULATED PIPES WHICH HAVE A NUMBER OF MONITORING WIRES, AND MEANS FOR CARRYING OUT THE PROCESS

Thomas B. Persson, Västra Söbacken 27, 444 00 Stenungsund, Sweden

Filed Apr. 12, 1984, Ser. No. 599,519
Claims priority, application Sweden, May 26, 1983, 8302960
Int. Cl.[4] H01B *13/06*
U.S. Cl. 156—48 8 Claims

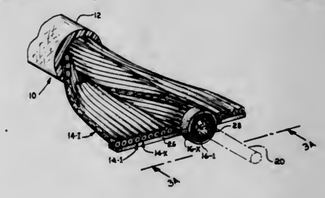


1. A process for sealing the end of insulated pipes in the nature of hot pipes, which have a number of monitoring wires extending between an inner fluid-transporting pipe and a casing which surrounds insulation, out past the insulation on the insulating pipe, characterized in that a sealing material which withstands working temperatures on the pipes of up to approximately 120° C. and which contains a mixture of wax and bitumen, in a flowing state and heated to an appropriate temperature, is applied over the end of the pipe and around the monitoring wires at the region of said pipe ends in a manner that the sealing material when it sets adheres to the pipe ends alongside the insulation of the pipe and monitoring wires which project out from the pipe end, so that a liquid-impermeable layer is formed between the edges of the casing and the fluid-transporting pipe, connecting them together and providing an enclosing seal with smooth transitions at the respective monitoring wires.

4,576,662
PROCESS FOR LOCATING AND CONNECTING INDIVIDUAL CONDUCTORS IN A MULTI-LAYER CONCENTRIC LAY CABLE

Timothy A. Lemke, Carlisle, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 5, 1984, Ser. No. 668,423
Int. Cl.[4] H01B *13/00*
U.S. Cl. 156—52 20 Claims



9. A process for ordering the individual conductors in each layer of a concentric lay multi-layered cable wherein one of

the conductors in each layer has a predetermined indicia thereon comprising the steps of:

(a) joining each of the conductors in one of the concentric layers of conductors;

(b) separating the conjoined conductors along a predetermined path as defined by reference to the predetermined indicia in the layer; and

(c) repeating steps (a) and (b) for each remaining layer of conductors in the cable.

4,576,663

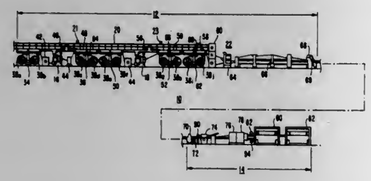
ORDER CHANGE METHOD AND APPARATUS FOR CORRUGATOR MACHINE

William H. Bory, Baltimore, Md., assignor to Chesapeake Corporation, West Point, Va.

Filed Aug. 31, 1984, Ser. No. 646,247

Int. Cl.⁴ B32B *31/00*

U.S. Cl. 156—64 **23 Claims**



1. Apparatus for changing the output material of a corrugator machine having a first and second single facers, each single facer including first and second splicers supplying single ply web material, a double backer producing composite web material and having a splicer supplying single ply web material, and a shear, the output material being changed from a first order material to a second order material, said apparatus comprising:

a first signal generator producing a first feedlength signal proportional to the length of single ply web material supplied by the first splicer of the first single facer;

a second signal generator producing a second feedlength signal proportional to the length of single ply web material supplied by the first splicer of the second single facer;

a third signal generator producing a third feedlength signal proportional to the length of single ply web material supplied by the double backer splicer;

a memory device for storing a plurality of position values which are functions of the relative locations of the first and second splicers of the first and second single facers, and a plurality of inventory values which are functions of the relative locations of the first and second single facers, the double backer, and the shear, said inventory values also being functions of the differences between said first, second, and third feedlength signals; and

control means for generating said inventory values, for comparing said position values with said feedlength signals, for comparing said inventory values, and for generating control signals to sequentially operate the splicers and the shear when the differences between said feedlength signals and said position values and between said stored inventory values reach predetermined values,

whereby splices in single ply web materials of the composite web material output of the double backer and a severance in the composite web material separating the first and second orders are formed in substantial coincidence.

4,576,664

FIXING ARTICLE HOLDERS TO SURFACES

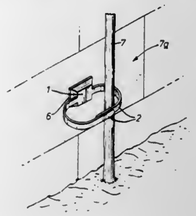
Michael D. Delahunty, Dublin, Ireland, assignor to Ducata Limited, Dublin, Ireland

Filed Dec. 27, 1983, Ser. No. 565,613

Claims priority, application Ireland, Jan. 3, 1983, 5/83; May 17, 1983, 1143/83

Int. Cl.⁴ B32B *31/12*

U.S. Cl. 156—71 **10 Claims**



9. A method of supporting an element against a hard surface which comprises the steps of:

(i) Mixing a portion of a filled hardenable adhesive composition of putty consistency including an adhesive component and a hardener component which are separately present in the composition in predetermined proportions, so as to form a pellet of the composition in which a hardening reaction has been activated,

(ii) Pressing the pellet into a socket defined by a cup portion in a holding member, said socket having an opening with a cross-sectional area which is less than the cross-sectional area of the interior of the socket,

(iii) Pressing the pellet with the holding member onto a surface at the desired position,

(iv) Allowing a sufficient period of time to elapse for the pellet to harden,

(v) Positioning an element adjacent the holding member and securing it thereto to support the element against or adjacent to the surface.

4,576,665

METHOD FOR MAKING A HOT MELT ADHESIVE BONDED PILE FABRIC

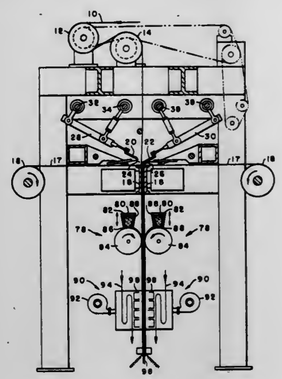
Greville Machell, Spartanburg, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Continuation of Ser. No. 436,230, Oct. 25, 1982, abandoned, which is a division of Ser. No. 304,486, Sep. 22, 1981, Pat. No. 4,371,576. This application Apr. 13, 1984, Ser. No. 599,832

Int. Cl.⁴ D04H *11/08*

U.S. Cl. 156—72 **1 Claim**

1. A method for making a hot melt adhesive bonded pile fabric which comprises: positioning two continuous, liquid-permeable base layers in a passage where they lie in substantial parallel relationship to one another at a predetermined distance from one another; driving at least one continuous pile forming yarn by folder blades alternatively against the opposing surfaces of said base layers when they are at or near the entrance to the above mentioned passage in such a way as to position the pile forming yarn relative to the base layers and to fold it zig-zag without tufting said pile-forming yarns through said base layers; thereafter applying to the back of said base layers a hot melt adhesive; forcing said hot melt adhesive through said base layers so that said hot melt adhesive contacts said pile forming yarn; cooling said hot melt adhesive to a temperature below its softening point to thereby bond said pile forming yarn to said base layers; and cutting said pile forming yarns to form two continuous hot melt adhesive bonded products.



4,576,666

HEAT-RECOVERABLE ARTICLE

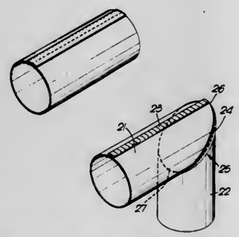
Richard J. Harris; Kenneth B. Pithouse, both of Wiltshire, England, and Frans S. J. Van Dijck, Kessel-Lo, Belgium, assignors to Raychem Limited, Swindon, England

Filed Aug. 14, 1984, Ser. No. 640,723

Claims priority, application United Kingdom, Aug. 16, 1983, 8322004

Int. Cl.⁴ B21F *15/06*; B29C *27/20*; B32B *1/08, 1/10*

U.S. Cl. 156—85 **19 Claims**



1. An article comprising two areas of woven fabric, at least one of which being heat-recoverable, joined together along a line by means of a mechanical joining arrangement that penetrates at least one of the areas of fabric, said area of fabric penetrated having a direction of crimp that is substantially perpendicular to the line at least along part of the length of the line.

16. An article according to claim 1, when installed around a pipe, a cable, a joint in a pipe or a splice in a cable, a bus bar or a joint in a bus bar.

17. A method encapsulating a substrate which comprises recovering into engagement with the substrate an article according to claim 1.

4,576,667

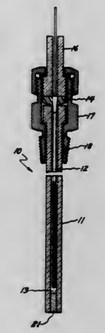
PROCESS FOR PREPARING A SINTERED CERAMIC ARTICLE WITH POROUS REGION

Dale F. Taylor, Schenectady, and Louis S. Sammler, Clifton Park, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 451,501, Dec. 20, 1982, Pat. No. 4,560,413. This application Oct. 1, 1984, Ser. No. 656,566

Int. Cl.⁴ C03B *29/00*

U.S. Cl. 156—89 **3 Claims**



1. A process for the manufacture of a sintered metallic oxide article comprising a non-porous body having a cylindrically shaped hole and a close-fitting, non-porous plug at one end of said shaped hole and at least one porous region in the general shape of a hollow cylinder intermediate said cylindrically shaped hole and said plug, said process comprising the steps of:

(a) providing a metallic oxide body prefired at about 1250° C. for about one hour in air in a preselected shape having juxtaposed surfaces,

(b) providing a cylindrically-shaped hole through said body connecting said surfaces,

(c) introducing a close-fitting plug of metallic oxide prefired at about 1250° C. for about one hour in air into said hole to produce an assembly, and

(d) sintering said assembly in a hydrogen atmosphere at about 1900° C. to render said body and said plug non-porous and to form a microporous junction therebetween in the general shape of a hollow cylinder.

4,576,668

PROCESS OF FORMING A LABELED TAG FOR A GARMENT

Susan E. Farrelly, and George Spector, both of 233 Broadway RM 3615, New York, N.Y. 10007

Filed May 29, 1984, Ser. No. 614,832

Int. Cl.⁴ B32B *31/20, 7/08*

U.S. Cl. 156—93 **2 Claims**

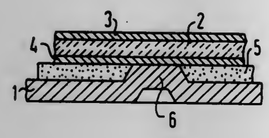
1. A process of forming a labeled tag for a garment comprising the following steps:

(a) sewing a tag having a heat activated bonding agent thereon along one side into an inside seam of said garment with said heat activated bonding agent facing outwards;

(b) placing a label over said tag;

(c) placing jaws of a heating activating press tool over said tag and said label; wherein one of said jaws has a depres-

sion to receive said tag, label and the other of said jaws; and



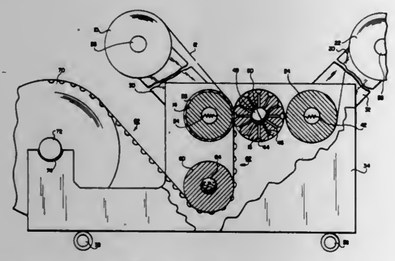
(d) squeezing said jaws of said heat activating press tool so that said tag and said label will bond together within said depression to form said labeled tag.

4,576,669

"ON DEMAND" APPARATUS AND METHOD FOR PRODUCING AIR-CUSHIONING PRODUCT

Garry L. Caputo, 464 Riverside Ave., Rutherford, N.J. 07070

Filed Nov. 9, 1984, Ser. No. 669,684
Int. Cl.⁴ B32B *31/12*
U.S. Cl. 156—145 **18 Claims**



13. A method for producing air-cushioning material for end users' consumption in their own facilities, said material being from two rolls of thermoplastic material such as polyethylene or the like which may be combined with other plastic materials to provide air passage-inhibiting properties, said method providing means for a start and stop of the apparatus by the operator and without alteration of the produced product by said starting and stopping of the apparatus for an "on demand" manufacture and supplying of air-cushioning material to said facility, said method including the steps of:

(a) providing a first roll of thin, thermoplastic film having thermoforming properties when heat-softened;

(b) carrying said roll on a supported shaft and as a continuous strip of film and replacing said roll on said shaft when replenishing the film on the first roll is desired or required;

(c) rotating and driving a first heat-conductive roller to and carrying on said roller the strip of first film around which the wrap extent is at least one hundred fifty degrees of arc;

(d) electrically heating said first film on said first heat-conducting roll to a temperature between two hundred and two hundred sixty degrees F. and with a thermostatic control of said first heat-conductive roller whereby and whereon the first film is heat-softened to a thermoforming condition;

(e) rotating a cooled, driven forming roller adjacent to and spacing said forming roller from the first heat-conducting roller so that non-contact is maintained with said first heat-conducting roller and providing between said first roller and said forming roller an S-path of heat-softened first film, said forming roller having its outer peripheral surface with a controlled temperature and formed with a multiplicity of shaped cavities, and providing each cavity at its inner extent a small conductor leading to a conductor connected to a source of vacuum;

(f) carrying valve means in association with a conductor to said source of vacuum, and providing with this valve means a mask, of a determined extent or sector therewith, and opening of about one-half of the small conductors from the shaped cavities to a source of vacuum so that the heat-softened first film when coming in contiguous contact with those cavities connected to said source of vacuum is drawn by vacuum into these shaped cavities forming shaped cell forms, this forming roller cooling the now-formed first film while rotatably and tightly carrying this first film by vacuum on said driven forming roller;

(g) providing a second roll of thin, thermoplastic film as a lidding cover for the air-cushioning material;

(h) driving a thermoconductive pressure roller and heating said roller to a selected temperature by electrical energy and providing on this roll a resilient, thermoconductive cover or outer layer on said pressure roller, said cover having sufficient resiliency and thermal conductivity so that with a wrap of less than ninety degrees of arc, said second lidding film is heated to a welding condition, and with the second film in a wrap condition on said pressure roller, said heat is sufficient that the peripheral temperature of the roller brings the second film to a temperature of at least two hundred seventy degrees F. and while the first thermoformed and heated film is brought in way of this second heated, lidding film, pressing these films together into a welded condition, the cover on this pressure roller sufficiently resilient so that with a minimum of applied pressure the second heated film is pressed to and into the first thermoformed film so that at the peripheral interstices between shaped cavities and at the outer surface of the forming roller the welding is achieved, the peripheral speed of the driven pressure roller and the forming roller substantially in coincidence, the welding of the two plies of film material providing in the thermoformed air-cushioning material a multiplicity of air-encased cells, and moving the pressure roll toward and away from the forming roll and adjustably applying such pressure and maintaining said pressure to accommodate the type and thickness of the films being welded;

(i) thermostatically controlling the electrical heating of said drive thermoconductive pressure roll to maintain the temperature in said lidding material provided by this second film where and when the wrap of film is on said roll;

(j) cooling a chill roll and positioning said roll so as to receive the welded strip of material and engaging said welded air-cushioning strip on the outer surface of said material, this cooling sufficient to bring the welded air-cushioning material to a temperature that is at or near room temperature, and

(k) carrying said cooled air-cushioning material to accumulation means such as a storage roll or a packing table.

4,576,670

METHOD FOR MAKING CONTACT WITH THE ELECTRODE ON THE ADHESIVE-COATED SIDE OF AN ELECTRICAL COMPONENT AND THE ARTICLE MADE BY SUCH METHOD

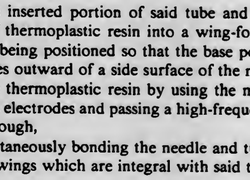
Reinhart Schade, Olching, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Continuation of Ser. No. 33,727, Apr. 26, 1979, abandoned. This application Oct. 21, 1980, Ser. No. 199,387
Claims priority, application Fed. Rep. of Germany, May 10, 1978, 2820403
Int. Cl.⁴ B32B *31/00*
U.S. Cl. 156—219 **6 Claims**

1. A method of making contact with an electrode of an electrical component which is bonded by an insulating adhesive layer to an electrically conductive carrier plate, comprising the steps of:

applying an insulating adhesive layer to the carrier plate;

prior to bonding, providing a contact element in the area of the adhesive layer by embossing the carrier plate a distance greater than the thickness of the adhesive layer so



that the embossment constitutes the contact element and contact is made between the carrier plate and the electrode during bonding; and

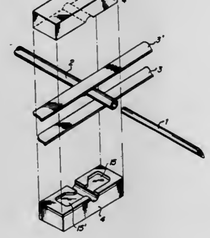
applying heat and pressure to the component and the carrier plate to cause the adhesive material to be displaced by the contact element and bond the carrier plate, the contact element and the electrode.

4,576,671

METHOD OF MANUFACTURING ALATE MEDICAL NEEDLE

Hirotaka Shimanaka, 3-8-19, Sakurao, Hatsukaichi-cho, Saeki-gun, Hiroshima-pref., Japan

Filed Jun. 29, 1984, Ser. No. 626,612
Claims priority, application Japan, Jul. 6, 1983, 58-123646; Oct. 31, 1983, 58-205571; Oct. 31, 1983, 58-205572
Int. Cl.⁴ B29C *65/04*
U.S. Cl. 156—245 **3 Claims**



1. A method of manufacturing an alate needle comprising a needle, wings, and a tube, which method comprises

inserting a base portion of a needle into a thermoplastic resin tube,

placing the inserted portion of said tube and one or two sheets of thermoplastic resin into a wing-forming mold, the tube being positioned so that the base portion of the needle lies outward of a side surface of the mold, and

heating the thermoplastic resin by using the mold and the needle as electrodes and passing a high-frequency current there through,

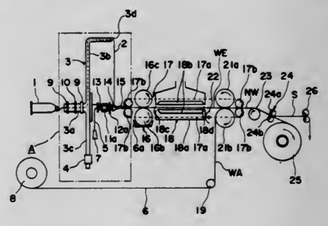
thereby simultaneously bonding the needle and tube together and forming wings which are integral with said tube.

4,576,672

APPARATUS FOR THE PRODUCTION OF REINFORCING NON-WOVEN FABRICS FOR COMPOSITES

Hiroyasu Kobayashi, Suita; Masayuki Fukui, Nishinomiya, and Shosaku Nomoto, Kobe, all of Japan, assignors to Kurashiki Boseki Kabushiki Kaisha, Kurashiki, Japan

Filed Apr. 7, 1983, Ser. No. 482,975
Claims priority, application Japan, Apr. 12, 1982, 57-61280
Int. Cl.⁴ D04H *3/02*
U.S. Cl. 156—177 **7 Claims**



1. A process for producing non-woven fabric reinforcement for composite material, comprising:

continuously supplying a pair of selvage threads in horizontally spaced parallel relationship;

laying down a continuous weft thread in a succession of spaced transverse reaches joined by selvage loops around the pair of selvage threads to form a weft sheet;

nipping the selvage loops and selvage threads on both sides of said weft sheet and for conveying said weft sheet in a horizontal plane while tensioning the weft thread reaches laterally of the weft sheet;

applying thermoplastic adhesive to the portions of the weft threads other than the selvage loops on only the portions of the weft threads facing outwardly of said weft sheet on at least one side of said thread as said weft sheet is being conveyed by means positioned along said nipping and conveying means;

drying and melting the adhesive on the weft threads by heating means positioned along said nipping and conveying means downstream of said adhesive applying means;

continuously supplying a warp sheet to said at least one side of said weft sheet at a position downstream of said heating means;

preheating the warp threads of said warp sheet immediately before their arrival at the weft sheet to a temperature sufficient for adhesion to the thermoplastic adhesive on the weft threads by means adjacent the point at which said warp sheet is supplied to said weft sheet;

continuously pressing the weft and warp sheets together for bonding the weft and warp threads of the respective sheets at the points of intersection thereof to form the non-woven fabric, the pressing including controlling the temperature of the surfaces of the pressing on the warp and weft sheets being at a temperature lower than the softening point of the adhesive; and

winding the non-woven fabric into a roll.

4,576,673

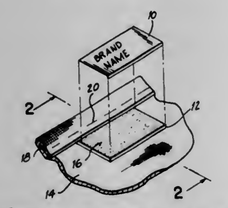
SERVICE UNIT INTENDED TO CONTINUOUSLY SUPPLY A HIGH-SPEED PRINTER WITH PREFORMED SUPPORT PACKAGES

Mauro Lenzi, Via G. Paganino, 2, 56100 Pisa, Italy

Filed Jul. 19, 1984, Ser. No. 632,587
Int. Cl.⁴ B31F *5/00*
U.S. Cl. 156—350 **8 Claims**

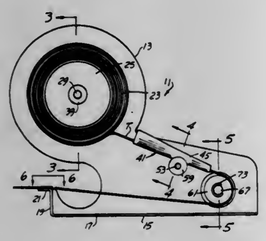
1. A service unit for continuously supplying a high-speed printer with a preformed paper support in folded packages, which unit has a long working autonomy without requiring the

intervention of an operator, said unit comprising in combination: a support frame, a package backing plane comprising a conveyor belt controlled by a microprocessor having a sensor for placing in position each packaging to be supplied to said printer; and, a plane for joining the paper support packages, said joining plane being able to move along a plane parallel to said package backing plane and placed above said package backing plane at such a height that said packages cannot be touched thereby, thus allowing the ends of the packages placed side by side to continuously connected to each other by an adhesive tape, wherein said joining plane comprises a plurality of completely retractile reference and blocking pins intended



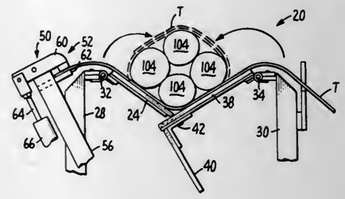
to place and maintain in position said ends to be joined; a filling assembly for the central joining area; and, an assembly for automatically cutting said adhesive tape, and wherein said joining plane also comprises: an assembly for supporting the adhesive tape roll; a transmission means; a guiding and a reference means; a friction assembly acting directly on said adhesive tape and not on said roll in order to stretch, place in position and stick said tape on said paper support to be joined; a driving means and pneumatic assemblies for operating said members and/or support, transport and moving assemblies; and, an electronic unit for controlling the synchronized and selective operation of said means, members and assemblies.

4,576,674
MASKING TAPE DISPENSER
Walter Le Tarte, P.O. Box 68, Smiths Creek, Mich. 48074
Filed Jun. 18, 1984, Ser. No. 621,545
Int. Cl.⁴ B31F *1/00*
U.S. Cl. 156—463 **6 Claims**



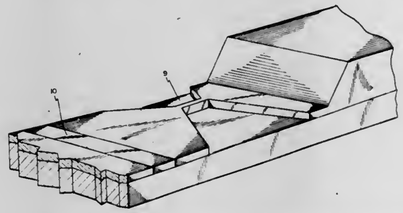
1. An edge blending masking tape dispenser comprising an upright roll support plate having a right angular apertured base plate mountable upon a support and having at one end an elevated serrated tape tear off edge;
an upright roll of adhesive coated masking tape journaled and yieldably retained upon said support plate above said base plate;
a tape edge folding and forming die assembly spaced from said tape roll mounted upon said support plate and having a channel of less width than the tape;
the free end of the tape extending to and around said forming die assembly to and over said tear-off edge for longitudinal manual feeding thereof;
said die assembly elevating one longitudinal edge of the tape and folding said edge down onto the tape as it passes around said die assembly, automatically forming downstream of said die assembly a folded down non-stick strip along one edge of said tape;
said die assembly including a tape edge folding and forming roll journaled upon said support plate and having an annular channel of less width than the tape;
the free end of the tape extending to and around said forming roll;
said roll elevating one longitudinal edge of the tape and folding said edge down onto the strip as it passes around said roll.

4,576,675
SYSTEM FOR SECURING A PLURALITY OF OBJECTS TOGETHER WITH ADHESIVE TAPE
Robert A. Brux, Salinas, Calif., assignor to Crown Zellerbach Corporation, San Francisco, Calif.
Filed Aug. 13, 1984, Ser. No. 640,423
Int. Cl.⁴ B32B *31/04*; B65B *11/48, 13/02, 27/10*
U.S. Cl. 156—468 **1 Claim**



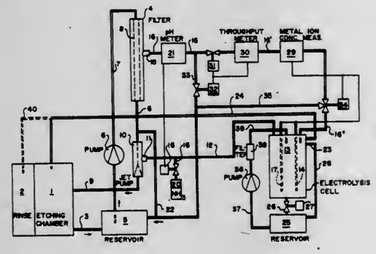
1. Apparatus for securing a plurality of objects together with an adhesive tape, comprising, in combination:
adhesive tape supply means including a roll of adhesive tape having a free end;
a securing station disposed adjacent to said tape supply means and including securing means for securing a predetermined length of tape about a plurality of objects positioned at said securing station, said securing station including yieldable flap means engageable by said plurality of objects and said tape, said yieldable flap means being operable to wrap said tape about said plurality of objects and to secure said tape thereto, said yieldable flap means including a first spring biased flap and a second spring biased flap, said flaps cooperating to provide support for said predetermined length of tape and yieldable when a plurality of objects is placed in engagement therewith to conform to the outer surface of said plurality of objects and press said predetermined length of tape into adhesive engagement therewith, said flaps being at least partially superposed with respect to one another to provide support for said predetermined length of tape, at least one of said flaps being generally L-shaped and including an outer flap portion which engages the tape and causes the tape to overlap when said objects are secured together;
delivery means for periodically delivering a predetermined length of tape to said securing station and including gripper means and prime mover means for moving said gripper means between a first position whereat said gripper means grips the free end of adhesive tape projecting from said roll of adhesive tape to a second position whereat a predetermined length of tape is positioned at said securing station; and
separating means for separating said predetermined length of tape from said roll of adhesive tape prior to securing said predetermined length of tape about said plurality of objects.

4,576,676
THICK CRYSTALLINE FILMS ON FOREIGN SUBSTRATES
Henry I. Smith, Sudbury; Harry A. Atwater, Somerville, and Michael W. Geis, Acton, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.
Filed May 24, 1983, Ser. No. 497,620
Int. Cl.⁴ C30B *1/08*
U.S. Cl. 156—603 **6 Claims**



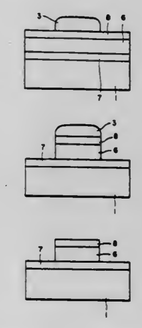
1. A method of forming a thick crystalline film with large, uniform-textured, grains and aligned crystallographic orientations upon a substrate, the method comprising:
(a) depositing a film to be processed upon the surface of the substrate;
(b) establishing a pattern of vertical constriction in a portion of the film; the pattern being characterized by a thin section and a section of graduated thickness connecting the thin section to the rest of the deposited film; and
(c) heating the film sequentially from the thin section to the rest of the film to induce recrystallization, whereby the orientation of the thin section will be passed on to the bulk of the deposited film.

4,576,677
METHOD AND APPARATUS FOR REGENERATING AN AMMONIACAL ETCHING SOLUTION
Wolfgang Faul; Leander Fürst, both of Jülich; Walter Holzer, Meersburg, and Bertel Kastening, Hamburg, all of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich GmbH, Jülich, Fed. Rep. of Germany
Filed Apr. 9, 1984, Ser. No. 598,087
Claims priority, application Fed. Rep. of Germany, Apr. 13, 1983, 3313293; Nov. 8, 1983, 3340343
Int. Cl.⁴ C23F *1/00*; B44C *1/22*; C03C *15/00, 25/06*
U.S. Cl. 156—642 **19 Claims**



1. Method of regenerating an ammoniacal etching solution by re-oxidation comprising the steps of:
withdrawing an ammoniacal etching solution, which is at least partially spent and contains etched metals in ionic form, from an etching chamber;
leading a first part of said withdrawn solution in a first path leading back to said etching chamber, passing a second part of said solution withdrawn from said chamber through an electrolysis cell which has a cathode and an anode and in which said solution serves as the electrolyte during passage therethrough, whereby said metal contained therein is deposited at said cathode and oxygen is evolved at said anode, and then causing the electrolyzed solution to flow in a second path leading back to said etching chamber.
collecting the oxygen anodically evolved in said electrolysis cell; and
introducing said collected oxygen into said electrolyzed solution and intensively mixing the oxygen with the solution in a portion of said second path of said solution leading back to said etching chamber.

4,576,678
PATTERN FORMING METHOD
Hiroshi Shibata, Kanagawa, Japan, assignor to VLSI Technology Research Association, Kanagawa, Japan
Continuation of Ser. No. 423,364, Sep. 24, 1982, Pat. No. 4,489,101, which is a continuation of Ser. No. 171,506, Jul. 23, 1980, abandoned. This application Sep. 13, 1984, Ser. No. 650,144
Claims priority, application Japan, Jul. 25, 1979, 54-96215
Int. Cl.⁴ H01L *21/306*; C23F *1/02*; B44C *1/22*; C03C *15/00*
U.S. Cl. 156—643 **17 Claims**



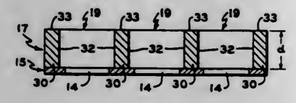
2. A pattern forming method comprising the steps of:
forming a first film layer of a compound containing silicon and nitrogen directly on a substrate by plasma reaction, wherein the substrate comprises multiple layers;
forming a resist film layer in a desired pattern on said first layer;
etching said first film layer with said resist film layer as a mask;
forming a second film layer on said substrate having said first film layer thus etched and on the resist film layer;
removing said first film layer from said substrate with an etchant which does not etch said second film layer; and
etching at least one of the multiple layers of said substrate with said second film layer as a mask with an etchant which does not etch said second film layer.

4,576,679
METHOD OF FABRICATING A COLD SHIELD
William J. White, Chelmsford, Mass., assignor to Honeywell Inc., Minneapolis, Minn.
Continuation of Ser. No. 520,951, Aug. 8, 1983, abandoned, which is a division of Ser. No. 248,127, Mar. 27, 1981, Pat. No. 4,431,918. This application Nov. 5, 1984, Ser. No. 668,681
Int. Cl.⁴ B44C *1/22*; C03C *15/00, 25/06*
U.S. Cl. 156—644 **4 Claims**

1. A method of fabricating a shield for limiting the radiation received by individual detectors within a detector array in an

electromagnetic radiation detection system to the radiation provided to the detectors by optics within the system, the shield comprising a member of etchable glass having apertures formed therein, comprising:

forming, on a first surface of an etchable glass member, an etch resist pattern, the etch resist pattern protecting areas of the glass where supporting walls of the shield will be located, the glass being exposed where the apertures will be located, the etch resist pattern defining the size and



shape of each aperture, the size and shape of each aperture being in predetermined relation to the size and shape of the detectors in order to shield the detectors from electromagnetic radiation generated outside the field of view of the optics;

etching the glass to form the apertures;

removing the etch resist; and

mounting the formed glass shield upon an array of individual detectors.

4,576,680

METHOD OF SIZING PAPER

Kimio Kawatani, Suita; Takashi Fujikawa, Kyoto, and Eiji Watanabe, Osaka, all of Japan, assignors to Nippon Petrochemicals Co., Ltd. and Arakawa Kagaku Kogyo Kabushiki Kaisha, both of Tokyo, Japan

Filed Feb. 6, 1984, Ser. No. 577,081

Claims priority, application Japan, Feb. 7, 1983, 58-18563

Int. Cl.⁴ C07D *307/60*; D21H *3/08*

U.S. Cl. 162—158 **10 Claims**

1. A method of sizing paper comprising adding to a pulp slurry a paper sizing agent containing a reaction product and/or a hydrogenation product of said reaction product, said reaction product being prepared by adding maleic anhydride to branched internal olefins having 14 to 36 carbon atoms which branched internal olefins are obtained by oligomerizing one member or a mixture of two or more members of a class of other olefins having 6 to 18 carbon atoms in the presence of an acid catalyst.

4,576,681

MACHINE FOR MAKING A FIBER WEB WITH SHARPLY DEFINED EDGES

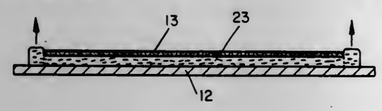
Christian Schiel, Heidenheim, Fed. Rep. of Germany, assignor to J. M. Voith GmbH, Heidenheim, Fed. Rep. of Germany

Filed Jul. 26, 1984, Ser. No. 634,689

Claims priority, application Fed. Rep. of Germany, Jul. 27, 1983, 3327056

Int. Cl.⁴ D21F *1/00*

U.S. Cl. 162—301 **3 Claims**



1. In a machine for producing a fiber web between a felt member and a wire member, and including a headbox for dispensing a fiber suspension stream of a selected width into a feed-in area formed between said felt member and said wire member, the improvement comprising said felt member directly loops a portion of the circumference of a forming roll, said wire member directly loops a portion of that portion of the felt member that loops the forming roll so as to define a curved dehydration zone between the felt member and wire member, said wire member having a width less than the width of the fiber suspension stream being dispensed by said headbox and the width of the felt member so that in the area of the dehydration zone there is produced a fiber web having sharply defined lateral edges, and the dehydration zone is free of side walls for sideways limitation of the fiber suspension.

4,576,682

LONG-NIP PRESS FOR A PAPER MAKING MACHINE

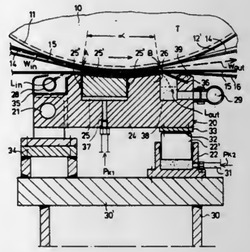
Jorma Laapotti, Palokka, Finland, assignor to Valmet Oy, Finland

Filed Mar. 19, 1984, Ser. No. 590,951

Claims priority, application Finland, Mar. 23, 1983, 830995

Int. Cl.⁴ D21F *3/06*

U.S. Cl. 162—358 **8 Claims**



1. In a long-nip press, in which a press zone is formed between a counter-roll and a press-shoe arrangement or between a counter-shoe and the press-shoe arrangement, through which press zone a fibrous web passes between a felt and a press belt or between two press belts with the press shoe arrangment being disposed inside a loop of the press belt, said press including means for hydrodynamically lubricating the press belt by feeding lubricant thereon before the press zone, and means for receiving lubricant off the press belt after the press zone,

the improvement comprising

said press shoe arrangment comprises

a frame component,

means for articulately engaging said frame component with a stationary structure,

a first shoe component disposed in said frame component,

first pressure means for loading said first shoe component, disposed between said first shoe component and said frame component,

a second shoe component formed as a part of said frame component, said second shoe component substantially immediately following said first shoe component in the direction of web run,

second pressure means for loading said second shoe component, and

said press shoe arrangement including means for increasing compression pressure applied by said first and second shoe components to the web in the press zone in one or more steps in a running direction of the fibrous web, and means for rapidly lowering the compression pressure applied to the web in the press zone from the maximum compression pressure applied therein to substantially no pressure.

4,576,683

METHOD FOR SEPARATING CARBOXYLIC ACIDS FROM MIXTURES WITH NON-ACIDS

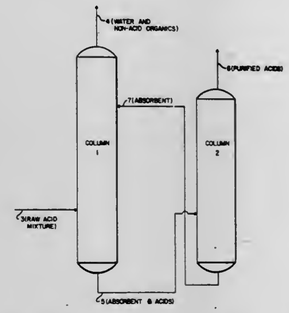
Lester R. Cohen, The Woodlands, Tex., assignor to Badger B.V., The Hague, Netherlands

Continuation-in-part of Ser. No. 399,717, Jul. 19, 1982, abandoned. This application Jun. 6, 1984, Ser. No. 617,701

Claims priority, application Netherlands, Jul. 24, 1981, 8103517

Int. Cl.⁴ C07C *51/44*; B01D *3/40*

U.S. Cl. 203—15 **19 Claims**



1. A method for separating C_1–C_{10} aliphatic and C_3–C_{10} olefinic carboxylic acids from mixtures with non-acids comprising an extractive distillation treatment, using an amide as an extractant, to recover an extractant-acid mixture followed by recovery of the acids from the extractant-acid mixture by rectification, characterized in that the amide extractant used in the extractive distillation treatment is a lactam from the group consisting of lactams having a 5-membered ring and lactams having a 6-membered ring, said lactam being a liquid at ambient temperature and being miscible in all proportions under the process conditions with the mixture of acids and non-acids.

4,576,684

METHOD FOR THE CONTINUOUS ELECTROLYTIC DEPOSITION OF METALS

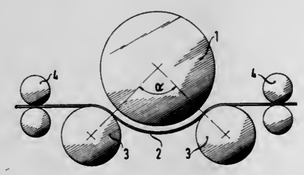
Werner Bechem, Hilchenbach; Hubertus Peters, Dortmund; Jürgen Solms, Hilchenbach, and Dietrich Wolfhard, Dortmund, all of Fed. Rep. of Germany, assignors to Hoesch Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 8, 1984, Ser. No. 669,444

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1983, 3343978

Int. Cl.⁴ C25D *7/06*

U.S. Cl. 204—28 **6 Claims**



1. Method for continuous electrolytic deposition of metals from aqueous solutions of metallic salts onto a metal strip using a high flow electrolyte exchange in the space between the anode and cathode which is sufficient to attain high current densities at low voltages comprising, moving a looped portion of a cathodic metal strip past an anodic metal cylinder, and constantly introducing fresh electrolytic solution into the space formed between the anode and cathode, by controlling the speed of rotation of said anodic metal cylinder.

4,576,685

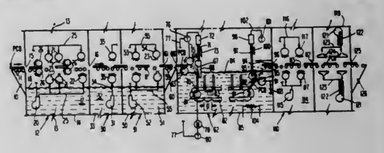
PROCESS AND APPARATUS FOR PLATING ONTO ARTICLES

Daniel L. Goffredo, Riverton, N.J.; Walter J. Meyer, and Horst Blässing, both of Berlin, Fed. Rep. of Germany, assignors to Schering AG, Berlin, Fed. Rep. of Germany

Filed Apr. 23, 1985, Ser. No. 726,049

Int. Cl.⁴ C25D *5/54*

U.S. Cl. 204—30 **21 Claims**



1. A process for deposition of metal onto surfaces of generally flat articles, comprising the steps of:

(a) providing the articles with at least some generally flat exterior surfaces having portions generally of non-metallic surface construction;

(b) continuously and serially delivering the articles along a predetermined path;

(c) preparing the articles for electroless metal deposition on surface portions as they are continuously delivered along their predetermined path, by application of at least one chemical solution and at least one rinse thereto;

(d) wherein the delivering step includes moving the articles in generally flat horizontal orientation along a generally horizontal path at a first rate of travel for at least a portion of the travel of articles along their predetermined path prior to the delivery of articles into an electroless deposition bath;

(e) transferring the articles from generally flat horizontal orientation to generally vertical orientation as they are delivered along their predetermined path; and

(f) substantially continuously moving the articles in serial surface-facing-surface relation while in their generally vertical orientation along a generally horizontal path through a bath of electroless metallic solution at a second rate of travel substantially slower than the first rate of travel, to apply a thin metallic coating thereto.

4,576,686

PROCESS FOR PRODUCING ALUMINUM SUPPORT FOR LITHOGRAPHIC PRINTING PLATES

Sakaki Hirokazu, and Kazushige Takizawa, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 26, 1984, Ser. No. 654,696

Claims priority, application Japan, Sep. 27, 1983, 58-178756

Int. Cl.⁴ C25D *11/16*; C25F *3/04*

U.S. Cl. 204—33 **20 Claims**

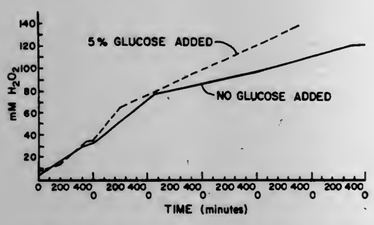
1. A process for producing an aluminum support for a lithographic printing plate, comprising a step of electrolytically graining the surface of an aluminum plate in an aqueous solution of electrolyte comprising hydrochloric acid and nitric acid in a ratio by weight of from 1/1 to 1/3.5 by applying an electric current having an asymmetrical alternating wave form.

4,576,687

HYDROGEN PEROXIDE PRODUCTION USING A NON-AQUEOUS SYSTEM

William Hertl, Corning, and Howard H. Weetall, Big Flats, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Jul. 26, 1984, Ser. No. 634,565
Int. Cl.⁴ B01J *19/12*
U.S. Cl. 204—157.5 **4 Claims**



1. A process for making hydrogen peroxide comprising:
(a) mixing a catalystically effective amount of a photo-excitable quinone compound with ethylene glycol, substantially free from water;
(b) purging the quinone compound and ethylene glycol mixture with oxygen; and
(c) irradiating the mixture with electromagnetic radiation which excites the quinone compound, thereby oxidizing the ethylene glycol and forming hydrogen peroxide.

4,576,688

PRODUCTION OF POLY(P-PHENYLENE) FROM 4,4'-DIHALOBIPHENYL AND LITHIUM USING ULTRASONIC WAVES

Lawrence D. David, Florham Park, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Nov. 4, 1982, Ser. No. 439,005
Int. Cl.⁴ C08G *61/10;* **C08F** *2/56*
U.S. Cl. 204—157.62 **7 Claims**

1. A process for producing poly(p-phenylene) which comprises subjecting a liquid reaction medium containing 4,4'-dihalobiphenyl and lithium metal as coupling reactants to activation with ultrasonic energy.

4,576,689

PROCESS FOR ELECTROCHEMICAL METALLIZATION OF DIELECTRICS

Almaxud M. Makkaev, ulitsa Zolotodolinskaya, 29, kv. 308, Novosibirsk; Oleg I. Lomovsky, ulitsa Ostrovskogo, 101a, kv. 22, Berdsk Novosibirskoi oblasti; Jury I. Mikhailov, ulitsa Maltseva, 1, kv. 31, and Vladimir V. Boldyrev, ulitsa Tereshkovoi, 38, kv. 29, both of Novosibirsk, all of U.S.S.R.

PCT No. PCT/SU80/00063, § 371 Date Feb. 18, 1981, § 102(e) Date Feb. 18, 1981, PCT Pub. No. WO80/02570, PCT Pub. Date Nov. 27, 1980
PCT Filed Apr. 25, 1980, Ser. No. 243,929
Int. Cl.⁴ C25D *5/54;* **C23C** *18/14*
U.S. Cl. 204—20 **13 Claims**

1. A process for producing a conductive layer on a dielectric consisting essentially of:
(a) wetting at least a portion of the surface of the dielectric with a solution comprising:

	grams/liter
copper salt	50–350
hypophosphorous acid salt	50–350
stabilizing agent	0.004–250
water	up to 1 liter

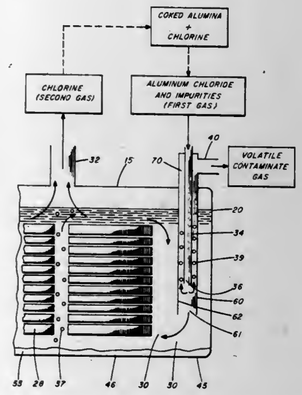
(b) heat-treating at least the portion of the surface of the dielectric wetted with the solution at a temperature in the range of 80° to 350° C. to evaporate the water and decompose the solution whereby a conductive layer is formed.

4,576,690

SEPARATION OF VOLATILE IMPURITIES FROM ALUMINUM CHLORIDE BEFORE ELECTROLYSIS

James R. Fields, Penn Township, Westmoreland County; Elmer H. Rogers, Jr, and Larry K. King, both of Murrysville, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Apr. 15, 1985, Ser. No. 723,452
Int. Cl.⁴ C25C *3/06, 3/08*
U.S. Cl. 204—67 **19 Claims**



1. A method for production of aluminum by electrolysis of $AlCl_3$ in a cell comprising
an electrolysis chamber containing an electrode and a molten salt bath contacting said electrode,
a gas separation compartment containing molten salt bath,
a partition separating the chamber from the compartment,
a gas inlet tube having an orifice in the compartment,
a gas outlet for removing gas from the compartment, said outlet being spaced from said inlet tube orifice,
said method comprising the steps of
(a) supplying $AlCl_3$ containing impurities that are insoluble in the bath through the inlet tube into the bath,
(b) evaporating said impurities from the bath and removing said impurities through the gas outlet,
(c) dissolving $AlCl_3$ into the bath,
(d) transferring bath containing dissolved $AlCl_3$ from the compartment into the chamber, and
(e) electrolyzing $AlCl_3$ in the chamber to produce aluminum, Cl_2 and used bath having a lower concentration of $AlCl_3$ than the bath of step (d).

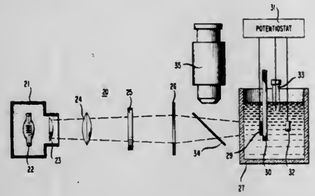
4,576,691

ETCHING OPTICAL SURFACES ON GAAS

Paul A. Kohl, Chatham; Lawrence E. Smith, Plainfield, and Harvey S. Trop, South Plainfield, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 31, 1984, Ser. No. 636,177
Int. Cl.⁴ C25F *3/12, 3/14*
U.S. Cl. 204—129.3 **11 Claims**

1. A process for fabricating an optical device comprising at least one n-type or intrinsic compound semiconductor consisting of at least 95 mole percent gallium arsenide comprising the step of etching at least part of the compound semiconductor to produce a compound semiconductor surface of optical quality characterized in that the etching procedure is an electrochemical photoetching procedure in which electric current is passed through the compound semiconductor, electrolytic solution with conductivity greater than 0.0001 mhos/cm and anode in which the electrochemical photoetching procedure further comprises
a. applying a potential to the semiconducting compound which is between the maximum potential of the valence



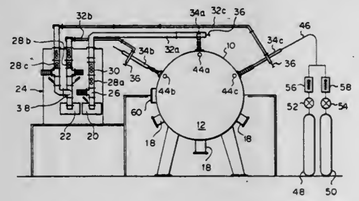
band of the semiconductor compound in the electrolytic solution and the minimum potential of the conduction band of the semiconductor compound in the electrolytic solution;
b. illuminating the part of the surface of the compound semiconductor to be etched with radiation of sufficient energy to produce holes in the valence band; and
c. the electrolytic solution comprises aqueous alkaline solution with pH greater than 11.

4,576,692

METHOD FOR CONTROLLING THE OPERATION OF A MICROWAVE-EXCITED OXYGEN PLASMA SURFACE TREATMENT APPARATUS

Kenji Fukuta; Takaoki Kaneko, and Yoshinobu Takahashi, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha and Kabushiki Kaisha Toshiba, both of, Japan

Filed Jun. 11, 1984, Ser. No. 619,174
Claims priority, application Japan, Jun. 14, 1983, 58-104906; Jun. 14, 1983, 58-104904; Jun. 14, 1983, 58-104905
Int. Cl.⁴ C07C *3/24, 13/00*
U.S. Cl. 204—165 **14 Claims**



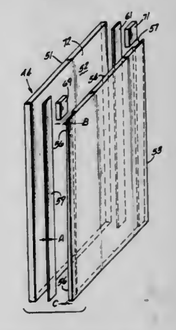
1. A method for sequentially controlling the operation of an apparatus for modifying the surface of polymer products with microwave-excited oxygen plasma, said apparatus including a microwave power generator operatively connected by a waveguide with a microwave discharge tube to excite a stream of oxygen gas flowing from a source of oxygen gas through said discharge tube into a reactor, said stream of oxygen gas being controlled by a flow control valve provided between said source of oxygen gas and said discharge tube, said reactor being adapted to be evacuated to continuously maintain the pressure therein at substantial vacuum conditions throughout the operational period of said apparatus, said method comprising the steps of:
after commencement of evacuation of said reactor, continuously monitoring and measuring the pressure in said reactor and generating a first pressure signal when said pressure decreases to a predetermined pressure level and a second pressure signal when said pressure thereafter increases to fall within a predetermined pressure range higher than said predetermined pressure level;
opening said flow control valve in response to said first pressure signal to allow a stream of oxygen gas to flow at a predetermined flow rate into said discharge tube and thence into said reactor;
turning on said microwave power generator in response to said second pressure signal to excite said stream of oxygen gas in said discharge tube to generate oxygen plasma which is then transferred into said reactor to react upon the polymer products received therein;
continuously monitoring and measuring the density of oxygen plasma thus generated and generating a density signal when the measured plasma density is within a predetermined density range; and
closing said flow control valve and turning off said microwave power generator in response to said density signal and after a lapse of predetermined time period from the generation of said density signal.

4,576,693

NUCLEIC ACID SEQUENCING ELECTROPHORESIS APPARATUS AND METHOD OF FABRICATING

John H. Kreisher, Ridgefield, and Charles A. Nalbantian, New Haven, both of Conn., assignors to International Biotechnologies, Inc., New Haven, Conn.

Filed Jan. 14, 1985, Ser. No. 691,057
Int. Cl.⁴ G01N *27/26*
U.S. Cl. 204—180.1 **19 Claims**



15. A method of fabricating a wedge shaped electrophoresis gel slab mold comprising the steps of: providing two mold plates each having generally flat primary surfaces, establishing a pair of matching, inclined secondary surfaces on opposed margins of one of said plates, said secondary surfaces being offset from the adjacent primary surface, disposing a ribbon of gasket material of uniform thickness in areal contact with each of said secondary surfaces, and clamping the plates together with the gasket material sandwiched between the plates.

4,576,694

METHOD FOR PRODUCING ELECTRICALLY INSULATED CONDUCTOR

Eiki Jidai, and Aiichiro Hashizume, both of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 370,907, Apr. 22, 1982, abandoned. This application Aug. 24, 1984, Ser. No. 643,762
Claims priority, application Japan, May 9, 1981, 56-71817
Int. Cl.[4] C25D *13/06, 13/10, 13/12*
U.S. Cl. 204—181.1 6 Claims

1. A method for producing an electrically insulated conductive body which comprises the steps of:
(a) immersing an electrically conductive body into an electrodeposition paint composition containing no chemical curing accelerator, said paint composition containing mica powder as an inorganic insulative substance and a water-dispersion varnish as an organic insulative substance, both substances being dispersed in water;
(b) forming an electro-deposited layer on said electrically conductive body by electrophoresis, followed by heat-setting the resulting insulative coating layer;
(c) immersing the coated electrically conductive body into a water-soluble resin solution containing therein a water-soluble chemical curing accelerator, followed by heat-setting the same; and
(d) impregnating the electro-deposited conductive body with an impregnating resin containing no chemical curing accelerator, followed by heat-setting the same.

4,576,695

ADHESION PROMOTERS FOR SANITARY CAN COATINGS

Phillip M. Owens, Strongsville, Ohio, assignor to SCM Corporation, New York, N.Y.

Filed Nov. 23, 1983, Ser. No. 554,692
Int. Cl.[4] C25D *13/10, 13/14, 13/20*
U.S. Cl. 204—181.4 6 Claims

1. A method for improving the adhesion of water-base paints to an untreated aluminum substrate which comprises
(a) cleansing the untreated aluminum surface with an aqueous acid wash and water washing said cleaned surface
(b) subjecting the untreated cleaned aluminum to an electrocoating paint composition comprising an epoxy-acrylate resin, a crosslinking agent and about 0.01 to about 2.0 parts, basis total resin, of an adhesion promoter wherein said promoter is an alkaline earth metal salt of citric acid and the metal is selected from the group consisting of calcium, magnesium and zinc
(c) electrodepositing said composition to deposit a film coating on said substrate
(d) curing the deposited film.

4,576,696

PROCESS FOR THE PREPARATION OF A BIOLOGICALLY ACTIVE EXTRACT

Robert Oertli, Möhlin, Switzerland, assignor to Solco Basel AG, Basel, Switzerland

Filed Sep. 19, 1984, Ser. No. 652,343
Claims priority, application Switzerland, Oct. 5, 1983, 5413/83
Int. Cl.[4] B01D *13/02*
U.S. Cl. 204—182.6 8 Claims

1. A process for the preparation of a biologically active, low-salt, pyrogen-free, sterile and antigen-free complete extract of mammal organs and of cell cultures, the extract consisting of a mixture of biologically active substances having a molecular weight of less than 10,000 Daltons, which comprises comminuting with disintegration of the cells the starting material which has been procured, and may have been stored, under low-germ or sterile conditions, rapidly heating the comminuted and disintegrated material in a heat exchanger to a temperature from 70° to 90° C. and rapidly again cooling to a low temperature, separating the products thereby precipitated from the solution by centrifugation, removing the substances having a molecular weight of greater than 10,000 Daltons from the solution by ultrafiltration and removing the salt ions from the remaining solution by electrodialysis, the whole process being carried out with exclusion of any foreign substances other than water, and without the use of any carrier material for separation methods.

4,576,697

SYNTHESIS OF CARBON-CONTAINING INTERCALATABLE LAYERED TRANSITION METAL CHALOCOGENIDES

David N. Palmer, Tolland, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Apr. 21, 1983, Ser. No. 487,148
Int. Cl.[4] C23C *15/00*
U.S. Cl. 204—192 N 4 Claims

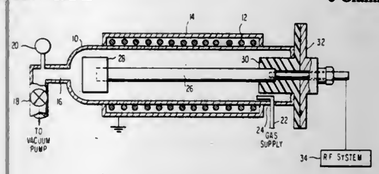
1. A process for treating the surface of a transition metal substrate to form into the surface a carbon-containing intercalatable layered transition metal chalcogenide having the general formula M_nX_2C where M is a transition metal selected from the group consisting of Ti, V, Cr, Fe, Zr and Ta; X is sulfur; and n is 1–2; which comprises:
ion implanting sulfur at an implantation energy in the range of about 150–200 kiloelectron volts and at a saturation dosage of about 10^{18} sulfur atoms/cm^2 into the surface of the transition metal substrate to a depth of about 1000–2200 Å; and
then ion implanting carbon at an implantation energy in the range of about 150–200 kiloelectron volts and at a saturation dosage of about 10^{18} carbon atoms/cm^2 into the surface of the sulfur-implanted transition metal substrate to a depth of about 1000–2200 Å.

4,576,698

PLASMA ETCH CLEANING IN LOW PRESSURE CHEMICAL VAPOR DEPOSITION SYSTEMS

James P. Gallagher, Newburgh, and Howard W. Schmidt, Jr., Walden, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 30, 1983, Ser. No. 509,518
Int. Cl.[4] C23C *14/00*
U.S. Cl. 204—192 E 6 Claims



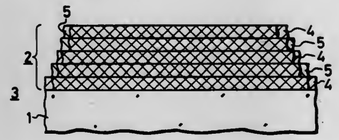
1. A method of removing deposition products from the interior of a chemical vapor deposition chamber comprising the steps of:
removing a device processed in said chamber and providing a pair of r.f. electrodes relative to said chamber;
mounting one of said electrodes into said chamber following removal of the device processed and sealing said chamber;
supplying a cleaning gas into said chamber, and
supplying r.f. electrical power between said pair of electrodes to establish an r.f. plasma of the cleaning gas within said chamber to clean by plasma etching deposition products from the interior of said chamber.

4,576,699

MAGNETO-OPTICAL RECORDING MEDIUM AND METHOD OF MAKING SAME

Noboru Sato, Kanagawa, and Tomiji Tanaka, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 23, 1984, Ser. No. 613,383
Claims priority, application Japan, May 25, 1983, 58-92067
Int. Cl.[4] C23C *15/00;* G11B *5/64*
U.S. Cl. 204—192 M 4 Claims



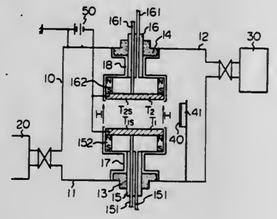
1. A method for manufacturing a magneto-optical recording medium comprising the steps of:
providing a transition metal source and a rare earth metal source in spaced relation,
simultaneously depositing said transition metal and said rare earth metal by co-sputtering the two metals on a base, and
providing relative movement between said base and said source during such co-sputtering to produce a multilayer recording layer in which the relative concentration between said rare earth metal and said transmission metal varies cyclically in the thickness dimension of the recording layer.

4,576,700

PERPENDICULAR MAGNETIC RECORDING MEDIUM METHOD FOR PRODUCING THE SAME, AND SPUTTERING DEVICE

Sadao Kadokura, Hachioji; Kazuhiko Honjo; Takashi Tomie, both of Hino, and Masahiko Naoe, Tokyo, all of Japan, assignors to Teijin Limited, Tokyo, Japan

Filed Feb. 16, 1983, Ser. No. 466,863
Claims priority, application Japan, Feb. 16, 1982, 57-22080
Int. Cl.[4] C23C *15/00*
U.S. Cl. 204—192 M 3 Claims



1. A method for producing a perpendicular magnetic recording medium comprising a nonmagnetic base, and two magnetic layers successively formed on said nonmagnetic base, said layers comprising a first layer of low-coercive force material and a second layer of a cobalt alloy comprised of Co-Cr or Co-Cr and an additional elements of the group of W, Mo, Ru, Pt, As, Ni, Re and Ta, and which has a direction of easy magnetization in a direction perpendicular to the film surface, and wherein said layer of low-coercive force consists of a Co-Ta alloy which is mainly composed of cobalt and additionally tantalum, said method comprising the steps of: forming layer of said Co-Ta alloy by an opposed targets sputtering method by generating a magnetic field in a direction perpendicular to the surfaces of a pair of targets arranged opposite to one another within a sputtering device, and depositing material of said targets on the nonmagnetic base, which is located beside a space between said pair of targets and which faces said space; and forming said first and second cobalt alloy layers by means of the opposed targets. sputtering method.

4,576,701

NICKEL ELECTROPLATING ANODE AND METHOD OF FORMING

Takeo Meguro, 16-11, Nishiogi Minami 4-chome, Suginami-ku, Tokyo, Japan

Filed Jun. 27, 1984, Ser. No. 625,088
Int. Cl.[4] C25D *17/12;* C25B *11/02;* B21D *22/00;* H01R *43/00*
U.S. Cl. 204—280 6 Claims

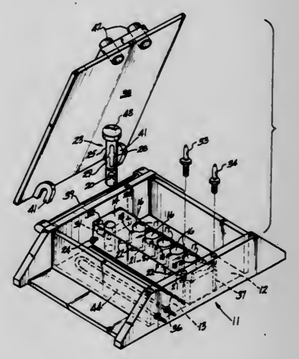
1. A plating electrolytic nickel anode comprising a spherical without melting and casting body produced by directly and plastically deforming a plate-like electrolytic nickel anode of high purity.

4,576,702

ANALYTICAL ELECTROELUTION DEVICE

Lawrence J. Peck, Cambridge, Mass., and John H. Kreisher, Ridgefield, Conn., assignors to International Biotechnologies, Inc., New Haven, Conn.

Filed Nov. 5, 1984, Ser. No. 668,562
Int. Cl.[4] G01N *27/28*
U.S. Cl. 204—299 R 12 Claims



1. An electroelution device for removing and collecting charged biological particles from a plurality of small gel slices or samples simultaneously comprising at least two fluid tight compartments separated by a bridge element, said bridge element being formed with a plurality of spaced recesses defining sample supports, said bridge being further formed with a plurality of conduits, one conduit being individual to each sample support and each conduit having a first outlet communicating with a mating sample support and a second outlet communicating with one of said compartments.

4,576,703

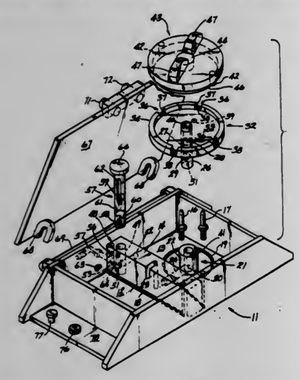
PREPARATORY ELECTROELUTION DEVICE

Lawrence J. Peck, Cambridge, Mass.; John H. Kreisher, Ridgefield, and Alan L. Walker, New Haven, both of Conn., assignors to International Biotechnologies, Inc., New Haven, Conn.

Filed Nov. 5, 1984, Ser. No. 668,571
Int. Cl.[4] G01N *27/28*
U.S. Cl. 204—299 R 12 Claims

1. An electroelution receptacle useful to remove charged particles such as biological substances from a gel slice comprising at least two major fluid tight compartments separated by a bridge element, a first valve disposed in one compartment including a valve body and a valve stem within said valve

body, a conduit connecting said valve body to the other compartment, through said bridge element, said valve stem having a central cavity defining a recovery reservoir, said valve stem being movable from a first position in which said first valve is open so that said recovery reservoir communicates through said conduit with an overflow outlet to a second position in



which said first valve is closed and said overflow outlet is cut off, said valve stem supporting at one end a gel specimen tray, a closure member for covering said specimen tray and making a releasable keyed connection with said specimen tray operable manually to move said valve stem to said first and second positions of said valve stem, selectively.

4,576,704

APPARATUS FOR THE ELECTROCHEMICAL DETECTION OF THE OXYGEN CONTENT OF LIQUIDS

Erwin Chiusole, Bregenz, Austria, and Hans Züllig, Rheineck, Switzerland, assignors to Züllig AG Rheineck, Rheineck, Switzerland

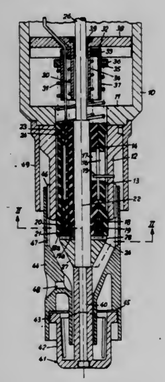
PCT No. PCT/CH83/00139, § 371 Date Jan. 29, 1985, § 102(e) Date Jan. 29, 1985, PCT Pub. No. WO84/04814, PCT Pub. Date Dec. 6, 1984

PCT Filed Dec. 12, 1983, Ser. No. 703,229

Claims priority, application Switzerland, Jun. 2, 1983, 3015/83

Int. Cl.⁴ G01N *27/38*

U.S. Cl. 204—402 **7 Claims**



1. In an apparatus for the electrochemical measurement of the oxygen content of liquids, said apparatus including first and second electrodes whose free ends can be immersed in the liquid whose oxygen content is to be measured, the oxygen content of the liquid being measured by an electric current occurring between the two electrodes, the apparatus also including a rotatable grinding device which can contact the free ends of said electrodes to clean them while the shape, size and mutual spacing of the free ends of said electrodes remain unchanged, the improvement wherein

said first and second electrodes are embedded in respective first and second annular bodies of insulating material, each of said first and second annular bodies having an axial end surface which faces the liquid whose oxygen content is to be measured, the free ends of said first and second electrodes being exposed at the axial end surface of the respective annular body in which it is embedded, said first and second annular bodies being axially movable relative to one another,

said apparatus includes first and second spring means which respectively cooperate with said first and second annular bodies to individually bias their said axial end surfaces toward said rotatable grinding device, and

said apparatus includes at least one adjusting means for determining the biasing force of one of said first and second spring means exerted on its associated annular body, adjustment of said adjusting means enabling a uniform cleaning of the free ends of said two electrodes by said grinding device.

4,576,705

APPARATUS WITH POLAROGRAPHIC SENSOR TO DETECT CONCENTRATIONS OF PLURALITY OF GAS COMPONENTS

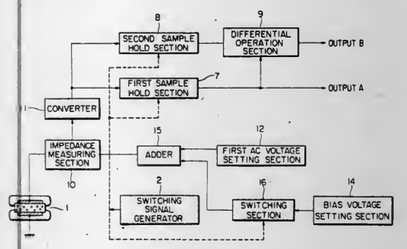
Haruyoshi Kondo; Hideaki Takahashi; Keiichi Saji; Takashi Takeuchi, and Kiyoharu Hayakawa, all of Aichi, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi, Japan

Filed May 24, 1984, Ser. No. 613,969

Claims priority, application Japan, May 26, 1983, 58-91441

Int. Cl.⁴ G01N *27/48*

U.S. Cl. 204—406 **11 Claims**



2. An apparatus for detecting the concentration of a plurality of gas components, comprising:

a polarographic solid electrolytic sensor including an oxygen ionic conductor having opposite surfaces, a cathode placed on one surface of said oxygen ionic conductor, an anode placed on the other surface of said oxygen ionic conductor to supply a voltage, and means covering said surface where said cathode is placed for regulating the quantity of gas which diffuses toward said cathode;

switching control means for performing a jtime-division switching operation during first time slots for detecting the internal resistance of said polarographic solid electrolytic sensor, second time slots for detecting the concentration of oxygen gas, and third time slots for detecting the composite concentration of oxygen gas, carbon dioxide gas and steam;

internal resistance detecting means for measuring the internal resistance of the polarographic solid electrolytic sensor by applying a voltage thereto so that the sensor is operated in the resistance control region during said first period;

first voltage applying means having

a voltage drop calculating section for calculating a voltage drop component caused by the current flowing through said polarographic solid electrolytic sensor in accordance with the internal resistance detected during the first time slots and the current flowing through said polarographic solid electrolytic sensor,

an attenuating section for attenuating the output voltage from said voltage drop calculating section,

constant voltage adding means for adding the first voltage to the output voltage from said attenuating section and for generating a first voltage having a magnitude which causes said polarographic solid electrolytic sensor to respond only to oxygen gas, and

means for applying the output from said constant voltage adding means to said polarographic solid electrolytic sensor during the second time slots under control of said switching control means;

second voltage applying means for applying a second voltage obtained by adding the first voltage and a constant additional voltage to said polarographic sensor so that said polarographic sensor measures the composite concentration of oxygen gas, carbon dioxide gas and steam;

said second voltage applying means having

an additional voltage setting section for generating an additional voltage,

an addition section for adding the additional voltage from said additional voltage setting section and the first voltage from said first voltage applying means to obtain the second voltage, and

a resistor attenuation section, between said additional voltage setting section and said addition section, for attenuating the second voltage set by said second voltage applying means in accordance with change in composite concentration of carbon dioxide gas and steam;

electric signal detecting means for detecting electric signals from said polarographic sensor when the first and second voltages are applied to said polarographic sensor, respectively, and for generating a signal corresponding to the oxygen concentration and a signal corresponding to the composite concentration of oxygen gas, carbon dioxide gas and steam;

first sample holding means connected to said electric signal detecting means, for storing data corresponding to the signal which corresponds to the oxygen concentration and which is generated from said electric signal detecting means when the first voltage is applied to said polarographic sensor;

second sample holding means connected to said electric signal detecting means, for storing data corresponding to the signal which corresponds to the composite concentration of oxygen gas, carbon dioxide gas and steam and which is generated from said electric signal detecting means when the second voltage is applied to said polarographic sensor; and

operating means connected to said first and second sample holding means, for subtracting the signal corresponding to the oxygen concentration from the signal corresponding to the composite concentration of oxygen gas, carbon dioxide gas and steam, and for generating a signal corresponding to the composite concentration of carbon dioxide gas and steam.

4,576,706

FLOWTHROUGH-TYPE ELECTROLYTIC CELL

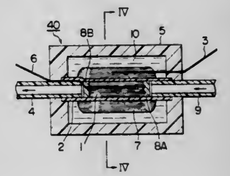
Yoshinori Takata, Chiba, and Mamoru Taki, Ibaraki, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 5, 1984, Ser. No. 647,483

Claims priority, application Japan, Sep. 5, 1983, 58-162786

Int. Cl.⁴ G01N *27/42*

U.S. Cl. 204—409 **27 Claims**



1. A flowthrough-type electrolytic cell, which comprises:

a chamber adapted to contain an electrolyte solution;

pipe means whose one end is communicated with a sample inlet and whose other end is communicated with a sample outlet, said pipe means being made of an ion exchange material, said pipe means being located in said chamber;

a working electrode provided in the pipe means, said working electrode comprising electroconductive material in the form of a bundle of fibers, or particulate matter, packed in the pipe means; and

a counterelectrode provided outside the pipe means and within said chamber.

4,576,707

PROCESS FOR BENEFICIATING COAL

Michael Siskin, Livingston, and Glen B. Brons, Phillipsburg, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 600,431, Apr. 16, 1984, Pat. No. 4,491,513. This application Dec. 27, 1984, Ser. No. 686,609

Int. Cl.⁴ C10G *1/04*

U.S. Cl. 208—8 LE **26 Claims**

15. A process for beneficiating coal which process comprises contacting the coal in two different stages with an aqueous ammonium salt solution wherein the stages are characterized as follows:

stage 1 is conducted at pH in the range of about 5 to 9 in the presence of an aqueous ammonium salt solution;

stage 2 being conducted at a pH in the range of about 0.5 to 5 or about 9 to 12 in the presence of an organic solvent at a temperature in the range of about 0° C. to about 300° C. for an effective amount of time.

4,576,708

BENEFICIATION OF SHALE KEROGEN AND ITS CONVERSION INTO SHALE OIL

Uriel M. Oko, Tulsa, Okla., and Robert M. Baldwin, Golden, Colo., assignors to Cities Service Oil & Gas Corp., Tulsa, Okla.

Filed Aug. 6, 1984, Ser. No. 638,123

Int. Cl.⁴ C10G *1/04*

U.S. Cl. 208—11 LE **108 Claims**

1. A process for the production and conversion of solid shale kerogen to produce shale oil comprising in serial combination the steps of:

(a) grinding crushed shale into a first product consisting essentially of generally inert matter and generally liberated solid kerogen having an average fineness of between about 5 microns to about 250 microns;

(b) treating the surface of the first product including the ground-liberated solid kerogen of step (a) with a first collec-

tor in order to render the ground liberated solid kerogen air-avid and water-repellent;

(c) introducing the ground-treated first product of step (b) into a first water suspension medium having a first frother;

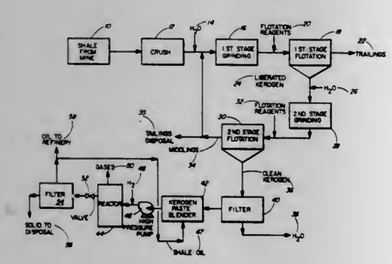
(d) suspending the ground-treated first product in the first water suspension medium by a first means for agitation;

(e) aerating the first water suspension medium in order to form a layer of foam on top of the first water suspension medium such that air-avid treated liberated solid kerogen having a fineness of between about 5 microns to about 250 microns attaches to the rising bubbles of aeration where it collects in the foam;

(f) skimming off the collected liberated solid kerogen from the surface of the first water suspension medium in order to recover liberated solid kerogen having an average fineness of between about 5 microns to 250 microns;

(g) grinding the recovered liberated solid kerogen of step (f) into a second product consisting essentially of generally disassociated inert matter and generaly clean solid kerogen having an average fineness of between about 0.5 microns to about 45 microns;

(h) treating the surface of the second product including the ground-clean solid kerogen with a second collector in order to render the ground-clean solid kerogen air-avid and water-repellent;



(i) introducing the ground-treated second product of step (h) into a second water suspension medium having a second frother;

(j) aerating the second water suspension medium having the second frother of step (i) in order to form a second layer of foam on top of the second water suspension medium such that air-avid treated clean solid kerogen having a fineness of between about 0.5 to 45 microns attaches to the rising bubbles of aeration where it collects in the foam;

(k) skimming off the collected clean solid kerogen product from the surface of the second water suspension medium in order to recover a clean solid kerogen product having an average fineness of between about 0.5 to 45 microns;

(l) mixing the recovered clean solid kerogen product of step (k) with a liquid means to form a pumpable solid kerogen paste;

(m) introducing the pumpable solid kerogen paste of step (k) into at least one reaction zone maintained at a pressure of between about 50 and about 5,000 psi. and a temperature of between about 300 degrees Fahrenheit and about 1,000 degrees Fahrenheit in order to convert the solid kerogen in the pumpable solid kerogen paste into a hydrocarbon liquid; and

(n) removing the converted hydrocarbon liquid of step (m) and associated gases from the reaction zone.

4,576,709

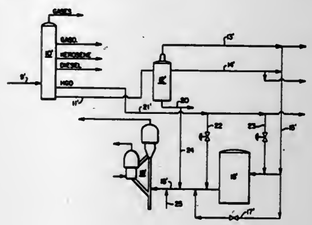
CATALYTIC UPGRADING OF REDUCED CRUDES AND RESIDUAL OILS WITH A COKE SELECTIVE CATALYST

Charles B. Miller, and Roy E. Whitt, both of Ashland, Ky., assignors to Ashland Oil, Inc., Ashland, Ky.

Continuation-in-part of Ser. No. 413,870, Sep. 2, 1982. This application Jun. 8, 1984, Ser. No. 618,635

Int. Cl.⁴ C10G *11/05, 69/04*

U.S. Cl. 208—57 **44 Claims**



1. In a process for catalytically converting residual oils comprising metallo-organic compounds boiling above 552° C. (1025° F.) with an active zeolite cracking catalyst comprising a passivating metal added to passivate nickel accumulated on catalyst particles comprising carbonaceous deposits and where the catalyst is regenerated with an oxygen containing gas to produce a CO rich flue gas, the improvement which comprises:

(a) partially hydrogenating a gas oil product of distillation before admixture with a vacuum resid product to provide a hydrogenated gas oil and mixing said hydrogenated gas oil with said vacuum resid product to form a vacuum resid-hydrogenated gas oil mixture;

(b) catalytically cracking the vacuum resid-hydrogenated gas oil mixture with a special catalyst comprising a hydrogen form of faujasite crystalline zeolite comprising rare earths dispersed in a high alumina content acidic matrix material providing cracking activity whereby carbonaceous material is deposited on the catalyst;

(c) regenerating said catalyst by combustion to remove deposited carbonaceous material to a desired residual coke level in the presence of an oxygen lean regeneration gas under a regeneration temperature restricted to within the range of 677° C. (1250° F.) up to about 760° C. (1400° F.);

(d) limiting said regeneration temperature as recited hereinabove and promoting CO burning with oxygen lean gas within a dense fluid bed of catalyst being regenerated;

(e) said catalyst being further restricted to comprise: (1) less than 20 weight percent of said faujasite crystalline zeolite comprising rare earths, (2) said zeolite mixture being dispersed in an acidic siliceous inorganic oxide matrix comprising at least 40 weight percent alumina, (3) said catalyst being prepared under conditions to provide catalyst particles with a surface area greater than 200 sq. m./g. and a pore volume of at least 0.4 c.c./g., and (4) said catalyst comprising rare earth metals also distributed in the catalyst matrix in an amount providing a lanthanum to cerium ratio greater than one.

4,576,710

CATALYST DESULFURIZATION OF PETROLEUM RESIDUA FEEDSTOCKS

Govanon Nongbri, Newtown, Pa., and Michael C. Chervenak, Pennington, N.J., assignors to HRI, Inc., Gibbsboro, N.J.

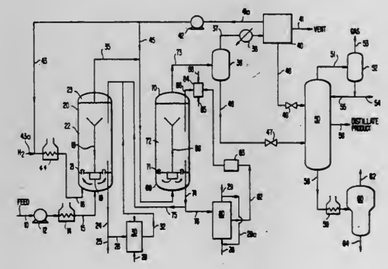
Continuation of Ser. No. 414,708, Sep. 3, 1982, abandoned. This application Nov. 9, 1984, Ser. No. 672,841

Int. Cl.⁴ C10G *65/04, 65/12*

U.S. Cl. 208—58 **12 Claims**

1. A process for the catalytic desulfurization of heavy petroleum residua feedstocks containing at least about 2 W% sulfur and less than about 400 ppm total metals to produce lower sulfur liquid products wherein the effective catalyst deactivation is minimized while catalyst age is increased, said process comprising:

(a) feeding the petroleum residua feedstock together with hydrogen into a reaction zone containing an ebullated catalyst bed of high activity desulfurization catalyst, said reaction zone being maintained at a 790°–860° F. temperature and 1000–1800 psig hydrogen partial pressure with a liquid space velocity of 0.2–2.0 $V_f/hr/V_r$ and a catalyst space velocity of 0.02–0.4 barrel/day/pound catalyst to provide at least about 75% desulfurization of the feed and to produce a hydroconverted hydrocarbon material;



(b) withdrawing used catalyst containing carbon deposits from said reaction zone at a rate of at least about 0.4 lb/bbl feed, discarding between 10 and 50 W% of said used catalyst, regenerating the remainder of said used catalyst to remove substantially all carbon deposits, and returning the regenerated catalyst to the reaction zone for further use along with fresh catalyst to minimize the catalyst effective deactivation rate and increase catalyst age; and

(c) withdrawing said hydroconverted hydrocarbon material from said reaction zone, and phase separating and distilling the material to produce gas and lower boiling desulfurized hydrocarbon liquid products.

4,576,711

HYDROCRACKING PROCESS AND CATALYST THEREFOR

John W. Ward, Yorba Linda, Calif., and Timothy L. Carlson, Grand Junction, Colo., assignors to Union Oil Company of California, Los Angeles, Calif.

Continuation of Ser. No. 406,498, Aug. 9, 1982, Pat. No. 4,517,073, which is a continuation-in-part of Ser. No. 84,761, Oct. 15, 1979, Pat. No. 4,419,271. This application Feb. 1, 1985, Ser. No. 697,258

The portion of the term of this patent subsequent to May 14, 2002, has been disclaimed.

Int. Cl.⁴ C10G *47/20*

U.S. Cl. 208—111 **23 Claims**

1. In a catalytic hydrocracking process, the improvement comprising contacting a hydrocarbon feedstock with a hydrocracking catalyst under hydrocracking conditions producing a product hydrocarbon of lower average molecular weight than said feedstock with a catalyst comprising an active hydrogenation metal component on a support comprising in admixture a dispersion of silica-alumina in alumina and a crystalline aluminosilicate zeolite having the zeolite Y crystal structure and a silica-to-alumina mole ratio above about 6.0.

4,576,712

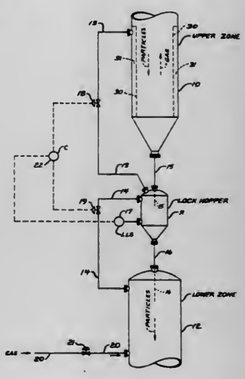
MAINTAINING GAS FLOW DURING TRANSFER OF SOLIDS IN HYDROCARBON CONVERSION AND GAS-SOLID CONTACTING PROCESSES

Arthur R. Greenwood, Niles, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Dec. 26, 1984, Ser. No. 686,499

Int. Cl.⁴ C10G *9/30, 11/18;* **B01J** *8/08*

U.S. Cl. 208—138 **9 Claims**



1. A method for maintaining a substantially continuous flow of a gas upward through a lower zone and then through an upper zone within a previously established flow rate range while simultaneously transferring particles downward from the upper zone to the lower zone, which lower zone has higher internal pressure than the upper zone, where said upper zone and lower zone internal pressures are independently variable, and where the particles are passed through the upper and lower zones during practice of a process for treatment of the particles or the gas, said method comprising:

(a) passing the gas into the lower zone, whereupon gas passes upward from the lower zone to a lock hopper zone through a lower particle transfer conduit which communicates between the lower zone and the lock hopper zone at a rate which prevents downward flow of particles through the lower particle transfer conduit, where an upper particle transfer conduit communicates between the lock hopper zone and the upper zone, where a lower portion of the upper zone, the upper particle transfer conduit, a lower portion of the lock hooper zone, and the lower particle transfer conduit are filled with particles without discontinuity, and where flow of particles downstream through the upper particle transfer conduit into the lock hopper is prevented because the level of particles in the lock hopper zone is at the lower end region of the upper particles transfer conduit;

(b) simultaneously with step (a), passing gas from the lock hopper zone to the upper zone by means of an upper gas conduit which communicates and substantially equalizes pressure between these zones;

(c) increasing the internal pressure of the lock hopper zone to a value substantially equal to the pressure of the lower zone by stopping gas flow through the upper gas conduit and passing gas from the lower zone to the lock hopper zone by means of a lower gas conduit which communicates and substantially equalizes pressure between these zones, causing particles to flow downward through the lower particle transfer conduit into the lower zone, and causing gas to flow from the lock hopper zone to the upper zone by means of the upper particle transfer conduit, at a gas rate which prevents downward flow of particles through the upper particle transfer conduit; and,

(d) stopping gas flow through the lower gas conduit when

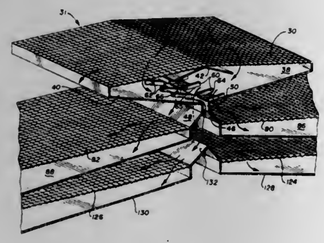
the level of particles in the lock hopper zone falls to a previously determined low level point and simultaneously establishing a flow of gas through the upper gas conduit, causing particle flow out of the lower particle transfer conduit to the lower zone to cease and causing particles to flow out of the upper particle transfer conduit and into the lock hopper zone, said particle flow continuing until the level of particles in the lock hopper zone rises to the lower end region of the upper particle transfer conduit.

4,576,713

FEED STREAM SPLITTER FOR MULTIPLE DECK SCREENING MACHINE

Gerald W. Melin, Stanchfield, Minn., assignor to Carter-Day Company, Minneapolis, Minn.

Filed Jul. 19, 1984, Ser. No. 632,427
Int. Cl.⁴ B07B *1/00, 1/28*
U.S. Cl. 209—254 **1 Claim**



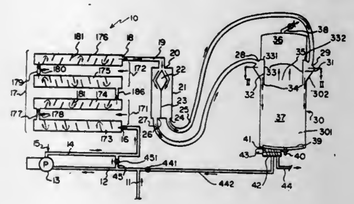
1. In a multiple deck screening machine;
(a) a pair of opposed uninterrupted distribution panels mounted in opposed inclined and slightly spaced relation, said panels being mounted for agitated movement to facilitate the movement of particulate material downwardly across their upper surfaces;
(b) said panels being inclined downwardly toward each other and each having opposed and spaced forward lowermost terminal edges located in juxtaposition so that of the other and terminating adjacent the other and defining a divider gap therebetween;
(c) each of said lowermost terminal edges being defined by a plurality of transversely space tongues extending forwardly from the lowermost portions of its panel toward its opposed distribution panel and by an open area between each adjacent pair of its said tongues;
(d) each of said tongues of each of said panels being constructed and arranged to be located opposite one of the open areas of the opposite panel and to deliver particulate material into said divider gap and to deliver particulate material into the opposite open area of the opposite panel if and when said divider gap is filled;
(e) upstanding divider plates extending along opposite sides of each of said tongues on each of said distribution panels from a point located rearwardly thereof and directing defined portions of the particulate material moving down each panel to each of said panel's respective tongues and open areas therebetween; and
(f) means for maintaining the material directed by said divider plates into said divider gap and said open areas in separated relation.

4,576,714

SYSTEM FOR THE CLARIFICATION OF SEWAGE AND OTHER LIQUID-CONTAINING WASTES

Anton P. Pohoreski, Saskatchewan, Canada, assignor to Continental Manufacturing and Sales Inc., Saskatchewan, Canada

Filed Jun. 15, 1984, Ser. No. 621,236
Claims priority, application Canada, Feb. 3, 1984, 446760
Int. Cl.⁴ C02F *1/52*
U.S. Cl. 210—195.1 **14 Claims**



1. A sewage purification system comprising:
(a) a pump for drawing sewage into said system;
(b) an injection inlet for injecting a first chemical into the effluent line from said pump; (c) a first U-shaped mixing chamber and a second interconnecting U-shaped mixing chamber, said first and second mixing chambers being connected to said effluent line from said pump, each of said first mixing chamber and said second mixing chamber comprising a near arm and a far arm, the inlet to said mixing chambers being to a near arm of a first said mixing chamber, the outlet from said mixing chambers being from a far arm of a second said mixing chamber, the mixing chambers being interconnected between the far arm of said first mixing chamber and the near arm of said second mixing chamber, each of said near arm and said far arm having baffles therein, said baffles extending only partly across the cross-section of said arm and alternating from one longitudinal face to the opposed longitudinal face and each being inclined at the same angle, towards the direction of flow, to tend to cause turbulent flow, and a conduit interconnecting each said near arm with each said far arm, each said conduit including an injection inlet for the injection thereinto of a respective second chemical and respective third chemical into said respective mixing chambers;
(d) a splitter chamber connected to the common outlet from said mixing chambers to convert said single flow into a pair of parallel flow outlets therefrom;
(e) a separator chamber connected to said parallel flow outlets and having inlet structure therein to cause streams of said chemicallytreated sewage to flow in a unitary direction tengentially along the side walls of said separator chamber, said separator chamber also including means therein for separating sludge therefrom and withdrawing it from the bottom thereof, through a sludge withdrawal line and for withdrawing clean water from the upper central core thereof; and
(f) a sludge recycle line interconnecting said separator chamber and said pump inlet line.

4,576,715

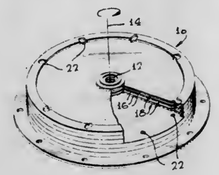
MEMBRANE PACK AND METHOD OF MAKING

John M. Michaels, Irvine; Gerald A. Croopnick, Trabuco Canyon, and Richard A. Morris, Anaheim, all of Calif., assignors to Dresser Industries, Inc, Dallas, Tex.

Filed Feb. 13, 1981, Ser. No. 234,394
Int. Cl.⁴ B01D *13/00*
U.S. Cl. 210—347 **10 Claims**

3. A membrane pack with a sealed edge comprising:
a sheet-like carrier which is permeable to the lateral flow of fluid therein, said carrier having an edge;

an insert of substantially nonporous thermoplastic polymer lying in the same plane as the carrier and having a first edge lying against said edge of said carrier but free of interlocking connection therewith, and an opposite second edge forming an edge of the membrane pack; and



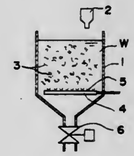
a membrane structure lying over a face of said carrier and extending beyond said carrier edge to lie over said insert, said insert being heat welded to the portion of said membrane structure which lies beyond said carrier edge, whereby to seal the carrier against the inflow of fluid therein which passes across said second edge of the insert.

4,576,716

METHOD OF PRODUCING WATER TREATMENT MEDIUM AND MEDIUM PRODUCED THEREBY

Hiroaki Ida, Uji; Masahiro Fujii, Kyoto, and Toshio Haruta, Nagaokakyo, all of Japan, assignors to Unitika, Ltd., Japan

Continuation-in-part of Ser. No. 331,765, Dec. 17, 1981, abandoned. This application May 9, 1983, Ser. No. 493,433
Claims priority, application Japan, Dec. 27, 1980, 55-186297; Mar. 24, 1981, 56-43332
Int. Cl.⁴ B01D *39/04*
U.S. Cl. 210—496 **15 Claims**



14. A depth-type filtration medium adapted for repeated use by backwash consisting of a spherical or spheroidal or discal fiber lump or lumps of non-crimped fibers obtained by causing non-crimped staple fibers 15 to 30 mm in length to flow and vibrate in a dispersive medium liquid so that the fibers will fold and bend and become mutually intertwined or entangled, said fibers being made of material selected from the group consisting of the polyester family, the polyamide family, the polyvinyl alcohol family, acrylonitrile, rayon, and any combination thereof.

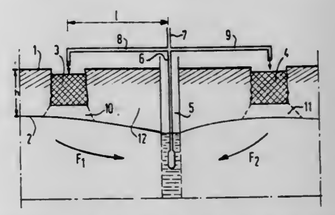
4,576,717

PROCESS FOR DENITRIFYING SUBTERREANEAN WATERS TO MAKE THEM POTABLE

Jean J. Collin; Alain Landreau, both of Orléans; Henri Talbo, Rennes; Guy Martin, Cesson Sevigné , and Jean Morvan, Liffré, all of France, assignors to Bureau de Recherches Geologiques et Minieres, Paris, France

Filed Jul. 31, 1984, Ser. No. 636,396
Claims priority, application France, Aug. 2, 1983, 83 12733
Int. Cl.⁴ C02F *3/06*
U.S. Cl. 210—610 **14 Claims**

1. A process for biological denitrification by a heterotrophic procedure for rendering subterranean water potable, said process comprising: introducing water to be treated into an in situ infiltration site containing a carbonaceous substrate and an inorganic support to denitrify the water to be treated, wherein denitrification is carried out without recourse to artificial enrichment with denitrifying bacteria; passing said denitrified water from said infiltration site to a zone which serves as a



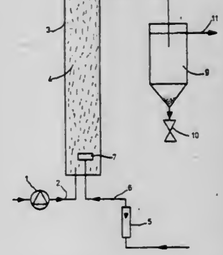
supplementary purification, said zone including means to remove residual organic compounds to produce potable water; and passing said potable water into an aquifer cable thus rendering said aquifer table potable.

4,576,718

USE OF WATER-ABSORBING, HIGHLY-FILLED POLYURETHANE (UREA) COMPOSITIONS FOR BIOLOGICAL TREATMENT OF WASTE-CONTAINING LIQUIDS

Artur Reischl, Leverkusen, and Kurt Mack, Wuppertal, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 16, 1984, Ser. No. 672,441
Claims priority, application Fed. Rep. of Germany, Jan. 26, 1984, 3402697
Int. Cl.⁴ C02F *3/06, 3/08*
U.S. Cl. 210—616 **15 Claims**



1. In the biological treatment of a wastecontaining liquid by the removal of organic matter by microorganisms, the improvement which comprises adding a carrier material for said microorganisms to said liquid in an amount of at least 0.5 grams per liter of said liquid, said carrier material comprising a non-floating, non-abrasive, filled polyurethane(urea) composition which (i) does not contain any cells capable of growth during the production thereof, (ii) has a filler content of from more than 15% by weight to about 95% by weight, based on the moisture-free weight of the filler-containing polyurethane(urea) composition, and (iii) has a water-absorbability of from more than 33% to about 97% by weight, said fillers used in said composition being selected from the group consisting of (i) natural materials containing finely-divided fossil lignocelluloses and the secondary products thereof, (ii) active carbon, (iii) cork powder, (iv) finely-divided organic distillation residues which melt above 100° C., (v) finely-divided inorganic

fillers, (vi) homogeneous or cellular plastic particles, and (vii) mixtures thereof.

4,576,719

PROCESS FOR THICKENING DIGESTED SLUDGE

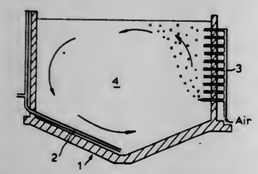
Brian J. E. Hurley, Wickford, and Anthony J. Rachwal, West Molesey, both of England, assignors to Thames Water Authority, London, England

Filed Feb. 28, 1984, Ser. No. 584,454

Claims priority, application United Kingdom, Feb. 28, 1983, 8305446

Int. Cl.⁴ C02F *11/06*

U.S. Cl. 210—620 **7 Claims**



1. A process for thickening digested sludge, comprising:
(i) providing digested sludge at a pH below 8.0 to be thickened;
(ii) providing a source of air;
(iii) passing the air throughout the whole volume of the digested sludge at an intensity in the range of above 0.1 to 5 parts of air to 1.0 part of said sludge, on a volume basis per hour;
(iv) periodically ceasing and restarting said air flow through said sludge;
(v) monitoring the pH of the digested sludge during periods of ceased air flow; and
(vi) ceasing flow of air completely and allowing settlement to thicken the sludge and provide a supernatant fraction and a sludge fraction after obtaining an indication of pH of at least about 8.0.

4,576,720

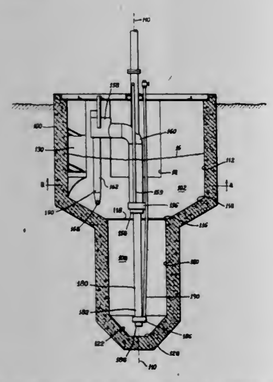
SUBCYCLONIC JET RECIRCULATION GRIT REMOVAL SYSTEM

Mikkel G. Mandt, 2309 Grand Blvd., Cedar Falls, Iowa 50613

Filed May 18, 1984, Ser. No. 611,838

Int. Cl.⁴ C02F *3/22*

U.S. Cl. 210—626 **6 Claims**



1. Apparatus for removing grit from a wastewater stream such as municipal sewage while maintaining the wastewater in an aerobic condition, comprising:
a subcyclonic sedimentation tank which is substantially radially symmetrical about a central axis and having a lower sediment accumulation surface projecting inward from the outer tank wall toward the central axis,
a lower sediment accumulation tank beneath and in axial alignment with the sedimentation tank and in fluid communication therewith along the central vertical axis,
inlet means for tangentially introducing the wastewater inlet stream to be degritted into the subcyclonic sedimentation tank at its periphery,
outlet means for discharging a degritted wastewater stream,
air lift pump means for withdrawing a portion of the wastewater from said sedimentation tank adjacent said sediment accumulation surface at the central vertical axis at a rate of at least about 0.02 of the volume of the wastewater in the sedimentation tank per minute, for introducing into the withdrawn stream at least about 0.1 standard cubic feet of air per gallon of said withdrawn stream for aeration of said withdrawn stream, and for lifting said withdrawn stream within an enclosed conduit under turbulent conditions to an elevation of at least about one foot above the surface of the wastewater in the sedimentation tank to provide an aerated, turbulently mixed recirculation stream,
said air lift pump means comprising an airlift conduit having an intake opening adjacent said sediment accumulation surface, and an air-liquid separation chamber in fluid communication with said airlift conduit above the surface of wastewater in said subcyclonic sedimentation tank for separating said air from said withdrawn stream to provide said aerated recirculation stream, and
discharge means for discharging said aerated turbulently mixed recirculation stream at a velocity of at least about 5 feet per second into the wastewater in the sedimentation tank in the direction of the tangential wastewater influent flow, at one or more locations radially displaced from the central axis.

4,576,721

MISCIBLE POLYMER BLENDS CONTAINING POLY(2-ALKYL-2-OXAZOLINE)

Kathleen M. McCreedy, Midland, Mich.; Henno Keskkula, Austin, Tex.; James C. Pawloski, and Edward H. Yonkers, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 552,211, Nov. 15, 1983. This application May 21, 1985, Ser. No. 736,510

Int. Cl.⁴ B01D *13/00*

U.S. Cl. 210—640 **3 Claims**

1. A process for separating mixtures of 2 or more organic compounds, or a mixture of water and an organic compound miscible therewith, comprising
(a) contacting one side of a membrane comprising a blend of a first polymer of a 2-oxazoline and at least one other polymer which is not a polymer of a 2-oxazoline and which other polymer is miscible with said first polymer in the proportions thereof present in the blend, and in which blend the weight ratio of said first polymer to said other polymer is from about 19:1 to about 1:19 with a fluid feed mixture containing 2 organic compounds of water and an organic compound miscible therewith, and
(b) withdrawing from the other side of said membrane a permeate in vapor form, said permeate containing a higher concentration of one component of the feed mixture than is present in the feed mixture.

4,576,722

SCALE AND SLUDGE COMPOSITIONS FOR AQUEOUS SYSTEMS

Lawrence A. Gaylor, Chagrin Falls, and James W. Beard, University Heights, both of Ohio, assignors to The Mogul Corporation, Chagrin Falls, Ohio

Continuation of Ser. No. 468,771, Feb. 22, 1983, abandoned, which is a continuation of Ser. No. 302,186, Sep. 14, 1981, abandoned, which is a continuation of Ser. No. 121,597, Feb. 14, 1980, abandoned. This application Feb. 7, 1985, Ser. No. 699,220

Int. Cl.⁴ C02F *5/14*

U.S. Cl. 210—699 **3 Claims**

1. A method of inhibiting the deposit of scale and sludge in boiler water which comprises adding to said boiler water

(a) from about 0.01 to 100 parts permillion parts by weight of the water in the boiler of 2-phosphonobutane-1,2,4 tricarboxylic acid or the metal salts thereof, and
(b) from about 0.01 to 500 parts by weight of the water of a mixture of (i) at least one acrylic polymer having an average molecular weight ranging from 1000 to about 10 million selected from the group consisting of homopolymers of acrylic acid and methacrylic acid, and (ii) a sulfonated styrene-maleic anhydride copolymer having a molecular weight such that it is soluble in water and functions as a dispersant,
with the ratio of said acrylic polymer to said sulfonated copolymer in said mixture being such that a given weight concentration of said mixture provides, in combination with said 2-phosphonobutane-1,2,4 tricarboxylic acid compound, an efficacy of inhibition greater than that provided by an equal weight concentration of acrylic polymer above or the sulfonated copolymer above.

4,576,723

ESTIMATION OF THE DEGREE OF DISPERSION IN FLOWING CONCENTRATED DISPERSIONS

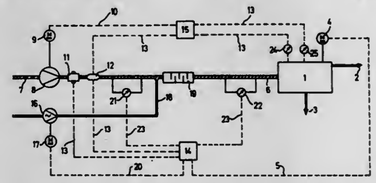
Josef Eisenlauer, Ludwigshafen; Dieter Horn, Heidelberg, and Manfred Neuwirth, Mannheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 3, 1984, Ser. No. 677,308

Claims priority, application Fed. Rep. of Germany, Dec. 2, 1983, 3343598

Int. Cl.⁴ C02F *1/52*

U.S. Cl. 210—709 **4 Claims**



1. A method for rapid in situ estimation of the degree of dispersion in a flowing two-phase system, in particular for determining optimum metering of a dispersant or flocculant in a concentrated dispersion, wherein assignment of the degree of dispersion is effected by measuring the pressure drop experienced by a flowing dispersion along a defined length during tubular flow.

4,576,724

CYCLONE SEPARATOR

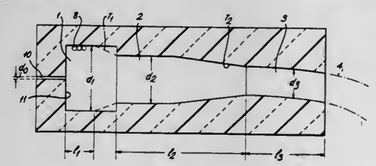
Derek A. Colman, 19 Osprey Close, Lordswood, Southampton SO1 8EX, and Martin T. Thew, 7 Court Close, Bitterne, Southampton SO2 5EJ, both of England

Continuation of Ser. No. 593,270, Mar. 26, 1984, abandoned, and Ser. No. 389,489, Jun. 17, 1982, abandoned. This application Mar. 4, 1985, Ser. No. 707,529

Claims priority, application United Kingdom, Jun. 25, 1981, 8119565

Int. Cl.⁴ B01D *37/00, 29/00*

U.S. Cl. 210—788 **18 Claims**



1. A cyclone separator having a generally cylindrical first portion with a plurality of substantially identical substantially equally circumferentially spaced tangentially directed feeds, and, adjacent to the first portion and substantially coaxial therewith, a tapered second portion open at its far end,
the first portion having an axial overflow outlet opposite the second portion,
the second portion comprising a flow-smoothing taper converging towards its said far end, where it leads into
a substantially coaxial generally cylindrical third portion,
the internal diameter of the totality of the axial overflow outlet being d_0, of the first portion being d_1, of the divergent end of the taper comprised in the second portion being d_2, of the convergent end of the taper being d_3, of the third portion being also d_3, the internal length of the first portion being l_1 and of the second portion being l_2, the total cross-sectional area of all the feeds measured at the points of entry normal to the inlet flow being A_i,
the shape of the separator being governed by the following relationships:

$$10 \leqq l_2/d_2 \leqq 25$$

$$0.04 \leqq 4A_i/\pi d_1 \leqq 0.10$$

$$d_2 > d_3$$

$$d_1 > d_2$$

the improvement comprising:

$$d_0/d_2 < 0.1$$

and wherein the half-angle of the convergence of the taper is 20' to 1°.

4,576,725

MAGNETIC FLUID INCORPORATING FINE MAGNETIC POWDER AND METHOD FOR MAKING THE SAME

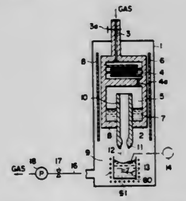
Hirohisa Miura; Hiroshi Satou; Hidenori Katagiri; Toshio Natsume, and Hidekazu Azuma, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Jun. 13, 1984, Ser. No. 620,094

Claims priority, application Japan, Jul. 13, 1983, 58-127441

Int. Cl.⁴ H01F *1/28;* B22F *9/00*

U.S. Cl. 252—62.51 **11 Claims**



1. A magnetic fluid, comprising a base liquid and metallic magnetic particle with average particle diameter of some hundreds of angstroms dispersed therein, said metallic magnetic particles each being suspended in said base liquid as each being directly generated from a metallic vapor through rapid cooling by adiabiatic expansion of said metallic vapor and thereafter directly introduced into a bath of said base liquid.

4,576,726

MAGNETIC COATING COMPOSITION

Masato Watanabe, Nara, and Yuzo Ozaki, Osaka, both of Japan, assignors to Toyo Tire & Rubber Company Limited, Japan

Filed Jan. 19, 1984, Ser. No. 571,957

Claims priority, application Japan, Jan. 25, 1983, 58-10908; Mar. 24, 1983, 58-50079; Apr. 15, 1983, 58-67646

Int. Cl.⁴ C04B *35/04;* H01F *1/00*

U.S. Cl. 252—62.54 **3 Claims**

1. A magnetic coating composition comprising a modified polyurethane resin containing hydroxyl groups at a concentra-

tion of at least 0.1 meq/g and a magnetic powder, wherein said modified polyurethane resin is selected from the group consisting of

(A) a resin obtained by reacting an epoxy-modified polyurethane resin with at least one of an amine or a carboxylic acid;

(B) a resin obtained by reacting a polyurethane resin having a carboxyl group with an epoxy compound;

(C) a resin obtained by reacting an epoxy compound with at least one of an amine or a carboxylic acid to prepare a ring-opened epoxy compound having hydroxyl groups and then reacting said ring-opened epoxy compound with an isocyanate; and

(D) a mixture of a ring-opened epoxy compound having hydroxyl groups, prepared by reacting an epoxy compound with at least one of an amine or a carboxylic acid, and a polyurethane prepared by reacting an isocyanage compound with said ring-opened epoxy compound.

4,576,727

PHOSPHATE-FREE DETERGENT COMPOSITION FOR WASHING OF TEXTILES IN HARD WATER

Gwendolen Browne, Rotterdam, Netherlands, assignor to De-Blaueve Lier B.V., Rotterdam, Netherlands

Division of Ser. No. 493,273, May 10, 1983, Pat. No. 4,534,876. This application Aug. 1, 1984, Ser. No. 636,556

Claims priority, application Netherlands, May 12, 1982, 8201953

Int. Cl.⁴ C11D *7/12, 7/42, 17/00;* **C08K** *3/26*

U.S. Cl. 252—90 **7 Claims**

1. A substantially phosphate-free detergent composition for washing of textiles in hard water at a temperature of at most 70° C., wherein are comprised

(a) at least one watersoluble inorganic salt derived from carbon dioxide, inclusive hydrates, perhydrates and percarbonates thereof

(b) at least one acidic compound devoid of formation of a precipitate with calcium and magnesium ions in hard water at usual dosage

(c) at least one surface active compound devoid of formation of a precipitate with calcium and magnesium ions in hard water at usual dosage,

at least one of the components (a) and (b) being physically separated from the other one, the ratio of these components being such that the pH of a 0.5% by weight solution in a washing liquor remains within the range of 5 to 8 throughout the complete washing cycle and said composition essentially free of components that will precipitate in hard water during the washing process.

4,576,728

CLEANING COMPOSITIONS

Barry Stoddart, Gateshead, England, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Nov. 8, 1984, Ser. No. 669,492

Claims priority, application United Kingdom, Nov. 11, 1983, 8330158

Int. Cl.⁴ C11D *1/84, 7/54*

U.S. Cl. 252—102 **18 Claims**

1. A thickened aqueous cleaning composition consisting essentially of

(a) from about 0.1% to about 5% by weight of a tertiary amine oxide of formula $R_1R_2R_3N{-}O$ wherein R_1 is a C_{12}–C_{15} linear and branched alkyl groups and R_2 and R_3 are independently selected from the group consisting of C_1–C_4 alkyl groups and C_2–C_4 hydroxyl alkyl groups;

(b) from about 0.01% to about 1% by weight of a viscosity enhancing compound selected from the group consisting of [salicylic acid and its 5-sulpho and 3,5-dimethyl derivatives,] m- and p-chloro benzoic acid, p-bromobenzoic acid, p-toluic acid and m-nitrobenzoic acid, and mixtures of any of the foregoing;

(c) from 0% to about 25% by weight of an ionisable compound selected from the group consisting of non surface active organic and inorganic compounds;

said composition exhibiting a viscosity of at least about 500 mPa.sec at a shear rate of 10.8 sec^{-1} and a viscosity of no more than about 50 mPa sec at a shear rate of 692 sec^{-1} at 21° C.

4,576,729

LIQUID DISINFECTANT LAUNDRY DETERGENTS

Leon E. Paszek, Mountainside, and Barbara Gebbia, Clifton, both of N.J., assignors to Sterling Drug Inc., New York, N.Y.

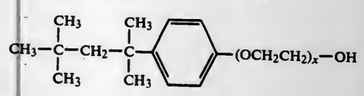
Continuation-in-part of Ser. No. 521,858, Aug. 10, 1983, abandoned. This application Jul. 24, 1984, Ser. No. 633,826

Int. Cl.⁴ C11D *3/48, 1/06, 1/86*

U.S. Cl. 252—106 **18 Claims**

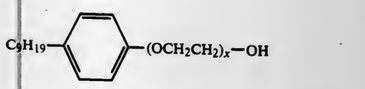
1. A stable liquid laundry detergent concentrate composition, which in use has germicidal, fabric brightening, cleaning, and anti-soil redeposition properties, and composition consisting essentially of:

(A) a non-ionic surfactant having the formulas:



Ia

or



Ib

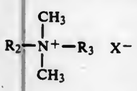
or a mixture thereof in which the C_9H_{19} group in the compounds of formula Ib is a mixture of branched-chain isomers, and x is an integer from 7 to 13;

(B) a cryptoanionic surfactant having the formula:

$$R{-}O{-}(C_nH_{2n}O)_m{-}R_1{-}COOM \qquad II$$

where R is a long-chain, straight or branched, alkyl group containing from 8 to 18 carbon atoms, n is an integer from 2 to 4, m is an integer from 1 to 100, R_1 is CH_2, CH_2CH_2 or $CH_2CH_2CH_2$ and M is a sodium, potassium, lithium, ammonium, diethylammonium or triethylammonium cation;

(C) a quaternary ammonium germicide having the formula:



III

where R_2 and R_3 are the same or different C_8–C_{12} alkyl, or R_2 is C_{12}–C_{16} and R_3 is benzyl; and X^- is halide; and

(D) water,

wherein, based on the total weight of A, B, C and D, components A, B and C comprise from 30 to 50 weight percent and wherein the ratio of A:B:C in said composition is in the range from 2:4:1 to 3.5:5:1.

4,576,730

METHOD AND COMPOSITION FOR CLEANING AND PROTECTING METAL

Earl Perkins, Columbia, Mo., assignor to Touchstone Corporation, Columbia, Mo.

Filed Mar. 18, 1985, Ser. No. 712,865

Int. Cl.⁴ C11D *7/20;* **C23F** *9/00, 13/00;* **C23G** *1/16*

U.S. Cl. 252—174.14 **7 Claims**

1. A powdered composition comprising:

(a) 70 to 99.25% Portland cement,

(b) 0.25 to 10% of anhydrous carbonates or hydroxides of metals selected from Group 1A of the periodic table, and

(c) 0.5 to 20% of silicates of magnesium.

4,576,731

CONVERSION OF INCOMPATIBLE MIXED POLYOLS TO POLYOL PRODUCTS WITH INCREASED RESISTANCE TO PHASE SEPARATION

James N. Rieck, Wheeling, W. Va., assignor to Mobay Chemical Corporation, Pittsburgh, Pa.

Filed Jan. 17, 1983, Ser. No. 458,424

Int. Cl.⁴ C09K *3/00*

U.S. Cl. 252—182 **8 Claims**

1. A polyol mixture comprising the reaction product of at least two polyols which normally are incompatible with each other and an organic isocyanate, the isocyanate to hydroxyl equivalent ratio being from 1:4 to 1:35, wherein the mixture is a liquid.

4,576,732

FERROELECTRIC LIQUID CRYSTAL COMPOUNDS AND LIQUID CRYSTAL COMPOSITIONS

Masato Isogai; Shintaroo Hattori, both of Hitachi; Kishiroo Iwasaki, Hitachiouta; Teruo Kitamura, Katsuta; Akio Mukoh, Mito; Takashi Inukai, Yokohama; Kenji Furukawa, Yokosuka; Kanetsugu Terashima, and Shinichi Saitoh, both of Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 28, 1983, Ser. No. 555,617

Claims priority, application Japan, Nov. 26, 1982, 57-206106; Dec. 25, 1982, 57-234561; Jul. 29, 1983, 58-137800

Int. Cl.⁴ C09K *3/34;* **G02F** *1/13;* **C07C** *69/76, 69/88*

U.S. Cl. 252—299.65 **12 Claims**

1. A ferroelectric liquid crystal compound selected from the group consisting of:

4-n-heptyloxy-4′-biphenylcarboxylic acid p′-(2-methylbutoxycarbonyl)phenyl ester,

4-n-pentyloxy-4′-biphenylcarboxylic acid p′-(2-methylbutoxycarbonyl)phenyl ester,

4-n-hexyloxy-4′-biphenylcarboxylic acid p′-(2-methylbutoxycarbonyl)phenyl ester,

4-n-octyloxy-4′-biphenylcarboxylic acid p′-(2-methylbutoxycarbonyl)phenyl ester,

4-n-nonyloxy-4′-biphenylcarboxylic acid p′-(2-methylbutoxycarbonyl)phenyl ester,

4-n-decyloxy-4′-biphenylcarboxylic acid p′-(2-methylbutoxycarbonyl)phenyl ester,

4-n-undecyloxy-4′-biphenylcarboxylic acid p′-(2-methylbutoxycarbonyl)phenyl ester,

4-n-dodecyloxy-4′-biphenylcarboxylic acid p′-(2-methylbutoxycarbonyl)phenyl ester,

4-n-hexyl-4′-biphenylcarboxylic acid p′-(2-methylbutoxycarbonyl)phenyl ester,

4-n-heptyl-4′-biphenylcarboxylic acid p′-(2-methylbutoxycarbonyl)phenyl ester,

4-n-octyl-4′-biphenylcarboxylic acid p′-(2-methylbutoxycarbonyl)phenyl ester,

4-n-nonyl-4′-biphenylcarboxylic acid p′-(2-methylbutoxycarbonyl)phenyl ester,

4-n-decyl-4′-biphenylcarboxylic acid p′-(2-methylbutoxycarbonyl)phenyl ester,

4-n-undecyl-4′-biphenylcarboxylic acid p′-(2-methylbutoxycarbonyl)phenyl ester,

4-n-dodecyl-4′-biphenylcarboxylic acid p′-(2-methylbutoxycarbonyl)phenyl ester,

p-n-pentyloxybenzoic acid 4′-(2-methylbutoxycarbonyl)-4-biphenylyl ester,

p-n-hexyloxybenzoic acid 4′-(2-methylbutoxycarbonyl)-4-biphenylyl ester,

p-n-heptyloxybenzoic acid 4′-(2-methylbutoxycarbonyl)-4-biphenylyl ester,

p-n-octyloxybenzoic acid 4′-(2-methylbutoxycarbonyl)-4-biphenylyl ester,

p-n-nonyloxybenzoic acid 4′-(2-methylbutoxycarbonyl)-4-biphenylyl ester,

p-n-decyloxybenzoic acid 4′-(2-methylbutoxycarbonyl)-4-biphenylyl ester,

p-n-undecyloxybenzoic acid 4′-(2-methylbutoxycarbonyl)-4-biphenylyl ester,

p-n-dodecyloxybenzoic acid 4′-(2-methylvbutoxycarbonyl)-4-biphenylyl ester,

p-n-hexylbenzoic acid 4′-(2-methylbutoxycarbonyl)-4-biphenylyl ester,

p-n-heptylbenzoic acid 4′-(2-methylbutoxycarbonyl)-4-biphenylyl ester,

p-n-nonylbenzoic acid 4′-(2-methylbutoxycarbonyl)-4-biphenylyl ester,

p-n-decylbenzoic acid 4′-(2-methylbutoxycarbonyl)-4-biphenylyl ester,

p-n-undecylbenzoic acid 4′-(2-methylbutoxycarbonyl)-4-biphenylyl ester,

p-n-dodecylbenzoic acid 4′-(2-methylbutoxycarbonyl)-4-biphenylyl ester,

4′-n-decyloxy-4-biphenylyl S-p-(2-methylbutoxycarbonyl)benzoate,

p-n-octyloxybenzyl S-4′-(2-methylbutoxycarbonyl)-4-biphenylyl ether, and

4′-n-octyloxy-4-biphenylyl S-p-(2-methylbutoxycarbonyl)benzyl ether.

4,576,733

4-HALOGENOBENZOIC ACID ESTERS

Shigeru Sugimori, Fujisawashi; Toyoshiro Isoyama, and Yasuyuki Goto, both of Yokohamashi, all of Japan, assignors to Chisso Corporation, Osaka, Japan

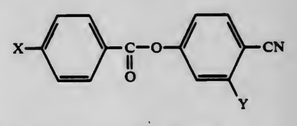
Filed Jul. 17, 1985, Ser. No. 755,720

Claims priority, application Japan, Jul. 19, 1984, 59-150239

Int. Cl.⁴ G09K *3/34;* **C07C** *121/60*

U.S. Cl. 252—299.67 **4 Claims**

1. A 4-halogenobenzoic acid ester expressed by the general formula



wherein X and Y each represent F, Cl or Br.

4,576,734

STABILIZER FOR SYNTHETIC RESINS

Tamaki Ishii, Suita; Shinichi Yachigo, Toyonaka; Manji Sasaki, Ibaraki; Masahisa Shionoya, Izumi, and Haruki Okamura, Osaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

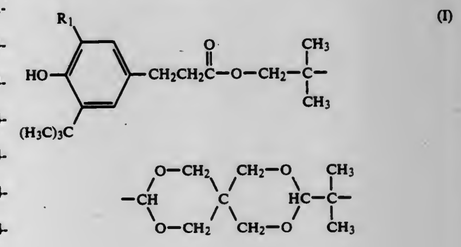
Filed Mar. 15, 1985, Ser. No. 712,230

Claims priority, application Japan, Mar. 19, 1984, 59-53186

Int. Cl.⁴ C09K *15/14;* **C08K** *5/11*

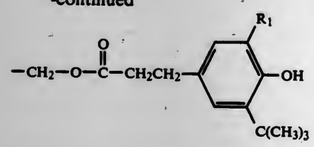
U.S. Cl. 252—404 **7 Claims**

1. A stabilizer for synthetic resins containing as an effective component a mixture comprising a phenol type compound (I) represented by the formula (I),

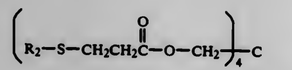


(I)

-continued

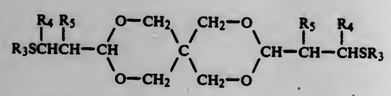


wherein R_1 represents a C_1–C_3 alkyl group, and at least one sulfur type compound (II) selected from the group consisting of compounds represented by the formula (II-1),



(II-1)

wherein R_2 represents a C_4–C_{20} alkyl group, and compounds represented by the formula (II-2),



(II-2)

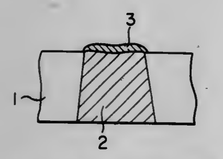
wherein R_3 represents a C_3–C_{18} alkyl group, and R_4 and R_5 independently represent a hydrogen atom or a C_1–C_6 alkyl group, the weight ratio of phenol type compound (I) to sulfur type one (II) being 1 to 0.5–15.

4,576,735

ELECTROCONDUCTIVE MOLYBDENUM PASTE

Takashi Kuroki; Tsuyoshi Fujita, both of Yokohama; Gyozo Toda, Hino; Shousaku Ishihara, Kamakura, and Yoshiyuki Ohzawa, Hiratsuka, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 12, 1984, Ser. No. 660,089
Claims priority, application Japan, Oct. 14, 1983, 58-190900
Int. Cl.⁴ H01B *1/02*
U.S. Cl. 252—512 **4 Claims**



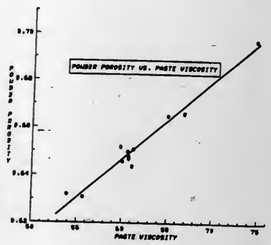
1. An electroconductive molybdenum paste which consists essentially of 100 parts by weight of a mixture consisting of 68.0 to 89.2% by weight of molybdenum powders having an average particle size of 0.5 to 10 μm, 10.0 to 27.0% by weight of a solvent, and 0.8 to 5.0% by weight of a binder, 0.5 to 5.0 parts by weight of dibenzylidene-D-sorbitol as a gelling agent, and 0.5 to 4.0 parts by weight of a silane coupling agent selected from the group consisting of at least one of $HSC_3H_6Si(OCH_3)_3$ and $H_2NC_2H_4NHC_3H_6Si(OCH_3)_2$.

4,576,736

METHOD OF PREDICTING AND CONTROLLING THE VISCOSITY OF CONDUCTIVE PASTES

Ann P. Harmuth, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 19, 1984, Ser. No. 591,074
Int. Cl.⁴ H01B *3/02*
U.S. Cl. 252—512 **3 Claims**



1. A method of formulating conductive metal paste having a predetermined viscosity comprising the steps of:
providing an organic vehicle having a predetermined viscosity;
providing a conductive metal powder having a predetermined average particle size;
developing a directly proportional correlation between packing density of said conductive metal powder and the paste viscosity of a paste of said conductive metal powder, suspended in said organic vehicle,
milling the said conductive powder to make its packing density conform to the packing density necessary to produce said predetermined viscosity of the paste to be formulated as determined by said correlation, and
mixing the organic vehicle and the conductive metal powder having decreased particle packing density.

4,576,737

ENCAPSULATION OF VOLATILE LIQUIDS

Richard S. Johnson, Wirral, England, assignor to Internationale Octrooi Maatschappij "Octropa" B.V., Rotterdam, Netherlands

Continuation of Ser. No. 396,373, Jul. 8, 1982, abandoned. This application Jun. 15, 1984, Ser. No. 620,813
Claims priority, application United Kingdom, Jul. 21, 1981, 8122414
Int. Cl.⁴ A01K *7/46*
U.S. Cl. 252—522 A **5 Claims**

1. A process for providing a particulate composition comprising liquid perfume encapsulated in a carrier material which comprises preparing a sprayable emulsion of the perfume in a solution of the carrier material, spraying the perfume-containing emulsion into a fluidized bed of particles whereby the perfume encapsulated in carrier material is deposited on the fluidized particles, continuing the spraying of the emulsion into the fluidized bed until the fluidized particles have the desired amount of encapsulated perfume deposited thereon and thereafter collecting the fluidized particles with the perfume encapsulated thereon.

2. Perfume encapsulates prepared by a process as claimed in claim 1.

4,576,738

HARD SURFACE CLEANING COMPOSITIONS CONTAINING PIANANE

Daniel Colodney, and Robert J. Steltenkamp, both of Somerset, N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Dec. 21, 1984, Ser. No. 684,653
Int. Cl.⁴ C11D *1/83, 3/44*
U.S. Cl. 252—559 **12 Claims**

1. A clear liquid hard surface cleaner consisting essentially of, by weight, from 2% to 8% of a water-soluble, synthetic anionic sulfated or sulfonated detergent salt having an alkyl group of 8 to 22 carbon atoms in the molecule; from 0.25% to 4% of a water-soluble ethyleneoxylated nonionic detergent; from 1% to 8% cis/trans 2,6,6 trimethylbicyclo(3.1.1)heptane; from 1% to 8% of a nonaqueous, polar, organic solvent having water solubility at 25° C. of at least 20% by weight selected from the group consisting of C_1–C_4 alkyl ethers of ethylene glycol or diethylene glycol or mono-, di- or tripropylene glycol, from 2% to 15% of a water-soluble organic or inorganic alkaline builder salt; from 0.5% to 8% of a C_1–C_3 alkyl-substituted benzene sulfonate hydrotrope salt; and the balance primarily water.

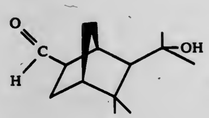
4,576,739

ORGANOLEPTIC TERTIARY HYDROXYL CARBOXALDEHYDES

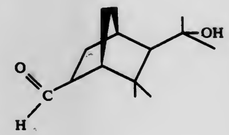
Futoshi Fujioka, Wanamassa; Richard M. Boden, Ocean, and William L. Schreiber, Jackson, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 511,965, Jul. 8, 1983, Pat. No. 4,491,537. This application Oct. 1, 1984, Ser. No. 656,660
Int. Cl.⁴ A61K *7/46*
U.S. Cl. 252—522 R **1 Claim**

1. A process for augmenting or enhancing the aroma of a perfume composition or cologne comprising the step of adding to said perfume composition or cologne an aroma augmenting or enhancing quantity of a mixture of compounds having the structures:



and



4,576,740

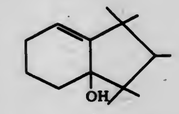
TERTIARY PENTAMETHYLINDANOL DERIVATIVES AND ORGANOLEPTIC USES THEREOF

John B. Hall, Rumson, and Takao Yoshida, West Long Branch, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

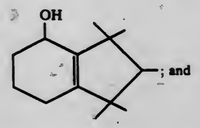
Division of Ser. No. 589,662, Mar. 14, 1984, Pat. No. 4,520,032. This application Nov. 14, 1984, Ser. No. 671,329
Int. Cl.⁴ A61K *7/46;* C11B *9/00*
U.S. Cl. 252—522 R **6 Claims**

1. A process for augmenting or enhancing the aroma of a perfume composition or perfumed article or cologne comprising the step of adding to said perfume composition, perfumed article or cologne an aroma augmenting or enhancing quantity of a composition of matter selected from the group consisting of:

(i) the compound having the structure:

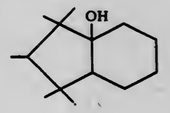


in the absence of the compound having the structure:



; and

(ii) the compound having the structure:



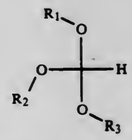
4,576,741

ISOMER-DIRECTED PROCESS FOR PRODUCING ASYMMETRIC KETONES USING CATALYTIC CLAISEN REARRANGEMENT OF ALLYLIC ETHERS, INTERMEDIATES, AND USES OF PRODUCTS AND INTERMEDIATES OF PROCESS IN PERFUMERY

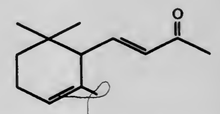
Mark A. Sprecker, Sea Bright; Robert P. Belko, Woodbridge; William L. Schreiber, Jackson, and Michael Licciardello, Little Silver, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Continuation of Ser. No. 602,646, Apr. 20, 1984, Pat. No. 4,548,743. This application Nov. 14, 1984, Ser. No. 671,473
Int. Cl.⁴ A61K *7/46;* C11B *9/00*
U.S. Cl. 252—522 R **2 Claims**

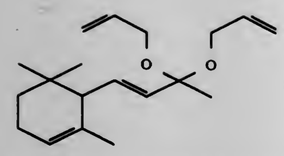
1. A product prepared according to the process comprising the steps of reacting a trialkylorthoformate having the structure:



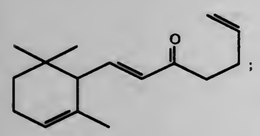
with α-ionone having the structure:

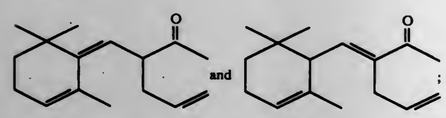


whereby a ketal-containing composition is prepared; then reacting the resulting ketal-containing composition with allyl alcohol in order to form a composition of matter containing the ketal having the structure:

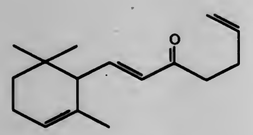


then rearranging the resulting ketal at a pH in the range of from about 2 up to about 6.5 in the presence of a citric acid catalyst thereby forming a mixture comprising the compounds having the structures:

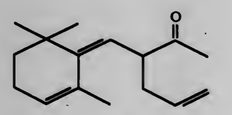




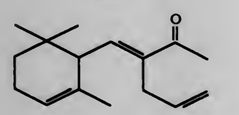
the mole ratio of the compound having the structure;



to the compounds having the structures:



and



being about 48:1, and then fractionally distilling the resulting product at a temperature in the range of from 109°–111° C. and a pressure of 1.0 mm/Hg.

2. A process for augmenting or enhancing the aroma of a consumable material selected from the group consisting of perfume compositions, colognes and perfumed articles comprising the step of adding to said consumable material an aroma augmenting or enhancing quantity of the product defined according to claim 1.

4,576,742

PERFUME USES OF REACTIVE PRODUCT CONTAINING MONO-OXOMETHYL SUBSTITUTED POLYHYDRODIMETHANONAPHTHALENE DERIVATIVES

Mark A. Sprecker, Sea Bright; Marie R. Hanna, Hazlet; Richard J. Tokarzewski, Keyport; Robert P. Belko, Woodbridge; Hugh Watkins, Lincroft, and Manfred H. Vock, Locust, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

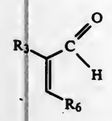
Division of Ser. No. 458,890, Jan. 18, 1983, Pat. No. 4,448,984, which is a division of Ser. No. 354,387, Mar. 2, 1982, Pat. No. 4,391,284. This application Jan. 12, 1984, Ser. No. 570,100

The portion of the term of this patent subsequent to May 1, 2001, has been disclaimed.

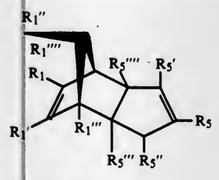
Int. Cl.⁴ A61K *7/46;* **C11B** *9/00*

U.S. Cl. 252—522 R **8 Claims**

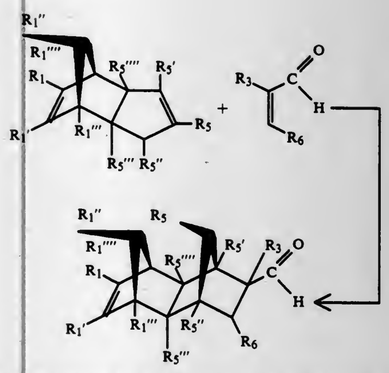
1. A process for augmenting or enhancing the aroma of a consumable material selected from the group consisting of perfume compositions, colognes and perfumed articles comprising the step of adding to said consumable material an aroma augmenting or enhancing quantity of a product produced according to the process comprising the steps of (i) admixing at a temperature in the range of 150°–250° C. an acrolein derivative having the structure:



with a bicyclopentadiene derivative having the structure:



whereby the reaction:



takes place wherein R_1, R_1', R_1'', R_1''', R_1'''', R_3, R_5, R_5', R_5'', R_5''', R_5'''' and R_6 represent hydrogen or methyl with the provisos:

(i) at least four of R_1, R_1', R_1'', R_1''', R_1'''' represent hydrogen; and

(ii) at least four of R_5, R_5', R_5'', R_5''', R_5'''' represent hydrogen;

and then (ii) fractionally distilling the resulting product whereby a mixture is produced capable of augmenting or enhancing the aroma of said consumable material.

4,576,743

PLATE CLEANER FOR LITHOGRAPHIC PRINTING PLATE

Nobuyuki Kita, and Hiroshi Matsumoto, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 9, 1985, Ser. No. 690,067

Claims priority, application Japan, Jan. 12, 1984, 59-4016

Int. Cl.⁴ B41M *1/06;* **B41N** *3/06;* **C11D** *1/62, 3/08*

U.S. Cl. 252—524 **16 Claims**

1. A process for restoring the hydrophilic property of stained non-image areas in a lithographic printing plate, which comprises treating said lithographic printing plate with a plate cleaner, wherein the improvement comprises using a plate cleaner comprising an aqueous solution containing a silicate in an amount of from 0.5 to 20% by weight based on the total weight of the plate cleaner and at least one surface active agent selected from the group consisting of cationic surface active agents and amphoteric surface active agents, said surface active agent being present in an amount of from 0.01 to 10% by weight based on the total weight of the plate cleaner.

6. A process as in claim 1, wherein the surface active agent is an amphoteric surface active agent selected from the group consisting of an alkylbetaine type and an alkylimidazoline type.

4,576,744

DETERGENT COMPOSITIONS

Robert J. Edwards, and Paul D. Hardman, both of Merseyside, England, assignors to Lever Brothers Company, New York, N.Y.

Filed Apr. 20, 1984, Ser. No. 602,575

Claims priority, application United Kingdom, Apr. 29, 1983, 8311854

Int. Cl.⁴ C11D *1/14, 3/37*

U.S. Cl. 252—554 **18 Claims**

1. A foaming aqueous liquid detergent composition having a viscosity of at least 60 cp to 2000 cp at 25° C., as measured at a shear rate of 26.5 s^{-1}, and consisting essentially of from 2 to 60% by weight of the total composition of an active detergent system comprising a water-soluble salt of a dialkyl ester of sulphosuccinic acid in which the alkyl groups may be the same or different, at least 40% by weight of water, and from 0.5 to 5% by weight of a water-soluble polymer, said polymer being a cellulose ether having hydroxyethyl or hydroxypropyl substituents, said composition being free of quaternary ammonium salts.

4,576,745

METHOD FOR THE FLUORIMETRIC DETERMINATION OF ENDOTOXINS, NEW PEPTIDES CARRYING A FLUOROPHOROUS SUBSTANCE USABLE IN SAID METHOD AND METHOD FOR ITS PREPARATION

Michel Monsigny, Saint-Cyr-en-Val, France, assignor to Centre National de la Recherche Scientifique, Paris, France

PCT No. PCT/FR82/00003, § 371 Date Sep. 9, 1982, § 102(e) Date Sep. 9, 1982, PCT Pub. No. WO82/02382, PCT Pub. Date Jul. 22, 1982

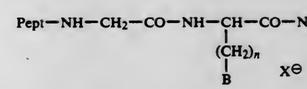
PCT Filed Jan. 6, 1982, Ser. No. 422,976

Claims priority, application France, Jan. 9, 1981, 81 00261

Int. Cl.⁴ C07C *103/52*

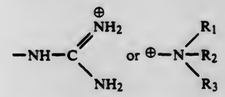
U.S. Cl. 260—112.5 R **4 Claims**

1. Peptides of the formula:



wherein Pept— is a hydrophobic peptide chain having 1 or 2 amino acid links, —NH—Ar is the residue of 7-amino 4-nitro 2-oxa 1,3-benzodiazole or 3-amino 9-ethyl carbazole

n is equal to 1, 2, 3, 4 or 5 and B is a radical



R_1, R_2 and R_3 designating hydrogen atoms or methyl groups.

4,576,746

NOVEL β-LACTAM ACETIC ACID DERIVATIVES

Duccio Favara, Como; Amedeo Omodei-Sale', Voghera, and Pietro Consonni, Milan, all of Italy, assignors to Gruppo Lepetit, S.p.A., Italy

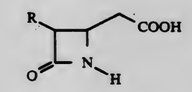
Filed Mar. 4, 1982, Ser. No. 354,572

Claims priority, application United Kingdom, Mar. 12, 1981, 8107865

Int. Cl.⁴ C07D *205/08, 487/04*

U.S. Cl. 260—239 A **4 Claims**

1. A β-lactam acetic acid derivative having the formula



wherein R represents alkyl, mono-substituted alkyl substituted with amino, mono- and di-alkylamino wherein the alkyl group has from 1 to 6 carbon atoms or alkenyl wherein the alkenyl group has from 3 to 6 carbon atoms, and its carboxylic acid salts.

4,576,747

ISOCYANATO-AZETIDINEDIONES

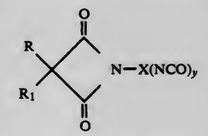
Shenghong A. Dai, Wallingford, Conn., assignor to The Upjohn Company, Midland, Mich.

Filed May 7, 1984, Ser. No. 608,005

Int. Cl.⁴ C07D *205/10, 403/14, 403/12*

U.S. Cl. 260—239 A **8 Claims**

1. An isocyanato-azetidinedione having the formula



wherein R and R_1, when taken individually, are independently selected from the group consisting of hydrogen and hydrocarbyl of 1–8 carbon atoms, and, R and R_1 when taken together with the carbon atom to which they are attached, represent a cycloalkane residue having 4 to 6 ring carbon atoms, inclusive, y is an integer from 1 to 7, and X is a hydrocarbon radical of 2–36 carbon atoms having a valency of y plus one.

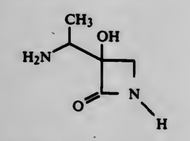
4,576,748

3-HYDROXY-3-AMINOETHYL β-LACTAMS

William J. Greenlee, Teaneck, and Arthur A. Patchett, Westfield, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Sep. 17, 1984, Ser. No. 651,029
Int. Cl.[4] C07D 205/08, 209/48; A61K 31/395
U.S. Cl. 260—239 A **3 Claims**

1. A compound having the formula



and its pharmaceutically acceptable salts.

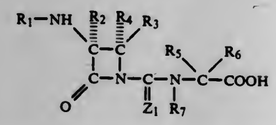
4,576,749

3-ACYLAMINO-1-CARBOXYMETHYLAMINOCARBONYL-2-AZETIDINONES

Robert Zahler, Princeton; William H. Koster, East Amwell Township, Hunterdon County, and William A. Slusarchyk, Belle Mead, all of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 538,719, Oct. 3, 1983, abandoned. This application Apr. 13, 1984, Ser. No. 599,841
Int. Cl.[4] C07D 205/08, 403/12, 401/12; A61K 31/395
U.S. Cl. 260—239 A **32 Claims**

1. A compound having the formula



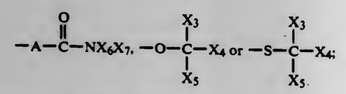
or a pharmaceutically acceptable ester or salt thereof, wherein

Z_1 is oxygen or sulfur;

R_1 is an acyl group derived from a carboxylic acid;

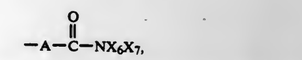
R_2 is hydrogen or methoxy;

R_3 and R_4 are the same or different and each is hydrogen, alkyl, alkenyl, alkynyl, cycloalkyl, phenyl, substituted phenyl or a 4, 5, 6 or 7-membered heterocycle, or one of R_3 and R_4 is hydrogen and the other is azido, halomethyl, dihalomethyl, trihalomethyl, alkoxycarbonyl, 2-phenylethenyl, 2-phenylethynyl, carboxy, $—CH_2X_1$, $—S—X_2$, $—O—X_2$,



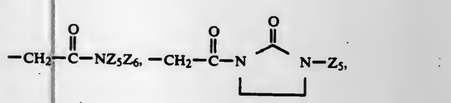
wherein X_1 is azido, amino, hydroxy, carboxy, alkoxycarbonyl, alkanoylamino, phenylcarbonylamino, (substituted phenyl)carbonylamino, alkylsulfonyloxy, phenylsulfonyloxy, (substituted phenyl)sulfonyloxy, phenyl, substituted phenyl, cyano, $—S—X_2$ or $—O—X_2$; X_2 is alkyl, phenyl, or substituted phenyl; one of X_3 and X_4 is hydrogen and the other is hydrogen or alkyl, or X_3 and X_4 when taken together with the carbon atom to which they are attached form a cycloalkyl group; X_5 is formyl, alkanoyl, phenylcarbonyl, (substituted phenyl)carbonyl, phenylalkylcarbonyl, (substituted phenyl)alkylcarbonyl, carboxy, alkoxycarbonyl, aminocarbonyl, (substituted amino)carbonyl, or cyano; A is $—CH=CH—$, $—(CH_2)_n—$, $—CH_2—O—$, $—CH_2—NH—$, $—CH_2—S—CH_2—$ or $—CH_2—O—CH_2—$; n is 0, 1 or 2; and X_6 and X_7 are the same or different and each is hydrogen, alkyl, phenyl or substituted phenyl, or X_6 is hydrogen and X_7 is amino, substituted amino, alkanoylamino or alkoxy, or X_6 and X_7 when taken together with the nitrogen atom to which they are attached form a 4, 5, or 6-membered nitrogen containing heterocycle;

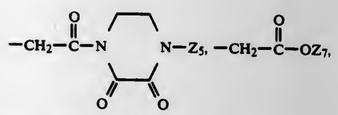
R_5 and R_6 are the same or different and each is hydrogen, alkyl, alkenyl, alkynyl, phenyl, substituted phenyl, cycloalkyl or a 4, 5, 6 or 7-membered heterocycle, or R_5 and R_6 together with the carbon atom to which they are attached are cycloalkyl, or one of R_5 and R_6 is hydrogen and the other is halomethyl, dihalomethyl, trihalomethyl, alkoxycarbonyl, alkenyl, alkynyl, 2-phenylethenyl, 2-phenylethynyl, carboxy, $—CH_2—X_1$, or



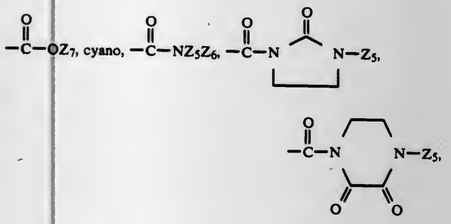
or R_6 is hydrogen and R_5 together with R_7 and the atoms to which they are attached form a 4, 5, or 6-membered nitrogen containing heterocycle; and

R_7 is hydrogen, alkyl, phenyl, substituted phenyl, cycloalkyl, a 4, 5, 6 or 7-membered heterocycle,

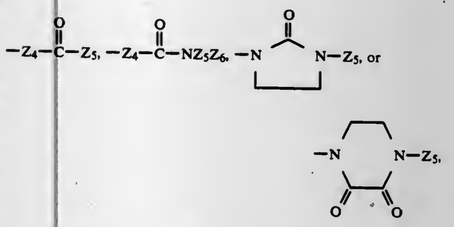




or $—(CH_2)_n—Z_3$ wherein n is 2, 3 or 4 and Z_3 is azido, $—NZ_5Z_6$, halogen, hydroxy,



alkanoyloxy, alkoxy, phenyloxy, (substituted phenyl)oxy, (a 4, 5, 6 or 7-membered heterocycle)—O—, mercapto, alkylthio, phenylthio, (substituted phenyl)thio, alkylsulfinyl, alkylsulfonyl,



wherein Z_4 is oxygen, sulfur or



Z_5 is hydrogen, alkyl, phenyl, substituted phenyl, phenylalkyl or (substituted phenyl)alkyl, Z_6 is hydrogen, alkyl, phenyl, substituted phenyl, phenylalkyl, (substituted phenyl)alkyl, alkanoyl, phenylcarbonyl, or (substituted phenyl)carbonyl, and Z_7 is hydrogen, alkyl, phenyl or substituted phenyl;

wherein the terms "alkyl" and "alkoxy" refer to groups having 1 to 10 carbon atoms;

the term "cycloalkyl" refers to groups having 3, 4, 5, 6 or 7 carbon atoms;

the term "substituted alkyl" refers to alkyl groups substituted with one, or more, azido, amino, halogen, hydroxy, carboxy, cyano, alkoxycarbonyl, aminocarbonyl, alkanoyloxy, alkoxy, phenyloxy, (substituted phenyl)oxy, mercapto, alkylthio, phenylthio, (substituted phenyl)thio, alkylsulfinyl or alkylsulfonyl groups;

the terms "alkanoyl", "alkenyl", and "alkynyl" refer to groups having 2 to 10 carbon atoms;

the term "substituted phenyl" refers to a phenyl group substituted with 1, 2 or 3 amino, halogen, hydroxyl, trifluoromethyl, alkyl (of 1 to 4 carbon atoms), alkoxy (of 1 to 4 carbon atoms), alkanoyloxy, aminocarbonyl or carboxy groups;

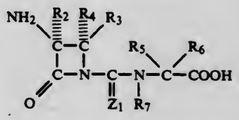
the term "a 4, 5, 6 or 7-membered heterocycle" refers to pyridinyl, furanyl, pyrrolyl, thienyl, 1,2,3-triazolyl, 1,2,4-triazolyl, imidazolyl, thiazolyl, thiadiazolyl, pyrimidinyl, oxazolyl, triazinyl, tetrazolyl, azetidinyl, oxetanyl, thietanyl, piperidinyl, piperazinyl, imidazolidinyl, oxazolidinyl, pyrrolidinyl, tetrahydropyrimidinyl, dihydrothiazolyl, hexahydroazepinyl, or one of the above groups substituted with one, or more, oxo, halogen, hydroxy, nitro, amino, cyano, trifluoromethyl, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, alkylsulfonyl, phenyl, substituted phenyl, 2-furfurylideneamino, benzylideneamino, or substituted alkyl, wherein the alkyl group has 1 to 4 carbon atoms, groups;

the term "heteroaryl" refers to pyridinyl, furanyl, pyrrolyl, thienyl, 1,2,3-triazolyl, 1,2,4-triazolyl, imidazolyl, thiazolyl, thiadiazolyl, pyrimidinyl, oxazolyl, triazinyl, tetrazolyl or one of the above groups substituted with one, or more, halogen, hydroxy, nitro, amino, cyano, trifluoromethyl, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, alkylsulfonyl, phenyl, substituted phenyl, 2-furfurylideneamino, benzylideneamino, or substituted alkyl, wherein the alkyl group has 1 to 4 carbon atoms, groups;

the term "substituted amino" refers to a group having the formula $—NZ_8Z_9$ wherein Z_8 is hydrogen, alkyl, phenyl, substituted phenyl, phenylalkyl or (substituted phenyl)alkyl and Z_9 is alkyl, phenyl, substituted phenyl, phenylalkyl, (substituted phenyl)alkyl, hydroxy, cyano, alkoxy, phenylalkoxy, or amino;

the expression "a 4, 5, or 6-membered nitrogen containing heterocycle" refers to 1-pyrrolidinyl, Δ^3-pyrrolin-1-yl, 1-azetidinyl, 1-piperidinyl, Δ^3-piperidein-1-yl, Δ^4-piperidein-1-yl, 3-oxazolidinyl, 3-thiazolidinyl, 1-imidazolidinyl, 4-thiomorpholinyl, 4-morpholinyl, 1-piperazinyl, 1-hexahydroopyrimidinyl, tetrahydro-2H-1,3-thiazin-3-yl, tetrahydro-2H-1,3-oxazin-3-yl. 3-thiazolidinyl,-1-oxide, 3-thiazolidinyl,1,1-dioxide, 4-thiomorpholinyl,1-oxide, 4-thiomorpholinyl,1,1-dioxide, tetrahydro-2H-1,3-thiazin-3-yl,1-oxide, tetrahydro-2H-1,3-thiazin-3-yl,1,1-dioxide, or one of the above groups substituted with one, or more, oxo, halogen, hydroxy, amino, cyano, trifluoromethyl, alkyl of 1 to 4 carbon atoms, alkylsulfonyl, phenyl, substituted phenyl, azido, carboxy, aminocarbonyl, OZ_{10}, NHZ_{10}, or SZ_{10} groups where Z_{10} is alkanoyl, aminocarbonyl, aminosulfonyl, phenylcarbonyl, (substituted phenyl)carbonyl, alkyl, substituted alkyl, phenyl or substituted phenyl.

32. A compound having the formula

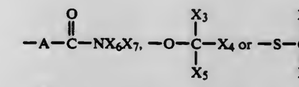


or a salt thereof, or a carboxy protected derivative thereof, wherein

Z_1 is oxygen or sulfur;

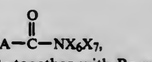
R_2 is hydrogen or methoxy;

R_3 and R_4 are the same or different and each is hydrogen, alkyl, alkenyl, alkynyl, cycloalkyl, phenyl, substituted phenyl or a 4, 5, 6 or 7-membered heterocycle, or one of R_3 and R_4 is hydrogen and the other is azido, halomethyl, dihalomethyl, trihalomethyl, alkoxycarbonyl, 2-phenylethenyl, 2-phenylethynyl, carboxy, $—CH_2X_1$, $—S—X_2$, $—O—X_2$,



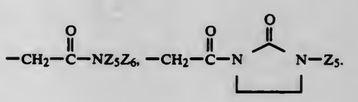
wherein X_1 is azido, amino, hydroxy, carboxy, alkoxycarbonyl, alkanoylamino, phenylcarbonylamino, (substituted phenyl)carbonylamino, alkylsulfonyloxy, phenylsulfonyloxy, (substituted phenyl)sulfonyloxy, phenyl, substituted phenyl, cyano, $—S—X_2$ or $—O—X_2$; X_2 is alkyl, phenyl, or substituted phenyl; one of X_3 and X_4 is hydrogen and the other is hydrogen or alkyl, or X_3 and X_4 when taken together with the carbon atom to which they are attached form a cycloalkyl group; X_5 is formyl, alkanoyl, phenylcarbonyl, (substituted phenyl)carbonyl, phenylalkylcarbonyl, (substituted phenyl)alkylcarbonyl, carboxy, alkoxycarbonyl, aminocarbonyl, (substituted amino)carbonyl, or cyano; A is $—CH=CH—$, $—(CH_2)_n—$, $—CH_2—O—$, $—CH_2—NH—$, $—CH_2—S—CH_2—$ or $—CH_2—O—CH_2—$; n is 0, 1 or 2; and X_6 and X_7 are the same or different and each is hydrogen, alkyl, phenyl or substituted phenyl, or X_6 is hydrogen and X_7 is amino, substituted amino, alkanoylamino or alkoxy, or X_6 and X_7 when taken together with the nitrogen atom to which they are attached form a 4, 5, or 6-membered nitrogen containing heterocycle;

R_5 and R_6 are the same or different and each is hydrogen, alkyl, alkenyl, alkynyl, phenyl, substituted phenyl, cycloalkyl or a 4, 5, 6 or 7-membered heterocycle, or R_5 and R_6 together with the carbon atom to which they are attached are cycloalkyl, or one of R_5 and R_6 is hydrogen and the other is halomethyl, dihalomethyl, trihalomethyl, alkoxycarbonyl, alkenyl, alkynyl, 2-phenylethenyl, 2-phenylethynyl, carboxy, $—CH_2—X_1$, or

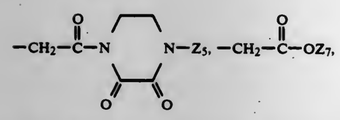


or R_6 is hydrogen and R_5 together with R_7 and the atoms to which they are attached form a 4, 5, or 6-membered nitrogen containing heterocycle; and

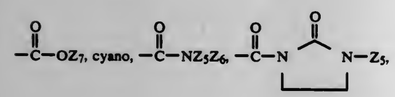
R_7 is hydrogen, alkyl, phenyl, substituted phenyl, cycloalkyl, a 4, 5, 6 or 7-membered heterocycle,

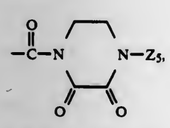


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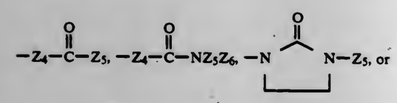


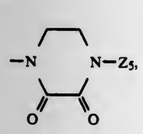
or $-(CH_2)_n-Z_3$ wherein n is 2, 3 or 4 and Z_3 is azido, $-NZ_5Z_6$, halogen, hydroxy,





alkanoyloxy, alkoxy, phenyloxy, (substituted phenyl)oxy, (a 4, 5, 6 or 7-membered heterocycle)—O—, mercapto, alkhylthio, phenylthio, (substituted phenyl)thio, alkylsulfinyl, alkylsulfonyl,





wherein Z_4 is oxygen, sulfur or



Z_5 is hydrogen, alkyl, phenyl, substituted phenyl, phenylalkyl or (substituted phenyl)alkyl, Z_6 is hydrogen, alkyl, phenyl, substituted phenyl, phenylalkyl, (substituted phenyl)alkyl, alkanoyl, phenylcarbonyl, or (substituted phenyl)carbonyl, and Z_7 is hydrogen, alkyl, phenyl or substituted phenyl;

wherein the terms "alkyl" and "alkoxy" refer to groups having 1 to 10 carbon atoms;

the term "cycloalkyl" refers to groups having 3, 4, 5, 6 or 7 carbon atoms;

the term "substituted alkyl" refers to alkyl groups substituted with one, or more, azido, amino, halogen, hydroxy, carboxy, cyano, alkoxycarbonyl, aminocarbonyl, alkanoyloxy, alkoxy, phenyloxy, (substituted phenyl)oxy, mercapto, alkylthio, phenylthio, (substituted phenyl)thio, alkylsulfinyl or alkylsulfonyl groups;

the terms "alkanoyl", "alkenyl", and "alkynyl" refer to groups having 2 to 10 carbon atoms;

the term "substituted phenyl" refers to a phenyl group substituted with 1, 2 or 3 amino, halogen, hydroxyl, trifluoromethyl, alkyl (of 1 to 4 carbon atom), alkoxy (of 1 to 4 carbon atoms), alkanoyloxy, aminocarbonyl or carboxy groups;

the term "a 4, 5, 6 or 7-membered heterocycle" refers to pyridinyl, furanyl, pyrrolyl, thienyl, 1,2,3-triazolyl, 1,2,4-triazolyl, imidazolyl, thiazolyl, thiadiazolyl, pyrimidinyl, oxazolyl, triazinyl, tetrazolyl, azetidinyl, oxetanyl, thietanyl, piperidinyl, piperazinyl, imidazolidinyl, oxazolidinyl, pyrrolidinyl, tetrahydropyrimidinyl, dihydrothiazolyl, hexahydroazepinyl, or one of the above groups substituted with one, or more, oxo, halogen, hydroxy, nitro, amino, cyano, trifluoromethyl, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, alkylsulfonyl, phenyl, substituted phenyl, 2-furfurylideneamino, benzylideneamino, or substituted alkyl, wherein the alkyl groups has 1 to 4 carbon atoms, groups;

the term "heteroaryl" refers to pyridinyl, furanyl, pyrrolyl, thienyl, 1,2,3-triazolyl, 1,2,4-triazolyl, imidazolyl, thiazolyl, thiadiazolyl, pyrimidinyl, oxazolyl, triazinyl, tetrazolyl or one of the above groups substituted with one, or more, halogen, hydroxy, nitro, amino, cyano, trifluoromethyl, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, alkylsulfonyl, phenyl, substituted phenyl, 2-furfurylideneamino, benzylideneamino, or substituted alkyl, wherein the alkyl group has 1 to 4 carbon atoms, groups;

the term "substituted amino" refers to a group having the formula $-NZ_8Z_9$ wherein Z_8 is hydrogen, alkyl, phenyl, substituted phenyl, phenylalkyl or (substituted phenyl)alkyl and Z_9 is alkyl, phenyl, substituted phenyl, phenylalkyl, (substituted phenyl)alkyl, hydroxy, cyano, alkoxy, phenylalkoxy, or amino;

the expression "a 4, 5, or 6-membered nitrogen containing heterocycle" refers to 1-pyrrolidinyl, Δ^3-pyrrolin-1-yl, 1-azetidinyl, 1-piperidinyl, Δ^3-piperidein-1-yl, Δ^4-piperidein-1-yl, 3-oxazolidinyl, 3-thiazolidinyl, 1-imidazolidinyl, 4-thiomorpholinyl, 4-morpholinyl, 1-piperazinyl, 1-hexahydropyrimidinyl, tetrahydro-2H-1,3-thiazin-3-yl, tetrahydro-2H-1,3-oxazin-3-yl, 3-thiazolidinyl,-1-oxide, 3-thiazolidinyl,1,1-dioxide, 4-thiomorpholinyl,1-oxide, 4-thiomorpholinyl,1,1-dioxide, tetrahydro-2H-1,3-thiazin-3-yl,1-oxide, tetrahydro-2H-1,3-thiazin-3-yl,1,1-dioxide, or one of the above groups substituted with one, or more, oxo, halogen, hydroxy, amino, cyano, trifluoromethyl, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, alkylsulfonyl, phenyl, substituted phenyl, azido, carboxy, aminocarbonyl, OZ_{10}, NHZ_{10}, or SZ_{10} groups where Z_{10} is alkanoyl, aminocarbonyl, aminosulfonyl, phenylcarbonyl, (substituted phenyl)carbonyl, alkyl, substituted alkyl, phenyl or substituted phenyl.

4,576,750

TRYPTOPHAN DERIVATIVE

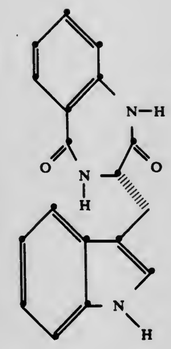
Steven M. Pitzenberger, Lansdale, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Apr. 22, 1985, Ser. No. 725,884

Int. Cl.[4] C07D *403/06*

U.S. Cl. 260—239.3 D **2 Claims**

1. A compound having the formula:



A

4,576,751

β-LACTAMS

Christian N. Hubschwerlen, Durmenach, France, and Gérard Schmid, Kienberg, Switzerland, assignors to Hoffman-La Roche Inc., Nutley, N.J.

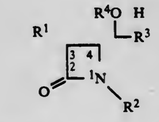
Filed Aug. 11, 1982, Ser. No. 407,027

Claims priority, application Switzerland, Aug. 27, 1981, 5524/81; Jun. 25, 1982, 3925/82

Int. Cl.[4] C07D *205/08, 403/04, 405/04, 405/14*

U.S. Cl. 260—245.4 **11 Claims**

1. An optically uniform 3,4-cis β-lactam of the formula



wherein R^1 is amino or a group selected from azido, phthalimido, (lower alkyl)—OCO—CH=C(CH_3)—NH or Z—NH wherein Z is selected from t-butoxycarbonyl, trichloroethoxycarbonyl, or benzyloxycarbonyl, R^2 is hydrogen or a compound selected from 2,4 or 3,4-di-(lower alkoxy)-benzyl, 2,4 or 3,4-di-(lower alkoxy)-phenyl, di-[4-(lower alkoxy)-phenyl]-methyl or 4-(lower alkoxy)-phenyl and R^3 and R^4 are joined with one another together with the CHO to which they are attached to form a substituted or unsubstituted 5 or 6 membered heterocycle having two oxygen atom with the proviso that R^1 is Z—NH when R^2 is hydrogen, and the corresponding optical antipodes thereof.

4,576,752

β-SUBSTITUTED POLYFLUOROETHYL COMPOUNDS

Carl G. Krespan, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 19, 1982, Ser. No. 399,281

The portion of the term of this patent subsequent to Oct. 2, 2001, has been disclaimed.

Int. Cl.[4] C07C *117/00*

U.S. Cl. 260—349 **23 Claims**

1. The β-substituted polyfluoroethyl compound having the formula,

$$N_3CF_2CFYZ,$$

wherein

Y is —F, —Cl or —OR_F^1;

Z is selected from —C(O)R_FX^1, —CF(R_FX^1)O—CF(CF_3)CF_2O—$_n$CF(CF_3)COF, —CF(R_FX^1)O—CF(CF_3)CF_2O—$_n$CF=CF_2, —CF(R_FX^1)O—CF(CF_3)CF_2O—$_m$$CF_2CF$=$CF_2$, and $Z^1R_FZ^1CFYCF_2N_3$;

R^1 is C_{1-10} alkyl, C_{6-10} aryl or C_{6-10} aralkyl;

R_F^1 is C_{1-4} perfluoroalkyl;

R_F is —CF_2— or C_{2-8} perfluoroalkylene, or C_{2-8} perfluoroalkylene containing one in-chain ether oxygen bond, or two in-chain ether oxygen bonds separated by at least two carbon atoms;

M^1 is an alkali metal, alkaline earth metal or ammonium;

n is 0 to 6;

m is 0 to 7;

Z^1 is —C(O)—, —CF(O—CF(CF_3)CF_2O—$_n$CF(CF_3)COF)—, —CF(O—CF(CF_3)CF_2O—$_n$CF(CF_3)CO_2M^1)—, —CF(O—CF(CF_3)CF_2O—$_n$CF=CF_2)—, or —CF(O—CF(CF_3)CF_2O—$_m$$CF_2CF$=$CF_2$)—; and

X^1 is —F, —SR^1, —SO_2R^1, —CO_2R, —N_3 or —OR^2;

R is —CH_2CF_3, —$CH_2(CF_2CF_2)_{(1-6)}H$, —C_6H_5 or C_{1-3} alkyl; and

R^2 is —CH_3, —C_2H_5 or —C_6H_5.

4,576,753

AZETIDINONE COMPOUNDS AND PROCESSES FOR PREPARATION THEREOF

Takashi Kamiya, Suita; Masashi Hashimoto, Toyonaka, and Osamu Nakaguti, Osaka, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

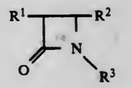
Division of Ser. No. 296,114, Aug. 25, 1981, Pat. No. 4,472,309, which is a division of Ser. No. 71,280, Aug. 30, 1979, Pat. No. 4,304,718, which is a division of Ser. No. 730,012, Oct. 6, 1976, Pat. No. 4,181,800. This application Jul. 9, 1984, Ser. No. 629,216

Claims priority, application United Kingdom, Oct. 6, 1975, 40893; Jan. 2, 1976, 94; Jan. 5, 1976, 242; May 25, 1976, 21507; Jun. 21, 1976, 25746

Int. Cl.[4] C07D *205/08, 403/04, 409/06*; A61K *31/42*

U.S. Cl. 260—239 A **3 Claims**

1. A compound of the formula:



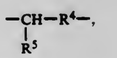
wherein

R^1 is amino, azido, phenoxy, phthalimido, 2-hydroxyimino-2-phenylacetamido or a group of the formula: R^d—CONH—, wherein

R^d is phenyl(lower)alkyl, thienyl(lower)alkyl or phenyl(lower)alkoxy,

R^2 is halogen, carboxy, formyl, hydroxymethyl, phenyl, styryl, methylthio, benzyloxyiminomethyl, or 5-methyl-1,3,4-thiadiazol-2-ylthio, and

R^3 is a group of the formula:



wherein

R^4 is phenyl which may be substituted with hydroxy or benzyloxy, and

R^5 is carboxy, lower alkoxycarbonyl or phenyl(lower)alkoxycarbonyl.

4,576,754

PREPARATION OF 6,6-DIBROMO-PENICILLANIC ACID-1,1-DIOXIDE

Jagdish C. Kapur, and Herman P. Fasel, both of Delft, Netherlands, assignors to Gist-Brocades N.V., Delft, Netherlands

Filed Oct. 10, 1984, Ser. No. 659,089

Claims priority, application European Pat. Off., Oct. 18, 1983, 83201496.3

Int. Cl.⁴ C07D *499/00*; A61K *31/425*

U.S. Cl. 260—245.2 R **14 Claims**

1. In a process for the preparation of 6,6-dibromo-penicillanic acid-1,1-dioxide comprising reacting 6β-amino-penicillanic acid-1,1-dioxide with a nitrosating agent in the presence of bromine and an inorganic acid or strong organic acid, the improvement comprising effecting the reaction in the presence of an alcohol.

4,576,755

WATER-SOLUBLE FIBRE-REACTIVE PHTHALOCYANINE COMPOUNDS

Peter Mischke, Bad Soden am Taunus, and Hermann Fuchs, Königstein, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

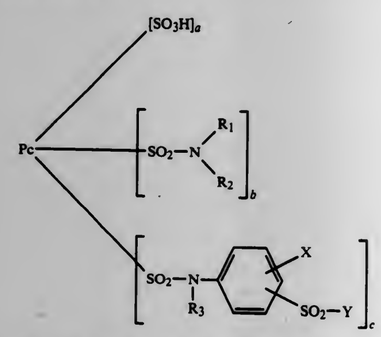
Continuation of Ser. No. 426,194, Sep. 28, 1982, abandoned. This application Oct. 15, 1984, Ser. No. 660,266

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1981, 3138864

Int. Cl.⁴ C09B *47/04, 47/28, 47/30*

U.S. Cl. 260—245.78 **3 Claims**

1. A water-soluble fiber-reactive phthalocyanine compound of the formula (1)



(1)

in which Pc is a radical of metal-free or metal-containing phthalocyanine, with the sulfonic acid or sulfonamide groups being bonded in the 3-positions of the aromatic rings of the phthalocyanine, in which R_1 and R_2 each is hydrogen or alkyl of from 1–6 carbon atoms or said alkyl substituted by methoxy, ethoxy, propoxy, $C_2H_5—O—C_2H_4—O—$, cyano, acetylamino, carboxyl, $HO_3S—$, $H_2O_3P—$, phenyl, methylphenyl, methoxyphenyl, dimethylamino, diethylamino, β-hydroxyethylamino, β-hydroxyethoxy, N-phenylureido, N-alkylureido in which the alkyl is from 1–4 carbon atoms or N-cycloalkylureido, or allyl, 2-methallyl, crotyl or cycloalkyl, or R_1 and R_2, together with the nitrogen atom, are a heterocyclic saturated or unsaturated ring, or R_1 and R_2 are phenyl or said phenyl substitued by one or more methyl, ethyl, methoxy, ethoxy, carboxyl or sulfonic acid groups, R_1 and R_2 being in each case identical or different, in which R_3 is hydrogen or alkyl of from 1 to 4 carbon atoms or said alkyl substituted by hydroxyl or carboxyl groups, in which X is hydrogen or alkyl or alkoxy of from 1 to 4 carbon atoms, in which Y is $—CH_2—CH_2—Z$ in which Z is $—OSO_3H$, $—SSO_3H$, $—OPO_3H_2$, or —OH, a is a number of from 0 to 2, b is a number of from 0 to 2 and c is a number of from 1.7 to 2.6, with the proviso that the sum of a, b and c is at most 4.

4,576,756

PRODUCTION OF HYDROGEN PEROXIDE

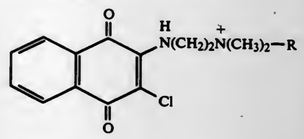
Mark S. Wrighton, Winchester, Mass.; Robert M. Buchanan, Louisville, Ky., and Gary S. Calabrese, Reading, Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Division of Ser. No. 543,574, Oct. 19, 1983, Pat. No. 4,533,443. This application Nov. 5, 1984, Ser. No. 668,621

Int. Cl.⁴ C07C *50/12*; H01C *13/00*

U.S. Cl. 260—396 R **4 Claims**

1. A compound having the formula:



wherein R is a lower alkyl, or aryl group.

4,576,757

PROCESS FOR THE PREPARATION OF MONOACYL POLYALKYLENE POLYAMINES

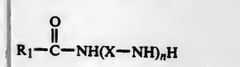
Jacob J. Guth, Upper Black Eddy, Pa.; Elvin R. Lukenbach, Somerset, and Richard R. Tenore, Martinsville, both of N.J., assignors to Johnson & Johnson Baby Products Company, New Brunswick, N.J.

Filed Apr. 26, 1984, Ser. No. 604,267

Int. Cl.⁴ C07C *102/00*

U.S. Cl. 260—404.5 **5 Claims**

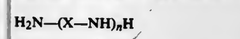
1. A process for the preparation of monoacyl polyalkylene polyamines of the formula



wherein R_1 is straight or branched chain alkyl of from 7 to 21 carbon atoms or mixtures thereof, n is an integer of from 1 to 3 and X is straight or branched chain alkylene or hydroxyalkylene of from 2 to 6 carbon atoms, comprising reacting a fatty acid ester of the formula



wherein R_1 is as above and R_2 is lower alkyl of from 1 to 3 carbon atoms, with a polyalkylene polyamine of the formula



wherein X and n are as above, in the presence of from about 5 to 40% by weight of the total weight of the reaction mixture of a hydroxylic solvent and at a temperature of from about 20° C. to 80° C. or under pressure.

4,576,758

ANTI-INFLAMMATORY LIPOXIN B ANALOGS

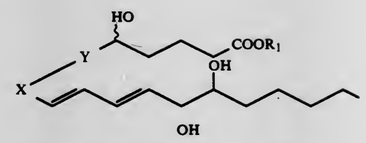
Joel Morris, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Jun. 1, 1984, Ser. No. 616,456

Int. Cl.⁴ C09F *5/00*

U.S. Cl. 260—405.5 **20 Claims**

1. An LX-B analog of formula XV



XV

wherein X is cis—CH=CH— or —C≡C—;
wherein Y is cis—C=CH—, trans—CH=CH—, or —CH-2—CH(OH)—; and
wherein R_1 is hydrogen; C_1-C_{12} alkyl; C_3-C_{10} cycloalkyl; C_7-C_{12} aralkyl; phenyl optionally substituted by one, two, or three C_1-C_3 alkyl, C_1-C_3 alkoxy, chloro, fluoro, or trifluoromethyl with the proviso that not more than two such substituents are other than alkyl; or a pharmacologically acceptable cation;
with the overall proviso that Y is trans—CH=CH— and X is cis—CH=CH— only when the hydroxyl configuration at C-5 is alpha.

4,576,759

POLYSUBSTITUTED DIENES

Heinz Viehe, Limal; Nadine S. Mesmaeker, Louvain-la-Neuve, and Robert Merènyi, Overijse-Maleizen, all of Belgium, assignors to SOLVAY & Cie (Societe Anonyme), Brussels, Belgium

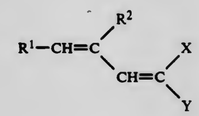
Filed Jun. 20, 1984, Ser. No. 622,745

Claims priority, application Belgium, Jun. 24, 1983, 211063

Int. Cl.⁴ C07C *57/03*

U.S. Cl. 260—410.9 R **14 Claims**

1. A polysubstituted diene of the formula:



in which:
X is selected from the group consisting of SH, SR^3, OR^3, SeR^3, NHR^3 and $N=R^3$, in which R^3 is an aliphatic or cyclic group containing from 1 to 20 carbon atoms;
Y is selected from the group consisting of C≡N and



in which R^4 is hydrogen or an aliphatic or a cyclic group containing form 1 to 20 carbon atoms, provided that, when X is SCH_3, Y is not



and, when X is OR^3 and R^3 is an alkyl group containing at least three carbon atoms, Y is not C≡N;
R^1 is selected from the group consisting of hydrogen, halogen and an aliphatic group containing from 2 to 8 carbon atoms; and
R^2 is selected from the group consisting of hydrogen, halogen, an aliphatic group containing from 1 to 8 carbon atoms and an aromatic group containing from 5 to 8 carbon atoms.

4,576,760

HYDROQUINONE SULFATE DERIVATIVES AND PRODUCTION THEREOF

Isuke Imada, Izumi, Japan, assignor to Takeda Chemical Industries, Ltd., Osaka, Japan

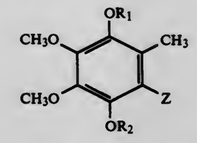
Filed Apr. 27, 1984, Ser. No. 604,495

Claims priority, application Japan, May 2, 1983, 58-77819

Int. Cl.⁴ C07C *141/16*

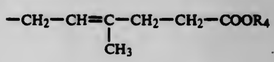
U.S. Cl. 558—37 **8 Claims**

1. A compound of the formula:



wherein either one of R_1 and R_2 is hydrogen or SO_3H and the other is SO_3H, Z is

$+CH_2+_m OR_3$, $+CH_2+_n COOR_4$ or



where m is an integer of 1–22, n is an integer of 0–21, R_3 is hydrogen or alkanoyl having 2 to 4 carbon atoms, and R_4 is hydrogen or alkyl having 1 to 4 carbon atoms,
or a pharmaceutically acceptable salt thereof.

4,576,761

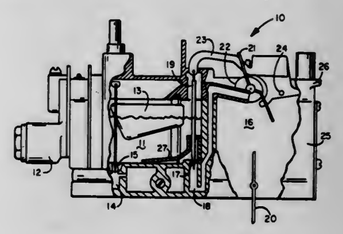
FUEL FLOW DEFLECTOR FOR USE IN A CARBURETOR

David J. Gruenwald, Oshkosh, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Filed May 9, 1985, Ser. No. 732,112

Int. Cl.⁴ F02M *5/02*

U.S. Cl. 261—23 A **7 Claims**



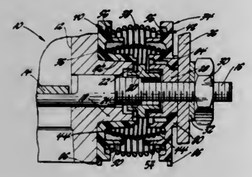
1. In a carburetor having a float bowl, an inlet valve controlled by a float in said float bowl to maintain a constant fuel level in said float bowl, an induction passage for supplying an air/fuel mixture to an engine, a fuel passageway for supplying fuel from said float bowl to said induction passage, said fuel passageway including an orifice positioned near the bottom of said float bowl, and an axially movable metering rod extending into said orifice to control the effective area of said orifice; the improvement comprising:
a fuel flow directing adaptor having
(A) an enclosure placed over said orifice to define a chamber above said orifice, said enclosure including an upper hole closely fitting said metering rod and a bottom open to said orifice, and
(B) a passage connecting said chamber with a portion of said float bowl remote from said orifice.

4,576,762

THROTTLE RETURN SPRING ASSEMBLY

Michael D. Griffin, and Ronald A. Waydelis, both of Rochester, N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 11, 1985, Ser. No. 710,399
Int. Cl.[4] F02M *19/12*
U.S. Cl. 261—65 **9 Claims**



1. In a throttle body having an induction passage for air flow, a throttle in said passage for controlling air flow therethrough, a shaft projecting from said body, and a lever mounted on said shaft, said lever being effective for moving said throttle between minimum and maximum air flow positions as said lever is moved between closed throttle and open throttle positions, a throttle return spring assembly mounted about said shaft for biasing said lever to said closed throttle position, said throttle return spring assembly comprising:

an inner torsion spring formed as a helical coil disposed about said shaft, said spring having opposite end loops each terminating in an end segment,

an outer torsion spring formed as a helical coil disposed about said inner spring, said outer spring having opposite end loops each terminating in an end segment,

and a pair of spring housings disposed about said shaft at opposite ends of said springs, each spring housing having a portion receiving one of said inner spring end segments, each spring housing further having a boss extending from the perimeter of said housing, each boss having a groove receiving one of said outer spring end segments,

wherein one of said housing bosses engages an abutment formed on said throttle body and the other of said housing bosses engages said lever for biasing said lever to said closed throttle position,

and wherein the outer spring end segment received by said one boss overlies said abutment and the outer spring end segment received by said other boss overlies said lever,

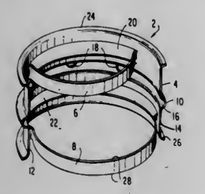
whereby said outer spring can directly engage said abutment and said lever for biasing said lever to said closed throttle position in the absence of said spring housings.

4,576,763

PACKINGS FOR GAS-LIQUID CONTACT APPARATUS

Dale E. Nutter, P.O. Box 7008, Tulsa, Okla. 74105

Filed Jun. 27, 1984, Ser. No. 625,275
Int. Cl.[4] B01F *3/04*
U.S. Cl. 261—94 **27 Claims**



18. A packing element for a bed of packing in gas-liquid contact apparatus, said packing element having a curved base member; said base member having an inner surface, an outer surface, two side edges and two ends;

a bridging member having a curvature which is opposite to the curvature of the base member; said bridging member having an inner surface, an outer surface, two side edges and two ends;

said ends of the bridging member being connected to said base member, said inner surfaces of the base member and bridging member facing inwardly of the packing element in opposite directions, said base member having a channel formed in its inner surface for receiving and conducting a portion of the liquid laterally in the bed when the element is oriented with the inner surface of the base member facing upwardly,

said packing element being made of sheet material which has a rib means therein for stiffening said base and forming said channel, said rib means having a concave surface facing inwardly and a convex surface facing outwardly,

at least one opening extending through the base member from the channel to the outer surface of the base member, said opening being operable to permit liquid to flow from said channel through said opening to wet the outer surface of the base member,

said side edges of the base member having outturned flange means formed therein to deter the flow of liquid over said side edges when the outer surface of the base member is facing upwardly.

20. A packing element for a bed of packing in gas-liquid contact apparatus, said packing element having a curved base member; said base member having an inner surface, an outer surface, two side edges and two ends;

at least two bridging members having curvatures which are opposite to the curvature of the base member; each of said bridging members having an inner surface, an outer surface, two side edges and two ends;

said ends of the bridging members being connected to said base member, said inner surfaces of the base member and bridging members facing inwardly of the packing element in opposite directions, said base member having elongated slots which correspond generally in shape and size with said bridging members, said slot having opposite ends which extend to the ends of the bridging members, a said bridging member having at least one side edge which is nonlinear along the length of the bridging member in order to deter nesting of said bridging member in a slot of another such packing element,

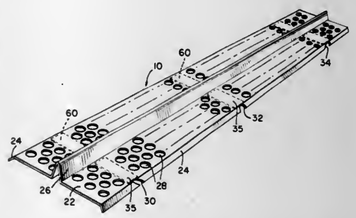
said bridging members extending different distances from the base member.

4,576,764

FILL SLAT ASSEMBLY FOR COOLING TOWERS

G. Maury Shepherd, and Charles E. Shepherd, both of Houston, Tex., assignors to C. E. Shepherd Company, Houston, Tex.

Filed Dec. 31, 1984, Ser. No. 687,973
Int. Cl.[4] B01F *3/04*
U.S. Cl. 261—111 **12 Claims**



1. A fill slat assembly for use in a water cooling tower of the type having a grid of interconnected vertical and horizontal supporting wires, said fill slat comprising:

(a) a body portion having a plurality of perforations through which water to be cooled can pass or partially pass,

(b) a longitudinal rib extending upwardly from said body portion throughout the length of said slat and located generally centrally transversely of the slat, said rib being unperforated and comprising side walls extending convergingly upwardly relative to a longitudinal central vertical plane through said slat, said rib being open between said side walls and forming a rigidifying beam for the fill slat for absorbing water loading on the slat without deformation thereof,

(c) a laterally directed flange formed at each side of said body portion, said flanges extending downwardly at an acute angle relative to a plane tnrough the body portion of said slat,

(d) each of said flanges being formed with slots open at the outer surfaces of said flanges and closed at the inner ends thereof, said closed ends being spaced from the juncture of said side flanges with said body portion, said slots being of a depth to receive entirely therewithin horizontal and vertical support wires, and

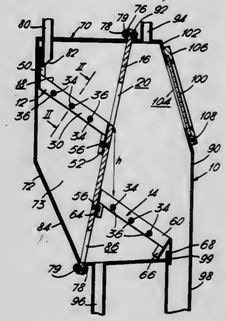
(e) means for positively securing the fill slat in place on the supporting wires so as to reduce rolling or longitudinal movement of said slat relative to said support wires, and reduce the effects of vibration within the tower.

4,576,765

SPHERE/LIQUID SEPARATOR AND SEPARATION METHOD

Stephen K. Cowlam; Steven Y. Moss, both of Wantage; Claude L. Stockwell, Newbury, and Victor R. Phillips, Woburn Sands, all of England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Oct. 1, 1984, Ser. No. 656,337
Claims priority, application United Kingdom, Oct. 5, 1983, 8326575
Int. Cl.[4] B01D *29/46*
U.S. Cl. 210—801 **14 Claims**



1. A separator for separating liquid from particles of substantially spherical shape, and comprising a plurality of stationary sloping screening decks in stepped relationship, each screening deck comprising a plurality of members in spaced relationship to each other and extending in the direction of slope of the respective deck, the width d of the space between adjacent members being less than the diameter of the particles, at least some of the members being laminae, and the vertical height H of the laminae being greater than $2\gamma/d\rho g$ where γ, ρ and g are as hereinbefore defined, so that in operation of the separator the particles move down the slope of each screening deck and tumble over the step from one screening deck to the next, while the liquid flows downwardly in the spaces between the members.

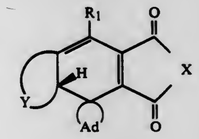
4,576,766

PHOTOCHROMIC COMPOUNDS AND THEIR USE IN PHOTOREACTIVE LENSES

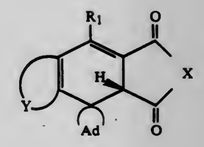
Martin W. Baskerville, Towcester; William R. Maltman, St. Helens, both of England, and Stephen N. Oliver, Penryncock, Wales, assignors to The Plessey Company PLC, Ilford, England

Filed Sep. 7, 1983, Ser. No. 530,160
Int. Cl.[4] B29D *11/00*
U.S. Cl. 264—1.4 **8 Claims**

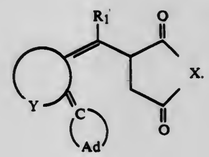
8. A method of forming a photochromic article capable of darkening with presence of sunlight and thermally fading in the absence thereof at ambient temperatures which comprises incorporating a precursor of the general formula (1) set forth in claim 1 into the material from which the article is formed prior to forming and converting it in situ into a material which confers a heliochromic character on the article, said precursor having the property that if heated at a temperature of at least 180° C. or if irradiated with U.V. light it is converted to a compound of general formula (11) below and on continued heating or irradiation undergoes at 1:5 hydrogen shift to a pale-coloured compound of general formula (111) below which pale coloured compound is reversibly converted to a darker compound of general formula (1V) under the stimulation of sunlight



(II)



(III)



(IV)

4,576,767

METHOD FOR CONTROLLING POWDER PRODUCTION

A. David Booz, New Kensington; Daniel R. Barch, Natrona Heights, both of Pa.; Ray A. Kuchera, and David D. White, Jr., both of Rockdale, Tex., assignors to Aluminum Company of America, Pittsburgh, Pa.

Division of Ser. No. 413,512, Aug. 31, 1982, Pat. No. 4,468,182.
This application May 3, 1984, Ser. No. 595,616
Int. Cl.[4] B29B *9/00*
U.S. Cl. 264—12 **9 Claims**

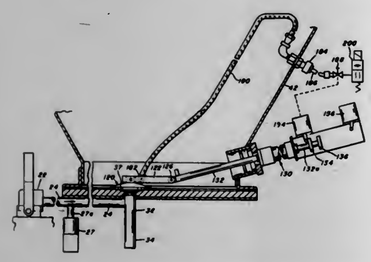
1. An improved method for the production of particulate metal comprising:

(a) providing a containment vessel having a sidewall extending to and endwall;

(b) providing a source of molten metal external to said vessel in communication with a nozzle means containing a central bore through which said molten metal flows from said source;

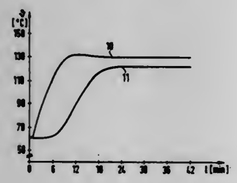
(c) mounting said nozzle means carried by said endwall, said

external source of metal, said sidewall and said endwall cooperating with the nozzle means to seal off the interior of said vessel and the metal particles therein from the area adjacent said source of molten metal;
(d) flowing a source of atomizing gas through said nozzle means into said vessel; and
(e) purging said bore with an external source of purging gas directable into said central bore in a direction opposite to the flow of molten metal therethrough to remove depositions therefrom by:



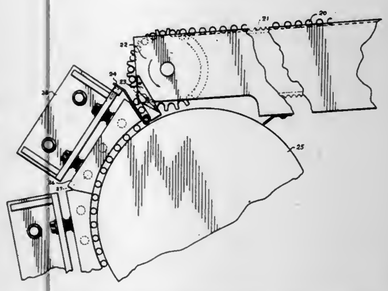
(1) covering said nozzle means with a cover which is positionable within said vessel over said nozzle means, said cover being connected to said source of purging gas;
(2) shutting off the flow of atomizing gas to said nozzle means; and
(3) flowing said purging gas through said cover into said central bore to thereby clean out any material interfering with the flow of metal through said bore.

4,576,768
METHOD FOR IMPREGNATING AND EMBEDDING ELECTRICAL WINDINGS
Helmut Markert, Nuremberg; Wolfgang Rogler, Erlangen; Wolfgang Bendel, Leonberg, and Friedrich Alber, Köngen, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany
Filed Jun. 27, 1984, Ser. No. 624,983
Claims priority, application Fed. Rep. of Germany, Jun. 27, 1983, 3323154
Int. Cl.⁴ B29C *35/02*
U.S. Cl. 264—27 **14 Claims**



1. A method for impregnating and embedding an electrical winding, with a polyepoxide-polyisocyanate resin mixture in the presence of a reaction accelerator which is latent under the processing conditions, which comprises:
(a) drying the resin mixture at a reduced pressure and at a temperature up to 110° C., while stirring, to produce a dried resin mixture;
(b) drying the electrical winding and impregnating the winding with the dried resin mixture under conditions of reduced pressure and a temperature up to 110° C. to produce a cast-in winding;
(c) applying an overpressure above atmospheric to the cast-in winding;
(d) elevating the temperature of the cast-in winding while maintaining said overpressure by generating Joule heat in the winding and, controlling the temperature as a function of the reaction heat to initate a cross-linking reaction of the resin mixture impregnated in the cast-in winding and produce a hardened cast-in winding; and
(e) post-heating the hardened, cast-in winding so that the cross-linked resin mixture is post-hardened.

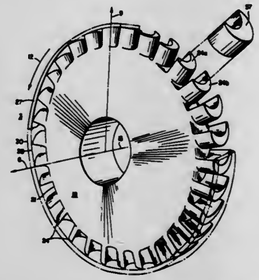
4,576,769
PROCESS FOR EXTRUDING AND SIZING FOAMED THERMOPLASTIC CIGARETTE FILTER RODS
Wyatt P. Hargett, Jr., Matthews, N.C., assignor to Celanese Corporation, New York, N.Y.
Filed Mar. 29, 1984, Ser. No. 594,635
Int. Cl.⁴ B29C *67/22, 59/04*
U.S. Cl. 264—51 **7 Claims**



1. A method of sizing thermoplastic polymeric foamed cigarette filter rods which comprises:
forming a thermoplastic polymeric foamed cigarette filter rod by extrusion through a circular orifice, cutting said rod at a cutting station into sections, each having the length of several filters, conveying said cut sections into the nip formed by a smooth surfaced rotating drum and a plurality of stationary heated block members mounted about and spaced from the periphery of the drum whereby oversized cut sections are rolled and thereby compressed to a uniform circumference.

4,576,770
METHOD OF MANUFACTURING A TURBOMACHINERY ROTOR
Frederick E. Schultz, Exmore, Va., assignor to General Electric Co., Philadelphia, Pa.
Division of Ser. No. 364,211, Apr. 1, 1982, Pat. No. 4,464,097. This application Oct. 19, 1983, Ser. No. 543,277
Int. Cl.⁴ B29D *3/02*
U.S. Cl. 264—103 **6 Claims**

1. A method of manufacturing a turbomachinery rotor including disc and blade portions comprising the steps of:
(a) providing a plurality of fiber arrays, each of said arrays being constructed by attaching the outer ends of radial fibers of each array to a ring and extending the inner ends of said fibers radially to a pyrolizable support;
(b) positioning circumferential fibers extending in a circumferential direction among said radial fibers and within a predetermined radial distance from said central support;
(c) positioning axial fibers among said radial fibers and extending said axial fibers in an axial direction within said predetermined radial distance from said central support;
(d) compressing some of said radial fibers into blade groupings of predetermined shapes located radially beyond said predetermined distance from said central support;
(e) bonding said fibers in a matrix; and
(f) pyrolizing said pyrolizable support;



Said radial, circumferential, and axial fibers and said matrix consisting of the same material respectively and being selected from the group consisting of carbon, quartz and alumina.

4,576,771
AQUEOUS ISOCYANATE EMULSIONS AND THEIR USE AS BINDERS IN A PROCESS FOR THE PRODUCTION OF SHAPED ARTICLES
Hans-Joachim Scholl, Cologne; Helmut Reiff, Leverkusen, and Hanns I. Sachs, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Division of Ser. No. 150,488, May 16, 1980, Pat. No. 4,528,117. This application Aug. 17, 1984, Ser. No. 641,801
Claims priority, application Fed. Rep. of Germany, May 29, 1979, 2921726
Int. Cl.⁴ B27N *3/00;* **B29J** *5/02;* **B01J** *13/00;* **C07C** *119/042*
U.S. Cl. 264—109 **8 Claims**

1. A process for producing shaped articles comprising:
(A) introducing into a mold a composition of a comminuted organic and/or inorganic material and an aqueous emulsion as a binder;
(B) hot pressing the composition; and
(C) removing the composition from the mold; wherein the emulsion comprises:
(i) from 80 to 20% by weight, based on the total emulsion, of water;
(ii) from 18 to 79% by weight, based on the total emulsion of an organic polyisocyanate;
(iii) from 0.5 to 15% by weight based on the total emulsion of a sulfonic acid corresponding to the formula:

$$R_1—SO_3H)_n$$

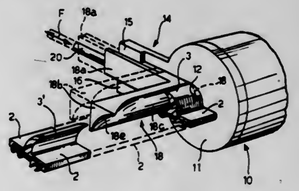
wherein
n represents the integers 1 or 2, and
R_1 represents an aromatic hydrocarbon radical containing from 6 to 14 carbon atoms, an aliphatic hydrocarbon radical containing from 10 to 18 carbon atoms, a cycloaliphatic hydrocarbon radical containing from 6 to 15 carbon atoms, an araliphatic hydrocarbon radical containing from 7 to 15 carbon atoms or an alkaromatic hydrocarbon radical containing from 7 to 24 carbon atoms; and
(iv) optionally from 1 to 10% by weight, based on the polyisocyanate, of a nonionic, surface-active agent as an emulsifier.

4,576,772
CATHETER WITH OPTIMUM RESISTANCE TO BENDING AND METHOD OF MANUFACTURE
George J. Carpenter, Southbridge, Mass., assignor to Warner-Lambert Technologies, Inc., Morris Plains, N.J.
Filed Jul. 20, 1984, Ser. No. 632,940
Int. Cl.⁴ B28B *1/48;* **B29D** *19/08*
U.S. Cl. 264—154 **11 Claims**



1. A method of controlling resistance to bending in a multilumen catheter comprising the steps of
providing a plastic tube of a given hardness, a given resistance to bending and a given length having a plurality of lumens, notching the tube about its periphery and along its length to create voids and to develop a vertabra-like structure, and filling the voids with a vulcanizable polymeric material having a hardness when cured less than the hardness of said plastic tube whereby the resistance to bending of said tube is reduced.

4,576,773
METHOD AND APPARATUS FOR EXTRUDING WEATHER STRIP FOR MOTOR-VEHICLES
Roberto Azzola, Turin, and Luciano Carrera, Cirié , both of Italy, assignors to S.A.I.A.G. S.p.A., Italy
Filed Feb. 3, 1984, Ser. No. 576,653
Claims priority, application Italy, Feb. 3, 1983, 67112 A/83
Int. Cl.⁴ B29C *47/02, 53/04*
U.S. Cl. 264—167 **3 Claims**



1. An extrusion device for extruding a weather strip of elastomeric material having a substantially flat anchoring section and a longitudinally sealing section in the form of a tab coextruded with the anchoring section and connected to the anchoring section along a straight line with the tab being inclined to one side of a plane perpendicular to the anchoring section along said straight line, said extrusion device comprising an extrusion head having a die with a fixed configuration extrusion orifice corresponding to the cross-section of the weather strip to be extruded, moveable deflector means disposed adjacent said extrusion orifice and adapted to be moved into and out of engagement with said tab to selectively change the inclination of said tab relative to said anchoring section from one of said plane to the other side of said plane; said moveable deflector means comprising a deflector member having a deflection surface adapted to contact said tab and having an initial profile at one end thereof corresponding essentially to the profile of one face of said tab as it emerges from said extrusion orifice, a final profile at the opposite end thereof having an inclination different from that of the initial profile and a continuously variable intermediate surface extending from said initial profile to said final profile, and means for mounting said deflector member for movement relative to said extrusion orifice between a rest position in which said deflection surface does not interfere with the weather strip

leaving the extrusion orifice and a working position in which the deflection surface is disposed adjacent said extrusion orifice with said initial profile coinciding with the corresponding portion of said extrusion orifice whereby the tab upon leaving the extrusion orifice slides in contact with the deflection surface and is plastically deformed to gradually assume the final profile of the deflection surface.

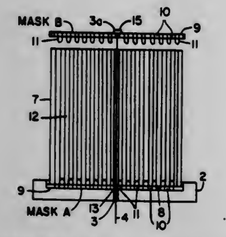
2. A method for extruding weather strips of elastomeric material comprises extruding a strip of elastomeric material from a fixed configuration extrusion orifice in an extrusion head having a substantially flat anchoring section and a longitudinal sealing section in the form of a tab connected to the anchoring section along a straight line and inclined relative to said anchoring section on one side of a plane perpendicular to said anchoring section along said straight line and selectively moving a deflector member having a variably contoured deflection surface with an initial profile coinciding with the corresponding portion of said extrusion orifice into engagement with one surface of said tab subsequent to the extrusion of said strip to gradually deflect said tab to change the inclination thereof relative to said anchoring section.

4,576,774

FLEXIBLE MASK AND MEANS FOR APPLYING TO HONEYCOMB STRUCTURES

Gary M. Hazard, Corning; Arthur E. Hillman, Campbell; Max R. Montierth, Elmira, and Albert R. Nieber, Corning, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed May 31, 1984, Ser. No. 615,808
Int. Cl.[4] B28B *1/08*; B29C *33/42*; B32B *3/12*
U.S. Cl. 264—267 **8 Claims**



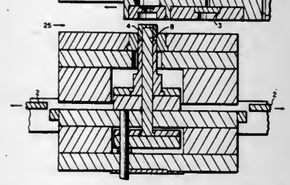
1. A method for fabricating a selectively-manifolded honeycomb structure for use as a fluid filter comprising the steps:
(a) providing a honeycomb structure having a multiplicity of hollow cells extending therethrough and having a top end face and a bottom end face;
(b) providing a pair of flexible masks, each mask having a pair of opposing faces, a plurality of openings extending through each mask, an opening in the first mask being surrounded with an open head bushing and an opening in the second mask being surrounded with a closed head bushing, said bushings being located in the same position in each mask, and a plurality of protrusions extending from one opposing face of each mask;
(c) placing said first mask having said open head bushing in a fixture closely approximating the outside circumference of said first mask with said protrusions extending away from the base of said fixture;
(d) approximately centering the bottom end face of said honeycomb structure on said first mask;
(e) vibrating said fixture for a sufficient length of time to seat said bottom end face of said honeycomb structure against said first mask such that a subset of cells of said honeycomb structure is aligned with openings in said first mask, and another subset of cells of said honeycomb structure engages an equal number of protrusions of said first mask;
(f) forcing said honeycomb structure down over the protrusions of said first mask,
(g) moving a wire through said open head bushing of said first mask and through the cell of said honeycomb structure directly over said bushing until it protrudes above the top end face of said honeycomb structure;
(h) approximately centering said second mask on the top end face of said honeycomb structure said closed head bushing fitting over the end of said wire protruding from the top end face and said protrusions of said second mask extending toward the top end face of said honeycomb structure;
(i) vibrating said fixture for a sufficient length of time to seat said second mask against the top end face of said honeycomb structure such that the openings of said second mask are aligned with a subset of cells of said honeycomb structure, and the protrusions of said second mask engage another subset of cells of said honeycomb structure, said wire locating said second mask on said honeycomb structure;
(j) forcing said second mask down over the top end face of said honeycomb structure to force the protrusions of said second mask into said subset of cells of said honeycomb structure;
(k) withdrawing said wire through said honeycomb structure and through said open head bushing;
(l) extracting said honeycomb structure with said masks in place from said fixture;
(m) charging a sealant through the openings of said masks into the open ends of said subsets of cells; and
(n) removing said masks from the top and bottom end faces of said honeycomb structures.

4,576,775

PROCESS FOR THE PREPARATION OF INJECTION MOLDED-STRETCH FORMED THERMOPLASTIC RESIN ARTICLES

Helmut Kaeufer, Metzkausen, and August Burr, Berlin, both of Fed. Rep. of Germany, assignors to Deutsche Solvay Werke GmbH, Solingen, Fed. Rep. of Germany

Filed Aug. 25, 1983, Ser. No. 411,294
Claims priority, application Fed. Rep. of Germany, Aug. 27, 1981, 3133872; Apr. 27, 1982, 3215588
Int. Cl.[4] B30B *7/00*; B29C *45/57, 57/10*
U.S. Cl. 264—323 **13 Claims**



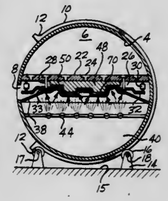
1. A process for the production of a shaped article from a thermoplastic resinous material, comprising the steps of:
heat plastifying the thermoplastic material;
injecting the heat-plastified thermoplastic material into a preform mold cavity in a closed press forming tool having a first shape configuration and at least one parting plane, to form a preform of the thermoplastic material, said preform mold cavity being formed by a preform mold nest and a ram extending thereto, and allowing said preform to partially cool in said preform mold cavity;
opening the press forming tool at said parting plane and providing an at least partially new second shape configuration to the forming tool containing the preform by aligning said preform and said ram with a shaped article mold nest having a different configuration from said preform mold nest, said ram and said shaped article mold nest forming a second mold cavity, and adjusting said press forming tool to increase the extension of said ram when said press forming tool is reclosed; and
reclosing the press forming tool and subjecting the preform in said second mold cavity of the forming tool having said second shape configuration before said preform is completely cooled to at least one pressure stretching deformation under an elevated pressure of from about 100 N/mm^2 to 800 N/mm^2 generated by a compression device applying a press closing force of from about 50 to 50,000 kN to produce a shaped article.

4,576,776

FLOW FORMING OF COMPOSITE MATERIAL

Marlow C. Anderson, Kent, Wash., assignor to Boeing Commercial Airplane Company, Seattle, Wash.

Filed Aug. 13, 1984, Ser. No. 639,846
Int. Cl.[4] B29C *43/10*
U.S. Cl. 264—510 **7 Claims**



1. A method of forming into a desired shape composite material that includes a matrix material which is reinforced with a fibrous material and which has a critical cure temperature, comprising:
positioning a mold surface generally above and spaced from and facing a flexible membrane;
heating the membrane to a forming temperature at which the matrix material will flow into the desired shape and which is below the critical cure temperature of the matrix material;
laying the composite material on the membrane, and allowing the matrix material to be heated evenly by contact with the membrane;
when the matrix material has been heated to said forming temperature, applying fluid pressure to the heated membrane opposite the mold surface to force the membrane and the material thereon to move upwardly into contact with and against the mold surface;
while maintaining the fluid pressure, allowing the matrix material to flow and the composite material to take the desired shape; and
then removing the fluid pressure from the membrane to allow the membrane to move out of contact with the composite material.

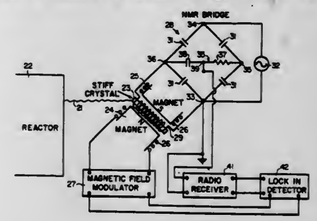
4,576,777

ENERGY DETECTION METHOD AND APPARATUS

Joseph Weber, 9 W. Melrose St., Chevy Chase, Md. 20015

Continuation-in-part of Ser. No. 118,184, Feb. 1, 1980, abandoned, which is a continuation-in-part of Ser. No. 833,678, Sep. 15, 1977, abandoned, which is a continuation-in-part of Ser. No. 710,295, Jul. 30, 1976, abandoned. This application Aug. 21, 1981, Ser. No. 295,002
Int. Cl.[4] G21C *17/00*
U.S. Cl. 376—153 **69 Claims**

1. A method of detecting neutrinos comprising the steps of irradiating a material with the neutrinos to cause coherent stimulated emission of radiant energy fields in the material in



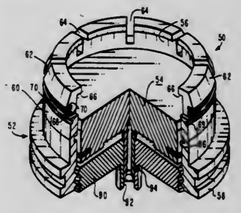
response to the material being irradiated by the neutrinos, and detecting the coherent radiant energy fields.

4,576,778

CORE BARREL PLUG

Herbert E. Ferree, Hempfield Township, Westmoreland County, and Thomas R. Wagner, Monroeville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 17, 1983, Ser. No. 523,995
Int. Cl.[4] G21C *13/06*; F16L *55/12*
U.S. Cl. 376—203 **13 Claims**



1. A nuclear reactor having a core barrel and a plug for preventing flow through a port in said core barrel, said plug comprising:
a substantially cylindrical body formed with a cylindrical portion and a flange and defining a tapered leading open end, said body defining a bore therein extending from said open end to said flange with said bore having a smaller diameter near said open end than near said flange, said cylindrical portion being formed with a plurality of longitudinal slots extending from said open end toward said flange and extending entirely through its thickness;
an end plug attached to said flange and having a second bore therethrough and holes therein extending from said second bore to the outside of said end plug;
a mandrel slidably disposed and captured in said body and having an extension slidably disposed through said second bore with said extension having a channel therethrough for allowing a fluid to pass through said channel and into a space defined between said mandrel and said end plug for moving said mandrel toward said open end of said body when said fluid is introduced into said space thereby causing said cylindrical portion to be expanded, said extension allowing said fluid to pass into said holes when said mandrel is in the expanded and locked position thereby venting said fluid and preventing overexpansion of said plug; and
locking means disposed on said mandrel for locking said mandrel in the expanded position.

8. A plug for preventing flow through a port in a core barrel of a pressurized water nuclear reactor comprising:
a substantially cylindrical body formed with a cylindrical

portion and a flange and defining a tapered leading open end, said body defining a bore therein extending from said open end to said flange with said bore having a smaller diameter near said open end than near said flange, said cylindrical portion being formed with a plurality of longitudinal slots extending from said open end toward said flange and extending entirely through its thickness;

an end plug attached to said flange and having a second bore therethrough and holes therein extending from said second bore to the outside of said end plug;

a mandrel slidably disposed and captured in said body and having an extension slidably disposed through said second bore with said extension having a channel therethrough for allowing a fluid to pass through said channel and into a space defined between said mandrel and said end plug for moving said mandrel toward said open end of said body when said fluid is introduced into said space thereby causing said cylindrical portion to be expanded, said extension allowing said fluid to pass into said holes when said mandrel is in the expanded and locked position thereby venting said fluid and preventing overexpansion of said plug;

a first notch disposed in said mandrel and extending around the outside circumference thereof;

a second notch disposed in said cylindrical portion and extending around the inside circumference thereof; and

a locking ring disposed in said first notch and capable of being inserted in said second notch when said mandrel is moved toward said open end for locking said mandrel in the expanded position.

4,576,779

END CLOSURE MEMBER FOR A CONTAINER

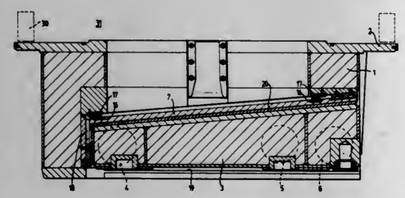
Donald S. McWilliam, Ashton-in-Makerfield, and David Minshall, Warrington, both of England, assignors to British Nuclear Fuels Limited, Warrington, England

Filed Oct. 31, 1983, Ser. No. 547,056

Claims priority, application United Kingdom, Nov. 11, 1982, 8232216

Int. Cl.⁴ G21F *5/00*

U.S. Cl. 376—203 **5 Claims**



1. An end closure member for a container comprising, means defining an open end for a container, a wedge-shaped member movable across said end between open and closed positions, a seal plate on the inclined surface of the wedge-shaped member directed towards the interior of said end, means mounting said seal plate for relative movement along the path of the inclined surface of the wedge-shaped member, spring means for urging the seal plate to move to a position to project outwardly beyond the smaller end of the wedge-shaped member, and a stop cooperable with the seal plate such that on advance of the wedge-shaped member into its closed position the projecting seal plate first contacts the stop and continued advance of the wedge-shaped member relative to the stopped seal plate causes a displacement of the seal plate towards the interior of the container to effect a seal at said end, and on withdrawal of the wedge-shaped member toward its open position the seal plate is moved away initially from the end of the container before moving with the wedge-shaped member into the open position.

5. A closure member according to claim 1 in combination with a container which comprises a nuclear fuel transport flask.

4,576,780

RELEASABLE ANTI-EJECTION DEVICE FOR THE CONTROL RODS OF A NUCLEAR REACTOR

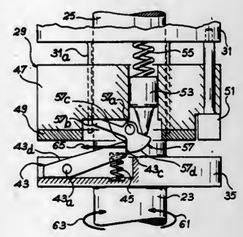
Gérard Belz, Vinon sur Verdon, France, assignor to Commissariat a l'Energie Atomique, France

Filed Apr. 19, 1983, Ser. No. 486,313

Claims priority, application France, Apr. 26, 1982, 82 07139

Int. Cl.⁴ G21C *7/08*

U.S. Cl. 376—235 **6 Claims**



1. In a nuclear reactor comprising a vessel, a core within said vessel and at least one pressure-tight enclosure integral with said vessel, said reactor also comprising at least one command bar pivotedly supported within said enclosure, drive means connected to said command bar, and a control rod connected to said drive means, a motor for rotating said command bar in a first direction for moving said control rod out of said reactor core, said motor also rotating said command bar in a second direction for moving the control rod in the reactor core, an anti-ejection device for said control rod, comprising locking means for rotationally locking said command bar with respect to said enclosure in said first direction, said locking means being supported with respect to said enclosure through calibrated elastic means, said elastic means being operable to flex when a torque exceeding a predetermined value is exerted by said motor on the command bar in said first direction.

4,576,781

TEMPERATURE THRESHOLD DETECTORS

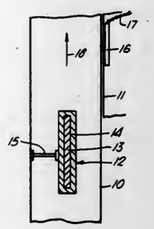
Edward Duncombe, Altrincham, and John P. Winstanley, Lymm, both of England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Jul. 2, 1982, Ser. No. 394,879

Claims priority, application United Kingdom, Jul. 28, 1981, 8123184

Int. Cl.⁴ G21C *17/00*; G01K *7/38*

U.S. Cl. 376—247 **10 Claims**



6. A temperature threshold detector system comprising a threshold temperature sensor for transmitting a wireless output indicative of the existence of a temperature threshold condition, an independently locatable and physically separate detector displaced therefrom and unconnected therewith for detecting the wireless output of said sensor, and means for connecting said detector with a monitoring station, said sensor comprising a permanent magnet having a first Curie point inside a ferromagnetic shield having a second Curie point lower than the first Curie point, said detector being responsive to a change in the field of the magnet as arises when the Curie point of the shield is exceeded.

4,576,782

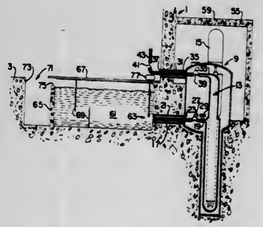
NUCLEAR REACTOR LOSS OF COOLANT PROTECTION SYSTEM

Robert A. Loose, Murrysville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 19, 1983, Ser. No. 543,599

Int. Cl.⁴ G21C *13/10*

U.S. Cl. 376—282 **15 Claims**



1. In a pressurized water reactor system of a nuclear power plant having a water storage tank for providing emergency coolant water and means provided external to the containment vessel, for use in the event of a primary loss of coolant situation, to circulate emergency water as a coolant by withdrawal through a wall of the containment vessel and return the same back through the wall of the containment vessel and passing the water through a heat exchange means prior to use as a coolant for the reactor core, the improvement comprising:

an enclosure, the interior of which is sealed to the atmosphere, positioned adjacent to and exterior of a wall of the containment vessel;

an inlet conduit, enclosed within a sealed outer casing, communicating between the interior of the containment vessel and the interior of the enclosure;

an exhaust conduit, enclosed within a sealed outer casing, communicating between the interior of the enclosure and the interior of the containment vessel;

a rupture disc on said inlet conduit within said enclosure, such that failure of the exhaust conduit within the enclosure will produce an increase of the pressure within the enclosure and above a predetermined pressure will fracture said rupture disc, and will circulate said coolant within said enclosure; and

means within the interior of said enclosure for pumping coolant from the interior of the containment vessel through said inlet conduit, and back to the interior of the containment vessel through the exhaust conduit; whereby if either of said conduits should fail, coolant will be collected within the enclosure and sealed to the atmosphere.

4,576,783

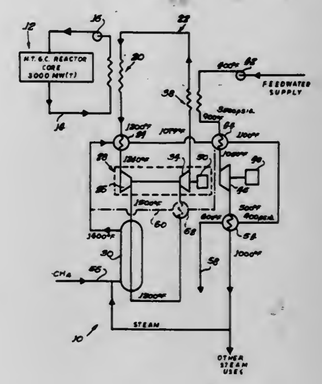
HEAT PUMP AUGMENTATION OF NUCLEAR PROCESS HEAT

Stanley L. Koutz, San Diego, Calif., assignor to GA Technologies Inc., San Diego, Calif.

Continuation of Ser. No. 224,471, Jan. 12, 1981, abandoned. This application Oct. 9, 1984, Ser. No. 659,011

Int. Cl.⁴ G21G *1/02*

U.S. Cl. 376—323 **6 Claims**



1. A system for increasing the temperature of a working fluid heated by a nuclear reactor, said system comprising, in combination,

a high temperature gas cooled nuclear reactor having a core and a primary cooling loop through which a coolant is circulated so as to undergo an increase in temperature,

a closed secondary loop having a working fluid therein,

said cooling and secondary loops having cooperative association with an intermediate heat exchanger adapted to effect transfer of heat from said coolant to said working fluid as said working fluid passes through said intermediate heat exchanger,

a heat pump connected in said secondary loop and including a turbine and a compressor through which said working fluid passes so that said working fluid undergoes an increase in temperature as it passes through said compressor,

a process loop including a process chamber adapted to receive a process fluid therein, said process chamber being connected in circuit with said secondary loop so as to receive said working fluid from said compressor and transfer heat from said working fluid to said process fluid,

a heat exchanger for heating the working fluid connected to the process loop for receiving heat therefrom and for transferring heat to the secondary loop prior to said working fluid passing through said compressor,

said secondary loop being operative to pass said working fluid from said process chamber to said turbine so as to effect driving relation thereof,

a steam generator operatively associated with said secondary loop so as to receive said working fluid from said turbine.

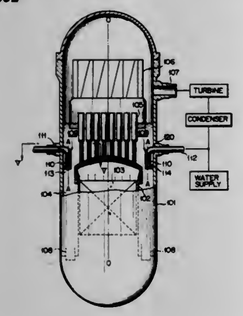
and a steam loop having a feedwater supply and connected in circuit with said steam generator so that feed-water passing through said steam loop is heated by said steam generator, said steam loop being connected in circuit with said process chamber and adapted to pass steam to said process chamber with said process fluid.

4,576,784

WATER SPARGER FOR A BOILING WATER REACTOR

Masahiro Kobayashi, Ebina, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Aug. 26, 1982, Ser. No. 412,030
Claims priority, application Japan, Aug. 31, 1981, 56-136369
Int. Cl.⁴ G21C *15/00*
U.S. Cl. 376—352 **6 Claims**



1. In a boiling water reactor having a reactor pressure vessel, a shroud disposed in said reactor pressure vessel, a reactor core housed in said shroud, a plurality of reactor water circulators arranged substantially equidistantly on the circumference along the inner surface of said reactor pressure vessel at a level below said reactor core for directing water along a flow path in said reactor pressure vessel from said reactor water circulators through said reactor core to a portion of said reactor pressure vessel above said reactor core and then downwards between said shroud and the inner surface of said reactor pressure vessel to said reactor water circulators, a water sparger for injecting water into a portion of said flow path between said shroud and the inner surface of said reactor pressure vessel, said water sparger comprising:

a plurality of vertically elongated water supplying headers, said plurality of headers being equal in number to said plurality of reactor water circulators, said water supplying headers surrounding said reactor core above said reactor water circulators, each of said water supplying headers being arranged along a vertical plane substantially equidistant from two adjacent said reactor water circulators, a circumferential extent of said headers being limited such that said headers do not extend to vertical radial planes intersecting said adjacent circulators, each of said water supplying headers having thereon one or more vertical rows of apertures directed radially inwardly to said reactor core, said vertical rows being fewer in number than the number of said apertures in each vertical row.

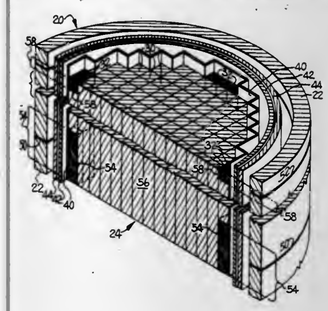
4,576,785

REDUCTION IN RATE OF RADIATION EXPOSURE TO EXCORE NUCLEAR REACTOR COMPONENTS

Talmage B. Clements, and Thomas M. Dresser, both of Raleigh, N.C., assignors to Carolina Power and Light Company, Raleigh, N.C.

Filed Jun. 14, 1983, Ser. No. 504,248
Int. Cl.⁴ G21C *3/32*
U.S. Cl. 376—435 **34 Claims**

1. A nuclear reactor including a reactor core having a plurality of individually replaceable fuel assemblies, said reactor further including an excore component such as a weld, instrumentation, or the like, that defines a localized area requiring a low rate of radiation exposure, the location and geometry of said localized area serving to define certain peripheral portions of said core that are in close proximity to the localized area and provide the greatest potential radiation source to the localized area, said core peripheral portions being formed by a partial volume between about 4% to about 50% of the total volume of each of one or more selected fuel assemblies, the partial volume of each selected fuel assembly defining a shield zone including material of lower fissile concentration than that which is typical for the entire core, and a substantial part of the remaining volume of each selected fuel assembly defining a



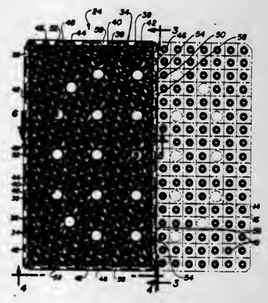
fuel zone including material of higher fissile concentration than in the shield zone, whereby each selected fuel assembly serves as a composite assembly that reduces the rate of radiation exposure to said localized area while also contributing to production of power by the core by providing fissile material for fission reactions.

4,576,786

PARTIAL GRID FOR A NUCLEAR REACTOR FUEL ASSEMBLY

Edmund E. DeMario, Pittsburgh, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 21, 1983, Ser. No. 564,049
Int. Cl.⁴ G21C *3/34*
U.S. Cl. 376—439 **7 Claims**



1. A fuel assembly for a nuclear reactor comprising:

(a) a plurality of elongated fuel rods disposed in a generally parallel upstanding array;

(b) a number of longitudinally extending control rod guide thimbles strategically arranged within the fuel rod array;

(c) a plurality of transversely extending fuel rod support grids axially spaced along and mounted to said guide thimbles, said support grids being of an egg-crate configuration having openings therein through which all of said fuel rods and guide thimbles extend for imparting lateral support thereto such that said grids encompass all of said fuel rods and guide thimbles;

(d) a partial grid structure transversely disposed between an adjacent pair of said fuel rod support grids and mounted on selected ones of said guide thimbles, said partial grid structure being of an egg-crate configuration having openings therein through which extend respective ones of a group of said fuel rods defined by a predetermined number of said plurality of fuel rods being less than the total number of said fuel rods, said partial grid structure encompassing less than all of said fuel rods; and

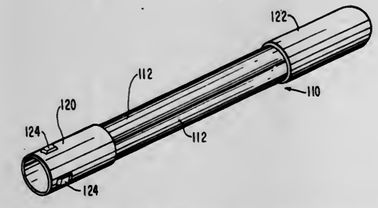
(e) means disposed adjacent opposite ends of said fuel rods and guide thimbles for separately supporting the respective opposite ends of said guide thimbles in thereby providing an integral fuel assembly.

4,576,787

BURNABLE ABSORBER ASSEMBLY

Brian H. Alsop, Penn Township, Westmoreland County; Frank D. Popa, and William E. Edwards, both of Monroeville, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 21, 1983, Ser. No. 564,048
Int. Cl.⁴ G21C *3/32*
U.S. Cl. 376—447 **22 Claims**



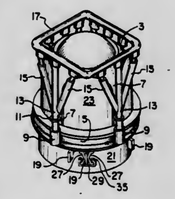
1. A burnable absorber assembly for insertion within a tube of a nuclear reactor core having a fluid flowing therein, said assembly comprising a plurality of elements each containing burnable absorber material, each of said elements having an opening extending therethrough, said elements arranged adjacent one another in a cluster so that the openings within said elements form a plurality of longitudinal extending channels through said assembly, said cluster of said elements insertable as a unit within said tube of said reactor core whereby a fluid flowing through said tube passes through each of said channels formed by said elements.

4,576,788

STRADDLE-TYPE SUPPORT STRUCTURE FOR NUCLEAR POWER PLANT PRESSURIZER VALVES

Ronald M. Blaushild, Wilkinsburg, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 9, 1984, Ser. No. 569,074
Int. Cl.⁴ G21C *13/00*
U.S. Cl. 376—461 **8 Claims**



1. A support structure for supporting a pressurizer safety and relief valve system of a pressurized water reactor, said system being mounted on columnar supports above a pressurizer vessel, the dome of said pressurizer vessel having a top portion of a smaller diameter than the bottom portion thereof, comprising:

an upper ring section adapted to rest on the top portion of said pressurizer vessel dome;

a lower ring section adapted to encircle the pressurizer vessel side wall at a location adjacent the bottom portion of said pressurizer vessel dome;

a plurality of arcuate connecting sections extending between said upper and lower ring sections, and conforming to the shape of said pressurizer vessel dome;

a plurality of sleeves attached to said lower ring adjacent said arcuate connecting section; and

means for supporting the columnar supports of said pressurizer safety and relief valve system within said sleeves.

4,576,789

GRAIN-REFINED GOLD-FREE DENTAL ALLOYS FOR PORCELAIN-FUSED-TO-METAL RESTORATIONS

Arun Prasad, Cheshire, Conn., assignor to Jeneric Industries, Inc., Wallingford, Conn.

Continuation-in-part of Ser. No. 570,628, Jan. 13, 1984, abandoned, which is a continuation-in-part of Ser. No. 554,721, Nov. 17, 1983, abandoned, which is a continuation of Ser. No. 458,993, Jan. 18, 1983, abandoned, which is a continuation-in-part of Ser. No. 400,481, Jul. 21, 1982, Pat. No. 4,419,325. This application Dec. 26, 1984, Ser. No. 685,914
Int. Cl.⁴ C22C *5/04*
U.S. Cl. 420—464 **16 Claims**



1. A grain-refined, palladium-based dental alloy for porcelain-fused-to-metal restorations consisting essentially of, on a weight basis, about 70–85% palladium, 7–15% copper, 2–8% gallium, 2–15% indium, 0.2–3.0% ruthenium or rhenium, and an effective amount of boron up to about 0.15% and an effective amount of zinc up to about 0.5% for the purpose of essentially eliminating the formation of bubbles in the porcelain during the porcelain firing process, the total of the constituents being 100%.

4,576,790

LOW GOLD DENTAL ALLOYS

Josef Rothaut, Fort Lee, N.J.; Jürgen Hausselt, Langenselbold, Fed. Rep. of Germany; Rudi Steinke, and Angela Klaus, both of Hanau, Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Jan. 28, 1985, Ser. No. 695,814
Claims priority, application Fed. Rep. of Germany, Feb. 24, 1984, 3406711
Int. Cl.⁴ C22C *5/04*
U.S. Cl. 420—464 **8 Claims**

1. A low gold dental alloy, especially suitable for firing on dental porcelain consisting of 20 to 35 wt.% gold, 45 to 65 wt.% palladium and

(a) 6 to 15 wt.% copper and 0 to 10 wt.% nickel,

(b) 0 to 12 wt.% indium, 0 to 12 wt.% tin, and 0 to 4 wt.% gallium, with the proviso that the sum of the content of indium and tin added to two and one-half times the gallium content has a value between 5 and 15 wt.%,

(c) 0.1 to 1 wt.% of at least one of iridium, rhenium, and ruthenium, and

(d) 0 to 1 wt.% aluminum, 0 to 1 wt.% tantalum, 0 to 1 wt.% titanium, and 0 to 5 wt.% silver.

4,576,791

ALUMINIUM-STRONTIUM-TITANIUM-BORON MASTER ALLOY

Stuart R. Thistlethwaite, Widnes, England, assignor to Anglo Blackwells Limited, England

Filed Feb. 27, 1984, Ser. No. 583,940
Int. Cl.⁴ C22C *21/00*
U.S. Cl. 420—552 **7 Claims**



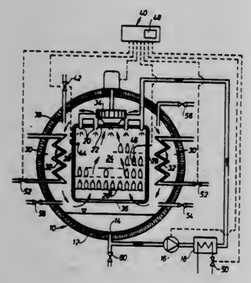
1. A master alloy for modifying the eutectic phase of an aluminium-silicon eutectic or hypo-eutectic casting alloy, or for treating an Al-Si-Mg extrusion alloy and consisting essentially of, in weight percent: 4–20% strontium, 0.2–5% titanium, boron in an amount up to 1%, the balance being aluminium and impurities.

4,576,792

METHOD FOR HEAT TREATMENT OF ARTICLES AND ARRANGEMENT FOR CARRYING OUT THE METHOD

Karl I. M. Martensson, Slöinge, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden

Filed Sep. 17, 1984, Ser. No. 650,847
Claims priority, application Sweden, Sep. 23, 1983, 8305139
Int. Cl.⁴ A61L *2/08*
U.S. Cl. 422—27 **7 Claims**



1. Method for heat treatment of articles (26) which are placed in a chamber (24) in a pressure vessel (10), heat being supplied to and heat being removed from, respectively, the articles (26) via water circulated in a closed circulation circuit (14,16,18, 20) and sprayed over the articles, which water during a heating period is heated by steam being introduced into the vessel and during a cooling period cooled by a first heat exchanger (18) in the circulation circuit, characterized in that simultaneously as the water is sprayed over the articles and flows downwards through them gaseous medium in the vessel is forced to flow upwards through the articles.

4. Arrangement for heat treatment of articles (26) which are placed in a chamber (24) in a pressure vessel for carrying out the method according to claim 1 and comprising a closed circulation circuit for water including a bottom outlet (14) in the pressure vessel, a pump (16), a first heat exchanger (18) and nozzles (20) which spray water over the articles in the chamber, and means (42) for supplying steam to the vessel, characterized in that an impeller (34) is arranged in the vessel for generating a forced circulating flow of gaseous medium through the articles (26) in countercurrent to the water flowing downwards through the articles (26) and that means (40) are arranged for driving the impeller (34) and the pump (16) simultaneously.

4,576,793

ANALYTICAL ELEMENT

Mikio Koyama; Kenichiro Okaniwa, and Masakuni Saruhashi, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Aug. 29, 1983, Ser. No. 527,681
Claims priority, application Japan, Sep. 7, 1982, 57-156084
Int. Cl.⁴ G01N *21/78*
U.S. Cl. 422—56 **17 Claims**

1. An analytical element comprising a support layer having an upper side and a lower side, a reagent layer which is positioned on one of said sides of said support and contains a reagent reactive with a component in a fluid sample, and a porous spreading layer which is positioned on the reagent layer on the opposite side to said support for permitting the component in said fluid sample to permeate into said reagent layer; wherein at least one of said layers contains at least 5% by weight of a copolymer formed by the polymerization of (i) at least 45% by weight of a copolymerizable ethylenically unsaturated acid with (ii) a copolymerizable ethylenically unsaturated monomer other than said copolymerizable ethylenically unsaturated acid.

4,576,794

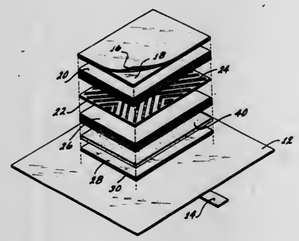
Patent Not Issued For This Number

4,576,795

DISPOSABLE STERILIZER VACUUM TEST PACK

Loran H. Bruso, Ontario, Calif., assignor to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 536,798, Sep. 28, 1983. This application Apr. 30, 1984, Ser. No. 605,084
Int. Cl.⁴ G01N *21/78*
U.S. Cl. 422—58 **8 Claims**



1. A method for constructing a disposable sterilizer vacuum test pack comprising the steps of:
- a. stacking a plurality of selectively porous layers to create a bundle having a top surface and a bottom surface and an edge therebetween;
- b. interposing a sheet with a steam sensitive indicator ink printed thereon between layers of said bundle;
- c. positioning a foam layer against said top surface of said bundle to substantially align its edge with the edge of said bundle to permit the circulation of gas over said top surface;
- d. positioning a first nonporous gas impermeable layer against said foam layer opposite said bundle to direct the passage of air through the edge of said foam layer;
- e. positioning a second nonporous gas impermeable layer against said bottom surface of said bundle to block the passage of air therethrough and aligning said second layer to sufficiently expose the edges of said bundle and said foam layer for evacuation of air therefrom in a preselected partial vacuum and to permit subsequent replacement thereof with steam for exposure of the indicator ink on said sheet to indicate the efficiency of the sterilizer; and
- f. folding a porous overwrap around the combination of said bundle, said indicator sheet, said foam layer and said first and second nonporous layers to maintain the integrity thereof.

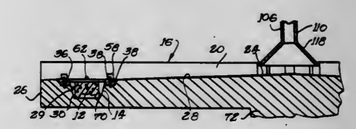
2. A disposable pack for testing the efficiency of a steam sterilizer apparatus to create a vacuum which comprises:
- a selectively porous bundle constructed of a plurality of selectively porous layers wherein said bundle has a top surface and a bottom surface with an edge therebetween;
- a sheet with a steam sensitive indicator ink printed thereon interposed between layers of said bundle;
- a first foam layer positioned against said top surface of said bundle having an edge substantially aligned with the edge of said bundle to permit circulation of gas over said top surface;
- a first nonporous gas impermeable layer positioned against said foam layer opposite said bundle to direct the passage of air through the edge of said foam layer; and
- a second nonporous gas impermeable layer positioned against said bottom surface of said handle to block the passage of air therethrough and aligned to leave sufficient exposure at the edges of said bundle and said foam layer for evacuation of air therefrom in a preselected partial vacuum and to permit subsequent replacement thereof with steam for exposure of the indicator ink on said sheet to indicate the efficiency of the sterilizer.

4,576,796

CENTRIFUGAL TISSUE PROCESSOR

James B. McCormick, Chicago, Ill., assignor to Pelam, Inc., Chicago, Ill.

Filed Jan. 18, 1984, Ser. No. 572,168
Int. Cl.⁴ G01N *1/06, 1/28, 33/48*
U.S. Cl. 422—99 **14 Claims**



1. Apparatus for processing and embedding tissue samples comprising
- rotor means having a rotational axis and a plurality of well means outward of its rotational axis for holding tissue samples,
- means to successively supply processing liquids and liquid embedding material to said well means,
- means to intermittently rotate said rotor means at a sufficient speed to slough liquid from said well means, and
- well cover means which retain said tissue samples in said well means while accessing processing liquids and embedding liquids to said well means, said well cover means comprising a peripheral frame defining a fluid passage opening and a porous mesh spanning said opening.

4,576,797

VAPOR SOURCE HOLDING CONTAINER

Akira Nishiwaki; Yasuo Morohoshi; Hitoshi Mitake, all of Hachioji; Hiroyuki Moriguchi, Kofu; Hiroyuki Nomori, Hachioji, and Kunio Ito, Tama, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Japan

Filed Aug. 30, 1983, Ser. No. 527,667
Claims priority, application Japan, Sep. 4, 1982, 57-154236
Int. Cl.⁴ C03B *25/14*
U.S. Cl. 422—102 **15 Claims**



1. A vapor source holding container for the evaporation, by heating, of an evaporative material in said container, said container comprising:
- an opening smaller in size than the surface area of said evaporative material, a first wall portion at the bottom of said container which is in contact with said evaporative material, and
- a second wall portion, connected to said first wall portion and said opening, wherein said second wall portion is not in contact with said evaporative material, wherein the emissivity of at least the external surface of the first wall

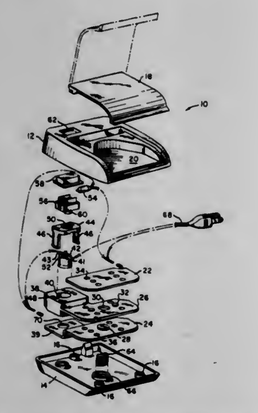
portion of said container in contact with the material is lower than the emissivity of at least the external surface of the second wall portion that is not in contact with the material.

4,576,798

CONTACT LENS DISINFECTING UNIT

Henry B. Hall, Madison; Peter B. Hewes, Middlefield; Benjamin N. Moore, Haddam, and Rosario Sanzaro, Durham, all of Conn., assignors to Safeway Products, Inc., Middletown, Conn.

Filed Jun. 21, 1983, Ser. No. 506,312
Int. Cl.⁴ A61L *2/18*
U.S. Cl. 422—105 **7 Claims**



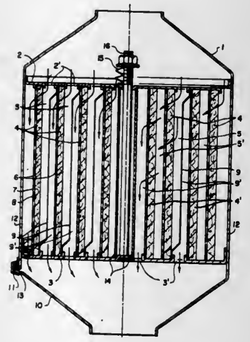
1. A disinfecting unit for contact lenses including:
(a) housing defining a cavity for receiving lens to be disinfected;
(b) heating system means disposed internally of said housing for generating, storing and transferring heat to said cavity, said heating system means including:
(i) heat generating means;
(ii) thermostat means for controlling the delivery of supply power to said heating system;
(iii) an generally planar insulation member having first and second portions, said first portion having an opening for receiving said heat generating means, said second portion being integral with and extending from first portion and being of greater thickness than first portion and in heat conducting relationship with said thermostat means;
(iv) first and second electrically conductive electrode plates disposed on opposite outer surfaces of said insulation member electrically contacting said heat generating means; said first electrode plate being substantially coextensive with said first portion of said insulating member and in heat conductive contact therewith and said housing portion defining said cavity, said second electrode plate being disposed in heat exchange contact on an outer surface of both the first portion and the second portion of said insulation member for transferring heat from heat generating means to said thermostat means; and
(c) circuit means for supplying power to and effectively controlling said heating system, said circuit means including said electrode plates in circuit with said thermostat means and said heat generating means thereby to de-energize said heater generating means when said thermostat means reaches a preset temperature.

4,576,799

FILTERING AND POST-COMBUSTION DEVICE FOR WASTE GASES

Siegfried Wörner, Esslingen; Walter Öttle, Faurndau, and Herbert Klein, Altbach, all of Fed. Rep. of Germany, assignors to J. Eberspächer, Fed. Rep. of Germany

Filed Jul. 28, 1983, Ser. No. 518,033
Claims priority, application Fed. Rep. of Germany, Jul. 29, 1982, 3228325
Int. Cl.⁴ B01J *8/04*
U.S. Cl. 422—176 **9 Claims**



1. A filtering and post-combustion device for cleaning soot from waste gases of an internal combustion engine, comprising a housing having one frusto-conical shaped end with an inlet and an opposite frusto-conical shaped end with an outlet which is axially spaced from said inlet, axially spaced inlet and outlet end plates arranged within said housing having means defining a plurality of respective axially aligned inlet and outlet openings therethrough, a plurality of hollow cylindrical filtering elements of different diameters arranged coaxially and at equal radial distances one within the other and within said housing between said end plates, each filtering element including a central gas permeable, axially extending filter and perforated wall means holding said filter in an arrangement permitting radial flow through said filter, and an axially extending wall extending midway between a first radial side of at least one of said filters to an opposite second radial side of a next adjacent filter and from a first axial end of said one filter to an opposite second axial end of said next adjacent filter, said wall defining an annular inlet chamber on said first radial side thereof which communicates with at least one of said inlet openings and an annular outlet chamber on said second radial side thereof which communicates with at least one of said outlet openings which is not axially aligned with said at least one inlet opening so as to further define a flow path from said inlet opening to said inlet chamber and through said filter to said outlet chamber and to said outlet opening, said filter comprising a wire mesh or ceramic fiber material permeable to gas for filtering soot, said perforated wall means comprising a perforated retaining shell on said first radial side of each filter and a perforated support wall on said second radial side of each filter, said at least one inlet opening being separated from another outlet opening which is axially aligned therewith, by said axially extending wall.

4,576,800

CATALYTIC CONVERTER FOR AN AUTOMOBILE

William B. Retallick, West Chester, Pa., assignor to Camet, Inc., Hiram, Ohio

Filed Sep. 13, 1984, Ser. No. 650,085
Int. Cl.⁴ F01N *3/10*
U.S. Cl. 422—180 **10 Claims**

1. A catalytic converter for an automobile comprising a single strip of metal folded back and forth upon itself, the strip having at least one slot along each line of folding, the slots being aligned with each other across adjacent layers of the strip, each folded slot defining a notch, the notches together defining at least one groove along the periphery of the folded strip, and at least one canister section, the canister section being shaped to coincide with the shape of the folded strip, the canister section having at least one ridge shaped to mate with the groove, the canister section being wrapped around the folded strip so as to maintain the strip in a fixed position.

4,576,801

PESTICIDAL SHEETS OR CONTAINERS

Lawrence J. Parry, Darwin, and Bruce J. Morrison, 8 Tasman Circuit, Wagaman, both of Australia, assignors to Bruce J. Morrison, Australia

PCT No. PCT/AU83/00188, § 371 Date Jul. 13, 1984, § 102(e) Date Jul. 13, 1984, PCT Pub. No. WO84/02447, PCT Pub. Date Jul. 5, 1984
PCT Filed Dec. 20, 1983, Ser. No. 629,475
Claims priority, application Australia, Dec. 20, 1982, PF7337; May 25, 1983, PF9526
Int. Cl.⁴ B05D *5/00*; C09D *5/14*; A01N *25/34*; A61F *13/00*
U.S. Cl. 427—288 **6 Claims**

1. A method of manufacturing an item applicable to a surface or area to proof the item, surface or area against crawling insects, the method including the steps of:
(a) mixing a pesticide with a liquid carrier, said liquid carrier comprising a printer's ink or ink/solvent mixture and said pesticide comprising a wettable-powder or liquid pesticide soluble in a water-or alcohol-based printer's ink or the solvent;
(b) applying the pesticide/carrier solution to the surface or surfaces of said item by printing or silk-screening methods; and
(c) drying the solution to remove the liquid carrier and to leave the pesticide in or on the item to be contacted by the crawling insects.

4,576,802

METHOD OF DISSOLVING IMPURE URANIUM TETRAFLUORIDE

Antoine Floreancig, St Genis Laval, France, assignor to Uranium Pechiney Ugine Kuhlmann, Paris, France

Filed Aug. 3, 1983, Ser. No. 519,922
Int. Cl.⁴ C01G *43/00*
U.S. Cl. 423—20 **12 Claims**

1. In a method of dissolving impure uranium tetrafluoride in a hot state in a nitric acid solution to which an aluminum compound has been added to complex the fluoride ions, the improvement comprising dissolving the tetrafluoride in two stages, the first stage comprising the steps of introducing a quantity of nitric acid that is at most 0.9 times the quantity of nitric acid required to solubilize the uranium tetrafluoride, introducing a quantity of the aluminum compound that is at most 0.95 times the stoichiometric quantity corresponding to the formation of AlF_6^{3-}, and agitating the resultant suspension during the first stage for a period of at least 0.5 hour, and the second stage comprising the steps of introducing a quantity of nitric acid such that the total quantity of nitric acid added during both of said stages results in a free acidity at the end of the second stage of at least 0.5 mole of nitric acid per liter of solution, adding a quantity of aluminum compound such that the total quantity of aluminum compound added during both of said stages is at least equal to the stiochiometric quantity corresponding to the formation of AlF_6^{3-}, and agitating the suspension during the second stage.

4,576,803

METHOD OF PRODUCING CALCIUM SULFATE DIHYDRATE IN CONNECTION WITH THE DESULFURIZATION OF FLUE GASES

Karl-Rudolf Hegemann, Essen; Helmut Weissert, Bochum, and Jürgen Laimkühler, Essen, all of Fed. Rep. of Germany, assignors to Gottfried Bischoff Bau kompl. Gasreinigungs- und Wasserrückkuhlanlagen GmbH & Co. Kommanditgesellschaft, Essen, Fed. Rep. of Germany

Filed Dec. 9, 1983, Ser. No. 559,916
Claims priority, application Fed. Rep. of Germany, Dec. 10, 1982, 3245754
Int. Cl.⁴ C01B *17/00*
U.S. Cl. 423—242 **3 Claims**

1. A method of operating a scrubbing column for the scrubbing and desulfurizing of flue gas from a fossil-fired power plant, comprising the steps of:
(a) preparing a scrubbing liquid by introducing lime and water into the sump of a scrubbing column containing a suspension of calcium sulfate dihydrate in the scrubbing water;
(b) scrubbing and desulfurizing said flue gas by passing it through a portion of said column above said sump in counterflow to scrubbing liquid which collects in this sump while introducing oxygen into the liquid in the sump;
(c) continuously recirculating the scrubbing liquid from this sump to the scrubbing of flue gas above said sump;
(d) detecting the solids concentration of said suspension;
(e) commencing at intervals a withdrawal of said suspension from said sump upon the detection of a solids concentration of said suspension at a maximum value in the range of 40 to 130 g/l;
(f) terminating the withdrawal upon the the solids concentration in said suspension falling to a minimum value in said range;
(g) adding make-up water to the suspension of said sump; and
(h) processing the withdrawn suspension to recover calcium sulfate dihydrate therefrom.

4,576,804

STABILIZED SOLUTIONS OF HYDROXYLAMINE OR ITS SALTS

Otto-Alfred Grosskinsky; Elmar Frommer; Josef Ritz, all of Ludwigshafen; Erwin Thomas, Freinsheim, and Franz-Josef Weiss, Neuhofen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 3, 1984, Ser. No. 677,306
Claims priority, application Fed. Rep. of Germany, Dec. 2, 1983, 3343600
Int. Cl.⁴ C01B *21/14*
U.S. Cl. 423—265 **6 Claims**

1. A stabilized solution of hydroxylamine or its salts in water or an alcohol, which contains a hydroxyanthraquinone.

4,576,805

INCREASING LATTICE METAL CONTENT OF POROUS INORGANIC CRYSTALLINE COMPOSITIONS

Clarence D. Chang, Princeton, and Joseph N. Miale, Lawrenceville, both of N.J., assignors to Mobile Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 412,362, Aug. 27, 1982, abandoned, which is a continuation-in-part of Ser. No. 333,369, Dec. 22, 1981, abandoned. This application May 10, 1983, Ser. No. 493,192

The portion of the term of this patent subsequent to Jan. 24, 2001, has been disclaimed.

Int. Cl.[4] C01B *33/20, 33/28, 35/10;* **B01J** *29/04*

U.S. Cl. 423—277 **22 Claims**

1. A method for increasing the total amount of lattice metal in the framework of a porous inorganic crystalline composition comprising 98 mole percent or more SiO_2 and 2 mole percent or less oxides of at least one initial lattice metal selected from those of Groups IIIB, IVB, VB, VIB, VIIB, VIII, IIIA, IVA and VA of the Periodic Table of the Elements and having an anhydrous anionic framework molar composition expressed by the formula

$$(1-x)SiO_2:(x)MO_{n/2}$$

wherein x is less than or equal to 0.02, M is said initial lattice metal and n is the valance of M, which comprises

contacting said crystalline composition at a temperature of from about 100° C. to about 850° C. with a volatile compound comprising at least one metal to be coordinated in the framework of said crystalline composition for a time sufficient to increase the total amount of lattice metal in the framework of said crystalline composition wherein said total amount is greater than the amount of said initial lattice metal prior to said contacting, said volatile compound comprising said metal having a radius ratio of less than about 0.6 and a size and shape which permits said volatile compound to enter the pores of said crystalline composition at the contacting temperature,

converting said volatile compound contacted inorganic crystalline composition to the hydrogen or hydronium form,

and recovering a porous inorganic crystalline-composition of enhanced cation exchange capacity.

4,576,806

REMOVAL OF SALT FROM POLYPHOSPHAZENE

Matthew K. Juneau, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Mar. 29, 1985, Ser. No. 718,004

Int. Cl.[4] C01B *25/10*

U.S. Cl. 423—300 **28 Claims**

1. A process for making a low-salt polyphosphazene said process comprising

(A) reacting a solution of a polyphosphonitrilic halide with a substituting agent selected from alkali metal alkoxides, alkali metal aryloxides or both alkali metal alkoxides and aryloxides to form a solution of alkoxy-substituted, aryloxy-substituted or both alkoxy and aryloxy-substituted polyphosphazene containing alkali metal halide contaminant,

(B) neutralizing residual alkali metal alkoxide and/or aryloxide,

(C) adding water and a lower water-soluble alcohol to the substituted polyphosphazene solution to dissolve said alkali metal halide,

(D) separating an aqueous phase containing said alkali metal halide and a non-aqueous organic phase containing said low-salt polyphosphazene, and

(E) recovering said low-salt polyphosphazene from said organic phase.

4,576,807

PRODUCTION OF ZEOLITE Y

Cecil P. Loechelt, II, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Aug. 6, 1984, Ser. No. 638,246

Int. Cl.[4] C01B *33/28*

U.S. Cl. 423—329 **10 Claims**

1. A method of producing crystalline synthetic faujasite, comprising the steps of separately preparing a sodium silicate solution and a sodium aluminate solution, providing an activated sodium silicate system by mixing said sodium silicate solution at ambient temperature with finely ground dry seed synthetic faujasite of the zeolite Y type product desired in an amount of about four percent of the final product and then cooking at about 100° C. for about four hours or more, cooling the activated sodium silicate system to about ambient temperature, mixing the sodium aluminate solution with the activated sodium silicate system at ambient temperature to provide a reaction mixture having a molar ratio of $(5.0–8.5)Na_2O.Al_2O_3.(15.0–25.0)SiO_2.(100–180)H_2O$, heating the reaction mixture to about 100° C. for about twelve hours or more with agitation until the desired crystalline synthetic faujasite is formed, and recovering said faujasite.

4,576,808

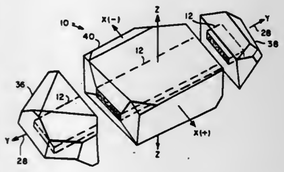
QUARTZ GROWTH ON X-SEEDS

Alton F. Armington, Lexington, and John J. Larkin, Methuen, both of Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 28, 1983, Ser. No. 566,130

Int. Cl.[4] C30B *29/18*

U.S. Cl. 423—335 **2 Claims**



1. A method for producing a substantially dislocation-free crystal seed material for use in the growing synthetic quartz, single crystal boules which comprises the steps of:

(A) providing a synthetic quartz, single crystal boule with its length directed along a crystallographic Y-axis orientation, its width directed along a crystallographic Y-axis orientation, its thickness directed along a crystallographic Z-axis orientation and wherein said Z-axis defines a Z region of crystal growth and said X-axis defines an X-minus and an X-plus region of crystal growth;

(B) slicing and removing the X-plus region of growth from said crystal boule;

(C) slicing a plurality of seed crystals from said X-plus region of growth such that each of said seed crystals displays a substantially rectangular prism configureation having (1) two oppositely disposed and parallel Z face surfaces running perpendicular to the Z axis orientation and along the longitudinal direction of the rectangular prism, (2) a first edge surface running perpendicular to the X-plus axis orientation and along the longitudinal thickness of the rectangular prism, (3) a second edge surface oppositely disposed and parallel to said first edge surface running perpendicular to the X-minus axis orientation, and (4) third and fourth oppositely disposed and parallel edge surfaces defining the longitudinal dimension of said rectangular prism and running in a direction perpendicular to said crystallographic Y-axis orientation.

4,576,809

PREPARATION OF ALKALI OR ALKALINE EARTH METAL COBALTTETRACARBONYLATES AND CATALYSTS OF CARBONYLATION REACTIONS THEREWITH

Jean Gauthier-Lafaye, Lyons, and Robert Perron, Charly, both of France, assignors to Rhone-Poulenc Specialities Chimiques, Courbevoie, France

Filed Nov. 7, 1983, Ser. No. 549,553

Claims priority, application France, Nov. 5, 1982, 82 18729; Sep. 13, 1983, 83 14732

Int. Cl.[4] C10G *1/04;* **B01J** *21/18, 27/20;* **C07C** *51/10*

U.S. Cl. 423—418 **13 Claims**

1. A process for the preparation of an alkali or alkaline earth metal cobalttetracarbonylate, comprising reacting a cobalt (II) compound with carbon monoxide in the presence of (i) an inorganic base which comprises an alkali or alkaline earth metal hydroxide or an alkali or alkaline earth metal bicarbonate and (ii) at least one sulfur compound comprising a sulfide, a polysulfide, a thiosulfate, a dithionate, a polythionate, or a mercaptan, and in a reaction medium consisting essentially of an alcohol, an ether, a mixture of water and an alcohol or a mixture of water and an ether.

10. The process as defined by claim 1, wherein the amount of sulfur compound, expressed in mole per gram-atom of cobalt, ranges from 0.01 to 1 mole.

12. The process as defined by claim 10, wherein the reaction temperature ranges from 10° to 150° C.

4,576,810

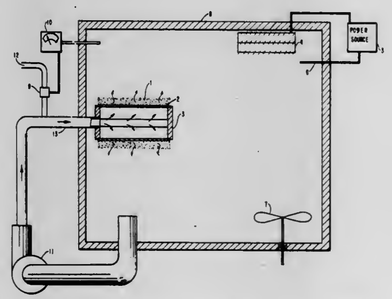
CARBON FIBER PRODUCTION

Hugh E. Redick, Simpsonville, S.C., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 5, 1983, Ser. No. 520,526

Int. Cl.[4] D01F *9/12*

U.S. Cl. 423—447.1 **12 Claims**



1. A pitch fiber package suitable for direct oxiadation with a gaseous mixture containing oxygen and an inert gas which comprises an open ended, porous, non-expanding or collapsible spool with a densely packed mass of as-spun pitch carbon fibers wound thereon so as to leave open areas between fiber bundles.

4,576,811

PROCESS FOR ADJUSTING THE FIBER STRUCTURE OF MESOPHASE PITCH FIBERS

Dennis M. Riggs, and Hugh E. Redick, both of Simpsonville, S.C., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

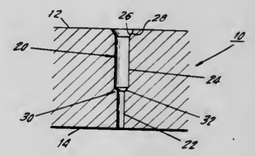
Continuation of Ser. No. 548,300, Nov. 3, 1983, abandoned. This application Jul. 16, 1985, Ser. No. 755,521

Int. Cl.[4] D01D *5/00*

U.S. Cl. 423—447.2 **4 Claims**

1. A process for producing carbon fiber from a mesophase pitch feed material which comprises passing said pitch feed material into a spinnerette body having an entrance side for the pitch feed material and having an exit side for the carbon fiber;

the spinnerette body having a spinnerette channel passing through it from the entrance side to the exit side; the channel comprising a capillary bore leading from within the body and opening out of the exit side thereof and having a capillary length to diameter ratio of from about 2:1 to 8:1; a larger diameter bore leading from the entrance side of the body toward the capillary bore and wherein the ratio of the diameter of the larger diameter bore to the



diameter of the capillary bore is in the range between approximately 2:1 to 15:1; and

a capillary bore entrance leading from the larger diameter bore into the capillary bore; the entrance being defined by a wall which narrows from the larger diameter bore to the capillary bore; the entrance wall having an entrance angle of from 120 to 170 degrees, which is measured diametrically across the entrance wall in a plane including a diameter of the entrance wall and the apex thereof, which is flat enough for giving the carbon fiber formed through the channel a greater proportion of tangential crossection of fibers.

4,576,812

CHLORINATION OF COPPER, LEAD, ZINC, IRON, SILVER AND GOLD

Hardwin E. A. von Hahn, 8464 Adera St., Vancouver, British Columbia, Canada (V6P 5E7)

Filed Jun. 12, 1984, Ser. No. 619,874

Claims priority, application Canada, Jun. 17, 1983, 430668

Int. Cl.[4] C01G *21/16, 9/04, 3/04, 5/00*

U.S. Cl. 423—491 **8 Claims**

1. A process for making the choloride of a metal selected from the group consisting of copper, iron, lead, zinc, silver and gold from the sulfide of the selected metal in the absence of air which comprises:

(a) forming an intimate mixture of a solid finely divided sulfide of the selected metal with a solid chlorine source selected from the group consisting of ferric chloride, cupric chloride and mixture thereof in any proportions;

(b) heating said mixture to a temperature, below the melting points of said sulfide and said chlorine source, at which a rapid reaction takes place converting said metal sulfide to a metal chloride and elemental sulfur in the state of a solid aggregate mixture;

(c) recovering said metal chloride from said solid aggregate mixture.

4,576,813

HEAT RECOVERY FROM CONCENTRATED SULFURIC ACID

Donald R. McAlister, Ballwin, Mo., and Steven A. Ziebold, Waterloo, Ill., assignors to Monsanto Company, St. Louis, Mo.

Filed Jul. 5, 1983, Ser. No. 510,527

Int. Cl.[4] C01B *17/98, 17/74, 17/48;* **C22C** *38/40*

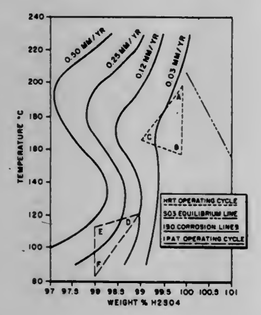
U.S. Cl. 423—522 **49 Claims**

1. In a process for the manufacture of sulfuric acid comprising the catalytic oxidation of sulfur dioxide to sulfur trioxide,

absorption of the sulfur trioxide in sulfuric acid, and cooling the sulfuric acid in a heat exchanger by transfer of heat to another fluid, the improvement which comprises:

contacting a gas comprising sulfur trioxide with sulfuric acid having a concentration of between 98% and 101%, thereby absorbing sulfur trioxide in the sulfuric acid and generating the heat of absorption, the absorption being carried out in a heat recovery tower to which said sulfuric acid is delivered at a concentration of at least 98% and a temperature of at least 120° C., and from which said sulfuric acid is discharged at a concentration of at least 99% and a temperature greater than 120° C.; and

removing the heat of absorption from said sulfuric acid in useful form through transfer of heat to another fluid in said heat exchanger and thereby heating said another fluid to a temperature greater than 120° C., said heat exchanger



comprising means for transfer of heat from said sulfuric acid to another fluid, said means comprising an alloy selected from the group consisting of ferrous alloys containing chromium, iron-nickel alloys containing chromium and nickel base alloys containing chromium, said alloy having a ferritic, austenitic or austenitic-ferritic duplex structure, the composition of the said alloy further satisfying the following relationship:

$$0.35(Fe+Mn)+0.70(Cr)+0.30(Ni)-0.12(Mo)>39$$

where:

Fe=the weight percent of iron in the alloy,
Mn=the weight percent of manganese in the alloy,
Cr=the weight percent of chromium in the alloy,
Ni=the weight percent of nickel in the alloy, and
Mo=the weight percent of molybdenum in the alloy.

4,576,814

CATALYST AND PROCESS FOR OXIDIZING HYDROGEN SULFIDE

Robert H. Hass, Fullerton, and John W. Ward, Yorba Linda, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 364,416, Apr. 1, 1982, Pat. No. 4,444,742, which is a continuation-in-part of Ser. No. 191,864, Sep. 29, 1980, abandoned, which is a continuation-in-part of Ser. No. 27,033, Apr. 4, 1979, Pat. No. 4,314,983. This application Dec. 28, 1983, Ser. No. 566,296

The portion of the term of this patent subsequent to Apr. 24, 2001, has been disclaimed.

Int. Cl.⁴ C01B *17/02, 17/16, 17/48*

U.S. Cl. 423—573 G **49 Claims**

1. A process for oxidizing hydrogen sulfide comprising contacting hydrogen sulfide and an oxidant gas comprising a component selected from the group consisting of sulfur dioxide and oxygen with a catalyst comprising a vanadium component in combination with a component of bismuth, tin, or antimony on a support containing a crystalline material selected from the group consisting of a crystalline silica molecular sieve or a crystalline zeolite, said silica or zeolite having a water sorption capacity of no more than 0.05 gram of water per anhydrous gram of crystalline material when the ratio of the water vapor partial pressure at 25° C. to the water saturation pressure at 25° C. is 0.8, under conditions causing said hydrogen sulfide to react with said component to produce elemental sulfur.

4,576,815

PROCESS FOR THE EXTRACTION OF METAL VALUES AND NOVEL METAL EXTRACTANTS

Frank Robinson, Gt. Manchester, England, assignor to Imperial Chemical Industries Limited, London, England

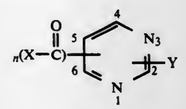
Filed Oct. 12, 1983, Ser. No. 541,120

Claims priority, application United Kingdom, Jul. 7, 1983, 8318412

Int. Cl.⁴ B01D *11/00*

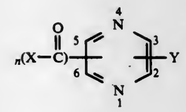
U.S. Cl. 423—658.5 **8 Claims**

1. A process for extracting metal values from aqueous solutions of metal salts containing halides or pseudo halide anions which comprises contacting the aqueous solution with a solution in a water-immiscible organic solvent of a substituted pyrimidine, pyrazine or pyridazine of formula:



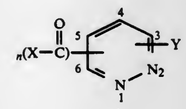
(i)

or



(ii)

or



(iii)

wherein

X is the group $-OR_1$ or $-NR_2R_3$, R_1 being a hydrocarbyl group containing from 1 to 36 carbon atoms and R_2 and R_3 separately being hydrogen or a hydrocarbyl group, and R_2 and R_3 together containing from 1 to 36 carbon atoms;

n is 1, 2 or 3; and

Y represents one or more optionally substituted phenyl groups,

provided that there is present in the molecule a total number of from 5 to 36 alkyl carbon atoms.

4,576,816

DENTIFRICE COMPOSITION

Nobuo Suganuma, Funabashi; Masafumi Anzai, Kawasaki; Nobuyuki Takada, Chigasaki, and Hiromichi Ichikawa, Mitaka, all of Japan, assignors to Lion Corporation, Tokyo, Japan

Continuation of Ser. No. 190,175, Sep. 23, 1980. This application Aug. 13, 1982, Ser. No. 407,901

Claims priority, application Japan, Oct. 27, 1979, 54-139057

The portion of the term of this patent subsequent to Dec. 3, 2002, has been disclaimed.

Int. Cl.⁴ A61K *7/18, 7/20*

U.S. Cl. 424—50 **15 Claims**

1. A dentifrice composition, consisting essentially of: 100–100,000 units of dextranase per gram of the composition; and an aluminum oxide compound having the formula:

$$Al_2O_3.nH_2O$$

wherein $n \geqq 0$, with an average particle size of 1 to 50 microns incorporated as a main abrasive in an amount of 20 to 90% by weight of the composition wherein the activity of the dextranase is stable upon storage.

4,576,817

ENZYMATIC BANDAGES AND PADS

Robert E. Montgomery, Pacific Palisades, and Michael A. Pellico, Los Angeles, both of Calif., assignors to Laclede Professional Products, Inc., Gardena, Calif.

Filed Jun. 7, 1984, Ser. No. 618,071

Int. Cl.⁴ A61K *37/48*

U.S. Cl. 424—94 **20 Claims**

1. An enzymatic substantially organic absorbent material for body contact application containing, per gram of material, from about 1.0 to about 1,000 International Units of serum-activated oxidoreductase enzyme for producing hydrogen peroxide upon contact of said material with serum.

4,576,818

IODOPHOR COMPOSITION

Bola V. Shetty, Stamford, Conn., assignor to Euroceltique, S.A., Luxembourg

Filed Aug. 7, 1984, Ser. No. 638,558

Int. Cl.⁴ A01N *59/12;* **A61K** *33/18*

U.S. Cl. 424—150 **6 Claims**

1. A germicidal complex of iodine with polydextrose wherein the amount of iodine is up to 20%.

4,576,819

ALUMINUM HYDROXIDE GEL, PROCESS FOR PRODUCTION THEREOF, AND USE THEREOF

Shigeo Miyata, and Tsutomu Nosu, both of Takamatsu, Japan, assignors to Kyowa Chemical Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 249,454, Mar. 31, 1981, abandoned. This application Nov. 22, 1983, Ser. No. 554,164

Int. Cl.⁴ A61K *33/10*

U.S. Cl. 424—156 **2 Claims**

1. An amorphous aluminum hydroxide gel of formula (I) in which Ca and/or Mg are bonded to the compound of formula (I) by ion-exchange with an alkali metal,

$$(CaO, MgO, M_2O)_x.Al_2O_3.(CO_2)_y.mH_2O \quad (I)$$

wherein M represents an alkali metal, M_2O may be zero, CaO and MgO are not zero at the same time and x, y and m are positive numbers represented by the following expressions

$$0.1 \leqq x < 0.8,$$

$$0.4 \leqq y \leqq 0.8,$$

$$2 \leqq m < 10$$

said amorphous aluminum hydroxide gel being produced by the process which comprises reacting an aluminum compound soluble in water and/or lower alcohols selected from the group consisting of aluminum chloride, aluminum nitrate, aluminum sulfate, aluminum metal, aluminum ammonium sulfate, aluminum bromide, aluminum fluoride, aluminum potassium sulfate, aluminum isopropoxide, sodium aluminate, potassium aluminate, and aluminum sodium sulfate, with a carbonate ion yielding compound soluble in water and/or lower alcohols selected from the group consisting of sodium carbonate, potassium carbonate, sodium hydrogen carbonate and potassium hydrogen carbonate, at a pH of about 6 to about 9.5 under such conditions that the CO_2/Al mole ratio of the resulting aluminum hydroxide gel is about 0.1–about 8, and ion exchanging the alkali metals of the resulting compound with magnesium and/or calcium.

4,576,820

PROCESS AND APPARATUS FOR FREEING BITTER LUPIN SEED OF BITTER SUBSTANCES THEREIN

Peter Hussmann, Florence, Italy, assignor to Mittex Aktiengesellschaft, Vaduz, Liechtenstein

PCT No. PCT/EP82/00164, § 371 Date Apr. 4, 1983, § 102(e) Date Apr. 4, 1983, PCT Pub. No. WO83/00419, PCT Pub. Date Feb. 17, 1983

PCT Filed Aug. 6, 1982, Ser. No. 482,335

Claims priority, application Fed. Rep. of Germany, Aug. 6, 1981, 3131207; Jan. 19, 1982, 3201378; May 21, 1982, 3219245

Int. Cl.⁴ A61K *35/78*

U.S. Cl. 424—195.1 **8 Claims**

1. A process for debittering particulate starting material comprised of bitter lupin seed, said material containing extractable bitter substances, comprising the steps of:

(a) providing a series of separate extract solutions, each solution of said series having a differing concentration of said bitter substances, said series having at least a highest-, a second highest-, and a lowest-concentration extract solution;

(b) providing a filter medium comprised of a layer of said particulate starting material, which filter medium is contacted by said highest-concentration extract solution in said series;

(c) sequentially contacting said layer with each extract solution of the remaining extract solutions in said series, respectively, in a predetermined order of decreasing concentration of said bitter substances;

(d) after step (c), contacting said layer with pure water;

(e) removing said highest-concentration extract solution from said series, so that said second highest-concentration extract becomes the highest-concentration extract solution in said series; and

(f) repeating steps (b) through (e) at least once,

wherein (i) said starting material is comprised of bitter lupin seed which was milled beforehand to a particle size in the range of about 1 to about 50 microns, (ii) said layer of said particulate starting material is between about 5 and about 50 mm in thickness, (iii) said highest-concentration extract solution contains a percentage of dry mass between about 10 and 30%, and (iv) said steps (b), (c) and (d) are carried out at a temperature of about 30° C. or less.

4,576,821

LONG LIFE SEMI-ARTIFICIAL BAIT

Malcolm S. Smith, Beaumont, and Colastie J. Daigle, Orange, both of Tex., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 12, 1985, Ser. No. 754,156

Int. Cl.⁴ A23L *1/325;* **A01K** *85/00*

U.S. Cl. 426—1 **18 Claims**

1. Fish and crustacean bait consisting essentially of

(a) from about 5 to about 50 wt. % of a water insoluble

polymer having a melting point below about 110° C. selected from the group consisting of polyamides and copolymers of ethylene with from about 15 to about 45 wt. % of at least one ethylenically unsaturated comonomer;

(b) from about 45 to about 95 wt. % of attractant selected from the group consisting of fish meal, and powdered fish; and

(c) from 0 to about 20 wt. % of fish oil.

4,576,822

PROCESS FOR THE PRODUCTION OF FERMENTED MILK PRODUCTS

Viljo T. J. Nordlund, Helsinki, Finland, assignor to Valio Meijerien Keskusosuusliiki, Helsinki, Finland

Continuation of Ser. No. 459,033, Jan. 18, 1983, abandoned. This application Sep. 6, 1984, Ser. No. 648,344

Claims priority, application Finland, Jan. 22, 1982, 820206

Int. Cl.⁴ A23C *9/12, 17/02*

U.S. Cl. 426—43 **13 Claims**

1. A process for producing a liquid fermented milk product, comprising the successive steps of:

(1) treating milk at a temperature of 0°-5° C. for a sufficient period of time with a solution of an enzyme selected from a rennet enzyme used for cheesemaking or proteolytic enzyme having a rennet-type action, to form a liquid, cold-coagulated milk, wherein the concentration of the enzyme solution is such that upon addition of 0.25 to 0.5% by weight of the solution, the milk contains 1/5-1/15 million rennet activity units,

(2) subjecting the milk treated with the rennet enzyme to a heat treatment for a sufficient period of time in order to convert the paracasein of the milk to a calcium paracaseinate and to inactivate the rennet enzyme, and thereafter

(3) innoculating the treated milk of step (2) with a sufficient amount of a starter culture of the liquid fermented milk product and subjecting the thus innoculated milk to fermentation and ripening to form the fermented milk product.

4,576,823

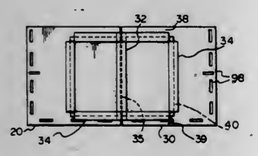
VACUUM SHEET

William A. Davies, P.O. Box 468, Richmond, Ontario, Canada K0A 2Z0

Filed Oct. 31, 1984, Ser. No. 666,939

Int. Cl.⁴ B32B *3/14*; G03B *27/60*

U.S. Cl. 428—61 **17 Claims**



1. A vacuum sheet for use in a contact vacuum frame to improve vacuum times, comprising:

at least two substantially planar sheets of material jointed together to form at least a partially open seam therebetween, said seam facilitating the evacuation of air from the vicinity of the vacuum sheet; and

a third planar sheet of material applied to one side of said at least two sheets to reinforce the same and to cover at least a portion of said seam formed therebetween.

4,576,824

PROCESS FOR MATURING STRONG BEVERAGES

Jury K. Gubiev, ulitsa Parshina, 25, korpus 1, kv. 178; Valery V. Krasnikov, ulitsa Festevalnaya, 9, kv. 96; Valentin P. Bakulin, 3 Likha-chevsky pereulik, 7, korpus 1, kv. 19; Mikhail A. Gagarin, ulitsa Profsojuznaya, 35/11, kv. 167; Vladimir V. Ivanov, ulitsa Sivashskaya, 4, korpus 3, kv. 64, and Zbignev N. Kishkovsky, ulitsa Begovava, 22, korpus 3, kv. 207, all of Moscow, U.S.S.R.

Filed Aug. 31, 1984, Ser. No. 646,625

Int. Cl.⁴ C12H *1/22*

U.S. Cl. 426—241 **6 Claims**

4. A process for maturing strong spirits which comprises:

activating an oak stave which has been used in maturing strong spirits by separating the stave from contact with the strong spirits and alternately heating the stave to a temperature of 35° to 55° C. in a multimode electromagnetic field of standing waves, having a frequency range of 2,000 to 4,500 MHz, in the presence of an oxygen containing gaseous medium and cooling the heated to a temperature in the range of 15° to 25° C. in the presence of an oxygen containing gaseous medium to provide an activated stave having a residual spirit content of from 5 to 10% and maturing the strong spirits in contact with the activated stave.

4,576,825

METHOD AND COMPOSITION FOR CURING MEAT

Catherine O. Tracy, Scottsdale; Evan F. Binkerd, Phoenix; Robert B. Rendek, and Raymond J. Wrobel, both of Scottsdale, all of Ariz., assignors to Conagra, Inc., Omaha, Nebr.

Filed Apr. 23, 1979, Ser. No. 32,191

Int. Cl.⁴ A23B *4/12*; A23L *3/34*

U.S. Cl. 426—266 **21 Claims**

1. A process for preparing cured ham or bacon so as to reduce the quantity of nitrosamines formed when the cured meat is subjected to frying temperatures, comprising the steps of

injecting ham or bacon belly meat with a curing solution containing alkali metal nitrite and a sufficient amount of food grade acid encapsulated with a non-toxic coating material which melts at a temperature above 115° F., said acid being in an amount sufficient to provide a desired concentration in the meat to react with and substantially reduce or deplete the nitrite and being capable, in its encapsulated form, of causing reduction of nitrite concentration in said solution,

holding the meat at a temperature below the melting point of said coating material for a period of time to permit the nitrite to exert its color-developing and anti-botulism effect on the meat, and

thereafter processing the meat at a temperature sufficient to melt said coating material and thus release the acid into said meat in order for it to react with said injected nitrite, thereby reducing the amount of nitrite available for reaction with amines contained in the meat whereby the nitrosamine formation is reduced upon frying.

13. A meat curing composition for reducing the quantity of nitrosamines formed in ham or bacon, comprising an injectible meat curing solution containing nitrite and a food grade acid encapsulated with a non-toxic coating material which melts above 115° F., said acid being present in said solution in an amount sufficient to provide a concentration of at least 300 ppm in the meat, and said acid being further characterized as being capable, in its unencapsulated form, of causing reduction of nitrite concentration in said solution.

4,576,826

PROCESS FOR THE PREPARATION OF FLAVORANT CAPSULES

Richard T. Liu, Worthington; Winston R. Nickerson, and Charles H. Anderson, both of Marysville, all of Ohio, assignors to Nestec S. A., Vevey, Switzerland

Continuation-in-part of Ser. No. 203,389, Nov. 3, 1980, abandoned, which is a continuation of Ser. No. 931,503, Aug. 7, 1978, abandoned. This application Dec. 21, 1981, Ser. No. 333,172

Int. Cl.⁴ A23L *1/221*

U.S. Cl. 426—289 **6 Claims**

1. A process for producing flavorant capsules having a long-shelf life comprising:

(a) adding particulated frozen aqueous essence to a wall material having a particle size of from 60 μm to 150 μm of powdered edible protein material, carbohydrate material, or a powdered edible material comprised of a combination of proteins and carbohydrates in a ratio of from 1:4 to 1:50 by weight of particulated frozen aqueous essence to powdered wall material while the wall material is being agitated at ambient temperature so as to (i) form coated particles, each such coated particle having a continuous layer of said wall material surrounding a frozen aqueous essence particle and to (ii) cause a water flux from the frozen aqueous essence particle to the surrounding wall material;

(b) curing the coating particles by continuing agitation of the wall material until the water flux ceases so as to form a continuous hardened, impervious shell of the said wall material having impregnated therein the flavor and/or aroma principles and having a wall thickness of from about 20 μm to 400 μm surrounding a hollow core; and then

(c) collecting the capsules having a particle size in the range of from 250 μm to 3.5 mm.

4,576,827

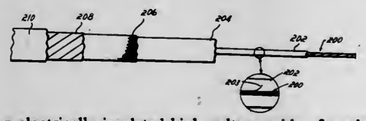
ELECTROSTATIC SPRAY COATING SYSTEM

Donald R. Hastings, Elyria, and John Sharpless, Oberlin, both of Ohio, assignors to Nordson Corporation, Amherst, Ohio

Filed Apr. 23, 1984, Ser. No. 602,974

Int. Cl.⁴ B05D *4/04*; H01C *13/00*

U.S. Cl. 427—27 **57 Claims**



1. An electrically insulated high voltage cable of predetermined length measured between opposite ends thereof for conducting electrostatic voltages in excess of approximately 50 KV to a coating-charging electrode in an electrostatic spray coating system, comprising:

a plurality of substantially equal length continuous silicon carbide fibers electrically connected primarily in parallel, said fibers each having a length in the approximate range of 1 m–50 m and extending between opposite ends of the cable to provide electrical current flow paths primarily substantially longitudinally along the length of said cable, said plurality of parallel-connected fibers collectively having a diameter measured generally transversely to the length of the cable in the approximate range of 10^{-2} cm.–1 cm. and a specific resistivity selected to provide a total resistance measured between the opposite ends of the cable in the approximate range of 1M–1000M ohms, and

an insulative sheath surrounding said parallel-connected fibers having a wall thickness and dielectric strength to avoid dialectric breakdown when said cable is connected to an electrostatic voltage supply in excess of approximately 50 KV.

30. A method of conducting high electrostatic voltages in excess of approximately 50 KV from a high voltage electrostatic supply to a coating-charging electrode in an electrostatic spray coating system comprising:

interconnecting between the electrode and the high voltage supply a cable having opposite ends and composed of substantially equal length continuous silicon carbide fibers electrically connected primarily in parallel and disposed along said cable to provide electrical current flow paths primarily substantiallly longitudinally along the length of said cable, said fibers each having a length measured along the length of said cable in the approximate range of 1 m–50 m, said plurality of parallel-connected fibers collectively having a diameter mesured generally transversely to the length of said cable in the approximate range of 10^{-2} cm.–1 cm. and a specific resistivity selected to provide a total resistance between said opposite ends of the cable in the approximate range of 1M–1000M ohms, and

energizing the fibers with an electrostatic voltage in excess of 50 KV while insulated to avoid dielectric breakdown to cause electrical current to flow along the length of said cable between said electrode and high voltage supply.

31. A method of electrostatic spray coating an article comprising the steps of:

interconnecting between an electrode and a high voltage supply a cable having opposite ends and composed of substantially equal length continuous silicon carbide fibers electrically connected primarily in parallel and disposed along said cable to provide electrical current flow paths primarily substantially longitudinally along the length of said cable, said fibers each having a length measured along the length of said cable in the approximate range of 1 m–50 m, said plurality of parallel-connected fibers collectively having a diameter measured generally transversely to the length of said cable in the approximte range of 10^{-2} cm.–1 cm. and a specific resistivity selected fo provide a total resistance between said opposite ends of said cable in the approximate range of 1M–1000M ohms, and

energizing the fibers with an electrostatic voltage in excess of 50 KV while insulated to avoid dielectric breakdown to cause electrical current to flow along the length of the cable between the electrode and the high voltage supply,

transporting coating material in electrostatic charge transfer relationship to the energized electrode to electrostatically charge the coating material, and

directing charged particles of coating material toward an article to the coated while maintaining the article at an electrostatic potential different from that of the electrode.

4,576,828

METHOD AND APPARATUS FOR PLASMA SPRAY COATING

Frank A. Walker, Jr., Huntington Beach, Calif., assignor to Geotel, Inc., Amityville, N.Y.

Filed May 17, 1984, Ser. No. 611,474

Int. Cl.⁴ B05D *1/08*

U.S. Cl. 427—34 **18 Claims**

1. A vacuum chamber plasma spraying system for continuous plasma spray coating of parts, said system comprising

a vacuum chamber for receiving parts to be sprayed,

means for decreasing pressure in said chamber,

a plasma spray gun mounted in the chamber,

input and output air locks,

means for decreasing pressure in said air locks,

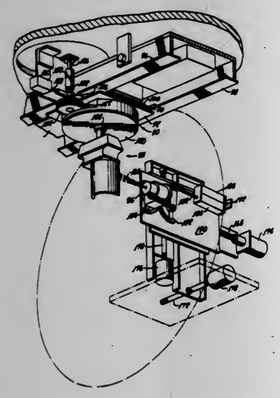
entrance and exit ports connecting the chamber in sealed relation to respective air locks,

entrance and exit closure members slidably mounted to alternatively open or close said ports,

a track extending from said input air lock through the chamber and into said output air lock, said track having gaps at said ports for receiving said closure members,

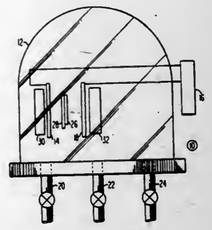
a plurality of carriers movably supported on the track, and
a plurality of linear induction motors having mutually spaced stators mounted to and along the track, said gaps being positioned at spaces between said stators, whereby said closure members may also be received in the spaces between the stators, said motors including a plurality of armatures respectively fixed to individual carriers, whereby said carriers may be driven along the track and through said ports when said closure members are open.

17. The method of plasma coating a part in a flow-through series of process steps comprising
providing a controlled environment chamber with input and output air locks,
plasma spray coating a part at a spraying station within said chamber,
unloading a part from said output air lock while a part is at said spraying station,
loading a part into said input air lock while a part is at said spraying station,
providing said controlled environment to said air locks,
shifting a part from said input air lock to said chamber and shifting a part from said chamber to said output air lock,
sealing said chamber from said air locks,



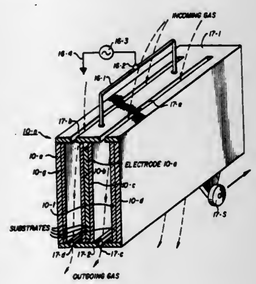
repeating said steps of loading and unloading said air locks, shifting parts to and from said chamber, providing the controlled environment to said air locks, and spraying a part in said chamber,
said method further including preheating a part at a preheating station in said chamber while a part is being sprayed at said spraying station,
shifting a part from said preheating station to said spraying station,
shifting a part from said load lock into said chamber, said step of
shifting a part from said load lock into said chamber including shifting a part to said preheat station, said air locks being provided with ports for selectively sealing the locks from the chamber and from ambient atmosphere, said shifting comprising mounting a track to extend through said air locks and through said chamber with gaps in the track at said ports,
positioning linear motor stators along said track at opposite sides of the gaps,
connecting motor armatures to said parts, selectively energizing individual ones of said stators, and
sliding sealing gates into said track gaps to seal said chamber.

4,576,829
LOW TEMPERATURE GROWTH OF SILICON DIOXIDE ON SILICON
Grzegorz Kaganowicz, Belle Mead, N.J.; John W. Robinson, Levittown, and John H. Thomas, III, Holland, both of Pa., assignors to RCA Corporation, Princeton, N.J.
Filed Dec. 28, 1984, Ser. No. 687,366
Int. Cl.[4] B05D *3/06*
U.S. Cl. 427—39 **3 Claims**



1. A method of growing an oxide film on a silicon substrate by plasma oxidation in a magnetically enhanced glow discharge system which method comprises the steps of;
placing the substrate in the deposition chamber of said system;
evacuating the chamber;
introducing a gaseous oxygen-containing precursor into the chamber;
initiating an oxygen plasma in the chamber by applying sufficient power from a power source through a magnetron electrode to provide an effective power density of between about 1 and 15 Watts per square centimeter of electrode; and
maintaining the temperature of the silicon substrate below about 130° C. during oxidation.

4,576,830
DEPOSITION OF MATERIALS
Zoltan Kiss, Belle Mead, N.J., assignor to Chronar Corp., Princeton, N.J.
Filed Nov. 5, 1984, Ser. No. 668,132
Int. Cl.[4] B05D *3/06*
U.S. Cl. 427—39 **20 Claims**



1. A box carrier for the deposit of materials, comprising
a plurality of side walls which have a region of separation,
a plurality of end walls joining said side walls,
a substrate positioned in said carrier against one of said side walls,
means for introducing a gaseous mixture into said region to permit a deposit therefrom on said substrate, and

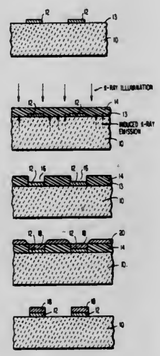
means for exhausting said gaseous mixture from said region.

10. The method of depositing material on substrates which comprises the steps of
(a) providing a box carrier which contains at least one of said substrates; and
(b) moving said carrier to a plurality of successive positions where a prescribed gas mixture is introduced into said chamber.

4,576,831
PROCESS FOR PRODUCING HEAT-SENSITIVE RECORDING PAPER
Noriyuki Hosoi; Kensuke Ikeda, and Hiroharu Matsukawa, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Aug. 23, 1983, Ser. No. 525,773
Claims priority, application Japan, Aug. 23, 1982, 57-145872
Int. Cl.[4] B41M *5/18*
U.S. Cl. 427—40 **3 Claims**

1. A process for producing a heat-sensitive recording paper which comprises pretreating a base paper by a high-frequency corona discharge and then applying an aqueous-type coating solution for forming a heat-sensitive recording layer to the base paper, wherein the high-frequency corona discharge treatment is carried out utilizing a discharge frequency in the range of 5 to 200 KHz and is carried out such that the product of the discharge electric current and the discharge voltage applied to a unit width is in the range of 0.5 KVA/m^2 to 50 KVA/m^2.

4,576,832
SELF-ALIGNING MASK
George A. Walker, Hopewell Junction, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Continuation of Ser. No. 454,899, Dec. 30, 1982, abandoned.
This application Aug. 13, 1984, Ser. No. 640,223
Int. Cl.[4] B05D *3/06*
U.S. Cl. 427—43.1 **13 Claims**



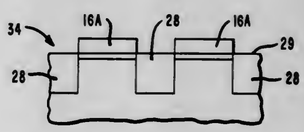
1. A method of forming a resist mask over a surface of a dielectric substrate having a metallurgy pattern on said surface comprising the steps of:
blanket coating said surface with said resist;
exposing said surface to resist insensitive X-rays that induce resist sensitive X-ray radiation from portions of said dielectric substrate not masked by said metallurgical pattern; and
developing said exposed resist for removal thereof of portions only over said metallurgical pattern to produce a self-aligned resist mask.

4,576,833
METHOD OF FORMING A LUMINESCENT LAYER ON A CARRIER AND LOW-PRESSURE MERCURY VAPOR DISCHARGE LAMP HAVING A LAYER APPLIED TO A CARRIER BY MEANS OF SUCH A METHOD
Pieter C. Scholten, and Ronald K. Eijnthoven, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Oct. 22, 1984, Ser. No. 663,605
Claims priority, application Netherlands, Oct. 26, 1983, 8303685
Int. Cl.[4] H01J *61/35, 61/46*
U.S. Cl. 427—67 **3 Claims**



1. A method of forming a layer of luminescent material on a glass carrier from a suspension of grains of luminescent material in a colloidal solution of a binder in a suspension medium, which suspension is contacted with the carrier in such a manner that a layer of suspension adheres thereto, the non-adherent residue of suspension is removed and the layer adhered to the carrier is dried, characterized in that the binder mainly comprises fibrous boehmite crystals up to at most 7% by weight measured with respect to the quantity of luminescent material present in the suspension.

4,576,834
METHOD FOR FORMING TRENCH ISOLATION STRUCTURES
Zbigniew P. Sobczak, Colorado Springs, Colo., assignor to NCR Corporation, Dayton, Ohio
Filed May 20, 1985, Ser. No. 735,515
Int. Cl.[4] H01L *21/316*
U.S. Cl. 427—93 **7 Claims**



1. A process for fabricating a planarized recessed silicon oxide structure in a silicon substrate trench from converted organosilicon material, comprising selectively depositing a layer of organosilicon material in a substrate trench to a height selected to provide a planar silicon oxide-substrate topography upon conversion of said material, the trench being bounded by a silicon substrate surface having thereon a coating of polymer material which is non-wetting to the layer of organosilicon material; and, heating the organosilicon material to convert said material to silicon oxide.

4,576,835

AQUEOUS RELEASE AGENTS

Karl-Josef Gardenier, and Wolfgang Heimbuerger, both of Duesseldorf, Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed Mar. 19, 1985, Ser. No. 713,528

Claims priority, application Fed. Rep. of Germany, Mar. 24, 1984, 3410957

Int. Cl.⁴ B05D *5/08, 7/02;* **C09J** *3/14;* **C09K** *3/00*

U.S. Cl. 427—222 **5 Claims**

1. A method for the temporary antiadhesive surface finishing of tacky pellets, granulates, cubes or flakes of hotmelt adhesives, comprising applying thereto an aqueous release agent consisting essentially of an about 0.5 to about 25% by weight solution of (a) at least one of an at least dihydric aliphatic alcohol containing from 3 to 7 carbon atoms, or (b) at least one aliphatic dicarbxylic or tricarboxylic acid or water-soluble salt thereof, or (c) a mixture of (a) and (b), wherein said aqueous release agent is applied in an amount of about 0.5 to about 10% based on the adhesive.

4. A method in accordance with claim 1 wherein from about 0.2 to about 15% by weight, based on the weight of the aqueous agent, of a water-insoluble salt of a C_{12}–C_{36} saturated aliphatic or alicyclic mono- or dicarboxylic acid is also present in the aqueous release agent.

4,576,836

METHOD FOR PRODUCING A REFRACTORY COMPOSITE STRUCTURE

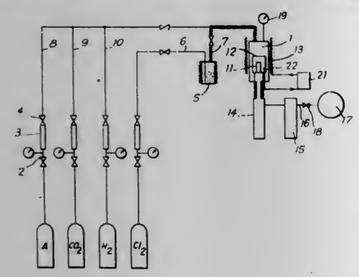
Robert Colmet, 129 avenue de Saint Médard, Eysines, France 33320; Roger Naslain, Résidence du Pontet "Les Jones", avenue du Pontet, Pessac, France 33600; Paul Hagenmuller, 351, avenue de la Libération, Talence, France 33405, and Pierre Lamico, 37, rue Louis Pasteur, Bruges, France 33520

Filed Jan. 19, 1983, Ser. No. 459,332

Claims priority, application France, Jan. 22, 1982, 82 01025

Int. Cl.⁴ C23C *16/00*

U.S. Cl. 427—255 **11 Claims**



1. Method for producing a refractory composite structure, comprising the densification of a refractory fibrous preform in ceramic material by a matrix at least partly constituted by an oxide having a melting point higher than 1750° C. wherein the fibrous preform is placed inside an infiltration chamber where it is heated within a reacting gaseous mixture introduced into the chamber and containing at least one gaseous hydrolyzing or oxiding agent and a volatile hydrolizable or oxidizable compound of the one element or of each element of which the oxide is a constituent of the matrix of the structure to be produced, in order to obtain by chemical reaction an adhesive deposit of said oxide or oxides constituting said matrix, the values of the overall pressure, of the temperature and of the gas flow rates inside the infiltration chamber being selected to be at a level slightly higher than the minimum values necessary for producing the said chemical reaction, so as to enable the constituents of the gaseous reaction mixture to penetrate to the bottom of the pores in the fibrous preform before having reacted completely such that the pores are densified throughout their length with the adhesive deposit.

4,576,837

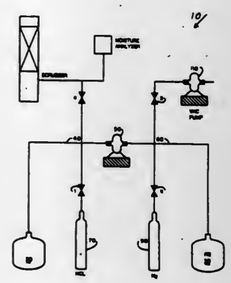
METHOD OF TREATING SURFACES

Gregorio Tarancon, Woodbridge, N.J.; Efrain Acevedo, Yonkers, N.Y., and Abel Saud, Jersey City, N.J., assignors to Tarancon Corporation, Edison, N.J.

Filed Mar. 19, 1985, Ser. No. 713,616

Int. Cl.⁴ C23C *16/00*

U.S. Cl. 427—255.4 **3 Claims**



1. The method of treating a surface comprising the steps of providing a gas in contact with the surface to be treated at a first pressure for a period of time, during which a chemical reaction takes place at the surface, reducing the pressure of the gas in contact with the surface to be treated for a second period of time, during which reaction byproduct are removed, re-establishing the first pressure of the gas in contact with the surface for a period of time during which the reaction takes place again, again reducing the pressure of the gas in contact with the surface for a period of time during which reaction byproduct are removed, and continuing the cycle of the first pressure and the reduced pressure until the surface has the desired characteristics.

4,576,838

ANTI-FOULING COATING COMPOSITION, PROCESS FOR APPLYING SAME AND COATING THEREBY OBTAINED

Murray Rosen, Seminole, and Thomas Lane, Lutz, both of Fla., assignors to Marine Shield Corp., St. Petersburg, Fla.

Filed Aug. 15, 1984, Ser. No. 640,972

Int. Cl.⁴ B05D *5/00;* **C09D** *5/14*

U.S. Cl. 427—385.5 **30 Claims**

24. The process of protecting a surface of an object from fouling by exposure to sea water comprising the steps of applying to said surface a film-forming composition comprising:

(a) 10–22 percent by weight of a hydrophilic component selected from the group consisting of castor oil, partially dehydrated castor oil having a hydroxyl equivalent weight of 600–800, a partially hydrolyzed polyvinylester having a hydroxyl equivalent weight of 300–600, a partially hydrolyzed copolymer of vinyl chloride and vinyl ester having a hydroxyl equivalent weight of 300–600, and a polymer of a monovinyl, monoalphamethylvinyl or monoalphaethylvinyl ether of an alkylene glycol having 2–6 carbon atoms, said polymer having a hydroxyl equivalent weight of 300–600;

(b) 2.5–7.5 percent by weight of a hydrophobic component having no more than 35 carbon atoms therein and having 1–3 urethane groups per molecule;

(c) 30–50 percent by weight of an organic tin polymer of a monomer having the formula $R_3SnOOCR'$ wherein R is a lower alkyl, cycloalkyl or aryl radical and R' is a polymerizable radical selected from the group consisting of vinyl, lower alkylvinyl, vinyl aryl and lower alkylvinyl aryl groups; and

(d) 20–40 percent by weight of a solvent component having one or more compounds selected from the group consisting of a hydroxyl-containing compound having the formula $R''(OH)_{n'}$ wherein R'' represents an aliphatic, arylaliphatic or cycloaliphatic hydrocarbon group having 2–10 carbon atoms and n' is an integer having a value of 1–3, a monoether or monoester of an alkylene glycol having no more than 10 carbon atoms, an aromatic hydrocarbon having a kauri butanol value of 73–105, and a ketone having no more than 10 carbon atoms;

and allowing said coating to dry to a hard film before the resultant coated surface is exposed to sea water.

4,576,839

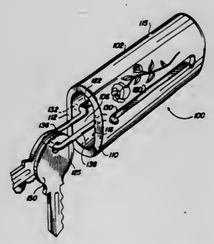
DECORATIVE HOLDER

Joseph R. Parren, 19638 N. 34th Dr., Phoenix, Ariz. 85027

Filed Nov. 19, 1984, Ser. No. 673,143

Int. Cl.⁴ A47G *29/10*

U.S. Cl. 428—13 **7 Claims**



1. An ornamental holder for a generally elongate object comprising:

(a) a generally elongate body having a front section and opposite sides defining an opening generally adapted to receive the object;

(b) said front section defining a transparent viewing window having an exterior surface and interior surface with the said interior surface adapted to receive ornamentation, said exterior surface being curved to form a lens to enhance the ornamentation at said interior surface when viewed from the exterior surface.

4,576,840

PILE FABRIC HAVING SHRUNKEN PILE AND NON-SHRINKABLE PILE

Shouichi Murata, Takasago; Muneto Makiyama, Kobe; Takahiro Omoto, Takasago, and Taizo Yasumoto, Kobe, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jan. 14, 1985, Ser. No. 690,905

Claims priority, application Japan, Mar. 27, 1984, 59-60083

Int. Cl.⁴ D02G *3/00;* **D03D** *27/00*

U.S. Cl. 428—16 **5 Claims**

1. A woven or knitted pile fabric having a natural fur-like appearance and having a pile portion formed of a blend of 20 to 98% by weight of shrinkable fibers having a shrinkage of at least 15% and a coefficient of static friction between the shrunk fibers of up to 0.230, said shrinkable fibers having a smoothness imparting finishing agent on the surfaces thereof, and non-shrinkable fibers.

4,576,841

DESICCANT APPLICATION FOR DOUBLE-GLAZED WINDOWS, ETC. AND A SPACER SECTION FILLED WITH THE DESICCANT APPLICATION

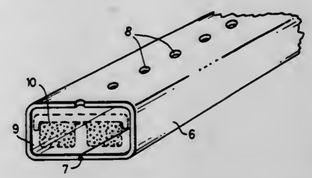
Horst Lingemann, Wuppertal, Fed. Rep. of Germany, assignor to Helmut Lingemann GmbH & Co., Fed. Rep. of Germany

Filed Nov. 4, 1982, Ser. No. 439,196

Claims priority, application Fed. Rep. of Germany, Nov. 4, 1981, 3143659

Int. Cl.⁴ E06B *3/24*

U.S. Cl. 428—34 **8 Claims**



1. A double-glazed window assembly comprising:

a pair of mutually spaced-apart window panes mounted in fixed relation;

a hollow moisture permeable spacing tube laterally disposed between said panes;

a desiccant package inserted in the length of said spacing tube;

said desiccant package comprising a first elongate sheet of ductile airtight material;

plural discrete indentations formed in one face of said first elongate sheet at intervals along the length of the first sheet;

a quantity of desiccant disposed in said indentations;

a second elongate sheet secured to said one face of said first sheet to form the desiccant package and enclosing each said indentation and the desiccant therein, so that the desiccant cannot migrate between indentations along the length of the desiccant package; and

said second elongate sheet being substantially permeable to moisture but being impermeable to the desiccant,

so that the desiccant is retained within the indentations, but moisture entering the spacing tube from between said panes of the double-glazed window can pass through the second sheet for adsorption by the desiccant.

4,576,842

COOKWARE FORMED FROM A LAMINATE

Tyler F. Hartsing, Westfield; Marvin E. Sauers, Belle Mead, and Lloyd M. Robeson, Whitehouse Station, all of N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Mar. 19, 1984, Ser. No. 590,791

Int. Cl.⁴ B65D *23/00;* **B32B** *27/36*

U.S. Cl. 428—35 **45 Claims**

1. Cookware made from a laminate, said laminate comprising at least three sheets made from a thermoplastic resin, an inside sheet made from a thermoplastic resin having a higher use temperature than the two outside sheets, said thermoplastic resin selected from a polyarylethersulfone, a poly(aryl ether), polyarylate, polyetherimide, polyester, aromatic polycarbonate, styrene resin, poly(alkyl acrylate), polyhydroxyether, poly(arylene sulfide) and polyamide.

4,576,843

BLOW MOLDED CONTAINERS AND METHOD OF FORMING THE SAME

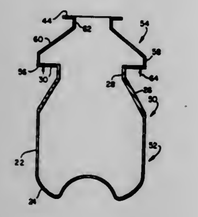
Martin H. Beck, Brookline, and Suppayan M. Krishnakumar, Nashua, both of N.H., assignors to The Continental Group, Inc., Stamford, Conn.

Continuation of Ser. No. 324,162, Nov. 23, 1981, Pat. No. 4,496,064. This application Sep. 4, 1984, Ser. No. 646,672

The portion of the term of this patent subsequent to Jan. 29, 2002, has been disclaimed.

Int. Cl.⁴ B65D *23/00*; B29C *17/12*

U.S. Cl. 428—35 **10 Claims**



1. An intermediate article of manufacture comprising a blow molded thermoplastic article, said article including a lower portion in the form of a container having a tubular body closed at one end by a bottom of the type shaped to resist internal pressure, an open mouth and a peripheral closure receiving portion at an opposite end of said body, all of said container having a high degree of biaxial orientation with the degree of biaxial orientation of said peripheral closure receiving portion approaching that of said tubular body, and an upper portion in the form of an accommodation element terminating in an open neck portion having substantially no orientation, and said peripheral closure receiving portion being of an outline materially greater than that of said open neck portion.

4,576,844

SHIPPING BAG

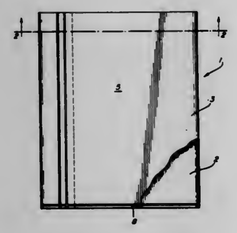
Charles R. Murray, Toronto, and Ray E. Harrison, Brampton, both of Canada, assignors to C-I-L Inc., North York, Canada

Filed Jul. 16, 1984, Ser. No. 631,540

Claims priority, application Canada, Nov. 28, 1983, 442097; Apr. 2, 1984, 451106

Int. Cl.⁴ B65D *30/08*; B32B *27/08*

U.S. Cl. 428—35 **4 Claims**



1. A thermoplastic shipping bag having a front wall and a back wall, each wall comprising a cross-laminated ply comprising at least two sheets of uni-axially oriented polyethylene bonded together; said laminated plies heat sealed one to the other to provide a heat seal area and wherein interposed between said laminated plies in said heat seal area are two layers of low density polyethylene constituting distinct inner plies of the bag, said low density polyethylene plies being heat sealed together and serving as a bridge to permit the effective heat sealing of the laminated plies to each other without significant loss of draw-induced film strength in and around the heat sealed area.

4,576,845

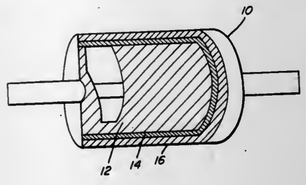
THERMALLY CONDUCTIVE BASE LAYERS FOR CAST POLYURETHANE ROLL COVERS

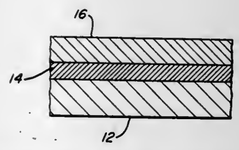
Daniel J. Krotchko, Salisbury, N.C., assignor to KRC Inc., Salisbury, N.C.

Filed Dec. 15, 1983, Ser. No. 561,945

Int. Cl.⁴ B21B *1/00*; D21F *0/00*

U.S. Cl. 428—36 **8 Claims**





1. A pressure roll having a flexible outer cover and adapted for cooperative, contacting engagement with another roll to define a nip area at which the outer cover of the pressure roll is deflected by the cooperating roll, said pressure roll comprising: a hollow metal core member having a cylindrical outer surface; a flexible outer polyurethane cover overlying the outer cylindrical surface of said core member; and an intermediate base layer interposed between said core member and said cover, said intermediate base layer including a polymeric substance and a thermally conductive material, said polymeric substance selected from the group consisting of thermosetting resins and vulcanized rubbers, said intermediate base layer having a thermal conductivity sufficient to conduct heat buildup from said cover to said core member.

4,576,846

FLEXIBLE PLASTIC FOAM WITH A GROOVE- AND TONGUE-LIKE CLOSING SYSTEM

Gert Noel, Hauseter Str. 123, B-4729 Hauset, Belgium

Filed Sep. 6, 1984, Ser. No. 647,801

Claims priority, application Fed. Rep. of Germany, Sep. 6, 1983, 3332149

Int. Cl.⁴ B32B *1/04, 1/08*; F16L *9/00*

U.S. Cl. 428—36 **15 Claims**

1. A cellular plastic insulating member of a flexible plastic foam material for thermally insulating a conduit, such as a pipe, duct or the like,

said member having a closing line extending longitudinally along the conduit, along which line the facing longitudinal surfaces of the insulating member are joined together,

a closing system located along said closing line and comprising a groove and a tongue, said groove comprising a longitudinally extending groove formed into the material of the member along at least one side of said line, the opening of the groove, viewed in a transverse cross section, being smaller than the dimension across certain interior portions of the groove, also viewed in transverse cross section,

said tongue of the closing system operatively connected to the side of the closing line other than the side having the groove, the tongue having a portion, viewed in transverse cross section, which is larger than said opening of the



groove, and said tongue being undercut, of smaller dimension closer to the side of the insulating member to which it is operatively connected, such that the tongue and groove snap fit into engagement with each other,

and said tongue being stiffer than the material forming the groove.

4,576,847

THREADED FIBER-REINFORCED PLASTIC MEMBER AND METHOD OF COATING THE SAME

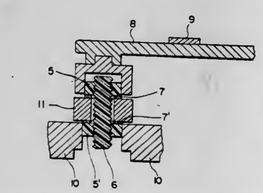
Isao Tajima, Nara, Japan, assignor to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Nov. 13, 1984, Ser. No. 670,896

Claims priority, application Japan, Nov. 14, 1983, 58-213803

Int. Cl.⁴ B44C *1/26*; B05D *3/02*

U.S. Cl. 428—67 **11 Claims**



1. A threaded member, comprising a threaded member made of fiber reinforced plastic and a coating of a crosslinked nylon resin on at least the threaded portion of the threaded member.

4,576,848

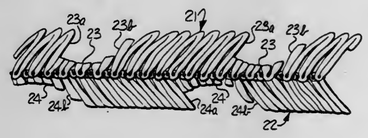
PILE FABRICS AS WOVEN TERRY FABRICS WITH DIAGONAL GROOVES OF CUT PILE

Larry W. Dillon, Ridgeway; Robert L. Jamerson, Collinsville, and Thomas M. Padgett, Martinsville, all of Va., assignors to Fieldcrest Mills, Inc., Eden, N.C.

Filed Jun. 24, 1985, Ser. No. 747,975

Int. Cl.⁴ B32B *3/00*

U.S. Cl. 428—89 **17 Claims**



14. A terry pile fabric comprising a base fabric, terry pile yarns forming terry pile extending from opposite faces of said base fabric, the terry pile on one face of the base fabric being entirely loop terry pile, the terry pile on the major portion of the opposite face of the base fabric also being loop terry pile having a jacquard pattern provided in the pile, said loop terry pile having a generally common direction of pile lie extending lengthwise of the fabric, the remainder of the terry pile on said opposite face of the fabric being cut terry pile defining diagonal grooves of cut pile extending across the jacquard pattern to impart a sculptured pattern appearance superimposed on the jacquard pattern, each of said diagonal grooves having a substantially vertical side and a sloping opposite side of variable height of pile imparting a sculptured pattern appearance to the terry fabric, and wherein the sloping side of each of the diagonal grooves is positioned downstream of the direction of pile lie.

4,576,849

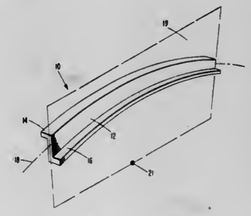
CURVED COMPOSITE BEAM

Richard J. Gardiner, Murray, Utah, assignor to Hercules Incorporated, Wilmington, Del.

Division of Ser. No. 501,737, Jun. 6, 1983, Pat. No. 4,512,835. This application Oct. 31, 1984, Ser. No. 666,589

Int. Cl.⁴ E04C *3/46*

U.S. Cl. 428—119 **3 Claims**



1. A structural beam adapted to extend lengthwise along an arc, said beam consisting of a plurality of integrated composite elements contributing to the structural properties thereof, a first of said composite elements dissected by a center plane that intersects said beam longitudinally and contains the center of said arc, the remainder of said elements lying in curved planes intersecting said center plane at said first composite element, said beam comprising:

a composite thermoset resin and fiber core having (a) first and second substantially planar web portions that are integral with each other lengthwise in intimate co-cured relation along said arc and constitute said first composite element and (b) a first flange portion constituting another of said composite elements, said first flange portion being unitary with said first web portion lengthwise along said core in that said first web and flange portions are formed by filament winding them together on a mandrel resulting in filaments of said first flange and web portions extending continuously across said beam these respective edges of said first flange and web portions that are laterally remote each other;

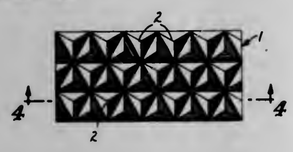
a composite thermoset resin and fiber layer integral with said first flange portion lengthwise in intimate co-cured relation along said core as an overlay on said first flange portion that lies on the surface thereof away from said core, said thermoset resin and fiber layer having continuous filaments extending along lines parallel to said arc.

4,576,850

SHAPED PLASTIC ARTICLES HAVING REPLICATED MICROSTRUCTURE SURFACES

John A. Martens, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jul. 20, 1978, Ser. No. 926,325
Int. Cl.⁴ C08G *77/04*
U.S. Cl. 428—156 **48 Claims**



1. An article, useful for an optical purpose, comprising a shaped, plastic, optically homogeneous, cast, monolithic layer having a replicated microstructure-bearing surface whose configuration contains a plurality of utilitarian discontinuities which characterize said optical purpose of said article, said layer comprising crosslinked polymer composed of (1) a plurality of hard segments of mono- or polyvalent moieties containing one or more carbocyclic and/or heterocyclic groups, wherein each of said moieties of said hard segments, when their valences are satisfied by protons, has at least one major transition temperature above 250° K., and (2) a plurality of soft segments of mono- or polyvalent moieties, wherein each of said moieties of said soft segments has a number average molecular weight of about 500 to 5000 and homopolymers thereof have a glass transition temperature below 250° K.

4,576,851

SEMICONDUCTOR SUBSTRATE

Seiichi Iwamatsu, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Nagano, Japan

Continuation of Ser. No. 394,070, Jul. 1, 1982, abandoned. This application Apr. 16, 1985, Ser. No. 723,708
Claims priority, application Japan, Jul. 2, 1981, 56-104298; Jul. 24, 1981, 56-116008
Int. Cl.⁴ H01L *27/12, 29/06, 21/305, 21/306*
U.S. Cl. 428—156 **8 Claims**



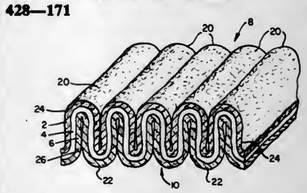
1. A semiconductor substrate, comprising a single-crystal semiconductor material having a planar surface and an island of the semiconductor material projecting from the surface forming a projecting region at an edge of said semiconductor material and an insulating film having an opening for cooperating with the projecting region to form a smooth surface with the top of the projecting semiconductor material at substantially the same level as the surface of the remainder of the insulating film and a single-crystal semiconductor film across the top of the projecting region and the insulating film.

4,576,852

FUSION OF THERMOPLASTIC FABRICS

Kenneth W. Burgess; William R. Bryant, and Wayne K. Erickson, all of Seneca, S.C., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 18, 1983, Ser. No. 542,962
Int. Cl.⁴ B32B *5/14*
U.S. Cl. 428—171 **44 Claims**



1. A method for preparing fused fabric which consists essentially of:
(a) contacting a feed fabric comprising a substantial portion of thermoplastic fibers with a wetting agent consisting essentially of water to form a wetted fabric; and thereafter
(b) subjecting said wetted fabric to a temperature and a nip pressure along the entire length of the nip sufficient to cause fusion of at least a portion of the fibers along the entire length and width of the feed fabric.

4,576,853

MULTI-LAYER PLEATED TEXTILE FIBER PRODUCT

Edward A. Vaughn, Clemson, S.C., and Michael L. Clymin, Harrisburg, Pa., assignors to C. H. Masland & Sons, Carlisle, Pa.

Continuation-in-part of Ser. No. 550,458, Nov. 10, 1983, abandoned. This application Jun. 29, 1984, Ser. No. 626,468
Int. Cl.⁴ B32B *3/28*
U.S. Cl. 428—181 **19 Claims**



1. A three dimensional structurally stable product comprising a plurality of structurally unstable textile fiber layers pleated together with the layers of each pleat in close contact and with contiguous multi-layer pleats in close contact, the ends of the pleats forming the sides of the product and the folds between pleats forming the upper and lower surfaces of the product.

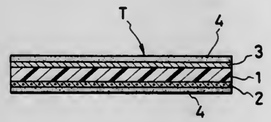
4,576,854

PACKAGING TAPE

Yoshio Kurahashi, Tokyo, Japan, assignor to Nippon Optical Fiber Co., Ltd., Tokyo, Japan

Filed Jul. 13, 1984, Ser. No. 630,531
Claims priority, application Japan, Jul. 21, 1983, 58-133929; Feb. 8, 1984, 59-20024
Int. Cl.⁴ C09J *7/02*
U.S. Cl. 428—204 **12 Claims**

1. A packaging tape for use in packaging or bundling that sticks to intself but not to the packaged or bundled article, said packaging tape comprising a tape-like substrate having two surfaces and a self-adhesive layer formed on both of the surfaces of said substrate, said self-adhesive layer prepared from an aqueous mixture comprising a water soluble adhesive as an anchoring ingredient to said tape-like substrate, and a rubber latex as a self-adhesive ingredient, which ingredients are mixed with each other in a weight ratio of said water-soluble adhesive to rubber latex within the range between 0.48 and 1.80, whereby said self-adhesive layers firmly bond to each other at an overlapped area between mated layers when the tape is



wound around an article to be packaged or bundled, thereby preventing the mated tape layers from unwinding and separating from each other, said self-adhesive layers being non-tacky to the surface of the article in contact with said self-adhesive layers thereby enabling said layers to be freely removed from the surface of the article packaged or bundled upon unwinding the tape.

4,576,855

COATING COMPOSITION AND SKINNED POLYURETHANE FOAM ARTICLES COATED THEREWITH

Toyohiko Okina, Anjo; Hiroshi Goto, Gifu; Akimasa Ozawa, Ichinomiya; Kenji Nakamura, Hirakata, and Hiroshi Oishi, Kyoto, all of Japan, assignors to Inoue MTP Co., Ltd., Nagoya and Sanyo Chemical Industries, Ltd., Kyoto, both of Japan

Filed Jun. 16, 1983, Ser. No. 504,736
Claims priority, application Japan, Jul. 22, 1982, 57-128375
Int. Cl.⁴ B32B *3/26, 7/10, 27/40*
U.S. Cl. 428—215 **23 Claims**

1. A coating composition, which comprises a combination of:
[I] a two component type non-yellowing polyurethane solution, for top coat, comprising (a) at least one OH-terminated urethane prepolymer having a hydroxyl-equivalent of at least 1,400 derived from at least one non-aromatic polyisocyanate and excess of at least one polyol, and (b) at least one non-aromatic polyisocyanate; and
[II] a two component type polyurethane, for under coat, comprising (c) at least one NCO-terminated urethane prepolymer derived from at least one polyol and at least one aromatic polyisocyanate, and (d) at least one polyol.

14. The composition of claim 1, wherein [I] is used in such amount providing a top coat layer having an average thickness of 0.01–0.1 mm, and [II] is used in such amount providing an under coat layer having an average thickness of 0.05–3 mm.

4,576,856

RECONSTITUTED MICA MATERIALS, RECONSTITUTED MICA PREPREG MATERIALS, RECONSTITUTED MICA PRODUCTS AND INSULATED COILS

Hideji Kuwajima, and Takeyoshi Watanabe, both of Hitachi, Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 319,076, Nov. 6, 1981, abandoned. This application Jun. 18, 1984, Ser. No. 621,461
Claims priority, application Japan, Nov. 19, 1980, 55-163846; Oct. 8, 1981, 56-161508
The portion of the term of this patent subsequent to Jan. 1, 2002, has been disclaimed.
Int. Cl.⁴ B32B *19/04*
U.S. Cl. 428—241 **15 Claims**

1. A reconstituted mica material produced by sheet forming a slurry containing mica flakes prepared by disintegrating unfired mica and comprising:
(i) 2 to 25 parts by weight of mica flakes having a particle size of 1.7 mm or more and an aspect ratio of 150 or more,
(ii) 20 to 60 parts by weight of mica flakes having a particle size of 1.0 mm or more and less than 1.7 mm and an aspect ratio of 150 more,
(iii) 20 to 40 parts by weight of mica flakes having a particle size of 0.25 mm or more and less that 1.0 mm and an aspect ratio of 100 or more, and
(iv) 10 to 30 parts by weight of mica flakes having a particle size of less than 0.25 mm and an aspect ratio of 100 or more; said reconstituted mica material exhibiting a flexural strength of 1580 kgf/cm² or more, a dielectric breakdown strength of 104 kV or more and a dielectric breakdown strength after deterioration of 92 kV or more when formed into a prepreg material.

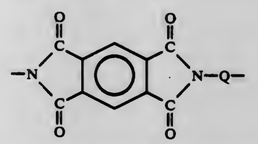
4,576,857

MELT-FUSIBLE POLYIMIDES

Thomas P. Gannett, and Hugh H. Gibbs, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

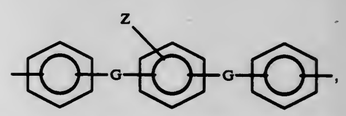
Continuation-in-part of Ser. No. 475,034, Mar. 14, 1983, abandoned. This application Sep. 21, 1983, Ser. No. 534,208
Int. Cl.⁴ B32B *27/28;* C07C *93/14, 149/42;* C08G *73/10*
U.S. Cl. 428—260 **44 Claims**

1. A substantially void-free composite structure consisting essentially of a fibrous substrate impregnated with a melt-fusible polyimide containing up to about 10% of end-capped amino or anhydride groups and consisting essentially of the following repeating units:



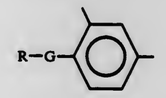
where Q in each repeating unit, independently of any other unit, is a divalent organic radical selected from the following:

(a)

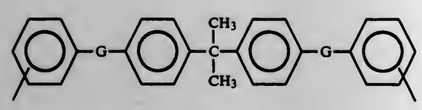


where G is O or S; and Z is hydrogen or phenyl; and, when Z is hydrogen, both terminal covalent bonds are either in the ortho or meta position with respect to G; while, when Z is phenyl, both terminal covalent bonds are in ortho, meta, or para position with respect to G;

(b)



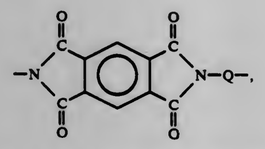
where G is O or S; and R is phenyl, biphenyl, or naphthyl; and



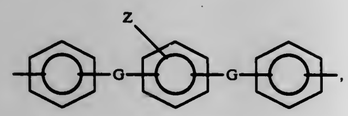
(c)

where G is O or S.

16. A melt-fusible polyimide consisting essentially of the following repeating units

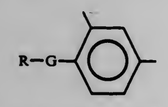


where Q in each repeating unit, independently of any other unit, is a divalent organic radical selected from the following:



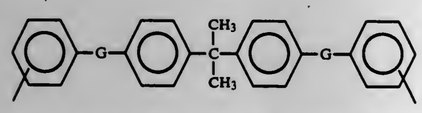
(a)

where G is O or S, and Z is hydrogen or phenyl; and, when Z is hydrogen, both terminal covalent bonds are either in the ortho or meta position with respect to G; while, when Z is phenyl, both terminal covalent bonds are in ortho, meta, or para position with respect to G;



(b)

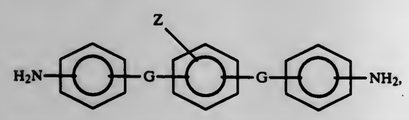
where G is O or S; and R is phenyl, biphenyl, or naphthyl; and



(c)

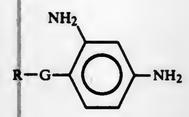
where G is O or S and both terminal covalent bonds are in the ortho or meta position with respect to G.

34. A solution in a polar solvent of a pyromellitic diester diacid and of a diamine, either component being present in a 0–10% molar excess, the diamine being either a single species or more than one species selected from the following classes (a) through (c):



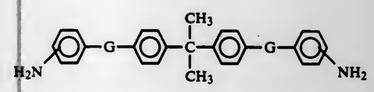
(a)

where G is O or S, and Z is hydrogen or phenyl; and, when Z is hydrogen, both terminal amine groups are either in the ortho or meta position with respect to G; while, when Z is phenyl, both terminal amine groups are in ortho, meta, or para position with respect to G;



(b)

where G is O or S; and R is phenyl, biphenyl, or naphthyl; and



(c)

where G is O or S, and both amine groups are in the ortho or meta position with respect to G.

41. A diamine selected from the class consisting of:
1,4-bis(4-aminophenoxy)-2-phenylbenzene;
2-(2,4-diaminophenoxy)biphenyl; and
4-(2,4-diaminophenoxy)biphenyl.

4,576,858

MATERIAL BASED ON A NON-WOVEN TEXTILE LAP WHICH MAY BE USED AS REINFORCEMENT FOR IMPERMEABLE COVERINGS

André Fourezon, Le Cheylard, France, assignor to Etablissements les Fils d'Auguste Chomarat et Cie, Paris, France

Filed Mar. 29, 1985, Ser. No. 717,867
Claims priority, application France, Apr. 6, 1984, 84 05693
Int. Cl.⁴ B32B *5/06*
U.S. Cl. 428—300 **4 Claims**



1. A material which may be used as reinforcement for bituminous impermeable coverings of the type constituted by a non-woven fibrous lap,
said lap being formed by a complex comprising an intermediate layer constituted by a non-woven fabric of polyester, said non-woven fabric serving as a support for glass fibers implanted therein, said fibers projecting on each side of said non-woven fabric and folded back thereon.

4,576,859

RADIO WAVE SHIELDING MATERIALS AND A METHOD OF PRODUCING THE SAME

Tomio Oyachi, Tokorozawa; Hiroya Fukuda, Yokohama, and Masahiko Anami, Tokyo, all of Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed Oct. 22, 1984, Ser. No. 663,657
Claims priority, application Japan, Oct. 21, 1983, 58-196022
Int. Cl.⁴ B32B *3/24*
U.S. Cl. 428—311.1 **12 Claims**

1. A radio wave shielding material comprising a plastic foamed body having a three-dimensional network skeleton structure and provided on its skeleton surface with a metal plating coat, and a coating of a conductive rubber and/or plastic formed on said metal plating coat.

4,576,860

FOAM LAMINATE FOIL OR WEB AND PROCESS FOR PREPARING SAME

Roland Fink, Ebenhausen; Maximilian Mayr, Garching, and Dieter Schlenz, Egling, all of Fed. Rep. of Germany, assignors to Alkor GmbH Kunststoffe, Munich, Fed. Rep. of Germany

Filed Aug. 12, 1985, Ser. No. 764,577
Claims priority, application Fed. Rep. of Germany, Aug. 10, 1984, 3429523
Int. Cl.⁴ B32B *3/26, 27/08*
U.S. Cl. 428—314.4 **30 Claims**

1. A delamination resistant foam laminate, comprising:
an unfoamed top layer having a thickness of greater than about 20 μ m and comprising a styrene-acrylonitrile copolymer grafted with at least one polyfunctional acrylate and containing at least one additional polymer selected from the group consisting of chlorinated polyethylenes, ethylene-propylene mixed polymers and a terpolymer of ethylene, propylene and a diene, the weight ratio of said grafted styrene-acrylonitrile copolymer to said at least one additional polymer being from about 8:2 to about 3:7;
a polyolefin foam bottom layer comprising at least one polymer selected from the group consisting of closed pore polyethylene foams and closed pore ethylene-propylene copolymer foams, the bulk density of said bottom layer being greater than 10 kg/m^3; and
an intermediate layer arranged between said top and bottom layers and acting as a coupling agent, said intermediate layer comprising a mixture of a polar group-containing low pressure polyethylene, a polar group-containing ethylene-vinly ester copolymer and at least one additional polymer selected from the group consisting of rubber-like ethylene-propylene mixed polymers and rubber-like terpolymers of ethylene, propylene and a diene.

4,576,861

MATERIAL FOR GASEOUS DIFFUSION ELECTRODE

Hiroshi Kato, Wake, Japan, assignor to Junkosha Co. Ltd., Tokyo, Japan

Filed Jan. 30, 1985, Ser. No. 696,312
Claims priority, application Japan, Feb. 27, 1984, 59-34427
Int. Cl.⁴ B32B *3/26, 5/30, 5/32*
U.S. Cl. 428—316.6 **10 Claims**

1. A composite material for use as a gas diffusing electrode comprising:
(a) a first layer comprising a sheet of expanded, porous PTFE having nodes interconnected by fibrils and having an initial thickness, said first layer containing a powdered, electroconductive substance therein, and
(b) a second layer comprising a sheet of pure, expanded, porous PTFE having nodes interconnected by fibrils and having an initial thickness,
said second layer being more highly porous than said first layer and being bonded to and integrated with said first layer, the thickness of said composite material being less than the combined initial thicknesses of said first and second layers, a portion of said nodes and fibrils of said first and second layers being interconnected and intertwined to form said bond between the layers.

4,576,862

POLYIMIDE LAMINANT AND PROCESS FOR THE PREPARATION OF SAME

Raymond Lee, Elk Grove Village, and Gregory A. Ferro, Mt. Prospect, both of Ill., assignors to Imi-Tech Corporation, Elk Grove Village, Ill.

Filed Jul. 15, 1985, Ser. No. 754,774
Int. Cl.⁴ B32B *3/26, 27/08*
U.S. Cl. 428—317.7 **24 Claims**

1. A laminate having improved vapor barrier properties comprising:
(a) a polyimide foam prepared by forming a prepolymer formed from (1) an organic tetracarboxylic acid or anhydride or ester derivative, (2) an aromatic diamine having the formula:

$$H_2N—R_2—NH_2$$

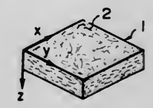
wherein R_2 is an aromatic group containing 5 to 16 carbon atoms, and (3) an organic liquid diamine containing at least 50% by weight of a conjugated diene, said foam having a vapor impermeable skin on one surface thereof formed by heating one surface of the foam to coalesce the polyimide on the surface;
(b) a fire-resistant, heat-activated adhesive layer overlaying the skin; and,
(c) a polyimide film adhered to said skin by said adhesive.

4,576,863

COMPOSITE MATERIAL AND PROCESS FOR ITS PRODUCTION

Tadashi Donomoto; Mototsugu Koyama; Yoshio Fuwa; Nobuhiro Miura, all of Toyota, and Tatsuo Sakakibara, Ueda, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota and Art Kinzoku Kogyo Kabushiki Kaisha, Tokyo, both of Japan

PCT No. PCT/JP81/00399, § 371 Date Jul. 15, 1983, § 102(e) Date Jul. 15, 1983, PCT Pub. No. WO83/01960, PCT Pub. Date Jun. 9, 1983
PCT Filed Dec. 18, 1981, Ser. No. 515,050
Claims priority, application Japan, Nov. 30, 1981, 56-191919
Int. Cl.⁴ B32B *5/16, 15/04*
U.S. Cl. 428—325 **4 Claims**



1. A composite material comprising a matrix of a metal selected from a group consisting of aluminum, magnesium and their alloys, and reinforcing members of an assemblage of alumina-silica fibers containing not less than 40 wt.% alumina, said assemblage of alumina-silica fibers having a virtual density of 0.08–0.3 g/cm^3 and including present in an amount of not more than 17 wt.%, nonfibered particles of the same material as the fibers whereas not more than 7 wt.% nonfibered particles are not smaller than 150 microns diameter.

4,576,864

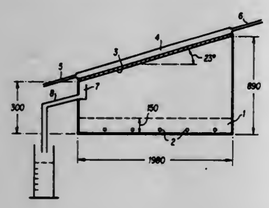
WATER SPREADING PLASTIC MATERIAL, METHOD FOR ITS MANUFACTURE AND ITS USE AS A GLAZING AND ROOFING MATERIAL

Jürgen Krautter, Darmstadt, and Willi Dzialas, Griesheim, both of Fed. Rep. of Germany, assignors to Rohm GmbH Chemische Fabrik, Darmstadt, Fed. Rep. of Germany

Filed Jan. 2, 1985, Ser. No. 688,608
Claims priority, application Fed. Rep. of Germany, Jan. 3, 1984, 3400079
Int. Cl.⁴ B32B *5/16*
U.S. Cl. 428—328 **24 Claims**

1. A water-spreading plastic material, comprising a plastic base having a water-repellent surface and having coated thereon:
(1) an adhesive comprising a non-water-soluble, organic solvent soluble and essentially non-swellable polar group containing polymer and,

(2) a water-spreading layer adhered to said base by said adhesive, being composed of colloid particles selected from the



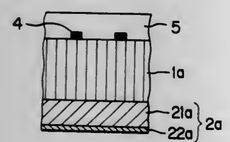
group consisting of silicon oxide, a metallic oxide and a mixture thereof.

4,576,865

MATERIALS FOR PACKAGING LIGHT-SENSITIVE MATERIALS

Mutsuo Akao, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Oct. 12, 1983, Ser. No. 541,349
Claims priority, application Japan, Oct. 13, 1982, 57-178289
Int. Cl.⁴ B32B *27/00*
U.S. Cl. 428—335 **22 Claims**



1. A material for packaging light-sensitive materials including a composite sheet which is a laminate of a substrate and at least one thermoplastic resin layer, at least one layer of said sheet having light-shielding properties,

wherein said thermoplastic resin layer is prepared by the process of melt coextruding a surface layer and an intermediate layer;

said surface layer being comprised of thermoplastic polyolefin resin selected from the group consisting of low density polyethylene, medium density polyethylene, high density polyethylene, linear low density (L-LDPE), ethylene copolymer other than L-LDPE which contain no less than 95 mol % of ethylene, polypropylene and mixtures thereof,

said intermediate layer having a thickness of at least 4 microns and being heat sealable and being comprised of one or more copolymers selected from:

(a) copolymer including 7–30 mol % acrylic ester and/or methacrylic ester with the balance being ethylene provided that the ester is comprised of an alkyl group having 1–8 carbon atoms, and

(b) an ethylene vinyl acetate copolymer (EVA) including 7–20 mol % of vinyl acetate with the balance being ethylene.

4,576,866

MAGNETIC RECORDING MATERIAL

Tsutomu Okita; Nobuo Tsuji, and Yoshito Mukaida, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 23, 1984, Ser. No. 592,671
Claims priority, application Japan, Mar. 25, 1983, 58-48761
Int. Cl.⁴ G11B *5/70*
U.S. Cl. 428—336 **8 Claims**

1. A magnetic recording material, comprising:

a support base having thereon;

a magnetic layer comprised of ferromagnetic powder dispersed in a binder, the binder comprised of a compound selected from class (A), a compound selected from class (B) and a compound selected from class (C), the magnetic layer having been irradiated with electron beams;

class (A) consists of vinyl chloride-vinyl acetate-based copolymers containing 5×10^{-5} to 1.7×10^{-3} equivalents of $-CO_2H$ groups per 1 g of copolymer;

class (B) consists of urethane acrylates having two or more acryloyl groups or methacryloyl groups per molecule and a number average molecular weight in the range of 500 to 100,000, with the urethane being synthesized using a polyester polyol as a starting material which contains a polyhydric alcohol component containing 0 to 10 mole % of a polyhydric alcohol having 3 or more hydroxyl groups and a polybasic component containing 0 to 10 mole % of a polybasic acid having 3 or more carboxyl groups, wherein at least 50 mole % of the polyhydric alcohol component is selected from the group consisting of dihydric alcohols of the group (I) and/or at least 50 mole % of the polybasic component is selected from the group consisting of dibasic acids of the group (II):

group (I) consists of alkyl-substituted aliphatic dihydric alcohols, alicyclic dihydric alcohols, and dihydric alcohols made by addition of alkylene oxide to an alcohol selected from the group consisting of alicyclic dihydric alcohols and aromatic dihydric alcohols;

group (II) consisting of alicyclic dicarboxylic acids, and aromatic dicarboxylic acids;

class (C) consists of compounds having a molecular weight of 500 or less and which contain two or more acryloyl groups or methacryloyl groups per molecule, wherein the ratio of compounds of class (B) to the compounds of class (C) is in the range of form 40/60 to 95/5 by weight, wherein the ratio of compounds of class (A) to the total of the compounds of class (B) and class (C) is in the range of 30/70 to 80/20 by weight, wherein the ferromagnetic powder is dispersed in the binder in an amount of 2 to 7 parts by weight per part by weight of the binder, wherein the magnetic layer has a thickness in the range of 2 to 8 μm and wherein the magnetic layer is irradiated with electron beams having an acceleration voltage in the range of 100 kV to 1,000 kV to apply an absorption dose in the range of 0.5 to 20 megarads.

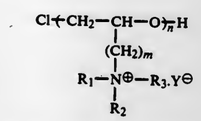
4,576,867

INK JET RECORDING PAPER

Shigehiko Miyamoto, Kamagaya, Japan, assignor to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

Filed Dec. 27, 1984, Ser. No. 686,928
Int. Cl.⁴ B41M *5/00*
U.S. Cl. 428—342 **16 Claims**

1. An ink jet recording paper, wherein a cationic resin having a structure represented by the following general formula (I):



(I)

wherein R_1, R_2 and R_3 represent alkyl group, m represent a number of 1 to 7, n represents a number of 2 to 20, and Y represents an acid residue, is attached to at least the surface of said ink jet recording paper.

4,576,868

COATING COMPOSITION PROCESS FOR THE PREPARATION OF COATINGS AND COATED SUBSTRATE

Ulrich Poth, Munster, and Hans-Dieter Hille, Bergisch-Gladbach, both of Fed. Rep. of Germany, assignors to BASF Farben & Fasern Aktiengesellschaft, Hamburg, Fed. Rep. of Germany

Filed Sep. 14, 1984, Ser. No. 651,274
Claims priority, application Fed. Rep. of Germany, Sep. 14, 1983, 3333072
Int. Cl.⁴ C08K *3/04*; C08L *67/00*; B32B *27/00*; B05D *1/36*
U.S. Cl. 428—423.1 **14 Claims**

1. A coating composition for the preparation of the base coat of a multilayer enamel consisting of at least one base and one transparent protective coat, the said coating composition containing binders based on organic resins, metallic pigments, organic solvents and, if appropriate, other pigments as well as customary additives and auxiliaries, wherein the binders consist of the following components:

A. 20 to 60% by weight of one or more polyurethane and/or urea elastomers prepared from

(a_1) linear compounds with terminal hydroxyl and/or primary and/or secondary amino groups and

(a_2) aliphatic and/or cycloaliphatic diisocyanates, the molar ratio of a_1 to a_2 being 0.8:1 to 1.5:1,

B. 10 to 50% by weight of one or more polyesters prepared from

(b_1) aromatic and aliphatic and/or cycloaliphatic polycarboxylic acids, 40 to 70 mol % of the polycarboxylic acids being aromatic and 60 to 30 mol % of the polycarboxylic acids being aliphatic and/or cycloaliphatic, and 0 to 50 mol % of the total polycarboxylic acids being tricarboxylic acids, and

(b_2) polyols,

20 to 60 mol % of the polyols having 2 or 3 carbon atoms and 40 to 80 mol % having 4 or more carbon atoms,

at least 40 mol % of the diols used having aliphatic side-chains,

0 to 50 mol % of the polyols being triols and

the ratio of the components b_1 and b_2 corresponding to the following formula

$$K = \frac{n_1 - n_2 (F - 2)}{n_2}$$

in which n_1 denotes the number of mol of polyols, n_2 denotes the number of mol of polycarboxylic acids, F denotes the average molar value of the functionality of the polycarboxylic acids and K has a value of 1.05 to 1.5, and

C. 5 to 25% by weight of polycondensates partially etherified with monoalcohols and consisting of melamine, benzoguanamine and/or urea with formaldehyde, the molar ratio of melamine to formaldehyde in the case of melamine/formaldehyde resins being 1:4.5 to 1:6 and the molar ratio of benzoguanamine or urea to formaldehyde in the case of benzoguanamine/formaldehyde or urea/formaldehyde resins being 1:2.5 to 1:4, and the sum of the components A, B and C being 100%.

7. A process for the preparation of coatings, in which a coating composition containing metallic pigments for the formation of a base coat is applied to a substrate, this being followed, after a period of exposure to the air, by the application according to the wet-in-wet process of a second coating composition forming a transparent protective coat, wherein the binders of the coating composition for the base coat consist of the following components:

A. 20 to 60% by weight of one or more polyurethane and/or urea elastomers prepared from

(a_1) linear compounds with terminal hydroxyl and/or primary and/or secondary amino groups and

(a_2) aliphatic and/or cycloaliphatic diisocyanates, the molar ratio of a_1 to a_2 being 0.8:1 to 1.5:1,

B. 10 to 50% by weight of one or more polyesters prepared from

(b_1) aromatic and aliphatic and/or cycloaliphatic polycarboxylic acids, 40 to 70 mol % of the polycarboxylic acids being aromatic and 60 to 30 mol % of the polycarboxylic acids being aliphatic and/or cycloaliphatic, and 0 to 50 mol % of the total polycarboxylic acids being tricarboxylic acids, and

(b_2) polyols,

20 to 60 mol % of the polyols having 2 or 3 carbon atoms and 40 to 80 mol % having 4 or more carbon atoms,

at least 40 mol % of the diols used having aliphatic side-chains,

0 to 50 mol % of the polyols being triols and

the ratio of the components b_1 and b_2 corresponding to the following formula

$$K = \frac{n_1 - n_2 (F - 2)}{n_2}$$

in which n_1 denotes the number of mol of polyols, n_2 denotes the number of mol of polycarboxylic acids, F denotes the average molar value of the functionality of the polycarboxylic acids and K has a value of 1.05 to 1.5, and

C. 5 to 25% by weight of polycondensates partially etherified with monoalcohols and consisting of melamine, benzoguanamine and/or urea with formaldehyde, the molar ratio of melamine to formaldehyde in the case of melamine/formaldehyde resins being 1:4.5 to 1:6 and the molar ratio of benzoguanamine or urea to formaldehyde in the case of benzoguanamine/formaldehyde or urea/formaldehyde resins being 1:2.5 to 1:4, and the sum of the components A, B and C being 100%.

4,576,869

TETRAFLUOROETHYLENE FINE POWDER AND PREPARATION THEREOF

Satish C. Malhotra, Parkersburg, W. Va., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 18, 1984, Ser. No. 621,798
Int. Cl.⁴ C08F *114/26*
U.S. Cl. 428—502 **3 Claims**

1. A non-melt-fabricable tetrafluoroethylene polymer prepared by the aqueous dispersion polymerization procedure in which the last portion of the polymerization is slowed down by stopping addition of initiator so that the end point is at least 5% longer than if initiator addition is continued to the end of the reaction characterized in that

(a) the primary particle size is between 0.1 and 0.5 microns;

(b) the standard specific gravity is less than 2.190,

(c) the rheometric pressure is at least 250 kg/cm^2,

(d) the uniformity of stretch is at least 75% throughout a lubricant loading range of 4 weight percent which 4 weight percent range is within a lubricant loading level range between 10 and 25 weight percent, at a stretch rate of 100%/second,

(e) the uniformity of stretch is at least 75% throughout a stretch rate of between 10 and 100%/second at a lubricant loading level of 17%, and

(f) the stress relaxation time is at least 400 seconds.

4,576,870
METHOD FOR MAKING MULTILAYERED RESIN BODIES HAVING UV-PROTECTION AND THE RESULTANT PRODUCTS

Ralf Liebler, Darmstadt; Siegmund Besecke, Seeheim-Jugenheim, and Manfred Munzer, Bensheim, all of Fed. Rep. of Germany, assignors to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

Filed Mar. 28, 1984, Ser. No. 594,326
Claims priority, application Fed. Rep. of Germany, Apr. 8, 1983, 3312611
Int. Cl.⁴ B32B *27/08, 31/30;* B29C *47/06*
U.S. Cl. 428—515 **16 Claims**

1. A method for making a formed multilayer synthetic resin body having at least one layer which is to be protected from incident ultraviolet light and at least one protective layer which absorbs incident ultraviolet light, which method comprises coextruding said body from a plurality of thermoplastic molding compounds, said protective layer being formed by extrusion of a first molding compound comprising from 51 to 100 percent by weight of a copolymer having polymerized therein at least one comonomer the molecule of which contains a group or structure which protects against ultraviolet light because of its characteristic absorption of ultraviolet light.

15. A formed multilayer synthetic resin body made by the method of claim 1.

4,576,871
HEAT-RECOVERABLE ARTICLE

Ulrich Oestreich, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jan. 27, 1984, Ser. No. 574,605
Claims priority, application Fed. Rep. of Germany, Mar. 3, 1983, 3307567
Int. Cl.⁴ B32B *27/32*
U.S. Cl. 428—521 **9 Claims**



1. A heat-recoverable article comprising:
an outer layer of an opaque, dimensionally stable, thermoplastically deformable material and
a colored inner layer of a cross-linked heat-recoverable material having a characteristic recovery shrinkage temperature,
said outer layer having the property of being non-transparent below the shrinkage temperature and of becoming transparent at a decrystallization temperature at least as high as said shrinkage temperature whereby said inner layer becomes visible through said outer layer when the article is heated to said decrystallization temperature.

4,576,872
FRICTION ELEMENT AND METHOD OF MANUFACTURE THEREOF

Melvyn Ward, Redditch, Great Britain, assignor to Lucas Industries, Birmingham, England

Filed Feb. 17, 1984, Ser. No. 581,320
Claims priority, application United Kingdom, Feb. 24, 1983, 8305189
Int. Cl.⁴ B22F *3/14, 3/16*
U.S. Cl. 428—550 **11 Claims**

1. A friction element comprising a sintered substrate formed of metallic friction material containing sintered metal particles and at least one friction modifier; and a surface layer having a thickness of up to about 2 mm on said sintered substrate and defining a friction surface of the friction element; said surface layer being formed of a metallic friction material containing at least one friction modifier and metal particles which are unsintered or sintered over substantially the whole of said friction surface to a lesser extent than said friction material of said sintered substrate so that said surface layer has less wear resistance than said sintered substrate and friction properties which are not substantially less than those of said sintered substrate.

5. A method of manufacturing a friction element comprising the steps of disposing in a resistance sintering die (1) at least one layer of powdered metallic friction material which (a) contains sinterable metallic particles and at least one friction modifier and (b) is destined to form a sintered friction material substrate of the friction element and (2) a surface layer of powdered metallic friction material which (a) contains metallic particles and at least one friction modifier and (b) is destined to form a friction material surface layer of the friction element; and subjecting said layers of powdered metallic friction material to a resistance sintering operation at a pressure and temperature such as to sinter said sinterable metallic particles of said at least one layer of powdered metallic friction material whereby said sintered substrate and said surface layer of the friction element having a thickness of up to 2 mm are produced, wherein said surface layer of powdered metallic friction material which is destined to form said surface layer of the friction element is formulated so as to be unsinterable or only partially sintered under said pressure and temperature whereby said surface layer of the friction element has less wear resistance than said sintered substrate and frictional properties which are not substantially less than those of said sintered substrate.

4,576,873
HOMOGENEOUS, DUCTILE IRON BASED HARDFACING FOILS

Debasis Bose, Randolph; Amitava Datta, Mendham; Nicholas J. DeCristofaro, Chatham, all of N.J., and Claude Henschel, Redwood City, Calif., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Division of Ser. No. 652,167, Sep. 19, 1984, Pat. No. 4,515,870, which is a continuation of Ser. No. 515,678, Jul. 21, 1983, abandoned, which is a continuation of Ser. No. 285,884, Jul. 22, 1981, abandoned. This application Feb. 19, 1985, Ser. No. 702,778
Int. Cl.⁴ B22F *5/00*
U.S. Cl. 428—606 **3 Claims**

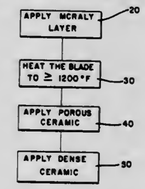
1. For use as a surface layer a hardfaced metal article, a homogeneous ductile hardfacing foil composed of metastable material having at least 50 percent glassy structure and a composition consisting essentially of 0 to about 25 atom percent cobalt, 0 to about 30 atom percent nickel, 0 to about 30 atom percent chromium, 0 to about 5 atom percent tungsten, 0 to about 4 atom percent molybdemum, about 4 to about 25 atom percent boron, 0 to about 15 atom percent silicon, and 0 to about 5 atom percent carbon, the balance being iron plus incidental impurities with the proviso that the total of iron, cobalt, nickel, chromium, tungsten and molybdenum ranges from about 70 to 88 atom percent and the total of boron, silicon and carbon ranges from about 12 to 30 atom percent.

4,576,874
SPALLING AND CORROSION RESISTANT CERAMIC COATING FOR LAND AND MARINE COMBUSTION TURBINES

Charles J. Spengler, Murrysville Boro, and Graham A. Whitlow, Murrysville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 3, 1984, Ser. No. 657,421
Int. Cl.⁴ B21D *39/00;* C03C *27/02*
U.S. Cl. 428—623 **15 Claims**

8. In a turbine blade of the type for use in a land-based or marine combustion turbine and having an airfoil of which at least a portion is designed to operate in the 1100°–1500° F. temperature range and being designed to be usable with contaminated fuels, the improvement comprising:

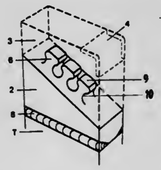


a 1–4 mil thick ceramic coating on at least the portion of said blade designed to operate in the 1100°–1500° F. temperature range, said ceramic coating having been applied in a manner such that it remains in compression up to a temperature of at least about 1200° F.

4,576,875
WELDABLE WEAR PART WITH HIGH WEAR RESISTANCE

Olle G. Olsson; Melih Yaman, both of Sandviken; Mats G. Waldenström, Sundbyberg, and Udo K. R. Fischer, Vallingby, all of Sweden, assignors to Santrade Ltd., Lucerne, Switzerland

Filed Jun. 17, 1981, Ser. No. 274,627
Claims priority, application Sweden, Jun. 23, 1980, 8004608
Int. Cl.⁴ B32B *15/18;* B22D *19/04, 19/06;* B02C *23/00*
U.S. Cl. 428—627 **10 Claims**



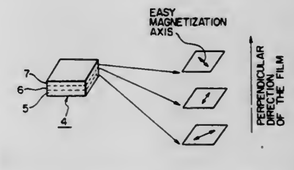
1. Wear part with high wear and abrasion resistance combined with good weldability and good mechanical strength or toughness, comprising a composite part of hard metal portion, a cast iron body portion and a joining portion, characterized in that the joining portion consists essentially of a weldable steel which by casting is bonded to the cast iron body portion by a combined mechanical-metallurgical bond.

4,576,876
MAGNETIC RECORDING MEDIUM

Kazuo Shiiki, Tsukui; Yoshihiro Shiroishi, Hachioji; Osamu Kitakami, and Yasutaro Uesaka, both of Kokubunji, all of Japan, assignors to Hitachi, Ltd, Tokyo and Hitachi Maxell, Ltd., Ohsaka, both of Japan

Filed Sep. 19, 1984, Ser. No. 651,937
Claims priority, application Japan, Sep. 19, 1983, 58-171375
Int. Cl.⁴ G11B *5/66*
U.S. Cl. 428—679 **16 Claims**

1. A complex, magnetic recording medium comprising a substrate, an underlayer provided directly or indirectly on said substrate, said underlayer including at least one magnetic film with high permeability, and a recording medium layer provided directly or indirectly on said underlayer, said underlayer

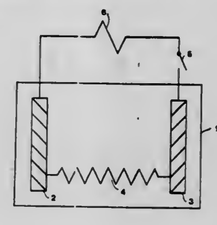


having a relative permeability of not less than 800 in all directions of the film surface.

4,576,877
FUEL CELL

Marinus Alfenaar, Schinnen, Netherlands, assignor to Electrochemische Energieconversie N.V., Mol, Belgium

Filed Jan. 11, 1985, Ser. No. 690,621
Claims priority, application Netherlands, Jan. 14, 1984, 8400127
Int. Cl.⁴ H01M *8/02, 8/18*
U.S. Cl. 429—12 **11 Claims**



1. A fuel cell comprising:
an anode;
a cathode; and
at least one electrically conductive member wherein
the anode is connected with the cathode within said fuel cell through at least one said electrically conductive member and
the arithmetic product of the total electrical resistance between the anode and the cathode electrically conductive connected together within said fuel cell, measured in Ω and the active area of the cathode in m^2, lies between 10^{-4} and 10 Ωm^2.

4,576,878
METHOD AND APPARATUS FOR REBALANCING A REDOX FLOW CELL SYSTEM

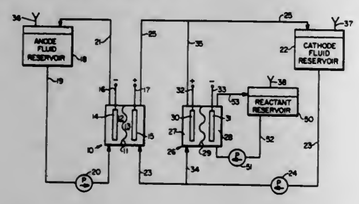
Randall F. Gahn, Columbia Station, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jun. 25, 1985, Ser. No. 748,536
Int. Cl.⁴ H01M *8/04*
U.S. Cl. 429—15 **15 Claims**

1. In a REDOX system including a REDOX cell having an anode chamber and a cathode chamber separated by an ion exchange membrane with an inert electrode in each chamber and anode and cathode fluids each of which includes the same two species of metal chlorides in aqueous HCl, the active metal ions in each fluid being determined by the charging voltage applied between the electrodes of the REDOX cell, the improvement comprising:
a rebalance cell having a cathode chamber and a chlorine

reactant chamber separated by an ion permeable membrane with an inert electrode in each chamber; means for directing the cathode fluid of the REDOX cell through the cathode chamber of the rebalance cell;

a supply of reactant fluid comprised of said two species of metal chlorides in aqueous HCl;



means for circulating said reactant fluid through said reactant chamber while said electrode in said reactant chamber is negative with respect to said electrode in the cathode chamber whereby the active metal ions in the cathode chamber are reduced while chlorine ions in the reactant chamber are oxidized to chlorine gas.

4,576,879

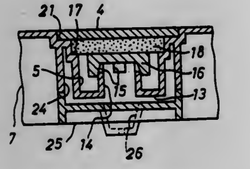
SEALED LEAD ACID BATTERY

Masao Nakazawa, Takatsuki; Michio Yashima, Kawagoe, and Shunji Takahashi, Ooi, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Takatsuki, Japan

Filed Oct. 10, 1984, Ser. No. 659,471

Int. Cl.⁴ H01M *2/12*

U.S. Cl. 429—86 **3 Claims**



1. A sealed lead acid battery comprising:

(a) a container having a rectangular base, four side walls approximately perpendicular to said base and a plurality of vertical partitions dividing said container into a series of separate chambers, said container being formed from a polypropylene resin containing 5 to 20% inert filler and having a wall thickness of 2 to 4 millimeters;

(b) a plurality of cell elements inserted into said chambers, each cell element consisting of at least one rectangular negative plate and at least one rectangular positive plate, arranged serially, each plate being separated from the next by a rectangular, microfibrous, glass separator, having a length and a width greater than that of said plates, said cell elements being pressed into said chamber so as to have an enforceable positive pressure on said negative and positive plates of between 35 and 60 kg/cm^2;

(c) a plurality of straps, connecting the positive and negative plates of each cell respectively;

(d) a cover body sealed to said container, said cover body having a plurality of filler ports, a negative terminal, a positive terminal, and a gas collection system consisting of a common manifold, venting passages connecting said manifold to openings in the top of each of said chambers, a common vent, said vent being formed in a recess in the surface of said cover and comprising a cylindrical, small diameter tube projecting vertically from said common manifold, a plurality of notches formed in the upper portion of said tube, and an elastic cap vertically and horizontally covering said upper tube portion;

(e) a gas permeable filter, fixedly arranged in said vent, superimposed upon and restraining said elastic cap of said common vent; and

(f) a loosely fitting cover detachably mounted upon said cover body over said filter,

wherein said elastic cap positively seals the upper tube portion, and said elastic cap is arranged with said upper tube portion to release gas through said filter by opening of said elastic cap, by itself, when the gas pressure within the common manifold is between 0.2 to 0.4 kg/cm^2 above ambient atmospheric pressure.

4,576,880

BATTERY PACK

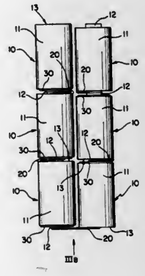
Alain Verdier, Ste Foy les Lyon, and Gilbert Charton, Dardilly, both of France, assignors to Black & Decker Inc., Newark, Del.

Filed Apr. 3, 1985, Ser. No. 719,320

Claims priority, application France, Apr. 6, 1984, 84 05471

Int. Cl.⁴ H01M *2/10*

U.S. Cl. 429—99 **12 Claims**



1. A battery pack, comprising:

a casing having a closed bottom, opposed side walls, and an open top;

said closed bottom having two access orifices therein;

each of said opposed side walls having an aperture therein adjacent said closed bottom;

a plurality of rechargeable batteries in said casing connected in a series arrangement with opposite poles of the series arrangement being located adjacent said closed bottom in alignment with said access orifices;

two contact strips each having a portion externally of said casing, said contact strips connected to contact flanges extending into said casing through a respective one of the apertures, each contact flange extending parallel to said closed bottom and over one of said access orifices and being rigidly secured to a respective one of said poles; and

a cover closing said open top and secured to said casing, said cover pressing said series arrangement of batteries towards said contact flanges to prevent movement of said series arrangement in said casing.

4,576,881

ELECTROCHEMICAL STORAGE CELL

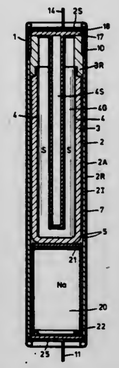
Dieter Hasenauer, Weinheim, and Kuno Hug, Heidelberg, both of Fed. Rep. of Germany, assignors to Brown, Boveri & Cie AG, Mannheim, Fed. Rep. of Germany

Filed Nov. 2, 1984, Ser. No. 667,872

Claims priority, application Fed. Rep. of Germany, Nov. 8, 1983, 3340264

Int. Cl.⁴ H01M *10/39*

U.S. Cl. 429—104 **8 Claims**



1. Electrochemical storage cell based on alkali-metal and sulfur with at least one anode space and a cathode space which are separated from each other by an alkali-ion-conducting solid electrolyte and are bounded at least in some areas by a housing, the improvement comprising that the housing is subdivided into at least two housing elements of which one inner metallic housing element is provided for electrical conductance, is sealed vacuum-tight and is made of a highly conductive heat-resistant aluminum and an outer housing element made of a heat resistant material having a thickness between 0.3 and 0.5 cm for supporting the inner housing element, closely encloses the inner housing element and consists of a continuous tube open at both ends and two discs with one disc at each open end of the tube terminating the end faces of the cell in the housing, wherein by thermo-compression the inner housing element is directly connected to an insulating ring of the solid electrolyte and also the insulating ring is connected to the outer housing element via an aluminum enclosure and wherein a space between the inner housing element and the solid electrolyte is designed as a gap and serves as the anode space, a supply container for the alkali metal disposed in the lower portion of the inner housing element beneath the alkali-ion-conducting solid electrolyte, and lower lateral region openings in the supply container through which the alkali metal can leave the supply container and get into said gap, said supply container otherwise sealed on all sides.

4,576,882

POLYETHYLENE IMINE-METAL SALT SOLID ELECTROLYTE

George T. Davis; Chawan-Kang Chiang, both of Gaithersburg; Joseph M. Antonucci, Kensington, all of Md., and Toru Takahashi, Chiba, Japan, assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 28, 1985, Ser. No. 706,811

Int. Cl.⁴ H01M *6/18*

U.S. Cl. 429—192 **8 Claims**

1. A solid polymer electrolyte comprising:

(a) a matrix of linear poly(ethylene imine) having the formula $(—CH_2CH_2NH—)_n$; and

(b) a metal salt selected from the group consisting of LiI, $LiClO_4$, NaI, NaBr, KI, CsSCN, $AgNO_3$, $CuCl_2$, $CoCl_2$, and $Mg(ClO_4)_2$, wherein the salt is dissolved in and uniformly distributed throughout the poly(ethylene imine) matrix and from more than zero to 0.10 moles of salt are used per mole of monomer repeat unit, $—CH_2CH_2NH—$.

4,576,883

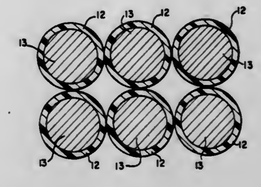
CATHODE COMPOSITION AND METHOD FOR SOLID STATE LITHIUM BATTERY

Henry F. Hope, and Stephen F. Hope, both of 2421 Wyandotte Rd., Willow Grove, Pa. 19090

Filed May 2, 1985, Ser. No. 729,643

Int. Cl.⁴ H01M *6/18*

U.S. Cl. 429—192 **5 Claims**



1. In a solid-state lithium battery of the type comprising a lithium or lithium/aluminum anode, a polymeric electrolyte, and a cathode based on vanadium oxide, the improvement comprising:

a cathode comprising a multiplicity of spheres, each sphere consisting of a vanadium oxide core encapsulated in a polymer film, said polymer film containing an inorganic salt and an activated carbon.

4,576,884

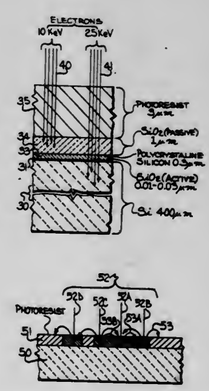
METHOD AND APPARATUS FOR EXPOSING PHOTORESIST BY USING AN ELECTRON BEAM AND CONTROLLING ITS VOLTAGE AND CHARGE

Arnold Reisman, Raleigh, N.C., assignor to Microelectronics Center of North Carolina, Research Triangle Park, N.C.

Filed Jun. 14, 1984, Ser. No. 620,510

Int. Cl.⁴ G03C *5/00*; G21K *5/04*

U.S. Cl. 430—30 **3 Claims**



1. A method for exposing photoresist with an electron beam during the fabrication of a semiconductor device, said method comprising the steps of:

coating a substrate to an approximate predetermined thickness with a photoresist that is exposed in response to an incident electron beam;

locating any variations in the thickness of the coated photoresist in the area upon which the electron beam is incident;

projecting an electron beam onto the coated photoresist and deflecting the electron beam to trace a pattern on the photoresist; and

controlling the energy of the projected electron beam by controlling the acceleration voltage of the projected electron beam as it is deflected to correlate the acceleration voltage to local variations in the thickness of the coated photoresist to match the penetration depth of the electron beam into the photoresist to the thickness of the photoresist at each of the locations upon which the electron beam is incident, and controlling the amount of charge of the electron beam to maximize the energy of the electron beam absorbed by the coated photoresist and minimize the energy absorbed by structures underlying the substrate during exposure from the incident electron beam so that the coated photoresist is thoroughly exposed and ionizing radiation damage to the underlying substrate from the projected electron beam is minimized.

4,576,885

PHOTOGRAPHIC MATERIAL FOR THE SILVER DYE BLEACH PROCESS

Mario Fryberg, Praroman-le-Mouret; Heinrich Schaller, Fribourg; Rolf Steiger, Praroman, and Heinz Peter, Rheinfelden, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

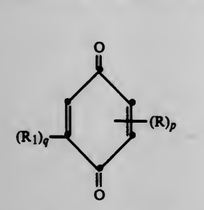
Filed Jan. 16, 1984, Ser. No. 571,018

Claims priority, application Switzerland, Jan. 26, 1983, 425/83

Int. Cl.⁴ G03C *7/32*

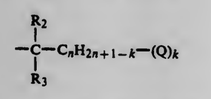
U.S. Cl. 430—390 **13 Claims**

1. A photographic silver dye bleach material which, in at least one layer, contains at least one compound of the formula



(1)

in which R is a radical of the formula



(2)

in which Q is $—CO_2R_4$, in which R_4 is alkyl having 1 to 20 carbon atoms, which is unsubstituted or is substituted by $—OR_6$, in which R_6 is cycloalkyl having 3 to 12 carbon atoms, alkenyl having 3 to 20 carbon atoms, aryl having 6 to 10 carbon atoms, which is unsubstituted or is monosubstituted or disubstituted by alkyl groups having 1 to 4 carbon atoms each, or aralkyl having 7 to 13 carbon atoms, and which may contain 1 to 5 oxygen atoms, or R_4 is alkenyl having 3 to 20 carbon atoms, cycloalkyl having 3 to 12 carbon atoms, aryl having 6 to 10 carbon atoms, which is unsubstituted or is substituted by alkyl having 1 to 4 carbon atoms, or is aralkyl having 7 to 13 carbon atoms, a heterocyclic ring which contains an oxygen atom or a nitrogen atom and is unsubstituted or substituted by 1, 2, or 4 alkyl groups having 1 to 4 carbon atoms each, or is methyl substituted by a 5-membered or 6-membered heterocyclic ring which contains an oxygen atom and is unsubstituted or is monosubstituted or disubstituted by alkyl groups having 1 to 4 carbon atoms each, or Q is $—CONR_4R_5$, wherein R_4 is as defined above and R_5 is hydrogen or alkyl having 1 to 20 carbon atoms or R_4 and R_5, together with the nitrogen atom to which they are linked, form a 5-membered or 6-membered ring which is unsubstituted or is monosubstituted or disubstituted by alkyl groups having 1 to 4 carbon atoms each, with the proviso that R_5 is different from hydrogen if R_4 is alkyl or aryl, or Q is —OX, in which X is R_5 or $—COR_7$, in which R_5 is as defined and R_7 is alkyl having 1 to 20 carbon atoms, alkenyl having 3 to 20 carbon atoms, cycloalkyl having 3 to 12 carbon atoms, aralkyl having 7 to 13 carbon atoms or aryl having 6 to 10 carbon atoms, which is unsubstituted or is monosubstituted or disubstituted by alkyl groups having 1 to 4 carbon atoms each, or Q is $—NR_8R_9$ in which R_8 is hydrogen or alkyl having 1 to 4 carbon atoms and R_9 is hydrogen, alkyl having 1 to 4 carbon atoms or $—COR_7$, in which R_7 is as defined above, or R_8 and R_9, together with the nitrogen atom to which they are linked, form a 5-membered or 6-membered ring which is unsubstituted or is monosubstituted or disubstituted by alkyl groups having 1 to 4 carbon atoms each, or Q is $—P(O)(OR_{10})([O]_xR_{11})$, in which x is 0 or 1, and, if x=1, R_{10} and R_{11} independently of one another are hyrogen or alkyl having 1 to 20 carbon atoms, or R_{10} and R_{11} form an alkylene group having 2 to 3 carbon atoms, which is unsubstituted or is monosubstituted or polysubstituted by alkyl groups having 1 to 20 carbon atoms each, or, if x=0, R_{10} is hydrogen or alkyl having 1 to 20 carbon atoms and R_{11} is unbranched alkyl having 1 to 5 carbon atoms, or Q is $—SO_2R_{12}$, in which R_{12} is hydroxy, chlorine or NR_5R_7, in which R_5 and R_7 are as defined above, with the proviso that R_5 is different from hydrogen if R_7 is alkyl or aryl, R_1 being a radical of the formula (2) if R_{12} is hydroxy, or Q is cyano, R_2 and R_3 independently of one another are alkyl having 1 to 5 carbon atoms and, if $Q=CO_2R_4$, R_2 or R_3 may be substituted by $—CO_2R_4$, or R_2 and R_3 can, together with the radical of the formula $—C_nH_{2n+1-k}$, form a cycloalkyl radical having 5 to 12 carbon atoms, which is monosubstituted or disubstituted by groups of the formula $—CO_2R_4$, in which R_4 is as defined, R_1 is alkyl having 1 to 8 carbon atoms or a radical of the formula (2), p is 1 or 2, q is 0 or 1, p+q having to be 1 or 2, n is 1 to 20 and k is 1 or 2, or a salt of the compound of the formula (1).

4,576,886

AZO PHOTORECEPTOR

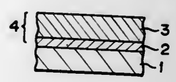
Naohiro Hirose; Osamu Sasaki, and Yoshio Takizawa, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Feb. 11, 1985, Ser. No. 700,531

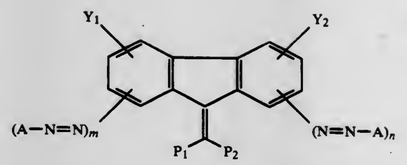
Claims priority, application Japan, Feb. 13, 1984, 59-24658; Mar. 19, 1984, 59-53237; Mar. 27, 1984, 59-60418; Apr. 10, 1984, 59-72376; Apr. 10, 1984, 59-72377; Apr. 11, 1984, 59-73820

Int. Cl.⁴ G03G *5/06, 5/14*

U.S. Cl. 430—59 **20 Claims**



1. A photoreceptor comprising a support and a photosensitive layer which contains an azo compound of the formula [I]:



[I]

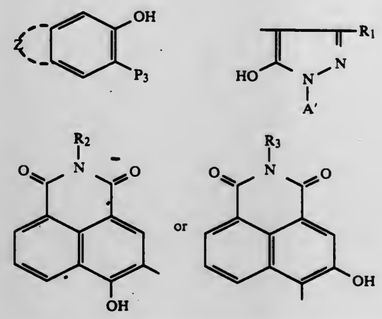
wherein P_1 and P_2 are independently a halogen atom, a hydrogen atom, an alkyl group, an alkoxy group, an aryl group, an acetylamido group, an alkylsulfonyl group,



(Q_1 is an alkyl group, an alkoxy group, a phenyl group, an amino group, a hydroxy group or a hydrogen atom) or



(Q_2, Q_3 and Q_4 independently are a halogen atom, a hydrogen atom, an alkyl group, an alkoxy group, a phenyl group, an acyl group, an ester group, a hydroxy group or a vinyl group), said alkyl group, alkoxy group, aryl group, amino group and vinyl group may have a substituent; Y_1 and Y_2 independently are a hydrogen atom, a halogen atom, a cyano group, a hydroxy group, an alkyl group or an alkoxy group; m and n each represent an integer of 0 to 2, and m and n cannot be both 0; A represents a group represented by any one of the following formulae:



wherein Z is a group of atoms necessary for constituting a substituted or unsubstituted aromatic carbon ring or an aromatic heterocyclic ring, P_3 is a substituted or unsubstituted carbamoyl group or a substituted or unsubstituted sulfamoyl group, R_1 is a hydrogen eatom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted amino group, a substituted or unsubstituted carbamoyl group, a carboxyl group and its ester group or a cyano group, A' is a substituted or unsubstituted aryl group, R_2 and R_3 independently are a substituted or unsubstituted alkyl group, a substituted or unsubstituted aralkyl group or a substituted or unsubstituted aryl group.

14. A photoreceptor according to any one of claims 1, 2, 4, 6, 8, 10 and 12, wherein said photosensitive layer contains a carrier transporting material and said azo compound as a carrier generating material.

15. A photoreceptor according to claim 14, wherein said photosensitive layer comprises a carrier transport layer with contains said carrier transporting material and a carrier generation layer which contains said carrier generating material.

4,576,887

PHOTOCONDUCTIVE POLYMER COMPOSITIONS

Paul Ehrlich, Eggertsville; Wayne A. Anderson, Hamburg, both of N.Y.; En T. Kang, Singapore, Taiwan, and Ansuya P. Bhatt, Salem, Mass., assignors to The Research Foundation of State University of New York, Albany, N.Y.

Filed Nov. 14, 1983, Ser. No. 551,275

Int. Cl.⁴ G03G *5/07*

U.S. Cl. 430—71 **11 Claims**

1. A photoconductive device comprising polyphenylacetylene as a photoconductive material thereof, at least 60 weight percent of said polyphenylacetylene being in the trans-configuration.

4,576,888

TONER FOR ELECTROPHOTOGRAPHY COMPRISING AZOIC PIGMENT HAVING SILICA CORE

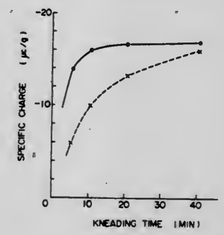
Nobuhiro Miyakawa, Abiko; Kouji Maekawa, Kyoto; Teruaki Higashiguchi, Tokyo, and Kaname Nakatani, Kawasaki, all of Japan, assignors to Mita Industrial Company, Limited, Osaka, Japan

Filed Feb. 24, 1984, Ser. No. 583,425

Claims priority, application Japan, Feb. 28, 1983, 58-30950

Int. Cl.⁴ G03G *9/08*

U.S. Cl. 430—106 **14 Claims**



1. A toner for electrophotography, comprising an azoic pigment having a silica core as a coloring component, and a resin medium for fixation, said azoic pigment comprising a core of a fine powder of silica and a coating of a monoor polyazoic dye chemically bound to the surface of the silica core through an aminosilane coupling agent.

4,576,889

METHOD FOR TRANSFERRING XEROGRAPHIC IMAGES

Leo N. Vackier, 's-Gravenwezel; Jozef L. Mampaey, Kontich, and Leo B. Alaerts, Boechout, all of Belgium, assignors to AGFA-Gevaert N.V., Mortsel, Belgium

Division of Ser. No. 498,160, May 25, 1983, Pat. No. 4,492,177. This application Sep. 6, 1984, Ser. No. 647,902

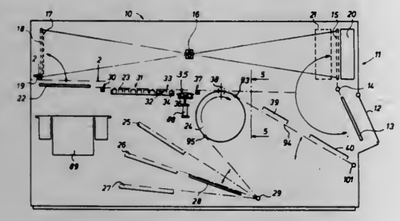
Claims priority, application Belgium, May 26, 1982, 8215318

Int. Cl.⁴ G03G *13/14, 9/08, 15/06, 15/14*

U.S. Cl. 430—126 **8 Claims**

1. Method for transferring a liquid xerographic toner image between the mutually facing surfaces of two elements, at least one of which is in generally flexible sheetlike form, which comprises advancing said flexible sheetlike element along a generally straight line path while supporting such element by its margins with the remainder thereof being unsupported and

capable of deflection from the general plane of said element as a whole; advancing the other element along an arcuate path around a fixed axis, said path having a locus thereof in close spaced proximity to the generally straight line path of said flexible element, while generally rigidly supporting said other element; determining the respective rates of advances of said elements to bring the same to the locus or proximity of the two paths substantially synchronously; depositing a liquid xerographic toner image on one of the mutually facing surfaces of said elements before such element reaches said locus of prox-



imity; while said flexible element passes through said locus of proximity applying a biasing force to its unsupported region to deflect that region out of the general plane of the sheet toward the other element to bring the toner image into direct contact with both element surfaces and thereby maintain the two element surfaces out of contact during their passage through said locus of proximity; and generating an electrical potential gradient across the two elements while they are passing through said locus of proximity with the toner image sandwiched therebetween to cause said toner image to transfer from the surface on which it is deposited to the other surface.

4,576,890

PREPARATION OF ENCAPSULATED ELECTROSTATOGRAPHIC TONER MATERIAL

Noriyuki Hosoi, Fujinomiya, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 14, 1984, Ser. No. 589,535
Claims priority, application Japan, Mar. 14, 1983, 58-41960
Int. Cl.⁴ G03G *9/08*
U.S. Cl. 430—137 **10 Claims**

1. A process for the preparation of an encapsulated electrostatographic toner material comprising a stage of forming shells around micro-droplets of hydrophobic core material containing colorant dispersed in an aqueous medium to produce microcapsules therein, and a stage of separating the microcapsules from the aqueous medium,

which is characterized in that methylcellulose is employed for stabilizing the micro-droplets of core material in the aqueous medium.

4,576,891

PHOTOSENSITIVE MICROCAPSULES USEFUL IN POLYCHROMATIC IMAGING HAVING RADIATION ABSORBER

Paul C. Adair, and Amy L. Burkholder, both of Chillicothe, Ohio, assignors to The Mead Corporation, Dayton, Ohio

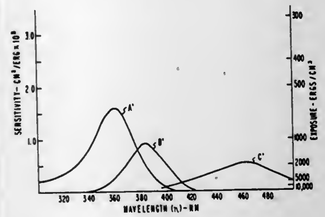
Filed Jun. 15, 1984, Ser. No. 620,994
Int. Cl.⁴ S03C *1/00*; B01J *13/02*
U.S. Cl. 430—138 **12 Claims**

1. A photosensitive material comprising a support having a layer of photosensitive microcapsules on the surface thereof,

said photosensitive microcapsules including first and second photosensitive microcapsules having first and second color formers associated therewith and having internal phases which respectively contain first and second photosensitive compositions which harden upon exposure to actinic radiation;

actinic radiation hardening said first photosensitive composition constituting a first spectral sensitivity range and actinic radiation hardening said second photosensitive composition constituting a second spectral sensitivity range;

said first and second spectral sensitivity ranges being different but overlapping in part;



said first photosensitive microcapsule additionally having associated therewith a compound which absorbs actinic radiation in the overlapping portion of said spectral sensitivity ranges such that the sensitivity of said first photosensitive microcapsule to actinic radiation in the overlapping portion of said spectral sensitivity ranges is reduced.

4,576,892

PHOTOSENSITIVE MATERIALS

Eugene Golda, Monsey, and Alan Wilkes, Brewster, both of N.Y., assignors to Polychrome Corporation, Yonkers, N.Y.

Continuation of Ser. No. 510,456, Jul. 1, 1983, abandoned, which is a continuation of Ser. No. 388,046, Jun. 14, 1983, abandoned, which is a continuation of Ser. No. 173,229, Jul. 28, 1980, abandoned. This application Mar. 12, 1985, Ser. No. 710,827
Int. Cl.⁴ G03F *7/08*; G03C *5/18*
U.S. Cl. 430—157 **15 Claims**

1. In a presensitized plate, for use in lithography, having a support member with a metal surface and an overlying layer on said metal surface, said layer comprises a photosensitive composition further comprising a diazo compound relative to light, the improvement which comprises employing a diazo compound which has been subjected to treatment prior to preparation of the photosensitive composition, prior to being coated on said metal surface, and prior to imagewise exposure for a time period sufficient to accelerate its light reactivity characteristics thereby improving its relative exposure sensitivity, said treated diazo compound having an absorbance at 375 nm of 0.40–0.79 and at 650 nm of 0.90–2.0, and wherein said treatment comprises (a) heating said diazo compound to a temperature above about 35° C. up to about 120° C., (b) ultraviolet light, (c) laser beam, or (d) electron beam.

11. In a process for preparing a presensitized plate, for use in lithography, by applying to a support member with a metal surface an overlying coating of a photosensitive composition comprising a diazo compound reactive to light to define printing and non-printing area, the improvement which comprises subjecting the diazo compound to treatment prior to preparation of the photosensitive composition, prior to being coated on said metal surface, and prior to imagewise exposure to accelerate its reactivity in the presence of light thereby improving its relative exposure sensitivity, said treated diazo compound having an absorbance at 375 nm of 0.40–0.79 and at 650 nm of 0.90–2.0, and wherein said treatment comprising (a) heating said diazo compound to a temperature above about 35° C. up to about 120° C., (b) ultraviolet light, (c) laser beam, or (d) electron beam.

15. A method of accelerating the reactivity of a photosensitive diazo compound and improving its relative exposure sensitivity to light which comprises heating said diazo compound to a temperature of from above about 35° C. to about 120° C., for about 1 to about 150 hours prior to exposing said diazo compoud to light, prior to formulating a photosensitive composition with said diazo compound, and prior to coating said diazo compound on a metal substrate, said heating diazo compound having an absorbance at 375 nm of 0.40–0.79 and at 650 nm of 0.90–2.0.

4,576,893

PRESENSITIZED LITHOGRAPHIC PRINTING PLATE PRECURSOR

Eiji Nakakita; Akinobu Koike; Toshiyuki Sekiya; Hiroshi Misu, and Nobuyuki Kita, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 20, 1984, Ser. No. 622,597
Claims priority, application Japan, Jun. 21, 1983, 58-111672
Int. Cl.⁴ G03C *1/60*; G03F *7/08*
U.S. Cl. 430—457 **10 Claims**

1. A presensitized lithographic printing plate precursor comprising an aluminum support that has been rendered hydrophilic and has provided thereon, a light-sensitive layer composed of a light-sensitive composition comprising in admixture (1) an organic solvent-soluble snd substantially water-insoluble light-sensitive diazo resin, (2) a substantially water-insoluble, film-forming organic polymeric compound, and (3) at least one of a substituted or unsubstituted pyridine-2,6-dicarboxylic acid, wherein said diazo resin is present in an amount of from about 3 to about 30% by weight, based on the total weight of the diazo resin (1) and the substantially water-insoluble, film forming organic polymeric compound (2), and wherein said substituted or unsubstituted pyridine-2,6-dicarboxylic acid is present in an amount of from about 1 to about 100% by weight based on the weight of the diazo resin.

4,576,894

TANNING DEVELOPMENT IN LOW SILVER PHOTOIMAGING USING POLYMERIC COUPLERS

Dennis S. Donald, Mendenhall, Pa., assignor to E. I. Du Pont De Nemours and Company, Wilmington, Del.

Filed Sep. 24, 1984, Ser. No. 653,593
Int. Cl.⁴ G03C *1/30, 1/06, 5/36, 5/26*
U.S. Cl. 430—264 **25 Claims**

1. A photoimaging system comprising the components:

(i) a photosensitive element for photoimaging applications comprising a substrate coated with a photosensitive layer containing dispersed silver halide particles in operative association with a continuous film-forming phase of polymer coupler, the coupler characterized by a number average molecular weight of about 2,000 to 100,000, a content of about 10 to 100 milliequivalents of coupler groups per 100 g of polymeric coupler and about 15 to 175 milliequivalents per 100 g of polymeric coupler of at least one acid group selected from carboxylic, sulfonic, and phosphonic, and the ability to couple with an oxidized developer of component (ii) to become insoluble in aqueous media; and

(ii) a developer consisting essentially of catechol, pyrogallol, or a hydroquinone or N-substituted aminophenol-type developing agent having at least two active coupling sites;

the system characterized further in that components (i) and (ii) cooperate to provide photoimages that are substantially colorless.

4,576,895

OPTICAL RECORDING BY ENERGY-INDUCED FRACTIONATION AND HOMOGENIZATION

Roger W. Barton, Los Altos; Hans J. Coufal, San Jose; Victor B. Jipson, San Jose, and Wen Y. Lee, San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 18, 1984, Ser. No. 621,410
Int. Cl.⁴ G03C *1/94*
U.S. Cl. 430—270 **13 Claims**

1. A method of information recording comprising the steps of

providing a film of a mixture on a substrate, said mixture comprising a matrix material and an incident energy absorbing material which fractionates and/or homogenizes under treatment with sufficient energy, said mixture having a physical state after fractionation and/or homogenization which will undergo further physical state transformation only under treatment with additional energy,

treating a spot on said film with sufficient energy to effect fractionation and/or homogenization of the film without ablation resulting in homogeneous and inhomogeneous regions whereby the physical changes caused by the fractionation and/or homogenization on said treated spot can be detected by the resulting changes in its physical properties,

said matrix material being SiO_2, TeO_2, GeO_2, MoO_2, Sb_2O_3, Bi_2O_3, In_2O_3, TbO, $(CF_4)_n$, Se or a mixture thereof, and

said energy absorbing material being Au, Ag, Pt, Pd, Ti, Cr, Cu, Te, Ge, Mn, Sb, Bi, Sn, In, Pb or a mixture thereof.

4,576,896

OPTICAL RECORDING MEDIUM

Setsuo Suzuki; Morio Tsuge, and Syoichi Nakayama, all of Yokohama, Japan, assignors to Sumitomo Bakelite Company Limited, Tokyo, Japan

Filed Oct. 23, 1984, Ser. No. 663,946
Claims priority, application Japan, Dec. 6, 1983, 58-229196
Int. Cl.⁴ G11B *3/70*
U.S. Cl. 430—271 **14 Claims**

1. An optical recording medium comprising a transparent substrate of a synthetic resin and an information recording layer provided thereon, on which medium information can be optically written, read and erased by means of a laser light, said transparent substrate consisting essentially of a cast-cured product of an epoxy resin composition comprising an alicyclic epoxy resin, an organic polybasic acid anhydride, a curing-accelerator and an anti-discoloring agent.

4,576,897

PROCESS OF MAKING A POLYAMIDE PRINTING PLATE HAVING AN IMPROVED CONTACT WITH AN IMAGE-BEARING FILM

Junichi Fujikawa, Kyoto; Osamu Togashi, Ohtsu, and Shigetra Kashio, Shiga, all of Japan, assignors to Toray Industries, Incorporated, Tokyo, Japan

Continuation of Ser. No. 545,113, Oct. 25, 1983, abandoned, which is a continuation of Ser. No. 288,324, Jul. 30, 1981, abandoned. This application Dec. 21, 1984, Ser. No. 684,972
Claims priority, application Japan, Aug. 7, 1980, 55-108630
Int. Cl.⁴ G03C *1/76*
U.S. Cl. 430—273 **6 Claims**

1. A process of preparing a polyamide printing plate having an improved contact with an image-bearing film, which comprises providing a base layer, applying thereto a photosensitive polyamide layer comprising alcohol-soluble or water-soluble polyamide and ethylenically unsaturated compound, applying an anti-stickiness layer comprising a polymer which is soluble or dispersible in a developer for said photosensitive polyamide, said anti-stickiness layer having a thickness in the range of from 0.2 to 20μ and having a matted surface which is formed by applying a polymer for the anti-stickiness layer in advance onto the mat surface of a matted film to form a coating and then bringing it into pressure contact with the photosensitive layer thereby transferring the anti-stickness coating onto the photosensitive layer, and then removing the matted film from the antistickiness coating which has been transferred to the photosensitive layer.

4,576,898
PROCESS OF MAKING PHOTOPOLYMER RELIEF PLATES USING AN ADHESIVE LAYER

Gerhard Hoffmann, Otterstadt; Dieter Kleuser, Frankenthal, and Werner Lenz, Bad Durkheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

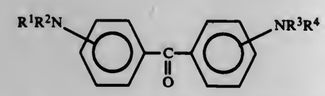
Division of Ser. No. 465,996, Feb. 11, 1983, abandoned, which is a continuation of Ser. No. 310,403, Oct. 9, 1981, abandoned. This application Oct. 9, 1984, Ser. No. 658,463

Claims priority, application Fed. Rep. of Germany, Oct. 17, 1980, 3039209

Int. Cl.⁴ G03C *7/02*

U.S. Cl. 430—306 **9 Claims**

1. A process for the production of photopolymer relief plates which comprises applying a photosensitive relief-forming layer R of a mixture comprising a photopolymerizable ethylenically unsaturated compound and a photoinitiator to a dimensionally stable base which bears an adhesive layer A for the layer R, exposing the layer R imagewise to actinic light of a wavelength range of from 300 to 400 nm and subsequently removing the unexpected areas of the layer, wherein a layer R, containing from 0.0001 to 3 percent by weight of a thermal polymerization inhibitor which on ultraviolet irradiation liberates nitrosyl free radicals is applied to an adhesive layer A, which contains from 0.01 to 10 percent by weight of a compound



where R^1, R^2, R^3 and R^4 are identical or different and each is alkyl or R^5—(O-alkylene)$_x$—, R^5 being H or alkyl and x being 1, 2, 3, 4 or 5.

4,576,899
METHOD FOR ENHANCING APPARENT PHOTOSPEED OF DIAZONIUM PLATES BY USING THIOCYANATE TO INSOLUBILIZE DIAZONIUM COMPOUND AFTER PHOTOLYSIS

Luigi Amariti, Bloomingdale, and Llandro C. Santos, Chicago, both of Ill., assignors to Imperial Metal & Chemical Company, Philadelphia, Pa.

Filed May 1, 1984, Ser. No. 605,796

Int. Cl.⁴ G03F *7/08*

U.S. Cl. 430—309 **5 Claims**

1. A method for enhancing the apparent photospeed of a plate having a layer including a diazonium material, comprising:

selectively photolyzing a plate to define image areas, said plate having a layer including a light-sensitive, negative-working diazonium material, said selective photolyzing including underexposing the diazonium material at the image areas, said underexposing including removing some, but not all, diazonium groups from the diazonium material;

applying a developer composition to the selectively photolyzed and underexposed plate, wherein said developer composition includes substantial amounts of water and an insolubilizing reactant, said insolubilizing reactant being a thiocyanate salt that is present in an amount sufficient to enhance the apparent photospeed of the plate;

reacting the insolubilizing reactant of the applied developer composition with unphotolyzed diazonium groups of the diazonium material at the image areas in order to reduce the solubility of the selectively photolyzed diazonium material; and

removing unphotolyzed diazonium material from the plate while substantially retaining the photolyzed and reacted diazonium material on the plate at the image areas, wherein said unphotolyzed diazonium material is soluble in the developer composition and said photolyzed and reacted diazonium material at the image areas is insoluble in the developer composition.

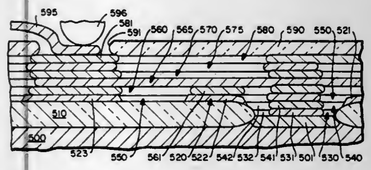
4,576,900
INTEGRATED CIRCUIT MULTILEVEL INTERCONNECT SYSTEM AND METHOD

Ping-Wang Chiang, Los Gatos, Calif., assignor to Amdahl Corporation, Sunnyvale, Calif.

Continuation of Ser. No. 310,089, Oct. 9, 1981, abandoned. This application Sep. 11, 1984, Ser. No. 649,531

Int. Cl.⁴ G03C *5/00*

U.S. Cl. 430—313 **17 Claims**



1. A process for forming an integrated circuit on a substructure having a substantially varying surface topology with surface hills and valleys including the step of forming a plural layer, conductor interconnect pattern and including the step of forming a plurality of successive, substantially planar, composite layers of insulating material and conductive material in said valleys with said insulating material on each layer defining a pattern of regions filled with conductive material to serve as part of a vertical and horizontal interconnect system, the steps for forming each composite layer comprising:

(a) forming a pattern of regions of conductive material on said substructure, said regions of conductive material having an upper surface;

(b) forming over said pattern of conductive regions a layer of first insulating material to a thickness substantially greater than the thickness of said conductive material and having a substantially planar top surface; and

(c) etching back said top surface of said layer of first insulating material down to the top surface of said regions of conductive material.

4. The process of claim 1, wherein said step of forming said pattern of regions of conductive material comprises forming a continuous layer of conductive material on said substrate and patterning said layer of conductive material using photolithography and selective etching steps.

4,576,901
PROCESS FOR PRODUCING NEGATIVE COPIES BY MEANS OF A MATERIAL BASED ON 1,2-QUINONE DIAZIDES WITH 4-ESTER OR AMIDE SUBSTITUTION

Paul Stahlhofen, and Gerhard Mack, both of Wiesbaden, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 2, 1984, Ser. No. 626,759

Claims priority, application Fed. Rep. of Germany, Jul. 11, 1983, 3325023

Int. Cl.⁴ G03F *7/26, 7/08*

U.S. Cl. 430—325 **11 Claims**

1. A process for producing negative relief copies, comprising the steps of:

(a) imagewise exposing a light-sensitive material to light through an original, said material comprising a light-sensitive layer which consists essentially of (1) a binder that is insoluble in water and soluble in aqueous-alkaline solutions and (2) an amount of a 1,2-quinone diazide sufficient to render said layer light-sensitive, said diazide comprising at least one of an ester and an amide of one selected from the group consisting of a 1,2-benzoquinone-2-diazide-4-sulfonic acid, a 1,2-benzoquinone-2-diazide-4-carboxylic acid, a 1,2-naphthoquinone-2-diazide-4-sulfonic acid, and a 1,2-naphthoquinone-2-diazide-4-diazide-4-carboxylic acid, such that said diazide undergoes photodecomposition; thereafter

(b) heating said material, such that cross-linking is effected in portions of said light-sensitive layer exposed to said light;

(c) after (b), cooling and then exposing said material again without said original, such that portions of said light-sensitive layer not exposed during step (a) are rendered alkali-soluble; and then

(d) developing said material with an aqueous-alkaline developer, such that said portions of said layer rendered alkali-soluble are solubilized.

10. A process for producing negative relief copies, comprising the steps of:

(a) imagewise exposing a light-sensitive material to light through an original, said material comprising a light-sensitive layer which consists of (1) a binder that is insoluble in water and soluble in aqueous-alkaline solutions and (2) an amount of a 1,2-quinone diazide sufficient to render said layer light-sensitive, said diazide comprising at least one of an ester and an amide of one selected from the group consisting of a 1,2-benzoquinone-2-diazide-4-sulfonic acid, a 1,2-benzoquinone-2-diazide-4-carboxylic acid, a 1,2-naphthoquinone-2-diazide-4-sulfonic acid, and a 1,2-naphthoquinone-2-diazide-4-diazide-4-carboxylic acid, such that said diazide undergoes photodecomposition; thereafter

(b) heating said material, such that cross-linking is effected in portions of said light-sensitive layer exposed to said light;

(c) after (b), cooling and then exposing said material again without said original, such that portions of said light-sensitive layer not exposed during step (a) are rendered alkali-soluble; and then

(d) developing said material with an aqueous-alkaline developer, such that said portions of said layer rendered alkali-soluble are solubilized.

4,576,902
PROCESS OF MAKING AND USING A POSITIVE WORKING PHOTOSENSITIVE FILM RESIST MATERIAL

Dietrich Saenger, 16 A Lorcher Ring, 6710 Frankenthal, and Helmut Barzynski, 49 An der Ameisenhalde, 6702 Bad Durkheim 1, both of Fed. Rep. of Germany

Division of Ser. No. 522,267, Aug. 11, 1983, which is a continuation of Ser. No. 415,455, Sep. 7, 1982, abandoned, which is a continuation of Ser. No. 283,910, Jul. 7, 1981, abandoned, which is a continuation of Ser. No. 154,895, May 30, 1980, abandoned. This application Dec. 4, 1984, Ser. No. 678,050

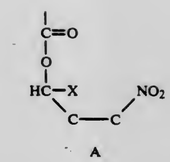
Claims priority, application Fed. Rep. of Germany, Jun. 5, 1979, 2922746

Int. Cl.⁴ G03C *5/00*

U.S. Cl. 430—326 **7 Claims**

1. A process for producing a resist pattern on a substrate which comprises:

laminating to a permanent support a positive working photosensitive dry film resist wherein the photosensitive material of the resist consists essentially of a polymer which has a mean molecular weight greater than 500, contains, chemically bonded in the molecule, not less than 5% by weight, based on the polymer molecular weight, of aromatic or hetero-aromatic o-nitrocarbinol ester groups of the formula I



(I)

A

where A is an aromatic or hetero-aromatic, unsubstituted or substituted ring system with from 5 to 14 ring members and X is hydrogen, alkyl of 1 to 8 carbon atoms or unsubstituted or substituted aryl or aralkyl, and can, after exposure, be washed out with an alkaline solvent or solvent mixture, and a plasticizing compound which is compatible with the polymer and is transparent in the wavelength range of from 300 to 400 nm, this compound being present in such an amount that the optical density of the film at a wavelength of 360 nm is from 0.05 to 3 and that the film softens sufficiently, on lamination at a conventional processing temperature of above 40° C., that it can be laminated to the permanent support;

exposing the laminated resist film image-wise to ultraviolet light; and

washing out the exposed areas of the resist with an alkaline developer.

4,576,903
DEVELOPER FOR POSITIVE PHOTORESISTS

Winfried Baron, Rossdorf; Kurt Marquard, Reinheim; Hans-Joachim Merrem, Seeheim; Raimund Sindlinger, Ober-Ramstadt, and Klaus-Peter Thiel, Brensbach-Wersau, all of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschränkter Haftung, Darmstadt, Fed. Rep. of Germany

Filed Dec. 21, 1984, Ser. No. 685,085

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1983, 3346979

Int. Cl.⁴ G03C *5/00*; G03F *7/00*

U.S. Cl. 430—331 **11 Claims**

1. In a developer for positive photoresists of the phenol/formaldehyde-novolak type containing an o-diazoquinone-type compound as a light-sensitive component,

consisting essentially of effective amounts of,

water,

an inorganic alkali metal compound producing hydroxyl ions in water,

a buffer maintaining a pH of about 12–14,

and a non-ionic surfactant,

the improvement wherein the amount of non-ionic surfactant is about 1–100 ppm,

whereby said developer is effective to develop said positive photoresist with high resolution.

4,576,904
METHOD FOR DEVELOPING NATURAL CAMOUFLAGE PATTERNS

George Anitole, Arlington, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 527,532, Aug. 29, 1983, abandoned. This application Jun. 28, 1985, Ser. No. 749,854

Int. Cl.⁴ G03C *5/00*

U.S. Cl. 430—347 **12 Claims**

1. A method for more scientifically generating more natural camouflage patterns, comprising the steps of:

(a) selecting for photographing a natural environmental background area site, of the type in which military equipment and personnel are expected to operate;

(b) providing means for establishing a known lateral distance

scale so that it will appear in conjunction with a resulting negative or positive film across the area photographed;
(c) photographing the selected area background and processing to obtain at least a first positive image photograph of the background area which photograph embodies all contrast tonal levels of the area;
(d) examining and evaluating said photograph to determine the potential acceptability of the various contrast tonal levels thereof in its initial form against a potential need to prepare any subsequent generation photographs to achieve bolder higher contrast tonal levels while eliminating certain lesser contrast tonal areas;
(e) selecting an area of said at least first positive image photograph's higher contrast pattern to be representative of an average blend of the predominately dark and light tonal areas to constitute the basic camouflage pattern, and enlarging this selected area pattern to a scaled up size into a form which will be compatibly adaptable for subsequent transfer onto the aforesaid military equipment;
(f) transposing at least in outline form the selected higher contrast dark and light tonal areas of the selected pattern onto various equipment/materiel; and thereafter
(g) applying at least two different color paints to said selected higher contrast dark and light areas which paint colors are deemed to provide the best camouflage effect as determined by a comparative evaluation with at least said initial photograph of said background environmental area site.

4,576,905

PHOTOGRAPHICALLY USEFUL CHALCOGENAZOLES, CHALCOGENAZOLINES, AND CHALCOGENAZOLINIUM AND CHALCOGENAZOLIUM SALTS

Wolfgang H. H. Gunther, Webster; Ronald E. Leone, and Rosemary Przyklek, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 529,829, Sep. 6, 1983, abandoned. This application Oct. 12, 1984, Ser. No. 660,155
Int. Cl.⁴ G03C *1/34, 1/28, 1/02, 5/24*
U.S. Cl. 430—401 **122 Claims**

1. A radiation sensitive silver halide emulsion comprised of a dispersing medium,
radiation sensitive silver halide grains, and
a photographically useful concentration of an addendum containing an aromatic ring and, fused with said aromatic ring, a five membered ring containing a divalent tellurium atom, a nitrogen atom, and a carbon atom interposed between said tellurium and nitrogen atoms.

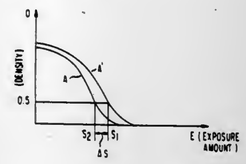
4,576,906

COLOR DIFFUSION TRANSFER PHOTOGRAPHIC ELEMENT WITH HEAT TREATED PYRAZOLIDINONE DEVELOPER

Osamu Takahashi, and Minoru Sakai, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation-in-part of Ser. No. 631,418, Jul. 16, 1984, abandoned. This application Jul. 2, 1985, Ser. No. 751,093
Claims priority, application Japan, Jul. 14, 1983, 58-128226
Int. Cl.⁴ G03C *5/54, 1/40, 1/42, 5/30*
U.S. Cl. 430—497 **18 Claims**

1. A color diffusion transfer photographic element which comprises a support having provided thereon at least one silver halide emulsion layer containing a non-diffusible redox compound capable of releasing a diffusible dye or a precursor thereof by processing with an alkaline processing solution in the presence of a silver halide developing agent after exposure to light, wherein
(a) said alkaline processing solution contains a 3-pyrazolidinone type developing agent,
(b) said alkaine processing solution is contained in a container destructible by pressure,
(c) said destructible container is assembled into the photographic element in such a position that the processing solution released from said container diffuses into the photographic layers, but said position does not interrupt exposure of the silver halide emulsion layer, and



(d) said alkaline processing solution is subjected to a heat treatment under a substantially oxygen-free condition for at least T days, wherein T is represented by the formula

$$\log T = \left(\frac{50 - X}{10}\right) \log 5 \qquad (I)$$

wherein X represents the maximum temperature, provided that X is about 40° C. or more and wherein said alkaline processing solution is heat treated before being assembled into the photographic element.

4,576,907

COLOR-PHOTOGRAPHIC RECORDING MATERIAL

Helmut Kampfer, Cologne; Hans Langen, Boun, and Erwin Ranz, Leverkusen, all of Fed. Rep. of Germany, assignors to Agfa Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 29, 1984, Ser. No. 645,275
Claims priority, application Fed. Rep. of Germany, Sep. 10, 1983, 3332688
Int. Cl.⁴ G03C *1/02*
U.S. Cl. 430—507 **10 Claims**

1. A colour-photographic recording material which has at least one photosensitive silver halide emulsion layer, at least one layer which contains colloidal silver and at least one silver-free layer positioned between these layers, at least one anti-foggant contained in said silver-free layer and said anti-foggant corresponding to the following formula:

$$(MS—Het—(Ar)_m—NR^1—CO)_nR^2$$

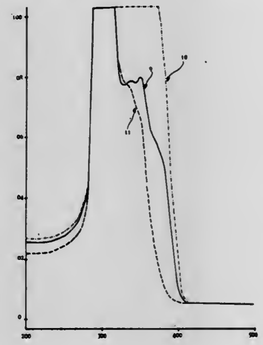
wherein
R^1 represents hydrogen or an optionally substituted aliphatic radical having from 1 to 6 carbon atoms,
R^2 represents an n-valent, optionally substituted aliphatic radical having from 4 to 17 carbon atoms when n represents 1, and having from 2 to 17 carbon atoms when n represents 2,
m represents 0 or 1,
n represents 1 or 2,
M represents hydrogen, an alkali metal atom or an ammonium group,
Ar represents a bivalent optionally substituted aromatic radical,
Het represents a bivalent heterocyclic radical containing at least one N-atom and which may be substituted.

4,576,908

ULTRAVIOLET ABSORBER IN PHOTOGRAPHIC ELEMENTS

Angelo Vallarino, Savona, Italy, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 8, 1984, Ser. No. 618,905
Claims priority, application Italy, Jun. 7, 1983, 65211 A/83
Int. Cl.⁴ G03C *1/84*
U.S. Cl. 430—512 **7 Claims**



1. A photographic element comprising a support base, at least one silver halide emulsion layer and at least one auxiliary layer over said silver halide emulsion layer, said photographic element being characterized by having at least one of said layers containing a dispersion of an ultraviolet radiation absorbing amount of 3-diallylaminoallylidenemalononitrile therein.

4,576,909

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Sohei Goto, and Ken Okauchi, both of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Oct. 4, 1984, Ser. No. 657,686
Claims priority, application Japan, Oct. 5, 1983, 58-187513
Int. Cl.⁴ G03C *7/32*
U.S. Cl. 430—546 **15 Claims**

1. A silver halide color photographic light-sensitive material comprising a support having thereon at least one silver halide emulsion layer wherein said layer contains a polymer coupler and a compound having the following general formula:

$$Ar—O—RO)_pH \qquad [I]$$

wherein Ar is an aryl group, R is an alkylene group, and p is an integer from 1 to 3.

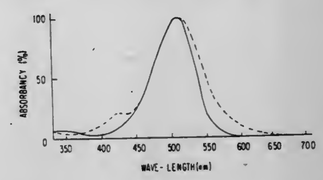
4,576,910

SILVER HALIDE COLOR LIGHT-SENSITIVE MATERIAL CONTAINING MAGENTA COLOR IMAGE-FORMING POLYMER OR COPOLYMER COUPLER LATEX

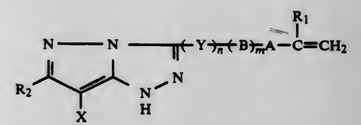
Tsumoru Hirano, and Nobuo Furutachi, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

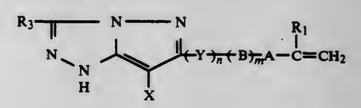
Filed Jun. 11, 1984, Ser. No. 619,422
Claims priority, application Japan, Jun. 9, 1983, 58-103336; Aug. 8, 1983, 58-145331
Int. Cl.⁴ G03C *1/08, 7/16, 7/26, 7/32*
U.S. Cl. 430—548 **18 Claims**

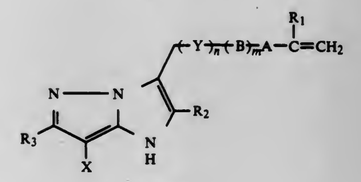
1. A silver halide color photographic light-sensitive material containing in its silver halide emulsion layer a magenta color image-forming polymer or copolymer coupler capable of coupling with an oxidation product of an aromatic primary amine developing agent, wherein said coupler has repeating units

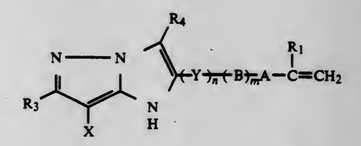


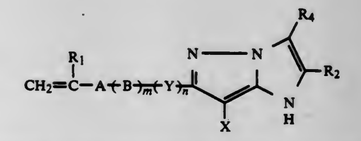
derived from the monomer represented by formula (I), (II), (III), (IV) or (V)


(I)


(II)


(III)


(IV)


(V)

wherein R_1 represents a hydrogen atom, a lower alkyl group containing 1 to 4 carbon atoms or a chlorine atom, R_2, R_3 and R_4 each represents a hydrogen atom, a hydroxy group, a substituted or unsubstituted alkyl group, a substituted or unsubstituted aryl group, a substituted or unsubstituted 5- or 6-membered hetero ring group, a substituted or unsubstituted alkylamino group, a substituted or unsubstituted acylamino group, a substituted or unsubstituted anilino group, a substituted or unsubstituted alkoxycarbonyl group, a substituted or unsubstituted alkylcarbonyl group, a substituted or unsubstituted arylcarbonyl group, a substituted or unsubstituted alkylthio group, a substituted or unsubstituted arylthio group, a substituted or unsubstituted carbamoyl group, a substituted or unsubstituted sulfamoyl group of a substituted or unsubstituted sulfonamido group, X represents a hydrogen atom, a halogen atom, or a

coupling-off group linked through an oxygen atom, nitrogen atom or sulfur atom, A represents —NHCO—, —OCO— or a phenylene group, B represents a substituted or unsubstituted alkylene (straight or branched), substituted or unsubstituted aralkylene or a substituted or unsubstituted phenylene group, Y represents —O—, —NH—, —S—, —SO—, —SO_2—, —CONH—, —COO—, —NHCO— or —NHCONH—, and m represents 1 when n represents 1, or m represents 0 or 1 when n represents 0.

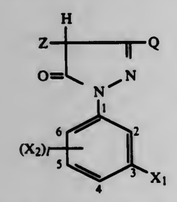
4,576,911
SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Noboru Mizukura; Noboru Fujimori; Kosaku Masuda; Shinji Yoshimoto; Noriki Tachibana, and Eiichi Ueda, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Sep. 4, 1984, Ser. No. 646,960
Claims priority, application Japan, Sep. 5, 1983, 58-163731
Int. Cl.⁴ G03C *7/38*
U.S. Cl. 430—548 **16 Claims**

1. A silver halide color photographic light-sensitive material which comprises a silver halide emulsion layer containing a magenta dye formable polymer coupler comprising a repeating unit having the formula:

Formula [I]



wherein Q is an ethylenically unsaturated group or a group having an ethylenically unsaturated group; X_1 is a halogen atom; X_2 is a halogen atom that is bonded to a position selected from the second, fourth and fifth positions of the phenyl group; Z is a hydrogen atom or a radical that can be split off by the coupling reaction with the oxidized product of a color developing agent; and l is an integer of from 1 to 3, provided if the l is not less than 2, said X_2s are allowed to be either the same as or different from one another.

4,576,912
FLUOROIMMUNOASSAYING

Sidney Yaverbaum, East Windsor, N.J., and Jacob Kusnetz, New City, N.Y., assignors to Technicon Instruments Corporation, Tarrytown, N.Y.

Continuation-in-part of Ser. No. 965,118, Nov. 30, 1978, abandoned. This application Feb. 28, 1983, Ser. No. 470,516
Int. Cl.⁴ G01N *53/00, 33/553, 33/544, 33/542*
U.S. Cl. 435—7 **14 Claims**

1. A method of enhancing the fluorescent level of a fluoroimmunoassay, comprising the steps of:

(a) tagging a long-chain carrier selected from proteins, cellulose, cellulose derivatives, polymers or polysaacharides, said carrier having fluorophore binding sites and capable of treatment to release fluorophores bound thereto, with a plurality of fluorophores, said fluorophores selected from the group consisting of fluorescein, dansyl, rhodamine, fluorescamine, pyrene, acradine, 2-methoxy-2,4-diphenyl-3(2H)-furanone, and fluorescein mercuric acetate until a critical spacing distance of less than 100 Å is reached between said fluorophores to induce self-quenching therebetween;

(b) conjugating one reactant of said fluoro-immunoassay with said fluorescently-quenched carrier;

(c) reacting said conjugated reactant in a known amount with a competing immunoreactant sample and a known amount of a complementary-reactant-containing solid phase binding agent to form a mixture of bound and unbound reaction products, said solid phase binding agent selected from magnetic particulate cellulose, glass, latexes, plastics, agaroses, sepharoses and sephadexes;

(d) separating said bound and unbound reaction products;

(e) liberating the fluorophores from said carrier following said separation in either one of the bound or unbound reaction product by breaking up the carrier molecule by a lysing or chemical treatment; and

(f) measuring the enhanced fluorescent level of said liberated fluorophores.

4,576,913
NAD(P)-INDEPENDENT GLYCEROL DEHYDROGENASE, A PROCESS FOR THE PREPARATION THEREOF AND THE USE THEREOF FOR THE DETERMINATION OF GLYCEROL AND TRIGLYCERIDES

Osao Adachi, and Minoru Ameyama, both of Yamaguchi, Japan, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Filed Mar. 23, 1984, Ser. No. 592,708
Claims priority, application Fed. Rep. of Germany, Mar. 25, 1983, 3311027
Int. Cl.⁴ C12Q *1/00, 1/32;* C12N *9/04;* C12R *1/01, 1/02*
U.S. Cl. 435—26 **11 Claims**

1. Glycerol dehydrogenase which catalyzes the reaction of glycerol to dihydroxyacetone characterized in that said glycerol dehydrogenase is NAD(P)-independent.

2. Process for obtaining an NAD(P)-independent glycerol dehydrogenase comprising culturing, in a nutrient medium, a micro-organism of the species Pseudomonas, Serratia, Klebsiella, Erwinia, Aspergillus, Penicillium, Rhizopus, Acetobacter or Gluconobacter which is capable of forming this enzyme and isolating enzyme from the culture broth.

5. Process for the determination of glycerol, comprising converting glycerol into dihydroxyacetone with an NAD(P)-independent glycerol dehydrogenase according to claim 1 in the presence of a proton and electron acceptor, and measuring the decrease of the oxidised acceptor or the increase of the reduced acceptor or the increase of dihydroxyacetone as a measure of the glycerol.

4,576,914
METHOD FOR ENHANCING A FUNGUS-LYTIC ACTIVITY OF β-1,3-D-GLUCANASE

Akiyoshi Yoshida, Nara; Shigeru Kametaka, and Shin'ichi Hayashi, both of Osaka, all of Japan, assignors to Rohto Pharmaceutical Co., Ltd., Japan

Filed Oct. 17, 1983, Ser. No. 542,861
Claims priority, application Japan, Oct. 18, 1982, 57-183421
Int. Cl.⁴ C12P *39/00;* C12N *9/24, 1/06;* C12R *1/06, 1/125, 1/645, 1/685, 1/885*
U.S. Cl. 435—42 **8 Claims**

1. A method of enhancing a fungus-lytic activity of β-1,3-D-glucanase which comprises using two β-1,3-D-glucanases of different origins.

2. A method of enhancing a fungus-lytic activity of β-1,3-D-glucanase which comprises using said glucanase in the presence of one or more of the activators selected from the group consisting of sodium lauroylsarcosinate, polyoxyethylene alkylphenyl ether, polyoxyethylene alkyl ether, polyoxyethylene polyoxpropylenealkyl ether, benzalkonium chloride, ammonium chloride, chlorhexidine glucuronate, methylparaben and propylparaben.

4,576,915
STRAINS OF *RHIZOBIUM PHASEOLI* AND PREPARATION OF CYCLIC (1→2)-β-D-GLUCAN

Tokuya Harada; Tadashi Higashiura, and Misae Okubo, all of Osaka, Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Filed Oct. 14, 1983, Ser. No. 542,217
Claims priority, application Japan, Oct. 14, 1982, 57-180949
Int. Cl.⁴ C12P *19/04;* C12R *1/41*
U.S. Cl. 435—101 **13 Claims**

1. A novel strain of *Rhizobium phaseoli* which produces cyclic β-1,2-glucon, but does not produce acidic extracellular polysaccharides or constituents of said acidic extracellular polysaccharides.

4,576,916
ELECTRO-OPTICAL APPARATUS FOR MICROBIAL IDENTIFICATION AND ENUMERATION

George E. Lowke, Hurst, Tex., and Robert J. Meltzer, Long Valley, N.J., assignors to Akzo N.V., Arnhem, Netherlands

Division of Ser. No. 371,906, Apr. 26, 1982, Pat. No. 4,467,032. This application Jul. 11, 1984, Ser. No. 629,641
Int. Cl.⁴ C12M *1/36;* C12Q *1/18, 1/04, 1/06*
U.S. Cl. 435—289 **13 Claims**

1. An apparatus for identifying and enumerating microbial cells comprising:

A. an electrical cell comprising,

i. a chamber having an inlet and an outlet,

ii. at least two walls disposed in parallel, spaced apart relation to each other, and

iii. paired electrodes located adjacent each of said walls and spaced apart from each other, said electrodes adapted to receive electrical current and to establish an induced electrical field across at least a portion of said chamber, and to promote the electrical alignment of microbial cells placed therein;

B. an optical sensing assembly comprising,

i. a laser light source positioned to pass a beam of laser light through said electrical cell and between said electrodes, and

ii. a laser light detector positioned in alignment with said light source to receive the laser light emerging from said electrical cell;

C. automated microbial sample delivery means in fluid registry with said electrical cell, to sequentially convey said microbial samples to said inlet; and

D. electrical signal processing means connected with said laser light detector, to translate the variations in birefringence caused by each microbial sample, into an electrical signal of quantitative data, for analysis and comparison with the results of previously performed control testing.

4,576,917
METHOD FOR ANALYSIS OF ADDITIVES IN POLYOLEFINS

John F. Schabron, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 17, 1980, Ser. No. 187,873
Int. Cl.⁴ G01N *30/14, 33/44*
U.S. Cl. 436—85 **12 Claims**

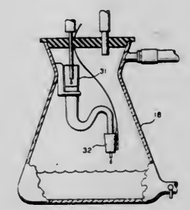
1. A process for the analysis of hindered phenol antioxidants in polyolefins consisting essentially of:

(a) dissolving the polyolefin in hot decalin;

(b) cooling the polyolefin decalin solution by indirect heat exchange to precipitate the polyolefin;

(c) recovering from the resulting decalin solution a portion that is substantially free of polyolefin;

(d) separating said portion into various chemical components; and

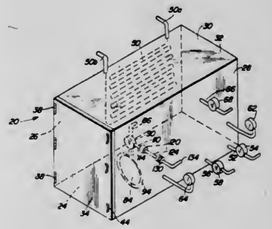


(e) determining the relative amounts of the components by means of a detector.

4,576,918
METHOD OF SAMPLING AND ANALYZING BIOCIDAL GAS FROM A REACTION CHAMBER

Anthony C. Yeung, D4 Greenville Gardens 22/F, Shiu Fai Terrace, Hong Kong

Filed Feb. 2, 1983, Ser. No. 463,286
Int. Cl.⁴ G01N *1/24*
U.S. Cl. 436—179 **4 Claims**



1. A method of determining the composition and concentration of a biocidal gas present in a reaction chamber during processing of material contained in the chamber and exposed to the biocidal gas,

said method comprising the steps of

covering a valved, fixed-volume, reuseable gas sampling vessel having an interior with an enveloping jacket as an insulating layer therefor,

evacuating said vessel,

placing the evacuated vessel within a reaction chamber containing articles to be processed,

providing a remotely operable valve control means accessible outside of the reaction chamber,

coupling said remotely operable valve control means to the valve of said sampling vessel in the reaction chamber for selectively manipulating the valve,

closing the reaction chamber and introducing article-treating biocidal gas thereinto for processing material contained in the chamber,

establishing gaseous flow communication between the interior of said evacuated sampling vessel and the reaction chamber by manipulating the valve of said valved vessel through said remotely operable valve control means to open the valve,

holding the valve in an open position for a finite time period sufficient to allow a gaseous atmosphere present in the reaction chamber to diffuse into and to fill said sampling vessel and to establish equilibrium between gases in said sampling vessel and in said chamber,

closing the valve of said valved gas sampling vessel to trap

and to seal therewithin an aliquot of the gaseous atmosphere present in said reaction chamber,

retrieving the gas-filled sampling vessel from said reaction chamber, and analyzing the gas contained in said vessel.

4,576,919

ZIRCON-CORDIERITE COMPOSITE CERAMIC

James D. Hodge, Cohoes, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 2, 1984, Ser. No. 667,702
Int. Cl.⁴ C03C *10/08;* C04B *35/48*
U.S. Cl. 501—9 **25 Claims**



1. A process for producing a polycrystalline body having a thermal expansion coefficient of less than 4.2×10^{-6} K. at 300° K. consisting essentially of from about 45% by weight to about 95% by weight of polycrystalline zircon phase, from about 5% by weight to about 55% by weight of polycrystalline cordierite phase, up to about 5% by weight of a phase of a nucleating agent, and less than about 2% by volume of a glassy phase which consists essentially of forming a mixture consisting essentially of zircon and/or ZrO_2, Al_2O_3, MgO and SiO_2 and a nucleating agent, said zircon and/or ZrO_2, Al_2O_3, MgO and SiO_2 being used in amounts required to produce said polycrystalline zircon phase and said polycrystalline cordierite phase of said polycrystalline body, shaping said mixture into a compact, sintering said compact at a temperature ranging from about 1290° C. to about 1550° C. at which sufficient liquid phase is generated to liquid phase sinter the compact and produce a densified body having a density greater than about 85% of the theoretical density of said body, said sintering temperature having no significant deleterious effect on said compact or body, said sintered body containing said zircon phase and a glassy phase of said cordierite, nucleation-annealing said sintered body at a temperature ranging from about 600° C. to about 800° C. to nucleate said glassy cordierite phase, crystallization-annealing the resulting nucleated body at a temperature ranging from about 1200° C. to below the temperature at which liquid phase forms in said body to produce said polycrystalline body, said nucleating agent being an agent for nucleating said glassy cordierite phase, said nucleating agent being used in an amount sufficient to nucleate said glassy cordiertie phase to produce said polycrystalline body, said sintering, said nucleation-annealing and said crystallization-annealing being carried out in an atmosphere or vacuum which has no significant deleterious effect on said compact or body.

4,576,920

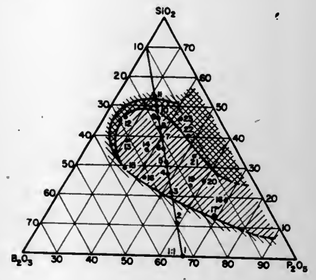
B_2O_3—P_2O_5—SiO_2 GLASS-CERAMICS

John F. MacDowell, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed May 23, 1985, Ser. No. 737,204
Int. Cl.⁴ C03C *10/02, 3/097, 3/064*
U.S. Cl. 501—10 **2 Claims**

1. A transparent, translucent, or opaque glass-ceramic article containing BPO_4 as the predominant crystal phase consisting essentially, expressed in terms of weight percent on the oxide basis, of about

SiO_2: 10–50



B_2O_3: 5–35
P_2O_5: 25–75
$SiO_2+P_2O_5+B_2O_3$: >90.

4,576,921

PREPARATION OF DISPERSIONS AND CERAMICS FROM HYDRATED METAL OXIDES

Edward S. Lane, Didcot, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed Aug. 12, 1983, Ser. No. 522,695
Claims priority, application United Kingdom, Aug. 13, 1982, 8223390; Jun. 28, 1983, 8317565
Int. Cl.⁴ C03C *3/00, 3/04;* C01B *13/14;* B01J *13/00*
U.S. Cl. 501—12 **12 Claims**

1. A process for the preparation of a dispersion which comprises contacting a hydrated metal oxide having an acidic function with a quaternary ammonium hydroxide in an amount sufficient to peptise the hydrated metal oxide to form a dispersion.

4,576,922

HIGH EXPANSION DENTAL CROWN CORE CERAMIC COMPOSITION

William J. O'Brien, and Matthew T. O'Brien, both of Ann Arbor, Mich., assignors to The Regents of the University of Michigan, Ann Arbor, Mich.

Continuation-in-part of Ser. No. 440,799, Jan. 5, 1983, abandoned. This application Jan. 9, 1985, Ser. No. 690,400
Int. Cl.⁴ C03C *14/00*
U.S. Cl. 501—32 **6 Claims**

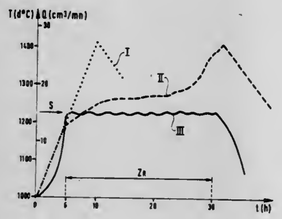
1. A ceramic composition characterized by a coefficient of thermal expansion in the temperature range from 25° C. to 500° C. of between about 14×10^{-6}/°C. to about 16×10^{-6}/°C. and further characterized by a transverse strength of about 18,000 psi or greater comprising from about 40 to 60% by weight of a finely ground, magnesium oxide dispersed in silicate glass matrix containing at least 3% by weight of zirconium oxide, titanium oxide, or mixtures thereof.

4,576,923

METHOD OF MANUFACTURING PARTS OR POWDERS OF A NITRIDE COMPOUND OF SILICON OR OF A METAL BY REACTING SILICON OR METAL PARTS OR POWDERS IN THE SOLID STATE WITH A NITROGEN-CONTAINING REACTIVE GAS

Daniel Broussaud, Villebon sur Yvette; William Mustel, Palaiseau, and Louis Minjolle, Tarbes, all of France, assignors to Armines and Ceraver, both of Paris, France

Filed Apr. 10, 1984, Ser. No. 598,912
Claims priority, application France, Apr. 13, 1983, 83 05993
Int. Cl.⁴ C04B *35/58;* F27D *19/00*
U.S. Cl. 501—98 **7 Claims**



1. A method of nitriding a material selected from the group consisting of silicon, metals, and mixtures thereof into a compound of said material by an exothermic reaction with a nitrogen-containing reactive gas, the method including initially heating the material in a reaction zone in the presence of said reactive gas so as to raise the temperature of the material to an exothermic reaction triggering temperature, delivering sufficient reactive gas to the reaction zone in contact with the material to completely transform by said exothermic reaction the material to said compound, and controlling the rate of said exothermic reaction so as not to exceed a preselected maximum reaction temperature above which complete transformation of the material would not occur, wherein the step of controlling the rate of said exothermic reaction comprises:

maintaining the consumption rate of the reactive gas substantially constant from the start of the exothermic reaction until the transformation has been completed at a level predetermined so as to allow the reaction temperature to increase up to, but not to exceed, said preselected maximum temperature.

4,576,924

PROCESS FOR THE DESORPTION OF SPENT SOLID ABSORBENT

Manfred Koch, Holzwickede; Ludwig Mühlhaus, Iserlohn; Rolf Lambach, Hagen, and Horst Grochowski, Oberhausen, all of Fed. Rep. of Germany, assignors to UHDE GmbH, Dortmund, Fed. Rep. of Germany

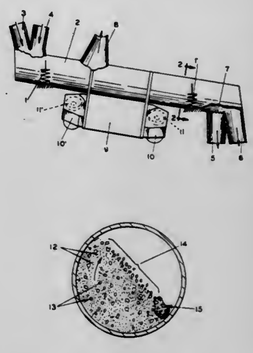
Filed Sep. 30, 1981, Ser. No. 306,962
Claims priority, application Fed. Rep. of Germany, Oct. 2, 1980, 3037187
Int. Cl.⁴ B01J *20/34;* B65G *27/00;* B01F *11/00;* C01B *31/08*
U.S. Cl. 502—56 **1 Claim**

1. A process for the desorption of spent solid absorbent medium through heating the latter to desorption temperature, the improvement comprising the steps of:

(a) introducing a spent absorbent medium and a hot carrier medium into an upper end of an inclined material carrier to form a mixture comprised of particles;

(b) immediately tumbling the spent absorbent medium and the hot carrier medium mixture in a revolving path as the media are introduced into the upper end of the inclined material carrier; and

(c) subjecting the mixture to periodic linear vibrational forces which act on the particles of the mixture as the mixture travels along the inclined material carrier for causing relative mixing of the particles as well as mixing of



the particles in a revolving path as the mixture moves along the inclined material carrier.

4,576,925

CATALYST FOR PURIFYING GASES FROM HYDROGEN SULPHIDE

Tofik G. O. Alkhazov, Baku; Jury P. Korotaev, Moscow, and Albert A. Vartanov, Baku, all of U.S.S.R., assignors to Azerbaidzhansky Institut Nefti I Khimii Imeni Azizbekova, Baku, U.S.S.R.

Division of Ser. No. 613,892, May 24, 1984, Pat. No. 4,519,992. This application Feb. 14, 1985, Ser. No. 701,563
Claims priority, application U.S.S.R., May 26, 1983, 3591260
Int. Cl.⁴ B01J *21/06, 23/80, 23/86*
U.S. Cl. 502—307 **5 Claims**

1. A catalyst useful in the oxidation of hydrogen sulphide contained in gases, said catalyst comprised of the following components in percent by weight:

titanium dioxide	10–30
iron oxide	20–30
zinc oxide	20–25
chromium oxide	20–50

4,576,926

CATALYTIC HOLLOW SPHERES

Taylor G. Wang, Glendale; Daniel D. Elleman, San Marino; Mark C. Lee, La Canada, and James M. Kendall, Jr., Pasadena, all of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Apr. 23, 1984, Ser. No. 602,901
Int. Cl.⁴ B01J *23/40, 35/08*
U.S. Cl. 502—339 **5 Claims**

1. A heterogeneous catalyst comprising hollow, spherical, gas-impervious particles comprising a metal shell containing a gas at a pressure above atmospheric and having a layer of catalyst on the surface thereof.

4,576,927

POROUS ADSORBENT FOR ADSORBING LOW DENSITY LIPOPROTEINS

Toru Kuroda, and Naokuni Yamawaki, both of Fuji, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Nov. 6, 1984, Ser. No. 668,795
Claims priority, application Japan, Nov. 25, 1983, 58-220532; Jan. 18, 1984, 59-5678; May 16, 1984, 59-96375; May 17, 1984, 59-97501; May 18, 1984, 59-98597
Int. Cl.[4] B01J *20/22*
U.S. Cl. 502—402 15 Claims

1. A porous adsorbent for adsorbing thereonto a low density lipoprotein:

which comprises a carrier surface and, linked with the surface, at least one member selected from a silanol group and a synthetic polyanion member having a chain structure and a molecular weight of 600 or more, said synthetic polyanion member having at least one functional group selected from the group consisting of a carboxyl group, sulfonic group and phosphoric acid group, said adsorbent satisfying at least one requirement selected from the group consisting of such requirement that the silanol group is present on the surface at a density of 0.8 to 7.5 $\mu mol/m^2$ and such requirement that the amount of the negative charge of the synthetic polyanion member relative to that of the adsorbent is 1×10^{-6} to 1×10^{-3} equivalent per ml of the adsorbent; and

which has pores, the pore diameters of pores occupying 70% or more of pore volume based on the total pore volume of the adsorbent being distributed in the range of 20 nm to 1,250 nm, the pore volume of pores of a pore diameter in the range of 0.8 D to 1.2 D in which D represents the pore diameter of any one of pores having pore diameters in the range of 20 nm to 1,250 nm being less than 80% based on the total pore volume of the adsorbent.

4,576,928

ADSORBENT AND PROCESS FOR PREPARING THE SAME

Nobutaka Tani, Minoo, and Tsuneo Hayashi, Ashiya, both of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Dec. 1, 1983, Ser. No. 557,061
Claims priority, application Japan, Dec. 2, 1982, 57-212379; Feb. 25, 1983, 58-31194; Apr. 18, 1983, 58-68116; Apr. 21, 1983, 58-70967; Oct. 5, 1983, 58-187365
Int. Cl.[4] B01J *20/22*
U.S. Cl. 502—404 15 Claims

1. An adsorbent for removing a substance to be removed from body fluid in extracorporeal circulation treatment comprising a porous cellulose gel on which a ligand having an affinity for the substance is immobilized by a covalent linkage by reacting the porous cellulose gel with epichorohydrin or a polyoxirane compound to introduce epoxy groups into the gel and reacting the resulting epoxy-activated gel with the ligand.

4,576,929

ACTIVE CARBON FIBERS AS ADSORBENT FOR WATER PURIFICATION

Kenji Shimazaki, Shizuoka, Japan, assignor to Toho Beslon Co., Ltd., Tokyo, Japan

Filed Dec. 18, 1984, Ser. No. 682,955
Claims priority, application Japan, Dec. 22, 1983, 58-240874
Int. Cl.[4] B01J *20/20*
U.S. Cl. 502—417 11 Claims

1. Active carbon fibers derived from acrylic fibers and having a BET specific surface area (SA) of from 800 to 2,000 m^2/g, a ratio of pore volume (Vp) to (SA) of from 5×10^{-4} to 14.5×10^{-4}, and a methylene blue adsorption rate constant of not less than 5×10^{-1} sec^{-1}.

4,576,930

TRANSFUSION PREPARATION FOR INTRAVENOUS INFUSION

Tohru Sugiyama; Yasuo Suzuki; Katsumasa Katagiri, all of Shimizu, and Satoshi Furutani, Yaizu, all of Japan, assignors to Shimizu Pharmaceutical Co., Ltd., Shimizu, Japan

Filed Jul. 7, 1983, Ser. No. 511,494
Claims priority, application Japan, Jul. 20, 1982, 57-127215
Int. Cl.[4] A61K *31/70*
U.S. Cl. 514—23 7 Claims

1. In a transfusion preparation containing glucose and electrolytes for intravenous infusion, the improvement comprising the preparation containing a salt of citric acid, salicylic acid, ethylenediaminetetraacetic acid or lactic acid as a chelating agent, and a pharmaceutically acceptable, water-soluble glycerophosphate, glucose-1-phosphate or glucose-6-phosphate as a phosphorous source, and having a pH of 5 to 7.5.

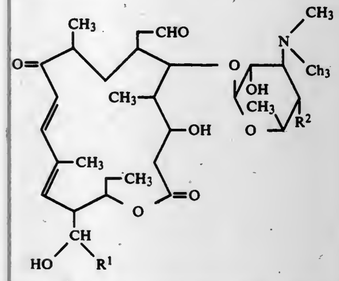
4,576,931

23-C-SUBSTITUTED MYCAMINOSYL TYLONOLIDE, PHARMACEUTICAL COMPOSITIONS AND METHOD OF USE

Hamao Umezawa; Sumio Umezawa, both of Tokyo; Tsutomu Tsuchiya, Kanagawa; Tomio Takeuchi, Tokyo; Akihiro Tanaka, Tokyo, and Shuichi Sakamoto, Tokyo, all of Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai (Microbial Chemistry Research Foundation), Tokyo, Japan

Filed Apr. 3, 1985, Ser. No. 719,286
Int. Cl.[4] A61K *31/78*; C07H *17/08*
U.S. Cl. 514—30 13 Claims

1. A 23-C-substituted mycaminosyl tylonolide compound of the following formula:



(I)

wherein R^1 represents lower alkyl, aryl, lower alkenyl or lower alkynyl, R^2 represents hydrogen or hydroxyl.

4. A method of producing an antibacterial activity against bacteria by administering a compound of claim 1 to a host in need of such treatment.

4,576,932

DIETARY SUPPLEMENT AND METHOD

Paolo Sorbini, Milan, Italy, assignor to Also Laboratori S.A.S., Italy

Filed Jan. 11, 1983, Ser. No. 457,156
Int. Cl.[4] A61K *31/715*
U.S. Cl. 514—54 7 Claims

1. A method for inhibiting an insulin rebound effect in a subject comprising the steps of fasting by said subject from insulin-stimulating carbohydrates for a period to reduce the insulin present in the bloodstream of said subject to near a basal insulin level; orally administering to said subject a dietary supplement, said dietary supplement comprising fructose, milk protein and guar gum, said fructose and guar gum being present in amounts effective to inhibit said insulin rebound effect, and wherein carbohydrates in said dietary supplement consist essentially of substances which do not stimulate insulin production; and fasting by said subject for a period subsequent to said oral administration from insulin-stimulating carbohydrates, said dietary supplement being effective to maintain said insulin present in the bloodstream of said subject near said insulin basal level during said period of fasting, thereby inhibiting said insulin rebound effect.

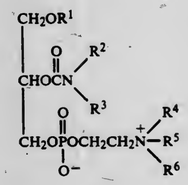
4,576,933

METHOD OF USE OF 1-(ALKYL FOR ALKYLCARBANOYL)-2-CARBAMOYLGLYCEROL DERIVATIVES

Susumu Tsushima, Suita, and Kohei Nishikawa, Kyoto, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Apr. 29, 1983, Ser. No. 490,224
Claims priority, application Japan, May 6, 1982, 57-76224
Int. Cl.[4] A61K *31/42, 31/425, 31/44, 31/685*
U.S. Cl. 514—77 17 Claims

1. A method of treatment of hypertension in a mammal, which comprises administering to said mammal an effective antihypertensive amount of a compound of the formula



wherein

R^1 is alkyl or alkylcarbamoyl containing 10 to 30 carbon atoms,

R^2 and R^3 are independently hydrogen or C_{1-6} alkyl

or wherein NR^2R^3 are piperidino, morpholino, thiomorpholino, 1-piperazinyl, 1-pyrrolidinyl, 1-azetidinyl or 1-azilidinyl and



is a pyridinio, oxazolio, thiazolio, pyridazinio, quinolinio, isoquinolinio, N-methylmorpholinio, morpholinio, N-methylpiperazinio or piperazinio group, each of said groups being unsubstituted or substituted by one C_{1-4} alkyl, hydroxy, hydroxyethyl, aminoethyl, amino, imino, carbamoyl or ureido group, or a pharmaceutically acceptable salt thereof.

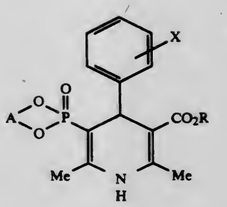
4,576,934

ANTIHYPERTENSIVE DIHYDROPYRIDINE-5-PHOSPHONIC ACID CYCLIC ESTERS

Kiyotomo Seto, Funabashi; Sakuya Tanaka, Hasuda, and Ryozo Sakoda, Kashiwa, all of Japan, assignors to Nissan Chemical Industries Ltd., Tokyo, Japan

Filed Sep. 26, 1984, Ser. No. 654,473
Claims priority, application Japan, Sep. 26, 1983, 58-177710; Aug. 3, 1984, 59-163649
Int. Cl.[4] C07F *9/58*; A61K *31/675*
U.S. Cl. 514—85 9 Claims

1. A compound of the formula:



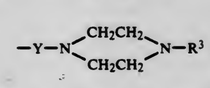
(I)

wherein

X is hydrogen, nitro, trifluoromethyl, fluorine, chlorine, bromine, or iodine;

A is 1,3-propylene or 1,4-butylene which may be substituted by C_1–C_3 alkyl;

R is C_1–C_4 alkyl, —Y—$N(R^1)(R^2)$ or



wherein each of R^1, R^2 and R^3, which may be the same or different, and is hydrogen, C_1–C_6 alkyl, or aralkyl; and Y is C_2–C_6 alkylene; and

Me is methyl; or its pharmaceutically acceptable salt.

6. An antihypertensive, coronary or peripheral vasodilator composition comprising

(a) an antihypertensive, coronary or peripheral vasodilator effective amount of the compound of claim 1; and

(b) a pharmaceutically acceptable diluent or carrier.

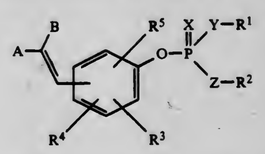
4,576,935

DIHALOVINYLPHENYL PHOSPHATES AND THEIR USE AS PESTICIDES

Gerd-Ulrich Schwarz, Schifferstadt, and Heinrich Adolphi, Limburgerhof, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 24, 1983, Ser. No. 544,855
Claims priority, application Fed. Rep. of Germany, Oct. 23, 1982, 3239288
Int. Cl.[4] A01N *57/06*; C07F *9/09*
U.S. Cl. 514—113 7 Claims

1. A dihalovinylphenyl phosphate of the formula



I

where A and B independently of one another are each fluorine, chlorine and bromine, or trihaloalkyl of 1 to 4 carbon atoms, X is oxygen or sulfur, Y and Z independently of one another are each oxygen, sulfur or the divalent radical —NH—, R^1 is alkyl of 1 to 3 carbon atoms, R^2 is alkyl, haloalkyl, alkoxyalkyl, alkylthioalkyl of 1 to 6 carbon atoms, and R^3, R^4 and R^5 independently of one another are each hydrogen, halogen, nitro, cyano, alkyl, alkoxy, alkylthio, trihaloalkyl or trihaloalkoxy of 1 to 4 carbon atoms.

2. A method of combating insects which comprises: applying to the insects or their habitat an effective amount of a compound of the formula I as defined in claim 1.

4,576,936

6α-FLUORO-9α-CHLORO-PREDNISOLONE 17,21-DIESTERS

Peter MacDonald, Arese, Italy, assignor to Sterosynt Ltd., Bristol, Great Britain

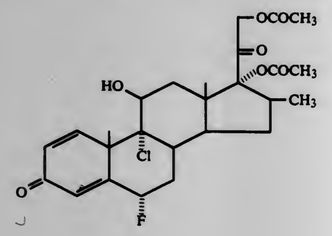
Continuation of Ser. No. 207,807, Nov. 17, 1980, abandoned. This application Mar. 23, 1982, Ser. No. 361,119

Claims priority, application Italy, Nov. 16, 1979, 27353; Oct. 9, 1980, 49853

Int. Cl.⁴ A61K *31/56*

U.S. Cl. 514—180 **1 Claim**

1. A method of treating an inflammatory condition in a warm-blooded animal responsive to treatment with antiinflammatory agents, which comprises administering to said animal a nontoxic, antiinflammatory effective amount of 6-α-fluoro-9-α-chloro-prednisolone 17,21-diester of formula I



(I)

4,576,937

7-D-MANDELAMIDO-3(1-SULFOMETHYLTETRAZOL-5-YL)THIOMETHYL-3-CEPHEM-4-CARBOXYLIC ACID MONOSODIUM SALT

Theodore J. Polansky, Harleysville, Pa., assignor to SmithKline Beckman Corporation, Philadelphia, Pa.

Filed Feb. 29, 1984, Ser. No. 584,590

Int. Cl.⁴ C07D *501/48*; A61K *31/545*

U.S. Cl. 514—204 **16 Claims**

1. 7-D-Mandelamido-3-(1-sulfomethyltetrazol-5-yl)-thiomethyl-3-cephem-4-carboxylic acid monosodium salt, and hydrates and solvates thereof.

4,576,938

CEPHALOSPORIN COMPOUND AND PROCESS FOR PREPARING THE SAME

Mitsuyoshi Wagatsuma, Urawa; Susumu Hatsuno, Kawaguchi; Totaro Yamaguchi, Urawa, and Satoshi Ohshima, Iwatsuki, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

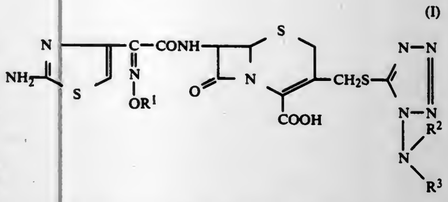
Filed Dec. 8, 1982, Ser. No. 447,809

Claims priority, application United Kingdom, Dec. 8, 1981, 8137018; Nov. 2, 1982, 8231243

Int. Cl.⁴ A61K *31/545*; C07D *501/56*

U.S. Cl. 514—206 **5 Claims**

4. An antibacterial composition comprising an effective antibacterial amount of a cephalosporin compound selected from the group consisting of a (Z) isomer of a compound of the formula:



(I)

wherein R^1 is methyl or tetrazolylmethyl and R^2 and R^3 are a hydrogen atom, or a pharmaceutically acceptable salt thereof and a pharmaceutically acceptable carrier therefor.

4,576,939

PENEM DERIVATIVES

Barry C. Ross, Luton, and Graham Johnson, Milton Keynes, both of United Kingdom, assignors to Hoechst AG, Frankfurt am Main, Fed. Rep. of Germany

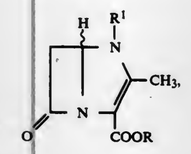
Continuation of Ser. No. 217,819, Dec. 18, 1980, abandoned. This application Nov. 8, 1982, Ser. No. 439,898

Claims priority, application United Kingdom, Dec. 20, 1979, 7943995

Int. Cl.⁴ A61K *31/415*; C07D *487/04*

U.S. Cl. 514—210 **10 Claims**

1. A penem compound of the formula



wherein

R is a carboxyl esterifying group removable by hydrolysis, reduction, or enzymatic action, or is a pharmaceutically acceptable cation; and

R^1 is alkyl having 1 to 4 carbon atoms or such alkyl substituted by —CN or —COO(C_1–C_4-alkyl), or is phenyl or phenyl mono- or di-substituted by the same or different substituents which are —CN, halogen, or —COO(C_1–C_4-alkyl).

4,576,940

ANTI-ALLERGIC 3-INDOLECARBOXAMIDES

Tetsuya Tahara; Tsuguo Ikebe; Michio Terasawa, and Tomonori Imayoshi, all of Oita, Japan, assignors to Yoshitomi Pharmaceutical Industries, Ltd., Osaka, Japan

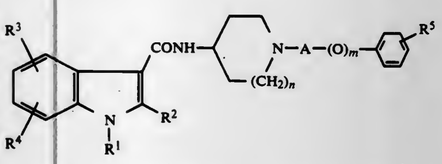
Filed Aug. 10, 1984, Ser. No. 639,292

Claims priority, application Japan, Sep. 14, 1983, 58-170061

Int. Cl.⁴ A61K *31/55, 31/445*; C07D *401/12*

U.S. Cl. 514—212 **11 Claims**

1. A 3-indolecarboxamide compound of the formula:



inclusive of compounds selected from the group consisting of pharmaceutically acceptable acid addition salt forms thereof,

and hydrate forms thereof, wherein R^1 is a C_{1-8} alkyl group, a C_{3-8} cycloalkyl group, a C_{3-8} cycloalkyl-C_{1-8} alkyl group, an allyl group, a propargyl group, or a phenyl or phenyl-C_{1-4} alkyl group which may be optionally substituted, on the benzene ring, by at least one substituent selected from the group consisting of a halogen atom, a trifluoromethyl group, a C_{1-4} alkyl group and a C_{1-4} alkoxy group; R^2 is a hydrogen atom or a C_{1-6} alkyl group; R^3 is a hydrogen atom, a halogen atom, a C_{2-6} alkanoyloxy group, a benzoyloxy group, a C_{1-4} alkoxy group, a benzyloxy group, a hydroxyl group or a C_{1-4} alkyl group; R^4 is a hydrogen atom, a halogen atom, a C_{1-4} alkyl group, a C_{1-4} alkoxy group or a hydroxyl group; R^5 is a hydrogen atom or a C_{1-4} alkoxy group; A is an ethylene or trimethylene group, which may be optionally substituted by a C_{1-4} alkyl group, n is zero, 1 or 2; and m is zero or 1.

9. A pharmaceutical composition for the prevention or treatment of allergic diseases containing an anti-allergic effective amount of the compound of claim 1 and a pharmaceutically acceptable carrier therefor.

4,576,941

COMPOUNDS FOR TREATING HYPERTENSION

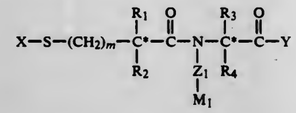
John T. Suh, Greenwich, Conn.; John J. Piwinski, Parsippany, N.J.; Howard Jones, Ossining, N.Y., and Edward S. Neiss, New Canaan, Conn., assignors to USV Pharmaceutical Corp., Tarrytown, N.Y.

Filed Feb. 29, 1984, Ser. No. 584,576

Int. Cl.⁴ A61K *31/54*; C07D *417/12, 413/12, 401/12*

U.S. Cl. 514—222 **23 Claims**

1. A compound of the formula



(I)

or a pharmaceutically acceptable alkali metal, alkaline earth metal, or acid addition salt thereof, wherein

X is hydrogen or



wherein

A is alkyl, phenyl, or phenyl substituted with up to 3 substituents selected from the group consisting of halo, alkyl having up to 7 carbon atoms, —CF_3, OH, COOH, NH_2, and SO_2NH_2;

m is 0 to 3 inclusive;

Y is —OR or —N(R)R;

R_1, R_2, R_3 and R_4 are independently R or amino-alkyl,

Z_1, reading toward the M_1 substituent, is selected from the group consisting of —$(CH_2)_n$—, —N(R)$CH_2(CH_2)_n$—, —N(R)$CH_2(CH_2)_n$NH—, —$(CH_2)_nSO_2$—, —$(CH_2)_n$N(R)SO_2—, —$(CH_2)_n$—N(R)—, —$(CH_2)_n$N(R)C(O)—, —$(CH_2)_n$C(O)N(R)—, or —$(CH_2)_n$C(O)—, in which n is 0 to 6 inclusive, and one of the (CH_2) groups can be mono- or disubstituted with methyl or ethyl;

M_1 is a 1,2,4-benzothiadiazine-1,1-dioxide group having two or three substituents selected from the group consisting of halogen, alkyl, aminoalkyl, aralkyl, cycloalkyl, alkylamino, acylamino, acylaminoalkyl, acylaminoalkylamino, trifluoromethyl, nitro, cyano, —OR, —SR, —C(O)OR, —S(O)R, —SO_2R, —C(O)N(R)R, —N(R)R, or —SO_2N(R)R;

wherein in each occurrence R is independently hydrogen, alkyl, cycloalkyl, aryl, aralkyl, heteroalkyl, heteroaralkyl, or heteroaryl;

wherein the alkyl groups and the alkyl moieties contain up to 7 carbon atoms, the cycloalkyl and heterocyclic groups and moieties are saturated or unsaturated and contain 3 to 12 atoms, the aryl groups and moieties are selected from the group consisting of phenyl, tolyl, indanyl, naphthyl, tetrahydronaphthyl and decanhydronaphthyl; and the heteroaryl groups and moieties are selected from the group consisting of indolyl, indolinyl, pyridyl, pyrrolidyl, pyrrolyl, morpholino, furyl, tetrahydrofuryl, thienyl, imidazolyl, quinolyl, isoquinolyl, benzimidazolyl, and tetrahydroisoquinolyl.

4,576,942

ANTI-ALLERGIC AND ANTI-INFLAMMATORY BI- AND TRI- CYCLO-1,4-THIAZINE DERIVATIVES, COMPOSITION, AND METHOD OF USE THEREFOR

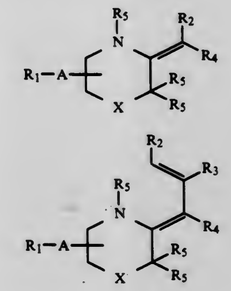
Raymond D. Youssefyeh, Tarrytown, N.Y., assignor to USV Pharmaceutical Corp., Tarrytown, N.Y.

Filed Jul. 12, 1984, Ser. No. 630,048

Int. Cl.⁴ A61K *31/38, 31/54*; C07D *279/16, 513/02*

U.S. Cl. 514—222 **5 Claims**

1. A member of the formulae:



I

II

III

wherein,

A is benzo or pyrido;

X is S;

R_1 is H, C_1–C_6 alkyl, OH, OR, halogen, nitro, COOR,

wherein R in OR, COOR,

denotes lower alkyl having 1 to 6 carbon atoms;

R_2, R_3, R_4 and R_5 are identical or different and each represent H, C_1–C_6 alkyl, OH, OR, cyano, halogen, or COOR, wherein R in OR and COOR denotes lower alkyl having 1 to 6 carbon atoms; and pharmaceutically acceptable salts thereof.

4,576,943

PYRAZOLO[1,5-a]PYRIMIDINES

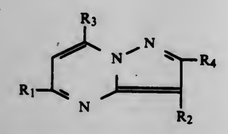
Andrew S. Tomcufcik, Old Tappan, N.J.; Walter E. Meyer, Suffern; John P. Dusza, Nanuet, both of N.Y., and Shin S. Tseng, Bridgewater, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Oct. 9, 1984, Ser. No. 659,069

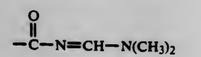
Int. Cl.[4] A61K *31/505, 31/535, 31/54;* **C07D** *471/04*

U.S. Cl. 514—222 **22 Claims**

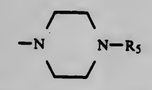
1. A compound selected from the group consisting of those of the formula:



wherein R_1 is hydrogen, methyl or trifluoromethyl, R_2 is cyano, carbamoyl or moiety of the formula:



R_3 is phenyl, 3-chlorophenyl, 4-chlorophenyl, 3-trifluoromethylphenyl, 3-pyridyl or 4-pyridyl, and R_4 is 1-piperidino, 4-benzyl-1-piperidino, 4-thiomorpholino, 4-morpholino or a piperazino moiety of the formula:



wherein R_5 is methyl, phenyl, 2-pyridyl, 2-furanylmethyl, 3-phenyl-2-propenyl, benzyl, 3-chlorobenzyl, 4-chlorobenzyl, 3,4-dichlorobenzyl, 2,6-dichlorobenzyl, 3-methoxybenzyl, 4-methoxybenzyl, β-hydroxyethyl, 2-phenoxyethyl, 3-phenoxypropyl or 4-phenoxybutyl with the proviso that when R_1 is methyl or trifluoromethyl then R_3 is phenyl or 4-pyridyl and R_4 is 4-benzyl-1-piperazinyl; and the pharmacologically acceptable acid-addition salts thereof.

17. A method of lowering blood pressure in a mammal which comprises administering to said mammal an effective hypotensive amount of a compound of claim **1**.

4,576,944

4-ETHYL-2-HYDROXY-3-METHYL-2-PHENYLMORPHOLINE, COMPOSITIONS AND USE

Louis Lafon, Paris, France, assignor to Laboratoire L. Lafon, France

Filed Oct. 12, 1984, Ser. No. 660,218

Claims priority, application France, Oct. 17, 1983, 83 16485

Int. Cl.[4] A61K *31/535;* **C07D** *265/32*

U.S. Cl. 514—238 **4 Claims**

1. A 2-hydroxy-2-phenylmorpholine derivative selected from the group consisting of:

(i) 4-ethyl-2-hydroxy-3-methyl-2-phenylmorpholine; and

(ii) non-toxic addition salts thereof.

3. A method of treatment of depression which comprises administering a pharmaceutically effective amount of a compound according to claim **1**.

4,576,945

HEXAALKYLMELAMINE-AMINO-OXY COMPOUNDS

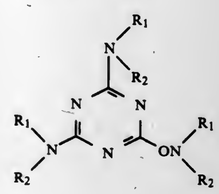
Mark E. Sanders, 1740 Shaleh Meadows Rd. Apt. 9D, Holladay, Utah 84117

Continuation-in-part of Ser. No. 436,682, Oct. 26, 1982, abandoned. This application Jan. 3, 1984, Ser. No. 567,475

Int. Cl.[4] C07D *251/52;* **A61K** *31/53*

U.S. Cl. 514—245 **19 Claims**

1. A compound having the formula:



wherein R_1 and R_2 are independently lower alkyl.

4,576,946

DERIVATIVES OF 4-METHYL 6-PHENYL PYRIDAZINE ACTIVE ON THE CENTRAL NERVOUS SYSTEM

Camille G. Wermuth, Strasbourg; Kathleen Biziere, Claplers, and Horace Davi, St. Gely du Fesc, all of France, assignors to Sanofi, France

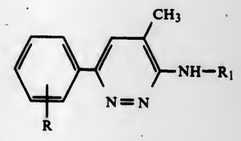
Filed Aug. 4, 1982, Ser. No. 405,169

Claims priority, application France, Aug. 10, 1981, 81 15435

Int. Cl.[4] C07D *237/20, 413/12;* **A61K** *31/50*

U.S. Cl. 514—247 **6 Claims**

1. Compounds of 4-methyl 6-phenyl pyridazine of the formula:

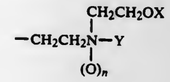


(I)

in which:

R is H or OH

R_1 represents the group



where

N=0 or 1

X=H and

Y=H or lower alkyl of 1–4 carbon atoms.

3. A pharmaceutical composition for the treatment of depressive states which contains at least one product of claim **1**.

4,576,947

PHARMACEUTICAL COMPOSITIONS

Heinz-Joachim Hinze, Auringen; Alfons Söder, Frankfurt-Schwanheim, and Kurt Popendiker, Wiesbaden, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

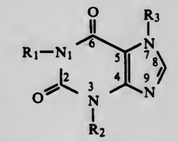
Continuation of Ser. No. 774,648, Mar. 4, 1977, abandoned, which is a continuation-in-part of Ser. No. 485,870, Jul. 5, 1974, abandoned, which is a continuation-in-part of Ser. No. 330,653, Feb. 8, 1973, abandoned. This application Nov. 10, 1983, Ser. No. 543,114

Claims priority, application Fed. Rep. of Germany, Feb. 15, 1972, 1810705; Feb. 19, 1972, 2207860; Jul. 11, 1973, 2335170

Int. Cl.[4] A61K *31/52*

U.S. Cl. 514—263 **20 Claims**

1. A pharmaceutical composition containing as one of plural components and as sole essential active ingredient, a cerebral-blood-flow-increasing amount of a compound of the formula



(I)

wherein

R_1 is a member selected from the group consisting of ω-hydroxyalkyl having from 5 to 8 carbon atoms and in which the hydroxyl is separated from the xanthine nucleus by at least two carbon atoms, unbranched (ω-1)-hydroxyalkyl having 5 to 8 carbon atoms, branched (ω-1)-hydroxyalkyl having from 5 to 8 carbon atoms and in which the hydroxyl is separated from the xanthine nucleus by at least two carbon atoms, methyl and —H;

R_2 is a member selected from the group consisting of ω-hydroxyalkyl having from 5 to 8 carbon atoms and in which the hydroxyl is separated from the xanthine nucleus by at least two carbon atoms, unbranched (ω-1)-hydroxyalkyl having from 5 to 8 carbon atoms, branched (ω-1)-hydroxyalkyl having from 5 to 8 carbon atoms and in which the hydroxyl is separated from the xanthine nucleus by at least two carbon atoms, and methyl; and

R_3 is a member selected from the group consisting of unbranched ω or (ω-1)-hydroxyalkyl having from 5 to 8 carbon atoms, branched (ω-1)-hydroxyalkyl having from 5 to 8 carbon atoms and in which the hydroxyl is separated from the xanthine nucleus by at least two carbon atoms, methyl and —H;

one and only one of R_1, R_2 and R_3 being ω- or (ω-1)-hydroxyalkyl.

4,576,948

COMPOSITION AND METHOD FOR INHIBITING TERMINAL DEOXYRIBONUCLEOTIDYL TRANSFERASE ACTIVITY

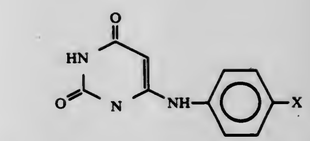
Ronald McCaffrey, Needham; George Wright, Worcester, and Earl F. Baril, Rutland, all of Mass., assignors to Trustees Boston University, Boston, Mass.

Filed Jan. 20, 1983, Ser. No. 459,433

Int. Cl.[4] A61K *31/505;* **C07D** *239/54*

U.S. Cl. 514—274 **4 Claims**

1. A process for treating a human patient afflicted with a form of leukemia, the cells of which express terminal deoxynucleotidyl transferase, which comprises administering to the patient a compound of the formula:



wherein X is C_1–C_{10} alkoxy or amino and is effective for the selective inhibition of terminal deoxynucleotidyl transferase in an amount effective to prevent proliferation of said cells in vivo.

4,576,949

USE OF 5,6,7,8-TETRAHYDROQUINOLINES AND 5,6-DIHYDROPYRINDINES AS LEUKOTRIENE AND LIPOXYGENASE INHIBITORS AND THE NOVEL 3-SUBSTITUTED COMPOUNDS THEREIN

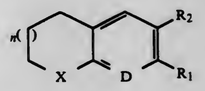
Herman W. Smith, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed May 7, 1984, Ser. No. 607,500

Int. Cl.[4] A61K *31/41;* **C07D** *221/20, 215/54, 215/20*

U.S. Cl. 514—277 **18 Claims**

1. A compound having the formula



I

wherein

D is N or N→O;

wherein

n is an integer 0 or 1;

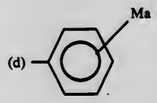
wherein

R_1 is

(a) hydrogen,

(b) alkyl of from 1 to 4 carbons; inclusive,

(c) cyclopropyl,



IX

wherein a is an integer 0–2, inclusive, and wherein M is

(i) hydrogen,

(ii) halo,

(iii) trifluoromethyl,

(iv) S—CH_3,

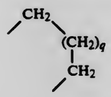
(v) phenyl,

(vi) O—CH_3,

(vii) OH,

(viii) NO_2,

(ix) NR_3R_4 wherein R_3 and R_4 are the same or different and are alkyl of from 1 to 4 carbons, inclusive, acyl, aroyl, hydrogen, or are taken together to form

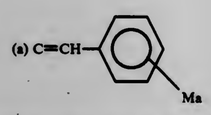


XI

wherein q is an integer 2 or 3, except that when one of R_3 or R_4 is acyl or aroyl, the other of R_3 or R_4 cannot be acyl or aroyl,

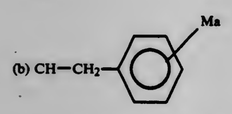
(x) $OCOCH_3$,
(xi) $OCOC_6H_5$,
(xii) $O—Si(CH_3)_2C(CH_3)_3$; and
wherein
R_2 is
(a) $COOR_5$ wherein R_5 is
(i) hydrogen,
(ii) alkyl of from one to four carbons, or
(iii) a pharmaceutically acceptable cation,
(b) CH_2OH,
(c) CHO,
(d) $CH{=}CH{-}(CH_2)_dR_6$ comprising the cis or trans isomer thereof wherein d is an integer 0 through 3, inclusive, and R_6 is CH_2OH, CH_2Cl or CO_2R_5 wherein R_5 is as defined above,
(e) $CH_2CH_2(CH_2)_dR_6$ wherein d and R_6 are as defined above; and
wherein
X is

XII



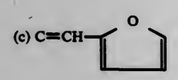
wherein M and a are as defined above except with the proviso that M cannot be NO_2 when D is N, R_2 is $COOR_5$ and n is 1,

XIII

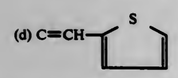


wherein M and a are as defined above except with the proviso that M cannot be NO_2 when D is N, R_2 is $COOR_5$ and n is 1,

XIV

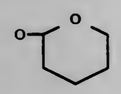


XV

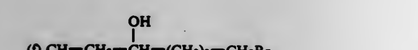


(e) $CH{-}CH_2{-}C(O){-}(CH_2)_3R_7$ and R_7 is H, OH, Cl,

XVI

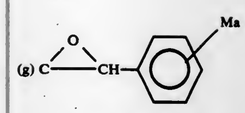


or $O—Si(CH_3)_2C(CH_3)_3$,



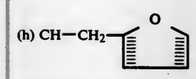
wherein R_7 is as defined above, or

XVII



wherein M and a are as defined above;

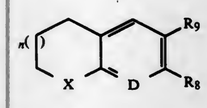
XVIII/XIX



and pharmaceutically acceptable salts thereof.

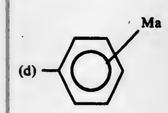
12. A method for the therapeutic or prophylactic treatment of allergy, asthma, chronic bronchitis, cystic fibrosis, psoriasis, or inflammatory bowel diseases comprising administration of an effective amount of a compound having the formula

II



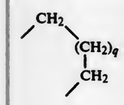
wherein
D is N or N→O;
wherein
n is an integer 0 or 1;
wherein
R_8 is
(a) hydrogen,
(b) alkyl of from 1 to 4 carbons; inclusive,
(c) cyclopropyl,

IX



wherein a is an integer 0–2, inclusive, and wherein M is
(i) hydrogen,
(ii) halo,
(iii) trifluoromethyl,
(iv) $S—CH_3$,
(v) phenyl,
(vi) $O—CH_3$,
(vii) OH,
(viii) NO_2,
(ix) NR_3R_4 wherein R_3 and R_4 are the same or different and are alkyl of from 1 to 4 carbons, inclusive, acyl, aroyl, hydrogen, or are taken together to form

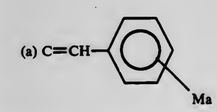
XI



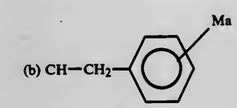
wherein q is an integer 2 or 3, except that when one of R_3 and R_4 is acyl or aroyl, the other of R_3 and R_4 cannot be acyl or aroyl,
(x) $OCOCH_3$,
(xi) $OCOC_6H_5$,
(xii) $O—Si(CH_3)_2C(CH_3)_3$; and
wherein
R_9 is
(a) hydrogen, or alkyl of 1 to 4 carbon atoms,
(b) $COOR_5$ wherein R_5 is

(i) hydrogen,
(ii) alkyl of from one to four carbons, or
(iii) a pharmaceutically acceptable cation,
(c) CH_2OH,
(d) CHO,
(e) $CH{=}CH{-}(CH_2)_dR_6$ comprising the cis or trans isomer wherein d is an integer 0 through 3, inclusive, and R_6 is CH_2OH, CH_2Cl, or CO_2R_5 wherein R_5 is as defined above with the proviso that when R_6 is CO_2R_5 then d cannot be 0,
(f) $CH_2CH_2(CH_2)_dR_6$ wherein d and R_6 are as defined above; and
wherein
X is

XII

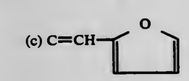


wherein M and a are as defined above,

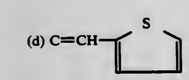


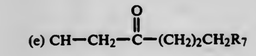
wherein M and a are as defined above,

XIV



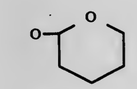
XV



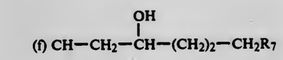


wherein R_7 is H, OH, Cl,

XVI

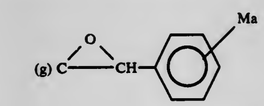


or $O—Si(CH_3)_2C(CH_3)_3$,



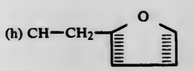
wherein R_7 is as defined above, or

XVII



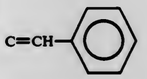
wherein M and a are as defined above;

XVIII/XIX



with the proviso that when R_8 and R_9 are both hydrogen and n is 0 then X cannot be

XII



and with the proviso that when R_8 and R_9 are both hydrogen and n is 1 then M cannot be OC(=O) alkyl of from 1 to 4 carbons, inclusive; and pharmaceutically acceptable salts thereof.

4,576,950

ALKYL PYRIDINIUM SYNERGISTS FOR BENZIMIDAZOLE PESTICIDES

George S. Puritch, Brentwood Bay, and Edward S. Kondo, Orleans, both of Canada, assignors to Safer Agro-Chem Ltd., Victoria, Canada

Filed Dec. 14, 1983, Ser. No. 561,083
Int. Cl.[4] A01N *43/40*
U.S. Cl. 514—358 **9 Claims**

1. A fungicidal composition with increased fungicidal activity, against benomyl tolerant fungi comprising (A) 0.1 to 90% by weight of methyl 1-(n-butylcarbamoyl)-2-benzimidazolecarbamate, and (B) 0.2 to 2 parts by weight of an alkyl pyridinium salt with the formula:

XIV

(II)

XV

wherein R represents an alkyl radical containing 12 to 16 carbon atoms and X is a monovalent anion, per part of the benzimidazole, wherein the composition is formulated such that when a further diluted aqueous solution containing 1 to 1,000 ppm of the benzimidazole insecticide is applied to fungi or habitats thereof, the concentration of the alkyl pyridinium salt in the diluted aqueous solution is below its critical micelle concentration level.

4,576,951

PROGLUMIDE, PHARMACEUTICAL PREPARATIONS AND COMPOSITIONS INCLUDING IT FOR USE IN HUMAN PAIN RELIEF

Luigi Rovati; Francesco Makovec; Paolo Senin, and Pierluigi Casula, all of Monza, Italy, assignors to Rotta Research Laboratorium S.p.A., Milan, Italy

Filed Dec. 10, 1984, Ser. No. 680,004
Claims priority, application Italy, Dec. 12, 1983, 68288 A/83
Int. Cl.[4] A61K *31/44, 31/195*
U.S. Cl. 514—282 **8 Claims**

1. A pharmaceutical composition for use in pain relief therapy in humans including proglumide or pharmaceutically-acceptable salt thereof and further including a drug selected from the group consisting of morphine and chemically related opioids, the amount of proglumide being effective to potentiate the analgesic-narcotic activity of said drug, wherein the ratio by weight of proglumide to the said drug is from about 200 to 1.

XVI

XVII

4,576,952

PYRAZOLOPYRIDINE DERIVATIVES AND THEIR USE AS ANTI-INFLAMMATORY AND/OR ANTI-ALLERGIC AGENTS

Jim Hurst, Sunderland, and Josephine B. May, Nelson, both of England, assignors to Beecham Group p.l.c., Middlesex, England

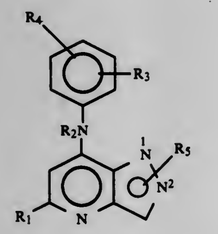
Filed Jan. 23, 1985, Ser. No. 693,731

Claims priority, application United Kingdom, Jan. 25, 1984, 8401868; Nov. 28, 1984, 8430012

Int. Cl.⁴ A61K *31/415, 31/44;* **C07D** *471/04*

U.S. Cl. 514—303 **9 Claims**

1. A compound of the formula (I) and pharmaceutically acceptable salts thereof:



(I)

wherein:

R_1 is hydrogen, C_{1-6} alkyl or phenyl optionally substituted by halogen, CF_3, C_{1-4} alkoxy or C_{1-4} alkyl;

R_2 is hydrogen or C_{1-6} alkyl;

R_3 is hydroxy, nitro, cyano, C_{2-10} acyloxy, NR_6R_7 wherein R_6 and R_7 are independently selected from hydrogen, C_{1-6} alkyl, C_{2-7} alkanoyl or C_{1-6} alkylsulphonyl; or COR_8 wherein R_8 is hydroxy, C_{1-6} alkoxy or NR_9R_{10} wherein R_9 and R_{10} are independently selected from hydrogen or C_{1-6} alkyl;

R_4 is hydrogen, halogen, CF_3, C_{1-4} alkoxy, C_{1-4} alkyl or any of the groups listed for R_3; and

R_5 is hydrogen, C_{1-4} alkyl or benzyl optionally substituted in the phenyl ring by halogen, CF_3, C_{1-4} alkoxy or C_{1-4} alkyl and is attached at nitrogen atom 1 or 2.

8. A method of treatment of inflammatory conditions in mammals comprising the administration to the mammal of an anti-inflammatory effective amount of a compound according to claim 1 or a pharmaceutically acceptable salt thereof.

4,576,953

QUINOLINE DERIVATIVES

David J. Le Count, Congleton, United Kingdom, assignor to Imperial Chemical Industries PLC, London, England

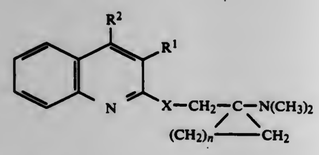
Filed Feb. 23, 1984, Ser. No. 583,035

Claims priority, application United Kingdom, Mar. 29, 1983, 8308601

Int. Cl.⁴ A61K *31/47;* **C07D** *215/22*

U.S. Cl. 514—312 **6 Claims**

1. A quinoline derivative of the formula:



II

wherein:

X stands for an oxygen or sulphur atom;

n stands for 1 or 2;

R^1 stands for an n-, iso- or s-(3–4C)alkyl radical, or a cyclopropyl radical, or a phenyl radical which may optionally bear a halogeno, (1–4C)alkyl or (1–4C)alkoxy substituent; and

R^2 stands for hydrogen or a (1–4C)alkyl radical;

or a pharmaceutically-acceptable acid-addition salt thereof.

6. A peripherally selective 5-HT antagonist pharmaceutical composition comprising a compound of the formula II stated in claim 1, wherein X, n, R^1 and R^2 have the meanings stated in claim 1, or a pharmaceutically-acceptable acid-addition salt thereof, and an inert pharmaceutically-acceptable diluent or carrier.

4,576,954

ANTI-RHEUMATIC 5-(SUBSTITUTED AMINO)-1,2-DITHIOL-3-ONE COMPOUNDS AND THEIR USE

Jean-Dominique Bourzat; Claude Cotrel, both of Paris; Daniel Farge, Thiais; Jean-Marc Paris, Vaires S/Marne, and Gérard Taurand, Creteil, all of France, assignors to Phone-Poulenc Sante, Courbevoie, France

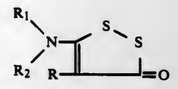
Filed Feb. 21, 1984, Ser. No. 582,043

Claims priority, application France, Feb. 24, 1983, 83 03005

Int. Cl.⁴ A61K *31/47;* **C07D** *215/02, 217/02*

U.S. Cl. 514—314 **5 Claims**

1. A 5-amino-1,2-dithiol-3-one compound of the formula



in which R represents a hydrogen or chlorine atom and R_1 and R_2, together with the nitrogen atom to which they are bonded, form a 1,2,3,4-tetrahydroquinoline or 1,2,3,4-tetrahydroisoquinoline ring, each being substituted or unsubstituted by a halogen atom, carboxyl, alkoxycarbonyl, carbamoyl, alkylcarbamoyl, dialkylcarbamoyl, trifluoromethyl, cyano, nitro, alkoxy, alkylthio or alkyl radical substituted or unsubstituted by a carboxyl, alkoxycarbonyl, carbamoyl, alkylcarbamoyl, dialkylcarbamoyl, hydroxyl, amino, alkylamino or dialkylamino radical, each of the aforesaid alkyl radicals and alkyl portions hereinbefore mentioned containing 1 to 4 carbon atoms in a straight or branched chain, and, where they exist, its pharmaceutically acceptable acid addition salts, its pharmaceutically acceptable metal salts and its pharmaceutically acceptable addition salts with nitrogen bases.

5. A method of treating rheumatic disease which comprises administering to a subject suffering therefrom or liable thereto an effective amount of a compound according to claim 1.

4,576,955

PYRIDYLALKYLENETHIOPYRIDYLS

Roger Crossley, and Kay H. Dickinson, both of Reading, England, assignors to John Wyeth & Brother, Ltd., Maidenhead, England

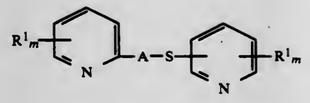
Division of Ser. No. 350,442, Feb. 19, 1982, Pat. No. 4,440,773, which is a continuation-in-part of Ser. No. 217,925, Dec. 18, 1980, Pat. No. 4,343,805, which is a continuation of Ser. No. 98,421, Nov. 29, 1979, abandoned. This application Oct. 13, 1983, Ser. No. 541,921

Claims priority, application United Kingdom, Dec. 16, 1978, 7848813

Int. Cl.⁴ C07D *401/12;* **A61K** *31/44*

U.S. Cl. 514—335 **5 Claims**

1. A compound of the formula



wherein the R^1 groups are, independently, hydrogen, hydroxyl, lower alkyl, hydroxyloweralkyl, loweralkoxy loweralkyl, loweralkoxy, halogen, formyl, phenyl, phenylloweralkyl, halophenyl or $CH(OR^4)_2$, where R^4 is alkyl of 1 to 4 carbon atoms or two R^4 radicals are joined to form a lower alkylene chain; m is 1 or 2; A is a saturated alkylene radical having from 1 to 4 carbon atoms, which may be substituted by lower alkyl of 1 to 6 carbon atoms; S is sulfur; or an acid addition salt thereof, with the proviso that at least one of R^1 is other than hydrogen.

4,576,956

IODO PROPARGYLAMINOISOXAZOLES AS FUNGICIDES

Yasuo Makisumi, Hyogo; Akira Murabayashi; Katsuya Tawara, both of Osaka; Yoshihachi Watanabe, Shiga; Toshio Takahashi, Hyogo, and Takao Konishi, Osaka, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

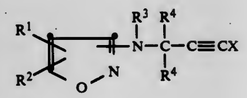
Filed Sep. 9, 1983, Ser. No. 530,883

Claims priority, application Japan, Oct. 5, 1982, 57-176762

Int. Cl.⁴ A61K *31/41;* **C07D** *261/12, 261/20*

U.S. Cl. 514—380 **21 Claims**

1. A compound of the formula I:



(I)

wherein R^1 and R^2 each is hydrogen, C_1–C_{10} alkyl, C_1–C_4 alkoxy, C_3–C_6 cycloalkyl, halogen, A—CH_2—, B—, B—CH_2— or B—CH_2O— wherein A is C_1–C_4 alkoxy or mono- or di- C_1–C_4 alkylamino and B is phenyl, furyl, thienyl or imidazolyl optionally substituted by one or two groups selected from the group consisting of halogen and carboxy;

R^1 and R^2 when taken together may form C_2–C_5 alkylene;

R^3 and R^4 each is hydrogen or C_1–C_4 alkyl; and X is iodine.

4,576,957

N-(SUBSTITUTED PHENYL)-N'-[(1H-IMIDAZOL-1-YL) AND (1H-1,2,4-TRIAZOL-1-YL)ALKYL]UREAS

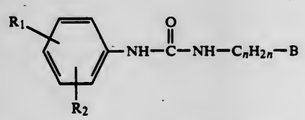
Joseph W. Marsico, Jr., Pearl River, N.Y.; William B. Wright, Jr., Woodcliff Lake, N.J., and Jeffery B. Press, Tuxedo, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jul. 5, 1984, Ser. No. 628,095

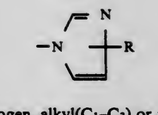
Int. Cl.⁴ A61K *31/41, 31/415;* **C07D** *233/61, 249/08*

U.S. Cl. 514—383 **21 Claims**

1. A compound selected from the group consisting of those of the formula:



wherein R_1 and R_2 are each independently selected from the group consisting of hydrogen, fluoro, chloro, bromo, trifluoromethyl, alkyl(C_1–C_3) and alkoxy(C_1–C_3); n is an integer from 2 to 8, inclusive; and B is 1H-1,2,4-triazol-1-yl or a moiety of the formula:



wherein R is hydrogen, alkyl(C_1–C_3) or phenyl.

19. The method of inhibiting thromboxane synthetase enzyme in a mammal which comprises administering internally to said mammal a thromboxane synthetase enzyme inhibiting amount of a compound of claim 1.

21. The method of inhibiting hypertension in a mammal which comprises administering to said mammal a hypotensive amount of a compound of claim 1.

4,576,958

ANTIHYPERTENSIVE 4,5-DIARYL-1H-IMIDAZOLE-2-METHANOL DERIVATIVES

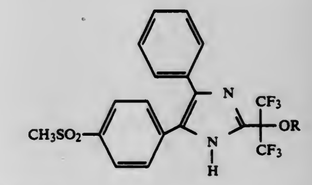
Ruth R. Wexler, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 23, 1984, Ser. No. 573,214

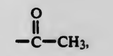
Int. Cl.⁴ C07D *233/54;* **A61K** *31/415*

U.S. Cl. 514—400 **3 Claims**

1. A method of treating hypertension in a mammal comprising administering to the mammal an antihypertensive amount of a compound of the formula



where R is H or



or a pharmaceutically suitable salt thereof.

4,576,959

6-SUBSTITUTED-4-DIALKYLAMINOTETRAHYDROBENZ[c,d]INDOLES

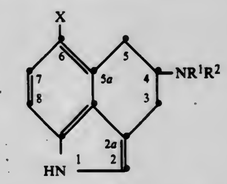
Michael E. Flaugh, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 577,096, Feb. 6, 1984. This application Feb. 1, 1985, Ser. No. 697,292

Int. Cl.⁴ A61K *31/40;* **C07D** *209/90*

U.S. Cl. 514—411 **23 Claims**

1. A 4-substitutedamino-6-substituted-1,3,4,5-tetrahydrobenz[c,d]indoles of the formula



wherein R^1 and R^2 are individually hydrogen, methyl, ethyl,

n-propyl or allyl; R^1 is additionally Y—CO where Y is H; CH_3; C_2H_5 or CH_2=CH; and X is a halogen, CN, $CONH_2$, NH_2 or NO_2, and pharmaceutically acceptable salts thereof.

2. A compound according to claim 1 in which X has its previous meaning and R^1 and R^2 are individually methyl, ethyl, n-propyl or allyl.

18. A method of treating depression which comprises administering to a depressed individual an antidepressant dose of a compound according to claim 2.

4,576,960

6,11-DIHYDRO-11-OXO-DIBENZ[b,e]OXEPIN DERIVATIVES

Lawrence L. Martin, Lebanon, and Linda L. Setescak, Somerville, both of N.J., assignors to Hoechst Roussel Pharmaceuticals Incorporated, Somerville, N.J.

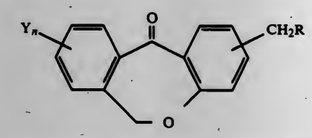
Continuation-in-part of Ser. No. 333,835, Dec. 23, 1981, Pat. No. 4,515,946. This application Apr. 4, 1983, Ser. No. 482,072

The portion of the term of this patent subsequent to May 7, 2002, has been disclaimed.

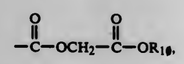
Int. Cl.[4] A61K *31/42, 31/335*

U.S. Cl. 514—450 17 Claims

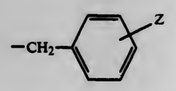
1. A 6,11-dihydro-11-oxo-bibenz[b,e]oxepin derivative having the formula



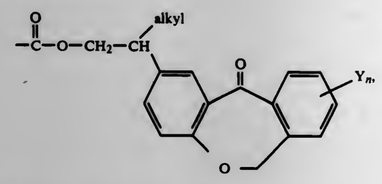
where Y is hydrogen, alkyl, alkoxy, halogen and trifluoromethyl; R is



where R_{10} is hydrogen, and

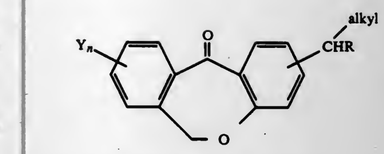


where Z is hydrogen, alkyl, alkoxy, halogen, trifluoromethyl, nitro and amino; and

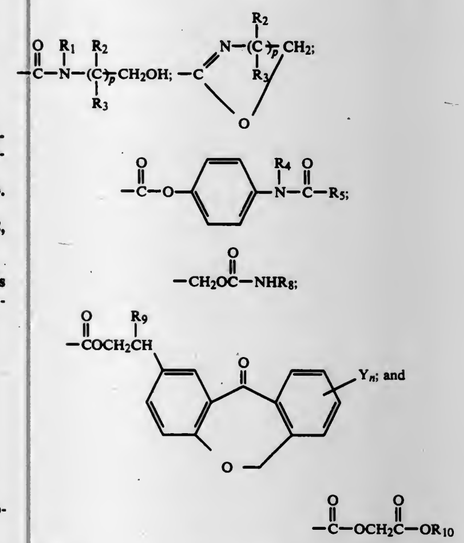


and where appropriate the optical isomers thereof and the racemic mixture thereof.

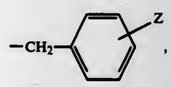
4. A 6,11-dihydrodibenz[b,e]oxepin acid derivative having the formula



where Y is hydrogen, alkyl, alkoxy, halogen and trifluoromethyl; R is

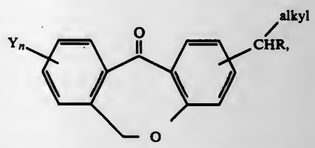


where R_{10} is hydrogen, alkyl, and



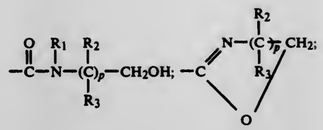
where Z is hydrogen, alkyl, alkoxy, halogen, trifluoromethyl, nitro and amino; where n is 0, 1, 2 or 3; p is 1 or 2; q is 0, 1, or 2; R_1 to R_7 are the same or different and are hydrogen and alkyl and R_8 is hydrogen, alkyl and phenyl; R_9 is hydrogen and alkyl; the optical isomers thereof and the racemic mixture thereof and the pharmaceutically acceptable addition salts thereof.

8. An antiinflammatory composition which comprises an effective antiinflammatory amount of a compound of the formula

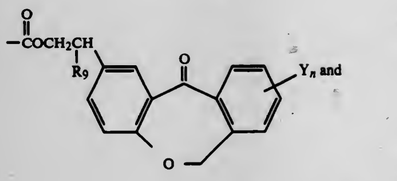


where Y is hydrogen, alkyl, alkoxy, halogen, and trifluoromethyl; R is

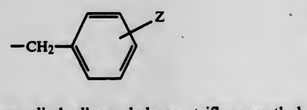
-continued





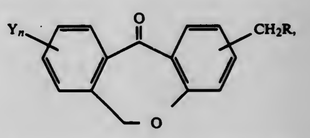


where R_{10} is hydrogen, alkyl and

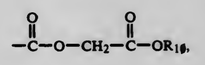


where Z is hydrogen, alkyl, alkoxy, halogen, trifluoromethyl, nitro and amino; where n is 0, 1, 2 or 3; p is 1 or 2; q is 0, 1, or 2; R_1 to R_7 are the same or different and are hydrogen and lower alkyl, R^8 is hydrogen, lower alkyl and phenyl and R_9 is hydrogen and alkyl and where appropriate the optical isomers thereof and the racemic mixtures thereof.

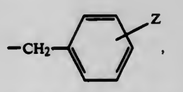
16. A method of alleviating inflammation in a mammal which comprises administering to a mammal an inflammation alleviating effective amount of a compound selected from the group consisting of (a) a compound of the formula



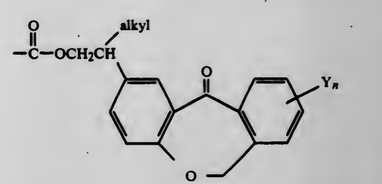
where Y is hydrogen, alkyl, alkoxy, halogen and trifluoromethyl; R is



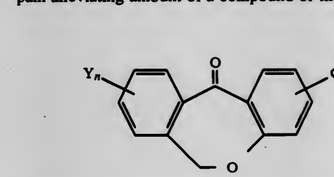
where R_{10} is hydrogen and



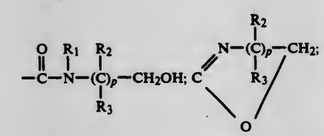
where Z is hydrogen, alkyl, alkoxy, halogen, trifluoromethyl, nitro and



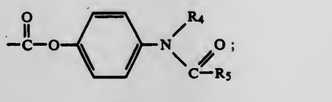
and where n is 0, 1, 2 or 3; and where appropriate the optical isomers thereof and the racemic mixture thereof; and (b) a compound of the formula



where Y is hydrogen, alkyl, alkoxy, halogen and trifluoromethyl; R is



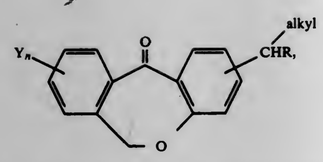
where R_{10} is hydrogen, alkyl and



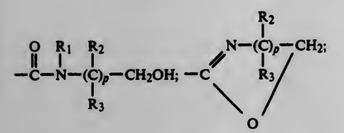
where Z is a hydrogen, alkyl, alkoxy, halogen, trifluoromethyl, nitro and amino; where n is 0, 1, 2 or 3; p is 1 or 2; q is 0, 1, or 2; R_1 to R_7 are the same or different and are hydrogen and lower alkyl and R_8 is hydrogen, lower alkyl and phenyl and R_9 is hydrogen and alkyl, or its optical isomers of the racemic mixture thereof.

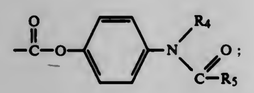
12. An analgesic composition which comprises an effective pain alleviating amount of a compound of the formula

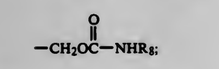
where Y is hydrogen, alkyl, alkoxy, halogen and trifluoromethyl; R is

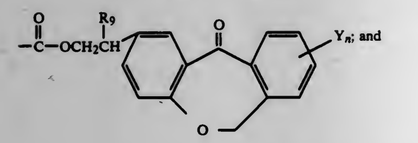


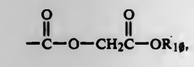
where Y is hydrogen, alkyl, alkoxy, halogen and trifluoromethyl; R is



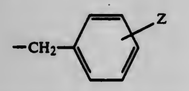








where R_{10} is hydrogen, alkyl and



where Z is hydrogen, alkyl, alkoxy, halogen, trifluoromethyl, nitro and amino; where n is 0, 1, 2, 3; p is 1 or 2; q is 0, 1, or 2; R_1 to R_7 are the same or different and are hydrogen and lower alkyl, R^8 is hydrogen, lower alkyl and phenyl and R_9 is hydrogen and alkyl, or its optical isomers or the racemic mixture thereof.

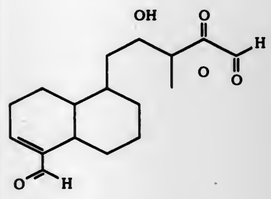
4,576,961

ANTIBIOTIC HETEROCYCLIC OXYGEN COMPOUNDS AND USE

Henning O. B. Lorck, No. 4, Rudemarken, DK-2840 Holte, and Poul R. Rasmussen, No. 7, Faellesvej, DK-3600 Frederikssund, both of Denmark

Continuation-in-part of Ser. No. 322,694, Nov. 18, 1981, abandoned. This application Aug. 30, 1983, Ser. No. 527,812
Claims priority, application United Kingdom, Dec. 3, 1980, 8038772
Int. Cl.[4] A61K *31/335, 31/34;* **C07D** *303/32, 493/10*
U.S. Cl. 514—462 **8 Claims**

1. A complex of closely related compounds, this complex being designated PR-1350 and hemiacetals thereof with alcohols of the general formula ROH, R being represented by a straight or branched alkyl radical having from 1 to 8 carbon atoms, such alkyl radicals being optionally substituted with halogen atoms or hydroxy, alkyloxy, aralkyloxy, aryloxy, alkanoyloxy, aralkanoyloxy, aroyloxy, sulfhydryl, alkylthio, aralkylthio, arylthio, alkanoylthio, aroylthio, azido, nitro, cyano, thiocyano, hydroxycarbonyl, alkyloxycarbonyl, aryloxycarbonyl, amino, alkylamino, dialkylamino, arylamino, alkanoylamino, and aroylamino groups; R can further be an alkenyl or alkynyl radical having from 2 to 6 carbon atoms, a cycloalkyl radical having from 3 to 7 carbon atoms in the alicyclic ring, or the mono- or dihalo, lower alkyl, lower alkoxy or hydroxy substituted analogues, an aralkyl, heterocyclylalkyl or aryl radical, these radicals being optionally substituted with halogen, nitro, lower alkyl, hydroxy or alkoxy radicals, PR-1350 having the basic structure as shown in formula I



I

and the complex PR-1350 being characterized by the following physico-chemical properties:

1. IR-spectrum of PR-1350: as shown in FIG. 1;
2. Optical rotation of PR-1350, measured 4 hours after preparation of the solution: $[\alpha]_D^{20} = +85°\text{-}90°$ (c=1, ethanol);
3. Electron impact mass spectrum (m/e) or PR-1350: 366, 205, 204, 189, 187, 175, 161, 159, 149, 147, 145, 135, 133, 131, 121, 119, 109, 107, 105, 95, 93, 91, 81, 79, 77, 69, 67, 55, 44, 41;
4. ^{1}H-NMR spectrum (10% solution deuteroacetone) of PR-1350: 9.28 (s), 6.63 (bt), 2.41 (m), 1.77 (m), 1.21 (s), 0.96 (s);
5. ^{13}C-NMR spectrum (10% solution in deuterochloroform) of PR-1350: 193.8 (d), 151.9 (s), 151.5 (d), 44.1, 37.6, 36.3, 29.3, 28.6, 25.9, 21.6, 17.8, 15.8;
6. Ultraviolet absorption maximum at 230 nm (E_1 $cm^{1\%}$=304) of PR-1350 in ethanol solution;
7. Solubility of PR-1350: Soluble in ethyl acetate, ethyl ether, benzene, ethanol, methanol, and chloroform; relatively insoluble in water; and insoluble in saturated hydrocarbon solvents.

8. A therapeutic method for treating an infectious disease which comprises administering to a host in need of such treatment an effective amount of a complex according to claim 1.

4,576,962

PROSTAGLANDIN ANALOGUES

Randall S. Matthews, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 542,210, Oct. 19, 1983, abandoned, which is a continuation-in-part of Ser. No. 439,504, Nov. 5, 1982, abandoned. This application May 4, 1984, Ser. No. 607,351
Int. Cl.[4] C07C *177/00;* **A61K** *31/557*
U.S. Cl. 514—530 **32 Claims**

1. The 13,14-didehydro-15-oxo-prostaglandin analogues of the formula:

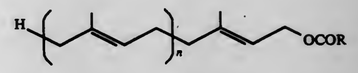
4,576,963

POLYPRENYL COMPOUNDS, PROCESS FOR THE PRODUCTION THEREOF AND MEDICINES CONTAINING SAME

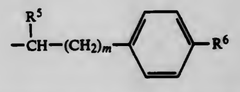
Isao Yamatsu, Ushikumachi; Shinya Abe, Kukisakimura; Yuichi Inai, Tokyo; Takeshi Suzuki, Ushikumachi; Kensaku Kinoshita, Abiko; Mannen Mishima, Yatabemachi; Yoshinori Katoh, Misato; Seiichi Kobayashi, Tsuchiura; Manabu Murakami, Toyosatomachi, and Kouzi Yamada, Toride, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

Division of Ser. No. 396,184, Jul. 8, 1982, Pat. No. 4,455,316. This application May 14, 1984, Ser. No. 609,664
Claims priority, application Japan, Jul. 23, 1981, 56-114371
Int. Cl.[4] A61K *31/235;* **C07C** *69/612*
U.S. Cl. 514—532 **6 Claims**

1. A compound having the formula:



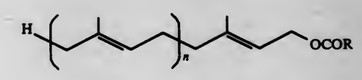
wherein R is a group having the formula:



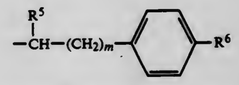
in which R^5 represents lower alkyl, R^6 represents lower alkyl, m represents the integer of 0 or 1, and n represents an integer of 2 or 3.

4. An anti-inflammatory composition containing, as an active ingredient, a therapeutically effective amount of a compound as claimed in claim 1, in combination with a pharmacologically acceptable carrier, diluent or vehicle.

6. A method for treating a patient suffering from rheumatism or arthritis which comprises administering to said patient a composition containing a therapeutically effective amount of compound having the formula:



wherein R is a group having the formula:



in which R^5 represents hydrogen or lower alkyl, R^6 represents lower alkyl, m represents an integer of 0 or 1 and n represents an integer of 1 to 3, in combination with a pharmacologically acceptable carrier, diluent or vehicle.

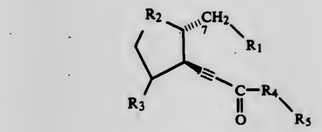
4,576,964

SUBSTITUTED HEXAHYDROBENZO[E]INDENE AND OCTAHYDROPHENANTHRENE CNS AGENTS AND PHARMACEUTICAL COMPOSITIONS THEREOF

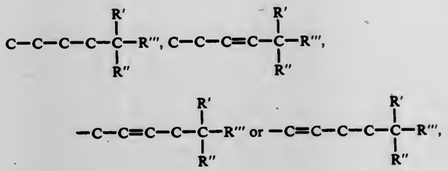
James F. Eggler, Stonington; Michael R. Johnson, Gales Ferry, and Lawrence S. Melvin, Jr., Ledyard, all of Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 358,569, Mar. 16, 1982, Pat. No. 4,476,131. This application Jun. 7, 1984, Ser. No. 618,151
Int. Cl.[4] A61K *31/22;* **C07C** *43/10, 43/205*
U.S. Cl. 514—546 **15 Claims**

1. A compound having the formula



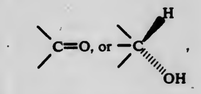
wherein R_1 is



wherein

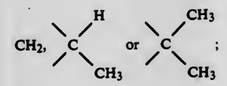
R' and R'' are each independently H, CH_3, C_2H_5 or C_3H_7, and R''' is CH_2OH, or $COOR_6$;

R_2 is



R_3 is hydrogen, hydroxyl, or hydroxymethyl, methylene, or R''''—O—, wherein R'''' is an alkyl having from 1 to 4 carbon atoms;

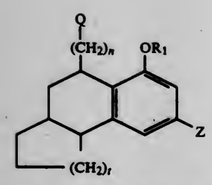
R_4 is



R_5 is C_2H_5; C_3H_7, C_4H_9 or C_5H_{11}; and

R_6 is

(a) hydrogen,
(b) alkyl or one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
(g) —(p—Ph)—CO—CH_3, wherein (p—Ph) is para-phenyl or inter-paraphenylene,
(h) —(p—Ph)—NH—CO—(p—Ph)—NH—CO—CH_3,
(i) —(p—Ph)—NH—CO—(p—Ph),
(j) —(p—Ph)—NH—CO—CH_3,
(k) —(p—Ph)—NH—CO—NH_2,
(l) —(p—Ph)—CH=N—NH—CO—NH_2,
(m) β-naphthyl,
(n) —CH_2—CO—R_7, wherein R_7 is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmaceutically acceptable cation.



wherein n is zero, 1 or 2; t is 1 or 2, R_1 is H or (C_1–C_5)alkanoyl, Q is COR_5 or $C(OR_7)R_5R_6$, where R_5 and R_6 are each H, (C_1–C_4)alkyl, phenyl or benzyl; R_7 is H, or when one or both of R_5 and R_6 are H, R_7 is H or (C_2–C_4)alkanoyl;

Z is (C_5–C_{13})alkyl, (C_5–C_{13})alkoxy, (C_5–C_{13})alkoxyalkyl, (C_9–C_{14})phenylalkyl, (C_9–C_{14})phenylalkoxy or (C_9–C_{14})-phenylalkoxyalkyl.

13. A pharmaceutical composition suitable for use as an analgesic which comprises a pharmaceutically-acceptable carrier and an analgesia-effective amount of a compound according to claim 1.

15. A pharmaceutical composition suitable for use in prevention and treatment of nausea which comprises a pharmaceutically-acceptable carrier and a compound according to claim 1 in an amount effective to prevent nausea.

4,576,965

PESTICIDAL OXIME N-ALKYL-N-α-HALOACYL-CARBAMATES

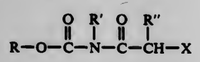
Themistocles D. J. D'Silva, Chapel Hill, N.C., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 30, 1983, Ser. No. 509,452

Int. Cl.⁴ C07C *153/00*; A01N *37/52*

U.S. Cl. 514—564 **14 Claims**

1. Compounds having the structure:



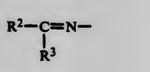
wherein:

R′ is C_{1-4} alkyl;

R″ is hydrogen or C_{1-4} alkyl;

X is chlorine, fluorine, or bromine; and

R is:



wherein:

R^2 is:

(a) C_{1-6} alkyl or C_{3-6} cycloalkyl, all of which may be unsubstituted or substituted with one or more halogen, alkoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, amido, alkoximino, nitro or cyano groups, or

(b) alkoxycarbonyl, cyano, aminocarbonyl, alkylaminocarbonyl, or dialkylaminocarbonyl, provided that R may contain no more than six aliphatic carbon atoms; and

R^3 is hydrogen, C_{1-6} alkyl, cyano or alkoximinoalkyl.

4,576,966

TREATMENT OF MENTAL SYMPTOMS CAUSED BY ORGANIC DISORDER IN BRAIN

Shizuo Kuriyama, Ooi, and Mikio Saitoh, Ashiya, both of Japan, assignors to Eisai Co., Ltd. and Mitsubishi Chemical Industries Ltd., both of Tokyo, Japan

Continuation of Ser. No. 530,247, Sep. 8, 1983, Pat. No. 4,507,322. This application Aug. 3, 1984, Ser. No. 637,285

Claims priority, application Japan, Sep. 22, 1982, 57-165546

Int. Cl.⁴ A61K *31/135*

U.S. Cl. 514—648 **1 Claim**

1. A method for improving and/or treating a patient afflicted with mental symptom caused by an organic disorder in the brain selected from the group consisting of head injury, brain surgery, brain abscess, spinal and cerebellar degenerative symptoms, amyotrophyic lateral sclerosis, multiple sclerosis, Parkinson's disease, chorea, athetosis, hemi-ballism and Wilson's disease, which comprises: administering to said patient a therapeutically effective amount of 2-(4-methylaminobutoxy)-diphenylmethane or a pharmaceutically acceptable salt thereof as an active ingredient, in combination with a pharmaceutically acceptable carrier.

4,576,967

NOVEL POLYOL ETHER COMPOUNDS, PROCESS PREPARING THE COMPOUNDS, AND COSMETICS COMPRISING SAME

Koichi Urata; Naotake Takaishi, both of Utsunomiya, and Yuji Suzuki, Tokyo, all of Japan, assignors to KAO Corporation, Tokyo, Japan

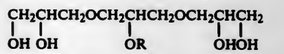
Filed Jul. 16, 1984, Ser. No. 631,210

Claims priority, application Japan, Jul. 25, 1983, 58-135421

Int. Cl.⁴ A61K *7/00*; C07C *43/10, 43/14*

U.S. Cl. 514—772 **5 Claims**

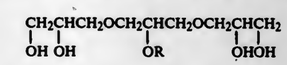
1. A polyol ether compound of the general formula (I)



(I)

in which R represents a saturated or unsaturated, linear or branched fatty hydrocarbon group having from 8 to 24 carbon atoms.

5. A cosmetic composition comprising an effective amount of a polyol ether compound of the general formula (I)



in which R is a saturated or unsaturated, linear or branched fatty hydrocarbon group having from 8 to 24 carbon atoms, and wherein said cosmetic composition is selected from the group consisting of cosmetic creams, emulsions, and lotions.

4,576,968

CATALYST COMPOSITION AND ITS USE IN A PROCESS FOR THE PRODUCTION OF ALCOHOLS FROM SYNTHESIS GAS

Barry Nay, Woking, and David G. Stewart, Epsom, both of England, assignors to The British Petroleum Company P.L.C., London, England

Division of Ser. No. 510,882, Jul. 5, 1983. This application Oct. 9, 1984, Ser. No. 659,017

Claims priority, application United Kingdom, Jul. 9, 1982, 8220083

Int. Cl.⁴ C07C *27/06*

U.S. Cl. 518—713 **6 Claims**

1. A process for the production of alcohols which process comprises reacting carbon monoxide with hydrogen at elevated temperature and pressure in the presence as catalyst of a catalyst composition consisting essentially of:

(a) cobalt,

(b) one or more of copper, silver, gallium, zirconium, zinc and thorium,

(c) one or more of palladium, platinum and nickel, and

(d) one or more alkali metals, in the atomic ratio of component (a): component (b): component (c) of 100:1 to 400:1 to 500, the alkali metal or metals forming up to 5% by weight of the composition,

wherein the essential elements are present in the form of their oxides or in the form of salts which are decomposable by heat to oxides.

4,576,969

SPHERICAL ION EXCHANGE RESIN HAVING MATRIX-BOUND METAL HYDROXIDE, METHOD FOR PRODUCING THE SAME AND METHOD FOR ADSORPTION TREATMENT USING THE SAME

Yoshiaki Echigo; Yoshiyuki Suematsu, and Tadashi Ishikura, all of Kyoto, Japan, assignors to Unitika Ltd., Hyogo, Japan

Filed Oct. 13, 1983, Ser. No. 541,646

Claims priority, application Japan, Oct. 13, 1982, 57-180469

Int. Cl.⁴ C08D *5/20*; C08F *8/10*

U.S. Cl. 521—28 **15 Claims**

1. A spherical ion exchange resin, comprising:

a cross-linked phenolic resin; and

a water insoluble multivalent metal hydroxide, wherein said metal hydroxide is enclosed and bound by a matrix of the cross-linked phenolic resin.

4,576,970

PROCESS FOR THE PRODUCTION OF MOLDED ARTICLES HAVING INTEGRAL SKIN

Otto Ganster, Leverkusen; Ulrich Knipp, Bergisch-Gladbach, and Bruno Luckas, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 21, 1985, Ser. No. 703,844

Claims priority, application Fed. Rep. of Germany, Mar. 3, 1984, 3407931

Int. Cl.⁴ C08G *18/14, 18/79*

U.S. Cl. 521—51 **3 Claims**

1. A process for the production of a molded article having a compact surface layer and a gross density above 900 kg/m³ via the reaction injection molding technique, comprising introducing a reaction mixture into a closed mold, said reaction mixture comprising:

(a) a polyisocyanate component consisting of at least one polyisocyanate in which all the isocyanate groups are aromatically bound,

(b) compounds having molecular weights of from 400 to 12,000 and having at least two isocyanate reactive hydrogen atoms,

(c) water, in a quantity of at least 0.15 mol per mol of isocyanate groups of component (a), and

(d) optionally compounds having molecular weights of from 60 to 399 and having at least two isocyanate reactive hydrogen atoms,

wherein the isocyanate index, based on all the reactants taking part in the reaction is from 70 to 125, maintaining a pressure of above 40 bar in the reaction mixture during the reaction so that the carbon dioxide formed in the course of the reaction remains completely or predominately in solution in the reaction mixture and in the molded article produced, and removing the resulting molded articles from the mold after termination of the chemical reaction.

4,576,971

FLAME-RETARDED POLYACRYLAMIDE OR POLYMETHACRYLIMIDE SYNTHETIC RESIN FOAM

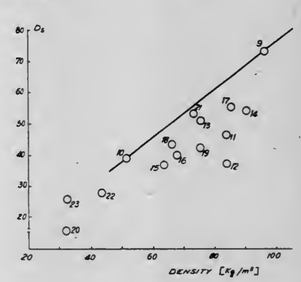
Ehrenfried Baumgartner, Darmstadt; Siegmund Besecke, Seeheim-Jugenheim, and Wolfgang Gaenzler, Darmstadt-Arheilgen, all of Fed. Rep. of Germany, assignors to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

Filed Dec. 18, 1984, Ser. No. 683,042

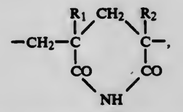
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1983, 3346060

Int. Cl.⁴ C08J *9/06*

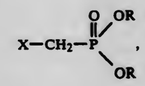
U.S. Cl. 521—108 **11 Claims**



1. A polyacrylimide or polymethacrylimide resin foam comprising (A) a polymer having 70 to 100 percent by weight of repeating units of the formula



wherein R_1 and R_2 are each hydrogen or methyl and 0–30 percent by weight of units of at least one other ethylenically unsaturated comonomer, and (B) at least 1 percent of phosphorus, by weight of the polymer, present at least partially in the form of an organophosphorus compound of the formula



wherein R are the same or different and are methyl, ethyl, or chloromethyl and X is hydrogen, halogen, hydroxyl, or RO—CO—.

4,576,972

CLOSED CELL PHENOLIC FOAM

James Lunt, Brights Grove; Edwin J. MacPherson, and Paul J. Meunier, both of Sarnia, all of Canada, assignors to Fiberglas Canada, Inc., Ontario, Canada

Division of Ser. No. 676,262, Nov. 29, 1984, Pat. No. 4,546,119. This application Jul. 29, 1985, Ser. No. 760,050

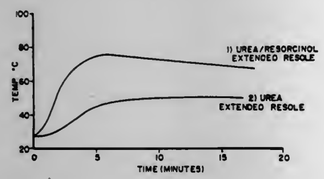
Int. Cl.⁴ C08J *9/14*

U.S. Cl. 521—136 **2 Claims**

1. A phenolic foam material comprising the reaction product of:

(1) an aqueous solution of a base-catalyzed phenol-formaldehyde resole having a mole ratio of phenol to formaldehyde of between 1:3 and 1:4, said solution containing substantially no free phenol, the pH of said solution having been adjusted with carbon dioxide to between about 6

and 8 and the resulting precipitate having been removed, and having been concentrated to a viscosity of 30° C. of more than about 15,000 centipoises; and the pH having been adjusted by the addition of an acid to about pH 3 to 4;



(2) urea and resorcinol, the amount of urea and the amount of resorcinol being selected such that the mole ratio of urea and resorcinol to residual formaldehyde contained in said resole is about 1:1 and the weight ratio of urea to resorcinol is about 2:1 to 3:1 in the presence of a surfactant and a blowing agent.

4,576,973

COPOLYMER, PROCESS FOR ITS PREPARATION AND ITS USE AS A SORBENT

Karl-Heinz Keil, Hanau-Mittelbuchen; Fritz Engelhardt, Frankfurt; Ulrich Greiner, Schöneck; Klaus Kühlein, Kelkheim; Reinhold Keller, Bad Soden; Merten Schlingmann, Königstein, and Gerhard Hess, Altenstadt, all of Fed. Rep. of Germany, assignors to Cassella Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 22, 1984, Ser. No. 623,708

Claims priority, application Fed. Rep. of Germany, Jul. 9, 1983, 3324835

Int. Cl.⁴ C08J *9/00*

U.S. Cl. 521—149 **5 Claims**

1. Crosslinked, porous copolymer in the form of beads, containing 50 to 99.9% by weight of recurring units of a heterocyclic 5-membered ring compound which contains a polymerisable olefinic group and which has at least one protonisable nitrogen atom in the ring, or several such compounds, 0.1 to 50% by weight of units of a crosslinking agent or several such crosslinking agents, 0 to 25% by weight of units of a polymerisable organoboron and/or organosilicon compound or several such compounds and, relative to 100% by weight of the sum of the abovementioned units, 5 to 350% by weight of units of an N-vinylamide of the general formula I $CH_2{=}CH{-}N(R^1){-}C(R^2){=}O$ wherein R^1 denotes hydrogen, methyl or ethyl and R^2 denotes hydrogen or C_1—C_3-alkyl, or several such N-vinylamides and 0 to 40% by weight of units of another polymerisable compound or several such compounds.

4,576,974

POLYOL COMPOSITIONS AND POLYURETHANE FOAMS MANUFACTURED THEREFROM

William G. Carroll, Vossem, and Ian D. Rosbotham, Heverlee, both of Belgium, assignors to Imperial Chemical Industries, PLC, London, England

Filed Feb. 11, 1985, Ser. No. 700,385

Claims priority, application United Kingdom, Mar. 8, 1984, 8406050

Int. Cl.⁴ C08G *18/14, 18/34*

U.S. Cl. 521—173 **3 Claims**

1. A polyol composition comprising:

(A) a polyester polyol containing residues derived from succinic, glutaric and adipic acids having a hydroxyl number in the range 150 to 450 and from 0.5 to 2.0 branch points per 1000 units of molecular weight, and

(B) a non-polymeric or polyoxyalkylene polyol having a functionality of from 3 to 4 and a hydroxyl number of at least 750, the relative proportions of A and B being such that the composition has a hydroxyl number in the range 400 to 600.

4,576,975

WATER SOLUBLE MICHLER'S KETONE ANALOGS IN COMBINED PHOTOINITIATOR COMPOSITION AND POLYMERIZABLE COMPOSITION

Laurence W. Reilly, Jr., Yorktown Heights, N.Y., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

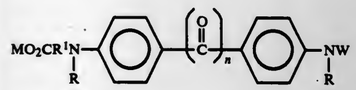
Division of Ser. No. 471,838, Mar. 3, 1983, Pat. No. 4,507,497. This application Dec. 18, 1984, Ser. No. 683,208

Int. Cl.⁴ C08F *2/50*; G03C *1/70*

U.S. Cl. 522—13 **5 Claims**

1. A photoinitiator system for a photopolymerizable composition having therein at least one addition-polymerizable compound containing ethylenic unsaturation, comprising:

(a) 0.1 to 10 weight percent of the total polymerizable composition of a compound which is a salt of a Michler's ketone analog and has the formula



wherein

R is an alkyl group of 1 to 8 carbon atoms,

R^1 is an alkyl group having 1 to 8 carbon atoms,

M is a cation,

W is R^1COOM or R^1H, and

n is an integer having a value of 1 or 2, and

(b) 0.1 to 10 weight percent of the total polymerizable composition of a free radical initiator compound selected from iodonium salts, biimidazoles, trialkylphosphites, alkyl peroxides, benzyl halides, alkyl nitrates, and the benzophenones other than (a).

4,576,976

PROCESS FOR THE PHOTOPOLYMERIZATION OF VINYL COMPOUNDS AND PHOTOPOLYMERIZABLE MATERIALS

Roland Schaefer, Friedrichsdorf, Fed. Rep. of Germany, assignor to Kulzer & Co., GmbH, Wehrheim, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 413,804, Sep. 1, 1982, Pat. No. 4,534,839. This application Mar. 7, 1984, Ser. No. 587,176

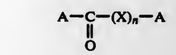
Claims priority, application Fed. Rep. of Germany, Sep. 15, 1981, 3136484

Int. Cl.⁴ C08F *2/50*

U.S. Cl. 522—16 **19 Claims**

1. In a process for the production of dental compositions by the photopolymerization of at least one vinyl monomer in the presence of a photoinitiator, the improvement comprising polymerizing said at least one vinyl monomer in the presence of a photoinitiator comprising:

(a) at least one photosensitizer of the formula



wherein

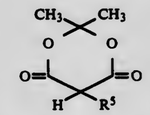
X is selected from the group consisting of CO, $C(R^1)(R^2)$ and $C(R^3)(OR^4)$, wherein R^1, R^2, R^3, R^4 are each selected from the group consisting of hydrogen and a hydrocarbon radical;

n is 0 or 1; and

A is selected from hydrocarbon radicals which may be substituted and which may be bonded together with the

proviso that when n is 1 and X is $C(R^1)(R^2)$, and when n is 0, A is an aromatic radical; and

(b) at least one reducing agent having the formula



wherein R^5 is selected from the group consisting of alkyl, substituted alkyl, aryl, substituted aryl, aralkyl and substituted aralkyl.

4,576,977

CURABLE RESIN COMPOSITION

Nobuyuki Miyazaki; Takashi Takayanagi, both of Yokohama, Japan, and Hiromichi Higaki, Irvington, N.Y., assignors to Asahi Glass Company Ltd., Tokyo, Japan

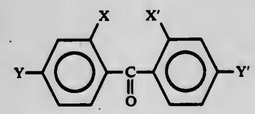
Filed Aug. 6, 1984, Ser. No. 637,833

Claims priority, application Japan, Aug. 9, 1983, 58-144358

Int. Cl.⁴ G21F *1/10*

U.S. Cl. 523—137 **14 Claims**

1. A curable resin composition comprising a cured matrix-forming component and an ultraviolet absorber, wherein said ultraviolet absorber comprises a benzophenone derivative represented by the formula (I):



(I)

where each of X and X' is a hydrogen atom or a hydroxyl group, provided that at least one of X and X' is a hydroxyl group, each of Y and Y' is a hydrogen, a hydroxyl group, —OROH or —OR', provided that at least one of Y and Y' is —OROH, where R is an alkylene group and R' is a monovalent organic group, and said cured matrix forming component is reactive with a hydroxyl group.

4,576,978

METHOD FOR PREPARING POLYMER SOLUTIONS

Wayne E. Luetzelschwab, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Continuation-in-part of Ser. No. 466,737, Feb. 16, 1983, Pat. No. 4,508,858. This application Feb. 8, 1985, Ser. No. 699,759

The portion of the term of this patent subsequent to Apr. 2, 2002, has been disclaimed.

Int. Cl.⁴ C08L *33/26*

U.S. Cl. 523—313 **18 Claims**

1. A process for the preparation of aqueous polymer solutions for use in secondary or tertiary recovery of oil from a subterranean oil-bearing formation comprising:

forming a first volume of a first reaction mixture comprising a polymerizable substance and a polymerization initiator;

introducing the first volume of the first reaction mixture into a first reaction vessel having an inlet and an outlet;

repeating at regular predetermined intervals the formation of additional volumes of the first reaction mixture and sequentially introducing each additional volume into the first reaction vessel in a manner such that a substantially stable interface forms between each adjacent volume and substantially no mixing occurs between each volume;

controlling the rate of movement of each volume of the first reaction mixture in the first reaction vessel from the inlet to the outlet thereof in a manner such that, as each volume of the first reaction mixture is continuously moved through the reaction vessel, the extent of polymerization of the polymerizable substance in each volume differs from that of every other volume in the first reaction vessel and the polymerization of the polymerizable substance in each volume is essentially complete, forming a polymer solution, when each volume successively reaches the outlet of the first reaction vessel;

successively and continuously removing each volume of the polymer solution from the outlet of the first reaction vessel;

forming a second reaction mixture by continuously introducing a dilution water in an amount less than that which causes free water to substantially separate from the polymer solution and a modifying agent capable of reacting with the polymer in the solution into each volume of polymer solution;

continuously introducing the second reaction mixture into a second reaction vessel having an inlet and an outlet;

controlling the rate of movement of the second reaction mixture in the second reaction vessel from the inlet to the outlet thereof in a manner such that the reaction between the polymer and the modifying agent is essentially complete, forming a product solution, when the second reaction mixture reaches the outlet of the second reaction vessel;

continuously removing the product solution from the outlet of the second reaction vessel; and

diluting the product solution prior to injecting it via a well into the subterranean oil-bearing formation.

4,576,979

HEAT-CURABLE SURFACE-COATING AGENTS, AND THEIR USE

Eberhard Schupp, Schwetzingen; Werner Loch, Erpolzheim; Rolf Osterloh, Gruenstadt, and Klaas Ahlers, Muenster, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 31, 1983, Ser. No. 547,094

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1983, 3311516

Int. Cl.⁴ C08K *3/20*; C08L *63/02*

U.S. Cl. 523—404 **13 Claims**

1. A heat-curable surface-coating agent which contains, as a binder, a mixture of (A) one or more polyadducts, polycondensates or other polymers having an average molecular weight M_n of from 500 to 10,000 and, per molecule, on average two or more OH or primary or secondary amino groups, or two or more OH and primary or secondary amino groups, or two or more OH and primary and secondary amino groups, or two or more primary and secondary amino groups, with the proviso that component (A) is a reaction product of epoxy resins with alcohols, mercaptans or amines and (B) a reaction product of (a) one or more polyisocyanates, (b) one or more secondary monoamines and, (c) one or more polyalcohols having two or more hydroxy groups.

4,576,980

AZETIDINEDIONE COMPOUNDS AS CROSSLINKERS FOR ELECTRODEPOSITED COATINGS

Shenghong A. Dai, Wallingford, and Philip W. Sherwood, Milford, both of Conn., assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 15, 1984, Ser. No. 660,768

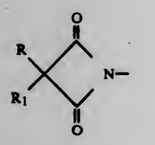
Int. Cl.⁴ C08K *3/20*

U.S. Cl. 523—420 **15 Claims**

1. A coating composition in aqueous dispersion for forming a heat-curable film on a substrate said composition comprising

1. a polymer having amine groups selected from the group consisting of primary amines, secondary amines, and mixtures thereof said amine groups being in the form of their acid salts; and

2. a crosslinking agent having at least two azetidinedione groups of the formula



wherein R and R_1 when taken separately are independently selected from the group consisting of hydrogen and hydrocarbyl, and when R and R_1 are taken together with the carbon atom to which they are joined represent a cycloalkane having 4 to 8 ring carbon atoms, inclusive, said azetidinedione crosslinking agent being present in at least an equivalent amount to react with substantially all of said amine groups.

4,576,981

ADHESIVE COMPOSITION

Manfred Hilger, Kouz; Günter Hultzsch, and Roman Keiper, both of Wiesbaden, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Apr. 25, 1984, Ser. No. 603,684

Claims priority, application Fed. Rep. of Germany, May 2, 1983, 3315977

Int. Cl.[4] C08L *67/02, 27/08;* C08J *7/04, 5/18*

U.S. Cl. 524—40 **19 Claims**

1. An adhesive composition suitable for use on a polyester surface, consisting essentially of:

a copolyester, said copolyester comprising linear polyesters having molecular weights up to about 20,000 and being the reaction product of diols having from 2 to 8 carbon atoms; and dicarboxylic acids having from 4 to 12 carbon atoms; and

at least one copolymer of vinylidene chloride.

4,576,982

HYDROLYTICALLY STABILIZED POLYCARBONATES

John A. Tyrell, and Gary L. Freimiller, both of Mt. Vernon, Ind., assignors to General Motors Company, Mt. Vernon, Ind.

Filed Sep. 14, 1984, Ser. No. 650,427

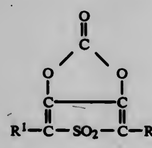
Int. Cl.[4] C08L *69/00*

U.S. Cl. 524—84 **26 Claims**

1. A thermoplastic composition exhibiting improved hydrolytic stability comprising, in physical admixture:

(i) at least one aromatic carbonate polymer; and

(ii) a hydrolytic stabilizing effective amount of at least one compound represented by the general formula



wherein R and R^1 are independently selected from hydrogen, monovalent hydrocarbon radicals, or monovalent hydrocarbonoxy radicals.

4,576,983

POLYMERIC COMPOSITION USEFUL FOR HOT WATER PIPE SERVICE

Ananda M. Chatterjee, Houston, and Earl E. Hayden, Katy, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 646,483, Aug. 31, 1984, abandoned, which is a continuation of Ser. No. 531,527, Sep. 12, 1983, abandoned. This application Mar. 27, 1985, Ser. No. 716,524

Int. Cl.[4] C08K *5/36*

U.S. Cl. 524—101 **6 Claims**

1. District heating pipes for potable water which contain a polymeric composition consisting essentially of an intimate blend of:

(a) about 93 to about 98 percent by weight of an isotactic butene-1 homopolymer;

(b) about 0.05 to about 0.5 percent by weight of 1,3,5-Tris(4-tert-butyl-3-hydroxy-2,6-dimethyl-benzyl)-1,3,5-triazine-2,4,6-(1H,3H,5H)-trione antioxidant;

(c) about 0.2 to about 0.7 percent by weight of lauryl-stearyl thiodipropionate;

(d) about 0.02 to about 0.6 percent by weight of a nucleating agent;

(e) about 0.5 to about 3.0 percent by weight of filler component comprising a mineral filler coated with an acid acceptor; and

(f) zero to about 3.0 percent by weight pigment.

4,576,984

STABILIZER COMPOSITIONS FOR PVC RESINS

Robert E. Bresser, Sharonville; Keith A. Mesch, and Karl R. Wursthorn, both of Cincinnati, all of Ohio, assignors to Morton Thiokol, Inc., Chicago, Ill.

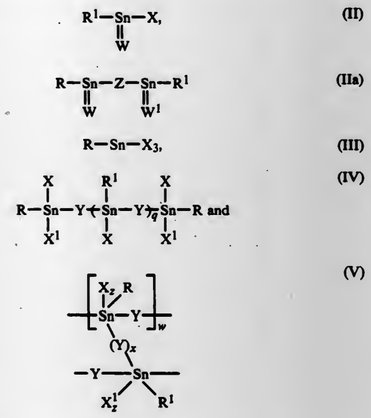
Continuation of Ser. No. 345,830, Feb. 2, 1982, abandoned, which is a continuation-in-part of Ser. No. 238,298, Feb. 26, 1981, abandoned. This application Jan. 10, 1984, Ser. No. 569,544

Int. Cl.[4] C08K *5/58*

U.S. Cl. 524—182 **5 Claims**

2. A composition for stabilizing halogen-containing organic polymers against the deteriorative effects of heat, said composition consisting essentially of the product produced by blending:

A. a mono-organotin compound or mixture of mono-organotin compounds selected from compounds having the formulas:



(II)

(IIa)

(III)

(IV)

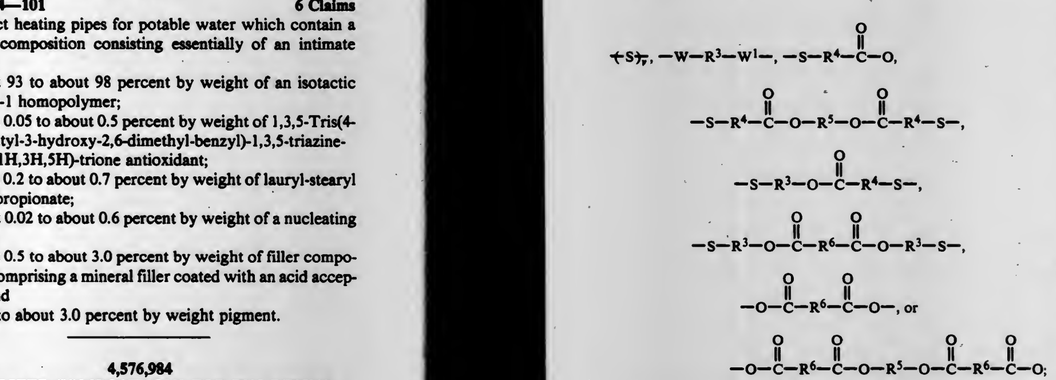
(V)

wherein

X and X^1 are the same or different and are selected from $-SR^2$,

and $O-R^8$ with the proviso that in formula (V) when z=1 and in formulas (III) and (IV) at least one X or X^1 is $-SR^2$;

Y is



W and W^1 are the same or different and are oxygen or sulfur;

Z is



R and R^1 are the same or different and are selected from alkyl aryl, alkenyl, aralkyl, alkaryl, cycloalkyl, cycloalkenyl,



R^2 is alkyl, alkenyl, aryl, aralkyl, cycloalkyl, cycloalkenyl,



R^3 is alkylene of at least 2 carbon atoms, arylene, alkenylene of at least 2 carbon atoms, cycloalkylene, or cycloalkenylene;

R^4 is alkylene, arylene, alkenylene of at least 2 carbon atoms, cycloalkylene, or cycloalkenylene;

R^5 is R^3;

R^6 is nothing or R^4;

R^7 is —H or R^8;

R^8 is alkyl, alkenyl, aryl, aralkyl, alkaryl, cycloalkyl, or cycloalkenyl;

R^9 is C_1 to C_4 alkylene;

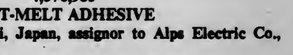
R^{12} is —H or a monovalent C_1 to $_{20}$ hydrocarbon radical;

R^{13} and R^{21} are the same or different and are each C_1 to C_{20} alkyl or C_1 to C_{20} alkoxy;

q=0 or an integer from 1 to 4 inclusive;

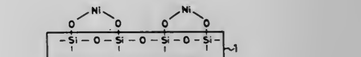
v=an integer from 1 to 8 inclusive; and

w=0, 1 or 2, x=0 or 1, z=0 or 1 with the proviso that when x=0 then z=1, when x=1 then z=0 and w=1, when w=2 then x=0 and z=1, and when w=0 then x=0, z=1 and Y is $-W-R^3-W^1-$ or



and

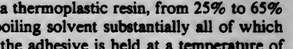
B. in a synergistically effective amount, a mercaptan-containing organic compounds selected from compounds having the formula:



(VIIIa)

where

R^{200} and R^{201} are the same or different and are alkylene, alkenylene, arylene, cycloalkylene or cycloalkenylene; or alkylene, alkenylene, arylene, cycloalkylene or cycloalkenylene each substituted with one or two —R, $-O-R^7$, $-R^9-O-R^7$,



groups; R, R^7, R^8, R^4 and R^9 are as defined in component A above.

4,576,985

HOT-MELT ADHESIVE

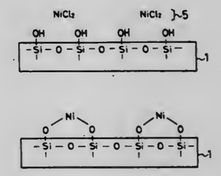
Yasuichi Ono, Miyagi, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Aug. 8, 1984, Ser. No. 638,869

Claims priority, application Japan, Aug. 8, 1983, 58-143797

Int. Cl.[4] C08K *3/10;* C08L *15/02, 33/10, 87/00*

U.S. Cl. 524—407 **9 Claims**



1. A hot melt adhesive suitable for bonding materials to an adherend surface which is characterized by the presence of hydrophilic silanol groups, said adhesive comprising from 5% to 65% by weight of a thermoplastic resin, from 25% to 65% by weight of a low boiling solvent substantially all of which will evaporate when the adhesive is held at a temperature of

from 120° C. to 200° C. for a sufficient period of time, and from 0.1% to 25% by weight of a metal salt which will react with said silanols to render said adherend surface hydrophilic.

4,576,986

RUBBER COMPOSITIONS CONTAINING SMALL PARTICLE SIZE ZEOLITES AND MIXTURES

John A. Kostinko, Bel Air, Md., assignor to J. M. Huber Corporation, Locust, N.J.

Continuation-in-part of Ser. No. 557,377, Dec. 1, 1983, and Ser. No. 572,122, Jan. 17, 1984, said Ser. No. 557,377, which is a continuation of Ser. No. 349,787, Feb. 18, 1982, abandoned, which is a continuation of Ser. No. 93,345, Nov. 21, 1979, abandoned, which is a continuation-in-part of Ser. No. 88,243, Oct. 25, 1979, abandoned, which is a continuation-in-part of Ser. No. 971,584, Dec. 20, 1978, Pat. No. 4,235,836, said Ser. No. 572,122, which is a continuation of Ser. No. 274,898, Jun. 18, 1981, abandoned, which is a continuation-in-part of Ser. No. 93,345, Ser. No. 88,243, Ser. No. 971,584, and Ser. No. 189,419, Sep. 22, 1980. This application Jun. 11, 1984, Ser. No. 619,504

Int. Cl.⁴ C08K *3/10, 3/34;* C08L *7/00, 9/00*

U.S. Cl. 524—450 **4 Claims**

1. A rubber composition which contains as filler synthetic zeolitic filler particles said particles being selected to make a controlled combination of from 20–80 wt. % of a zeolite similar to Zeolite X and from 20–80 wt. % of a zeolite similar to Zeolite A, said particles being similar to zeolite X and zeolite A in having the chemical formula of zeolite X and zeolite A but differing from zeolite X and zeolite A in having larger ports or pore diameters, having bimodal pore size distribution, and having X-ray diffraction patterns depressed from those of zeolite X and zeolite A, said combination being formed when the preparative batch reaction mixture of sodium silicate and sodium aluminate has a water to sodium oxide molar ratio of between 10:1 and 60:1; a sodium oxide to silica molar ratio of between 0.5:1 and 3:1; and a silica to alumina molar ratio of between 2:1 and 15:1, wherein the particles of said combination exhibit a narrow differential weight percent gaussian distribution with an average particle size of no more than about 2.2 microns with at least 90 percent of the weight between 0.1 and 5.0 microns in diameter, wherein the cumulative percent population exhibits at least 41 percent by weight less than one micron, with no more than 5 percent by weight greater than 3.2 microns in diameter, said particles having a surface area of greater than 10 m^2/g.

4,576,987

AQUEOUS WATER-REPELLENT COATINGS

William B. Crockatt, Mississauga, and John Rimma, Scarborough, both of Canada, assignors to DeSoto, Inc., Des Plaines, Ill.

Filed Dec. 13, 1984, Ser. No. 681,207

Int. Cl.⁴ C08K *5/01;* C08L *91/08*

U.S. Cl. 524—487 **20 Claims**

1. An aqueous coating composition containing a large proportion of wax which dries to provide a continuous and durable film from which the wax will slowly and progressively exude to the surface to provide a water repellent surface which confers long term water resistance comprising: (1) from 5% to 40% of an aqueous microcrystalline wax dispersion; (2) from 40% to 93% of an aqueous emulsion of copolymerized monoethylenically unsaturated monomers having a sufficiently low glass transition temperature to coalesce on air drying; and (3) from 1% to 20% of an N-methylol functional self crosslinking polyurethane aqueous dispersion in which the polyurethane contains sufficient volatile amine-neutralized carboxyl groups for water dispersibility, said proportions being by weight based on the solids content of the three components which are blended together.

4,576,988

SAPONIFIED PRODUCTS OF SILICON-CONTAINING ETHYLENE-VINYL ACETATE COPOLYMER AS MELT MOLDING MATERIALS

Yoshinari Tanaka; Akimasa Aoyama; Takeshi Moritani, all of Kurashiki; Kenji Satoh, Tondabayashi, and Takuji Okaya, Nagaokakyo, all of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

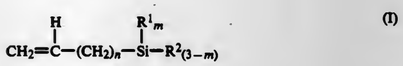
Filed Dec. 3, 1984, Ser. No. 677,200

Claims priority, application Japan, Dec. 19, 1983, 58-240759

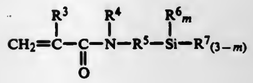
Int. Cl.⁴ C08L *29/04;* C08F *8/00*

U.S. Cl. 524—503 **7 Claims**

1. A melt molding material which comprises a saponified product of a silicon-containing ethylene-vinyl acetate copolymer, having a degree of saponification of the vinyl acetate component of at least 95 molar %, an ethylene content of 25–55 molar % and a silicon-containing monomer content of 0.0005–0.2 molar % which has been obtained by saponifying a copolymer of vinyl acetate, ethylene and at least one silicon-containing olefinically unsaturated monomer selected from the group consisting of:

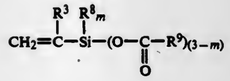


(I)



(II)

and



(III)

wherein

n is 0 or 1,

m is 0–2,

R^1 is lower alkyl, aryl or lower alkyl having aryl,

R^2 is a saturated branched or non-branched alkoxy of 1–40 carbon atoms or a saturated branched or non-branched alkoxy of 1–40 carbon atoms having a substituent containing oxygen,

R^3 is hydrogen or methyl,

R^4 is hydrogen or lower alkyl,

R^5 is alkylene of 1–5 carbon atoms or a divalent organic residue consisting of two chains of 1–5 carbon atoms connected with each other via oxygen or nitrogen,

R^6 is hydrogen, halogen, lower alkyl, aryl, or lower aryl having alkyl,

R^7 is alkoxy of 1–40 carbon atoms, acyloxy of 1–40 carbon atoms, alkoxy of 1–40 carbon atoms having a substituent containing oxygen or nitrogen, or acyloxy of 1–40 carbon atoms having a substituent containing oxygen or nitrogen,

R^8 is hydrogen, halogen, lower alkyl, aryl or lower alkyl having aryl, and

R^9 is lower alkyl.

4,576,989

AQUEOUS SOLUTIONS OR DISPERSIONS OF CATIONIC OLIGO-URETHANES, A PROCESS FOR THE PRODUCTION THEREOF AND THE USE THEREOF TO PRODUCE COATINGS

Klaus Noll, Cologne, Fed. Rep. of Germany; Terry Potter, New Martinsville, W. Va.; Josef Pedain, Cologne, and Jürgen Schwindt, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 14, 1985, Ser. No. 701,710

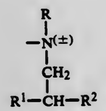
Claims priority, application Fed. Rep. of Germany, Feb. 27, 1984, 3406998

Int. Cl.⁴ C08L *75/04*

U.S. Cl. 524—591 **9 Claims**

1. An aqueous solution or dispersion of cationic oligourethanes which are cross-linkable at elevated temperatures and which solutions or dispersions may contain blocked polyisocyanate groups wherein the oligourethanes contain

(a) about 0.1 to 3% by weight of ternary or quaternary ammonium ions in the form of structural units which are incorporated via urethane groups terminally and/or within the oligourethane, corresponding to the formula



wherein

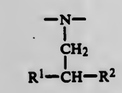
R represents hydrogen or an aliphatic, cycloaliphatic or araliphatic radical obtained by quaternizing tert. nitrogen atoms with an alkylating, cycloalkylating or aralkylating agent,

R^1 represents hydrogen or an alkyl radical having from 1 to 4 carbon atoms,

R^2 represents —C≡N, —CO—NH_2, —CO—NHR^3, —CO—NR_2^3 or —$COOR^3$,

R^3 represents a monovalent hydrocarbon radical which may have inert substituents,

(b) up to about 2.8% by weight of tert. amine nitrogens in the form of structural units which are incorporated via urethane groups terminally and/or within the molecule, corresponding to the formula



wherein R^1 and R^2 are as defined above and

(c) about 0 to 15% by weight of blocked isocyanate groups provided that the ternary ammonium groups of (a), the tert. nitrogen atoms of (b) and the blocked isocyanate groups both incorporated into the oligourethane and being a part of the blocked polyisocyanate optionally present in the solution or dispersion are present in an equivalent ratio of (a+b):blocked isocyanate groups of about 1:1 to 1:1.5.

4,576,990

WATER-SOLUBLE INSULATING VARNISH

Shiro Mazaki, and Hiroshi Shibata, both of Osaka, Japan, assignors to Nitto Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 15, 1984, Ser. No. 671,841

Int. Cl.⁴ C08L *77/00, 79/00*

U.S. Cl. 524—602 **14 Claims**

1. A water-soluble insulating varnish which is prepared by reacting an aromatic dicarboxylic acid component and a polyhydric alcohol component containing at least 30 mol% of an alcohol having 3 or more hydroxy groups in the amounts such that the ratio of the hydroxyl group to the carboxyl group is from 1.2:1 to 1.8:1 to produce a high molecular weight polyester resin;

addition reacting a polybasic acid containing a single anhydride group in the molecule with the polyester resin to obtain a carboxyl group-containing polyester resin; and

dissolving the carboxyl group-containing polyester resin in water using a basic compound.

4,576,991

UV-RESISTANT FLAME RETARDANT COMPOSITIONS OF POLYCARBONATES AND HALOGENATED ALKENYL AROMATIC COPOLYMERS

Glenn D. Cooper, deceased, late of Delmar, N.Y. (by Rose Cooper, executrix), and Sai-Pei Ting, Delmar, N.Y., assignors to General Electric Company, Pittsfield, Mass.

Filed Jun. 25, 1984, Ser. No. 623,951

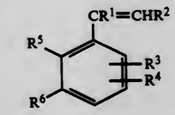
Int. Cl.⁴ C08L *69/00*

U.S. Cl. 525—146 **11 Claims**

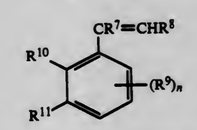
1. A flame retardant thermoplastic composition, comprising:

(a) an aromatic polycarbonate consisting essentially of a tetraalkyl-substituted aromatic polycarbonate; and

(b) a copolymer consisting of units of a non-halogenated alkenyl aromatic compound having the formula



wherein R^1, R^2, R^3, R^4, R^5 and R^6 selected from the group consisting of hydrogen and lower alkyl groups having from 1 to 6 carbon atoms; and units of a brominated alkenyl aromatic compound having the formula



wherein R^7 and R^8 are selected from the group consisting of hydrogen and lower alkyl groups having from 1 to 6 carbon atoms, R^9 is bromine and, R^{10}, R^{11} are selected from the group consisting of hydrogen, bromine and lower alkyl groups having from 1 to 6 carbon atoms, and n represents the number of R^9 substituents on the ring.

4,576,992

POLYMER MIXTURES

Hartmuth Buding, Dormagen; Heinrich Königshofen, Bergisch-Gladbach; Zsolt Szentivanyi, and Joachim Thörmer, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Fed. Rep. of Germany

Filed Nov. 29, 1984, Ser. No. 676,486

Claims priority, application Fed. Rep. of Germany, Dec. 14, 1983, 3345249

Int. Cl.⁴ C08L *45/00, 23/16*

U.S. Cl. 525—211 **4 Claims**

1. Mixtures comprising (a) from 35 to 5%, by weight, of substantially saturated hydrocarbon elastomers selected from EPM, EPDM, butyl rubber or polyoctenamer; (b) from 65 to 95%, by weight, of a nitrile group-containing elastomer having from 25 to 140 nitrile nitrogen atoms and less than 12 double bonds per 1000 carbon atoms; and also (c) conventional mixture additives; the percentages being based on the sum of (a) and (b).

4,576,993
LOW DENSITY POLYETHYLENE POLYMERIC COMPOSITIONS

Paul Tamplin, and Malcolm D. Heaven, both of Swindon, Great Britain, assignors to Raychem Limited, England

Continuation of Ser. No. 237,508, Feb. 23, 1981, abandoned, which is a continuation of Ser. No. 26,950, Apr. 4, 1979, abandoned, which is a continuation-in-part of Ser. No. 25,120, Mar. 29, 1979, abandoned. This application Jan. 30, 1984, Ser. No. 574,943

Claims priority, application United Kingdom, Sep. 20, 1978, 37468/78

Int. Cl.⁴ C08L *23/04*

U.S. Cl. 525—240 **40 Claims**

1. A substantially cross-linked polymeric composition comprising a first linear low density ethylene homo- or copolymer which, prior to cross-linking is characterized by (a) a density at 25° C. of less than 0.930 gm/cm^3, (b) a linearity expressed in terms of pendant methyl groups per 10^3 carbon atoms of the polymer chain of less than 30, (c) no more than 5 branches greater in length than C_8, and (d) a stress exponent in the range of from 1.2 to 1.4, wherein the first ethylene homo- or copolymer is present in the form of a blend with a blendable branched, ethylene homo- or copolymer, the polymers having been blended prior to cross-linking.

4,576,994
PROCESS FOR THE PREPARATION OF A POLYPROPYLENE MOLDING COMPOSITION

Bernhard Dorrer, and Helmut Strametz, both of Frankfurt am Main, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 31, 1984, Ser. No. 646,583

Claims priority, application Fed. Rep. of Germany, Sep. 3, 1983, 3331877

Int. Cl.⁴ C08F *297/08*

U.S. Cl. 525—247 **2 Claims**

1. A process for the preparation of a polypropylene molding composition consisting of 65 to 95% by weight of a polypropylene and 35 to 5% by weight of an ethylene propylene copolymer by continuous polymerization in two stages in liquid propylene, which comprises preparing a crystalline polypropylene or a polypropylene modified by small amounts of another 1-olefin in the first state at a temperature between about 40° C. and about 85° C. and a pressure higher than the pressure of the second stage and a residence time of 40 to 90 minutes and preparing an ethylene/propylene copolymer in the second stage at a temperature between about 40° C. and about 85° C. and under a pressure of 23 to 64 atmospheres and a residence time of 10 to 90 minutes in the presence of 10 to 55 mole % of ethylene, based on the ethylene/propylene mixture present, a mixed catalyst which has been formed by bringing into contact

(A) the reaction product of

(a1) a reaction product of a magnesium halide with an electron donor and/or a cyclopolyene and

(a21) a compound formed by reduction of titanium tetrachloride by means of an organometallic compound of main groups I to III of the periodic table or

(a22) titanium tetrachloride with

(B) a halogen-free organoaluminum compound and

(C) a compound from the group comprising cyclopolyenes and aromatic carboxylic acid esters, wherein the mixed catalyst being used in both stages is composed of about 0.001 to 1 mole/liter of liquid of component (A) about 0.01 to 40 moles/liter of liquid of component (B) and 0.003 to 12 moles/liter of liquid of component (C).

4,576,995
LAMINATED ARTICLE AND PRODUCTION THEREOF

Masamitsu Nakabayashi, Sennan; Yuzo Furukawa, Kawanishi, and Akira Tashiro, Takatsuki, all of Japan, assignors to Takeda Chemical Industries, Inc., Osaka, Japan

Filed Jul. 19, 1984, Ser. No. 633,426

Claims priority, application Japan, Jul. 22, 1983, 58-134649

Int. Cl.⁴ C08F *263/04*

U.S. Cl. 525—285 **5 Claims**

1. An adhesive for bonding an ethylene/vinyl alcohol copolymer and polystyrene together, which comprises a modified ethylene/vinyl acetate copolymer obtained by graft-copolymerizing styrene and an α,β-unsaturated dicarboxylic acid or anhydride thereof to an ethylene/vinyl acetate copolymer.

4,576,996
POLYCARBONATES EXHIBITING IMPROVED HEAT RESISTANCE

Victor Mark, Evansville, and Charles V. Hedges, Mt. Vernon, both of Ind., assignors to General Electric Company, Mt. Vernon, Ind.

Division of Ser. No. 451,109, Dec. 17, 1983, Pat. No. 4,520,187. This application Mar. 1, 1985, Ser. No. 707,431

Int. Cl.⁴ C08G *63/62, 63/64*

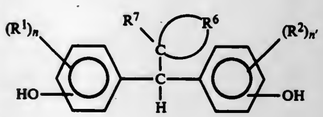
U.S. Cl. 525—439 **54 Claims**

1. Thermoplastic polymeric compositions exhibiting improved heat resistance comprised of

(i) at least one thermoplastic polymer containing the reaction products of:

(a) a carbonate precursor; and

(b) at least one dihydric phenol selected from dihydric phenols represented by the general formula



wherein:

each R^1 is independently selected from halogen radicals, monovalent hydrocarbon radicals, and monovalent hydrocarbonoxy radicals;

each R^2 is independently selected from halogen radicals, monovalent hydrocarbon radicals, and monovalent hydrocarbonoxy radicals;

R^6 is selected from divalent hydrocarbon radicals which together with the carbon atom to which R^6 is bonded form a cyclic structure;

R^7 is selected from hydrogen and monovalent hydrocarbon radicals; and

n and n' are independently selected from whole numbers having a value of from 0 to 4 inclusive.

4,576,997
ADHESIVE BLENDS

Jimmy R. Trotter, and Richard L. McConnell, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 14, 1984, Ser. No. 650,471

Int. Cl.⁴ C08L *67/02*

U.S. Cl. 525—444 **6 Claims**

1. Composition comprising a blend of about 5–95% by weight of a copolyester selected from (a), (b), or mixtures thereof with about 95–5% by weight of (c) which are defined as follows:

(a) a crystallizable copolyester having a melting point of about 100°–190° C, a heat of fusion of less than 10 calories per gram and an I.V. of about 0.4–1.6, the copolyester being derived from an acid component of at least 50 mole % terephthalic acid and a glycol component selected from the roup consisting of 1,4-butanediol, 1,6-hexanediol and combinations thereof, the copolyester also being derived from about 20–50 mole % of a co-acid or about 20–60 mole % of a co-glycol, or about 20–75 mole % of a combination of a co-acid and a co-glycol, the co-acid and co-glycol being selected from the group consisting of isophthalic acid, C_3–C_{12} aliphatic dibasic acids, aliphatic and cycloaliphatic glycols having 2–8 carbon atoms and diethylene glycol, the total of the acid component and the glycol component each being 100 mole %;

(b) a substantially amorphous copolyester having a glass transition temperature of 50° C. or higher, a heat of fusion of less than 1 calorie per gram and an I.V. of about 0.4–1.2, the copolyesters being derived from at least one acid selected from the group consisting of terephthalic acid, isophthalic acid, and 1,4-cyclohexanedecarboxylic acid, and at least one glycol selected from the group consisting of ethylene glycol, diethylene gglycol, and 1,4-cyclohexanedimethanol, with the proviso that the copolyester contains at least two acids or at least two glycols, the second acid or glycol being present in an amount of about 25–60 mole %; and

(c) a highly crystalline aliphatic homo- or copolyester having a melting point of about 40°–90° C. an I.V. of about 0.4–1.5 and a heat of fusion of greater than 10 cal/g., said homo- or copolyester essentially being derived from at least one aliphatic dibasic acid having 4 to 12 carbon atoms and at least one aliphatic glycol having 2 to 8 carbon atoms.

4,576,998
VINYL URETHANE COMPOSITE POLYMER CONTAINING VINYL TERMINATED URETHANE OLIGOMERS

Gilbert B. Ellerbe, III, and Robert E. Hefner, Jr., both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 7, 1984, Ser. No. 679,440

Int. Cl.⁴ C08G *18/62, 18/63;* C08F *283/04*

U.S. Cl. 525—455 **12 Claims**

1. A vinyl urethane composite polymer comprising the reaction product of a reaction mixture comprising

(a) from about 1 to about 20 percent by weight of the mixture of a vinyl-terminated urethane oligomer containing at least one segment derived from a poly(alkylene oxide) polyol having an equivalent weight of about 200–4000,

(b) from about 15 to 75 percent by weight of the mixture of a vinyl monomer having a boiling point above the temperature incurred in reacting said reaction mixture,

(c) a polyisocyanate in an amount sufficient to provide to the mixture from about 0.9 to about 1.5 isocyanate groups per active hydrogen atom contained therein, and

(d) a polyahl, provided that when said polyahl comprises a polymer polyahl containing dispersed soft polymer particles, the combined weight of said dispersed soft polymer particles and said vinyl-terminated oligomer is from about 1 to about 20 percent by weight of the mixture, and the vinyl-terminated urethane oligomer comprises about 5 to about 90 percent of the combined weight of the vinyl-terminated urethane oligomer and the dispersed soft polymer particles.

4,576,999
ULTRAVIOLET RADIATION-CURABLE SILICONE RELEASE COMPOSITIONS WITH EPOXY AND/OR ACRYLIC FUNCTIONALITY

Richard P. Eckberg, Round Lake, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed May 6, 1982, Ser. No. 375,676

Int. Cl.⁴ C08F *283/00*

U.S. Cl. 525—476 **8 Claims**

1. A process for preparing an organopolysiloxane having epoxy functionality and curable to an abhesive composition on exposure to ultraviolet radiation in the presence of a photoinitiator comprising the steps:

(1) Reacting a cyclic diolefin with a hydrogen-functional siloxane compound in the presence of a small amount of a precious metal catalyst;

(2) recovering a cyclic mono-olefin-substituted siloxane and reacting it with an epoxidation agent; and

(3) recovering an epoxy-functional polysiloxane.

4,577,000
CHEMICALLY STABLE STIFF BACKBONE POLYMERS AS MOBILITY CONTROL AGENTS IN OIL RECOVERY

Catherine S. H. Chen, Berkeley Heights, and Albert L. Williams, Princeton, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Sep. 29, 1982, Ser. No. 426,590

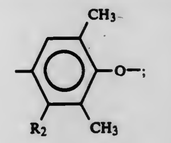
Int. Cl.⁴ C08G *65/48, 75/20, 75/23*

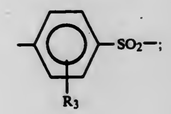
U.S. Cl. 525—534 **11 Claims**

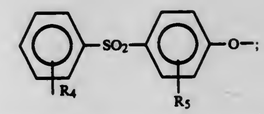
1. A water soluble polymer of the formula

$$H—R_1—H \quad (I)$$

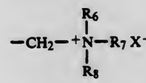
wherein R_1 is a stiff polymeric backbone consisting essentially of repeating units selected from the group consisting of


(II)


(III)


(IV)

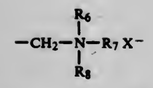
where R_2, R_3, R_4 and R_5 comprise hydrogen and moieties of the formula



where X is halogen and R_6, R_7 and R_8 are the same or different and are C_1–C_{20} hydrocarbyl groups, provided that R_8 is absent when the moiety



forms a pyridyl ring, further provided that said



moieties are present in an amount sufficient to solubilize said polymer (I), said polymer (I) being water insoluble if all of R_2, R_3, R_4 and R_5 were hydrogen.

4,577,001

POLYMERIZATION OF OLEFINS EMPLOYING A CATALYST CONTAINING A TITANIUM COMPONENT DERIVED FROM HYDROXYALKYL AROMATIC COMPOUNDS

William M. Coleman, III, Lake Jackson, and Morris S. Edmondson, Alvin, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 566,107, Dec. 27, 1983, Pat. No. 4,528,339. This application Nov. 13, 1984, Ser. No. 670,524

The portion of the term of this patent subsequent to Jun. 5, 2001, has been disclaimed.

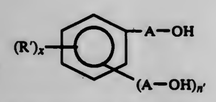
Int. Cl.[4] C08F *4/44*; B01J *37/00*

U.S. Cl. 526—127 **24 Claims**

1. In a process for polymerizing at least one α-olefin or a mixture of at least one α-olefin and at least one polymerizable ethylenically unsaturated monomer in the presence of a supported Ziegler-Natta catalyst; the improvement which comprises employing as the transition metal component of such catalyst that which results from reacting

(A) at least one titanium compound represented by the formula $Ti(OR)_xX_{4-x}$ wherein each R is independently a hydrocarbyl group having from 1 to about 20 carbon atoms; X is a halogen and x has a value from zero to 4; with

(B) at least one compound containing at least one aliphatic hydroxyl group represented by the formula



wherein each A is independently a divalent hydrocarbyl group having from 1 to about 10 carbon atoms; R′ is independently hydrogen, a halogen atom, a hydrocarbyl group, a hydrocarbyloxy group or a halogen, nitro or hydrocarbyloxy substituted hydrocarbyl group or a halogen, nitro or hydrocarbyloxy substituted hydrocarbyloxy group, each such hydrocarbyl or hydrocarbyloxy groups having from 1 to about 20 carbon atoms; n′ has a value of from 1 to 5, and each x independently has a value of from zero to 4; and wherein components (A) and (B) are employed in quantities which provide a molar ratio of (B):(A) of 0.1:1 to about 10:1.

4,577,002

ELASTOMERIC COPOLYMERS, THEIR PREPARATION AND THEIR USE

Antonius A. Broekhuis, Badhuisweg 3, 1031 CM Amsterdam, Netherlands

Continuation of Ser. No. 617,029, Jun. 4, 1984, abandoned. This application May 15, 1985, Ser. No. 734,260

Claims priority, application United Kingdom, Jun. 13, 1983, 8316052

Int. Cl.[4] C08F *4/48*

U.S. Cl. 526—181 **11 Claims**

1. A process for preparing an elastomeric copolymer of an aromatic vinyl compound and a conjugated diene in the presence of an organolithium initiator characterized in that the process employs etheylene glycol n-butyl tert-butyl ether as a structural modifier to produce a copolymer which has a vinyl content of at least 30% by weight and a differential content of the aromatic vinyl compound at the ends of the copolymer which changes in a portion of not more than 5% of the polymer chain (as determined by monomer conversion) from a first value to a second value which is at least 25% points higher than the first value, and said portion lies with the initial 10% of the copolymer chain (as determined by monomer conversion) and on completion of polymerization, polymer chains are coupled by means of a coupling agent.

4,577,003

PENTACOORDINATE SILYL ENOLATES AND THEIR USE AS POLYMERIZATION INITIATORS

William B. Farnham, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 619,944, Jun. 12, 1984, Pat. No. 4,528,389. This application Mar. 27, 1985, Ser. No. 716,481

Int. Cl.[4] C08F *2/00*

U.S. Cl. 526—194 **6 Claims**

1. Process for polymerizing the monomer of the formula $CH_2{=}C(CH_3)X$ wherein

X is —C(O)X′ or;

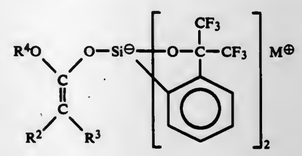
X′ is $-OSi(R^1)_3$, —OR or —NR′R″;

each R^1, independently, is H or a hydrocarbyl radical which is an aliphatic, alicyclic, aromatic or mixed aliphatic-aromatic radical containing up to 20 carbon atoms; provided, however, at least one R^1 is not H;

R is a hydrocarbyl radical which is an aliphatic, alicyclic, aromatic or mixed aliphatic-aromatic radical containing up to 20 carbon atoms, optionally containing one or more ether oxygen atoms within aliphatic segments thereof, and optionally containing one or more functional substituents that are unreactive under polymerizing conditions; and

each of R′ and R″ is independently selected from C_{1-4} alkyl,

the process comprising contacting monomer, in an inert, anhydrous liquid medium, at a temperature in the range about 20° C. to about 120° C., with the pentacoordinate silyl enolate initiator of the formula



wherein

each of R^2 and R^3 is independently selected from H or C_{1-5} alkyl; provided, however, both R^2 and R^3 are not H;

R^4 is a hydrocarbyl radical which is an aliphatic, alicyclic, aromatic or mixed aliphatic-aromatic radical containing up to 20 carbon atoms, optionally containing one or more ether oxygen atoms within aliphatic segments thereof; and

M is lithium, sodium, potassium or cesium.

4,577,004

PROCESS FOR PRODUCING A CHLOROPRENE POLYMER

Noriaki Emura; Takashi Ariyoshi, and Toshikazu Kato, all of Yamaguchi, Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Yamaguchi, Japan

Filed Dec. 14, 1984, Ser. No. 681,736

Claims priority, application Japan, Dec. 15, 1983, 58-235047

Int. Cl.[4] C07C *107/08*; C09B *29/20*

U.S. Cl. 526—204 **13 Claims**

1. A process for producing a chloroprene polymer, comprising

subjecting chloroprene to aqueous emulsion polymerization in the presence of a cyclic polysulfide compound which is present in a quantity equal to at least 0.1% by weight of the weight of said chloroprene to form a chloroprene polymer, and

deflocculating said polymer.

4,577,005

POLYMERIC DIELECTRIC MATERIAL

Junichi Sako, Osaka; Toshiharu Yagi, Hyogo; Yoshihide Higashihata, Osaka; Masayoshi Tatemoto, Osaka; Nobuyuki Tomihashi, Osaka, and Yoshiki Shimizu, Osaka, all of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Filed Jun. 12, 1984, Ser. No. 620,006

Claims priority, application Japan, Jun. 20, 1983, 58-111702

Int. Cl.[4] C08F *214/22*

U.S. Cl. 526—254 **6 Claims**

1. A polymeric dielectric material film comprising a terpolymer which comprises 35 to 80% by mole of vinylidene fluoride, 15 to 60% by mole of trifluoroethylene and 0.5 to 11.2% by mole of hexafluoropropylene, said film having a permittivity of at least about 9.8 such that the permittivity is increased by 3 to 7 when said film is heated at a temperature of from 60° to 140° C. for at least one hour.

4,577,006

DICYCLOPENTADIENE RESINS

Samuel D. Hollis, Savannah, Ga., assignor to Union Camp Corporation, Wayne, N.J.

Filed Mar. 15, 1985, Ser. No. 712,207

Int. Cl.[4] C08F *232/08*

U.S. Cl. 526—283 **3 Claims**

1. The synthetic polymeric resin obtained upon polymerization of a mixture, which comprises;

(a) dicyclopentadiene; and

(b) an aliphatic, conjugated hydrocarbon polyene having 8 to 12 carbon atoms, inclusive.

4,577,007

POLYMERS CONTAINING RESORCINOL MONOBENZOATE

Michael DeBergalis, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 469,689, Feb. 25, 1983, Pat. No. 4,522,971. This application Dec. 21, 1984, Ser. No. 684,938

Int. Cl.[4] C08F *22/10*

U.S. Cl. 526—321 **6 Claims**

1. A process of making a polymer of a moiety reacted with resorcinol monobenzoate, said moiety having a functional group which bonds to the hydroxyl group on the resorcinol monobenzoate through a linking group, said linking group including at least one group selected from the group consisting of ether, carbonate, and urethane groups and ester groups containing at least two carbon atoms, wherein the polymer contains by weight about 12.5–80% resorcinol monobenzoate, the balance being said moiety, said functional group being a group other than an isocyanate or a polymeric acyl halide,

wherein the monomer precursors of the polymeric moiety are reacted with resorcinol monobenzoate or a monomeric derivative containing resorcinol monobenzoate to produce a comonomer which is then copolymerized.

4,577,008

PROCESS FOR THE PRODUCTION OF ACRYLONITRILE-PROPYLENE COPOLYMERS

Kenneth C. Benton, Macedonia, and James L. O'Kane, Northfield, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Jun. 27, 1984, Ser. No. 625,168

Int. Cl.[4] C08F *220/44*, *2/18*, *2/22*

U.S. Cl. 526—342 **18 Claims**

1. A thermoplastic polymeric composition resulting from the polymerization of

(A) a major portion of olefinically unsaturated nitrile monomers, and

(B) a minor portion of propylene

wherein the polymeric composition is a random copolymer comprising between 65 and 95 percent by weight of the polymerized olefinically unsaturated nitrile.

4,577,009

POLYIMIDE PRODUCT FROM PHENANTHRENE

Joseph G. Robinson, Winchcombe, and Pierce W. F. Riemer Huntly, both of England, assignors to Coal Industry (Patents) Limited, London, England

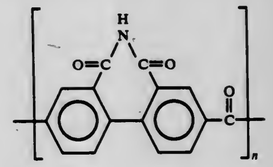
Filed Sep. 18, 1984, Ser. No. 651,713

Claims priority, application United Kingdom, Nov. 18, 1983, 8330793

Int. Cl.[4] C08G *10/04*

U.S. Cl. 528—228 **2 Claims**

1. A polyimide product of the general formula



where n is a value in the range 2 to 20.

4,577,010

PROCESS FOR THE PURIFICATION OF POLYPHENYLENE ETHERS

Nicola Bottazzini, Milan, and Marino Quaglino, Trecate, both of Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Jan. 7, 1985, Ser. No. 689,093

Claims priority, application Italy, Jan. 9, 1984, 19075 A/84

Int. Cl.[4] C08G *65/46*

U.S. Cl. 528—487 **5 Claims**

1. A process for the purification of polyphenylene ethers, prepared by oxidative polycondensation of alkylphenols by means of copperamine catalysts consisting in treating a solution of the polymer, in an acid medium, with at least one compound comprised in the general formula

$$R{-}(SH)_n \qquad (I)$$

wherein:

n=a whole number ranging between 1 and 6, extremes included:

R may be:

(a) a linear or branched alkyl radical containing from 1 to 16 carbon atoms, which can contain, as substituents in the chain, alkoxy groups having 1–6 carbon atoms, aminic, sulphonic, hydroxy, carboxylic groups, halogens, nitro ($-NO_2$) groups, sulphydrylic (—SH) groups in such number as to maintain the value of n no higher than 6;

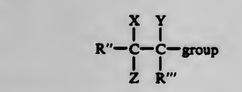
(b) an aryl, alkylaryl, aralkyl, heterocyclic, cycloalkyl radical, containing altogether from 6 to 16 carbon atoms, optionally comprising substituent groups selected from alkyl groups having 1–6 carbon atoms, alkoxy groups having 1–6 carbon atoms, aminic, hydroxy, sulphonic, carboxylic, nitro groups, halogens and sulphydrylic groups, in such number that the value of n does not exceed limit 6;

(c) a hydrocarbon radical containing two or more non-condensed benzene rings, optionally containing in the benzene rings substituent groups selected from halogens, aminic, sulphonic, hydroxyl, carboxylic, nitro groups, C_1–C_6 alkyl and/or alkoxy groups and sulphyd-

rylic groups in such number that n does not exceed value 6;
(d) an



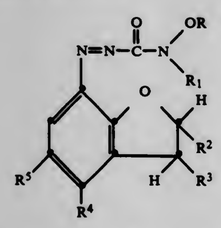
wherein R′ may be linear or branched alkyl radical containing from 1 to 16 carbon atoms, optionally containing in the chain, aminic hydroxyl, sulphonic, nitric, carboxylic, halogen substituent groups, sulphydrylic groups in such number that n does not exceed value 6; or R′ may be an aryl, alkylaryl, aralkyl, cycloalkyl, or heterocyclic radical containing altogether from 6 to 16 carbon atoms, which may optionally contain substituents selected from alkyl and alkoxy groups having 1–6 carbon atoms, halogen atoms, sulphonic, carboxylic, hydroxy, aminic, nitric groups and sulphydrylic groups in such number that n does not exceed value 6;
(e) an



wherein R″=hydroxy group, R‴, X, Y, Z, equal to or different from each other, may represent hydrogen, alkyl and/or alkoxy radicals having from 1 to 12 carbon atoms, sulphydrylic, aryl, arylalkyl, alkylaryl, cycloalkyl, heterocyclic groups, containing altogether from 1 to 16 carbon atoms.

4,577,011
MITICIDAL 2-(2-ALKYL-2,3-DIHYDROBENZOFURAN-7-YL)-N-ALKOXY-N-ALKYL-DIAZENECARBOXAMIDES
Kurt H. Pilgram, and Richard D. Skiles, both of Modesto, Calif., assignors to Shell Oil Company, Houston, Tex.
Filed Aug. 22, 1984, Ser. No. 643,330
Int. Cl.⁴ C07C *107/00, 113/04;* A01N *9/28;* C07D *307/78*
U.S. Cl. 534—787 **3 Claims**

1. A compound of the formula



wherein R, R^1 and R^2 each is alkyl of one to three carbon atoms; R^3 is hydrogen or alkyl of one to three carbon atoms; R^4 and R^5 each is hydrogen, bromine, chlorine, or alkyl of one to three carbon atoms.

4,577,012
METHOD OF SEPARATION OF NUCLEOTIDES AND NUCLEOSIDES FROM EACH OTHER
Masaaki Tsurushima, Minoo; Gozi Kokubu, Kitakatsuragi, and Koji Moriya, Osaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan
Filed Dec. 2, 1983, Ser. No. 557,367
Claims priority, application Japan, Dec. 3, 1982, 57-212971
Int. Cl.⁴ C07H *17/00, 15/12, 19/06*
U.S. Cl. 536—24 **11 Claims**

1. A method for the separation of nucleotides and nucleosides from each other, which comprises contacting a solution containing nucleotides and nucleosides, after being adjusted to a pH of not more than 7, with activated carbon to absorb the nucleosides and nucleotides and then eluting the nucleotides with an aqueous solution of an alkali metal hydroxide, the said nucleotides being from the group of inosine-5′-monophosphate, guanosine-5′-monophosphate, adenosine-5′-monophosphate, xanthosine-5′-monophosphate, cytidine-5′-monophosphate, uridine-5′-monophosphate, deoxyadenosine-5′-monophosphate, deoxycytidine-5′-monophosphate, deoxyuridine-5′-monophosphate, inosine-2′(3′),5′-diphosphate, inosine-5′-diphosphate, guanosine-2′(3′),5′-diphosphate, guanosine-5′-diphosphate, adenosine-2′(3′),5′-diphosphate, adenosine-5′-diphosphate, cytidine-5′-diphosphate, uridine-5′-diphosphate, deoxyadenosine-5′-diphosphate, deoxycytidine-5′-diphosphate, deoxyuridine-5′-diphosphate, adenosine-5′-triphosphate, guanosine-5′-triphosphate, deoxyadenosine-5′-triphosphate, deoxyguanosine-5′-triphosphate, deoxyctidine-5′-triphosphate, deoxyuridine-5′-triphosphate, inosine-2′-monophosphate, guanosine-3′-monophosphate, adenosine-3′,5′-cyclic monophosphate, and xanthine-2′,3′-cyclic monophosphate, the said nucleosides being inosine, guanosine, adenosine, xanthosine, cytidine, uridine, thymidine and orotidine and a deoxyribose homolog of said compounds and the said activated carbon having pore characteristics such that not less than 0.6 cc/g of the total pore volume is occupied by pores having a diameter of not more than 15μ, not less than 0.4 cc/g of the total pore volume is occupied by pores having a diameter of not more than 300 Å and not less than 17 Å of an average pore diameter for pores having a diameter of not more than 300 Å and, following the nucleotide elution, eluting the nucleosides with an aqueous solution containing an alkali metal hydroxide and a lower alcohol.

2. A method of separation of nucleotides and 5-amino-4-imidazolecarboxyamidoriboside from each other, which comprises contacting a solution containing nucleotides and 5-amino-4-imidazolecarboxyamidoriboside, after being adjusted to a pH of not more than 7, with activated carbon to absorbe 5-amino-4-imidazolecarboxyamidoriboside and nucleotides and then eluting the nucleotides with an aqueous solution of an alkali metal hydroxide, the said nucleotides being from the group inosine-5′-monophosphate, quanosine-5′-monophosphate, adenosine-5′-monophosphate, xanthosine-5′-monophosphate, cytidine-5′-monophosphate, uridine-5′-monophosphate, deoxyadenosine-5′-monophosphate, deoxycytidine-5′-monophosphate, deoxyuridine-5′-monophosphate, inosine-2′(3′),5′-diphosphate, inosine-5′-diphosphate, guanosine-2′(3′),5′-diphosphate, guanosine-5′-diphosphate, adenosine-2′(3′),5′-diphosphate, adenosine-5′-diphosphate, cytidine-5′-diphosphate, uridine-5′-diphosphate, deoxyadenosine-5′-diphosphate, deoxycytidine-5′-diphosphate, deoxyuridine-5′-diphosphate, adenosine-5′-triphosphate, guanosine-5′-triphosphate, deoxyadenosine-5′-triphosphate, deoxyguanosine-5′-triphosphate, deoxycytidine-5′-triphosphate, deoxyuridine-5′-triphosphate, inosine-2′-monophosphate, guanosine-3′-monophosphate, adenosine-3′,5′-cyclic monophosphate, and xanthine-2′,3′-cyclic monophosphate, and the said activated carbon having pore characteristics such that not less than 0.6 cc/g of the total pore volume is occupied by pores having a diameter of not more than 15μ, not less than 014 cc/g of total pore volume is occupied by pores having a diameter of not more than 300 Å and not less than 17 Å of an average pore diameter for pores having a diameter of not more than 300 Å and following the

nucleotide elution, eluting the 5-amino-4-imidazolecarboxyamidoriboside with an aqueous solution containing an alkali metal hydroxide and a lower alcohol.

11. The method according to claim 1, wherein the nucleotides are 5′-inosinic acid or 5′-guanylic acid and the nucleosides are inosine or guanosine.

4,577,013
IONICALLY MODIFIED CELLULOSE MATERIAL, ITS PREPARATION AND ITS USE
Jürg Merz, Biel-Benken, and Walter Voser, Allschwil, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
Filed Dec. 12, 1984, Ser. No. 680,690
Claims priority, application Switzerland, Dec. 22, 1983, 6856/83
Int. Cl.⁴ C08B *15/06;* B01D *15/08*
U.S. Cl. 536—43 **4 Claims**

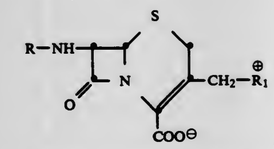
1. An ionically modified cellulose material in which each ionic moiety is linked to the cellulose moiety via a group of the formula

—O—CH_2—NH—CO—,

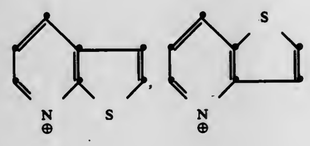
the carbonyl group being attached to the ionic moiety of the material and the oxygen atom being attached to the cellulose moiety of the material, which material is obtained from microcrystalline wood cellulose in the form of powder as the starting material, said cellulose powder having a degree of polymerisation of 490 to 550 and consisting of particles having a specific BET surface area of 0.8 to 1.1 m^2/g and a degree of swelling in water at 20° C. of 4 to 6 ml/g.

4,577,014
THIENO AND FUROPYRIDINIUM-SUBSTITUTED CEPHALOSPORINS
William H. W. Lunn, and Robert T. Vasileff, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.
Division of Ser. No. 449,945, Dec. 15, 1982, Pat. No. 4,501,739, which is a continuation-in-part of Ser. No. 340,628, Jan. 19, 1982, abandoned, which is a continuation-in-part of Ser. No. 300,357, Sep. 8, 1981, abandoned. This application Dec. 7, 1984, Ser. No. 679,514
Int. Cl.⁴ C07D *501/38;* A61K *31/545*
U.S. Cl. 544—022 **7 Claims**

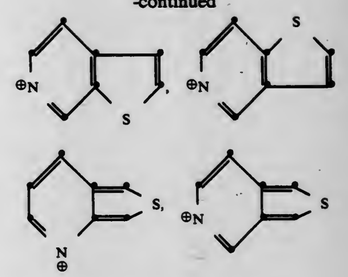
1. The compound of the formula



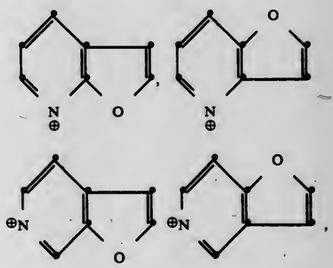
wherein R is hydrogen, formyl, aminoadipoyl, or protected aminoadipoyl; $\oplus R_1$ is a bicyclicpyridinium group selected from the group consisting of a thienopyridinium group of the formulas



-continued



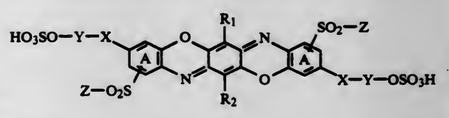
or a furopyridinium group of the formulas



and said thienopyridinium and said furopyridinium wherein either or both of the hetero rings thereof is substituted by one or two C_1–C_4 alkyl, halogen, carboxy, carbamoyl, or C_1–C_4 alkoxycarbonyl groups.

4,577,015
TRIPHENDIOXAZINE VINYL SULPHONE DYESTUFFS
Horst Jäger; Wolfgang Harms, both of Leverkusen, and Karl J. Herd, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Filed Jan. 24, 1985, Ser. No. 694,535
Claims priority, application Fed. Rep. of Germany, Feb. 11, 1984, 3404856; Oct. 31, 1984, 3439756
Int. Cl.⁴ C07D *498/02;* C09B *19/00, 19/02*
U.S. Cl. 544—76 **3 Claims**

1. Triphendioxazine dyestuffs of the general formula



wherein
R_1, R_2=H, F, Cl, Br, C_1–C_4-alkoxy, C_1–C_4-alkyl, phenoxy or acylamido;
X=NR_3, O or S wherein
R_3=H, C_1–C_4-alkyl, optionally substituted by SO_3H, OSO_3H, COOH, OH or OCH_3;
Y=C_2–C_6-alkylene which is optionally interrupted by O, SO_2, NH, S, NCH_3 or substituted by OSO_3H;
Z=—CH=CH_2 or —CH_2—CH_2—w wherein
W=OSO_3H, SSO_3H, OPO_3H_2, OC_1–C_4-alkylcarbonyl.

4,577,016
PROCESS FOR THE PREPARATION OF PENEM DERIVATIVES

Marco Alpegiani; Angelo Bedeschi; Maurizio Foglio; Giovanni Franceschi, and Ettore Perrone, all of Milan, Italy, assignors to Farmitalia Carlo Erba S.p.A., Milan, Italy

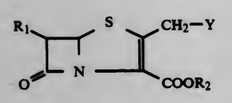
Filed Apr. 4, 1983, Ser. No. 481,924

Claims priority, application United Kingdom, Apr. 8, 1982, 8210410

Int. Cl.⁴ C07D *499/00*; A61K *31/425*

U.S. Cl. 544—182 **19 Claims**

1. A process for the preparation of a compound of formula (I):



(I)

wherein R_1 is hydrogen;

a C_1–C_{12} alkyl group either unsubstituted or substituted by at least one substituent selected from the group consisting of hydroxy, amino, cyano, mercapto, protected hydroxy, protected amino and protected mercapto: a C_4–C_7 monocycloalkyl group or a C_4–C_7 monocycloalkyl group substituted by at least one substituent selected from the group consisting of C_1–C_6 alkyl, hydroxy, amino, cyano, mercapto, protected hydroxy, protected amino and protected mercapto; R_2 is hydrogen or a carboxy protecting group; and Y is

(a) a group —S—Het wherein Het is

(A) a pentatomic or hexatomic heteromonocyclic ring containing at least one double bond and at least one heteroatom selected from the group consisting of N, S and O, unsubstituted or substituted by at least one substituent selected from the group consisting of:

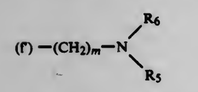
(a') hydroxy, C_1–C_6 alkoxy, halogen, C_2–C_6 aliphatic acyl;

(b') C_1–C_6 alkyl or C_1–C_6 alkyl substituted by a tetrazolyl group or by at least one hydroxy or halogen substituent:

(c') C_2–C_6 alkenyl or C_2–C_6 alkenyl substituted by at least one hydroxy or halogen substituent:

(d') —S—R3' wherein R_3 is hydrogen or C_1–C_6 alkyl; or —S—CH_2COOR_4, wherein R_4 is hydrogen, C_1–C_6 alkyl or a carboxy-protecting group;

(e') —$(CH_2)_m$—$COOR_4$ or —CH=CH—$COOR_4$, wherein m is 0, 1, 2 or 3 and R_4 is as defined above; —$(CH_2)_m$—CN or —$(CH_2)_m$—$CONH_2$, wherein m is as defined above; —$(CH_2)_m$—SO_3H, wherein m is as defined above, or



(f') —$(CH_2)_m$—N(R_6)(R_5)

wherein m is as defined above, and each of R_5 and R_6, which may be the same or different, represents hydrogen, C_1–C_6 alkyl, sulfo, or an aliphatic acyl group or, when one of R_5 and R_6 is hydrogen, the other may also be an amino protecting group; or

(B) a heterobicyclic ring containing at least two double bonds, wherein each of the condensed heteromonocyclic rings, being the same or different, is a pentatomic or hexatomic heteromonocyclic ring containing at least one heteroatom selected from the group consisting of N, S and O, said heterobicyclic ring being unsubstituted or substituted by at least one substituent selected from the group consisting of (a'), (b'), (c'), (d'), (e') and (f') as defined above;

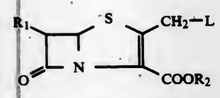
(b) a formyloxy or a C_2–C_6 carboxylic acyloxy group wherein the acyl group may be unsubstituted or substituted by halogen, C_2–C_6 carboxylic acyl, amino, hydroxy, mercapto, protected amino, protected hydroxy or protected mercapto;

(c) a C_1–C_{12} alkoxy or C_1–C_{12} alkylthio both optionally substituted by at least one substituent selected from the group consisting of halogen, formyl, C_2–C_6 acyl, amino, hydroxy, mercapto, protected amino, protected hydroxy and protected mercapto;

(d) a pyridinium group or a carbamoyl substituted pyridinium;

(e) azido, and the pharmaceutically or veterinarily acceptable salts thereof, said process comprising:

displacing the group L, in the presence of an organic solvent, in a compound of formula (II):



(II)

wherein R_1 and R_2 are as defined above and the group L is chlorine, bromine, hydroxy or an activated hydroxy group with a group Y, in a compound of formula III:

Y—H (III)

wherein group Y is as defined above, a salt thereof or a reactive derivative thereof wherein the activated hydroxy group is one capable of reacting with a compound YH or salt thereof to form a —CH_2—Y bond in formula (I), said salt of compound YH being capable of reacting with a compound (II) when L is an activated hydroxy group as hereinbefore defined to form a —CH_2—Y bond in formula (I), and the reactive derivative of the compound YH is one capable of reacting with compound (II) when L is a free hydroxy group to form a —CH_2—Y bond in formula (I), the reaction to cause the displacement being carried out under conditions to form said —CH_2—Y bond wherein the group Y displaces the group L in said compound (II) to form said compound (I), with the proviso that when Y in formula (I) is pyridinium or carbamoyl substituted pyridinium, then Y in formula (II) is pyridinyl or carbamoyl substituted pyridinyl.

4,577,017
PROCESS FOR THE PREPARATION OF AN ISOCYANURATE COMPOUND CONTAINING ISOCYANATE GROUPS

Willem J. H. Hupperetz, Schinnen, and Johannes A. H. M. Ramakers, Beek (L.), both of Netherlands, assignors to DSM Resins B.V., Zwolle, Netherlands

Filed Sep. 12, 1984, Ser. No. 649,609

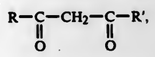
Claims priority, application Netherlands, Sep. 13, 1983, 8303152

Int. Cl.⁴ C07D *251/30*

U.S. Cl. 544—193 **10 Claims**

1. Process for the preparation of an isocyanurate compound containing isocyanate groups by trimerizing a diisocyanate in the presence of a catayst, wherein the catalyst is:

I a compound having the formula



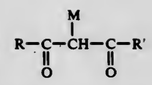
where R and R' are independently selected from the group consisting of:

a hydrocarbon radical with 1–10 carbon atoms, —O—R_1 with R_1 being a hydrocarbon radical with 1–10 carbon atoms, and

H,

in combination with an alkalimetal alkanolate, or

II a compound having the formula



where R and R' have the same meanings as above, and M represents a univalent metal.

4,577,018
2,3-DIAMINO-SUBSTITUTED-4(3H)-PYRIMIDINONES AND PLATINUM CHELATES

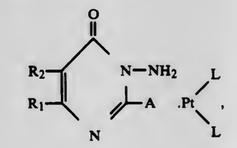
Joseph J. Hlavka, Tuxedo; Panayota Bitha, Pomona, and Yang-i Lin, Nanuet, all of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Aug. 22, 1983, Ser. No. 525,531

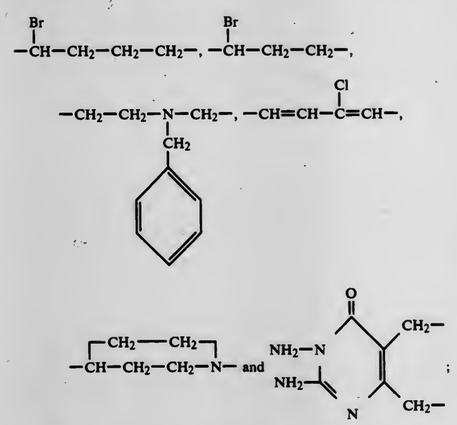
Int. Cl.⁴ C07F *15/00*; C07D *471/14, 471/04, 487/04*

U.S. Cl. 544—225 **15 Claims**

1. A compound of the formula:



wherein R_1 is alkyl(C_1–C_6), trifluoromethyl, phenyl, p-chlorophenyl or p-nitrophenyl; R_2 is hydrogen, alkyl(C_1–C_4), halogen, benzyl or hydroxyethyl; R_1 and R_2 taken together is a divalent moiety selected from the group consisting of —$(CH_2)_n$—wherein n is an integer 3–6,



A is amino or hydrazino; and L and L' are the same and are anions selected from the group consisting of halide, nitrate, sulfate and (C_2–C_6) alkanoate of L and L' taken together is a dibasic anion selected from the group consisting of oxalate, malonate, methylmalonate, succinate, and tartronate.

4,577,019
STABILIZED ADDUCTS OF MENADIONE BISULFITE WITH P-AMINOBENZOIC ACID OR ADENINE

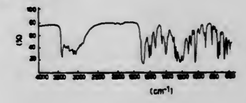
Enrico Bruschi, Genoa, Italy, assignor to Luigi Stoppani S.p.A., Milan, Italy

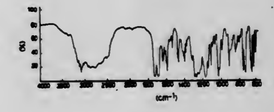
Continuation of Ser. No. 273,379, Jun. 15, 1981, abandoned, which is a continuation of Ser. No. 102,445, Dec. 11, 1979, abandoned, which is a continuation-in-part of Ser. No. 971,031, Dec. 19, 1978, abandoned. This application Aug. 2, 1983, Ser. No. 518,769

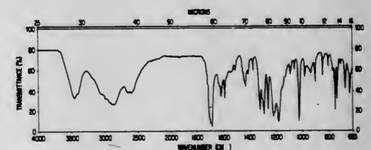
Claims priority, application Italy, Jul. 21, 1978, 26008 A/78

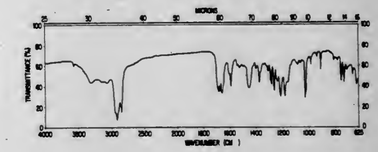
Int. Cl.⁴ C07D *473/34*; C07C *49/66*

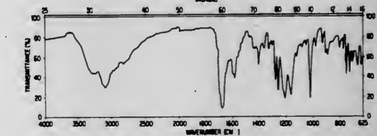
U.S. Cl. 544—264 **2 Claims**

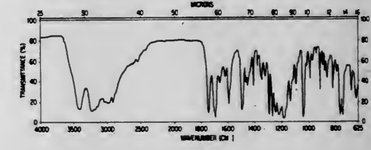


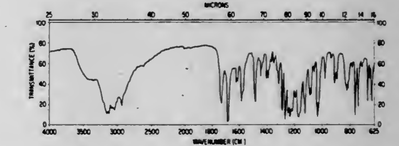












1. Adducts of menadione bisulfite with p-aminobenzoic acid

having the general formula: $C_{18}H_{17}O_7NS$, m.w. 391.4; menadione 42.5% by weight; p-aminobenzoic acid 35.1% by weight.

2. Adducts of menadione bisulfite with adenine having the general formula: $C_{16}H_{15}N_5O_5S$, m.w. 389.42; menadione 43.2% by weight; adenine 34.5% by weight.

4,577,020

AMINOALKYL AND AMINOALKENYL TRIAZOLES AS ANTI-PSYCHOTIC AGENTS

Martin Gall, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

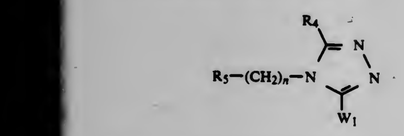
Filed Jan. 25, 1983, Ser. No. 460,723

The portion of the term of this patent subsequent to Jul. 6, 1999, has been disclaimed.

Int. Cl.⁴ C07D *403/06, 249/08;* A61K *31/495, 31/41*

U.S. Cl. 544—366 **5 Claims**

1. A compound of the Formula I,



I

or an enantiomer or stereoisomer thereof,

wherein P_4 is

(a) hydrogen,

(b) (C_1–C_3) alkyl,

(c) —CH_2OH,

(d) —CH_2OCOCH_3,

(e) —$S(O)_qCH_3$,

(f) —SCH_2CH_3, or

(g) —R_{15};

wherein R_5, R_{15}, and R_{25} are the same or different and are

(a) phenyl substituted by zero to 2 chloro, fluoro, bromo, alkyl of from one to 3 carbon atoms, nitro, or alkoxy of from one to 3 carbon atoms, or

(b) phenyl substituted by one trifluoromethyl and zero to one of the previous phenyl substituents;

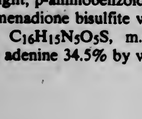
wherein W_1 is

(a) cis—$C(R_3)$=CH—$CH_2NR_1R_2$,

(b) trans—$C(R_3)$=CH—$CH_2NR_1R_2$,

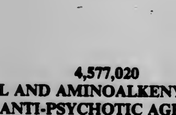
(c) —$C(CH_3)(OR_{14})$—CH_2—$CH_2NR_1R_2$,

(d) a substituent of the Formula III, or



III

(e) a substituent of the Formula IV;



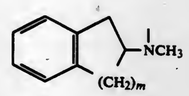
IV

wherein —NR_1R_2 is

(a) —$N(CH_3)$—$CH_2(CH_2)_m$—R_{25},

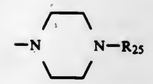
(b) —NH—$CH_2(CH_2)_mR_{25}$,

(c) a substituent of the Formula V,



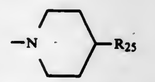
V

(d) a substituent of the Formula VI,



VI

(e) a substituent of the Formula VII, or



VII

(f) —$N(CH_3)$—$(CH_2)_3$—$CH(R_{51})_2$;

wherein R_{14} is

(a) hydrogen,

(b) —$COCH_3$, or

(c) —$COCH_2CH_3$;

wherein R_{51} is

(a) phenyl,

(b) p-fluorophenyl, or

(c) p-chlorophenyl;

wherein R_3 is

(a) hydrogen or

(b) methyl;

wherein the dotted line represents a single or double bond;

wherein m is an integer of from one to 2, inclusive;

wherein n is an integer of from zero to 3, inclusive; and

wherein q is an integer of from zero to 2, inclusive; or a pharmacologically acceptable acid addition salt; or solvate or hydrate thereof.

4,577,021

1H-2-BENZOPYRAN-1-YL ALKYL ON 1-(ISOCHROMAN-1-YL)ALKYL PIPERAZINES

John M. McCall, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 26,719, Apr. 4, 1979, abandoned, which is a continuation-in-part of Ser. No. 847,350, Oct. 31, 1977, abandoned. This application Apr. 1, 1985, Ser. No. 718,199

Int. Cl.⁴ C07D *405/06, 413/06*

U.S. Cl. 544—376 **14 Claims**

1. A compound selected from the group consisting of

4-(2-methylphenyl)-1-[3-(3,4-dihydro-6,7-dimethoxy-1,4-dimethyl-1H-2-benzopyran-1-yl)-propyl]piperazine;

4-(2-methylphenyl)-1-[3-(3,4-dihydro-6,7-dimethoxy-1,4-dimethyl-1H-2-benzopyran-1-yl)-propyl]piperazine, monohydrochloride;

1-[2-(3,4-dihydro-6,7-dimethoxy-4,4-dimethyl-1H-2-benzopyran-1-yl)ethyl]-4-(2-methylphenyl)piperazine;

1-[2-(3,4-dihydro-6,7-dimethoxy-4,4-dimethyl-1H-2-benzopyran-1-yl)ethyl]-4-(2-methylphenyl)piperazine, monohydrochloride;

1-[2-(6,7-dimethoxy-4,4-dimethylisochroman-1-yl)ethyl]-4-(3-trifluoromethylphenyl)piperazine;

1-[2-(6,7-dimethoxy-4,4-dimethylisochroman-1-yl)ethyl]-4-(3-trifluoromethylphenyl)piperazine, dihydrochloride;

4-(2-methylphenyl)-1-[3-(3,4-dihydro-6,7-dimethoxy-1,4,4-trimethyl-1H-2-benzopyran-1-yl)-propyl]piperazine;

4-(2-methylphenyl)-1-[3-(3,4-dihydro-6,7-dimethoxy-1,4,4-trimethyl-1H-2-benzopyran-1-yl)-propyl]piperazine, dihydrochloride;

4-(2-methylphenyl)-1-[3-(3,4-dihydro-1-(4-fluorophenyl)-6,7-dimethoxy-1H-2-benzopyran-1-yl)propyl]piperazine;

4-(2-methylphenyl)-1-[3-(3,4-dihydro-1-(4-fluorophenyl)-6,7-dimethoxy-1H-2-benzopyran-1-yl)propyl]piperazine, hydrochloride hydrate;

4-(2-methylphenyl)-1-[2-(3,4-dihydro-6,7-dimethoxy-3,3-dimethyl-1H-2-benzopyran-1-yl)-ethyl]piperazine;

4-(2-methylphenyl)-1-[2-(3,4-dihydro-6,7-dimethoxy-3,3-dimethyl-1H-2-benzopyran-1-yl)-ethyl]piperazine, monohydrochloride; and

1-[3-(3,4-dihydro-6,7-dimethoxy-1-methyl-1H-2-benzopyran-1-yl)propyl]-4-(2-methylphenyl)piperazine.

4,577,022

SILYL COMPOUNDS

Roger Crossley, Reading, and Robin G. Shepherd, Maidenhead, both of England, assignors to John Wyeth & Brother, Ltd., Maidenhead, England

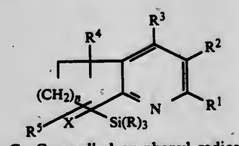
Filed Jun. 21, 1983, Ser. No. 506,277

Claims priority, application United Kingdom, Jun. 25, 1982, 8218466

Int. Cl.⁴ C07D *215/16*

U.S. Cl. 546—14 **19 Claims**

1. A silyl compound of formula I



(I)

cycloalkyl, C_7–C_{12} aralkyl or phenyl radicals, any of which cyclic radicals may be substituted by C_1–C_6 alkyl, C_1–C_6 alkoxy or trifluoromethyl; or

R^1 and R^2 taken together or R^2 and R^3 taken together, with the carbon atoms to which they are attached, form a 5-, 6-, or 7-membered carbocyclic ring, and when R^1 and R^2 form a ring, the ring has the same number of carbon atoms as the ring carrying R^4; or

R^4 and R^5 may also represent C_1–C_6 alkoxy;

n is one of the integers 1, 2 or 3;

X is hydrogen or lithium, sodium or potassium; and

R is C_1–C_6 alkyl, C_4–C_6 cycloalkyl, C_7–C_{12} aralkyl or phenyl which may be substituted by C_1–C_6 alkyl, C_1–C_6 alkoxy or trifluoromethyl; or

R is an electron dontating group selected from C_1–C_6 alkoxy, C_4–C_6 cycloalkoxy, C_7–C_{12} aralkoxy, phenoxy which may be substituted by C_1–C_6 alkyl, C_1–C_6 alkoxy or trifluoromethyl, C_1–C_6 alkylthio, C_4–C_6 cycloalkythio, C_7–C_{12} aralkythio, the group R^bR^cN- wherein R^b and R^c are selected from C_1–C_6 alkyl, C_4–C_6 cycloalkyl, phenyl and C_7–C_{12} aralkyl or R^b and R^c may be joined to form a pyrrolidine or piperidine with the nitrogen atom ring, which pyrrolidine or piperidine ring may be substituted by C_1–C_6 alkyl or C_4–C_6 cycloalkyl.

4,577,023

DIAZABICYCLO (2,2,2) OCTADIONES

Antonius Corvers, Beek, and Johannes H. A. Hofman, Elsloo, both of Netherlands, assignors to Stamicarbon B.V., Geleen, Netherlands

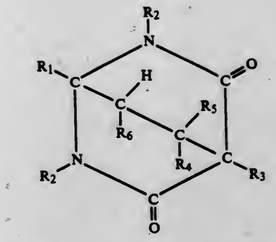
Continuation-in-part of Ser. No. 442,975, Nov. 19, 1982, abandoned. This application May 25, 1984, Ser. No. 614,241

Claims priority, application Netherlands, Nov. 21, 1981, 8105277; Canada, Nov. 19, 1982, 415988

Int. Cl.⁴ C07D *471/08*

U.S. Cl. 546—122 **9 Claims**

1. A diazabicyclo(2,2,2)octadione having the formula



I

wherein R_1–R_6 are independently selected from the group consisting of hydrogen, methyl, and ethyl.

4,577,024

OXOINDOLIZINE AND OXOINDOLIZINIUM COMPOUNDS USEFUL AS DYES

George L. Fletcher, Jr., Pittsford, N.Y.; Steven L. Bender, Pasadena, Calif., and Donald H. Wadsworth, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 278,022, Jun. 29, 1981, abandoned. This application Aug. 27, 1982, Ser. No. 412,444

Int. Cl.⁴ C07D *471/04*

U.S. Cl. 546—183 **15 Claims**

1. A dye selected from the group consisting of oxoindolizine and oxoindolizinium dyes and combinations thereof wherein

(a) the oxo group of said dyes is in the 1- or 3-position of the oxoindolizine or oxoindolizinium nucleus,

(b) said dyes contain in the 7-position of the oxoindolizine or oxoindolizinium nucleus a chromophore group which enables said dyes to have a maximum absorption of electromagnetic radiation at wavelengths within the range of 300 to 1000 nanometers, and

(c) said oxoindolizine or oxoindolizinium nucleus contains, in at least one of the 1-, 2- and 3-positions, alkyl containing 1 to 18 carbon atoms, aryl containing 6 to 20 carbon atoms, or aryl containing 6 to 20 carbon atoms substituted by alkyl containing 1 to 5 carbon atoms, alkoxy containing 1 to 5 carbon atoms, or aryloxy containing 6 to 10 carbon atoms.

2. A dye selected from the group consisting of

(i) 7-methylidene-1 or 3-oxoindolizine dyes;

(ii) 7-(4-oxo-2,5-cyclohexadiene-1-ylidene)-1 or 3-oxoindolizine dyes;

(iii) 7-(1 or 3-oxoindolizin-7-ylidene)-1 or 3-oxoindolizine dyes;

(iv) 7-(1 or 3-oxoindolizin-7-ylidene)ethylidene-1 or 3-oxoindolizine dyes;

(v) 7-(1 or 3-oxoindolizin-7-ylidene)methyliene-1 or 3-oxoindolizinium salt dyes;

(vi) 7-(2 or 4-aminoaryl)-1 or 3-oxoindolizine dyes; and

(vii) 7-pyridinium-1 or 3-oxoindolizine dyes; and combinations of said dyes;

wherein said dyes contain, in the 7-position of the indolizine or indolizinium nucleus, a chromophore group which enables said dyes to have a maximum absorption of electromagnetic radiation at a wavelength within the range of 300 to 1000 nanometers; and

wherein said indolizine or indolizinium nucleus contains, in at least one of the 1-, 2- and 3-positions, alkyl containing 1 to 18 carbon atoms, aryl containing 6 to 20 carbon atoms, or aryl containing 6 to 20 carbon atoms substituted by alkyl containing 1 to 5 carbon atoms, alkoxy containing 1 to 5 carbon atoms, or aryloxy containing 6 to 10 carbon atoms.

4,577,025

METHOD OF PREPARING α-AROMATIC PROPIONIC ACIDS AND INTERMEDIATES THEREOF

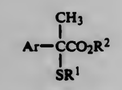
Kazutaka Arai; Yoshio Ohara; Yashio Takakuwa, and Toyoko Iizumi, all of Funabashi, Japan, assignors to Nissan Chemical Industries, Ltd., Tokyo, Japan

Continuation of Ser. No. 332,961, Dec. 21, 1981. This application Aug. 26, 1983, Ser. No. 527,179

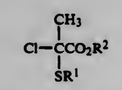
Int. Cl.⁴ C07D *211/34, 333/02, 333/24, 277/60*

U.S. Cl. 546—198 **26 Claims**

1. A method of preparing an ester of α-thio-α-aromatic propionic acid derivatives represented by the general formula:



wherein R^1 is an alkyl group, a phenyl group or a benzothiazolyl group, R^2 is an alkyl group and Ar is an aromatic group, which comprises reacting an ester of α-chloro-α-thiopropionic acid represented by the general formula:



wherein R^1 and R^2 are as defined above, with an aromatic compound represented by the general formula:

ArH

wherein Ar is as defined above, in the presence of a Lewis acid.

4,577,026

INTERMEDIATES FOR SPIRO[2H-1,4-BENZODIOXEPIN-3(5H)4'PIPERIDINE] COMPOUNDS

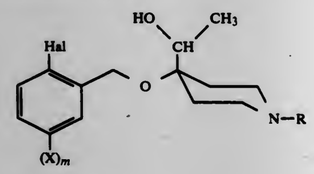
Raymond W. Kosley, Jr., Bridgewater, and Robert J. Cherill, Somerset, both of N.J., assignors to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

Division of Ser. No. 516,832, Jul. 25, 1983, Pat. No. 4,472,580, which is a division of Ser. No. 410,155, Aug. 20, 1982, Pat. No. 4,405,631. This application Jul. 12, 1984, Ser. No. 630,134

Int. Cl.⁴ C07D *211/48*

U.S. Cl. 546—216 **9 Claims**

1. A compound of the formula



in which

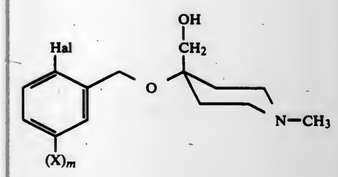
R is selected from the group consisting of hydrogen or a methyl or benzyl group;

Hal is fluorine;

X is fluorine; and

m is zero or 1.

7. A compound of the formula



in which

Hal is fluorine;

X is fluorine; and

m is zero or 1.

4,577,027

PRODUCTION OF POLYCHLORINATED PYRIDINE MIXTURES BY DIRECT LIQUID PHASE CHLORINATION OF ALPHA-PICOLINE

Michael J. Marinak, Kelso, and John L. Simonson, Longview, both of Wash., assignors to Kalama Chemical, Inc., Kalama, Wash.

Continuation-in-part of Ser. No. 422,753, Sep. 24, 1982, abandoned. This application Feb. 22, 1983, Ser. No. 468,282

The portion of the term of this patent subsequent to Jan. 14, 2003, has been disclaimed.

Int. Cl.⁴ C07D *213/61*

U.S. Cl. 546—345 **10 Claims**

1. The process of producing high yields of mixtures rich in chlorinated picolines and chlorinated pyridines by non-catalytically chlorinating alpha-picoline directly with chlorine in the liquid phase without substantial formation of intractable mixtures of tars and polymers, said process comprising:

(a) establishing in a first non-catalytic reactor means a diluent reactor charge made up of chlorinated pyridine and/or chlorinated picoline compounds, said diluent being essentially nonreactive with chlorine in the sense of having the characteristic of generating less than one mole of hydrogen chloride per mole of diluent under the reaction conditions to which the reactants in said first reactor are subjected;

(b) while maintaining the reactor charge in the liquid phase and at a temperature of about 100° C. to about 250° C., continuously sparging both chlorine and alpha-picoline into the reactor charge near the bottom thereof and at a chlorine-to-picoline ratio of at least about 5:1 by weight and at an alpha-picoline feed rate low enough so that any separation of the reactor charge into a second, lighter phase composed of unchlorinated alpha-picoline is less than about 10% of the reactor charge by volume at temperatures in excess of 120° C.; and

(c) continuing chlorine addition and maintaining the reaction mass in the liquid phase at a temperature of at least about 155° C. in a second non-catalytic reactor means until the desired extent of side chain and nuclear substitution of chlorine in the alpha-picoline has occurred.

4,577,028

5-HALOALKYL-PYRIDINES

Pierre Martin, Rheinfelden, and Eginhard Steiner, Füllinsdorf, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

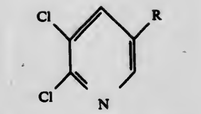
Filed Oct. 14, 1982, Ser. No. 434,433

Claims priority, application Switzerland, Oct. 20, 1981, 6692/81; Dec. 29, 1981, 8328/81; Sep. 1, 1982, 5195/82

Int. Cl.⁴ C07D *213/26*; C07C *47/14*

U.S. Cl. 546—345 **12 Claims**

1. A compound of the formula:



wherein R is mono-, poly- or perhalogenated alkyl group of 2 carbon atoms.

4,577,029

DERIVATIVE OF TETRAHYDROBENZOTHIAZOLE AND HERBICIDAL COMPOSITION CONTAINING THE SAME AS ACTIVE INGREDIENT

Katsumichi Aoki; Takafumi Shida; Yoichi Kanda; Keigo Satake; Hiroyasu Shinkawa, and Shiro Yamazaki, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 3, 1983, Ser. No. 491,049

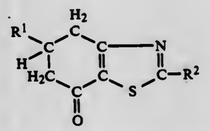
Claims priority, application Japan, May 10, 1982, 57-77798; Apr. 8, 1983, 58-61926

The portion of the term of this patent subsequent to Nov. 6, 2001, has been disclaimed.

Int. Cl.⁴ C07D *417/04*

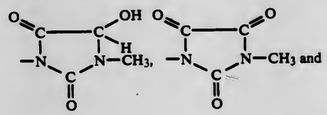
U.S. Cl. 548—162 **2 Claims**

1. A derivative of tetrahydrobenzothiazole represented by the general formula (I):

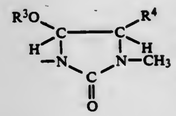


(I)

wherein R^1 represents a hydrogen atom, a straight-chain alkyl group having 1 to 6 carbon atoms or branched-cahin alkyl group having 1 to 6 carbon atoms, a cycloalkyl group having 3 to 6 carbon atoms or a phenyl group and R^2 represents a chemical group selected from the group consisting of:



and



wherein R^3 represents a hydrogen atom, a methyl group or an acetyl group and R^4 represents a hydrogen atom, a hydroxyl group, methoxy group or acetoxy group.

4,577,030

AZOLYL-SUBSTITUTED PHENOXY-AMINOPROPANOL DERIVATIVES

Peter J. Machin, London, England, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

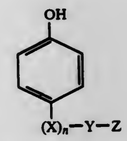
Division of Ser. No. 237,612, Feb. 24, 1981, Pat. No. 4,387,100. This application Mar. 14, 1983, Ser. No. 475,290

Claims priority, application United Kingdom, Feb. 25, 1980, 8006261; Nov. 10, 1980, 8035997

Int. Cl.⁴ C07D *249/04, 249/08*

U.S. Cl. 548—255 **4 Claims**

1. A compound of the formula



wherein X is oxygen, n is 1, Y is methylene, ethylene or propylene and Z is a 5-membered aromatic heterocyclic ring selected from the group consisting of 1H-1,2,3-triazol-1-yl or 2H-1,2,3-triazol-2-yl.

4,577,031

POLYMERIZABLE IMIDAZOLIDINONES

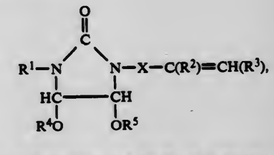
Carmine P. Iovine, Bridgewater; Joseph G. Palmer, Rocky Hill, and James L. Walker, Whitehouse Station, all of N.J., assignors to National Starch and Chemical Corporation, Bridgewater, N.J.

Continuation of Ser. No. 473,922, Mar. 10, 1983, abandoned. This application Mar. 22, 1985, Ser. No. 715,218

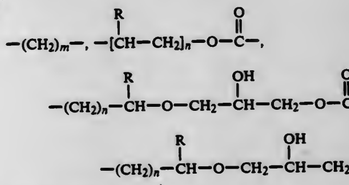
Int. Cl.⁴ C07D *233/40*

U.S. Cl. 548—319 **20 Claims**

1. As a composition of matter, an imidazolidinone monomer having the structure:



wherein R^1 is hydrogen or a linear or branched C_1–C_6 alkyl group when attached to a nitrogen; X is a divalent radical selected from the group consisting of



with R being hydrogen or a methyl group, m being an integer from 0–5, and n being an integer from 1–5; R_2 is hydrogen or a methyl group; R^3 is hydrogen or a



group, with R^1 being hydrogen or a linear or branched C_1–C_6 alkyl or hydroxyalkyl when attached to an oxygen; and R_4 and

R_5 are independently hydrogen or a C_1–C_4 linear or branched alkyl group.

4,577,032

1-BENZOYLDIBROMOMETHYL-2-METHYLIMIDAZOLE AS A FUNGICIDAL AGENT

Takayuki Fujita, 233-8, Aza Inamoto, Nakakirai, Matsushige-cho, Itano-gun, Tokushima-ken; Yoshikazu Kitazawa, 42-1, Aza Kowake, Ejiri, Kitajima-cho, Itano-gun, Tokushima-ken; Tadashi Akita, 2-3, Hachiban-cho, Sako, Tokushima-shi, Tokushima-ken, and Isamu Tani, 344-2, Myodo-cho 1-chome,, Tokushima-shi, Tokushima-ken, all of Japan

Filed Jun. 15, 1984, Ser. No. 621,104
Int. Cl.[4] C07D *233/60*
U.S. Cl. 548—341 1 Claim

1. 1-benzoyldibromomethyl-2-methylimidazole.

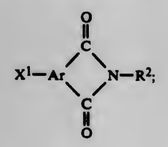
4,577,033

HETEROCYCLIC QUATERNARY AMMONIUM SALTS AS PHASE TRANSFER CATALYSTS FOR AROMATIC ETHER IMIDE PREPARATION

John W. Verbicky, Jr., Scotia, and Alice M. Colley, Latham, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 14, 1985, Ser. No. 691,037
Int. Cl.[4] C07D *209/48*
U.S. Cl. 548—461 10 Claims

1. In a method for preparing an aromatic ether imide by the reaction, in a non-polar organic solvent in the presence of a phase transfer catalyst, of (A) at least one hydroxyaromatic compound alkali metal salt having formula I $R^1(OM)_a$ (I) where R^1 is an aromatic radical containing about 6–30 carbon atoms, M is an alkali metal and a is 1 or 2, with (B) at least one substituted imide having formula II



(II)

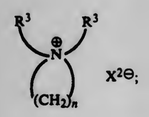
wherein

Ar is an aromatic radical,

R^2 is hydrogen or a hydrocarbon-based radical containing about 1–13 carbon atoms and

X^1 is halo or nitro;

the improvement which comprises using as said phase transfer catalyst (C) at least one heterocyclic quaternary salt having formula III



(III)

wherein

R^3 is a lower alkyl radical,

X^2 is one equivalent of an anion-forming atom or radical and n is an integer from 4 to 6.

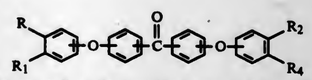
4,577,034

AUTOXIDATION OF BIS(ORTHO DIALKYL-PHENOXY)BENZOPHENONES

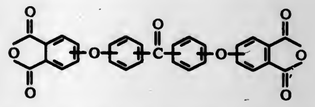
Viswesvara R. Durvasula, Cheshire, Conn., assignor to The Dow Chemical Company, Midland, Mich.

Filed Feb. 14, 1985, Ser. No. 701,835
Int. Cl.[4] C07D *307/89*
U.S. Cl. 549—241 9 Claims

1. A method for converting a bis(ortho dialkyl-phenoxy)benzophenone having the formula (I)



to the corresponding dianhydride having the formula (II)



wherein R, R_1, R_2, and R_3 are independently selected from linear lower alkyl, said method comprising autoxidizing said benzophenone (I) in a solution of an aliphatic monocarboxylic acid having 3 to 8 carbon atoms with oxygen in the presence of a heavy metal oxidation catalyst and a promoter and at a temperature of at least about 120° C. to form said dianhydride (II).

4,577,035

2,2'-ISOPROPYLIDINE BIS(TETRAHYDROFURAN)

George W. Huffman, 6502 Vermont Trail, Crystal Lake, Ill. 60014; William J. Pentz, 61 Margaret Ter.; David E. Vietti, 720 Millwood, both of Cary, Ill. 60013, and Joseph P. Wuskell, 11 Lowell Rd., West Hartford, Conn. 06119

Filed Nov. 28, 1984, Ser. No. 675,710
Int. Cl.[4] C07D *307/12*
U.S. Cl. 549—472 1 Claim

1. The composition of matter 2,2'-isopropylidine bis(tetrahydrofuran).

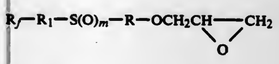
4,577,036

PERFLUOROALKYL-ALKYL-THIO, SULFINYL OR SULFONYL-ALKYLENE GLYCIDYL ETHER

Robert A. Falk, New City, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jan. 30, 1985, Ser. No. 696,552
Int. Cl.[4] C07D *303/46, 303/36, 303/34*
U.S. Cl. 549—556 10 Claims

1. A perfluoroalkyl-alkylthio(sulfinyl or sulfonyl)alkylene glycidyl ether of the formula



(I)

wherein

R_f is straight or branched chain perfluoroalkyl of 3 to 18 carbon atoms or perfluoroalkoxyperfluoroalkyl of 3 to 18 carbon atoms;

R_1 is straight or branched chain alkylene of up to six carbon atoms, carboxamidoalkylene of up to six carbon atoms, or sulfonamidoalkylene of up to six carbon atoms, and wherein the amido nitrogen thereof is unsubstituted or substituted by lower alkyl;

m is 0, 1 or 2; and

R is straight or branched chain alkylene of 2 to 12 carbon atoms.

4,577,037

METHODS FOR PREVENTING THE PRECIPITATION OF MIXED ZINC DIALKYLDITHIOPHOSPHATES WHICH CONTAIN HIGH PERCENTAGES OF A LOWER ALKYL GROUP

Thomas F. Buckley, Hercules, Calif., assignor to Chevron Research, San Francisco, Calif.

Filed Feb. 10, 1984, Ser. No. 579,067
Int. Cl.[4] C07F *3/06*
U.S. Cl. 556—25 5 Claims

1. In a process for the preparation of a mixed zinc dialkyldithiophosphate by the reaction of phosphorus pentasulfide with from about 50–80 mole percent of lower alcohol and from about 50–20 mole percent of higher alcohol followed by neutralization of the resulting mixed dialkyldithiophosphoric acid with a basically reacting zinc compound, wherein the improvement comprises the addition to said reaction of an effective amount of an ammonium salt of a carboxylic acid having from 1 to 6 carbon atoms to prevent precipitation of said mixed zinc composition.

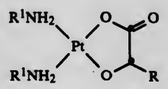
4,577,038

GLYCOLIC ACID TYPE PLATINUM COMPLEXES

Tetsushi Totani, Hyogo, and Katsutoshi Aono, Nara, both of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Filed May 4, 1984, Ser. No. 606,961
Claims priority, application Japan, Jun. 1, 1983, 58-98631
Int. Cl.[4] C07F *15/00*
U.S. Cl. 556—137 14 Claims

1. A compound of the formula:



(wherein R is C_1–C_6 alkyl, hyroxymethyl, halomethyl, or phenyl; R^1 is hydrogen or C_1–C_6 alkyl; with proviso that R is not hydroxymethyl, when R^1 is hydrogen).

4,577,039

METHOD OF PREPARING HEXAMETHYLCYCLOTRISILAZANE

Barry C. Arkles, Ambler, and Burrell N. Hamon, Fairless Hills, both of Pa., assignors to Petrarch Systems Inc., Bristol, Pa.

Filed Jul. 15, 1985, Ser. No. 755,049
Int. Cl.[4] C07F *7/10*
U.S. Cl. 556—409 14 Claims

1. A process for the preparation of cyclotrisilazane comprising heating cyclotetrasilazane in the presence of hydrogen and a catalyst selected from the Group VIII metal catalysts.

4,577,040

METHOD FOR PREPARING DIORGANOPOLYSILOXANES CONTAINING FLUOROALKYL GROUPS

Rudolf Kaufmann; Karl Braunsperger; Karl-Heinrich Wegehaupt, all of Burghausen, Fed. Rep. of Germany, and Günter von Au, Sao Paulo, Brazil, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Nov. 16, 1983, Ser. No. 552,578
Claims priority, application Fed. Rep. of Germany, Dec. 29, 1982, 3248546
Int. Cl.[4] C07F *7/08*
U.S. Cl. 556—462 4 Claims

1. A method for preparing diorganopolysiloxanes containing fluoroalkyl groups and/or fluoroalkyloxyalkyl groups which comprises

(a) hydrolyzing at least one silane of the formula:

$R^1R^2SiCl_2$

where R^1 is selected from the group consisting of an alkyl radical having from 1 to 6 carbon atoms and an aryl radical; R^2 is a radical selected from the group consisting of R_F—CH_2—CH_2—, where R_F is a perfluoro radical having from 1 to 12 carbon atoms and a fluoroalkyloxyalkyl radical having the formula:

$C_nR_{2n+1}{}^3OR^4$

where R^3 is hydrogen and fluorine; R^4 is a divalent aliphatic radical having from 2 to 6 carbon atoms and n is an integer from 1 to 6, and thereafter

(b) equilibrating the hydrolyzate in the presence of a compound having the formula:

$[R_3{}^5R^6N]OH$

where R^5 is an alkyl radical having from 1 to 4 carbon atoms and R^6 is selected from the group consisting of R^5 and the benzyl radical.

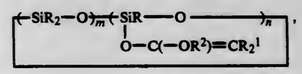
4,577,041

CYCLIC ORGANOPOLYSILOXANE COMPOUND

Masatoshi Arai; Koji Futatsumori; Takeo Inoue, and Shinichi Sato, all of Gunma, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Jun. 26, 1985, Ser. No. 749,174
Claims priority, application Japan, Jun. 29, 1984, 59-134175
Int. Cl.[4] C07F *7/04, 7/08, 7/18*
U.S. Cl. 556—446 1 Claim

1. A cyclic organopolysiloxane compound represented by the general formula



in which R is a group selected from the class consisting of halogenated or unhalogenated monovalent hydrocarbon groups having 1 to 8 carbon atoms and a trimethylsiloxy group, R^1 is a hydrogen atom or a substituted or unsubstituted monovalent hydrocarbon group having 1 to 8 carbon atoms, R^2 is a substituted or unsubstituted monovalent hydrocarbon group having 1 to 8 carbon atoms, m is zero, 1, 2 or 3 and n is 2, 3 or 4 with the proviso that m+n is 4 or 5.

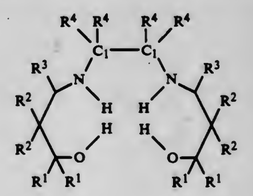
4,577,042

HOMOGENEOUS COORDINATION COMPOUNDS AS OXIDATION CATALYSTS

Terrence J. Collins, Pasadena; Fred C. Anson, Altadena, both of Calif.; Stephen L. Gipson, Florissant, Mo., and Terry E. Krafft, Greeley, Colo., assignors to California Institute of Technology, Pasadena, Calif.

Filed Mar. 17, 1983, Ser. No. 476,364
Int. Cl.[4] C07C *103/24, 103/38*
U.S. Cl. 564—158 3 Claims

1. A compound forming a tetradendate, tetraanionic ligand with a metal selected from compounds of the formula:



where
R^1 is F or CF_3, aliphatic or aromatic;
R^2 is H or aliphatic; and
R^1 and R^2 can be combined to form an aromatic group such as benzene protected by electron withdrawing, substituent groups, such as Cl, F, NO_2, CN or a sterically hindered group, such as t-butyl;
R^3 is O; and
R^4 is hydrogen or aliphatic, such as alkyl groups of 1 or more carbon atoms, or the R^4 groups are replaced by one aromatic ring linking their adjoining atoms C_1 and C_2.

4,577,043

PROCESS FOR THE PREPARATION OF ALDEHYDES

Heinz Kalbfell, Shermbeck; Bernhard Lieder, Bottrop, and Herbert Mercamp, Dinslaken, all of Fed. Rep. of Germany, assignors to Ruhrchemie Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 9, 1984, Ser. No. 670,357
Claims priority, application Fed. Rep. of Germany, Nov. 12, 1983, 3341035
Int. Cl.[4] C07C *45/50*
U.S. Cl. 568—454 9 Claims

1. In a process for the preparation of aldehydes comprising reacting olefins of 2 to 15 carbon atoms with carbon monoxide and hydrogen in a reactor in the presence of water and water-soluble rhodium phosphine complex catalysts at temperatures of from about 90° to 150° C. and pressures from about 1 to about 300 bar; separating said liquid phase into first aqueous and first organic phases without prior cooling; and returning said first aqueous phase containing said catalyst to the reactor; the improvement which comprises cooling said first organic phase to from about 20° C. to about 40° C.; subsequently relieving the pressure with consequent formation of waste gas; separating said first organic phase into second organic and second aqueous phases; and distilling said second organic phase to yield a third aqueous phase and the aldehyde with one more carbon atom than the olefin.

4,577,044

PREPARATION OF CHLOROTRIFLUOROETHYLENE TELOMERS WITH FLUOROXYTRIFLUOROMETHANE

Donald H. Campbell, Niagara-on-the-Lake, Canada; Michael J. Fifolt, and Mohan S. Saran, both of Grand Island, N.Y., assignors to Occidental Chemical Corporation, Niagara Falls, N.Y.

Division of Ser. No. 545,020, Oct. 24, 1983. This application Feb. 11, 1985, Ser. No. 700,209
Int. Cl.[4] C07C *41/06, 179/00*
U.S. Cl. 568—677 10 Claims

1. A process for producing a mixture of telomers consisting of reacting chlorotrifluoroethylene in liquid form with fluoroxytrifluoromethane in the absence of a solvent.

4,577,045

METHOD FOR THE PRODUCTION OF ANHYDROUS POTASSIUM TERT.BUTOXIDE

Reinhard Matthes, Rheinfelden, and Hans-Joachim Vahlensieck, Wehr, both of Fed. Rep. of Germany, assignors to Dynamit Nobel AG, Cologne, Fed. Rep. of Germany

Filed Mar. 21, 1985, Ser. No. 714,369
Claims priority, application Fed. Rep. of Germany, Apr. 7, 1984, 3413212
Int. Cl.[4] C07C *29/70*
U.S. Cl. 568—851 4 Claims

1. A method for continuous production of anhydrous potassium tert.butoxide comprising
reacting aqueous potash lye with tert.butyl alcohol in a packed distillation column, and removing water by distillation using cyclohexane and/or hexane as withdrawing agent,
the tert.butyl alcohol being present in such excess of the aqueous potash lye and the withdrawing agent such that there is a 10 to 18 wt.-% solution of potassium tert.butoxide in the column bottom and the tert.butyl alcohol of the gas mixture at the center of the column is between 50 and 90 wt.-%; distilling out a mixture of the withdrawing agent, tert.butyl alcohol and water at the column top at temperatures of between 65° and 75° C.;
withdrawing the solution of potassium tert.butoxide produced in the column bottom; and
obtaining anhydrous potassium tert.butoxide from the withdrawn solution.

4,577,046

DEAMINATION OF AROMATIC AMINES

Mark D. Hylarides, and Fred A. Mettler, Jr., both of Albuquerque, N. Mex., assignors to University of New Mexico, Albuquerque, N. Mex.

Filed Jun. 11, 1984, Ser. No. 619,203
Int. Cl.[4] C07C *45/65*
U.S. Cl. 568—312 23 Claims

1. In a process for deaminating an aromatic primary amine of the type wherein the amino group is diazotized to form a diazonium salt and the diazo group of the diazonium salt is replaced with a replacement group, the improvement comprising deaminating the amine in the presence of hydrogen peroxide in an amount of at least about 0.25 mol peroxide per mol of diazonium salt.

4,577,047

CATALYSTS AND PROCESS FOR THE SELECTIVE HYDROGENATION OF ACETYLENES

Henry C. Hudson, New Caney, Tex., assignor to Shell Oil Company, Houston, Tex.

Division of Ser. No. 675,175, Nov. 27, 1984, Pat. No. 4,551,443. This application Aug. 22, 1985, Ser. No. 768,287
Int. Cl.[4] C07C *5/03*
U.S. Cl. 585—260 28 Claims

1. A process for the selective hydrogenation of acetylenic hydrocarbon impurities in a stream comprising lower olefins which comprises contacting at a temperature ranging from about 50° C. to about 200° C. said stream with hydrogen and a catalyst comprising palladium and optionally chromium supported on a porous carrier which comprises alumina having a surface area less than about 5 m^2/g, a pore volume (Hg at 3000 psi) of between about 0.2 to about 0.5 cc/g and wherein greater than about 40% of the pore volume is contained in pores having pore diameters of greater than about 10 microns.

4,577,048

CATALYSIS OVER ACTIVATED HIGH SILICA ZEOLITES

Clarence D. Chang, Princeton, and Joseph N. Miale, Lawrenceville, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 581,497, Feb. 17, 1984, Pat. No. 4,530,756, which is a continuation-in-part of Ser. No. 333,370, Dec. 22, 1981, Pat. No. 4,444,902. This application May 13, 1985, Ser. No. 733,340
Int. Cl.[4] C07C *2/68, 5/22*
U.S. Cl. 585—467 25 Claims

1. A process for converting feedstock aromatic compounds selected from the group consisting of benzene, monocyclic alkyl-substituted benzene of from 7 to 10 carbon atoms and mixtures thereof, alkyl being methyl, ethyl or a combination thereof, to conversion product aromatic compounds which differ from feedstock aromatic compounds, which comprises contacting said feedstock at conversion conditions with a catalyst composition comprising a crystalline zeolite having an initial silica:alumina mole ratio of at least about 100:1 prepared by a method which comprises calcining the zeolite at a temperature of from about 200° C. to about 600° C. for a period of time ranging from about 1 minute to about 48 hours, contacting said calcined zeolite with from about 0.1 to about 1 gram of solid aluminum fluoride per gram of zeolite at a temperature of from about 0° C. to about 650° C., and converting said aluminum fluoride contacted zeolite to hydrogen form.

22. The process of claim 1 wherein said feedstock aromatic compounds comprise benzene and said conversion comprises alkylation of said benzene.

23. The process of claim 1 wherein said feedstock aromatic compounds comprise toluene and said conversion comprises disproportionation of said toluene.

24. The process of claim 1 wherein said feedstock aromatic compounds comprise xylene isomers and said conversion comprises isomerization of said xylene isomers.

4,577,049

ALKYLATION OF DURENE UTILIZING HIGH BOILING CONDENSED POLYAROMATIC COMPOUNDS

Leslie R. Rudnick, Lawrenceville, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 326,469, Mar. 26, 1980, abandoned. This application Apr. 24, 1985, Ser. No. 726,572
Int. Cl.[4] C07C *4/12*
U.S. Cl. 585—486 6 Claims

1. A process for the dealkylation of durene which comprises contacting durene under elevated temperatures and pressures with a polynuclear aromatic compound having a boiling point of at least 600° F., said dealkylation being carried out in the presence of a carbon molecular sieve.

4,577,050

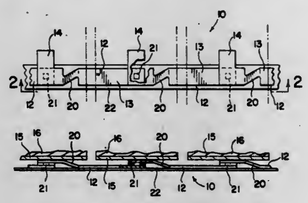
ZSM-5/ZSM-12 CATALYST MIXTURE FOR CRACKING ALKYLBENZENES

Warren W. Kaeding, Lawrenceville, and Carol S. Lee, Princeton, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 490,624, May 2, 1983, abandoned. This application Jun. 14, 1984, Ser. No. 620,890
Int. Cl.[4] C07C *4/12*
U.S. Cl. 585—486 6 Claims

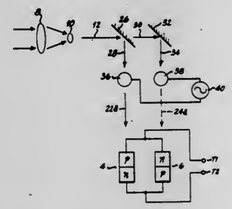
1. A process for converting a first hydrocarbon mixture to a second hydrocarbon mixture, said first hydrocarbon mixture consisting essentially of aromatic hydrocarbons having 10 or more carbon atoms, said first hydrocarbon mixture comprising at least 50% by weight of diisopropylbenzene and less than 5% by weight of the sum of benzene, toluene, xylene and ethylbenzene, said second hydrocarbon mixture comprising at least 30% by weight of the sum of benzene, toluene, xylene and ethylbenzene and less than 20% by weight of diisopropylbenzene, said process comprising cracking said first hydrocarbon mixture over a catalyst comprising a mixture of zeolites, said mixture of zeolites consisting essentially of from about 10% to about 90% by weight of ZSM-5, the remainder being essentially ZSM-12.

4,577,051
BYPASS DIODE ASSEMBLY FOR PHOTOVOLTAIC MODULES
Robert A. Hartman, Chagrin Falls, Ohio, assignor to The Standard Oil Company, Cleveland, Ohio
Filed Sep. 28, 1984, Ser. No. 655,900
Int. Cl.[4] H01L *25/02*
U.S. Cl. 136—244 14 Claims



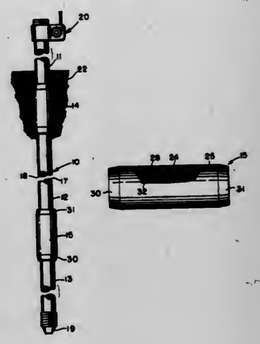
1. An apparatus for conditionally electrically bypassing a power generating segment of a photovoltaic assembly including a plurality of electrically interconnected power generating elements, said apparatus comprising:
a plurality of diodes each having two opposed terminals; and
a plurality of electrically conducting strips, each said strip including a generally planar longitudinal leg having first and second ends and a bridging arm portion joining said first and second ends, said first end of one said strip at least partially overlapping said second end of a next adjacent said strip, one of said diodes being disposed between each of said overlapping ends with each of its said terminals in electrical communication with a respective one of said overlapping ends.

4,577,052
AC SOLAR CELL
Herman P. Schutten, Milwaukee; James A. Benjamin, Waukesha, both of Wis., and Robert W. Lade, Fort Myers, Fla., assignors to Eaton Corporation, Cleveland, Ohio
Filed Sep. 23, 1982, Ser. No. 421,944
Int. Cl.[4] H02N *6/00*
U.S. Cl. 136—246 4 Claims



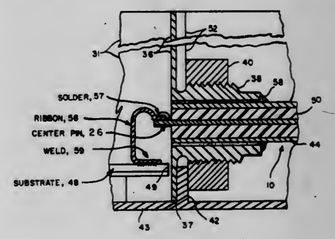
3. An AC solar cell comprising:
a pair of PN junction type solar cells connected in antiparallel between a pair of main terminals; and
means for electrically directing light alternatingly without mechanical movement on said PN junctions to generate an alternating potential across said main terminals.

4,577,053
GROUND ROD
Anton M. Kies, Oranjelaan 8, 5062 KA Oisterwijk, Netherlands
Filed Mar. 2, 1984, Ser. No. 585,529
Int. Cl.[4] H01R *4/66*; F16B *7/18*; B21D *39/04*
U.S. Cl. 174—7 16 Claims



1. In combination, a ground rod comprising sections of copper jacketed steel rod, a coupling holding said sections in end-to-end relationship, said coupling comprising an outer sleeve of high strength corrosion resistant alloy metal and an inner sleeve of a malleable conductive metal, and means mechanically interlocking said sleeves along their co-extensive lengths, said means comprising closely spaced deformations on the interior of said corrosion resistant sleeve, said conductive metal sleeve being expanded into said deformations.

4,577,054
CONNECTING COAXIAL CABLES TO SHIELDED ELECTRONIC DEVICE
Henry M. deRonde, Lomita, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Jan. 10, 1984, Ser. No. 569,640
Int. Cl.[4] H05K *9/00*
U.S. Cl. 174—35 C 4 Claims



1. A combination of a coaxial cable assembly and a shielded cavity, said combination comprising:
a plurality of shielded cavity walls, said shielded cavity walls positioned about an RF electronic device therein, at least one of said shielded cavity walls having at least one vertical slot therethrough, said slot having an opening at a top of said shielded cavity wall;
a coaxial cable trough, said coaxial cable trough being adjacent to said shielded cavity wall having said vertical slot therein, said trough having a minimum width for allowing a right angle bend of a semi-rigid coaxial cable; and
a coaxial cable feed thru, said coaxial cable feed thru con-

necting a semi-rigid coaxial cable in said trough through one of said shielded cavity walls of said shielded cavity to said RF device shielded from said trough, said feed thru further comprising:

a feed thru body, said feed thru body having a flange and a threaded tube, said flange and said threaded tube are connected fixedly together, said flange and said threaded tube having aligned holes, said holes having an inside diameter slightly greater than the outside diameter of said semi-rigid coaxial cable, said semi-rigid coaxial cable soldered into said holes, said semi-rigid coaxial cable having a center conductor that protrudes beyond a surface of said flange for the purpose of connecting a conductive ribbon thereon, said flange resting on an inside surface of said shielded cavity in which said RF device is mounted and connected, said flange covering said vertical slot on said shielded cavity wall to form an RF seal thereabout; and

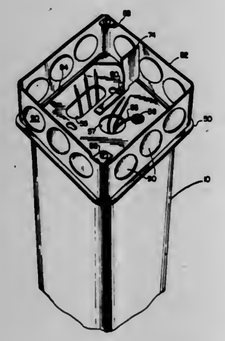
a nut, said nut for holding said flange against said inside surface of said shielded cavity, said nut being threaded onto said threaded tube that is inserted into said slot in said shielded cavity wall, such nut resting against an outside surface of said shielded cavity wall.

4,577,055

POWER POLE WIRING ASSEMBLY

Emil S. Wuertz, Madison, Conn., assignor to Harvey Hubbell Incorporated, Orange, Conn.

Filed Jan. 16, 1984, Ser. No. 570,964
Int. Cl.⁴ H02G *3/04*
U.S. Cl. 174—48 **3 Claims**



1. A multi-purpose power hole wiring assembly for use with a power hole of the type having an elongated housing dimensioned to extend from a location above a false ceiling down to a surface below the ceiling, an elongated barrier dividing the interior volume of the housing into power and communication chambers for receiving power wires and communication wires, respectively, extending between outlet locations along the pole and the top of the pole, the housing top further comprising means having mounting openins protruding inwardly from opposite sides thereof, the wiring assembly comprising the combination of

a flat, rectangular, stiff, metal mounting plate, each side of which is significantly longer than any cross-sectional dimension of the top of the housing;

first and second mounting holes through said plate alignable with said mounting openings for receiving threaded fasteners to attach said plate to the top of said pole across the open end thereof above said ceiling;

a first wire hole through said plate for passing wires therethrough to and from said communication chamber, said first wire hole being aligned with said communication chamber when said mounting holes are aligned with said mounting openings;

a second wire hole through said plate for passing wires therethrough to and from said power chamber, said second wire hole being aligned with said power chamber when said mounting holes are aligned with said mounting openings;

a plurality of sets of threaded holes through said plate, each set being positioned to be uniquely alignable with standard mounting holes in one extension ring selected from a plurality of extension rings of different sizes to permit mounting said one extension ring on said plate to thereby form a junction box on said plate; and

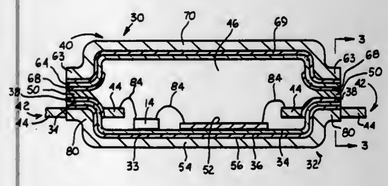
an extension barrier having a wall portion and a flange portion, said flange portion having openings alignable with said mounting openings for attachment of said barrier with the same threaded fasteners holding said plate, said wall portion being substantially aligned with the barrier in said pole.

4,577,056

HERMETICALLY SEALED METAL PACKAGE

Sheldon H. Butt, Godfrey, Ill., assignor to Olin Corporation, New Haven, Conn.

Filed Apr. 9, 1984, Ser. No. 598,112
Int. Cl.⁴ H01L *23/10*
U.S. Cl. 174—52 FP **31 Claims**



1. A hermetically sealed package forming an enclosure adapted to receive an electronic device, comprising:

a first metal or metal alloy member having a first refractory oxide layer on at least a first surface thereof, said first member having at least a first metallized band on said first refractory oxide layer;

a second metal or metal alloy member disposed against said first member and being sealed to said first metallized band;

a metal or metal alloy lead frame member disposed between said first and second members, said lead frame member comprising a plurality of lead elements extending both into said enclosure being adapted for electrical connection to the electronic device and external to said enclosure, said lead frame member further having a second refractory layer on at least a portion of the lead frame surface to electrically insulate said lead frame member from said first and second members, said lead frame member further having at least a second metallized band on said second refractory oxide layer; and

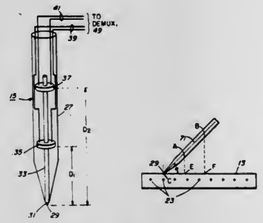
solder means for bonding said first metallized band to said second member and the second metallized band of the lead frame member between said first and second members whereby the electronic device is sealed within the enclosure.

4,577,057

DIGITIZING TABLET SYSTEM HAVING STYLUS TILT CORRECTION

Barry Blesser, Raymond, N.H., assignor to Pencept, Inc., Waltham, Mass.

Filed Mar. 2, 1984, Ser. No. 585,711
Int. Cl.⁴ G08C *21/00*
U.S. Cl. 178—18 **14 Claims**



1. A digitizing tablet system comprising:

a. a housing having a two dimensional work surface for receiving a work sheet and a plurality of elements which define a rectangular coordinate grid,

b. a stylus, positioned within said rectangular coordinate grid, having a tip adapted to contact said work sheet and a pair of elements for interacting with said plurality of elements in said housing for determining the position of said tip within said rectangular coordinate grid, said pair of elements in said stylus comprising a first element disposed within said stylus at a first distance from said tip and a second element disposed within said stylus at a second distance from said tip, said second distance being different from said first distance,

c. means for energizing one of said grid of plurality of elements and said pair of elements in said stylus and producing thereby a first set of electrical output signals each having an amplitude and polarity related to the position of the first element in the pen within said rectangular coordinate grid and a second set of electrical output signals each having an amplitude and polarity related to the position of the second element in the stylus within said rectangular coordinate grid,

d. electronic means for processing the respective amplitudes and polarities of said first set of electrical output signals and said second set of electrical output signals to produce third and fourth electrical signals corresponding to the positional data of the first and second elements in the pen, respectively, relative to the grid, and

e. processing means for producing from said third and fourth electrical signals a fifth electrical signal corresponding to positional data of the tip of the stylus within said rectangular coordinate grid.

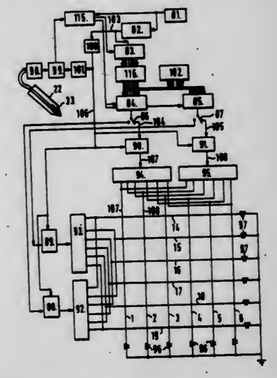
4,577,058

CURRENT-RATIO DIGITIZERS

Robert J. Collins, 36 Cannon Hill, Colehill, Wimborne, Dorset BH21 2TA, England

Filed Apr. 16, 1984, Ser. No. 600,823
Claims priority, application United Kingdom, Apr. 22, 1983, 8311043
Int. Cl.⁴ G08C *21/00*
U.S. Cl. 178—18 **18 Claims**

1. A digitiser table, under the surface of which are located a set of parallel X-conductors and a set of parallel Y-conductors arranged as a grid, which may be energised by electric currents to produce patterns of magnetic field close to the surface of the table; means for applying currents of constant polarity but of varying amplitude to successive pairs of conductors in a predetermined sequence; and means movable relative to said table and having sensor means therein responsive to the local component of magnetic field perpendicular to the surface of the table; location of the sensor means between a pair of current-carrying conductors being given by the ratio of amplitudes of the currents applied to the two conductors of the pair when the resultant magnetic field component perpendicular to the surface of the table passes through a null value.

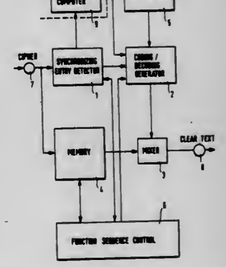


4,577,059

DECODING PROCESS AND APPARATUS

Kurt H. Mueller, Wallisellen, Switzerland, assignor to GRETAG Aktiengesellschaft, Regensdorf, Switzerland

Filed Dec. 29, 1982, Ser. No. 454,414
Claims priority, application Switzerland, Jan. 29, 1982, 558/82; Apr. 2, 1982, 2046/82
Int. Cl.⁴ H04K *1/02*; H04L *9/02*
U.S. Cl. 178—22.17 **9 Claims**



9. Decoding apparatus for decoding a transmitted cipher containing phase-in information recurring in time intervals in the cipher comprising detector means connected to receive said cipher for detecting phase-in information therein, means for detecting the start of receipt of the cipher, coding key sequence generator means for generating a coding key sequence which commences at a point in the sequence determined by the detected phase-in information, the coding key sequence generator being selectively operable to generate the coding key sequence in a forward or a backward direction, an intermediate memory for storing at least part of the received cipher, means for mixing the coding key sequence with the cipher stored in said memory in accordance with the proper time relationship between the received cipher and the phase-in

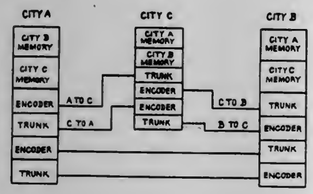
information contained in the cipher in response to the detected start of the cipher and the initial detection of the phase-in information to thereby decode the entire cipher.

4,577,060

PAGING NETWORK

Robert E. Webb, Roswell; Eugene H. Kreeft, Sugarhill, and Jack T. Arnold, Norcross, all of Ga., assignors to BBL Industries, Inc., Atlanta, Ga.

Filed May 18, 1983, Ser. No. 495,803
Int. Cl.[4] H04Q *7/04*; H04M *3/42*
U.S. Cl. 179—2 EC **34 Claims**



1. A network of paging terminals, each terminal interfacing with a telephone system and responding to telephone calls by transmitting pages in a locality serviced by said terminal, comprising:

a multi-drop communication link connected to each of said paging terminals;

means, at each of said paging terminals, for producing a message containing a page and a paging group address to identify from which of said terminals transmission of said page is desired;

means, at each of said paging terminals, for sending each of said messages on said communication link; and

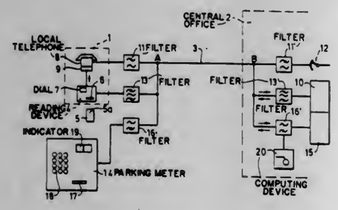
means for establishing an orderly use of said communication link by including a destination address in each of said messages to indicate to all of said paging terminals which terminal has a responsibility to send the next message on said communication link.

4,577,061

ARRANGEMENT FOR A PAY TELEPHONE PAYMENT SYSTEM UTILIZING A PAYMENT CARD WITHIN THE TELECOMMUNICATION SYSTEM

Kurt Katzeff, and Tommy Petre, both of Televerkets Huvudkontor, Fack, S-123 86 Farsta, Sweden

PCT No. PCT/SE83/00311, § 371 Date May 7, 1984, § 102(e) Date May 7, 1984, PCT Pub. No. WO84/01073, PCT Pub. Date Mar. 15, 1984
PCT Filed Sep. 5, 1983, Ser. No. 609,077
Claims priority, application Sweden, Sep. 7, 1982, 8205066
Int. Cl.[4] G07F *17/24*; H04M *17/02*
U.S. Cl. 179—2 AM **3 Claims**



1. A payment system for a public telephone service and an auxiliary public service unrelated to said telephone service comprising:

a remote telephone facility adapted to be connected by a subscriber line to a telephone network central office, said remote telephone facility including:

a public telephone service facility offering telephone service in exchange or payment via a payment card comprising;

a reading device means for reading and debiting a payment card, said reading device connected to said telephone network;

a first set of telephone subsidiary devices for interfacing said reading device via said subscriber line and a central computer to said telephone network, whereby information may be transferred between said payment card and central computer identifying the identity of the payment card;

a second set of telephone subsidiary devices for interfacing said reading device via said subscriber line to communicate the residual value of the payment card to the computer facility;

a third set of telephone subsidiary devices for communicating the erasure of information on said payment card to said readng device, whereby said payment card can be debited;

an auxiliary public service facility offering services in exchange for payment via a payment card comprising:

an auxiliary reading device for reading and debiting a payment card which is issued for subscribing to said service;

first, second and third auxiliary devices for interconnecting said auxiliary reading device via said subscriber line to said central computer and transmitting the identity of an auxiliary payment card, residual value of said card and erasure information for said card;

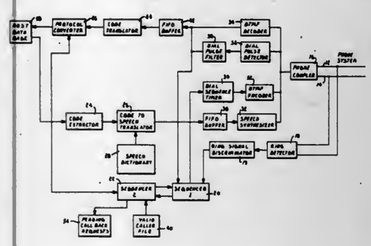
said auxiliary devices and telephone devices including filter means for maintaining signals destined for said telephone facility and auxiliary facility separate from each other.

4,577,062

METHOD FOR DISPENSING INFORMATION

Thomas N. Hilleary, Johnson County, Kans., and Robert D. Fulton, Jackson County, Mo., assignors to Butler National Corporation, Lenexa, Kans.

Filed Sep. 2, 1983, Ser. No. 529,116
Int. Cl.[4] H04M *11/00*
U.S. Cl. 179—2 A **7 Claims**



1. A method of automatically furnishing information through existing telephone circuits, said method comprising:

automatically receiving an incoming call and immediately automatically transmitting an invitation for the caller to enter through the caller's telephone dialing apparatus a prearranged dialing sequence identifying the caller as a recipient of the information;

automatically receiving and comparing the dialed sequence with stored data to verify the authorized status;

after verifying said status, automatically transmitting a signal to the caller inviting the entry through the caller's telephone dialing apparatus of a new dialing sequence corresponding to a particular information desired;

receiving the entry made by the caller and recalling data from a changing data source corresponding to said particular information;

automatically transmitting to the caller by synthesized voice the particular information recalled from the data source;

continuing the automatic transmission of repetitive invitations to the caller to enter dialing sequences corresponding to additinal particular information, receiving the entries, recalling data corresponding to the respective particular information and automatically transmitting relevant information to the caller by synthesized voice until a predetermined time elapses after an invitation to enter is given without a subsequent entry having been made by the caller and without the caller breaking the circuit; and

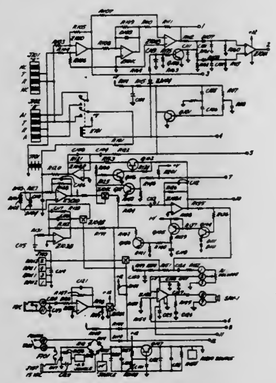
automatically transferring the call to a third telephone upon the elapse of said predetermined time interval.

4,577,063

RING DELAY OVERRIDE FOR TELEPHONE ANSWERING SYSTEM

Bradford E. Hanscom, Downey, and Gerald L. Mock, Corona, both of Calif., assignors to T.A.D. Avanti, Inc., Compton, Calif.

Filed Aug. 26, 1983, Ser. No. 526,696
Int. Cl.[4] H04M *1/64*
U.S. Cl. 179—6.16 **3 Claims**



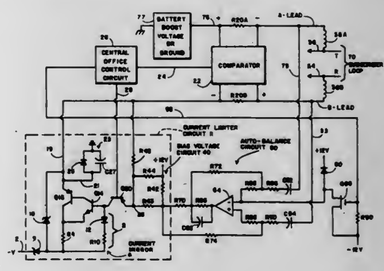
1. In a telephone answering system which responds to ring signals received over the telephone line, and which includes a magnetic tape mechanism (T-1) having a recorded announcement thereon to be transmitted over the telephone line to a caller during a time interval (T_1) in response to a predetermined number of ring signals received over the telephone line, and a magnetic tape mechanism (T-2) for recording messages received over the telephone line during a time interval (T_2) following the time interval (T_1), the combination of: a microcomputer responsive to a predetermined number of ring signals received on the telephone line to activate the system; a first input circuit coupled to the telephone line and to the microcomputer for introducing the ring signal to the microcomputer; an output circuit connected to the microcomputer to be coupled to the telephone line and to the (T-1) tape mechanism by the microcomputer upon the activation of the system by the microcomputer in response to said predetermined number of ring signals received over the telephone line to cause audio signals to be transmitted over the telephone line to a caller representing the announcement recorded on the (T-1) tape mechanism; a second input circuit connected to the microcomputer to be coupled to the telephone line and to the magnetic tape mechanism (T-2) by the microcomputer at the end of the (T_1) time interval for receiving audio signals over the telephone line during the (T_2) time interval representing a message from the caller and for causing such audio signals to be recorded on the (T-2) tape mechanism; circuit means connecting said (T-2) tape mechanism to the microcomputer for introducing pulses to the microcomputer in response to movement of the (T-2) tape mechanism; and circuitry connected to the microcomputer and controlled thereby for increasing to a second predetermined number the number of ring signals required to cause the microcomputer to activate the system in the absence of pulses being received by said microcomputer from said circuit means during a preceding (T_2) time interval.

4,577,064

AUTO-BALANCE CIRCUIT FOR BATTERY FEED IN A TELEPHONE CIRCUIT

John M. Huft, Lakewood, and Frederick J. Kiko, Aurora, both of Colo., assignors to GTE Lenkurt Incorporated, Phoenix, Ariz.

Continuation of Ser. No. 489,998, Apr. 29, 1983, abandoned. This application Aug. 12, 1985, Ser. No. 764,518
Int. Cl.[4] H04M *19/00*
U.S. Cl. 179—16 F **8 Claims**



1. Apparatus for controlling direct current supplied from an office battery to a subscriber telephone station via tip and ring lines of a subscriber loop circuit and minimizing extraneous AC induced longitudinal voltage appearing thereon comprising:

bias means for establishing a DC reference voltage at a reference node;

differential means for detecting any AC induced longitudinal voltage on the lines, converting this AC voltage to an AC output current of said differential means, and superimposing said AC output current on said DC reference voltage at said reference node; said differential means comprising a differential input operational amplifier having inverting and non-inverting terminals electrically connected to one and other of the lines, respectively;

first means responsive to said AC current and DC reference voltage at said reference node for varying the amplitudes of both a DC output current from and an output voltage of said first means in accordance with said AC current at said reference node; and

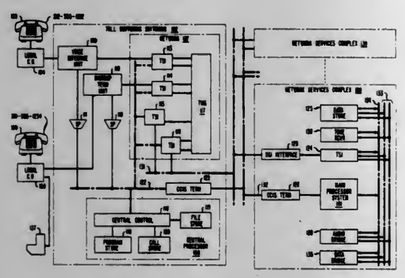
first feedback means for coupling the amplitude variation on the output voltage of said first means to an input of said differential amplifier whereby the affect of any longitudinally induced AC voltage is minimized.

4,577,065

MEET-ME CONFERENCE ARRANGEMENT

Alan E. Frey, Naperville, and Howard A. Kerr, West Chicago, both of Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Nov. 3, 1983, Ser. No. 548,433
Int. Cl.[4] H04M *3/56*
U.S. Cl. 179—18 BC 11 Claims



1. For use in a communication network comprising a plurality of customer stations, a plurality of meet-me conference systems, communication channels and switching means for selectively interconnecting said stations to said conference systems via said communication channels, apparatus for controlling the interconnection of said stations to said conference systems comprising:

means responsive to a request for conference service from one of said stations for designating an access code for a conference,

means responsive to the initial receipt of said access code from a particular one of said stations for selecting an idle one of said conference systems and for requesting connection of said particular station to said selected system, and

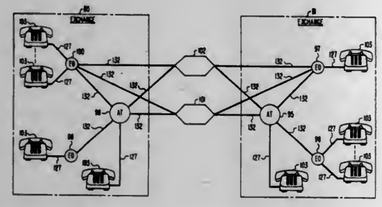
means effective upon the successful connection of said particular station to said selected conference system for designating a group of said communication channels for connecting to said selected conference system other of said stations transmitting said access code.

4,577,066

TELEPHONE INTEREXCHANGE CALL ROUTING

Brian R. Bimonte; Mark A. Gauldin, both of Wheaton, and Douglas H. Riley, Naperville, all of Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 3, 1983, Ser. No. 519,841
Int. Cl.[4] H04M *3/42, 7/00*
U.S. Cl. 179—18 B 45 Claims



1. A method of finding a route for a telephone call, comprising the steps of:

selecting a plurality of possible call routes on the basis of a carrier designated to carry the call;

selecting one of the selected plurality of routes on the basis of characteristics associated with the call; and

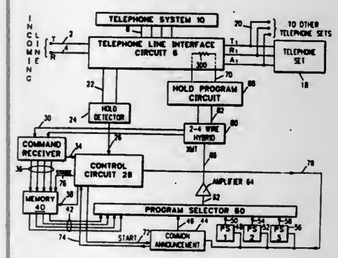
attempting to establish the selected route for the call.

4,577,067

REMOTELY CONTROLLED TELEPHONE HOLD PROGRAM SYSTEM

Alfred Levy, 12 Oak Hill Dr., Oyster Bay, N.Y. 11771, and Jon D. Paul, 2800 Third St., San Francisco, Calif. 94107

Filed Oct. 5, 1983, Ser. No. 538,820
Int. Cl.[4] H04M *11/08, 3/42*
U.S. Cl. 179—99 H 31 Claims



1. A system for providing remote program selection by a held caller during the hold connection in a telephone hold program system wherein said held caller's line is connected to a holding circuit and a program is transmitted to the held caller, comprising:

said holding circuit including hold impedance means which is shunted across said held caller's line when said held caller's line is placed on hold until said line is removed from hold and placed in use with a party available for communication with said held caller;

hold detection means for detecting when a line is being held by said hold impedance means in said holding circuit;

program select announcement means for transmitting instructions over said held line to said held caller for remotely selecting one of a plurality of programs;

switching means, responsive to said hold detection means, for causing said program select announcement means to be played over said held line to said held caller;

program select signalling means, at said held caller's location, for sending select signals over said caller's line, when said line is being held, for selecting one of a plurality of programs to be played to said held caller;

select signal decoding means for receiving and decoding said select signals sent by said held caller to select the particular program signalled by said held caller;

a plurality of program source means;

program select means, responsive to said select signal decoding means, and connected to said plurality of program source means, for selecting one of said plurality of program sources, determined by the select signal decoding means; and

hold program circuit means connected to said program select means, and responsive to said hold detection means, for coupling the selected program source to said held caller's line during the period that the held caller is on hold;

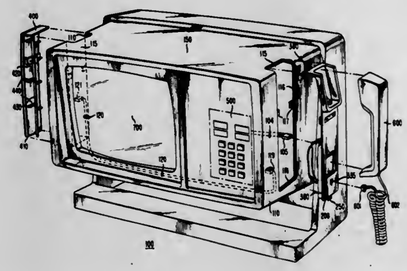
whereby the held caller will receive the program source material which said held caller has selected remotely from said plurality of program source means.

4,577,068

ADAPTIVE MODULAR TELEPHONE CRADLE FOR A COMMUNICATION TERMINAL

Thomas J. Kelly, Colts Neck, and Daniel W. Tyler, Middletown, both of N.J., assignors to AT&T Information Systems Inc., Holmdel, N.J.

Filed Nov. 23, 1983, Ser. No. 554,540
Int. Cl.[4] H04M *1/00*
U.S. Cl. 179—100 R 8 Claims



2. A communication terminal cabinet adapted to house a telephone station set in communication with a telephone handset, comprising at least first and second cabinet surfaces arranged in spaced-apart relationship, said first and second surfaces having respective apertures formed therein,

a modular telephone cradle adapted to receive said handset, said modular cradle being further adapted to be inserted into the aperture formed in said first surface and to be inserted into the aperture formed in said second surface, said cradle having means to establish an electrical connection between said station set and said handset, and

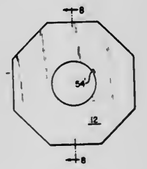
a modular cover plate adapted to be inserted into the aperture formed in said second surface when said modular cradle is inserted into said first surface and being further adapted to be inserted into the aperture formed in said first surface when said modular cradle is inserted into said second surface.

4,577,069

ELECTROACOUSTICAL TRANSDUCER

William J. Keezer, Medway, Mass., assignor to Bose Corporation, Framingham, Mass.

Continuation of Ser. No. 718,178, Aug. 27, 1976, Pat. No. 4,158,756. This application Jul. 7, 1978, Ser. No. 922,557
Int. Cl.[4] H04R *9/02*
U.S. Cl. 179—119 R 6 Claims



1. In an electroacoustical transducer having an annular permanent magnet with a center aperture, a pole piece positioned in the aperture, a voice coil surrounding the pole piece, a diaphragm operatively connected to the pole piece, a front flux plate with a center aperture aligned with the aperture of the magnet, a back flux plate attached to the pole piece, the improvement comprising:

at least one of said flux plates having opposite parallel faces, one of which is completely flush with the annular magnet and said one flux plate having eight sides substantially perpendicular to and between the faces, each side having an inner edge abutting the annular magnet, an outer edge substantially parallel to the inner edge, and two edges in common with adjacent sides; and

the inner face edges of the one flux plate being contained within the area bounded by the outer diameter of the annular magnet.

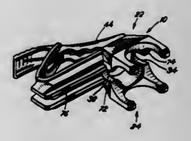
4,577,070

HOLDER FOR INCONSPICUOUSLY MOUNTING A MICROPHONE

Yuri Shulman, 8326 N. Keystone St., Skokie, Ill. 60076

Filed Sep. 28, 1984, Ser. No. 655,865
Int. Cl.[4] H04R *1/02;* A47D *15/00;* F16L *3/12*
U.S. Cl. 179—146 R 7 Claims





1. A holder for inconspicuously mounting a microphone comprising:

base means for securing said holder to a surface; and

cradle means for interlockingly receiving said microphone in four distinct orientations with respect to said holder, said cradle means including four struts extending from said base means, each of four struts having a bi-directional flexibility so as to snappingly receive and release said microphone.

4,577,071

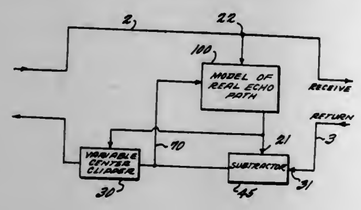
ECHO CANCELLER WITH ADAPTIVE RESIDUAL CENTER CLIPPER CONTROLLED BY ECHO ESTIMATE

Robert D. Johnston, Woodbridge, and Nicholas J. A. Forse, Ipswich, both of England, assignors to British Telecommunications, London, England

Filed Oct. 13, 1983, Ser. No. 541,654
Claims priority, application United Kingdom, Oct. 15, 1982, 8229510; Jun. 1, 1983, 8315046
Int. Cl.[4] H04B *3/20*
U.S. Cl. 179—170.2 17 Claims

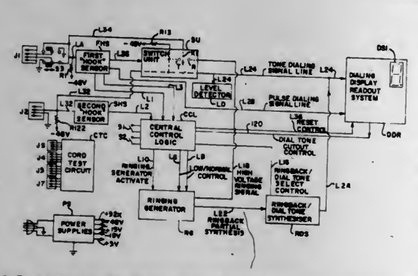
16. In an echo canceller providing an echo estimate signal

and having a residual center clipper having a controlled threshold, the improvement comprising:



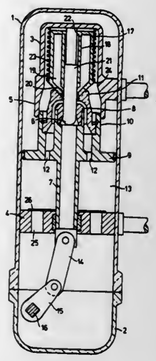
control means connected to control the threshold of the center clipper in response to the echo estimate signal.

4,577,072
TELEPHONE EQUIPMENT TESTER
John R. Lulay, Chicago, Ill., assignor to Dynascan Corporation, Chicago, Ill.
Filed Dec. 30, 1983, Ser. No. 567,100
Int. Cl.[4] H04M *1/24*
U.S. Cl. 179—175.1 R 11 Claims



1. In a plug-in telephone tester for connection to a telephone so as to test for erroneous digit-indicating dialing signals produced when manually or automatically dialing said telephone and having connector means for receiving a plug-in connector of a manual or automatically dialable telephone, a single digit indicating display element, and control means for operating said display element to display a number corresponding to each numerical digit-indicating signal received by said connector means, the improvement wherein said control means includes: first means for receiving and storing in time sequence the dialed digit-indicating signals in different storage areas thereof provided for the respective numerical digits as they are received by said connector means at possible speeds where they cannot be discerned when sequentially viewed on said display element; and second means responsive to the presence of digit-indicating signals stored in said first means for sequentially reading out the digit-indicating signals stored in said different storage areas to said signal display element to display the numerical digits involved sequentially at a slower readily visible sequential rate.

4,577,073
ELECTRICAL CIRCUIT BREAKER WITH ARC EXTINGUISHING COMPRESSED FLUID
Gianpietro Talpo, Bergamo, Italy, assignor to Sace S.p.A. Costruzioni Elettromeccaniche, Bergamo, Italy
Filed Jan. 14, 1985, Ser. No. 691,015
Claims priority, application Italy, Jan. 20, 1984, 19264 A/84
Int. Cl.[4] H01H *33/88*
U.S. Cl. 200—148 A 8 Claims

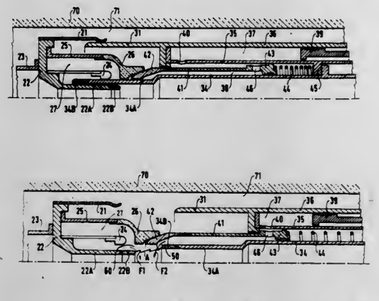


1. Electrical circuit breaker of the type using an arc extinguishing compressed fluid, in particular a gas, such as sulphur hexafluoride, comprising within a tightly sealed casing filled with the extinguishing fluid, a current bearing connector with a stationary contact, a current bearing connector in which a movable contact actuated by a driving mechanism is guided, a fluid blasting device formed by a piston solid with the movable contact and defining a compression zone, and by a fluid blasting nozzle of insulating material brought by the movable contact to an advanced position relatively to the stationary contact with an opening communicating with said compression zone, as well as a body of insulating material for the closure of the blasting nozzle, slidingly mounted for a stroke limited by a stop element on the stationary contact and under the action of elastic means, said movable body being suitable to be moved, so as to go away from said stop element by means of said nozzle during the movable contact closure stroke, characterized in that said movable body is provided with a cavity forming a chamber open towards said blasting nozzle, said chamber of the movable body being placed in communication with said compression zone through said blasting nozzle in that part of the stroke of movable contacts in which the blasting nozzle holds the movable body away from said stop element, whilst the opening of said chamber is facing the opening of the nozzle during the residual part of the stroke of movable contacts.

4,577,074
HIGH VOLTAGE GAS-BLAST CIRCUIT BREAKER
Van Doan Pham, Meyzieu, France, assignor to Alsthom-Atlantique, Paris, France
Filed Jan. 14, 1985, Ser. No. 691,042
Claims priority, application France, Jan. 13, 1984, 84 00474
Int. Cl.[4] H01H *33/88*
U.S. Cl. 200—148 A 6 Claims

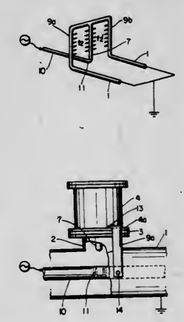
1. Gas-blast type high voltage circuit breaker comprising means defining a first chamber wherein gas pressure increases from heating by the breaking arc, means for causing the gas in said chamber to escape said first chamber to blow out the arc at current zero of the current being interrupted, means including a piston defining a second compression gas chamber wherein gas is compressed by said piston at the beginning of the breaker opening phase and means for directing gas from

said second chamber at the arc during the following phases, main fixed contacts, fixed arcing contacts, main moving contacts and moving arcing contacts, the arc extending between the two arcing contacts during breaker opening, the



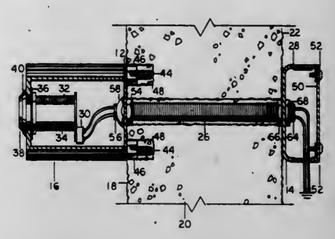
improvement wherein said first chamber and said second chamber are disposed to each side of the arcing region, are both annular-shaped and terminate in nozzles aiming separate gas jets at two respective roots of the arc.

4,577,075
EARTHING SWITCH FOR GAS-INSULATED SWITCHGEAR APPARATUS
Kenji Akita; Minoru Sakaguchi, and Hiroshi Suzuyama, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Jan. 16, 1985, Ser. No. 691,912
Claims priority, application Japan, Jan. 18, 1984, 59-5602
Int. Cl.[4] H01H *33/04;* H02B *1/20*
U.S. Cl. 200—148 R 7 Claims



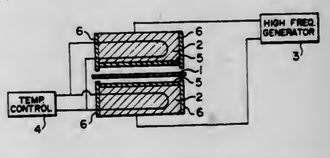
1. An earthing switch for gas-insulated switchgear apparatus comprising a gas-insulated enclosure, a main conductor disposed in said enclosure, a stationary contact provided to said main conductor, an operating mechanism case accommodating a moving contact which is movable to connect with and disconnect from said stationary contact and an operating mechanism for operating said moving contact, said case being mounted on said enclosure interposing an insulating member therebetween, and earthing means for removably providing electrical connection between said movable contact and said enclosure and including at least two earthing bars each having one end connected to said operating mechanism case and an opposite end connected to said enclosure, said two earthing bars being disposed outside of said enclosure near to said moving contact and located on opposite sides with respect to said moving contact.

4,577,076
SWITCH GUARD ASSEMBLY
Russell Whelan, Jr., 5638 Miriam Rd., Philadelphia, Pa. 19124
Filed Oct. 19, 1983, Ser. No. 543,541
Int. Cl.[4] H01H *27/00*
U.S. Cl. 200—294 2 Claims



1. A switch guard assembly for mounting on a panel, said switch guard assembly comprising an outer plate and a back plate, said switch guard assembly further including a housing assembly, said panel having inner panel and outer panel faces, said outer plate and back plate being mounted respectively against said outer and inner panel faces, said outer plate being secured to said housing assembly and having an opening, said back plate being the rear wall of a standard electrical box and having an opening, said securement of said outer plate being accomplished by backwardly extending bolts which pass through appropriate openings in the outer plate, with the outer plate being secured in place by nuts threaded on said bolts, and wherein portions of said bolts and nuts are located in holes drilled in said panel, said panel having an opening communicating with the openings in said outer and back plates, a pipe having first and second ends, said pipe being located in said panel opening with said first pipe end passing through and beyond the opening in said outer plate and the second pipe end passing through and beyond the opening in said back plate, said first pipe end being firmly secured to said outer plate in a cap that is firmly secured to said first pipe end and said outer plate and said second end being firmly, but releasably, secured to said back plate, said housing assembly having in its interior, electrical switch means located in said housing and wired through said pipe and openings in said plates, said switch means being wired to a source of power, whereby the firm securement of said pipe ends to said outer plate and back plate resists removal of said housing from its position against said outer panel face, thereby further resisting access to said electrical switch means.

4,577,077
SURFACE SMOOTHING METHOD FOR DISK-LIKE RECORDING MEDIUM
Toshio Kawamata, Odawara, Japan, assignor to Fuji Photo Film Co., Ltd., Japan
Filed Jul. 26, 1983, Ser. No. 517,282
Claims priority, application Japan, Aug. 12, 1982, 57-140167
Int. Cl.[4] H05B *6/64*
U.S. Cl. 219—10.43 7 Claims



1. A method of smoothing the surfaces of a disk-like recording medium having a dielectric binder, which comprises inter-

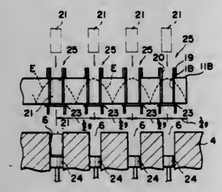
posing and supporting the disk-like recording medium under pressure between a pair of electrodes having highly planished surfaces, and applying a high frequency from said electrodes to both surfaces of said medium so as to soften the dielectric binder, thereby smoothing the surfaces of said medium.

4,577,078

APPARATUS FOR PREHEATING MOLD RESIN FOR A SEMICONDUCTOR DEVICE

Yasumasa Noda, Kawasaki, and Yoichi Suzuki, Sagamihara, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 30, 1984, Ser. No. 615,463
Claims priority, application Japan, May 31, 1983, 58-96026; May 31, 1983, 58-96027
Int. Cl.⁴ H05B *6/64*
U.S. Cl. 219—10.55 A **12 Claims**



1. Preheating apparatus for use in a semiconductor molding apparatus for preheating mold resin before the mold resin is charged in a mold die, comprising:
- a microwave generator generating a microwave;
- a waveguide connected to the microwave generator;
- a plurality of positioning devices respectively positioning a plurality of supplies of mold resin, within the waveguide, at the positions of peaks of the distribution, along the length of the waveguide, of the electric field intensity formed by the microwave in the waveguide, each positioning device positioning the mold resin so that the center of the mold resin coincides with the position of a peak of the distribution of the electric field intensity; and
- means for permitting introduction of the mold resin from outside of the waveguide into each of the positioning devices and discharge of the mold resin from each of the positioning devices to the outside of the waveguide,
- wherein walls of the waveguide perpendicular to the electric field due to the microwave are provided with perforations and each of the positioning devices comprises a cylindrical retainer extending through the waveguide and fitted in a respective one of the perforations, the inner surface of the cylindrical retainer defining a retaining hole for accommodating and positioning the mold resin.

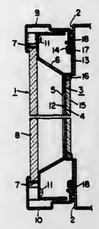
4,577,079

DOOR OF MICROWAVE OVEN

Takamichi Sujaku, Nagoya, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 25, 1985, Ser. No. 726,993
Claims priority, application Japan, May 22, 1984, 59-74747[U]
Int. Cl.⁴ H05B *6/76*
U.S. Cl. 219—10.55 D **7 Claims**

1. A door for a microwave oven for opening and closing an access opening formed in a cabinet, said door comprising:
- a door plate of a frame-like construction having a central window and having a forward side facing away from the opening and an inward side facing the opening;
- upper and lower sashes secured to said door plate so as to cover upper and lower ends of said door plate;
- an outer barrier provided on the forward side of the door plate and arranged to cover said central window;
- a screen having a front and a rear side and a number of perforations, the front side of said screen facing and covering the inward side of said central window;
- a contact plate formed integrally with said screen to surround the same so that said contact plate is contactable with said cabinet at a portion surrounding said access opening,
- an inner barrier provided in contact with the rear side of said screen;
- a door cover engageable with said upper and lower sashes and with said contact plate and having an opening at the center;



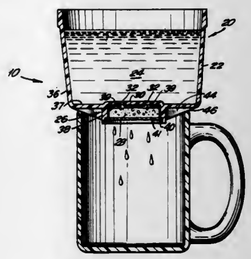
said upper and lower sashes having at least a portion of their rearward edges which face the cabinet bent radially inwardly toward the central portion of the door to hold said door cover;
- said contact plate having outer peripheral portions firstly bent toward the forward side and then bent radially outwardly thereby forming stepped portions for supporting said door cover; and
- at least one pair of engaging portions provided along an internal edge of said door cover to be brought into engagement with said stepped portions of said contact plate.

4,577,080

COFFEE MAKER ADAPTED FOR USE IN A MICROWAVE OVEN

M. Gary Grossman, Fort Lee, N.J., assignor to GEE Associates, Fort Lee, N.J.

Filed Mar. 19, 1985, Ser. No. 713,460
Int. Cl.⁴ H05B *6/80*
U.S. Cl. 219—10.55 E **14 Claims**



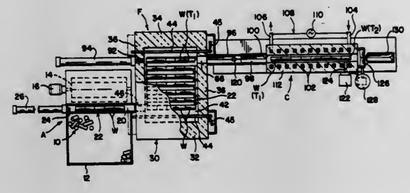
1. A drip-type coffee maker adapted to discharge fresh brewed coffee into a receptacle therebelow, comprising:
- a container having two compartments, including
- an upper reservoir adapted to hold water,
- a lower filter element adapted to hold coffee grounds and including a filter for the dispensing of brewed coffee therefrom, and
- a partition between said reservoir and filter element, including at least one flow restricting perforation therethrough sealed by a non-toxic meltable substance which melts at the temperature the water is heated for brewing coffee, whereupon the heated water will flow in a restricted manner through the perforation and the coffee grounds to become freshly brewed coffee which, in turn, will flow through said filter and into the receptacle therebelow.

4,577,081

HEATING NONMAGNETIC METAL WORKPIECES

Norbert R. Balzer, Boaz, Ala., assignor to Park-Ohio Industries, Inc., Shaker Heights, Ohio

Filed Apr. 20, 1984, Ser. No. 602,542
Int. Cl.⁴ H05B *5/00, 6/64*
U.S. Cl. 219—10.69 **11 Claims**



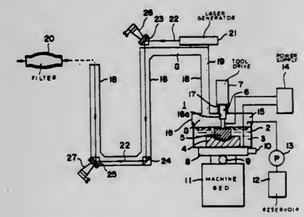
1. The method of heating a workpiece of nonmagnetic metal material having an initial temperature to a selective elevated processing temperature comprising the steps of:
- (a) first preheating the said workpiece in a high efficiency electric radiant heat furnace to a preheat temperature elevated above said initial temperature by more than one half the difference between said initial temperature and said processing temperature and said preheat temperature being substantially below said processing temperature of the workpiece so as not to cause undesired surface degradation and grain coarsening thereof, and
- (b) then transferring the said preheated workpiece from said furnace immediately into and post-heating said preheated workpiece inductively in an induction heating coil to said selective processing temperature.

4,577,082

ELECTRICAL MACHINING METHOD AND APPARATUS WITH EVOLVED-GAS LASER DETOXIFICATION

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Kanagawa, Japan

Filed Jun. 3, 1983, Ser. No. 500,855
Claims priority, application Japan, Jun. 3, 1982, 57-95718
Int. Cl.⁴ B23H *1/10*
U.S. Cl. 219—69 D **8 Claims**



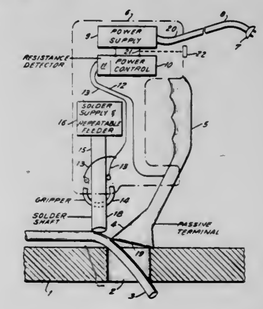
1. A method of electrically machining a conductive workpiece wherein a machining electric current is passed across a machining gap flooded with a liquid machining medium between a tool electrode and the workpiece to decompose the liquid machining medium and to erosively remove material from the conductive workpiece whereby a gaseous machining effluent comprising noxious gases is evolved from the machining gap, the method including the steps of:
- collecting the effluent in a space immediately above the liquid machining medium and confining the collected effluence against direct escape into the atmosphere;
- passing the collected machining effluent through an elongate fluid flow passage communicating said space with the atmosphere; and
- irradiating the machining effluent flowing through said passage with a laser beam guided to pass longitudinally along said elongate fluid flow passage whereby to decompose at least a major portion of the noxious gases in said flowing machining effluent into their constituent elements.

4,577,083

SOLDERING TECHNIQUE

A. William Carreira, 166 West Remington St., Black River, N.Y. 13612

Filed Jul. 25, 1983, Ser. No. 516,808
Int. Cl.⁴ B23K *1/04*
U.S. Cl. 219—85 F **3 Claims**



1. The method of applying solder to work to be soldered comprising the steps of applying a probe to a portion of said work and applying solder to the portion of the work to be soldered, passing current through said probe, the portion of the work to be soldered and the solder in engagement therewith and thereby heating the solder until the solder has melted, the melting of the solder interrupting the passage of current and terminating the melting of the solder; the said solder when heated by the current passing therethrough constitutes the sole source of heat for melting said solder.

4,577,084

PRESSURE-DIFFERENTIAL METHOD FOR SLEEVE-TO-TUBE JOINING

Israel Stol, Monroeville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

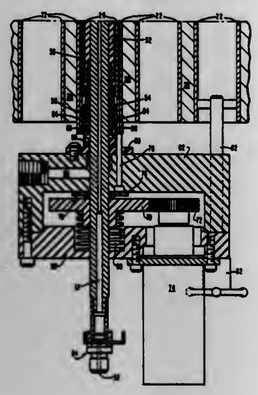
Division of Ser. No. 409,208, Aug. 18, 1982, Pat. No. 4,514,614.
This application Dec. 28, 1984, Ser. No. 687,418
Int. Cl.⁴ B23K *1/04*
U.S. Cl. 219—85 M **9 Claims**

1. A method for brazing a metal sleeve within a metal tube comprising:
- positioning a metal sleeve having brazing material on the outside thereof in a metal tube;
- inserting a heating apparatus in said sleeve near a portion of said sleeve to be brazed to said tube;
- actuating a sealing mechanism of said heating apparatus thereby defining a sealed chamber between said sleeve and

said heating apparatus near said portion of said sleeve to be brazed to said tube;

introducing an inert shielding gas through said heating apparatus and into said sealed chamber for pressurizing said sealed chamber to between approximately 5 to 150 psi;

activating said heating apparatus by establishing a current of between approximately 2–150 amps through said heating





apparatus for heating said sleeve and said braze material while said shielding gas gently forces said sleeve and braze material outwardly toward said tube thereby placing said sleeve and said braze material in close contact with said tube during the brazing process; and

rotating said heating apparatus about its longitudinal axis for completing a braze joint around the circumference of said sleeve.

4,577,085

SYSTEM OF TRANSFORMERS FOR A WELDING APPARATUS

Peter H. Burgher, Howell, and John L. Boomer, Haslett, both of Mich., assignors to Marelco Power Systems, Inc., Howell, Mich.

Filed Jan. 20, 1984, Ser. No. 572,396

Int. Cl.⁴ B23K *11/24*

U.S. Cl. 219—116 **11 Claims**

1. A welding system comprising:

a pair of welding electrodes,

an isolation transformer having a primary coil and a secondary coil,

means for mounting said isolation transformer closely adjacent said electrodes,

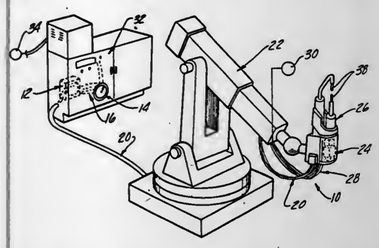
an auto transformer having a coil and a pair of taps,

means for electrically connecting said auto transformer coil taps to said isolation transformer primary coil,

a power source electrically connected to said auto transformer coil,

means for mounting said auto transformer remote from said isolation transformer,

first means for fluidly cooling said isolation transformer primary coil,



second means for fluidly cooling said isolation transformer secondary coil,

wherein said primary and secondary coils each comprise a tubular conductor and wherein said first and second cooling means comprises means for passing a fluid coolant through said isolation transformer primary and secondary coils, respectively.

4,577,086

MONITORING IN-SERVICE RESISTANCE OF AC CONDUCTORS

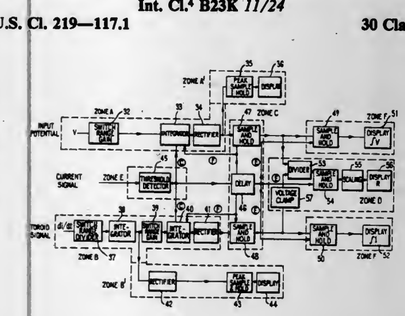
James C. Needham, Essex; Robert M. Rivett, Balsham, and Raymond A. G. Perryman, Newmarket, all of United Kingdom, assignors to The Welding Institute, Abington, Great Britain

Filed Sep. 9, 1983, Ser. No. 530,657

Claims priority, application United Kingdom, Sep. 10, 1982, 8225827

Int. Cl.⁴ B23K *11/24*

U.S. Cl. 219—117.1 **30 Claims**



16. A method of resistance welding, the method comprising applying a current having at least an alternating component between a pair of electrodes positioned adjacent a workpiece or workpieces to be welded; and monitoring resistance characteristics of the circuit carrying the current by a method comprising:

(a) monitoring the potential drop between two predetermined positions in said circuit;

(b) monitoring said current flowing through said predetermined positions;

(c) comparing said monitored current with a threshold;

(d) determining at least two instants at which said monitored current reaches said threshold; and

(e) determining one of the integral and the average of said monitored potential drop for the period between said instants, whereby said one of the integral and the average is representative of the resistance characteristic being monitored.

4,577,087

APPARATUS FOR LASER WELDING PIPES AND THE LIKE

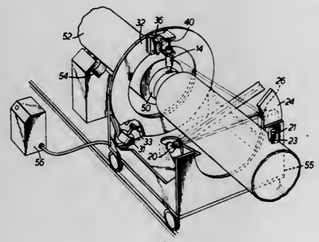
John R. Chadwick, Wilmslow, England, assignor to Fairey Engineering Limited, Stockport, England

Filed Jun. 29, 1984, Ser. No. 625,887

Claims priority, application United Kingdom, Jun. 29, 1983, 8317666

Int. Cl.⁴ B23K *26/00*

U.S. Cl. 219—121 LC **16 Claims**



1. Apparatus for directing a laser beam for laser welding pipes or like articles of circular section, said articles having an axis, said apparatus comprising a first mirror which is disposed in a position remote from said axis of said articles to be welded and on which, in use, a laser beam transmitted transverse to said axis is incident, a second mirror, a third mirror, focussing means arranged, in use, to direct said beam onto said articles to be welded substantially perpendicular to said axis of the articles, first drive means arranged to rotate said second mirror about said articles to be welded, second drive means arranged to rotate said third mirror through at least 360° about said articles to be welded and control means arranged to adjust the relative angular orientations of said mirrors such that, in use, the beam produced by said laser is reflected from said first mirror to said second mirror and thence to said third mirror and is substantially focussed by said focussing means onto said articles to be welded, whereby the focussed laser beam may be moved continously around the periphery of said articles being welded.

4,577,088

METHOD OF LASER BUTT WELDING

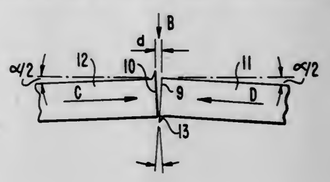
Charles M. Sharp, Landing, N.J., assignor to SWS Inc., Landing, N.J.

Filed Jun. 27, 1984, Ser. No. 625,239

Int. Cl.⁴ B23K *26/02*

U.S. Cl. 219—121 LD **20 Claims**

19. A method of forming a butt weld comprising the steps of providing two members to be butt welded, positioning respective longitudinally extending edges of said members to be butt welded in abutting contact with the edges being canted slightly with respect to one another so that the butt joint formed by said abutting edges is open toward a first side of said members in a direction transverse to the direction in which said edges longitudinally extend with said abutting edges of said butt joint contacting one another toward a second side of said members opposite said first side, and directing at least one high energy density beam at said butt joint, said beam being directed at said butt joint from said first side of said members in a direction transverse to the direction in which said edges longitudinally extend so that at least a portion of said beam extends into the



open side of said butt joint to said edges for butt welding said members.

4,577,089

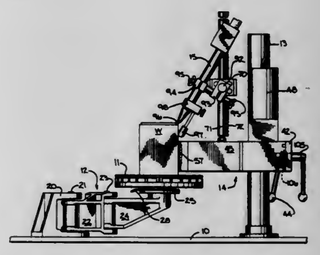
AUTOMATIC WELDING MACHINE

Gene R. Olson, 985 N. 115th St., Wauwatosa, Wis. 53226, and Gregg R. Sorenson, 605 Elm Grove Rd., Elm Grove, Wis. 53122

Continuation of Ser. No. 306,469, Sep. 28, 1981, abandoned. This application Mar. 22, 1984, Ser. No. 592,728

Int. Cl.⁴ B23K *9/225*

U.S. Cl. 219—124.22 **5 Claims**



1. A welding machine comprising:

a workpiece support table freely movable in a horizontal plane;

an upright standard adjacent said support table;

a pair of closely spaced rollers mounted in a roller housing mounted on said standard by a releasable clamp mechanism which slides about the standard so that the roller housing may be positioned vertically and angularly relative to the axis of the standard, said rollers having their axes normal to the plane of said support table, said rollers including permanent magnets which will hold the perimeter surface of a workpiece against the rollers;

a motor connected to rotate said rollers in a common direction and to thereby turn a workpiece held against said rollers;

a carriage assembly including a welding gun, said carrier assembly being supported on a column extending from said roller housing in a direction parallel to the axes of said rollers, said carriage assembly and welding gun being movable along said column in a direction normal to the axes of said rollers; and

a probe mounted with said carriage assembly and adapted to engage the perimeter of the workpiece to position the welding gun relative to the surface of the workpiece.

4,577,090

PRIMARY CABLE APPARATUS FOR ROBOT WELDING GUN

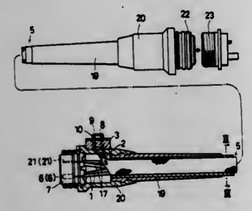
Hiroshi Obara, Tokyo, Japan, assignor to Obara Corporation, Tokyo, Japan

Filed Aug. 24, 1983, Ser. No. 526,450

Claims priority, application Japan, Aug. 27, 1982, 57-128529[U]

Int. Cl.⁴ B23K *11/36*

U.S. Cl. 219—137.9 **4 Claims**



1. A primary cable apparatus for a robot welding gun having a cable comprising:

a pair of conductors operatively connected to a welding power source;

a grounding conductor;

a shield wire positioned to substantially surround the pair of conductors and the grounding conductor;

an insulation coating operatively positioned to substantially surround the shield wire;

a first connector operatively mounted on one end of the cable for connection to the welding power source and including terminals connected to the conductors;

a second connector for detecting a disorder having a terminal operatively connected to the grounding conductor and a terminal connected to the shield wire for detecting damage to the insulation coating of the cable; and

a disorder detector operatively connected to the terminals of the second connector by two input terminals which are thus connected to said grounding conductor and said shield wire respectively; and

circuit means connected to said input terminals and responsive to said two input terminals being at an equal potential for operating a circuit breaker interposed in a welding power circuit.

4,577,091

TRAY ELECTRODE ARRANGEMENT FOR AN ELECTRICAL STEAM OR HOT WATER GENERATOR

Albert Künzli, Wiesendangen, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Aug. 10, 1984, Ser. No. 639,336

Claims priority, application Switzerland, Aug. 11, 1983, 4388/83

Int. Cl.⁴ H05B *3/60*; F22B *1/30*

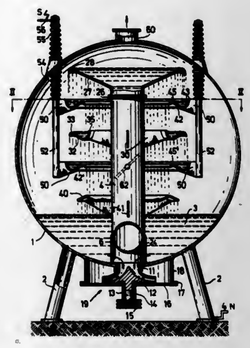
U.S. Cl. 219—284 **11 Claims**

1. An electrical hot water generator or steam generator comprising

a pressure vessel having a sump therein;

a vertical riser within said pressure vessel;

at least two pairs of spaced electrically conductive trays disposed about said riser in vertically disposed relation, said trays each having a peripheral overflow edge disposed to permit water to flow thereover in the form of a film from the top tray of the top pair of trays to the bottom tray of said top pair and then from the bottom tray of said top pair of trays to the top tray of the pair of trays therebeneath and from the bottom tray of the bottom pair of trays into said sump with said top tray of each said pair of trays being electrically insulated from said bottom tray of said respective pair of trays; and



means for conveying water from said sump to the top tray of said top pair of trays.

4,577,092

INFRARED COOKING APPARATUS WITH ADJUSTABLE HEIGHT AND PIVOTAL HEATING ELEMENT AND WITH PIVOTAL SIDE FLAPS

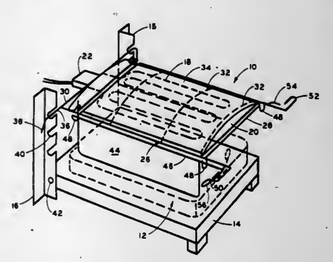
Jacques A. Lenoir, St. Hubert, 1 bis Alle de Quebec, 91300 Massy, France

Filed Jun. 6, 1983, Ser. No. 501,115

Claims priority, application France, Jun. 7, 1982, 82 09866

Int. Cl.⁴ H05B *1/00*; A47J *37/00*

U.S. Cl. 219—354 **7 Claims**



1. Cooking apparatus comprising a base for the support of a pan or the like for holding food, vertical standard means removably secured to said base and a housing substantially coextensive with said base and having a heating element located therein, said vertical standard means having detent means spaced along its length, and said housing having means enterable into and cooperating with said detent means to hang said housing on said standard in a selected one of said detent means at a selected angle to the horizontal, said housing being thus mounted on said standard means for vertical adjustment in a selected one of said detents and for selected pivotal movement about a horizontal axis corresponding to the adjusted position whereby said heating element is adjustable in use, in height and angular relationship to said base, said housing comprising an open framework in which said heating element is located and a removable cover located on said framework above the heating element provided with a reflective lower concave surface to focus the heat from said heating element inwardly from the sides of said housing and pivotal flaps removably mounted along the exterior sides of said housing, said flaps and said housing having cooperating means for selectively positioning said flaps to depend into the vertical space between said housing and the base and to permit angular adjustment of said flaps relative to said housing to provide a variable wall opening about said apparatus.

4,577,093

DEVICE FOR ELECTRIC HEATING OF A GAS MIXTURE BY DIRECT JOULE EFFECT

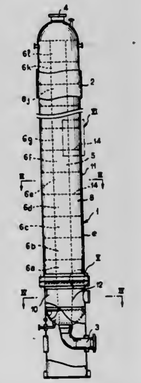
Christian Plard, Le Pecq, and Jacques Soulié, Paris, both of France, assignors to Electricite de France, Paris and Spie-Batignolles, Puteaux, both of France

Filed Feb. 17, 1984, Ser. No. 581,045

Claims priority, application France, Feb. 21, 1983, 83 02763

Int. Cl.⁴ F24H *3/00*

U.S. Cl. 219—376 **7 Claims**



1. A high-power device for electric heating of a gas mixture by direct Joule effect, the mixture being heated to temperatures and pressures up to 900° C. and 60 bar respectively, the device being constituted by an enclosure which has a lower inlet and an upper outlet for the gas mixture and which contains bare electric resistors and conductors for the supply of electric current to said resistors, wherein said device comprises a central duct having a lower end directly connected to said lower inlet and an upper end facing said upper outlet, said central duct being constituted by a plurality of superposed modules which are removable independently of each other, each module being constituted by a plurality of electric resistance elements made up of banks of metallic strips placed in relation, said strips being parallel to each other and to the direction along which the gas mixture flows between said inlet and said outlet of the enclosure, a peripheral zone containing the conductors for the supply of electric current to the resistance elements, and a plurality of passages formed between the central duct and the peripheral zone in order that a small proportion of the gas flow which passes through the central duct may be permitted to flow within the peripheral zone.

4,577,094

ELECTRICAL HEATING APPARATUS PROTECTED AGAINST AN OVERHEATING CONDITION

Edwin R. Mills, Wake County, N.C., assignor to Fieldcrest Mills, Inc., Eden, N.C.

Filed Oct. 5, 1983, Ser. No. 539,083

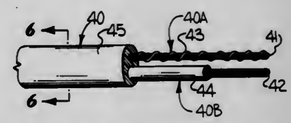
Int. Cl.⁴ H05B *1/02*

U.S. Cl. 219—505 **29 Claims**

1. An electrical heating apparatus protected against an overheating condition and comprising

an electrical heating means for generating heat in proportion to the amount of electrical current flowing therethrough, said heating means providing essentially all of the heat for the apparatus;

a heat sensitive means in a thermally responsive relationship with respect to said electrical heating means for monitoring the heat generated by said electrical heating means and for providing a signal in response to an overheating condition, said heat sensitive means consisting of a single conductor having positive temperature coefficient electrical



impedance characteristics continuously along its entire length so that it may detect an overheating condition at any position along its entire length; and

control means associated with said electrical heating means and said heat sensitive conductor for controlling the electrical current flowing through said electrical heating means in response to a signal from said heat sensitive conductor.

4,577,095

AUTOMATIC FOCUSING APPARATUS FOR A SEMICONDUCTOR PATTERN INSPECTION SYSTEM

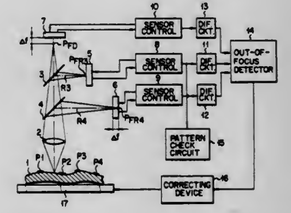
Tomohide Watanabe, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 7, 1983, Ser. No. 472,604

Claims priority, application Japan, Mar. 8, 1982, 57-35260

Int. Cl.⁴ G01V *1/20*

U.S. Cl. 250—201 **6 Claims**



1. An automatic focusing apparatus for placing a semiconductor substrate into focus relative to an inspecting system so that a pattern formed on a surface of the semiconductor substrate can be inspected by the inspecting system via light emanating from the substrate to the apparatus comprising:

an objective lens disposed in opposition to the surface of the substrate having the pattern formed thereon, the objective lens having a predetermined focal length;

first and second reflection means for reflecting respective portions of the light from the surface of the substrate as refracted through the objective lens;

a first photosensitive element for receiving light reflected from said first reflection means, said first photosensitive element being positioned to receive light at the focal length of said objective lens and producing an output according to an amount of light incident upon said first photosensitive element;

a second photosensitive element for receiving light reflected from said second reflecting means, said second photosensitive element being positioned at a preselected distance closer to the focal length of said objective lens and producing an output according to an amount of light incident upon said second photosensitive element;

a third photosensitive element aligned with said objective

lens to receive light refracted therethrough, said third photosensitive element being positioned at a preselected distance farther from the objective lens than a focal length of said objective lens and producing an output according to an amount of light incident upon said third photosensitive element;

first sensing means for producing a first electrical signal based upon the output of said first photosensitive element;

second sensing means for producing a second electrical signal based upon the output of said second photosensitive element;

third sensing means for producing a third electrical signal based upon the output of said third photosensitive element;

detecting means coupled to said first, second and third sensing means for producing a focus correction signal by comparing the first, second and third electrical signals; and

correcting means coupled to said detecting means for moving the substrate relative to the objective lens in response to the focus correction signal so as to place the substrate in focus relative to the first photosensitive element;

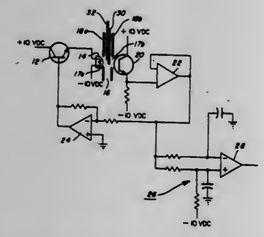
the inspecting system being coupled to said first photosensitive element for determining whether the pattern on said substrate has defects.

4,577,096

MULTIPLE COPY AND TRANSPARENCY DETECTOR WITH ILLUMINATION CONTROL

Jack Beery, Fremont, Calif.; Frederick A. Donahue, Walworth, and Ronald E. Shaul, Canandaigua, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 15, 1983, Ser. No. 523,516
Int. Cl.⁴ G01J *1/32*
U.S. Cl. 250—205 **8 Claims**



1. In a printing machine having sheets advanced through copy processing stations along a predetermined sheet path, a device for detecting superposed sheets at a sheet detection station comprising

means for feeding sheet material along the sheet path past the copying processing stations, illumination means positioned along the sheet path at the sheet detection station, a photosensitive means for receiving illumination from said illumination means, the amount of illumination received by the photosensitive means being dependent upon whether a sheet is present or not present at the sheet detection station, and

circuitry for detecting sheets in said sheet path, said circuitry comprising

feedback means electrically connected to the photosensitive means for maintaining a constant illumination from the illumination means, and

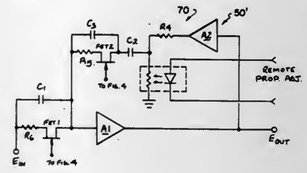
signal producing means connected to the feedback means to provide a signal in response to the stepped change in the amount of illumination received by the photosensitive means due to the presence of a copy sheet in the sheet path.

4,577,097

THREE-MODE ANALOG CONTROLLER WITH REMOTE TUNING

Marion A. Keyes, IV, Chagrin Falls; Peter K. Lui, Mentor, and Jack W. Malcolm, deceased, late of Louisville, all of Ohio (by Elizabeth J. Malcolm, executrix), assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Sep. 3, 1982, Ser. No. 414,698
Int. Cl.⁴ H01J *40/14*
U.S. Cl. 250—211 K **9 Claims**



1. A three-mode analog controller for regulating a signal corresponding to a control variable to produce a control output comprising:

an integrating circuit for integrating the signal with a selected time constant and having a reset adjustment for varying the time constant;

a proportional circuit for applying a selected gain to the signal and having a gain adjustment for varying the gain; and

a derivative circuit for obtaining a derivative of the signal at a selected rate and having a rate adjustment for varying the rate;

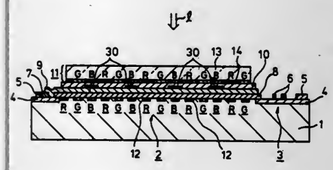
wherein said reset, gain, and rate adjustments comprise a light source, a current line connected between said signal and source for applying a current value to said light source for producing a varied light emission from said light source corresponding to said signal and a photoresistor which varies in resistance with variations in light emitted by said light source.

4,577,098

SOLID-STATE IMAGE SENSOR WITH A PHOTOTROPIC OR FLUORESCENT LAYER

Kazufumi Ogawa, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Apr. 11, 1983, Ser. No. 483,755
Claims priority, application Japan, Apr. 14, 1982, 57-62763; Apr. 16, 1982, 57-64326
Int. Cl.⁴ H01J *3/14*
U.S. Cl. 250—216 **12 Claims**



7. A solid-state image sensor comprising:

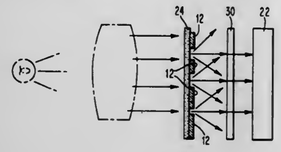
a fluorescent film disposed on a photosensor in a picture element area, the fluorescent film being transparent to green and red bands and the fluorescent film absorbing a blue cyan band and emitting a fluorescent radiation light with a wave-length longer than that of the absorbed light, said fluorescent film being disposed only between a blue or cyan filter and said photosensor.

4,577,099

APPARATUS FOR PROXIMITY DETECTION OF AN OPAQUE PATTERN ON A TRANSLUCENT SUBSTRATE

Douglas S. Goodman, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 29, 1984, Ser. No. 626,366
Int. Cl.⁴ H01J *3/14*
U.S. Cl. 250—216 **9 Claims**



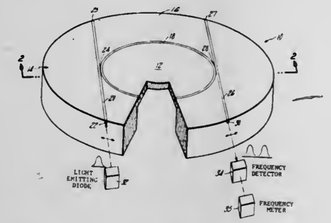
1. Improved proximity pattern detection apparatus of the type wherein an opaque pattern on a translucent background is rear illuminated and an optical pattern sensing device positioned in front of the opaque pattern responds to light transmitted through the translucent background without any intermediate imaging optics, the improvement wherein the rear illumination for the opaque pattern on the translucent background is narrow spectral band light and a narrow band pass interference filter is positioned between the opaque pattern and the optical pattern sensing device, the optical band passed by the interference filter and the spectral band of the rear illumination overlapping each other, whereby the maximum allowed spacing between the optical pattern sensing device and the opaque pattern is thereby increased for any desired optical resolution.

4,577,100

TEMPERATURE COMPENSATED OPTICAL PRESSURE SENSOR

Gerald Meltz, Avon, Conn.; Louis B. Allen, Jr., Binghamton, N.Y., and Carl M. Ferrar, East Hartford, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 27, 1983, Ser. No. 565,496
Int. Cl.⁴ G01L *1/24*
U.S. Cl. 250—231 P **10 Claims**



1. A pressure monitor, comprising:

pressure responsive means including a diaphragm having a waveguide loop located on one surface thereof, said diaphragm deflecting under pressure to cause stress-induced birefringence in said waveguide loop;

optical input means positioned adjacent said waveguide loop for coupling light energy into said waveguide loop;

output means also positioned adjacent said waveguide loop for coupling a portion of light energy out of said waveguide loop; and

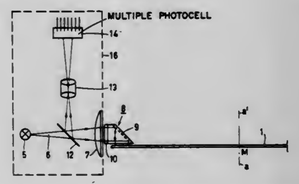
whereby a differential frequency shift occurs in the spectral response of light energy resonating in said waveguide loop as a result of said stress-induced birefringence which is proportional to pressure acting on said diaphragm.

4,577,101

SHAFT ENCODER WITH AN OPTICAL SYSTEM COMPRISING TWO STRAIGHT-LINE-GENERATRIX SURFACES

Joannes G. Bremer, Eindhoven, and Klaas Compaan, Geldrop, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 8, 1983, Ser. No. 502,079
Claims priority, application Netherlands, Jun. 8, 1982, 8202300
Int. Cl.⁴ G01D *5/34*
U.S. Cl. 250—231 SE **15 Claims**



1. An apparatus for determining the angular displacement of an object, comprising a measurement grating, means for mechanically connecting said grating to the object, and a radiation-sensitive detection system comprising a grating-like element,

characterized in thatthe measurement grating comprises radially extending grating strips on a circular disk, and

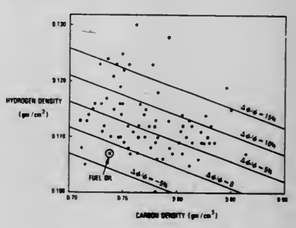
the apparatus includes an optical system comprising two straight-line-generatrix surfaces is arranged between the measurement grating and the radiation-sensitive detection system.

4,577,102

METHOD AND APPARATUS FOR DISTINGUISHING HYDROCARBON FROM FRESH WATER IN SITU

Harold Sherman, Ridgefield, and John J. Ullo, Bethel, both of Conn., assignors to Schlumberger Technology Corporation, New York, N.Y.

Filed Dec. 9, 1981, Ser. No. 328,881
Int. Cl.⁴ G01V *5/10*
U.S. Cl. 250—269 **30 Claims**



1. A method for investigating the oil/fresh water content of the fluid within a geological formation;

a. irradiating said geological formation with neutrons;

b. detecting the resultant neutron flux distribution and generating therefrom a first signal indicative of formation porosity;

c. deriving from said geological formation a second signal indicative of formation porosity but which is less affected by the nature of the pore fluid whether it be fresh water or liquid hydrocarbon than said first signal; and

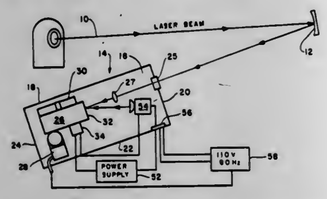
d. comparing said first and second signals to obtain an indication of the presence of oil versus fresh water in said formation.

4,577,103

METHOD AND APPARATUS FOR HIGH SPEED, SUSTAINED RECORDING OF INFRARED LASER BEAM PATTERNS

Joseph M. Geary, Edgewood, N. Mex.; Darius S. Vunck, Redondo Beach, Calif.; Dennis C. Duneman; Ronald L. Sessions, both of Albuquerque, N. Mex.; Charles E. Moeller, and Raymond V. Wick, both of Albuquerque, N. Mex., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 22, 1984, Ser. No. 643,138
Int. Cl.⁴ G03B *42/00*; G03C *5/16*
U.S. Cl. 250—316.1 **9 Claims**



1. A method of photographically recording at high speed the far field pattern of a high energy infrared laser beam over a selected period of time for providing rapid repetitive samples of information on beam parameters such as far field beam intensity, jitter, and absolute beam size and power, said method comprising the steps of:

reflecting a sample from a high energy infrared laser beam into an enclosure that is light tight to visible radiation and contains an operating lensless movie camera loaded with a suitable film strip,

focusing the infrared beam on the film plane of the camera so that consecutive frames of the film are irradiated by the infrared beam each time the camera shutter is open, the period of irradiation being of sufficient duration to sensitize the film to visible radiation in the areas where the infrared radiation impinges on the film,

detecting the position of the camera shutter and generating electrical trigger signals just before the shutter is closed for each frame,

applying the trigger signals to appropriate circuitry that actuates a light source oriented so as to generate a pulse of visible light that irradiates the film plane of the camera near the end of each shutter movement to expose each frame of the film,

developing the film strip so exposed to provide a continuous record of the infrared laser beam characteristics over the selected period of time.

4,577,104

MEASURING THE PERCENTAGE OR FRACTIONAL MOISTURE CONTENT OF PAPER HAVING A VARIABLE INFRARED RADIATION SCATTERING CHARACTERISTIC AND CONTAINING A VARIABLE AMOUNT OF A BROADBAND INFRARED RADIATION ABSORBER

Steven P. Sturm, Columbus, Ohio, assignor to AccuRay Corporation, Columbus, Ohio

Filed Jan. 20, 1984, Ser. No. 572,361
Int. Cl.⁴ G01J *1/00*
U.S. Cl. 250—339 **4 Claims**

1. A method adapted for measuring the moisture fraction or percent moisture contained in a traveling sheet of paper also containing a fiber constituent that may have a variable infrared radiation scattering characteristic and may include a variable amount of a broadband infrared radiation absorber, which method comprises

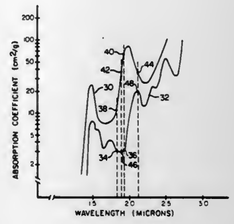
directing into the paper two sets of infrared radiation wavelengths that are affected to about the same extent by the variable scattering characteristic and are also affected to about the same extent by the variable amount of the broadband absorber,

the first set including wavelengths that have about the same absorption coefficients for the fiber constituent but have substantially different absorption coefficients for the moisture contained in the paper,

the second set including wavelengths that have about the same absorption coefficients for the moisture contained in the paper but have substantially different absorption coefficients for the fiber constituent,

detecting radiations from the paper,

forming a function of the ratio of the transmittances of the detected radiations in the first set to produce a first response to the moisture contained in the paper, the first response including a first error function dependent on the scattering characteristic and broadband absorber content of the fiber constituent,



forming a function of the ratio of the transmittances of the detected radiations in the second set to produce a second response to the fiber constituent, the second response including substantially the same first error function dependent on the scattering characteristic and broadband absorber content of the fiber constituent, the second response also including a second error function dependent on the amount of moisture contained in the paper,

forming a function of the ratio of the first and second responses to produce a third response that is substantially independent of the first error function but is dependent on the second error function, and

producing a fourth response which is a function of the third response, which is calibrated in accordance with the second error function, and which is indicative of the moisture fraction or percent moisture contained in the paper, substantially independent of the first and second error functions and substantially independent of variations of the scattering characteristic and variations in the amount of the broadband absorber.

4,577,105

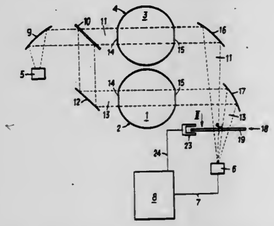
METHOD OF DETERMINING MASSES OF ABSORBING COMPONENTS OF A SAMPLE IN A TEST VOLUME AND A DEVICE FOR IMPLEMENTATION OF THIS METHOD

Peter W. Krempl, and Wolfgang Schindler, both of Graz, Austria, assignors to AVL Gesellschaft für Verbrennungskraftmaschinen und Messtechnik and Hans List, both of Graz, Austria

Filed Apr. 20, 1984, Ser. No. 602,391
Claims priority, application Austria, Apr. 21, 1983, 1468/83
Int. Cl.⁴ G01J *1/00*
U.S. Cl. 250—343 **7 Claims**

1. A method of determining masses of absorbing components of a sample in a test volume, said method including the steps of

(1) providing a test volume which contains the sample with absorbing components, (2) providing a reference volume, (3) deriving at least two frequency bands from one source of electromagnetic radiation, (4) providing a detector which has a certain response time constant, (5) passing separate beams of said electromagnetic radiation through both said test volume and said reference volume, (6) cyclically allowing said separate beams of electromagnetic radiation to alternatively pass to said



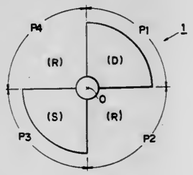
detector, said cycles being at least one order of magnitude longer than said certain response time constant of said detector, said detector, during each said cycle, detecting the intensity of each frequency band of the beam which has passed through said test volume and at least one frequency band of the beam which has passed through said reference volume, and (7) determining the masses of absorbing components of said sample based on the differences in radiation intensity detected by said detector.

4,577,106

SPECTROPHOTOMETER

Yoshiro Fukasawa; Tomoyuki Fukazawa, and Michihiro Kawamura, all of Tokyo, Japan, assignors to Japan Spectroscopic Co., Ltd., Hachioji, Japan

Filed Sep. 12, 1983, Ser. No. 531,471
Int. Cl.⁴ G01N *21/61*
U.S. Cl. 250—347 **9 Claims**



1. In a double-beam spectrophotometer comprising

means for emitting light through sample and reference cells to form sample and reference beams, respectively,

beam path switching means located in the beam paths for cyclically interrupting and switching the sample and reference beams,

a light detector for detecting a given spectrum of the beam which has passed said beam path switching means, to thereby produce an output signal, and

signal processing means for processing output signals of said light detector to determine the ratio of intensity of the sample to reference beam,

the improvement wherein

said beam path switching means is switched in its one cycle among four states:

a dark state interrupting both the sample and reference beams from passing,

a first reference beam selecting state allowing only the reference beam to pass,

a sample beam selecting state allowing only the sample beam to pass, and

a second reference beam selecting state allowing only the reference beam to pass,

in this order, and

said signal processing means includes

a signal component separating circuit for separating from each output signal of said light detector a component having a fundamental frequency corresponding to one cycle of said beam path switching means and a component having a double frequency which is twice said fundamental frequency, and

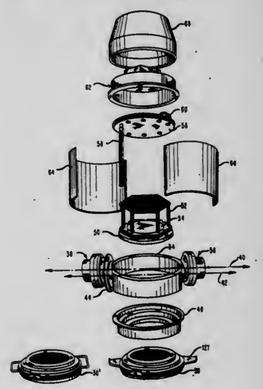
an arithmetic circuit for carrying out arithmetic operations on those signals output by said signal component separating circuit which correspond to the fundamental frequency and double frequency components.

4,577,107

DETECTOR HEAD MOUNTING APPARATUS

Raymond L. Meeder, Palos Heights, Ill., assignor to Siemens Gammasonics, Inc., Des Plaines, Ill.

Continuation of Ser. No. 540,087, Oct. 7, 1983, Pat. No. 4,560,876, which is a continuation of Ser. No. 298,635, Sep. 2, 1981, Pat. No. 4,438,335. This application Sep. 6, 1984, Ser. No. 647,595
The portion of the term of this patent subsequent to Mar. 20, 2000, has been disclaimed.
Int. Cl.⁴ G01T *1/164*; G21K *1/02*
U.S. Cl. 250—363 S **10 Claims**



1. Apparatus for pivotally mounting a detector head including a collimator onto supporting structure of a radiation detector comprising

means for mounting the head onto the supporting structure for rotation about a selected one of a plurality of trunnion axes, and

means for selecting the axis about which the detector head can rotate.

4,577,108

X-RAY CONVERTER FOIL

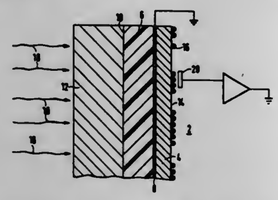
Heinrich Diepers, Höchstadt; Ingmar Feigt, Langensendelbach, and Gottfried Lange, Erlangen, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Nov. 27, 1984, Ser. No. 675,223

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1983, 3346477

Int. Cl.⁴ G01T *1/22*

U.S. Cl. 250—370 **22 Claims**



1. An X-ray converter device in the form of a substantially planar sheet for detecting the intensity distribution of X-rays over a two-dimensional region, comprising:

a semiconductor layer having a thickness less than 50 μm;

an electrode in the form of an electically conductive foil attached to one face of said semiconductor layer; and

a layer attached to said conductive foil on a side thereof opposite said semiconductor layer, said layer including a carrier layer and an X-ray amplification layer.

4,577,109

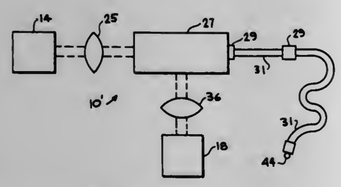
REMOTE MULTI-POSITION INFORMATION GATHERING SYSTEM AND METHOD

Tomas B. Hirschfeld, Livermore, Calif., assignor to Regents of the University of California, Berkeley, Calif.

Continuation-in-part of Ser. No. 194,684, Oct. 6, 1980. This application Nov. 30, 1982, Ser. No. 445,619

Int. Cl.⁴ G01N *21/64*

U.S. Cl. 250—461.1 **6 Claims**



1. An apparatus for monitoring the salt concentration of an associated fluid and for generating a fluorescent signal related to said salt concentration, the apparatus comprising:

a fiber optic through which an illumination beam from an associated light source is transmitted from a first end of the fiber optic to a second end of the fiber optic;

a plurality of water-sensitive fluorescent indicator molecules;

a gel in contact with the associated fluid, the gel having a volume which is responsive to changes in the salt concentration of the associated fluid, and the gel holding the plurality of water-sensitive fluorescent indicator molecules adjacent to the second end of the fiber optic such that light from the illumination beam leaving the second end of the fiber optic illuminates the plurality of water-sensitive fluorescent indicator molecules and such that a portion of the fluorescent emissions generated by the plurality of water-sensitive fluorescent indicator molecules is collected by the second end of the fiber optic and transmitted to the first end of the fiber optic, the transmitted fluorescent emissions forming a fluorescent signal; and

detection means associated with the first end of the fiber optic for separating the fluorescent signal from the illumination beam and for relating the intensity of the fluorescent signal to the salt concentration of the associated fluid.

4,577,110

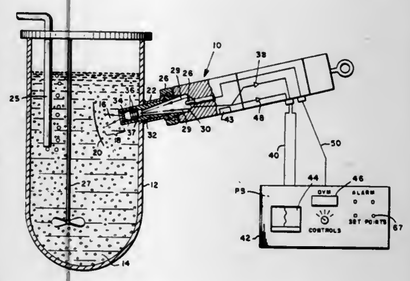
OPTICAL APPARATUS AND METHOD FOR MEASURING THE CHARACTERISTICS OF MATERIALS BY THEIR FLUORESCENCE

William R. MacBride, Glenmore; James A. Magee, Exton; William B. Armiger, King of Prussia, and Dane W. Zabriskie, West Chester, all of Pa., assignors to BioChem Sensors, Inc., Malvern, Pa.

Filed Apr. 11, 1983, Ser. No. 483,559

Int. Cl.⁴ G01J *3/443*; G01N *21/64*

U.S. Cl. 250—461.2 **2 Claims**



1. Apparatus for measuring in real time the energy level of a liquid biological medium contained in a biological reactor, the medium containing living cells, by measuring fluorescence emitted by the cells, comprising means for projecting a directed symmetrical diverging illuminating beam of ultraviolet light along a path into the cells, and photosensitive means for detecting emitted fluorescence from within the cells, wherein the field of illumination of the illuminating beam is encompassed by the field of view of the photosensitive means detecting the emitted fluorescence and wherein at least a portion of the apparatus extends into the reactor.

4,577,111

APPARATUS FOR ELECTRON BEAM LITHOGRAPHY

Norio Saitou, Iruma; Susumu Ozasa, Kashiwa, and Takashi Matsuzaka, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 22, 1983, Ser. No. 516,091

Claims priority, application Japan, Jul. 28, 1982, 57-131476

Int. Cl.⁴ H01J *37/26*

U.S. Cl. 250—492.2 **6 Claims**

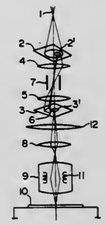
1. An apparatus for electron beam lithography comprising:

means for generating an electron beam;

first electrooptic means for shaping said electron beam to yield a desired sectional shape, said first electrooptic means including at least one mask having a polygonal aperture;

second electrooptic means for demagnifying and imaging a shaped beam produced by said first electrooptic means onto a sample face and for deflecting the shaped beam; and

third electrooptic means placed between said first and second electrooptic means for rotating and adjusting said shaped beam, said third electrooptic means including a solenoid coil having a focal distance which is at least five times as large as the distance between said first and second electrooptic means.



4,577,112

MOVABLE ENCLOSURE FOR THE REPLACEMENT AND TRANSPORTATION OF CONTAMINATED PARTS AND COMPLEMENTARY CASING FOR SUCH AN ENCLOSURE

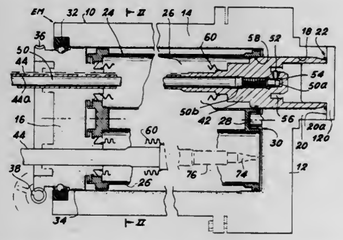
Francois Conche, Les Mureaux, and Jean-Francois Montret, Verriere Le Buisson, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Apr. 5, 1984, Ser. No. 597,042

Claims priority, application France, Apr. 13, 1983, 83 06028

Int. Cl.⁴ G21F *5/00*

U.S. Cl. 250—506.1 **8 Claims**



1. Apparatus for replacing and transporting contaminated parts, comprising a mobile body having front and rear ends and providing an enclosure for biological protection, said apparatus being characterized by:

A. a drum in said body which is rotatable about a rotation axis extending through the body and which defines at least two cylindrical cavities, respectively adapted to receive a contaminated part to be replaced and a new replacement part, said cavities having their axes parallel to said rotation axis and spaced at equal distances therefrom;

B. means for rotating said drum within the body so as to bring each of said cavities in turn into alignment with an opening in the front of the body;

C. a gripping head for each cavity, each said gripping head comprising

(1) a piston that is slidable axially in its cavity between a rear equipment storage position and a forward position in which the gripping head penetrates said opening, and

(2) gripping means carried by said piston for movement relative thereto between defined gripping and releasing positions;

D. said body comprising

(1) a cylindrical portion which surrounds said drum,

(2) a rear cover which is rotatably sealed to said cylindrical portion and is confined to rotation with said drum relative to said cylindrical portion, and

(3) a front base which is fixed to said cylindrical portion and in which said opening is formed;

E. an actuating rod for each gripping head, each said actuating rod being secured to the piston of its gripping head and extending coaxially rearwardly therefrom slidably through and beyond said cover to have a rear portion which projects behind said cover;

F. first actuating means cooperable with said rear portion of each actuating rod for imparting lengthwise motion thereto, for actuating the gripping head aligned with said opening between its said positions; and

G. second actuating means receivable in an axially extending bore in each of said actuating rods for actuating said gripping means on each gripping head from one to the other of its said positions.

4,577,113

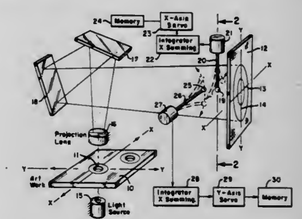
TWO AXIS CENTERING SYSTEM WITH OSCILLATING PHOTOCELLS

William F. Marantette, and Ruth B. Marantette, both of 20624 Earl St., Torrance, Calif. 90503

Filed May 3, 1984, Ser. No. 606,474

Int. Cl.⁴ G01N *21/86*

U.S. Cl. 250—548 **4 Claims**



1. A method of positioning a member at given X and Y rectangular coordinate points, including the steps of:

(a) providing a circular hole in said member;

(b) projecting an image of said hole onto a screen having horizontal and vertical cross hairs defining X and Y axes respectively, said member being positioned at said given rectangular coordinate points when the intersection point of said cross hairs is at the exact center of said image of said circular hole;

(c) oscillating a first light responsive cell back and forth in the horizontal X axis cross hair direction;

(d) simultaneously oscillating a second light responsive cell up and down in the vertical Y axis cross hair direction, the centers of oscillations coinciding with the intersection points of said cross hairs when viewed in a direction normal to the X-Y plane;

(e) generating an X center signal whenever said first light responsive cell crosses its center of oscillation, said first light responsive cell generating a left edge signal when it crosses the left border of said image and a right edge signal when it crosses the right border of said image;

(f) utilizing said X axis center and the left and right edge signals to generate an X axis control signal having a value constituting a function of the difference in the time intervals between the X axis center signal and the left edge signal and the X axis center signal and the right edge signal so that when said time intervals are equal, said X axis control signal is zero;

(g) utilizing said X axis control signal in an X axis servo system to move said member in a direction so that the image of said hole moves along the X axis cross hair until said two time intervals are equal so that said member is positioned at said given X axis coordinate;

(h) generating a Y axis center signal whenever said second

light responsive cell crosses its center of oscillation, said second light responsive cell generating a top edge signal when it crosses the top boundary of said image and a bottom edge signal when it crosses the bottom boundary of said image;

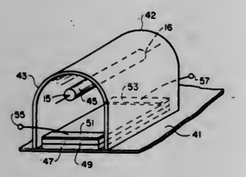
(i) utilizing said Y axis center and the top and bottom edge signals to generate a Y axis control signal having a value constituting a function of the difference in the time intervals between the Y axis center signal and the top edge signal and the Y axis center signal and the bottom edge signal so that when said latter time intervals are equal, said Y axis center signal is zero; and,

(j) utilizing said Y axis control signal in a Y axis servo system to move said member in a direction so that the image of said hole moves along the Y axis cross hair until said latter mentioned time intervals are equal so that said member is positioned at said given Y axis coordinate.

4,577,114
HIGH POWER OPTICAL SWITCH FOR MICROSECOND SWITCHING

Stephen Levy, Ocean; Joseph C. O'Connell, Tinton Falls; William H. Wright, Jr., Neptune, and Maurice Weiner, Ocean, all of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 17, 1984, Ser. No. 611,292
Int. Cl.⁴ H01J *40/14*; H01L *31/00*
U.S. Cl. 250—551 **13 Claims**



9. A stripline type semiconductor, optically activated switch comprising; a conductive ground plane with an insulated substrate thereon, a ribbon type bulk semiconductor mounted on said substrate, a pair of metal contacts applied to the upper surface of said bulk semiconductor to define a gap therebetween, said bulk semiconductor having a tapered density of trapping centers therein with said density being maximum at said upper surface thereof, and a flashlamp mounted above said gap to provide illumination for said gap.

4,577,115
APPARATUS FOR SENSING TRANSIENT PHENOMENA IN RADIANT ENERGY IMAGES

Edward M. Rentsch, Plainsboro, and Larry A. Freedman, East Brunswick, both of N.J., assignors to RCA Corporation, Princeton, N.J.

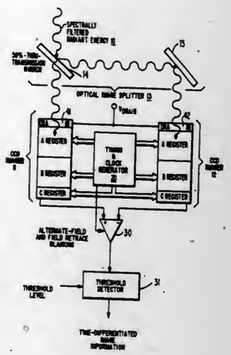
Filed Nov. 8, 1982, Ser. No. 439,995
Int. Cl.⁴ H01L *31/00*
U.S. Cl. 250—578 **6 Claims**

1. A sensor system for locating transients in a radiant energy image, said sensor system comprising:

first and second CCD imagers of a field transfer type arranged to respectively receive substantially identical first and second portions of said radiant energy image in spatial registration with each other;

timing generator means supplying clocking signals to said first and second CCD imagers for causing them to sense at staggered times said first and second portions of said radiant energy image and to supply in synchronism responses to said first and second portions of said radiant energy image from successive pairs of their sensing times, the responses being supplied in synchronism according to a predetermined recurrent scan pattern relating timing to spatial location in the radiant energy image;

means for differentially combining those responses; and

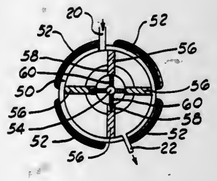


means, responding to the amplitude of the differentially combined responses being too large to lie within the bounds of a range of amplitude values, for indicating the existence of a transient in the radiant energy image.

4,577,116
SYSTEM FOR PROVIDING ELECTRICAL ENERGY TO A MISSILE AND THE LIKE

George T. Pinson, Huntsville, Ala., assignor to The Boeing Company, Seattle, Wash.

Filed Nov. 14, 1983, Ser. No. 550,879
Int. Cl.⁴ F01D *15/10*; H02K *21/12*; H02P *9/04*
U.S. Cl. 290—43 **4 Claims**



1. A system for providing electrical energy to a missile and the like, the system comprising:

a gas source adapted tor receipt on board the missile;

a gas regulator connected to the gas source via a gas line;

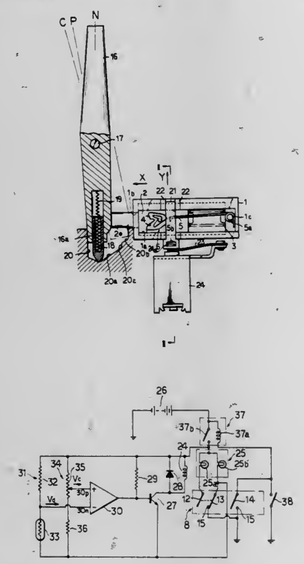
an integrated turbine driven generator having a generator housing, the housing having field coils mounted thereon, the housing also having a gas inlet connected to the gas line and a gas outlet, a turbine rotor received in the housing and having spring bias magnetic vanes slidable mounted therein and forming a positive displacement vane motor, the vanes rotating the rotor by gas expansion and the magnetic field set up therein cuts the field coils for providing an induced electrical current; and

a power regulator connected to the field coils for regulating the amount of power to the missile's electrical system.

4,577,117
LIGHT RESPONSIVE SWITCH STRUCTURE FOR USE IN A MOTOR VEHICLE OR THE LIKE

Nobuhiro Takeda; Masaichi Hattori, and Akira Hanaki, all of Aichi, Japan, assignors to Kabushiki-Kaisha Tokai-Rika-Denki-Seisakusho, Nishibiwajima, Japan

Filed Jun. 6, 1983, Ser. No. 501,493
Claims priority, application Japan, Jun. 14, 1982, 57-102795[U]; Jun. 15, 1982, 57-89133
Int. Cl.⁴ H01H *3/16*
U.S. Cl. 307—10 R **7 Claims**



1. A dimmer switch device for use with head lamps of an automotive vehicle for automatically changing the head lamps only from high beam to low beam comprising;

(1) manually operative means (16,39) disposed for reciprocal movement between a return position (N) and an operative position (C) by manual operation and always being urged in the direction of the return position by a spring member (19);

(2) a slider (2) is moved in the direction of an operative position from a return position by said manually operative means (16) against the force of a return spring (3) within a body (1);

(3) a locking structure (6) including a grooved cam (4) formed in a surface of the slider (2) and a cam follower (5), one end of said cam follower being secured to said body, said grooved cam (4) defining an endless loop-shaped configuration and having a first engagement portion (a) for holding said manually operative means at the return position, and a second engagement portion (b) for holding said manually operative means at the operative position, each of said engagement portions being provided where the grooved cam (4) intersects with the direction of movement of said slider (2),

(4) said cam follower (5) including a spring means and a free end of which reiterates the movement around the groove of the grooved cam with the engagement with each of said engagement portions (a) and (b) and the disengagement therefrom each time said slider (2) reciprocally moves,

the free end (5b) of said cam follower (5) engaging the first engagement portion (a) of the grooved cam when the slider (2) occupies the return position and engaging the second engagement portion when the slider (2) occupies the operative position;

(5) a cancelling member (21) disposed for slidable movement at one side of the body (1), said cancelling member (21) engage part of the cam follower (5) with movement in a predetermined direction only when the free end (5b) thereof occupies the second engagement portion (b) and further to disengage said free end (5b) from the second engagement portion (b), whereby the slider (2) is allowed to move in the direction of the return position by means of the spring (3);

(6) an electromagnetic solenoid (24) which moves the cancelling member (21) in said return direction when energized;

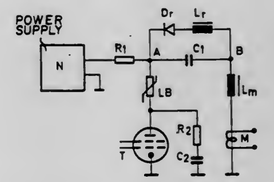
(7) an electric circuit having a photo sensing means for detecting the light from an on-coming vehicle and thereby energizing the electromagnetic solenoid (24) in response to an output of the photo sensing means in order to move the manually operative means back to the return position; and

(8) a contact structure associated with said slider, said contact structure holding the head lamp (25) at the low-beam position when the slider (2) occupies the return position (a) and holding the head lamp (25) at the high-beam position when the slider (2) occupies the operative position (b).

4,577,118
DRIVING CIRCUIT FOR PULSE CURRENT POWER SUPPLIES

Jürgen Rümmler, Hamburg, Fed. Rep. of Germany, assignor to Deutsches Elektronen-Synchrotron Desy, Hamburg, Fed. Rep. of Germany

Filed Jul. 13, 1984, Ser. No. 630,530
Claims priority, application Fed. Rep. of Germany, Jul. 15, 1983, 3325502
Int. Cl.⁴ H03K *3/35*
U.S. Cl. 307—106 **3 Claims**



1. A driving circuit for pulse current power supplies with a first inductance coil as the load, said first inductance coil being connected via a first capacitor to a DC-power supply unit, with a controllable electric valve connected with its anode to a junction (A) of the first capacitor with the power supply unit, and with a recharging choke and a recharging diode connected in parallel to the first capacitor, said driving circuit comprising:

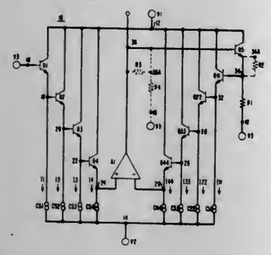
at least one ring band core surrounding the line connecting junction (A) with the anode of the electrical valve;

and further comprising a resistor and a second capacitor connected in series with said resistor so that one side of said resistor is connected to the anode of the electrical valve and the other side of the resistor is connected to the second capacitor, the other side of the second capacitor being connected to ground.

4,577,119
TRIMLESS BANDGAP REFERENCE VOLTAGE GENERATOR

Suk K. Kim, Bridgewater, N.J., and Thayamkulangara R. Viswanathan, Waterloo, Canada, assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Nov. 17, 1983, Ser. No. 552,783
Int. Cl.[4] G05F 5/00
U.S. Cl. 307—297 12 Claims



1. Voltage generator circuitry comprising:
an amplifier having an output terminal and first and second differential input terminals;
a first plurality of semiconductor junctions each having an anode and a cathode, the anode of the first junction in the first plurality of junctions being connectable to a first reference voltage, and the cathode of each junction in the first plurality of junctions being coupled to the anode of the next junction in the first plurality of junctions, except that the cathode of the last junction is coupled to the first input terminal of the amplifier;
a second plurality of semiconductor junctions each having an anode and a cathode, one of the first and second pluralities of junctions containing one more junction than the other, the anode of the first junction in the second plurality of junctions being coupled to the output terminal of the amplifier, and the cathode of each of the junctions in the second plurality of junctions being coupled to the anode of the next junction in the second plurality of junctions, except that the cathode of the last junction in the second plurality of junctions is coupled to the second input terminal of the amplifier;
a first current source means coupled to a first semiconductor junction which is in the said one of the pluralities;
a second current source means coupled to the remaining junctions in the said one of the pluralities;
a third current source means coupled to all of the junctions in the other plurality.

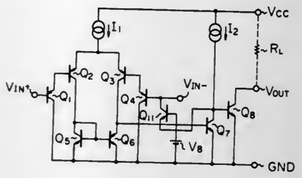
4,577,120
Patent Not Issued For This Number

4,577,121
DIFFERENTIAL CIRCUIT

Yoshiaki Sano; Isamu Omura, and Ryo Hiramatsu, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 17, 1982, Ser. No. 450,763
Claims priority, application Japan, Dec. 17, 1981, 56-204317
Int. Cl.[4] H03K 5/24
U.S. Cl. 307—355 4 Claims

1. A differential circuit operatively connected to receive first and second input signals having potentials, comprising:
a differential stage having first and second transistors for receiving the first and second input signals, respectively, said differential stage comparing the potentials of the first and second input signals to provide an output corresponding to a state of said second transistor;
a control stage having a control transistor operatively connected to said differential stage, said control transistor being driven by the output of said differential stage;
an output stage including an output transistor operatively connected to said control transistor, said output transistor having a base carrying a base current, the base current of

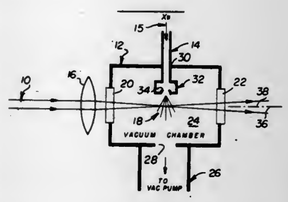


said output transistor being controlled by said control transistor; and
error-output preventing means, operatively connected between said differential stage and said control stage, including an error-output preventing transistor, said error-output preventing transistor becoming on when the potential of the second input signal becomes lower than a predetermined value, so as to keep said output transistor at a state corresponding to the relation of the potentials of the first and second input signals even if the potential of the second input signal becomes lower than the predetermined value.

4,577,122
METHOD AND APPARATUS FOR GENERATION OF COHERENT VUV AND XUV RADIATION

Andrew H. Kung, Moraga, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Filed Dec. 28, 1983, Ser. No. 566,275
Int. Cl.[4] H03F 7/00
U.S. Cl. 307—425 18 Claims

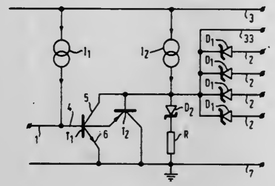


1. A method for frequency up-converting a first beam of radiation having a selected first frequency to develop a second beam of radiation having a selected second frequency higher than said first frequency, said method comprising:
developing a plurality of successive pulsed jets of gas from a source of high pressure gas;
pulse modulating said first beam of radiation; and
interacting each successive pulsed jet with a corresponding beam pulse to develop said second beam.

4,577,123
INTEGRATED LOGIC CIRCUIT HAVING COLLECTOR NODE WITH PULL-UP AND CLAMP

Johannes D. P. Van Den Crommenacker, and Jan Lohstroh, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 9, 1983, Ser. No. 502,866
Claims priority, application Netherlands, Mar. 9, 1983, 8300843
Int. Cl.[4] H03K 19/013, 19/091, 5/08; H01L 29/70
U.S. Cl. 307—446 7 Claims

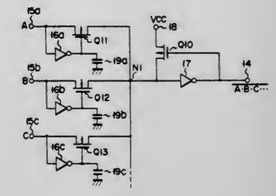


1. An integrated logic circuit having a signal input formed by a control electrode of a transistor and plural signal outputs each coupled through a diode to a first main electrode of the transistor, the signal input being connected to means for supplying current, which integrated logic circuit comprises a semiconductor body having a major surface located on an active side of the semiconductor body, a group of regions of a first conductivity type being present on this active side of the semiconductor body, which regions extend on a substrate region of a second conductivity type common to these regions, each of the regions of the first conductivity type being surrounded by an isolation zone which extends from the major surface into the semiconductor body and by means of which at least a number of these regions are isolated from each other at least during operation of the integrated logic circuit, whereby a first region of the first conductivity type belonging to the group of regions forms part of the first main electrode of the transistor and the control electrode of the transistor has a surface zone of the second conductivity type which is situated inside the isolation zone surrounding this first region, a second main electrode of the transistor adjoining the major surface and being separated from the control electrode by a rectifying junction, while at the major surface there is provided a system of signal connections which comprises conductive tracks which are separated from the semiconductor body by an insulating layer, a plurality of these conductive tracks each connecting the first region of the first conductivity type through a diode junction to a further part of the integrated logic circuit, the diode junctions constituting the said diodes which are each connected in forward direction in series with the main current path of the transistor, the means for supplying current comprising a supply line for connecting a supply source and means for supplying current from the supply line to the signal input, while a conductive connection at least comprising a load element is arranged between the supply line and the first main electrode of the transistor, characterized in that a further connection is provided, which comprises the series arrangement of a Schottky diode and a resistor and which connects the first main electrode to the second main electrode of the transistor, the further connection and the main current path of the transistor being arranged parallel to each other with the same current direction.

4,577,124
CMOS LOGIC CIRCUIT

Hideharu Koike, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Japan

Filed Jun. 15, 1984, Ser. No. 621,085
Claims priority, application Japan, Jul. 28, 1983, 58-138319
Int. Cl.[4] H03K 19/017, 19/094, 19/20
U.S. Cl. 307—451 7 Claims

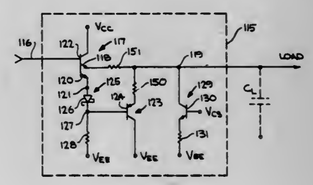


1. A CMOS logic circuit comprising:
a voltage source;
a plurality of input terminals of said CMOS logic circuit;
MOSFETs of a first conductivity type, each of which has one terminal connected to a corresponding one of said input terminals of said CMOS logic circuit, the other terminal connected to a common node, and a gate;
delaying means inserted between said input terminals of said CMOS logic circuit and the respective gates of said MOSFETs of the first conductivity type, respectively;
an output inverter having an input terminal connected to said common node of said MOSFETs of the first conductivity type, and an output terminal;
an output terminal of said CMOS logic circuit which is connected to said output terminal of said output inverter; and
a MOSFET of a second conductivity type which has one end connected to said input terminal of said output inverter, the other end connected to said voltage source, and a gate connected to said output terminal of said output inverter.

4,577,125
OUTPUT VOLTAGE DRIVER WITH TRANSIENT ACTIVE PULL-DOWN

Michael Allen, San Francisco, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Dec. 22, 1983, Ser. No. 564,812
Int. Cl.[4] H03K 15/40, 19/36
U.S. Cl. 307—455 12 Claims



1. An output voltage driver apparatus for a circuit for driving a load, comprising:

emitter follower means, having an input connectable to the circuit, a reference emitter node and an output emitter node for providing a reference output voltage at said reference emitter node and an output voltage at said output emitter node to drive the load, said emitter follower means providing charge-up current to the load when the output voltage swings from one level to another level;

pull-down transistor means connected to said output emitter node, for providing transient pull-down current to the load when said output voltage swings from the other level to the one level and having a bias node; and

a bias transistor matching said pull-down transistor means;

said bias transistor having a bias emitter, a bias base and a bias collector;

said bias emitter being connected to said reference emitter node; and

said bias collector and bias base being connected in common to said bias node so that said pull-down transistor means is activated to supply said transient pull-down current when said output voltage differs from the voltage at said bias node by an amount equal to or greater than a turn on voltage and said bias transistor and said pull-down transistor means behave as a current mirror during steady state to provide an essentially constant DC current during steady state to stabilize said output voltage.

4,577,126

SYNCHRONOUS ELECTRIC MACHINE WITH SUPERCONDUCTIVE FIELD WINDINGS

Alain-Jacques Mailfert, Morsang-sur-Orge, France, assignor to Institut National Polytechnique de Lorraine, Nancy, France

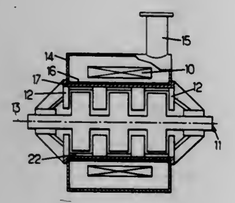
PCT No. PCT/FR82/00171, § 371 Date Jun. 20, 1983, § 102(e) Date Jun. 20, 1983, PCT Pub. No. WO83/01541, PCT Pub. Date Apr. 28, 1983

PCT Filed Oct. 19, 1982, Ser. No. 525,040

Claims priority, application France, Oct. 19, 1981, 81 19620

Int. Cl.⁴ H02K *9/00*

U.S. Cl. 310—52 **5 Claims**



1. A synchronous rotating electrical machine comprising, in combination:

a fixed stationary superconductive field winding adapted to provide a high intensity D.C. magnetic field having flux lines substantially parallel to an axis and a rotational symmetry about said axis in a region around said axis when a D.C. current circulates through said field winding;

a fixed normally conducting armature having a plurality of disks spaced along said axis, each disk made from an electric insulating material and having flat windings located in said region for circulation of multiphase A.C. currents;

and a rotor mounted for rotation about said axis, having a plurality of rotor disks axially interleaved with the disks of said wound armature, each said rotor disk carrying a plurality of identical ferromagnetic bodies evenly distributed angularly about said axis and located in said region for creating A.C. electromagnetic forces in said flat windings upon rotation of said rotor.

4,577,127

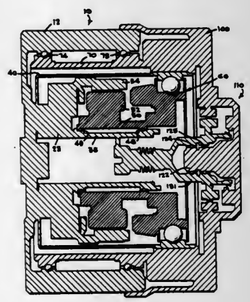
LIGHTWEIGHT ELECTRIC ROBOTIC ACTUATOR

Herbert E. Ferree, Greensburg; Thomas R. Wagner, Monroeville; Michael D. Hecht, West Mifflin, and Thomas J. Donnelly, Monroeville, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 21, 1983, Ser. No. 563,912

Int. Cl.⁴ H02K *7/06*

U.S. Cl. 310—83 **14 Claims**



1. In combination,

(a) an electric robotic actuator and a modular resolver affixed to said actuator for indicating the position of a movable portion of said actuator relative to a stationary portion of said actuator;

(b) said actuator comprising a stationary first housing, a second housing rotatably supported by said first housing, rotating means for causing said second housing to controllably rotate relative to said first housing, said rotating means comprising a motor within said housings including a stator affixed to said first housing and a rotor, said rotor coupled to said second housing through a speed reducing deep cup harmonic drive mechanism, and said second housing having a covering back plate which is provided with a centrally disposed aperture;

(c) said modular resolver comprising a first resolver portion and a second resolver portion, said modular resolver projecting at least partially into said housings through said centrally disposed aperture in said covering back plate of said second housing, removable resolver connecting means for affixing said first resolver portion to said covering back plate of said second housing, mounting means for rotatably mounting said second resolver portion relative to said first resolver portion and for maintaining said modular resolver portions in assembled relationship, slip-fit mating means which when mated rigidly connects said second resolver portion to said stationary first housing actuator portion, said modular resolver including a resolver stator affixed to said second resolver portion and a resolver rotor affixed to said first resolver portion and operable to provide an electrical signal which is an accurate indication of the rotation of said first resolver portion relative to said second resolver portion; and said modular resolver being readily removable and replaceable on said actuator by removing said removable resolver connecting means to free said first resolver portion from said covering back plate of said second actuator housing and then moving said modular resolver out of said aperture in said covering back plate to disengage said slip-fit mating means; whereby said resolver can readily be replaced without disassembling said actuator.

4,577,128

INDUCTION MOTORS

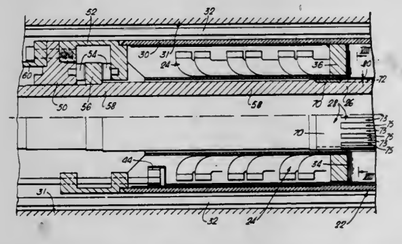
Deryk S. M. Gould, Edinburgh, and Michael T. Wright, Limekilns, both of Scotland, assignors to Northern Engineering Industries, plc, England

Continuation of Ser. No. 543,781, Oct. 20, 1983, abandoned, which is a continuation of Ser. No. 325,600, Nov. 27, 1981, abandoned. This application Jan. 7, 1985, Ser. No. 689,449

Claims priority, application United Kingdom, Dec. 11, 1980, 8039707

Int. Cl.⁴ H02K *5/12*

U.S. Cl. 310—87 **4 Claims**



1. A submersible oil well pump induction motor comprising:

(a) an elongated hollow stator having windings;

(b) an elongated unitary rotor extending through said stator, said rotor comprising:

(b1) a hollow continuous tubular shaft of ferromagnetic material of substantially uniform diameter having first and second integral formations, said first formations extending lengthwise of said shaft and said second formations extending annularly of said shaft, and first and second conductors plated onto said shaft, said first conductors being elongated conductors located in said first formations and said second conductors being annular conductors located in said second formations and being in contact with said first conductors to short-circuit said first conductors,

(b2) surface portions of said rotor and of said conductors together forming a contiguous cylindrical surface facing said stator,

(b3) and a plated anti-corrosion layer applied over said contiguous cylindrical surface,

(4) the length of said rotor substantially exceeding the diameter of said rotor;

(c) first and second spaced-apart radial bearings mounted on the stator and rotatably supporting the rotor and journalled respectively on end extensions of said rotor;

(d) and a third radial bearing intermediate said first and second radial bearing and mounted on the stator and directly journaled on said plated contiguous cylindrical surface at a location intermediate said first and second bearings thereby rotatably supporting an intermediate portion of said rotor.

4,577,129

ELECTRIC MOTOR HAVING TWO CO-PLANAR STATOR SECTIONS

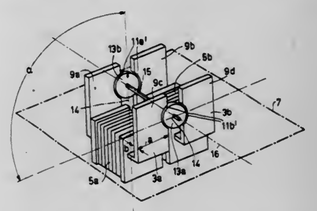
Leo Bertram, Stolberg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 16, 1984, Ser. No. 571,283

Claims priority, application Fed. Rep. of Germany, Jan. 17, 1983, 3301264

Int. Cl.⁴ H02K *7/20*

U.S. Cl. 310—112 **6 Claims**



1. An electric motor having two parallel stator sections, a respective electrical excitation coil surrounding each stator section, and a rotor rotatable about a rotor axis, characterized in that

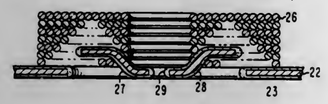
each stator section comprises an ironshank having a central part extending in a direction parallel to said rotor axis, and two respective shank parts projecting from said central part in opposite axial directions and bent to form respective poles, shank parts extending in one axial direction from said central parts forming a pair-wise juxtaposed pole shoe pair, said central parts being parallel to each other and defining a plane parallel to said rotor axis, and each pole shoe pair lying in and defining a respective plane perpendicular to said rotor axis,

each excitation coil is disposed around a respective central part and defines a coil axis parallel to said rotor axis, each coil having respective ends spaced in the axial direction,

each pole shoe is spaced from the ends of the respective coils, and each of said shank parts has a 90° bend in the area between the respective coil and the respective pole shoe pairs, and

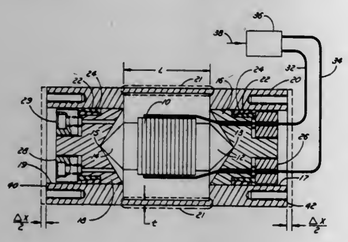
said rotor has two rotor parts on a common shaft, each rotor part having magnetic poles arranged to cooperate with a corresponding pole shoe pair, said rotor poles forming one pole set and said pole shoe pairs forming another pole set, the poles of at least one of said pole sets being angularly shifted with respect to each other, the sum of the shifts of the two pole sets being an angle of 90° maximum.

4,577,130
PANCAKE MOTOR WITH INSITU WOUND BOBBINLESS STATOR COILS
Frank R. Reed, Mt. Laurel, N.J., assignor to RCA Corporation, Princeton, N.J.
Filed May 21, 1984, Ser. No. 612,428
Int. Cl.[4] H02K *3/00*
U.S. Cl. 310—194 13 Claims



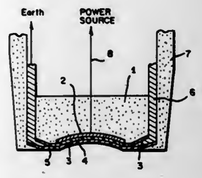
1. In a pancake motor of the type having a stator assembly comprising a flux return plate with stator coils mounted thereon, the improvement characterized in that:
(a) said flux return plate comprises a magnetic material having a conformal, electrically non-conducting, coating;
(b) each stator coil location on said flux return plate is provided with at least one raised tab having an offset bend, each said tab being integral with said plate; and
(c) each stator coil is secured to said flux return plate by entrapment of a number of turns of the coil between the tab and the surface of said flux return plate and wherein the entrapped turns are fused to the remaining turns.

4,577,131
PIEZOELECTRIC MICROMOTION ACTUATOR
James A. Soobitsky, Higganum, Conn., assignor to Zygo Corporation, Middlefield, Conn.
Filed Dec. 29, 1983, Ser. No. 566,686
Int. Cl.[4] H01L *41/08*
U.S. Cl. 310—328 12 Claims



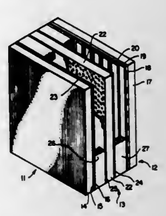
1. A micromotion actuator for transmitting in a substantially tilt free linear fashion a translation induced electrically comprising (a) a piezoelectric type transducer which expands and contracts in response to variations in an electric signal, (b) a cylindrical flexure tube in which said transducer is mounted, (c) means for coupling said transducer to said flexure tube for linearly translating at least one end of said flexure tube in a tilt-free translation on the order of at least a fraction of a wavelength of light essentially solely in a direction parallel to the longitudinal axis of said flexure tube when said transducer expands or contracts in response to variations in said electric signal while decoupling tilted or sideways motion of said transducer, and (d) means for coupling an element to be moved to at least said flexure tube one end for enabling linear displacement of said element on the order of at least a fraction of a wavelength of light in response to said tilt-free translation of said flexure tube one end; whereby accurate linear displacement of said element may be provided in response to said variations in said electric signal.

4,577,132
ULTRASONIC TRANSDUCER EMPLOYING PIEZOELECTRIC POLYMERIC MATERIAL
Hiroji Ohigashi, Zushi; Keiko Koga, Sagamihara, and Toshiharu Nakanishi, Kamakura, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan
Division of Ser. No. 510,687, Jul. 5, 1983, which is a continuation of Ser. No. 232,963, Feb. 9, 1981, abandoned. This application Oct. 19, 1984, Ser. No. 662,946
Int. Cl.[4] H01L *41/08*
U.S. Cl. 310—800 8 Claims



1. An ultrasonic transducer having a piezoelectric vibrating element that vibrates in a thickness extensional mode, comprising a sheet of piezoelectric material consisting essentially of a copolymer vinylidene fluoride and ethylene trifluoride, having the value of the thickness extensional electromechanical coupling factor (K_t) of at least 0.05.

4,577,133
FLAT PANEL DISPLAY AND METHOD OF MANUFACTURE
Ronald E. Wilson, 54 S. 860 E., Orem, Utah 84057
Filed Oct. 27, 1983, Ser. No. 546,103
Int. Cl.[4] H01J *31/26*
U.S. Cl. 313—103 CM 28 Claims

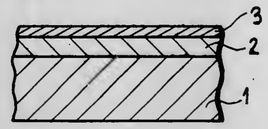


1. A flat panel display which has an overall resolution of up to 284,000 pixels per sqare inch, said display including means for generating a low energy flow of electrons, said means including low power selection devices for gating the electron flow, said devices being energized intermittently in response to electrical signals of from 2 to 20 volts, multiplying means having a constant bias voltage for multiplying the magnitude of the electron flow, and a phospher screen for receiving the gated electron flow, the means for generating and the multiplying means and the screen being assembled in close proximity in a two-dimensional array and vacuum sealed with the multiplying means sandwiched between the means for generating and the screen.

26. A method of making an electron multiplier for a high resolution flat panel display which includes the steps of etching a multiplicity of microscopic holes having a diameter-to-length aspect on the order of 1 to 20 through at least one flat plate in a closely spaced two-dimensional array in which the holes are separated by uniform microscopic spaces to permit a hole density of up to 284,000 holes per square inch, and depositing

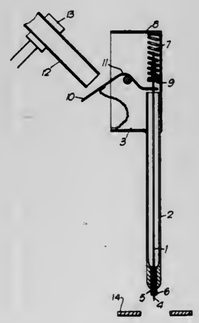
a thin layer of conductive metal on each flat surface of the plate.

4,577,134
DIRECT HEATING CATHODE AND A PROCESS FOR MANUFACTURING SAME
Guy Clerc, Paris, France, assignor to Thomson-CSF, Paris, France
Filed Jan. 12, 1982, Ser. No. 338,872
Claims priority, application France, Jan. 16, 1981, 81 00782
Int. Cl.[4] H01J *1/14, 19/06;* H01K *1/04*
U.S. Cl. 313—346 R 20 Claims



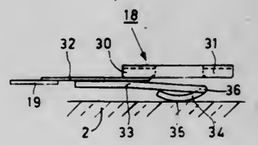
1. A cathode assembly comprising:
(a) an emissive layer comprising tungsten and at least one rare earth oxide;
(b) a layer of pyrolytic graphite supporting the emissive layer;
(c) the emissive layer coating and intimately contacting the layer of pyrolytic graphite without the presence of an intermediate layer of a diffusion barrier, and
(d) means for directly heating the support; wherein the cathode is caused to be emissive by directly heating the layer of pyrolytic graphite.

4,577,135
LIQUID METAL ION SOURCES
Derek K. Jeffries, Didcot, and Duncan J. McMillan, Abingdon, both of England, assignors to United Kingdom Atomic Energy Authority, London, England
Filed Feb. 7, 1983, Ser. No. 464,677
Claims priority, application United Kingdom, Feb. 22, 1982, 8205212
Int. Cl.[4] H01J *1/02*
U.S. Cl. 313—362.1 15 Claims



1. In an apparatus comprising a field ion emission source for the provision of ions or charged droplets of a liquid metal under the action of an applied electric field, and extraction electrode means for effecting the applied electric field, the improvement wherein said source comprises a needle having an emitting tip, a reservoir for a liquid metal, ions or charged droplets of which are to be emitted by the source, and a sheath surrounding the needle and from which the needle projects, the sheath serving to convey liquid metal to the emitting tip of the needle at a controlled rate, wherein there is provided means for withdrawing the emitting tip of the needle into the sheath so as to enable the emitting tip of the needle to be immersed in the liquid metal, thereby in use to initiate or reestablish flow of the metal over the projecting surface of the needle.

4,577,136
CATHODE-RAY TUBE HAVING A GETTERING DEVICE AND GETTERING DEVICE SUITABLE FOR SAID TUBE
Rijk Hooghordel, and Franciscus P. van Jole, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Oct. 28, 1983, Ser. No. 546,265
Claims priority, application Netherlands, Nov. 11, 1982, 8204366
Int. Cl.[4] H01J *29/94*
U.S. Cl. 313—481 6 Claims

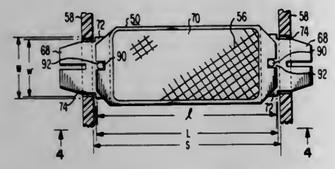


1. In a cathode-ray tube comprising a glass envelope containing electrical components and an annular getter holder having a central opening, support means for supporting the getter holder in the envelope, said support means comprising:
(a) a resilient metal strip having a first portion connected to one of the electrical components;
(b) a metal connecting strip having a first portion connected to the getter holder and having a second portion connected to a second portion of the resilient metal strip; and
(c) a metal support arm having a first portion connected to the connecting strip at a predetermined location between said first and second portions of the strip, said support arm extending toward an inner surface of the envelope and including an end portion curved toward said inner surface, said curved end portion contacting said inner surface at a position beneath the central opening of the getter holder and spacing the getter holder at a predefined distance from the envelope;
the length of the metal support arm, from the end portion to the predetermined location of the connecting strip, and the length of the connecting strip, from said predetermined location to the first portion thereof, having predefined measurements, thereby establishing a predefined thermal conduction path length from the getter holder to the envelope;
said position of the support arm end portion, said predefined distance, and said predefined path length collectively limiting radiated and conducted heat transfer from the getter holder to the envelope during heating of the getter holder.

4,577,137
ELECTRODE STRUCTURE FOR AN ELECTRON MULTIPLIER CAGE ASSEMBLY
Donald B. Kaiser, Lancaster, Pa., assignor to RCA Corporation, Princeton, N.J.
Filed May 18, 1984, Ser. No. 611,754
Int. Cl.[4] H01J *40/04, 43/26, 19/42*
U.S. Cl. 313—533 6 Claims

1. In a photomultiplier tube comprising an evacuated envelope having therein a photoemissive cathode, a shield cup

spaced from said cathode, and an electron multiplier cage assembly abutting said shield cup, said cage assembly including a pair of transversely spaced insulating support plates having a plurality of support slots formed therethrough, said plates being attached to said shield cup, and a plurality of electrodes disposed between said support plates, said electrodes having an active portion and attachment means disposed within said support slots of said plates to support said electrodes therebetween, at least one of said electrodes having a mesh member attached thereto, the improvement comprising



said electrodes having support shoulders formed in opposite sides thereof between said active portion and said attachment means, said support shoulders having a width greater than that of said slots whereby said shoulders provide stop locations adjacent to said support plates, at least one of said electrodes including reference means and said mesh member including locating means, said locating means being aligned with said reference means of said at least one electrode.

4,577,138

THYRATRONS

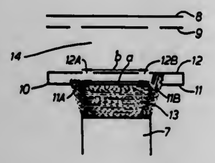
Hugh Menown, Chelmsford, and Raymond P. Knight, Braintree, both of England, assignors to English Electric Valve Company, Chelmsford, England

Filed Jul. 29, 1983, Ser. No. 518,621

Claims priority, application United Kingdom, Aug. 3, 1982, 8222374

Int. Cl.⁴ H01J *17/30*

U.S. Cl. 313—599 **9 Claims**



1. A gas-filled thyratron comprising an anode; a cathode; a control grid positioned between said anode and said cathode; and a primary grid positioned between said control grid and said cathode, said primary grid having apertures spaced in a direction from cathode to anode in at least two planes, at least one aperture in one plane being staggered relative to at least one aperture in another plane whereby to inhibit penetration through said primary grid of the primary discharge maintained between said primary grid and said cathode prior to triggering, said grids initiating but not limiting the anode current.

4,577,139

COMMUTATORLESS D.C. MOTOR WITH THREE-STRAND FULL-PITCHED STATOR WINDING

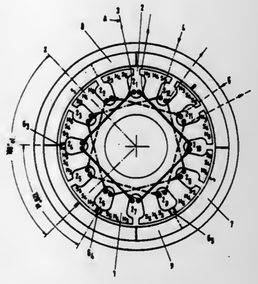
Wilhelm Reinhardt, Schrozberg, and Helmut Lipp, Hohebach, both of Fed. Rep. of Germany, assignors to EBM Elektrobau Mulfingen GmbH & Co., Fed. Rep. of Germany

Filed Jul. 27, 1984, Ser. No. 635,050

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1983, 3331194

Int. Cl.⁴ H02K *29/08*

U.S. Cl. 318—254 **4 Claims**



1. Commutatorless D.C. motor with cylindrical air gap and having a stator with three stator winding strands displaced by 120° electrical and with a permanent-magnetic external rotor with at least p=1 pairs of poles and with $N=2p\times3$ winding slots in the stator, and with at least two rotation position detectors comprising Hall generators operatively connected to switch on and off the individual winding strands depending on the rotational position of the rotor, characterized in that:

the rotor has p=2 or p=4 pairs of poles; the stator windings are full pitch and are located within the stator slots, each winding strand is subdivided into $W=2p$ winding sections, whose central axes exhibit a separation of 180° electrical, viewed in the direction of rotation, and the direction of winding of the winding sections is such that at the periphery of the stator alternating North and South poles, viewed in the direction of rotation, are produced by the winding sections.

4,577,140

APPARATUS FOR GUIDING A TRACKLESS VEHICLE

Alfred Schmidt, Munich, and Gerhard Flachenecker, Ottobrunn, both of Fed. Rep. of Germany, assignors to M.A.N. Maschinenfabrik Augsburg-Nurnberg AG, Munich, Fed. Rep. of Germany

Filed Sep. 24, 1984, Ser. No. 653,984

Claims priority, application Fed. Rep. of Germany, Oct. 1, 1983, 3335776

Int. Cl.⁴ B64C *13/18*

U.S. Cl. 318—587 **11 Claims**

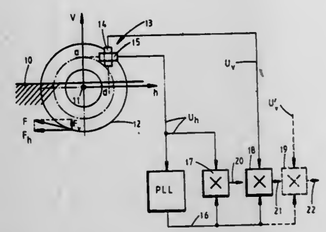
1. Apparatus for guiding a trackless vehicle along a conductor, defining a vehicle path, carrying an A.C. current, the apparatus comprising:

at least two sensors for detecting the magnetic field emanting from the conductor and producing output signals in response thereto, and

electronic circuitry for providing deviation signals, used to guide the vehicle, said circuitry including a phase-locked loop (PLL), the PLL including a phase-sensitive detector (PSD), a voltage-controlled oscillator (VCO), and a control unit for receiving the output of the PSD and transforming it into a control voltage, the control voltage being applied to the VCO,

the VCO generating a rectangular output signal equal to 2^n times the frequency of the PLL, the PLL including a divider circuit for dividing the VCO output signal by 2^n, and a frequency divider for simultaneously generating a demodulation signal shifted through 90°,

means for applying the output signal of one of the sensors to the input of the PLL,



means for demodulating the output signals of the sensors, and

means for applying the output of the PLL to the demodulating means.

4,577,141

SYSTEM FOR DRIVING A MOVABLE STAGE

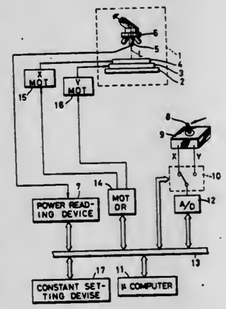
Kazuaki Saiki, Kawasaki; Aiichi Ishikawa, Minami-ashigara; Noriyoshi Hashimoto; Koichi Kudo, both of Yokohama, and Kuniyuki Yoshikawa, Fujisawa, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Nov. 27, 1984, Ser. No. 675,323

Claims priority, application Japan, Nov. 30, 1983, 58-226344; Nov. 30, 1983, 58-226346

Int. Cl.⁴ G05B *11/18*

U.S. Cl. 318—590 **10 Claims**



1. A stage driving system having an operation lever tiltable from its neutral position in all directions and being adapted to drive a stage in two-dimensional direction depending on the direction of the tilted operation lever, said system comprising:

(a) means for detecting the angle of the tilted operation lever from its neutral position, said detecting means being adapted to generate a first signal when the angle of the tilted operation lever from its neutral position is between a first angle and a second angle larger than said first angle and to produce a second signal when the angle of the tilted operation lever from its neutral position is between said second angle and a third angle larger than said second angle; and

(b) means for moving said stage in the two-dimensional direction, said moving means being adapted to move said stage at a velocity corresponding to the angle of the tilted operation lever in response to said first signal and to move said stage under a predetermined acceleration in response to said second signal.

4,577,142

FINE FEED SYSTEM

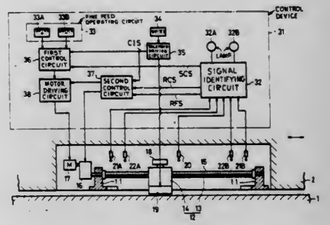
Sadayuki Matsumiya, Kawasaki, Japan, assignor to Mitutoyo Mfg. Co., Ltd., Tokyo, Japan

Filed Jun. 13, 1984, Ser. No. 620,222

Claims priority, application Japan, Jun. 24, 1983, 58-114751

Int. Cl.⁴ G05B *11/18*

U.S. Cl. 318—592 **14 Claims**



1. A fine feed system, wherein a movable member movable relative to a stationary member is finely fed, comprising:

a fine feed mechanism, including a first member and a second member, both of which are movable relative to each other and are secured to said movable member;

a driving member operatively connected to said first member;

a clamp device operable between a clamped and released conditions and provided on said second member, said clamp device, when in said clamped condition, effecting a coupling of said second member to said stationary member;

movement regulating detector means having operable position detector elements at the ends of a range of movement for said movable member for defining a relatively movable range between said first and second members; and

a control means for effecting an operation of said driving means and a movement of said movable member within said range when said operable position detector elements of said movement regulating detector means are not operated and for operating said driving means in a direction to return said first and said second members to an original relative position in response to said clamp device being in said released condition.

4,577,143

METHOD AND APPARATUS TO CONVERT AN ELECTRICAL VALUE INTO A MECHANICAL POSITION BY USING AN ELECTROMAGNETIC ELEMENT SUBJECT TO HYSTERESIS

Gerhard Eschrich, Gerlingen; Josef Juhasz, Vaihingen, and Manfred Schwab, Gerlingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 13, 1984, Ser. No. 650,356

Claims priority, application Fed. Rep. of Germany, Oct. 8, 1983, 3336629; Mar. 3, 1984, 3407952

Int. Cl.⁴ H02P *5/28;* **H01H** *47/00*

U.S. Cl. 318—701 **18 Claims**

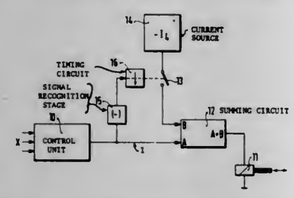
1. In an electromagnetic positioning apparatus subject to magnetic hysteresis and having a mechanical element movable among a plurality of desired positions, each corresponding to an electrical input value of said apparatus, by furnishing electrical energy to said apparatus,

wherein a characteristic plot of the value of an electrical input parameter, selected from the group consisting of

current (I) and voltage, against the value of a mechanical output parameter (n,p,s) of said apparatus, defines a rising magnetization curve (H2, 52) as said output value rises and a falling magnetization curve (H1, 51) as said output value falls, said curves defining a remagnetization hysteresis gap therebetween, and the respective values of said input and output parameters at any given time together defining an operating point (1,2,3) on one of said curves,

and wherein said hysteresis, without compensation, results, when said input value has both risen and fallen from an initial input value, in inconsistent initial and subsequent mechanical output values for the same electrical input value,

a method of compensating for the effect of said hysteresis so



as to produce a unique mechanical output value for any given electrical input value, comprising the steps of:

(a) determining whether the operating point has, due to a change in the value of said electrical input parameter, continued along the same magnetization curve, or, conversely, has undergone a change-over to the other of said curves, due to a reversal of polarity or the direction of said parameter change,

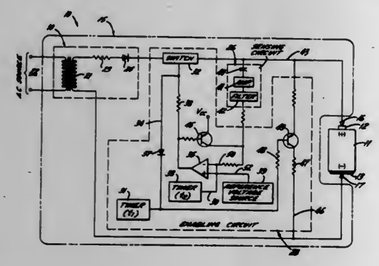
(b) if a reversal of polarity has occurred, furnishing to said electromagnetic apparatus sufficient electrical energy, not only to move said mechanical element of the electromagnetic apparatus between positions, but also to effect reversal of magnetization of the electromagnetic apparatus, to overcome the hysteresis gap between said curves (H1, 51; H2, 52).

4,577,144

BATTERY CHARGING SYSTEM INCLUDING MEANS FOR DISTINGUISHING BETWEEN RECHARGEABLE AND NON-RECHARGEABLE BATTERIES

John S. Hodgman, and Ferdinand H. Mullersman, both of Gainesville, Fla., assignors to General Electric Company, Gainesville, Fla.

Filed Oct. 11, 1984, Ser. No. 659,916
Int. Cl.⁴ H02J *7/00*
U.S. Cl. 320—2 **19 Claims**



1. A battery charging system adapted to distinguish a rechargeable battery type from a non-rechargeable battery type, both said types being of substantially similar size and having first and second external load terminals for delivering electrical energy, said system comprising, in combination:

a battery charging circuit having a first non-charging mode and a second charging mode, said circuit having first and second charging contacts arranged for engagement with the first and second external load terminals respectively of when a battery is connected to the contacts;

sensing means for sensing the value of at least one parameter common to both rechargeable and non-rechargeable batteries, said value for a rechargeable battery differing from said value for a non-rechargeable battery;

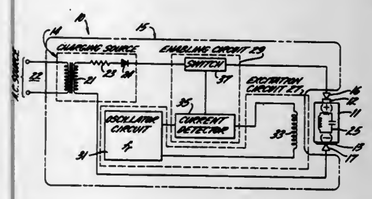
enabling means responsive to said sensing means for disabling said charging circuit when said value is indicative of a non-rechargeable battery.

4,577,145

CHARGING SYSTEM HAVING ELECTROMAGNETIC FIELD MEANS FOR DISTINGUISHING BETWEEN PRIMARY AND SECONDARY BATTERIES

Ferdinand H. Mullersman, Gainesville, Fla., assignor to General Electric Company, Gainesville, Fla.

Filed Oct. 11, 1984, Ser. No. 659,917
Int. Cl.⁴ H02J *7/00*; H01M *10/44*
U.S. Cl. 320—2 **21 Claims**



1. A battery charging system adapted to distinguish a rechargeable battery type from a non-rechargeable type, both said types being of substantially similar shape and size, said system comprising, in combination:

a rechargeable battery circuit having a first non-charging mode and a second charging mode, said circuit having first and second contacts arranged for engagement with the first and second external load terminals, respectively, of said rechargeable battery;

a radiating device for radiating an electromagnetic field proximate to said battery when the battery is placed in engagement with said contacts of said charging circuit;

said rechargeable battery including indicating means responsive to the electromagnetic field for providing an indication distinguishing said rechargeable battery from a non-rechargeable battery; and

enabling means responsive to the indication from said indicating means and in response thereto enabling the charging mode of said charging circuit, whereby said charging circuit will be enabled for charging only batteries of the rechargeable type.

4,577,146

VARIABLE AUTOTRANSFORMER HAVING AN INDEXED STEPPING BRUSH

Richard S. Lenzing, Farmington, Conn., assignor to The Superior Electric Company, Bristol, Conn.

Continuation-in-part of Ser. No. 416,718, Sep. 13, 1982, abandoned. This application Jnn. 12, 1984, Ser. No. 620,375
Int. Cl.⁴ G05F *1/14*
U.S. Cl. 323—341 **3 Claims**

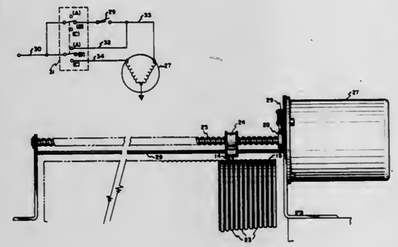
1. An adjustable voltage transformer, comprising:

(a) an electrically conductive coil wound upon a magnetic core and

having upon the coil a commutating surface corresponding to the path of a contact brush in electrical engagement therewith, the commutating surface being formed of a succession of exposed segments of the windings of the coil, and the brush being sized such that it is alternatingly in engagement with one or two of the segments;

(b) an internally threaded guide to which the brush is fixedly attached;

(c) a threaded lead screw passing through and mechanically cooperating with the guide;



(d) electric motor means to rotate the lead screw to move the guide, causing the brush to move a selected direction along the commutating surface; and

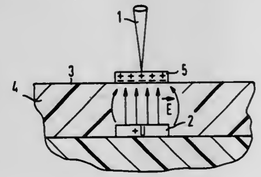
(e) control means to cause the motor means to provide rotation in the desired direction and to cause the brush to be in contact with only one segment when the brush is at rest.

4,577,147

ARRANGEMENT AND METHOD FOR VOLTAGE MEASUREMENT AT A BURIED TEST SUBJECT

Jürgen Frosien, Ottobrunn, and Michael Pomper, Schliersee, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jun. 6, 1983, Ser. No. 501,088
Claims priority, application Fed. Rep. of Germany, Sep. 2, 1982, 3232671
Int. Cl.⁴ G01N *27/00*
U.S. Cl. 324—71.3 **7 Claims**



1. A quantitive voltage potential measurement arrangement for use with a particle beam probe employed to measure a voltage potential on a test subject lying beneath and in direct contact with a layer and where the particle beam probe lies above a surface of the layer, comprising:

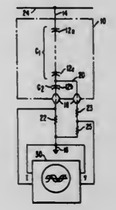
a test spot means comprising a solid state substance which has mobile charges, said test spot means being disposed in insulated fashion by said layer at said layer surface from and over said test subject and between said test subject and the particle beam probe such that the mobile charges in the test spot means are influenced by the potential on the test subject and a charge separation occurs of such mobile charges creating a potential at a surface of the test spot means facing the particle beam probe which is proportional to the voltage on the test subject, said proportional potential at the test spot means being achieved in that an area of the test spot means and the test subject are both large in comparison to a thickness of the layer beneath the test spot means so that a homogeneous electric field is present between the test spot means and the test subject when said proportional potential is present on the test spot means, and said surface potential being measured by the particle beam probe.

4,577,148

SURGE ARRESTER EQUIPPED FOR MONITORING FUNCTIONS AND METHOD OF USE

Andrew S. Sweetana, Bloomington, Ind., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 17, 1982, Ser. No. 450,584
Int. Cl.⁴ G01R *31/02*
U.S. Cl. 324—72 **5 Claims**



1. A surge arrester equipped for monitoring functions comprising:

a plurality of arrester blocks, each comprising a metal oxide varistor, stacked in a directly connected series conductive relationship having no spark gaps;

a housing enclosing said plurality of arrester blocks;

a line terminal connected with a first of said arrester blocks and extending from said housing for connection with an AC line;

a ground terminal connected with a second of said arrester blocks remote from said first arrester block and extending from said housing for connection with an electrical ground;

a voltage tap connected to said plurality of arrester blocks at a location at least one arrester block removed from the location of said ground terminal, said voltage tap extending from said housing;

voltage indicating means connected between said voltage tap and said ground terminal and current indication means connected across a resistive shunt in series with said ground terminal.

4,577,149

DETECTION OF CATASTROPHIC FAILURE OF DIELECTRIC, IMPROPER CONNECTION, AND TEMPERATURE OF A PRINTED CIRCUIT ASSEMBLY VIA ONE WIRE

Terry B. Zbinden, Maple Grove, Minn., assignor to Sperry Corporation, New York, N.Y.

Division of Ser. No. 395,511, Jul. 6, 1982, Pat. No. 4,504,782. This application Nov. 26, 1984, Ser. No. 675,051
Int. Cl.⁴ G01R *31/14*; G01N *25/00*; G08B *26/10*
U.S. Cl. 324—73 PC **6 Claims**

1. An apparatus for energizing and for sensing a selected one or more of a multiplicity of sensors as occur upon a plurality of printed circuit cards, said apparatus comprising:

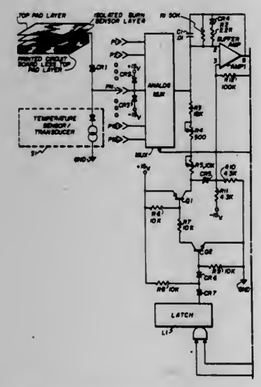
a multiplicity of wires each one of which said multiplicity of wires is connected to one or more of a multiplicity of sensors as occur upon a plurality of printed circuit cards;

voltage biasing and sensing means which are, when connected upon a time to a one of said multiplicity of wires, responsive to a selection control for upon a first selection

at a first time energizing with a first bias voltage said one of said multiplicity of wires and also said one or more of said multiplicity of sensors connected to said one of said multiplicity of wires and, simultaneously to said first time energizing, for sensing upon said one of said multiplicity of wires the signal output of a first single one of said one or more of said multiplicity of sensors connected thereto, and for upon a second selection at a second time energizing with a second bias voltage said one or more of said multiplicity of sensors connected to said one of said multiplicity of wires and, simultaneously to said second time energizing, for sensing upon said one of said multiplicity of wires the signal output of another, second, single said one or more of said multiplicity of sensors connected thereto;

selection control means responsive to an externally supplied address for providing said selection control to said voltage biasing and sensing means;

analog-signal-communicating multiplexor means responsive to an addressing signal for selectively connecting upon a time a one of said multiplicity of wires as each connect to one or more of said multiplicity of sensors as occur upon said plurality of printed circuit cards to said voltage biasing and sensing means, communicating by said selectively connecting both an analog said bias voltage signal from



said voltage biasing and sensing means to said one or more of said multiplicity of sensors as connect to said selectively connected one of said multiplicity of wires and also simultaneously an output signal of said one or more of said multiplicity of sensors to said voltage biasing and sensing means;

addressing means for receiving an externally supplied address and, responsively to said externally supplied address, providing for a time said addressing signal to said multiplexor means;

wherein said selectively connected one of said multiplicity of wires as connects to one or more of said multiplicity of sensors does in fact connect to at least both one said first sensor and one said second sensor;

wherein any single one of said multiplicity of sensors as occurs upon one of said plurality of printed circuit cards is selectable for sensing responsively to said externally supplied address because said multiplexor means, responsive to said addressing means, will selectively connect one of said multiplicity of wires to said voltage biasing and sensing means while said voltage biasing and sensing means, responsive to said selection control means, will selectively energize and sense either a first single one of said one or more of said multiplicity of sensors upon said first time, or will sense another, second, single one of said multiplicity of sensors upon said second time;

whereby when said multiplicity of wires is equal to said multiplicity of sensors then one of said multiplicity of sensors as occur upon said plurality of multilayer printed circuit cards is selectable responsively to said externally supplied address for said energizing and for said sensing.

4,577,150

PHASE MEASURING METHOD AND APPARATUS

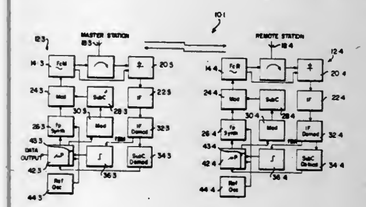
Jan Schreuder, Cape Town, South Africa, assignor to Plessey South Africa Limited, Cape Town, South Africa

Filed May 26, 1983, Ser. No. 498,467

Claims priority, application South Africa, Jun. 9, 1982, 82/4058

Int. Cl.⁴ G01R *25/00*

U.S. Cl. 324—83 R **10 Claims**



1. A method of obtaining a primary measurement of the differences in the phase relationship between a pair of comparison signals at predetermined different times, the two comparison signals existing simultaneously and having the same comparison frequency, a first of the comparison signals being produced at a first station and a second of the comparison signals being produced at a second station spaced from the first station, which method comprises:

generating at the first station a first frequency-stable reference signal having a first reference frequency suitably close to the comparison frequency;

generating at the second station a second frequency-stable reference signal having a second reference frequency suitably close to the comparison frequency;

measuring at the first station the phase relationship between the first comparison signal and the first reference signal at each of said predetermined times to provide a first secondary measurement;

measuring at the second station the phase relationship between the second comparison signal and the second reference signal at each of said predetermined times to provide a second secondary measurement; and

bringing together and suitably processing the first and second secondary measurements to extract therefrom said primary measurement.

4,577,151

SPARK MONITOR DEVICE FOR CURRENT COLLECTORS

Satoshi Tanisaka, Nagasaki, and Yoshihiro Michiguchi, Ibaraki, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 12, 1982, Ser. No. 397,047

Claims priority, application Japan, Jul. 14, 1981, 56-108822

Int. Cl.⁴ G01R *31/02*; G08B *21/00*

U.S. Cl. 324—158 MG **8 Claims**

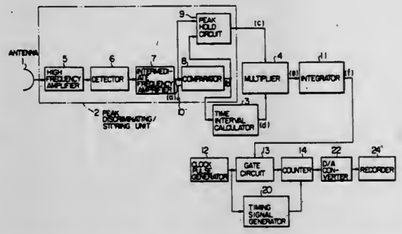
1. A device for monitoring sparks generated at a current collector in a rotary machine comprising:

means for receiving high frequency noise derived from sparks generated at the current collector and producing a first signal corresponding to an amplitude modulating component detected from said high frequency noise;

means connected to said high frequency noise receiving means for detecting a higher level portion of said first signal where said first signal continuously exceeds a predetermined set value;

means coupled to said higher-level portion detecting means for determining a time interval during which said higher-level portion continues; and

means connected to said higher-level portion detecting



means and to said time interval determining means for generating a second signal of a level corresponding to a multiplication product of a maximum value in said higher-level portion of said first signal and said time interval determined by said time interval determining means, said second signal being representative of the state of the generated sparks.

4,577,153

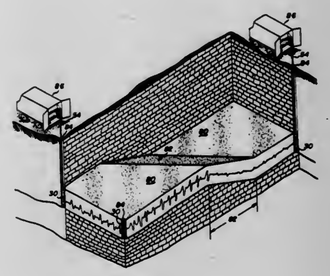
CONTINUOUS WAVE MEDIUM FREQUENCY SIGNAL TRANSMISSION SURVEY PROCEDURE FOR IMAGING STRUCTURE IN COAL SEAMS

Larry G. Stolarczyk, Raton, N. Mex., assignor to Stolar, Inc., Raton, N. Mex.

Continuation-in-part of Ser. No. 483,264, Apr. 8, 1983, abandoned. This application May 6, 1985, Ser. No. 731,741

Int. Cl.⁴ G01V *3/12, 3/30*

U.S. Cl. 324—334 **20 Claims**



4,577,152

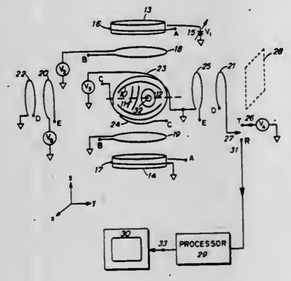
SELECTIVE MATERIAL PROJECTION IMAGING SYSTEM USING NUCLEAR MAGNETIC RESONANCE

Albert Macovski, 2505 Alpine Way, Menlo Park, Calif. 94025

Filed Apr. 11, 1983, Ser. No. 483,827

Int. Cl.⁴ G01R *33/20*

U.S. Cl. 324—309 **37 Claims**



1. In a method for producing selective material projection images of a volume using nuclear magnetic resonance the steps of:

measuring the two-dimensional projection of a plurality of components of the nuclear magnetic resonance activity using different intensities of the main magnetic field; and

processing these components to produce one or more two-dimensional projection images of specific materials of the volume.

1. A method for detecting geological anomalies in underground coal seam formations comprising

placing an FM transmitter having continuous wave transmit capabilities in a medium frequency range of between approximately 300 KHz to approximately 800 KHz about a coal seam to be analyzed, the transmitter including a tuned-loop antenna for propagation through said seam;

placing a medium frequency FM receiver having continuous wave receive capability and including a tuned-loop antenna about said seam remote from the position of the transmitter with said seam intermediate to the transmitter and receiver, said tuned-loop antennas of the receiver and transmitter being positioned to be vertical to said seam, said receiver further including measuring and recording means for measuring and recording a plurality of characteristics of said received waves propagated through said seam;

exposing said seam to a plurality of transmissions of continuous wave medium frequency waves with an azimuthal magnetic field component propagated horizontally through said seam from the transmitter towards the receiver;

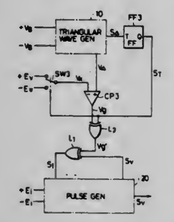
measuring a plurality of signal transmission characteristics through said seam;

generating a number of data points by locating both the transmitter and receiver at several points about said seam such that for each transmitter location the receiver is placed at a plurality of preselected points about said seam;

calculating a plurality of expected signal transmission characteristics through said seam; and

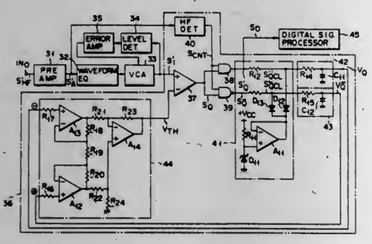
comparing said calculated signal transmission characteristics with said measured signal transmission characteristics and generating a graphical representation of said formation therefrom.

4,577,154
PULSE WIDTH MODULATION CIRCUIT AND INTEGRATION CIRCUIT OF ANALOG PRODUCT USING SAID MODULATION CIRCUIT
Katsuaki Takagi, Hachioji; Yuzo Kita, Fuchu; Yoshimune Hagiwara; Kazuyoshi Ogawa, both of Kodaira, and Hideo Hara, Tachikawa, all of Japan, assignors to Hitachi, Ltd. and Hitachi Micro Computer Engineering Ltd., both of Tokyo, Japan
Filed Jul. 26, 1983, Ser. No. 517,407
Claims priority, application Japan, Jul. 28, 1982, 57-130336
Int. Cl.[4] H03K *5/05, 7/08*
U.S. Cl. 328—158 **15 Claims**



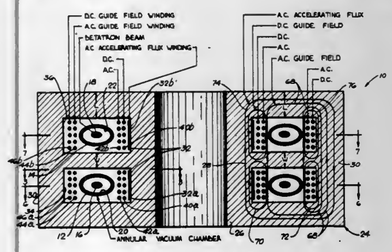
1. A pulse width modulation circuit comprising:
signal generation means for generating a triangular wave signal having a predetermined frequency;
clock signal generation means connected to receive the output of said signal generation means for generating a clock signal taking alternately first and second values in a predetermined period in synchronism with said triangular wave signal;
switch means for providing an output signal changing over between an analog signal to be used for pulse width modulation and a signal which is the inverted form of said analog signal in response to said clock signal;
comparison means for comparing said triangular wave signal and the output signals of said switch means to generate a binary output signal; and
inversion means for selectively inverting the output of said comparison means in response to said clock signal.

4,577,155
DATA EXTRACTING CIRCUIT
Akira Kobayashi, Yokohama, and Tadashi Kojima, Tokyo, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
Filed Sep. 15, 1983, Ser. No. 532,514
Claims priority, application Japan, Sep. 16, 1982, 57-161215
Int. Cl.[4] H03K *5/08, 5/153*
U.S. Cl. 328—164 **2 Claims**



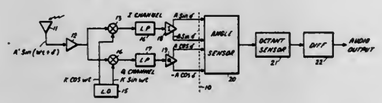
1. A data extracting circuit for converting an analog signal derived from a D.C. component-free modulated digital signal stored on a recording medium, into a D.C. component-free digital signal, comprising:
comparator means for comparing said analog signal with a reference signal and providing a compared signal;
phase inverting means for receiving said compared signal and providing a first signal component which is in-phase with said compared signal, and a second signal component which is phase-inverted with respect to said compared signal, said D.C. component-free digital signal being derived from said first signal component;
clipping means for limiting an amplitude level of said first and second signal components to a predetermined level to provide first and second limited signal components;
integrating means for separately integrating said first and second limited signal components and providing first and second integrated signals; and
means for determining a difference between said first and second integrated signals and supplying a signal corresponding to said difference to said comparator means as said reference signal.

4,577,156
PUSH-PULL BETATRON PAIR
Donald W. Kerst, Madison, Wis., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Feb. 22, 1984, Ser. No. 582,420
Int. Cl.[4] H05H *7/08*
U.S. Cl. 328—237 **6 Claims**



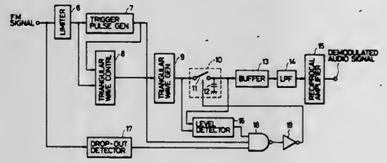
1. A betatron accelerator, comprising
an annular betatron tube having a vacuum chamber therein in which charged particles are to be accelerated,
a magnetic circuit including an axial magnetic core along the axis of said tube,
accelerating flux producing means for producing a changing accelerating flux in said core and linking with said tube for producing acceleration of charged particles in said tube,
alternating current guide field producing means for producing an alternating current guide field through said tube for guiding the charged particles along generally circular orbits in said tube,
an alternating current source for energizing said guide field producing means,
first and second oppositely polarized direct current sources,
switching means including an AC switching device for connecting said alternating current source to said accelerating flux producing means,
a first DC switching device for connecting said first direct current source to said accelerating flux producing means,
a second DC switching device for connecting said second oppositely polarized direct current source to said accelerating flux producing means,
and control means for closing said AC switching device during approximately the first 90° of the guide field cycle,
said control means closing said first DC switching device while opening said AC switching device and said second DC switching device during approximately the second 90° of said cycle to clamp the accelerating flux at its positive maximum value,
said control means closing said AC switching device while opening both of said DC switching devices during approximately the third 90° of said cycle for rapidly changing the accelerating flux between its positive and negative maximum values,
said control means closing said second DC switching device while opening said AC switching device and said first DC switching device during approximately the fourth 90° of said cycle to clamp the accelerating flux at its negative maximum value,
and means for injecting a first electron beam for acceleration in one direction of rotation during said first 90° while injecting a second electron beam for acceleration in the opposite direction of rotation during said third 90°.

4,577,157
ZERO IF RECEIVER AM/FM/PM DEMODULATOR USING SAMPLING TECHNIQUES
Joseph Reed, Stamford, Conn., assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Dec. 12, 1983, Ser. No. 560,686
Int. Cl.[4] H03D *3/18, 3/00, 5/00;* **H04B** *1/16*
U.S. Cl. 329—50 **23 Claims**



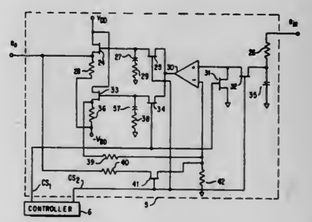
1. Apparatus for use in demodulating the information content in the I and Q channel of a zero IF receiving apparatus comprising:
angle sensing means responsive to said I and Q channel signals for providing at an output angle signals indicative of phase angles associated with said I and Q signals being within specified ranges of angles,
means responsive to said angle signals to provide an indication of which one of a plurality of octants each of said phase angles is in to specify said angle as one between 0° to 360° for assigning one of a plurality of predetermined angular values to said phase angles as indicative of said octant and means responsive to said assigned angular values to provide at an output a demodulated signal.

4,577,158
DEMODULATOR WITH DROP-OUT COMPENSATION AND RECIPROCAL AMPLIFIER
Kazuo Kuroda, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan
Filed Dec. 16, 1983, Ser. No. 561,868
Claims priority, application Japan, Dec. 16, 1982, 57-220848
Int. Cl.[4] H03K *9/06;* **H03D** *3/00*
U.S. Cl. 329—104 **6 Claims**



1. An FM signal demodulating circuit comprising:
drop-out detecting means for generating a drop-out signal when an input FM signal drops out;
period detecting means for detecting the period of said FM signal in the absence of said drop-out signal to produce a periodic signal;
voltage generating means for generating a voltage, a level of the voltage corresponding to the period of said FM signal;
sample-and-hold means for sampling an output of said voltage generating means in response to said periodic signal and for holding the same;
reciprocal arithmetic means for producing a signal representing the reciprocal of the level of signal held by said sample-and-hold means;
and means responsive to said drop-out detecting means for causing said sample-and-hold means to stop sampling when said drop-out detection means detects a drop-out.

4,577,159
LOW DRIFT BROADBAND AMPLIFIER
Noel M. Pace, Loveland, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Jul. 27, 1984, Ser. No. 635,321
Int. Cl.[4] H03F *1/02*
U.S. Cl. 330—9 **3 Claims**



1. A broadband amplifier, having a low D.C. drift characteristic, the boardband amplifier comprising:
first differential amplifier means having an inverting input, a non-invverting input and an output;
first switching means, coupled to the first differential amplifier means, for alternately connecting the non-inverting input of the first differential amplifier means to an input signal during an amplifying mode of operation of the boardband amplifier and to a source of ground potential during a sample and hold mode of operation of the broadband amplifier;
feedback means, coupled to the first differential amplifier means, for controlling the gain thereof;
D.C. drift compensation means having first and second sample and hold means, coupled to the first differential amplifier means, said first sample and hold means being operative for storing a D.C. input offset voltage of the first differential amplifier means during the sample and hold mode of operation of the broadband amplifier, said second sample and hold means being operative for storing a D.C. input offset voltage of said D.C. drift compensation means during the amplifying mode of operation of the boardband amplifier; and
controller means, coupled to the first switching means and to the D.C. drift compensation means, for supplying a control signal for alternately switching the operation of the broadband amplifier between the amplifying mode of operation and the sample and hold mode of operation.

4,577,160

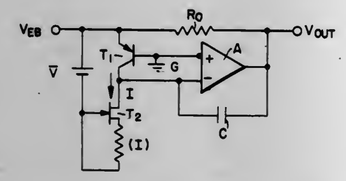
METHOD OF AND APPARATUS FOR LOW NOISE CURRENT AMPLIFICATION

Jerome Y. Lettvin, Cambridge, and George M. Plotkin, Lynn, both of Mass., assignors to Robert H. Rines, Concord, N.H., a part interest

Continuation-in-part of Ser. No. 455,305, Jan. 3, 1983, abandoned. This application Dec. 22, 1983, Ser. No. 564,360

Int. Cl.⁴ H03F *1/26*

U.S. Cl. 330—149 **27 Claims**



1. In an electronic amplifier apparatus comprising a differencing amplifier circuit connected to receive signal from and to feedback to an electronic switching device, a method of enabling low-noise current amplification of a signal from low impedance source means, that comprises, passing equal but opposite currents with the correlated noise from a common source in opposite directions through the switching device to produce minimal resultant uncorrelated noise therein, and superimposing the signal from said low impedance source means as an increment to the current through said device of magnitude much smaller than said opposite currents.

4,577,161

NOISE REDUCTION BY LINEAR INTERPOLATION USING A DUAL FUNCTION AMPLIFIER CIRCUIT

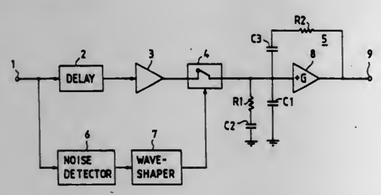
Kazutoshi Hirohashi, Yokohama; Yukinobu Ishigaki, Tokyo, and Yasuomi Namiki, Yokohama, all of Japan, assignors to Victor Company of Japan, Ltd., Japan

Filed Aug. 8, 1984, Ser. No. 638,779

Claims priority, application Japan, Aug. 8, 1983, 58-144651

Int. Cl.⁴ H03F *1/26*

U.S. Cl. 330—149 **19 Claims**



1. A noise reduction circuit having an input terminal to which an information signal is applied and an output terminal, comprising:

means connected to said input terminal for detecting a noise impulse introduced in said information signal and generating therefrom a sampling pulse that is time-coincident with the portion of the signal affected by said noise impulse;

a switch connected in a circuit path between said input and output terminals for passing said information signal therethrough in the absence of said sampling pulse and blocking said signal in response to said sampling pulse;

a first amplifier connected in said circuit path between said input terminal and said switch, said first amplifier having an input and output and an output impedance;

a second, noninverting amplifier connected in said circuit path between said switch and said output terminal, the second amplifier having an input impedance greater than the output impedance of said first amplifier, said second amplifier having an input and output;

a capacitor coupled from a node between said switch and the input of said second amplifier to ground; and

feedback circuit means coupled from the output of said second amplifier to the input thereof, the feedback circuit means including time constant means forming a plurality of time constant values with said capacitor for providing primary and secondary differentiation on an output signal from said second amplifier and applying the differentiated signal to the input of said second amplifier.

4,577,162

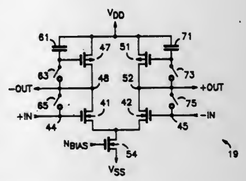
CLOCKED GAIN STAGE HAVING DIFFERENTIAL INPUTS AND OUTPUTS

Joe W. Peterson, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 29, 1985, Ser. No. 728,628

Int. Cl.⁴ H03F *3/16, 3/04*

U.S. Cl. 330—253 **8 Claims**



8. A fully differential gain stage for receiving first and second input voltages and providing first and second output voltages proportional to a differential of the first and second input voltages, comprising:

a first transistor of a first conductivity type having a first current electrode connected to a first output terminal, a second current electrode, and a control electrode for receiving the first input voltage;

a second transistor of the first conductivity type having a first current electrode connected to a second output terminal, a second current electrode, and a control electrode for receiving the second input voltage;

a third transistor of the first and conductivity type having a first current electrode connected to the second current electrode of both the first and second transistors, a second current electrode connected to a first terminal for receiving a first power supply voltage, and a control electrode for receiving a bias voltage;

a fourth transistor of a second conductivity type having a first current electrode connected to the first output terminal, a second current electrode connected to a second terminal for receiving a second power supply voltage, and a control electrode;

a fifth transistor of the second conductivity type having a first current electrode connected to the second output terminal, a second current electrode connected to the second terminal for receiving the second power supply voltage, and a control electrode;

first switching means having a first electrode connected to the first output terminal, and a second electrode connected to the first input terminal;

second switching means having a first electrode connected to the first output terminal, and a second electrode connected to the control electrode of the fourth transistor;

a first capacitor having a first electrode connected to both the control electrode of the fourth transistor and the second electrode of the second switching means, and a second electrode connected to the second terminal for receiving the second power supply voltage;

third switching means having a first electrode connected to the second output terminal, and a second electrode connected to the second input terminal;

fourth switching means having a first electrode connected to the second output terminal, and a second electrode connected to the control electrode of the fifth transistor; and

a second capacitor having a first electrode connected to both the control electrode of the fifth transistor and the second electrode of the fourth switching means, and a second electrode connected to the second terminal for receiving the second power supply voltage.

4,577,163

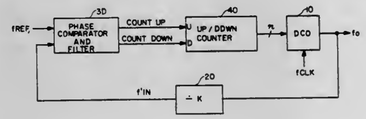
DIGITAL PHASE LOCKED LOOP

Norman L. Culp, Colorado Springs, Colo., assignor to Honeywell Inc., Phoenix, Ariz.

Filed Jul. 9, 1984, Ser. No. 629,035

Int. Cl.⁴ H03L *7/18*

U.S. Cl. 331—1 A **2 Claims**



1. A digital phase locked loop comprising:

(a) a digital controlled oscillator means for generating an output signal having a frequency which is a function of a value associated with a digital input word, wherein said digital controlled oscillator means comprises:

(i) storage means, for holding a binary sum word;

(ii) adder means, operatively connected to said storage means and to said counter means, for generating a new binary sum word, the new binary sum word being the sum of the binary sum word received from said storage means and the binary number received from said counter means, the new binary sum word being stored in said storage means to generate another sum word during the subsequent add cycle; and

(iii) output means, operatively connected to said adder means, for strobing a carry signal resulting from the generation of the new binary sum word by said adder means, to generate said output signal;

(b) counter means, operatively connected to said digital controlled oscillator means, having an up input terminal adapted to receive an up input signal, and having a down input terminal adapted to receive a down input signal, for modifying a binary number contained in said counter means in response to said up input signal and in response to said down input signal, said binary number being operatively coupled to said digital controlled oscillator means; and

(c) phase comparator means, operatively connected to said counter means, for comparing the frequency of a reference signal to the frequency of said output signal, to generate the up input signal when the output signal lags the reference signal, and to generate the down input signal when the output signal leads the reference signal.

4,577,164

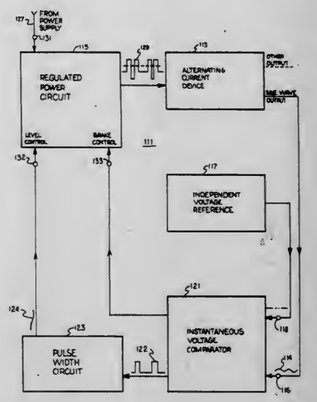
DRIVE REGULATOR UTILIZING VARIABLE PULSE WIDTH SIGNAL

Boris F. Grib, Dix Hills, N.Y., assignor to Philamon Incorporated, Farmingdale, N.Y.

Continuation-in-part of Ser. No. 16,160, Mar. 1, 1979, Pat. No. 4,499,436. This application Oct. 1, 1984, Ser. No. 656,711

Int. Cl.⁴ H03B *5/30;* **H03L** *5/00*

U.S. Cl. 331—109 **20 Claims**



1. A drive current control circuit for an alternating current electrical device having an output comprising

means for providing a drive current to said device,

means for obtaining a sine wave electrical signal having an amplitude proportional to the output of said device,

means for producing a constant reference signal for comparison with said sine wave electrical signal,

means for producing a pulse signal having a pulse width which varies as the excess of said sine wave electrical signal over said reference signal,

means for producing a control signal with a magnitude varying approximately as a moving average of the width of pulses of said pulse signal, and

means for reducing said drive current to said device in response to said control signal.

4,577,165

HIGH-FREQUENCY OSCILLATOR WITH POWER AMPLIFIER AND AUTOMATIC POWER CONTROL

Akira Uehara; Takashi Uehara, both of Kanagawa; Mlyuki Saito, Saitama, and Toshiyuki Ishida, Tokyo, all of Japan, assignors to Tokyo Denshi Kagaku Co., Ltd., Kanagawa, Japan

Filed Feb. 16, 1984, Ser. No. 580,853

Claims priority, application Japan, Feb. 22, 1983, 58-28195; Feb. 22, 1983, 58-28196

Int. Cl.⁴ H03B *5/36;* **H03L** *5/02*

U.S. Cl. 331—109 **7 Claims**

3. A high-frequency oscillator, comprising:

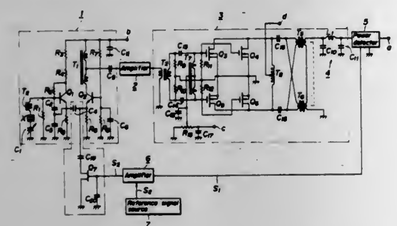
an oscillation circuit (1) having a high-frequency oscillatory element (X) and amplifying element (Q_2) for amplifying the output of said oscillatory element;

a power amplification circuit (3) for amplifying the power of a high-frequency output of said oscillation circuit;

control means (Q_7, 6) for varying a bias voltage of said amplifying element to thereby control the output power of said power amplification circuit;

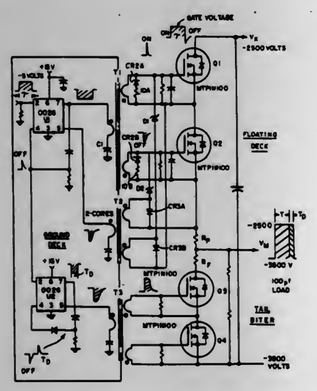
said control means having a field effect transistor (Q_7) connected at the drain thereof to said amplifying element and

a control circuit (6) for applying a direct-current control signal (S_3) to the gate of said field effect transistor;
said power amplification circuit comprises a metal-oxide semi-conductor type field effect transistor (Q_3, Q_4, Q_5, Q_6);
said control means further has a power detector (5) for detecting said output power of said power amplification



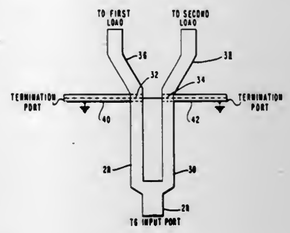
circuit to give a converted direct-current signal (S_1) according thereto, and a reference signal source (7) for giving a predetermined reference signal (S_2) while it is continuously energized; and
said control circuit comprises an amplifier (6) for amplifying the difference between said converted signal and said reference signal to produce said control signal.

4,577,166
MINIATURE HIGH PERFORMANCE PULSED MODULATOR APPARATUS
Walter E. Milberger, Severna Park, and Franklin B. Jones, Baltimore, both of Md., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Aug. 22, 1984, Ser. No. 643,201
Int. Cl.⁴ H03K *7/08*
U.S. Cl. 332—9 T **7 Claims**



1. A pulsed modulator apparatus comprising in combination:
a first clock driver means receiving an input trigger pulse of a predetermined pulse width, said first clock driver means providing a first output pulse in response to said input trigger pulse, a second input pulse derived from said first output pulse and applied to said clock driver means to provide a second output pulse,
a first coupling means connected to said first clock driver means to receive said first output pulse therefrom,
a second coupling means connected to said first clock driver means to receive said second output pulse therefrom, and,
a first switching means connected to both said first and second coupling means to receive the outputs therefrom, said first coupling means providing an on signal to said first switching means in response to said first output pulse, said first switching means connected between a first and second predetermined voltage, said first switching means switching from said first predetermined voltage to said second predetermined voltage, said first switching means providing an output pulse signal in response to said on signal, said second coupling means providing an off signal to said first switching means in response to said second output pulse, said first switching means switching from said second predetermined voltage to said first predetermined voltage in response to said signal, said output pulse signal having an output pulse width equal to or greater than the time difference between said first and second output pulse, said output pulse signal is applied to a load means.

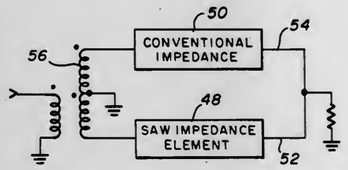
4,577,167
MICROSTRIP LINE BRANCHING COUPLER HAVING COAXIAL COUPLED REMOTE TERMINATION
Gary E. Evans, Trappe, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Dec. 3, 1982, Ser. No. 447,824
Int. Cl.⁴ H01P *5/12*
U.S. Cl. 333—128 **9 Claims**



1. A microwave coupler comprising:
(a) a first port coupled to first ends of first and second microstrip transmission lines (28 and 30), said first and second transmission lines (28 and 30) having a predetermined electrical length;
(b) second and third ports (32 and 34) respectively coupled to third and fourth microstrip transmission lines (36 and 38) and to second ends of said first and second microstrip transmission lines (28 and 30); and
(c) coaxial transmission line means (40 and 42) coupled to said second ends of said first and second microstrip transmission lines (28 and 30), said coaxial transmission line means extending to at least one remote location and terminating thereat.

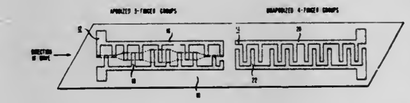
4,577,168
NOTCH FILTER
Clinton S. Hartmann, Richardson, Tex., assignor to R. F. Monolithics, Inc., Dallas, Tex.
Filed Dec. 3, 1984, Ser. No. 677,295
Int. Cl.⁴ H03H *7/07, 7/09, 9/64*
U.S. Cl. 333—170 **35 Claims**

1. An improved notch filter for rejecting a predetermined band of signal frequencies comprising:
a. a first circuit having a signal input terminal and a signal output terminal for providing an output signal at said output terminal, said first circuit having an inductor in parallel with an impedance element having an input admittance substantially constant in both magnitude and phase over a predetermined band width at the center of the notch frequency, said first circuit having primarily reactive characteristics at signal frequencies higher or lower than the notch frequency band width and primarily resistive characteristics at the center of said notch frequency, and



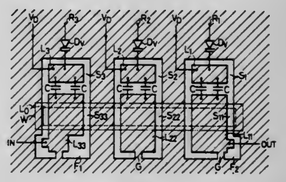
b. a second circuit having a signal input terminal and a signal output terminal in electrical parallel with said first circuit and being resistive at all frequencies and having a second output signal at its output terminal 180° out-of-phase with said first circuit output signal whereby at the center of said notch frequency said first and second circuit output signals are substantially equal and cancelling thereby providing no output and rejecting a predetermined band width of frequencies.

4,577,169
SMALL RIPPLE SURFACE ACOUSTIC WAVE FILTER WITH LOW INSERTION LOSS
Thrygve R. Meeker, Allentown, and Wei-Shin Tsay, Fogelsville, both of Pa., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Aug. 1, 1984, Ser. No. 636,679
Int. Cl.⁴ H03H *9/64, 9/145*
U.S. Cl. 333—194 **9 Claims**



1. A surface acoustic wave filter comprising substrate means having at least a major surface layer of a piezoelectric material;
an input transducer for transforming an electrical input signal into an acoustical signal, said input transducer including a first electrode responsive to an input signal of positive polarity and a second electrode responsive to an input signal of negative polarity, each electrode being recessed into said substrate means to be essentially coplanar with said major surface layer and comprising a plurality of electrode fingers, said positive and negative electrode fingers being interleaved to form an interdigitated electrode finger configuration and disposed to form a plurality of finger groups capable of reducing reflection between adjacent electrode fingers, each group including a set of N equal length finger electrodes of both positive and negative polarity, said input transducer being apodized such that adjacent finger groups comprise electrode fingers of different lengths perpendicular to the direction of travel of a surface acoustic wave, wherein the different lengths are determined in accordance with a predetermined apodization equation (W(t,T)); and
an output transducer including a first electrode of positive polarity and a second electrode of negative polarity, each electrode responsive to the acoustic signal generated by said input transducer for providing as an output an associated electrical signal, each electrode being recessed into said substrate means to be essentially coplanar with said major surface layer and comprising a plurality of electrode fingers, said positive and negative electrode fingers being interleaved to form an interdigitated electrode finger configuration and disposed to form a plurality of finger groups capable of reducing reflection between adjacent electrode fingers, each group including a set of M fingers of both positive and negative polarity, M being different from N.

4,577,170
VARIABLE TUNING FILTER IN HIGH FREQUENCY CIRCUIT
Isao Hayashi, Tokyo, Japan, assignor to Kyocera Corporation, Japan
Filed Jan. 31, 1985, Ser. No. 696,928
Claims priority, application Japan, Feb. 2, 1984, 59-14847[U]
Int. Cl.⁴ H01P *1/203, 7/08*
U.S. Cl. 333—205 **2 Claims**

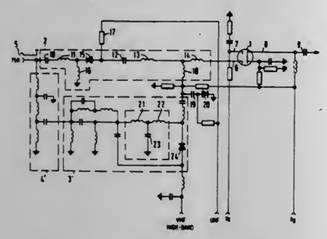


1. A high frequency variable tuning filter comprising:
a dielectric substrate;
a grounding conductive layer on the surface of one side of the substrate and an electrically conductive film layer on the other side thereof;
a plurality of adjacent resonators each including two areas of the electrically conductive layer formed by a figure eight shaped groove in said electrically conductive layer, wherein a portion of the electrically conductive layer small in width remains in said 8-shaped groove to connect one of said two areas to the portion of the electrically conductive layer outside of said groove, and wherein a portion of said electrically conductive film layer remains between the adjacent resonators; and
a region on said one side of the dielectric substrate which is positioned opposite the resonators, wherein the region is formed by removing a part of said grounding conductive layer.

4,577,171
INPUT CIRCUIT COMPRISING AT LEAST TWO INPUT PATHS
Franz Heigl, Ochsenfeld, and Josef Rehm, Rohrbach, both of Fed. Rep. of Germany, assignors to Telefunken electronic GmbH, Heilbronn, Fed. Rep. of Germany
Filed May 11, 1984, Ser. No. 609,205
Claims priority, application Fed. Rep. of Germany, May 11, 1983, 3317219
Int. Cl.⁴ H03J *5/00;* H04B *1/18*
U.S. Cl. 334—1 **17 Claims**

1. An input circuit for a combined UHF and VHF tuner comprising in combination: a common antenna terminal; a UHF selection filter and a VHF selection filter each having its input connected to said common antenna terminal; a common output amplifier for said input circuit, said amplifier having its input connected to the output of said UHF selection filter; an impedance included in said UHF selection filter and having one end connected for high frequency to said input of said amplifier; first circuit means, including a controllable switch, for connecting the other end of said impedance to ground for high frequency via said switch when said switch is closed; and

second circuit means for connecting the output of said VHF selection filter to said other end of said impedance so as to cause said output of said VHF selection filter to be connected



to ground for high frequency via said switch when it is closed and so as to cause said output of said VHF selection filter to be connected to said input of said amplifier when said switch is open.

4,577,172

ELECTROMAGNETIC RELAY AND METHOD FOR THE MANUFACTURE THEREOF

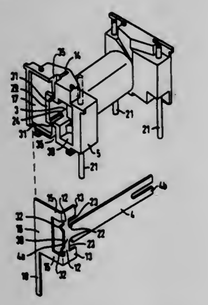
Helmut Schedele, Diessen, and Josef Schweiger, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Oct. 11, 1984, Ser. No. 659,893

Claims priority, application Fed. Rep. of Germany, Oct. 20, 1983, 3338198

Int. Cl.⁴ H01H *51/22*

U.S. Cl. 335—80 **19 Claims**



1. An electromagnetic relay, comprising:

a coil body serving as a base body;

an armature or contact tongue element secured at one end and being aligned in an axial cavity of said base body;

the secured end of the tongue element being secured in grooves of a first coil flange of the base body via lateral fastening tabs, and an opposite free end of the element being movable adjacent to a pole plate or cooperating contact element in a region of a second coil flange of the base body;

a thickness of said fastening tabs being significantly less than a width of said grooves in said first coil flange which accepts the fastening tabs; and

said fastening tabs being fixed by means of a hardened glue which fills in a space in said grooves.

4,577,173

ELECTROMAGNETIC RELAY AND METHOD FOR MANUFACTURING SUCH RELAY

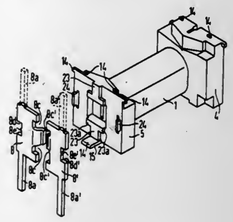
Helmut Schedele, Diessen; Josef Schweiger, and Heinz Stadler, both of Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Oct. 11, 1984, Ser. No. 659,894

Claims priority, application Fed. Rep. of Germany, Oct. 20, 1983, 3338208

Int. Cl.⁴ H01H *51/22*

U.S. Cl. 335—80 **15 Claims**



1. An electromagnetic relay comprising a coil body, a tongue-shaped armature mounted in an axially through opening of said coil body, said armature having a fastening end secured in the region of a first coil flange to said coil body and having its free end switchable between two pole plates in the region of a second coil flange of said coil body, a flux transfer plate mounted against said first coil flange at the fastening end of said armature, whereby said pole plates have at least one section lying flat against the end face of said second coil flange and rest against two spacing members of said coil flange which are formed as extensions of the narrow sides of said armature, a respective sealing film at the end faces of both said first and second coil flanges, a rim bead (17, 47) formed on said first coil flange (4, 34) which surrounds the coil body opening (3, 33), said rim bead penetrated by two retaining webs (21, 51) of the armature (6, 36) which correspond to the height of the bead (17, 47) which penetrate at only two opposite sides thereof, the spacing members (23, 53) of said second coil flange (5, 35) project over the end face of said second coil flange (5, 35) with a height corresponding to the thickness of said pole plates (8, 8', 38, 38'), and said pole plates (8, 8', 38, 38') positioned between said spacing members (23, 53) and at retaining tabs (24, 54) provided at the edge of said coil flange (5, 35).

4,577,174

ELECTROMAGNET FOR ELECTRIC SWITCHING DEVICE

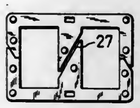
Helmut Lemmer, Marienheide-Kalsbach, Fed. Rep. of Germany, assignor to Square D Starkstrom GmbH, Marienheide, Fed. Rep. of Germany

Filed Mar. 11, 1985, Ser. No. 709,788

Claims priority, application European Pat. Off., Mar. 31, 1984, 84103594.2; Oct. 25, 1984, 84112847.3

Int. Cl.⁴ H01F *7/08*

U.S. Cl. 335—261 **6 Claims**



1. An electromagnet for an electromagnetic switching device, particularly safety switch, utilized for direct current and

comprising a magnetic core and a movable armature, said core and said armature being each formed of a plurality of superposed laminations assembled into a pack and connected to each other by rivets, said core and said armature being each assembled of evenly shaped laminations, said armature and said core each having two outer legs and one central leg, one of the outer legs having a free end and being formed with an oblique surface which merges into a flat end face, the other of the other legs having a free end formed with another oblique surface and with a flat stop surface, said another oblique surface and the stop surface fitting said first mentioned oblique surface and said end face, respectively, when the armature is laid over the magnetic core, said central leg having a further oblique surface such that an air gap results between the further oblique surface of the central leg of the core and the further oblique surface of the cnetral leg of the armature when the latter and the core are in assembly.

4,577,175

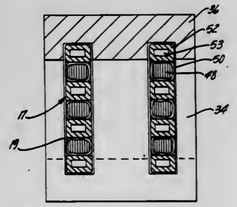
TRANSFORMER WITH FLUID COOLED WINDINGS

Peter H. Burgher, and Raymond F. Marsden, both of Howell, Mich., assignors to Marelco Power Systems, Howell, Mich.

Continuation of Ser. No. 416,376, Sep. 13, 1982, abandoned. This application Jun. 27, 1984, Ser. No. 624,945

Int. Cl.⁴ H01F *27/08*

U.S. Cl. 336—61 **12 Claims**



1. In combination with a transformer having a core, a primary winding and a secondary winding, the improvement comprising one of said windings being formed from at least one tubular member formed in a plurality of first loops, said at least one tubular member defining a fluid passageway in said winding, and the other of said windings comprising a plurality of second loops, each of said second loops being consecutively interpositioned between loops of said one winding, each said loop of said other winding comprising a plurality of coils of a flat conductor having flat sides terminating at narrow ends, so that the conductor is aligned parallel to the axis of the coil and wherein each narrow axial end of coil of flat conductor lies adjacent a loop of said tubular member.

4,577,176

TEMPERATURE REGULATING DEVICE

Helmut Bayer, Vienna, Austria, assignor to Electrovac Gesellschaft m.b.H., Vienna, Austria

Filed Dec. 27, 1983, Ser. No. 565,552

Claims priority, application Austria, Jan. 5, 1983, 31/83

Int. Cl.⁴ H01H *37/48*

U.S. Cl. 337—394 **9 Claims**

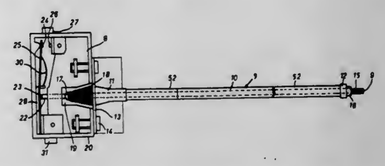
1. A device for regulating temperature of a heat source in a heating appliance wherein a heat source provides plural heating zones, the heat source including heating elements, the appliance having a heating surface; said device comprising:

at least one temperature sensor disposed between said heat source and said heating surface;

an electrical contact system for switchably energizing said heat source for regulation of the temperature thereof, and an electrically insulating housing supporting said contact system at an inner end of said temperature sensor;

said temperature sensor having a bar with a sufficiently high coefficient of thermal expansion for operating said contact system, said temperature sensor further comprising a tube which encloses said bar and connects therewith at an outer end of said sensor, one end of said bar being in communication with said contact system for regulation of the temperature of said heat source; and wherein

the tube is formed of at least two tube lengths arranged serially one behind the other along an axis of the tube at locations corresponding to sites of respective ones of the



heating zones to insure direct action of heat by each heating zone on the corresponding tube length, opposite ends of the tube being electrically insulated from each other, each of said tube lengths being exposed to heat from a plurality of said heating zones; and

at least two of said tube lengths have a thermal expansion different from each other within the temperature range between 20° C. and 700° C., the total expansion of the tube formed of said tube lengths being less than the thermal expansion of the bar within said temperature range.

4,577,177

DISPLAY APPARATUS FOR ELEVATOR CAR

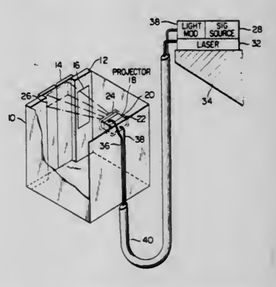
Akira Marubashi, Aichi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 31, 1984, Ser. No. 615,530

Claims priority, application Japan, Jun. 1, 1983, 58-97220

Int. Cl.⁴ B66B *3/00*

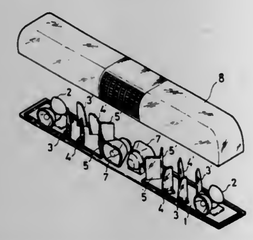
U.S. Cl. 340—19 R **10 Claims**



1. An apparatus for displaying image information within an elevator car, comprising a projector disposed in an elevator car and formed of a light deflector, a diminishing lens disposed on an entrance side of said light deflector, and an objective lens disposed on an exit side thereof; a laser disposed on a stationary part for an elevator system including the elevator car to form a light source for generating a light beam, a signal source disposed on said stationary part to generate a modulating signal as determined by a piece of image information to be displayed, a light modulator disposed on said stationary part to modulate said light beam from said light source with said modulating signal from said signal source; an optical fiber for leading said modulated light beam from said light modulator to said diminishing lens included in said projector, and a set of electrical conductors for connecting said signal source to said light deflector; the arrangement being such that the light beam

deflected by said light deflector is focussed on an inner surface of said elevator car by means of said objective lens.

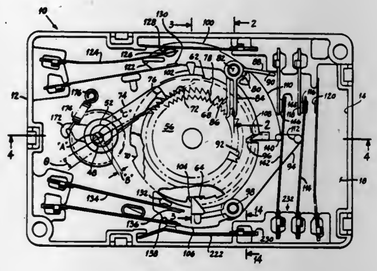
4,577,178
REFLECTION TYPE FLOW-FLASHING LIGHT
Shozo Hitora, Nara, Japan, assignor to Sasaki Electric Manufacturing Co., Ltd., Osaka, Japan
Filed Apr. 20, 1983, Ser. No. 486,649
Int. Cl.⁴ B60Q *1/46*
U.S. Cl. 340—81 R **7 Claims**



1. A reflection type flow-flashing light comprising: an elongated base having a forward and rearward direction;
- at least one rotating light operatively positioned at one end of said elongated base;
- a plurality of reflecting plates being spaced relative to each other and being mounted on said elongated base adjacent to said rotating light, each of said reflecting plates being disposed at a predetermined position for enabling light emitted from said rotating light to pass therebetween to impinge upon each of said reflecting plates while reflecting said light in a direction both forward and rearward;
- said elongated base includes a first end and a second end, said at least one rotating light being positioned adjacent to said first end and further including a second rotating light operatively positioned adjacent to said second end and a plurality of reflecting plates being spaced relative to each other and being mounted on said elongated base adjacent to said second rotating light, each of said reflecting plates being disposed at a predetermined position for enabling light emitted from said rotating light to pass therebetween to impinge upon each of said reflecting plates while reflecting said light in a direction both forward and rearward.

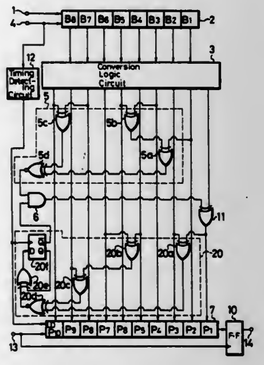
4,577,179
PROGRAMMER/TIMER FOR APPLIANCES
Worthy L. Chambers, Lombard; William H. Jones, Villa Park, and Arthur H. Hayden, Crystal Lake, all of Ill., assignors to Eaton Corporation, Cleveland, Ohio
Filed Apr. 15, 1982, Ser. No. 367,867
Int. Cl.⁴ G08B *1/00*; H01H *7/08*
U.S. Cl. 340—309.15 **5 Claims**

1. A device for electrical switching in timed sequence comprising:
- (a) a primary and secondary cam means rotatably mounted on a housing about respectively first and second spaced centers of rotation;
- (b) electrical switch means including primary cam follower means responsive to movement of said primary cam means for effecting electrical switching of contacts in accordance with a first program sequence;
- (c) secondary cam follower means responsive to said secondary cam means for altering said electrical switching in accordance with a second program sequence;
- (d) ratchet and pawl means operative to cause rotation of said primary cam means and including a ratchet wheel rotatable about said first center and a drive pawl orbital about said second center; and,



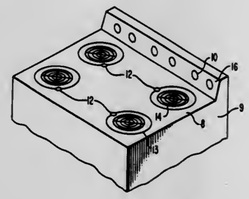
- (e) drive means rotatable about said second center to cause said pawl to index said ratchet.

4,577,180
DIGITAL DATA CONVERTING METHOD AND APPARATUS THEREOF
Shinichi Fukuda, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Nov. 20, 1984, Ser. No. 673,374
Claims priority, application Japan, Nov. 24, 1983, 58-221235
Int. Cl.⁴ H03K *13/00*
U.S. Cl. 340—347 DD **6 Claims**



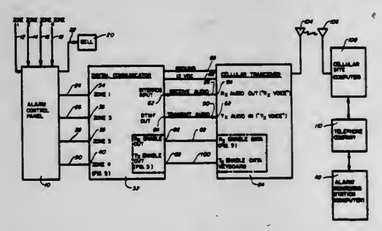
1. A method for converting a digital signal into an NRZI (non-return to zero, inverted)-coded signal, the method comprising the steps of:
- dividing a base digital signal into a series of base words with each m bits of data;
- converting said base digital signal into a converted digital signal by matching a converted word with each said base word, each said converted word having n bits of data, wherein n is greater than m and said converted digital signal has a predetermined maximum number of consecutive digital zeroes;
- detecting if the value of every odd-numbered bits of said converted word is digital zero;
- producing a detecting signal according to the result of said detecting;
- controlling said converted word in response to said detecting signal; and
- modulating said converted digital signal as an NRZI-coded digital signal.

4,577,181
ALARM SYSTEM FOR ELECTRIC RANGE
Bernard Lipscher, 8 Hamilton Ave., and Kevin G. Coleman, 3 Franklin Ave., both of Wheeling, W. Va. 26003
Filed Mar. 4, 1985, Ser. No. 707,950
Int. Cl.⁴ G08B *19/00*; H05B *1/02*
U.S. Cl. 340—522 **3 Claims**



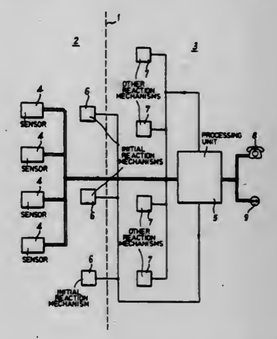
1. In an alarm system for an electric range for detecting when a burner is energized without a utensil in place on said burner, said electric range having:
- a generally planar stovetop with an opening for a burner,
- a dish which rests in said opening, said dish having a rim that rests on the stovetop and supports the dish, and
- a heating element which rests in said dish and which is energized by electric current controlled by a burner control switch; and said alarm system having a sensing means for detecting the presence or absence of a utensil on the heating element and an alarm means responsive to said sensing means and said burner control switch; the improvement, wherein said sensing means comprises:
- an electrical switch mounted below the stovetop having a first switch position and a second switch position;
- a pin slidably passing through an opening in said stovetop beneath the rim of said dish in contact with the underside of said rim and biased against said rim with a pressure sufficient to lift the rim from the stovetop when no utensil is present on the heating element, but insufficient to lift the rim when a utensil is in place on the heating element,
- means connecting said pin with said switch to operate the switch between the first and second positions corresponding to the position of the pin when a utensil is present or absent from the heating element.

4,577,182
ALARM SYSTEM
James W. Millsap, Hammond, Ind., and Peter Miller, 5659 N. Drake, Chicago, Ill. 60659, assignors to Peter Miller, Chicago, Ill.
Filed Apr. 10, 1984, Ser. No. 598,851
Int. Cl.⁴ G08B *1/08*; H04M *11/04*
U.S. Cl. 340—539 **9 Claims**



7. A system for providing a relatively tamperproof alarm of a protected premises at a fixed location, which comprises the steps of:
- providing a digital communicator having an audio input and an interrogation input;
- coupling an alarm signal line to said digital communicator;
- providing a cellular transceiver having a programmable means, an audio input and an audio output;
- coupling said digital communicator audio output to said cellular transceiver audio input;
- coupling said cellular transceiver audio output to said digital communicator interrogation input;
- when an alarm condition occurs, providing a signal from said digital communicator to said cellular transceiver to automatically transmit an over-the-air signal to a cellular site, where it can be forwarded to an alarm monitoring station with the alarm monitoring station being placed in two-way communication with the cellular transceiver via the cellular site.

4,577,183
APPARATUS FOR THE PROTECTION OF PLACES SUCH AS RESIDENCES
Guy Fontaine, Marnes-la-Coquette, and Serge Achard, Marly-le-Roi, both of France, assignors to Promocab, S.A., Versailles, France
Filed Mar. 12, 1982, Ser. No. 357,647
Claims priority, application France, Mar. 13, 1981, 81 05061
Int. Cl.⁴ G01B *13/02*
U.S. Cl. 340—541 **5 Claims**



1. A device for the protection of premises such as residences, comprising two chains of human presence detection sensors, a processing unit and reaction mechanisms, one of said chains of human presence detection sensors being located outside said premises, and one of said chains of human presence detection sensors being located inside said premises, said reaction mechanisms including means for simulating a presence inside the premises, controlled by the processing unit to simulate a human presence, and said processing unit including means for modifying the operation of the reaction mechanisms each time a human presence detection sensor is activated.

4,577,184
SECURITY SYSTEM WITH RANDOMLY MODULATED PROBE SIGNAL
Henri Hodara, Altadena, and Willard H. Wells, Arcadia, both of Calif., assignors to Tetra-Tech, Inc., Pasadena, Calif.
Filed May 23, 1983, Ser. No. 496,951
Int. Cl.⁴ G08B *13/00, 13/18*
U.S. Cl. 340—566 **8 Claims**

1. An alarm system for a facility whose security is to be monitored, said system comprising:
- a probe-signal source for generating a probe signal;
- a modulating-signal source for generating a substantially

random modulating signal for use in modulating the probe signal;

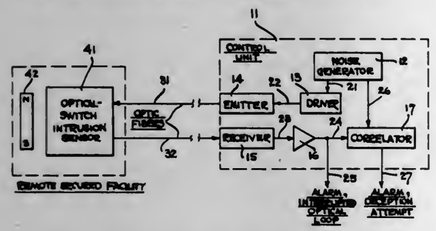
a modulator, responsive to the random modulating signal, for applying the modulating signal to the probe signal to produce a modulated probe signal that fluctuates substantially in accordance with the random modulating signal;

an intrusion sensor that establishes at least a secure condition and an alarm condition of such a facility, and that receives the modulated probe signal and impresses information as to the source or alarm condition upon the modulated probe signal, to form a composite reply signal;

a signal receiver for receiving the composite reply signal;

a first signal path for carrying the modulated probe signal to the intrusion sensor;

a second signal path for carrying the composite reply signal from the intrusion sensor to the signal receiver; and



a correlation-testing device that is responsive to the mddulation of the modulating signal, and that is also responsive to the modulation of the composite reply signal at the signal receiver, and that compares the modulation of the composite reply signal with the modulation of the modulating signal, and that generates an attempted-deception signal when the composite-reply-signal modulation is not correlated with the modulating-signal modulation in a particular manner; and wherein:

the signals in at least part of the first signal path and in at least part of the second signal path are optical signals; and

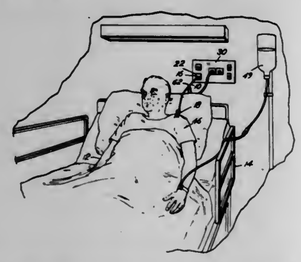
the intrusion sensor comprises an optical mirror that is moved into position to reflect an optical signal from the first signal path into the second signal path if and only if the facility is in a particular one of the secure and alarm conditions.

4,577,185

CONSTRUCTION FOR ALERTING HEALTH-CARE PROFESSIONALS

Frieda Andersen, Munster, Ind., assignor to Saint Margaret Hospital, Hammond, Ind.

Filed Jul. 29, 1983, Ser. No. 518,531
Int. Cl.⁴ G08B *23/00*
U.S. Cl. 340—573 **2 Claims**



1. An improved construction for operating a health-care professional alert system upon undesirable movement by a patient, the health-care professional alert system being of the kind having a signaling device that can be activated by a patient and capable of producing a signal detectable by health-care professionals, the signaling device having a patient-operable switch unit connected by a message transmitting cable to a wall-mounted receptacle and constructed such that removal of the patient-operable switch unit activates the signal, the construction comprising, in combination:

an insert mateable with the wall-mounted receptacle, the insert having an insertion end and an exposed end, the insert further comprising a plurality of stacked concentric cylinders, each cylinder being of progressively lesser diameter toward the insertion end, the insert being attached to the cord at the largest diameter cylinder, with the insertion of each cylinder to each adjoining cylinder defining an annular shelf mateable with portions of the interior of the receptacle, and the insert further being compatible with a plurality of receptacles that were each originally sized to receive different diameter inserts;

a segment of cord attached at one end of the exposed end of the insert; and

means for attaching the remaining end of the cord segment to a patient comprising a spring operated clip attached to the cord segment opposite the insert;

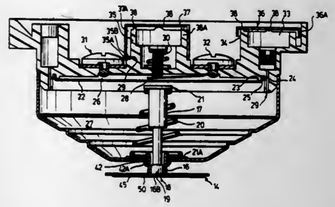
whereby undesirable movement of the patient's body pulls on the cord and results in the detachment of the insert from the receptacle, so that the signaling device activates the signal and alerts a health-care professional that undesirable movement is occuring.

4,577,186

FIRE DETECTOR

Jack Duggan, Markham, Canada, assignor to Fire Detection Devices Ltd., Markham, Canada

Filed Feb. 9, 1984, Ser. No. 578,642
Int. Cl.⁴ G08B *17/00*
U.S. Cl. 340—589 **26 Claims**



1. An improved fire detector vented to atmosphere, capable of closing or opening an alarm circuit when the rate of rise of the temperature of the ambient atmosphere exceeds a predetermined prescribed rate of rise of temperature comprising a base supporting a diaphragm enclosing a space between the base and diaphragm, a shell secured to the base enclosing s space between the diaphragm and shell, electrical circuit contacts mounted on the base in the space between the diaphragm and shell for being closed or opened when the rate of rise of the temperature of the atmosphere exceeds a predetermined rate of rise of temperature, at least one vent aperture through the base from the space between the diaphragm and base to the back of the detector, and at least one vent aperture through the base from the space between the base and shell to the back of the detector, the at least one vent aperture through the base between the diaphragm and base to the back of the detector, being surrounded by an endless wall covered by a closure cap having a top and depending skirt, the closure cap spaced from the endless wall by relatively small projections between the top of the closure cap and the top of the endless wall and by relatively thin posts or lugs between the endless wall and depending skirt for spacing the endless wall from the depending skirt, the depending skirt being such as to extend to a position above the bottom of the endless wall remote the top of the endless wall whereby the atmosphere between the diaphragm and base is permitted to expand into the space between the endless wall and skirt which in turn forces air therefrom into the space at the back of the detector under normal expansion of the ambient atmosphere and draws air into the vent aperture substantially only from the space between the endless wall and skirt under normal contraction of the ambient atmosphere between the diaphragm and base thereby precluding dust and other contaminants in the space at the back of the detector from entering the vent aperture.

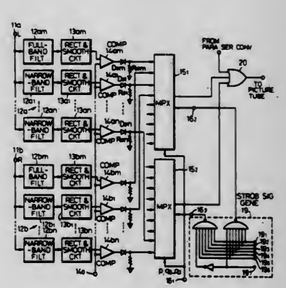
7. An improved fire detector comprising a base, a shell secured to the base, a fin secured to the shell by a ferrule passing through the shell at one end and secured to a detent member carried in the shell by a fusible link and at the other end by the ferrule passing through a centrally disposed aperture through the fin, the improvement comprising the fin being connected to the ferrule by causing substantially equally spaced peripheral portions of the ferrule at the end of the ferrule passing through the centrally disposed aperture, to be indented to cause metal from such portions to be forced to flow substantially radially over portions of the fin, surrounding the aperture in the fin, whereby the outer surface of the ferrule engages fin metal surrounding the aperture and metal forced to flow radially from the peripheral indented portions overlies and engages the fin to provide a joint between the two which permits efficient heat transfer between the two.

4,577,188

LEVEL DISPLAY DEVICE FOR AUDIO SIGNAL

Mamoru Inami, Yokohama; Yoshiaki Tanaka, Fujisawa, and Zenju Ohtsuki, Tokyo, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Aug. 30, 1982, Ser. No. 412,968
Claims priority, application Japan, Sep. 3, 1981, 56-138861; Sep. 3, 1981, 56-138862; Sep. 3, 1981, 56-138863; Sep. 3, 1981, 56-138864
Int. Cl.⁴ G09G *1/00*
U.S. Cl. 340—721 **10 Claims**



1. A level display device for audio signal comprising:

a plurality of bandpass filters having filtering bands of respectively different center frequencies, for band-dividing and filtering an input signal supplied thereto through an input terminal;

pulse width converting means provided in correspondence with respective bandpass filters for converting the input signal into a pulse signal which is in synchronism with a vertical synchronizing signal of a video signal and has a pulse width representative of the level of said input signal, said pulse width converting means comprising a plurality of comparators each of which is supplied with one of the band-divided signals to one input terminal thereof and a comparison voltage to the other input terminal thereof, said comparison voltage being in synchronism with the vertical synchronizing signal and successively varying in the voltage level with time only during a predetermined interval within a vertical scanning period;

level indication signal producing means connected with outputs of said pulse width converting means in parallel, for serially producing said converted pulse signal in synchronism with a horizontal synchronizing signal by successively time-dividing said converted pulse signal during a horizontal scanning period;

character indication signal producing means stored with information signals for displaying characters and the like, for serially obtaining a character indication signal in synchronism with a synchronizing signal of said video signal;

video signal composing means driven by said video signal, for obtaining a video signal by composing an output of said level indication signal producing means and an output of said character indication signal producing means; and

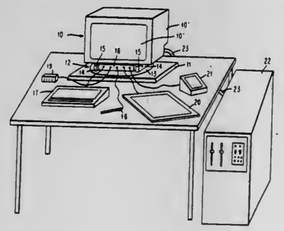
display means for composing and displaying bars corresponding to the audio signal level in a vertical direction, characters, and the like, on a screen of a picture tube, by the outputs of said level indication signal producing means and said character indication signal producing means.

4,577,187

DISPLAY WORKSTATION

Millard G. Barr, Shokan; William H. Barrett, Woodstock; Joseph W. Braidt, New Paltz; John F. Driscoll; Joseph A. Gregory, both of Kingston; Samuel A. Lucente, Glenford, and Louis J. Remsburger, Pine Plains, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 20, 1983, Ser. No. 543,741
Int. Cl.⁴ G09F *1/00*; A47B *91/00*; F16M *1/00*
U.S. Cl. 340—700 **12 Claims**



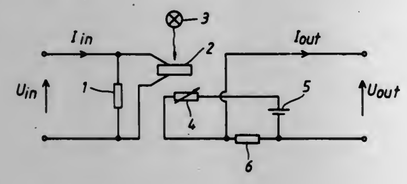
1. A display workstation comprising a display monitor, having a viewing screen, a cable connector means releasably coupled to the monitor in a position below the viewing screen, a plurality of input devices with individual cables which extend to and are releasably coupled to the cable connector means, a separate display control unit, and at least one further cable coupled to the cable connector means and extending therefrom to the control unit, the cable connector means providing electrical connections between the input device cables and the cable to the control unit.

4,577,189

CIRCUITS WITH ELECTRO-OPTICAL FEEDBACK FOR DISPLAY AND A DIGITIZER APPLICATION

Morgan Adolfsson; Iorgay Brogardh, and Christer Ovren, all of Västerås, Sweden, assignors to ASEA Aktiebolag, Västerås, Sweden

Filed Mar. 30, 1982, Ser. No. 363,598
Claims priority, application Sweden, Apr. 2, 1981, 8102109
Int. Cl.⁴ G09G 3/00
U.S. Cl. 340—794 **26 Claims**



1. A shift register operating with information in electrical and optical form, comprising:

a plurality of series-connected electro-optical memory (EOM) circuits, each being capable of transforming electrical signals into optical signals and optical signals into electrical signals, each said EOM circuit including an optical modulator for modulating the light from a light source and a photo-detector circuit including light sensitive means, said optical modulator and said photo-detector circuit being interconnected with one another to provide an electro-optical feedback loop including light transmission means for transmitting light signals from said optical modulator and means for converting said light signals into electrical signals, and including said photo-detector circuit, to provide an electrical input to said optical modulator and a modulated optical output in response thereto;

an additional photo-detector for transmission of information between each of said series-connected EOM circuits;

means responsive to said additional photo-detector circuit to control an EOM circuit in at least one succeeding EOM circuit; and

a substrate containing said plurality of series-connected EOM circuits and each said additional photo-detectors in the form of an integrated circuit, said optical modulator including a liquid crystal substance, and first and second electrically-conducting spaced layers between which is located said liquid crystal substance with said first electrically-conductive layer being spaced a greater distance from said substrate than said second electrically-conducting layer, and a respective light-polarizing element respectively adjacent said first and second electrically-conducting layers.

4,577,190

PROGRAMMED LOGIC ARRAY WITH AUXILIARY PULL-UP MEANS TO INCREASE PRECHARGING SPEED

Hung-Fai S. Law, Summit, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Apr. 11, 1983, Ser. No. 483,645
Int. Cl.⁴ H03K 19/173; G06F 7/38
U.S. Cl. 340—825.83 **10 Claims**

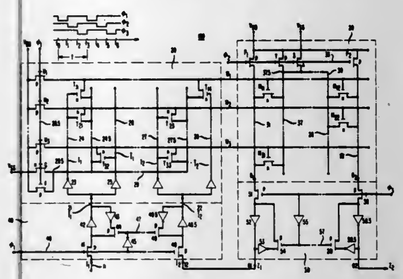
1. A logic array including a PLA comprising a plane having:

(a) a first output line to which a high current-carrying terminal of each of a first plurality of driver transistors is connected;

(b) a clocked ground node to which another high current-carrying terminal of each of the first plurality of driver transistors (M_{11}, M_{31}) is connected;

(c) clocked precharging means connected to the first output line (31) for charging the line essentially to a first predetermined voltage level during only a predetermined portion of each cycle of a clock sequence;

(d) clocked ground node charging means connected to the ground node (37.5) for charging the node essentially to the first predetermined voltage level (V_{DD}) during only the predetermined portion (t_1t_2) of each said cycle; and



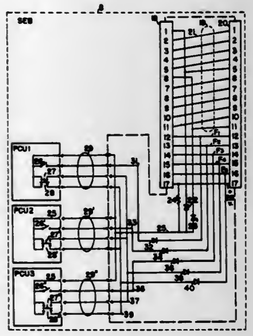
(e) power switching means connected to the clocked ground node (37.5) and for discharging the clocked ground node (37.5) essentially to a second, different predetermined voltage level during only a remaining portion of each said cycle.

4,577,191

MATRIX CONTROL METHOD AND APPARATUS

Robert W. Pargee, Jr., San Clemente, Calif., assignor to EECO Incorporated, Santa Ana, Calif.

PCT No. PCT/US83/01167, § 371 Date Aug. 1, 1983, § 102(e) Date Aug. 1, 1983, PCT Pub. No. WO85/00720, PCT Pub. Date Feb. 14, 1985
PCT Filed Aug. 1, 1983, Ser. No. 524,435
Int. Cl.⁴ H04Q 9/00
U.S. Cl. 340—825.79 **12 Claims**



1. The method of controlling a selected use circuit out of a multiplicity of substantially identical sequentially series connected electrical use circuits from a selected control circuit out of the same multiplicity of substantially identical sequentially series connected electrical control circuits that comprises the method steps of;

(a) forming a one for one correspondence between said use circuits in one sequential series connection and between said control circuits in another sequential series connection,

(b) providing a first sequence of clock pulses having plural phases to each said electrical use circuit and also to each said electrical control circuit, each with all of the phases displaced one phase from circuit to circuit,

(c) providing a second sequence of clock pulses having a number of plural phases mutually prime with respect to the number of plural phases of said first sequence of clock pulses, also to each said electrical use circuit and to each said electrical control circuit, each with all of the phases similarly displaced one phase from circuit to circuit,

(d) successively providing from each said control circuit a unique combination of pulse-coincidences which are carried by a function conductor to the corresponding use circuit, which is simultaneously enabled by correspondingly timed pulses so that actuation of a given said electrical control circuit energizes the corresponding electrical use circuit, and

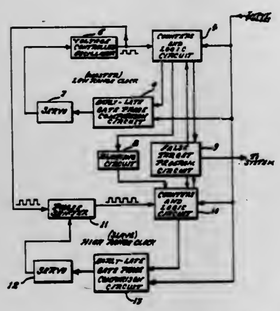
(e) cyclically repeating the unique combination of pulse-coincidence at each said control circuit and the corresponding use circuit by continuously providing said first and second sequences of clock pulses.

4,577,192

ELECTRONIC COUNTERMEASURES FALSE TARGET SYSTEM

Richard J. Wiegand, Severna Park, Md., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 14, 1969, Ser. No. 808,048
Int. Cl.⁴ G01S 7/38
U.S. Cl. 343—18 E **3 Claims**



1. In an electronic countermeasurers deception system wherein radar pulses are generated and transmitted as constituent pulses in reflected threat radar signals, apparatus for adapting to changes in threat radar pulse repetition frequency comprising

a master range clock adapted to operate at a low pulse repetition frequency,

a slave clock adapted to operate at a high pulse repetition frequency,

means for generating and grouping an array of false target pulses around a low pulse repetition frequency radar signal,

means for digitally transferring said array of false target pulses to a high pulse repetition frequency radar signal, and

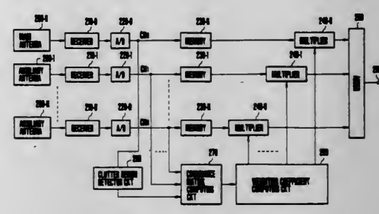
means for phase shifting said transferred array with respect to the master range clock rate.

4,577,193

COHERENT SIDELOBE CANCELLER FOR RADAR

Eiichi Kiuchi; Hiroshi Sawanaka, and Yuichi Tomita, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Oct. 18, 1984, Ser. No. 663,464
Claims priority, application Japan, Oct. 19, 1983, 58-195743
Int. Cl.⁴ G01S 3/16, 3/28
U.S. Cl. 343—380 **2 Claims**



1. A coherent sidelobe canceller configured as a linear array antenna system having a digital open-loop configuration comprising:

signal receiver means having (N+1) channels connected to a main antenna and N auxiliary antennas in a one-to-one relationship, for producing radar video signals, N being an integer;

analog-to-digital converter means having (N+1) channels, each channel being connected to a corresponding one of said signal receiver means for converting said radar video signals to digital signals;

a first calculating means connected to all (N+1) channels of said analog-to-digital converter means for calculating a covariance matrix ϕ based on said digital signals from said analog-to-digital converter means;

a second calculating means connected to an output of said first calculating means for calculating a weighting coefficient vector W on the basis of the relationship expressed as $W=\mu\phi^{-1}S^*$, where μ is an arbitrary constant, ϕ^{-1} is an inverse matrix of said covariance matrix ϕ and S^* is an arbitrary vector, said second calculating means having a plurality of outputs for outputting the components of the vector W;

memory means having (N+1) memory cells, each of said memory cells being connected to a corresponding channel of said analog-to-digital converter means, said memory means for storing and delaying said digital signals of said analog-to-digital converter means until the calculation of said vector W is completed;

multiplier means having (N+1) multipliers, each of said multipliers having one input connected to an output of said corresponding memory cell and another input connected to one of said plurality of outputs of said second calculating means, said multiplier means for multiplying said digital signals stored in said memory cells by said weighting coefficient vector W; and

summing means for summing output signals from said multiplier means to suppress interference signals based on real time processing;

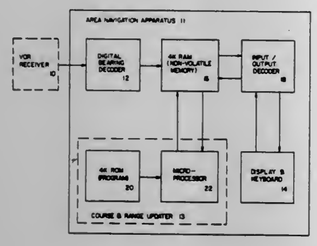
whereby said memory means enables the storage and delay of said ditigal signals until completion of the calculation of said vector W in said second calculating means so as to permit optimization of the time at which said digital signals are input to said multiplier means with respect to the time of input of said weight coefficient vector to thereby adjust for optimizing interference rejection.

4,577,194

AREA NAVIGATIONAL SYSTEM

William A. Ragsdale, League City, Tex., assignor to Intermetrics, Inc., Cambridge, Mass.

Filed Jun. 14, 1983, Ser. No. 504,262
Int. Cl.⁴ G01S *1/44*
U.S. Cl. 343—401 **19 Claims**



1. Apparatus for air navigation to a point of known location which is separated from a VOR beacon of known location, said apparatus comprising:

a storage means for storing signals representative of, respectively, the known locations of said point and said VOR, an estimated ground speed, an estimated range-to-go to said point, and an estimated course to said point;

means for receiving from a VOR signal receiver/VOR bearing generator a signal representative of the current bearing of said VOR beacon from said apparatus;

a bearing change generator responsive to signals generated by said VOR receiver/generator for generating a signal that is representative of the change in the VOR bearing;

a course estimator responsive to signals generated by said bearing change generator and signals in said storage means for generating a signal representative of an updated course heading, said course estimator including,

(a) a first provisional range-to-VOR generator responsive to signals representative of the current estimated course heading and the current VOR bearing for deriving a signal representative of a provisional range-to-VOR,

(b) a second provisional range-to-VOR generator responsive to signals representative of the current estimated ground speed and the change of the VOR bearing for deriving a signal representative of a provisional range-to-VOR,

(c) a range filter for comparing the relationship between said signals representative of said provisional ranges-to-VOR with a predetermined permitted relationship and selecting one of said two signals representative of provisional ranges-to-VOR on the basis of said comparison,

(d) a provisional course generator responsive to the signal representative of the one of said provisional ranges-to-VOR selected on the basis of said comparison for generating a signal representative of a provisional course, and

(e) a course updater responsive to said signal representative of said provisional course for generating a signal representative of an updated course;

a range-to-point estimator responsive to said signal representative of said updated estimated course stored in said storage means for generating a signal representative of the range-to-point, and

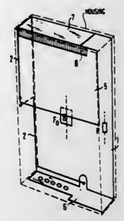
control means for controlling said bearing sampling and for activating said course estimator at predetermined intervals.

4,577,195

MINIATURIZED MOBILE RADIO RECEIVER WITH DIPOLE ANTENNA

Manfred Schwanitz; Dietrich Gaertner; Wolfgang Dressler, all of Berlin, and Joerg Schenk, Pforzheim, all of Fed. Rep. of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

PCT No. PCT/EP83/00106, § 371 Date Dec. 19, 1983, § 102(e) Date Dec. 19, 1983, PCT Pub. No. WO83/03716, PCT Pub. Date Oct. 27, 1983
PCT Filed Apr. 16, 1984, Ser. No. 568,239
Claims priority, application Fed. Rep. of Germany, Apr. 20, 1982, 3214449
Int. Cl.⁴ H01Q *1/24*
U.S. Cl. 343—702 **11 Claims**



1. In a miniaturized radio receiver with a housing, said receiver including at least one printed circuit board containing a plurality of components interconnected on said board by means of conductive strips, a dipole antenna having first and second wires directed parallel to one edge of said board with said first wire directed from the top of said edge towards the center of said board and said second wire directed from the bottom of said edge towards the center of said board to create a space between said wires near the center of said board to form a dipole antenna with said base of said antenna positioned near the center of said board, the combination therewith of capacitive loads for said wires comprising:

first and second conductive areas with said first area connected to said first wire at the top of said edge and positioned transverse to said first wire, with said second area connected to said second wire at the bottom of said edge and positioned transverse to said second wire, with each conductive area directed parallel to a corresponding side of said printed circuit board and spaced therefrom to create a predetermined capacitive value for each of said antenna wires, and means coupled to said conductive strips on said board to effectively open said conductive strips near said base of said dipole to block the flow of RF signals.

4,577,196

MISSILE MOUNTED WAVEGUIDE ANTENNA

I-Ping Yu, Thousand Oaks, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.

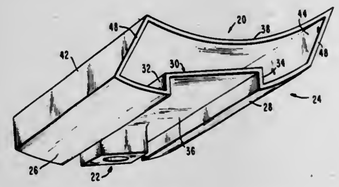
Filed Apr. 1, 1983, Ser. No. 481,501
Int. Cl.⁴ H01Q *13/06*
U.S. Cl. 343—705 **4 Claims**

1. A compact microwave antenna for mounting within a recessed free space of a missile, comprising:

a waveguide antenna having two longitudinally parallel broad walls and two longitudinally parallel narrow walls, whereby the cross-sectional area of the antenna is constant over the length of the antenna and whereby the volume of the antenna is adapted to fit entirely within the free space;

one of such broad walls including a generally rectangular ridge; and

the other said broad wall being arcuate in form and most closely approaching said rectangular ridge at the center of such ridge, whereby a gap is defined between such broad



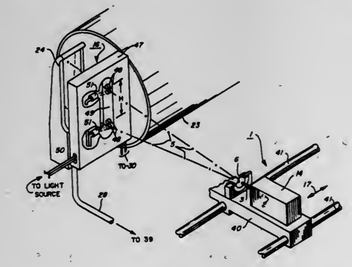
walls and whereby the arcuate form is adapted to mount with convenience on an interior surface of the free space.

4,577,197

INK JET PRINTER DROPLET HEIGHT SENSING CONTROL

Peter A. Crean, Penfield; David Birnbaum, Pittsford; David B. Feldman, Rochester, all of N.Y.; Frank J. Liptak, Carteret, N.J., and David W. Sewhuk, Rochester, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 17, 1985, Ser. No. 692,260
Int. Cl.⁴ G01D *15/18*; H01J *5/16*; G02B *6/04*
U.S. Cl. 346—75 **8 Claims**



1. An improved ink jet printer of the type having a stationary base and a reciprocating printhead mounted on a movable carriage, the printhead having a droplet generator with a single nozzle for producing a single perturbated, continuous stream of ink under pressure that breaks up into droplets at a predetermined distance from the nozzle whereat the droplets are charged in accordance with digitized data signals from a controller for printing swaths of information on a recording medium by sweeping a predetermined series of droplets in one direction, while the droplet generator is reciprocated in another direction, and repeating the carriage reciprocation and droplet sweeping until a completed page of information is printed one swath at a time, the recording medium being incrementally moved a distance equal to the height of one printed swath by a platen after each swath is printed, wherein the improvement comprises:

a height control sensor positioned adjacent at least one end of the platen at a location to sense periodically a test sweep of droplets before or after a swath of information is printed, the sensor having:

(1) a mounting structure fixedly attached to the printer base with an opening therein for the passage of a test sweep of droplets therethrough,

(2) first and second pairs of photodetectors fixedly mounted at predetermined positions on the mounting structure adjacent said opening therein, and

(3) each photodetector pair having an associated light source fixedly mounted on the structure adjacent said opening therein at a location opposite its associated photodetector pair, so that the light sources confront and activate their associated pair of photodectors each of the photodetector pairs generating differential sensing signals in response to the passage of droplets thereby;

circuit means, responsive to said differential sensing signals, for identifying which of the droplets detected by each of the photodector pairs has a trajectory closest to a desired predetermined trajectory, the circuit means generating control signals indicative of whether the identified droplet has the desired trajectory or has one higher or lower; and

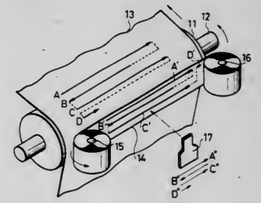
means responsive to said control signals for adjusting at least one printer operating parameter in response to the control signals to correct the trajectories of the droplets and thus their interdroplet spacing, so that each subsequently printed swath on the recording medium has a uniformly constant height, thereby enabling the printer to incrementally move the recording medium so that each swath is contiguous to the previously printed swath without pixel gaps or overlaps because all swaths are substantially the same uniform height.

4,577,198

THERMAL TRANSFER PRINTER

Ikuo Hibino, Takizawa, and Mikio Miyajima, Iwate, both of Japan, assignors to Alps Electric Company, Ltd., Japan

Filed Aug. 24, 1984, Ser. No. 644,494
Claims priority, application Japan, Aug. 24, 1983, 58-155217
Int. Cl.⁴ B41J *31/00*
U.S. Cl. 346—76 PH **7 Claims**



1. A printer comprising:

a platen for holding a sheet of print paper thereagainst;

means for advancing said platen and the print paper incrementally in successive line feeding;

a print head movable axially along said platen for bidirectional printing in opposite first and second directions;

an ink tape having a stretch thereof facing said platen for being advanced and pressed against said sheet of print paper by said print head in successive printing operations, said ink tape having a width allowing printing along at least two transversely spaced lines thereon; and

means for positioning a stretch on one line of said tape in front of said print head and advancing said tape in the first direction as said print head is moved in the first direction for printing, and following a line feed of said print paper, for positioning a stretch on a second line of said tape in front of said print head and advancing said tape in the second, opposite direction as said print head is moved in the second direction for printing; and

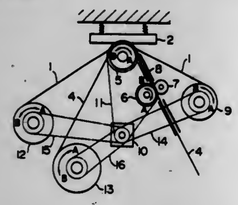
means for winding the tape a selected length after printing thereon in said first and second directions in order to bring a fresh section of said tape to a starting position for subsequent bidirectional printing.

4,577,199

THERMAL TRANSFER RECORDING APPARATUS

Eisaku Saiki; Satoshi Kawamura, both of Yokohama, and Masataka Kawauchi, Ishioka, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 22, 1984, Ser. No. 612,809
Claims priority, application Japan, May 23, 1983, 58-89129
Int. Cl.[4] B41J *35/10, 3/20*
U.S. Cl. 346—76 PH 17 Claims



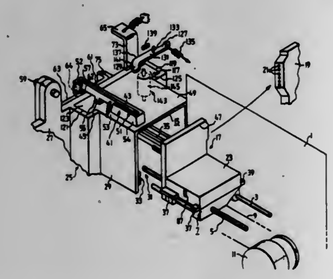
1. A thermal transfer recording apparatus comprising a carrier having a record forming material on its surface, a recording medium, a thermal head having heating elements, and a recording section including means for pressing said carrier and said recording medium against each other; carrier mounting means and recording medium mounting means for mounting said carrier and said recording medium independently of each other on an upstream side of said recording section; carrier mounting means for mounting said carrier on a downstream side of said recording section; conveying means for conveying said recording medium on the downstream side of said recording section; a conveying mechanism capable of conveying said carrier and said recording medium in a normal direction and in a reverse direction; and means for applying tension to the carrier and the recording medium upon feeding said carrier and said recording medium in said normal direction and in said reverse direction, said tension applying means being provided on the upstream and downstream sides of said recording section.

4,577,200

CASSETTE FOR THE INK JET PRINTER OF AN OFFICE MACHINE

Albert Rix, Wilhelmshaven; Horst Martens, Varel; Dieter Drogi, Wilhelmshaven; Klaus-Dieter Frerichs, and Wolfgang Leschik, both of Schortens, all of Fed. Rep. of Germany, assignors to Olympia Werke AG, Wilhelmshaven, Fed. Rep. of Germany

Filed Nov. 15, 1984, Ser. No. 672,178
Claims priority, application Fed. Rep. of Germany, Nov. 26, 1983, 3342894
Int. Cl.[4] G01D *15/16*
U.S. Cl. 346—140 R 21 Claims



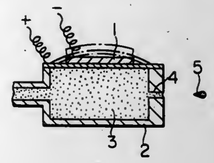
1. An ink jet printing head cassette assembly comprising an ink jet printing head for use in an office machine equipped with a carriage for moving said printing head past a record carrier during a printing operation, the carriage being provided with holding elements for holding said printing head and the carriage being arranged for moving said printing head into a rest position at the conclusion of a printing operation, the machine further being equipped with a receptacle having holding members and with means for establishing electrical, mechanical and ink supply plug-in connections with said printing head when said printing head is mounted on the carriage, said assembly further comprising: a housing arranged to be inserted, together with said printing head, into the receptacle when said assembly is installed in the office machine so that said housing is held by the holding members of the receptacle and said printing head is held by the holding elements of the carriage, said housing being disposed for receiving and protecting said printing head when said printing head is in said rest position and when said housing is removed from the receptacle; and holding means associated with said housing and said printing head for securely holding said printing head in said housing when said housing is removed from the receptacle.

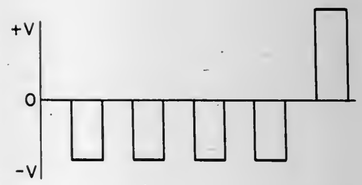
4,577,201

FLUID DROPLET EJECTING SYSTEM

Kiyotaka Murakami, Hino, and Yoshiaki Kimura, Hachioji, both of Japan, assignors to Konishiroku Photo Industry Co. Ltd., Tokyo, Japan

Filed Feb. 6, 1984, Ser. No. 577,132
Claims priority, application Japan, Feb. 5, 1983, 58-18460
Int. Cl.[4] G01D *15/16*
U.S. Cl. 346—140 R 10 Claims





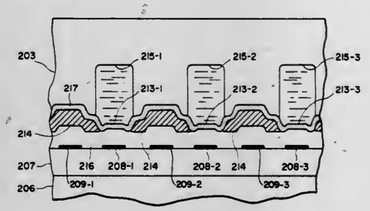
1. In an on-demand type ink-jet recording apparatus comprising:
an ink-jet printer head including an ink chamber,
a polarized piezoelectric element coupled to said ink chamber, said piezoelectric element being polarized as a result of application of a voltage of given polarity thereacross to thereby effect a polarization treatment thereof,
a nozzle in communication with said ink chamber and from which an ink droplet is to be ejected,
an ink supplying passage through which ink is supplied to the ink chamber, and
means for applying to said piezoelectric element a droplet-ejecting pulse voltage of only the opposite polarity to that used in said polarization treatment for ejecting an ink droplet from said nozzle for recording on a recording medium,
the improvement comprising:
means for applying to said piezoelectric element at least one polarization-loss-preventing pulse of the same polarity as that used in said polarization treatment at predetermined points of time not for recording but to prevent loss of polarization of said piezoelectric element due to application of said opposite polarity droplet-ejecting pulses, said at least one polarization-loss-preventing pulse being applied after application of a plurality of said droplet-ejecting pulses.

4,577,202

LIQUID JET RECORDING HEAD

Toshitami Hara, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 7, 1983, Ser. No. 558,981
Claims priority, application Japan, Dec. 11, 1982, 57-217582
Int. Cl.[4] G01D *15/18*
U.S. Cl. 346—140 R 34 Claims



1. A liquid jet recording head, comprising:
a liquid discharging section having an orifice for discharging liquid in liquid droplets and a liquid pathway connected to said orifice, said liquid pathway having a heat acting portion for applying heat energy to liquid in said portion for forming liquid droplets;
a liquid chamber for storage of liquid to be supplied to said liquid pathway;
an electro-thermal transducer including at least a pair of confronting electrodes connected electrically to a heat generating resistance layer provided on a substrate for forming a heat generating section between said electrodes, at least one of said electrodes having a least a portion thereof underlying said liquid chamber; and
an upper layer on at least said portion of said one electrode and including a first layer comprising an inorganic dielectric material, a second layer comprising an organic material and a third layer comprising an inorganic material, laminated in this order from the surface of said one electrode.

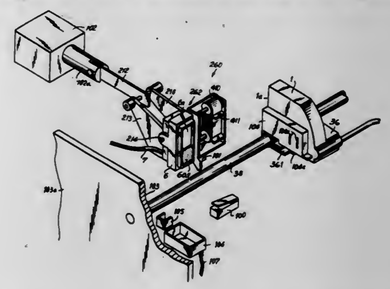
4,577,203

INK JET RECORDING APPARATUS

Yoshikazu Kawamura, Shiojiri, Japan, assignor to Epson Corporation and Kabushiki Kaisha Suwa Seikosha, both of Tokyo, Japan

Continuation of Ser. No. 425,767, Sep. 28, 1982, abandoned. This application Aug. 7, 1985, Ser. No. 763,324
Claims priority, application Japan, Sep. 30, 1981, 56-155209; Aug. 13, 1982, 57-141297
Int. Cl.[4] G01D *15/18*
U.S. Cl. 346—140 R 50 Claims

1. An ink jet recording apparatus for projecting ink onto a recording medium comprising an ink jet head adapted to receive ink having an ejection nozzle means for ejecting said ink out of said ink jet head towards said recording medium, ink tank means for storing said ink and for supplying said stored ink to said ink jet head, switching means for selectively switching between a first condition where said ink tank means is in fluid communication with said ink jet head so that ink stored in said ink tank means can be supplied to said ink jet head and a second condition where said ink jet head is vented to atmosphere, cap means for selectively covering said ejection nozzle means, suction means for creating a negative pressure in said cap means, and control means for controlling the operation of said switching means, suction means and cap means during a printing start operation and a printing operation, ink stored in said ink tank means being supplied to said ink jet head when said switching means is in said first condition during said printing operation, said cap means covering said ejection nozzle means when said printing operation is completed, said cap means selectively drawing ink and air out of said ink jet head through said ejection nozzle means in response to the negative



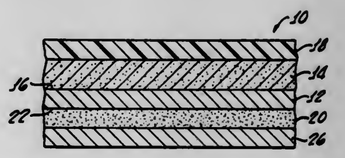
pressure created by said suction means, said cap means essentially clearing said ink jet head of ink when said switching means is in said second condition whereby ink clogging and corrosion during said no print condition can be essentially prevented, said cap means being removed from said ejection nozzle means and said printing operation commences when said switching means is in said first condition during said printing start operation, said suction means refilling said ink jet head with ink and said printing operation commencing after said switching means switches from said second condition to said first condition when said switching means is initially in said second condition during said printing start operation.

4,577,204

THERMOSENSITIVE RECORDING LABEL

Tomoo Shibata, Irvine, and Wissam J. Jurdi, Anaheim, both of Calif., assignors to Ricoh Electronics, Inc., Santa Ana, Calif.

Filed May 25, 1984, Ser. No. 614,287
Int. Cl.[4] B41M *5/18*
U.S. Cl. 346—200 12 Claims



1. A thermosensitive recording label comprising:
a substrate;
a thermosensitive color-forming layer disposed on one side of said substrate, said thermosensitive color-forming layer comprising a colorless or lightcolored leuco dye and acidic substance capable of causing said leuco dye to udnergo color formation upon heating of the thermosensitive recording label;
a protective layer disposed on said thermosensitive color-forming layer;
a pressure-sensitive hot melt adhesive layer disposed on another side of said substrate said pressure-sensitive hot melt adhesive layer comprising at least one adhesive agent

selected from the group consisting of a styrene-butadiene rubber hot melt adhesive and an acrylic hot melt adhesive, and,

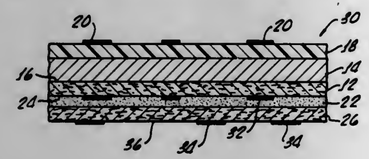
a releasable backing sheet disposed on said pressure-sentitive adhesive layer.

4,577,205

RELEASABLE HEAT-SENSITIVE LABEL WITH E. B. SETTING PRINTING INK

Tomoo Shibata, Irvine, and Wissam J. Jurdi, Anaheim, both of Calif., assignors to Ricoh Electronics, Inc., Santa Ana, Calif.

Filed May 25, 1984, Ser. No. 614,307
Int. Cl.⁴ B41M *5/18*
U.S. Cl. 346—204 **10 Claims**



1. A thermosensitive recording label, comprising:

a substrate;

a thermosensitive color-forming layer disposed on one side of said substrate, said thermosensitive color-forming layer comprising a colorless or light-colored leuco dye and an acidic substance capable of causing said leuco dye to undergo color formation upon heating of the thermosensitive recording label;

a protective layer disposed on said thermosensitive color-forming layer;

electron beam setting printing ink disposed in a preselected pattern on said protective layer;

a pressure-sensitive adhesive layer disposed on another side of said substrate;

a releasable backing sheet disposed on said pressure-sensitive adhesive layer; and,

electron beam setting printing ink disposed in a preselected pattern on said releasable backing sheet,

said electron beam setting printing ink consisting essentially of a prepolymer, a monomer and a pigment, said prepolymer being a member of the group comprising unsaturated polyesters, vinyloxyethylacrylate, urethane-acrylates, epoxy-acrylates, and dicyclopentadiene acrylates, said monomer being a member of the group comprising acrylic acid esters, methacrylic acid esters, aryl compounds and styrene;

said electron beam setting printing ink having sufficient density and thickness to enable an observable pattern to appeal upon setting of the electron beam setting printing ink during exposure to an electron beam.

4,577,206

PEN RECORDING APPARATUS

Masaaki Hibino, Yokkaichi, Japan, assignor to Brother Industries, Ltd., Nagoya, Japan

Filed Mar. 7, 1985, Ser. No. 708,979
Claims priority, application Japan, Mar. 12, 1984, 59-47972
Int. Cl.⁴ G01D *9/30*
U.S. Cl. 346—139 R **4 Claims**

1. A pen recording apparatus comprising:

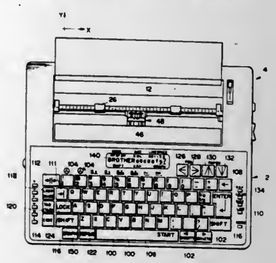
(a) sheet holding means for holding a recording sheet in position;

(b) pen selection means for arbitrarily selecting one of a plurality of types of pen and positioning same in a writing position;

(c) pen holding means for holding at least the pen disposed in the writing position;

(d) a writing control device for moving the pen holding means and the recording sheet relative to each other in two axial directions which intersect each other causing the pen disposed in the writing position to record characters, symbols, graphs, etc., on the recording sheet;

(e) switch means for switching the recording apparatus between a typing mode in which characters, symbols, etc., are typed and a graphic mode in which graphs are drawn;



(f) a memory for storing the pen disposed in the writing position when the recording apparatus is switched from the typing mode to the graphic mode; and

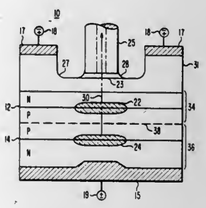
(g) a pen selection means control unit for actuating the pen selection means, when the recording apparatus is switched from the graphic mode to the typing mode, in such a manner that the pen stored in the memory is disposed in the writing position.

4,577,207

DUAL WAVELENGTH OPTICAL SOURCE

John A. Copeland, Dunwoody, Ga., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 30, 1982, Ser. No. 454,550
Int. Cl.⁴ H01L *33/00*
U.S. Cl. 357—17 **3 Claims**



1. A dual wavelength optical source comprising

a monolithic integrated pair of series-opposition connected diodes including

a first diode formed in a first homogeneous material having a first energy band gap and being doped with n and p type impurities as a homojunction for producing light at a first wavelength,

a second diode formed adjacent to the first diode in a second homogeneous material having a second energy band gap and being doped with p and n type impurities as another homojunction for producing light at a second wavelength, and

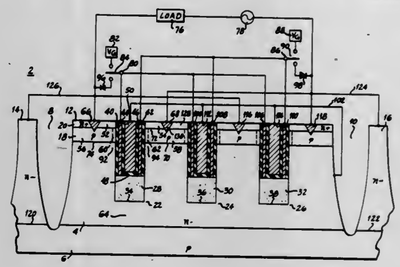
means interconnected with the first and second diodes for reversing polarity of a common bias current conducted through the first and second diodes and thereby alternatively activating light emission of the first and second wavelengths, respectively, from the first and second diodes along a common path out of the diodes.

4,577,208

BIDIRECTIONAL POWER FET WITH INTEGRAL AVALANCHE PROTECTION

Herman P. Schutten, Milwaukee, Wis.; Robert W. Lade, Fort Myers, Fla., and James A. Benjamin, Waukesha, Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed Sep. 23, 1982, Ser. No. 421,932
Int. Cl.⁴ H01L *29/78*
U.S. Cl. 357—23.4 **19 Claims**



1. A bidirectional FET, comprising:

a first source region of one conductivity type semiconductor material;

a first channel region of opposite conductivity type semiconductor material forming a junction with said first source region;

a single drift region of said one conductivity type semiconductor material forming another junction with said first channel region;

a second channel region of said opposite conductivity type semiconductor material forming a junction with said drift region;

a second source region of said one conductivity type semiconductor material forming a junction with said second channel region;

gate electrode means disposed proximate said first and second channel regions and adapted for application of electrical potential for producing electric fields of sufficient intensity to invert the conductivity type in at least a portion of said first and second channel regions;

whereby upon application of voltage of either polarity to said first and second source regions, electric current can flow in a respective corresponding direction between them, under control of said electrical potential of said gate electode means;

said FET having an OFF state in the absence of said electric gate potential, with the junction between said drift region and one of said channel regions blocking current flow toward one of said source regions, and with the junction between said drift region and the other of said channel regions blocking current flow toward the other of said source regions, said single drift region supporting OFF state blocking voltage in both directions; and

integral avalanche protection means in parallel with said last mentioned blocking junctions and having a lower reverse breakover threshold for protecting the latter in said OFF state;

wherein said integral avalanche protection means comprises:

first and second isolation regions of said one conductivity type laterally spaced and separated from said source regions, channel regions and drift region by respective isolation moats, and means connecting each of said first and second isolation regions to a respective on of said source regions; and

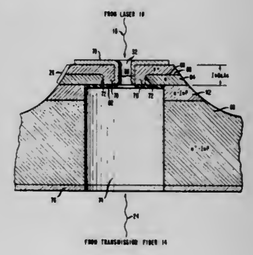
a common region of said opposite conductivity type forming bypass junctions with said first and second isolation regions to provide an integral bypass current path around said blocking junctions between said channel regions and said drift region, said bypass junctions having a lower reverse breakover voltage threshold than said blocking junction.

4,577,209

PHOTODIODES HAVING A HOLE EXTENDING THERETHROUGH

Stephen R. Forrest, Chatham, and Richard L. Panock, Cranford, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Division of Ser. No. 416,467, Sep. 10, 1982. This application Sep. 25, 1984, Ser. No. 653,885
Int. Cl.⁴ H01L *27/14*
U.S. Cl. 357—30 **9 Claims**



1. A photodiode comprising

a relatively wide bandgap semiconductor body of one conductivity type,

a first layer of said one conductivity type formed on said body, said first layer having a narrower bandgap than said body,

a second layer of the opposite conductivity type contiguous with said first layer and having a narrower bandgap than said body, thereby forming a p-n junction at the interface between said layers,

said layers having a first hole which extends therethrough,

said second layer having a segment which extends along the inside of said hole, so that said p-n junction does not intersect said hole,

said body having a second hole which extends therethrough and is axially aligned with said first hole, said second hole having a larger diameter than said first hole, and

means forming electrical contacts to said photodiode.

4,577,210

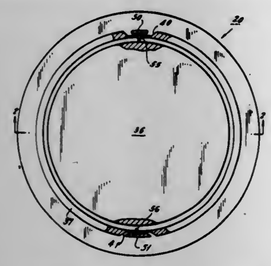
CONTROLLED RECTIFIER HAVING RING GATE WITH INTERNAL PROTRUSION FOR DV/DT CONTROL

John M. Gault, Manhattan Beach, Calif., assignor to International Rectifier Corporation, Los Angeles, Calif.

Filed Aug. 12, 1982, Ser. No. 407,435
Int. Cl.⁴ H01L *23/48, 27/24, 29/10*
U.S. Cl. 357—38 **6 Claims**

1. A controlled rectifier having a ring gate and an increased resistance to dV/dt turn-on; said controlled rectifier comprising a wafer of monocrystalline semiconductor material having generally flat parallel first and second surfaces; said first surface containing a central emitter diffusion region having a generally flat cathode contact secured thereto; said emitter region being of one of the conductivity types; said emitter region being formed in and surrounded at said first surface by a second region which is of the other of the conductivity types; said emitter region having a short peripheral portion extending from its outer periphery; and a ring-shaped gate contact disposed on said first surface and surrounding and radially spaced from the exterior of said central emitter diffusion region and from the exterior of said flat cathode contact; said ring-shaped

gate having an exterior periphery and an interior periphery; said ring-shaped gate contact having a short peripheral portion thereof extending from said interior periphery and electrically connected at said first surface to said short peripheral extending portion of the outer periphery of said central emitter diffusion region, thereby to provide a non-injecting current path for distributed capacitance current which flows from said ring



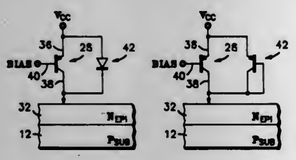
gate during the application of forward biasing voltage to said controlled rectifier and further including an auxiliary emitter region in said first surface; said auxiliary emitter region at least partly underlying and connected to said ring gate and being spaced from said central emitter diffusion region; and an auxiliary gate connected to said first surface at a point spaced from said auxiliary emitter region.

4,577,211

INTEGRATED CIRCUIT AND METHOD FOR BIASING AN EPITAXIAL LAYER

Byron G. Bynum, and David L. Cave, both of Tempe, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 2, 1984, Ser. No. 596,120
Int. Cl.⁴ H01L *29/72*; H03K *3/26*
U.S. Cl. 357—34 **12 Claims**



1. A circuit for biasing a first portion of an impurity region of an integrated circuit to a voltage level substantially equal to a supply voltage level comprising:

a contact transistor formed within a second isolated portion of said impurity region and having first, second and third contact leads thereto, said first contact lead being coupled to a supply voltage line, said second contact lead being coupled to a bias voltage line and said third contact lead being connected to said first portion of said impurity region; and

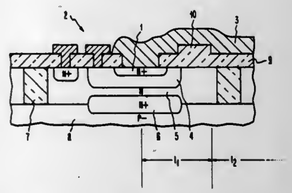
a shunt diode having anode and cathod terminals thereof, said anode and cathod terminals being respectively connected to said first and third contact leads of said contact transistor.

4,577,212

STRUCTURE FOR INHIBITING FORWARD BIAS BETA DEGRADATION

Gary R. Hueckel, Wappingers Falls, and George S. Prokop, Fishkill, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 29, 1984, Ser. No. 626,274
Int. Cl.⁴ H01L *29/52, 29/54, 23/50*
U.S. Cl. 357—68 **4 Claims**



1. In a bipolar transistor susceptible to forward bias beta degradation associated with electromigration-induced emitter contact stress, means for alleviating said stress at said emitter, said means comprising emitter contact, insulated metallurgy means for concentrating electromigration-induced stress in said metallurgy in an area adjacent to the area of contact between said metallurgy and said emitter,

said insulated metallurgy means comprising,

a layer of insulating material through which an opening is formed for contacting said emitter and metallurgy on said insulating layer for contacting said emitter through said opening,

said layer having an area of increased thickness adjacent to said opening,

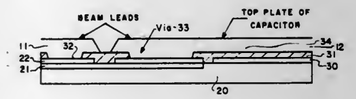
said metallurgy contacting said emitter through said opening after traversing said area.

4,577,213

INTERNALLY MATCHED SCHOTTKY BARRIER BEAM LEAD DIODE

Paul E. Bauhahn, Fridley, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 5, 1984, Ser. No. 586,161
Int. Cl.⁴ H01L *23/48*
U.S. Cl. 357—69 **9 Claims**



1. A gallium arsenide millimeter-wave internally matched Schottky barrier beam lead diode comprising:

a beam lead Schottky diode structure fabricated on a chip having a Schottky contact beam lead portion and an ohmic beam lead portion, said Schottky diode at said millimeter wave frequencies exhibiting unwanted but inherent parasitic reactance and lead inductive reactance; and,

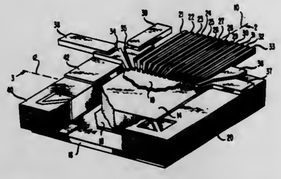
a matching reactive shunt path comprising in series an inductor and a capacitor fabricated on said chip adjacent said Schottky diode structure and coupled from said ohmic beam lead to said Schottky contact beam lead.

4,577,214

LOW-INDUCTANCE POWER/GROUND DISTRIBUTION IN A PACKAGE FOR A SEMICONDUCTOR CHIP

Leonard W. Schaper, West Orange, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 261,037, May 6, 1981, abandoned. This application Mar. 2, 1984, Ser. No. 584,299
Int. Cl.⁴ H01L *23/48, 29/44, 23/02*
U.S. Cl. 357—74 **4 Claims**



1. In combination,

a semiconductor chip including conductive pads on one main surface thereof, said pads including multiple power pads and multiple ground pads,

a package for said chip comprising a body member defining an interior cavity,

means for mounting said chip within the interior cavity defined by said body member,

closely spaced-apart planar ground and power members formed in parallel planes in said package said members substantially surrounding said cavity and extending around said chip, and, said members each having outer peripheral portions and inner peripheral portions, said inner portions in close proximity to said chip,

only a single pair of power supply terminal members emanating from said package, said pair of terminal members consisting of a single power terminal member and a single ground terminal member, said single power terminal member being connected within said package to an outer peripheral portion of said planar power member and said single ground terminal member being connected within said package to an outer peripheral portion of said planar ground member, said single pair of power supply terminal members being adapted to be connected to the respective terminals of an external power supply,

multiple link members within said package respectively connecting inner peripheral portions of said planar power member to said power pads on said chip,

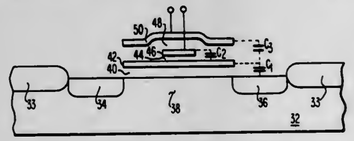
and multiple link members within said package respectively connecting inner peripheral portions of said planar ground member to said ground pads on said chip.

4,577,215

DUAL WORD LINE, ELECTRICALLY ALTERABLE, NONVOLATILE FLOATING GATE MEMORY DEVICE

Roger G. Stewart, Neshanic Station, and Alfred C. Ipri, Princeton, both of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Feb. 18, 1983, Ser. No. 467,643
Int. Cl.⁴ H01L *29/78*
U.S. Cl. 357—23.5 **5 Claims**



1. A non-volatile electrically erasable, programmable floating gate memory device having a body of semiconductor material of a first conductivity type with extended, parallel source and drain regions of a second conductivity type embedded in the body of semiconductor material at a surface thereof and spaced one from the other to define a channel region, a conductive floating gate member oriented parallel to said surface and insulated from the substrate and having a portion thereof disposed over the channel region, a conductive program line having a portion thereof disposed over and insulated from the floating gate member and a conductive word line disposed over and insulated from the conductive program line, comprising:

a portion of the floating gate being oriented in a direction parallel to the extended source and drain regions and aligned with the channel region;

the program line being disposed under and parallel to the word line over the channel region with both lines perpendicularly disposed with respect to the orientation of the floating gate;

the ends of the floating gate being aligned with the width of the word line; and

the capacitance values of the floating gate, the word and program lines and the substrate having the relationship:

$$C_2 < C_3 > C_1$$

where:

C_1 = the floating gate-to-substrate capacitance,

C_2 = the program line-to-floating gate capacitance; and

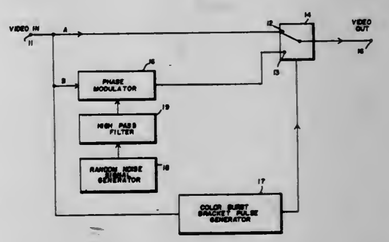
C_3 = the word line-to-floating gate capacitance.

4,577,216

METHOD AND APPARATUS FOR MODIFYING THE COLOR BURST TO PROHIBIT VIDEOTAPE RECORDING

John O. Ryan, Cupertino, Calif., assignor to Macrovision, San Jose, Calif.

Filed Nov. 14, 1983, Ser. No. 551,696
Int. Cl.⁴ H04N *9/45, 9/80, 7/167, 5/78*
U.S. Cl. 358—19 **14 Claims**



1. A method for modifying a color video signal of the type wherein color information is transmitted on a subcarrier, the color video signal also including a color burst signal for generating in a television receiver a subcarrier signal at a reference phase for use in demodulating the color information, the method comprising the step of phase modulating the color burst signal with a noise signal to produce a modified color video signal, whereby the modified signal produces a normal color picture on a television receiver while a videotape recording made from the modified signal exhibits color interference.

4,577,217
ENCODING CIRCUIT FOR A SECAM COLOR TELEVISION TRANSMISSION

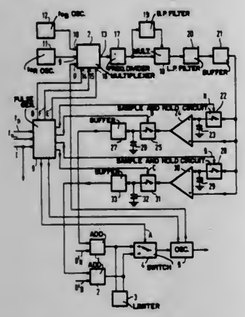
Hearicus W. G. Haenen, and Antonie van Leeuwen, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 25, 1983, Ser. No. 469,543

Claims priority, application Netherlands, Mar. 23, 1982, 8201188

Int. Cl.⁴ H04N *9/40*

U.S. Cl. 358—14 **7 Claims**



1. An encoding circuit for a SECAM color television transmitter in which two line-sequential color difference signals modulate a color subcarrier signal generated by a frequency-modulatable oscillator, the generated subcarrier signal being at a first quiescent frequency during scanning line periods of the first color difference signal and at a second quiescent frequency during scanning line periods of the second color difference signal, the modulated subcarrier signal being at the quiescent frequency corresponding to any scanning line period during a blanking interval thereof in which the relevant color-difference signal is zero, such encoding circuit comprising:

means for generating a first reference signal at a frequency which is a reference for said first quiescent frequency and a second reference signal at a frequency which is a reference for said second quiescent frequency;

a frequency demodulator adapted to derive at its output a demodulated voltage of a value dependent on the frequency of a signal applied to its input;

a multiplex circuit connecting said reference signal generating means and said frequency-modulatable oscillator to the input of said frequency demodulator;

pulse generating means adapted to supply switching signals to said multiplex circuit which cause it to apply to the input of said frequency demodulator predetermined sequences of said modulated subcarrier signal and said first and second reference frequency signals during successive scanning line periods;

a first control path connected to the output of said frequency demodulator and responsive to further switching signals supplied by said pulse generating means to a produce a first control voltage by subtracting the demodulated voltage derived from said first reference frequency signal during predetermined scanning line periods from the demodulated voltage derived from said modulated subcarrier signal during the blanking intervals of predetermined scanning line periods when such signal is at said first quiescent frequency;

a second control path connected to the output of said frequency demodulator and responsive to further switching signals supplied by said pulse generating means to produce a second control voltage by subtracting the demodulated voltage derived from said second reference frequency signal during predetermined scanning line periods from the demodulated voltage derived from said modulated subcarrier signal during the blanking intervals of predetermined scanning line periods when such signal is at said second quiescent frequency;

and means connected to each of said control paths for applying said first and second control voltages to said frequency-modulatable oscillator to modify the first and second quiescent frequencies thereof to correspond with said first and second reference frequencies;

the switching signals supplied by said pulse generating means being sequenced so that there is at least one scanning line period between those during which are derived the demodulated voltages which are subtracted to produce each of said control voltages.

4,577,218
COLOR SEPARATING CIRCUIT FOR PRODUCING RED AND BLACK SIGNALS

Masami Kurata, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

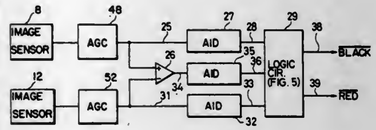
Filed Mar. 18, 1983, Ser. No. 476,759

Claims priority, application Japan, Mar. 19, 1982, 57-42555

The portion of the term of this patent subsequent to Oct. 23, 2001, has been disclaimed.

Int. Cl.⁴ H04N *1/46*; G03F *3/08*; G01J *3/511*; G06K *9/46*

U.S. Cl. 358—75 **4 Claims**



1. A color separating circuit system comprising: a reading device having at least two reading elements for scanning the same portion of an original having picture data in different wavelength ranges, and for providing an unfiltered output picture signal and a filtered output picture signal;

signal level adjusting means for adjusting the levels of said output picture signals provided by said reading elements so that said levels are equal to each other when white picture data is read;

arithmetic means for obtaining an output difference signal by computing a level difference between said output picture signals which have been subjected to level adjustment by said signal level adjusting means;

A/D converters for digitizing respectively said output difference signal of said arithmetic means and said adjusted output picture signals provided by said signal level adjusting means; and

a color separation logic circuit for performing the operation of color separation on the outputs of said A/D converters.

4,577,219
METHOD AND AN APPARATUS FOR COPYING RETOUCH IN ELECTRONIC COLOR PICTURE REPRODUCTION

Jürgen Klie, Toekendorf, and Rainer Nehl, Kiel, both of Fed. Rep. of Germany, assignors to Dr. Ing. Rudolf Hell GmbH, Fed. Rep. of Germany

Filed Nov. 30, 1983, Ser. No. 556,330

Claims priority, application European Pat. Off., Dec. 11, 1982, 82111504.5

Int. Cl.⁴ H04N *1/46*; G03F *3/08*

U.S. Cl. 358—78 **18 Claims**

1. A method for copying retouch of a color image by transferring image information from a read image region of a color image to a write image region of said color image in electronic color image reproduction, wherein original color signals are obtained by scanning of the color image, the original color signals are converted into color values for a plurality of different color components of the color signals, and the color values are stored in a storage medium image-point-by-image-point, comprising the steps of:

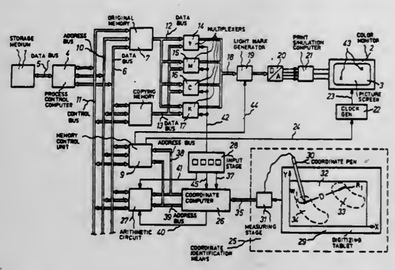
(a) marking an image point as a read point within the read image region of the color image to be retouched, said read image region defining a portion of said color image from which image information is to be taken;

(b) marking an image point as a write point within the write image region of the color image to be retouched, said write image region defining a portion of said color image into which the image information taken from said read image region is to be transferred;

(c) identifying coordinates of said marked read point and said marked write point;

(d) determining a vector distance between said read point and said write point from said identified coordinates of the read point and the write point;

(e) marking the write region in terms of size and shape so as to mark additional image points within the write image region and identifying the coordinates of said additional image points;



(f) determining coordinates of corresponding additional image points within said read image region from the coordinates of said additional image points within said write image region, said corresponding additional image points within said read image region being in each case spaced from said additional image points within said write image region by said determined vector distance;

(g) generating for at least one of the color components of the image points marked within said write image region substitution color values related to the original color values of the corresponding image points within said read image region; and

(h) replacing said original color values of the image points within said write image region by said substitution color values to obtain a retouched color image within the write image region, whereby a desired copying retouch of the color image is achieved.

4,577,220
ARRANGEMENT FOR DETECTING TO WHICH CHANNEL A TELEVISION SET IS TUNED

Raymond Laxton, Maidenhead, and Peter E. Smith, Reading, both of United Kingdom, assignors to AGB Research PLC, London, England

Filed May 24, 1984, Ser. No. 614,323

Claims priority, application United Kingdom, May 25, 1983, 8314468

Int. Cl.⁴ H04N *7/00*

U.S. Cl. 358—84 **6 Claims**

1. A television channel detecting arrangement, for detecting to which channel a television set is tuned, comprising:

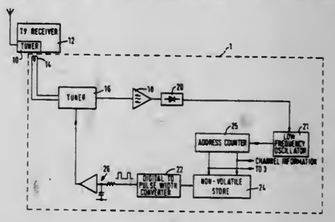
means inductively coupled to a local oscillator of the television set for receiving a local oscillator signal therefrom;

means for storing binary numbers representative of channels to which the television set may be tuned;

means for converting the binary numbers from a digital representation to an analog representation;

means coupled to the digital to analog conversion means for tuning to a plurality of frequencies in accordance with the analog signal;

means for generating a detection signal when the tuning means is tuned to the frequency of the local oscillator signal; and



means for identifying in response to the detection signal the binary number corresponding to the tuning signal which caused said detection signal to be generated, thereby identifying the channel to which the television set is tuned.

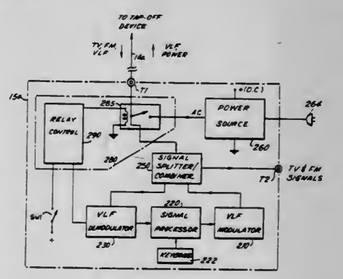
4,577,221
POWER SAFETY DEVICE FOR CATV TAP-OFF UNIT

Russell A. Skinner, Sr., Elizabeth, and Walter S. Ciciora, Englewood, both of Colo., assignors to American Television & Communications Corporation, Englewood, Colo.

Filed Nov. 29, 1984, Ser. No. 676,076

Int. Cl.⁴ H04N *7/10*

U.S. Cl. 358—86 **17 Claims**



1. In a cable television system having a tap-off device external to a subscriber premises, the tap-off device connected to the subscriber premises via a drop cable for delivering television signals to the subscriber premises, and the tap-off device including electronic circuitry powered at least in part by a source of subscriber-supplied electrical power which is applied to the drop cable and delivered via the drop cable to the tap-off device, a power safety device comprising:

first means associated with the tap-off device and connected to the drop cable for transmitting a signal to the subscriber premises via the drop cable;

second means associated with the subscriber premises for interrupting the application of power to the drop cable; and

sensing means associated with the subscriber premises for sensing the transmitted signal on the drop cable, said sensing means being connected to said second means and responsive to sensing the absence of the transmitted signal for enabling said second means to interrupt the application

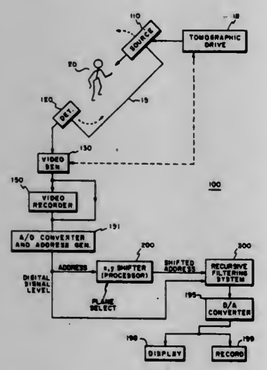
of power to the drop cable to protect individuals from receiving a hazardous electrical shock.

4,577,222

APPARATUS AND METHOD FOR CROSS SECTIONAL IMAGING OF A BODY

Robert A. Kruger, Sandy, and James A. Nelson, Salt Lake City, both of Utah, assignors to Thomson-CSF Broadcast, Inc., Stamford, Conn.

Filed Nov. 26, 1982, Ser. No. 444,613
Int. Cl.⁴ H04N *5/32*
U.S. Cl. 358—111 **22 Claims**



1. A method for generating a processed image of a cross-section through a body, comprising the steps of:

disposing the body between a combination of a source of radiation and an associated detector, such that a beam of radiation from said source impinges angularly on said body and passes through to said detector;

effecting relative rotational motion between said beam and said body such that a principal plane of interest in said body remains substantially in focus during said relative rotational motion;

deriving from the detector, at different rotational positions, a series of frames of electronic video signals that represent images of the radiation transmission characteristics of the body at a series of successive times;

temporally filtering said series of frames by combining successive frames of the series with a weighting for each combination that depends on when the frames being combined occur in time with respect to each other; and

displaying the temporally filtered series of frames.

4,577,223

SYNTHETIC D.C. RESTORATION OF A.C. COUPLED SIGNALS

Robert C. Fitch, Roseville, and Pat M. Narendra, Mapleplain, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 8, 1982, Ser. No. 447,906
Int. Cl.⁴ H04N *5/33*
U.S. Cl. 358—113 **11 Claims**

1. A method of processing a sequence of a.c. coupled electronic signals, each of duration t, comprising:

selecting a first signal;

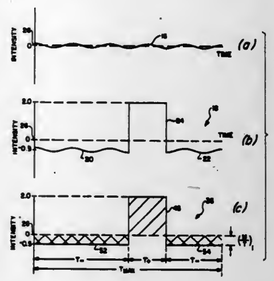
selecting a second signal;

generating a difference signal which is the difference between said first and second signals;

determining a first time which is that portion of t when said first signal exceeds said second signal;

determining a second time which is that portion of t when said second signal exceeds said first signal;

selecting the larger of said first or second times;



generating an average value of said difference signal during said larger time; and

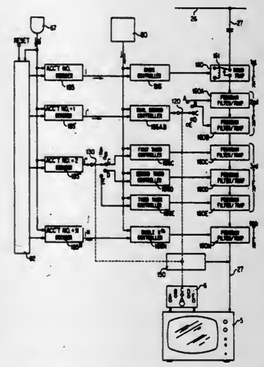
adding said average value to said second signal.

4,577,224

SECURE CABLE TELEVISION ACCESS SYSTEM WITH TIERING CONTROL

Clarence S. Ost, 7905 Bayshore Dr., Margate City, N.J. 08402

Filed Jul. 19, 1982, Ser. No. 399,471
Int. Cl.⁴ H04N *7/16, 7/167*
U.S. Cl. 358—114 **16 Claims**



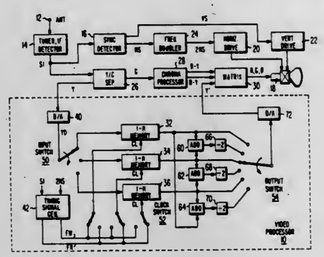
1. Program access tiering control method in a time-addressable access control system for cable TV subscribers, wherein program signals are transmitted via cable to local tapoff interconnections with subscribers' television receivers together with a series of clocking pulses corresponding to sequential arrangement of subscribers, the clocking pulses being accompanied by program access-enabling pulses for program-requesting subscribers, wherein sets of programs are arranged in different levels or tiers, such as according to different levels of subscriber charges, the tiering control method being characterized by including within the transmission to any given subscriber a plurality of clocking pulses time-addressed for such subscriber and corresponding to a plurality of program tiers, and including for any requesting subscriber enabling command pulses for each of the respective tiers so requested, thereby enabling the subscriber to select for reception a program from any such tier so requested and enabled.

4,577,225

PROGRESSIVE SCAN VIDEO PROCESSOR HAVING COMMON MEMORIES FOR VIDEO INTERPOLATION AND SPEED-UP

Dalton H. Pritchard, Princeton, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Aug. 31, 1984, Ser. No. 646,104
Int. Cl.⁴ H04N *7/01, 5/68*
U.S. Cl. 358—140 **6 Claims**



1. A progressive scan processor, comprising:

a source of video input signal;

memory means including three memory locations each having a storage capacity of one line of said video input signal and organized in a parallel arrangement;

memory control means for sequentially causing each one of said memory locations to write in a current line of said video signal a line at a time at a first clock rate and for causing two previously stored lines to be read from two of said memory locations at a second clock rate while said video signal is being written into one of said memory locations to provide two time compressed video output signals; and

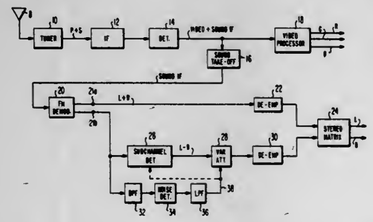
output means coupled to said memory means and responsive to said two time compressed video output signals for providing a processed video output signal in which alternate lines thereof are interpolated from said two time compressed video output signals.

4,577,226

NOISE REDUCTION FOR FM STEREOPHONIC SYSTEMS AND PARTICULARLY USEFUL IN TELEVISION AUDIO SYSTEMS

Jack Avins, Princeton, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Nov. 30, 1982, Ser. No. 445,486
Int. Cl.⁴ H04N *7/04, 5/21, 5/60*
U.S. Cl. 358—143 **6 Claims**



1. In a television receiving system including a sound detecting channel having a predetermined bandwidth for recovering a multichannel sound signal including a main signal component, a subcarrier signal component and a pilot signal component, apparatus for reducing the level of noise recovered with said subcarrier signal component comprising:

tuned circuit means having a resonant frequency located between the frequencies occupied by said main and subcarrier signals coupled to be responsive to said recovered sound signal for sensing the noise density in the portion of said predetermined bandwidth of said detecting channel which is around said pilot signal exclusive of said main and subcarrier signal components;

detector means coupled to said tuned circuit means for generating a control signal in response to the level of the sensed noise density in said detecting channel; and

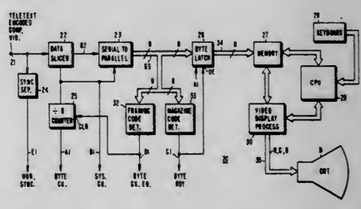
level control means responsive to said control signal for controlling the amplitude level of said subcarrier signal component inversely with respect to the level of said sensed noise density.

4,577,227

TELETEXT FRAMING CODE DETECTOR

Kadagattor V. Gurumurthy, Indianapolis, Ind., assignor to RCA Corporation, Princeton, N.J.

Filed Oct. 18, 1983, Ser. No. 543,034
Int. Cl.⁴ H04N *7/087, 7/08*
U.S. Cl. 358—147 **6 Claims**



1. A teletext decoder capable of detecting a sought after byte of encoded data in the presence of one-bit error, comprising:

a data slicer responsive to an amplitude modulated, teletext encoded composite video signal for generating a serial data stream of logical bits representing a teletext packet, said data stream subject to error in the generation of the bits thereof;

a serial-to-parallel converter for generating bytes of incoming data from said serial data stream;

means for developing, on a plurality of signal lines, signal states representative of respective bits of prime implicant terms associated with said bytes of incoming data; and

a detector stage responsive to the signal states of said signal lines for logically analyzing the prime implicant terms associated with said bytes of incoming data to detect the presence of a prime implicant term associated with the sought after byte of encoded data to provide a detection signal when that byte is present in the serial data stream.

4,577,228

TRANSVERSAL FILTER INCORPORATING MOS-TRANSISTOR AMPLIFIERS

Ikuya Arai; Toshinori Murata, both of Yokohama, and Masafumi Kazumi, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 29, 1984, Ser. No. 614,667
Claims priority, application Japan, May 27, 1983, 58-92285
Int. Cl.⁴ H04N *5/213;* H03F *3/45*
U.S. Cl. 358—167 **2 Claims**

1. A transversal filter used in a ghost canceller of a television receiver comprising:

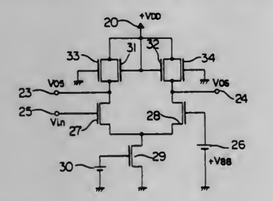
(a) a first amplifier which receives an input video signal and provides a first output video signal in a same polarity as that of said input video signal and a second output video signal having a same amplitude as that of said first output video

signal and a polarity opposite to that of said first output video signal;

(b) a plurality of switches connected to said first amplifier and adapted to conduct selectively the first or second output video signal provided by said first amplifier;

(c) a group of second amplifiers comprising a plurality of variable gain amplifiers connected to said switches correspondingly, each of said variable gain amplifiers having a terminal for receiving a control voltage, by which the amplitude of the first or second output video signal provided by corresponding one of said switches is varied;

(d) group of delay elements comprising a plurality of delay elements connected in cascades, each of said delay elements being connected to a corresponding one of said variable gain



amplifiers of said group of second amplifiers and operable to delay the first or second output video signal provided by said corresponding one variable gain amplifier for a predetermined time length; and

(e) an adder connected to the output of said group of delay elements so as to receive the delayed first or second output video signal and adapted to receive the input video signal so that the delayed first or second output video signal is added to the input video signal,

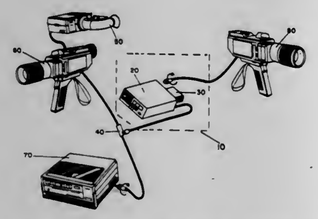
wherein said plurality of variable gain amplifiers of said group of second amplifiers each include an amplifying element formed by a MOS transistor which is loaded by a complementary connection of a P-MOS transistor and an N-MOS transistor constituting a C-MOS transistor pair.

4,577,229

SPECIAL EFFECTS VIDEO SWITCHING DEVICE

Juan de la Cierva, Sr., and Juan de la Cierva, Jr., both of 1450 NW. 78th Ave., Miami, Fla. 33126

Filed Oct. 7, 1983, Ser. No. 540,163
Int. Cl.⁴ H04N *5/04, 5/262*
U.S. Cl. 358—182 **4 Claims**



1. A device for mixing video and audio signals originated from at least one remote camera and one director camera, comprising, in operative combination:

A. an internal means for synchronizing said video signals connected to said remote and director cameras; and

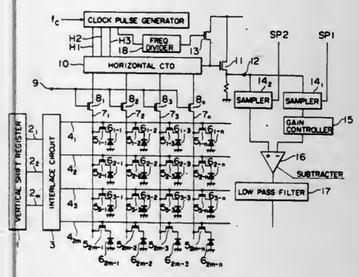
B. Means for combining said video signals connected to said remote and director cameras including removable cartridges having special effects means that are programmed for predetermined video switching patterns, including means for dissolving said video signals and means for mixing said audio signals.

4,577,230

SOLID STATE IMAGING DEVICE

Naoki Ozawa, Kokubunji; Toshiyuki Akiyama, Kodaira; Shusaku Nagahara, Hachioji, and Iwao Takemoto, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 16, 1985, Ser. No. 691,911
Claims priority, application Japan, Jan. 18, 1984, 59-5576
Int. Cl.⁴ H04N *3/12*
U.S. Cl. 358—212 **5 Claims**



1. A solid state imaging device comprising:

a plurality of photoelectric conversion elements arranged regularly in horizontal and vertical directions;

a plurality of vertical signal lines for transferring charges in a vertical direction;

a first group of switches for transferring signal charges which are generated in said photoelectric conversion elements in response to incident light, to predetermined ones of said vertical signal lines;

horizontal transfer means including at least one charge transfer device, said charge transfer device being provided with a set of transfer electrodes capable of transferring two kinds of charges, separately from each other, in a horizontal direction;

a second group of switches for transferring charges on said vertical signal lines from said vertical signal lines to said horizontal transfer means;

pulse generating means for said first group of switches and pulse generating means for said second group of switches, for generating a pulse for controlling said first group switches and a pulse for controlling said second group switches, respectively, so that both smear charges stored on said vertical signal lines and signal charges transferred from said photoelectric conversion elements through said first group switches to said vertical signal lines may be transferred, separately from each other, to said horizontal transfer means;

transfer-pulse generating means for generating a transfer control pulse, said transfer control pulse being applied to said transfer electrodes, to transfer the smear charges and the signal charges, both of which have been transferred to said horizontal transfer means, to an output end separately from each other;

charge-voltage conversion means for converting each smear charge and each signal charge, both of which have been transferred by said horizontal transfer means, into a smear voltage and a signal voltage, respectively;

reset means for resetting the smear charge and the signal charge held by said charge-voltage conversion means, at an interval twice as long as the repetition period of said transfer control pulse; and

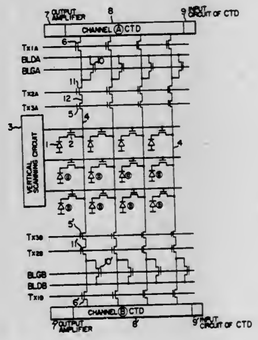
subtraction means for producing a difference between said smear charge and said signal charge after at least one of said smear charge and said signal charge has been adjusted in accordance with a predetermined factor.

4,577,231

HIGH SENSITIVITY SOLID-STATE IMAGING DEVICE

Shinya Ohba, Kanagawa; Haruhisa Ando, Hachioji; Masaaki Nakai, Tokorozawa; Toshifumi Ozaki, Tokyo; Koichi Seki, Hachioji; Kenji Takahashi; Toshiyuki Akiyama, both of Kodaira; Iwao Takemoto, Tokyo; Takuya Imaide; Akihide Okuda, both of Yokohama, and Masaharu Kubo, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 17, 1983, Ser. No. 476,415
Claims priority, application Japan, Mar. 31, 1982, 57-51215
Int. Cl.⁴ H04N *3/14*
U.S. Cl. 358—212 **8 Claims**



1. A high sensitivity solid-state imaging device wherein a photo-sensing section is constructed of a MOS-type sensor in which picture elements each comprised of a photodiode and a switching MOS transistor are arrayed in the form of a matrix, wherein signal outputs of the respective picture elements of said MOS-type sensor are transferred to a CTD (charge transfer device) through vertical signal lines, and wherein the signal outputs are read out by said CTD, said imaging device comprising:

signal-transfer means for causing bias charges to enter into said vertical signal lines so as to mix them with signal charges on said vertical signal lines and for causing the mixed signal charges to be transferred into said CTD, said signal-transfer means including a first gate MOS transistor which is connected between the vertical signal line and said CTD;

reset means for setting a potential of said vertical signal line to a predetermined reference voltage before the bias charges enter into said vertical signal line, said reset means including second and third gate MOS transistors which are connected in series between said first gate MOS transistor and said vertical signal line;

a reset gate element which is connected between a juncture of said first and second gate MOS transistors and a reset-voltage line; and

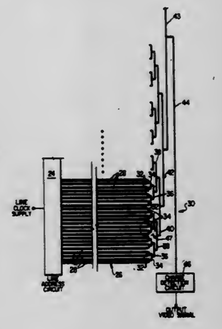
an inverter circuit having a first input terminal thereof connected to a corresponding one of said vertical signal lines, a second input terminal connected to a common voltage line, and an output terminal connected to the gate of the corresponding third gate MOS transistor.

4,577,232

LINE ADDRESSED CHARGE COUPLED IMAGER

Jaroslav Hynecek, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 31, 1984, Ser. No. 646,400
Int. Cl.⁴ H04N *3/14*
U.S. Cl. 358—213 **15 Claims**



1. A charge transfer imager comprising:

an array of charge transfer locations arranged in a plurality of rows;

a buffer register disposed at one end of each said rows for receiving charge propagated from said rows;

output means connected to said buffer register for receiving charge propagated along said buffer register, and

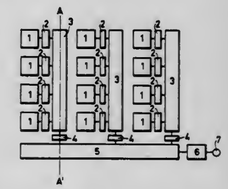
the length of the path traveled by each charge along said buffer register to said output means being equal as measured by number of pixels traveled.

4,577,233

SOLID IMAGE-PICKUP DEVICE

Masafumi Kimata, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 1, 1983, Ser. No. 500,198
Claims priority, application Japan, Jun. 1, 1982, 57-95443
Int. Cl.⁴ H04N *3/14*
U.S. Cl. 358—213 **6 Claims**



1. A solid image-pickup device having a scanning mechanism for reading and outputting outputs from photo-detectors comprising:

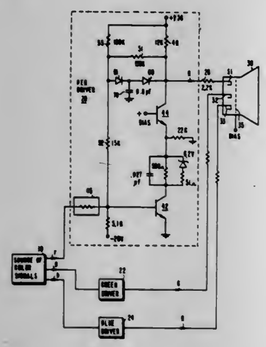
at least one means, forming said scanning mechanism, comprising a charge transferring unit in which a plurality of MOS gates are arranged side by side, and a MOS gate control unit for applying signals to said plurality of MOS gates so as to form potential wells below all said gates of said charge transferring unit at a first period, to inject a signal charge into said potential well at a second period, and to successively remove said potential wells in a direction of said charge transferring so as to move said signal charges below said MOS gates of said charge transferring unit at a third period.

4,577,234

DRIVER AMPLIFIER FOR AN IMAGE DISPLAY DEVICE

Wayne E. Harlan, Marion, Ind., assignor to RCA Corporation, Princeton, N.J.

Filed Oct. 31, 1983, Ser. No. 547,325
Int. Cl.⁴ H04N *5/68, 9/16*
U.S. Cl. 358—243 **13 Claims**



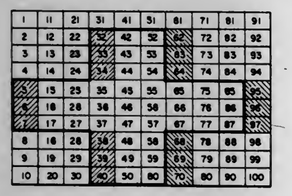
1. A video signal processing system comprising:
a source of video signals;
an image display device for displaying video information in response to video signals applied to an intensity control electrode thereof;
a video output driver amplifier with a signal input coupled to said video signal source and a signal output from which amplified video signals are provided to said intensity control electrode of said display device, said amplifier being subject to exhibiting a saturated state in response to large amplitude video signals processed by said amplifier between said signal input and said signal output; and
threshold control means coupled to said amplifier and selectively responsive to said video signals processed by said amplifier for reducing the signal gain of said amplifier in response to said large amplitude processed video signals exceeding a threshold level, to preclude said amplifier exhibiting said saturated state.

4,577,235

TEXT/CONTINUOUS TONE IMAGE DECISION PROCESSOR

Henry N. Kannapell, Raleigh, N.C., and Paul G. Nietfeld, San Antonio, Tex., assignors to The Mead Corporation, Dayton, Ohio

Filed Aug. 20, 1984, Ser. No. 642,605
Int. Cl.⁴ H04N *1/40*
U.S. Cl. 358—280 **20 Claims**



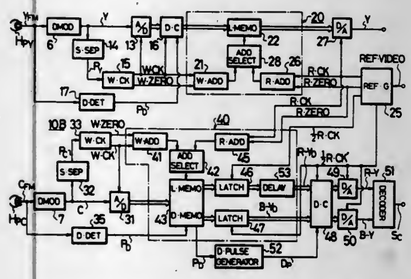
1. A method for determining whether portions of an image represented by image data obtained by scanning said image correspond to text or continuous tone, said method comprising the steps of:
partitioning said image data into contiguous image data blocks;
determining an average grayscale value for each of said image data blocks;
determining at least one additional characteristic for each of said image data blocks;
utilizing each possible average grayscale value as an indexing variable;
generating a one dimensional Gaussian distribution to distribute said at least one additional characteristic for each of said average grayscale values for text data;
determining the mean and standard deviation for each text data distribution;
calculating the Mahalanobis distance for each additional characteristic data value for each image data block to determine a measure of the distance from the mean for that characteristic of the corresponding data block and, hence, a representative text probability of whether said data block corresponds to a text portion of said image; and
determining whether said data blocks correspond to text or continuous tone portions of said image based on said representative text probabilities.

4,577,236

APPARATUS FOR REPRODUCING A COLOR VIDEO SIGNAL

Kenji Takanashi, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jun. 27, 1983, Ser. No. 508,190
Claims priority, application Japan, Jun. 29, 1982, 57-111884
Int. Cl.⁴ H04N *5/782*
U.S. Cl. 358—320 **15 Claims**



1. Apparatus for reproducing a color video signal from a recording medium on which a luminance component is recorded in a first channel and at least two chrominance components are recorded in a second channel such that the chrominance components are tire-compressed and successively recorded in cyclically repeated fashion, comprising:
means for generating a first write clock in response to a first synchronizing signal contained in said luminance component;
means for generating a second write clock in response to a second synchronizing signal contained in one of said chrominance components;
first memory means for storing said luminance component reproduced from said first channel in synchronism with said first write clock;
second memory means for storing said chrominance components reproduced from said second channel in synchronism with said second write clock;
reference clock generator means for generating a reference clock supplied to said first and second memory means;
means for reading out said luminance component from said first memory means in response to said reference clock; and

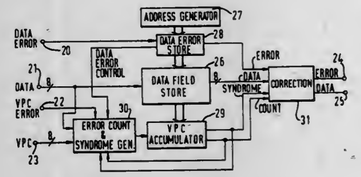
means for reading out said chrominance components from said second memory means in accordance with said reference clock to thereby time-expand said chrominance components and simultaneously synchronize said chrominance components with said luminance component.

4,577,237

ERROR CORRECTION IN DIGITAL TELEVISION SIGNALS

Mark C. Collins, Basingstoke, England, assignor to Sony Corporation, Tokyo, Japan

Filed Aug. 17, 1983, Ser. No. 523,874
Claims priority, application United Kingdom, Aug. 20, 1982, 8224013
Int. Cl.⁴ H04N *5/782*
U.S. Cl. 358—336 **8 Claims**



1. A method of error correction of a digital television signal consisting of sequential data words, the method comprising the steps of:
selecting a predetermined number of said data words;
deriving a parity word from the selected data words;
forming a correction unit including said selected data words and said parity word;
recording said correction unit;
reproducing said correction unit for slow motion display;
identifying validly reproduced ones and invalidly reproduced ones of the reproduced words of the reproduced correction unit, and flagging each word identified as being invalidly reproduced;
deriving a syndrome from the reproduced parity word and selected ones of the reproduced data words, said syndrome being equal to zero when all said reproduced words are validly reproduced;
counting the number of said validly reproduced words; and
performing alternative error correction steps in dependence on said number of validly reproduced words, said alternative error correction steps including:
when said number of reproduced words identified as being valid is one less than said predetermined number, such that only one reproduced data word is invalidly reproduced, using said syndrome to correct the one invalidly reproduced word; and
when said number of reproduced words identified as being valid equals said predetermined number and said syndrome does not equal zero, flagging each of said reproduced data words as being in error.

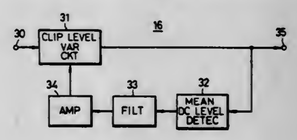
4,577,238

CIRCUIT FOR REDUCING INTERMODULATION DISTORTION IN A FREQUENCY-MODULATED SIGNAL

Yasuaki Watanabe, Kasukabe, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Apr. 22, 1983, Ser. No. 487,686
Claims priority, application Japan, Apr. 30, 1982, 57-73543
Int. Cl.⁴ H04N *5/91, 5/213;* **H03B** *19/00, 1/00;* **H04B** *1/10*
U.S. Cl. 358—340 **6 Claims**

1. An intermodulation distortion reducing circuit for a frequency-modulated signal, said intermodulation distortion reducing circuit comprising: a sinusoidal wave shaping circuit supplied with an input frequency-modulated signal including an intermodulation distortion component for shaping a carrier waveform of said input frequency-modulated signal into a waveform closely approximating a sinusoidal wave; and a mean DC level detecting circuit supplied with an output signal of said sinusoidal wave shaping circuit, for detecting a mean DC level of said output signal of said sinusoidal wave shaping circuit and producing a detection output, said sinusoidal wave



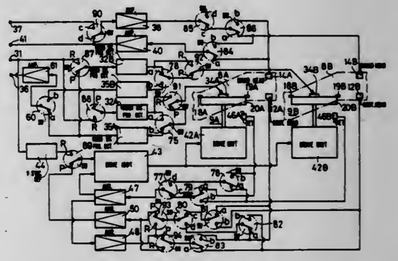
shaping circuit being supplied with the detection output of said mean DC level detecting circuit and a waveform shaping quantity of said sinusoidal wave shaping circuit being varied to obtain a carrier waveform which closely approximates a sinusoidal waveform having a duty cycle of 50%, to produce a frequency-modulated signal having a waveform closely approximating a sinusoidal waveform with its intermodulation distortion component reduced.

4,577,239

VIDEO TAPE RECORDER USABLE WITH DIFFERENT TYPES OF TAPE CASSETTES

Katsuya Sougen, Tokyo, Japan, assignor to AIWA Co., Ltd., Tokyo, Japan

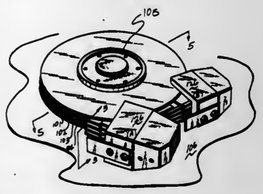
Filed Nov. 12, 1981, Ser. No. 320,572
Claims priority, application Japan, Nov. 12, 1980, 55-158189
Int. Cl.⁴ G11B *5/86, 15/46;* **H04N** *5/78*
U.S. Cl. 360—15 **1 Claim**



1. A video cassette tape recorder comprising:
a case;
a VHS-system tape cassette loading unit mounted on the case;
a beta-system cassette loading unit mounted on the case;
first drive means disposed within the case, for driving a VHS-system tape loaded on the VHS-system tape loading unit;
second drive means disposed within the case, for driving a beta-system tape loaded on the beta-system tape loading unit;
first video signal reproducing means disposed within the case for reproducing first video signals recorded on the VHS-system tape;
second video signal reproducing means disposed within the case, for reproducing second video signals recorded on the beta-system tape;
first sound signal reproducing means disposed within the case, for reproducing first sound signals recorded on the VHS-system tape;
second sound signal reproducing means disposed within the

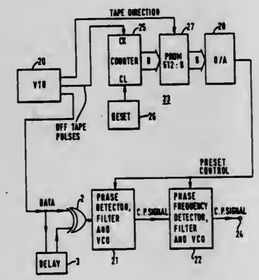
case, for reproducing second signals recorded on the beta-system tape;
first video signal recording means disposed within the case, for recording the first video signals available from the first video signal reproducing means on the beta-system tape;
second video signal recording means disposed within the case, for recording the second video signals available from the second video signal reproducing means on the VHS-system tape;
first sound signal recording means disposed within the case, for recording the first sound signals available from the first sound signal reproducing means on the beta-system tape, when the first video signals are recorded on the beta-system tape;
second sound signal recording means disposed within the case, for recording the second sound signal available from the second sound reproducing means on the VHS-system tape when the second video signals are recorded on the VHS-system tape;
first control signal reproducing means disposed within the case, for reproducing first control signals recorded on the VHS-system tape;
second control signal reproducing means disposed within the case, for reproducing second control signals recorded on the beta-system tape;
third control signal producing means disposed within the case, for producing third control signals in association with the first drive means;
fourth control signal producing means disposed within the case, for producing fourth control signals in association with the second drive means;
drive control means disposed within the case, for selectively producing first drive control signals by the first control signals available from the first control signal reproducing means and the third control signals available from the third control signal producing means and second drive control signals by the second control signals available from the second control signal reproducing means and the fourth control signals available from the fourth control signal producing means, and for selectively supplying the first and second drive control signals to the first and second drive means;
first control signal recording means disposed within the case, for recording on the beta-system tape the third control signals available from the third control signal producing means or the first control signals available from the first control signal reproducing means, when the first video signals are recorded on the beta-system tape; and second control signal recording means for recording on the VHS-system tape the fourth control signals available from the fourth control signal producing means or the second control signals available from the second control signal reproducing means, when the second video signals are recorded on the VHS-system tape;
wherein when the first video signals and the first sound signals recorded on the VHS-system tape are recorded on the beta-sytem tape;
(a) the first drive control signals from the drive control means are supplied to both of the first and second drive means;
(b) the first control signals from the first control signal reproducing means and the third control signals from the third control signal producing means are supplied to the drive control means;
(c) the first video signals from the first video signal reproducing means are supplied to the first video signal recording means;
(d) the first sound signals from the first sound signal reproducing means are supplied to the first sound signal recording means; and
(e) the third control signals from the third control signal producing means are supplied to the first control signal recording means; and
wherein when the second video signals and the second sound signals recorded on the beta-system tape are recorded on the VHS-system tape,
(a) the second drive control signals from the drive control means are supplied to both of the first and second drive means;
(b) the second control signals from the second control signal reproducing means and the fourth control signals from the fourth control signal producing means are supplied to the drive control means;
(c) the second video signals from the second video reproducing means are supplied to the second video signal recording means;
(d) the second sound signals from the second sound signal reproducing means are supplied to the second sound signal recording means; and
(e) the fourth control signals from the fourth control signal producing means are supplied to the second control signal recording means.

4,577,240
MULTIPLE ZONE MULTIPLE DISK VIDEO RECORDING SYSTEM
David J. Hedberg, Rancho Palos Verdes; Edward P. Denta, Jr., Buena Park, and Victor E. Jo Chiong, Torrance, all of Calif., assignors to Digital Engineering, Ltd., Torrance, Calif.
Filed Nov. 15, 1982, Ser. No. 441,790
Int. Cl.⁴ H04N 5/79; G11B 5/55
U.S. Cl. 360—22 **9 Claims**



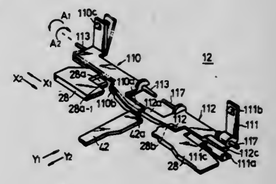
1. A video disk recording system for video signals including synchronization pulses defining fields, said signals being formed into a parallel digitized data stream comprising
a plurality M of recording disks mounted for coordinate movement,
a servo disk,
spindle means for mounting said disks for rotation in common about a single axis, said recording disks and servo disk having a plurality of data impressionable recording surfaces thereon,
said servo disk carrying a set of once-around reference pulses for establishing a position synchronizing signal to which all said data tracks are physicially and electrically synchronized,
motor means for rotating the spindle at an approximate speed for synchronizing the video pulses with the once-around reference pulses,
means forming a first plurality (A) of read/write heads and a servo reading head associated with said recording surfaces respectively,
actuator means (A) for mounting said first plurality of heads and including arm means for carrying said heads over each respective disk surface in a first zone (A),
means forming second plurality (B) of read/write heads and a servo head associated with said recording surfaces respectively,
actuator means (B) independent of said first actuator means for mounting said second plurality of heads, and including second arm means for carrying said heads over each respective recording surface in a second zone (B) independently of said first zone (A),
means for incrementally adjusting the speed of said motor means to change the phase orientation while maintaining the disk at approximately the speed and overall lock to reference until a once-around reference pulse are received in coincidence with the incoming video sync,
means including a coincidence detector for latching the system when coincidence occurs,
means for recording alternate fields of video data on said first and second zones respectively, the actuator means of one zone performing track search functions while the actuator and heads of the other zone are reading or writing,
whereby video recording proceeds as that each video field is recorded one of a series of single cylinders defined collectively by a set of tracks on the recording disk surfaces taken together and alternating zone (B) between zone (A) and surfaces taken together.

4,577,241
DIGITAL VIDEO TAPE RECORDER APPARATUS
James H. Wilkinson, Basingstoke, United Kingdom, assignor to Sony Corporation, Tokyo, Japan
Filed Mar. 21, 1984, Ser. No. 591,871
Claims priority, application United Kingdom, Apr. 12, 1983, 8309815
Int. Cl.⁴ G11B 5/09
U.S. Cl. 360—51 **6 Claims**



1. Digital video tape recorder apparatus comprising:
means operative in reproduction modes of the apparatus to derive a stream of coded data reproduced from a magnetic tape, a speed-dependent pulse signal of frequency dependent on the transport speed of said tape, and a direction signal indicating the direction of transport of said tape;
a first phase-locked loop circuit to which said stream of data is supplied and including a loop filter of relatively wide bandwidth and a first voltage controlled oscillator for producing a first regenerated clock pulse signal from said stream of data;
a second phase-locked loop circuit to which said first regenerated clock pulse signal is supplied and including a loop filter of relatively narrow bandwidth and a second voltage controlled oscillator for producing an output regenerated clock pulse signal from said first regenerated clock pulse signal and for use in regenerating said stream of data; and
a preset control signal generator means for deriving at least one preset control signal in dependence on said speed-dependent pulse signal and said direction signal and for supplying said at least one preset control signal to said first and second voltage controlled oscillators.

4,577,242
TAPE RECORDER HAVING A MECHANISM FOR PREVENTING ERRONEOUS SETTING TO A RECORDING MODE
Shigeo Tetsuka, Maebashi, Japan, assignor to Victor Company of Japan, Ltd., Japan
Filed Jul. 24, 1984, Ser. No. 634,034
Claims priority, application Japan, Jul. 29, 1983, 58-118479
Int. Cl.⁴ G11B 15/04
U.S. Cl. 360—60 **6 Claims**



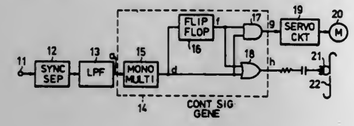
1. A tape recorder comprising:
a tape moving direction setting mechanism for setting a tape moving mode of said tape recorder to a forward moving mode in which a tape within a loaded tape cassette moves in a forward direction or to a reverse moving mode in which the tape moves in a reverse direction;
a recording mode setting member which has an elongated shape and is displaced by a manual operation of setting an operation mode of said tape recorder to a recording mode;
a forward tab detecting member for detecting the existence of a forward erroneous erasure preventing tab of the loaded tape cassette, said forward tab detecting member having a first stopper which assumes an operating position where said first stopper opposes a tip end of said recording mode setting member so as to restrict the displacement of said recording mode setting member when said forward tab detecting member does not detect said forward erroneous erasure preventing tab, said first stopper assuming an inoperative position where said first stopper does not interfere with the displacement of said recording mode setting member when said forward tab detecting member detects said forward erroneous erasure preventing tab;
a reverse tab detecting member for detecting the existence of a reverse erroneous erasure preventing tab of the loaded tape cassette, said reverse tab detecting member having a second stopper which assumes an operating position where said second stopper opposes the tip end of said recording mode setting member so as to restrict the displacement of said recording mode setting member when said reverse tab detecting member does not detect said reverse erroneous erasure preventing tab, said second stopper assuming an inoperative position where said second stopper does not interfere with the displacement of said recording mode setting member when said reverse tab detecting member detects said reverse erroneous erasure preventing tab; and
an operating member which is displaced responsive to the setting operation of said tape moving direction setting mechanism,
said operating member acting on said reverse tab detecting member so that said second stopper assumes the inoperative position when the tape moving mode is set to said forward moving mode, and acting on said forward tab detecting member so that said first stopper assumes the inoperative position when the tape moving mode is set to said reverse moving mode.

4,577,243

CONTROL SIGNAL GENERATING CIRCUIT FOR A MAGNETIC RECORDING AND/OR REPRODUCING APPARATUS

Yoshio Tokuyama, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Japan

Filed Apr. 19, 1984, Ser. No. 601,953
Claims priority, application Japan, Apr. 22, 1983, 58-71145
Int. Cl.⁴ G11B *21/04, 15/473*
U.S. Cl. 360—70 **7 Claims**



1. A control signal generating circuit for a magnetic recording and/or reproducing apparatus, said recording and/or reproducing apparatus having supplying means for supplying a reference signal, and a control head for recording and/or reproducing a control signal on and/or from a magnetic tape, said control signal generating circuit comprising:

a monostable multivibrator for producing a pulse signal having a predetermined pulse width in response to said reference signal from said supplying means;

a flip-flop circuit responsive to the output pulse signal of said monostable multivibrator, for inverting an output thereof every time said pulse signal is supplied thereto; and

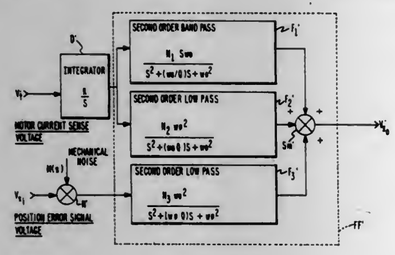
an OR gate for producing a control signal responsive to the output pulse signal of said monostable multivibrator and the output of said flip-flop circuit, and for supplying said control signal to said control head.

4,577,244

TECHNIQUES FOR DISK SERVO

Ashraf I. El-Sadi, San Jose, Calif., assignor to Memorex Corporation, Santa Clara, Calif.

Division of Ser. No. 543,688, Oct. 20, 1983. This application Dec. 12, 1983, Ser. No. 560,715
Int. Cl.⁴ G11B *21/10*
U.S. Cl. 360—77 **16 Claims**



1. A technique for providing improved head-position (error) information to a prescribed Head-positioning Servo system, this technique comprising:

deriving head-position read-back signals from a prescribed Read/Write transducer, these signals including a time-variant position-error component V_I and a noise component V_G;

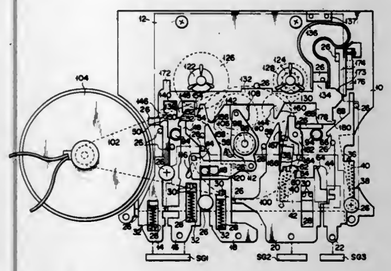
time-differentiating this signal and applying the raw signal, along with this time-differentiated version, to a "second order summing filter stage", including output-summing means.

4,577,245

OPERATING LEVER DEVICE OF MAGNETIC RECORDING TAPE TRANSPORT APPARATUS

Shigeru Nemoto; Goro Kitajima; Sinichi Saitou, and Hazime Osada, all of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 617,825, Jun. 6, 1984, abandoned, which is a continuation of Ser. No. 382,210, May 26, 1982, abandoned. This application Feb. 21, 1985, Ser. No. 703,467
Claims priority, application Japan, May 28, 1981, 56-81723
Int. Cl.⁴ G11B *15/00*
U.S. Cl. 360—93 **10 Claims**



1. An operating lever device for a magnetic recording tape transport apparatus which uses a tape cassette, comprising:

a first base plate;

a second base plate parallel to said first base plate with a distance therebetween;

first operating lever means disposed between said first and second base plates to be movable along the first and second base plates between a first position and a second position;

second operating lever means disposed between said first and second base plates to be movable along the first and second base plates between first and second positions and parallel to the moving direction of said first operating lever means;

an auxiliary operating lever disposed between said first and second base plates to be movable along the first and second base plates among first, second, third and fourth positions and perpendicularly to a direction of movement of said first and second operating lever means, said auxiliary operating lever in the first position thereof being spaced apart from said first and second operating lever means located in the first positions thereof in the locus of movement of said first and second operating lever means from the first position to the second position thereof, said auxiliary operating lever in the second position thereof being engaged with said first operating lever means located at the second position thereof, said auxiliary operating lever in the third position thereof being released from said first operating lever means located in the second position thereof by being spaced apart from the first position farther than from the second position in a direction from the first position to the second position thereof upon movement of said first operating lever means to the second position thereof and subsequent movement of said second operating lever means to the second position thereof, said auxiliary operating lever in the fourth position thereof being separated from the first position thereof in a dction from the second and third positions to the first position thereof upon movement of said first operating lever means to the first position thereof and subsequent movement of said second operating lever means to the second position thereof; and

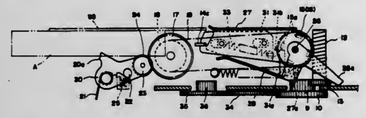
ejecting means disposed at least at one of said first and second base plates for ejecting the tape cassette from the magnetic recording tape transport apparatus upon movement of said auxiliary operating lever from the first position to the fourth position thereof.

4,577,246

CASSETTE RECORDING/REPRODUCING APPARATUS WITH AN AUTOMATIC LOADING FEED ROLLER

Seiichiro Matsuki, Kawagoe, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Apr. 26, 1983, Ser. No. 488,659
Claims priority, application Japan, Apr. 30, 1982, 57-72811; Aug. 6, 1982, 57-118824[U]
Int. Cl.⁴ G11B *15/00*
U.S. Cl. 360—96.5 **25 Claims**



1. A cassette tape recording/reproducing apparatus of the automatic cassette loading type wherein a cassette casing inserted into a cassette inlet of the apparatus is automatically rested on reel bases, the improvement comprising

a frictional feed roller disposed adjacent the cassette inlet and adapted to be forced down by the cassette casing being inserted,

drive means for imparting a rotational force to said feed roller, and

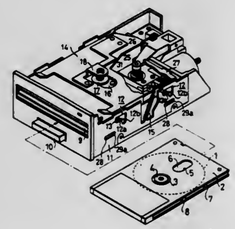
control means responding to the forcing down of said feed roller to actuate said drive means to rotate said feed roller, thereby frictionally carrying the cassette casing into the interior of the apparatus.

4,577,247

RECORDING AND REPRODUCING APPARATUS WITH CARTRIDGE RETAINING MEANS

Motohiro Shimaoka, and Yukio Saito, both of Furukawa, Japan, assignors to Alps Electric Co., Ltd., Japan

Filed Dec. 22, 1983, Ser. No. 564,305
Claims priority, application Japan, Dec. 22, 1982, 57-193105[U]
Int. Cl.⁴ G11B *5/12*
U.S. Cl. 360—97 **7 Claims**



1. A recording and reproducing apparatus comprising:

a cartridge holder adapted to accomodate a disk cartridge inserted therein, said cartridge holder being movable in said apparatus between unloaded and loaded positions;

a resilient member for normally biasing said cartridge holder toward the unloaded position from which the disk cartridge is dischargeable from the apparatus, said cartridge holder being movable to the loaded position against the biasing force of said resilient member; and

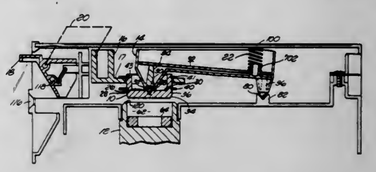
holder means mounted to said cartridge holder for pressing the disk cartridge against a portion of said cartridge holder to thereby prevent the disk cartridge from popping out when said cartridge holder is moved from the loaded to the unloaded position by the force of said resilient member, said holder means comprising a support mounted to a portion of said cartridge holder, a shaft supported in said support, and a presser movably supported on said shaft and biased in a direction for pressing against the disk cartridge inserted in said cartridge holder.

4,577,248

FLOPPY DISC ROTATIONAL APPARATUS

Gill Cantwell, 2434 Purdue Ave., #17, Los Angeles, Calif. 90064

Filed Jan. 31, 1983, Ser. No. 462,591
Int. Cl.⁴ G11B *5/012*
U.S. Cl. 360—97 **21 Claims**



1. Apparatus for positioning and rotating a flexible disc magnetic recording medium having a centrally disposed opening with a diameter therethrough about a predetermined axis of rotation by urging said disc adjacent said opening against a rotor surface, comprising:

(A) a spindle member having at least for discrete external surfaces for engaging said disc including,

(1) a first surface defining a truncated cone having a maximum diameter less than the diameter of said opening,

(2) a second surface defining a cylinder having a diameter slightly greater than the diameter of said opening,

(3) a third surface transitioning between said first and second surfaces,

(4) a fourth surface perpendicular to and extending radially outward from said second surface, and

(5) a groove formed in said second surface for securing a ring therein, said fourth surface being a planar surface defined on said ring;

(B) bearing means centrally disposed on said axis of rotation;

(C) means for rotatably mounting said spindle member on said bearing means; and

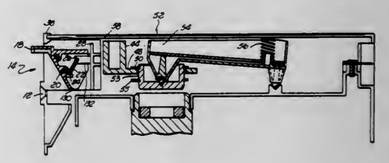
(D) means for moving said spindle member toward and away from said rotor surface for gripping said disc between said rotor and fourth surfaces to rotate said disc.

4,577,249

DISC LOADING APPARATUS

Gill Cantwell, 2434 Purdue Ave., #17, Los Angeles, Calif. 90064

Filed Jan. 31, 1983, Ser. No. 462,286
Int. Cl.⁴ G11B *5/016, 5/55*
U.S. Cl. 360—99 **28 Claims**



1. Apparatus for loading and unloading a magnetic memory disc into and out of a drive mechanism having drive means therein for engaging and rotating said disc and magnetic transducers therein, said apparatus comprising:

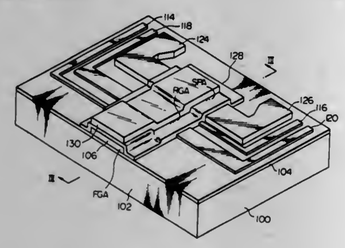
(A) housing means having a front and rear, said front defining an opening therethrough said disc being inserted through said opening on the front of said housing means and traveling towards the rear of said housing means;
(B) lifter means pivotally supported in said housing for rotation between first and second positions, on an axis of rotation, said axis of rotation being substantially parallel with the direction of insertion of said disc within said housing, said lifter means attached to said drive means and said transducers such that when in said first position said lifter means moves said drive means and said transducers out of operative relationship with said disc and when in said second position permitting movement of said drive means and said transducers into operative relationship with said disc;
(C) separate actuating means engaging said lifter means for rotation thereof between said first and second positions; and
(D) interlock means engaging said lifter means and said housing means to preclude movement of said lifter means from said first position to said second position in the absence of a disc being inserted into said housing which thereby prevents said drive means from moving to a disc engaging position and said transducers from moving to a transducing position.

4,577,250

HALL EFFECT MAGNETIC HEAD

Kazuhiro Sato, Sagamihara, and Katsuhiko Oguri, Fujisawa, both of Japan, assignors to Victor Company of Japan, Limited, Kanagawa, Japan

Filed Dec. 10, 1982, Ser. No. 448,564
Claims priority, application Japan, Dec. 18, 1981, 56-203570; Dec. 19, 1981, 56-204531; Dec. 28, 1981, 56-193285
Int. Cl.⁴ G11B *5/38*
U.S. Cl. 360—112 **13 Claims**



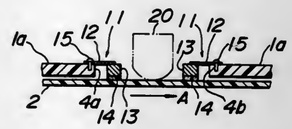
1. A Hall effect magnetic head for performing a predetermined operation such as recording, reproducing and erasing of data on a recording medium which is capable of magnetically recording data therein, comprising:
a first magnetic member;
a second magnetic member located to face said first magnetic member;
the first and second magnetic members defining a front gap therebetween to face the recording medium;
the first and second magnetic members further defining a rear gap therebetween to the rear of said front gap, the rear gap being made up of a first rear gap portion located to the rear of the front gap at a predetermined spacing therefrom and a second rear gap portion located to the rear of said first rear gap portion at a predetermined spacing therefrom;
the first and second magnetic members further defining a space therebetween dimensioned wider than each of the front and rear gaps;
a Hall element disposed in the rear gap; and
means for developing a magnetic field within the rear gap, said means being positioned in said space.

4,577,251

MAGNETIC DISC CASSETTE HAVING DISC FLATTENING MEANS

Shinichi Okada, Chichibu, Japan, assignor to Canon Denshi Kabushiki Kaisha, Saitama, Japan

Filed Mar. 8, 1983, Ser. No. 473,320
Claims priority, application Japan, Mar. 12, 1982, 57-38047; Mar. 12, 1982, 57-38048
Int. Cl.⁴ G11B *25/04, 23/02*
U.S. Cl. 360—133 **9 Claims**



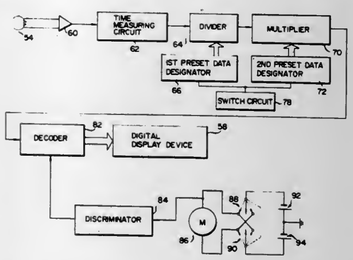
1. A casette for accommodating a magnetic recording medium in the form of a thin disc, said cassette being adapted for insertion in a magnetic recording/reproducing apparatus having a magnetic head, comprising:
a case having first and second substantially flat surfaces defining a cavity therebetween wherein said disc is positioned for rotation in a given direction about an axis normal to said flat surfaces, at least one of said flat surfaces having a window therein for exposing a surface of said disc to said magnetic head, said window having first and second opposite edges; and
a pressing member secured to a flat surface of said case adjacent an edge of said window and protruding into said window to resiliently press on a surface of said disc thereby flattening said surface, said pressing member including a pressing piece made of a cushioning material for contacting the surface of said disc and a resilient supporting member interposed between said case and said pressing piece for supporting said pressing piece and urging it against the surface of said disc.

4,577,252

WORD LINE NUMBER COUNT/DISPLAY DEVICE FOR TAPE RECORDER

Minoru Kobayashi, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 161,316, Jun. 20, 1980, Pat. No. 4,345,287. This application Jun. 21, 1982, Ser. No. 390,556
Claims priority, application Japan, Jun. 26, 1979, 54-80334
The portion of the term of this patent subsequent to Aug. 17, 1999, has been disclaimed.
Int. Cl.⁴ G11B *5/008*
U.S. Cl. 360—137 **10 Claims**



1. In a tape recorder for dictation, which includes a multichannel magnetic head having a plurality of magnetic heads,

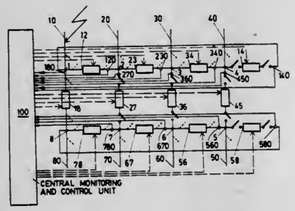
drive means for running a magnetic recording tape in a selected one of a first direction and a second direction opposite to said first direction, and first recording means connected to one of the magnetic heads in said multi-channel magnetic head, for recording a first signal including a main communication content of a dictation and a message regarding the main communication content on the magnetic recording tape when the magnetic recording tape is run in said first direction,
a word line number count/display device comprising:
second recording means connected to another one of the magnetic heads in said multi-channel magnetic head, for recording a second signal related to the length of said main communication content on the magnetic recording tape;
detecting means for detecting said second signal from the magnetic recording tape while the magnetic recording tape is running in either of said first or said second directions;
calculating means electrically connected to said detecting means for calculating the number of word lines corresponding to the main communication content on the basis of said second signal and in accordance with an average number of words spoken by a dictator during a predetermined period of time and an average number of words contained in one line of a typing paper; and
display means electrically connected to said calculating means for displaying information corresponding to the calculated number of word lines.

4,577,253

METHOD FOR LIMITING THE FAULT-GENERATED CURRENTS OF CIRCUIT BREAKERS IN A HIGH-VOLTAGE SWITCHING SYSTEM AND APPLICATION OF THE METHOD

Leopold Blahous, Wettingen, and Georg Köppl, Birr, both of Switzerland, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed May 4, 1983, Ser. No. 491,364
Claims priority, application Switzerland, May 18, 1982, 3080/82
Int. Cl.⁴ H02B *1/24*
U.S. Cl. 361—62 **4 Claims**



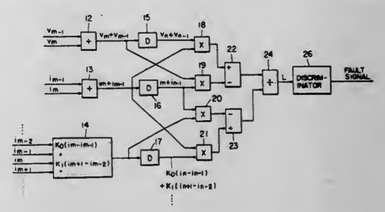
1. A method for limiting the magnitude of the breaking currents of circuit breakers that are opened to isolate a short-circuited node in a high-voltage switching system, having nodes connected in the form of a ring by means of closed circuit breakers and a unit for monitoring the component short circuit currents fed to each of the nodes and for controlling the circuit breakers,
comprising as a first step, the opening of a first circuit breaker in said ring which has at least one faultless node located between each of its terminals and the short-circuited node,
and as a second step the opening of two other circuit-breakers arranged in the ring between said short-circuited node and adjacent faultless nodes.

4,577,254

PROTECTIVE RELAY SYSTEM

Mitsuru Yamaura, Hachioji, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 6, 1984, Ser. No. 637,722
Claims priority, application Japan, Aug. 10, 1983, 58-144988
Int. Cl.⁴ H02H *3/28*
U.S. Cl. 361—80 **12 Claims**



1. A machine implemented method for protecting an electric power system comprising the steps of:
providing signals indicative of instantaneous values of sampled electrical quantities or their synthetic values,
determining or discriminating the distance in accordance with the equation:

$$L_a = \frac{(i_m + i_{m-1})(v_n + v_{n-1}) - (i_n + i_{n-1})(v_m + v_{m-1})}{(i_m + i_{m-1}\sum_{p=0}^{N} K_p (j_{n+p} - j_{n-p-1}) - (i_n + i_{n-1})\sum_{p=0}^{N} K_p (j_{m+p} - j_{m-p-1})} \quad (21)$$

where
L represents the inductance of that portion of the electric power system which lies between the relay location and the fault point,
v_k (k=n, n−1, m, or m−1), i_k (k=n, n−1, m, or m−1), and j_k (k=n+p, n−p−1, m+p, or m−p−1) represent said instantaneous values or said synthetic values for the time point k,
n and m represent sampling time points as expressed by consecutive integers, with n and m differing from each other,
p represents integers 0, 1, . . . N,
N represents a predetermined natural number,
K_p (p=0, 1, . . . N) represents constants, with at least K_0 and K_1 being values other than zero and being so determined that the errors in the approximation for the inductance is zero for specified frequencies, and
producing a signal to be used for the protection of the electric power system according to the result of the determination or the discrimination.

4,577,255

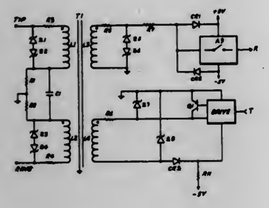
LIGHTNING PROTECTION CIRCUIT FOR DIGITAL SUBSCRIBER LOOP INTERFACE

Philip T. Martin, Raleigh, N.C., assignor to ITT Corporation, New York, N.Y.

Filed Jun. 20, 1984, Ser. No. 622,432
Int. Cl.⁴ H02H *9/04*
U.S. Cl. 361—119 **14 Claims**

1. A lightning protection circuit used in an interface of a digital subscriber loop having a transformer coupling communication signals from said loop to transmit and receive circuitry of said interface, comprising:
means, coupled to said loop, for absorbing energy of lightning signals coupled from said loop to said interface;

means, connected to said absorbing means, for discharging said energy, wherein said transformer has split primary windings, which are connected across said loop; and



a pair of voltage limiting means, each connected across an associated one of said split primary windings, for limiting voltage across each of said windings.

4,577,256

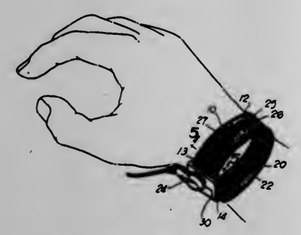
WOVEN STRETCHABLE GROUNDING STRAP

Albert C. Breidegam, Sharpsburg, Ga., assignor to Semtronics Corporation, Peachtree City, Ga.

Filed Sep. 25, 1984, Ser. No. 654,636

Int. Cl.⁴ H05F *3/02*

U.S. Cl. 361—220 **17 Claims**



1. A strap for establishing electrical contact with a person's body, comprising:

(a) a length of woven material for extension in its longitudinal direction circumferentially of the person's wrist, ankle or limb, and comprising:

(i) a plurality of elastic warp yarns oriented in the longitudinal direction to allow the material to stretch; and

(ii) a plurality of electrically conductive yarns exposed on the inner surface of the material to contact the person's skin;

(b) an electrically non-conductive clasp attached to a first end of the material to capture the second end of the material for securing the strap to the person; and

(c) a fitting attached to the clasp to receive an electrically conductive cord, which fitting is in electrical contact with the conductive yarns.

4,577,257

ELECTRIC CAPACITOR WITH AN EXCESSIVE-PRESSURE SAFETY PROTECTION MECHANISM

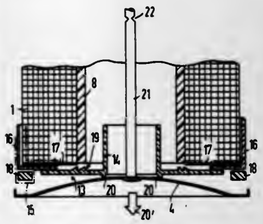
Werner Erhardt, Ballendorf, and Udo Hieber, Heidenheim, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jul. 9, 1984, Ser. No. 628,808

Claims priority, application Fed. Rep. of Germany, Jul. 13, 1983, 3325343

Int. Cl.⁴ H01G *1/06, 9/00*

U.S. Cl. 361—272 **3 Claims**



1. Electric capacitor comprising a housing having an inwardly-arched, substantially spherical, dome-shaped bottom membrane, a capacitor winding disposed in said housing, an exmembrane, a capacitor winding disposed in said housing, an execessive-pressure protection safety device disposed in said housing in vicinity of said bottom membrane, a central core tube disposed in said winding, and an insulating disc disposed between said winding and said bottom membrane, said insulating disc having at least two parts, said insulating disc including an extension protruding into said central core tube and said insulating disc having a surface facing said winding, said surface having corrugations formed thereon.

4,577,258

DECOUPLED INTEGRATED CIRCUIT PACKAGE

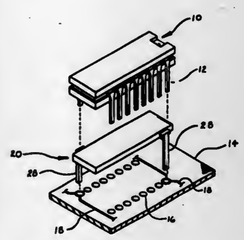
Raymond C. Jodoin, Scottsdale, Ariz., assignor to Rogers Corporation, Rogers, Conn.

Division of Ser. No. 403,408, Jul. 30, 1982, Pat. No. 4,502,101. This application Nov. 29, 1984, Ser. No. 676,490

The portion of the term of this patent subsequent to Feb. 26, 2002, has been disclaimed.

Int. Cl.⁴ H05K *7/20*

U.S. Cl. 361—321 **4 Claims**



1. A decoupling capacitor for use with an integrated circuit element which has a plurality of contact pins extending therefrom in a pair of spaced parallel rows, with a first pin in one row and a second spaced pin in the other row being power supply pins, the capacitor including:

a flat rectangular ceramic body having a pair of opposed surfaces;

a metalized coating on each of said opposed surfaces of said ceramic body;

a first conductor in electrical contact with one of said metalized coatings, and a second conductor in electrical contact with the other of said metalized coatings, said first and second conductors extending outwardly and downwardly from points located adjacent opposite sides of said body and being coordinated with the first and second spaced pins of said integrated circuit element for insertion in a pair of power supply sockets in a circuit board; and

an insulating means encapsulating said ceramic body and metalized coatings, said conductors extending through said insulating means.

4,577,259

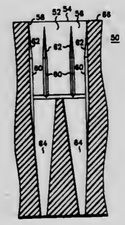
APPARATUS AND METHOD FOR RETAINING AN ELECTRONIC DEVICE

Leonard Latasiewicz, Hoffman Estates; Felix B. Melikian, Niles, and Bay E. Estes, III, Palatine, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 9, 1983, Ser. No. 492,519

Int. Cl.⁴ H05K *7/02*

U.S. Cl. 361—400 **7 Claims**



1. A retaining apparatus for an electronic device comprised of a housing for completely encapsulating said device and at least one conductive lead operably connected to said device and extending from said housing, wherein said housing has a substantially uniform cross section, and further having no grooves formed therein and having no flanges formed on or attached thereto, said apparatus comprising:

a socket assembly having a first end and a second end, and including a cavity formed in said first end for receiving said housing, said cavity having a total interior periphery thereof of a greater cross sectional dimension than said housing, and at least one hole formed in said second end in communication with said cavity for receiving said lead; and

a plurality of deformable ribs extending medially from a proximal portion thereof on said interior periphery of said cavity to a distal portion thereof defining a lesser cross sectional dimension than said housing, said ribs having a beveled edge thereof adjacent an opening to said cavity whereby said housing may be inserted into said opening and retained in position within said cavity solely by deformably engaging said ribs at said distal portion thereof.

4,577,260

VEHICLE LAMP ASSEMBLIES

Nicholas W. Tysoe, Worcester, England, assignor to Britax Vega Limited, Droitwich, England

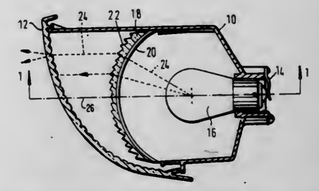
Continuation of Ser. No. 501,014, Jun. 6, 1983, abandoned. This application Oct. 12, 1984, Ser. No. 660,252

Claims priority, application United Kingdom, Jun. 24, 1982, 8218271

Int. Cl.⁴ G03B *15/02*

U.S. Cl. 362—61 **3 Claims**

1. A vehicle lamp assembly having an optical axis and comprising a light source, a light transmitting cover element which is unsymmetrical with respect said optical axis, a light transmitting intermediate element disposed between the source and the cover element and comprising generally cylindrical inner and outer surfaces having their axes coincident with each other, perpendicular to said optical axis and located with the light source at the intersection of said optical axis and said coincident axes, one of said cylindrical surfaces carrying elongate



Fresnel prism formations of uniform cross-section extending in respective planes parallel to said coincident axes and the other cylindrical surface carrying elongate Fresnel prism formations of constant cross-section extending in respective planes perpendicular to said coincident axes, so as to direct collimated light from the source parallel to said optical axis and on to substantially the whole of the cover element.

4,577,261

LAMP MOUNTING STRUCTURE FOR BICYCLE

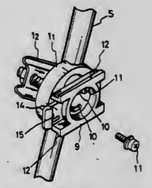
Sadaharu Tsuyama, Osaka, Japan, assignor to Tsuyama Mfg. Co., Ltd., Japan

Filed Aug. 29, 1984, Ser. No. 645,902

Claims priority, application Japan, Aug. 31, 1983, 58-135034

Int. Cl.⁴ B62J *6/00*; F21V *33/00*

U.S. Cl. 362—72 **6 Claims**



1. A lamp mounting structure for a bicycle, comprising:

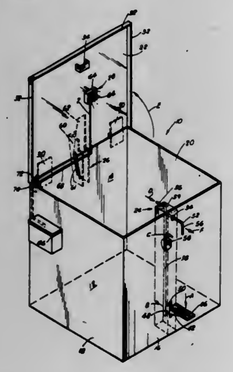
a mounting unit including two members to firmly hold therebetween a part of a bicycle, such as a seat stay thereof;

a lamp mount detachably screwed to said mounting unit, and having angle adjusting means for adjusting the angular position of said lamp mount relative to said mounting unit;

said angle adjusting means comprising a plurality of openings provided in said lamp mount, said openings including a pair of arcuate slots centered on the same point, and in which threaded bolts are passed through said arcuate slots for screwing said lamp mount to said mounting unit; and,

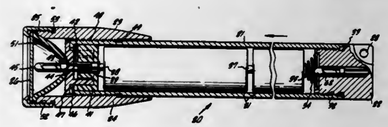
a lamp unit detachably mounted on said lamp mount, said lamp mount and said lamp unit being provided with slide coupling means for their relative sliding movement on each other, said slide coupling means comprising a pair of guide rails provided on opposite sides of said lamp mount, one rail on each side, a tongue extending from another side of said lamp mount, a latching projection provided on the tip of said tongue, and means provided in said lamp unit for engagement with said latching projection.

4,577,262
LIFE PRESERVER STORAGE CONTAINER
Leonard J. Bateaux, 114 Dock Rd., New Iberia, La. 70560
Filed Jul. 11, 1984, Ser. No. 629,920
Int. Cl.[4] F21V *33/00, 23/04*
U.S. Cl. 362—155 **8 Claims**



1. A storage container for life preservers, comprising:
a. a body portion having a bottom portion, a rear wall, at least two side walls and a front wall, said rear wall, front wall and side walls extending upwardly from said bottom portion, providing said body portion with an open top and defining a storage chamber interior of said walls;
b. a top portion hingedly connected along the upper edge of said rear wall for closing said opening and movable between a first opened position and a second closed position;
c. means connected to said rear wall and said top portion for normally urging said top portion to said first position, said means further comprising:
i. a lifting spring assembly rigidly attached to said rear wall; and
ii. a lifting arm attached to said top portion and in engagement with said lifting spring assembly, said lifting arm normally urging said top portion to said first position in response to pressure from said lifting spring assembly;
d. means for latching said top portion in said second position, said means further comprising:
i. a latch member positioned adjacent said front wall and movable between a first latching position and a second releasing position;
ii. a closing latch positioned on said top portion and adapted to releasably receive said latch member and retain said top portion in said second position when said latch member is in said first position;
iii. a spring in engagement with said latch member and said front wall normally urging said latch member toward said first position;
e. means operable by hand and foot for disengaging said latching means and allowing said top portion to move to said opened first position, said means comprising:
i. a foot operable actuator attached to the lower portion of said latch member and extending exterior of said body portion, said actuator causing said latch member to move to said second position and disengage from said closing latch in response to pressure upon said actuator, allowing movement of said top portion from said second position to said first position; and
ii. a hand operable actuator attached near the upper portion of said latch member and extending exterior of said body portion, said actuator causing said latch member to move to said second position in response to pressure upon said actuator in opposition to said spring.
f. light means activated when said top portion moves to said first position for illumination of said storage chamber.

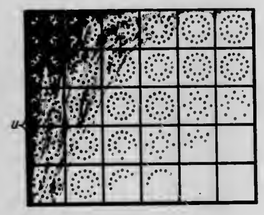
4,577,263
MINIATURE FLASHLIGHT
Anthony Maglica, 219 Armsluy Sq., Ontario, Calif. 91762
Filed Sep. 6, 1984, Ser. No. 648,032
Int. Cl.[4] F21L *7/00*
U.S. Cl. 362—187 **4 Claims**



1. A miniature flashlight comprising:
means for retaining a plurality of miniature dry cell batteries in series electrical contact;
a miniature bi-pin lamp bulb;
means for holding the miniature bi-pin lamp bulb, said means being movably retained by the means for retaining a plurality of dry cell batteries;
a substantially parabolic reflector;
a substantially planar lens;
means for retaining the reflector and the lens in a mutually fixed relationship, said means for retaining the reflector and the lens being adapted to be controllably translatable along the means for retaining a plurality of dry cell batteries such that the relative positional relationship between the reflector and the lamp bulb may be varied, thereby varying a reflection dispersion of a light beam emanating through the lens from said miniature bi-pin lamp bulb;
means for electrically coupling a first electrode of the series arranged dry cell batteries to a first pin of the bi-pin lamp bulb; and
means for electrically coupling a second pin of the bi-pin lamp bulb to a second electrode of the series arranged dry cell batteries;
wherein relative motion of the means for retaining the reflector and the lens in a direction toward the means for retaining a plurality of miniature dry cell batteries will cause the reflector to contact the means for holding the miniature bi-pin lamp bulb and further relative motion in the same direction will move the means for holding the miniature bi-pin lamp bulb to open an electrical contact at the means for electrically coupling the second pin of the bi-pin lamp bulb to the second electrode of the batteries.

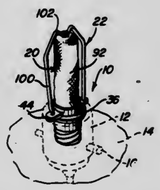
4,577,264
LIGHTING APPARATUS AND SYSTEM UTILIZING MINIATURE INCANDESCENT LAMPS
George W. Plumly, Granbury, Tex., assignor to Plumly Lighting Corporation, Fort Worth, Tex.
Filed Dec. 5, 1984, Ser. No. 678,669
Int. Cl.[4] F21P *1/00*
U.S. Cl. 362—252 **23 Claims**

1. A lighting panel comprising:
a. a plurality of groups of miniature incandescent lamps, with each said group being made up of at least four lamps, with means connecting the lamps of each group in series, with means connecting said groups in parallel, with means adapted for connecting said groups to a normal source of alternating current power, with each said lamp being rated for consumption of less than 1.5 watts when energized, with the sum of the voltage drops of the lamps of a group when operating at normal rated wattage being substantially equal to the voltage of said power source;
b. an exterior surface having the quality of specular reflection, with the filament of each said lamp being disposed outwardly of said exterior surface, with said lamps being arranged in a predetermined array with respect to said exterior surface and such that the light source density is a minimum of four lamps per square foot of said exterior surface;



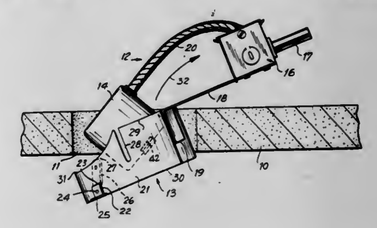
c. a lens for each said lamp, with each said lens being made of clear translucent material and forming a cavity for receiving the respective lamp, with both the lens exterior and the cavity having diffusing surfaces, and with said lens exterior diffusing surface protruding outwardly of said panel exterior surface.

4,577,265
ELECTRIC GASLIGHT SIMULATIVE
A. Frank Krause, Jr., P.O. Box 190, Fairfax, Va. 22030
Filed Nov. 15, 1984, Ser. No. 671,500
Int. Cl.[4] F21M *3/14*
U.S. Cl. 362—255 **12 Claims**



1. An electric gaslight simulative for threaded engagement with a light bulb socket in an electric light fixture comprising an adapter socket having a threaded conductive cap for threading into a light socket, said adapter socket including a body of insulative material on which the cap is mounted, a conductive light bulb socket smaller than the socket in the light fixture mounted on said body in electrical contact with the cap, a central conductive member mounted in the body and extending into the smaller socket from the opposite end of the body in insulated relation to the cap to energize a light bulb screwed into the smaller light socket, a mantle mounted on the body in enclosing relation to a light bulb in the smaller socket and a supporting wire frame connected to the body and extending alongside the mantle and supporting the outer end of the mantle to simulate a gaslight when the light bulb within the mantle is energized.

4,577,266
CEILING MOUNTED LIGHTING FIXTURE WITH THERMAL PROTECTOR
Anthony C. Donato, Westfield, and Alex Kartavenko, Clifton, both of N.J., assignors to Lightolier Incorporated, Jersey City, N.J.
Filed Feb. 11, 1985, Ser. No. 700,487
Int. Cl.[4] F21V *7/00*
U.S. Cl. 362—296 **5 Claims**



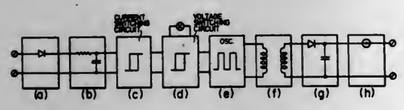
1. A ceiling mounted lighting fixture adapted to be clampingly secured to a ceiling panel or the like by insertion from beneath said panel through a mounting aperture formed in said panel, said fixture comprising a generally cylindrical mounting shroud, a stand-off member secured to said shroud and projecting radially outwardly therefrom, a connector box including thermal sensor means mounted on the end of said stand-off remote from said shroud, said shroud including at the upper edge thereof a recess portion of reduced height at a position diametrically opposite said stand-off, a plurality of stop members mounted on said shroud in angularly spaced relation thereabout, said stop members including radially outwardly projecting stop flanges disposed substantially in the plane of the lowermost end of said shroud, a plurality of slots formed in said shroud, said slots extending generally in the direction of the axis of said shroud, the lowermost ends of said slots terminating in spaced relation to the lowermost end of said shroud, a plurality of spring clip members insertable into said slots, said clip members including ceiling clamp portions projecting radially outwardly of said shroud, and shroud engaging portions in frictional engagement with and shiftable axially along said slots whereby said shroud may be mounted within said ceiling by inclining said shroud from the horizontal, passing said stand-off and connector box upwardly through said mounting aperture, tilting said shroud about a turning axis normal to the axis of said stand-off to position said shroud in said mounting aperture and thereafter inserting said clip members into said slots and shifting the same downwardly to thereby clamp said ceiling between said stop flanges and clamp portions, the combination including a bulb housing, a flexible mains connector extending between said housing and said connector box, a reflector, and complemental clamp means interposed between said housing and said reflector for mounting said housing to said reflector.

4,577,267
ADAPTER FOR FIELD SIGNALS OF COMPUTERS, MICROPROCESSOR SYSTEMS OR THE LIKE DIGITAL ELECTRONIC CIRCUITS
Timo Juutilainen, Espoo, Finland, assignor to Delcon Oy, Finland
Continuation-in-part of Ser. No. 341,482, Jan. 21, 1982, abandoned. This application Apr. 5, 1984, Ser. No. 596,922
Claims priority, application Finland, Jan. 26, 1981, 810207
Int. Cl.[4] H02M *3/335*
U.S. Cl. 363—19 **10 Claims**

1. Apparatus for adapting field signals of computers, microprocessor systems or the like digital electronic circuits having output signals, including input means and output means, first switching circuit means responsive to a first level of signals at said input means, oscillator means actuated by said first switch-

ing circuit means, and transformer means having primary and secondary winding means, said primary winding means being included in said oscillator means and said secondary winding means being included in said output means, the imrovement comprising:

(a) second switching circuit means responsive to a second level of said signals at said input means, said second switching circuit means being normally operative;



(b) each of said first and said second switching circuit means exhibiting hysteresis in its response to said signals at said input means;

(c) said first switching circuit means being inoperative when said second switching circuit means is operative, and said first switching circuit means being operative when said second switching circuit means is inoperative; and

(d) said signals at said input means running through said second switching circuit means when said first switching circuit means is inoperative.

4,577,268

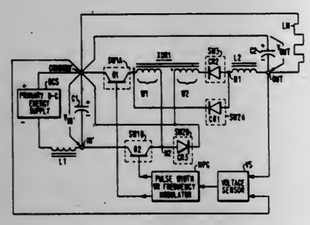
SWITCHING DC-TO-DC CONVERTERS

Finis C. Easter, Canoga Park, and Ramon H. Aires, Granada Hills, both of Calif., assignors to RCA Corporation, Princeton, N.J.

Division of Ser. No. 451,430, Dec. 20, 1982, Pat. No. 4,504,896, which is a continuation of Ser. No. 245,104, Mar. 18, 1981, abandoned. This application Sep. 20, 1984, Ser. No. 652,485

Int. Cl.⁴ H02M *3/335*

U.S. Cl. 363—21 **6 Claims**



1. A switching dc-to-dc converter comprising:

first and second terminals for receiving therebetween the primary dc energy to be converted;

a flyback transformer having first and second windings, which first and second windings have respective first and second ends, with currents of opposite polarities tending to flow from their first ends responsive to waxing or waning of the strength of the electromagnetic field surrounding them, the first end of said second winding being connected to said first terminal;

means recurrently applying an input current during a first series of time intervals to the first winding of said flyback transformer, to cause the waxing of the strength of an electromagnetic field for storing energy to be released by the waning of the strength of said electromagnetic field during a second series of time intervals interleaved with said first series of time intervals, which means includes

means for selectively connecting during each time interval in said first series the first end of said first winding to said second terminal, and includes

means for selectively connecting during each time interval in said first series the second end of said first winding to said first terminal;

a third terminal;

a capacitor connected between said first and third terminals;

means for recovering flyback current flow from the second winding of said flyback transformer during said second series of time intervals and combining it with transformed input current flow from said second winding during said first series of time intervals to provide an output current flow through said third terminal that continues to flow during both said first and second series of time intervals, which means includes

a dc-conductive impedance element having a first end connected to said third terminal and having a second end,

means for selectively connecting during said first series of time intervals the second end of said d-c conductive element and the second end of said second winding,

means for selectively connecting during each time interval in said second series the second end of said dc-conductive impedance element and a point on said first winding remote from its first end by the same number of turns as in said second winding, and

means for selectively connecting during each time interval in said second series said first terminal and the first end of said first winding.

4,577,269

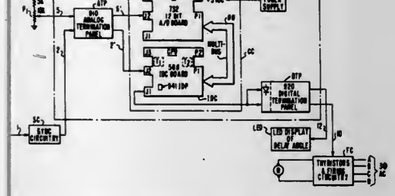
APPARATUS FOR EFFICIENT USE OF A MICROPROCESSOR TO CONTROL THYRISTORS

Alberto Abbondanti, Penn Hills, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 20, 1982, Ser. No. 435,440

Int. Cl.⁴ H02M *1/084*

U.S. Cl. 363—129 **4 Claims**



1. Thyristor gating apparatus for a microprocessor-based control system involving N thyristors connected to an AC power supply and to be fired sequentially; the apparatus including a ramp-intersect comparator having a ramp generator to provide a running count representing electrical angles therefrom on said AC power supply, said comparator being responsive (1) to a reference signal characterizing the instant of firing a thyristor "next" to be fired and (2) to said running count, to determine such firing instant; and means for firing said "next" thyristor upon said firing instant, characterized in that said ramp-intersect comparator includes:

an auxiliary counter;

a master counter serving as said ramp generator;

said microprocessor being responsive to said running count from said master counter and to said reference signal for deriving an error count;

said error count being derived by said microprocessor upon a selected instant;

and said microprocessor presetting said auxiliary counter with said error count instantaneously after the derivation thereof upon said selected instant; said auxiliary counter being immediately thereafter triggered by said microprocessor to count down from such preset error count;

said firing means being controlled for firing upon zero count by said auxiliary counter.

4,577,270

PLANT CONTROL METHOD

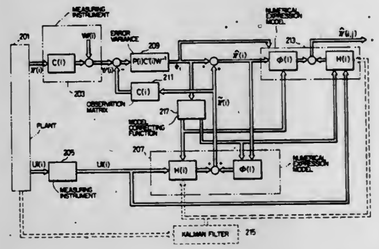
Akira Sugano; Masaru Muramatsu; Sachio Yamanobe, and Yoshio Sato, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Engineering Co., Ltd., Ibaraki, both of Japan

Continuation of Ser. No. 280,206, Jul. 6, 1981, abandoned. This application Oct. 5, 1984, Ser. No. 658,412

Claims priority, application Japan, Jul. 4, 1980, 55-90591

Int. Cl.⁴ G06F *15/46*; G05B *13/04*

U.S. Cl. 364—151 **19 Claims**



1. A method of controlling and optimizing the operation of a process within a plant having at least one manipulated variable and at least one controlled variable dependent on said at least one manipulated variable, said method comprising the steps of;

measuring the present value of said at least one controlled variable;

calculating a present presumed value of said at least one controlled variable by using a first plant model formed by a mathematical procedure which uses said measured controlled variable and system noise included within said plant as data therefor;

evaluating an error corresponding to the difference between the measured value of said at least one controlled variable and said present presumed value thereof on the basis of noise included within said measured value and system noise included within said plant;

calculating a future predictive value of said at least one controlled variable by using a second plant model formed by a mathematical procedure which uses said present presumed value, said evaluated error and system noise included within said plant as data therefor;

correcting said first plant model in such a manner that said evaluated error becomes zero; and

adjusting said at least one manipulated variable in accordance with said future predictive value and a desired value of said at least one controlled variable.

4,577,271

SAMPLED DATA SERVO CONTROL SYSTEM

Donald H. Jones, Pittsburgh, and Spencer W. Allen, Murrysville, both of Pa., assignors to International Cybernetics Corporation, Pittsburgh, Pa.

Filed Aug. 15, 1983, Ser. No. 523,061

Int. Cl.⁴ G06F *15/46*; G05B *13/02*

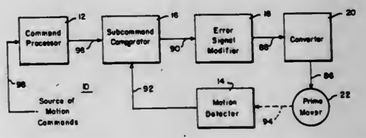
U.S. Cl. 364—174 **21 Claims**

1. A sampled data system for controlling the motion of an object comprising:

means for processing a command representative of the desired motion of the object by generating at least one series of subcommands, each subcommand representing a segment of the desired motion over a time period;

means for comparing said subcommands to at least one signal representative of the actual motion of the object and generating at least one error signal representative of the variation of a characteristic of the actual motion of the object from the corresponding characteristic of the motion represented by said subcommands;

means for detecting a single motion characteristic of the



actual motion of the object and generating all said actual motion signals therefrom;

means for so modifying said error signal that said system exhibits a set of desired performance characteristics; and

means for converting at least one said modified error signal to a signal suitable for application to a prime mover which causes said object to exhibit said desired motion.

4,577,272

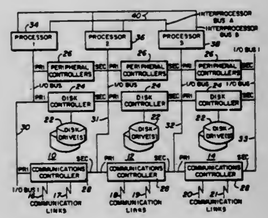
FAULT TOLERANT AND LOAD SHARING PROCESSING SYSTEM

James D. Ballew, Garland, and Phil H. Rogers, Dallas, both of Tex., assignors to E-Systems, Inc., Dallas, Tex.

Filed Jun. 27, 1983, Ser. No. 508,101

Int. Cl.⁴ G06F *15/16, 11/00*

U.S. Cl. 364—200 **19 Claims**



1. A method of allocating incoming messages for processing in one channel of a multi-channel fault tolerant, load sharing data processing system and for reassigning message upon the malfunctioning of a channel, comprising the steps of:

identifying each incoming message at each channel of the data processing system containing data to be processed for assignment to one of the channels of the systems for processing;

assigning the identified message to the channel having the smallest number of messages waiting to be processed;

transmitting the identified message to the assigned channel for processing in the order assigned;

transmitting the assigned message to at least one other channel of the system for back-up storage;

monitoring each of the channels of the system for a malfunction condition;

identifying each message in all functioning channels that remains unprocessed and assigned to the malfunctioning channel;

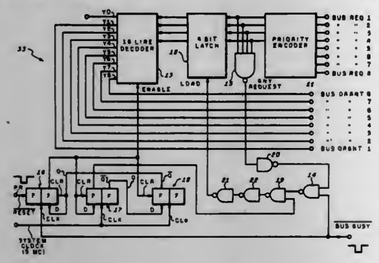
reassigning each of the identified messages to the remaining functioning channels on the basis of the smallest number of messages waiting to be processed; and

in response to a reassignment of a message, processing the message in the reassigned channel.

4,577,273
MULTIPLE MICROCOMPUTER SYSTEM FOR DIGITAL COMPUTERS

Michael G. Hopper, Burke, Va., and Harri G. Prival, Potomac, Md., assignors to Sperry Corporation, New York, N.Y.

Filed Jan. 6, 1983, Ser. No. 501,304
Int. Cl.[4] G06F *15/16*
U.S. Cl. 364—200 1 Claim

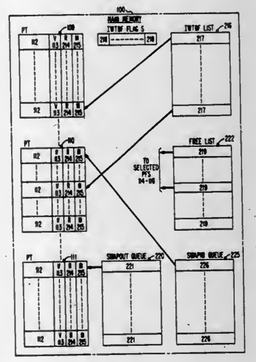


1. A multiple microcomputer system comprising:
a plurality of microcomputer means coupled to provide data, address, control and identification signals to an intercommunication bus, and coupled to provide a bus request signal to a priority resolution means for executing programs and for signalling and acknowledging high speed interchange of data among said plurality of microcomputer means;
priority resolution means coupled to provide bus grant signal to said plurality of microcomputer means for determining which microcomputer means among said plurality of microcomputer means shall have access to said intercommunication bus; said priority resolution circuit includes:
a priority encoder coupled to receive a plurality of bus request signals and coupled to provide an encoded signal to a four bit latch and a first NAND gate;
a sixteen line decoder coupled to receive an output from said four bit latch and coupled to provide a plurality of said bus grant signals;
a first inverter coupled to receive an output from said first NAND gate;
a second NAND gate coupled to receive an output from said first inverter and also coupled to receive a bus busy signal;
a third NAND gate coupled to receive an output from said second NAND gate and also coupled to receive an input from a second flip-flop;
a second inverter coupled to receive an input from said third NAND gate;
a third inverter coupled to receive an input from said second inverter and coupled to provide an output to said four bit latch;
a first flip-flop coupled to receive a system clock input, a reset input, and a D input from a third flip-flop and coupled to provide an output to said sixteen line decoder;
said second flip-flop coupled to receive a system clock input and a D input from said first flip-flop;
said third flip-flop coupled to receive a D input from said second flip-flop, and coupled to receive a system clock input and coupled to receive an output from said first flip-flop;
plurality of memory means in said plurality of microcomputer means for storage of programs, data, address, and control signals; each of said plurality of memory means having signalling block of memory wherein an address to said signalling block initiates an interrupt signal for specifying a service routine to be followed in regard to processing transferred data;
said plurality of memory means each partitioned into blocks wherein each said block is dedicated to a specified microcomputer means;
coded signals comprising a first predetermined plurality of bits for identifying a selected microcomputer to receive inter-microcomputer communications and a second predetermined plurality of bits for identifying a selected memory location in said selected microcomputer memory means, and
coded signal identification circuit contained in each said microcomputer means responsive to said coded signals for recognizing which inter-microcomputer communications are destined for selected microcomputer means.

4,577,274
DEMAND PAGING SCHEME FOR A MULTI-ATB SHARED MEMORY PROCESSING SYSTEM

Gary S. Ho, San Jose, Calif., and Ralph W. Peterson, Naperville, Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 11, 1983, Ser. No. 512,379
Int. Cl.[4] G06F *12/12, 12/10, 12/06, 13/00*
U.S. Cl. 364—200 36 Claims

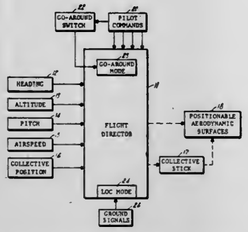


35. In a processing system using paged virtual storage addressing and including an addressable main store having a plurality of page frames for storing selected pages of information, and a plurality of flushable address translation stores for storing the main store addresses corresponding to selected virtual storage addresses, a paging apparatus comprising:
initializable flush-indicating means, cooperative with the address translation stores, for indicating whether the plurality of address translation stores have been flushed since initialization of the flush-indicating means;
reference-indicating means, cooperative with the flush-indicating means, for indicating whether a selected at least one page frame has been referenced since initialization of the flush-indicating means;
means, cooperative with the flush-indicating means and with the reference-indicating means, for selecting from the at least one page frame a page frame indicated not to have been referenced, after the plurality of address translation stores are indicated to have been flushed; and
means, cooperative with the selecting means, for storing a page in the page frame selected by the selecting means.

4,577,275
FLIGHT DIRECTOR GO-AROUND MODE

Don L. Adams, Fairfield; Charles W. Evans, Norfolk, and Stuart C. Wright, Woodbridge, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed May 31, 1983, Ser. No. 499,682
Int. Cl.[4] G06F *15/50*
U.S. Cl. 364—433 4 Claims



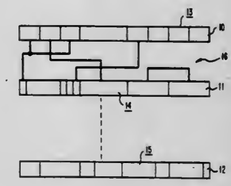
1. A flight director having a channel for controlling the lift (climb/descent) of an aircraft in response to a collective command and having a channel for controlling the airspeed of the aircraft in response to a pitch command, comprising:
a switch for providing a go-around signal in response to a pilot input;
altitude means for providing a rate signal indicative of the aircraft vertical rate;
airspeed means for providing an airspeed signal indicative of the aircraft airspeed; and
signal processing means connected for response to the switch, the altitude means and the airspeed means, for providing the collective command in response to the go-around signal to cause the aircraft to climb at a predetermined rate as indicated by the rate signal, for providing the pitch command to increase the airspeed of the aircraft in response to the go-around signal when the airspeed signal is indicative of an airspeed that is less than a predetermined airspeed, such as the maximum rate of climb airspeed of the aircraft, and for providing the pitch command to decrease the airspeed in response to the go-around signal only when the airspeed signal is indicative of an airspeed that is greater than the predetermined airspeed and if the predetermined rate of climb is not achieved within a predetermined time interval after go-around was commanded by the pilot.

4,577,276
PLACEMENT OF COMPONENTS ON CIRCUIT SUBSTRATES

Alfred E. Dunlop, New Providence, and Brian W. Kernighan, Berkeley Heights, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Sep. 12, 1983, Ser. No. 531,423
Int. Cl.[4] G06F *15/46*
U.S. Cl. 364—491 9 Claims

1. An integrated circuit fabricated in accordance with a design procedure comprising the steps of
(a) determining a plurality of modules of integrated circuit components from which said integrated circuit can be fabricated,
(b) successively partitioning said plurality of modules into successively smaller subsets of modules maximally connected within subsets and minimally connected between subsets in accordance with a known partitioning algorithm,
(c) successively dividing the area of a substrate into subareas proportional to the areas of the polycells in said subsets,
(d) placing said modules on said substrate in accordance with the subarea location to which said modules are assigned, and

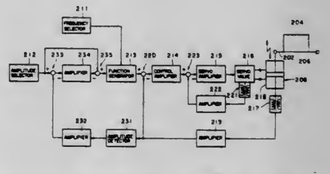


(e) propagating connections to terminal external to each of said subareas to the periphery of the respective subareas prior to said partitioning step.

4,577,277
METHOD AND APPARATUS OF CONTINUOUS CASTING BY THE USE OF MOLD OSCILLATING SYSTEM

Futoshi Kamei; Shinichi Harada, both of Kobe; Akira Yasunishi, Hyogo; Minoru Takemura, Kobe; Takeshi Fujikawa, Hyogo; Shinzo Iida, and Yasuyuki Katayama, both of Kobe, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Aug. 24, 1983, Ser. No. 525,896
Claims priority, application Japan, Mar. 7, 1983, 58-37169; Jul. 22, 1983, 58-134962
Int. Cl.[4] B22D *11/04*
U.S. Cl. 364—472 5 Claims



5. A continuous casting apparatus with a mold oscillating system adapted to put a casting mold in oscillation at a preselected amplitude and frequency, said oscillation system comprising:
an oscillating frame substantially of U-shape in plan view and having a pivoting shaft and an oscillator, free ends of opposite side frame portions thereof being pivotally supported on such pivoting shaft and oscillated up and down by said oscillator wherein said oscillator is connected to a center portion of a transverse frame portion thereof;
an oscillation control circuit connected to said oscillator to control oscillator of said mold;
wherein said oscillator further comprises an electrohydraulic servo having a cylinder, said cylinder being connected to said oscillating frame and driven according to a signal of preselected amplitude and frequency produced by said control circuit;
wherein said control circuit further comprises:
a function generator for generating a control signal of preselected amplitude and frequency and for inputting said control signal to said electrohydraulic servo;
an amplitude detector for converting a position signal of said cylinder to an amplitude signal;
a deviation detector for calculating an amount of deviation of said amplitude signal from said preselected amplitude;
a multiplier for multiplying said amount of deviation by a coefficient to produce a first result; and
an adder for adding said first result to said preselected ampli-

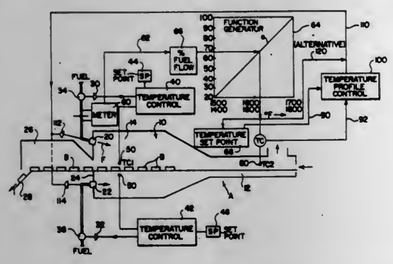
tude to produce a second result and for inputting said second result to said function generator.

4,577,278

METHOD AND SYSTEM FOR CONTROLLING A SELECTED ZONE IN A FUEL FIRED FURNACE

Robert A. Shannon, Avon Lake, Ohio, assignor to North American Manufacturing Company, Cleveland, Ohio

Filed Jul. 18, 1983, Ser. No. 514,921
Int. Cl.[4] F27D *3/00*
U.S. Cl. 364—477 **26 Claims**



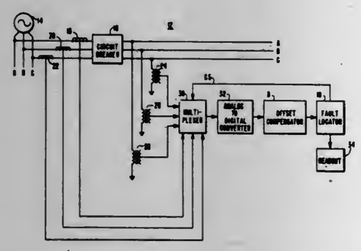
1. A method of heating a selected zone in a fuel fired furnace having means for moving work through said selected zone in a given direction from an entrant end to and through an exit end of said zone at a variable production rate, said furnace further having a means for controlling the heating rate in said zone and means for controlling the temperature profile in said zone and in a direction parallel to said given direction between a first short profile with the point of maximum energy liberation adjacent said exit end and a second long profile with said point of maximum energy liberation spaced from said exit end, said method comprising: controlling said heating rate in accordance with the exit temperature of said selected zone and adjacent to said exit end of said zone, establishing a desired set point temperature at said entrant end of said zone corresponding to said heating rate as controlled by said exit temperature, and inversely adJusting said temperature profile in response to deviation of the actual temperature at the entrant end of said zone from said set point temperature until said heating rate and temperature profile reach an equilibrium condition.

4,577,279

METHOD AND APPARATUS FOR PROVIDING OFFSET COMPENSATION

Seymour Salowe, Murrysville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 31, 1983, Ser. No. 499,624
Int. Cl.[4] H02H *3/18*
U.S. Cl. 364—483 **4 Claims**



1. A fault locating device adapted for use in a power system network to determine a fault location on a faulted power line within a few cycles after fault occurrence from measured signals representative of the voltage and current of the faulted power line, said measured signals including a transient decaying exponential offset component initiated by said line fault, said fault locating device including:

means coupled to a power line in said power system network for measuring the voltage and current thereof and for generating signals representative of said measured voltage and current;

means for sampling the amplitudes of at least one said voltage and current signals at a sampling rate which renders M+1 amplitude samples per cycle of the power line frequency;

offset compensating means for removing substantially said transient decaying exponential offset component from said at least one of said voltage and current signals by operating on the sampled amplitudes of said one signal X to generate compensated amplitude samples therefrom in accordance with the following relationship:

$$Y_{N-P} = X_{N-P} - \left(\frac{1}{M+1}\right) \sum_{\alpha=0}^{M} X_{N-\alpha},$$

where X_N denotes an instant amplitude sample taken by said sampling means, X_{N-1} through X_M denote the previous M consecutive sample amplitudes, whereby the M+1 amplitude samples form a set of samples which set moves in time with each taking of a new instant amplitude sample by said sampling means, where X_{N-P} denotes an amplitude sample within each sample set P samples from said instant amplitude sample X_N, and where Y_{N-P} denotes a corresponding compensated amplitude sample for each sample set; and

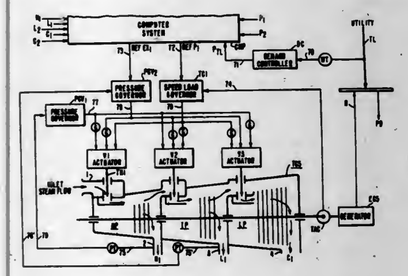
fault locator for determining the fault location on the faulted power line from the compensated amplitude samples generated by said offset compensating means, whereby the determination of the fault location may be performed within a few cycles of the fault occurrence without being hampered by the transient offset component.

4,577,280

CONTROL SYSTEM FOR FLUID FLOW DISTRIBUTION

Richard E. Putman, Penn Hills, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 3, 1983, Ser. No. 548,478
Int. Cl.[4] G06F *15/46*
U.S. Cl. 364—494 **21 Claims**



1. In a system for the distribution of fluid through a plurality of input fluid lines to satisfy a demand of fluid through a plurality of output lines, with at least one common header collecting fluid from at least two parallel such output lines, the combination of:

control means for selectively changing the flow between said input lines and for concurrently and selectively changing the flow between said output lines in accordance with a predetermined optimization criterion;

decoupling means responsive to an intended change to be done by said control means according to said optimization criterion as effected upon one of said parallel output lines for anticipating changes through the system as effected by said control means upon the others of said parallel output lines; and

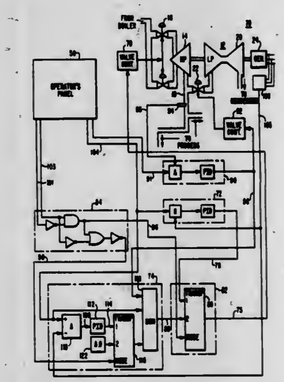
said control means combining each of such intended changes and of correlative said anticipating changes for simultaneously changing the flow between said input and output lines in accordance with said intended and anticipating changes, thereby to compensate for a discrepancy in said optimization criterion due to said correlative anticipating changes.

4,577,281

METHOD AND APPARATUS FOR CONTROLLING THE CONTROL VALVE SETPOINT MODE SELECTION FOR AN EXTRACTION STEAM TURBINE

James M. Bukowski; Gary E. Midock, both of Pittsburgh, and Ronald J. Walko, Bethel, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 16, 1983, Ser. No. 562,378
Int. Cl.[4] F01D *17/02*
U.S. Cl. 364—494 **15 Claims**



1. A control apparatus for operating an extraction steam turbine-electric power generation system to satisfy extraction steam and megawatt output demand, said apparatus comprising:

at least one turbine inlet steam control valve;

a turbine extraction valve;

a first valve controller means for positioning said control valve;

a second valve controller means for positioning said extraction valve;

a megawatt output transducer means for generating a megawatt feedback signal corresponding to the existing level of megawatt output;

a sensor means for generating an extraction feedback signal corresponding to the existing level of extraction steam;

a control mode selector means for determining a first operational state corresponding to the presence of said megawatt output demand and the absence of said extraction steam demand and a second operational state corresponding to the presence of both said megawatt output demand and said extraction steam demand;

an operator panel means for generating at least one signal to determine the operation of said control mode selector means in accordance with an operator selection at said operator panel means;

a control valve setpoint signal selection controller means for selecting a first control valve setpoint signal in said first operational state or a second control valve setpoint signal in said second operational state and establishing said selected control valve setpoint signal operative with said first valve controller means;

a control valve setpoint signal controller means for determining said first control valve setpoint signal in accordance with said megawatt output demand and said megawatt feedback signal, said first control valve setpoint signal connected to said control valve setpoint signal selection controller means;

an extraction valve setpoint signal controller means for determining an extraction valve setpoint signal in accordance with said extraction steam demand and said extraction feedback signal, said extraction valve setpoint signal operative with said second valve controller means; and

a control valve setpoint signal correction controller means for determining said second control valve setpoint signal in accordance with a predetermined function of said megawatt feedback signal, said megawatt output demand, and said extraction valve setpoint signal, said second control valve setpoint signal connected to said control valve setpoint signal selection controller means.

4,577,282

MICROCOMPUTER SYSTEM FOR DIGITAL SIGNAL PROCESSING

Edward R. Caudel, and Surendar S. Magar, both of Houston, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 22, 1982, Ser. No. 350,852
Int. Cl.[4] G06F *9/00, 13/00*
U.S. Cl. 364—200 **8 Claims**

1. A microcomputer device for digital signal processing formed in a single semiconductor unit comprising:

an arithmetic/logic unit having data input and data output;

an accumulator having an input connected to said data output and an accumulator output;

a data memory having an address input and having data input/output means;

data bus means coupled to the data input of the arithmetic/logic unit and to said accumulator output and coupled to the data input/output means of the data memory;

means connecting the accumulator output to a data input of the arithmetic/logic unit separately from the data bus means;

data input/output terminals for coupling to circuits external to the semiconductor unit, and means connecting the data bus means to said data input/output terminals;

a shifter in the coupling from the data bus means to a data input of the arithmetic/logic unit, and means in said shifter for shifting a selectable number of bits;

a program memory having an address input and having an instruction output, the program memory storing instruction words;

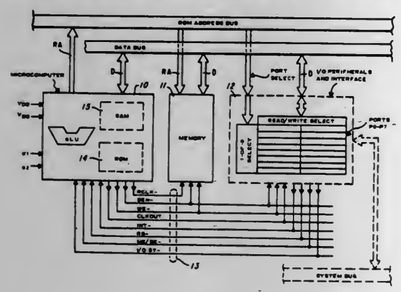
program address means connected to the address input of the program memory means;

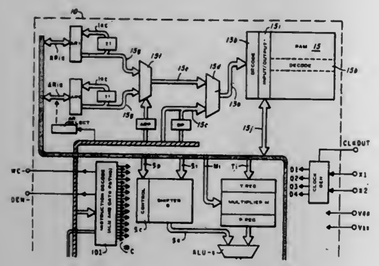
control means for generating controls in response to instruction words received from said program memory means or from said data input/output terminals, the controls defining operation of the arithmetic/logic unit and transfer to and from the bus means;

program bus means separate from said data bus means coupled to said instruction output, to an input of said control means, to said program address means, and to said input-/output terminals, for transfer of instruction words and program memory addresses;

and timing means for establishing overlapping operating cycles during one of which data may be transferred from the data memory to a data input of the arithmetic/logic

unit via said shifter, and the arithmetic/logic unit produces results to the accumulator for one instruction, the control means receives an instruction word from the





instruction output via said program bus means for the next instruction, and the program address means applies an address to the address input of the program memory for another following instruction.

4,577,283

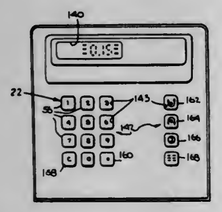
POSTAGE METER WITH KEYBOARD KEYS FOR CAUSING METER OPERATIONS TO BE PERFORMED

John H. Soderberg, Stratford; Howell A. Jones, Southport; Alton B. Eckert, Norwalk, and Edward E. Duwel, Trumbull, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Dec. 8, 1982, Ser. No. 447,861

Int. Cl.⁴ G06F *15/20*

U.S. Cl. 364—464 **25 Claims**



1. In a postage meter having means for entering data, means for displaying numerical values and other data, means for printing postage, computer means electrically connected to each of the aforesaid means and programmed for processing data for controlling the operation thereof, wherein said data entering means includes a keyboard having a plurality of depressable numeric keys, and wherein said computer means includes means for storing data and calculating amounts pertaining to the operation of said postage meter, an improvement in the operation of said postage meter, the improvement comprising:

(a) said keyboard including a depressable special purpose key;

(b) said computer means programmed for causing said displaying means to display a numerical value in response to the depression of selected numeric keys;

(c) said computer means programmed for automatically processing said numerical value on display in response to the depression of said special purpose key; and

(d) said computer means programmed for causing a particular operation of said postage meter to be performed in response to the depression of said special purpose key when said displayed numerical value is a predetermined value corresponding to said particular operation.

4,577,284

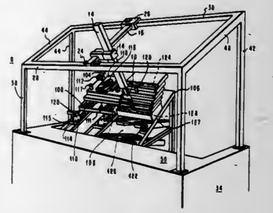
ADAPTIVE ROBOT BATCH ASSEMBLY SYSTEM

Arthur E. Christy, and Elmer J. Gill, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 363,994, Mar. 31, 1982, abandoned. This application Nov. 20, 1984, Ser. No. 673,447

Int. Cl.⁴ G06F *15/46, 15/20*

U.S. Cl. 364—513 **7 Claims**



1. An adaptive assembly system comprising:

a computer controlled robotic manipulator for performing a plurality of assembly task sequences; and

a plurality of task oriented workstations, each workstation containing all parts and tooling for supporting and supplying a given assembly task, each task oriented workstation being selectively positionable in locking engagement with framework supporting the manipulator

whereby the manipulator may advance from one workstation to another with no down time associated therewith.

4,577,285

GAGE BLOCK MANAGEMENT SYSTEM

Donald H. Bailey, Bloomfield Hills, Mich., assignor to Suburban Tool, Inc., Birmingham, Mich.

Continuation-in-part of Ser. No. 427,859, Sep. 29, 1982, Pat. No. 4,542,473. This application May 25, 1983, Ser. No. 497,808

Int. Cl.⁴ G06F *15/20*

U.S. Cl. 364—560 **14 Claims**

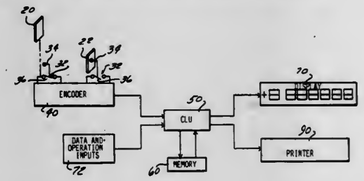
1. A gage block management system comprising:

a case for removably receiving a plurality of gage blocks, each having opposed gage surfaces with a nominal dimension therebetween and a known deviation from the nominal dimension;

means for specifying a pre-determined stack height formed of selected ones of the gage blocks;

memory means for storing the nominal dimension and known deviation of each gage block and a control program for selecting which gage blocks are to be selected to form the specified stack height;

control means for executing the control program in the memory means and selecting which gage blocks are to be selected to form the specified stack height; and



means, responsive to the control means, for indicating which gage blocks are to be removed from the case to form the specified stack height.

4,577,286

SOLAR ENERGY-POWERED CALCULATOR OR THE LIKE

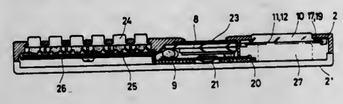
Yutaka Yoshimura, and Masahiro Hikami, both of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Japan

Filed Jan. 4, 1984, Ser. No. 568,073

Claims priority, application Japan, Jan. 8, 1983, 58-875[U]; Feb. 1, 1983, 58-15840

Int. Cl.⁴ G06F *1/00;* H01L *31/04*

U.S. Cl. 364—708 **3 Claims**



1. An electronic calculator containing a plurality of solar cells powering the internally provided electronic parts comprising;

a removable integrated unit comprising said solar cells, a protective filter, and support means for securing said solar cells to the filter;

a plurality of terminals present in said appliance for obtaining the power generated by said solar cells; and

means for achieving electrical connections either between said solar cells or between said solar cells and said electronic parts upon installing said integrated unit into said electronic appliance.

4,577,287

METHOD AND APPARATUS FOR GENERATING DIGITAL SIGNALS REPRESENTING PERIODIC SAMPLES OF A SINE WAVE

Christopher J. Chrin, Lisle, Ill., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 2, 1983, Ser. No. 471,330

Int. Cl.⁴ G06F *15/31*

U.S. Cl. 364—721 **13 Claims**

1. A method of generating electrical digital signals representing periodic sample values for a sine wave, the period of sample generation being T seconds, the frequency of said sine wave being F, T being less than 1/2F, comprising the steps of:

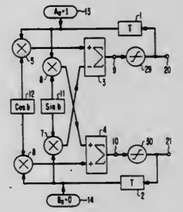
(a) generating electrical signals representing initial values of c and d, $c=\sin 2\pi FT$, $d=\cos 2\pi FT$, rounded up in absolute value such that $c^2+d^2 \geqq 1$;

(b) generating electrical signals representing an initial value, e, of said sine wave, and f, the value of cosine corresponding to e;

(c) generating a preliminary next value, S′, of said sine wave by calculating cf+de=S′, and generating a cosine value, C′, corresponding to S′, by calculating df−ce=C′;

(d) generating a final next value S of said sine wave and C of the corresponding cosine value, respectively, by limiting to one any magnitude of S′ and C′ respectively, which exceeds one;

(e) setting e=S, f=C;



(f) transmitting an electrical signal representing the value of S to a user of said signal; and

(g) repeating steps c, d, e and f every T seconds for the duration of the time of generation of said digital sine wave.

4,577,288

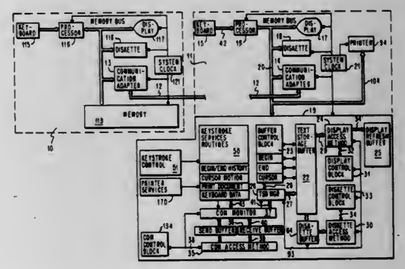
DATA COMMUNICATIONS SYSTEM WITH RECEIVING TERMINAL FOR VARYING THE PORTIONS OF RECEIVED DATA BEING DISPLAYED

Dennis G. Busch, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 16, 1981, Ser. No. 274,050

Int. Cl.⁴ G06F *9/00*

U.S. Cl. 364—900 **4 Claims**



1. In a data communication system comprising at least one data transmitting display terminal and at least one data receiving display termianl wherein said data receiving display terminal also functions to transmit data and said data transmitting terminal also functions to receive data, the improvement wherein each said data receiving and transmitting display terminal comprises;

means operative during data transmission for storing data received from said at least one data transmitting terminal;

means operation during said data transmission for concurrenty displaying the alphanumeric representation of said received stored data, the screen capacity of the data receiving display terminal being less than that required to display all of said received stored data at a time;

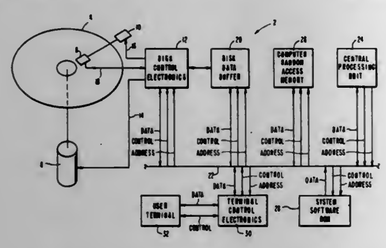
cursor means operative during data transmission for concurrently and selectively designating entire portions of said displayed received data for printing, said cursor means comprising display and control means;

means for concurrently printing said designated portions during said data transmission.

4,577,289
HARDWARE KEY-ON-DISK SYSTEM FOR COPY-PROTECTING MAGNETIC STORAGE MEDIA

Liam D. Comerford, Carmel, and Steve R. White, Mt. Kisco, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1983, Ser. No. 567,294
Int. Cl.[4] G06F *12/14*
U.S. Cl. 364—900 63 Claims



1. A method of determining by a computer if a particular magnetic medium comprised of sections which are divided into subsections is an original or a copy, with an original having indicia on at least one subsection of at least one section thereon that are not modifiable by the medium write process, and a copy not having said indicia, or having indicia in a different pattern than said indicia, including a product program which is to be executed only if the medium is an original, and a medium test program for performing said method to test if said particular medium is an original, said method comprising the steps of:

writing at least portions of said sections of said particular medium with a test pattern which generates a change in the pattern of magnetic domains in said medium at predetermined locations within said portions, said portions including at least said indicia-containing subsections, with a subsection in said portions responding to said test pattern only in the absence of indicia thereon, to form a stored pattern in said portions;

storing an expected pattern, which is indicative of the pattern which is expected to be read from said portions of an original medium including said indicia;

comparing said expected pattern with said stored pattern on at least a per subsection basis, to determine if predetermined subsections have the expected pattern of magnetic domains; and

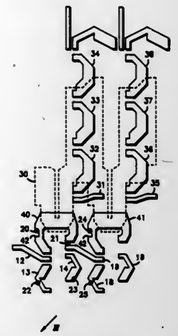
executing said product program only in response to the comparison determining that the corresponding subsections have the expected pattern of magnetic domains, which is indicative of the presence of said indicia, thereby indicating that said particular medium is an original.

4,577,290
REPLICATOR WITH IMPROVED PROPAGATION PERFORMANCE

David C. Markham, Mesa, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 26, 1984, Ser. No. 593,469
Int. Cl.[4] G11C *19/08*
U.S. Cl. 365—12 7 Claims

1. A magnetic bubble domain memory replicator for replicating magnetic bubble domains and having a first magnetic pole end, a second magnetic pole end, a replicating area, and a notch located in the replicator adjacent to the second magnetic pole end for momentarily storing a magnetic bubble domain as

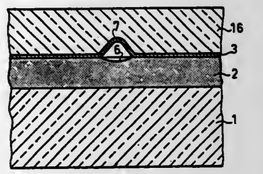


the domain moves from the replicating area to the second magnetic pole end.

4,577,291
THERMO-OPTICAL DATA WRITING PROCESS AND DATA MEDIUM FOR PERFORMING THIS PROCESS

Jean Cornet, Paris, France, assignor to Thomson-CSF, Paris, France

Continuation of Ser. No. 517,748, Jul. 27, 1983, abandoned, which is a continuation of Ser. No. 226,803, Jan. 21, 1981, Pat. No. 4,404,656. This application Aug. 27, 1984, Ser. No. 644,648
Claims priority, application France, Jan. 23, 1980, 80 01423
The portion of the term of this patent subsequent to Sep. 13, 2000, has been disclaimed.
Int. Cl.[4] G11C *11/46*
U.S. Cl. 365—126 18 Claims



1. A thermo-optical data writing process using a focused radiation beam intensity modulated to write in data in the form of topographic features protruding from portions of the recordable surface of a recording medium at which the impact of said beam produces a sharply focused illumination, said process comprising the steps of:

forming said recording medium of a layer of organic material undergoing thermal degradation above a predetermined temperature threshold with production of gas, said layer being flanked on one side with a thermal triggering layer of a ductile material wherein said topographic features are permanently recorded as a result of local evolution of said gas and loss of adhesion between said layers causing plastic stretching of said ductile metal below its elongation at break, said recording surface corresponding to said thermal triggering layer, said organic material layer being further flanked on its other side with supporting means not liable to substantially reflect radiation impinging from said thermal triggering layer;

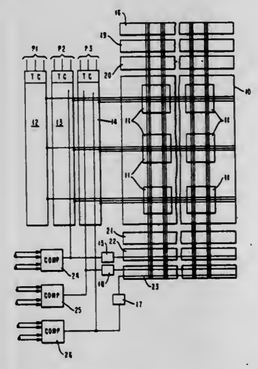
using an intermediate metal layer for firmly affixing said thermal triggering layer to said layer of organic material; and

causing said beam to strike said thermal triggering layer to selectively trigger said thermal degradation from a heating consisting in the direct conversion of an amount of radiant energy from said focused radiation beam to produce, once optically absorbed, enough localized surface heating of said organic material layer to raise the temperature above said threshold thereby providing said topographic features in accordance with said thermal degradation.

4,577,292
SUPPORT CIRCUITRY FOR MULTI-PORT SYSTEMS

Kerry Bernstein, South Burlington, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 31, 1983, Ser. No. 499,729
Int. Cl.[4] G11C *13/00*
U.S. Cl. 365—189 6 Claims



1. In a memory array having cells each of which is separately addressable from a plurality of write lines and is readable by a plurality of sets of low to high order bit lines, comprising:

a memory cell array,

a set of low to high order word decoders coupled to each cell of the array,

a set of low to high order read heads coupled to each cell of the array, the lowest order read head being coupled to the cell via the lowest order bit lines and the higher read heads being respectively coupled to the cell, via respective higher order bit lines, said read heads being equal in number to the number of said word decoders,

at least one inhibit and transfer circuit coupled to each of said higher order read heads,

address comparison means coupled to said higher order word decoders and said higher order read heads,

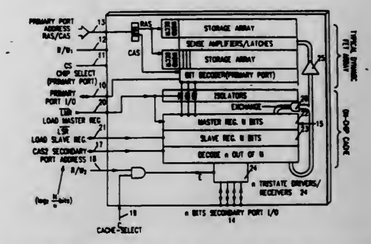
each of said inhibit and transfer circuit comprising a pair of bit activated transistors having their control electrodes respectively coupled to the low order bit lines,

a pair of grounding transistors each being coupled between a respective high order bit line and ground, and switching transistors coupled in parallel with the bit line activated transistors and respectively coupled to the control electrode of the grounding transistors to selectively control one of the grounding transistors and transfer the state of a lower order bit line to a higher order bit line.

4,577,293
DISTRIBUTED, ON-CHIP CACHE

Richard E. Matick, Peekskill, and Daniel T. Ling, Croton-on-Hudson, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 1, 1984, Ser. No. 616,046
Int. Cl.[4] G11C *7/00*
U.S. Cl. 365—189 9 Claims

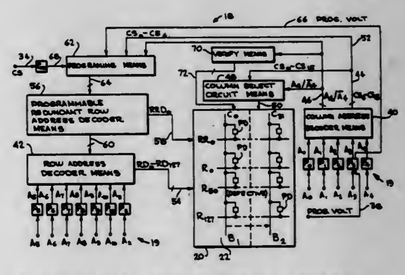


1. A distributed, on-chip cache comprising a secondary row port buffer on a plurality of dynamic random access memory chips, each of said memory chips comprising a primary port for access to a storage array on the chip, said secondary row port buffer, and isolation means for providing a normally isolated connection between said secondary row port buffer and said storage array, said secondary row port buffer comprising a master register, a slave register, and parallel input-/output driver means for providing access to said slave register, said master register being loaded from said storage array through said isolation means and subsequently when said secondary row port buffer is isolated from said storage array by said isolation means, said slave register being loaded from said master register.

4,577,294
REDUNDANT MEMORY CIRCUIT AND METHOD OF PROGRAMMING AND VERIFYING THE CIRCUIT

George W. Brown, and Phi Thai, both of San Jose, Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Apr. 18, 1983, Ser. No. 485,695
Int. Cl.[4] G11C *11/40, 7/00*
U.S. Cl. 365—200 37 Claims



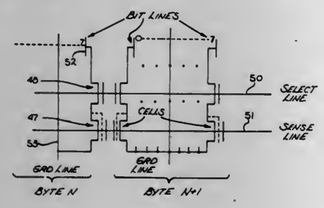
1. Apparatus for accessing information, comprising:

(a) a memory for storing the information, said memory having a matrix of a plurality of rows and a plurality of columns and having a redundant row;

(b) row address decoder means add column address decoder means for receiving and decoding, respectively, row and column addresses to access said plurality of rows and said plurality of columns to store the information in said memory and to deselect a defective row of said plurality of rows by accessing said memory to disconnect said defec-

tive row from all of said plurality of columns, said defective row having a row address;
(c) programmable decoder means, coupled to said redundant row, for receiving and decoding any one of the row addresses to select said redundant row; and
(d) means, coupled to said column address decoder means, for programming said programmable decoder means to decode said row address of said defective row.

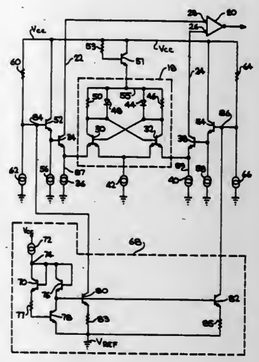
4,577,295
HYBRID E² CELL AND RELATED ARRAY
Boaz Eitan, Sunnyvale; Avi Kolodny, Cupertino; Daniel Amrany, Sunnyvale, and James McCreary, Los Gatos, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.
Filed May 31, 1983, Ser. No. 499,198
Int. Cl.⁴ G11C *13/00*
U.S. Cl. 365—218 **12 Claims**



1. An MOS integrated circuit, electrically programmable and electrically erasable memory cell arrangement formed on a substrate comprising:
a memory cell including;
(i) a pair of spaced-apart regions disposed in said substrate;
(ii) a floating gate disposed at least between said spaced-apart regions, said floating gate being insulated from said substrate by a first insulative layer and a portion of said floating gate being insulated from said substrate by a second insulative layer through which charge is tunnelled from said floating gate to said substrate, said second insulative layer being thinner than said first insulative layer;
(iii) a control gate disposed at least between said spaced-apart regions, said control gate being disposed above and insulated from said floating gate;
injection means for injecting charge into said substrate during the programming of said cell; and
electrical means coupled to said spaced-apart regions, control gate and injection means for programming said cell such that said injected charge is transferred from said substrate through said first insulative layer onto said floating gate and for erasing said cell such that charge from said floating gate is tunnelled through said second insulative layer into said substrate,
whereby the area of said substrate required for said cell may be reduced since the capacitive coupling between said floating gate and said control gate may be reduced.

4,577,296
COMPENSATION CURRENT GENERATOR
Thomas S. W. Wong, San Jose, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.
Filed Mar. 1, 1984, Ser. No. 585,332
Int. Cl.⁴ G11C *7/04*; G05F *1/58*
U.S. Cl. 365—226 **8 Claims**

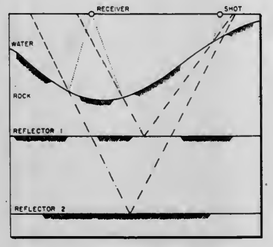
1. A circuit including a reference current source and at least one transistor contained therein, said circuit providing a current at an output terminal, which current is inversely proportional to the current gain of said at least one transistor, and is directly proportional to said reference current source, and is directly proportional to a scaling factor n, said circuit further including,
a diode-connected compensation transistor having a collector terminal, a base terminal, and first and second emitter terminals, said collector terminal being coupled to said reference current source, said base terminal being coupled to said collector terminal of said diode-connected compensation transistor, said first emitter terminal being coupled through a first resistance element to a base terminal of said at least one transistor, and said second emitter terminal being coupled to a collector terminal of said at least one transistor, and



a second compensation transistor having a base terminal coupled to the second emitter terminal of said diode-connected compensation transistor, said base terminal of said second compensation transistor being further coupled to the collector terminal of said at least one transistor, said second compensation transistor also having an emitter terminal coupled through a second resistance element to a reference voltage terminal, and a collector terminal coupled to said output terminal of said circuit, said at least one transistor having an emitter terminal coupled to said reference voltage terminal.

4,577,297
METHOD FOR ENHANCING RECORDED MARINE SEISMIC REFLECTION SIGNALS HAVING UNDULATING WATER BOTTOM DISTORTIONS
Cynthia T. Kalkomey, Irving; Thomas J. Mason, Dallas, and Keh Pann, Richardson, all of Tex., assignors to Mobil Oil Corporation, New York, N.Y.
Continuation of Ser. No. 372,273, Apr. 27, 1983, abandoned.
This application Jul. 9, 1985, Ser. No. 753,818
Int. Cl.⁴ G01V *1/38, 1/00*
U.S. Cl. 367—24 **1 Claim**

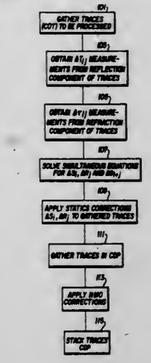
1. In a seismic record section of marine seismic reflection signals from subsurface interfaces recorded at an exploration site having a water layer overlying an undulating water bottom and having the seismic shot points and receiver points located above the undulating water bottom, the method of enhancing the seismic record section by the removal of the distortion on the recorded seismic reflection signals caused by the undulating water bottom comprising the steps of:
(a) gathering together all common shot point seismic reflection signals,
(b) decreasing the length of the upgoing reflection signal in all said common shot point seismic reflection signals, so as to simulate receiver points immediately below said undulating water bottom, thereby removing the velocity effect of the water layer from the recorded seismic reflection signals in all said common shot point seismic reflection signals,
(c) increasing the length of the upgoing reflection signal in all said common shot point seismic reflection signals so as to simulate receiver points along a new horizontal datum above said undulating water bottom, thereby replacing the removed water layer velocity effect in all said common shot point seismic reflection signals with the velocity effect of the earth medium below the water bottom,
(d) gathering together all common receiver point seismic reflection signals,
(e) decreasing the length of the upgoing reflection signal in all said common receiver point seismic reflection signals so as to simulate shot points immediately below said undulating water bottom, thereby removing the velocity effect of the water layer from the recorded seismic reflection signals in all said common receiver point seismic reflection signals,



(f) increasing the length of the upgoing reflection signal in all said common receiver point seismic reflection signals so as to simulate receiver points along a new horizontal datum above said undulating water bottom, thereby replacing the removed water layer velocity effect in all said common receiver point seismic reflection signals with the velocity effect of the earth medium below the water bottom, and
(g) recording said velocity replaced seismic reflection signals to produce a seismic record section on which the undulating water bottom distortion has been removed.

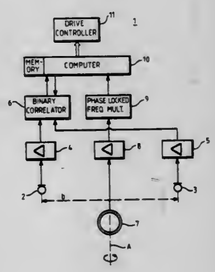
4,577,298
METHOD FOR CORRECTING SURFACE CONSISTENT STATICS IN SEISMIC TRACES
David Hinkley, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.
Filed Sep. 8, 1983, Ser. No. 530,321
Int. Cl.⁴ G01V *1/00*
U.S. Cl. 367—50 **2 Claims**

1. A method for determining surface consistent statics associated with recorded seismic trace signals comprising the steps of:
(a) generating acoustic waves into a geological formation from a plurality of acoustic wave sources;
(b) recording arriving representations of acoustic waves generated from said sources at a plurality of spaced receiver locations;
(c) forming a common offset trace (COT) gather of recorded acoustic waves;
(d) measuring the differences in arrival times of reflection signal components in said COT gathered traces;
(e) normalizing the paths taken by the refraction signal components to the paths taken by the reflection signal components to correct for slant paths (angular displacements) between said refractions and reflection signal components;
(f) measuring the differences in arrival times of the normalized refraction signal components in said COT gathered traces;
(g) determining said source and receiver statics for said COT gathered traces; and



(h) aligning said gathered traces in time by shifting each said COT gathered trace by an amount corresponding to a determined source and receiver static associated therewith; and
(i) determining the two way travel time from a datum to a reflection boundary.

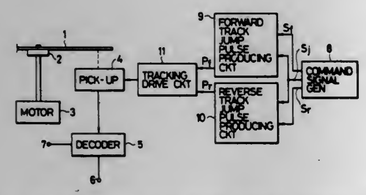
4,577,299
ACOUSTIC DIRECTION FINDER
Hans P. Blaschke, Steinhöring; Winfried Knappik, Planegg; Horst Mette, Oberndorf, and Peter Scholler, Ottobrunn, all of Fed. Rep. of Germany, assignors to Messerschmitt-Bölkow-Blohm GmbH, Fed. Rep. of Germany
Filed May 23, 1983, Ser. No. 497,201
Claims priority, application Fed. Rep. of Germany, May 28, 1982, 3220175
Int. Cl.⁴ G01S *3/80*
U.S. Cl. 367—120 **8 Claims**



1. An acoustic correlation direction finding device comprising:
a rotating base having a plurality of sound pickups spaced thereon, each sound pickup operable to generate a base signal responsive to sound from a sound source;
a rotational position sensor connected to said base for generating a rotation signal having a frequency equal to a rotation frequency of said base;
multiplier means connected to said rotation position sensor for processing said rotation signal in a phase-locked loop manner to produce clock pulses;

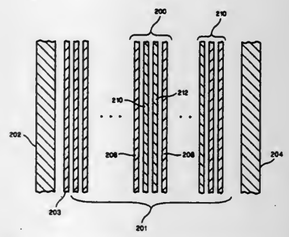
computer means connected to said multiplier means and controlled by said clock pulses, each two clock pulses defining an angle sector of rotation of said base;
and a digital correlator means connected to each of said pickups for receiving and correlating the pickup signals and connected to said computer means, said computer means controlling said correlator at a timing set by said clock pulses for generating correlation functions of the pickup signals for each angle sector, and adds together all the correlation functions of each sector for plural rotations of said base, said correlation functions being weighted with a time factor corresponding to a decay time by said computer means, said computer means functional to smooth the curve of the correlation peaks of the correlation functions associated with each angle sector in succeeding angle sectors and operable to determine a direction of the sound source.

4,577,300
DISC PLAYERS FOR REPRODUCING AN INFORMATION SIGNAL FROM A ROTATING DISC
Akira Katsuyama, Yokohama, and Shuichi Kimura, Shiki, both of Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Jul. 8, 1983, Ser. No. 511,928
Claims priority, application Japan, Jul. 12, 1982, 57-105519[U]
Int. Cl.⁴ G11B *21/10*
U.S. Cl. 369—43 **4 Claims**



1. A disc player for reproducing from a rotating disc an information signal recorded thereon in a plurality of record tracks defined by successive turns of a spiral signal path, said disc player being selectively operable in one of a normal reproducing mode, a fast-forwarding mode and a fast-reversing mode, said disc player comprising:
pick-up means for determining a reading position on said disc;
control means for controlling said pick-up means to move said reading position radially in respect to the center of rotation of said disc, said control means moving said reading position gradually in said normal reproducing mode in a forward radial direction of said disc so as to accurately trace said spiral signal path as said disc rotates to reproduce said information signal recorded therein; and
track jump circuit means operative in said fast-forwarding mode and in said fast-reversing mode to initiate a track jump operation in said forward radial direction and in a reverse radial direction, respectively, at regular first intervals, and regular second intervals, respectively;
said control means being responsive to each said initiation of a track jump operation in said fast-forwarding and said fast-reversing modes, respectively, to cause said pick-up means to jump said reading position from one turn to another turn during a first minor portion of the respective interval and to move said reading position gradually in said forward radial direction so as to trace substantially along said other turn for the remaining major portion of said respective interval;
said first interval in said fast-forwarding mode being longer than said second interval in said fast-reversing mode, whereby the number of said jump operations occurring in a predetermined time in said fast-forwarding mode is greater than the number of said jump operations occurring in said predetermined time in said fast-forwarding mode.

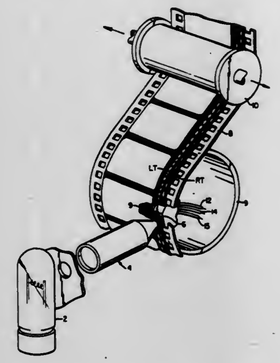
4,577,301
TRACK PITCH CALIBRATION ERROR REDUCTION
Harlan P. Mathews, and Craig Cambier, both of Boulder County, Colo., assignors to Storage Technology Partners II, Louisville, Colo.
Filed Jul. 6, 1984, Ser. No. 628,686
Int. Cl.⁴ G11B *7/00*
U.S. Cl. 369—44 **16 Claims**



6. A track pitch calibration system for use in an optical storage system to insure that radiation beams directed to a surface of a record carrier used with said storage system are properly aligned with data tracks written on said record carrier, said storage system including means for following a previously written track with a first radiation beam, and means for positioning a second radiation beam a desired distance from said first radiation beam in response to an offset signal, said track pitch calibration system comprising:
a set of at least four calibration tracks written on the record carrier having a desired track pitch or distance therebetween; and
means for optically measuring the track pitch between two of said calibration tracks and for generating said offset signal in response to said measurement.

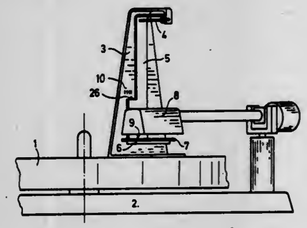
4,577,302
APPARATUS FOR REPRODUCING MOTION PICTURE FILM PHOTOGRAPHIC SOUND-TRACKS TO CORRECT REPRODUCTION ERRORS AND REDUCE NOISE
Ioan R. Allen, Tiburon, Calif., assignor to Dolby Laboratories Licensing Corporation, San Francisco, Calif.
Filed Mar. 14, 1983, Ser. No. 475,026
Int. Cl.⁴ G11B *7/20*
U.S. Cl. 369—46 **22 Claims**

1. Apparatus for reproducing motion picture film variable area photographic sound-tracks, wherein the film has at least one bilateral format sound-track in which substantially identical audio information is recorded in mirror-image halves of said at least one bilateral sound-track, comprising
means for reading said at least one bilateral sound-track to generate a first and a second signal, the first signal being generated substantially in response to one half of the bilateral sound-track and the second signal being generated substantially in response to the other half of the bilateral sound-track; and



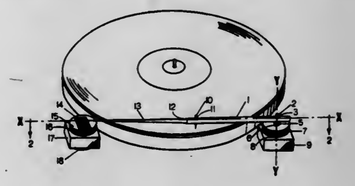
means for comparing the two signals to provide non-audio information for correcting reproduction errors and reducing noise.

4,577,303
TEST EQUIPMENT FOR PHONO PICKUP NEEDLES
Heinrich Zimmermann, Joh.-Seb.-Bach-Str. 14, D-7742 St. Georgen, Fed. Rep. of Germany
Filed Jun. 21, 1984, Ser. No. 622,799
Claims priority, application Fed. Rep. of Germany, Jun. 21, 1983, 3322230
Int. Cl.⁴ G11B *3/00*; H04N *5/76*
U.S. Cl. 369—55 **18 Claims**



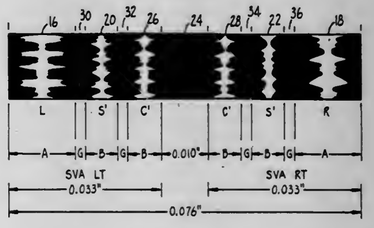
1. Test equipment for reproducing styli for records to determine the amount of wear of the scanning tip of a stylus, which equipment employs components of a record player, comprising
a turntable capable of being turned manually;
a reproducing stylus to be tested used for a scanning of records;
a pickup supporting the reproducing stylus;
a base part to be positioned on the turntable;
an axis disposed at the base part;
a carrying part supported by the base part and rotatable about the axis such that the carrying part is movable about in a plane parallel to the base part on the turntable;
a test support area made of a material corresponding to a record, which test support area is provided with grooves and which test support area rests on the carrying part such that the grooves correspond in their positon to the grooves of a record and where the stylus engages a groove;
elastic coupling means between the carrying part and the base part, where the restoring force of the coupling means increases with increasing relative turning of the base part with respect to the carrying part; and
display means indicating the relative turning of the base part with respect to the carrying part.

4,577,304
DEVICE FOR CORRECTING AUDIO RECORD'S GROOVE ECCENTRICITY
Hamid Hannani, 327 S. 46th St., Philadelphia, Pa. 19143
Filed Jul. 5, 1983, Ser. No. 510,749
Int. Cl.⁴ G01B *7/00*; G11B *25/04*
U.S. Cl. 369—56 **8 Claims**



1. A method of positioning a record on a turntable in a concentric manner independent of a center contact between said record and said turntable's spindle shaft, comprising the steps of:
enlarging the center hole of said record so that the contact between said record and said turntable's spindle shaft is avoided;
rotating said record on said turntable and tracing a groove of said record by a groove tracking means;
enlarging the horizontal displacement of said groove tracking means so that said horizontal displacement can be visually detected in relation to a stationary monitoring device;
bringing said turntable to a stop at a maximum horizontal displacement of said groove tracking means;
repositioning said record in accordance with said concentric information so as to attain a concentric position of said record.

4,577,305
STEREOPHONIC MOTION PICTURE PHOTOGRAPHIC SOUND-TRACKS COMPATIBLE WITH DIFFERENT SOUND PROJECTION FORMATS AND RECORD AND PLAYBACK APPARATUS THEREFORE
Ioan R. Allen, Tiburon, and Craig C. Todd, Muir Beach, both of Calif., assignors to Dolby Laboratories Licensing Corporation, San Francisco, Calif.
Filed Mar. 14, 1983, Ser. No. 475,036
Int. Cl.⁴ G11B *7/20*; H04R *5/00*
U.S. Cl. 369—86 **21 Claims**



1. A motion picture film having a photographic sound-track for selective reproduction of monophonic sound when used with conventional moonophonic photographic sound projec-

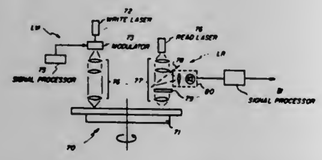
tion apparatus, for reproduction of stereophonic sound when used with conventional stereo variable area (SVA) photographic sound projection apparatus, said SVA sound projection apparatus used conventionally for reproducing a conventional LT SVA track are and a conventional RT SVA track area on motion picture films, for reproduction of four-channel sound when used with 2-4 matrix decoding stereo variable area photographic sound projection apparatus, and for reproduction of discrete four-channel sound when used with appropriate discrete four-channel sound projection apparatus; said sound-track comprising four or six variable area tracks occupying substantially the conventional LT and RT SVA track areas reproduced by conventional stereo variable area sound projection apparatus, said tracks having modulation levels and widths and carrying four channel sound with levels, amplitude and phase relationships such that when the tracks are summed when used with conventional monophonic projection apparatus substantially compatible monophonic sound is reproduced, when the tracks are summed using conventional stereo variable area (SVA) projection apparatus, substantially compatible stereophonic channels are reproduced for use as two-channel sound, for 2-4 matrix decoding into four-channel sound, and when the tracks are separately read by appropriate discrete four-channel sound projection apparatus, discrete four-channel sound is reproduced.

4,577,306

METHOD FOR OPTICALLY WRITING AND/OR READING INFORMATION ON OPTICAL RECORDING ELEMENTS

Dennis G. Howe, Fairport, and Joseph J. Wrobel, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 408,399, Aug. 16, 1982, abandoned, which is a division of Ser. No. 124,381, Feb. 25, 1980, Pat. No. 4,360,908. This application Apr. 2, 1985, Ser. No. 719,622
Int. Cl.⁴ G11B *7/00*
U.S. Cl. 369—109 **6 Claims**



1. A method for optically writing and reading information on an optical recording element, said method comprising the steps of:

(a) providing an optical recording element having a recording stratum of predetermined nominal thickness overlying a reflective support, said stratum being highly absorptive of light of a first wavelength and heat-deformable by such light to form recorded pits of decreased stratum thickness, said stratum being highly transparent with respect to light of a second wavelength and having optical properties such that a stratum from said nominal thickness to said decreased stratum thickness will produce a substantially greater phase shift in reflected light of said second wavelength than will a stratum thickness increase from said nominal thickness of equal magnitude;

(b) writing information on said recording element by scanning said stratum with an intensity-modulated beam of light of said first wavelength, such beam of light being effective to selectively decrease the thickness of said stratum according to information to be written;

(c) scanning the written-upon stratum with a beam of light of said second wavelength to produce reflected light having an instantaneous phase determined by the thickness of the scanned portion of said stratum; and

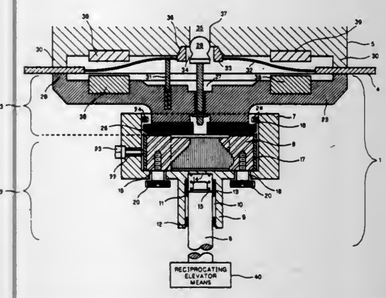
(d) sensing the instantaneous phase of said reflected light.

4,577,307

OPTICAL DISK MAGNETIC LOAD/UNLOAD MECHANISM

John W. Woods; Paul Kummli, and Edward M. White, all of Boulder County, Colo., assignors to Storage Technology Partners II, Louisville, Colo.

Filed Sep. 27, 1984, Ser. No. 655,847
Int. Cl.⁴ G11B *9/06, 19/20*
U.S. Cl. 369—270 **6 Claims**



1. An apparatus for selectively clamping an optical information recording disk to a spindle in an optical information recording device, said apparatus comprised of:

a reciprocating elevator means;

a non-rotating disk support assembly, said non-rotating disk support assembly being attached to the reciprocating elevator means;

a rotating disk support assembly, said rotating disk support assembly supporting the disk to be clamped to the device spindle;

magnetic clamping means for selectively clamping support assembly to the non-rotating disk support assembly comprising:

an electromagnet, said electromagnet being disposed in the non-rotating disk support assembly,

a magnetically permeable shunt plate, said shunt plate being attached to a bottom surface of the rotating disk support assembly and having a taper around a lower rim thereof,

means for selectively energizing the electromagnet during disk load and unload operations, but de-energizing the electromagnet when the disk is clamped to the device spindle for device rotation, and

a shunt plate centering ring, said ring being attached around the electromagnet and having a tapered upper end which cooperates with the lower taper around the magnetic shunt plate to cause the magnetic shunt plate, and thereby the rotating disk support assembly, to be properly positioned and centered over the electromagnet;

means for centering the rotating disk support assembly on the device spindle;

means for centering the disk on the device spindle; and

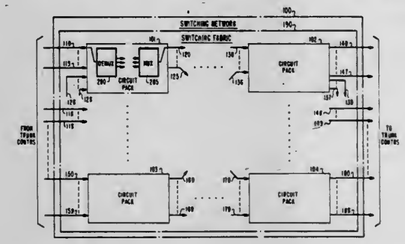
means for selectively clamping the rotating disk support assembly, and in turn the disk, to the device spindle for spindle rotation.

4,577,308

MULTIPLEXED INTERCONNECTION OF PACKET SWITCHING NODE PACKAGES

Mikiel L. Larson, St. Charles, and Wing N. Toy, Glen Ellyn, both of Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Apr. 6, 1984, Ser. No. 597,508
Int. Cl.⁴ H04J *15/00, 11/04*
U.S. Cl. ?' ɔ—9 **16 Claims**



1. A switching network comprising at least one arrangement of switching nodes and a plurality of signal transmission links connected to the at least one arrangement, each arrangement comprising:

a plurality of signal switching nodes, each node having at least one signal input, and a plurality of signal outputs;

at least one demultiplexer each having an input port connected to a link for receiving a multiplexed stream of signals and having a plurality of output ports each coupled to an input of a node for transmitting to each coupled node input a substream of signals demultiplexed from the received stream; and

at least one multiplexer each having a plurality of input ports each coupled to an output of a node for receiving from each coupled node output a signal substream, and having an output port connected to a link for transmitting a signal stream multiplexed from the plurality of received substreams; wherein

each signal substream comprises a plurality of serial signals each representing the value of a bit; and wherein

each multiplexed signal stream comprises a plurality of pulse-width modulated signals each representing the value of a plurlaity of bits.

4,577,309

METHOD AND APPARATUS FOR MEASURING DISTANT ECHO DELAY IN AN ECHO CANCELLING ARRANGEMENT

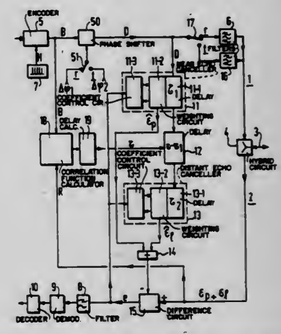
Bahman Barazeche, Paris; Roger P. J. Alexis, Neuilly sur Seine, and Loïc B. Y. Guidoux, Garancieres, all of France, assignors to 501 Telecommunications Radioelectriques et Telephoniques T.R.T., Paris, France

Filed Dec. 19, 1983, Ser. No. 562,612
Claims priority, application France, Dec. 30, 1982, 82 22124
Int. Cl.⁴ H04J *15/00;* **H04B** *3/20*
U.S. Cl. 370—32 **11 Claims**

1. A method of measuring delay of a distant echo signal, for use in adapting an echo cancelling circuit incorporated in a transceiver to cancel an echo signal occurring in the receive path of the transceiver in response to a signal transmitted in the transmit path thereof; such echo signal consisting of a substantially undelayed near echo signal and a delayed distant echo signal; such echo cancelling circuit comprising a near echo canceller receiving the signal from the transmit path without delay and a distant echo canceller receiving such transmit path signal with a delay substantially equal to the measured delay of the distant echo signal; said method comprising the steps of:

transmitting, by modulation of a carrier wave, successive data sequences having a periodic autocorrelation function with sidelobes of negative or zero value and having a duration at least equal to the maximum value of the delay to be measured, the number of elements of each data sequence determining the accuracy of measurement of the distant echo delay;

after transmitting each data sequence, calculating the correlation function between the data of the next transmitted sequence and the data recovered by demodulating the received echo signal produced by the preceding data



sequence and storing successive samples representative of said correlation function in a memory;

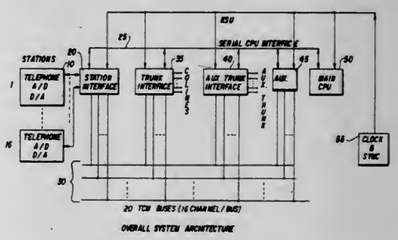
processing the stored correlation function samples to eliminate samples corresponding to the near echo signal and to determine from among the remaining samples the sample corresponding to the maximum value of said correlation function; and calculating the delay of the distant echo signal from the rank order of such maximum sample among such remaining samples.

4,577,310

STATION INTERFACE FOR DIGITAL ELECTRONIC TELEPHONE SWITCHING SYSTEM HAVING CENTRALIZED DIGITAL AUDIO PROCESSOR

Vincent V. Korsky, Shelton, and Chansak Laotetpitaks, Woodbridge, both of Conn., assignors to TIE/Communications, Inc., Shelton, Conn.

Filed May 16, 1984, Ser. No. 610,700
Int. Cl.⁴ H04J *11/04*
U.S. Cl. 370—58 **15 Claims**



1. Apparatus in a digital electronic telephone switching system for coupling a plurality of digital telephone instruments to a digital data bus having a plurality of time division multiplexed digital data channels allotted thereon, and for enabling two way communication between selected ones of said telephone instruments and said digital data bus comprising:

means coupled to said digital data bus for temporarily storing digital data transmitted on said bus, said storing means comprising a plurality of storage locations, each storage

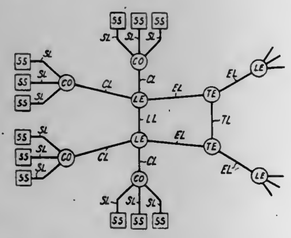
location corresponding to a channel of said digital data bus;
first time division multiplexing means coupled to said telephone instruments for receiving a plurality of first signals from said telephone instruments and for converting said first signals into a first time-division multiplexed serial signal;
second time-division multiplexing means coupled to said telephone instruments for receiving a second serial signal having digital data for each of said telephone instruments time-division multiplexed thereon and for converting said digital data of said second serial signal into a plurality of parallel serial data streams for each of said telephone instruments;
control means including computer means coupled to said storing means for succesively selecting desired ones of said plurality of storage locations, thereby providing a serial selected digital data signal from the storing means; and
processing means coupled to said storing means, said digital data bus and said first and second time division multiplexing means for digitally processing the serial selected digital data signal from said storing means and said first serial signal so as to modify the digital representation of the amplitude of voltage levels represented by said serial selected digital data signal and said first serial signal so as to produce a modified serial selected digital data signal and a modified first serial signal, said modified serial selected digital data signal being coupled to said second time-division multiplexing means as said second serial signal and said modified first serial signal being coupled to said digital data bus.

4,577,311

PACKET-BASED TELECOMMUNICATION SYSTEM

Jean F. Duquesné , 32 rue La Fontaine, 75016 Paris, and Boris Rozenwaig, 8, rue Redouté , 92360 Meudon-La-Foret, both of France

Continuation-in-part of Ser. No. 333,983, Dec. 23, 1981, abandoned. This application Jun. 20, 1985, Ser. No. 746,635
Claims priority, application France, Dec. 24, 1980, 80 27513
Int. Cl.[4] H04Q *11/04*
U.S. Cl. 370—60 **1 Claim**



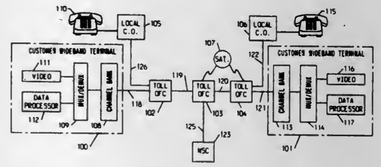
1. Multiservice packet telecommunication network of the invention comprising:
a plurality of subscriber's stations each connected to several sources of analog data signals and digital data signals and including means for digitizing said analog data signals from those of said sources which are analog data signal sources;
a plurality of means in each subscriber's station for forming, transmitting and receiving packets constituted by said digital data signals and said digitized data signals, said packets having an information field, an address field and a start word and end word fields, said start word field preceding said address field;
packet switching networks, each connected to said subscriber's stations and to other packet switching networks through incoming and outgoing data channels;
means for inserting in the address field of the packet a sequence of addresses including a first, second, . . . n^{th} addresses defining the outgoing data link of the first, second, . . . n^{th} switching networks included in the route of the packet between a packet sender station and a packet receiver station; and it is characterised in that the outgoing channel from each switching network towards other switching networks and the subscriber stations are associated in groups of a plurality of outgoing channels, the whole group having one and the same address common to all the channels of the group and the switching network further comprises
means (342A, 342B) for detecting said common address of a group in the address field of a packet conveyed in an incoming channel; and
means (344A, 344B) controlled by said address detecting means for searching a free-non-addressed outgoing channel of the group, said searching means connecting said free outgoing channel to said incoming channel.

4,577,312

ARRANGEMENT FOR WIDEBAND TRANSMISSION VIA A SWITCHED NETWORK

Peter D. Nash, Naperville, Ill., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 5, 1984, Ser. No. 627,898
Int. Cl.[4] H04J *3/16, 3/22*
U.S. Cl. 370—84 **8 Claims**



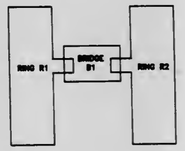
1. For use in a communications network having a plurality of switching offices, customer wideband terminals, and time division multiplex (TDM) channels having a relatively narrow bandwidth for interconnecting said terminals via said offices, a method for establishing to a designated one of said terminals a facility having a wider bandwidth than any one of said TDM channels comprising the steps of:
establishing to said designated terminal a selected plurality of said TDM channels whose combined bandwidth is at least equal to the bandwidth required by said designated terminal,
transmitting from one end over each said selected TDM channel a test pattern of data in successive time frames,
measuring the relative delay between selected TDM channels by comparing at the other end of said selected channels during a particular time frame the data received on each one of said selected TDM channels with the data received on another one of said selected TDM channels, and
selectively inserting delay in the transmission of data over any of said selected TDM channels so that data transmitted in a single time frame from one end over all said selected TDM channels will be received at the other end of all said selected TDM channels in a single time frame.

4,577,313

ROUTING MECHANISM WITH ENCAPSULATED FCS FOR A MULTI-RING LOCAL AREA NETWORK

Kian-Bon K. Sy, 432 Farmstead Dr., Cary, N.C. 27511

Filed Jun. 4, 1984, Ser. No. 616,754
Int. Cl.[4] H04J *3/00*
U.S. Cl. 370—88 **9 Claims**



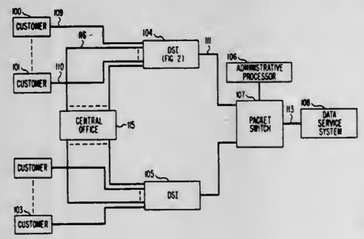
1. In a telecommunication network system wherein a plurality of serial loop networks are being interconnected by a plurality of switching stations and each serial loop having thereon one or more stations, a method for maintaining end-to-end integrity of data comprising the steps of:
(a) generating and transmitting from a source station a frame including a destination address, a source address, an RI field and a frame check sequence (FCS) pattern;
(b) receiving the frame at a switching station connected to the loop;
(c) preserving the FCS pattern;
(d) calculating and appending a new FCS pattern to the received frame;
(e) forwarding the frame;
(f) receiving the frame at a switching station not connected to the loop;
(g) calculating and appending a new FCS pattern to the received frame;
(h) repeating steps (e) through (g) until the last switching station is reached whereby the station does not calculate a new FCS pattern but uses the preserved FCS pattern as the frame CRC.

4,577,314

DIGITAL MULTI-CUSTOMER DATA INTERFACE

Jean Chu, Naperville; Mark G. Hinch, Wheaton; James M. Johnson, Jr., Glen Ellyn; Henry J. Kafka, Bolingbrook, and David J. Stelte, Wheaton, all of Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 31, 1983, Ser. No. 481,057
Int. Cl.[4] H04J *6/00*
U.S. Cl. 370—94 **40 Claims**



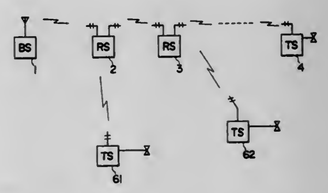
1. A digital customer interface arrangement for communicating packets of data between a plurality of customer lines and a packet switch and comprising
means responsive to a receipt of serial bit signals for a plurality of customer lines for serially time multiplexing said bit signals,
means responsive to a receipt of the time multiplexed bit signals for assembling individual byte signals for each one of said lines,
means cooperating with said assembling means and controlled by the assembled byte signals for generating individual packets of data signals for each one of said lines,
means for storing each generated packet of signals,
means responsive to a receipt of customer line status bit signals from said time multiplexing means for control buffering said status bit signals for each of said lines, and
means controlled with said buffered status bit signals and by said generating means for controlling a reading of the stored packets of signals from said storing means for transmission to said packet switch.

4,577,315

POWER SAVING SYSTEM FOR TIME-DIVISION MULTIPLE ACCESS RADIOCOMMUNICATION NETWORK

Shigeru Otsuka, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 24, 1984, Ser. No. 633,993.
Claims priority, application Japan, Jul. 25, 1983, 58-135389
Int. Cl.[4] H04J *3/16;* H04B *1/00, 7/00;* G08B *5/22*
U.S. Cl. 370—95 **12 Claims**



1. A power saving system for a time-division multiple access communication network having a first station and a plurality of second stations capable of individually establishing connections with said first station in response to a selection signal and relaying information signals through the established connections, the system comprising:
means for interleaving a power saving control signal at periodic intervals with said selection signal and said information signals and transmitting the interleaved signals from said first station to said second stations;
a plurality of means associated respectively with said second stations for individually cutting off power supplies to said second stations for a predetermined period in response to said control signal; and
means for detecting the moment a connection is being established, identifying the second station establishing the connection, and selectively inhibiting one of said power cut-off means associated with the identified second station from responding to said control signal, while allowing the remainder of said power cut-off means to respond to said control signal.

4,577,316

SYNCHRONIZATION SYSTEM FOR A REGENERATIVE SUBTRANSPONDER SATELLITE COMMUNICATION SYSTEM

Leonard N. Schiff, Lawrenceville, N.J., assignor to RCA Corporation, Princeton, N.J.

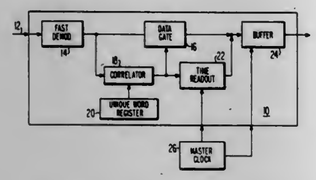
Filed Feb. 13, 1984, Ser. No. 579,608
Int. Cl.[4] H04J *3/06*
U.S. Cl. 370—104 **13 Claims**

1. In a satellite communication system having a plurality of earth stations sharing an uplink carrier in a time division multiple access mode wherein one of said earth stations is designated

as a master earth station, the method of synchronizing the transmission from each earth station comprising the steps of:

determining the time of arrival at the satellite of the signal from each earth station; and

transmitting the time of arrival of the signals at the satellite to the earth stations; and



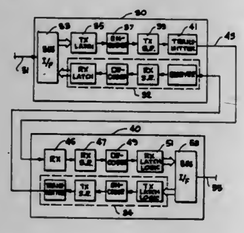
adjusting, if necessary, the time of transmission from at least one earth station so that the determined time of arrival of the signal at the satellite matches the optimum time of arrival for a properly synchronized transmission.

4,577,317

METHOD FOR EXTENDING A PARALLEL DATA BUS

Paul C. Chu, San Jose, and Gerald K. Mercola, Pleasanton, both of Calif., assignors to ICS Electronics Corporation, San Jose, Calif.

Filed Apr. 15, 1983, Ser. No. 485,162
Int. Cl.[4] H04J *3/12, 3/02*
U.S. Cl. 370—110.1 **6 Claims**



1. A method for serially transmitting a composite parallel frame between stations terminating local and remote parallel buses with a serial link therebetween comprising,

receiving a parallel frame at a local station,

decomposing the parallel frame into a data sub-frame and a management sub-frame, said management sub-frame including management bits from said parallel frame and a three bit local message for handshaking between stations, the three bits indicating the following states: ready for data, new byte available, and ready for next byte,

tagging said sub-frames with message codes to enable said stations to distinguish data sub-frames from management sub-frames,

serially transmitting a management sub-frame from the local to the remote station, said three bit local message of said management sub-frame indicating a new byte available, then

receiving a serially transmitted management sub-frame from the remote station at the local station, said three bit local message of said management sub-frame indicating ready for data, then

serially transmitting a data sub-frame from the local to the remote station and then

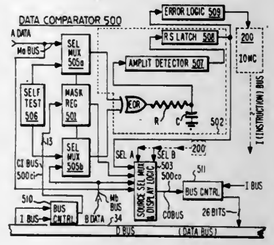
receiving a serially transmitted management sub-frame from the remote station at the local station acknowledging the data sub-frame received.

4,577,318

SELF TESTING DETECTION SYSTEM FOR COMPARING DIGITAL SIGNAL TRANSITION TIMES

James B. Whitacre, Westminster, and Peter P. Binoeder, Tustin, both of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Nov. 14, 1983, Ser. No. 551,081
Int. Cl.[4] G01R *15/12*
U.S. Cl. 371—1 **11 Claims**



1. In a mulitple line test system wherein each pair of first and second digital input signals from first and second source units are compared for skew in transition times to test whether each pair of first and second digital signals are within allowable tolerances, a multiple line-pair comparison system comprising:

(a) a plurality of comparison means, one each for each line-pair tested, each said comparison means for receiving each of said first and second digital input signals and for developing digital-difference output signals representing the time-difference beween the leading edges and trailing edges of each of said first and second digital input signals; each said digital difference output signals being transmitted to a discrete sensing means;

(b) a plurality of discrete sensing means connected for receiving each of said digital difference output signals and for generating an error output signal when said time-difference exceeds a preset value;

(c) processor means for initiating a skew self test means before each comparison in said comparison means of each line-pair of said first and second digital input signals and for receiving and identifying any of said error output signals from said plurality of discrete sensing means;

(d) common clock means for clocking each of said first and second digital input signals and for clocking said skew self test means;

(e) said skew self test means controlled by said processor means for checking the preset allowable skew tolerance and the preset non-allowable skew tolerance for each of said comparison means, said skew self test means including:

(e1) pass-delay circuit means for generating a pair of digital-pass signals for input to a select multiplexor means, said digital-pass signals having a skew differential within the allowable tolerance;

(e2) fail delay circuit means for generating a pair of digital-fail signals for input to a select mulitplexor means, said digital-fail signals having a skew differential beyond the allowable tolerance;

(f) said select multiplexor means for receiving said pairs of digital input signals, and for receiving said series of digital-pass signals and said series of digital-fail signals, and including:

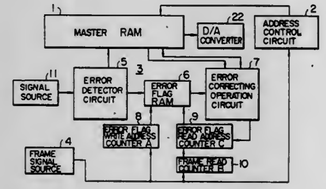
(f1) select means, controlled by said processor means, for enabling passage of each of said pairs of digital input signals to each of said comparison means or for enabling passage of each of said series of digital-fail and digital-pass signals to each of said comparison means.

4,577,319

ERROR FLAG PROCESSOR

Takashi Takeuchi, Fujisawa; Keizo Nishimura, Yokohama; Masaharu Kobayashi, Yokohama, and Kazumasa Oiso, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 422,299, Sep. 23, 1982, abandoned. This application May 6, 1985, Ser. No. 730,258
Claims priority, application Japan, Sep. 30, 1981, 56-153702; Sep. 30, 1981, 56-153704; Sep. 30, 1981, 56-153706
Int. Cl.[4] G06F *11/10;* G11B *27/00*
U.S. Cl. 371—38 **14 Claims**



1. An error flag processor comprising:

(a) a master memory having areas for storage of a plurality of information word frames each comprised of a plurality of signal words and associated parity words determined from the signal words of a predetermined number of frames;

(b) error word detecting means for detecting error words within each information word frame on the basis of the associated parity words;

(c) an error flag storage means having the capacity for storing an error flag for each of said predetermined number of frames;

(d) error flag write means for successively writing error flags produced as a result of detection of errors in the input data in frames by the error word detecting means into the error flag storage means for each frame;

(e) error correcting means connected to said master memory and said error flag storage means for correcting error words within each word frame comprised of the signal words rearranged in an original time series sequence as identified by error flags from said error flag storage means; and

(f) error flag read means for reading from said error flag storage means error flags so as to be allotted to individual words of each rearranged signal word frame in association with signal words from said master memory into said error correcting means, whereby when data subject to de-interleave and read-out from said master memory is then subjected to a correcting operation by said error correcting means, error flag information allotted to individual words is read out of the error flag storage means by said error flag read means and the error words are corrected by said error correcting means in correspondence to receipt of an error flag.

4,577,320

LIGHT POWER CONTROLLING APPARATUS

Shoji Yoshikawa, and Masaharu Sakamoto, both of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jan. 30, 1984, Ser. No. 575,042
Claims priority, application Japan, Feb. 10, 1983, 58-21311
Int. Cl.[4] H01S *3/13*
U.S. Cl. 372—29 **8 Claims**

1. A light power controlling apparatus comprising:

semiconductor light emitting device;

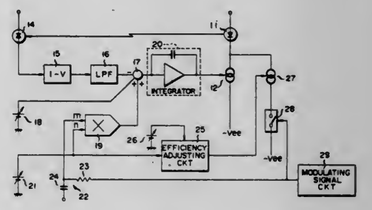
first current circuit means connected to said light emitting device and for feeding a first current to said light emitting device to cause said light emitting device to emit light;

photosensor means for producing an electrical signal corresponding to the emitted light from said light emitting device;

first averaging means for averaging a form factor of an electrical signal of said photosensor means and for generating an average signal corresponding to the averaged form factor;

error amplifier means for comparing said average signal of said averaging means with a reference signal corresponding to a desired value of light power, thereby to produce a difference signal representing a difference between the average value and said desired value;

integrator means for integrating said difference signal of said error amplifier means and for feeding the integrated signal as a feedback control signal to said first current circuit means;



means for generating a modulating signal in a modulating mode;

second current circuit means connected to said light emitting device and for feeding to said light emitting device a second current according to said modulating signal;

peak power setting means for setting said second current circuit means at a peak power value in a modulating mode;

second averaging means connected to said modulating signal generating means for averaging a form factor of said modulating signal to obtain a second average signal; and

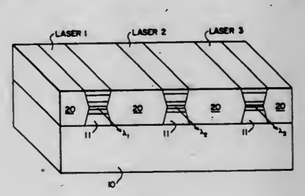
means for adding to said desired value a signal representing the product of said peak power value and said second average signal and for feeding it as a reference signal to said error amplifier means.

4,577,321

INTEGRATED QUANTUM WELL LASERS FOR WAVELENGTH DIVISION MULTIPLEXING

James K. Carney, Eden Prairie, and Robert M. Kolbas, Bloomington, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Sep. 19, 1983, Ser. No. 533,187
Int. Cl.[4] H01S *3/19*
U.S. Cl. 372—50 **6 Claims**

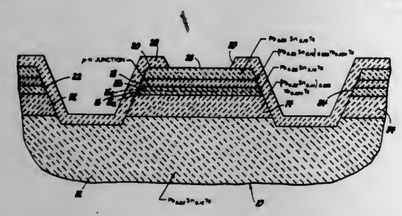


1. An integrated array of quantum well lasers which has a plurality of quantum well lasers for providing a plurality of light beams each having a different but known wavelength for use in wavelength division multiplexing comprising:

a single crystal semiconductor substrate having simultaneously grown thereon from a single growth sequence a plurality of compositionally identical epitaxial layers to

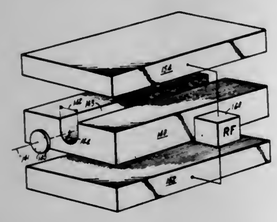
form quantum well heterostructure lasers, each of said plurality of quantum well lasers comprising:
a first cladding region grown on said substrate;
an active region of a determined thickness which includes alternating thin layers of narrow band-gap well layers and wide band-gap barrier layers followed by a final narrow band-gap well layer successively grown on said first cladding region,
wherein said determined thickness is different from one to the next of said plurality of quantum well lasers;
and a second cladding region grown on said active region, each of said quantum well lasers being electrically and optically isolated.

4,577,322
LEAD-YTTERBIUM-TIN TELLURIDE HETEROJUNCTION SEMICONDUCTOR LASER
Dale L. Partin, Sterling Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Oct. 19, 1983, Ser. No. 543,368
Int. Cl.[4] H01S 3/19; H01L 33/00
U.S. Cl. 372—44 **4 Claims**



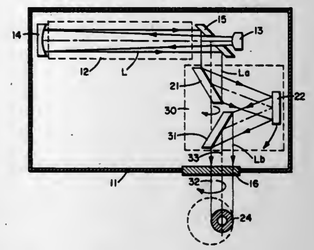
1. In a double heterojunction semiconductor lead salt infrared diode laser, the improvement wherein a semiconductive monocrystalline lead salt active region layer of given energy band gap, index of refraction, crystal structure and lattice constant is sandwiched between two semiconductive monocrystalline lead-tin ytterbium salt layers of mutually opposite conductivity type and having an energy band gap significantly higher than, an index of refraction significantly lower than, a crystal structure the same as, and a lattice constant substantially equal to said active region layer, effective to increase layer performance by providing lattice matching among said layers as well as providing carrier and optical confinement with respect to said active region layer.

4,577,323
U CHANNEL WAVEGUIDE LASER
Leon A. Newman, South Windsor, and John T. Kennedy, South Meriden, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.
Filed Sep. 6, 1983, Ser. No. 529,438
Int. Cl.[4] H01S 3/03, 3/09
U.S. Cl. 372—64 **3 Claims**



1. An RF-powered waveguide laser comprising:
first and second electrodes having first and second parallel, facing electrode surfaces positioned on opposite sides of an optical axis;
an insulating member positioned between said first and second parallel electrode surfaces and containing an optical waveguide disposed about said optic axis;
reflective means for defining an optical cavity containing said waveguide;
a gain medium disposed within said optical cavity;
RF-pumping means for applying power to said electrodes for resonating, in at least one electromagnetic mode, laser radiation in said gain medium disposed within said optical cavity; characterized in that:
said optical waveguide has a cross section perpendicular to said optic axis that is asymmetric about said optic axis.

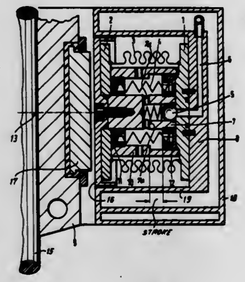
4,577,324
HIGH POWER OUTPUT LASER APPARATUS
Naoto Nishida, Yokohama; Tadashi Takahashi, Tokyo, and Katsuyuki Kakizaki, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Japan
Filed May 30, 1984, Ser. No. 615,335
Claims priority, application Japan, May 31, 1983, 58-94805
Int. Cl.[4] H01S 3/08
U.S. Cl. 372—95 **6 Claims**



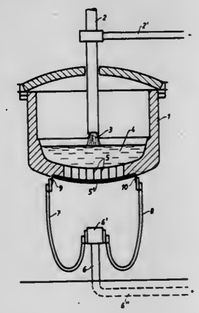
1. A laser oscillator apparatus comprising:
a laser medium flowing in one direction in a chamber;
an unstable resonator including a first mirror with a concave reflecting surface and second mirror with a convex reflecting surface, both of said reflecting surfaces facing each other in order to generate a laser beam transmitted in a direction perpendicular to the flowing direction of the laser medium; and
an output window provided in the chamber for the laser beam, and rotation means for rotating the laser beam disposed between the unstable resonator and the output window.

4,577,325
HYDRAULICALLY FORCING CONTACTS AGAINST ELECTRODES FOR ELECTROFURNACES
Theodor Mertin, Langenfeld, and Franz S. Hagen, Dinslaken, both of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Duesseldorf, Fed. Rep. of Germany
Filed Nov. 5, 1984, Ser. No. 668,037
Claims priority, application Fed. Rep. of Germany, Nov. 4, 1983, 3340390
Int. Cl.[4] H05B 7/10
U.S. Cl. 373—101 **5 Claims**

1. In an electrofurnace having an electrode, there being a cooled annular carrying ring provided for looping around the electrode, there being further at least one contact bracket for engagement with the electrode, a contact pressure producing device comprising:
a first bushing cover affixed to said carrier ring and having a central opening, there being pressure conduit means for providing hydraulic fluid to said opening;
a second bushing cover disposed for force engagement with said contacts;
bellows interposed between said first and second bushing covers and connected thereto;
resilient spring means interposed between said first and second bushing covers inside said bellows and providing a resilient force in opposition to any hydraulic force in the interior of the bellows tending to spread the two covers apart; and
check valve means arranged in the interior of said bellows and mounted to a holding element affixed to said second cover for opening and closing said opening in said first cover, but being carried along whenever the pressure in the bellows exceeds a particular value.

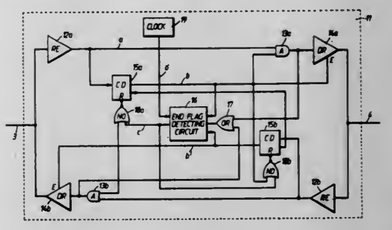


4,577,326
DC ARC FURNACE HEARTH CONNECTION
Kjell Bergman, and Sven-Einar Stenkvist, both of Västerås, Sweden, assignors to ASEA Aktiebolag, Västerås, Sweden
Filed Jun. 20, 1984, Ser. No. 622,589
Claims priority, application Sweden, Jul. 7, 1983, 8303879
Int. Cl.[4] H05B 7/11
U.S. Cl. 373—103 **2 Claims**



1. A DC arc furnace having a vertical arcing electrode adapted to be connected with a negative current lead and a hearth adapted to contain a melt below the electrode and having a hearth electrode comprising a plurality of vertical metal conductors extending through the hearth in the form of a cluster, the hearth electrode extending laterally from the axis of the arcing electrode symmetrically with respect to the axis and having a plurality of electrical connections extending to the outside of the hearth and spaced laterally from the arcing electrode's axis symmetrically with respect to the axis, the connections being adapted for connection with a positive current lead and application of DC to the electrodes powering an arc between the arcing electrode and melt; wherein the improvement comprises a positive current lead below the bottom of the hearth and having an upper end positioned on the arcing electrode's axis below the hearth's bottom and extending from the positive current lead's upper end vertically downwardly on the axis to a low position where the magnetic field of the positive current lead cannot appreciably affect the arc, the positive current lead extending substantially horizontally from its low position to a position offset from the hearth, the positive current lead's upper end having electrical conductors extending from it to the electrical connections of the hearth electrode and which are symmetrical with respect to the arcing electrode's axis.

4,577,327
DATA TRANSMISSION INCLUDING A REPEATER
Shigeo Nambu, Fuchu, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Oct. 1, 1984, Ser. No. 656,761
Claims priority, application Japan, Sep. 30, 1983, 58-182656
Int. Cl.[4] H04L 5/16
U.S. Cl. 375—4 **4 Claims**



4. A method of transferring signals between stations connected to lines on opposite sides of a repeater, said method comprising the steps of:
(a) monitoring for a signal passing through said repeater;
(b) inhibiting signals passing through said repeater in a direction opposite said signal monitored by said step (a) in response to said step (a);
(c) monitoring said signal for a predetermined characteristic of the end of said signal; and
(d) stopping said inhibiting step (b) in response to said monitoring step (c).

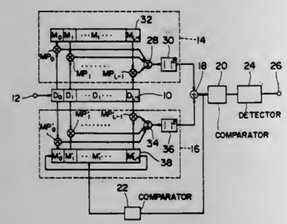
4,577,328
METHOD AND CIRCUIT FOR DETECTING A TRAINING SIGNAL
Kelichi Senoo, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Oct. 31, 1983, Ser. No. 547,264
Claims priority, application Japan, Oct. 30, 1982, 57-190028
Int. Cl.[4] H03H 7/30, 7/40
U.S. Cl. 375—13 **2 Claims**

1. A method of detecting a training signal for use in initial adjustment of an automatic equalizer with respect to channel characteristics, comprising the steps of:
(a) receiving and shifting a demodulated training signal in synchronism with data modulating rate, said training signal comprising at least two periodic data sequences each having a period L and the autocorrelation function of said periodic data sequence assumes an impulse;
(b) calculating the correlation between said demodulated training signal and a first periodic data sequence with the period L, and obtaining a first square value indicative of said correlation;
(c) calculating the correlation between said demodulated training signal and a second periodic data sequence and

obtaining a second square value indicative of said correlation, wherein said second periodic data sequence is circulated in synchronism with the data modulating rate and has the same sequence as said first data sequence;

(d) dividing said first square value by said second square value;

(e) comparing the quotient obtained in the step (d) with a first and second threshold values;



(f) setting the order of said second periodic data sequence to the order of said first periodic data sequence shifted by one, if said quotient exceeds the second threshold value;

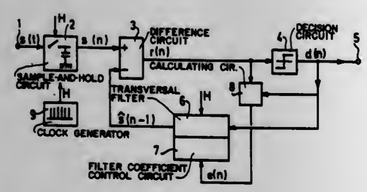
(g) producing a signal if said quotient exceeds the first threshold value; and

(h) detecting the presence of said training signal by detecting said at least two periodic data sequences occuring at a time interval equal to said period L.

4,577,329
SELF-ADAPTIVE EQUALIZER FOR BASEBAND DATA SIGNALS

Richard Brie, Paris, and Loic B. Y. Guidoux, Garancieres, both of France, assignors to Telecommunications Radioelectriques et Telephoniques T.R.T., Paris, France

Filed Oct. 6, 1983, Ser. No. 539,582
Claims priority, application France, Oct. 11, 1982, 82 16997
Int. Cl.⁴ H04B *3/04*; H03H *7/30*; H03K *5/159*
U.S. Cl. 375—14 **10 Claims**

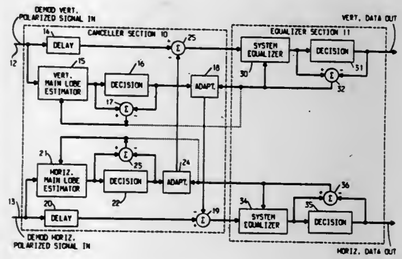


1. In a self-adaptive equalizer for use in the receiver of a data modem for correcting in the base-band the data signal received, such equalizer being of the kind comprising a difference circuit to which is applied the received signal and a correction signal formed at a sampling frequency by a transversal filter having adjustable coefficients, the difference circuit producing a corrected signal which is applied to a decision circuit for recovering the data signal, the recovered data signal being applied to the input of the transversal filter, the coefficients of the transversal filter being adjusted so as to minimize a predetermined function of an error signal, the improvement characterized in that the equalizer comprises means for adjusting the coefficients of the transversal filter in accordance with an error sampling signal, such error signal being formed at each actual sampling instant n by deriving the algebraic difference between the value of the corrected signal produced by the difference circuit at the sampling instant and the value of the corrected signal produced by the difference circuit at a previous sampling instant, the latter value first being multiplied by the ratio between the value of the recovered data signal at the actual sampling instant and the value of the recovered data signal at the previous sampling instant; such adjustment of the coefficients being effected only for sampling instants at which the said two values of the recovered data signal both differ from zero.

4,577,330
CROSS-POLARIZATION INTERFERENCE CANCELLATION ARRANGEMENT FOR DIGITAL RADIO CHANNELS

Mohsen Kavehrad, Hudson, N.H., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Apr. 19, 1984, Ser. No. 602,055
Int. Cl.⁴ H03H *7/30*
U.S. Cl. 375—15 **6 Claims**



1. A cross-polarization interference cancellation arrangement comprising:

a first and a second input terminal capable of receiving a first and a second orthogonally polarized baseband digital input signal, respectively;

a first and a second output terminal;

canceller means connected to the first and second input terminals and responsive to a received first and second orthogonally polarized baseband input signal for determining therefrom a first and a second estimate, respectively, of a main lobe of a pulse response of the respective first and second input signals, and for generating from the first and second estimates a respective first and second cancellation output signal of a proper phase and amplitude which is introduced into the second and first orthogonally polarized input signals, respectively, to generate respective second and first canceller means output signals wherein the main lobe of an interfering orthogonally polarized signal is substantially cancelled; and

equalizer means responsive to the first and second canceller means output signals for substantially equalizing therein any intersymbol and cross-rail interference components for providing a resultant first and second equalizer means output signal to the first and second output terminals, respectively.

4,577,331
MULTIPLE RATE BASEBAND TRANSMITTER

Dana A. Merrill, Raleigh, N.C., assignor to ITT Corporation, New York, N.Y.

Filed Feb. 23, 1984, Ser. No. 583,084
Int. Cl.⁴ H04L *27/04*
U.S. Cl. 375—17 **13 Claims**

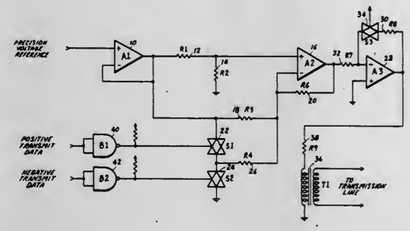
1. A baseband transmitter for transmitting bipolar data on a transmission line comprising:

a source of two unipolar data signals;

a precision voltage reference for controlling the pulse amplitude of said bipolar data;

first amplifier means for generating a positive or a negative pulse output in response to a switched input data signal at one input and said precision voltage input on the other input thereto;

first switch means having a channel resistance and for generating said switched input data signal in response to said unipolar data signals;

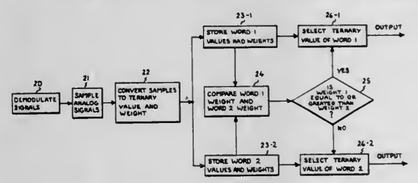


second amplifier means coupled to the output of said first amplifier means for generating amplified bi-polar data having a controlled pulse amplitude, and second switch means in parallel with an input and the output of said second amplifier means for providing compensation for the channel resistance of said first switch means, and having a channel resistance.

4,577,332
DIGITAL DECODING ARRANGEMENT

Theodore Brenig, Lynchburg, Va., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 14, 1983, Ser. No. 474,788
Int. Cl.⁴ H04L *1/02*
U.S. Cl. 375—40 **6 Claims**



1. An arrangement for decoding analog signals forming a binary meassage and transmitted at least twice in sequence, comprising:

a. means for producing a first digital value signal in response to each received analog signal above a selected level and for producing a second and different digital value signal in response to each received analog signal below said selected level;

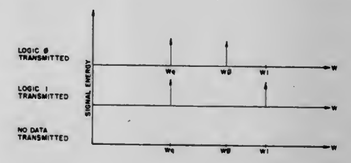
b. means for producing a wighting factor that is related to the deviation of each received analog signal from said selected level;

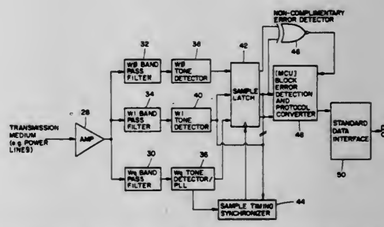
c. and means for selecting one digital value signal produced from corresponding and repeated analog signals, said one selected digital value signal having the highest weighting factor associated therewith.

4,577,333
COMPOSITE SHIFT KEYING COMMUNICATION SYSTEM

Kenneth A. Lewis, Essex Junction, Vt., and Alan N. Alpern, Manhattan, N.Y., assignors to GridComm Inc., Danbury, Conn.

Filed Sep. 13, 1984, Ser. No. 650,777
Int. Cl.⁴ H04L *27/30*
U.S. Cl. 375—45 **22 Claims**





1. A composite shift key method of communication for binary signals, comprising:

a. transmitting a summed signal having a qualifying signal at a qualifying signal frequency Wqt as one of the summed signal components only when binary data, either a binary zero or a binary one, is desired to be transmitted, by algebraically summing a first signal at

b. a first frequency W1 with the qualifying signal at the qualifying signal frequency Wqt, to produce a first summed signal which is transmitted when a binary one is desired to be transmitted, such that a binary one transmitted signal is a composite summed signal of Wqt and W1, and by algebraically summing a second signal at

c. a second frequency W0 with the qualifying signal at the qualifying signal frequency Wqt, to produce a second summed signal which is transmitted when a binary zero is desired to be transmitted, such that a binary zero transmitted signal is a composite summed signal of Wqt and W0; and

d. ceasing transmission of the qualifying signal at the qualifying signal frequency Wqt as a transmitted signal or as a component of a composite summed signal when neither a binary zero nor a binary one is desired to be transmitted.

4,577,334
DIGITAL DATA RECEIVER INCLUDING TIMING ADJUSTMENT CIRCUIT

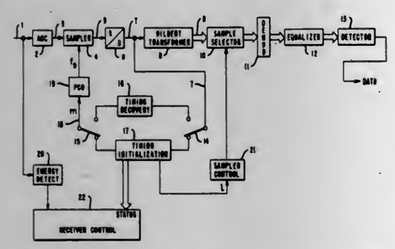
Jan Boer, Utrecht, and Wilhelmus J. M. Diepstraten, Diessen, both of Netherlands, assignors to NCR Corporation, Dayton, Ohio

Filed Nov. 9, 1984, Ser. No. 670,425
Claims priority, application United Kingdom, Jan. 13, 1984, 8400922
Int. Cl.⁴ H04L *7/10*
U.S. Cl. 375—97 **12 Claims**

1. In a data receiving apparatus for receiving a data modulated carrier signal and including a sampling circuit responsive to sampling clocks for sampling the received signal, a phase controlled oscillator for developing the sampling clocks, and

an analog-to-digital converter for converting the sampled received signal to a digitized sampled received signal, a timing adjustment system comprising:

a signal transform circuit including first and second Discrete Fourier Transform filter circuits and adapted to provide first and second complex signals as a function of the correlation between said digitized sampled received signal and each of first and second predetermined locally generated frequencies having values of $f_c-\frac{1}{2}f_b$ and $f_c+\frac{1}{2}f_b$, respectively, where f_c and f_b are the carrier frequency and the modulation frequency, respectively;



complex conjugate multiplier means being responsive to said first and second complex signals for providing a complex output signal; and

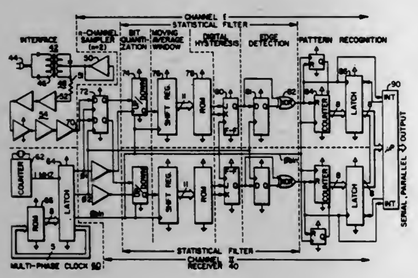
conversion means responsive to said complex output signal for applying an adjustment signal to said phase controlled oscillator to selectively adjust the phase of said sampling clocks to define the sampling instants at which said received signal is sampled.

4,577,335

COHERENT DATA COMMUNICATIONS TECHNIQUE

Hee Woug, San Jose, and Carson Chen, San Bruno, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jan. 9, 1984, Ser. No. 569,358
Int. Cl.⁴ H03D *3/22*
U.S. Cl. 375—86 **13 Claims**



1. A receiver for reconstructing data from a received phase modulated transmission comprising:

a multiphase clock generator for generating n sample clock signals at the same frequency and phase offset from each other by 360°/2n, and for generating a bin clock signal at a frequency equal to the sample clock frequency divided by a first predetermined number;

n channels, each connected to receive a respective sample clock signal and the phase modulated transmission and each including

sampler means, responsive to said received phase modulated transmission, to take one sample of the received transmission in response to each sample clock signal and to provide high and low sample output signals for digitally driving each of said n channels as a function of the related clock signal;

a statistical filter, responsive to said sample output signal; and including counter means responsive to said bin clock signal to produce an average bin value for the first predetermined number of consecutive samples; and moving average means responsive to said bin clock signal to form moving average values of a second predetermined number of consecutive bins; and

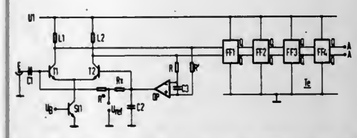
pattern recognition means to assign data bit values to predetermined patterns of said moving average values.

4,577,336

INTEGRABLE FREQUENCY DIVIDER CIRCUIT HAVING A FEEDBACK CONTROLLED DIFFERENTIAL AMPLIFIER AS ITS PREAMPLIFIER CIRCUIT

Hans Kriedt, Munich, and Josef Fenk, Eching-Ottenburg, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Continuation of Ser. No. 435,416, Oct. 20, 1982. This application May 20, 1985, Ser. No. 736,401
Claims priority, application Fed. Rep. of Germany, Oct. 21, 1981, 3141790
Int. Cl.⁴ H03K *21/02, 21/40, 23/58;* **H03F** *1/34*
U.S. Cl. 377—111 **8 Claims**



1. Integrable frequency divider circuit, comprising a preamplifier in the form of a differential amplifier having at least one stage and having a signal input for receiving signals to be processed, a reference input and two outputs, a frequency divider having divider stages including a first divider stage, each being in the form of identical series-connected flip-flop cells, said first divider stage having two inputs each being connected to a respective one of said two outputs of said differential amplifier for receiving the signals to be processed, an operational amplifier having an output directly connected to said reference input of said differential amplifier and having two inputs, two resistors each being connected between a respective one of said inputs of said operational amplifier and a respective one of said outputs of said differential amplifier, and a capacitor connected between said inputs of said operational amplifier.

4,577,337

X-RAY FLUORESCENCE TESTING OF LAMINATE STRUCTURES

Glenn M. Light, San Antonio, Tex., assignor to Southwest Research Institute, San Antonio, Tex.

Filed May 21, 1984, Ser. No. 612,477
Int. Cl.⁴ G01N *23/223*
U.S. Cl. 378—044 **20 Claims**

1. An X-ray fluorescence test method for detecting, locating and quantifying impact caused delaminations and subsurface cracks in a laminate with an X-ray fluorescence source-detector comprising:

placing a substantially uniform layer of a test coating on the surface of a test portion of said laminate, said test coating being comprised of a penetrant of low viscosity and low surface tension which is capable of penetrating the surface breaking cracks associated with impact caused delaminations and subsurface cracks in said laminate and at least one element of high atomic number (Z) which is detectable by said X-ray fluorescence source-detector;

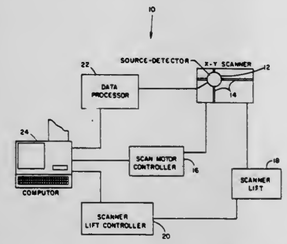
leaving said test coating upon said surface for a sufficient period of time to allow said penetrant to penetrate said delaminations and subsurface cracks and carry sufficient amounts of said high atomic number (Z) element into said delaminations and cracks to be detectable by said X-ray fluorescence source-detector after said test coating is removed from said surface;

removing said test coating from said surface;

testing said test portion of said laminate with said X-ray fluorescence source-detector for significant X-ray fluorescence;

detecting said delaminations and subsurface cracks, if any, by using any said significant X-ray fluorescence as an indication of a delamination or crack in said test portion;

locating said delaminations and subsurface cracks by moving said X-ray fluorescence source-detector along said surface of said test portion, observing which areas emit significant X-ray fluorescence and using said significant X-ray fluorescence from any given area of said surface as an indication that a said delamination or subsurface cracking is located in said area; and



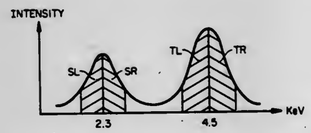
quantifying said delamination and subsurface cracking by determining the boundaries of said delaminations and subsurface cracks by moving said X-ray fluorescence source-detector to locate the parameters of said significant X-ray fluorescence and deeming said significant X-ray fluorescence parameters to be the boundaries of said delaminations and subsurface cracks and by determining the severity of said delaminations and subsurface cracks by measuring the intensity of said X-ray fluorescence from said delaminations and subsurface cracks and deeming the relative intensity of said X-ray fluorescence to be indicative of the relative severity of said delaminations and subsurface cracks.

4,577,338

X-RAY FLUORESCENCE SPECTROMETER AND METHOD OF CALIBRATING THE SAME

Yoshihiro Takahashi, and Maria A. Rey, both of San Jose, Calif., assignors to Xertex Corporation, Santa Clara, Calif.

Filed Nov. 1, 1982, Ser. No. 438,008
Int. Cl.⁴ G01N *23/223*
U.S. Cl. 378—048 **20 Claims**



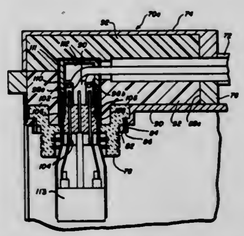
1. In a method of determining the sulfur content of a sample, the steps of: exciting the sample with x-rays of predetermined energy level to provide fluorescent energy corresponding to the elemental content of the sample and to the target line x-rays scattered by the sample, sampling the fluorescent energy in regions corresponding to the energy level of sulfur and to the energy level of the scattered target line x-rays, converting the sampled fluorescent energy to an electrical signal representative of the sulfur content of the sample, and calculating the sulfur content of the sample in accordance with a predetermined relationship.

4,577,339

CABLE TERMINATION FOR X-RAY TUBES

Heinrich F. Klostermann, 1326 Hoover St., Apt. 10, Menlo Park, Calif. 94025

Filed Oct. 28, 1983, Ser. No. 546,615
Int. Cl.⁴ H01J *35/00;* **H01R** *13/46*
U.S. Cl. 378—121 **12 Claims**



1. An improvement in x-ray tubes of the type comprising a metal tube envelope, a rotating anode assembly therein and drive means for it, a cathode and power supply means for the anode and cathode including supply cables, the improvement comprising terminal means for connecting the supply cables to the anode and cathode, including:

an insulating stud sealed to and extending through the generally flat end wall of the tube envelope, the insulating stud having a flat surface perpendicular to the end wall on the outside of the tube envelope;

(b) plug receptacles mounted in the flat surface of the stud, and wire means embedded in the stud and extending from the plug receptacles to the interior of the tube for connection with the anode or cathode;

(c) metal shield means secured to the tube end wall, the metal shield having a first end surrounding the protruding stud and a second open end spaced apart therefrom;

(d) insulating material within the metal shield and defining an opening extending from the flat surface of the insulating stud to the open end of the metal shield; and

(e) a terminal end fitting receiving the supply cable and including pins extending from the end thereof, the terminal end being sized to fit into the opening in the insulating material with the pins received in the plug receptacles.

4,577,340

HIGH VACUUM ROTATING ANODE X-RAY TUBE

Roland W. Carlson, Lyndhurst, and Edward A. Blaskis, Hudson, both of Ohio, assignors to Technicare Corporation, Solon, Ohio

Filed Sep. 19, 1983, Ser. No. 533,706
Int. Cl.⁴ H01J *5/30;* **F16J** *9/00, 15/00;* **E21B** *33/00*
U.S. Cl. 378—132 **3 Claims**

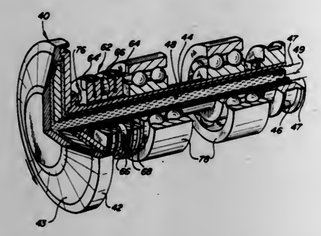
1. In a CT scanner, a high voltage high vacuum rotating anode X-ray tube comprising:

(a) a anode adapted for rotation about an axis therethrough, the anode having a rotor and a shaft extending therefrom;

(b) a housing enclosing portions of said rotor and defining therewithin an evacuated region of high vacuum;

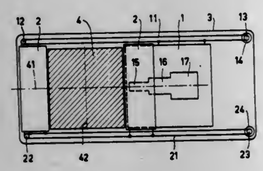
(c) an electron gun fixedly mounted through said housing, said electron gun adapted and configured to emit a beam

of electrons to be incident in said region on the rotor of said anode for generating X-rays;
(d) fluid magnetic sealing means disposed about the shaft of said anode for fluidically sealing the high vacuum in said region while permittting rotation of said anode;
(e) bearing means disposed about said shaft outside of said high vacuum region for transmitting rotary motion through said sealing means;
(f) window means formed on said housing for permitting transmission of X-rays through said housing; and



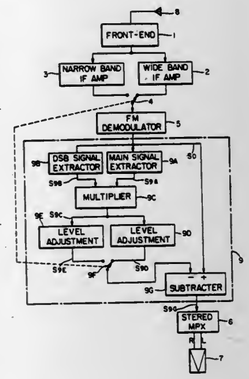
(g) an annular static seal disposed on said rotor within the high vacuum region;
(h) wherein said magnetic sealing means comprises a pair of annular pole pieces separated by a plurality of magnets, said pole pieces fitted about the shaft of said anode, with vacuum sealing between said pole pieces and the shaft provided by a magnetic fluid and further comprising means for maintaining the pressure imtermediate the two pole pieces at a relatively low pressure of or below approximately 100 millibars.

4,577,341
DIAPHRAGM ARRANGEMENT FOR X-RAY SPOT-FILM DEVICE
Horst H. Schwieker, and Kurt Gieschen, both of Hamburg, Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Mar. 3, 1983, Ser. No. 471,931
Claims priority, application Fed. Rep. of Germany, Mar. 17, 1982, 3209683
Int. Cl.⁴ G21K *1/02, 1/04*
U.S. Cl. 378—150 **11 Claims**



1. A diaphragm arrangement for an X-ray spot film device, said diaphragm arrangement comprising:
a first diaphragm having a first axis and having at least two rectangular apertures therein along the axis, said first diaphragm being displaceable in the direction of its axis, each rectangular aperture having a different size;
a second diaphragm having a second axis transverse to the first axis, said second diaphragm defining an aperture having edges parallel to the second axis, said second diaphragm being arranged to overlap the first diaphragm so that the two diaphragms selectively define an exposure field wherein said first diaphragm defines a dimension in the direction of said second axis and said second diaphragm defines a dimension in the direction of said first axis; and
motor means for displacing the first diaphragm along said first axis.

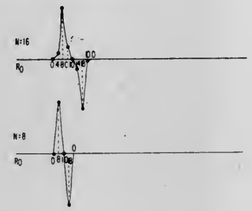
4,577,342
DISTORTION CANCEL CIRCUIT IN FM STEREO
Michinori Naito, Tokyo, Japan, assignor to Trio Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 29, 1984, Ser. No. 584,881
Claims priority, application Japan, Mar. 4, 1983, 58-30555[U]
Int. Cl.⁴ H04H *5/00*
U.S. Cl. 381—13 **4 Claims**



1. A distortion cancel circuit in an FM stereo receiver having an IF stage, comprising:
an input terminal at which is received an FM stereo demodulation signal which contains a distortion component generated in said IF stage;
an output terminal connected to an input of an FM MPX circuit;
a circuit for synthesizing a canceling signal to eliminate said distortion component generated in said IF stage by multiplying a main signal and a subsignal of said FM stereo demodulation signal at said input terminal;
a circuit for adjusting the level of said synthesized canceling signal; and
a circuit for subtractively combining said canceling signal whose level was adjusted with said FM stereo demodulation signal.

4,577,343
SOUND SYNTHESIZER
Toshio Oura, Tokyo, Japan, assignor to Nippon Electric Co. Ltd., Tokyo, Japan
Continuation of Ser. No. 214,931, Dec. 10, 1980, abandoned. This application Sep. 12, 1983, Ser. No. 531,195
Claims priority, application Japan, Dec. 10, 1979, 54-159909
Int. Cl.⁴ G10L *1/00*
U.S. Cl. 381—51 **7 Claims**

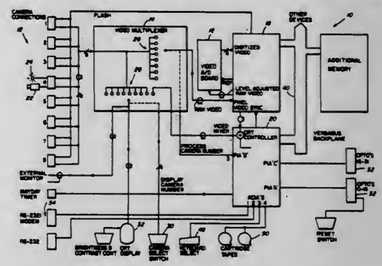
1. A sound synthesizer comprising:
memory means for storing waveform information obtained by normalizing, along a time axis, one repeated waveform extracted from a group of waveforms repeatedly appearing a plurality of times within a speech sound waveform, said group of waveforms being substantially similar in configuration to each other, the extracted waveform information being stored at a group of memory locations of a predetermined number in said memory means, and for storing a plurality of groups of amplitude information for designating amplitude levels of said repeatedly appearing waveforms;
means for designating a number of memory locations for said waveform information to be read out of said memory means, said number of designated memory locations being equal to said predetermined number of memory locations when a speech sound having the same tone frequency as that of a recorded speech sound is to be synthesized, and said number of designated memory locations being less than said predetermined number of memory locations when a speech sound having a tone frequency higher than that of said recorded speech sound is to be synthesized, the ratio of said designated number to said predetermined number depending upon the frequency of the tone of the speech sound to be synthesized;



means for reading said waveform information from the designated memory locations and for reading a designated group of amplitude information out of said memory means at a fixed rate regardless of the tone frequency of the speech sound to be synthesized;
means for defining a multiplying interval for said designated group of amplitude information;
means for producing a speech sound data by multiplying said read-out waveform information by said designated group of amplitude information during said defined multiplying interval;
means for setting a start value of one of the produced speech sound data and an end value of a next one of the produced speech sound data to be zero; and
means for sequentially linking said one of said speech sound data to said next one of said speech sound data adjacent thereto.

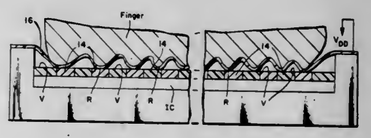
4,577,344
VISION SYSTEM
Theodore L. Warren, Westford; Kenneth R. Whelan, Medfield, and Arnold G. Reinhold, Cambridge, all of Mass., assignors to Automatix Incorporated, Billerica, Mass.
Filed Jan. 17, 1983, Ser. No. 458,729
Int. Cl.⁴ G06K *9/00*
U.S. Cl. 382—1 **19 Claims**

1. A system for sensing, processing and analyzing images, said system comprising:
(a) a plurality of camera means for sensing images and generating video signals defining said sensed images;
(b) vision processing means communicating with said camera means for processing said video signals, said vision processing means including at least two central processing units, shared memory means for storing said video signals during all stages of processing of said video signals and internal bus means communicating with each said central processing unit and with said shared memory means;
(c) external bus means communicating with said vision processing means, said external bus means providing communication with at least the shared memory means;
(d) computer controller means communicating with said shared memory means through said external bus means, said computer controller means at least generating command signals for controlling said vision processing means;



(e) display means connected to said computer controller means, selected image signals being presented on said display means; and,
(f) switch means for selectively switching said video signals generated by said camera means, selected ones of said video signals being applied to said vision processing means and said display means.

4,577,345
FINGERPRINT SENSOR
Igor Abramov, 3620 Spencer St., #50, Torrance, Calif. 90503
Filed Apr. 5, 1984, Ser. No. 597,124
Int. Cl.⁴ G06K *9/00*
U.S. Cl. 382—4 **6 Claims**



1. A method for sensing the ridge and valley fingerprint pattern of a person's finger and translating said pattern into electrical signals representative thereof, including the steps of:
stretching a membrane having a conductive surface over an array of electrically conductive contact pads which are electrically insulated from each other and arranged so that each contact pad defines an "X,Y" coordinate of said array, the conductive surface being opposite said pads and spaced therefrom so it is not in electrical contact therewith;
connecting a separate electronic switching circuit to each of said pads;
pressing the person's finger against said membrane such that the ridge portions of said person's fingerprint pattern forces the membrane into electrical contact with the pads there-opposite, thereby activating the electronic switching circuits connected to said pads; and
scanning the electronic switching circuits to generate an electrical output signal in accordance with the activated and nonactivated switching circuits which represents the fingerprint pattern.

282,980
CAP
Paul Hayton, R.R. #2, Holland Centre, Ontario, Canada NOH 1R0
Filed May 28, 1985, Ser. No. 737,883
Claims priority, application Canada, Jan. 22, 1985, 22-01-85-4
Term of patent 14 years
U.S. Cl. D2—248



282,981
MITTEN
Melinda J. Pierce, 8851 Midvale No., No. 1, Seattle, Wash. 98103
Filed Jun. 16, 1983, Ser. No. 504,923
Term of patent 14 years
U.S. Cl. D2—367



282,982
INFORMATION INDICATOR FOR ATTACHMENT TO A GARMENT HANGER
John Kodet, 225 West St., Carlton, New South Wales, Australia
Filed May 24, 1983, Ser. No. 497,614
Claims priority, application Australia, Feb. 12, 1982, 2256/82
Term of patent 14 years
U.S. Cl. D6—328



282,983
SIDE CHAIR
Rick Bart, 397 Wenham Rd., Pasadena, Calif. 91107
Filed Aug. 18, 1983, Ser. No. 524,260
Term of patent 14 years
U.S. Cl. D6—369



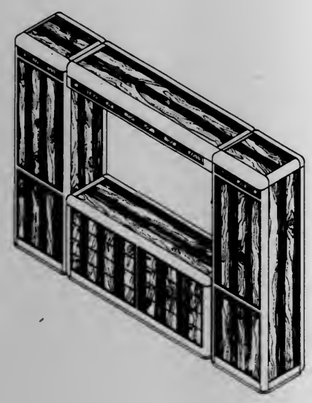
282,984
SIDE CHAIR
Rick Bart, 397 Wenham Rd., Pasadena, Calif. 91107
Filed Aug. 18, 1983, Ser. No. 524,494
Term of patent 14 years
U.S. Cl. D6—369



282,985
CHAIR FRAME
Jeffrey P. Cronk, Los Angeles, Calif., assignor to Brown Jordan Company, El Monte, Calif.
Filed Aug. 8, 1983, Ser. No. 521,207
Term of patent 14 years
U.S. Cl. D6—373



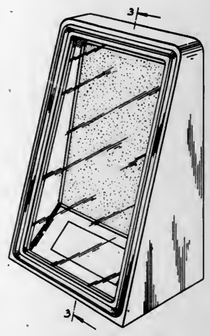
282,986
COMBINED DUAL ARMOIRE, BRIDGE AND DRESSER UNIT
Huey T. Keller, High Point, N.C., assignor to Bernhardt Industries, Inc., Lenoir, N.C.
Filed Oct. 17, 1983, Ser. No. 542,784
Term of patent 14 years
U.S. Cl. D6—397



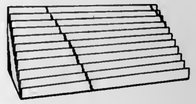
282,987
DISPLAY RACK
Richard T. Cohen, New York, N.Y., assignor to Melrose Displays, Inc., Passaic, N.J.
Filed Sep. 2, 1982, Ser. No. 414,488
Term of patent 14 years
U.S. Cl. D6—449



282,988
DISPLAY CASE
Russell Woolard, Flixton, England, assignor to Petrus Products Limited, Manchester, England
Filed Jun. 24, 1983, Ser. No. 507,484
Claims priority, application United Kingdom, Mar. 3, 1983, 8305963; Apr. 26, 1983, 1012714
Term of patent 14 years
U.S. Cl. D6—471



282,989
TAPE RACK
Ronald M. Nelson, 682 Costa Dr., Napa, Calif. 94558
Filed Jul. 1, 1983, Ser. No. 510,067
Term of patent 14 years
U.S. Cl. D6—474

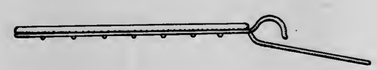




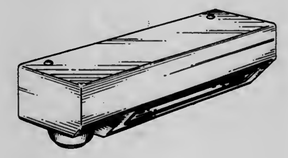
282,990
LUMBAR SUPPORT CUSHION
Julian Sims, 350 E. 54th St., New York, N.Y. 10022, and Steven Joseph, 40 Willis Ave., Staten Island, N.Y. 10301
Filed Jan. 3, 1983, Ser. No. 455,246
Term of patent 14 years
U.S. Cl. D6—502



282,991
DETACHABLE TRAY
Richard C. Wellington, Woodcliff Lake, N.J., assignor to Wellington Home Products, Paterson, N.J.
Filed Oct. 21, 1983, Ser. No. 544,220
Term of patent 14 years
U.S. Cl. D6—511



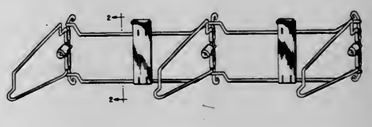
282,992
COMBINED CUP AND TOWEL DISPENSER
Randall N. Bartlett, Bay Minette, Ala., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.
Filed Jul. 18, 1983, Ser. No. 515,000
Term of patent 14 years
U.S. Cl. D6—516



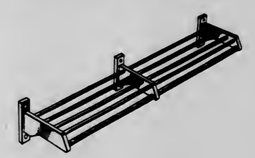
282,993
COMBINED MIRROR AND SHAVING GEAR HOLDER
Ronald W. Sanford, Great Neck, N.Y., assignor to Brooks/Kendall, Ltd., Great Neck, N.Y.
Filed Mar. 22, 1984, Ser. No. 592,178
Term of patent 14 years
U.S. Cl. D6—526

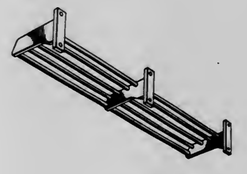


282,994
BAG HOLDER OR THE LIKE
Randolph D. Prader, Fairport, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.
Continuation-in-part of Ser. No. 259,220, Apr. 30, 1981, Pat. No. Des. 271,067. This application Mar. 30, 1983, Ser. No. 480,193
The portion of the term of this patent subsequent to Oct. 25, 2000, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—566

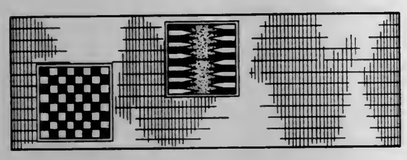


282,995
WALL MOUNTED RACK
Keith J. Beverly, c/o Beverly Coat Hanger Co., Inc., 1215 Fairfax Ave., San Francisco, Calif. 94124
Filed Aug. 22, 1983, Ser. No. 525,013
Term of patent 14 years
U.S. Cl. D6—566

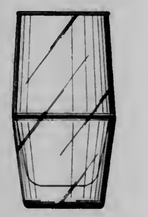


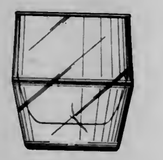


282,996
GRASS-WEED LYING MAT
Herbert W. Bösenberg, Annastrasse 25, D-6100 Darmstadt, Fed. Rep. of Germany
Filed Feb. 23, 1983, Ser. No. 468,968
Claims priority, application Fed. Rep. of Germany, Aug. 24, 1982, 8 MR 847; Feb. 3, 1983, 8 MR 867
Term of patent 14 years
U.S. Cl. D6—588

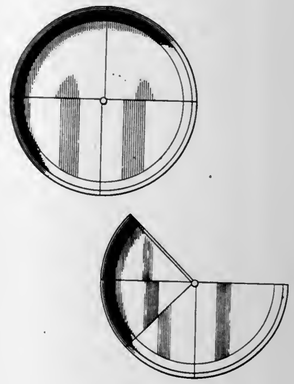


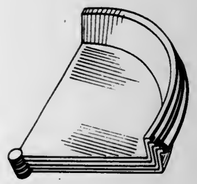
282,997
TUMBLER OR SIMILAR ARTICLE
Lawrence J. Miller, Oregon, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Oct. 20, 1983, Ser. No. 543,716
Term of patent 14 years
U.S. Cl. D7—6





282,998
COLLAPSIBLE PLATE
Barbara J. Ransom, 8005 Lichen Dr., Citrus Heights, Calif. 95621
Filed Apr. 25, 1983, Ser. No. 488,093
Term of patent 14 years
U.S. Cl. D7—23





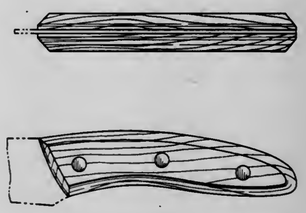
282,999
SPOON OR SIMILAR ARTICLE
Colin B. Richmond, II, Oneida, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed Oct. 21, 1983, Ser. No. 544,087
Term of patent 14 years
U.S. Cl. D7—137



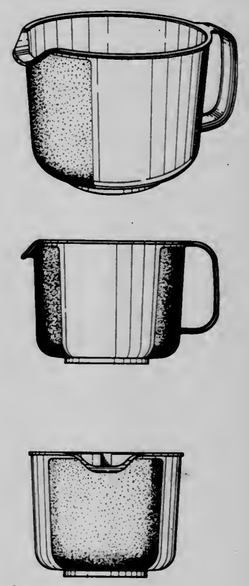
283,000
SPOON OR SIMILAR ARTICLE
Colin B. Richmond, II, Oneida, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed Dec. 5, 1983, Ser. No. 558,009
Term of patent 14 years
U.S. Cl. D7—137



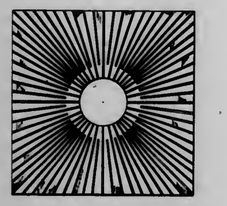
283,001
KNIFE HANDLE
Robert Pashley, Lake Geneva, Wis.; Mary E. Burke, Crystal; William Peters, Maple Grove, both of Minn.; Robert L. Jacobi, Lake Geneva, Wis., and Ronald J. Gangelhoff, Mound, Minn., assignors to Chicago Cutlery Consumer Products, Inc., Minneapolis, Minn.
Filed May 13, 1983, Ser. No. 494,298
Term of patent 14 years
U.S. Cl. D7—152

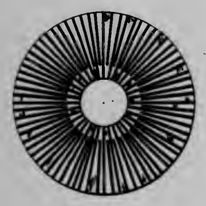


283,002
MIXING BOWL OR THE LIKE
Robert H. C. M. Daenen, Hekelgem, Belgium, assignor to Dart Industries Inc., Northbrook, Ill.
Filed Apr. 18, 1983, Ser. No. 485,679
Term of patent 14 years
U.S. Cl. D7—319

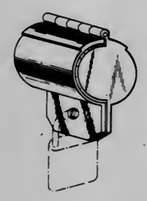


283,003
TREE GRATE
DeWitt McKinley, Forth Worth, Tex., assignor to McKinley Tree Grate Co., Inc., Fort Worth, Tex.
Filed Dec. 29, 1983, Ser. No. 566,894
Term of patent 14 years
U.S. Cl. D8—1

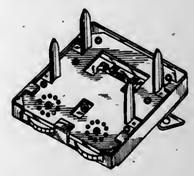


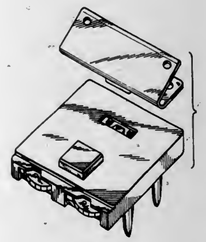


283,004
DOOR LOCK GUARD
Richard E. Parker, 1417 Nebraska Ave., Palm Harbor, Fla. 33563
Filed Mar. 16, 1983, Ser. No. 475,929
Term of patent 14 years
U.S. Cl. D8—322

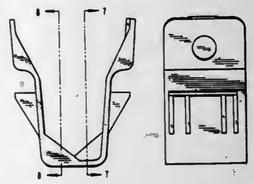


283,005
DUAL WHEEL COMBINATION LOCK FOR LUGGAGE OR SIMILAR TYPE ARTICLE-RETAINING CONTAINER
Urs Gisiger, Selzach, Switzerland, assignor to Amiet AG, Oberdorf, Switzerland
Filed Jan. 27, 1983, Ser. No. 461,470
Claims priority, application d Iat. Prop. O., Nov. 16, 1982, 72755
Term of patent 14 years
U.S. Cl. D8—331



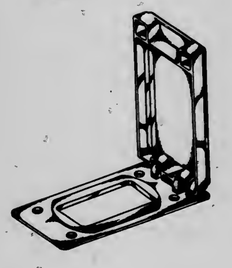


283,006
HOLD DOWN BRACKET
Joseph A. Carter, Jr., 3263 Roxburg Dr., Lexington, Ky. 40503, and Paul R. Everhard, Lexington, Ky., assignors to Joseph A. Carter, Jr., Lexington, Ky.
Filed May 17, 1983, Ser. No. 495,522
Term of patent 14 years
U.S. Cl. D8—349



283,007
ELECTRICAL OUTLET COVER PLATE ENCLOSURE THEREFOR
Daniel P. Henkel, Kunkletown, Pa., assignor to Square D Company, Palatine, Ill.
Continuation-in-part of Ser. No. 307,407, Oct. 1, 1981, Pat. No. D. 273,084. This application Nov. 3, 1983, Ser. No. 548,521
The portion of the term of this patent subsequent to Mar. 20, 1998, has been disclaimed.
Term of patent 14 years
U.S. Cl. D8—353





283,008
GUY HOOK FOR ATTACHMENT TO TRANSMISSION LINE POLES OR THE LIKE
Gaddis G. Hall, P.O. Box 6699, Birmingham, Ala. 35210
Filed Aug. 22, 1983, Ser. No. 525,131
Term of patent 14 years
U.S. Cl. D8—356





283,009
BEVERAGE CONTAINER
Dale A. Jennette, 505 Wild Oak Ct., Louisville, Ky. 40222
Filed Nov. 2, 1983, Ser. No. 547,992
Term of patent 14 years
U.S. Cl. D9—307



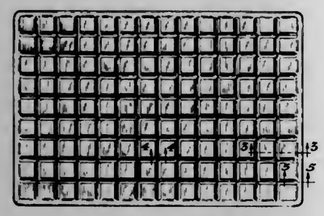
283,010
BOTTLE
Frederick N. Biesecker, Boyertown, Pa., assignor to Drug Plastics & Glass Company, Inc., Boyertown, Pa.
Filed Oct. 3, 1983, Ser. No. 538,690
Term of patent 14 years
U.S. Cl. D9—367



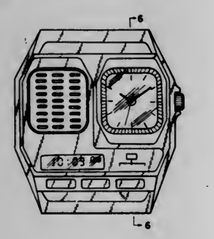
283,011
CAN
Thomas E. Moloney, Wheaton; Nelson N. Chernikoff, Richton Park; Edward S. Traczyk, Lockport; Michael M. Shulski, Northfield; Edward K. Cassidy, Palatine, and John M. Mann, Downers Grove, all of Ill., assignors to Anheuser-Busch Companies, Inc., St. Louis, Mo.
Filed Aug. 15, 1983, Ser. No. 523,514
Term of patent 14 years
U.S. Cl. D9—398



283,012
UTILITY TRAY
Austin L. Jenkens, 431 Stadium Dr., Findlay, Ohio 45840
Filed Nov. 3, 1983, Ser. No. 548,310
Term of patent 14 years
U.S. Cl. D9—456



283,013
WRIST WATCH
Hayao Kano, Niiza, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan
Filed Oct. 21, 1983, Ser. No. 544,459
Term of patent 14 years
U.S. Cl. D10—32





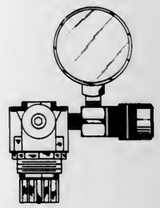
283,014
WATCH
Susumu Suzuki; Noritaka Uchihori, and Naoto Fukasawa, all of Suwa, Japan, assignors to Kabushi Kaisha Suwa Seikosha, Tokyo, Japan
Filed Jul. 22, 1983, Ser. No. 516,417
Claims priority, application Japan, Jan. 22, 1983, 58-2179
Term of patent 14 years
U.S. Cl. D10—38



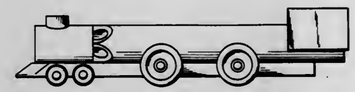
283,015
WATCH CASE
Marc Lederrey, Le Landeron, Switzerland, assignor to Rado Uhren AG, Lengnau, Switzerland
Division of Ser. No. 378,489, May 17, 1982, Pat. No. Des. 277,830. This application Jan. 14, 1985, Ser. No. 691,175
Term of patent 14 years
U.S. Cl. D10—39



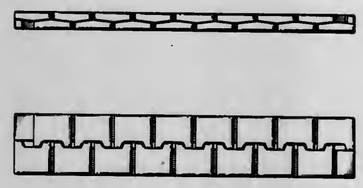
283,016
QUICK CONNECTING CYLINDER AIR LEAKAGE TESTER
Edward Evenson, Chicago, Ill., assignor to Milton Industries, Inc., Chicago, Ill.
Filed Jul. 25, 1983, Ser. No. 516,738
Term of patent 14 years
U.S. Cl. D10—85



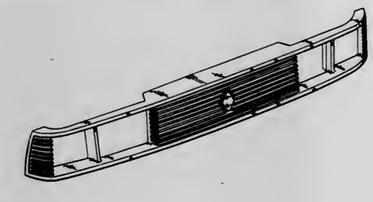
283,017
SIMULATIVE TOY WHISTLE
Glenn F. Henry, 3131 W. Jefferson St., Joilet, Ill. 60435
Filed Jan. 9, 1984, Ser. No. 569,414
Term of patent 14 years
U.S. Cl. D10—119



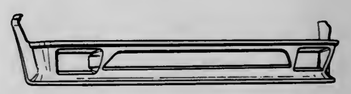
283,018
JEWELRY CHAIN
Masao Otake, Ichikawa, Japan, assignor to Nakagawa Corporation, Tokyo, Japan
Filed Jun. 10, 1983, Ser. No. 503,348
Claims priority, application Japan, Sep. 17, 1982, 57-42307
The portion of the term of this patent subsequent to Dec. 31, 1999, has been disclaimed.
Term of patent 14 years
U.S. Cl. D11—12



283,019
AUTOMOBILE GRILLE
Richard A. Teague, Franklin; Robert C. Nixon, and George M. Krispinsky, both of Huntington Woods, all of Mich., assignors to American Motors Corporation, Southfield, Mich.
Continuation of Ser. No. 432,152, Sep. 30, 1982, abandoned. This application Jun. 17, 1985, Ser. No. 745,815
Term of patent 14 years
U.S. Cl. D12—163



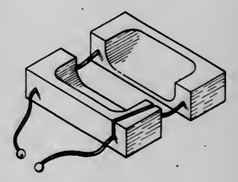
283,020
SPOILER
Adolf Koch, Waiblingen-Neustadt, Fed. Rep. of Germany, assignor to Sport-Service-Lorinser Sportliche Autoausruestung GmbH, Waiblingen, Fed. Rep. of Germany
Filed Dec. 5, 1983, Ser. No. 558,154
Claims priority, application Fed. Rep. of Germany, Jun. 13, 1983, 947
Term of patent 14 years
U.S. Cl. D12—181



283,021
FAIRING FOR MOTORCYCLES
Karl H. Abe, Steinebach/Woerthsee, and Klaus V. Gevert, Munich, both of Fed. Rep. of Germany, assignors to Bayerische Motoren Werke AG, Fed. Rep. of Germany
Filed Nov. 9, 1983, Ser. No. 550,100
Claims priority, application Fed. Rep. of Germany, May 9, 1983, MR 13415
Term of patent 14 years
U.S. Cl. D12—182

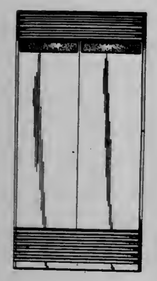


283,022
WHEEL CHOCK
John A. Cameron, 375 Baron Ct., Erie, Colo. 80516
Filed Sep. 12, 1983, Ser. No. 531,211
Term of patent 14 years
U.S. Cl. D12—217

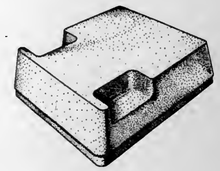


283,023
TELEPHONE BRANCH EXCHANGE CABINET
J. Scott Gibson, Ottawa, Canada, assignor to Mitel Corporation, Kanata, Canada
Filed Nov. 1, 1983, Ser. No. 547,440
Claims priority, application Canada, May 3, 1983, 03-05-83-2
Term of patent 14 years
U.S. Cl. D14—52



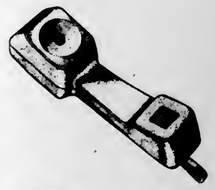


283,024
TELEPHONE STAND
John N. McGarvey, Drexel, Pa., and Alvin R. Tilley, Red Bank, N.J., assignors to AT&T Technologies, Inc., Indianapolis, Ind.
Filed Mar. 25, 1985, Ser. No. 715,702
Term of patent 14 years
U.S. Cl. D14—60





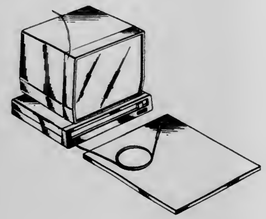
283,025
TELEPHONE HANDSET
Gary R. Gaus, Indianapolis, Ind.; John N. McGarvey, Drexel Hill, Pa.; John P. Reeves, Indianapolis, Ind., and Alvin R. Tilley, Red Bank, N.J., assignors to AT&T Information Systems, Inc., Indianapolis, Ind.
Filed Sep. 20, 1985, Ser. No. 778,039
Term of patent 14 years
U.S. Cl. D14—63



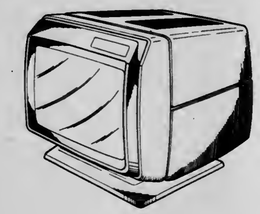




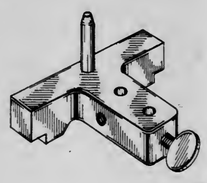
283,026
COMPUTER TERMINAL
Dana M. Richmond, Southborough, Mass., assignor to Pencept, Inc., Waltham, Mass.
Filed Aug. 1, 1983, Ser. No. 519,141
Term of patent 14 years
U.S. Cl. D14—106



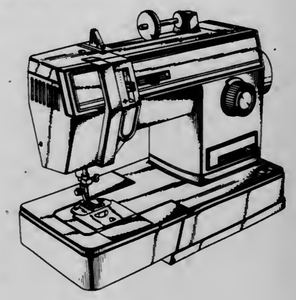
283,027
VIDEO DISPLAY TERMINAL OR SIMILAR ARTICLE
Can I. Gundogan, Boston, Mass., assignor to Data General Corporation, Westboro, Mass.
Filed May 23, 1983, Ser. No. 496,790
Term of patent 14 years
U.S. Cl. D14—113



283,028
FLUID INJECTION APPARATUS FOR INTERNAL COMBUSTION ENGINES
Donald E. Goorhouse, 7125 2nd St., #111, Scottsdale, Ariz. 85251
Filed Dec. 19, 1984, Ser. No. 683,601
Term of patent 14 years
U.S. Cl. D15—5



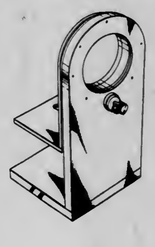
283,029
SEWING MACHINE OR SIMILAR ARTICLE
Thomas W. David, Brooklyn, N.Y., assignor to The Singer Company, Stamford, Conn.
Filed Jul. 18, 1983, Ser. No. 514,721
Term of patent 14 years
U.S. Cl. D15—69



283,030
SEWING MACHINE OR SIMILAR ARTICLE
Thomas W. David, Brooklyn, N.Y., assignor to The Singer Company, Stamford, Conn.
Filed Jul. 18, 1983, Ser. No. 514,720
Term of patent 14 years
U.S. Cl. D15—69



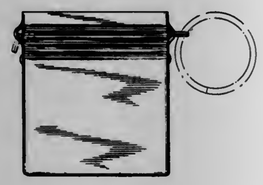
283,031
CAMERA SUPPORT BRACKET
Ehsan Sadre-Marandi, Chattanooga, and Harry L. O. Smith, Cleveland, both of Tenn., assignors to Beattie Systems, Inc., Cleveland, Tenn.
Filed Oct. 7, 1983, Ser. No. 539,791
Term of patent 14 years
U.S. Cl. D16—44

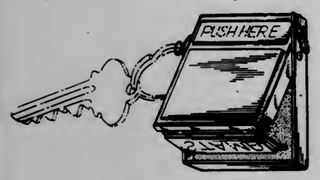


283,032
GUITAR HOLDER
Ronald N. Quesnel, 967 Cadillac St., Windsor, Ontario, Canada N8Y 2T3
Filed Sep. 23, 1983, Ser. No. 535,446
Claims priority, application Canada, Mar. 30, 1983, 30-03-83-8
Term of patent 14 years
U.S. Cl. D17—20

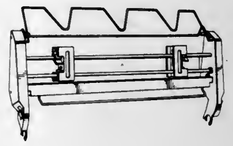


283,033
COLLAPSIBLE STAMP PAD AND KEY FOB
Peter H. Berg, 1336 Holiday Park Dr., Wantagh, N.Y. 11793
Filed Jan. 20, 1983, Ser. No. 459,426
Term of patent 14 years
U.S. Cl. D18—15

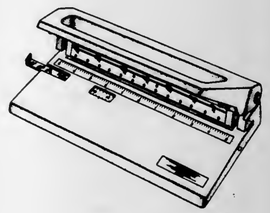




283,034
SHEET FEEDER FOR PRINTER
Masanori Hashimoto, Hills Terao 2-308 4-24 Nishiterao, Kanagawa-ku, Yokohama-shi, Kanagawa, Japan
Filed Dec. 22, 1982, Ser. No. 452,312
Claims priority, application Japan, Jun. 22, 1982, 57-027865
Term of patent 14 years
U.S. Cl. D18—22



283,035
HEAVY DUTY PAPER PUNCH
Albrecht Goertz, New York, N.Y., assignor to Rolodex Corporation, Secaucus, N.J.
Filed Jan. 10, 1983, Ser. No. 456,864
Term of patent 14 years
U.S. Cl. D19—72



283,036
KEY PURPOSE IDENTIFIER
Murray Strongwater, 326 Hewlett Neck Rd., Woodmere, N.Y. 11598
Filed Aug. 25, 1983, Ser. No. 526,478
Term of patent 14 years
U.S. Cl. D20—28



283,037
TOY WINGED HORSE FIGURE
Elizabeth Knight, Milton, Mass., assignor to Hasbro Industries, Inc., Pawtucket, R.I.
Filed Nov. 7, 1983, Ser. No. 549,906
Term of patent 14 years
U.S. Cl. D21—165



283,038
TOY UNICORN
Elizabeth Knight, Milton, Mass., assignor to Hasbro Industries, Inc., Pawtucket, R.I.
Filed Nov. 7, 1983, Ser. No. 549,904
Term of patent 14 years
U.S. Cl. D21—165



283,039
GOLF PUTTER HEAD
Karsten Solheim, 501 W. Wakonda La., Phoenix, Ariz. 85023
Filed Oct. 20, 1983, Ser. No. 543,824
Term of patent 14 years
U.S. Cl. D21—219



283,040
PISTOL
Darrel E. Holland, and William P. Holland, both of P.O. Box 348, Powers, Oreg. 97466
Filed Sep. 26, 1983, Ser. No. 535,919
Term of patent 14 years
U.S. Cl. D22—1



283,041
KNIFE
Alan Y. T. Lee, 24 Ferncliff Rd., Cos Cob, Conn. 06807
Filed Feb. 17, 1984, Ser. No. 581,277
Term of patent 14 years
U.S. Cl. D22—1



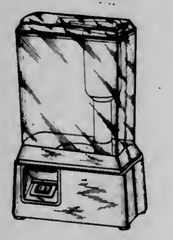
283,042
SHORT RIFLE
Darrell E. Holland, and William P. Holland, both of P.O. Box 348, Powers, Oreg. 97466
Filed Sep. 26, 1983, Ser. No. 535,768
Term of patent 14 years
U.S. Cl. D22—6



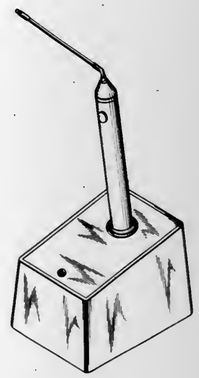
283,043
PISTOL HOLSTER
Larry E. Pitts, P.O. Box 75065, Birmingham, Ala. 35253
Filed Apr. 21, 1983, Ser. No. 487,006
Term of patent 14 years
U.S. Cl. D22—13



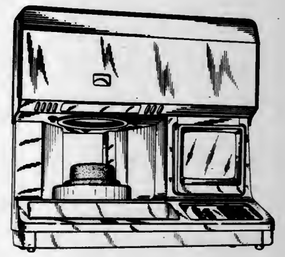
283,044
WATER PURIFIER
Alister Jack, Grijpskerk, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Sep. 22, 1983, Ser. No. 534,920
Claims priority, application Benelux, Mar. 25, 1983, 57709-00
Term of patent 14 years
U.S. Cl. D23—3



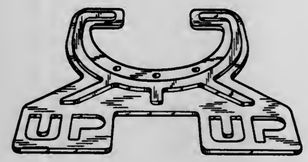
283,045
THERMAL MYRINGOTOMY SYSTEM
John K. Lynn, Jacksonville, Fla., assignor to Xomed Inc., Jacksonville, Fla.
Filed Apr. 7, 1983, Ser. No. 483,065
Term of patent 14 years
U.S. Cl. D24—8



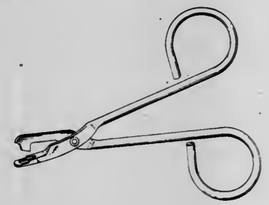
283,046
DENTAL FURNACE
Michael J. Botich, San Jacinto, Calif., assignor to Unitek Corporation, Monrovia, Calif.
Filed Apr. 22, 1983, Ser. No. 487,539
Term of patent 14 years
U.S. Cl. D24—8



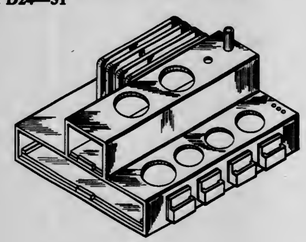
283,047
TRAY FOR BITE REGISTRATION
Anders Eriksson, Skanninge, Sweden, assignor to Anders Eriksson HB, Skanninge, Sweden
Filed Jun. 28, 1983, Ser. No. 508,682
Term of patent 14 years
U.S. Cl. D24—10



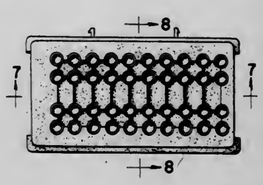
283,048
SURGICAL STAPLE REMOVER
Edward J. Sharkany, Huntington, Conn., assignor to Acme United Corporation, Fairfield, Conn.
Filed Jun. 20, 1983, Ser. No. 505,743
Term of patent 14 years
U.S. Cl. D24—26



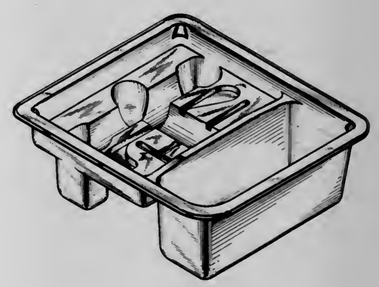
283,049
ORGANIZER FOR HOLDING DRUG DETECTION KIT ARTICLES OR THE LIKE
Mahendra K. Pandya, 8018 Daytona Ave., N.W., Massillon, Ohio 44646
Filed Nov. 18, 1983, Ser. No. 553,166
Term of patent 14 years
U.S. Cl. D24—31



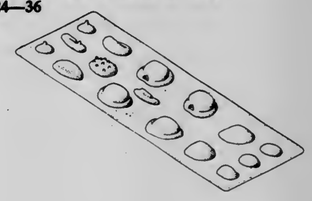
283,050
MICROBIOLOGICAL TEST TRAY
James H. Godsey, Huntington Station, N.Y., assignor to American Home Products Corporation (Del.), New York, N.Y.
Filed Mar. 4, 1983, Ser. No. 472,376
Term of patent 14 years
U.S. Cl. D24—31



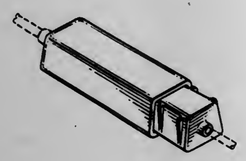
283,051
SINUS IRRIGATION TRAY
Alfred J. Fichera, Jacksonville, Fla., assignor to Xomed, Jacksonville, Fla.
Filed Jun. 20, 1983, Ser. No. 505,679
Term of patent 14 years
U.S. Cl. D24—31



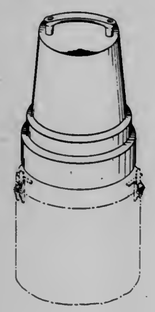
283,052
FOOT PEDAL MASSAGER
F. Josef Eugster, Taitung, Taiwan, assignor to C. S. Industrial International, Inc., Taipei, Taiwan
Filed Jul. 15, 1982, Ser. No. 398,571
Term of patent 14 years
U.S. Cl. D24—36



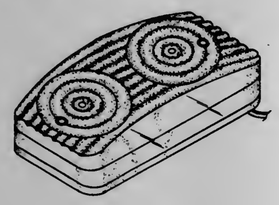
283,053
CONNECTOR FOR INVASIVE CATHETER SYSTEM
Robert A. Hermann, San Diego, Calif., assignor to Camino Laboratories, Inc., San Diego, Calif.
Filed Jun. 1, 1983, Ser. No. 500,034
Term of patent 14 years
U.S. Cl. D24—53



283,054
ROTATABLE DETACHABLE HEAD FOR WEATHER RESISTANT SPOT LIGHT
Charles W. C. Altman, Yonkers, N.Y., assignor to Altman Stage Lighting Co., Inc., Yonkers, N.Y.
Filed Mar. 18, 1983, Ser. No. 476,535
Term of patent 14 years
U.S. Cl. D26—24



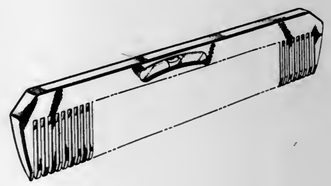
283,055
VEHICLE LAMP
David P. Meyer, 16732 Kehrsgrove Dr., St. Louis County, Mo. 63017
Filed Jun. 23, 1983, Ser. No. 507,026
Term of patent 14 years
U.S. Cl. D26—28



283,056
LAMP
Hearicus J. Ansems, Spoorwegstraat 14, 6828 AS Arnhem, Netherlands
Filed Apr. 19, 1983, Ser. No. 486,497
Claims priority, application Fed. Rep. of Germany, Oct. 19, 1982, DMA/000157
Term of patent 14 years
U.S. Cl. D26—61



283,057
BARBER'S COMB
Christopher M. Rogers, 2020 Second Ave. South, Apt. #2, Minneapolis, Minn. 55404
Filed Jul. 5, 1984, Ser. No. 627,814
Term of patent 14 years
U.S. Cl. D28—25



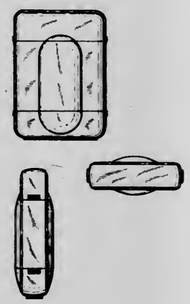
283,058
ELECTRIC SHAVER
Teizo Satoh, and Masaru Miyazaki, both of Tokyo, Japan
Filed Mar. 1, 1984, Ser. No. 585,316
Term of patent 14 years
U.S. Cl. D28—50



283,059
DRY SHAVER
Teizoh Satoh, and Masaru Miyazaki, both of Tokyo, Japan, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Aug. 2, 1984, Ser. No. 638,599
Claims priority, application United Kingdom, Feb. 6, 1984, 1.017.742
Term of patent 14 years
U.S. Cl. D28—50



283,060
ELECTRIC DRY SHAVER WITH COVER
Murray I. C. Camens, Groningen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Jul. 23, 1984, Ser. No. 633,545
Term of patent 14 years
U.S. Cl. D28—51

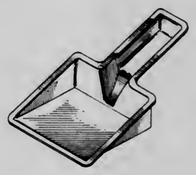


283,061
ELECTRIC HAIR CLIPPER
Tadashi Kitashima, Hino; Masaru Komiya, Kodaira, and Toshirou Higa, Hino, all of Japan, assignors to Kyusyu Hitachi Maxell, Ltd., Fukoka, Japan
Filed Jul. 17, 1984, Ser. No. 631,823
Claims priority, application Japan, Jan. 18, 1984, 59-1542
Term of patent 14 years
U.S. Cl. D28—53

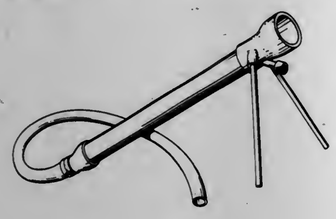




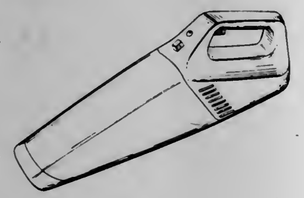
283,062
DISPOSABLE SCOOP
Peter F. Lordi, Highland, N.Y., assignor to Ulster Manufacturing, Inc., Highland, N.Y.
Division of Ser. No. 475,023, Mar. 14, 1983. This application Apr. 29, 1985, Ser. No. 728,521
Term of patent 14 years
U.S. Cl. D30—99



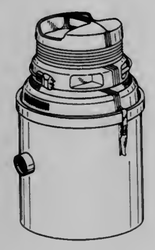
283,063
WASHING UNIT FOR CYLINDRICAL CARTRIDGE FILTERS
Paul D. Holman, 919 E. Kaler Dr., Phoenix, Ariz. 85020
Filed Jan. 31, 1983, Ser. No. 462,649
Term of patent 14 years
U.S. Cl. D32—1



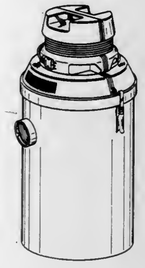
283,064
HAND-HELD VACUUM CLEANER
Joyce K. Thomas, and Samuel E. Hobulin, both of Lexington, Ill., assignors to National Union Electric Corporation, Bloomington, Ill.
Filed Mar. 16, 1983, Ser. No. 475,756
Term of patent 14 years
U.S. Cl. D32—18



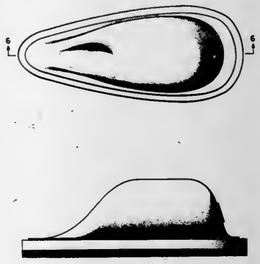
283,065
TOP PORTION FOR A CANISTER-TYPE SUCTION APPARATUS
Siegfried Maier, Stetten, Fed. Rep. of Germany, assignor to DÜPRO AG, Romanshorn, Switzerland
Filed Sep. 22, 1983, Ser. No. 534,551
Claims priority, application Fed. Rep. of Germany, Mar. 23, 1983, MR 20 745
The portion of the term of this patent subsequent to Mar. 18, 2003, has been disclaimed.
Term of patent 14 years
U.S. Cl. D32—23



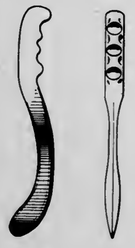
283,066
TOP PORTION FOR A CANISTER-TYPE SUCTION APPARATUS
Siegfried Maier, Stetten, Fed. Rep. of Germany, assignor to DÜPRO AG, Romanshorn, Switzerland
Filed Sep. 22, 1983, Ser. No. 534,552
Claims priority, application Fed. Rep. of Germany, Mar. 23, 1983, MR 20 745
The portion of the term of this patent subsequent to Mar. 18, 2003, has been disclaimed.
Term of patent 14 years
U.S. Cl. D32—23



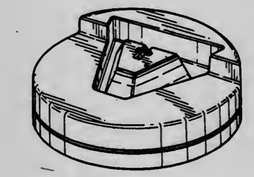
283,067
DISPENSING APPLICATOR
Kenneth G. McLin, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed May 26, 1983, Ser. No. 498,239
Term of patent 14 years
U.S. Cl. D32—45



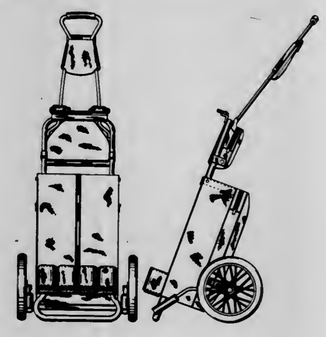
283,068
STRIGIL
Albert R. Beal, 95 W. Hampton Rd., Philadelphia, Pa. 19118
Filed Nov. 25, 1983, Ser. No. 555,056
Term of patent 14 years
U.S. Cl. D32—49



283,069
IRON BASE
William C. Dobson, West Bend, Wis., and William C. Cesaroni, Glenview, Ill., assignors to Dart Industries Inc., Northbrook, Ill.
Filed Feb. 17, 1984, Ser. No. 581,491
Term of patent 14 years
U.S. Cl. D32—73



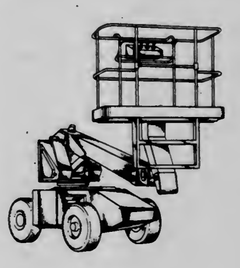
283,070
GOLF CART
Henry P. Yokers, Menomonee Falls, and Janet M. Conley, Milwaukee, both of Wis., assignors to ABC Industries, Inc., Milwaukee, Wis.
Filed May 16, 1983, Ser. No. 494,949
Term of patent 14 years
U.S. Cl. D34—15



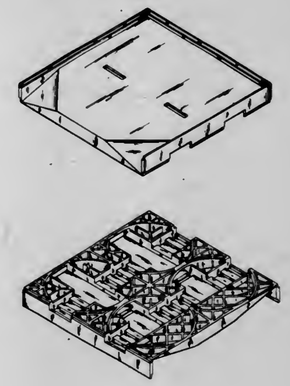
283,071
UTILITY CART
Stanley J. Neuhaus, R.R. 1, Shell Rock, Iowa 50670
Filed Sep. 6, 1983, Ser. No. 529,262
Term of patent 14 years
U.S. Cl. D34—24



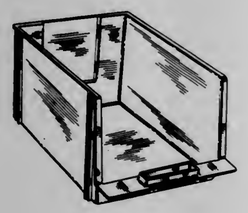
283,072
SELF-PROPELLED AERIAL WORK PLATFORM
Azam S. Qureshi, Fullerton, and William D. Murrill, Downey, both of Calif., assignors to Calavar Corporation, Santa Fe Springs, Calif.
Filed Jun. 16, 1983, Ser. No. 505,361
Term of patent 14 years
U.S. Cl. D34—34



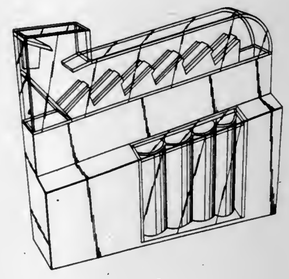
283,073
PALLET
John J. Marshall, West Chester, Pa., assignor to Container Corporation of America, Chicago, Ill.
Filed May 23, 1983, Ser. No. 497,030
Term of patent 14 years
U.S. Cl. D34—38



283,074
SHELF BIN
Hans Skillius, Halmstad, Sweden, assignor to A/S E. Damberg Group, Nykobing Falster, Denmark
Filed Feb. 15, 1983, Ser. No. 466,544
Claims priority, application Denmark, Aug. 31, 1982, 823/1982
Term of patent 14 years
U.S. Cl. D34—40



283,075
COIN BANK OR SIMILAR ARTICLE
John W. Spirk, Jr., 50 Stonewood Dr., and John R. Nottingham, 60 Stonewood Dr., both of Moreland Hills, Ohio 44022
Filed May 17, 1985, Ser. No. 735,317
Term of patent 14 years
U.S. Cl. D99—34



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 18TH DAY OF MARCH, 1986

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Nattermann & Cie GmbH: *See—*
Bauer, Kurt H.; Ghyczy, Miklos; Etschenberg, Eugen; and Osthoff, Heinrich, 4,576,626, Cl. 71-28.000.

A. O. Smith Harvestore Products, Inc.: *See—*
Garber, Gary L.; and Allhands, Marcus N., 4,576,117, Cl. 119-52.00B.

A. W. Chesterton Company: *See—*
Azibert, Henri V., 4,576,384, Cl. 277-81.00S.

Aab, Hans-Walter: *See—*
Lehmann, Wolfgang; and Aab, Hans-Walter, 4,576,420, Cl. 308-6.00C.

Aas, Flemming; and Jeppesen, Borge, to Radiometer A/S. Method and a closure cap for sealing a capillary tube. 4,576,595, Cl. 604-256.000.

Abbondanti, Alberto, to Westinghouse Electric Corp. Apparatus for efficient use of a microprocessor to control thyristors. 4,577,269, Cl. 363-129.000.

Abbott Laboratories: *See—*
Levin, Harold A.; and Larkin, Mark E., 4,576,602, Cl. 604-408.000.

Abdite Industries, Inc.: *See—*
Laszlo, Oliver J., 4,575,911, Cl. 29-156.80B.

Abe, Shinya: *See—*
Yamatsu, Isao; Abe, Shinya; Inai, Yuichi; Suzuki, Takeshi; Kinoshita, Kensaku; Mishima, Mannen; Katoh, Yoshinori; Kobayashi, Seiichi; Murakami, Manabu; and Yamada, Kouzi, 4,576,963, Cl. 514-532.000.

Abe, Tomoaki: *See—*
Muto, Yukio; Kinugawa, Masumi; and Abe, Tomoaki, 4,576,039, Cl. 73-118.000.

Abel, Irving R.; and Hatch, Marcus R., to Honeywell Inc. Reflective Schmidt system with nonrotationally symmetric corrector. 4,576,452, Cl. 350-620.000.

Abo, Keiju: *See—*
Kumura, Haruyoshi; Tanaka, Yoshikazu; Abo, Keiju; Hirano, Hiroyuki; and Yamamuro, Sigeaki, 4,576,265, Cl. 192-0.055.

Abramov, Igor. Fingerprint sensor. 4,577,345, Cl. 382-4.000.

AccuRay Corporation: *See—*
Sturm, Steven P., 4,577,104, Cl. 250-339.000.

Acevedo, Efrain: *See—*
Tarancon, Gregorio; Acevedo, Efrain; and Saud, Abel, 4,576,837, Cl. 427-255.400.

Achard, Serge: *See—*
Fontaine, Guy; and Achard, Serge, 4,577,183, Cl. 340-541.000.

Adachi, Osao; and Ameyama, Minoru, to Boehringer Mannheim GmbH. NAD(P)-Independent glycerol dehydrogenase, a process for the preparation thereof and the use thereof for the determination of glycerol and triglycerides. 4,576,913, Cl. 435-26.000.

Adair, Paul C.; and Burkholder, Amy L., to Mead Corporation, The. Photosensitive microcapsules useful in polychromatic imaging having radiation absorber. 4,576,891, Cl. 430-138.000.

Adams, Don L.; Evans, Charles W.; and Wright, Stuart C., to United Technologies Corporation. Flight director go-around mode. 4,577,275, Cl. 364-433.000.

Adams, James; and Belin, Felix, to Republic Steel Corporation. Automatic combustion control apparatus and method. 4,576,570, Cl. 431-12.000.

Adduci, Robert L.: *See—*
Spisak, Andrew M.; and Adduci, Robert L., 4,576,258, Cl. 188-299.000.

Adolfsson, Morgan; Brogardh, Iorgny; and Ovren, Christer, to ASEA Aktiebolag. Circuits with electro-optical feedback for display and a digitizer application. 4,577,189, Cl. 340-794.000.

Adolphi, Heinrich: *See—*
Schwarz, Gerd-Ulrich; and Adolphi, Heinrich, 4,576,935, Cl. 514-113.000.

Advanced Micro Devices, Inc.: *See—*
Allen, Michael, 4,577,125, Cl. 307-455.000.
Brown, George W.; and Thai, Phi, 4,577,294, Cl. 365-200.000.
Wong, Thomas S. W., 4,577,296, Cl. 365-226.000.

Ae, Osamu: *See—*
Morimoto, Keiji; Satoh, Shuichi; Iwai, Yoshiyuki; Ae, Osamu; Suda, Masao; Tsuchiya, Kiyoshi; Ogata, Kojiro; and Miyanagi, Naoki, 4,576,515, Cl. 405-184.000.

AGB Research PLC: *See—*
Laxton, Raymond; and Smith, Peter E., 4,577,220, Cl. 358-84.000.

Agfa Gevaert Aktiengesellschaft: *See—*
Kampfer, Helmut; Langen, Hans; and Ranz, Erwin, 4,576,907, Cl. 430-507.000.

AGFA-Gevaert N.V.: *See—*
Vackier, Leo N.; Mampaey, Jozef L.; and Alaerts, Leo B., 4,576,889, Cl. 430-126.000.

Ahlers, Klaas: *See—*
Schupp, Eberhard; Loch, Werner; Osterloh, Rolf; and Ahlers, Klaas, 4,576,979, Cl. 523-404.000.

Aigner, Heinrich: *See—*
Norden, Jurgen; Aigner, Heinrich; Schindler, Fritz; and Samblebe, Reinhard, 4,576,625, Cl. 71-3.000.

Aihara, Yoshihiko: *See—*
Fukuda, Tsuyoshi; and Aihara, Yoshihiko, 4,576,457, Cl. 354-173.110.

Aikawa, Eiichi: *See—*
Matsuura, Masahiro; and Aikawa, Eiichi, 4,576,251, Cl. 182-152.000.

Aires, Ramon H.: *See—*
Easter, Finis C.; and Aires, Ramon H., 4,577,268, Cl. 363-21.000.

Aisen Seiki Kabushika Kaisha: *See—*
Hattori, Takemi, 4,576,410, Cl. 297-284.000.

Aisin Seiki Kabushiki Kaisha: *See—*
Nishu, Mitsufumi; Takeuchi, Kenji; Sato, Masanori; Horiuchi, Ichiro; Muramatsu, Katsuhiko; and Kiryu, Koji, 4,576,059, Cl. 74-473.00P.
Terada, Takami, 4,576,412, Cl. 297-362.000.

AIWA Co., Ltd.: *See—*
Sougen, Katsuya, 4,577,239, Cl. 360-15.000.

Ajay Enterprises Corp.: *See—*
Ogden, Ralph, 4,576,352, Cl. 248-188.400.

Ajinomoto Co., Inc.: *See—*
Matsushita, Noritaka, 4,576,647, Cl. 106-193.00R.

Akao, Mutsuo, to Fuji Photo Film Co., Ltd. Materials for packaging light-sensitive materials. 4,576,865, Cl. 428-335.000.

Akashi, Teruo; Ito, Hiroshi; and Yamada, Shigemichi, to Toyota Jidosha Kabushiki Kaisha. Transmission mechanism with parallel transmission systems including one way clutches, one being lockable. 4,576,063, Cl. 74-745.000.

Akita, Kenji; Sakaguchi, Minoru; and Suzuyama, Hiroshi, to Hitachi, Ltd. Earthing switch for gas-insulated switchgear apparatus. 4,577,075, Cl. 200-148.00R.

Akita, Tadashi: *See—*
Fujita, Takayuki; Kitazawa, Yoshikazu; Akita, Tadashi; and Tani, Isamu, 4,577,032, Cl. 548-341.000.

Akiyama, Toshiyuki: *See—*
Ohba, Shinya; Ando, Haruhisa; Nakai, Masaaki; Ozaki, Toshifumi; Seki, Koichi; Takahashi, Kenji; Akiyama, Toshiyuki; Takemoto, Iwao; Imaide, Takuya; Okuda, Akihide; and Kubo, Masaharu, 4,577,231, Cl. 358-212.000.
Ozawa, Naoki; Akiyama, Toshiyuki; Nagahara, Shuusaku; and Takemoto, Iwao, 4,577,230, Cl. 358-212.000.

Aktiebolaget Electrolux: *See—*
Martensson, Karl I. M., 4,576,792, Cl. 422-27.000.

Akzo N.V.: *See—*
Lowke, George E.; and Meltzer, Robert J., 4,576,916, Cl. 435-289.000.

Aladdin Engineering & Mfg. Co.: *See—*
Horn, Edward R.; and Kot, Norbert J., II, 4,576,367, Cl. 269-32.000.

Alaerts, Leo B.: *See—*
Vackier, Leo N.; Mampaey, Jozef L.; and Alaerts, Leo B., 4,576,889, Cl. 430-126.000.

Alazet, Jean, to Cardus, Francis, a part interest. Depilating appliance. 4,575,902, Cl. 19-2.000.

Alber, Friedrich: *See—*
Markert, Helmut; Rogler, Wolfgang; Bendel, Wolfgang; and Alber, Friedrich, 4,576,768, Cl. 264-27.000.

Albrecht, Ernst; and Busch, Edgar, to Pfaff Industriemaschinen GmbH. Feed drive for a stitch group sewing machine. 4,576,103, Cl. 112-73.000.

Alcan International Limited: *See—*
Deutschman, John E., 4,576,651, Cl. 134-25.100.

Alex Moulton Limited: *See—*
Moulton, Alexander E.; and Uncles, Philip B., 4,576,393, Cl. 280-276.000.

Alexis, Roger P. J.: *See—*
Barazeche, Bahman; Alexis, Roger P. J.; and Guidoux, Loic B. Y., 4,577,309, Cl. 370-32.000.

Alfenaar, Marinus, to Electrochemische Energieconversie N.V. Fuel cell. 4,576,877, Cl. 429-12.000.

Alkhazov, Tofik G. O.; Korotaev, Jury P.; and Vartanov, Albert A., to Azerbaidzhansky Institut Nefti I Khimii Imeni Azizbekova. Catalyst for purifying gases from hydrogen sulphide. 4,576,925, Cl. 502-307.000.

Alkor GmbH Kunststoffe: *See—*
Fink, Roland; Mayr, Maximilian; and Schlenz, Dieter, 4,576,860, Cl. 428-314.400.

All-Pak, Inc.: *See—*
Willett, Richard A.; Faletti, Fred J.; and Faletti, Paul A., 4,575,986, Cl. 53-118.000.
Allard, Kenneth L.: *See—*
Weiner, Harvey I.; and Allard, Kenneth L., 4,576,547, Cl. 415-116.000.
Allegheny Ludlum Steel Corporation: *See—*
Kedzior, Edward S., 4,576,300, Cl. 217-13.000.
Allen, Ioan R., to Dolby Laboratories Licensing Corporation. Apparatus for reproducing motion picture film photographic sound-tracks to correct reproduction errors and reduce noise. 4,577,302, Cl. 369-46.000.
Allen, Ioan R.; and Todd, Craig C., to Dolby Laboratories Licensing Corporation. Stereophonic motion picture photographic sound-tracks compatible with different sound projection formats and record and playback apparatus therefore. 4,577,305, Cl. 369-86.000.
Allen, Louis B., Jr.: *See—*
Meltz, Gerald; Allen, Louis B., Jr.; and Ferrar, Carl M., 4,577,100, Cl. 250-231.00P.
Allen, Michael, to Advanced Micro Devices, Inc. Output voltage driver with transient active pull-down. 4,577,125, Cl. 307-455.000.
Allen, Richard S.: *See—*
Huang, Wann-Sheng; Mims, Donald S.; and Allen, Richard S., 4,576,036, Cl. 73-29.000.
Allen, Spencer W.: *See—*
Jones, Donald H.; and Allen, Spencer W., 4,577,271, Cl. 364-174.000.
Allhands, Marcus N.: *See—*
Garber, Gary L.; and Allhands, Marcus N., 4,576,117, Cl. 119-52.00B.
Allied Corporation: *See—*
Bach, Lloyd G., 4,576,004, Cl. 60-547.100.
Bose, Debasis; Datta, Amitava; DeCristofaro, Nicholas J.; and Henschel, Claude, 4,576,873, Cl. 428-606.000.
Maurice, Walter F., 4,576,325, Cl. 228-135.000.
Ohta, Yukitake; and Fukunaga, Yasuo, 4,576,437, Cl. 350-96.200.
Ray, Ranjan, 4,576,653, Cl. 148-3.000.
Allis-Chalmers Corporation: *See—*
Wooldridge, James E.; Osborne, Robert E.; and Sexton, Robert W., 4,576,618, Cl. 55-122.000.
Allred, Von D.; and Harmon, Don B. Riser repair assembly for underground irrigation systems. 4,576,400, Cl. 285-5.000.
Alno-Mobelwerke GmbH & Co. KG: *See—*
Graf, Erhard, 4,576,355, Cl. 248-544.000.
Alpegiani, Marco; Bedeschi, Angelo; Foglio, Maurizio; Franceschi, Giovanni; and Perrone, Ettore, to Farmitalia Carlo Erba S.p.A. Process for the preparation of penem derivatives. 4,577,016, Cl. 544-182.000.
Alpern, Alan N.: *See—*
Lewis, Kenneth A.; and Alpern, Alan N., 4,577,333, Cl. 375-45.000.
Alps Electric Company, Ltd.: *See—*
Hibino, Ikuo; and Miyajima, Mikio, 4,577,198, Cl. 346-76.0PH.
Mishio, Hiroshi, 4,576,491, Cl. 400-124.000.
Ono, Yasuichi, 4,576,985, Cl. 524-407.000.
Shimaoka, Motohiro; and Saito, Yukio, 4,577,247, Cl. 360-97.000.
Sugawara, Fukuo; Iwane, Yasuhiko; Hori, Fumihisa; and Onozato, Takashi, 4,576,492, Cl. 400-146.000.
Also Laboratori S.A.S.: *See—*
Sorbini, Paolo, 4,576,932, Cl. 514-54.000.
Alsop, Brian H.; Popa, Frank D.; and Edwards, William E., to Westinghouse Electric Corp. Burnable absorber assembly. 4,576,787, Cl. 376-447.000.
Alsthom-Atlantique: *See—*
Combes, Gilles; and Delage, Germain, 4,576,512, Cl. 405-100.000.
Pham, Van Doan, 4,577,074, Cl. 200-148.00A.
Aluminum Company of America: *See—*
Booz, A. David; Barch, Daniel R.; Kuchera, Ray A.; and White, David D., Jr., 4,576,767, Cl. 264-12.000.
Fields, James R.; Rogers, Elmer H., Jr; and King, Larry K., 4,576,690, Cl. 204-67.000.
ALZA Corporation: *See—*
Guittard, George V.; Deters, Joseph C.; Theeuwes, Felix; and Cortese, Richard, 4,576,604, Cl. 604-890.000.
Amariti, Luigi; and Santos, Llandro C., to Imperial Metal & Chemical Company. Method for enhancing apparent photospeed of diazonium plates by using thiocyanate to insolubilize diazonium compound after photolysis. 4,576,899, Cl. 430-309.000.
Amato, James: *See—*
Kaplan, Alan; and Amato, James, 4,576,114, Cl. 118-720.000.
AMCA International Corporation: *See—*
Zanin, Michael A., 4,576,100, Cl. 105-49.000.
Amdahl Corporation: *See—*
Chiang, Ping-Wang, 4,576,900, Cl. 430-313.000.
American Cyanamid Company: *See—*
Hlavka, Joseph J.; Bitha, Panayota; and Lin, Yang-i, 4,577,018, Cl. 544-225.000.
Marsico, Joseph W., Jr.; Wright, William B., Jr.; and Press, Jeffery B., 4,576,957, Cl. 514-383.000.
Montgomery, John R.; Brumaghim, Milton W.; and Deniega, Jose C., 4,576,166, Cl. 128-325.000.
Tomcufcik, Andrew S.; Meyer, Walter E.; Dusza, John P.; and Tseng, Shin S., 4,576,943, Cl. 514-222.000.
American Television & Communications Corporation: *See—*
Skinner, Russell A., Sr.; and Ciciora, Walter S., 4,577,221, Cl. 358-86.000.
Ameyama, Minoru: *See—*
Adachi, Osao; and Ameyama, Minoru, 4,576,913, Cl. 435-26.000.
Amici, Francis R.; Berger, Hans S.; Farrington, Richard I.; and Piazza, Pietro, to Coleco Industries, Inc. Cord-climbing creature. 4,576,586, Cl. 446-315.000.
Ammann, Heinz, to Sulzer Brothers Limited. Heat exchanger. 4,576,120, Cl. 122-6.00A.
AMP Incorporated: *See—*
Joos, Manfred; and Maack, Werner, 4,575,932, Cl. 29-751.000.
Maack, Werner; Kampfmann, Georg; and Foerster, Peter, 4,576,032, Cl. 72-431.000.
Amrany, Daniel: *See—*
Eitan, Boaz; Kolodny, Avi; Amrany, Daniel; and McCreary, James, 4,577,295, Cl. 365-218.000.
Anahara, Meiji; and Omori, Hiroshi, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Pneumatic nozzle utilized in the process of producing a fasciated yarn. 4,575,999, Cl. 57-333.000.
Anami, Masahiko: *See—*
Oyachi, Tomio; Fukuda, Hiroya; and Anami, Masahiko, 4,576,859, Cl. 428-311.100.
Anatros Corporation: *See—*
Danby, Hal C., 4,576,592, Cl. 604-80.000.
Ancheta, Antonio D. Two-stroke internal combustion engine. 4,576,126, Cl. 123-41.380.
Andersen, Frieda, to Saint Margaret Hospital. Construction for alerting health-care professionals. 4,577,185, Cl. 340-573.000.
Anderson, Charles H.: *See—*
Liu, Richard T.; Nickerson, Winston R.; and Anderson, Charles H., 4,576,826, Cl. 426-289.000.
Anderson, David N., to FMC Corporation. Apparatus for producing frozen confections. 4,576,562, Cl. 425-126.00S.
Anderson, Marlow C., to Boeing Commercial Airplane Company. Flow forming of composite material. 4,576,776, Cl. 264-510.000.
Anderson, Wayne A.: *See—*
Ehrlich, Paul; Anderson, Wayne A.; Kang, En T.; and Bhatt, Ansuya P., 4,576,887, Cl. 430-71.000.
Andersson, Bengt, to Waco Jonserreds AB. Device in a machine tool for maintaining a workpiece displaced in its longitudinal direction, in engagement with the tool. 4,576,212, Cl. 144-243.000.
Andersson, Bjorn H.: *See—*
Grip, Carl E.; Hagstad, Bertil J.; and Andersson, Bjorn H., 4,575,912, Cl. 29-173.000.
Ando, Haruhisa: *See—*
Ohba, Shinya; Ando, Haruhisa; Nakai, Masaaki; Ozaki, Toshifumi; Seki, Koichi; Takahashi, Kenji; Akiyama, Toshiyuki; Takemoto, Iwao; Imaide, Takuya; Okuda, Akihide; and Kubo, Masaharu, 4,577,231, Cl. 358-212.000.
Anglo Blackwells Limited: *See—*
Thistlethwaite, Stuart R., 4,576,791, Cl. 420-552.000.
Anitole, George, to United States of America, Army. Method for developing natural camouflage patterns. 4,576,904, Cl. 430-347.000.
Anson, Fred C.: *See—*
Collins, Terrence J.; Anson, Fred C.; Gipson, Stephen L.; and Krafft, Terry E., 4,577,042, Cl. 564-158.000.
Antonucci, Joseph M.: *See—*
Davis, George T.; Chiang, Chawan-Kang; Antonucci, Joseph M.; and Takahashi, Toru, 4,576,882, Cl. 429-192.000.
Anzai, Masafumi: *See—*
Suganuma, Nobuo; Anzai, Masafumi; Takada, Nobuyuki; and Ichikawa, Hiromichi, 4,576,816, Cl. 424-50.000.
Aoki, Katsumichi; Shida, Takafumi; Kanda, Yoichi; Satake, Keigo; Shinkawa, Hiroyasu; and Yamazaki, Shiro, to Kureha Kagaku Kogyo Kabushiki Kaisha. Derivative of tetrahydrobenzothiazole and herbicidal composition containing the same as active ingredient. 4,577,029, Cl. 548-162.000.
Aoki, Keiichi: *See—*
Takimoto, Tadashi; Oishibashi, Hirotsugu; Ueyama, Katsuyoshi; Ohara, Muneyuki; Kobayashi, Akio; Aoki, Keiichi; Nakamura, Mitsuo; and Hagiwara, Kenzo, 4,576,324, Cl. 228-44.300.
Aono, Katsutoshi: *See—*
Totani, Tetsushi; and Aono, Katsutoshi, 4,577,038, Cl. 556-137.000.
Aoyama, Akimasa: *See—*
Tanaka, Yoshinari; Aoyama, Akimasa; Moritani, Takeshi; Satoh, Kenji; and Okaya, Takuji, 4,576,988, Cl. 524-503.000.
Aoyama, Susumu: *See—*
Sugiuchi, Toshiyasu; Aoyama, Susumu; and Yoshida, Toshio, 4,575,913, Cl. 29-432.000.
Applied Power Inc.: *See—*
Janecke, James P.; and Patel, Kishor J., 4,576,200, Cl. 137-624.130.
Arai, Ikuya; Murata, Toshinori; and Kazumi, Masafumi, to Hitachi, Ltd. Transversal filter incorporating MOS-transistor amplifiers. 4,577,228, Cl. 358-167.000.
Arai, Kazutaka; Ohara, Yoshio; Takakuwa, Yashio; and Iizumi, Toyoko, to Nissan Chemical Industries, Ltd. Method of preparing α-aromatic propionic acids and intermediates thereof. 4,577,025, Cl. 546-198.000.
Arai, Masatoshi; Futatsumori, Koji; Inoue, Takeo; and Sato, Shinichi, to Shin-Etsu Chemical Co., Ltd. Cyclic organopolysiloxane compound. 4,577,041, Cl. 556-446.000.
Arakawa Kagaku Kogyo Kabushiki Kaisha: *See—*
Kawatani, Kimio; Fujikawa, Takashi; and Watanabe, Eiji, 4,576,680, Cl. 162-158.000.
Arakawa, Tadao; Ueno, Takeshi; Tsunematsu, Hiroshi; Toyoda, Keiichi; and Hashimoto, Tsuguo, to Hitachi, Ltd.; and Hitachi Engineering Co., Ltd. Method and apparatus for controlling an operation of plant. 4,576,007, Cl. 60-660.000.

Araki, Hiroaki; and Kitamoto, Tatsuji, to Fuji Photo Film Co., Ltd. Process for producing ferromagnetic metal powder. 4,576,635, Cl. 75-0.5AA.
Aretz, Ulrich; and Buhren, Heinz, to W. Schlafhorst & Co. Device for depositing and keeping the thread end in the cop tube of a spinning cop passed on from a cop preparation station to transporting means. 4,576,340, Cl. 242-35.50A.
Arieh, Simon; and Courvoisier, Guy, to Lange International S.A. Ski boot. 4,575,958, Cl. 36-121.000.
Arito, Tatsunari: *See—*
Shiga, Koji; and Arito, Tatsunari, 4,576,469, Cl. 355-29.000.
Ariyoshi, Takashi: *See—*
Emura, Noriaki; Ariyoshi, Takashi; and Kato, Toshikazu, 4,577,004, Cl. 526-204.000.
Arkles, Barry C.; and Hamon, Burrell N., to Petrarch Systems Inc. Method of preparing hexamethylcyclotrisilazane. 4,577,039, Cl. 556-409.000.
Armida, Gennaro; Sacco, Decio; and Grilli, Walter, to Italtractor I.T.M. S.p.A. Assembly-procedure and relative hinge-assembly for use with lubricated-type crawler tracks. 4,575,914, Cl. 29-434.000.
Armiger, William B.: *See—*
MacBride, William R.; Magee, James A.; Armiger, William B.; and Zabriskie, Dane W., 4,577,110, Cl. 250-461.200.
Armines: *See—*
Broussaud, Daniel; Mustel, William; and Minjolle, Louis, 4,576,923, Cl. 501-98.000.
Armington, Alton F.; and Larkin, John J., to United States of America, Air Force. Quartz growth on X-seeds. 4,576,808, Cl. 423-335.000.
Armond, John W.; and Smith, Kenneth C., to BOC Group, Inc., The. Process and apparatus for separation of a gaseous mixture. 4,576,614, Cl. 55-18.000.
Arney, Donald B. Fire fighting bucket assembly for aircraft. 4,576,237, Cl. 169-53.000.
Arnold, Emil, to North American Philips Corporation. Method of manufacturing a high resistance layer having a low temperature coefficient of resistance and semiconductor device having such high resistance layer. 4,575,923, Cl. 29-576.00B.
Arnold, Jack T.: *See—*
Webb, Robert E.; Kreeft, Eugene H.; and Arnold, Jack T., 4,577,060, Cl. 179-2.0EC.
Aro Corporation, The: *See—*
Baltz, James P.; and Plouck, Richard E., 4,576,270, Cl. 192-150.000.
Art Kinzoku Kogyo Kabushiki Kaisha: *See—*
Donomoto, Tadashi; Koyama, Mototsugu; Fuwa, Yoshio; Miura, Nobuhiro; and Sakakibara, Tatsuo, 4,576,863, Cl. 428-325.000.
Artz, Gerd; Beckmann, Gerhard; Figge, Dieter; and Philipp, Clemens, to Fried. Krupp Gesellschaft mit beschrankter Haftung. Feeding device for introducing steel melt into twin-belt casters. 4,576,218, Cl. 164-431.000.
Asahi Glass Company Ltd.: *See—*
Miyazaki, Nobuyuki; Takayanagi, Takashi; and Higaki, Hiromichi, 4,576,977, Cl. 523-137.000.
Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Kuroda, Toru; and Yamawaki, Naokuni, 4,576,927, Cl. 502-402.000.
Tajima, Isao, 4,576,847, Cl. 428-67.000.
Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Itoh, Takayuki, 4,576,443, Cl. 350-427.000.
Asbill, Clarence M., III: *See—*
Lucas, William L.; Asbill, Clarence M., III; Frank, Gerald L.; and Miller, David M., 4,576,194, Cl. 137-84.000.
ASEA Aktiebolag: *See—*
Adolfsson, Morgan; Brogardh, Iorgny; and Ovren, Christer, 4,577,189, Cl. 340-794.000.
Bergman, Kjell; and Stenkvist, Sven-Einar, 4,577,326, Cl. 373-103.000.
Ashenfelter, Roger N., to Tecumseh Products Company. Oil dispersing device. 4,576,555, Cl. 417-372.000.
Ashimori Industry Co., Ltd.: *See—*
Morinaga, Akio; Sakaguchi, Yoichi; Hyodo, Masakatsu; and Yagi, Isaburo, 4,576,205, Cl. 138-98.000.
Ashland Oil, Inc.: *See—*
Miller, Charles B.; and Whitt, Roy E., 4,576,709, Cl. 208-57.000.
AT&T Bell Laboratories: *See—*
Bimonte, Brian R.; Gauldin, Mark A.; and Riley, Douglas H., 4,577,066, Cl. 179-18.00B.
Chrin, Christopher J., 4,577,287, Cl. 364-721.000.
Chu, Jean; Hinch, Mark G.; Johnson, James M., Jr.; Kafka, Henry J.; and Stelte, David J., 4,577,314, Cl. 370-94.000.
Copeland, John A., 4,577,207, Cl. 357-17.000.
Dunlop, Alfred E.; and Kernighan, Brian W., 4,577,276, Cl. 364-491.000.
Forrest, Stephen R.; and Panock, Richard L., 4,577,209, Cl. 357-30.000.
Frey, Alan E.; and Kerr, Howard A., 4,577,065, Cl. 179-18.0BC.
Ho, Gary S.; and Peterson, Ralph W., 4,577,274, Cl. 364-200.000.
Kavehrad, Mohsen, 4,577,330, Cl. 375-15.000.
Kim, Suk K.; and Viswanathan, Thayamkulangara R., 4,577,119, Cl. 307-297.000.
Kohl, Paul A.; Smith, Lawrence E.; and Trop, Harvey S., 4,576,691, Cl. 204-129.300.
Larson, Mikiel L.; and Toy, Wing N., 4,577,308, Cl. 370-9.000.
Law, Hung-Fai S., 4,577,190, Cl. 340-825.830.
Logan, Ralph A.; and Tsang, Won-Tien, 4,575,919, Cl. 29-569.00L.
Meeker, Thrygve R.; and Tsay, Wei-Shin, 4,577,169, Cl. 333-194.000.
Nash, Peter D., 4,577,312, Cl. 370-84.000.
Schaper, Leonard W., 4,577,214, Cl. 357-74.000.
AT&T Information Systems Inc.: *See—*
Kelly, Thomas J.; and Tyler, Daniel W., 4,577,068, Cl. 179-100.00R.
Atkinson, Lowell G.: *See—*
Winston, Walter E.; and Atkinson, Lowell G., 4,576,553, Cl. 417-9.000.
Atlantic Richfield Company: *See—*
Brasher, John K., 4,576,107, Cl. 116-227.000.
Atwater, Harry A.: *See—*
Smith, Henry I.; Atwater, Harry A.; and Geis, Michael W., 4,576,676, Cl. 156-603.000.
Audemars, Daniel: *See—*
Muller, Niklaus; and Audemars, Daniel, 4,576,526, Cl. 406-75.000.
Auerbach, Steven L.; and Conklin, Sharon J., to Conklin, Sharon J. Helmet liner for containing water. 4,575,871, Cl. 2-6.000.
Auracher, Walter. Orthopaedic support for the head and neck. 4,576,150, Cl. 128-75.000.
Automated Packaging Systems, Inc.: *See—*
Lerner, Hershey, 4,575,901, Cl. 17-11.000.
Automatic Mechanical System Engineering Co.: *See—*
Matsumoto, Masato, 4,576,243, Cl. 177-119.000.
Automatix Incorporated: *See—*
Warren, Theodore L.; Whelan, Kenneth R.; and Reinbold, Arnold G., 4,577,344, Cl. 382-1.000.
Automobiles Citroen: *See—*
Barthelemy, Andre , 4,576,056, Cl. 74-388.0PS.
Automobiles Peugeot: *See—*
Barthelemy, Andre , 4,576,056, Cl. 74-388.0PS.
Avins, Jack, to RCA Corporation. Noise reduction for FM stereophonic systems and particularly useful in television audio systems. 4,577,226, Cl. 358-143.000.
AVL Gesellschaft fur Verbrennungskraftmaschinen und Messtechnik: *See—*
Krempl, Peter W.; and Schindler, Wolfgang, 4,577,105, Cl. 250-343.000.
Axelsson, Robert: *See—*
Svensson, Jan A.; and Axelsson, Robert, 4,576,199, Cl. 137-614.040.
Azerbaidzhansky Institut Nefti I Khimii Imeni Azizbekova: *See—*
Alkhazov, Tofik G. O.; Korotaev, Jury P.; and Vartanov, Albert A., 4,576,925, Cl. 502-307.000.
Azibert, Henri V., to A. W. Chesterton Company. Split mechanical face seal. 4,576,384, Cl. 277-81.00S.
Azuma, Hidekazu: *See—*
Miura, Hirohisa; Satou, Hiroshi; Katagiri, Hidenori; Natsume, Toshio; and Azuma, Hidekazu, 4,576,725, Cl. 252-62.510.
Azzola, Roberto; and Carrera, Luciano, to S.A.I.A.G. S.p.A. Method and apparatus for extruding weather strip for motor-vehicles. 4,576,773, Cl. 264-167.000.
Baba, Misao: *See—*
Ogawa, Yoshiyuki; Uno, Hideaki; and Baba, Misao, 4,576,368, Cl. 269-322.000.
Babcock & Wilcox Company, The: *See—*
Keyes, Marion A., IV; Lui, Peter K.; and Malcolm, Jack W., deceased, 4,577,097, Cl. 250-211.00K.
Bach, Lloyd G., to Allied Corporation. Braking device with oppositely movable diaphragms. 4,576,004, Cl. 60-547.100.
Backus, George S. Golf pronation training device. 4,576,378, Cl. 273-186.00A.
Badesha, Santokh S.; Pai, Damodar M.; Carmichael, Kathleen M.; and Tarnawskyj, Ihor W., to Xerox Corporation. Process for the preparation of chalcogenide alloys. 4,576,634, Cl. 75-0.50A.
Badger B.V.: *See—*
Cohen, Lester R., 4,576,683, Cl. 203-15.000.
Baffes, Thomas G.: *See—*
Levy, Aaron I., 4,576,155, Cl. 128-132.00R.
Bailey, Donald H., to Suburban Tool, Inc. Gage block management system. 4,577,285, Cl. 364-560.000.
Baker Oil Tools, Inc.: *See—*
Ross, Richard J.; and Speller, David J., 4,576,196, Cl. 137-508.000.
Stout, Gregg W.; Nelson, John A.; and Crisp, John H., 4,576,236, Cl. 166-386.000.
Bakulin, Valentin P.: *See—*
Gubiev, Jury K.; Krasnikov, Valery V.; Bakulin, Valentin P.; Gagarin, Mikhail A.; Ivanov, Vladimir V.; and Kishkovsky, Zbignev N., 4,576,824, Cl. 426-241.000.
Baldwin, Robert M.: *See—*
Oko, Uriel M.; and Baldwin, Robert M., 4,576,708, Cl. 208-11.0LE.
Ballard, Michael J. Ring seal with overlapping flanges for contaminant trapping. 4,576,383, Cl. 277-53.000.
Ballew, James D.; and Rogers, Phil H., to E-Systems, Inc. Fault tolerant and load sharing processing system. 4,577,272, Cl. 364-200.000.
Balogh, John M.; and Terzian, Rouben T., to Marvin Glass & Associates. Toy figures with vacuum changeable features. 4,576,585, Cl. 446-199.000.
Baltz, James P.; and Plouck, Richard E., to Aro Corporation, The. Torque control and fluid shutoff mechanism for a fluid operated tool. 4,576,270, Cl. 192-150.000.
Balzer, Norbert R., to Park-Ohio Industries, Inc. Heating nonmagnetic metal workpieces. 4,577,081, Cl. 219-10.690.
Bancroft, Joseph C. Extruded metal corner construction. 4,576,502, Cl. 403-231.000.
Bangor Punta Corporation: *See—*
Mikuta, Richard; and Curran, Roger, 4,575,961, Cl. 42-1.00S.
Barazeche, Bahman; Alexis, Roger P. J.; and Guidoux, Loic B. Y., to 501 Telecommunications Radioelectriques et Telephoniques T.R.T.

Method and apparatus for measuring distant echo delay in an echo cancelling arrangement. 4,577,309, Cl. 370-32.000.

Barber-Colman Company: *See—*
Haug, Edward W., 4,576,527, Cl. 407-28.000.

Barch, Daniel R.: *See—*
Booz, A. David; Barch, Daniel R.; Kuchera, Ray A.; and White, David D., Jr., 4,576,767, Cl. 264-12.000.

Baribeau, Jean J.: *See—*
Lam, Wim J.; Devries, Luitzen; McKinnon, Gordon M.; and Baribeau, Jean J., 4,576,577, Cl. 434-58.000.

Baril, Earl F.: *See—*
McCaffrey, Ronald; Wright, George; and Baril, Earl F., 4,576,948, Cl. 514-274.000.

Bark, Manfred: *See—*
Roseland, Hermann; and Bark, Manfred, 4,575,889, Cl. 12-15.000.

Baron, Winfried; Marquard, Kurt; Merrem, Hans-Joachim; Sindlinger, Raimund; and Thiel, Klaus-Peter, to Merck Patent Gesellschaft mit beschrankter Haftung. Developer for positive photoresists. 4,576,903, Cl. 430-331.000.

Barr, Millard G.; Barrett, William H.; Braidt, Joseph W.; Driscoll, John F.; Gregory, Joseph A.; Lucente, Samuel A.; and Remsburger, Louis J., to International Business Machines Corporation. Display workstation. 4,577,187, Cl. 340-700.000.

Barr-Scarlett Trust: *See—*
Barr, William A., 4,576,261, Cl. 192-4.00A.

Barr-Truitt Trust: *See—*
Barr, William A. (William A. Barr, trustee, part interest to each assors. to), 4,576,261, Cl. 192-4.00A.

Barr, William A., to William A. Barr Memorial Trust; Barr-Scarlett Trust; and Barr-Truitt Trust, by William A. Barr, trustee, part interest to each. Safety parking brake for automatic transmissions. 4,576,261, Cl. 192-4.00A.

Barradas, George. Heatable roller for curling hair. 4,576,188, Cl. 132-39.000.

Barrett, William H.: *See—*
Barr, Millard G.; Barrett, William H.; Braidt, Joseph W.; Driscoll, John F.; Gregory, Joseph A.; Lucente, Samuel A.; and Remsburger, Louis J., 4,577,187, Cl. 340-700.000.

Barth, Gerald D.; and Wagner, David P., to Illinois Tool Works Inc. Thread form for soft material. 4,576,534, Cl. 411-412.000.

Barthelemy, Andre , to Automobiles Citroen; and Automobiles Peugeot. Rotary assistance mechanism, particularly for vehicle steering. 4,576,056, Cl. 74-388.0PS.

Barton, Roger W.; Coufal, Hans J.; Jipson, Victor B.; and Lee, Wen Y., to International Business Machines Corporation. Optical recording by energy-induced fractionation and homogenization. 4,576,895, Cl. 430-270.000.

Barzynski, Helmut: *See—*
Saenger, Dietrich; and Barzynski, Helmut, 4,576,902, Cl. 430-326.000.

BASF Aktiengesellschaft: *See—*
Eisenlauer, Josef; Horn, Dieter; and Neuwirth, Manfred, 4,576,723, Cl. 210-709.000.
Grosskinsky, Otto-Alfred; Frommer, Elmar; Ritz, Josef; Thomas, Erwin; and Weiss, Franz-Josef, 4,576,804, Cl. 423-265.000.
Hoffmann, Gerhard; Kleuser, Dieter; and Lenz, Werner, 4,576,898, Cl. 430-306.000.
Parg, Adolf; Hamprecht, Gerhard; Sauter, Hubert; and Wuerzer, Bruno, 4,576,630, Cl. 71-92.000.
Ruehenbeck, Wolfgang, 4,576,573, Cl. 432-15.000.
Schupp, Eberhard; Loch, Werner; Osterloh, Rolf; and Ahlers, Klaas, 4,576,979, Cl. 523-404.000.
Schwarz, Gerd-Ulrich; and Adolphi, Heinrich, 4,576,935, Cl. 514-113.000.

BASF Farben & Fasern Aktiengesellschaft: *See—*
Poth, Ulrich; and Hille, Hans-Dieter, 4,576,868, Cl. 428-423.100.

Baskerville, Martin W.; Maltman, William R.; and Oliver, Stephen N., to Plessey Company PLC, The. Photochromic compounds and their use in photoreactive lenses. 4,576,766, Cl. 264-1.400.

Bate, Robert T.: *See—*
Reed, Mark A.; and Bate, Robert T., 4,575,924, Cl. 29-576.00E.

Bates, John F.; Brager, Howard R.; and Korenko, Michael K., to United States of America, Energy. Austenitic alloy and reactor components made thereof. 4,576,641, Cl. 75-128.00P.

Bauer, Kurt H.; Ghyczy, Miklos; Etschenberg, Eugen; and Osthoff, Heinrich, to A. Nattermann & Cie GmbH. Foliage fertilizers. 4,576,626, Cl. 71-28.000.

Bauhahn, Paul E., to Honeywell Inc. Internally matched Schottky barrier beam lead diode. 4,577,213, Cl. 357-69.000.

Baum, Fredrick W., Jr. Right angle measuring apparatus. 4,575,943, Cl. 33-138.000.

Baumgartner, Ehrenfried; Besecke, Siegmund; and Gaenzler, Wolfgang, to Rohm GmbH. Flame-retarded polyacrylamide or polymethacrylimide synthetic resin foam. 4,576,971, Cl. 521-108.000.

Baxter Travenol Laboratories, Inc.: *See—*
Combs, Cathy M.; Duffy, Joseph K.; and Tiboene, Mark, 4,576,017, Cl. 62-372.000.

Bayer Aktiengesellschaft: *See—*
Buding, Hartmuth; Konigshofen, Heinrich; Szentivanyi, Zsolt; and Thormer, Joachim, 4,576,992, Cl. 525-211.000.
Ganster, Otto; Knipp, Ulrich; and Luckas, Bruno, 4,576,970, Cl. 521-51.000.
Jager, Horst; Harms, Wolfgang; and Herd, Karl J., 4,577,015, Cl. 544-76.000.
Noll, Klaus; Potter, Terry; Pedain, Josef; and Schwindt, Jurgen, 4,576,989, Cl. 524-591.000.
Reischl, Artur; and Mack, Kurt, 4,576,718, Cl. 210-616.000.
Scholl, Hans-Joachim; Reiff, Helmut; and Sachs, Hanns I., 4,576,771, Cl. 264-109.000.

Bayer, Helmut, to Electrovac Gesellschaft m.b.H. Temperature regulating device. 4,577,176, Cl. 337-394.000.

Bayer, Jurgen: *See—*
Humpolik, Bohumil; Kluna, Vlastimil; Winterer, Wilfried; Kuchelmeister, Reinhold; and Bayer, Jurgen, 4,576,223, Cl. 165-79.000.

Bazuin, Johannes, to Le Bland Makino Machine Tool Co. Turret lathe having probe and protective cover. 4,576,069, Cl. 82-2.00R.

BBC Brown, Boveri & Company, Limited: *See—*
Blahous, Leopold; and Koppl, Georg, 4,577,253, Cl. 361-62.000.

BBL Industries, Inc.: *See—*
Webb, Robert E.; Kreeft, Eugene H.; and Arnold, Jack T., 4,577,060, Cl. 179-2.0EC.

Beair, Charles E.: *See—*
Mundt, Arnold L.; Beair, Charles E.; Naumann, Leo J.; Roberts, Alan T.; and LaPelle, Ronald J., 4,576,303, Cl. 220-89.00A.

Beard, James W.: *See—*
Gaylor, Lawrence A.; and Beard, James W., 4,576,722, Cl. 210-699.000.

Beaty, John E., Sr. Security gate. 4,576,509, Cl. 404-6.000.

Bechem, Werner; Peters, Hubertus; Solms, Jurgen; and Wolfhard, Dietrich, to Hoesch Aktiengesellschaft. Method for the continuous electrolytic deposition of metals. 4,576,684, Cl. 204-28.000.

Beck, Martin H.; and Krishnakumar, Suppayan M., to Continental Group, Inc., The. Blow molded containers and method of forming the same. 4,576,843, Cl. 428-35.000.

Beck, Martin H.: *See—*
Clark, Richard E.; Tacito, Louis D.; Miller, Bryan H.; and Beck, Martin H., 4,575,915, Cl. 29-509.000.

Beckmann, Gerhard: *See—*
Artz, Gerd; Beckmann, Gerhard; Figge, Dieter; and Philipp, Clemens, 4,576,218, Cl. 164-431.000.

Bedeschi, Angelo: *See—*
Alpegiani, Marco; Bedeschi, Angelo; Foglio, Maurizio; Franceschi, Giovanni; and Perrone, Ettore, 4,577,016, Cl. 544-182.000.

Beecham Group p.l.c.: *See—*
Hurst, Jim; and May, Josephine B., 4,576,952, Cl. 514-303.000.

Beery, Jack; Donahue, Frederick A.; and Shaul, Ronald E., to Xerox Corporation. Multiple copy and transparency detector with illumination control. 4,577,096, Cl. 250-205.000.

Belanger, Inc.: *See—*
Belanger, James A.; Wentworth, Robert; and Lapham, James M., 4,576,098, Cl. 104-172.00B.

Belanger, James A.; Wentworth, Robert; and Lapham, James M., to Belanger, Inc. Automobile conveyor. 4,576,098, Cl. 104-172.00B.

Beleckis, Vytautas K., to Dennison National Company. Easel type ring binder construction. 4,576,497, Cl. 402-73.000.

Belin, Felix: *See—*
Adams, James; and Belin, Felix, 4,576,570, Cl. 431-12.000.

Belko, Robert P.: *See—*
Sprecker, Mark A.; Belko, Robert P.; Schreiber, William L.; and Licciardello, Michael, 4,576,741, Cl. 252-522.00R.
Sprecker, Mark A.; Hanna, Marie R.; Tokarzewski, Richard J.; Belko, Robert P.; Watkins, Hugh; and Vock, Manfred H., 4,576,742, Cl. 252-522.00R.

Bell Communications Research, Inc.: *See—*
Drewes, John H.; and Gemra, Richard J., 4,575,904, Cl. 24-115.00K.

Bell & Howell Company: *See—*
Parker, Robert R.; and DiGianfilippo, Dominic J., 4,576,578, Cl. 434-307.000.

Belz, Gerard, to Commissariat a l'Energie Atomique. Releasable anti-ejection device for the control rods of a nuclear reactor. 4,576,780, Cl. 376-235.000.

Bendel, Wolfgang: *See—*
Markert, Helmut; Rogler, Wolfgang; Bendel, Wolfgang; and Alber, Friedrich, 4,576,768, Cl. 264-27.000.

Bender, Steven L.: *See—*
Fletcher, George L., Jr.; Bender, Steven L.; and Wadsworth, Donald H., 4,577,024, Cl. 546-183.000.

Benjamin, James A.: *See—*
Schutten, Herman P.; Benjamin, James A.; and Lade, Robert W., 4,577,052, Cl. 136-246.000.
Schutten, Herman P.; Lade, Robert W.; and Benjamin, James A., 4,577,208, Cl. 357-23.400.

Bennett Pump Company: *See—*
Swick, George E., Jr., 4,576,312, Cl. 222-27.000.

Benson, Alan M.; Mawer, John D.; and Ruzicka, Alan V., to W. S. Shamban & Company. Anti-extrusion back-up ring assembly. 4,576,386, Cl. 277-165.000.

Bentall, Richard H. C. Switched electrical apparatus for medical use. 4,576,172, Cl. 128-422.000.

Bentele, Benedikt; and Heerlein, Manfred, to Siemens Aktiengesellschaft. System for the continuous lubrication of a rolling bearing. 4,576,489, Cl. 384-469.000.

Bentley Engineering Company Limited: *See—*
Keel, Frederick; Townsend, Keith G.; and Carter, Marshall C., 4,576,019, Cl. 66-147.000.

Benton, Kenneth C.; and O'Kane, James L., to Standard Oil Company, The. Process for the production of acrylonitrile-propylene copolymers. 4,577,008, Cl. 526-342.000.

Benuzzi, Gino, to Giben Impianti S.p.A. Machine for stacking automatically packs of panels of different sizes on respective lifting platforms. 4,576,536, Cl. 414-51.000.

Berger, Hans S.: *See—*
Amici, Francis R.; Berger, Hans S.; Farrington, Richard I.; and Piazza, Pietro, 4,576,586, Cl. 446-315.000.

Bergische Achsenfabrik Fr. Kotz & Sohne: *See—*
Steiner, Helmut; Ebbinghaus, Wilfried; and Paech, Hartmut, 4,576,488, Cl. 384-291.000.

Bergman, Kjell; and Stenkvist, Sven-Einar, to ASEA Aktiebolag. DC Arc furnace hearth connection. 4,577,326, Cl. 373-103.000.

Bernardi, Dario; and Pettinari, Maurizio. Device for spreading layers of dough of circular shape from dough masses of near spherical shape. 4,576,564, Cl. 425-337.000.

Bernecker, Gerhard, to Passat Maschinenbau GmbH. Press for pressing batches of articles dry. 4,575,949, Cl. 34-14.000.

Bernstein, Kerry, to International Business Machines Corporation. Support circuitry for multi-port systems. 4,577,292, Cl. 365-189.000.

Bertram, Leo, to U.S. Philips Corporation. Electric motor having two co-planar stator sections. 4,577,129, Cl. 310-112.000.

Besecke, Siegmund: *See—*
Baumgartner, Ehrenfried; Besecke, Siegmund; and Gaenzler, Wolfgang, 4,576,971, Cl. 521-108.000.
Liebler, Ralf; Besecke, Siegmund; and Munzer, Manfred, 4,576,870, Cl. 428-515.000.

Beyersbergen van Henegouwen, Cornelis M.: *See—*
Koken, Karel G. M.; van de Kerkhof, Hubertus F. W.; Olierook, John C. J.; and Beyersbergen van Henegouwen, Cornelis M., 4,576,345, Cl. 242-198.000.

Bhagat, Jayant K., to General Motors Corporation. Silicon nitride formation and use in self-aligned semiconductor device manufacturing method. 4,575,921, Cl. 29-571.000.

Bhatt, Ansuya P.: *See—*
Ehrlich, Paul; Anderson, Wayne A.; Kang, En T.; and Bhatt, Ansuya P., 4,576,887, Cl. 430-71.000.

Bickerstaff, David J., to Ferro Manufacturing Corporation. Flush glass window regulator. 4,575,967, Cl. 49-211.000.

Bimonte, Brian R.; Gauldin, Mark A.; and Riley, Douglas H., to AT&T Bell Laboratories. Telephone interexchange call routing. 4,577,066, Cl. 179-18.00B.

Bingham, George H.; Krupotich, Edward A.; and Rosensweig, Burton J., to Omation Corporation. Apparatus and method for checking the contents of envelopes and sorting documents by thickness. 4,576,287, Cl. 209-601.000.

Binkerd, Evan F.: *See—*
Tracy, Catherine O.; Binkerd, Evan F.; Rendek, Robert B.; and Wrobel, Raymond J., 4,576,825, Cl. 426-266.000.

Binkert, Gerald A. Collapsible house for cats. 4,576,116, Cl. 119-19.000.

Binoeder, Peter P.: *See—*
Whitacre, James B.; and Binoeder, Peter P., 4,577,318, Cl. 371-1.000.

BioChem Sensors, Inc.: *See—*
MacBride, William R.; Magee, James A.; Armiger, William B.; and Zabriskie, Dane W., 4,577,110, Cl. 250-461.200.

Birnbaum, David: *See—*
Crean, Peter A.; Birnbaum, David; Feldman, David B.; Liptak, Frank J.; and Sewhuk, David W., 4,577,197, Cl. 346-75.000.

Bishop, John R.: *See—*
Morland, Robert B.; Cooke, Anson R.; and Bishop, John R., 4,576,629, Cl. 71-90.000.

Bitha, Panayota: *See—*
Hlavka, Joseph J.; Bitha, Panayota; and Lin, Yang-i, 4,577,018, Cl. 544-225.000.

Biziere, Kathleen: *See—*
Wermuth, Camille G.; Biziere, Kathleen; and Davi, Horace, 4,576,946, Cl. 514-247.000.

Black & Decker Inc.: *See—*
Verdier, Alain; and Charton, Gilbert, 4,576,880, Cl. 429-99.000.
Winston, Walter E.; and Atkinson, Lowell G., 4,576,553, Cl. 417-9.000.

Blahous, Leopold; and Koppl, Georg, to BBC Brown, Boveri & Company, Limited. Method for limiting the fault-generated currents of circuit breakers in a high-voltage switching system and application of the method. 4,577,253, Cl. 361-62.000.

Blaising, Horst: *See—*
Goffredo, Daniel L.; Meyer, Walter J.; and Blaising, Horst, 4,576,685, Cl. 204-30.000.

Blaschke, Hans P.; Knappik, Winfried; Mette, Horst; and Scholler, Peter, to Messerschmitt-Bolkow-Blohm GmbH. Acoustic direction finder. 4,577,299, Cl. 367-120.000.

Blaskis, Edward A.: *See—*
Carlson, Roland W.; and Blaskis, Edward A., 4,577,340, Cl. 378-132.000.

Blaushild, Ronald M., to Westinghouse Electric Corp. Straddle-type support structure for nuclear power plant pressurizer valves. 4,576,788, Cl. 376-461.000.

Bleeke, William F., to CTS Corporation. Method for making a precision linear potentiometer sensor. 4,575,929, Cl. 29-620.000.

Blesser, Barry, to Pencept, Inc. Digitizing tablet system having stylus tilt correction. 4,577,057, Cl. 178-18.000.

Blessing, William R., Sr. Panel overhead support apparatus. 4,576,354, Cl. 248-354.500.

Blickenderfer, Jack L., to Westinghouse Electric Corp. Nuclear reactor fuel assembly peripheral rod lifting device. 4,575,930, Cl. 29-723.000.

Bliss, Robert J. Skin marker for use in biopsy excisions. 4,576,163, Cl. 128-305.000.

Block Drug Co., Inc.: *See—*
Ravel, Kanak K. R.; Vaidya, Bhupendra R.; and Nerizon, Nelly A., 4,576,645, Cl. 106-125.000.

Board of Regents, University of Texas System: *See—*
Zuccaro, Don R., 4,576,348, Cl. 244-173.000.

BOC Group, Inc., The: *See—*
Armond, John W.; and Smith, Kenneth C., 4,576,614, Cl. 55-18.000.

Bochumer Eisenhuette Heintzmann GmbH & Co. KG: *See—*
Heintzmann, Peter; Koppers, Manfred; Bohnes, Karlheinz; and Hecken, Gerhard, 4,576,524, Cl. 405-260.000.

Boden, Richard M.: *See—*
Fujioka, Futoshi; Boden, Richard M.; and Schreiber, William L., 4,576,739, Cl. 252-522.00R.

Bodenan, Rene; and Teculescu, Nicholas, to M.E.G., S.A. Hot air dryer structure. 4,575,952, Cl. 34-54.000.

Bodenseewerk Geratetechnic GmbH: *See—*
Gauggel, Roland; and Eckhardt, Reiner, 4,576,346, Cl. 244-3.160.

Boehringer Mannheim GmbH: *See—*
Adachi, Osao; and Ameyama, Minoru, 4,576,913, Cl. 435-26.000.

Boeing Commercial Airplane Company: *See—*
Anderson, Marlow C., 4,576,776, Cl. 264-510.000.

Boeing Company, The: *See—*
Jones, Everett E., 4,576,575, Cl. 432-253.000.
Korsch, Dietrich G., 4,576,447, Cl. 350-444.000.
Opsahl, Allan W., 4,576,347, Cl. 244-130.000.
Pinson, George T., 4,577,116, Cl. 290-43.000.

Boer, Jan; and Diepstraten, Wilhelmus J. M., to NCR Corporation. Digital data receiver including timing adjustment circuit. 4,577,334, Cl. 375-97.000.

Bohnes, Karlheinz: *See—*
Heintzmann, Peter; Koppers, Manfred; Bohnes, Karlheinz; and Hecken, Gerhard, 4,576,524, Cl. 405-260.000.

Boik, Elmer J., to Continental White Cap, Inc. Tamper indicating fitment. 4,576,298, Cl. 215-252.000.

Bok, Edward. Apparatus for applying a coating on a substrate. 4,576,109, Cl. 118-50.000.

Boland, Michel A. G., to Region Wallone. Method for determining the stability of an orthopedic device composed of an external fixation bar during setting of bone fractures. 4,576,158, Cl. 128-92.00R.

Boldyrev, Vladimir V.: *See—*
Makkaev, Almaxud M.; Lomovsky, Oleg I.; Mikhailov, Jury I.; and Boldyrev, Vladimir V., 4,576,689, Cl. 204-20.000.

Boltrek, Henry; and Coakley, Peter J., Jr, to Westinghouse Electric Corp. Escalator. 4,576,276, Cl. 198-332.000.

Bommarito, Paul F. Ophthalmic guide for multi-focal spectacles. 4,575,946, Cl. 33-200.000.

Bond, James. Portable bag filling stand. 4,576,350, Cl. 248-97.000.

Boni, Fabio. Wheel balancing apparatus. 4,576,044, Cl. 73-462.000.

Boomer, John L.: *See—*
Burgher, Peter H.; and Boomer, John L., 4,577,085, Cl. 219-116.000.

Booz, A. David; Barch, Daniel R.; Kuchera, Ray A.; and White, David D., Jr., to Aluminum Company of America. Method for controlling powder production. 4,576,767, Cl. 264-12.000.

Bopp, Warren G., to Eaton Corporation. Torsion damping mechanism with variable damping. 4,576,259, Cl. 192-3.210.

Borg, John L. Reversible Magnus propeller. 4,576,581, Cl. 440-86.000.

Bornslaeger, S. Richard: *See—*
Jackson, David M.; Matthews, Billie J.; and Bornslaeger, S. Richard, 4,576,596, Cl. 604-370.000.

Borowsky, Richard. Light-occluding contact lens. 4,576,453, Cl. 351-162.000.

Borsig GmbH: *See—*
Nassauer, Konrad, 4,576,225, Cl. 165-101.000.

Borsoi, Bruno, to NORDICA S.p.A. Shoe, in particular a ski shoe, incorporating a flex and side and forward lean adjustment device. 4,575,955, Cl. 36-117.000.

Bory, William H., to Chesapeake Corporation. Order change method and apparatus for corrugator machine. 4,576,663, Cl. 156-64.000.

Bose Corporation: *See—*
Keezer, William J., 4,577,069, Cl. 179-119.00R.

Bose, Debasis; Datta, Amitava; DeCristofaro, Nicholas J.; and Henschel, Claude, to Allied Corporation. Homogeneous, ductile iron based hardfacing foils. 4,576,873, Cl. 428-606.000.

Bottazzini, Nicola; and Quaglino, Marino, to Montedison S.p.A. Process for the purification of polyphenylene ethers. 4,577,010, Cl. 528-487.000.

Bourzat, Jean-Dominique; Cotrel, Claude; Farge, Daniel; Paris, Jean-Marc; and Taurand, Gerard, to Phone-Poulenc Sante. Anti-rheumatic 5-(substituted amino)-1,2-dithiol-3-one compounds and their use. 4,576,954, Cl. 514-314.000.

Boyer, Kent R.; and Cobb, Clyde E., to HR Textron Inc. Pressure-operated eccentric shaft coupling. 4,576,203, Cl. 137-625.630.

Bracker AG: *See—*
Neff, Andreas, 4,575,933, Cl. 29-765.000.

Bradley, Lindell P.: *See—*
Bradley, Robert F.; and Bradley, Lindell P., 4,576,170, Cl. 128-419.00D.

Bradley, Robert F.; and Bradley, Lindell P., to Micro-Circuits Company. Heart monitor and defibrillator device. 4,576,170, Cl. 128-419.00D.

Brager, Howard R.: *See—*
Bates, John F.; Brager, Howard R.; and Korenko, Michael K., 4,576,641, Cl. 75-128.00P.

Braginski, Aleksander I.; and Male, Alan T., to Westinghouse Electric Corp. Submicron-particle ductile superconductor. 4,575,927, Cl. 29-599.000.

Braidt, Joseph W.: *See—*
Barr, Millard G.; Barrett, William H.; Braidt, Joseph W.; Driscoll, John F.; Gregory, Joseph A.; Lucente, Samuel A.; and Remsburger, Louis J., 4,577,187, Cl. 340-700.000.

Brain, Lucille M. Diaper magic, open plastic pants to hold cloth diapers or disposable liner. 4,576,601, Cl. 604-398.000.

Branco, Bernard; and Malandain, Michel, to Seppic. Film-forming compositions for enveloping solid forms, particularly pharmaceutical or food products or seeds, and products obtained, coated with said compositions. 4,576,646, Cl. 106-163.100.

Brandenstein, Manfred; Walter, Lothar; Haas, Roland; and Dobhan, Herbert, to SKF Kugellagerfabriken GmbH. Sliding sleeve for clutch shifters. 4,576,268, Cl. 192-98.000.

Brandl, Rudolf; and Danner, Helmut, to Heckler & Koxh GmbH. Small arm having a barrell with a transverse bore and a detachable silencer. 4,576,084, Cl. 89-14.400.

Brandt, Francois. Hydropneumatic energy-recuperating recoil brake for artillery pieces and firearms. 4,576,086, Cl. 89-43.010.

Brasell, James M.; and Nichols, Ernest, Jr. Device for lifting removable automobile tops. 4,576,542, Cl. 414-626.000.

Brasher, John K., to Atlantic Richfield Company. Apparatus for detecting the level of particulate solids in a shuttle car. 4,576,107, Cl. 116-227.000.

Braunsperger, Karl: *See—*
Kaufmann, Rudolf; Braunsperger, Karl; Wegehaupt, Karl-Heinrich; and von Au, Gunter, 4,577,040, Cl. 556-462.000.

Breidegam, Albert C., to Semtronics Corporation. Woven stretchable grounding strap. 4,577,256, Cl. 361-220.000.

Brekle, Erich: *See—*
Klingel, Hans; and Brekle, Erich, 4,575,969, Cl. 51-131.100.

Bremer, Joannes G.; and Compaan, Klaas, to U.S. Philips Corporation. Shaft encoder with an optical system comprising two straight-line-generatrix surfaces. 4,577,101, Cl. 250-231.0SE.

Brenig, Theodore, to General Electric Company. Digital decoding arrangement. 4,577,332, Cl. 375-40.000.

Bresser, Robert E.; Mesch, Keith A.; and Wursthorn, Karl R., to Morton Thiokol, Inc. Stabilizer compositions for PVC resins. 4,576,984, Cl. 524-182.000.

Bridgestone Corporation: *See—*
Harada, Jumei; Yamamoto, Keiji; and Yokoi, Takashi, 4,576,563, Cl. 425-194.000.
Oyachi, Tomio; Fukuda, Hiroya; and Anami, Masahiko, 4,576,859, Cl. 428-311.100.

Bridgestone Tire Co. Ltd.: *See—*
Yoda, Yasutada; Sueyasu, Seisuke; Orikawa, Michihiro; and Futamura, Shoji, 4,576,559, Cl. 425-28.00R.

Brie, Richard; and Guidoux, Loic B. Y., to Telecommunications Radioelectriques et Telephoniques T.R.T. Self-adaptive equalizer for baseband data signals. 4,577,329, Cl. 375-14.000.

Brink, T. A. Portable stroke victims arm rest. 4,576,351, Cl. 248-118.000.

Britax Vega Limited: *See—*
Tysoe, Nicholas W., 4,577,260, Cl. 362-61.000.

British Nuclear Fuels Limited: *See—*
McWilliam, Donald S.; and Minshall, David, 4,576,779, Cl. 376-203.000.

British Petroleum Company P.L.C., The: *See—*
Nay, Barry; and Stewart, David G., 4,576,968, Cl. 518-713.000.

British Telecommunications: *See—*
Johnston, Robert D.; and Forse, Nicholas J. A., 4,577,071, Cl. 179-170.200.

Broekhuis, Antonius A. Elastomeric copolymers, their preparation and their use. 4,577,002, Cl. 526-181.000.

Brogardh, Iorgny: *See—*
Adolfsson, Morgan; Brogardh, Iorgny; and Ovren, Christer, 4,577,189, Cl. 340-794.000.

Brons, Glen B.: *See—*
Siskin, Michael; and Brons, Glen B., 4,576,707, Cl. 208-8.0LE.

Brooks, Donald G. Harvester comb fingers. 4,575,998, Cl. 56-312.000.

Brother Industries, Ltd.: *See—*
Hibino, Masaaki, 4,577,206, Cl. 346-139.00R.

Broussaud, Daniel; Mustel, William; and Minjolle, Louis, to Armines; and Ceraver. Method of manufacturing parts or powders of a nitride compound of silicon or of a metal by reacting silicon or metal parts or powders in the solid state with a nitrogen-containing reactive gas. 4,576,923, Cl. 501-98.000.

Brown, Bill G. Block storage. 4,576,319, Cl. 224-42.410.

Brown, Boveri & Cie AG: *See—*
Hasenauer, Dieter; and Hug, Kuno, 4,576,881, Cl. 429-104.000.

Brown, George W.; and Thai, Phi, to Advanced Micro Devices, Inc. Redundant memory circuit and method of programming and verifying the circuit. 4,577,294, Cl. 365-200.000.

Brown, Robert L., to DMI Wireline, Inc. Device for facilitating release of stuck drill collars. 4,576,229, Cl. 166-177.000.

Browne, Gwendolen, to DeBlaueve Lier B.V. Phosphate-free detergent composition for washing of textiles in hard water. 4,576,727, Cl. 252-90.000.

Brumaghim, Milton W.: *See—*
Montgomery, John R.; Brumaghim, Milton W.; and Deniega, Jose C., 4,576,166, Cl. 128-325.000.

Brundage, Richard B.: *See—*
Terpstra, Daniel A.; and Brundage, Richard B., 4,576,072, Cl. 83-102.100.

Brunninger, Manfred: *See—*
Theurer, Josef; and Brunninger, Manfred, 4,576,538, Cl. 414-339.000.

Brunswick Corporation: *See—*
Gruenwald, David J., 4,576,761, Cl. 261-23.00A.

Bruschi, Enrico, to Luigi Stoppani S.p.A. Stabilized adducts of menadione bisulfite with p-aminobenzoic acid or adenine. 4,577,019, Cl. 544-264.000.

Bruso, Loran H., to Warner-Lambert Company. Disposable sterilizer vacuum test pack. 4,576,795, Cl. 422-58.000.

Brux, Robert A., to Crown Zellerbach Corporation. System for securing a plurality of objects together with adhesive tape. 4,576,675, Cl. 156-468.000.

Bryans, Alexander C., to General Electric Company. Diffuser for a centrifugal compressor. 4,576,550, Cl. 415-211.000.

Bryant, Frank C.: *See—*
Hanson, Michael R.; and Bryant, Frank C., 4,576,532, Cl. 411-352.000.

Bryant, William R.: *See—*
Burgess, Kenneth W.; Bryant, William R.; and Erickson, Wayne K., 4,576,852, Cl. 428-171.000.

BS&B Safety Systems, Inc.: *See—*
Mundt, Arnold L.; Beair, Charles E.; Naumann, Leo J.; Roberts, Alan T.; and LaPelle, Ronald J., 4,576,303, Cl. 220-89.00A.

Buchanan, Robert M.: *See—*
Wrighton, Mark S.; Buchanan, Robert M.; and Calabrese, Gary S., 4,576,756, Cl. 260-396.00R.

Buchtel, Michael E. Cutlery storage apparatus. 4,575,939, Cl. 30-296.00A.

Buck, David A. Jaw assembly. 4,576,067, Cl. 81-185.100.

Buckley, Bruce S.; Buckley, Edward M.; and Reichwein, Roy H., to Cochlea Corporation. Parts sorting systems. 4,576,286, Cl. 209-558.000.

Buckley, Edward M.: *See—*
Buckley, Bruce S.; Buckley, Edward M.; and Reichwein, Roy H., 4,576,286, Cl. 209-558.000.

Buckley, Thomas F., to Chevron Research. Methods for preventing the precipitation of mixed zinc dialkyldithiophosphates which contain high percentages of a lower alkyl group. 4,577,037, Cl. 556-25.000.

Buding, Hartmuth; Konigshofen, Heinrich; Szentivanyi, Zsolt; and Thormer, Joachim, to Bayer Aktiengesellschaft. Polymer mixtures. 4,576,992, Cl. 525-211.000.

Buhren, Heinz: *See—*
Aretz, Ulrich; and Buhren, Heinz, 4,576,340, Cl. 242-35.50A.

Bukatov, Alexandr S.: *See—*
Kaidash, Arnold N.; Iofis, Naum A.; Khurtsilava, Semen G.; Bukatov, Alexandr S.; and Danilova, Zinaida P., 4,576,605, Cl. 623-2.000.

Bukowski, James M.; Midock, Gary E.; and Walko, Ronald J., to Westinghouse Electric Corp. Method and apparatus for controlling the control valve setpoint mode selection for an extraction steam turbine. 4,577,281, Cl. 364-494.000.

Bureau de Recherches Geologiques et Minieres: *See—*
Collin, Jean J.; Landreau, Alain; Talbo, Henri; Martin, Guy; and Morvan, Jean, 4,576,717, Cl. 210-610.000.

Burgess, June: *See—*
Burgess, Robert H., 4,575,880, Cl. 4-313.000.

Burgess, Kenneth W.; Bryant, William R.; and Erickson, Wayne K., to Phillips Petroleum Company. Fusion of thermoplastic fabrics. 4,576,852, Cl. 428-171.000.

Burgess, Robert: *See—*
Burgess, Robert H., 4,575,880, Cl. 4-313.000.

Burgess, Robert H., to Burgess, Robert; and Burgess, June. Auto-flush system. 4,575,880, Cl. 4-313.000.

Burgher, Peter H.; and Boomer, John L., to Marelco Power Systems, Inc. System of transformers for a welding apparatus. 4,577,085, Cl. 219-116.000.

Burgher, Peter H.; and Marsden, Raymond F., to Marelco Power Systems. Transformer with fluid cooled windings. 4,577,175, Cl. 336-61.000.

Burkholder, Amy L.: *See—*
Adair, Paul C.; and Burkholder, Amy L., 4,576,891, Cl. 430-138.000.

Burkholder, Jack. Pressure fitting. 4,576,403, Cl. 285-39.000.

Burndy Corporation: *See—*
Verbruggen, Marcel, 4,576,427, Cl. 339-61.00M.

Burns, Gerald E.: *See—*
Suh, Sung L.; Burns, Gerald E.; and Silcox, William H., 4,576,520, Cl. 405-224.000.

Burr, August: *See—*
Kaeufer, Helmut; and Burr, August, 4,576,775, Cl. 264-323.000.

Burroughs Corporation: *See—*
Figueredo, Jorge H., 4,576,322, Cl. 228-4.500.
Nemiroff, Michael H., 4,575,922, Cl. 29-574.000.
Whitacre, James B.; and Binoeder, Peter P., 4,577,318, Cl. 371-1.000.

Burtea, Constantin, to Mastermatic, Inc. Tunnel heater. 4,576,090, Cl. 99-443.00C.

Busch, Dennis G., to International Business Machines Corporation. Data communications system with receiving terminal for varying the portions of received data being displayed. 4,577,288, Cl. 364-900.000.

Busch, Edgar: *See—*
Albrecht, Ernst; and Busch, Edgar, 4,576,103, Cl. 112-73.000.

Buteaux, Leonard J. Life preserver storage container. 4,577,262, Cl. 362-155.000.

Butler National Corporation: *See—*
Hilleary, Thomas N.; and Fulton, Robert D., 4,577,062, Cl. 179-2.00A.

Butt, Sheldon H., to Olin Corporation. Hermetically sealed metal package. 4,577,056, Cl. 174-52.0FP.

B.V. Haagse Bakkerijmachinefabriek: *See—*
Van der Togt, Jacobus C., 4,576,074, Cl. 83-358.000.

Bye, Michael E. Shoe construction with foot and ankle restraining means. 4,575,954, Cl. 36-89.000.

Bynum, Byron G.; and Cave, David L., to Motorola, Inc. Integrated circuit and method for biasing an epitaxial layer. 4,577,211, Cl. 357-34.000.

C. E. Shepherd Company: *See—*
Shepherd, G. Maury; and Shepherd, Charles E., 4,576,764, Cl. 261-111.000.

C. H. Masland & Sons: *See—*
Vaughn, Edward A.; and Clymin, Michael L., 4,576,853, Cl. 428-181.000.

C-I-L Inc.: *See—*
Murray, Charles R.; and Harrison, Ray E., 4,576,844, Cl. 428-35.000.

Cabral, Chavelo; Dean, Donald E.; and Lopez, Armando M. Safety seat closure. 4,575,879, Cl. 4-253.000.

Cadars, Patrick, to Valeo. Heat exchanger, in particular for a motor vehicle, and side sealing device therefor. 4,576,227, Cl. 165-149.000.

CAE Electronics, Ltd.: *See—*
Lam, Wim J.; Devries, Luitzen; McKinnon, Gordon M.; and Baribeau, Jean J., 4,576,577, Cl. 434-58.000.

Calabrese, Gary S.: *See—*
Wrighton, Mark S.; Buchanan, Robert M.; and Calabrese, Gary S., 4,576,756, Cl. 260-396.00R.

California Institute of Technology: *See—*
Collins, Terrence J.; Anson, Fred C.; Gipson, Stephen L.; and Krafft, Terry E., 4,577,042, Cl. 564-158.000.
Wang, Taylor G.; Elleman, Daniel D.; Lee, Mark C.; and Kendall, James M., Jr., 4,576,926, Cl. 502-339.000.

Cambier, Craig: *See—*
Mathews, Harlan P.; and Cambier, Craig, 4,577,301, Cl. 369-44.000.

Camet, Inc.: *See—*
Retallick, William B., 4,576,800, Cl. 422-180.000.

Campbell, Donald H.; Fifolt, Michael J.; and Saran, Mohan S., to Occidental Chemical Corporation. Preparation of chlorotrifluoroethylene telomers with fluoroxytrifluoromethane. 4,577,044, Cl. 568-677.000.

Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence: *See—*
Smallhorn, Edward A.; and Oliver, John B., 4,576,204, Cl. 138-44.000.

Canducci, Giancarlo: *See—*
Plicchi, Gianni; and Canducci, Giancarlo, 4,576,183, Cl. 128-723.000.

Canon Denshi Kabushiki Kaisha: *See—*
Okada, Shinichi, 4,577,251, Cl. 360-133.000.

Canon Kabushiki Kaisha: *See—*
Fukuda, Tsuyoshi; and Aihara, Yoshihiko, 4,576,457, Cl. 354-173.110.
Hara, Toshitami, 4,577,202, Cl. 346-140.00R.
Kamata, Shigeru, 4,576,446, Cl. 350-429.000.
Kitagawa, Takahiro; and Totsuka, Masao, 4,576,475, Cl. 355-91.000.
Miura, Yuzo; and Yamada, Akira, 4,576,459, Cl. 354-287.000.
Okino, Tadashi; and Saito, Syuichiro, 4,576,456, Cl. 352-216.000.

Cantwell, Gill. Floppy disc rotational apparatus. 4,577,248, Cl. 360-97.000.

Cantwell, Gill. Disc loading apparatus. 4,577,249, Cl. 360-99.000.

Capra, Pier C.: *See—*
Lupo, Giorgio; Capra, Pier C.; and Marcarino, Aldo, 4,576,264, Cl. 192-48.910.

Caputo, Garry L. "On demand" apparatus and method for producing air-cushioning product. 4,576,669, Cl. 156-145.000.

Cardoso, Jean-Francois: *See—*
Fink, Mathias A.; and Cardoso, Jean-Francois, 4,576,046, Cl. 73-631.000.

Cardus, Francis: *See—*
Alazet, Jean, 4,575,902, Cl. 19-2.000.

Cargould, Barry D., to Eagle-Picher Industries, Inc. Device for measuring extraneous losses in apparatus for measuring the rolling resistance of tires. 4,576,040, Cl. 73-146.000.

Carl-Zeiss-Stiftung: *See—*
Westphal, Klaus, 4,576,450, Cl. 350-522.000.

Carlson, Frederick D.; and Hart, Ronald E., to J. I. Case Company. Sealed bushing assembly for pivotal members. 4,575,898, Cl. 16-274.000.

Carlson, Roland W.; and Blaskis, Edward A., to Technicare Corporation. High vacuum rotating anode X-ray tube. 4,577,340, Cl. 378-132.000.

Carlson, Timothy L.: *See—*
Ward, John W.; and Carlson, Timothy L., 4,576,711, Cl. 208-111.000.

Carlstedt, Richard A., to Miner Enterprises, Inc. Draft gear for railroad car coupler system. 4,576,295, Cl. 213-32.00R.

Carmichael, Hoagy C.; and Schooler, Miles R. Orthopedic leg appliance. 4,576,151, Cl. 128-80.00C.

Carmichael, Kathleen M.: *See—*
Badesha, Santokh S.; Pai, Damodar M.; Carmichael, Kathleen M.; and Tarnawskyj, Ihor W., 4,576,634, Cl. 75-0.50A.

Carney, James K.; and Kolbas, Robert M., to Honeywell Inc. Integrated quantum well lasers for wavelength division multiplexing. 4,577,321, Cl. 372-50.000.

Carolina Power and Light Company: *See—*
Clements, Talmage B.; and Dresser, Thomas M., 4,576,785, Cl. 376-435.000.

Carpenter, George J., to Warner-Lambert Technologies, Inc. Catheter with optimum resistance to bending and method of manufacture. 4,576,772, Cl. 264-154.000.

Carre, Jean J.; and Meynier, Guy, to Societe Anonyme D.B.A. Disc brake with removable caliper reinforcing arm. 4,576,257, Cl. 188-73.320.

Carre, Jean-Jacques: *See—*
Mery, Jean-Claude; Carre, Jean-Jacques; and Thioux, Alain, 4,576,255, Cl. 188-71.500.

Carreira, A. William. Soldering technique. 4,577,083, Cl. 219-85.00F.

Carrera, Luciano: *See—*
Azzola, Roberto; and Carrera, Luciano, 4,576,773, Cl. 264-167.000.

Carroll, William G.; and Rosbotham, Ian D., to Imperial Chemical Industries, PLC. Polyol compositions and polyurethane foams manufactured therefrom. 4,576,974, Cl. 521-173.000.

Cart-O-Matic Aktiebolag: *See—*
Thorsen, Kjeld, 4,576,274, Cl. 194-210.000.

Carter, Charles G., to Stauffer Chemical Company. Certain aryloxyphenoxy oxoimidazolidines and method of use. 4,576,631, Cl. 71-92.000.

Carter-Day Company: *See—*
Melin, Gerald W., 4,576,713, Cl. 209-254.000.

Carter-Hoffman Corporation: *See—*
Pinnow, Curtis C.; and Gill, Brian, 4,576,425, Cl. 312-324.000.

Carter, Marshall C.: *See—*
Keel, Frederick; Townsend, Keith G.; and Carter, Marshall C., 4,576,019, Cl. 66-147.000.

Cassella Aktiengesellschaft: *See—*
Keil, Karl-Heinz; Engelhardt, Fritz; Greiner, Ulrich; Kuhlein, Klaus; Keller, Reinhold; Schlingmann, Merten; and Hess, Gerhard, 4,576,973, Cl. 521-149.000.

Castner, Raymond P.: *See—*
Copper, Frank W., Jr.; and Castner, Raymond P., 4,576,546, Cl. 414-744.00R.

Castolin S.A.: *See—*
Muller, Niklaus; and Audemars, Daniel, 4,576,526, Cl. 406-75.000.

Casula, Pierluigi: *See—*
Rovati, Luigi; Makovec, Francesco; Senin, Paolo; and Casula, Pierluigi, 4,576,951, Cl. 514-282.000.

Caterpillar Tractor Co.: *See—*
Gee, James E., 4,575,959, Cl. 37-4.000.
Holzinger, Charles E.; and Fee, David M., 4,576,418, Cl. 303-71.000.

Caterpiller Tractor Co.: *See—*
Molnar, John; and Porter, Robert B., Jr., 4,576,414, Cl. 297-476.000.

Caudel, Edward R.; and Magar, Surendar S., to Texas Instruments Incorporated. Microcomputer system for digital signal processing. 4,577,282, Cl. 364-200.000.

Caumont, Jean-Francois, to Tempo Sanys. Apparatus for producing cloth cut outs for packaging in a container together with the production at a different rate of closure cut out for the container. 4,575,992, Cl. 53-520.000.

Cave, David L.: *See—*
Bynum, Byron G.; and Cave, David L., 4,577,211, Cl. 357-34.000.

Celanese Corporation: *See—*
David, Lawrence D., 4,576,688, Cl. 204-157.620.
Hargett, Wyatt P., Jr., 4,576,769, Cl. 264-51.000.

Central Mine Equipment: *See—*
Rassieur, Charles L., 4,576,498, Cl. 403-24.000.

Centre National de la Recherche Scientifique: *See—*
Monsigny, Michel, 4,576,745, Cl. 260-112.50R.

Ceraver: *See—*
Broussaud, Daniel; Mustel, William; and Minjolle, Louis, 4,576,923, Cl. 501-98.000.

Certech Incorporated: *See—*
Uram, Stuart Z., 4,576,219, Cl. 164-358.000.

Chadbourne, Lester E., deceased: *See—*
Olivier, Paul D.; and Chadbourne, Lester E., deceased, 4,576,551, Cl. 416-191.000.

Chadbourne, Mary T., personal representative: *See—*
Olivier, Paul D.; and Chadbourne, Lester E., deceased, 4,576,551, Cl. 416-191.000.

Chadwick, John R., to Fairey Engineering Limited. Apparatus for laser welding pipes and the like. 4,577,087, Cl. 219-121.0LC.

Chalabian, Jack S., to K-Jack Engineering Company, Inc. Coin operated pull-down door and door spring mechanism for vending machine. 4,576,271, Cl. 194-233.000.

Chambers, Worthy L.; Jones, William H.; and Hayden, Arthur H., to Eaton Corporation. Programmer/timer for appliances. 4,577,179, Cl. 340-309.150.

Champion International Corporation: *See—*
Hain, Paul O., 4,576,566, Cl. 425-400.000.
Lepisto, J. George, 4,576,210, Cl. 141-115.000.

Chang, Clarence D.; Chu, Cynthia T. W.; and Miale, Joseph N., to Mobil Oil Corporation. Increasing lattice metal content of porous inorganic crystalline compositions. 4,576,805, Cl. 423-277.000.

Chang, Clarence D.; and Miale, Joseph N., to Mobil Oil Corporation. Catalysis over activated high silica zeolites. 4,577,048, Cl. 585-467.000.

Chappelear, Robert N.; and Symborski, Alex P., to Owens-Corning Fiberglas Corporation. Apparatus for producing chopped strands of glass fibers. 4,576,621, Cl. 65-10.200.

Charney, Gregory S.; Hohner, Terrance D.; and Salibello, Cosmo, to Terrance D. Hohner. Eye fatigue simulator for optometry. 4,576,454, Cl. 351-243.000.

Chartier, George R., to O. J. Ouellette Inc. Attachment cap for fastener head. 4,576,533, Cl. 411-373.000.

Charton, Gilbert: *See—*
Verdier, Alain; and Charton, Gilbert, 4,576,880, Cl. 429-99.000.

Chatterjee, Ananda M.; and Hayden, Earl E., to Shell Oil Company. Polymeric composition useful for hot water pipe service. 4,576,983, Cl. 524-101.000.

Chauvin, John A. Automatic roux maker. 4,576,089, Cl. 99-332.000.

Chen, Carson: *See—*
Wong, Hee; and Chen, Carson, 4,577,335, Cl. 375-86.000.

Chen, Catherine S. H.; and Williams, Albert L., to Mobil Oil Corporation. Chemically stable stiff backbone polymers as mobility control agents in oil recovery. 4,577,000, Cl. 525-534.000.

Chen, Cheng C. Necktie. 4,575,872, Cl. 2-144.000.

Cherill, Robert J.: *See—*
Kosley, Raymond W., Jr.; and Cherill, Robert J., 4,577,026, Cl. 546-216.000.

Chervenak, Michael C.: *See—*
Nongbri, Govanon; and Chervenak, Michael C., 4,576,710, Cl. 208-58.000.

Chesapeake Corporation: *See—*
Bory, William H., 4,576,663, Cl. 156-64.000.

Chevron Research: *See—*
Buckley, Thomas F., 4,577,037, Cl. 556-25.000.

Chevron Research Company: *See—*
Duerksen, John H.; Wall, Robert G.; and Knight, Jack D., 4,576,232, Cl. 166-274.000.
Nguyen, Tanh V., 4,576,043, Cl. 73-195.000.
Suh, Sung L.; Burns, Gerald E.; and Silcox, William H., 4,576,520, Cl. 405-224.000.

Chiang, Chawan-Kang: *See—*
Davis, George T.; Chiang, Chawan-Kang; Antonucci, Joseph M.; and Takahashi, Toru, 4,576,882, Cl. 429-192.000.

Chiang, Ping-Wang, to Amdahl Corporation. Integrated circuit multi-level interconnect system and method. 4,576,900, Cl. 430-313.000.

Chisso Corporation: *See—*
Sugimori, Shigeru; Isoyama, Toyoshiro; and Goto, Yasuyuki, 4,576,733, Cl. 252-299.670.

Chiusole, Erwin; and Zullig, Hans, to Zullig AG Rheineck. Apparatus for the electrochemical detection of the oxygen content of liquids. 4,576,704, Cl. 204-402.000.

Chlystun, Walter K. Apparatus for forming a dispensing container. 4,576,565, Cl. 425-383.000.

Cho, Michio; Suzuki, Masane; and Saito, Takayuki, to Fuji Photo Film Co., Ltd. Camera finder employing holographic view field frames. 4,576,458, Cl. 354-199.000.

Chr. Eisele Maschinenfabrik GmbH & Co. KG: *See—*
Holder, Kurt, 4,576,075, Cl. 83-464.000.

Chrin, Christopher J., to AT&T Bell Laboratories. Method and apparatus for generating digital signals representing periodic samples of a sine wave. 4,577,287, Cl. 364-721.000.

Christiansen, Ari R. E.: *See—*
Skantz, Kaj M.; and Christiansen, Ari R. E., 4,576,643, Cl. 106-14.240.

Christy, Arthur E.; and Gill, Elmer J., to International Business Machines Corporation. Adaptive robot batch assembly system. 4,577,284, Cl. 364-513.000.

Chronar Corp.: *See—*
Kiss, Zoltan, 4,576,830, Cl. 427-39.000.

Chu, Cynthia T. W.: *See—*
Chang, Clarence D.; Chu, Cynthia T. W.; and Miale, Joseph N., 4,576,805, Cl. 423-277.000.

Chu, Jean; Hinch, Mark G.; Johnson, James M., Jr.; Kafka, Henry J.; and Stelte, David J., to AT&T Bell Laboratories. Digital multi-customer data interface. 4,577,314, Cl. 370-94.000.

Chu, Paul C.; and Mercola, Gerald K., to ICS Electronics Corporation. Method for extending a parallel data bus. 4,577,317, Cl. 370-110.100.

Ciba-Geigy AG: *See—*
Fryberg, Mario; Schaller, Heinrich; Steiger, Rolf; and Peter, Heinz, 4,576,885, Cl. 430-390.000.

Ciba-Geigy Corporation: *See—*
Falk, Robert A., 4,577,036, Cl. 549-556.000.
Martin, Henry; and Fricker, Urs, 4,576,628, Cl. 71-88.000.
Martin, Pierre; and Steiner, Eginhard, 4,577,028, Cl. 546-345.000.
Merz, Jurg; and Voser, Walter, 4,577,013, Cl. 536-43.000.

Cichanski, William J.: *See—*
Mast, Robert F.; Cichanski, William J.; Walker, Francis R.; and Magura, Donald D., 4,576,519, Cl. 405-207.000.

Ciciora, Walter S.: *See—*
Skinner, Russell A., Sr.; and Ciciora, Walter S., 4,577,221, Cl. 358-86.000.

Cidelcem: *See—*
Tzifkansky, Guy; and Marchais, Jean-Claude, 4,576,309, Cl. 220-366.000.

Cities Service Oil & Gas Corp.: *See—*
Oko, Uriel M.; and Baldwin, Robert M., 4,576,708, Cl. 208-11.0LE.

Clark, Richard E.; Tacito, Louis D.; Miller, Bryan H.; and Beck, Martin H., to Continental Packaging Company, Inc. Method of forming a composite container. 4,575,915, Cl. 29-509.000.

Clark, William T., III. Method of immune modification by means of extracorporeal irradiation of the blood. 4,576,143, Cl. 128-1.00R.

Clawson, Lawrence G.: *See—*
Massey, Lester G.; Clawson, Lawrence G.; and Syska, Andrew J., 4,575,948, Cl. 34-10.000.

Clements, Talmage B.; and Dresser, Thomas M., to Carolina Power and Light Company. Reduction in rate of radiation exposure to excore nuclear reactor components. 4,576,785, Cl. 376-435.000.

Clerc, Guy, to Thomson-CSF. Direct heating cathode and a process for manufacturing same. 4,577,134, Cl. 313-346.00R.

Clinique de la Residence du Parc: *See—*
Pol, Vincent; and Dumas, Jean-Claude, 4,576,606, Cl. 623-3.000.

Clymin, Michael L.: *See—*
Vaughn, Edward A.; and Clymin, Michael L., 4,576,853, Cl. 428-181.000.

Coakley, James L.; and Haydt, Richard J., deceased (by Haydt, Mette, legal representative), to HR Textron Inc. Servovalve with integrated failure monitoring. 4,576,198, Cl. 137-596.000.

Coakley, Peter J., Jr: *See—*
Boltrek, Henry; and Coakley, Peter J., Jr, 4,576,276, Cl. 198-332.000.

Coal Industry (Patents) Limited: *See—*
Robinson, Joseph G.; and Foster, Pierce W., 4,577,009, Cl. 528-228.000.

Cobb, Clyde E.: *See—*
Boyer, Kent R.; and Cobb, Clyde E., 4,576,203, Cl. 137-625.630.

Coca-Cola Company, The: *See—*
Morgan, Annis R., Jr.; Mehlan, Bernd; Gress, Josef; and Williford, Hugh S., 4,576,272, Cl. 194-215.000.

Coccia, Mario: *See—*
Valentini, Luigi; and Coccia, Mario, 4,576,211, Cl. 141-329.000.

Cochlea Corporation: *See—*
Buckley, Bruce S.; Buckley, Edward M.; and Reichwein, Roy H., 4,576,286, Cl. 209-558.000.

Codman & Shurtleff, Inc.: *See—*
Kraus, Robert G.; Kunica, Enora S.; and Praderio, Joseph J., 4,576,589, Cl. 604-8.000.

Cogswell, Jesse G. Rigid wire saw wheel apparatus for very hard materials. 4,576,139, Cl. 125-21.000.

Cohen, Edwin J. Optical instrument for measuring angles. 4,576,478, Cl. 356-149.000.

Cohen, Lester R., to Badger B.V. Method for separating carboxylic acids from mixtures with non-acids. 4,576,683, Cl. 203-15.000.

Cohen, Mary, executrix: *See—*
Cohen, Nathan, deceased; and Cohen, Mary, executrix, 4,576,336, Cl. 239-33.000.

Cohen, Nathan, deceased; and Cohen, Mary, executrix. Drinking straw. 4,576,336, Cl. 239-33.000.

Coleco Industries, Inc.: *See—*
Amici, Francis R.; Berger, Hans S.; Farrington, Richard I.; and Piazza, Pietro, 4,576,586, Cl. 446-315.000.

Coleman, Kevin G.: *See—*
Lipscher, Bernard; and Coleman, Kevin G., 4,577,181, Cl. 340-522.000.

Coleman, William M., III; and Edmondson, Morris S., to Dow Chemical Company, The. Polymerization of olefins employing a catalyst containing a titanium component derived from hydroxyalkyl aromatic compounds. 4,577,001, Cl. 526-127.000.

Colgate-Palmolive Company: *See—*
Colodney, Daniel; and Steltenkamp, Robert J., 4,576,738, Cl. 252-559.000.

Colley, Alice M.: *See—*
Verbicky, John W., Jr.; and Colley, Alice M., 4,577,033, Cl. 548-461.000.

Collin, Jean J.; Landreau, Alain; Talbo, Henri; Martin, Guy; and Morvan, Jean, to Bureau de Recherches Geologiques et Minieres. Process for denitrifying subterreanean waters to make them potable. 4,576,717, Cl. 210-610.000.

Collins, Mark C., to Sony Corporation. Error correction in digital television signals. 4,577,237, Cl. 358-336.000.

Collins, Robert J. Current-ratio digitizers. 4,577,058, Cl. 178-18.000.

Collins, Terrence J.; Anson, Fred C.; Gipson, Stephen L.; and Krafft, Terry E., to California Institute of Technology. Homogeneous coordination compounds as oxidation catalysts. 4,577,042, Cl. 564-158.000.

Colliver, Anthony D.: *See—*
Wrightson, Robert W.; and Colliver, Anthony D., 4,576,505, Cl. 403-362.000.

Colman, Derek A.; and Thew, Martin T. Cyclone separator. 4,576,724, Cl. 210-788.000.

Colmet, Robert; Naslain, Roger; Hagenmuller, Paul; and Lamico, Pierre. Method for producing a refractory composite structure. 4,576,836, Cl. 427-255.000.

Colodney, Daniel; and Steltenkamp, Robert J., to Colgate-Palmolive Company. Hard surface cleaning compositions containing pianane. 4,576,738, Cl. 252-559.000.

Colt Industries Operating Corp.: *See—*
Corrette, Richard H., 4,576,033, Cl. 72-469.000.

Columbus McKinnon Corporation: *See—*
Pancook, James J., 4,576,363, Cl. 254-372.000.

Combes, Gilles; and Delage, Germain, to Alsthom-Atlantique. Rotary sluice gate. 4,576,512, Cl. 405-100.000.

Combi Co., Ltd.: *See—*
Nakao, Shinroku; and Tsuchiya, Kunimasa, 4,575,896, Cl. 16-35.00R.

Combs, Cathy M.; Duffy, Joseph K.; and Thoene, Mark, to Baxter Travenol Laboratories, Inc. Insulated shipping container. 4,576,017, Cl. 62-372.000.

Combustion Engineering, Inc.: *See—*
Palmer, David N., 4,576,697, Cl. 204-192.00N.

Comerford, Liam D.; and White, Steve R., to International Business Machines Corporation. Hardware key-on-disk system for copy-protecting magnetic storage media. 4,577,289, Cl. 364-900.000.

Commissariat a l'Energie Atomique: *See—*
Belz, Gerard, 4,576,780, Cl. 376-235.000.
Conche, Francois; and Montret, Jean-Francois, 4,577,112, Cl. 250-506.100.
Miline, Francois, 4,576,613, Cl. 55-1.000.

Compaan, Klaas: *See—*
Bremer, Joannes G.; and Compaan, Klaas, 4,577,101, Cl. 250-231.0SE.

Compagnie des Produits Industriels de l'Quest (C.P.I.O.): *See—*
Gallas, Gerard; Raher, Loic; and Renzo, Bernard, 4,576,366, Cl. 267-8.00R.

Compagnie Francaise des Petroles: *See—*
Herve, Jean-Luc A., 4,576,193, Cl. 137-15.000.

Computer Air Corp.: *See—*
Luzenberg, Robert S., 4,576,012, Cl. 62-157.000.

Conagra, Inc.: *See—*
Tracy, Catherine O.; Binkerd, Evan F.; Rendek, Robert B.; and Wrobel, Raymond J., 4,576,825, Cl. 426-266.000.

Conche, Francois; and Montret, Jean-Francois, to Commissariat a l'Energie Atomique. Movable enclosure for the replacement and transportation of contaminated parts and complementary casing for such an enclosure. 4,577,112, Cl. 250-506.100.

Conklin, Sharon J.: *See—*
Auerbach, Steven L.; and Conklin, Sharon J., 4,575,871, Cl. 2-6.000.

Conover, Gilbert, Jr.; and Richard, Gary R., to Independent Energy, Inc. Thermally responsive electrical control device and monitoring circuit therefor. 4,576,487, Cl. 374-183.000.

Conrad, Joseph. Permanent mooring method and arrangement. 4,576,521, Cl. 405-225.000.

Consolidated Natural Gas Service Company, Inc.: *See—*
Massey, Lester G.; Clawson, Lawrence G.; and Syska, Andrew J., 4,575,948, Cl. 34-10.000.

Consonni, Pietro: *See—*
Favara, Duccio; Omodei-Sale', Amedeo; and Consonni, Pietro, 4,576,746, Cl. 260-239.00A.

Continental Group, Inc., The: *See—*
Beck, Martin H.; and Krishnakumar, Suppayan M., 4,576,843, Cl. 428-35.000.

Continental Manufacturing and Sales Inc.: *See—*
Pohoreski, Anton P., 4,576,714, Cl. 210-195.100.

Continental Packaging Company, Inc.: *See—*
Clark, Richard E.; Tacito, Louis D.; Miller, Bryan H.; and Beck, Martin H., 4,575,915, Cl. 29-509.000.

Continental White Cap, Inc.: *See—*
Boik, Elmer J., 4,576,298, Cl. 215-252.000.
Lecinski, Frank H., 4,576,296, Cl. 215-31.000.
Lecinski, Frank H., Jr., 4,576,299, Cl. 215-318.000.

Cooke, Anson R.: *See—*
Morland, Robert B.; Cooke, Anson R.; and Bishop, John R., 4,576,629, Cl. 71-90.000.

Cooke, William J.; Dancey, James N.; DeBoon, George B.; Miller, Norman W.; and Yungblut, Glen R., to EPI Resources Ltd. Fixed/-movable marine structure system. 4,576,518, Cl. 405-205.000.

Coolair Corporation Pte. Ltd.: *See—*
Wrightson, Robert W.; and Colliver, Anthony D., 4,576,505, Cl. 403-362.000.

Cooper, Glenn D., deceased (by Cooper, Rose, executrix); and Ting, Sai-Pei, to General Electric Company. UV-Resistant flame retardant compositions of polycarbonates and halogenated alkenyl aromatic copolymers. 4,576,991, Cl. 525-146.000.

Cooper, Rose, executrix: *See—*
Cooper, Glenn D., deceased; and Ting, Sai-Pei, 4,576,991, Cl. 525-146.000.

Copeland, John A., to AT&T Bell Laboratories. Dual wavelength optical source. 4,577,207, Cl. 357-17.000.

Copper, Frank W., Jr.; and Castner, Raymond P., to Westinghouse Electric Corp. Method for servicing a steam generator. 4,576,546, Cl. 414-744.00R.

Corbet, Aaron B.; Holliger, Christoph; and Strul, Bruno, to United States of America, Health and Human Services. Method and apparatus for measuring density profiles in microscopic tube flow. 4,576,477, Cl. 356-39.000.

Cordis Corporation: *See—*
Hooven, Michael D.; and Saulson, Stanley H., 4,576,035, Cl. 73-4.00R.

Cornet, Jean, to Thomson-CSF. Thermo-optical data writing process and data medium for performing this process. 4,577,291, Cl. 365-126.000.

Corning Glass Works: *See—*
Hazard, Gary M.; Hillman, Arthur E.; Montierth, Max R.; and Nieber, Albert R., 4,576,774, Cl. 264-267.000.
Hertl, William; and Weetall, Howard H., 4,576,687, Cl. 204-157.500.
MacDowell, John F., 4,576,920, Cl. 501-10.000.
Mann, George H., 4,576,623, Cl. 65-30.140.

Corrette, Richard H., to Colt Industries Operating Corp. Thread rolling die construction. 4,576,033, Cl. 72-469.000.

Cortese, Richard: *See—*
Guittard, George V.; Deters, Joseph C.; Theeuwes, Felix; and Cortese, Richard, 4,576,604, Cl. 604-890.000.

Corvers, Antonius; and Hofman, Johannes H. A., to Stamicarbon B.V. Diazabicyclo (2,2,2) octadiones. 4,577,023, Cl. 546-122.000.

Cosnet, Pascal. Device for stowing loads of large-sized bales of fodder on a vehicle. 4,576,531, Cl. 410-36.000.

Cotrel, Claude: *See—*
Bourzat, Jean-Dominique; Cotrel, Claude; Farge, Daniel; Paris, Jean-Marc; and Taurand, Gerard, 4,576,954, Cl. 514-314.000.

Coufal, Hans J.: *See—*
Barton, Roger W.; Coufal, Hans J.; Jipson, Victor B.; and Lee, Wen Y., 4,576,895, Cl. 430-270.000.

Courvoisier, Guy: *See—*
Arieh, Simon; and Courvoisier, Guy, 4,575,958, Cl. 36-121.000.

Cowlam, Stephen K.; Moss, Steven Y.; Stockwell, Claude L.; and Phillips, Victor R., to United Kingdom Atomic Energy Authority. Sphere/liquid separator and separation method. 4,576,765, Cl. 210-801.000.

Cox, Andrew P. D., to Dunlop Limited. Leak detectors. 4,576,037, Cl. 73-40.50R.

Cox, Don C., to Otis Engineering Corporation. Hydraulically actuated slip assembly. 4,576,254, Cl. 188-67.000.

Crawford, A. Gerrit. Lightweight high pressure tubular storage system for compressed gas and method for cryogenic pressurization. 4,576,015, Cl. 62-292.000.

Crean, Peter A.; Birnbaum, David; Feldman, David B.; Liptak, Frank J.; and Sewhuk, David W., to Xerox Corporation. Ink jet printer droplet height sensing control. 4,577,197, Cl. 346-75.000.

Crepinsek, Alois. Door stile lock and latch bolt assembly. 4,576,023, Cl. 70-137.000.

Crisp, John H.: *See—*
Stout, Gregg W.; Nelson, John A.; and Crisp, John H., 4,576,236, Cl. 166-386.000.

Crockatt, William B.; and Rimma, John, to DeSoto, Inc. Aqueous water-repellent coatings. 4,576,987, Cl. 524-487.000.

Croopnick, Gerald A.: *See—*
Michaels, John M.; Croopnick, Gerald A.; and Morris, Richard A., 4,576,715, Cl. 210-347.000.

Crossley, Roger; and Dickinson, Kay H., to John Wyeth & Brother, Ltd. Pyridylalkylenethiopyridyls. 4,576,955, Cl. 514-335.000.

Crossley, Roger; and Shepherd, Robin G., to John Wyeth & Brother, Ltd. Silyl compounds. 4,577,022, Cl. 546-14.000.

Crown Zellerbach Corporation: *See—*
Brux, Robert A., 4,576,675, Cl. 156-468.000.

Crucible Materials Corporation: *See—*
Holtz, Frederick C., Jr., 4,576,642, Cl. 75-239.000.

Csapo, Erich: *See—*
Kurt, Prunbauer; and Csapo, Erich, 4,576,026, Cl. 70-380.000.

CTS Corporation: *See—*
Bleeke, William F., 4,575,929, Cl. 29-620.000.

Culp, Norman L., to Honeywell Inc. Digital phase locked loop. 4,577,163, Cl. 331-1.00A.

Curran, Roger: *See—*
Mikuta, Richard; and Curran, Roger, 4,575,961, Cl. 42-1.00S.

Curt G. Joa, Inc.: *See—*
Joa, Curt G., 4,576,600, Cl. 604-390.000.

Cutler, Christopher A.: *See—*
Wallace, William D.; and Cutler, Christopher A., 4,576,181, Cl. 128-675.000.

Dai, Shenghong A., to Upjohn Company, The. Isocyanato-azetidinediones. 4,576,747, Cl. 260-239.00A.

Dai, Shenghong A.; and Sherwood, Philip W., to Dow Chemical Company, The. Azetidinedione compounds as crosslinkers for electrodeposited coatings. 4,576,980, Cl. 523-420.000.

Daigle, Colastie J.: *See—*
Smith, Malcolm S.; and Daigle, Colastie J., 4,576,821, Cl. 426-1.000.

Daikin Kogyo Co., Ltd.: *See—*
Harada, Tokuya; Higashiura, Tadashi; and Okubo, Misae, 4,576,915, Cl. 435-101.000.
Sako, Junichi; Yagi, Toshiharu; Higashihata, Yoshihide; Tatemoto, Masayoshi; Tomihashi, Nobuyuki; and Shimizu, Yoshiki, 4,577,005, Cl. 526-254.000.

Dainippon Screen Mfg. Co., Ltd.: *See—*
Yamasaki, Masahiro; Hirose, Iwao; Fukushima, Masao; and Yoshida, Ichiro, 4,576,467, Cl. 355-10.000.

Daitoku, Koichi; and Tsukahara, Daiki, to Nippon Kogaku K. K. Photographing lens position device in automatic focusing camera. 4,576,460, Cl. 354-400.000.

Danby, Hal C., to Anatros Corporation. Dual source parenteral infusion apparatus. 4,576,592, Cl. 604-80.000.

Dancey, James N.: *See—*
Cooke, William J.; Dancey, James N.; DeBoon, George B.; Miller, Norman W.; and Yungblut, Glen R., 4,576,518, Cl. 405-205.000.

Danfoss A/S: *See—*
Neldeberg, Poul; and Olsen, Steen H., 4,576,332, Cl. 237-2.00B.

Daniel, Maurice. Light distribution and collection assemblies and methods. 4,576,436, Cl. 350-96.100.

Danilova, Zinaida P.: *See—*
Kaidash, Arnold N.; Iofis, Naum A.; Khurtsilava, Semen G.; Bukatov, Alexandr S.; and Danilova, Zinaida P., 4,576,605, Cl. 623-2.000.

Danner, Helmut: *See—*
Brandl, Rudolf; and Danner, Helmut, 4,576,084, Cl. 89-14.400.

Dansk Industri Syndikat A/S: *See—*
Kauserud, Hakon, 4,576,215, Cl. 164-15.000.

Datta, Amitava: *See—*
Bose, Debasis; Datta, Amitava; DeCristofaro, Nicholas J.; and Henschel, Claude, 4,576,873, Cl. 428-606.000.

Daussan, Andre : *See—*
Daussan, Jean-Charles; Daussan, Andre ; and Daussan, Gerard, 4,576,365, Cl. 266-220.000.

Daussan et Compagnie: *See—*
Daussan, Jean-Charles; Daussan, Andre ; and Daussan, Gerard, 4,576,365, Cl. 266-220.000.

Daussan, Gerard: *See—*
Daussan, Jean-Charles; Daussan, Andre ; and Daussan, Gerard, 4,576,365, Cl. 266-220.000.

Daussan, Jean-Charles; Daussan, Andre ; and Daussan, Gerard, to Daussan et Compagnie. Device for the removal of inclusions contained in molten metals. 4,576,365, Cl. 266-220.000.

Davi, Horace: *See—*
Wermuth, Camille G.; Biziere, Kathleen; and Davi, Horace, 4,576,946, Cl. 514-247.000.

David, Lawrence D., to Celanese Corporation. Production of poly(p-phenylene) from 4,4'-dihalobiphenyl and lithium using ultrasonic waves. 4,576,688, Cl. 204-157.620.

Davies, William A. Vacuum sheet. 4,576,823, Cl. 428-61.000.

Davis, George T.; Chiang, Chawan-Kang; Antonucci, Joseph M.; and Takahashi, Toru, to United States of America, Navy. Polyethylene imine-metal salt solid electrolyte. 4,576,882, Cl. 429-192.000.

Dawson, Chris R.; Dondero, John; and Parks, Gerald R., to Gregory, John R. Detachable visor for a motorcycle helmet. 4,575,875, Cl. 2-422.000.

Dayen, Leonid: *See—*
Schilling, Hugh K.; Dayen, Leonid; and Raines, Charles D., 4,576,266, Cl. 192-70.120.

de la Cierva, Juan, Jr.: *See—*
de la Cierva, Juan, Sr.; and de la Cierva, Juan, Jr., 4,577,229, Cl. 358-182.000.

de la Cierva, Juan, Sr.; and de la Cierva, Juan, Jr. Special effects video switching device. 4,577,229, Cl. 358-182.000.

Deal, Philip A., to R. J. Reynolds Tobacco Company. Variable air dilution cigarette filter. 4,576,187, Cl. 131-336.000.

Deal, Troy M. Dredge cutterhead. 4,575,960, Cl. 37-63.000.

Dean, Donald E.: *See—*
Cabral, Chavelo; Dean, Donald E.; and Lopez, Armando M., 4,575,879, Cl. 4-253.000.

Dearing, James C. Air duct register mounting clip. 4,576,349, Cl. 248-27.100.

DeBergalis, Michael, to Du Pont de Nemours, E. I., and Company. Polymers containing resorcinol monobenzoate. 4,577,007, Cl. 526-321.000.

DeBlaueve Lier B.V.: *See—*
Browne, Gwendolen, 4,576,727, Cl. 252-90.000.

DeBoon, George B.: *See—*
Cooke, William J.; Dancey, James N.; DeBoon, George B.; Miller, Norman W.; and Yungblut, Glen R., 4,576,518, Cl. 405-205.000.

DeCristofaro, Nicholas J.: *See—*
Bose, Debasis; Datta, Amitava; DeCristofaro, Nicholas J.; and Henschel, Claude, 4,576,873, Cl. 428-606.000.

Deep, George: *See—*
Smyth, Laurence C.; and Deep, George, 4,576,220, Cl. 164-66.100.

Degussa Aktiengesellschaft: *See—*
Rothaut, Josef; Hausselt, Jurgen; Steinke, Rudi; and Klaus, Angela, 4,576,790, Cl. 420-464.000.

Delage, Germain: *See—*
Combes, Gilles; and Delage, Germain, 4,576,512, Cl. 405-100.000.

Delahunty, Michael D., to Ducata Limited. Fixing article holders to surfaces. 4,576,664, Cl. 156-71.000.

Delcon Oy: *See—*
Juutilainen, Timo, 4,577,267, Cl. 363-19.000.

DeLuca, Paul V.; and Hung, Peter, to Porta Systems Corp. Protective boot for telephone subscriber jacks. 4,576,428, Cl. 339-94.00R.

Demangeon, Francis; Hagenbach, Germain; and Maldonado, Paul, to Elf France. Cationic emulsions of bituminous binders of the bitumen type and their process of preparation. 4,576,648, Cl. 106-269.000.

DeMario, Edmund E., to Westinghouse Electric Corp. Partial grid for a nuclear reactor fuel assembly. 4,576,786, Cl. 376-439.000.

Deniega, Jose C.: *See—*
Montgomery, John R.; Brumaghim, Milton W.; and Deniega, Jose C., 4,576,166, Cl. 128-325.000.

Denison, Early B., to Shell Oil Company. Riser angle control apparatus and method. 4,576,516, Cl. 405-195.000.

Dennison National Company: *See—*
Beleckis, Vytautas K., 4,576,497, Cl. 402-73.000.

Denta, Edward P., Jr.: *See—*
Hedberg, David J.; Denta, Edward P., Jr.; and Jo Chiong, Victor E., 4,577,240, Cl. 360-22.000.

de Pierne, Otto S.: *See—*
Shukla, Jayendra G.; Sohn, Ki G.; Twickler, Carl; and de Pierne, Otto S., 4,576,612, Cl. 51-295.000.

Derain, Christian; and Saint-Marc, Henri R., to Societe Nouvelle des Bennes Saphem. Device for compacting contents of high capacity semitrailer body. 4,576,540, Cl. 414-511.000.

deRonde, Henry M., to United States of America, Air Force. Connecting coaxial cables to shielded electronic device. 4,577,054, Cl. 174-35.00C.

DeSoto, Inc.: *See—*
Crockatt, William B.; and Rimma, John, 4,576,987, Cl. 524-487.000.

Deters, Joseph C.: *See—*
Guittard, George V.; Deters, Joseph C.; Theeuwes, Felix; and Cortese, Richard, 4,576,604, Cl. 604-890.000.

Detroit Stoker Company: *See—*
Reschly, David C., 4,576,101, Cl. 110-182.500.

Deutsche Solvay Werke GmbH: *See—*
Kaeufer, Helmut; and Burr, August, 4,576,775, Cl. 264-323.000.

Deutsches Elektronen-Synchrotron Desy: *See—*
Rummler, Jurgen, 4,577,118, Cl. 307-106.000.

Deutschman, John E., to Alcan International Limited. Treatment of scrap lining material from aluminium reduction cells. 4,576,651, Cl. 134-25.100.

Development Finance Corporation of New Zealand: *See—*
Thorpe, Denis, 4,576,247, Cl. 181-243.000.

Devries, Luitzen: *See—*
Lam, Wim J.; Devries, Luitzen; McKinnon, Gordon M.; and Baribeau, Jean J., 4,576,577, Cl. 434-58.000.

Diamond, Harvey E. Integrated stereo and bathtub system II. 4,575,882, Cl. 4-559.000.

Dickinson, Harry D. Bollard trafficway barrier and vehicle arrest system. 4,576,508, Cl. 404-6.000.

Dickinson, Kay H.: *See—*
Crossley, Roger; and Dickinson, Kay H., 4,576,955, Cl. 514-335.000.

Diepers, Heinrich; Feigt, Ingmar; and Lange, Gottfried, to Siemens Aktiengesellschaft. X-Ray converter foil. 4,577,108, Cl. 250-370.000.

Diepstraten, Wilhelmus J. M.: *See—*
Boer, Jan; and Diepstraten, Wilhelmus J. M., 4,577,334, Cl. 375-97.000.

Diffracto Ltd.: *See—*
Pryor, Timothy R., 4,576,482, Cl. 356-376.000.

DiGianfilippo, Dominic J.: *See—*
Parker, Robert R.; and DiGianfilippo, Dominic J., 4,576,578, Cl. 434-307.000.

Digital Engineering, Ltd.: *See—*
Hedberg, David J.; Denta, Edward P., Jr.; and Jo Chiong, Victor E., 4,577,240, Cl. 360-22.000.

Dillon, Larry W.; Jamerson, Robert L.; and Padgett, Thomas M., to Fieldcrest Mills, Inc. Pile fabrics as woven terry fabrics with diagonal grooves of cut pile. 4,576,848, Cl. 428-89.000.

Dils, Ray R., to United States of America, Commerce. Optical fiber thermometer. 4,576,486, Cl. 374-131.000.

Dixon, Derek; and Richardson, Barry A., to John Brown Automation Limited. Apparatus for use in leak detection. 4,576,038, Cl. 73-40.700.

DMI Wireline, Inc.: *See—*
Brown, Robert L., 4,576,229, Cl. 166-177.000.

Dobhan, Herbert: *See—*
Brandenstein, Manfred; Walter, Lothar; Haas, Roland; and Dobhan, Herbert, 4,576,268, Cl. 192-98.000.

Dobner, Donald J., to General Motors Corporation. Power assisted braking system with wheel lock control. 4,576,417, Cl. 303-15.000.

Dr. Ing. Rudolf Hell GmbH: *See—*
Klie, Jurgen; and Nehl, Rainer, 4,577,219, Cl. 358-78.000.

Docutel/Olivetti Corporation: *See—*
Fulbright, Thomas G.; and Payne, G. Houson, III, 4,576,495, Cl. 400-328.000.

Doerr, Hermann; Hoster, Thomas; Neuschuetz, Dieter; Radke, Dietrich; Janssen, Wilhelm; and Ulrich, Klaus, to Fried. Krupp Gesellschaft mit beschraenkter Haftung. Process for the production of ferromanganese. 4,576,638, Cl. 75-80.000.

Doi, Isao; Mihashi, Takashi; and Yokota, Shoichiro, to Nissan Motor Co., Ltd. Valve timing control device for an internal combustion engine. 4,576,127, Cl. 123-90.150.

Dolby Laboratories Licensing Corporation: *See—*
Allen, Ioan R., 4,577,302, Cl. 369-46.000.
Allen, Ioan R.; and Todd, Craig C., 4,577,305, Cl. 369-86.000.

Domino Printing Sciences Plc: *See—*
Slomianny, Jan, 4,576,111, Cl. 118-313.000.

Donahue, Frederick A.: *See—*
Beery, Jack; Donahue, Frederick A.; and Shaul, Ronald E., 4,577,096, Cl. 250-205.000.

Donald, Dennis S., to Du Pont de Nemours, E. I., and Company. Tanning development in low silver photoimaging using polymeric couplers. 4,576,894, Cl. 430-264.000.

Donato, Anthony C.; and Kartavenko, Alex, to Lightolier Incorporated. Ceiling mounted lighting fixture with thermal protector. 4,577,266, Cl. 362-296.000.

Doncroft Colors & Chemicals, Inc.: *See—*
Donenfeld, Henry, 4,576,610, Cl. 8-471.000.

Dondero, John: *See—*
Dawson, Chris R.; Dondero, John; and Parks, Gerald R., 4,575,875, Cl. 2-422.000.

Donenfeld, Henry, to Doncroft Colors & Chemicals, Inc. Sublimation dye transfer printing of fabrics. 4,576,610, Cl. 8-471.000.

Donnelly, Thomas J.: *See—*
Ferree, Herbert E.; Wagner, Thomas R.; Hecht, Michael D.; and Donnelly, Thomas J., 4,577,127, Cl. 310-83.000.

Donofrio, Pat. Glass scriber assembly. 4,576,079, Cl. 83-886.000.

Donomoto, Tadashi; Koyama, Mototsugu; Fuwa, Yoshio; Miura, Nobuhiro; and Sakakibara, Tatsuo, to Toyota Jidosha Kabushiki Kaisha; and Art Kinzoku Kogyo Kabushiki Kaisha. Composite material and process for its production. 4,576,863, Cl. 428-325.000.

Dorrer, Bernhard; and Strametz, Helmut, to Hoechst Aktiengesellschaft. Process for the preparation of a polypropylene molding composition. 4,576,994, Cl. 525-247.000.

Doskocil Manufacturing Co., Inc.: *See—*
Frydenberg, Donald V., 4,576,307, Cl. 220-324.000.

Dove, Anna Lena: *See—*
Dove, Doublas J. A.; and Nelson, Raymond F., 4,576,280, Cl. 206-289.000.

Dove, Doublas J. A.; and Nelson, Raymond F., to Dove, Anna Lena. Hanging garment container. 4,576,280, Cl. 206-289.000.

Dow Chemical Company, The: *See—*
Coleman, William M., III; and Edmondson, Morris S., 4,577,001, Cl. 526-127.000.
Dai, Shenghong A.; and Sherwood, Philip W., 4,576,980, Cl. 523-420.000.
Durvasula, Visweswara R., 4,577,034, Cl. 549-241.000.
Ellerbe, Gilbert B., III; and Hefner, Robert E., Jr., 4,576,998, Cl. 525-455.000.
McCreedy, Kathleen M.; Keskkula, Henno; Pawloski, James C.; and Yonkers, Edward H., 4,576,721, Cl. 210-640.000.

Dowling, Donald J.; and Palmer, Harold A., to Texaco Inc. Method and apparatus for combating encroachment by in situ treated formations. 4,576,231, Cl. 166-248.000.

Downs, Michael J. Apparatus and method for investigation of a surface. 4,576,479, Cl. 356-351.000.

Dreher, Gunther: *See—*
Stieber, Michael; Meinke, Peter; and Dreher, Gunther, 4,576,246, Cl. 180-168.000.

Dreibelbis, Richard C., to Emerson Electric Co. (H&H Precision Prod. Div.). Cartridge type control valve with inverted J-shaped inlet duct. 4,576,195, Cl. 137-315.000.

Dresser Industries, Inc: *See—*
Michaels, John M.; Croopnick, Gerald A.; and Morris, Richard A., 4,576,715, Cl. 210-347.000.

Dresser, Thomas M.: *See—*
Clements, Talmage B.; and Dresser, Thomas M., 4,576,785, Cl. 376-435.000.

Dressler, Wolfgang: *See—*
Schwanitz, Manfred; Gaertner, Dietrich; Dressler, Wolfgang; and Schenk, Joerg, 4,577,195, Cl. 343-702.000.

Drewes, John H.; and Gemra, Richard J., to Bell Communications Research, Inc. Guy hook. 4,575,904, Cl. 24-115.00K.

Driscoll, John F.: *See—*
Barr, Millard G.; Barrett, William H.; Braidt, Joseph W.; Driscoll, John F.; Gregory, Joseph A.; Lucente, Samuel A.; and Remsburger, Louis J., 4,577,187, Cl. 340-700.000.

Drogi, Dieter: *See—*
Rix, Albert; Martens, Horst; Drogi, Dieter; Frerichs, Klaus-Dieter; and Leschik, Wolfgang, 4,577,200, Cl. 346-140.00R.

D'Silva, Themistocles D. J., to Union Carbide Corporation. Pesticidal oxime N-alkyl-N-α-haloacyl-carbamates. 4,576,965, Cl. 514-564.000.

DSM Resins B.V.: *See—*
Hupperetz, Willem J. H.; and Ramakers, Johannes A. H. M., 4,577,017, Cl. 544-193.000.

Dubroff, Seymour. Intraocular lenses. 4,575,878, Cl. 623-6.000.

Ducata Limited: *See—*
Delahunty, Michael D., 4,576,664, Cl. 156-71.000.

Duda, Henry J., to Randall Equipment Company. Awning assembly. 4,576,192, Cl. 135-89.000.

Duerksen, John H.; Wall, Robert G.; and Knight, Jack D., to Chevron Research Company. Non-condensible gas injection including alpha-olefin sulfonate dimer surfactant additives and a process of stimulating hydrocarbon recovery from a subterranean formation. 4,576,232, Cl. 166-274.000.

Duffy, Joseph K.: *See—*
Combs, Cathy M.; Duffy, Joseph K.; and Thoene, Mark, 4,576,017, Cl. 62-372.000.

Dufresne, Raymond A. Snap cable clamp apparatus for battery terminals. 4,576,430, Cl. 339-100.000.

Duggan, Jack, to Fire Detection Devices Ltd. Fire detector. 4,577,186, Cl. 340-589.000.

Dumas, Christopher C.: *See—*
Koerner, Richard J.; Dumas, Christopher C.; Filia, Philip J.; Lawrence, Ronald L.; and Petch, David B., 4,576,148, Cl. 128-26.000.

Dumas, Jean-Claude: *See—*
Pol, Vincent; and Dumas, Jean-Claude, 4,576,606, Cl. 623-3.000.

Duncombe, Edward; and Winstanley, John P., to United Kingdom Atomic Energy Authority. Temperature threshold detectors. 4,576,781, Cl. 376-247.000.

Duneman, Dennis C.: *See—*
Geary, Joseph M.; Vunck, Darius S.; Duneman, Dennis C.; Sessions, Ronald L.; Moeller, Charles E.; and Wick, Raymond V., 4,577,103, Cl. 250-316.100.

Dunlop, Alfred E.; and Kernighan, Brian W., to AT&T Bell Laboratories. Placement of components on circuit substrates. 4,577,276, Cl. 364-491.000.

Dunlop Limited: *See—*
Cox, Andrew P. D., 4,576,037, Cl. 73-40.50R.

Dunn, Jeffery L.; and Durham, Michael W., to Leyman Manufacturing Corp. Safety latch for a cargo platform. 4,576,541, Cl. 414-545.000.

Du Pont de Nemours, E. I., and Company: *See—*
DeBergalis, Michael, 4,577,007, Cl. 526-321.000.
Donald, Dennis S., 4,576,894, Cl. 430-264.000.
Farnham, William B., 4,577,003, Cl. 526-194.000.
Gannett, Thomas P.; and Gibbs, Hugh H., 4,576,857, Cl. 428-260.000.
Krespan, Carl G., 4,576,752, Cl. 260-349.000.
Lemke, Timothy A., 4,576,662, Cl. 156-52.000.
Malhotra, Satish C., 4,576,869, Cl. 428-502.000.
Reap, James J., 4,576,633, Cl. 71-93.000.
Redick, Hugh E., 4,576,810, Cl. 423-447.100.
Riggs, Dennis M.; and Redick, Hugh E., 4,576,811, Cl. 423-447.200.
Rorer, Morris P., 4,576,632, Cl. 71-93.000.
Smith, Malcolm S.; and Daigle, Colastie J., 4,576,821, Cl. 426-1.000.
Wells, John R., 4,576,110, Cl. 118-52.000.
Wexler, Ruth R., 4,576,958, Cl. 514-400.000.

Duquesne , Jean F.; and Rozenwaig, Boris. Packet-based telecommunication system. 4,577,311, Cl. 370-60.000.

Durham, Michael W.: *See—*
Dunn, Jeffery L.; and Durham, Michael W., 4,576,541, Cl. 414-545.000.

Durham, Steven: *See—*
McCann, James; Langley, James; Hopper, Ian; Durham, Steven; Scott, Thomas; and McOmish, Eric R., 4,576,517, Cl. 405-195.000.

Durvasula, Visweswara R., to Dow Chemical Company, The. Autoxidation of bis(ortho dialkyl-phenoxy)benzophenones. 4,577,034, Cl. 549-241.000.

Dusza, John P.: *See—*
Tomcufcik, Andrew S.; Meyer, Walter E.; Dusza, John P.; and Tseng, Shin S., 4,576,943, Cl. 514-222.000.

Duwel, Edward E.: *See—*
Soderberg, John H.; Jones, Howell A.; Eckert, Alton B.; and Duwel, Edward E., 4,577,283, Cl. 364-464.000.

Dyck, Manfred F.; and Haine, Walter A., to Ortho Pharmaceutical Corporation. Prophylactic device and method. 4,576,156, Cl. 128-132.00R.

Dynamit Nobel AG: *See—*
Matthes, Reinhard; and Vahlensieck, Hans-Joachim, 4,577,045, Cl. 568-851.000.

Dynascan Corporation: *See—*
Lulay, John R., 4,577,072, Cl. 179-175.10R.

Dzialas, Willi: *See—*
Krautter, Jurgen; and Dzialas, Willi, 4,576,864, Cl. 428-328.000.

E. R. Squibb & Sons, Inc.: *See—*
Zahler, Robert; Koster, William H.; and Slusarchyk, William A., 4,576,749, Cl. 260-239.00A.

E-Systems, Inc.: *See—*
Ballew, James D.; and Rogers, Phil H., 4,577,272, Cl. 364-200.000.

E-W Mold & Tool Company, Inc.: *See—*
Grannen, Walter A., III, 4,576,568, Cl. 425-577.000.

Eagle-Picher Industries, Inc.: *See—*
Cargould, Barry D., 4,576,040, Cl. 73-146.000.

Easter, Finis C.; and Aires, Ramon H., to RCA Corporation. Switching dc-to-dc converters. 4,577,268, Cl. 363-21.000.

Eastman Kodak Company: *See—*
Fletcher, George L., Jr.; Bender, Steven L.; and Wadsworth, Donald H., 4,577,024, Cl. 546-183.000.
Gunther, Wolfgang H. H.; Leone, Ronald E.; and Przyklek, Rosemary, 4,576,905, Cl. 430-401.000.
Howe, Dennis G.; and Wrobel, Joseph J., 4,577,306, Cl. 369-109.000.
Trotter, Jimmy R.; and McConnell, Richard L., 4,576,997, Cl. 525-444.000.

Eaton Corporation: *See—*
Bopp, Warren G., 4,576,259, Cl. 192-3.210.
Chambers, Worthy L.; Jones, William H.; and Hayden, Arthur H., 4,577,179, Cl. 340-309.150.
Howering, Robert, 4,576,535, Cl. 411-503.000.
Lane, E. James; Holmes, Russell C.; and Markyvech, Ronald K., 4,576,263, Cl. 192-0.044.
Schutten, Herman P.; Benjamin, James A.; and Lade, Robert W., 4,577,052, Cl. 136-246.000.
Schutten, Herman P.; Lade, Robert W.; and Benjamin, James A., 4,577,208, Cl. 357-23.400.
Speranza, Donald; Lane, E. James; and Markyvech, Ronald K., 4,576,065, Cl. 74-866.000.

Eaton, Ralph M.; and Geen, Michael W., to Plessey Overseas Limited. Diamond heatsink assemblies. 4,576,224, Cl. 165-80.200.

Ebbinghaus, Wilfried: *See—*
Steiner, Helmut; Ebbinghaus, Wilfried; and Paech, Hartmut, 4,576,488, Cl. 384-291.000.

Eberhard Faber, Inc.: *See—*
Nelson, John E., 4,576,424, Cl. 312-231.000.

Ebert, Charles, to Gebr. Happich GmbH. Sun visor with molded stiffening frame. 4,576,409, Cl. 296-97.00H.

EBM Elektrobau Mulfingen GmbH & Co.: *See—*
Reinhardt, Wilhelm; and Lipp, Helmut, 4,577,139, Cl. 318-254.000.

Ebnother, Martin: *See—*
Gale, Michael T.; Knop, Karl H.; and Ebnother, Martin, 4,576,439, Cl. 350-162.230.

Echigo, Yoshiaki; Suematsu, Yoshiyuki; and Ishikura, Tadashi, to Unitika Ltd. Spherical ion exchange resin having matrix-bound metal hydroxide, method for producing the same and method for adsorption treatment using the same. 4,576,969, Cl. 521-28.000.

Eckberg, Richard P., to General Electric Company. Ultraviolet radiation-curable silicone release compositions with epoxy and/or acrylic functionality. 4,576,999, Cl. 525-476.000.

Eckenrodt, Richard H. Rebar saddle. 4,575,985, Cl. 52-677.000.

Eckert, Alton B.: *See—*
Soderberg, John H.; Jones, Howell A.; Eckert, Alton B.; and Duwel, Edward E., 4,577,283, Cl. 364-464.000.

Eckhardt, David A.: *See—*
Lahoda, Edward J.; and Eckhardt, David A., 4,576,123, Cl. 122-382.000.

Eckhardt, Reiner: *See—*
Gauggel, Roland; and Eckhardt, Reiner, 4,576,346, Cl. 244-3.160.

Eddens, Fletcher C.; White, David W.; and Harmon, John L., to General Electric Company. Heat treated tube. 4,576,654, Cl. 148-11.50F.

Edmondson, Morris S.: *See—*
Coleman, William M., III; and Edmondson, Morris S., 4,577,001, Cl. 526-127.000.

Edwards, Robert J.; and Hardman, Paul D., to Lever Brothers Company. Detergent compositions. 4,576,744, Cl. 252-554.000.

Edwards, William E.: *See—*
Alsop, Brian H.; Popa, Frank D.; and Edwards, William E., 4,576,787, Cl. 376-447.000.

EECO Incorporated: *See—*
Pargee, Robert W., Jr., 4,577,191, Cl. 340-825.790.

Eggler, James F.; Johnson, Michael R.; and Melvin, Lawrence S., Jr., to Pfizer Inc. Substituted hexahydrobenzo[e]indene and octahydrophenanthrene CNS agents and pharmaceutical compositions thereof. 4,576,964, Cl. 514-546.000.

Ehrlich, Paul; Anderson, Wayne A.; Kang, En T.; and Bhatt, Ansuya P., to Research Foundation of State University of New York, The. Photoconductive polymer compositions. 4,576,887, Cl. 430-71.000.

Eijnthoven, Ronald K.: *See—*
Scholten, Pieter C.; and Eijnthoven, Ronald K., 4,576,833, Cl. 427-67.000.

Eisai Co., Ltd.: *See—*
Kuriyama, Shizuo; and Saitoh, Mikio, 4,576,966, Cl. 514-648.000.
Yamatsu, Isao; Abe, Shinya; Inai, Yuichi; Suzuki, Takeshi; Kinoshita, Kensaku; Mishima, Mannen; Katoh, Yoshinori; Kobayashi, Seiichi; Murakami, Manabu; and Yamada, Kouzi, 4,576,963, Cl. 514-532.000.

Eisenberg, Bernard C., to Solbern Corp. Method and apparatus for delivering a predetermined amount of material to a container. 4,576,209, Cl. 141-1.000.

Eisenberg, Hans J. Portable platform trestle for stages, platforms, pedestals or the like. 4,575,975, Cl. 52-109.000.

Eisenlauer, Josef; Horn, Dieter; and Neuwirth, Manfred, to BASF Aktiengesellschaft. Estimation of the degree of dispersion in flowing concentrated dispersions. 4,576,723, Cl. 210-709.000.

Eitan, Boaz; Kolodny, Avi; Amrany, Daniel; and McCreary, James, to Intel Corporation. Hybrid E^2 cell and related array. 4,577,295, Cl. 365-218.000.

Electric Power Research Institute: *See—*
Glamm, Paul R.; and Wendschlag, James C., 4,576,011, Cl. 62-115.000.

Electricite de France: *See—*
Plard, Christian; and Soulie, Jacques, 4,577,093, Cl. 219-376.000.

Electrochemische Energieconversie N.V.: *See—*
Alfenaar, Marinus, 4,576,877, Cl. 429-12.000.

Electrovac Gesellschaft m.b.H.: *See—*
Bayer, Helmut, 4,577,176, Cl. 337-394.000.

Elf France: *See—*
Demangeon, Francis; Hagenbach, Germain; and Maldonado, Paul, 4,576,648, Cl. 106-269.000.

Eli Lilly and Company: *See—*
Flaugh, Michael E., 4,576,959, Cl. 514-411.000.
Lunn, William H. W.; and Vasileff, Robert T., 4,577,014, Cl. 544-022.000.

Elias, Abe G.; and Elias, Peter G. Device for squeezing and winding collapsible tubes. 4,576,314, Cl. 222-97.000.

Elias, Peter G.: *See—*
Elias, Abe G.; and Elias, Peter G., 4,576,314, Cl. 222-97.000.

Elleman, Daniel D.: *See—*
Wang, Taylor G.; Elleman, Daniel D.; Lee, Mark C.; and Kendall, James M., Jr., 4,576,926, Cl. 502-339.000.

Ellerbe, Gilbert B., III; and Hefner, Robert E., Jr., to Dow Chemical Company, The. Vinyl urethane composite polymer containing vinyl terminated urethane oligomers. 4,576,998, Cl. 525-455.000.

El-Sadi, Ashraf I., to Memorex Corporation. Techniques for disk servo. 4,577,244, Cl. 360-77.000.

ELZETT Muvek: *See—*
Kassza, Tibor; Kakonyi, Gyula; and Molnar, Gabor, 4,576,025, Cl. 70-276.000.

Emerson Electric Co.: *See—*
Terpstra, Daniel A.; and Brundage, Richard B., 4,576,072, Cl. 83-102.100.

Emerson Electric Co. (H&H Precision Prod. Div.): *See—*
Dreibelbis, Richard C., 4,576,195, Cl. 137-315.000.

Emkay Manufacturing Co.: *See—*
Kaplan, Alan; and Amato, James, 4,576,114, Cl. 118-720.000.

Emonet, Henri. Tool assembly and handle assembly therefor. 4,576,241, Cl. 173-162.00H.

Emura, Noriaki; Ariyoshi, Takashi; and Kato, Toshikazu, to Toyo Soda Manufacturing Co., Ltd. Process for producing a chloroprene polymer. 4,577,004, Cl. 526-204.000.

Engelhardt, Fritz: *See—*
Keil, Karl-Heinz; Engelhardt, Fritz; Greiner, Ulrich; Kuhlein, Klaus; Keller, Reinhold; Schlingmann, Merten; and Hess, Gerhard, 4,576,973, Cl. 521-149.000.

English Electric Valve Company: *See—*
Menown, Hugh; and Knight, Raymond P., 4,577,138, Cl. 313-599.000.

Entreprise d'Equipements Mecaniques et Hydrauliques (E.M.H.): *See—*
Ghilardi, Jean P. R. F.; and Forget, Remi F., 4,576,387, Cl. 277-176.000.

EPI Resources Ltd.: *See—*
Cooke, William J.; Dancey, James N.; DeBoon, George B.; Miller, Norman W.; and Yungblut, Glen R., 4,576,518, Cl. 405-205.000.

Epson Corporation: *See—*
Kawamura, Yoshikazu, 4,577,203, Cl. 346-140.00R.

Epstein, Moshe. Biopsy attachment for ultrasonic probe. 4,576,175, Cl. 128-660.000.

Erdmann, Hermann; and Ramaker, Hermann, to ERNO Raumfahrttechnik GmbH. Rescue equipment for submarine vehicles. 4,576,105, Cl. 114-333.000.

Erhardt, Werner; and Hieber, Udo, to Siemens Aktiengesellschaft. Electric capacitor with an excessive-pressure safety protection mechanism. 4,577,257, Cl. 361-272.000.

Erickson, Wayne K.: *See—*
Burgess, Kenneth W.; Bryant, William R.; and Erickson, Wayne K., 4,576,852, Cl. 428-171.000.

Ermeto Armaturen GmbH: *See—*
Kohnlechner, Rainer, 4,576,049, Cl. 73-706.000.

ERNO Raumfahrttechnik GmbH: *See—*
Erdmann, Hermann; and Ramaker, Hermann, 4,576,105, Cl. 114-333.000.

Erwin Sick GmbH Optik-Elektronik: *See—*
Lauer, Reinhard; and Hartmann, Werner, 4,576,047, Cl. 73-597.000.

Eschrich, Gerhard; Juhasz, Josef; and Schwab, Manfred, to Robert Bosch GmbH. Method and apparatus to convert an electrical value into a mechanical position by using an electromagnetic element subject to hysteresis. 4,577,143, Cl. 318-701.000.

Esselte Pendaflex Corporation: *See—*
Snider, Alan D.; Soporowski, Andrzej L.; and Herbst, Manfred O., 4,576,328, Cl. 229-1.50R.

Essex Group, Inc.: *See—*
Levine, Herbert R.; Gerrato, Stephen G.; and Poulin, Benoit L., 4,576,207, Cl. 138-177.000.

Establissements les Fils d'Auguste Chomarat et Cie: *See—*
Fourezon, Andre , 4,576,858, Cl. 428-300.000.

Estes, Bay E., III: *See—*
Latasiewicz, Leonard; Melikian, Felix B.; and Estes, Bay E., III, 4,577,259, Cl. 361-400.000.

Ethyl Corporation: *See—*
Juneau, Matthew K., 4,576,806, Cl. 423-300.000.
Loechelt, Cecil P., II, 4,576,807, Cl. 423-329.000.

Etschenberg, Eugen: *See—*
Bauer, Kurt H.; Ghyczy, Miklos; Etschenberg, Eugen; and Osthoff, Heinrich, 4,576,626, Cl. 71-28.000.

Euroceltique, S.A.: *See—*
Shetty, Bola V., 4,576,818, Cl. 424-150.000.

Evans, Charles W.: *See—*
Adams, Don L.; Evans, Charles W.; and Wright, Stuart C., 4,577,275, Cl. 364-433.000.

Evans, Gary E., to Westinghouse Electric Corp. Microstrip line branching coupler having coaxial coupled remote termination. 4,577,167, Cl. 333-128.000.

EVVA-Werk Spezialerzeugung von Zylinder- und Sicherheitsschloessern Gesellschaft m.b.H. & Co. Kommanditgesellschaft: *See—*
Kurt, Prunbauer; and Csapo, Erich, 4,576,026, Cl. 70-380.000.

Excel Industries, Inc.: *See—*
Mariel, James G., 4,575,968, Cl. 49-502.000.

Excelermatic Inc.: *See—*
Kraus, Charles E., 4,575,910, Cl. 29-148.40D.
Kraus, Charles E., 4,576,055, Cl. 74-200.000.

Exxon Production Research Co.: *See—*
Mast, Robert F.; Cichanski, William J.; Walker, Francis R.; and Magura, Donald D., 4,576,519, Cl. 405-207.000.
Smetak, Edward C., 4,576,523, Cl. 405-227.000.

Exxon Research and Engineering Co.: *See—*
Siskin, Michael; and Brons, Glen B., 4,576,707, Cl. 208-8.0LE.
Weber, Paul S., 4,576,404, Cl. 285-41.000.

Eyzaguirre, Ramon C. Closed chamber dryer. 4,575,951, Cl. 34-30.000.

Fafournoux, Bernard. Bag for vacuum packaging of articles. 4,576,283, Cl. 206-524.800.

FAG Kugelfischer Georg Schafer (KGaA): *See—*
Scharting, Gunter; and Neugebauer, Steffen, 4,576,382, Cl. 277-12.000.

Fairey Engineering Limited: *See—*
Chadwick, John R., 4,577,087, Cl. 219-121.0LC.

Faletti, Fred J.: *See—*
Willett, Richard A.; Faletti, Fred J.; and Faletti, Paul A., 4,575,986, Cl. 53-118.000.

Faletti, Paul A.: *See—*
Willett, Richard A.; Faletti, Fred J.; and Faletti, Paul A., 4,575,986, Cl. 53-118.000.

Falk, Robert A., to Ciba-Geigy Corporation. Perfluoroalkyl-alkyl-thio, sulfinyl or sulfonyl-alkylene glycidyl ether. 4,577,036, Cl. 549-556.000.

Fanuc Ltd.: *See—*
Inaba, Hajimu; and Torii, Nobutoshi, 4,576,537, Cl. 414-222.000.

Farge, Daniel: *See—*
Bourzat, Jean-Dominique; Cotrel, Claude; Farge, Daniel; Paris, Jean-Marc; and Taurand, Gerard, 4,576,954, Cl. 514-314.000.

Farmitalia Carlo Erba S.p.A.: *See—*
Alpegiani, Marco; Bedeschi, Angelo; Foglio, Maurizio; Franceschi, Giovanni; and Perrone, Ettore, 4,577,016, Cl. 544-182.000.
Valentini, Luigi; and Coccia, Mario, 4,576,211, Cl. 141-329.000.

Farnham, William B., to Du Pont de Nemours, E. I., and Company. Pentacoordinate silyl enolates and their use as polymerization initiators. 4,577,003, Cl. 526-194.000.

Farrelly, Susan E.; and Spector, George. Process of forming a labeled tag for a garment. 4,576,668, Cl. 156-93.000.

Farrington, Richard I.: *See—*
Amici, Francis R.; Berger, Hans S.; Farrington, Richard I.; and Piazza, Pietro, 4,576,586, Cl. 446-315.000.

Fasel, Herman P.: *See—*
Kapur, Jagdish C.; and Fasel, Herman P., 4,576,754, Cl. 260-245.20R.

Faul, Wolfgang; Furst, Leander; Holzer, Walter; and Kastening, Bertel, to Kernforschungsanlage Julich GmbH. Method and apparatus for regenerating an ammoniacal etching solution. 4,576,677, Cl. 156-642.000.

Favara, Duccio; Omodei-Sale', Amedeo; and Consonni, Pietro, to Gruppo Lepetit, S.p.A. Novel β-lactam acetic acid derivatives. 4,576,746, Cl. 260-239.00A.

Fazekas, Carl F., to Panavision, Inc. Dual motor reversible drive film magazine. 4,576,455, Cl. 352-78.00R.

Fedosov, Alexei Z.: *See—*
Lipets, Adolf U.; Kuznetsova, Svetlana M.; Galuskin, Vadim B.; Lafa, Jury I.; Sotnikov, Ivan A.; Ovchar, Vladimir G.; and Fedosov, Alexei Z., 4,576,226, Cl. 165-134.100.

Fee, David M.: *See—*
Holzinger, Charles E.; and Fee, David M., 4,576,418, Cl. 303-71.000.

Feierabend, Louis: *See—*
Mottram, William R.; Fisher, Gene A.; and Feierabend, Louis, 4,576,616, Cl. 55-68.000.

Feigt, Ingmar: *See—*
Diepers, Heinrich; Feigt, Ingmar; and Lange, Gottfried, 4,577,108, Cl. 250-370.000.

Feldman, David B.: *See—*
Crean, Peter A.; Birnbaum, David; Feldman, David B.; Liptak, Frank J.; and Sewhuk, David W., 4,577,197, Cl. 346-75.000.

Felthuis, Jacob; and Tournier, Joseph H., to Hoogovens Groep B.V.; and Keralox B.V. Ceramic sealing rope. 4,576,081, Cl. 87-6.000.

Fenk, Josef: *See—*
Kriedt, Hans; and Fenk, Josef, 4,577,336, Cl. 377-111.000.

Fennesz, Manfred. System for tempering a room. 4,576,221, Cl. 165-49.000.

FERAG AG: *See—*
Meier, Jacques, 4,575,988, Cl. 53-399.000.

Ferderber, Fred F. Drawing support and storage apparatus. 4,576,279, Cl. 206-225.000.

Ferguson, Glenn R.; and Ferguson, Kenneth R. Horse wind and mud deflector. 4,575,996, Cl. 54-80.000.

Ferguson, Kenneth R.: *See—*
Ferguson, Glenn R.; and Ferguson, Kenneth R., 4,575,996, Cl. 54-80.000.

Ferguson Manufacturing, Inc.: *See—*
Hill, T. Don, 4,576,584, Cl. 446-193.000.

Ferrar, Carl M.: *See—*
Meltz, Gerald; Allen, Louis B., Jr.; and Ferrar, Carl M., 4,577,100, Cl. 250-231.00P.

Ferree, Herbert E.; Klinvex, Daniel E.; and Vestovich, Robert P., to Westinghouse Electric Corp. Adjustable radius apparatus for calibrating ultrasonic transducer array. 4,576,034, Cl. 73-1.0DV.

Ferree, Herbert E.; and Wagner, Thomas R., to Westinghouse Electric Corp. Core barrel plug. 4,576,778, Cl. 376-203.000.

Ferree, Herbert E.; Wagner, Thomas R.; Hecht, Michael D.; and Donnelly, Thomas J., to Westinghouse Electric Corp. Lightweight electric robotic actuator. 4,577,127, Cl. 310-83.000.

Ferro Corporation: *See—*
Shukla, Jayendra G.; Sohn, Ki G.; Twickler, Carl; and de Pierne, Otto S., 4,576,612, Cl. 51-295.000.

Ferro, Gregory A.: *See—*
Lee, Raymond; and Ferro, Gregory A., 4,576,862, Cl. 428-317.700.

Ferro Manufacturing Corporation: *See—*
Bickerstaff, David J., 4,575,967, Cl. 49-211.000.

Fetzer, Gerhard: *See—*
Griesinger, Rolf; and Fetzer, Gerhard, 4,576,000, Cl. 57-416.000.

Fiberglas Canada, Inc.: *See—*
Lunt, James; MacPherson, Edwin J.; and Meunier, Paul J., 4,576,972, Cl. 521-136.000.

Fiddian-Green, Richard G. Intraluminal membrane oxygenator method for a tubular organ of the gastrointestinal tract. 4,576,590, Cl. 604-26.000.

Fieldcrest Mills, Inc.: *See—*
Dillon, Larry W.; Jamerson, Robert L.; and Padgett, Thomas M., 4,576,848, Cl. 428-89.000.
Mills, Edwin R., 4,577,094, Cl. 219-505.000.

Fields, James R.; Rogers, Elmer H., Jr; and King, Larry K., to Aluminum Company of America. Separation of volatile impurities from aluminum chloride before electrolysis. 4,576,690, Cl. 204-67.000.

Fifolt, Michael J.: *See—*
Campbell, Donald H.; Fifolt, Michael J.; and Saran, Mohan S., 4,577,044, Cl. 568-677.000.

Figge, Dieter: *See—*
Artz, Gerd; Beckmann, Gerhard; Figge, Dieter; and Philipp, Clemens, 4,576,218, Cl. 164-431.000.

Figueredo, Jorge H., to Burroughs Corporation. Machine for ultrasonically bonding wires to cavity-down integrated circuit packages. 4,576,322, Cl. 228-4.500.

Filia, Philip J.: *See—*
Koerner, Richard J.; Dumas, Christopher C.; Filia, Philip J.; Lawrence, Ronald L.; and Petch, David B., 4,576,148, Cl. 128-26.000.

Fink, Mathias A.; and Cardoso, Jean-Francois, to U.S. Philips Corporation. Device for the examination of objects by means of ultrasound echography. 4,576,046, Cl. 73-631.000.

Fink, Roland; Mayr, Maximilian; and Schlenz, Dieter, to Alkor GmbH Kunststoffe. Foam laminate foil or web and process for preparing same. 4,576,860, Cl. 428-314.400.

Finnieston, Alan: *See—*
Zagorski, Joseph; and Finnieston, Alan, 4,576,153, Cl. 128-87.00R.

Fire Detection Devices Ltd.: *See—*
Duggan, Jack, 4,577,186, Cl. 340-589.000.

Fischbach, Wolfgang, to Heinrich Baumgarten KG Eisen- und Blechwarenfabrik. Handle attachment for a hollow accessory handle which is formed of sheet metal. 4,575,897, Cl. 16-110.00A.

Fischer, Udo K. R.: *See—*
Olsson, Olle G.; Yaman, Melih; Waldenstrom, Mats G.; and Fischer, Udo K. R., 4,576,875, Cl. 428-627.000.

Fisher, Gene A.: *See—*
Mottram, William R.; Fisher, Gene A.; and Feierabend, Louis, 4,576,616, Cl. 55-68.000.

Fitch, Robert C.; and Narendra, Pat M., to Honeywell Inc. Synthetic d.c. restoration of a.c. coupled signals. 4,577,223, Cl. 358-113.000.

Fitzgerald, Fitz E. Pipe cutter and method. 4,576,070, Cl. 82-82.000.

Fitzner, Klaus: *See—*
Mathewes, Wolfgang; Fitzner, Klaus; and Plitt, Uwe, 4,576,088, Cl. 98-119.000.

Flachenecker, Gerhard: *See—*
Schmidt, Alfred; and Flachenecker, Gerhard, 4,577,140, Cl. 318-587.000.

Flaugh, Michael E., to Eli Lilly and Company. 6-Substituted-4-dialkylaminotetrahydrobenz[c,d]indoles. 4,576,959, Cl. 514-411.000.

Flensburg, Carl G. A.; and Isaksson, Rolf H. V. Method in producing stitched printed matters and feeder for working the method. 4,576,369, Cl. 270-54.000.

Fletcher, George L., Jr.; Bender, Steven L.; and Wadsworth, Donald H., to Eastman Kodak Company. Oxoindolizine and oxoindolizinium compounds useful as dyes. 4,577,024, Cl. 546-183.000.

Floreancig, Antoine, to Uranium Pechiney Ugine Kuhlmann. Method of dissolving impure uranium tetrafluoride. 4,576,802, Cl. 423-20.000.

Florida State University: *See—*
Lipner, Harry, 4,576,599, Cl. 604-390.000.

Fluorocarbon/Sepco: *See—*
Kana, Kenneth W.; Kana, Willie H.; and Seidel, Francis L., 4,575,917, Cl. 29-520.000.

FMC Corporation: *See—*
Anderson, David N., 4,576,562, Cl. 425-126.00S.
Post, Steven W., 4,576,337, Cl. 239-127.000.
Ungchusri, Tep; and Jakubowski, William J., 4,576,385, Cl. 277-124.000.

Foerster, Peter: *See—*
Maack, Werner; Kampfmann, Georg; and Foerster, Peter, 4,576,032, Cl. 72-431.000.

Foglio, Maurizio: *See—*
Alpegiani, Marco; Bedeschi, Angelo; Foglio, Maurizio; Franceschi, Giovanni; and Perrone, Ettore, 4,577,016, Cl. 544-182.000.

Fontaine, Guy; and Achard, Serge, to Promocab, S.A. Apparatus for the protection of places such as residences. 4,577,183, Cl. 340-541.000.

Force, Louis W. Wellhead gas treatment and co-generation method and system. 4,576,005, Cl. 60-618.000.

Forget, Remi F.: *See—*
Ghilardi, Jean P. R. F.; and Forget, Remi F., 4,576,387, Cl. 277-176.000.

Forrer, Hans. Multipurpose clamping device for workpieces, particularly of wood. 4,576,529, Cl. 408-240.000.

Forrest, Stephen R.; and Panock, Richard L., to AT&T Bell Laboratories. Photodiodes having a hole extending therethrough. 4,577,209, Cl. 357-30.000.

Forse, Nicholas J. A.: *See—*
Johnston, Robert D.; and Forse, Nicholas J. A., 4,577,071, Cl. 179-170.200.

Forster, Hilmar, to Scharfenbergkupplung GmbH. Vehicle coupler device having means for taking excess impacts. 4,576,294, Cl. 213-9.000.

Fortuna, Vincent E., to Vercon, Inc. Apparatus for closing a container. 4,575,987, Cl. 53-298.000.

Foster, John L. Pipeline inspection vehicles. 4,576,097, Cl. 104-138.00G.

Foster, Pierce W.: *See—*
Robinson, Joseph G.; and Foster, Pierce W., 4,577,009, Cl. 528-228.000.

Foster, Robert D., to Spred-A-Bag Inc. Dispensing bag. 4,576,316, Cl. 222-541.000.

Fourezon, Andre , to Establissements les Fils d'Auguste Chomarat et Cie. Material based on a non-woven textile lap which may be used as reinforcement for impermeable coverings. 4,576,858, Cl. 428-300.000.

Franceschi, Giovanni: *See—*
Alpegiani, Marco; Bedeschi, Angelo; Foglio, Maurizio; Franceschi, Giovanni; and Perrone, Ettore, 4,577,016, Cl. 544-182.000.

Frank, Gerald L.: *See—*
Lucas, William L.; Asbill, Clarence M., III; Frank, Gerald L.; and Miller, David M., 4,576,194, Cl. 137-84.000.

Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H.: *See—*
Theurer, Josef, 4,576,095, Cl. 104-12.000.
Theurer, Josef; and Brunninger, Manfred, 4,576,538, Cl. 414-339.000.

Freedman, Larry A.: *See—*
Rentsch, Edward M.; and Freedman, Larry A., 4,577,115, Cl. 250-578.000.

Freeman, Tommie A., to Halliburton Company. Rupturable closure. 4,576,522, Cl. 405-225.000.

Freimiller, Gary L.: *See—*
Tyrell, John A.; and Freimiller, Gary L., 4,576,982, Cl. 524-84.000.

Frerichs, Klaus-Dieter: *See—*
Rix, Albert; Martens, Horst; Drogi, Dieter; Frerichs, Klaus-Dieter; and Leschik, Wolfgang, 4,577,200, Cl. 346-140.00R.

Fres-co System USA, Inc.: *See—*
Goglio, Luigi, 4,576,285, Cl. 206-632.000.

Frey, Alan E.; and Kerr, Howard A., to AT&T Bell Laboratories. Meet-me conference arrangement. 4,577,065, Cl. 179-18.0BC.

Frey, Otto: *See—*
Muller, Maurice E.; and Frey, Otto, 4,576,152, Cl. 128-92.00R.

Fricker, Urs: *See—*
Martin, Henry; and Fricker, Urs, 4,576,628, Cl. 71-88.000.

Fried. Krupp Gesellschaft mit beschraenkter Haftung: *See—*
Doerr, Hermann; Hoster, Thomas; Neuschuetz, Dieter; Radke, Dietrich; Janssen, Wilhelm; and Ulrich, Klaus, 4,576,638, Cl. 75-80.000.

Fried. Krupp Gesellschaft mit beschrankter Haftung: *See—*
Artz, Gerd; Beckmann, Gerhard; Figge, Dieter; and Philipp, Clemens, 4,576,218, Cl. 164-431.000.

Friedrich Vollmer Fienmessgeratebau GmbH: *See—*
Rigler, Gunter; and Vollmer, Friedrich, 4,575,945, Cl. 33-182.000.

Frito-Lay, Inc.: *See—*
Socola, Helen M.; and Topor, Michael G., 4,576,108, Cl. 118-19.000.

Frommer, Elmar: *See—*
Grosskinsky, Otto-Alfred; Frommer, Elmar; Ritz, Josef; Thomas, Erwin; and Weiss, Franz-Josef, 4,576,804, Cl. 423-265.000.

Frosien, Jurgen; and Pomper, Michael, to Siemens Aktiengesellschaft. Arrangement and method for voltage measurement at a buried test subject. 4,577,147, Cl. 324-71.300.

Fryberg, Mario; Schaller, Heinrich; Steiger, Rolf; and Peter, Heinz, to Ciba-Geigy AG. Photographic material for the silver dye bleach process. 4,576,885, Cl. 430-390.000.

Frydenberg, Donald V., to Doskocil Manufacturing Co., Inc. Separable elements held together by a sliding latch. 4,576,307, Cl. 220-324.000.

Fuchs, Hermann: *See—*
Mischke, Peter; and Fuchs, Hermann, 4,576,755, Cl. 260-245.780.

Fuji Jukogyo Kabushiki Kaisha: *See—*
Yamakawa, Toru; Makita, Fujio; Umezawa, Mitsuo; and Sakakiyama, Ryuzo, 4,576,061, Cl. 74-665.00T.

Fuji Machinery Company, Ltd.: *See—*
Umeda, Yoshiaki; Matsumoto, Ryouhei; Isomura, Hiroyasu; and Shimotaka, Hisakuni, 4,576,588, Cl. 493-475.000.

Fuji Micro Graphics Co., Ltd.: *See—*
Shiga, Koji; and Arito, Tatsunari, 4,576,469, Cl. 355-29.000.

Fuji Photo Film Co., Ltd.: *See—*
Akao, Mutsuo, 4,576,865, Cl. 428-335.000.
Araki, Hiroaki; and Kitamoto, Tatsuji, 4,576,635, Cl. 75-0.5AA.
Cho, Michio; Suzuki, Masane; and Saito, Takayuki, 4,576,458, Cl. 354-199.000.
Hirano, Tsumoru; and Furutachi, Nobuo, 4,576,910, Cl. 430-548.000.
Hirokazu, Sakaki; and Takizawa, Kazushige, 4,576,686, Cl. 204-33.000.
Hosoi, Noriyuki; Ikeda, Kensuke; and Matsukawa, Hiroharu, 4,576,831, Cl. 427-40.000.
Hosoi, Noriyuki, 4,576,890, Cl. 430-137.000.
Kawamata, Toshio, 4,577,077, Cl. 219-10.430.
Kita, Nobuyuki; and Matsumoto, Hiroshi, 4,576,743, Cl. 252-524.000.
Kogane, Mikio; and Nishimura, Mizuho, 4,576,471, Cl. 355-50.000.
Kogane, Mikio; Nishimura, Mizuho; and Yamamoto, Takashi, 4,576,473, Cl. 355-68.000.
Nakakita, Eiji; Koike, Akinobu; Sekiya, Toshiyuki; Misu, Hiroshi; and Kita, Nobuyuki, 4,576,893, Cl. 430-457.000.
Okita, Tsutomu; Tsuji, Nobuo; and Mukaida, Yoshito, 4,576,866, Cl. 428-336.000.
Shiga, Koji; and Arito, Tatsunari, 4,576,469, Cl. 355-29.000.
Shiraishi, Atsushi; and Nishimura, Mizuho, 4,576,474, Cl. 355-75.000.
Takahashi, Osamu; and Sakai, Minoru, 4,576,906, Cl. 430-497.000.

Fuji Xerox Co., Ltd.: *See—*
Kurata, Masami, 4,577,218, Cl. 358-75.000.
Takahashi, Koji; and Mochizuki, Akira, 4,576,371, Cl. 271-296.000.

Fujii, Makoto: *See—*
Kambara, Goro; and Fujii, Makoto, 4,576,113, Cl. 118-697.000.

Fujii, Masahiro: *See—*
Ida, Hiroaki; Fujii, Masahiro; and Haruta, Toshio, 4,576,716, Cl. 210-496.000.

Fujikawa, Junichi; Togashi, Osamu; and Kashio, Shigetra, to Toray Industries, Incorporated. Process of making a polyamide printing plate having an improved contact with an image-bearing film. 4,576,897, Cl. 430-273.000.

Fujikawa, Takashi: *See—*
Kawatani, Kimio; Fujikawa, Takashi; and Watanabe, Eiji, 4,576,680, Cl. 162-158.000.

Fujikawa, Takeshi: *See—*
Kamei, Futoshi; Harada, Shinichi; Yasunishi, Akira; Takemura, Minoru; Fujikawa, Takeshi; Iida, Shinzo; and Katayama, Yasuyuki, 4,577,277, Cl. 364-472.000.

Fujimori, Noboru: *See—*
Mizukura, Noboru; Fujimori, Noboru; Masuda, Kosaku; Yoshimoto, Shinji; Tachibana, Noriki; and Ueda, Eiichi, 4,576,911, Cl. 430-548.000.

Fujioka, Futoshi; Boden, Richard M.; and Schreiber, William L., to International Flavors & Fragrances Inc. Organoleptic tertiary hydroxyl carboxaldehydes. 4,576,739, Cl. 252-522.00R.

Fujisawa Pharmaceutical Co., Ltd.: *See—*
Kamiya, Takashi; Hashimoto, Masashi; and Nakaguti, Osamu, 4,576,753, Cl. 260-239.00A.

Fujita, Takayuki; Kitazawa, Yoshikazu; Akita, Tadashi; and Tani, Isamu. 1-Benzoyldibromomethyl-2-methylimidazole as a fungicidal agent. 4,577,032, Cl. 548-341.000.

Fujita, Tsuyoshi: *See—*
Kuroki, Takashi; Fujita, Tsuyoshi; Toda, Gyozo; Ishihara, Shousaku; and Ohzawa, Yoshiyuki, 4,576,735, Cl. 252-512.000.

Fujitsu Limited: *See—*
Kanbara, Kazuhiro; and Hataishi, Osamu, 4,575,925, Cl. 29-576.00W.
Sano, Yoshiaki; Omura, Isamu; and Hiramatsu, Ryo, 4,577,121, Cl. 307-355.000.

Fujiwara, Shunji: *See—*
Miyake, Hidenori; Fujiwara, Shunji; Nakazato, Yoshio; Yanagishima, Fumiya; and Teshiba, Toko, 4,576,029, Cl. 72-205.000.

Fukasawa, Yoshiro; Fukazawa, Tomoyuki; and Kawamura, Michihiro, to Japan Spectroscopic Co., Ltd. Spectrophotometer. 4,577,106, Cl. 250-347.000.

Fukazawa, Tomoyuki: *See—*
Fukasawa, Yoshiro; Fukazawa, Tomoyuki; and Kawamura, Michihiro, 4,577,106, Cl. 250-347.000.

Fukuchi, Masakazu; and Oishi, Keiji, to Konishiroku Photo Industry Co., Ltd. Developing system for an electrostatic copying apparatus. 4,576,466, Cl. 355-3.0DD.

Fukuda, Hiroya: *See—*
Oyachi, Tomio; Fukuda, Hiroya; and Anami, Masahiko, 4,576,859, Cl. 428-311.100.

Fukuda, Shinichi, to Sony Corporation. Digital data converting method and apparatus thereof. 4,577,180, Cl. 340-347.0DD.

Fukuda, Tsuyoshi; and Aihara, Yoshihiko, to Canon Kabushiki Kaisha. Motor driven winding mechanism for camera. 4,576,457, Cl. 354-173.110.

Fukui, Masayuki: *See—*
Kobayashi, Hiroyasu; Fukui, Masayuki; and Nomoto, Shosaku, 4,576,672, Cl. 156-177.000.

Fukunaga, Yasuo: *See—*
Ohta, Yukitake; and Fukunaga, Yasuo, 4,576,437, Cl. 350-96.200.

Fukushima, Masao: *See—*
Yamasaki, Masahiro; Hirose, Iwao; Fukushima, Masao; and Yoshida, Ichiro, 4,576,467, Cl. 355-10.000.

Fukuta, Kenji; Kaneko, Takaoki; and Takahashi, Yoshinobu, to Toyota Jidosha Kabushiki Kaisha; and Kabushiki Kaisha Toshiba. Method for controlling the operation of a microwave-excited oxygen plasma surface treatment apparatus. 4,576,692, Cl. 204-165.000.

Fulbright, Thomas G.; and Payne, G. Houson, III, to Docutel/Olivetti Corporation. Depository/printer mechanism for an automated teller machine. 4,576,495, Cl. 400-328.000.

Fullinwider, Ranson R.: *See—*
Tapp, William T.; and Fullinwider, Ranson R., 4,576,230, Cl. 166-382.000.

Fulton, Robert D.: *See—*
Hilleary, Thomas N.; and Fulton, Robert D., 4,577,062, Cl. 179-2.00A.

Funger, Bernhard; Gruber, Heinz; Hartmann, Werner; Kohnen, Julius; Kutz, Johannes; and Moser, Manfred, to Kusters, Eduard. Device for applying a treatment medium, especially in foam form, to a running web of material. 4,576,112, Cl. 118-415.000.

Furst, Leander: *See—*
Faul, Wolfgang; Furst, Leander; Holzer, Walter; and Kastening, Bertel, 4,576,677, Cl. 156-642.000.

Furukawa, Kenji: *See—*
Isogai, Masato; Hattori, Shintaroo; Iwasaki, Kishiroo; Kitamura, Teruo; Mukoh, Akio; Inukai, Takashi; Furukawa, Kenji; Terashima, Kanetsugu; and Saitoh, Shinichi, 4,576,732, Cl. 252-299.650.

Furukawa, Yuzo: *See—*
Nakabayashi, Masamitsu; Furukawa, Yuzo; and Tashiro, Akira, 4,576,995, Cl. 525-285.000.

Furutachi, Nobuo: *See—*
Hirano, Tsumoru; and Furutachi, Nobuo, 4,576,910, Cl. 430-548.000.

Furutani, Satoshi: *See—*
Sugiyama, Tohru; Suzuki, Yasuo; Katagiri, Katsumasa; and Furutani, Satoshi, 4,576,930, Cl. 514-23.000.

Fushida, Akira; Hasegawa, Yuuji; and Matsui, Toshikazu, to Mita Industrial Co., Ltd. Method and apparatus for adjusting toner concentration of two-component type developer. 4,576,465, Cl. 355-3.0DD.

Futamura, Shoji: *See—*
Yoda, Yasutada; Sueyasu, Seisuke; Orikawa, Michihiro; and Futamura, Shoji, 4,576,559, Cl. 425-28.00R.

Futatsumori, Koji: *See—*
Arai, Masatoshi; Futatsumori, Koji; Inoue, Takeo; and Sato, Shinichi, 4,577,041, Cl. 556-446.000.

Fuwa, Yoshio: *See—*
Donomoto, Tadashi; Koyama, Mototsugu; Fuwa, Yoshio; Miura, Nobuhiro; and Sakakibara, Tatsuo, 4,576,863, Cl. 428-325.000.

GA Technologies Inc.: *See—*
Koutz, Stanley L., 4,576,783, Cl. 376-323.000.

Gaenzler, Wolfgang: *See—*
Baumgartner, Ehrenfried; Besecke, Siegmund; and Gaenzler, Wolfgang, 4,576,971, Cl. 521-108.000.

Gaertner, Dietrich: *See—*
Schwanitz, Manfred; Gaertner, Dietrich; Dressler, Wolfgang; and Schenk, Joerg, 4,577,195, Cl. 343-702.000.

Gagarin, Mikhail A.: *See—*
Gubiev, Jury K.; Krasnikov, Valery V.; Bakulin, Valentin P.; Gagarin, Mikhail A.; Ivanov, Vladimir V.; and Kishkovsky, Zbignev N., 4,576,824, Cl. 426-241.000.

Gahn, Randall F., to United States of America, National Aeronautics and Space Administration. Method and apparatus for rebalancing a redox flow cell system. 4,576,878, Cl. 429-15.000.

Gale, Michael T.; Knop, Karl H.; and Ebnother, Martin, to RCA Corporation. Reflective diffractive authenticating device. 4,576,439, Cl. 350-162.230.

Gall, Martin, to Upjohn Company, The. Aminoalkyl and aminoalkenyl triazoles as anti-psychotic agents. 4,577,020, Cl. 544-366.000.

Gallagher, James P.; and Schmidt, Howard W., Jr., to International Business Machines Corporation. Plasma etch cleaning in low pressure chemical vapor deposition systems. 4,576,698, Cl. 204-192.00E.

Gallas, Gerard; Raher, Loic; and Renzo, Bernard, to Compagnie des Produits Industriels de l'Quest (C.P.I.O.). Antivibration elastic support. 4,576,366, Cl. 267-8.00R.

Galuskin, Vadim B.: *See—*
Lipets, Adolf U.; Kuznetsova, Svetlana M.; Galuskin, Vadim B.; Lafa, Jury I.; Sotnikov, Ivan A.; Ovchar, Vladimir G.; and Fedosov, Alexei Z., 4,576,226, Cl. 165-134.100.

Gamble, William E. Object securing sleeve for padlock devices. 4,576,022, Cl. 70-55.000.

Gannett, Thomas P.; and Gibbs, Hugh H., to Du Pont de Nemours, E. I., and Company. Melt-fusible polyimides. 4,576,857, Cl. 428-260.000.

Ganster, Otto; Knipp, Ulrich; and Luckas, Bruno, to Bayer Aktiengesellschaft. Process for the production of molded articles having integral skin. 4,576,970, Cl. 521-51.000.

Garber, Gary L.; and Allhands, Marcus N., to A. O. Smith Harvestore Products, Inc. Livestock feeding apparatus. 4,576,117, Cl. 119-52.00B.

Garden City Fan & Blower Co.: *See—*
Lanier, Robert L., 4,576,549, Cl. 415-209.000.

Gardenier, Karl-Josef; and Heimbuerger, Wolfgang, to Henkel Kommanditgesellschaft auf Aktien. Aqueous release agents. 4,576,835, Cl. 427-222.000.

Gardiner, Richard J., to Hercules Incorporated. Curved composite beam. 4,576,849, Cl. 428-119.000.

Garrett Corporation, The: *See—*
Olivier, Paul D.; and Chadbourne, Lester E., deceased, 4,576,551, Cl. 416-191.000.

Gauggel, Roland; and Eckhardt, Reiner, to Bodenseewerk Geratetechnic GmbH. Seeker head for a target seeking missile. 4,576,346, Cl. 244-3.160.

Gauldin, Mark A.: *See—*
Bimonte, Brian R.; Gauldin, Mark A.; and Riley, Douglas H., 4,577,066, Cl. 179-18.00B.

Gault, John M., to International Rectifier Corporation. Controlled rectifier having ring gate with internal protrusion for dV/dt control. 4,577,210, Cl. 357-38.000.

Gault, Robert: *See—*
Wright, Paul C.; and Gault, Robert, 4,576,329, Cl. 229-41.00R.

Gauthier-Lafaye, Jean; and Perron, Robert, to Rhone-Poulenc Specialities Chimiques. Preparation of alkali or alkaline earth metal cobalttetracarbonylates and catalysts of carbonylation reactions therewith. 4,576,809, Cl. 423-418.000.

Gauvain, Roger, to Societe Alsacienne de Construction de Material Textile. Device for guiding a sliver into a can coiler. 4,575,903, Cl. 19-159.00R.

Gaylor, Lawrence A.; and Beard, James W., to Mogul Corporation, The. Scale and sludge compositions for aqueous systems. 4,576,722, Cl. 210-699.000.

Gazzarrini, Vinicio, to Solis s.r.l. Pantyhose crotch edge stretching apparatus and method. 4,576,318, Cl. 223-52.000.

Geary, Joseph M.; Vunck, Darius S.; Duneman, Dennis C.; Sessions, Ronald L.; Moeller, Charles E.; and Wick, Raymond V., to United States of America, Air Force. Method and apparatus for high speed, sustained recording of infrared laser beam patterns. 4,577,103, Cl. 250-316.100.

Gebbia, Barbara: *See—*
Paszek, Leon E.; and Gebbia, Barbara, 4,576,729, Cl. 252-106.000.

Gebr. Happich GmbH: *See—*
Ebert, Charles, 4,576,409, Cl. 296-97.00H.

GEE Associates: *See—*
Grossman, M. Gary, 4,577,080, Cl. 219-10.55E.

Gee, James E., to Caterpillar Tractor Co. Material directing device for an auger scraper. 4,575,959, Cl. 37-4.000.

Geen, Michael W.: *See—*
Eaton, Ralph M.; and Geen, Michael W., 4,576,224, Cl. 165-80.200.

Geis, Michael W.: *See—*
Smith, Henry I.; Atwater, Harry A.; and Geis, Michael W., 4,576,676, Cl. 156-603.000.

Gellert, Jobst U. Injection molding system having an insulation sleeve. 4,576,567, Cl. 425-549.000.

Gemra, Richard J.: *See—*
Drewes, John H.; and Gemra, Richard J., 4,575,904, Cl. 24-115.00K.

General Electric Company: *See—*
Brenig, Theodore, 4,577,332, Cl. 375-40.000.
Bryans, Alexander C., 4,576,550, Cl. 415-211.000.
Cooper, Glenn D., deceased; and Ting, Sai-Pei, 4,576,991, Cl. 525-146.000.
Eckberg, Richard P., 4,576,999, Cl. 525-476.000.
Eddens, Fletcher C.; White, David W.; and Harmon, John L., 4,576,654, Cl. 148-11.50F.
Hodge, James D., 4,576,919, Cl. 501-9.000.
Hodgman, John S.; and Mullersman, Ferdinand H., 4,577,144, Cl. 320-2.000.
Mark, Victor; and Hedges, Charles V., 4,576,996, Cl. 525-439.000.
Miller-Jones, Stockton M., 4,576,045, Cl. 73-626.000.
Mullersman, Ferdinand H., 4,577,145, Cl. 320-2.000.
Rowe, Raymond G., 4,576,660, Cl. 148-407.000.
Schultz, Frederick E., 4,576,770, Cl. 264-103.000.
Taylor, Dale F.; and Sammler, Louis S., 4,576,667, Cl. 156-89.000.
Verbicky, John W., Jr.; and Colley, Alice M., 4,577,033, Cl. 548-461.000.

General Motors Company: *See—*
Tyrell, John A.; and Freimiller, Gary L., 4,576,982, Cl. 524-84.000.

General Motors Corporation: *See—*
Bhagat, Jayant K., 4,575,921, Cl. 29-571.000.
Dobner, Donald J., 4,576,417, Cl. 303-15.000.
Gloomis, Lawrence A.; and Schoof, Wendy M., 4,575,908, Cl. 24-650.000.
Griffin, Michael D.; and Waydelis, Ronald A., 4,576,762, Cl. 261-65.000.
Herman, Edmund A., 4,576,560, Cl. 425-103.000.
Herrmann, Alan J., 4,576,426, Cl. 339-17.00F.
Klomp, Edward D., 4,576,338, Cl. 239-452.000.
Lambert, David K., 4,576,050, Cl. 73-861.050.
Lambert, George F., 4,576,407, Cl. 294-97.000.
LeBlanc, Richard S., 4,576,085, Cl. 89-36.130.
Partin, Dale L., 4,577,322, Cl. 372-44.000.
Shaw, Daniel, 4,576,217, Cl. 164-130.000.
Spisak, Andrew M.; and Adduci, Robert L., 4,576,258, Cl. 188-299.000.

Genrich, Thad J.: *See—*
Sperr, Charles J.; Sperr, Douglas C.; and Genrich, Thad J., 4,576,013, Cl. 62-171.000.

Geo Vann, Inc.: *See—*
George, Flint R., 4,576,233, Cl. 166-297.000.

George, Flint R., to Geo Vann, Inc. Differential pressure actuated vent assembly. 4,576,233, Cl. 166-297.000.

Geotel, Inc.: *See—*
Walker, Frank A., Jr., 4,576,828, Cl. 427-34.000.

Gerber Products Company: *See—*
Quinlan, Robert L., Jr., 4,576,392, Cl. 280-87.02W.

Gerrato, Stephen G.: *See—*
Levine, Herbert R.; Gerrato, Stephen G.; and Poulin, Benoit L., 4,576,207, Cl. 138-177.000.

Gerritsen, John T., to Jarrow Products, Inc. Magnetically sealed sliding window assembly. 4,575,966, Cl. 49-209.000.

Gerstner, Michael. Rollable pallet assembly and caster device. 4,576,391, Cl. 280-79.10R.

Ghilardi, Jean P. R. F.; and Forget, Remi F., to Entreprise d'Equipements Mecaniques et Hydrauliques (E.M.H.). Rotary joint device with floating seal ring for a cryogenic fluid. 4,576,387, Cl. 277-176.000.

Ghyczy, Miklos: *See—*
Bauer, Kurt H.; Ghyczy, Miklos; Etschenberg, Eugen; and Osthoff, Heinrich, 4,576,626, Cl. 71-28.000.

Gibbs, Hugh H.: *See—*
Gannett, Thomas P.; and Gibbs, Hugh H., 4,576,857, Cl. 428-260.000.

Giben Impianti S.p.A.: *See—*
Benuzzi, Gino, 4,576,536, Cl. 414-51.000.

Gieschen, Kurt: *See—*
Schwieker, Horst H.; and Gieschen, Kurt, 4,577,341, Cl. 378-150.000.

Gill, Brian: *See—*
Pinnow, Curtis C.; and Gill, Brian, 4,576,425, Cl. 312-324.000.

Gill, Elmer J.: *See—*
Christy, Arthur E.; and Gill, Elmer J., 4,577,284, Cl. 364-513.000.

Gillette Company, The: *See—*
Packham, Charles C., 4,575,941, Cl. 30-346.510.

Gilvin, Allie F.: *See—*
Laiewski, Stanislaus; Hessen, Thomas A.; Hardy, Thomas R.; and Gilvin, Allie F., 4,576,278, Cl. 206-204.000.

Gipson, Stephen L.: *See—*
Collins, Terrence J.; Anson, Fred C.; Gipson, Stephen L.; and Krafft, Terry E., 4,577,042, Cl. 564-158.000.

Gist-Brocades N.V.: *See—*
Kapur, Jagdish C.; and Fasel, Herman P., 4,576,754, Cl. 260-245.20R.

Glamm, Paul R.; and Wendschlag, James C., to Electric Power Research Institute. Air conditioning system and method of operation. 4,576,011, Cl. 62-115.000.

Glatthorn, Raymond H., to United States of America, Energy. Cam-controlled boring bar. 4,576,068, Cl. 82-1.400.

Glatthorn, Raymond H., to United States of America, Energy. Minimum wear tube support hole design. 4,576,228, Cl. 165-162.000.

Glenn, William E., to New York Institute of Technology. Method and apparatus for ultrasonic inspection of a solid workpiece. 4,576,048, Cl. 73-642.000.

Glockner, Manfred: *See—*
Wallenfang, Gerd; and Glockner, Manfred, 4,576,129, Cl. 123-357.000.

Gloomis, Lawrence A.; and Schoof, Wendy M., to General Motors Corporation. Lock for seat belt buckle. 4,575,908, Cl. 24-650.000.

Goffredo, Daniel L.; Meyer, Walter J.; and Blaising, Horst, to Schering AG. Process and apparatus for plating onto articles. 4,576,685, Cl. 204-30.000.

Goglio, Luigi, to Fres-co System USA, Inc. Sealed flexible container with non-destructive peelable opening and apparatus and method for forming same. 4,576,285, Cl. 206-632.000.

Golan, Leonard W.: *See—*
Rogak, Michael; Golan, Leonard W.; Witbeck, Charles; and Golan, Stephen L., 4,575,962, Cl. 42-1.00Q.

Golan, Stephen L.: *See—*
Rogak, Michael; Golan, Leonard W.; Witbeck, Charles; and Golan, Stephen L., 4,575,962, Cl. 42-1.00Q.

Golda, Eugene; and Wilkes, Alan, to Polychrome Corporation. Photosensitive materials. 4,576,892, Cl. 430-157.000.

Goldberg, Julie E.: *See—*
Hyman, Alan A.; and Goldberg, Julie E., 4,576,154, Cl. 128-78.000.

Golden, Steven T.: *See—*
Villaveces, James; and Golden, Steven T., 4,576,389, Cl. 280-43.160.

Goldmann, Wolf, to Krupp Polysius AG. Method of producing cement from raw material containing harmful substances. 4,576,644, Cl. 106-100.000.

Gondo, Hisashi: *See—*
Suzuki, Ryoichi; Ohno, Jiro; and Gondo, Hisashi, 4,576,639, Cl. 75-123.00E.

Goodman, Douglas S., to International Business Machines Corporation. Apparatus for proximity detection of an opaque pattern on a translucent substrate. 4,577,099, Cl. 250-216.000.

Gordon, Richard A. Tank cover. 4,576,115, Cl. 119-5.000.

Goto, Hiroshi: *See—*
Okina, Toyohiko; Goto, Hiroshi; Ozawa, Akimasa; Nakamura, Kenji; and Oishi, Hiroshi, 4,576,855, Cl. 428-215.000.

Goto, Sohei; and Okauchi, Ken, to Konishiroku Photo Industry Co., Ltd. Silver halide color photographic light-sensitive material. 4,576,909, Cl. 430-546.000.

Goto, Yasuyuki: *See—*
Sugimori, Shigeru; Isoyama, Toyoshiro; and Goto, Yasuyuki, 4,576,733, Cl. 252-299.670.

Gottfried Bischoff Bau kompl. Gasreinigungs- und Wasserruckkuhlanlagen GmbH & Co. Kommanditgesellschaft: *See—*
Hegemann, Karl-Rudolf; Weissert, Helmut; and Laimkuhler, Jurgen, 4,576,803, Cl. 423-242.000.

Gould, Deryk S. M.; and Wright, Michael T., to Northern Engineering Industries, plc. Induction motors. 4,577,128, Cl. 310-87.000.

Graf, Erhard, to Alno-Mobelwerke GmbH & Co. KG. Suspension hardware for suspended cabinets. 4,576,355, Cl. 248-544.000.

Granata, Samuel J., Jr.; and Rylatt, John A., to Westinghouse Electric Corp. Fluid distributor for heat exchanger inlet nozzle. 4,576,222, Cl. 165-76.000.

Grannen, Walter A., III, to E-W Mold & Tool Company, Inc. Injection mold with thin wall hole forming means. 4,576,568, Cl. 425-577.000.

Green, David T.; and McGarry, Richard A., to United States Surgical Corporation. Surgical ligation and cutting device with safety means. 4,576,165, Cl. 128-305.000.

Greenland, John S., to Warner-Lambert Company. Vented drip chamber for use with a syringe. 4,576,594, Cl. 604-251.000.

Greenlee, William J.; and Patchett, Arthur A., to Merck & Co., Inc. 3-Hydroxy-3-aminoethyl β-lactams. 4,576,748, Cl. 260-239.00A.

Greenwood, Arthur R., to UOP Inc. Maintaining gas flow during transfer of solids in hydrocarbon conversion and gas-solid contacting processes. 4,576,712, Cl. 208-138.000.

Gregory, John R.: *See—*
Dawson, Chris R.; Dondero, John; and Parks, Gerald R., 4,575,875, Cl. 2-422.000.

Gregory, Joseph A.: *See—*
Barr, Millard G.; Barrett, William H.; Braidt, Joseph W.; Driscoll, John F.; Gregory, Joseph A.; Lucente, Samuel A.; and Remsburger, Louis J., 4,577,187, Cl. 340-700.000.

Greiner, Ulrich: *See—*
Keil, Karl-Heinz; Engelhardt, Fritz; Greiner, Ulrich; Kuhlein, Klaus; Keller, Reinhold; Schlingmann, Merten; and Hess, Gerhard, 4,576,973, Cl. 521-149.000.

Gress, Josef: *See—*
Morgan, Annis R., Jr.; Mehlan, Bernd; Gress, Josef; and Williford, Hugh S., 4,576,272, Cl. 194-215.000.

GRETAG Aktiengesellschaft: *See—*
Mueller, Kurt H., 4,577,059, Cl. 178-22.170.

Gretag San Marco S.p.A.: *See—*
Marson, Roberto, 4,576,321, Cl. 226-173.000.

Grib, Boris F., to Philamon Incorporated. Drive regulator utilizing variable pulse width signal. 4,577,164, Cl. 331-109.000.

GridComm Inc.: *See—*
Lewis, Kenneth A.; and Alpern, Alan N., 4,577,333, Cl. 375-45.000.

Griesinger, Rolf; and Fetzer, Gerhard, to Stahlecker, Hans; and Stahlecker, Fritz. Spinning rotor for an open-end spinning device and process of making same. 4,576,000, Cl. 57-416.000.

Griffin, Donnie R., to PKG Trading Company, Inc. Gun rest. 4,575,964, Cl. 42-94.000.

Griffin, Michael D.; and Waydelis, Ronald A., to General Motors Corporation. Throttle return spring assembly. 4,576,762, Cl. 261-65.000.

Grilli, Walter: *See—*
Armida, Gennaro; Sacco, Decio; and Grilli, Walter, 4,575,914, Cl. 29-434.000.

Grimmett, Earl S.: *See—*
Rasmussen, George P.; and Grimmett, Earl S., 4,576,102, Cl. 110-346.000.

Gringer, Donald. Blade retaining tool head. 4,575,936, Cl. 30-169.000.

Grip, Carl E.; Hagstad, Bertil J.; and Andersson, Bjorn H., to SSAB Svenskt Stal AB. Spring steel. 4,575,912, Cl. 29-173.000.

Gristina, Nicholas. Balances running on gears for a motor vehicle engine. 4,576,060, Cl. 74-573.00R.

Grochowski, Horst: *See—*
Koch, Manfred; Muhlhaus, Ludwig; Lambach, Rolf; and Grochowski, Horst, 4,576,924, Cl. 502-56.000.

Grosskinsky, Otto-Alfred; Frommer, Elmar; Ritz, Josef; Thomas, Erwin; and Weiss, Franz-Josef, to BASF Aktiengesellschaft. Stabilized solutions of hydroxylamine or its salts. 4,576,804, Cl. 423-265.000.

Grossman, M. Gary, to GEE Associates. Coffee maker adapted for use in a microwave oven. 4,577,080, Cl. 219-10.55E.

Grossmeyer, Mark C. Memory enhancing apparatus. 4,576,484, Cl. 368-245.000.

Gruber, Heinz: *See—*
Funger, Bernhard; Gruber, Heinz; Hartmann, Werner; Kohnen, Julius; Kutz, Johannes; and Moser, Manfred, 4,576,112, Cl. 118-415.000.

Gruenwald, David J., to Brunswick Corporation. Fuel flow deflector for use in a carburetor. 4,576,761, Cl. 261-23.00A.

Gruppo Lepetit, S.p.A.: *See—*
Favara, Duccio; Omodei-Sale', Amedeo; and Consonni, Pietro, 4,576,746, Cl. 260-239.00A.

GTE Lenkurt Incorporated: *See—*
Huft, John M.; and Kiko, Frederick J., 4,577,064, Cl. 179-16.00F.

Gubiev, Jury K.; Krasnikov, Valery V.; Bakulin, Valentin P.; Gagarin, Mikhail A.; Ivanov, Vladimir V.; and Kishkovsky, Zbignev N. Process for maturing strong beverages. 4,576,824, Cl. 426-241.000.

Guggenheim, S. Frederic, to United States of America, Energy. Multiport valve assembly. 4,576,201, Cl. 137-624.180.

Guidoux, Loic B. Y.: *See—*
Barazeche, Bahman; Alexis, Roger P. J.; and Guidoux, Loic B. Y., 4,577,309, Cl. 370-32.000.
Brie, Richard; and Guidoux, Loic B. Y., 4,577,329, Cl. 375-14.000.

Guittard, George V.; Deters, Joseph C.; Theeuwes, Felix; and Cortese, Richard, to ALZA Corporation. Osmotic system with instant drug availability. 4,576,604, Cl. 604-890.000.

Gulko, Arnold G. Pedal powered watercraft. 4,576,580, Cl. 440-21.000.

Gunther, Wolfgang H. H.; Leone, Ronald E.; and Przyklek, Rosemary, to Eastman Kodak Company. Photographically useful chalcogenazoles, chalcogenazolines, and chalcogenazolinium and chalcogenazolium salts. 4,576,905, Cl. 430-401.000.

Gurumurthy, Kadagattor V., to RCA Corporation. Teletext framing code detector. 4,577,227, Cl. 358-147.000.

Guth, Jacob J.; Lukenbach, Elvin R.; and Tenore, Richard R., to Johnson & Johnson Baby Products Company. Process for the preparation of monoacyl polyalkylene polyamines. 4,576,757, Cl. 260-404.500.

Haas, Gene F.; and Zierhut, Kurt P. Indexing device. 4,576,530, Cl. 409-223.000.

Haas, Roland: *See—*
Brandenstein, Manfred; Walter, Lothar; Haas, Roland; and Dobhan, Herbert, 4,576,268, Cl. 192-98.000.

Haenen, Henricus W. G.; and van Leeuwen, Antonie, to U.S. Philips Corporation. Encoding circuit for a SECAM color television transmission. 4,577,217, Cl. 358-14.000.

Hafele, Walter; and Knorreck, Peter, to Robert Bosch GmbH. Fuel injection pump for internal combustion engines. 4,576,130, Cl. 123-372.000.

Hageman, Jacques; Plumet, Lucien; and Robberechts, Marcel, to INTEROX (Societe Anonyme). Process for the treatment of cellulosic materials with oxidizing agents and microwaves. 4,576,609, Cl. 8-103.000.

Hagen, Franz S.: *See—*
Mertin, Theodor; and Hagen, Franz S., 4,577,325, Cl. 373-101.000.

Hagenbach, Germain: *See—*
Demangeon, Francis; Hagenbach, Germain; and Maldonado, Paul, 4,576,648, Cl. 106-269.000.

Hagenmuller, Paul: *See—*
Colmet, Robert; Naslain, Roger; Hagenmuller, Paul; and Lamico, Pierre, 4,576,836, Cl. 427-255.000.

Hagiwara, Kenzo: *See—*
Takimoto, Tadashi; Oishibashi, Hirotsugu; Ueyama, Katsuyoshi; Ohara, Muneyuki; Kobayashi, Akio; Aoki, Keiichi; Nakamura, Mitsuo; and Hagiwara, Kenzo, 4,576,324, Cl. 228-44.300.

Hagiwara, Yoshimune: *See—*
Takagi, Katsuaki; Kita, Yuzo; Hagiwara, Yoshimune; Ogawa, Kazuyoshi; and Hara, Hideo, 4,577,154, Cl. 328-158.000.

Hagstad, Bertil J.: *See—*
Grip, Carl E.; Hagstad, Bertil J.; and Andersson, Bjorn H., 4,575,912, Cl. 29-173.000.

Hahn, Clive E. W.; Palayiwa, Eileen; Lindsay-Scott, David J.; Sugg, Basil R.; and Tyrrell, Paul J., to Penlon Limited. Gas mixing and flow smoothing apparatus. 4,576,159, Cl. 128-203.140.

Hain, Paul O., to Champion International Corporation. Apparatus for forming a paperboard receptacle. 4,576,566, Cl. 425-400.000.

Haine, Walter A.: *See—*
Dyck, Manfred F.; and Haine, Walter A., 4,576,156, Cl. 128-132.00R.

Hakko Seiki Kabushiki Kaisha: *See—*
Tominaga, Katsuya, 4,576,451, Cl. 350-566.000.

Hakusan Seisakusho Co., Ltd.: *See—*
Takimoto, Tadashi; Oishibashi, Hirotsugu; Ueyama, Katsuyoshi; Ohara, Muneyuki; Kobayashi, Akio; Aoki, Keiichi; Nakamura, Mitsuo; and Hagiwara, Kenzo, 4,576,324, Cl. 228-44.300.

Hall, Charles P., to Monterey Manufacturing Co. Waterbed mattress with free floating baffle. 4,575,885, Cl. 5-450.000.

Hall, Henry B.; Hewes, Peter B.; Moore, Benjamin N.; and Sanzaro, Rosario, to Safeway Products, Inc. Contact lens disinfecting unit. 4,576,798, Cl. 422-105.000.

Hall, John B.; and Yoshida, Takao, to International Flavors & Fragrances Inc. Use of pentamethylindanol derivatives in augmenting or enhancing the aroma or taste of smoking tobacco compositions or smoking tobacco articles. 4,576,186, Cl. 131-276.000.

Hall, John B.; and Yoshida, Takao, to International Flavors & Fragrances Inc. Tertiary pentamethylindanol derivatives and organoleptic uses thereof. 4,576,740, Cl. 252-522.00R.

Halliburton Company: *See—*
Freeman, Tommie A., 4,576,522, Cl. 405-225.000.

Hamane, Masumi; and Hanawa, Kaoru, to Honda Giken Kogyo K.K. Automatic multispeed transmission for vehicles with manual means for prohibition of engagement of a centrifugal clutch. 4,576,269, Cl. 192-103.00A.

Hamel, Jerome T.; and Huff, Bernard G., to Hantover, Inc. Pneumatic stunner. 4,575,900, Cl. 17-1.00B.

Hamon, Burrell N.: *See—*
Arkles, Barry C.; and Hamon, Burrell N., 4,577,039, Cl. 556-409.000.

Hamprecht, Gerhard: *See—*
Parg, Adolf; Hamprecht, Gerhard; Sauter, Hubert; and Wuerzer, Bruno, 4,576,630, Cl. 71-92.000.

Hanaki, Akira: *See—*
Takeda, Nobuhiro; Hattori, Masaichi; and Hanaki, Akira, 4,577,117, Cl. 307-10.00R.

Hanawa, Kaoru: *See—*
Hamane, Masumi; and Hanawa, Kaoru, 4,576,269, Cl. 192-103.00A.

Hanlock, Inc.: *See—*
Hanson, Michael R.; and Bryant, Frank C., 4,576,532, Cl. 411-352.000.

Hanna, Marie R.: *See—*
Sprecker, Mark A.; Hanna, Marie R.; Tokarzewski, Richard J.; Belko, Robert P.; Watkins, Hugh; and Vock, Manfred H., 4,576,742, Cl. 252-522.00R.

Hannani, Hamid. Device for correcting audio record's groove eccentricity. 4,577,304, Cl. 369-56.000.

Hannen, Rainer W., to MSK-Verpackungs-Systeme GmbH. Method and device for packaging palletized stacks of goods. 4,575,989, Cl. 53-434.000.

Hanota Holdings S.A.: *See—*
Van de Caveye, Yves; and Schaefle , Henri, 4,576,561, Cl. 425-104.000.

Hanscom, Bradford E.; and Mock, Gerald L., to T.A.D. Avanti, Inc. Ring delay override for telephone answering system. 4,577,063, Cl. 179-6.160.

Hansen, Per K., to Position Orientation Systems, Ltd. Passive optical position measurement system. 4,576,481, Cl. 356-375.000.

Hanson, Michael R.; and Bryant, Frank C., to Hanlock, Inc. Insulation stud. 4,576,532, Cl. 411-352.000.

Hantover. Inc.: *See—*
Hamel, Jerome T.; and Huff, Bernard G., 4,575,900, Cl. 17-1.00B.

Hara, Hideo: *See—*
Takagi, Katsuaki; Kita, Yuzo; Hagiwara, Yoshimune; Ogawa, Kazuyoshi; and Hara, Hideo, 4,577,154, Cl. 328-158.000.

Hara, Toshitami, to Canon Kabushiki Kaisha. Liquid jet recording head. 4,577,202, Cl. 346-140.00R.

Harada, Jumei; Yamamoto, Keiji; and Yokoi, Takashi, to Bridgestone Corporation. Rotary roll-type rubber extruder. 4,576,563, Cl. 425-194.000.

Harada, Shinichi: *See—*
Kamei, Futoshi; Harada, Shinichi; Yasunishi, Akira; Takemura, Minoru; Fujikawa, Takeshi; Iida, Shinzo; and Katayama, Yasuyuki, 4,577,277, Cl. 364-472.000.

Harada, Tokuya; Higashiura, Tadashi; and Okubo, Misae, to Daikin Kogyo Co., Ltd. Strains of *Rhizobium phaseoli* and preparation of cyclic (1→2)-β-D-glucan. 4,576,915, Cl. 435-101.000.

Hardman, Paul D.: *See—*
Edwards, Robert J.; and Hardman, Paul D., 4,576,744, Cl. 252-554.000.

Hardouin, Pierre; Lameyre, Felix; and Paris, Claude, to La Telemecanique Electrique. Connection device for electric conductor. 4,576,429, Cl. 339-95.00D.

Hardy, Thomas R.: *See—*
Laiewski, Stanislaus; Hessen, Thomas A.; Hardy, Thomas R.; and Gilvin, Allie F., 4,576,278, Cl. 206-204.000.

Hargett, Wyatt P., Jr., to Celanese Corporation. Process for extruding and sizing foamed thermoplastic cigarette filter rods. 4,576,769, Cl. 264-51.000.

Harlan, Wayne E., to RCA Corporation. Driver amplifier for an image display device. 4,577,234, Cl. 358-243.000.

Harmon, Don B.: *See—*
Allred, Von D.; and Harmon, Don B., 4,576,400, Cl. 285-5.000.

Harmon, John L.: *See—*
Eddens, Fletcher C.; White, David W.; and Harmon, John L., 4,576,654, Cl. 148-11.50F.

Harms, Wolfgang: *See—*
Jager, Horst; Harms, Wolfgang; and Herd, Karl J., 4,577,015, Cl. 544-76.000.

Harmuth, Ann P., to International Business Machines Corporation. Method of predicting and controlling the viscosity of conductive pastes. 4,576,736, Cl. 252-512.000.

Harris Graphics Corporation: *See—*
Jackson, Dale H., 4,576,370, Cl. 270-54.000.

Harris, Ivor R.: *See—*
Wootton, Malcolm J.; and Harris, Ivor R., 4,576,640, Cl. 75-123.00E.

Harris, Richard J.; Pithouse, Kenneth B.; and Van Dijck, Frans S. J., to Raychem Limited. Heat-recoverable article. 4,576,666, Cl. 156-85.000.

Harrison Equipment Co., Inc.: *See—*
McMinn, Robert R., 4,575,926, Cl. 29-598.000.

Harrison, George W., to Team, Inc. Leak repair clamp. 4,576,401, Cl. 285-15.000.

Harrison, Ray E.: *See—*
Murray, Charles R.; and Harrison, Ray E., 4,576,844, Cl. 428-35.000.

Hart, Ronald E.: *See—*
Carlson, Frederick D.; and Hart, Ronald E., 4,575,898, Cl. 16-274.000.

Harte, J. Richard. Instructional and testing apparatus with switch closure at two different depths. 4,576,579, Cl. 434-334.000.

Hartman, Robert A., to Standard Oil Company, The. Bypass diode assembly for photovoltaic modules. 4,577,051, Cl. 136-244.000.

Hartman, Thomas A. Elastically conformable tapered pin-key. 4,576,504, Cl. 403-318.000.

Hartmann, Clinton S., to R. F. Monolithics, Inc. Notch filter. 4,577,168, Cl. 333-170.000.

Hartmann, Werner: *See—*
Funger, Bernhard; Gruber, Heinz; Hartmann, Werner; Kohnen, Julius; Kutz, Johannes; and Moser, Manfred, 4,576,112, Cl. 118-415.000.
Lauer, Reinhard; and Hartmann, Werner, 4,576,047, Cl. 73-597.000.

Hartsing, Tyler F.; Sauers, Marvin E.; and Robeson, Lloyd M., to Union Carbide Corporation. Cookware formed from a laminate. 4,576,842, Cl. 428-35.000.

Haruta, Toshio: *See—*
Ida, Hiroaki; Fujii, Masahiro; and Haruta, Toshio, 4,576,716, Cl. 210-496.000.

Harvey Hubbell Incorporated: *See—*
Wuertz, Emil S., 4,577,055, Cl. 174-48.000.

Harwell, Betty L. Booster fan and air deflector for floor vents. 4,576,331, Cl. 236-49.000.

Hasegawa, Yuuji: *See—*
Fushida, Akira; Hasegawa, Yuuji; and Matsui, Toshikazu, 4,576,465, Cl. 355-3.0DD.

Hasenauer, Dieter; and Hug, Kuno, to Brown, Boveri & Cie AG. Electrochemical storage cell. 4,576,881, Cl. 429-104.000.

Hashiguchi, Toshihiko, to Olympus Optical Co., Ltd. Hard endoscope with improved light dispersion. 4,576,147, Cl. 128-6.000.

Hashimoto, Masashi: *See—*
Kamiya, Takashi; Hashimoto, Masashi; and Nakaguti, Osamu, 4,576,753, Cl. 260-239.00A.

Hashimoto, Noriyoshi: *See—*
Saiki, Kazuaki; Ishikawa, Aiichi; Hashimoto, Noriyoshi; Kudo, Koichi; and Yoshikawa, Kuniyuki, 4,577,141, Cl. 318-590.000.

Hashimoto, Osamu: *See—*
Satoh, Susumu; Hashimoto, Osamu; and Irie, Toshio, 4,576,657, Cl. 148-12.00C.

Hashimoto, Tsuguo: *See—*
Arakawa, Tadao; Ueno, Takeshi; Tsunematsu, Hiroshi; Toyoda, Keiichi; and Hashimoto, Tsuguo, 4,576,007, Cl. 60-660.000.

Hashizume, Aiichiro: *See—*
Jidai, Eiki; and Hashizume, Aiichiro, 4,576,694, Cl. 204-181.100.

Hass, Robert H.; and Ward, John W., to Union Oil Company of California. Catalyst and process for oxidizing hydrogen sulfide. 4,576,814, Cl. 423-573.00G.

Hastings, Donald R.; and Sharpless, John, to Nordson Corporation. Electrostatic spray coating system. 4,576,827, Cl. 427-27.000.

Hataishi, Osamu: *See—*
Kanbara, Kazuhiro; and Hataishi, Osamu, 4,575,925, Cl. 29-576.00W.

Hatamura, Yotaro. Load detector. 4,576,053, Cl. 73-862.660.

Hatch, Marcus R.: *See—*
Abel, Irving R.; and Hatch, Marcus R., 4,576,452, Cl. 350-620.000.

Hatsuno, Susumu: *See—*
Wagatsuma, Mitsuyoshi; Hatsuno, Susumu; Yamaguchi, Totaro; and Ohshima, Satoshi, 4,576,938, Cl. 514-206.000.

Hatta, Susumu, to Tachikawa Spring Co. Ltd. Head-rest including a device to permit pivotal adjustment thereof relative to a vehicle seat. 4,576,413, Cl. 297-408.000.

Hattori, Masaichi: *See—*
Takeda, Nobuhiro; Hattori, Masaichi; and Hanaki, Akira, 4,577,117, Cl. 307-10.00R.

Hattori, Shintaroo: *See—*
Isogai, Masato; Hattori, Shintaroo; Iwasaki, Kishiroo; Kitamura, Teruo; Mukoh, Akio; Inukai, Takashi; Furukawa, Kenji; Terashima, Kanetsugu; and Saitoh, Shinichi, 4,576,732, Cl. 252-299.650.

Hattori, Takemi, to Aisen Seiki Kabushika Kaisha. Lumbar support for a backrest. 4,576,410, Cl. 297-284.000.
Haug, Edward W., to Barber-Colman Company. Shaper cutter. 4,576,527, Cl. 407-28.000.
Hausselt, Jurgen: *See*—
Rothaut, Josef; Hausselt, Jurgen; Steinke, Rudi; and Klaus, Angela, 4,576,790, Cl. 420-464.000.
Hawk Industries, Inc.: *See*—
Rogak, Michael; Golan, Leonard W.; Witbeck, Charles; and Golan, Stephen L., 4,575,962, Cl. 42-1.00Q.
Hawrylo, Frank Z., to RCA Corporation. Method of bonding semiconductor devices to heatsinks. 4,576,326, Cl. 228-171.000.
Hayakawa, Kiyoharu: *See*—
Kondo, Haruyoshi; Takahashi, Hideaki; Saji, Keiichi; Takeuchi, Takashi; and Hayakawa, Kiyoharu, 4,576,705, Cl. 204-406.000.
Hayashi, Isao, to Kyocera Corporation. Variable tuning filter in high frequency circuit. 4,577,170, Cl. 333-205.000.
Hayashi, Shin'ichi: *See*—
Yoshida, Akiyoshi; Kametaka, Shigeru; and Hayashi, Shin'ichi, 4,576,914, Cl. 435-42.000.
Hayashi, Tsuneo: *See*—
Tani, Nobutaka; and Hayashi, Tsuneo, 4,576,928, Cl. 502-404.000.
Hayden, Arthur H.: *See*—
Chambers, Worthy L.; Jones, William H.; and Hayden, Arthur H., 4,577,179, Cl. 340-309.150.
Hayden, Earl E.: *See*—
Chatterjee, Ananda M.; and Hayden, Earl E., 4,576,983, Cl. 524-101.000.
Haydt, Mette, legal representative: *See*—
Coakley, James L.; and Haydt, Richard J., deceased, 4,576,198, Cl. 137-596.000.
Haydt, Richard J., deceased: *See*—
Coakley, James L.; and Haydt, Richard J., deceased, 4,576,198, Cl. 137-596.000.
Haynie, Henry C., Sr.: *See*—
Slaughter, William B.; and Haynie, Henry C., Sr., 4,576,235, Cl. 166-374.000.
Hazard, Gary M.; Hillman, Arthur E.; Montierth, Max R.; and Nieber, Albert R., to Corning Glass Works. Flexible mask and means for applying to honeycomb structures. 4,576,774, Cl. 264-267.000.
Heaven, Malcolm D.: *See*—
Tamplin, Paul; and Heaven, Malcolm D., 4,576,993, Cl. 525-240.000.
Hecht, Michael D.: *See*—
Ferree, Herbert E.; Wagner, Thomas R.; Hecht, Michael D.; and Donnelly, Thomas J., 4,577,127, Cl. 310-83.000.
Hecken, Gerhard: *See*—
Heintzmann, Peter; Koppers, Manfred; Bohnes, Karlheinz; and Hecken, Gerhard, 4,576,524, Cl. 405-260.000.
Heckler & Koxh GmbH: *See*—
Brandl, Rudolf; and Danner, Helmut, 4,576,084, Cl. 89-14.400.
Hedberg, David J.; Denta, Edward P., Jr.; and Jo Chiong, Victor E., to Digital Engineering, Ltd. Multiple zone multiple disk video recording system. 4,577,240, Cl. 360-22.000.
Hedges, Charles V.: *See*—
Mark, Victor; and Hedges, Charles V., 4,576,996, Cl. 525-439.000.
Heerlein, Manfred: *See*—
Bentele, Benedikt; and Heerlein, Manfred, 4,576,489, Cl. 384-469.000.
Hefner, Robert E., Jr.: *See*—
Ellerbe, Gilbert B., III; and Hefner, Robert E., Jr., 4,576,998, Cl. 525-455.000.
Hegemann, Karl-Rudolf; Weissert, Helmut; and Laimkuhler, Jurgen, to Gottfried Bischoff Bau kompl. Gasreinigungs- und Wasserruckkuhlanlagen GmbH & Co. Kommanditgesellschaft. Method of producing calcium sulfate dihydrate in connection with the desulfurization of flue gases. 4,576,803, Cl. 423-242.000.
Heigl, Franz; and Rehm, Josef, to Telefunken electronic GmbH. Input circuit comprising at least two input paths. 4,577,171, Cl. 334-1.000.
Heikkila, Pertti: *See*—
Issakainen, Onni; and Heikkila, Pertti, 4,576,525, Cl. 405-269.000.
Heimbuerger, Wolfgang: *See*—
Gardenier, Karl-Josef; and Heimbuerger, Wolfgang, 4,576,835, Cl. 427-222.000.
Heinrich Baumgarten KG Eisen- und Blechwarenfabrik: *See*—
Fischbach, Wolfgang, 4,575,897, Cl. 16-110.00A.
Heintzmann, Peter; Koppers, Manfred; Bohnes, Karlheinz; and Hecken, Gerhard, to Bochumer Eisenhuette Heintzmann GmbH & Co. KG. Rock anchor arrangement. 4,576,524, Cl. 405-260.000.
Helmut Lingemann GmbH & Co.: *See*—
Lingemann, Horst, 4,576,841, Cl. 428-34.000.
Hemmeter, George T.: *See*—
Stevens, Joy; and Hemmeter, George T., 4,575,894, Cl. 15-172.000.
Hempelmann, Heinrich J., to NI Industries, Inc. Wheel trim retention system. 4,576,415, Cl. 301-37.00S.
Hendriks, John G. Cabinet drawers security locking device. 4,576,423, Cl. 312-216.000.
Henkel Kommanditgesellschaft auf Aktien: *See*—
Gardenier, Karl-Josef; and Heimbuerger, Wolfgang, 4,576,835, Cl. 427-222.000.
Henning, John C., to Product Investment Incorporated. Easy-open closure. 4,576,304, Cl. 220-269.000.
Henschel, Claude: *See*—
Bose, Debasis; Datta, Amitava; DeCristofaro, Nicholas J.; and Henschel, Claude, 4,576,873, Cl. 428-606.000.
Her Majesty the Queen in Right of the Province of Alberta as represented by the Minister of Energy and Natural Resources: *See*—
Kentfield, John A. C., 4,576,064, Cl. 74-833.000.
Herbst, Manfred O.: *See*—
Snider, Alan D.; Soporowski, Andrzej L.; and Herbst, Manfred O., 4,576,328, Cl. 229-1.50R.
Hercules Incorporated: *See*—
Gardiner, Richard J., 4,576,849, Cl. 428-119.000.
Herd, Karl J.: *See*—
Jager, Horst; Harms, Wolfgang; and Herd, Karl J., 4,577,015, Cl. 344-76.000.
Herman, Edmund A., to General Motors Corporation. SMC Loader for compression molding press. 4,576,560, Cl. 425-103.000.
Hermann Heye: *See*—
Seidel, Hans-Georg, 4,576,624, Cl. 65-300.000.
Herriau, Jean P.: *See*—
Huignard, Jean P.; Rajbenbach, Henri; Loiseaux, Brigitte; and Herriau, Jean P., 4,576,434, Cl. 350-3.640.
Herrick, Robert S. Intraocular lens having loops defining a posterior capsule barrier. 4,575,877, Cl. 623-6.000.
Herrmann, Alan J., to General Motors Corporation. Flexible printed circuit connector and contact eyelet therefor. 4,576,426, Cl. 339-17.00F.
Hertl, William; and Weetall, Howard H., to Corning Glass Works. Hydrogen peroxide production using a non-aqueous system. 4,576,687, Cl. 204-157.500.
Herve, Jean-Luc A., to Compagnie Francaise des Petroles. Device for working on a submerged valve. 4,576,193, Cl. 137-15.000.
Hess, Gerhard: *See*—
Keil, Karl-Heinz; Engelhardt, Fritz; Greiner, Ulrich; Kuhlein, Klaus; Keller, Reinhold; Schlingmann, Merten; and Hess, Gerhard, 4,576,973, Cl. 521-149.000.
Hessen, Thomas A.: *See*—
Laiewski, Stanislaus; Hessen, Thomas A.; Hardy, Thomas R.; and Gilvin, Allie F., 4,576,278, Cl. 206-204.000.
Hetzel, Gerhard. Safety shoe with toe protecting cap. 4,575,953, Cl. 36-77.00R.
Hewes, Peter B.: *See*—
Hall, Henry B.; Hewes, Peter B.; Moore, Benjamin N.; and Sanzaro, Rosario, 4,576,798, Cl. 422-105.000.
Hewlett-Packard Company: *See*—
Pace, Noel M., 4,577,159, Cl. 330-9.000.
Hibino, Ikuo; and Miyajima, Mikio, to Alps Electric Company, Ltd. Thermal transfer printer. 4,577,198, Cl. 346-76.0PH.
Hibino, Masaaki, to Brother Industries, Ltd. Pen recording apparatus. 4,577,206, Cl. 346-139.00R.
Hidle, Jerry, to Panhandle Industries, Inc. Lint removal device. 4,575,890, Cl. 15-104.00A.
Hieber, Udo: *See*—
Erhardt, Werner; and Hieber, Udo, 4,577,257, Cl. 361-272.000.
Higaki, Hiromichi: *See*—
Miyazaki, Nobuyuki; Takayanagi, Takashi; and Higaki, Hiromichi, 4,576,977, Cl. 523-137.000.
Higashiguchi, Teruaki: *See*—
Miyakawa, Nobuhiro; Maekawa, Kouji; Higashiguchi, Teruaki; and Nakatani, Kaname, 4,576,888, Cl. 430-106.000.
Higashihata, Yoshihide: *See*—
Sako, Junichi; Yagi, Toshiharu; Higashihata, Yoshihide; Tatemoto, Masayoshi; Tomihashi, Nobuyuki; and Shimizu, Yoshiki, 4,577,005, Cl. 526-254.000.
Higashitani, Yoshitaka: *See*—
Kozai, Shinji; Shiiba, Suenobu; and Higashitani, Yoshitaka, 4,575,970, Cl. 51-165.920.
Higashiura, Tadashi: *See*—
Harada, Tokuya; Higashiura, Tadashi; and Okubo, Misae, 4,576,915, Cl. 435-101.000.
High, Paul G.: *See*—
Kuchyt, James R.; and High, Paul G., 4,576,543, Cl. 414-722.000.
Hikami, Masahiro: *See*—
Yoshimura, Yutaka; and Hikami, Masahiro, 4,577,286, Cl. 364-708.000.
Hilger, Manfred; Hultzsch, Gunter; and Keiper, Roman, to Hoechst Aktiengesellschaft. Adhesive composition. 4,576,981, Cl. 524-40.000.
Hill, T. Don, to Ferguson Manufacturing, Inc. Wild turkey call. 4,576,584, Cl. 446-193.000.
Hille, Hans-Dieter: *See*—
Poth, Ulrich; and Hille, Hans-Dieter, 4,576,868, Cl. 428-423.100.
Hilleary, Thomas N.; and Fulton, Robert D., to Butler National Corporation. Method for dispensing information. 4,577,062, Cl. 179-2.00A.
Hillman, Arthur E.: *See*—
Hazard, Gary M.; Hillman, Arthur E.; Montierth, Max R.; and Nieber, Albert R., 4,576,774, Cl. 264-267.000.
Hinch, Mark G.: *See*—
Chu, Jean; Hinch, Mark G.; Johnson, James M., Jr.; Kafka, Henry J.; and Stelte, David J., 4,577,314, Cl. 370-94.000.
Hinkley, David, to Mobil Oil Corporation. Method for correcting surface consistent statics in seismic traces. 4,577,298, Cl. 367-50.000.
Hinton, Michael. Produce support tray assemblage. 4,576,293, Cl. 211-127.000.
Hinze, Heinz-Joachim; Soder, Alfons; and Popendiker, Kurt, to Hoechst Aktiengesellschaft. Pharmaceutical compositions. 4,576,947, Cl. 514-263.000.
Hiramatsu, Ryo: *See*—
Sano, Yoshiaki; Omura, Isamu; and Hiramatsu, Ryo, 4,577,121, Cl. 307-355.000.

Hirano, Hiroyuki: *See*—
Kumura, Haruyoshi; Tanaka, Yoshikazu; Abo, Keiju; Hirano, Hiroyuki; and Yamamuro, Sigeaki, 4,576,265, Cl. 192-0.055.
Hirano, Tsumoru; and Furutachi, Nobuo, to Fuji Photo Film Co., Ltd. Silver halide color light-sensitive material containing magenta color image-forming polymer or copolymer coupler latex. 4,576,910, Cl. 430-548.000.
Hiraoka, Hiroshi: *See*—
Sakata, Hiromi; Kozuka, Nobuhiko; and Hiraoka, Hiroshi, 4,576,464, Cl. 355-3.00R.
Hirohashi, Kazutoshi; Ishigaki, Yukinobu; and Namiki, Yasuomi, to Victor Company of Japan, Ltd. Noise reduction by linear interpolation using a dual function amplifier circuit. 4,577,161, Cl. 330-149.000.
Hirokazu, Sakaki; and Takizawa, Kazushige, to Fuji Photo Film Co., Ltd. Process for producing aluminum support for lithographic printing plates. 4,576,686, Cl. 204-33.000.
Hirose, Iwao: *See*—
Yamasaki, Masahiro; Hirose, Iwao; Fukushima, Masao; and Yoshida, Ichiro, 4,576,467, Cl. 355-10.000.
Hirose, Naohiro; Sasaki, Osamu; and Takizawa, Yoshio, to Konishiroku Photo Industry Co., Ltd. Azo photoreceptor. 4,576,886, Cl. 430-59.000.
Hirschfeld, Tomas B., to University of California, Regents of the. Remote multi-position information gathering system and method. 4,577,109, Cl. 250-461.100.
Hitachi Chemical Company, Ltd.: *See*—
Kuwajima, Hideji; and Watanabe, Takeyoshi, 4,576,856, Cl. 428-241.000.
Hitachi Construction Machinery Co., Ltd.: *See*—
Morimoto, Keiji; Satoh, Shuichi; Iwai, Yoshiyuki; Ae, Osamu; Suda, Masao; Tsuchiya, Kiyoshi; Ogata, Kojiro; and Miyanagi, Naoki, 4,576,515, Cl. 405-184.000.
Hitachi Engineering Co., Ltd.: *See*—
Arakawa, Tadao; Ueno, Takeshi; Tsunematsu, Hiroshi; Toyoda, Keiichi; and Hashimoto, Tsuguo, 4,576,007, Cl. 60-660.000.
Sugano, Akira; Muramatsu, Masaru; Yamanobe, Sachio; and Sato, Yoshio, 4,577,270, Cl. 364-151.000.
Hitachi, Ltd.: *See*—
Akita, Kenji; Sakaguchi, Minoru; and Suzuyama, Hiroshi, 4,577,075, Cl. 200-148.00R.
Arai, Ikuya; Murata, Toshinori; and Kazumi, Masafumi, 4,577,228, Cl. 358-167.000.
Arakawa, Tadao; Ueno, Takeshi; Tsunematsu, Hiroshi; Toyoda, Keiichi; and Hashimoto, Tsuguo, 4,576,007, Cl. 60-660.000.
Isogai, Masato; Hattori, Shintaroo; Iwasaki, Kishiroo; Kitamura, Teruo; Mukoh, Akio; Inukai, Takashi; Furukawa, Kenji; Terashima, Kanetsugu; and Saitoh, Shinichi, 4,576,732, Cl. 252-299.650.
Kuroki, Takashi; Fujita, Tsuyoshi; Toda, Gyozo; Ishihara, Shousaku; and Ohzawa, Yoshiyuki, 4,576,735, Cl. 252-512.000.
Maeda, Kenji, 4,576,545, Cl. 414-735.000.
Moriyama, Shigeo, 4,575,942, Cl. 33-1.00M.
Oguino, Masanori, 4,576,442, Cl. 350-418.000.
Ohba, Shinya; Ando, Haruhisa; Nakai, Masaaki; Ozaki, Toshifumi; Seki, Koichi; Takahashi, Kenji; Akiyama, Toshiyuki; Takemoto, Iwao; Imaide, Takuya; Okuda, Akihide; and Kubo, Masaharu, 4,577,231, Cl. 358-212.000.
Ozawa, Naoki; Akiyama, Toshiyuki; Nagahara, Shuusaku; and Takemoto, Iwao, 4,577,230, Cl. 358-212.000.
Saiki, Eisaku; Kawamura, Satoshi; and Kawauchi, Masataka, 4,577,199, Cl. 346-76.0PH.
Saitou, Norio; Ozasa, Susumu; and Matsuzaka, Takashi, 4,577,111, Cl. 250-492.200.
Sugano, Akira; Muramatsu, Masaru; Yamanobe, Sachio; and Sato, Yoshio, 4,577,270, Cl. 364-151.000.
Takagi, Katsuaki; Kita, Yuzo; Hagiwara, Yoshimune; Ogawa, Kazuyoshi; and Hara, Hideo, 4,577,154, Cl. 328-158.000.
Takata, Yoshinori; and Taki, Mamoru, 4,576,706, Cl. 204-409.000.
Takeuchi, Takashi; Nishimura, Keizo; Kobayashi, Masaharu; and Oiso, Kazumasa, 4,577,319, Cl. 371-38.000.
Tanisaka, Satoshi; and Michiguchi, Yoshihiro, 4,577,151, Cl. 324-158.0MG.
Yamauchi, Teruo; Nogi, Toshiharu; and Oyama, Yoshishige, 4,576,136, Cl. 123-590.000.
Hitachi, Ltd: *See*—
Shiiki, Kazuo; Shiroishi, Yoshihiro; Kitakami, Osamu; and Uesaka, Yasutaro, 4,576,876, Cl. 428-679.000.
Hitachi Maxell, Ltd.: *See*—
Shiiki, Kazuo; Shiroishi, Yoshihiro; Kitakami, Osamu; and Uesaka, Yasutaro, 4,576,876, Cl. 428-679.000.
Hitachi Micro Computer Engineering Ltd.: *See*—
Takagi, Katsuaki; Kita, Yuzo; Hagiwara, Yoshimune; Ogawa, Kazuyoshi; and Hara, Hideo, 4,577,154, Cl. 328-158.000.
Hitora, Shozo, to Sasaki Electric Manufacturing Co., Ltd. Reflection type flow-flashing light. 4,577,178, Cl. 340-81.00R.
Hlaban, James J., to Kimberly-Clark Corporation. Sanitary napkin set. 4,576,597, Cl. 604-390.000.
Hlavka, Joseph J.; Bitha, Panayota; and Lin, Yang-i, to American Cyanamid Company. 2,3-Diamino-substituted-4(3H)-pyrimidinones and platinum chelates. 4,577,018, Cl. 544-225.000.
Ho, Gary S.; and Peterson, Ralph W., to AT&T Bell Laboratories. Demand paging scheme for a multi-ATB shared memory processing system. 4,577,274, Cl. 364-200.000.
Hodara, Henri; and Wells, Willard H., to Tetra-Tech, Inc. Security system with randomly modulated probe signal. 4,577,184, Cl. 340-566.000.
Hodge, James D., to General Electric Company. Zircon-cordierite composite ceramic. 4,576,919, Cl. 501-9.000.
Hodgman, John S.; and Mullersman, Ferdinand H., to General Electric Company. Battery charging system including means for distinguishing between rechargeable and non-rechargeable batteries. 4,577,144, Cl. 320-2.000.
Hoechst AG: *See*—
Ross, Barry C.; and Johnson, Graham, 4,576,939, Cl. 514-210.000.
Hoechst Aktiengesellschaft: *See*—
Dorrer, Bernhard; and Strametz, Helmut, 4,576,994, Cl. 525-247.000.
Hilger, Manfred; Hultzsch, Gunter; and Keiper, Roman, 4,576,981, Cl. 524-40.000.
Hinze, Heinz-Joachim; Soder, Alfons; and Popendiker, Kurt, 4,576,947, Cl. 514-263.000.
Mischke, Peter; and Fuchs, Hermann, 4,576,755, Cl. 260-245.780.
Stahlhofen, Paul; and Mack, Gerhard, 4,576,901, Cl. 430-325.000.
Hoechst-Roussel Pharmaceuticals Inc.: *See*—
Kosley, Raymond W., Jr.; and Cherill, Robert J., 4,577,026, Cl. 546-216.000.
Martin, Lawrence L.; and Setescak, Linda L., 4,576,960, Cl. 514-450.000.
Hoesch Aktiengesellschaft: *See*—
Bechem, Werner; Peters, Hubertus; Solms, Jurgen; and Wolfhard, Dietrich, 4,576,684, Cl. 204-28.000.
Hoet, Roland: *See*—
Park, David B.; Snyder, James R.; McDonald, Gerard J.; and Hoet, Roland, 4,576,277, Cl. 198-803.010.
Hoffman-La Roche Inc.: *See*—
Hubschwerlen, Christian N.; and Schmid, Gerard, 4,576,751, Cl. 260-245.400.
Hoffmann, Gerhard; Kleuser, Dieter; and Lenz, Werner, to BASF Aktiengesellschaft. Process of making photopolymer relief plates using an adhesive layer. 4,576,898, Cl. 430-306.000.
Hoffmann-La Roche Inc.: *See*—
Machin, Peter J., 4,577,030, Cl. 548-255.000.
Hofman, Johannes H. A.: *See*—
Corvers, Antonius; and Hofman, Johannes H. A., 4,577,023, Cl. 546-122.000.
Hohner, Terrance D.: *See*—
Charney, Gregory S.; Hohner, Terrance D.; and Salibello, Cosmo, 4,576,454, Cl. 351-243.000.
Hokuetsu Industries Co., Ltd.: *See*—
Tanaka, Masanori; Maehara, Atsushi; and Kanai, Junichi, 4,576,558, Cl. 418-150.000.
Holden, Kenneth M., to 501 W B Lock Company. Trailer lock. 4,576,021, Cl. 70-34.000.
Holder, Kurt, to Chr. Eisele Maschinenfabrik GmbH & Co. KG. Circular saw machine. 4,576,075, Cl. 83-464.000.
Hollenstein, Helmut: *See*—
Rock, Erich; and Hollenstein, Helmut, 4,576,506, Cl. 403-407.100.
Holliger, Christoph: *See*—
Corbet, Aaron B.; Holliger, Christoph; and Strul, Bruno, 4,576,477, Cl. 356-39.000.
Hollingsworth, Alexander, to Nordson Corporation. Skin packaging machine with vacuum frame. 4,575,991, Cl. 53-509.000.
Hollis, Samuel D., to Union Camp Corporation. Dicyclopentadiene resins. 4,577,006, Cl. 526-283.000.
Holmes, Russell C.: *See*—
Lane, E. James; Holmes, Russell C.; and Markyvech, Ronald K., 4,576,263, Cl. 192-0.044.
Holtz, Frederick C., Jr., to Crucible Materials Corporation. Alloy composition and process. 4,576,642, Cl. 75-239.000.
Holzer, Walter: *See*—
Faul, Wolfgang; Furst, Leander; Holzer, Walter; and Kastening, Bertel, 4,576,677, Cl. 156-642.000.
Holzinger, Charles E.; and Fee, David M., to Caterpillar Tractor Co. Brake release mechanism for vehicle towing. 4,576,418, Cl. 303-71.000.
Homsy, Charles A. Porous body-implantable polytetrafluoroethylene. 4,576,608, Cl. 623-11.000.
Honda Giken Kogyo K.K.: *See*—
Hamane, Masumi; and Hanawa, Kaoru, 4,576,269, Cl. 192-103.00A.
Yamato, Akihiro; and Otobe, Yutaka, 4,576,134, Cl. 123-480.000.
Honda Giken Kogyo Kabushiki Kaisha: *See*—
Kenichi, Nagahiro, 4,576,128, Cl. 123-198.00F.
Nakazawa, Masao; Yashima, Michio; and Takahashi, Shuuji, 4,576,879, Cl. 429-86.000.
Honeywell Inc.: *See*—
Abel, Irving R.; and Hatch, Marcus R., 4,576,452, Cl. 350-620.000.
Bauhahn, Paul E., 4,577,213, Cl. 357-69.000.
Carney, James K.; and Kolbas, Robert M., 4,577,321, Cl. 372-50.000.
Culp, Norman L., 4,577,163, Cl. 331-1.00A.
Fitch, Robert C.; and Narendra, Pat M., 4,577,223, Cl. 358-113.000.
White, William J., 4,576,679, Cl. 156-644.000.
Honjo, Kazuhiko: *See*—
Kadokura, Sadao; Honjo, Kazuhiko; Tomie, Takashi; and Naoe, Masahiko, 4,576,700, Cl. 204-192.00M.
Hooghordel, Rijk; and van Jole, Franciscus P., to U.S. Philips Corporation. Cathode-ray tube having a gettering device and gettering device suitable for said tube. 4,577,136, Cl. 313-481.000.
Hoogovens Groep B.V.: *See*—
Felthuis, Jacob; and Tournier, Joseph H., 4,576,081, Cl. 87-6.000.
Hooven, Michael D.; and Saulson, Stanley H., to Cordis Corporation. Self-calibrating differential condition sensor. 4,576,035, Cl. 73-4.00R.

Hope, Henry F.; and Hope, Stephen F. Cathode composition and method for solid state lithium battery. 4,576,883, Cl. 429-192.000.

Hope, Stephen F.: *See—*
Hope, Henry F.; and Hope, Stephen F., 4,576,883, Cl. 429-192.000.

Hopper, Ian: *See—*
McCann, James; Langley, James; Hopper, Ian; Durham, Steven; Scott, Thomas; and McOmish, Eric R., 4,576,517, Cl. 405-195.000.

Hopper, Michael G.; and Prival, Harri G., to Sperry Corporation. Multiple microcomputer system for digital computers. 4,577,273, Cl. 364-200.000.

Hori, Fumihisa: *See—*
Sugawara, Fukuo; Iwane, Yasuhiko; Hori, Fumihisa; and Onozato, Takashi, 4,576,492, Cl. 400-146.000.

Horiuchi, Ichiro: *See—*
Nishu, Mitsufumi; Takeuchi, Kenji; Sato, Masanori; Horiuchi, Ichiro; Muramatsu, Katsuhiko; and Kiryu, Koji, 4,576,059, Cl. 74-473.00P.

Horn, Dieter: *See—*
Eisenlauer, Josef; Horn, Dieter; and Neuwirth, Manfred, 4,576,723, Cl. 210-709.000.

Horn, Edward R.; and Kot, Norbert J., II, to Aladdin Engineering & Mfg. Co. Pneumatic mechanical clamp including locking means. 4,576,367, Cl. 269-32.000.

Horton Manufacturing Co., Inc.: *See—*
Schilling, Hugh K.; Dayen, Leonid; and Raines, Charles D., 4,576,266, Cl. 192-70.120.

Horton, Stuart L.; and Kann, Frederick P. Tab dispenser with odor applicator. 4,576,311, Cl. 221-73.000.

Hoshino, Shuji: *See—*
Ohki, Toshio; Matsumoto, Masaomi; Sakuraya, Takashi; Tokushige, Keinosuke; and Hoshino, Shuji, 4,575,972, Cl. 51-251.000.

Hosoi, Noriyuki; Ikeda, Kensuke; and Matsukawa, Hiroharu, to Fuji Photo Film Co., Ltd. Process for producing heat-sensitive recording paper. 4,576,831, Cl. 427-40.000.

Hosoi, Noriyuki, to Fuji Photo Film Co., Ltd. Preparation of encapsulated electrostatographic toner material. 4,576,890, Cl. 430-137.000.

Hoster, Thomas: *See—*
Doerr, Hermann; Hoster, Thomas; Neuschuetz, Dieter; Radke, Dietrich; Janssen, Wilhelm; and Ulrich, Klaus, 4,576,638, Cl. 75-80.000.

Hovel, Harold J.; and Kuech, Thomas F., to International Business Machines Corporation. Incoherent light annealing of gallium arsenide substrate. 4,576,652, Cl. 148-1.500.

Howe, Dennis G.; and Wrobel, Joseph J., to Eastman Kodak Company. Method for optically writing and/or reading information on optical recording elements. 4,577,306, Cl. 369-109.000.

Howering, Robert, to Eaton Corporation. Nonresiliently deformable fastener. 4,576,535, Cl. 411-503.000.

HR Textron Inc.: *See—*
Boyer, Kent R.; and Cobb, Clyde E., 4,576,203, Cl. 137-625.630.
Coakley, James L.; and Haydt, Richard J., deceased, 4,576,198, Cl. 137-596.000.

HRI, Inc.: *See—*
Nongbri, Govanon; and Chervenak, Michael C., 4,576,710, Cl. 208-58.000.

Huang, Wann-Sheng; Mims, Donald S.; and Allen, Richard S., to Texaco Inc. Method and apparatus for determining quality and mass flow rate of flowing steam. 4,576,036, Cl. 73-29.000.

Hubschwerlen, Christian N.; and Schmid, Gerard, to Hoffman-La Roche Inc. β-Lactams. 4,576,751, Cl. 260-245.400.

Hudson, Henry C., to Shell Oil Company. Catalysts and process for the selective hydrogenation of acetylenes. 4,577,047, Cl. 585-260.000.

Huebel, Robert R.: *See—*
Netzer, David; and Huebel, Robert R., 4,576,615, Cl. 55-43.000.

Hueckel, Gary R.; and Prokop, George S., to International Business Machines Corporation. Structure for inhibiting forward bias beta degradation. 4,577,212, Cl. 357-68.000.

Huff, Bernard G.: *See—*
Hamel, Jerome T.; and Huff, Bernard G., 4,575,900, Cl. 17-1.00B.

Huffman, George W.; Pentz, William J.; Vietti, David E.; and Wuskell, Joseph P. 2,2'-Isopropylidine bis(tetrahydrofuran). 4,577,035, Cl. 549-472.000.

Huft, John M.; and Kiko, Frederick J., to GTE Lenkurt Incorporated. Auto-balance circuit for battery feed in a telephone circuit. 4,577,064, Cl. 179-16.00F.

Hug, Kuno: *See—*
Hasenauer, Dieter; and Hug, Kuno, 4,576,881, Cl. 429-104.000.

Hughes Aircraft Company: *See—*
Yu, I-Ping, 4,577,196, Cl. 343-705.000.

Hughes, William B. Method of providing fertilizer from brines. 4,576,627, Cl. 71-41.000.

Huhn, John H.; and Spector, George. Pole shell building. 4,575,978, Cl. 52-234.000.

Huhta, Pentti: *See—*
Kahilathi, Matti; Ventola, Keijo; Virtanen, Matti; and Huhta, Pentti, 4,576,327, Cl. 228-212.000.

Huignard, Jean P.; Rajbenbach, Henri; Loiseaux, Brigitte; and Herriau, Jean P., to Thomson-CSF. Device for recording a coherent image in a multimode optical cavity. 4,576,434, Cl. 350-3.640.

Huls Aktiengesellschaft: *See—*
Norden, Jurgen; Aigner, Heinrich; Schindler, Fritz; and Samblebe, Reinhard, 4,576,625, Cl. 71-3.000.

Hultgren, Kent G.: *See—*
Smed, Jan P.; Seitzer, Kenneth E.; and Hultgren, Kent G., 4,576,548, Cl. 415-137.000.

Hultzsch, Gunter: *See—*
Hilger, Manfred; Hultzsch, Gunter; and Keiper, Roman, 4,576,981, Cl. 524-40.000.

Humpolik, Bohumil; Kluna, Vlastimil; Winterer, Wilfried; Kuchelmeister, Reinhold; and Bayer, Jurgen, to Sueddeutsche Kuehlerfabrik Julius Fr. Behr GmbH & Co. KG. Heat exchanger and process for its manufacture. 4,576,223, Cl. 165-79.000.

Hung, Peter: *See—*
DeLuca, Paul V.; and Hung, Peter, 4,576,428, Cl. 339-94.00R.

Hupperetz, Willem J. H.; and Ramakers, Johannes A. H. M., to DSM Resins B.V. Process for the preparation of an isocyanurate compound containing isocyanate groups. 4,577,017, Cl. 544-193.000.

Hurley, Brian J. E.; and Rachwal, Anthony J., to Thames Water Authority. Process for thickening digested sludge. 4,576,719, Cl. 210-620.000.

Hurst, Jim; and May, Josephine B., to Beecham Group p.l.c. Pyrazolopyridine derivatives and their use as anti-inflammatory and/or anti-allergic agents. 4,576,952, Cl. 514-303.000.

Hussmann, Peter, to Mittex Aktiengesellschaft. Process and apparatus for freeing bitter lupin seed of bitter substances therein. 4,576,820, Cl. 424-195.100.

Hydril Company: *See—*
Mott, James D.; and Wolff, Danny K., 4,576,358, Cl. 251-14.000.

Hydromatik GmbH: *See—*
Wagenseil, Ludwig; and Lotter, Manfred, 4,576,554, Cl. 417-270.000.

Hylarides, Mark D.; and Mettler, Fred A., Jr., to University of New Mexico. Deamination of aromatic amines. 4,577,046, Cl. 568-312.000.

Hyman, Alan A.; and Goldberg, Julie E. Sacroiliac belt. 4,576,154, Cl. 128-78.000.

Hynecek, Jaroslav, to Texas Instruments Incorporated. Line addressed charge coupled imager. 4,577,232, Cl. 358-213.000.

Hyodo, Masakatsu: *See—*
Morinaga, Akio; Sakaguchi, Yoichi; Hyodo, Masakatsu; and Yagi, Isaburo, 4,576,205, Cl. 138-98.000.

Ichikawa, Hiromichi: *See—*
Suganuma, Nobuo; Anzai, Masafumi; Takada, Nobuyuki; and Ichikawa, Hiromichi, 4,576,816, Cl. 424-50.000.

ICS Electronics Corporation: *See—*
Chu, Paul C.; and Mercola, Gerald K., 4,577,317, Cl. 370-110.100.

Ida, Hiroaki; Fujii, Masahiro; and Haruta, Toshio, to Unitika, Ltd. Method of producing water treatment medium and medium produced thereby. 4,576,716, Cl. 210-496.000.

Iida, Shinzo: *See—*
Kamei, Futoshi; Harada, Shinichi; Yasunishi, Akira; Takemura, Minoru; Fujikawa, Takeshi; Iida, Shinzo; and Katayama, Yasuyuki, 4,577,277, Cl. 364-472.000.

Iizumi, Toyoko: *See—*
Arai, Kazutaka; Ohara, Yoshio; Takakuwa, Yashio; and Iizumi, Toyoko, 4,577,025, Cl. 546-198.000.

Ikari, Kazuo, to Olympus Optical Co., Ltd. Photographic lens system for compact cameras. 4,576,448, Cl. 350-465.000.

Ikebe, Tsuguo: *See—*
Tahara, Tetsuya; Ikebe, Tsuguo; Terasawa, Michio; and Imayoshi, Tomonori, 4,576,940, Cl. 514-212.000.

Ikeda, Kensuke: *See—*
Hosoi, Noriyuki; Ikeda, Kensuke; and Matsukawa, Hiroharu, 4,576,831, Cl. 427-40.000.

Ikeda, Masato: *See—*
Miyazaki, Hiroshi; and Ikeda, Masato, 4,576,174, Cl. 128-639.000.

Illinois Tool Works Inc.: *See—*
Barth, Gerald D.; and Wagner, David P., 4,576,534, Cl. 411-412.000.
Saari, Oliver, 4,576,057, Cl. 74-424.80C.

Imada, Isuke, to Takeda Chemical Industries, Ltd. Hydroquinone sulfate derivatives and production thereof. 4,576,760, Cl. 558-37.000.

Imaide, Takuya: *See—*
Ohba, Shinya; Ando, Haruhisa; Nakai, Masaaki; Ozaki, Toshifumi; Seki, Koichi; Takahashi, Kenji; Akiyama, Toshiyuki; Takemoto, Iwao; Imaide, Takuya; Okuda, Akihide; and Kubo, Masaharu, 4,577,231, Cl. 358-212.000.

Imanishi, Kiyoshi: *See—*
Tabuchi, Makoto; and Imanishi, Kiyoshi, 4,575,995, Cl. 53-591.000.

Imayoshi, Tomonori: *See—*
Tahara, Tetsuya; Ikebe, Tsuguo; Terasawa, Michio; and Imayoshi, Tomonori, 4,576,940, Cl. 514-212.000.

IMEX AG: *See—*
Versteeg, Gijsbert, 4,575,984, Cl. 52-589.000.

Imi-Tech Corporation: *See—*
Lee, Raymond; and Ferro, Gregory A., 4,576,862, Cl. 428-317.700.

Imperial Chemical Industries Limited: *See—*
Robinson, Frank, 4,576,815, Cl. 423-658.500.

Imperial Chemical Industries, PLC: *See—*
Carroll, William G.; and Rosbotham, Ian D., 4,576,974, Cl. 521-173.000.
Le Count, David J., 4,576,953, Cl. 514-312.000.

Imperial Metal & Chemical Company: *See—*
Amariti, Luigi; and Santos, Llandro C., 4,576,899, Cl. 430-309.000.

Inaba, Hajimu; and Torii, Nobutoshi, to Fanuc Ltd. Robot system. 4,576,537, Cl. 414-222.000.

Inaba, Masahito: *See—*
Yuasa, Yoshio; Yasumoto, Hidetoshi; Naruse, Kazuhiko; Kawagoe, Nobukazu; and Inaba, Masahito, 4,576,470, Cl. 355-38.000.

Inadome, Kiyotaka, to Nippon Kogaku K. K. Zoom lens. 4,576,445, Cl. 350-427.000.

Inai, Yuichi: *See—*
Yamatsu, Isao; Abe, Shinya; Inai, Yuichi; Suzuki, Takeshi; Kinoshita, Kensaku; Mishima, Mannen; Katoh, Yoshinori; Kobayashi, Seiichi; Murakami, Manabu; and Yamada, Kouzi, 4,576,963, Cl. 514-532.000.

Inami, Mamoru; Tanaka, Yoshiaki; and Ohtsuki, Zenju, to Victor Company of Japan, Ltd. Level display device for audio signal. 4,577,188, Cl. 340-721.000.

Independent Energy, Inc.: *See—*
Conover, Gilbert, Jr.; and Richard, Gary R., 4,576,487, Cl. 374-183.000.

Inject Star Pokelmaschinen GmbH: *See—*
Prosenbauer, Otto, 4,575,899, Cl. 17-1.00G.

Inline Plastics Corporation: *See—*
Schepp, Frank, 4,576,330, Cl. 229-44.00R.

Inokuti, Yukio; Kobayashi, Yasuhiro; and Ito, Yo. Method for manufacturing grain-oriented silicon steel sheet. 4,576,658, Cl. 148-111.000.

Inoue-Japax Research Incorporated: *See—*
Inoue, Kiyoshi, 4,577,082, Cl. 219-69.00D.

Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Electrical machining method and apparatus with evolved-gas laser detoxification. 4,577,082, Cl. 219-69.00D.

Inoue MTP Co., Ltd.: *See—*
Okina, Toyohiko; Goto, Hiroshi; Ozawa, Akimasa; Nakamura, Kenji; and Oishi, Hiroshi, 4,576,855, Cl. 428-215.000.

Inoue, Takeo: *See—*
Arai, Masatoshi; Futatsumori, Koji; Inoue, Takeo; and Sato, Shinichi, 4,577,041, Cl. 556-446.000.

Institut National Polytechnique de Lorraine: *See—*
Mailfert, Alain-Jacques, 4,577,126, Cl. 310-52.000.

Institute of Technology Precision Electrical Discharge Works: *See—*
Yoda, Yasutada; Sueyasu, Seisuke; Orikawa, Michihiro; and Futamura, Shoji, 4,576,559, Cl. 425-28.00R.

Intel Corporation: *See—*
Eitan, Boaz; Kolodny, Avi; Amrany, Daniel; and McCreary, James, 4,577,295, Cl. 365-218.000.

Intermetrics, Inc.: *See—*
Ragsdale, William A., 4,577,194, Cl. 343-401.000.

International Biotechnologies, Inc.: *See—*
Kreisher, John H.; and Nalbantian, Charles A., 4,576,693, Cl. 204-180.100.
Peck, Lawrence J.; and Kreisher, John H., 4,576,702, Cl. 204-299.00R.
Peck, Lawrence J.; Kreisher, John H.; and Walker, Alan L., 4,576,703, Cl. 204-299.00R.

International Business Machines Corporation: *See—*
Barr, Millard G.; Barrett, William H.; Braidt, Joseph W.; Driscoll, John F.; Gregory, Joseph A.; Lucente, Samuel A.; and Remsburger, Louis J., 4,577,187, Cl. 340-700.000.
Barton, Roger W.; Coufal, Hans J.; Jipson, Victor B.; and Lee, Wen Y., 4,576,895, Cl. 430-270.000.
Bernstein, Kerry, 4,577,292, Cl. 365-189.000.
Busch, Dennis G., 4,577,288, Cl. 364-900.000.
Christy, Arthur E.; and Gill, Elmer J., 4,577,284, Cl. 364-513.000.
Comerford, Liam D.; and White, Steve R., 4,577,289, Cl. 364-900.000.
Gallagher, James P.; and Schmidt, Howard W., Jr., 4,576,698, Cl. 204-192.00E.
Goodman, Douglas S., 4,577,099, Cl. 250-216.000.
Harmuth, Ann P., 4,576,736, Cl. 252-512.000.
Hovel, Harold J.; and Kuech, Thomas F., 4,576,652, Cl. 148-1.500.
Hueckel, Gary R.; and Prokop, George S., 4,577,212, Cl. 357-68.000.
Lewis, Robert K.; and Ray, Sudipta K., 4,576,659, Cl. 148-127.000.
Matick, Richard E.; and Ling, Daniel T., 4,577,293, Cl. 365-189.000.
Walker, George A., 4,576,832, Cl. 427-43.100.

International Coal Refining Company: *See—*
Thorogood, Robert M., 4,576,121, Cl. 122-7.00R.

International Cybernetics Corporation: *See—*
Jones, Donald H.; and Allen, Spencer W., 4,577,271, Cl. 364-174.000.

International Flavors & Fragrances Inc.: *See—*
Fujioka, Futoshi; Boden, Richard M.; and Schreiber, William L., 4,576,739, Cl. 252-522.00R.
Hall, John B.; and Yoshida, Takao, 4,576,186, Cl. 131-276.000.
Hall, John B.; and Yoshida, Takao, 4,576,740, Cl. 252-522.00R.
Sprecker, Mark A.; Belko, Robert P.; Schreiber, William L.; and Licciardello, Michael, 4,576,741, Cl. 252-522.00R.
Sprecker, Mark A.; Hanna, Marie R.; Tokarzewski, Richard J.; Belko, Robert P.; Watkins, Hugh; and Vock, Manfred H., 4,576,742, Cl. 252-522.00R.

International Rectifier Corporation: *See—*
Gault, John M., 4,577,210, Cl. 357-38.000.

International Standard Electric Corporation: *See—*
Schwanitz, Manfred; Gaertner, Dietrich; Dressler, Wolfgang; and Schenk, Joerg, 4,577,195, Cl. 343-702.000.

International Telephone and Telegraph Corporation: *See—*
Reed, Joseph, 4,577,157, Cl. 329-50.000.

Internationale Octrooi Maatschappij "Octropa" B.V.: *See—*
Johnson, Richard S., 4,576,737, Cl. 252-522.00A.

INTEROX (Societe Anonyme): *See—*
Hageman, Jacques; Plumet, Lucien; and Robberechts, Marcel, 4,576,609, Cl. 8-103.000.

Inukai, Takashi: *See—*
Isogai, Masato; Hattori, Shintaroo; Iwasaki, Kishiroo; Kitamura, Teruo; Mukoh, Akio; Inukai, Takashi; Furukawa, Kenji; Terashima, Kanetsugu; and Saitoh, Shinichi, 4,576,732, Cl. 252-299.650.

Iofis, Naum A.: *See—*
Kaidash, Arnold N.; Iofis, Naum A.; Khurtsilava, Semen G.; Bukatov, Alexandr S.; and Danilova, Zinaida P., 4,576,605, Cl. 623-2.000.

Iovine, Carmine P.; Palmer, Joseph G.; and Walker, James L., to National Starch and Chemical Corporation. Polymerizable imidazolidinones. 4,577,031, Cl. 548-319.000.

Iphas Pharma-Verpackung: *See—*
Mommer, Heinrich, 4,576,593, Cl. 604-250.000.

Ipri, Alfred C.: *See—*
Stewart, Roger G.; and Ipri, Alfred C., 4,577,215, Cl. 357-23.500.

Irie, Toshio: *See—*
Satoh, Susumu; Hashimoto, Osamu; and Irie, Toshio, 4,576,657, Cl. 148-12.00C.

Isaksson, Rolf H. V.: *See—*
Flensburg, Carl G. A.; and Isaksson, Rolf H. V., 4,576,369, Cl. 270-54.000.

Isgar, Charles B.; and Isgar, Shirley K. Container for use with plastic bags. 4,576,310, Cl. 220-404.000.

Isgar, Shirley K.: *See—*
Isgar, Charles B.; and Isgar, Shirley K., 4,576,310, Cl. 220-404.000.

Ishida, Toshiyuki: *See—*
Uehara, Akira; Uehara, Takashi; Saito, Miyuki; and Ishida, Toshiyuki, 4,577,165, Cl. 331-109.000.

Ishigaki, Yukinobu: *See—*
Hirohashi, Kazutoshi; Ishigaki, Yukinobu; and Namiki, Yasuomi, 4,577,161, Cl. 330-149.000.

Ishihara, Shousaku: *See—*
Kuroki, Takashi; Fujita, Tsuyoshi; Toda, Gyozo; Ishihara, Shousaku; and Ohzawa, Yoshiyuki, 4,576,735, Cl. 252-512.000.

Ishii, Fumiaki, to Olympus Optical Co., Ltd. Endoscope connecting device. 4,576,144, Cl. 128-4.000.

Ishii, Fumiaki: *See—*
Yabe, Hisao; Sasa, Hiroyuki; Nakajima, Yukio; Ishii, Fumiaki; Takamura, Koji; and Nakamura, Takeaki, 4,576,650, Cl. 134-22.120.

Ishii, Jun: *See—*
Kobayashi, Osamu; Tanaka, Masanori; and Ishii, Jun, 4,576,275, Cl. 194-203.000.

Ishii, Tamaki; Yachigo, Shinichi; Sasaki, Manji; Shionoya, Masahisa; and Okamura, Haruki, to Sumitomo Chemical Company, Limited. Stabilizer for synthetic resins. 4,576,734, Cl. 252-404.000.

Ishikawa, Aiichi: *See—*
Saiki, Kazuaki; Ishikawa, Aiichi; Hashimoto, Noriyoshi; Kudo, Koichi; and Yoshikawa, Kuniyuki, 4,577,141, Cl. 318-590.000.

Ishikawajima-Harima Jukogyo Kabushiki Kaisha: *See—*
Ohki, Toshio; Matsumoto, Masaomi; Sakuraya, Takashi; Tokushige, Keinosuke; and Hoshino, Shuji, 4,575,972, Cl. 51-251.000.

Ishikura, Tadashi: *See—*
Echigo, Yoshiaki; Suematsu, Yoshiyuki; and Ishikura, Tadashi, 4,576,969, Cl. 521-28.000.

Isobe, Minoru, to Oki Electric Industry Co., Ltd. Multihead serial printer. 4,576,490, Cl. 400-82.000.

Isogai, Masato; Hattori, Shintaroo; Iwasaki, Kishiroo; Kitamura, Teruo; Mukoh, Akio; Inukai, Takashi; Furukawa, Kenji; Terashima, Kanetsugu; and Saitoh, Shinichi, to Hitachi, Ltd. Ferroelectric liquid crystal compounds and liquid crystal compositions. 4,576,732, Cl. 252-299.650.

Isomura, Hiroyasu: *See—*
Umeda, Yoshiaki; Matsumoto, Ryouhei; Isomura, Hiroyasu; and Shimotaka, Hisakuni, 4,576,588, Cl. 493-475.000.

Isoyama, Toyoshiro: *See—*
Sugimori, Shigeru; Isoyama, Toyoshiro; and Goto, Yasuyuki, 4,576,733, Cl. 252-299.670.

Issakainen, Onni; and Heikkila, Pertti, to Oy Tampella AB. Method and equipment for performing rock bolting. 4,576,525, Cl. 405-269.000.

Italtractor I.T.M. S.p.A.: *See—*
Armida, Gennaro; Sacco, Decio; and Grilli, Walter, 4,575,914, Cl. 29-434.000.

Ito, Hiroshi: *See—*
Akashi, Teruo; Ito, Hiroshi; and Yamada, Shigemichi, 4,576,063, Cl. 74-745.000.

Ito, Kunio: *See—*
Nishiwaki, Akira; Morohoshi, Yasuo; Mitake, Hitoshi; Moriguchi, Hiroyuki; Nomori, Hiroyuki; and Ito, Kunio, 4,576,797, Cl. 422-102.000.

Ito, Masazumi; and Murata, Tomoji, to Minolta Camera Kabushiki Kaisha. Control apparatus for copying machine. 4,576,472, Cl. 355-50.000.

Ito, Yo: *See—*
Inokuti, Yukio; Kobayashi, Yasuhiro; and Ito, Yo, 4,576,658, Cl. 148-111.000.

Itoh, Takayuki, to Asahi Kogaku Kogyo Kabushiki Kaisha. Zoom lens with high variable power ratio including wide-angle capability. 4,576,443, Cl. 350-427.000.

ITT Corporation: *See—*
Martin, Philip T., 4,577,255, Cl. 361-119.000.
Merrill, Dana A., 4,577,331, Cl. 375-17.000.

Ivanov, Vladimir V.: *See—*
Gubiev, Jury K.; Krasnikov, Valery V.; Bakulin, Valentin P.; Gagarin, Mikhail A.; Ivanov, Vladimir V.; and Kishkovsky, Zbignev N., 4,576,824, Cl. 426-241.000.

Iversen, Elmer A. Security grille apparatus for doors and windows. 4,575,965, Cl. 49-50.000.

Ivy-Gene Co., Inc.: *See—*
Kaye, Gordon E.; Schwartz, Eugene B.; and Sollins, Irving V., 4,576,591, Cl. 604-62.000.

Iwai, Yoshiyuki: *See—*
Morimoto, Keiji; Satoh, Shuichi; Iwai, Yoshiyuki; Ae, Osamu; Suda, Masao; Tsuchiya, Kiyoshi; Ogata, Kojiro; and Miyanagi, Naoki, 4,576,515, Cl. 405-184.000.

Iwamatsu, Seiichi, to Kabushiki Kaisha Suwa Seikosha. Semiconductor substrate. 4,576,851, Cl. 428-156.000.

Iwane, Yasuhiko: *See—*
Sugawara, Fukuo; Iwane, Yasuhiko; Hori, Fumihisa; and Onozato, Takashi, 4,576,492, Cl. 400-146.000.

Iwasaki, Kishiroo: *See—*
Isogai, Masato; Hattori, Shintaroo; Iwasaki, Kishiroo; Kitamura, Teruo; Mukoh, Akio; Inukai, Takashi; Furukawa, Kenji; Terashima, Kanetsugu; and Saitoh, Shinichi, 4,576,732, Cl. 252-299.650.

Izumisawa, Nobuyuki. Grinding machine. 4,575,973, Cl. 51-170.0TL.

J. Eberspacher: *See—*
Worner, Siegfried; Ottle, Walter; and Klein, Herbert, 4,576,799, Cl. 422-176.000.

J. I. Case Company: *See—*
Carlson, Frederick D.; and Hart, Ronald E., 4,575,898, Cl. 16-274.000.

J. M. Huber Corporation: *See—*
Kostinko, John A., 4,576,986, Cl. 524-450.000.

J. M. Voith GmbH: *See—*
Scheuter, Siegbert; and Kuhn, Friedrich, 4,576,343, Cl. 242-66.000.
Schiel, Christian, 4,576,681, Cl. 162-301.000.

Jackson, Dale H., to Harris Graphics Corporation. Method and apparatus for tipping closely incidental mail to magazines or the like. 4,576,370, Cl. 270-54.000.

Jackson, David M.; Matthews, Billie J.; and Bornslaeger, S. Richard, to Kimberly-Clark Corporation. Resilient shape-retaining sanitary napkin. 4,576,596, Cl. 604-370.000.

Jager, Horst; Harms, Wolfgang; and Herd, Karl J., to Bayer Aktiengesellschaft. Triphendioxazine vinyl sulphone dyestuffs. 4,577,015, Cl. 544-76.000.

Jahn-Held, Wilhelm: *See—*
Lindorfer, Walter; and Jahn-Held, Wilhelm, 4,576,513, Cl. 405-128.000.

Jakubowski, William J.: *See—*
Ungchusri, Tep; and Jakubowski, William J., 4,576,385, Cl. 277-124.000.

Jalowayski, Alfredo A. Nasal dilator. 4,576,168, Cl. 128-342.000.

Jamerson, Robert L.: *See—*
Dillon, Larry W.; Jamerson, Robert L.; and Padgett, Thomas M., 4,576,848, Cl. 428-89.000.

Jamerson, Willis B.; and Spector, George. Sleeping bag sheet insert. 4,575,884, Cl. 5-420.000.

Janecke, James P.; and Patel, Kishor J., to Applied Power Inc. Hydraulic pressure reducing control valve. 4,576,200, Cl. 137-624.130.

Janssen, Wilhelm: *See—*
Doerr, Hermann; Hoster, Thomas; Neuschuetz, Dieter; Radke, Dietrich; Janssen, Wilhelm; and Ulrich, Klaus, 4,576,638, Cl. 75-80.000.

Japan Spectroscopic Co., Ltd.: *See—*
Fukasawa, Yoshiro; Fukazawa, Tomoyuki; and Kawamura, Michihiro, 4,577,106, Cl. 250-347.000.

Japanese National Railways: *See—*
Takimoto, Tadashi; Oishibashi, Hirotsugu; Ueyama, Katsuyoshi; Ohara, Muneyuki; Kobayashi, Akio; Aoki, Keiichi; Nakamura, Mitsuo; and Hagiwara, Kenzo, 4,576,324, Cl. 228-44.300.

Jarrett, Steve A.; and Krzyston, John F., to Reynolds Metals Company. Method and apparatus for recycling cans. 4,576,289, Cl. 209-631.000.

Jarrow Products, Inc.: *See—*
Gerritsen, John T., 4,575,966, Cl. 49-209.000.

Jeffries, Derek K.; and McMillan, Duncan J., to United Kingdom Atomic Energy Authority. Liquid metal ion sources. 4,577,135, Cl. 313-362.100.

Jeneric Industries, Inc.: *See—*
Prasad, Arun, 4,576,789, Cl. 420-464.000.

Jensen, Paul L.: *See—*
Mueller, Edward E.; and Jensen, Paul L., 4,576,572, Cl. 432-13.000.

Jeppesen, Borge: *See—*
Aas, Flemming; and Jeppesen, Borge, 4,576,595, Cl. 604-256.000.

Jidai, Eiki; and Hashizume, Aiichiro, to Mitsubishi Denki Kabushiki Kaisha. Method for producing electrically insulated conductor. 4,576,694, Cl. 204-181.100.

Jipson, Victor B.: *See—*
Barton, Roger W.; Coufal, Hans J.; Jipson, Victor B.; and Lee, Wen Y., 4,576,895, Cl. 430-270.000.

Jo Chiong, Victor E.: *See—*
Hedberg, David J.; Denta, Edward P., Jr.; and Jo Chiong, Victor E., 4,577,240, Cl. 360-22.000.

Joa, Curt G., to Curt G. Joa, Inc. Fasteners for diapers. 4,576,600, Cl. 604-390.000.

Jodoin, Raymond C., to Rogers Corporation. Decoupled integrated circuit package. 4,577,258, Cl. 361-321.000.

Johansson, Lennart: *See—*
Ljungkvist, Stig-ake; and Johansson, Lennart, 4,576,510, Cl. 404-49.000.

John Brown Automation Limited: *See—*
Dixon, Derek; and Richardson, Barry A., 4,576,038, Cl. 73-40.700.

John Wyeth & Brother, Ltd.: *See—*
Crossley, Roger; and Dickinson, Kay H., 4,576,955, Cl. 514-335.000.
Crossley, Roger; and Shepherd, Robin G., 4,577,022, Cl. 546-14.000.

Johns Hopkins University, The: *See—*
Parker, John G.; and Stanbro, William D., 4,576,173, Cl. 128-633.000.

Johnson, David. Audio signal generator. 4,576,178, Cl. 128-670.000.

Johnson, Dwight E.: *See—*
Porter, William F.; Porter, Michael J.; and Johnson, Dwight E., 4,576,620, Cl. 65-9.000.

Johnson, Graham: *See—*
Ross, Barry C.; and Johnson, Graham, 4,576,939, Cl. 514-210.000.

Johnson, Irvin D., to Marathon Oil Company. Flow basket. 4,576,042, Cl. 73-155.000.

Johnson, James M., Jr.: *See—*
Chu, Jean; Hinch, Mark G.; Johnson, James M., Jr.; Kafka, Henry J.; and Stelte, David J., 4,577,314, Cl. 370-94.000.

Johnson & Johnson Baby Products Company: *See—*
Guth, Jacob J.; Lukenbach, Elvin R.; and Tenore, Richard R., 4,576,757, Cl. 260-404.500.

Johnson, Michael R.: *See—*
Eggler, James F.; Johnson, Michael R.; and Melvin, Lawrence S., Jr., 4,576,964, Cl. 514-546.000.

Johnson, Richard S., to Internationale Octrooi Maatschappij "Octropa" B.V. Encapsulation of volatile liquids. 4,576,737, Cl. 252-522.00A.

Johnson, Ronald M., to TRW Inc. Fuel injection apparatus employing electric power converter. 4,576,135, Cl. 123-490.000.

Johnson, Thomas E.; and Spencer, Terrance D., to Timberjack Inc. Rotational grapple. 4,576,406, Cl. 294-86.410.

Johnson, William M. Pad for a shoulder strap. 4,575,874, Cl. 2-268.000.

Johnston, Robert D.; and Forse, Nicholas J. A., to British Telecommunications. Echo canceller with adaptive residual center clipper controlled by echo estimate. 4,577,071, Cl. 179-170.200.

Jonca, Henri V. J., to Societe Nationale Industrielle Aerospatialle. Device for automatically connecting electric conductors on a regrouping member. 4,575,931, Cl. 29-747.000.

Jones, Donald H.; and Allen, Spencer W., to International Cybernetics Corporation. Sampled data servo control system. 4,577,271, Cl. 364-174.000.

Jones, Everett E., to Boeing Company, The. Slip joint tooling fixture for airframe structure and the like. 4,576,575, Cl. 432-253.000.

Jones, Franklin B.: *See—*
Milberger, Walter E.; and Jones, Franklin B., 4,577,166, Cl. 332-9.00T.

Jones, Howard: *See—*
Suh, John T.; Piwinski, John J.; Jones, Howard; and Neiss, Edward S., 4,576,941, Cl. 514-222.000.

Jones, Howell A.: *See—*
Soderberg, John H.; Jones, Howell A.; Eckert, Alton B.; and Duwel, Edward E., 4,577,283, Cl. 364-464.000.

Jones, William H.: *See—*
Chambers, Worthy L.; Jones, William H.; and Hayden, Arthur H., 4,577,179, Cl. 340-309.150.

Joos, Manfred; and Maack, Werner, to AMP Incorporated. Hand tool for terminating wires in a connector. 4,575,932, Cl. 29-751.000.

Josefsson, Erik A. A., to SSAB Svenskt Stal AB. Method for producing high strength steel with good ductility. 4,576,655, Cl. 148-12.00F.

Juhasz, Istvan. Soccer practice apparatus. 4,576,379, Cl. 273-411.000.

Juhasz, Josef: *See—*
Eschrich, Gerhard; Juhasz, Josef; and Schwab, Manfred, 4,577,143, Cl. 318-701.000.

Julius Blum Gesellschaft m.b.H.: *See—*
Rock, Erich; and Hollenstein, Helmut, 4,576,506, Cl. 403-407.100.

Juneau, Matthew K., to Ethyl Corporation. Removal of salt from polyphosphazene. 4,576,806, Cl. 423-300.000.

Jung, Lothar. Manufacture of preforms for energy transmitting fibers. 4,576,622, Cl. 65-13.000.

Junkosha Co. Ltd.: *See—*
Kato, Hiroshi, 4,576,861, Cl. 428-316.600.

Jurdi, Wissam J.: *See—*
Shibata, Tomoo; and Jurdi, Wissam J., 4,577,204, Cl. 346-200.000.
Shibata, Tomoo; and Jurdi, Wissam J., 4,577,205, Cl. 346-204.000.

Juty, Andrzej J. J.: *See—*
Kelsey, Stephen F.; and Juty, Andrzej J. J., 4,576,306, Cl. 220-271.000.

Juutilainen, Timo, to Delcon Oy. Adapter for field signals of computers, microprocessor systems or the like digital electronic circuits. 4,577,267, Cl. 363-19.000.

K-Jack Engineering Company, Inc.: *See—*
Chalabian, Jack S., 4,576,271, Cl. 194-233.000.

Kabushiki Kaisha Daikin Seisakusho: *See—*
Koshimo, Masahiko, 4,576,260, Cl. 192-3.310.

Kabushiki Kaisha Kobe Seiko Sho: *See—*
Kamei, Futoshi; Harada, Shinichi; Yasunishi, Akira; Takemura, Minoru; Fujikawa, Takeshi; Iida, Shinzo; and Katayama, Yasuyuki, 4,577,277, Cl. 364-472.000.

Kabushiki Kaisha Komatsu Seisakusho: *See—*
Matsumoto, Minoru, 4,576,240, Cl. 173-105.000.

Kabushiki Kaisha Nikken Kousakusho: *See—*
Matumoto, Masakazu, 4,576,058, Cl. 74-425.000.

Kabushiki Kaisha Nipponcoinco: *See—*
Kobayashi, Osamu; Tanaka, Masanori; and Ishii, Jun, 4,576,275, Cl. 194-203.000.

Kabushiki Kaisha Suwa Seikosha: *See—*
Iwamatsu, Seiichi, 4,576,851, Cl. 428-156.000.
Kawamura, Yoshikazu, 4,577,203, Cl. 346-140.00R.

Kabushiki-Kaisha Tokai-Rika-Denki-Seisakusho: *See—*
Takeda, Nobuhiro; Hattori, Masaichi; and Hanaki, Akira, 4,577,117, Cl. 307-10.00R.

Kabushiki Kaisha Toshiba: *See—*
Fukuta, Kenji; Kaneko, Takaoki; and Takahashi, Yoshinobu, 4,576,692, Cl. 204-165.000.
Koike, Hideharu, 4,577,124, Cl. 307-451.000.
Nambu, Shigeo, 4,577,327, Cl. 375-4.000.
Nishida, Naoto; Takahashi, Tadashi; and Kakizaki, Katsuyuki, 4,577,324, Cl. 372-95.000.
Noda, Yasumasa; and Suzuki, Yoichi, 4,577,078, Cl. 219-10.55A.
Sujaku, Takamichi, 4,577,079, Cl. 219-10.55D.
Tsunashima, Yoshitaka, 4,575,920, Cl. 29-571.000.
Yamaura, Mitsuru, 4,577,254, Cl. 361-80.000.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See—*
Anahara, Meiji; and Omori, Hiroshi, 4,575,999, Cl. 57-333.000.

Kabushiki Kaisha Toyota Chuo Kenkyusho: *See—*
Kondo, Haruyoshi; Takahashi, Hideaki; Saji, Keiichi; Takeuchi, Takashi; and Hayakawa, Kiyoharu, 4,576,705, Cl. 204-406.000.
Sugiyama, Susumu, 4,576,052, Cl. 73-862.630.

Kadokura, Sadao; Honjo, Kazuhiko; Tomie, Takashi; and Naoe, Masahiko, to Teijin Limited. Perpendicular magnetic recording medium method for producing the same, and sputtering device. 4,576,700, Cl. 204-192.00M.

Kaeding, Warren W.; and Lee, Carol S., to Mobil Oil Corporation. ZSM-5/ZSM-12 Catalyst mixture for cracking alkylbenzenes. 4,577,050, Cl. 585-486.000.

Kaeufer, Helmut; and Burr, August, to Deutsche Solvay Werke GmbH. Process for the preparation of injection molded-stretch formed thermoplastic resin articles. 4,576,775, Cl. 264-323.000.

Kafka, Henry J.: *See—*
Chu, Jean; Hinch, Mark G.; Johnson, James M., Jr.; Kafka, Henry J.; and Stelte, David J., 4,577,314, Cl. 370-94.000.

Kaganowicz, Grzegorz; Robinson, John W.; and Thomas, John H., III, to RCA Corporation. Low temperature growth of silicon dioxide on silicon. 4,576,829, Cl. 427-39.000.

Kahilathi, Matti; Ventola, Keijo; Virtanen, Matti; and Huhta, Pentti, to Kone Oy. Procedure for affixing bearing hoops on outer surface of large diameter drum. 4,576,327, Cl. 228-212.000.

Kaidash, Arnold N.; Iofis, Naum A.; Khurtsilava, Semen G.; Bukatov, Alexandr S.; and Danilova, Zinaida P., to Nauchno-Issledovatelsky Institut Khirurgii Imeni A.V. Vishnevskogo. Cardiac valve prosthesis. 4,576,605, Cl. 623-2.000.

Kaiser, Donald B., to RCA Corporation. Electrode structure for an electron multiplier cage assembly. 4,577,137, Cl. 313-533.000.

Kakizaki, Katsuyuki: *See—*
Nishida, Naoto; Takahashi, Tadashi; and Kakizaki, Katsuyuki, 4,577,324, Cl. 372-95.000.

Kakonyi, Gyula: *See—*
Kassza, Tibor; Kakonyi, Gyula; and Molnar, Gabor, 4,576,025, Cl. 70-276.000.

Kalama Chemical, Inc.: *See—*
Marinak, Michael J.; and Simonson, John L., 4,577,027, Cl. 546-345.000.

Kalbfell, Heinz; Lieder, Bernhard; and Mercamp, Herbert, to Ruhrchemie Aktiengesellschaft. Process for the preparation of aldehydes. 4,577,043, Cl. 568-454.000.

Kalkomey, Cynthia T.; Mason, Thomas J.; and Pann, Keh, to Mobil Oil Corporation. Method for enhancing recorded marine seismic reflection signals having undulating water bottom distortions. 4,577,297, Cl. 367-24.000.

Kamata, Shigeru, to Canon Kabushiki Kaisha. Zoom lens mounting. 4,576,446, Cl. 350-429.000.

Kambara, Goro; and Fujii, Makoto, to Sony Corporation. Apparatus for coating viscous material on a seal edge surface of a cathode ray tube. 4,576,113, Cl. 118-697.000.

Kamei, Futoshi; Harada, Shinichi; Yasunishi, Akira; Takemura, Minoru; Fujikawa, Takeshi; Iida, Shinzo; and Katayama, Yasuyuki, to Kabushiki Kaisha Kobe Seiko Sho. Method and apparatus of continuous casting by the use of mold oscillating system. 4,577,277, Cl. 364-472.000.

Kametaka, Shigeru: *See—*
Yoshida, Akiyoshi; Kametaka, Shigeru; and Hayashi, Shin'ichi, 4,576,914, Cl. 435-42.000.

Kamiya, Takashi; Hashimoto, Masashi; and Nakaguti, Osamu, to Fujisawa Pharmaceutical Co., Ltd. Azetidinone compounds and processes for preparation thereof. 4,576,753, Cl. 260-239.00A.

Kampfer, Helmut; Langen, Hans; and Ranz, Erwin, to Agfa Gevaert Aktiengesellschaft. Color-photographic recording material. 4,576,907, Cl. 430-507.000.

Kampfmann, Georg: *See—*
Maack, Werner; Kampfmann, Georg; and Foerster, Peter, 4,576,032, Cl. 72-431.000.

Kana, Kenneth W.; Kana, Willie H.; and Seidel, Francis L., to Fluorocarbon/Sepco. Method and apparatus for assembling spiral wound gasket rings into gauge rings. 4,575,917, Cl. 29-520.000.

Kana, Willie H.: *See—*
Kana, Kenneth W.; Kana, Willie H.; and Seidel, Francis L., 4,575,917, Cl. 29-520.000.

Kanai, Junichi: *See—*
Tanaka, Masanori; Maehara, Atsushi; and Kanai, Junichi, 4,576,558, Cl. 418-150.000.

Kanbara, Kazuhiro; and Hataishi, Osamu, to Fujitsu Limited. Method for fabricating a SOI type semiconductor device. 4,575,925, Cl. 29-576.00W.

Kanda, Yoichi: *See—*
Aoki, Katsumichi; Shida, Takafumi; Kanda, Yoichi; Satake, Keigo; Shinkawa, Hiroyasu; and Yamazaki, Shiro, 4,577,029, Cl. 548-162.000.

Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See—*
Murata, Shouichi; Makiyama, Muneto; Omoto, Takahiro; and Yasumoto, Taizo, 4,576,840, Cl. 428-16.000.
Tani, Nobutaka; and Hayashi, Tsuneo, 4,576,928, Cl. 502-404.000.

Kaneko, Takaoki: *See—*
Fukuta, Kenji; Kaneko, Takaoki; and Takahashi, Yoshinobu, 4,576,692, Cl. 204-165.000.

Kang, En T.: *See—*
Ehrlich, Paul; Anderson, Wayne A.; Kang, En T.; and Bhatt, Ansuya P., 4,576,887, Cl. 430-71.000.

Kann, Frederick P.: *See—*
Horton, Stuart L.; and Kann, Frederick P., 4,576,311, Cl. 221-73.000.

Kannapell, Henry N.; and Nietfeld, Paul G., to Mead Corporation, The. Text/continuous tone image decision processor. 4,577,235, Cl. 358-280.000.

KAO Corporation: *See—*
Urata, Koichi; Takaishi, Naotake; and Suzuki, Yuji, 4,576,967, Cl. 514-772.000.

Kaplan, Alan; and Amato, James, to Emkay Manufacturing Co. Crystal plating slug apparatus. 4,576,114, Cl. 118-720.000.

Kapralis, Imants P. Reinforced lightweight plastic packages. 4,576,282, Cl. 206-524.000.

Kapur, Jagdish C.; and Fasel, Herman P., to Gist-Brocades N.V. Preparation of 6,6-dibromo-penicillanic acid-1,1-dioxide. 4,576,754, Cl. 260-245.20R.

Kartavenko, Alex: *See—*
Donato, Anthony C.; and Kartavenko, Alex, 4,577,266, Cl. 362-296.000.

Kashio, Shigetra: *See—*
Fujikawa, Junichi; Togashi, Osamu; and Kashio, Shigetra, 4,576,897, Cl. 430-273.000.

Kasper, James D.: *See—*
Proud, Todd A.; Lin, Tom F.; Mitchell, Wayne J.; and Kasper, James D., 4,576,185, Cl. 128-760.000.

Kassza, Tibor; Kakonyi, Gyula; and Molnar, Gabor, to ELZETT Muvek. Magnetic lock insert for lock mechanisms. 4,576,025, Cl. 70-276.000.

Kastening, Bertel: *See—*
Faul, Wolfgang; Furst, Leander; Holzer, Walter; and Kastening, Bertel, 4,576,677, Cl. 156-642.000.

Katagiri, Hidenori: *See—*
Miura, Hirohisa; Satou, Hiroshi; Katagiri, Hidenori; Natsume, Toshio; and Azuma, Hidekazu, 4,576,725, Cl. 252-62.510.

Katagiri, Katsumasa: *See—*
Sugiyama, Tohru; Suzuki, Yasuo; Katagiri, Katsumasa; and Furutani, Satoshi, 4,576,930, Cl. 514-23.000.

Katayama, Yasuyuki: *See—*
Kamei, Futoshi; Harada, Shinichi; Yasunishi, Akira; Takemura, Minoru; Fujikawa, Takeshi; Iida, Shinzo; and Katayama, Yasuyuki, 4,577,277, Cl. 364-472.000.

Kato, Hiroshi, to Junkosha Co. Ltd. Material for gaseous diffusion electrode. 4,576,861, Cl. 428-316.600.

Kato, Toshikazu: *See—*
Emura, Noriaki; Ariyoshi, Takashi; and Kato, Toshikazu, 4,577,004, Cl. 526-204.000.

Kato, Yasuyuki: *See—*
Tatsukami, Yoshiharu; Kato, Yasuyuki; and Wake, Shigeo, 4,576,438, Cl. 350-96.340.

Katoh, Yoshinori: *See—*
Yamatsu, Isao; Abe, Shinya; Inai, Yuichi; Suzuki, Takeshi; Kinoshita, Kensaku; Mishima, Mannen; Katoh, Yoshinori; Kobayashi, Seiichi; Murakami, Manabu; and Yamada, Kouzi, 4,576,963, Cl. 514-532.000.

Katsuyama, Akira; and Kimura, Shuichi, to Sony Corporation. Disc players for reproducing an information signal from a rotating disc. 4,577,300, Cl. 369-43.000.

Katzeff, Kurt; and Petre, Tommy. Arrangement for a pay telephone payment system utilizing a payment card within the telecommunication system. 4,577,061, Cl. 179-2.0AM.

Kaufmann, Rudolf; Braunsperger, Karl; Wegehaupt, Karl-Heinrich; and von Au, Gunter, to Wacker-Chemie GmbH. Method for preparing diorganopolysiloxanes containing fluoroalkyl groups. 4,577,040, Cl. 556-462.000.

Kauserud, Hakon, to Dansk Industri Syndikat A/S. Method for the production of frozen mould bodies and apparatus for use in the carrying out of the method. 4,576,215, Cl. 164-15.000.

Kavehrad, Mohsen, to AT&T Bell Laboratories. Cross-polarization interference cancellation arrangement for digital radio channels. 4,577,330, Cl. 375-15.000.

Kawagoe, Nobukazu: *See—*
Yuasa, Yoshio; Yasumoto, Hidetoshi; Naruse, Kazuhiko; Kawagoe, Nobukazu; and Inaba, Masahito, 4,576,470, Cl. 355-38.000.

Kawai, Kozo: *See—*
Otuka, Shinpei; Kawai, Kozo; and Kusunoki, Toshio, 4,576,149, Cl. 128-33.000.

Kawaken Fine Chemicals Co., Ltd.: *See—*
Matsushita, Noritaka, 4,576,647, Cl. 106-193.00R.

Kawamata, Toshio, to Fuji Photo Film Co., Ltd. Surface smoothing method for disk-like recording medium. 4,577,077, Cl. 219-10.430.

Kawamura, Atsushi, to Ricoh Company, Ltd. Macro-focus zoom lens. 4,576,444, Cl. 350-428.000.

Kawamura, Michihiro: *See—*
Fukasawa, Yoshiro; Fukazawa, Tomoyuki; and Kawamura, Michihiro, 4,577,106, Cl. 250-347.000.

Kawamura, Satoshi: *See—*
Saiki, Eisaku; Kawamura, Satoshi; and Kawauchi, Masataka, 4,577,199, Cl. 346-76.0PH.

Kawamura, Yoshikazu, to Epson Corporation; and Kabushiki Kaisha Suwa Seikosha. Ink jet recording apparatus. 4,577,203, Cl. 346-140.00R.

Kawasaki Seitetsu Kabushiki Kaisha: *See—*
Ohki, Toshio; Matsumoto, Masaomi; Sakuraya, Takashi; Tokushige, Keinosuke; and Hoshino, Shuji, 4,575,972, Cl. 51-251.000.

Kawasaki Steel Corporation: *See—*
Kozai, Shinji; Shiiba, Suenobu; and Higashitani, Yoshitaka, 4,575,970, Cl. 51-165.920.
Miyake, Hidenori; Fujiwara, Shunji; Nakazato, Yoshio; Yanagishima, Fumiya; and Teshiba, Toko, 4,576,029, Cl. 72-205.000.
Satoh, Susumu; Obara, Takashi; and Nishida, Minoru, 4,576,656, Cl. 148-12.00C.
Satoh, Susumu; Hashimoto, Osamu; and Irie, Toshio, 4,576,657, Cl. 148-12.00C.

Kawatani, Kimio; Fujikawa, Takashi; and Watanabe, Eiji, to Nippon Petrochemicals Co., Ltd.; and Arakawa Kagaku Kogyo Kabushiki Kaisha. Method of sizing paper. 4,576,680, Cl. 162-158.000.

Kawauchi, Masataka: *See—*
Saiki, Eisaku; Kawamura, Satoshi; and Kawauchi, Masataka, 4,577,199, Cl. 346-76.0PH.

Kawazoe, Chisato; Yoshida, Kenichi; and Tsuno, Koichi, to Sumitomo Electric Industries, Ltd. Fiberscope. 4,576,146, Cl. 128-6.000.

Kaye, Gordon E.; Schwartz, Eugene B.; and Sollins, Irving V., to Ivy-Gene Co., Inc. Medicament implant applicator. 4,576,591, Cl. 604-62.000.

Kazumi, Masafumi: *See—*
Arai, Ikuya; Murata, Toshinori; and Kazumi, Masafumi, 4,577,228, Cl. 358-167.000.

Kearney & Trecker Corporation: *See—*
Mattson, Clyde E., 4,575,918, Cl. 29-568.000.

Kedzior, Edward S., to Allegheny Ludlum Steel Corporation. Reusable shipping container. 4,576,300, Cl. 217-13.000.

Keel, Frederick; Townsend, Keith G.; and Carter, Marshall C., to Bentley Engineering Company Limited. Circular knitting machine having improved take-down apparatus. 4,576,019, Cl. 66-147.000.

Keezer, William J., to Bose Corporation. Electroacoustical transducer. 4,577,069, Cl. 179-119.00R.

Keil, Karl-Heinz; Engelhardt, Fritz; Greiner, Ulrich; Kuhlein, Klaus; Keller, Reinhold; Schlingmann, Merten; and Hess, Gerhard, to Cassella Aktiengesellschaft. Copolymer, process for its preparation and its use as a sorbent. 4,576,973, Cl. 521-149.000.

Keintzel, Gunter; and Westebbe, Klaus, to L. & C. Steinmuller GmbH. Water separator for drying wet vapor, with subsequent superheating of the dried vapor. 4,576,125, Cl. 122-483.000.

Keiper Dynavit GmbH & Co.: *See—*
Lautenschlager, Peter, 4,576,051, Cl. 73-862.360.

Keiper, Roman: *See—*
Hilger, Manfred; Hultzsch, Gunter; and Keiper, Roman, 4,576,981, Cl. 524-40.000.

Keledjian, Gaston: *See—*
Passemard, Jean-Robert; and Keledjian, Gaston, 4,576,544, Cl. 414-735.000.

Keller, Reinhold: *See—*
Keil, Karl-Heinz; Engelhardt, Fritz; Greiner, Ulrich; Kuhlein, Klaus; Keller, Reinhold; Schlingmann, Merten; and Hess, Gerhard, 4,576,973, Cl. 521-149.000.

Kelly, Thomas J.; and Tyler, Daniel W., to AT&T Information Systems Inc. Adaptive modular telephone cradle for a communication terminal. 4,577,068, Cl. 179-100.00R.

Kelman, Charles D. Intraocular lenses. 4,576,607, Cl. 623-6.000.

Kelsey, Stephen F.; and Juty, Andrzej J. J., to Metal Box plc. Closure for a container having vent and tethered means. 4,576,306, Cl. 220-271.000.

Kempers, Eugene K., to Midwest Energy Services Company. Pump suction vacuum lift vortex control. 4,576,197, Cl. 137-565.000.

Kendall, James M., Jr.: *See—*
Wang, Taylor G.; Elleman, Daniel D.; Lee, Mark C.; and Kendall, James M., Jr., 4,576,926, Cl. 502-339.000.

Keneson, Jerry L. Device for holding and aiding in the sharpening of welding rods. 4,575,971, Cl. 51-236.000.

Kenichi, Nagahiro, to Honda Giken Kogyo Kabushiki Kaisha. Valve operation stopping means for multi-cylinder engine. 4,576,128, Cl. 123-198.00F.

Kennedy, John T.: *See—*
Newman, Leon A.; and Kennedy, John T., 4,577,323, Cl. 372-64.000.

Kentfield, John A. C., to Her Majesty the Queen in Right of the Province of Alberta as represented by the Minister of Energy and Natural Resources. Coupling mechanism for wind turbine. 4,576,064, Cl. 74-833.000.

Keralox B.V.: *See—*
Felthuis, Jacob; and Tournier, Joseph H., 4,576,081, Cl. 87-6.000.

Kernforschungsanlage Julich GmbH: *See—*
Faul, Wolfgang; Furst, Leander; Holzer, Walter; and Kastening, Bertel, 4,576,677, Cl. 156-642.000.

Kernighan, Brian W.: *See—*
Dunlop, Alfred E.; and Kernighan, Brian W., 4,577,276, Cl. 364-491.000.

Kerr, Howard A.: *See—*
Frey, Alan E.; and Kerr, Howard A., 4,577,065, Cl. 179-18.0BC.

Kerst, Donald W., to United States of America, Energy. Push-pull betatron pair. 4,577,156, Cl. 328-237.000.

Keskkula, Henno: *See—*
McCreedy, Kathleen M.; Keskkula, Henno; Pawloski, James C.; and Yonkers, Edward H., 4,576,721, Cl. 210-640.000.

Key, Richard. Animal immobilizing apparatus and method. 4,576,171, Cl. 128-421.000.

Keyes, Marion A., IV; Lui, Peter K.; and Malcolm, Jack W., deceased (by Malcolm, Elizabeth J., executrix), to Babcock & Wilcox Company, The. Three-mode analog controller with remote tuning. 4,577,097, Cl. 250-211.00K.

Khurtsilava, Semen G.: *See—*
Kaidash, Arnold N.; Iofis, Naum A.; Khurtsilava, Semen G.; Bukatov, Alexandr S.; and Danilova, Zinaida P., 4,576,605, Cl. 623-2.000.

Kies, Anton M. Ground rod. 4,577,053, Cl. 174-7.000.

Kiko, Frederick J.: *See—*
Huft, John M.; and Kiko, Frederick J., 4,577,064, Cl. 179-16.00F.

Kim, Suk K.; and Viswanathan, Thayamkulangara R., to AT&T Bell Laboratories. Trimless bandgap reference voltage generator. 4,577,119, Cl. 307-297.000.

Kimata, Masafumi, to Mitsubishi Denki Kabushiki Kaisha. Solid image-pickup device. 4,577,233, Cl. 358-213.000.

Kimberly-Clark Corporation: *See—*
Hlaban, James J., 4,576,597, Cl. 604-390.000.
Jackson, David M.; Matthews, Billie J.; and Bornslaeger, S. Richard, 4,576,596, Cl. 604-370.000.

Kimura, Shuichi: *See—*
Katsuyama, Akira; and Kimura, Shuichi, 4,577,300, Cl. 369-43.000.

Kimura, Yoshiaki: *See—*
Murakami, Kiyotaka; and Kimura, Yoshiaki, 4,577,201, Cl. 346-140.00R.

King, Larry K.: *See—*
Fields, James R.; Rogers, Elmer H., Jr; and King, Larry K., 4,576,690, Cl. 204-67.000.

King Seeley Thermos Co.: *See—*
Nelson, Kenneth L., 4,576,016, Cl. 62-320.000.

Kinne, Stanley F., to Lear Siegler, Inc. Trailer frame structure. 4,576,398, Cl. 280-789.000.

Kinoshita, Kensaku: *See—*
Yamatsu, Isao; Abe, Shinya; Inai, Yuichi; Suzuki, Takeshi; Kinoshita, Kensaku; Mishima, Mannen; Katoh, Yoshinori; Kobayashi, Seiichi; Murakami, Manabu; and Yamada, Kouzi, 4,576,963, Cl. 514-532.000.

Kinugawa, Masumi: *See—*
Muto, Yukio; Kinugawa, Masumi; and Abe, Tomoaki, 4,576,039, Cl. 73-118.000.

Kiriake, Masaharu: *See—*
Matsui, Isamu; Uchida, Hiroshi; Nakanishi, Kazuo; Kiriake, Masaharu; and Shimano, Akira, 4,576,341, Cl. 242-35.50A.

Kirksey, Patricia E., to University Hospital. Disposable syringe needle separation and storage box. 4,576,281, Cl. 206-370.000.

Kiryu, Koji: *See—*.
Nishu, Mitsufumi; Takeuchi, Kenji; Sato, Masanori; Horiuchi, Ichiro; Muramatsu, Katsuhiko; and Kiryu, Koji, 4,576,059, Cl. 74-473.00P.

Kishkovsky, Zbignev N.: *See—*
Gubiev, Jury K.; Krasnikov, Valery V.; Bakulin, Valentin P.; Gagarin, Mikhail A.; Ivanov, Vladimir V.; and Kishkovsky, Zbignev N., 4,576,824, Cl. 426-241.000.

Kiss, Zoltan, to Chronar Corp. Deposition of materials. 4,576,830, Cl. 427-39.000.

Kita, Nobuyuki; and Matsumoto, Hiroshi, to Fuji Photo Film Co., Ltd. Plate cleaner for lithographic printing plate. 4,576,743, Cl. 252-524.000.

Kita, Nobuyuki: *See—*
Nakakita, Eiji; Koike, Akinobu; Sekiya, Toshiyuki; Misu, Hiroshi; and Kita, Nobuyuki, 4,576,893, Cl. 430-457.000.

Kita, Yuzo: *See—*
Takagi, Katsuaki; Kita, Yuzo; Hagiwara, Yoshimune; Ogawa, Kazuyoshi; and Hara, Hideo, 4,577,154, Cl. 328-158.000.

Kitagawa, Takahiro; and Totsuka, Masao, to Canon Kabushiki Kaisha. Contacting method and apparatus in contact copying. 4,576,475, Cl. 355-91.000.

Kitajima, Goro: *See—*
Nemoto, Shigeru; Kitajima, Goro; Saitou, Sinichi; and Osada, Hazime, 4,577,245, Cl. 360-93.000.

Kitakami, Osamu: *See—*
Shiiki, Kazuo; Shiroishi, Yoshihiro; Kitakami, Osamu; and Uesaka, Yasutaro, 4,576,876, Cl. 428-679.000.

Kitamoto, Tatsuji: *See—*
Araki, Hiroaki; and Kitamoto, Tatsuji, 4,576,635, Cl. 75-0.5AA.

Kitamura, Kengo; and Murata, Hitoshi, to Nissan Motor Company, Limited. Method and system for automatically attaching sub-assembly to main assembly using industrial robots. 4,575,934, Cl. 29-787.000.

Kitamura, Masahiro, to Tachikawa Spring Co., Ltd. Vehicle seat. 4,576,411, Cl. 297-353.000.

Kitamura, Teruo: *See—*
Isogai, Masato; Hattori, Shintaroo; Iwasaki, Kishiroo; Kitamura, Teruo; Mukoh, Akio; Inukai, Takashi; Furukawa, Kenji; Terashima, Kanetsugu; and Saitoh, Shinichi, 4,576,732, Cl. 252-299.650.

Kitazawa, Yoshikazu: *See—*
Fujita, Takayuki; Kitazawa, Yoshikazu; Akita, Tadashi; and Tani, Isamu, 4,577,032, Cl. 548-341.000.

Kiuchi, Eiichi; Sawanaka, Hiroshi; and Tomita, Yuichi, to NEC Corporation. Coherent sidelobe canceller for radar. 4,577,193, Cl. 343-380.000.

Klaus, Angela: *See—*
Rothaut, Josef; Hausselt, Jurgen; Steinke, Rudi; and Klaus, Angela, 4,576,790, Cl. 420-464.000.

Klein, Herbert: *See—*
Worner, Siegfried; Ottle, Walter; and Klein, Herbert, 4,576,799, Cl. 422-176.000.

Kleuser, Dieter: *See—*
Hoffmann, Gerhard; Kleuser, Dieter; and Lenz, Werner, 4,576,898, Cl. 430-306.000.

Klie, Jurgen; and Nehl, Rainer, to Dr. Ing. Rudolf Hell GmbH. Method and an apparatus for copying retouch in electronic color picture reproduction. 4,577,219, Cl. 358-78.000.

Klingel, Hans; and Brekle, Erich, to Trumpf GmbH & Co. Grinding machine for punching tools. 4,575,969, Cl. 51-131.100.

Klinvex, Daniel E.: *See—*
Ferree, Herbert E.; Klinvex, Daniel E.; and Vestovich, Robert P., 4,576,034, Cl. 73-1.0DV.

Klockner-Humboldt-Deutz Aktiengesellschaft: *See—*
Wallenfang, Gerd; and Glockner, Manfred, 4,576,129, Cl. 123-357.000.

Kloeckner Ferromatik Desma GmbH: *See—*
Roseland, Hermann; and Bark, Manfred, 4,575,889, Cl. 12-15.000.

Klomp, Edward D., to General Motors Corporation. Fuel injector with hoop nozzle spray tip. 4,576,338, Cl. 239-452.000.

Kloster, Kenneth D. Tool for removing fasteners from shock absorber cylinders. 4,576,066, Cl. 81-176.300.

Klostermann, Heinrich F. Cable termination for x-ray tubes. 4,577,339, Cl. 378-121.000.

Kluna, Vlastimil: *See—*
Humpolik, Bohumil; Kluna, Vlastimil; Winterer, Wilfried; Kuchelmeister, Reinhold; and Bayer, Jurgen, 4,576,223, Cl. 165-79.000.

KMW Products Limited: *See—*
Kuchyt, James R.; and High, Paul G., 4,576,543, Cl. 414-722.000.

Knapp, Alfons, to Masco Corporation. Mixing valve. 4,576,202, Cl. 137-625.170.

Knappik, Winfried: *See—*
Blaschke, Hans P.; Knappik, Winfried; Mette, Horst; and Scholler, Peter, 4,577,299, Cl. 367-120.000.

Knight, Alan C. Claw hammer with protective cushion. 4,576,361, Cl. 254-26.00R.

Knight, Jack D.: *See—*
Duerksen, John H.; Wall, Robert G.; and Knight, Jack D., 4,576,232, Cl. 166-274.000.

Knight, Raymond P.: *See—*
Menown, Hugh; and Knight, Raymond P., 4,577,138, Cl. 313-599.000.

Knipp, Ulrich: *See—*
Ganster, Otto; Knipp, Ulrich; and Luckas, Bruno, 4,576,970, Cl. 521-51.000.

Knop, Karl H.: *See—*
Gale, Michael T.; Knop, Karl H.; and Ebnother, Martin, 4,576,439, Cl. 350-162.230.

Knorreck, Peter: *See—*
Hafele, Walter; and Knorreck, Peter, 4,576,130, Cl. 123-372.000.

Kobayashi, Akio: *See—*
Takimoto, Tadashi; Oishibashi, Hirotsugu; Ueyama, Katsuyoshi; Ohara, Muneyuki; Kobayashi, Akio; Aoki, Keiichi; Nakamura, Mitsuo; and Hagiwara, Kenzo, 4,576,324, Cl. 228-44.300.

Kobayashi, Akira; and Kojima, Tadashi, to Tokyo Shibaura Denki Kabushiki Kaisha. Data extracting circuit. 4,577,155, Cl. 328-164.000.

Kobayashi, Hiroyasu; Fukui, Masayuki; and Nomoto, Shosaku, to Kurashiki Boseki Kabushiki Kaisha. Apparatus for the production of reinforcing non-woven fabrics for composites. 4,576,672, Cl. 156-177.000.

Kobayashi, Kazuo: *See—*
Sakamoto, Koji; and Kobayashi, Kazuo, 4,576,463, Cl. 355-3.0DD.

Kobayashi, Masaharu: *See—*
Takeuchi, Takashi; Nishimura, Keizo; Kobayashi, Masaharu; and Oiso, Kazumasa, 4,577,319, Cl. 371-38.000.

Kobayashi, Masahiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Water sparger for a boiling water reactor. 4,576,784, Cl. 376-352.000.

Kobayashi, Minoru, to Olympus Optical Co., Ltd. Word line number count/display device for tape recorder. 4,577,252, Cl. 360-137.000.

Kobayashi, Osamu; Tanaka, Masanori; and Ishii, Jun, to Kabushiki Kaisha Nipponcoinco. Coin discrimination apparatus. 4,576,275, Cl. 194-203.000.

Kobayashi, Seiichi: *See—*
Yamatsu, Isao; Abe, Shinya; Inai, Yuichi; Suzuki, Takeshi; Kinoshita, Kensaku; Mishima, Mannen; Katoh, Yoshinori; Kobayashi, Seiichi; Murakami, Manabu; and Yamada, Kouzi, 4,576,963, Cl. 514-532.000.

Kobayashi, Yasuhiro: *See—*
Inokuti, Yukio; Kobayashi, Yasuhiro; and Ito, Yo, 4,576,658, Cl. 148-111.000.

Koblanski, John N., to Ocean Ecology Ltd. Apparatus to remove oil slicks. 4,576,569, Cl. 431-1.000.

Koch, Manfred; Muhlhaus, Ludwig; Lambach, Rolf; and Grochowski, Horst, to UHDE GmbH. Process for the desorption of spent solid absorbent. 4,576,924, Cl. 502-56.000.

Koerner, Richard J.; Dumas, Christopher C.; Filia, Philip J.; Lawrence, Ronald L.; and Petch, David B., to Sutter Biomedical, Inc. Continuous passive motion hand device. 4,576,148, Cl. 128-26.000.

Koga, Keiko: *See—*
Ohigashi, Hiroji; Koga, Keiko; and Nakanishi, Toshiharu, 4,577,132, Cl. 310-800.000.

Kogane, Mikio; and Nishimura, Mizuho, to Fuji Photo Film Co., Ltd. Photographic printing apparatus. 4,576,471, Cl. 355-50.000.

Kogane, Mikio; Nishimura, Mizuho; and Yamamoto, Takashi, to Fuji Photo Film Co., Ltd. Photographic printing apparatus. 4,576,473, Cl. 355-68.000.

Kohl, Paul A.; Smith, Lawrence E.; and Trop, Harvey S., to AT&T Bell Laboratories. Etching optical surfaces on GaAs. 4,576,691, Cl. 204-129.300.

Kohler Co.: *See—*
Rozek, Roy J., 4,575,881, Cl. 4-405.000.

Kohnen, Julius: *See—*
Funger, Bernhard; Gruber, Heinz; Hartmann, Werner; Kohnen, Julius; Kutz, Johannes; and Moser, Manfred, 4,576,112, Cl. 118-415.000.

Kohnlechner, Rainer, to Ermeto Armaturen GmbH. Pressure sensor with ringed chamber. 4,576,049, Cl. 73-706.000.

Kohtaki & Co., Ltd.: *See—*
Yamato, Yoshiharu, 4,576,092, Cl. 100-218.000.

Koike, Akinobu: *See—*
Nakakita, Eiji; Koike, Akinobu; Sekiya, Toshiyuki; Misu, Hiroshi; and Kita, Nobuyuki, 4,576,893, Cl. 430-457.000.

Koike, Hideharu, to Kabushiki Kaisha Toshiba. CMOS Logic circuit. 4,577,124, Cl. 307-451.000.

Kojima, Tadashi: *See—*
Kobayashi, Akira; and Kojima, Tadashi, 4,577,155, Cl. 328-164.000.

Koken, Karel G. M.; van de Kerkhof, Hubertus F. W.; Olierook, John C. J.; and Beyersbergen van Henegouwen, Cornelis M., to U.S. Philips Corporation. Magnetic-tape cassette with a latching cover plate. 4,576,345, Cl. 242-198.000.

Kokubu, Gozi: *See—*
Tsurushima, Masaaki; Kokubu, Gozi; and Moriya, Koji, 4,577,012, Cl. 536-24.000.

Kolbas, Robert M.: *See—*
Carney, James K.; and Kolbas, Robert M., 4,577,321, Cl. 372-50.000.

Kolodny, Avi: *See—*
Eitan, Boaz; Kolodny, Avi; Amrany, Daniel; and McCreary, James, 4,577,295, Cl. 365-218.000.

Kolve, Gerald C. Reinforced saw chain tooth. 4,576,078, Cl. 83-833.000.

Kondo, Edward S.: *See—*
Puritch, George S.; and Kondo, Edward S., 4,576,950, Cl. 514-358.000.

Kondo, Haruyoshi; Takahashi, Hideaki; Saji, Keiichi; Takeuchi, Takashi; and Hayakawa, Kiyoharu, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Apparatus with polarographic sensor to detect concentrations of plurality of gas components. 4,576,705, Cl. 204-406.000.

Kone Oy: *See—*
Kahilathi, Matti; Ventola, Keijo; Virtanen, Matti; and Huhta, Pentti, 4,576,327, Cl. 228-212.000.

Konigshofen, Heinrich: *See—*
Buding, Hartmuth; Konigshofen, Heinrich; Szentivanyi, Zsolt; and Thormer, Joachim, 4,576,992, Cl. 525-211.000.

Konishi, Takao: *See—*
Makisumi, Yasuo; Murabayashi, Akira; Tawara, Katsuya; Watanabe, Yoshihachi; Takahashi, Toshio; and Konishi, Takao, 4,576,956, Cl. 514-380.000.

Konishiroku Photo Industry Co., Ltd.: *See—*
Fukuchi, Masakazu; and Oishi, Keiji, 4,576,466, Cl. 355-3.0DD.
Goto, Sohei; and Okauchi, Ken, 4,576,909, Cl. 430-546.000.
Hirose, Naohiro; Sasaki, Osamu; and Takizawa, Yoshio, 4,576,886, Cl. 430-59.000.
Koyama, Mikio; Okaniwa, Kenichiro; and Saruhashi, Masakuni, 4,576,793, Cl. 422-56.000.
Mizukura, Noboru; Fujimori, Noboru; Masuda, Kosaku; Yoshimoto, Shinji; Tachibana, Noriki; and Ueda, Eiichi, 4,576,911, Cl. 430-548.000.
Murakami, Kiyotaka; and Kimura, Yoshiaki, 4,577,201, Cl. 346-140.00R.
Nishiwaki, Akira; Morohoshi, Yasuo; Mitake, Hitoshi; Moriguchi, Hiroyuki; Nomori, Hiroyuki; and Ito, Kunio, 4,576,797, Cl. 422-102.000.

Koppers, Manfred: *See—*
Heintzmann, Peter; Koppers, Manfred; Bohnes, Karlheinz; and Hecken, Gerhard, 4,576,524, Cl. 405-260.000.

Koppl, Georg: *See—*
Blahous, Leopold; and Koppl, Georg, 4,577,253, Cl. 361-62.000.

Korenko, Michael K.: *See—*
Bates, John F.; Brager, Howard R.; and Korenko, Michael K., 4,576,641, Cl. 75-128.00P.

Korotaev, Jury P.: *See—*
Alkhazov, Tofik G. O.; Korotaev, Jury P.; and Vartanov, Albert A., 4,576,925, Cl. 502-307.000.

Korsch, Dietrich G., to Boeing Company, The. Compact, single piece laser beam analyzer. 4,576,447, Cl. 350-444.000.

Korsky, Vincent V.; and Laotetpitaks, Chansak, to TIE/Communications, Inc. Station interface for digital electronic telephone switching system having centralized digital audio processor. 4,577,310, Cl. 370-58.000.

Kortenback & Rauh KG: *See—*
Schultes, Tilmann; and Seidel, Joachim, 4,576,191, Cl. 135-30.000.

Koshimo, Masahiko, to Kabushiki Kaisha Daikin Seisakusho. Lock-up clutch of a torque converter. 4,576,260, Cl. 192-3.310.

Kosley, Raymond W., Jr.; and Cherill, Robert J., to Hoechst-Roussel Pharmaceuticals Inc. Intermediates for spiro[2H-1,4-benzodioxepin-3(5H)4'piperidine] compounds. 4,577,026, Cl. 546-216.000.

Koster, William H.: *See—*
Zahler, Robert; Koster, William H.; and Slusarchyk, William A., 4,576,749, Cl. 260-239.00A.

Kostinko, John A., to J. M. Huber Corporation. Rubber compositions containing small particle size zeolites and mixtures. 4,576,986, Cl. 524-450.000.

Kot, Norbert J., II: *See—*
Horn, Edward R.; and Kot, Norbert J., II, 4,576,367, Cl. 269-32.000.

Kotera, Yoshikazu: *See—*
Yoshida, Fumio; and Kotera, Yoshikazu, 4,576,027, Cl. 72-11.000.

Koutz, Stanley L., to GA Technologies Inc. Heat pump augmentation of nuclear process heat. 4,576,783, Cl. 376-323.000.

Kovacs, Janos: *See—*
Tamas, Istvan; Riederauer, Szilard; and Kovacs, Janos, 4,576,637, Cl. 75-10.00R.

Koyama, Mikio; Okaniwa, Kenichiro; and Saruhashi, Masakuni, to Konishiroku Photo Industry Co., Ltd. Analytical element. 4,576,793, Cl. 422-56.000.

Koyama, Mototsugu: *See—*
Donomoto, Tadashi; Koyama, Mototsugu; Fuwa, Yoshio; Miura, Nobuhiro; and Sakakibara, Tatsuo, 4,576,863, Cl. 428-325.000.

Kozai, Shinji; Shiiba, Suenobu; and Higashitani, Yoshitaka, to Kawasaki Steel Corporation. Metal strip edge grinding apparatus. 4,575,970, Cl. 51-165.920.

Kozponti Valto-Es Hitelbank RT: *See—*
Valeria, Hidvegi, 4,576,353, Cl. 248-165.000.

Kozuka, Nobuhiko: *See—*
Sakata, Hiromi; Kozuka, Nobuhiko; and Hiraoka, Hiroshi, 4,576,464, Cl. 355-3.00R.

Krafft, Terry E.: *See—*
Collins, Terrence J.; Anson, Fred C.; Gipson, Stephen L.; and Krafft, Terry E., 4,577,042, Cl. 564-158.000.

Kraftwerk Union Aktiengesellschaft: *See—*
Mathewes, Wolfgang; Fitzner, Klaus; and Plitt, Uwe, 4,576,088, Cl. 98-119.000.

Krasnikov, Valery V.: *See—*
Gubiev, Jury K.; Krasnikov, Valery V.; Bakulin, Valentin P.; Gagarin, Mikhail A.; Ivanov, Vladimir V.; and Kishkovsky, Zbignev N., 4,576,824, Cl. 426-241.000.

Kraus, Charles E., to Excelermatic Inc. Method of treating traction surfaces. 4,575,910, Cl. 29-148.40D.

Kraus, Charles E., to Excelermatic, Inc. Hydraulically controlled infinitely variable traction roller transmission. 4,576,055, Cl. 74-200.000.

Kraus, Robert G.; Kunica, Enora S.; and Praderio, Joseph J., to Codman & Shurtleff, Inc. Trocar. 4,576,589, Cl. 604-8.000.

Krause, A. Frank, Jr. Electric gaslight simulative. 4,577,265, Cl. 362-255.000.

Krautter, Jurgen; and Dzialas, Willi, to Rohm GmbH Chemische Fabrik. Water spreading plastic material, method for its manufacture and its use as a glazing and roofing material. 4,576,864, Cl. 428-328.000.

KRC Inc.: *See—*
Krotchko, Daniel J., 4,576,845, Cl. 428-36.000.

Kreeft, Eugene H.: *See—*
Webb, Robert E.; Kreeft, Eugene H.; and Arnold, Jack T., 4,577,060, Cl. 179-2.0EC.

Kreisher, John H.; and Nalbantian, Charles A., to International Biotechnologies, Inc. Nucleic acid sequencing electrophoresis apparatus and method of fabricating. 4,576,693, Cl. 204-180.100.

Kreisher, John H.: *See—*
Peck, Lawrence J.; and Kreisher, John H., 4,576,702, Cl. 204-299.00R.
Peck, Lawrence J.; Kreisher, John H.; and Walker, Alan L., 4,576,703, Cl. 204-299.00R.

Krempl, Peter W.; and Schindler, Wolfgang, to AVL Gesellschaft fur Verbrennungskraftmaschinen und Messtechnik; and List, Hans. Method of determining masses of absorbing components of a sample in a test volume and a device for implementation of this method. 4,577,105, Cl. 250-343.000.

Krespan; Carl G., to Du Pont de Nemours, E. I., and Company. β-Substituted polyfluoroethyl compounds. 4,576,752, Cl. 260-349.000.

Kriedt, Hans; and Fenk, Josef, to Siemens Aktiengesellschaft. Integrable frequency divider circuit having a feedback controlled differential amplifier as its preamplifier circuit. 4,577,336, Cl. 377-111.000.

Krishnakumar, Suppayan M.: *See—*
Beck, Martin H.; and Krishnakumar, Suppayan M., 4,576,843, Cl. 428-35.000.

Krotchko, Daniel J., to KRC Inc. Thermally conductive base layers for cast polyurethane roll covers. 4,576,845, Cl. 428-36.000.

Kruger, Robert A.; and Nelson, James A., to Thomson-CSF Broadcast, Inc. Apparatus and method for cross sectional imaging of a body. 4,577,222, Cl. 358-111.000.

Krupotich, Edward A.: *See—*
Bingham, George H.; Krupotich, Edward A.; and Rosensweig, Burton J., 4,576,287, Cl. 209-601.000.

Krupp Polysius AG: *See—*
Goldmann, Wolf, 4,576,644, Cl. 106-100.000.

Krzyston, John F.: *See—*
Jarrett, Steve A.; and Krzyston, John F., 4,576,289, Cl. 209-631.000.

Kubick, Frederick, to United Technologies Corporation. Variable fresnel lens device. 4,576,441, Cl. 350-355.000.

Kubo, Masaharu: *See—*
Ohba, Shinya; Ando, Haruhisa; Nakai, Masaaki; Ozaki, Toshifumi; Seki, Koichi; Takahashi, Kenji; Akiyama, Toshiyuki; Takemoto, Iwao; Imaide, Takuya; Okuda, Akihide; and Kubo, Masaharu, 4,577,231, Cl. 358-212.000.

Kucera, Richard J. Pipe-vibration reducer. 4,576,356, Cl. 248-559.000.

Kuchelmeister, Reinhold: *See—*
Humpolik, Bohumil; Kluna, Vlastimil; Winterer, Wilfried; Kuchelmeister, Reinhold; and Bayer, Jurgen, 4,576,223, Cl. 165-79.000.

Kuchera, Ray A.: *See—*
Booz, A. David; Barch, Daniel R.; Kuchera, Ray A.; and White, David D., Jr., 4,576,767, Cl. 264-12.000.

Kuchyt, James R.; and High, Paul G., to KMW Products Limited. Knock-down construction for front end loader. 4,576,543, Cl. 414-722.000.

Kudo, Koichi: *See—*
Saiki, Kazuaki; Ishikawa, Aiichi; Hashimoto, Noriyoshi; Kudo, Koichi; and Yoshikawa, Kuniyuki, 4,577,141, Cl. 318-590.000.

Kuech, Thomas F.: *See—*
Hovel, Harold J.; and Kuech, Thomas F., 4,576,652, Cl. 148-1.500.

Kugler, Artur: *See—*
Reppert, Rudi; Zaunberger, Franz X.; and Kugler, Artur, 4,576,062, Cl. 74-740.000.

Kuhlein, Klaus: *See—*
Keil, Karl-Heinz; Engelhardt, Fritz; Greiner, Ulrich; Kuhlein, Klaus; Keller, Reinhold; Schlingmann, Merten; and Hess, Gerhard, 4,576,973, Cl. 521-149.000.

Kuhn, Friedrich: *See—*
Scheuter, Siegbert; and Kuhn, Friedrich, 4,576,343, Cl. 242-66.000.

Kulzer & Co., GmbH: *See—*
Schaefer, Roland, 4,576,976, Cl. 522-16.000.

Kummli, Paul: *See—*
Woods, John W.; Kummli, Paul; and White, Edward M., 4,577,307, Cl. 369-270.000.

Kumura, Haruyoshi; Tanaka, Yoshikazu; Abo, Keiju; Hirano, Hiroyuki; and Yamamuro, Sigeaki, to Nissan Motor Co., Ltd. Control system for hydraulic automatic clutch. 4,576,265, Cl. 192-0.055.

Kung, Andrew H., to University of California, The Regents of the. Method and apparatus for generation of coherent VUV and XUV radiation. 4,577,122, Cl. 307-425.000.

Kunica, Enora S.: *See—*
Kraus, Robert G.; Kunica, Enora S.; and Praderio, Joseph J., 4,576,589, Cl. 604-8.000.

Kunzli, Albert, to Sulzer Brothers Limited. Tray electrode arrangement for an electrical steam or hot water generator. 4,577,091, Cl. 219-284.000.

Kurahashi, Yoshio, to Nippon Optical Fiber Co., Ltd. Packaging tape. 4,576,854, Cl. 428-204.000.

Kuraray Co., Ltd.: *See—*
Tanaka, Yoshinari; Aoyama, Akimasa; Moritani, Takeshi; Satoh, Kenji; and Okaya, Takuji, 4,576,988, Cl. 524-503.000.

Kurashiki Boseki Kabushiki Kaisha: *See—*
Kobayashi, Hiroyasu; Fukui, Masayuki; and Nomoto, Shosaku, 4,576,672, Cl. 156-177.000.

Kurata, Masami, to Fuji Xerox Co., Ltd. Color separating circuit for producing red and black signals. 4,577,218, Cl. 358-75.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
Aoki, Katsumichi; Shida, Takafumi; Kanda, Yoichi; Satake, Keigo; Shinkawa, Hiroyasu; and Yamazaki, Shiro, 4,577,029, Cl. 548-162.000.

Kuriyama, Shizuo; and Saitoh, Mikio, to Eisai Co., Ltd.; and Mitsubishi Chemical Industries Ltd. Treatment of mental symptoms caused by organic disorder in brain. 4,576,966, Cl. 514-648.000.

Kuroda, Kazuo, to Pioneer Electronic Corporation. Demodulator with drop-out compensation and reciprocal amplifier. 4,577,158, Cl. 329-104.000.

Kuroda, Toru; and Yamawaki, Naokuni, to Asahi Kasei Kogyo Kabushiki Kaisha. Porous adsorbent for adsorbing low density lipoproteins. 4,576,927, Cl. 502-402.000.

Kuroki, Takashi; Fujita, Tsuyoshi; Toda, Gyozo; Ishihara, Shousaku; and Ohzawa, Yoshiyuki, to Hitachi, Ltd. Electroconductive molybdenum paste. 4,576,735, Cl. 252-512.000.

Kurt, Prunbauer; and Csapo, Erich, to EVVA-Werk Spezialerzeugung von Zylinder- und Sicherheitsschloessern Gesellschaft m.b.H. & Co. Kommanditgesellschaft. Cylinder lock having coupling means. 4,576,026, Cl. 70-380.000.

Kusnetz, Jacob: *See—*
Yaverbaum, Sidney; and Kusnetz, Jacob, 4,576,912, Cl. 435-7.000.

Kusters, Eduard: *See—*
Funger, Bernhard; Gruber, Heinz; Hartmann, Werner; Kohnen, Julius; Kutz, Johannes; and Moser, Manfred, 4,576,112, Cl. 118-415.000.

Kusunoki, Toshio: *See—*
Otuka, Shinpei; Kawai, Kozo; and Kusunoki, Toshio, 4,576,149, Cl. 128-33.000.

Kutz, Johannes: *See—*
Funger, Bernhard; Gruber, Heinz; Hartmann, Werner; Kohnen, Julius; Kutz, Johannes; and Moser, Manfred, 4,576,112, Cl. 118-415.000.

Kuwajima, Hideji; and Watanabe, Takeyoshi, to Hitachi Chemical Company, Ltd. Reconstituted mica materials, reconstituted mica prepreg materials, reconstituted mica products and insulated coils. 4,576,856, Cl. 428-241.000.

Kuznetsova, Svetlana M.: *See—*
Lipets, Adolf U.; Kuznetsova, Svetlana M.; Galuskin, Vadim B.; Lafa, Jury I.; Sotnikov, Ivan A.; Ovchar, Vladimir G.; and Fedosov, Alexei Z., 4,576,226, Cl. 165-134.100.

Kyocera Corporation: *See—*
Hayashi, Isao, 4,577,170, Cl. 333-205.000.

Kyowa Chemical Industry Co., Ltd.: *See—*
Miyata, Shigeo; and Nosu, Tsutomu, 4,576,819, Cl. 424-156.000.

L. & C. Steinmuller GmbH: *See—*
Keintzel, Gunter; and Westebbe, Klaus, 4,576,125, Cl. 122-483.000.

La Telemecanique Electrique: *See—*
Hardouin, Pierre; Lameyre, Felix; and Paris, Claude, 4,576,429, Cl. 339-95.00D.

Laapotti, Jorma, to Valmet Oy. Long-nip press for a paper making machine. 4,576,682, Cl. 162-358.000.

Laboratoire L. Lafon: *See—*
Lafon, Louis, 4,576,944, Cl. 514-238.000.

Laclede Professional Products, Inc.: *See—*
Montgomery, Robert E.; and Pellico, Michael A., 4,576,817, Cl. 424-94.000.

Lade, Robert W.: *See—*
Schutten, Herman P.; Benjamin, James A.; and Lade, Robert W., 4,577,052, Cl. 136-246.000.
Schutten, Herman P.; Lade, Robert W.; and Benjamin, James A., 4,577,208, Cl. 357-23.400.

Lafa, Jury I.: *See—*
Lipets, Adolf U.; Kuznetsova, Svetlana M.; Galuskin, Vadim B.; Lafa, Jury I.; Sotnikov, Ivan A.; Ovchar, Vladimir G.; and Fedosov, Alexei Z., 4,576,226, Cl. 165-134.100.

Lafon, Louis, to Laboratoire L. Lafon. 4-Ethyl-2-hydroxy-3-methyl-2-phenylmorpholine, compositions and use. 4,576,944, Cl. 514-238.000.

Lahoda, Edward J.; and Eckhardt, David A., to Westinghouse Electric Corp. Workpiece positioning apparatus with plural sensors. 4,576,123, Cl. 122-382.000.

LaHue, Ronald L.: *See—*
Rau, Jim L.; and LaHue, Ronald L., 4,576,003, Cl. 60-384.000.

Laiewski, Stanislaus; Hessen, Thomas A.; Hardy, Thomas R.; and Gilvin, Allie F., to W. R. Grace & Co., Cryovac Div. Purge trap tray. 4,576,278, Cl. 206-204.000.

Laimkuhler, Jurgen: *See—*
Hegemann, Karl-Rudolf; Weissert, Helmut; and Laimkuhler, Jurgen, 4,576,803, Cl. 423-242.000.

L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude: *See—*
Moufflet, Luc; Roux, Michel; and Valadier, Jean, 4,576,571, Cl. 432-9.000.

Lalin, Hill S. Dual mode gas sampler and pneumatic flow control system. 4,576,054, Cl. 73-863.030.

Lam, Wim J.; Devries, Luitzen; McKinnon, Gordon M.; and Baribeau, Jean J., to CAE Electronics, Ltd. Blended mode concept for control of flight simulator motion systems. 4,576,577, Cl. 434-58.000.

Lamb-Weston, Inc.: *See—*
Rayment, Arthur G., 4,576,071, Cl. 83-71.000.

Lambach, Rolf: *See—*
Koch, Manfred; Muhlhaus, Ludwig; Lambach, Rolf; and Grochowski, Horst, 4,576,924, Cl. 502-56.000.

Lambert, David K., to General Motors Corporation. Thermal diffusion fluid flow sensor. 4,576,050, Cl. 73-861.050.

Lambert, George F., to General Motors Corporation. Robot hand for lifting apertured panel. 4,576,407, Cl. 294-97.000.

Lambert, James L., to Westinghouse Electric Corp. Method and apparatus for measuring temperature profile with a single optical fiber. 4,576,485, Cl. 374-130.000.

Lameyre, Felix: *See—*
Hardouin, Pierre; Lameyre, Felix; and Paris, Claude, 4,576,429, Cl. 339-95.00D.

Lamico, Pierre: *See—*
Colmet, Robert; Naslain, Roger; Hagenmuller, Paul; and Lamico, Pierre, 4,576,836, Cl. 427-255.000.

Landreau, Alain: *See—*
Collin, Jean J.; Landreau, Alain; Talbo, Henri; Martin, Guy; and Morvan, Jean, 4,576,717, Cl. 210-610.000.

Lane, E. James; Holmes, Russell C.; and Markyvech, Ronald K., to Eaton Corporation. Clutch control. 4,576,263, Cl. 192-0.044.

Lane, E. James: *See—*
Speranza, Donald; Lane, E. James; and Markyvech, Ronald K., 4,576,065, Cl. 74-866.000.

Lane, Edward S., to United Kingdom Atomic Energy Authority. Preparation of dispersions and ceramics from hydrated metal oxides. 4,576,921, Cl. 501-12.000.

Lane, Thomas: *See—*
Rosen, Murray; and Lane, Thomas, 4,576,838, Cl. 427-385.500.

Lange, Gottfried: *See—*
Diepers, Heinrich; Feigt, Ingmar; and Lange, Gottfried, 4,577,108, Cl. 250-370.000.

Lange International S.A.: *See—*
Arieh, Simon; and Courvoisier, Guy, 4,575,958, Cl. 36-121.000.

Langen, Hans: *See—*
Kampfer, Helmut; Langen, Hans; and Ranz, Erwin, 4,576,907, Cl. 430-507.000.

Langley, James: *See—*
McCann, James; Langley, James; Hopper, Ian; Durham, Steven; Scott, Thomas; and McOmish, Eric R., 4,576,517, Cl. 405-195.000.

Langston, Ralph C. Method for pulling long runs of fiber optic cable. 4,576,362, Cl. 254-134.3FT.

Lanier, Robert L., to Garden City Fan & Blower Co. Vortex generator for centrifugal fans. 4,576,549, Cl. 415-209.000.

Laotetpitaks, Chansak: *See—*
Korsky, Vincent V.; and Laotetpitaks, Chansak, 4,577,310, Cl. 370-58.000.

LaPelle, Ronald J.: *See—*
Mundt, Arnold L.; Beair, Charles E.; Naumann, Leo J.; Roberts, Alan T.; and LaPelle, Ronald J., 4,576,303, Cl. 220-89.00A.

Lapham, James M.: *See—*
Belanger, James A.; Wentworth, Robert; and Lapham, James M., 4,576,098, Cl. 104-172.00B.

Larkin, John J.: *See—*
Armington, Alton F.; and Larkin, John J., 4,576,808, Cl. 423-335.000.

Larkin, Mark E.: *See—*
Levin, Harold A.; and Larkin, Mark E., 4,576,602, Cl. 604-408.000.

Larsen, Walter L. Hook fastening device. 4,575,906, Cl. 24-238.000.

Larson, Curtis L., to Minnesota Mining and Manufacturing Company. Tamper resistant closure. 4,576,297, Cl. 215-250.000.

Larson, Lynn D. Fiberous wave-dampening apparatus. 4,575,886, Cl. 5-450.000.

Larson, Mikiel L.; and Toy, Wing N., to AT&T Bell Laboratories. Multiplexed interconnection of packet switching node packages. 4,577,308, Cl. 370-9.000.

Laszlo, Fiak; Sandor, Derzsenyi; and Sandor, Darin, to Magyar Gordulocsapagy Muvek. Roller shoe structure. 4,576,422, Cl. 308-6.00C.

Laszlo, Oliver J., to Abdite Industries, Inc. Method and apparatus for constructing turbine components. 4,575,911, Cl. 29-156.80B.

Latasiewicz, Leonard; Melikian, Felix B.; and Estes, Bay E., III, to Motorola, Inc. Apparatus and method for retaining an electronic device. 4,577,259, Cl. 361-400.000.

Lauer, Reinhard; and Hartmann, Werner, to Erwin Sick GmbH Optik-Elektronik. Apparatus for determining the transit time of ultrasonic pulses in a fluid. 4,576,047, Cl. 73-597.000.

Launder, Richard L. Scarifier tooth assembly. 4,576,239, Cl. 172-751.000.

Lauren, Henning J. E. Pipe insulation sleeve. 4,576,206, Cl. 138-149.000.

Lautenschlager, Peter, to Keiper Dynavit GmbH & Co. Ergometer having an eddy current brake serving as a loading device. 4,576,051, Cl. 73-862.360.

Law, Hung-Fai S., to AT&T Bell Laboratories. Programmed logic array with auxiliary pull-up means to increase precharging speed. 4,577,190, Cl. 340-825.830.

Lawrence, Ronald L.: *See—*
Koerner, Richard J.; Dumas, Christopher C.; Filia, Philip J.; Lawrence, Ronald L.; and Petch, David B., 4,576,148, Cl. 128-26.000.

Laxton, Raymond; and Smith, Peter E., to AGB Research PLC. Arrangement for detecting to which channel a television set is tuned. 4,577,220, Cl. 358-84.000.

Le Bland Makino Machine Tool Co.: *See—*
Bazuin, Johannes, 4,576,069, Cl. 82-2.00R.

Lear Siegler, Inc.: *See—*
Kinne, Stanley F., 4,576,398, Cl. 280-789.000.

LeBlanc, Richard S., to General Motors Corporation. Slip ring assembly. 4,576,085, Cl. 89-36.130.

Lecinski, Frank H., to Continental White Cap, Inc. Combination radial locking device and infestation seal for press-seal type transfer neck finish. 4,576,296, Cl. 215-31.000.

Lecinski, Frank H., Jr., to Continental White Cap, Inc. Closure cap with improved top-load leakage resistance. 4,576,299, Cl. 215-318.000.

Le Count, David J., to Imperial Chemical Industries PLC. Quinoline derivatives. 4,576,953, Cl. 514-312.000.

Lee, Carol S.: *See—*
Kaeding, Warren W.; and Lee, Carol S., 4,577,050, Cl. 585-486.000.

Lee, Mark C.: *See—*
Wang, Taylor G.; Elleman, Daniel D.; Lee, Mark C.; and Kendall, James M., Jr., 4,576,926, Cl. 502-339.000.

Lee, Raymond; and Ferro, Gregory A., to Imi-Tech Corporation. Polyimide laminant and process for the preparation of same. 4,576,862, Cl. 428-317.700.

Lee, Wen Y.: *See—*
Barton, Roger W.; Coufal, Hans J.; Jipson, Victor B.; and Lee, Wen Y., 4,576,895, Cl. 430-270.000.

Lehman, Richard F., to Xerox Corporation. Illumination system for an electrophotographic printing device. 4,576,462, Cl. 355-14.00R.

Lehmann, Wolfgang; and Aab, Hans-Walter, to Neff Gewindespindeln GmbH. Linear bearing arrangement for guiding a carriage in a straight line along a guide rail. 4,576,420, Cl. 308-6.00C.

Leiber, Heinz, to Robert Bosch GmbH. Vehicle anti-skid or anti-brake-lock system, and brake control method. 4,576,419, Cl. 303-100.000.

Lemke, Timothy A., to Du Pont de Nemours, E. I., and Company. Process for locating and connecting individual conductors in a multilayer concentric lay cable. 4,576,662, Cl. 156-52.000.

Lemmer, Helmut, to Square D Starkstrom GmbH. Electromagnet for electric switching device. 4,577,174, Cl. 335-261.000.

Lenoir, Jacques A. Infrared cooking apparatus with adjustable height and pivotal heating element and with pivotal side flaps. 4,577,092, Cl. 219-354.000.

Lenz, Werner: *See—*
Hoffmann, Gerhard; Kleuser, Dieter; and Lenz, Werner, 4,576,898, Cl. 430-306.000.

Lenzi, Mauro. Service unit intended to continuously supply a high-speed printer with preformed support packages. 4,576,673, Cl. 156-350.000.

Lenzing, Richard S., to Superior Electric Company, The. Variable autotransformer having an indexed stepping brush. 4,577,146, Cl. 323-341.000.

Leone, Ronald E.: *See—*
Gunther, Wolfgang H. H.; Leone, Ronald E.; and Przyklek, Rosemary, 4,576,905, Cl. 430-401.000.

Lepisto, J. George, to Champion International Corporation. Duck bill filler nozzle. 4,576,210, Cl. 141-115.000.

Lerner, Hershey, to Automated Packaging Systems, Inc. Poultry holding mechanism with improved wing hooks. 4,575,901, Cl. 17-11.000.

Leschik, Wolfgang: *See—*
Rix, Albert; Martens, Horst; Drogi, Dieter; Frerichs, Klaus-Dieter; and Leschik, Wolfgang, 4,577,200, Cl. 346-140.00R.

Le Tarte, Walter. Masking tape dispenser. 4,576,674, Cl. 156-463.000.

Lettvin, Jerome Y.; and Plotkin, George M., to Rines, Robert H., a part interest. Method of and apparatus for low noise current amplification. 4,577,160, Cl. 330-149.000.

Lever Brothers Company: *See—*
Edwards, Robert J.; and Hardman, Paul D., 4,576,744, Cl. 252-554.000.

Levin, Harold A.; and Larkin, Mark E., to Abbott Laboratories. Blow molded container with integral administration port. 4,576,602, Cl. 604-408.000.

Levine, Herbert R.; Gerrato, Stephen G.; and Poulin, Benoit L., to Essex Group, Inc. Texturized heat shrinkable tubing having radial and longitudinal shrinkage memory. 4,576,207, Cl. 138-177.000.

Levy, Aaron I., to Baffes, Thomas G., a part interest. External pulmonary brace and method for using same. 4,576,155, Cl. 128-132.00R.

Levy, Alfred; and Paul, Jon D. Remotely controlled telephone hold program system. 4,577,067, Cl. 179-99.00H.

Levy, Stephen; O'Connell, Joseph C.; Wright, William H., Jr.; and Weiner, Maurice, to United States of America, Army. High power optical switch for microsecond switching. 4,577,114, Cl. 250-551.000.

Lew, Hyok S. Floating disc butterfly valves. 4,576,360, Cl. 251-162.000.

Lewis, Kenneth A.; and Alpern, Alan N., to GridComm Inc. Composite shift keying communication system. 4,577,333, Cl. 375-45.000.

Lewis, Robert K.; and Ray, Sudipta K., to International Business Machines Corporation. Process for inhibiting metal migration during heat cycling of multilayer thin metal film structures. 4,576,659, Cl. 148-127.000.

Leyman Manufacturing Corp.: *See—*
Dunn, Jeffery L.; and Durham, Michael W., 4,576,541, Cl. 414-545.000.

Licciardello, Michael: *See—*
Sprecker, Mark A.; Belko, Robert P.; Schreiber, William L.; and Licciardello, Michael, 4,576,741, Cl. 252-522.00R.

Liebler, Ralf; Besecke, Siegmund; and Munzer, Manfred, to Rohm GmbH. Method for making multilayered resin bodies having UV-protection and the resultant products. 4,576,870, Cl. 428-515.000.

Lieder, Bernhard: *See—*
Kalbfell, Heinz; Lieder, Bernhard; and Mercamp, Herbert, 4,577,043, Cl. 568-454.000.

Lift-U-Inc.: *See—*
Williams, Harold R., 4,576,539, Cl. 414-391.000.

Light, Glenn M., to Southwest Research Institute. X-Ray fluorescence testing of laminate structures. 4,577,337, Cl. 378-044.000.

Lightolier Incorporated: *See—*
Donato, Anthony C.; and Kartavenko, Alex, 4,577,266, Cl. 362-296.000.

Lillard, Robert M. Fireplace apparatus for sliding door aperture. 4,576,141, Cl. 126-120.000.

Lin, Patrick. Electronic digital tape-rule. 4,575,944, Cl. 33-138.000.

Lin, Tom F.: *See—*
Proud, Todd A.; Lin, Tom F.; Mitchell, Wayne J.; and Kasper, James D., 4,576,185, Cl. 128-760.000.

Lin, Yang-i: *See—*
Hlavka, Joseph J.; Bitha, Panayota; and Lin, Yang-i, 4,577,018, Cl. 544-225.000.

Lindorfer, Walter; and Jahn-Held, Wilhelm, to Wintershall AG. Process for terminal storage of pumpable wastes. 4,576,513, Cl. 405-128.000.

Lindsay-Scott, David J.: *See—*
Hahn, Clive E. W.; Palayiwa, Eileen; Lindsay-Scott, David J.; Sugg, Basil R.; and Tyrrell, Paul J., 4,576,159, Cl. 128-203.140.

Ling, Daniel T.: *See—*
Matick, Richard E.; and Ling, Daniel T., 4,577,293, Cl. 365-189.000.

Lingemann, Horst, to Helmut Lingemann GmbH & Co. Desiccant application for double-glazed windows, etc. and a spacer section filled with the desiccant application. 4,576,841, Cl. 428-34.000.

Lion Corporation: *See—*
Suganuma, Nobuo; Anzai, Masafumi; Takada, Nobuyuki; and Ichikawa, Hiromichi, 4,576,816, Cl. 424-50.000.

Lipets, Adolf U.; Kuznetsova, Svetlana M.; Galuskin, Vadim B.; Lafa, Jury I.; Sotnikov, Ivan A.; Ovchar, Vladimir G.; and Fedosov, Alexei Z. Multipass corrosion-proof air preheater. 4,576,226, Cl. 165-134.100.

Lipner, Harry, to Florida State University. Sanitary pads for men. 4,576,599, Cl. 604-390.000.

Lipp, Helmut: *See—*
Reinhardt, Wilhelm; and Lipp, Helmut, 4,577,139, Cl. 318-254.000.

Lipscher, Bernard; and Coleman, Kevin G. Alarm system for electric range. 4,577,181, Cl. 340-522.000.

Liptak, Frank J.: *See—*
Crean, Peter A.; Birnbaum, David; Feldman, David B.; Liptak, Frank J.; and Sewhuk, David W., 4,577,197, Cl. 346-75.000.

List, Hans: *See—*
Krempl, Peter W.; and Schindler, Wolfgang, 4,577,105, Cl. 250-343.000.

Liu, Richard T.; Nickerson, Winston R.; and Anderson, Charles H., to Nestec S. A. Process for the preparation of flavorant capsules. 4,576,826, Cl. 426-289.000.

Ljungkvist, Stig-ake; and Johansson, Lennart. Technique for the location of expansion joints when casting a concrete bed. 4,576,510, Cl. 404-49.000.

Loch, Werner: *See—*
Schupp, Eberhard; Loch, Werner; Osterloh, Rolf; and Ahlers, Klaas, 4,576,979, Cl. 523-404.000.

Loechelt, Cecil P., II, to Ethyl Corporation. Production of zeolite Y. 4,576,807, Cl. 423-329.000.

Logan, Ralph A.; and Tsang, Won-Tien, to AT&T Bell Laboratories. Method of making heteroepitaxial ridge overgrown laser. 4,575,919, Cl. 29-569.00L.

Lohstroh, Jan: *See—*
Van Den Crommenacker, Johannes D. P.; and Lohstroh, Jan, 4,577,123, Cl. 307-446.000.

Loiseaux, Brigitte: *See—*
Huignard, Jean P.; Rajbenbach, Henri; Loiseaux, Brigitte; and Herriau, Jean P., 4,576,434, Cl. 350-3.640.

Loizeau, Pierre, to Valeo. Centrifugal actuator device, in particular for a clutch disk assembly. 4,576,267, Cl. 192-70.170.

Lomovsky, Oleg I.: *See—*
Makkaev, Almaxud M.; Lomovsky, Oleg I.; Mikhailov, Jury I.; and Boldyrev, Vladimir V., 4,576,689, Cl. 204-20.000.

Longoria, Heron. Trailer hitch mounted tool support. 4,576,395, Cl. 280-511.000.

Loose, Robert A., to Westinghouse Electric Corp. Nuclear reactor loss of coolant protection system. 4,576,782, Cl. 376-282.000.

Lopez, Armando M.: *See—*
Cabral, Chavelo; Dean, Donald E.; and Lopez, Armando M., 4,575,879, Cl. 4-253.000.

Lorck, Henning O. B.; and Rasmussen, Poul R. Antibiotic heterocyclic oxygen compounds and use. 4,576,961, Cl. 514-462.000.

Lott, Hamilton, Jr.; and Strock, Lynn E., to Nucor Corporation. Sliding hold-down clip for standing seam metal roof. 4,575,983, Cl. 52-544.000.

Lotter, Manfred: *See—*
Wagenseil, Ludwig; and Lotter, Manfred, 4,576,554, Cl. 417-270.000.

Lowke, George E.; and Meltzer, Robert J., to Akzo N.V. Electro-optical apparatus for microbial identification and enumeration. 4,576,916, Cl. 435-289.000.

Lucas Industries: *See—*
Ward, Melvyn, 4,576,872, Cl. 428-550.000.

Lucas Industries Public Limited Company: *See—*
Silcock, Terence M. B.; and Timms, Colin T., 4,576,133, Cl. 123-458.000.
Wootton, Malcolm J.; and Harris, Ivor R., 4,576,640, Cl. 75-123.00E.

Lucas, William L.; Asbill, Clarence M., III; Frank, Gerald L.; and Miller, David M., to Robertshaw Controls Company. Pneumatic control system, control means therefor and method of making the same. 4,576,194, Cl. 137-84.000.

Lucente, Samuel A.: *See—*
Barr, Millard G.; Barrett, William H.; Braidt, Joseph W.; Driscoll, John F.; Gregory, Joseph A.; Lucente, Samuel A.; and Remsburger, Louis J., 4,577,187, Cl. 340-700.000.

Luckas, Bruno: *See—*
Ganster, Otto; Knipp, Ulrich; and Luckas, Bruno, 4,576,970, Cl. 521-51.000.

Luetzelschwab, Wayne E., to Marathon Oil Company. Method for preparing polymer solutions. 4,576,978, Cl. 523-313.000.

Lui, Peter K.: *See—*
Keyes, Marion A., IV; Lui, Peter K.; and Malcolm, Jack W., deceased, 4,577,097, Cl. 250-211.00K.

Luigi Stoppani S.p.A.: *See—*
Bruschi, Enrico, 4,577,019, Cl. 544-264.000.

Lukenbach, Elvin R.: *See—*
Guth, Jacob J.; Lukenbach, Elvin R.; and Tenore, Richard R., 4,576,757, Cl. 260-404.500.

Lulay, John R., to Dynascan Corporation. Telephone equipment tester. 4,577,072, Cl. 179-175.10R.

Lunn, William H. W.; and Vasileff, Robert T., to Eli Lilly and Company. Thieno and furopyridinium-substituted cephalosporins. 4,577,014, Cl. 544-022.000.

Lunt, James; MacPherson, Edwin J.; and Meunier, Paul J., to Fiberglas Canada, Inc. Closed cell phenolic foam. 4,576,972, Cl. 521-136.000.

Lupo, Giorgio; Capra, Pier C.; and Marcarino, Aldo, to S.O.M., S.p.A. Servo clutch mechanism, and the drive gear incorporating same. 4,576,264, Cl. 192-48.910.

Luzenberg, Robert S., to Computer Air Corp. Evaporative cooler. 4,576,012, Cl. 62-157.000.

M.A.N. Maschinenfabrik Augsburg-Nurnberg AG: *See—*
Schmidt, Alfred; and Flachenecker, Gerhard, 4,577,140, Cl. 318-587.000.
Stieber, Michael; Meinke, Peter; and Dreher, Gunther, 4,576,246, Cl. 180-168.000.

M.E.G., S.A.: *See—*
Bodenan, Rene; and Teculescu, Nicholas, 4,575,952, Cl. 34-54.000.

M. Faensen: *See—*
Mommer, Heinrich, 4,576,593, Cl. 604-250.000.

Maack, Werner; Kampfmann, Georg; and Foerster, Peter, to AMP Incorporated. Crimping press capable of crimping terminals onto a range of wire sizes. 4,576,032, Cl. 72-431.000.

Maack, Werner: *See—*
Joos, Manfred; and Maack, Werner, 4,575,932, Cl. 29-751.000.

MacBride, William R.; Magee, James A.; Armiger, William B.; and Zabriskie, Dane W., to BioChem Sensors, Inc. Optical apparatus and method for measuring the characteristics of materials by their fluorescence. 4,577,110, Cl. 250-461.200.

MacDonald, Peter, to Sterosynt Ltd. 6α-Fluoro-9α-chloro-prednisolone 17,21-diesters. 4,576,936, Cl. 514-180.000.

MacDowell, John F., to Corning Glass Works. B_2O_3—P_2O_5—SiO_2 glass-ceramics. 4,576,920, Cl. 501-10.000.

Machell, Greville, to Milliken Research Corporation. Method for making a hot melt adhesive bonded pile fabric. 4,576,665, Cl. 156-72.000.

Machin, Peter J., to Hoffmann-La Roche Inc. Azolyl-substituted phenoxy-aminopropanol derivatives. 4,577,030, Cl. 548-255.000.

Machine Products Corporation: *See—*
McDermott, Charles; and Zafar, Magbool A., 4,575,976, Cl. 52-118.000.

MacIntosh, John A.: *See—*
Zeigner, Willard L.; and MacIntosh, John A., 4,576,244, Cl. 177-245.000.

Mack, Gerhard: *See—*
Stahlhofen, Paul; and Mack, Gerhard, 4,576,901, Cl. 430-325.000.

Mack, Kurt: *See—*
Reischl, Artur; and Mack, Kurt, 4,576,718, Cl. 210-616.000.

Macovski, Albert. Selective material projection imaging system using nuclear magnetic resonance. 4,577,152, Cl. 324-309.000.

MacPherson, Edwin J.: *See—*
Lunt, James; MacPherson, Edwin J.; and Meunier, Paul J., 4,576,972, Cl. 521-136.000.

Macrovision: *See—*
Ryan, John O., 4,577,216, Cl. 358-19.000.

Maeda, Kenji, to Hitachi, Ltd. Wrist of robot. 4,576,545, Cl. 414-735.000.

Maehara, Atsushi: *See—*
Tanaka, Masanori; Maehara, Atsushi; and Kanai, Junichi, 4,576,558, Cl. 418-150.000.

Maekawa, Kouji: *See—*
Miyakawa, Nobuhiro; Maekawa, Kouji; Higashiguchi, Teruaki; and Nakatani, Kaname, 4,576,888, Cl. 430-106.000.

Magar, Surendar S.: *See—*
Caudel, Edward R.; and Magar, Surendar S., 4,577,282, Cl. 364-200.000.

Magee, James A.: *See—*
MacBride, William R.; Magee, James A.; Armiger, William B.; and Zabriskie, Dane W., 4,577,110, Cl. 250-461.200.

Maglica, Anthony. Miniature flashlight. 4,577,263, Cl. 362-187.000.

Magura, Donald D.: *See—*
Mast, Robert F.; Cichanski, William J.; Walker, Francis R.; and Magura, Donald D., 4,576,519, Cl. 405-207.000.

Magyar Gordulocsapagy Muvek: *See—*
Laszlo, Fiak; Sandor, Derzsenyi; and Sandor, Darin, 4,576,422, Cl. 308-6.00C.

Mailfert, Alain-Jacques, to Institut National Polytechnique de Lorraine. Synchronous electric machine with superconductive field windings. 4,577,126, Cl. 310-52.000.

Makino, Hiroshi; and Shinohara, Shigeyuki. Pallet transport apparatus. 4,576,099, Cl. 104-287.000.

Makisumi, Yasuo; Murabayashi, Akira; Tawara, Katsuya; Watanabe, Yoshihachi; Takahashi, Toshio; and Konishi, Takao, to Shionogi & Co., Ltd. Iodo propargylaminoisoxazoles as fungicides. 4,576,956, Cl. 514-380.000.

Makita, Fujio: *See—*
Yamakawa, Toru; Makita, Fujio; Umezawa, Mitsuo; and Sakakiyama, Ryuzo, 4,576,061, Cl. 74-665.00T.

Makiyama, Muneto: *See—*
Murata, Shouichi; Makiyama, Muneto; Omoto, Takahiro; and Yasumoto, Taizo, 4,576,840, Cl. 428-16.000.

Makkaev, Almaxud M.; Lomovsky, Oleg I.; Mikhailov, Jury I.; and Boldyrev, Vladimir V. Process for electrochemical metallization of dielectrics. 4,576,689, Cl. 204-20.000.

Makovec, Francesco: *See—*
Rovati, Luigi; Makovec, Francesco; Senin, Paolo; and Casula, Pierluigi, 4,576,951, Cl. 514-282.000.

Malandain, Michel: *See—*
Branco, Bernard; and Malandain, Michel, 4,576,646, Cl. 106-163.100.

Malcolm, Elizabeth J., executrix: *See—*
Keyes, Marion A., IV; Lui, Peter K.; and Malcolm, Jack W., deceased, 4,577,097, Cl. 250-211.00K.

Malcolm, Jack W., deceased: *See—*
Keyes, Marion A., IV; Lui, Peter K.; and Malcolm, Jack W., deceased, 4,577,097, Cl. 250-211.00K.

Maldonado, Paul: *See—*
Demangeon, Francis; Hagenbach, Germain; and Maldonado, Paul, 4,576,648, Cl. 106-269.000.

Male, Alan T.: *See—*
Braginski, Aleksander I.; and Male, Alan T., 4,575,927, Cl. 29-599.000.

Malhotra, Satish C., to Du Pont de Nemours, E. I., and Company. Tetrafluoroethylene fine powder and preparation thereof. 4,576,869, Cl. 428-502.000.

Maltman, William R.: *See—*
Baskerville, Martin W.; Maltman, William R.; and Oliver, Stephen N., 4,576,766, Cl. 264-1.400.

Mampaey, Jozef L.: *See—*
Vackier, Leo N.; Mampaey, Jozef L.; and Alaerts, Leo B., 4,576,889, Cl. 430-126.000.

Mandt, Mikkel G. Subcyclonic jet recirculation grit removal system. 4,576,720, Cl. 210-626.000.

Maneki, Satome. Chopstick holder. 4,576,408, Cl. 294-99.200.

Mann, George H., to Corning Glass Works. Method for making multifocal ophthalmic lens. 4,576,623, Cl. 65-30.140.

Mannesmann Aktiengesellschaft: *See—*
Mertin, Theodor; and Hagen, Franz S., 4,577,325, Cl. 373-101.000.

Manning, Graham P., to Smith Kline & French Laboratories Limited. Dust recovery apparatus. 4,576,619, Cl. 55-213.000.

Manus, Eugene A.; and Wiley, Paris H. Respiration and heart rate monitoring apparatus. 4,576,179, Cl. 128-671.000.

Marantette, Ruth B.: *See—*
Marantette, William F.; and Marantette, Ruth B., 4,577,113, Cl. 250-548.000.

Marantette, William F.; and Marantette, Ruth B. Two axis centering system with oscillating photocells. 4,577,113, Cl. 250-548.000.

Marathon Oil Company: *See—*
Johnson, Irvin D., 4,576,042, Cl. 73-155.000.
Luetzelschwab, Wayne E., 4,576,978, Cl. 523-313.000.

Marcarino, Aldo: *See—*
Lupo, Giorgio; Capra, Pier C.; and Marcarino, Aldo, 4,576,264, Cl. 192-48.910.

Marcato, Forrest C. Road-marking material heating system. 4,576,122, Cl. 122-26.000.

Marchais, Jean-Claude: *See—*
Tzifkansky, Guy; and Marchais, Jean-Claude, 4,576,309, Cl. 220-366.000.

Marelco Power Systems: *See—*
Burgher, Peter H.; and Marsden, Raymond F., 4,577,175, Cl. 336-61.000.

Marelco Power Systems, Inc.: *See—*
Burgher, Peter H.; and Boomer, John L., 4,577,085, Cl. 219-116.000.

Mariani, Leonardo. Bracket assembly for securing wall members. 4,575,979, Cl. 52-24.000.

Mariel, James G., to Excel Industries, Inc. Vehicle door assembly. 4,575,968, Cl. 49-502.000.

Marinak, Michael J.; and Simonson, John L., to Kalama Chemical, Inc. Production of polychlorinated pyridine mixtures by direct liquid phase chlorination of alpha-picoline. 4,577,027, Cl. 546-345.000.

Marine Shield Corp.: *See—*
Rosen, Murray; and Lane, Thomas, 4,576,838, Cl. 427-385.500.

Marish, Robert. Ladder stop. 4,576,250, Cl. 182-108.000.

Mark, Victor; and Hedges, Charles V., to General Electric Company. Polycarbonates exhibiting improved heat resistance. 4,576,996, Cl. 525-439.000.

Marker International Company: *See—*
Stempfhuber, Lorenz, 4,576,396, Cl. 280-612.000.

Markert, Helmut; Rogler, Wolfgang; Bendel, Wolfgang; and Alber, Friedrich, to Siemens Aktiengesellschaft. Method for impregnating and embedding electrical windings. 4,576,768, Cl. 264-27.000.

Markham, David C., to Motorola, Inc. Replicator with improved propagation performance. 4,577,290, Cl. 365-12.000.

Markyvech, Ronald K.: *See—*
Lane, E. James; Holmes, Russell C.; and Markyvech, Ronald K., 4,576,263, Cl. 192-0.044.
Speranza, Donald; Lane, E. James; and Markyvech, Ronald K., 4,576,065, Cl. 74-866.000.

Marliss Industries, Inc.: *See—*
Spencer, Michael L., 4,576,238, Cl. 172-311.000.

Marom, Dan. Rescue and glider device. 4,576,248, Cl. 182-5.000.

Marquard, Kurt: *See—*
Baron, Winfried; Marquard, Kurt; Merrem, Hans-Joachim; Sindlinger, Raimund; and Thiel, Klaus-Peter, 4,576,903, Cl. 430-331.000.

Marriott, Alan G.: *See—*
McLellan, William S.; and Marriott, Alan G., 4,576,080, Cl. 84-267.000.

Marriott McLellan Limited: *See—*
McLellan, William S.; and Marriott, Alan G., 4,576,080, Cl. 84-267.000.

Marsden, Raymond F.: *See—*
Burgher, Peter H.; and Marsden, Raymond F., 4,577,175, Cl. 336-61.000.

Marshall, Hubert T., II; Vest, Eugene W.; and Villforth, Frederick J., III, to Texaco, Inc. Method and system for accurately measuring speed of a ship relative to a body of water. 4,576,476, Cl. 356-28.000.

Marsico, Joseph W., Jr.; Wright, William B., Jr.; and Press, Jeffery B., to American Cyanamid Company. N-(Substituted phenyl)-N'-[(1H-

imidazol-1-yl) and (1H-1,2,4-triazol-1-yl)alkyl]ureas. 4,576,957, Cl. 514-383.000.
Marson, Roberto, to Gretag San Marco S.p.A. Apparatus for connecting a strip of photographic paper to a flat conveyor belt. 4,576,321, Cl. 226-173.000.
Martens, Alan; Wescott, Kermit R.; and Snow, Bennie E., to Westinghouse Electric Corp. Apparatus and method for fluidly connecting a boiler into pressurized steam feed line and combined-cycle steam generator power plant embodying the same. 4,576,124, Cl. 122-406.0ST.
Martens, Horst: *See—*
Rix, Albert; Martens, Horst; Drogi, Dieter; Frerichs, Klaus-Dieter; and Leschik, Wolfgang, 4,577,200, Cl. 346-140.00R.
Martens, John A., to Minnesota Mining and Manufacturing Company. Shaped plastic articles having replicated microstructure surfaces. 4,576,850, Cl. 428-156.000.
Martensson, Karl I. M., to Aktiebolaget Electrolux. Method for heat treatment of articles and arrangement for carrying out the method. 4,576,792, Cl. 422-27.000.
Martin, Guy: *See—*
Collin, Jean J.; Landreau, Alain; Talbo, Henri; Martin, Guy; and Morvan, Jean, 4,576,717, Cl. 210-610.000.
Martin, Henry; and Fricker, Urs, to Ciba-Geigy Corporation. Oxime ethers, compositions containing them and the use thereof. 4,576,628, Cl. 71-88.000.
Martin, Lawrence L.; and Setescak, Linda L., to Hoechst Roussel Pharmaceuticals Incorporated. 6,11-Dihydro-11-oxo-dibenz[b,e]oxepin derivatives. 4,576,960, Cl. 514-450.000.
Martin, Philip T., to ITT Corporation. Lightning protection circuit for digital subscriber loop interface. 4,577,255, Cl. 361-119.000.
Martin, Pierre; and Steiner, Eginhard, to Ciba-Geigy Corporation. 5-Haloalkyl-pyridines. 4,577,028, Cl. 546-345.000.
Martin, Roy D., to Texaco Inc. Dynamic balancing means for an oil well pumping unit. 4,576,041, Cl. 73-151.000.
Marubashi, Akira, to Mitsubishi Denki Kabushiki Kaisha. Display apparatus for elevator car. 4,577,177, Cl. 340-19.00R.
Marvin Glass & Associates: *See—*
Balogh, John M.; and Terzian, Rouben T., 4,576,585, Cl. 446-199.000.
Masco Corporation: *See—*
Knapp, Alfons, 4,576,202, Cl. 137-625.170.
Mase, Yasushi: *See—*
Nakajima, Masataka; Mase, Yasushi; and Tamura, Yoshiharu, 4,576,132, Cl. 123-438.000.
Mason, Thomas J.: *See—*
Kalkomey, Cynthia T.; Mason, Thomas J.; and Pann, Keh, 4,577,297, Cl. 367-24.000.
Massachusetts Institute of Technology: *See—*
Smith, Henry I.; Atwater, Harry A.; and Geis, Michael W., 4,576,676, Cl. 156-603.000.
Wrighton, Mark S.; Buchanan, Robert M.; and Calabrese, Gary S., 4,576,756, Cl. 260-396.00R.
Massey, Lester G.; Clawson, Lawrence G.; and Syska, Andrew J., to Consolidated Natural Gas Service Company, Inc. Pneumatic transport and heat exchange systems. 4,575,948, Cl. 34-10.000.
Mast, Robert F.; Cichanski, William J.; Walker, Francis R.; and Magura, Donald D., to Exxon Production Research Co. Offshore platform base. 4,576,519, Cl. 405-207.000.
Mastermatic, Inc.: *See—*
Burtea, Constantin, 4,576,090, Cl. 99-443.00C.
Masuda, Kosaku: *See—*
Mizukura, Noboru; Fujimori, Noboru; Masuda, Kosaku; Yoshimoto, Shinji; Tachibana, Noriki; and Ueda, Eiichi, 4,576,911, Cl. 430-548.000.
Mathewes, Wolfgang; Fitzner, Klaus; and Plitt, Uwe, to Kraftwerk Union Aktiengesellschaft. Pressure-wave protective flap (or damper). 4,576,088, Cl. 98-119.000.
Mathews, Harlan P.; and Cambier, Craig, to Storage Technology Partners II. Track pitch calibration error reduction. 4,577,301, Cl. 369-44.000.
Mathis, Bernhard: *See—*
Mathis, Paul; Mathis, Bernhard; Mathis, Franz; and Zimmerer, Wilhelm, 4,576,483, Cl. 366-65.000.
Mathis, Franz: *See—*
Mathis, Paul; Mathis, Bernhard; Mathis, Franz; and Zimmerer, Wilhelm, 4,576,483, Cl. 366-65.000.
Mathis, Paul; Mathis, Bernhard; Mathis, Franz; and Zimmerer, Wilhelm, to Mathis System-Technik GmbH. Apparatus for mixing and metering flowable solid materials. 4,576,483, Cl. 366-65.000.
Mathis System-Technik GmbH: *See—*
Mathis, Paul; Mathis, Bernhard; Mathis, Franz; and Zimmerer, Wilhelm, 4,576,483, Cl. 366-65.000.
Matick, Richard E.; and Ling, Daniel T., to International Business Machines Corporation. Distributed, on-chip cache. 4,577,293, Cl. 365-189.000.
Matsui, Isamu; Uchida, Hiroshi; Nakanishi, Kazuo; Kiriake, Masaharu; and Shimano, Akira, to Murata Kikai Kabushiki Kaisha. Cop transporting systems for an automatic winder. 4,576,341, Cl. 242-35.50A.
Matsui, Toshikazu: *See—*
Fushida, Akira; Hasegawa, Yuuji; and Matsui, Toshikazu, 4,576,465, Cl. 355-3.0DD.
Matsukawa, Hiroharu: *See—*
Hosoi, Noriyuki; Ikeda, Kensuke; and Matsukawa, Hiroharu, 4,576,831, Cl. 427-40.000.
Matsuki, Seiichiro, to Pioneer Electronic Corporation. Cassette recording/reproducing apparatus with an automatic loading feed roller. 4,577,246, Cl. 360-96.500.
Matsumiya, Sadayuki, to Mitutoyo Mfg. Co., Ltd. Fine feed system. 4,577,142, Cl. 318-592.000.
Matsumoto, Hiroshi: *See—*
Kita, Nobuyuki; and Matsumoto, Hiroshi, 4,576,743, Cl. 252-524.000.
Matsumoto, Masaomi: *See—*
Ohki, Toshio; Matsumoto, Masaomi; Sakuraya, Takashi; Tokushige, Keinosuke; and Hoshino, Shuji, 4,575,972, Cl. 51-251.000.
Matsumoto, Masato, to Automatic Mechanical System Engineering Co. Method and apparatus for weighing bulk materials. 4,576,243, Cl. 177-119.000.
Matsumoto, Minoru, to Kabushiki Kaisha Komatsu Seisakusho. Hydraulic impact device. 4,576,240, Cl. 173-105.000.
Matsumoto, Ryouhei: *See—*
Umeda, Yoshiaki; Matsumoto, Ryouhei; Isomura, Hiroyasu; and Shimotaka, Hisakuni, 4,576,588, Cl. 493-475.000.
Matsushita Electric Industrial Co., Ltd.: *See—*
Ogawa, Kazufumi, 4,577,098, Cl. 250-216.000.
Matsushita Electric Works, Ltd.: *See—*
Otuka, Shinpei; Kawai, Kozo; and Kusunoki, Toshio, 4,576,149, Cl. 128-33.000.
Matsushita, Noritaka, to Kawaken Fine Chemicals Co., Ltd.; and Ajinomoto Co., Inc. Oleophilic composition comprising a powdery or granular substance having a hydrophilic surface and an aluminum chelate compound. 4,576,647, Cl. 106-193.00R.
Matsuura, Masahiro; and Aikawa, Eiichi. Folding scaffold. 4,576,251, Cl. 182-152.000.
Matsuzaka, Takashi: *See—*
Saitou, Norio; Ozasa, Susumu; and Matsuzaka, Takashi, 4,577,111, Cl. 250-492.200.
Matthes, Reinhard; and Vahlensieck, Hans-Joachim, to Dynamit Nobel AG. Method for the production of anhydrous potassium tert.butoxide. 4,577,045, Cl. 568-851.000.
Matthews, Billie J.: *See—*
Jackson, David M.; Matthews, Billie J.; and Bornslaeger, S. Richard, 4,576,596, Cl. 604-370.000.
Matthews, Randall S., to Procter & Gamble Company, The. Prostaglandin analogues. 4,576,962, Cl. 514-530.000.
Mattson, Clyde E., to Kearney & Trecker Corporation. Tool change mechanism. 4,575,918, Cl. 29-568.000.
Matumoto, Masakazu, to Kabushiki Kaisha Nikken Kousakusho. Worm assembly. 4,576,058, Cl. 74-425.000.
Maurice, Walter F., to Allied Corporation. Method of manufacturing a bicycle hub. 4,576,325, Cl. 228-135.000.
Mavrocostas, George, to Rolls-Royce Limited. Exhaust mixer for turbofan aeroengine. 4,576,002, Cl. 60-262.000.
Mawer, John D.: *See—*
Benson, Alan M.; Mawer, John D.; and Ruzicka, Alan V., 4,576,386, Cl. 277-165.000.
May, Josephine B.: *See—*
Hurst, Jim; and May, Josephine B., 4,576,952, Cl. 514-303.000.
Mayr, Maximilian: *See—*
Fink, Roland; Mayr, Maximilian; and Schlenz, Dieter, 4,576,860, Cl. 428-314.400.
Mazaki, Shiro; and Shibata, Hiroshi, to Nitto Electric Industrial Co., Ltd. Water-soluble insulating varnish. 4,576,990, Cl. 524-602.000.
McAbery, Robert S. Sliding valve assembly. 4,576,335, Cl. 239-1.000.
McAlister, Donald R.; and Ziebold, Steven A., to Monsanto Company. Heat recovery from concentrated sulfuric acid. 4,576,813, Cl. 423-522.000.
McCaffrey, Ronald; Wright, George; and Baril, Earl F., to Trustees Boston University. Composition and method for inhibiting terminal deoxyribonucleotidyl transferase activity. 4,576,948, Cl. 514-274.000.
McCall, John M., to Upjohn Company, The. 1H-2-Benzopyran-1-yl alkyl on 1-(isochroman-1-yl)alkyl piperazines. 4,577,021, Cl. 544-376.000.
McCann, James; Langley, James; Hopper, Ian; Durham, Steven; Scott, Thomas; and McOmish, Eric R., to 501 Vickers PLC. Marine heave compensating device. 4,576,517, Cl. 405-195.000.
McConnell, Bernard E. Telescoping rod clamp. 4,576,501, Cl. 403-59.000.
McConnell, Richard L.: *See—*
Trotter, Jimmy R.; and McConnell, Richard L., 4,576,997, Cl. 525-444.000.
McCorkle, Charles E. Apparatus and method for separation of scar tissue in venous pathway. 4,576,162, Cl. 128-303.00R.
McCormick, James B., to Pelam, Inc. Centrifugal tissue processor. 4,576,796, Cl. 422-99.000.
McCreary, James: *See—*
Eitan, Boaz; Kolodny, Avi; Amrany, Daniel; and McCreary, James, 4,577,295, Cl. 365-218.000.
McCreedy, Kathleen M.; Keskkula, Henno; Pawloski, James C.; and Yonkers, Edward H., to Dow Chemical Company, The. Miscible polymer blends containing poly(2-alkyl-2-oxazoline). 4,576,721, Cl. 210-640.000.
McCullough, Timothy J. Depth control gauge for meat trimming knife. 4,575,937, Cl. 30-276.000.
McCullough, Timothy J. Meat trimming knife. 4,575,938, Cl. 30-276.000.
McDermott, Charles; and Zafar, Magbool A., to Machine Products Corporation. Extension and retraction system for boom apparatus. 4,575,976, Cl. 52-118.000.

McDonald, Gerard J.: *See—*
Park, David B.; Snyder, James R.; McDonald, Gerard J.; and Hoet, Roland, 4,576,277, Cl. 198-803.010.
McGard, Inc.: *See—*
Sullivan, Jeffrey R., 4,576,308, Cl. 220-327.000.
McGarry, Richard A.: *See—*
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McKinnon, Gordon M.: *See—*
Lam, Wim J.; Devries, Luitzen; McKinnon, Gordon M.; and Baribeau, Jean J., 4,576,577, Cl. 434-58.000.
McLellan, William S.; and Marriott, Alan G., to Marriott McLellan Limited. Guitars. 4,576,080, Cl. 84-267.000.
McMillan, Duncan J.: *See—*
Jeffries, Derek K.; and McMillan, Duncan J., 4,577,135, Cl. 313-362.100.
McMinn, Robert R., to Harrison Equipment Co., Inc. Electric generator with rapid replaceable motor and method of manufacturing same. 4,575,926, Cl. 29-598.000.
McOmish, Eric R.: *See—*
McCann, James; Langley, James; Hopper, Ian; Durham, Steven; Scott, Thomas; and McOmish, Eric R., 4,576,517, Cl. 405-195.000.
McWilliam, Donald S.; and Minshall, David, to British Nuclear Fuels Limited. End closure member for a container. 4,576,779, Cl. 376-203.000.
Mead Corporation, The: *See—*
Adair, Paul C.; and Burkholder, Amy L., 4,576,891, Cl. 430-138.000.
Kannapell, Henry N.; and Nietfeld, Paul G., 4,577,235, Cl. 358-280.000.
Mead, F. Jerome. Eyeglass holder for operative association with the rear view mirror on a vehicle. 4,576,320, Cl. 224-311.000.
Meador, Jacqueline C., to United States of America, Army. Fabrication of expandable polystyrene plastic ignition containers. 4,576,094, Cl. 102-202.120.
Meadows, Winston R. Pet feeding bowl. 4,576,118, Cl. 119-62.000.
Medsys, Inc.: *See—*
Myers, George H., 4,576,176, Cl. 128-660.000.
Medtronic, Inc.: *See—*
Thompson, Howard J., 4,576,556, Cl. 417-477.000.
Meeder, Raymond L., to Siemens Gammasonics, Inc. Detector head mounting apparatus. 4,577,107, Cl. 250-363.00S.
Meeker, Thrygve R.; and Tsay, Wei-Shin, to AT&T Bell Laboratories. Small ripple surface acoustic wave filter with low insertion loss. 4,577,169, Cl. 333-194.000.
Meguro, Takeo. Nickel electroplating anode and method of forming. 4,576,701, Cl. 204-280.000.
Mehlan, Bernd: *See—*
Morgan, Annis R., Jr.; Mehlan, Bernd; Gress, Josef; and Williford, Hugh S., 4,576,272, Cl. 194-215.000.
Meier, Jacques, to FERAG AG. Method and apparatus for storing continuously arriving flat products, especially printed products, and product package formed from such products. 4,575,988, Cl. 53-399.000.
Meinke, Peter: *See—*
Stieber, Michael; Meinke, Peter; and Dreher, Gunther, 4,576,246, Cl. 180-168.000.
Melcher, Roy L.: *See—*
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Melikian, Felix B.: *See—*
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Melin, Gerald W., to Carter-Day Company. Feed stream splitter for multiple deck screening machine. 4,576,713, Cl. 209-254.000.
Meltz, Gerald; Allen, Louis B., Jr.; and Ferrar, Carl M., to United Technologies Corporation. Temperature compensated optical pressure sensor. 4,577,100, Cl. 250-231.00P.
Meltzer, Robert J.: *See—*
Lowke, George E.; and Meltzer, Robert J., 4,576,916, Cl. 435-289.000.
Melvin, Lawrence S., Jr.: *See—*
Eggler, James F.; Johnson, Michael R.; and Melvin, Lawrence S., Jr., 4,576,964, Cl. 514-546.000.
Memorex Corporation: *See—*
El-Sadi, Ashraf I., 4,577,244, Cl. 360-77.000.
Menown, Hugh; and Knight, Raymond P., to English Electric Valve Company. Thyratrons. 4,577,138, Cl. 313-599.000.
Mercamp, Herbert: *See—*
Kalbfell, Heinz; Lieder, Bernhard; and Mercamp, Herbert, 4,577,043, Cl. 568-454.000.
Merck & Co., Inc.: *See—*
Greenlee, William J.; and Patchett, Arthur A., 4,576,748, Cl. 260-239.00A.
Pitzenberger, Steven M., 4,576,750, Cl. 260-239.30D.
Merck Patent Gesellschaft mit beschrankter Haftung: *See—*
Baron, Winfried; Marquard, Kurt; Merrem, Hans-Joachim; Sindlinger, Raimund; and Thiel, Klaus-Peter, 4,576,903, Cl. 430-331.000.
Mercola, Gerald K.: *See—*
Chu, Paul C.; and Mercola, Gerald K., 4,577,317, Cl. 370-110.100.
Merenyi, Robert: *See—*
Viehe, Heinz; Mesmaeker, Nadine S.; and Merenyi, Robert, 4,576,759, Cl. 260-410.90R.
Merrem, Hans-Joachim: *See—*
Baron, Winfried; Marquard, Kurt; Merrem, Hans-Joachim; Sindlinger, Raimund; and Thiel, Klaus-Peter, 4,576,903, Cl. 430-331.000.
Merrill, Dana A., to ITT Corporation. Multiple rate baseband transmitter. 4,577,331, Cl. 375-17.000.
Mertin, Theodor; and Hagen, Franz S., to Mannesmann Aktiengesellschaft. Hydraulically forcing contacts against electrodes for electrofurnaces. 4,577,325, Cl. 373-101.000.
Mery, Jean-Claude; Carre, Jean-Jacques; and Thioux, Alain, to Societe Anonyme D.B.A. Multi-disc brakes. 4,576,255, Cl. 188-71.500.
Merz, Jurg; and Voser, Walter, to Ciba-Geigy Corporation. Ionically modified cellulose material, its preparation and its use. 4,577,013, Cl. 536-43.000.
Mesch, Keith A.: *See—*
Bresser, Robert E.; Mesch, Keith A.; and Wursthorn, Karl R., 4,576,984, Cl. 524-182.000.
Mesmaeker, Nadine S.: *See—*
Viehe, Heinz; Mesmaeker, Nadine S.; and Merenyi, Robert, 4,576,759, Cl. 260-410.90R.
Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung: *See—*
Ruger, Roderich, 4,576,432, Cl. 350-1.200.
Ruger, Roderich, 4,576,449, Cl. 350-500.000.
Messerschmitt-Bolkow-Blohm GmbH: *See—*
Blaschke, Hans P.; Knappik, Winfried; Mette, Horst; and Scholler, Peter, 4,577,299, Cl. 367-120.000.
Metacon Aktiengesellschaft: *See—*
Wenger, Otto, 4,576,317, Cl. 222-600.000.
Metal Box plc: *See—*
Kelsey, Stephen F.; and Juty, Andrzej J. J., 4,576,306, Cl. 220-271.000.
Mette, Horst: *See—*
Blaschke, Hans P.; Knappik, Winfried; Mette, Horst; and Scholler, Peter, 4,577,299, Cl. 367-120.000.
Mettler, Fred A., Jr.: *See—*
Hylarides, Mark D.; and Mettler, Fred A., Jr., 4,577,046, Cl. 568-312.000.
Meunier, Paul J.: *See—*
Lunt, James; MacPherson, Edwin J.; and Meunier, Paul J., 4,576,972, Cl. 521-136.000.
Meyer, Walter E.: *See—*
Tomcufcik, Andrew S.; Meyer, Walter E.; Dusza, John P.; and Tseng, Shin S., 4,576,943, Cl. 514-222.000.
Meyer, Walter J.: *See—*
Goffredo, Daniel L.; Meyer, Walter J.; and Blaising, Horst, 4,576,685, Cl. 204-30.000.
Meyn, Pieter. Machine for packaging eggs. 4,575,993, Cl. 53-534.000.
Meynier, Guy: *See—*
Carre, Jean J.; and Meynier, Guy, 4,576,257, Cl. 188-73.320.
Miale, Joseph N.: *See—*
Chang, Clarence D.; Chu, Cynthia T. W.; and Miale, Joseph N., 4,576,805, Cl. 423-277.000.
Chang, Clarence D.; and Miale, Joseph N., 4,577,048, Cl. 585-467.000.
Michaels, John M.; Croopnick, Gerald A.; and Morris, Richard A., to Dresser Industries, Inc. Membrane pack and method of making. 4,576,715, Cl. 210-347.000.
Michiguchi, Yoshihiro: *See—*
Tanisaka, Satoshi; and Michiguchi, Yoshihiro, 4,577,151, Cl. 324-158.0MG.
Micro-Circuits Company: *See—*
Bradley, Robert F.; and Bradley, Lindell P., 4,576,170, Cl. 128-419.00D.
Microelectronics Center of North Carolina: *See—*
Reisman, Arnold, 4,576,884, Cl. 430-30.000.
Midock, Gary E.: *See—*
Bukowski, James M.; Midock, Gary E.; and Walko, Ronald J., 4,577,281, Cl. 364-494.000.
Midwest Energy Services Company: *See—*
Kempers, Eugene K., 4,576,197, Cl. 137-565.000.
Mihashi, Takashi: *See—*
Doi, Isao; Mihashi, Takashi; and Yokota, Shoichiro, 4,576,127, Cl. 123-90.150.
Mikhailov, Jury I.: *See—*
Makkaev, Almaxud M.; Lomovsky, Oleg I.; Mikhailov, Jury I.; and Boldyrev, Vladimir V., 4,576,689, Cl. 204-20.000.
Mikkelson, Vernon E. Instrument for use in obstructing the vas deferens. 4,576,161, Cl. 128-303.00R.
Mikuta, Richard; and Curran, Roger, to Bangor Punta Corporation. Gunsight elevating apparatus. 4,575,961, Cl. 42-1.00S.
Milberger, Walter E.; and Jones, Franklin B., to United States of America, Air Force. Miniature high performance pulsed modulator apparatus. 4,577,166, Cl. 332-9.00T.
Miles, John M., to Phillips Petroleum Company. Method for removal of residual solvent from particulate crumb made by solution polymerization. 4,575,950, Cl. 34-27.000.
Miline, Francois, to Commissariat a l'Energie Atomique. Process for confining the pollution in an area. 4,576,613, Cl. 55-1.000.
Miller, Bryan H.: *See—*
Clark, Richard E.; Tacito, Louis D.; Miller, Bryan H.; and Beck, Martin H., 4,575,915, Cl. 29-509.000.
Miller, Charles B.; and Whitt, Roy E., to Ashland Oil, Inc. Catalytic upgrading of reduced crudes and residual oils with a coke selective catalyst. 4,576,709, Cl. 208-57.000.
Miller, Craig A.; and Miller, Floyd E., to Western Precooling Systems, Inc. Produce vacuum cooler with improved venting. 4,576,014, Cl. 62-268.000.

Miller, David M.: *See—*
Lucas, William L.; Asbill, Clarence M., III; Frank, Gerald L.; and Miller, David M., 4,576,194, Cl. 137-84.000.

Miller, Floyd E.: *See—*
Miller, Craig A.; and Miller, Floyd E., 4,576,014, Cl. 62-268.000.

Miller, Frank A. Method and apparatus for machining a door or the like. 4,576,213, Cl. 144-371.000.

Miller-Jones, Stockton M., to General Electric Company. Wide aperture ultrasonic scanner employing convex transducer array. 4,576,045, Cl. 73-626.000.

Miller, Norman W.: *See—*
Cooke, William J.; Dancey, James N.; DeBoon, George B.; Miller, Norman W.; and Yungblut, Glen R., 4,576,518, Cl. 405-205.000.

Miller, Paul H. Exercising apparatus. 4,576,376, Cl. 272-69.000.

Miller, Peter: *See—*
Millsap, James W.; and Miller, Peter, 4,577,182, Cl. 340-539.000.

Milliken Research Corporation: *See—*
Machell, Greville, 4,576,665, Cl. 156-72.000.
Pascoe, William M., Sr., 4,576,611, Cl. 8-482.000.

Mills, Edwin R., to Fieldcrest Mills, Inc. Electrical heating apparatus protected against an overheating condition. 4,577,094, Cl. 219-505.000.

Millsap, James W.; and Miller, Peter, to Miller, Peter. Alarm system. 4,577,182, Cl. 340-539.000.

Milnes, Arthur G. Optical card and card reader system for purchase of parking time. 4,576,273, Cl. 194-209.000.

Mims, Donald S.: *See—*
Huang, Wann-Sheng; Mims, Donald S.; and Allen, Richard S., 4,576,036, Cl. 73-29.000.

Miner Enterprises, Inc.: *See—*
Carlstedt, Richard A., 4,576,295, Cl. 213-32.00R.

Minjolle, Louis: *See—*
Broussaud, Daniel; Mustel, William; and Minjolle, Louis, 4,576,923, Cl. 501-98.000.

Minnesota Mining and Manufacturing Company: *See—*
Larson, Curtis L., 4,576,297, Cl. 215-250.000.
Martens, John A., 4,576,850, Cl. 428-156.000.
Reilly, Laurence W., Jr., 4,576,975, Cl. 522-13.000.
Vallarino, Angelo, 4,576,908, Cl. 430-512.000.

Minolta Camera Kabushiki Kaisha: *See—*
Ito, Masazumi; and Murata, Tomoji, 4,576,472, Cl. 355-50.000.
Yuasa, Yoshio; Yasumoto, Hidetoshi; Naruse, Kazuhiko; Kawagoe, Nobukazu; and Inaba, Masahito, 4,576,470, Cl. 355-38.000.

Minshall, David: *See—*
McWilliam, Donald S.; and Minshall, David, 4,576,779, Cl. 376-203.000.

Mischke, Peter; and Fuchs, Hermann, to Hoechst Aktiengesellschaft. Water-soluble fibre-reactive phthalocyanine compounds. 4,576,755, Cl. 260-245.780.

Mishima, Mannen: *See—*
Yamatsu, Isao; Abe, Shinya; Inai, Yuichi; Suzuki, Takeshi; Kinoshita, Kensaku; Mishima, Mannen; Katoh, Yoshinori; Kobayashi, Seiichi; Murakami, Manabu; and Yamada, Kouzi, 4,576,963, Cl. 514-532.000.

Mishio, Hiroshi, to Alps Electric Co., Ltd. Printing head. 4,576,491, Cl. 400-124.000.

Misu, Hiroshi: *See—*
Nakakita, Eiji; Koike, Akinobu; Sekiya, Toshiyuki; Misu, Hiroshi; and Kita, Nobuyuki, 4,576,893, Cl. 430-457.000.

Mita Industrial Co., Ltd.: *See—*
Fushida, Akira; Hasegawa, Yuuji; and Matsui, Toshikazu, 4,576,465, Cl. 355-3.0DD.
Miyakawa, Nobuhiro; Maekawa, Kouji; Higashiguchi, Teruaki; and Nakatani, Kaname, 4,576,888, Cl. 430-106.000.
Sakata, Hiromi; Kozuka, Nobuhiko; and Hiraoka, Hiroshi, 4,576,464, Cl. 355-3.00R.

Mitake, Hitoshi: *See—*
Nishiwaki, Akira; Morohoshi, Yasuo; Mitake, Hitoshi; Moriguchi, Hiroyuki; Nomori, Hiroyuki; and Ito, Kunio, 4,576,797, Cl. 422-102.000.

Mitchell, Wayne J.: *See—*
Proud, Todd A.; Lin, Tom F.; Mitchell, Wayne J.; and Kasper, James D., 4,576,185, Cl. 128-760.000.

Mitsubishi Chemical Industries Ltd.: *See—*
Kuriyama, Shizuo; and Saitoh, Mikio, 4,576,966, Cl. 514-648.000.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Jidai, Eiki; and Hashizume, Aiichiro, 4,576,694, Cl. 204-181.100.
Kimata, Masafumi, 4,577,233, Cl. 358-213.000.
Marubashi, Akira, 4,577,177, Cl. 340-19.00R.
Ogushi, Tetsurou; and Murakami, Masaaki, 4,576,009, Cl. 62-3.000.
Tanahashi, Tooru; and Tadenuma, Isao, 4,576,253, Cl. 187-29.00R.
Yoshida, Fumio; and Kotera, Yoshikazu, 4,576,027, Cl. 72-11.000.

Mitsubishi Paper Mills, Ltd.: *See—*
Miyamoto, Shigehiko, 4,576,867, Cl. 428-342.000.

Mitsui Engineering & Shipbuilding Co., Ltd.: *See—*
Yamaoka, Keijiro, 4,576,006, Cl. 60-641.500.

Mittex Aktiengesellschaft: *See—*
Hussmann, Peter, 4,576,820, Cl. 424-195.100.

Mitutoyo Mfg. Co., Ltd.: *See—*
Matsumiya, Sadayuki, 4,577,142, Cl. 318-592.000.

Miura, Hirohisa; Satou, Hiroshi; Katagiri, Hidenori; Natsume, Toshio; and Azuma, Hidekazu, to Toyota Jidosha Kabushiki Kaisha. Magnetic fluid incorporating fine magnetic powder and method for making the same. 4,576,725, Cl. 252-62.510.

Miura, Nobuhiro: *See—*
Donomoto, Tadashi; Koyama, Mototsugu; Fuwa, Yoshio; Miura, Nobuhiro; and Sakakibara, Tatsuo, 4,576,863, Cl. 428-325.000.

Miura, Yuzo; and Yamada, Akira, to Canon Kabushiki Kaisha. Eye-cup for camera. 4,576,459, Cl. 354-287.000.

Miyajima, Mikio: *See—*
Hibino, Ikuo; and Miyajima, Mikio, 4,577,198, Cl. 346-76.0PH.

Miyakawa, Kazuo, to Yoshida Kogyo K. K. Method and apparatus for attaching fly strips to a slide fastener chain. 4,576,104, Cl. 112-265.200.

Miyakawa, Nobuhiro; Maekawa, Kouji; Higashiguchi, Teruaki; and Nakatani, Kaname, to Mita Industrial Company, Limited. Toner for electrophotography comprising azoic pigment having silica core. 4,576,888, Cl. 430-106.000.

Miyake, Hidenori; Fujiwara, Shunji; Nakazato, Yoshio; Yanagishima, Fumiya; and Teshiba, Toko, to Kawasaki Steel Corporation. Method of coiling thin strips. 4,576,029, Cl. 72-205.000.

Miyamoto, Shigehiko, to Mitsubishi Paper Mills, Ltd. Ink jet recording paper. 4,576,867, Cl. 428-342.000.

Miyanagi, Naoki: *See—*
Morimoto, Keiji; Satoh, Shuichi; Iwai, Yoshiyuki; Ae, Osamu; Suda, Masao; Tsuchiya, Kiyoshi; Ogata, Kojiro; and Miyanagi, Naoki, 4,576,515, Cl. 405-184.000.

Miyata, Shigeo; and Nosu, Tsutomu, to Kyowa Chemical Industry Co., Ltd. Aluminum hydroxide gel, process for production thereof, and use thereof. 4,576,819, Cl. 424-156.000.

Miyazaki, Hiroshi; and Ikeda, Masato, to Shionogi & Company, Ltd. Micro electrode. 4,576,174, Cl. 128-639.000.

Miyazaki, Nobuyuki; Takayanagi, Takashi; and Higaki, Hiromichi, to Asahi Glass Company Ltd. Curable resin composition. 4,576,977, Cl. 523-137.000.

Mizukura, Noboru; Fujimori, Noboru; Masuda, Kosaku; Yoshimoto, Shinji; Tachibana, Noriki; and Ueda, Eiichi, to Konishiroku Photo Industry Co., Ltd. Silver halide color photographic light-sensitive material. 4,576,911, Cl. 430-548.000.

Mobay Chemical Corporation: *See—*
Oliver, Vincent S.; Tames, Walter; Prochaska, Helmuth H.; and Wieser, Karl-Heinz, 4,576,649, Cl. 106-308.00Q.
Rieck, James N., 4,576,731, Cl. 252-182.000.

Mobil Oil Corporation: *See—*
Chang, Clarence D.; Chu, Cynthia T. W.; and Miale, Joseph N., 4,576,805, Cl. 423-277.000.
Chang, Clarence D.; and Miale, Joseph N., 4,577,048, Cl. 585-467.000.
Chen, Catherine S. H.; and Williams, Albert L., 4,577,000, Cl. 525-534.000.
Hinkley, David, 4,577,298, Cl. 367-50.000.
Kaeding, Warren W.; and Lee, Carol S., 4,577,050, Cl. 585-486.000.
Kalkomey, Cynthia T.; Mason, Thomas J.; and Pann, Keh, 4,577,297, Cl. 367-24.000.
Rudnick, Leslie R., 4,577,049, Cl. 585-486.000.

Mochizuki, Akira: *See—*
Takahashi, Koji; and Mochizuki, Akira, 4,576,371, Cl. 271-296.000.

Mock, Gerald L.: *See—*
Hanscom, Bradford E.; and Mock, Gerald L., 4,577,063, Cl. 179-6.160.

Modern Globe, Inc.: *See—*
O'Brien, Richard W.; and Rogers, Gwyn D., 4,575,909, Cl. 26-18.600.

Moeller, Charles E.: *See—*
Geary, Joseph M.; Vunck, Darius S.; Duneman, Dennis C.; Sessions, Ronald L.; Moeller, Charles E.; and Wick, Raymond V., 4,577,103, Cl. 250-316.100.

Mogul Corporation, The: *See—*
Gaylor, Lawrence A.; and Beard, James W., 4,576,722, Cl. 210-699.000.

Mohan, William L.; and Willits, Samuel P., to Spartanics Ltd. Method and apparatus for operating a magnetic clutch. 4,576,262, Cl. 192-18.00B.

Mohasco Corporation: *See—*
Powell, Larry D.; and Tidwell, Charles J., Jr., 4,575,883, Cl. 5-13.000.

Molnar, Gabor: *See—*
Kassza, Tibor; Kakonyi, Gyula; and Molnar, Gabor, 4,576,025, Cl. 70-276.000.

Molnar, John; and Porter, Robert B., Jr., to Caterpiller Tractor Co. Seat belt apparatus. 4,576,414, Cl. 297-476.000.

Mommer, Heinrich, to M. Faensen; and Iphas Pharma-Verpackung. Dosing device for infusion or transfusion of fluids. 4,576,593, Cl. 604-250.000.

Monsanto Company: *See—*
McAlister, Donald R.; and Ziebold, Steven A., 4,576,813, Cl. 423-522.000.

Monsigny, Michel, to Centre National de la Recherche Scientifique. Method for the fluorimetric determination of endotoxins, new peptides carrying a fluorophorous substance usable in said method and method for its preparation. 4,576,745, Cl. 260-112.50R.

Montedison S.p.A.: *See—*
Bottazzini, Nicola; and Quaglino, Marino, 4,577,010, Cl. 528-487.000.

Monterey Manufacturing Co.: *See—*
Hall, Charles P., 4,575,885, Cl. 5-450.000.

Montgomery, Robert E.; and Pellico, Michael A., to Laclede Professional Products, Inc. Enzymatic bandages and pads. 4,576,817, Cl. 424-94.000.

Montierth, Max R.: *See—*
Hazard, Gary M.; Hillman, Arthur E.; Montierth, Max R.; and Nieber, Albert R., 4,576,774, Cl. 264-267.000.

Montret, Jean-Francois: *See—*
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Moore, Benjamin N.: *See—*
Hall, Henry B.; Hewes, Peter B.; Moore, Benjamin N.; and Sanzaro, Rosario, 4,576,798, Cl. 422-105.000.

Morgan, Annis R., Jr.; Mehlan, Bernd; Gress, Josef; and Williford, Hugh S., to Coca-Cola Company, The. Counter-top or wall-mounted vending machine. 4,576,272, Cl. 194-215.000.

Mori, Takashi: *See—*
Sasaki, Ichitaro; Mori, Takashi; and Tsuyuguchi, Tadao, 4,576,344, Cl. 242-67.10R.

Moriguchi, Hiroyuki: *See—*
Nishiwaki, Akira; Morohoshi, Yasuo; Mitake, Hitoshi; Moriguchi, Hiroyuki; Nomori, Hiroyuki; and Ito, Kunio, 4,576,797, Cl. 422-102.000.

Morimoto, Keiji; Satoh, Shuichi; Iwai, Yoshiyuki; Ae, Osamu; Suda, Masao; Tsuchiya, Kiyoshi; Ogata, Kojiro; and Miyanagi, Naoki, to Nippon Telegraph & Telephone Public Corp.; and Hitachi Construction Machinery Co., Ltd. Pipe laying apparatus. 4,576,515, Cl. 405-184.000.

Morinaga, Akio; Sakaguchi, Yoichi; Hyodo, Masakatsu; and Yagi, Isaburo, to Tokyo Gas Co., Ltd.; and Ashimori Industry Co., Ltd. Tubular lining material for pipe lines having bends. 4,576,205, Cl. 138-98.000.

Morita Iron Works Co., Ltd.: *See—*
Morita, Motoo, 4,576,028, Cl. 72-143.000.

Morita, Motoo, to Morita Iron Works Co., Ltd. Method of making a coil spring and apparatus therefor. 4,576,028, Cl. 72-143.000.

Moritani, Takeshi: *See—*
Tanaka, Yoshinari; Aoyama, Akimasa; Moritani, Takeshi; Satoh, Kenji; and Okaya, Takuji, 4,576,988, Cl. 524-503.000.

Moriya, Koji: *See—*
Tsurushima, Masaaki; Kokubu, Gozi; and Moriya, Koji, 4,577,012, Cl. 536-24.000.

Moriyama, Shigeo, to Hitachi, Ltd. Ultra-precision two-dimensional moving apparatus. 4,575,942, Cl. 33-1.00M.

Morland, Robert B.; Cooke, Anson R.; and Bishop, John R., to Union Carbide Corporation. Herbicidal thiadiazole ureas. 4,576,629, Cl. 71-90.000.

Morohoshi, Yasuo: *See—*
Nishiwaki, Akira; Morohoshi, Yasuo; Mitake, Hitoshi; Moriguchi, Hiroyuki; Nomori, Hiroyuki; and Ito, Kunio, 4,576,797, Cl. 422-102.000.

Morris, Joel, to Upjohn Company, The. Anti-inflammatory lipoxin B analogs. 4,576,758, Cl. 260-405.500.

Morris, Richard A.: *See—*
Michaels, John M.; Croopnick, Gerald A.; and Morris, Richard A., 4,576,715, Cl. 210-347.000.

Morrison, Bruce J.: *See—*
Parry, Lawrence J.; and Morrison, Bruce J., 4,576,801, Cl. 427-288.000.

Morton Thiokol, Inc.: *See—*
Bresser, Robert E.; Mesch, Keith A.; and Wursthorn, Karl R., 4,576,984, Cl. 524-182.000.

Morvan, Jean: *See—*
Collin, Jean J.; Landreau, Alain; Talbo, Henri; Martin, Guy; and Morvan, Jean, 4,576,717, Cl. 210-610.000.

Moser, Manfred: *See—*
Funger, Bernhard; Gruber, Heinz; Hartmann, Werner; Kohnen, Julius; Kutz, Johannes; and Moser, Manfred, 4,576,112, Cl. 118-415.000.

Moss, Gerald. Feeding device for enterally administering liquids into a human body. 4,576,603, Cl. 604-410.000.

Moss, Steven Y.: *See—*
Cowlam, Stephen K.; Moss, Steven Y.; Stockwell, Claude L.; and Phillips, Victor R., 4,576,765, Cl. 210-801.000.

Motorola, Inc.: *See—*
Bynum, Byron G.; and Cave, David L., 4,577,211, Cl. 357-34.000.
Latasiewicz, Leonard; Melikian, Felix B.; and Estes, Bay E., III, 4,577,259, Cl. 361-400.000.
Markham, David C., 4,577,290, Cl. 365-12.000.
Peterson, Joe W., 4,577,162, Cl. 330-253.000.

Mott, James D.; and Wolff, Danny K., to Hydril Company. Remotely operable safety valve. 4,576,358, Cl. 251-14.000.

Mottram, William R.; Fisher, Gene A.; and Feierabend, Louis, to Proto-Med. Inc. Method and apparatus for concentrating oxygen. 4,576,616, Cl. 55-68.000.

Moufflet, Luc; Roux, Michel; and Valadier, Jean, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude. Method of polishing the surface of glass articles. 4,576,571, Cl. 432-9.000.

Moulton, Alexander E.; and Uncles, Philip B., to Alex Moulton Limited. Bicycle suspension. 4,576,393, Cl. 280-276.000.

MSK-Verpackungs-Systeme GmbH: *See—*
Hannen, Rainer W., 4,575,989, Cl. 53-434.000.

Mueller, Edward E.; and Jensen, Paul L., to Whirl-Air-Flow Corporation. Apparatus and method for cleaning contaminated soil. 4,576,572, Cl. 432-13.000.

Mueller, Kurt H., to GRETAG Aktiengesellschaft. Decoding process and apparatus. 4,577,059, Cl. 178-22.170.

Muhlhaus, Ludwig: *See—*
Koch, Manfred; Muhlhaus, Ludwig; Lambach, Rolf; and Grochowski, Horst, 4,576,924, Cl. 502-56.000.

Mukaida, Yoshito: *See—*
Okita, Tsutomu; Tsuji, Nobuo; and Mukaida, Yoshito, 4,576,866, Cl. 428-336.000.

Mukoh, Akio: *See—*
Isogai, Masato; Hattori, Shintaroo; Iwasaki, Kishiroo; Kitamura, Teruo; Mukoh, Akio; Inukai, Takashi; Furukawa, Kenji; Terashima, Kanetsugu; and Saitoh, Shinichi, 4,576,732, Cl. 252-299.650.

Muller, Egbert; and Stumpe, Werner, to Robert Bosch GmbH. Multicircuit pressure medium brake system. 4,576,416, Cl. 303-15.000.

Muller, Maurice E.; and Frey, Otto, to Sulzer Brothers Limited. Injector for bone cement. 4,576,152, Cl. 128-92.00R.

Muller, Niklaus; and Audemars, Daniel, to Castolin S.A. Arrangement for supplying powdered material to a spraying device. 4,576,526, Cl. 406-75.000.

Mullersman, Ferdinand H., to General Electric Company. Charging system having electromagnetic field means for distinguishing between primary and secondary batteries. 4,577,145, Cl. 320-2.000.

Mullersman, Ferdinand H.: *See—*
Hodgman, John S.; and Mullersman, Ferdinand H., 4,577,144, Cl. 320-2.000.

Multinorm B.V.: *See—*
Van Paradijs, Hendrikus J. A.; and Mynders, Gysbert J., 4,575,997, Cl. 56-16.400.

Mundell, Richard H., to Shell Oil Company. Peristaltic down-hole drilling motor. 4,576,242, Cl. 175-107.000.

Mundt, Arnold L.; Beair, Charles E.; Naumann, Leo J.; Roberts, Alan T.; and LaPelle, Ronald J., to BS&B Safety Systems, Inc. Rupturable pressure relieving fluid containers. 4,576,303, Cl. 220-89.00A.

Munzer, Manfred: *See—*
Liebler, Ralf; Besecke, Siegmund; and Munzer, Manfred, 4,576,870, Cl. 428-515.000.

Murabayashi, Akira: *See—*
Makisumi, Yasuo; Murabayashi, Akira; Tawara, Katsuya; Watanabe, Yoshihachi; Takahashi, Toshio; and Konishi, Takao, 4,576,956, Cl. 514-380.000.

Murakami, Kiyotaka; and Kimura, Yoshiaki, to Konishiroku Photo Industry Co. Ltd. Fluid droplet ejecting system. 4,577,201, Cl. 346-140.00R.

Murakami, Manabu: *See—*
Yamatsu, Isao; Abe, Shinya; Inai, Yuichi; Suzuki, Takeshi; Kinoshita, Kensaku; Mishima, Mannen; Katoh, Yoshinori; Kobayashi, Seiichi; Murakami, Manabu; and Yamada, Kouzi, 4,576,963, Cl. 514-532.000.

Murakami, Masaaki: *See—*
Ogushi, Tetsurou; and Murakami, Masaaki, 4,576,009, Cl. 62-3.000.

Muramatsu, Katsuhiko: *See—*
Nishu, Mitsufumi; Takeuchi, Kenji; Sato, Masanori; Horiuchi, Ichiro; Muramatsu, Katsuhiko; and Kiryu, Koji, 4,576,059, Cl. 74-473.00P.

Muramatsu, Masaru: *See—*
Sugano, Akira; Muramatsu, Masaru; Yamanobe, Sachio; and Sato, Yoshio, 4,577,270, Cl. 364-151.000.

Murata, Hitoshi: *See—*
Kitamura, Kengo; and Murata, Hitoshi, 4,575,934, Cl. 29-787.000.

Murata Kikai Kabushiki Kaisha: *See—*
Matsui, Isamu; Uchida, Hiroshi; Nakanishi, Kazuo; Kiriake, Masaharu; and Shimano, Akira, 4,576,341, Cl. 242-35.50A.

Murata Manufacturing Co., Ltd.: *See—*
Tabuchi, Makoto; and Imanishi, Kiyoshi, 4,575,995, Cl. 53-591.000.

Murata, Shouichi; Makiyama, Muneto; Omoto, Takahiro; and Yasumoto, Taizo, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Pile fabric having shrunken pile and non-shrinkable pile. 4,576,840, Cl. 428-16.000.

Murata, Tomoji: *See—*
Ito, Masazumi; and Murata, Tomoji, 4,576,472, Cl. 355-50.000.

Murata, Toshinori: *See—*
Arai, Ikuya; Murata, Toshinori; and Kazumi, Masafumi, 4,577,228, Cl. 358-167.000.

Muren, Sture, to Santrade Ltd. Thread cutting insert. 4,575,888, Cl. 10-101.00R.

Murray, Charles R.; and Harrison, Ray E., to C-I-L Inc. Shipping bag. 4,576,844, Cl. 428-35.000.

Murray, W. Kirby; and Sullivan, David O., to Tri-State Oil Tool Industries, Inc. Locking pipe sub. 4,576,402, Cl. 285-39.000.

Mustel, William: *See—*
Broussaud, Daniel; Mustel, William; and Minjolle, Louis, 4,576,923, Cl. 501-98.000.

Muto, Yukio; Kinugawa, Masumi; and Abe, Tomoaki, to Nippondenso Co., Ltd. Air-flow detecting apparatus. 4,576,039, Cl. 73-118.000.

Muzzarelli, Gabriele. Apparatus for cheese compacting. 4,576,091, Cl. 99-455.000.

Myers, George H., to Medsys, Inc. Transducer for measurement of corneal thickness. 4,576,176, Cl. 128-660.000.

Mynders, Gysbert J.: *See—*
Van Paradijs, Hendrikus J. A.; and Mynders, Gysbert J., 4,575,997, Cl. 56-16.400.

Nagahara, Shuusaku: *See—*
Ozawa, Naoki; Akiyama, Toshiyuki; Nagahara, Shuusaku; and Takemoto, Iwao, 4,577,230, Cl. 358-212.000.

Nagano, Masashi, to Shimano Industrial Company Limited. Front chain gear for a bicycle. 4,576,587, Cl. 474-152.000.
Naito, Michinori, to Trio Kabushiki Kaisha. Distortion cancel circuit in FM stereo. 4,577,342, Cl. 381-13.000.
Naitoh, Katsumi; and Shimamura, Tadaaki, to NSK Warner K.K. Method for preparing a seat belt buckle mechanism. 4,575,916, Cl. 29-517.000.
Nakabayashi, Masamitsu; Furukawa, Yuzo; and Tashiro, Akira, to Takeda Chemical Industries, Inc. Laminated article and production thereof. 4,576,995, Cl. 525-285.000.
Nakaguti, Osamu: *See—*
Kamiya, Takashi; Hashimoto, Masashi; and Nakaguti, Osamu, 4,576,753, Cl. 260-239.00A.
Nakai, Masaaki: *See—*
Ohba, Shinya; Ando, Haruhisa; Nakai, Masaaki; Ozaki, Toshifumi; Seki, Koichi; Takahashi, Kenji; Akiyama, Toshiyuki; Takemoto, Iwao; Imaide, Takuya; Okuda, Akihide; and Kubo, Masaharu, 4,577,231, Cl. 358-212.000.
Nakajima, Masataka; Mase, Yasushi; and Tamura, Yoshiharu, to Nissan Motor Company, Limited. Engine starting air fuel ratio control system. 4,576,132, Cl. 123-438.000.
Nakajima, Yukio: *See—*
Yabe, Hisao; Sasa, Hiroyuki; Nakajima, Yukio; Ishii, Fumiaki; Takamura, Koji; and Nakamura, Takeaki, 4,576,650, Cl. 134-22.120.
Nakakita, Eiji; Koike, Akinobu; Sekiya, Toshiyuki; Misu, Hiroshi; and Kita, Nobuyuki, to Fuji Photo Film Co., Ltd. Presensitized lithographic printing plate precursor. 4,576,893, Cl. 430-457.000.
Nakamura, Kenji: *See—*
Okina, Toyohiko; Goto, Hiroshi; Ozawa, Akimasa; Nakamura, Kenji; and Oishi, Hiroshi, 4,576,855, Cl. 428-215.000.
Nakamura, Mitsuo: *See—*
Takimoto, Tadashi; Oishibashi, Hirotsugu; Ueyama, Katsuyoshi; Ohara, Muneyuki; Kobayashi, Akio; Aoki, Keiichi; Nakamura, Mitsuo; and Hagiwara, Kenzo, 4,576,324, Cl. 228-44.300.
Nakamura, Takeaki: *See—*
Yabe, Hisao; Sasa, Hiroyuki; Nakajima, Yukio; Ishii, Fumiaki; Takamura, Koji; and Nakamura, Takeaki, 4,576,650, Cl. 134-22.120.
Nakanishi, Kazuo: *See—*
Matsui, Isamu; Uchida, Hiroshi; Nakanishi, Kazuo; Kiriake, Masaharu; and Shimano, Akira, 4,576,341, Cl. 242-35.50A.
Nakanishi, Toshiharu: *See—*
Ohigashi, Hiroji; Koga, Keiko; and Nakanishi, Toshiharu, 4,577,132, Cl. 310-800.000.
Nakao, Shinroku; and Tsuchiya, Kunimasa, to Combi Co., Ltd. Caster with an oscillation stopping mechanism. 4,575,896, Cl. 16-35.00R.
Nakatani, Kaname: *See—*
Miyakawa, Nobuhiro; Maekawa, Kouji; Higashiguchi, Teruaki; and Nakatani, Kaname, 4,576,888, Cl. 430-106.000.
Nakayama, Syoichi: *See—*
Suzuki, Setsuo; Tsuge, Morio; and Nakayama, Syoichi, 4,576,896, Cl. 430-271.000.
Nakazato, Yoshio: *See—*
Miyake, Hidenori; Fujiwara, Shunji; Nakazato, Yoshio; Yanagishima, Fumiya; and Teshiba, Toko, 4,576,029, Cl. 72-205.000.
Nakazawa, Masao; Yashima, Michio; and Takahashi, Shuuji, to Honda Giken Kogyo Kabushiki Kaisha. Sealed lead acid battery. 4,576,879, Cl. 429-86.000.
Nalbantian, Charles A.: *See—*
Kreisher, John H.; and Nalbantian, Charles A., 4,576,693, Cl. 204-180.100.
Nambu, Shigeo, to Kabushiki Kaisha Toshiba. Data transmission including a repeater. 4,577,327, Cl. 375-4.000.
Namiki, Yasuomi: *See—*
Hirohashi, Kazutoshi; Ishigaki, Yukinobu; and Namiki, Yasuomi, 4,577,161, Cl. 330-149.000.
Naoe, Masahiko: *See—*
Kadokura, Sadao; Honjo, Kazuhiko; Tomie, Takashi; and Naoe, Masahiko, 4,576,700, Cl. 204-192.00M.
Narendra, Pat M.: *See—*
Fitch, Robert C.; and Narendra, Pat M., 4,577,223, Cl. 358-113.000.
Naruse, Kazuhiko: *See—*
Yuasa, Yoshio; Yasumoto, Hidetoshi; Naruse, Kazuhiko; Kawagoe, Nobukazu; and Inaba, Masahito, 4,576,470, Cl. 355-38.000.
Nash, Peter D., to AT&T Bell Laboratories. Arrangement for wideband transmission via a switched network. 4,577,312, Cl. 370-84.000.
Naslain, Roger: *See—*
Colmet, Robert; Naslain, Roger; Hagenmuller, Paul; and Lamico, Pierre, 4,576,836, Cl. 427-255.000.
Nassauer, Konrad, to Borsig GmbH. Heat exchanger for cooling hot gases, especially those deriving from the synthesis of ammonia. 4,576,225, Cl. 165-101.000.
National Semiconductor Corporation: *See—*
Wong, Hee; and Chen, Carson, 4,577,335, Cl. 375-86.000.
National Starch and Chemical Corporation: *See—*
Iovine, Carmine P.; Palmer, Joseph G.; and Walker, James L., 4,577,031, Cl. 548-319.000.
Natsume, Toshio: *See—*
Miura, Hirohisa; Satou, Hiroshi; Katagiri, Hidenori; Natsume, Toshio; and Azuma, Hidekazu, 4,576,725, Cl. 252-62.510.
Nauchno-Issledovatelsky Institut Khirurgii Imeni A.V. Vishnevskogo: *See—*
Kaidash, Arnold N.; Iofis, Naum A.; Khurtsilava, Semen G.; Bukatov, Alexandr S.; and Danilova, Zinaida P., 4,576,605, Cl. 623-2.000.
Naumann, Leo J.: *See—*
Mundt, Arnold L.; Beair, Charles E.; Naumann, Leo J.; Roberts, Alan T.; and LaPelle, Ronald J., 4,576,303, Cl. 220-89.00A.
Nay, Barry; and Stewart, David G., to British Petroleum Company P.L.C., The. Catalyst composition and its use in a process for the production of alcohols from synthesis gas. 4,576,968, Cl. 518-713.000.
NCR Corporation: *See—*
Boer, Jan; and Diepstraten, Wilhelmus J. M., 4,577,334, Cl. 375-97.000.
Sobczak, Zbigniew P., 4,576,834, Cl. 427-93.000.
NEC Corporation: *See—*
Kiuchi, Eiichi; Sawanaka, Hiroshi; and Tomita, Yuichi, 4,577,193, Cl. 343-380.000.
Otsuka, Shigeru, 4,577,315, Cl. 370-95.000.
Senoo, Keiichi, 4,577,328, Cl. 375-13.000.
Needham, James C.; Rivett, Robert M.; and Perryman, Raymond A. G., to Welding Institute, The. Monitoring in-service resistance of AC conductors. 4,577,086, Cl. 219-117.100.
Neff, Andreas, to Bracker AG. Apparatus for placing or mounting ring travelers on spinning or twisting rings. 4,575,933, Cl. 29-765.000.
Neff Gewindespindeln GmbH: *See—*
Lehmann, Wolfgang; and Aab, Hans-Walter, 4,576,420, Cl. 308-6.00C.
Nehl, Rainer: *See—*
Klie, Jurgen; and Nehl, Rainer, 4,577,219, Cl. 358-78.000.
Neimann S.A.: *See—*
Weber, Gunter, 4,576,024, Cl. 70-252.000.
Neiss, Edward S.: *See—*
Suh, John T.; Piwinski, John J.; Jones, Howard; and Neiss, Edward S., 4,576,941, Cl. 514-222.000.
Neldeberg, Poul; and Olsen, Steen H., to Danfoss A/S. Heating installation with heat pump. 4,576,332, Cl. 237-2.00B.
Nelson, James A.: *See—*
Kruger, Robert A.; and Nelson, James A., 4,577,222, Cl. 358-111.000.
Nelson, John A.: *See—*
Stout, Gregg W.; Nelson, John A.; and Crisp, John H., 4,576,236, Cl. 166-386.000.
Nelson, John E., to Eberhard Faber, Inc. Artist's work and storage station. 4,576,424, Cl. 312-231.000.
Nelson, Kenneth L., to King Seeley Thermos Co. Ice making apparatus. 4,576,016, Cl. 62-320.000.
Nelson, Raymond F.: *See—*
Dove, Doublas J. A.; and Nelson, Raymond F., 4,576,280, Cl. 206-289.000.
Nemiroff, Michael H., to Burroughs Corporation. Method of fabricating integrated circuits incorporating steps to detect presence of gettering sites. 4,575,922, Cl. 29-574.000.
Nemoto, Shigeru; Kitajima, Goro; Saitou, Sinichi; and Osada, Hazime, to Olympus Optical Co., Ltd. Operating lever device of magnetic recording tape transport apparatus. 4,577,245, Cl. 360-93.000.
Nerizon, Nelly A.: *See—*
Ravel, Kanak K. R.; Vaidya, Bhupendra R.; and Nerizon, Nelly A., 4,576,645, Cl. 106-125.000.
Nestec S. A.: *See—*
Liu, Richard T.; Nickerson, Winston R.; and Anderson, Charles H., 4,576,826, Cl. 426-289.000.
Netzer, David; and Huebel, Robert R., to Randall Corporation, The. Carbon dioxide hydrocarbons separation process. 4,576,615, Cl. 55-43.000.
Neugebauer, Steffen: *See—*
Scharting, Gunter; and Neugebauer, Steffen, 4,576,382, Cl. 277-12.000.
Neuschuetz, Dieter: *See—*
Doerr, Hermann; Hoster, Thomas; Neuschuetz, Dieter; Radke, Dietrich; Janssen, Wilhelm; and Ulrich, Klaus, 4,576,638, Cl. 75-80.000.
Neuwirth, Manfred: *See—*
Eisenlauer, Josef; Horn, Dieter; and Neuwirth, Manfred, 4,576,723, Cl. 210-709.000.
New York Institute of Technology: *See—*
Glenn, William E., 4,576,048, Cl. 73-642.000.
Newellpharma s.r.l.: *See—*
Perna, Giorgino, 4,576,216, Cl. 164-21.000.
Newman, Leon A.; and Kennedy, John T., to United Technologies Corporation. U Channel waveguide laser. 4,577,323, Cl. 372-64.000.
Nguyen, Tanh V., to Chevron Research Company. Methods for metering two-phase flow. 4,576,043, Cl. 73-195.000.
Nhy-Temp, Inc.: *See—*
Windecker, Robert J., 4,576,010, Cl. 62-64.000.
NI Industries, Inc.: *See—*
Hempelmann, Heinrich J., 4,576,415, Cl. 301-37.00S.
Nichols, Ernest, Jr.: *See—*
Brasell, James M.; and Nichols, Ernest, Jr., 4,576,542, Cl. 414-626.000.
Nickerson, Winston R.: *See—*
Liu, Richard T.; Nickerson, Winston R.; and Anderson, Charles H., 4,576,826, Cl. 426-289.000.
Nieber, Albert R.: *See—*
Hazard, Gary M.; Hillman, Arthur E.; Montierth, Max R.; and Nieber, Albert R., 4,576,774, Cl. 264-267.000.
Nielsen, Karl I. Device for laying out a pipeline. 4,576,514, Cl. 405-154.000.
Nietfeld, Paul G.: *See—*
Kannapell, Henry N.; and Nietfeld, Paul G., 4,577,235, Cl. 358-280.000.

Nifco Inc.: *See—*
Omata, Nobuaki, 4,576,252, Cl. 185-39.000.
Nippon Electric Co. Ltd.: *See—*
Oura, Toshio, 4,577,343, Cl. 381-51.000.
Nippon Kogaku K. K.: *See—*
Daitoku, Koichi; and Tsukahara, Daiki, 4,576,460, Cl. 354-400.000.
Inadome, Kiyotaka, 4,576,445, Cl. 350-427.000.
Nippon Kogaku K.K.: *See—*
Saiki, Kazuaki; Ishikawa, Aiichi; Hashimoto, Noriyoshi; Kudo, Koichi; and Yoshikawa, Kuniyuki, 4,577,141, Cl. 318-590.000.
Nippon Optical Fiber Co., Ltd.: *See—*
Kurahashi, Yoshio, 4,576,854, Cl. 428-204.000.
Nippon Petrochemicals Co., Ltd.: *See—*
Kawatani, Kimio; Fujikawa, Takashi; and Watanabe, Eiji, 4,576,680, Cl. 162-158.000.
Nippon Steel Corporation: *See—*
Suzuki, Ryoichi; Ohno, Jiro; and Gondo, Hisashi, 4,576,639, Cl. 75-123.00E.
Nippon Telegraph & Telephone Public Corp.: *See—*
Morimoto, Keiji; Satoh, Shuichi; Iwai, Yoshiyuki; Ae, Osamu; Suda, Masao; Tsuchiya, Kiyoshi; Ogata, Kojiro; and Miyanagi, Naoki, 4,576,515, Cl. 405-184.000.
Nippondenso Co., Ltd.: *See—*
Muto, Yukio; Kinugawa, Masumi; and Abe, Tomoaki, 4,576,039, Cl. 73-118.000.
Nishida, Minoru: *See—*
Satoh, Susumu; Obara, Takashi; and Nishida, Minoru, 4,576,656, Cl. 148-12.00C.
Nishida, Naoto; Takahashi, Tadashi; and Kakizaki, Katsuyuki, to Kabushiki Kaisha Toshiba. High power output laser apparatus. 4,577,324, Cl. 372-95.000.
Nishikawa, Kohei: *See—*
Tsushima, Susumu; and Nishikawa, Kohei, 4,576,933, Cl. 514-77.000.
Nishimura, Akira: *See—*
Tsuno, Koichi; and Nishimura, Akira, 4,576,145, Cl. 128-6.000.
Nishimura, Keizo: *See—*
Takeuchi, Takashi; Nishimura, Keizo; Kobayashi, Masaharu; and Oiso, Kazumasa, 4,577,319, Cl. 371-38.000.
Nishimura, Mizuho: *See—*
Kogane, Mikio; and Nishimura, Mizuho, 4,576,471, Cl. 355-50.000.
Kogane, Mikio; Nishimura, Mizuho; and Yamamoto, Takashi, 4,576,473, Cl. 355-68.000.
Shiraishi, Atsushi; and Nishimura, Mizuho, 4,576,474, Cl. 355-75.000.
Nishioka, Kimihiko, to Olympus Optical Co., Ltd. Endoscope including a reflector related by an inequality for uniform light distribution. 4,576,435, Cl. 350-96.260.
Nishiwaki, Akira; Morohoshi, Yasuo; Mitake, Hitoshi; Moriguchi, Hiroyuki; Nomori, Hiroyuki; and Ito, Kunio, to Konishiroku Photo Industry Co., Ltd. Vapor source holding container. 4,576,797, Cl. 422-102.000.
Nishu, Mitsufumi; Takeuchi, Kenji; Sato, Masanori; Horiuchi, Ichiro; Muramatsu, Katsuhiko; and Kiryu, Koji, to Aisin Seiki Kabushiki Kaisha. Shift lever support mechanism for transmissions. 4,576,059, Cl. 74-473.00P.
Nissan Chemical Industries, Ltd.: *See—*
Arai, Kazutaka; Ohara, Yoshio; Takakuwa, Yashio; and Iizumi, Toyoko, 4,577,025, Cl. 546-198.000.
Seto, Kiyotomo; Tanaka, Sakuya; and Sakoda, Ryozo, 4,576,934, Cl. 514-85.000.
Nissan Motor Co., Ltd.: *See—*
Doi, Isao; Mihashi, Takashi; and Yokota, Shoichiro, 4,576,127, Cl. 123-90.150.
Kitamura, Kengo; and Murata, Hitoshi, 4,575,934, Cl. 29-787.000.
Kumura, Haruyoshi; Tanaka, Yoshikazu; Abo, Keiju; Hirano, Hiroyuki; and Yamamuro, Sigeaki, 4,576,265, Cl. 192-0.055.
Nakajima, Masataka; Mase, Yasushi; and Tamura, Yoshiharu, 4,576,132, Cl. 123-438.000.
Nitto Electric Industrial Co., Ltd.: *See—*
Mazaki, Shiro; and Shibata, Hiroshi, 4,576,990, Cl. 524-602.000.
Niveau AG: *See—*
Preusker, Werner, 4,576,214, Cl. 152-213.00A.
Noda, Yasumasa; and Suzuki, Yoichi, to Kabushiki Kaisha Toshiba. Apparatus for preheating mold resin for a semiconductor device. 4,577,078, Cl. 219-10.55A.
Noel, Gert. Flexible plastic foam with a groove- and tongue-like closing system. 4,576,846, Cl. 428-36.000.
Nogi, Toshiharu: *See—*
Yamauchi, Teruo; Nogi, Toshiharu; and Oyama, Yoshishige, 4,576,136, Cl. 123-590.000.
Noiles, Douglas G., to United States Surgical Corporation. Surgical stapler apparatus with curved shaft. 4,576,167, Cl. 128-334.00R.
Noll, Klaus; Potter, Terry; Pedain, Josef; and Schwindt, Jurgen, to Bayer Aktiengesellschaft. Aqueous solutions or dispersions of cationic oligo-urethanes, a process for the production thereof and the use thereof to produce coatings. 4,576,989, Cl. 524-591.000.
Nomori, Hiroyuki: *See—*
Nishiwaki, Akira; Morohoshi, Yasuo; Mitake, Hitoshi; Moriguchi, Hiroyuki; Nomori, Hiroyuki; and Ito, Kunio, 4,576,797, Cl. 422-102.000.
Nomoto, Shosaku: *See—*
Kobayashi, Hiroyasu; Fukui, Masayuki; and Nomoto, Shosaku, 4,576,672, Cl. 156-177.000.
Nongbri, Govanon; and Chervenak, Michael C., to HRI, Inc. Catalyst desulfurization of petroleum residua feedstocks. 4,576,710, Cl. 208-58.000.
Noranda Inc.: *See—*
Smyth, Laurence C.; and Deep, George, 4,576,220, Cl. 164-66.100.
Norden, Jurgen; Aigner, Heinrich; Schindler, Fritz; and Samblebe, Reinhard, to Huls Aktiengesellschaft. Fertilizers containing urea with urease inhibitors. 4,576,625, Cl. 71-3.000.
NORDICA S.p.A.: *See—*
Borsoi, Bruno, 4,575,955, Cl. 36-117.000.
Nordlund, Viljo T. J., to Valio Meijerien Keskusosuusliiki. Process for the production of fermented milk products. 4,576,822, Cl. 426-43.000.
Nordson Corporation: *See—*
Hastings, Donald R.; and Sharpless, John, 4,576,827, Cl. 427-27.000.
Hollingsworth, Alexander, 4,575,991, Cl. 53-509.000.
Normann, Richard A., to University of Utah. Method and apparatus for measuring liquid flow. 4,576,182, Cl. 128-692.000.
North American Manufacturing Company: *See—*
Shannon, Robert A., 4,577,278, Cl. 364-477.000.
North American Philips Corporation: *See—*
Arnold, Emil, 4,575,923, Cl. 29-576.00B.
Northern Engineering Industries, plc: *See—*
Gould, Deryk S. M.; and Wright, Michael T., 4,577,128, Cl. 310-87.000.
Nosu, Tsutomu: *See—*
Miyata, Shigeo; and Nosu, Tsutomu, 4,576,819, Cl. 424-156.000.
NSK Warner K.K.: *See—*
Naitoh, Katsumi; and Shimamura, Tadaaki, 4,575,916, Cl. 29-517.000.
Nucor Corporation: *See—*
Lott, Hamilton, Jr.; and Strock, Lynn E., 4,575,983, Cl. 52-544.000.
Nutter, Dale E. Packings for gas-liquid contact apparatus. 4,576,763, Cl. 261-94.000.
O. J. Ouellette Inc.: *See—*
Chartier, George R., 4,576,533, Cl. 411-373.000.
O & S Manufacturing Company: *See—*
Smith, Joseph E., 4,576,499, Cl. 403-27.000.
Obara Corporation: *See—*
Obara, Hiroshi, 4,577,090, Cl. 219-137.900.
Obara, Hiroshi, to Obara Corporation. Primary cable apparatus for robot welding gun. 4,577,090, Cl. 219-137.900.
Obara, Takashi: *See—*
Satoh, Susumu; Obara, Takashi; and Nishida, Minoru, 4,576,656, Cl. 148-12.00C.
O'Brien, Matthew T.: *See—*
O'Brien, William J.; and O'Brien, Matthew T., 4,576,922, Cl. 501-32.000.
O'Brien, Richard W.; and Rogers, Gwyn D., to Modern Globe, Inc. Apparatus for treating fabric for shrinkage. 4,575,909, Cl. 26-18.600.
O'Brien, William J.; and O'Brien, Matthew T., to University of Michigan, The Regents of the. High expansion dental crown core ceramic composition. 4,576,922, Cl. 501-32.000.
Occidental Chemical Corporation: *See—*
Campbell, Donald H.; Fifolt, Michael J.; and Saran, Mohan S., 4,577,044, Cl. 568-677.000.
Ocean Ecology Ltd.: *See—*
Koblanski, John N., 4,576,569, Cl. 431-1.000.
O'Connell, Joseph C.: *See—*
Levy, Stephen; O'Connell, Joseph C.; Wright, William H., Jr.; and Weiner, Maurice, 4,577,114, Cl. 250-551.000.
Oertli, Robert, to Solco Basel AG. Process for the preparation of a biologically active extract. 4,576,696, Cl. 204-182.600.
Oestreich, Ulrich, to Siemens Aktiengesellschaft. Heat-recoverable article. 4,576,871, Cl. 428-521.000.
Oetiker, Hans. Coupling for pressure gas lines. 4,576,359, Cl. 251-149.600.
O'Fearna, Patrick J. Portable wind screen. 4,576,364, Cl. 256-24.000.
Ogata, Kojiro: *See—*
Morimoto, Keiji; Satoh, Shuichi; Iwai, Yoshiyuki; Ae, Osamu; Suda, Masao; Tsuchiya, Kiyoshi; Ogata, Kojiro; and Miyanagi, Naoki, 4,576,515, Cl. 405-184.000.
Ogawa, Kazufumi, to Matsushita Electric Industrial Co., Ltd. Solid-state image sensor with a phototropic or fluorescent layer. 4,577,098, Cl. 250-216.000.
Ogawa, Kazuyoshi: *See—*
Takagi, Katsuaki; Kita, Yuzo; Hagiwara, Yoshimune; Ogawa, Kazuyoshi; and Hara, Hideo, 4,577,154, Cl. 328-158.000.
Ogawa, Yoshiyuki; Uno, Hideaki; and Baba, Misao, to Yokogawa Medical Systems, Limited. Table mechanism. 4,576,368, Cl. 269-322.000.
Ogden, Ralph, to Ajay Enterprises Corp. Exercise treadmill. 4,576,352, Cl. 248-188.400.
Oguino, Masanori, to Hitachi, Ltd. Image projection apparatus. 4,576,442, Cl. 350-418.000.
Oguri, Katsuhiko: *See—*
Sato, Kazuhiro; and Oguri, Katsuhiko, 4,577,250, Cl. 360-112.000.
Ogushi, Tetsurou; and Murakami, Masaaki, to Mitsubishi Denki Kabushiki Kaisha. Heat transmission device. 4,576,009, Cl. 62-3.000.
Ohara, Muneyuki: *See—*
Takimoto, Tadashi; Oishibashi, Hirotsugu; Ueyama, Katsuyoshi; Ohara, Muneyuki; Kobayashi, Akio; Aoki, Keiichi; Nakamura, Mitsuo; and Hagiwara, Kenzo, 4,576,324, Cl. 228-44.300.
Ohara, Yoshio: *See—*
Arai, Kazutaka; Ohara, Yoshio; Takakuwa, Yashio; and Iizumi, Toyoko, 4,577,025, Cl. 546-198.000.

Ohba, Shinya; Ando, Haruhisa; Nakai, Masaaki; Ozaki, Toshifumi; Seki, Koichi; Takahashi, Kenji; Akiyama, Toshiyuki; Takemoto, Iwao; Imaide, Takuya; Okuda, Akihide; and Kubo, Masaharu, to Hitachi, Ltd. High sensitivity solid-state imaging device. 4,577,231, Cl. 358-212.000.
Ohigashi, Hiroji; Koga, Keiko; and Nakanishi, Toshiharu, to Toray Industries, Inc. Ultrasonic transducer employing piezoelectric polymeric material. 4,577,132, Cl. 310-800.000.
Ohki, Toshio; Matsumoto, Masaomi; Sakuraya, Takashi; Tokushige, Keinosuke; and Hoshino, Shuji, to Kawasaki Seitetsu Kabushiki Kaisha; and Ishikawajima-Harima Jukogyo Kabushiki Kaisha. Grinding machine for use with rolling mill. 4,575,972, Cl. 51-251.000.
Ohnishi, Yutaka, to Tachikawa Spring Co., Ltd. Fillet-welding equipment for pipe materials. 4,576,323, Cl. 228-29.000.
Ohno, Jiro: *See—*
Suzuki, Ryoichi; Ohno, Jiro; and Gondo, Hisashi, 4,576,639, Cl. 75-123.00E.
Ohshima, Satoshi: *See—*
Wagatsuma, Mitsuyoshi; Hatsuno, Susumu; Yamaguchi, Totaro; and Ohshima, Satoshi, 4,576,938, Cl. 514-206.000.
Ohta, Yukitake; and Fukunaga, Yasuo, to Allied Corporation. Connector for fibre optic cable. 4,576,437, Cl. 350-96.200.
Ohtsuki, Zenju: *See—*
Inami, Mamoru; Tanaka, Yoshiaki; and Ohtsuki, Zenju, 4,577,188, Cl. 340-721.000.
Ohzawa, Yoshiyuki: *See—*
Kuroki, Takashi; Fujita, Tsuyoshi; Toda, Gyozo; Ishihara, Shousaku; and Ohzawa, Yoshiyuki, 4,576,735, Cl. 252-512.000.
Oishi, Hiroshi: *See—*
Okina, Toyohiko; Goto, Hiroshi; Ozawa, Akimasa; Nakamura, Kenji; and Oishi, Hiroshi, 4,576,855, Cl. 428-215.000.
Oishi, Keiji: *See—*
Fukuchi, Masakazu; and Oishi, Keiji, 4,576,466, Cl. 355-3.0DD.
Oishibashi, Hirotsugu: *See—*
Takimoto, Tadashi; Oishibashi, Hirotsugu; Ueyama, Katsuyoshi; Ohara, Muneyuki; Kobayashi, Akio; Aoki, Keiichi; Nakamura, Mitsuo; and Hagiwara, Kenzo, 4,576,324, Cl. 228-44.300.
Oiso, Kazumasa: *See—*
Takeuchi, Takashi; Nishimura, Keizo; Kobayashi, Masaharu; and Oiso, Kazumasa, 4,577,319, Cl. 371-38.000.
Okada, Shinichi, to Canon Denshi Kabushiki Kaisha. Magnetic disc cassette having disc flattening means. 4,577,251, Cl. 360-133.000.
Okamura, Haruki: *See—*
Ishii, Tamaki; Yachigo, Shinichi; Sasaki, Manji; Shionoya, Masahisa; and Okamura, Haruki, 4,576,734, Cl. 252-404.000.
O'Kane, James L.: *See—*
Benton, Kenneth C.; and O'Kane, James L., 4,577,008, Cl. 526-342.000.
Okaniwa, Kenichiro: *See—*
Koyama, Mikio; Okaniwa, Kenichiro; and Saruhashi, Masakuni, 4,576,793, Cl. 422-56.000.
Okauchi, Ken: *See—*
Goto, Sohei; and Okauchi, Ken, 4,576,909, Cl. 430-546.000.
Okaya, Takuji: *See—*
Tanaka, Yoshinari; Aoyama, Akimasa; Moritani, Takeshi; Satoh, Kenji; and Okaya, Takuji, 4,576,988, Cl. 524-503.000.
Oki Electric Industry Co., Ltd.: *See—*
Isobe, Minoru, 4,576,490, Cl. 400-82.000.
Okina, Toyohiko; Goto, Hiroshi; Ozawa, Akimasa; Nakamura, Kenji; and Oishi, Hiroshi, to Inoue MTP Co., Ltd.; and Sanyo Chemical Industries, Ltd. Coating composition and skinned polyurethane foam articles coated therewith. 4,576,855, Cl. 428-215.000.
Okino, Tadashi; and Saito, Syuichiro, to Canon Kabushiki Kaisha. Image sensing system. 4,576,456, Cl. 352-216.000.
Okita, Tsutomu; Tsuji, Nobuo; and Mukaida, Yoshito, to Fuji Photo Film Co., Ltd. Magnetic recording material. 4,576,866, Cl. 428-336.000.
Oko, Uriel M.; and Baldwin, Robert M., to Cities Service Oil & Gas Corp. Beneficiation of shale kerogen and its conversion into shale oil. 4,576,708, Cl. 208-11.0LE.
Okubo, Misae: *See—*
Harada, Tokuya; Higashiura, Tadashi; and Okubo, Misae, 4,576,915, Cl. 435-101.000.
Okuda, Akihide: *See—*
Ohba, Shinya; Ando, Haruhisa; Nakai, Masaaki; Ozaki, Toshifumi; Seki, Koichi; Takahashi, Kenji; Akiyama, Toshiyuki; Takemoto, Iwao; Imaide, Takuya; Okuda, Akihide; and Kubo, Masaharu, 4,577,231, Cl. 358-212.000.
Oldani, Gaetano. Self-propelled pedestrian-controlled tractor for towing helicopters. 4,576,245, Cl. 180-14.100.
Olierook, John C. J.: *See—*
Koken, Karel G. M.; van de Kerkhof, Hubertus F. W.; Olierook, John C. J.; and Beyersbergen van Henegouwen, Cornelis M., 4,576,345, Cl. 242-198.000.
Olin Corporation: *See—*
Butt, Sheldon H., 4,577,056, Cl. 174-52.0FP.
Oliver, John B.: *See—*
Smallhorn, Edward A.; and Oliver, John B., 4,576,204, Cl. 138-44.000.
Oliver, Stephen N.: *See—*
Baskerville, Martin W.; Maltman, William R.; and Oliver, Stephen N., 4,576,766, Cl. 264-1.400.
Oliver, Vincent S.; Tames, Walter; Prochaska, Helmuth H.; and Wieser, Karl-Heinz, to Mobay Chemical Corporation. Color enhanced permanent pigments from precipitated cationic dyes. 4,576,649, Cl. 106-308.00Q.
Olivier, Paul D.; and Chadbourne, Lester E., deceased (by Chadbourne, Mary T., personal representative), to Garrett Corporation, The. Turbo machine blading. 4,576,551, Cl. 416-191.000.
Olsen, Steen H.: *See—*
Neldeberg, Poul; and Olsen, Steen H., 4,576,332, Cl. 237-2.00B.
Olson, Gene R.; and Sorenson, Gregg R. Automatic welding machine. 4,577,089, Cl. 219-124.220.
Olsson, Olle G.; Yaman, Melih; Waldenstrom, Mats G.; and Fischer, Udo K. R., to Santrade Ltd. Weldable wear part with high wear resistance. 4,576,875, Cl. 428-627.000.
Olympia Werke AG: *See—*
Rix, Albert; Martens, Horst; Drogi, Dieter; Frerichs, Klaus-Dieter; and Leschik, Wolfgang, 4,577,200, Cl. 346-140.00R.
Olympus Optical Co., Ltd.: *See—*
Hashiguchi, Toshihiko, 4,576,147, Cl. 128-6.000.
Ikari, Kazuo, 4,576,448, Cl. 350-465.000.
Ishii, Fumiaki, 4,576,144, Cl. 128-4.000.
Kobayashi, Minoru, 4,577,252, Cl. 360-137.000.
Nemoto, Shigeru; Kitajima, Goro; Saitou, Sinichi; and Osada, Hazime, 4,577,245, Cl. 360-93.000.
Nishioka, Kimihiko, 4,576,435, Cl. 350-96.260.
Yabe, Hisao; Sasa, Hiroyuki; Nakajima, Yukio; Ishii, Fumiaki; Takamura, Koji; and Nakamura, Takeaki, 4,576,650, Cl. 134-22.120.
Yoshikawa, Shoji; and Sakamoto, Masaharu, 4,577,320, Cl. 372-29.000.
Omata, Nobuaki, to Nifco Inc. Rotation damper. 4,576,252, Cl. 185-39.000.
Omation Corporation: *See—*
Bingham, George H.; Krupotich, Edward A.; and Rosensweig, Burton J., 4,576,287, Cl. 209-601.000.
Omodei-Sale', Amedeo: *See—*
Favara, Duccio; Omodei-Sale', Amedeo; and Consonni, Pietro, 4,576,746, Cl. 260-239.00A.
Omori, Hiroshi: *See—*
Anahara, Meiji; and Omori, Hiroshi, 4,575,999, Cl. 57-333.000.
Omoto, Takahiro: *See—*
Murata, Shouichi; Makiyama, Muneto; Omoto, Takahiro; and Yasumoto, Taizo, 4,576,840, Cl. 428-16.000.
Omura, Isamu: *See—*
Sano, Yoshiaki; Omura, Isamu; and Hiramatsu, Ryo, 4,577,121, Cl. 307-355.000.
Ono, Yasuichi, to Alps Electric Co., Ltd. Hot-melt adhesive. 4,576,985, Cl. 524-407.000.
Onozato, Takashi: *See—*
Sugawara, Fukuo; Iwane, Yasuhiko; Hori, Fumihisa; and Onozato, Takashi, 4,576,492, Cl. 400-146.000.
Opsahl, Allan W., to Boeing Company, The. Flap torque tube slot seal. 4,576,347, Cl. 244-130.000.
Orain, Michel A., to Uni-Cardan Aktiengesellschaft. Torque transmission assembly. 4,576,503, Cl. 403-259.000.
Orikawa, Michihiro: *See—*
Yoda, Yasutada; Sueyasu, Seisuke; Orikawa, Michihiro; and Futamura, Shoji, 4,576,559, Cl. 425-28.00R.
Ortho Pharmaceutical Corporation: *See—*
Dyck, Manfred F.; and Haine, Walter A., 4,576,156, Cl. 128-132.00R.
Osada, Hazime: *See—*
Nemoto, Shigeru; Kitajima, Goro; Saitou, Sinichi; and Osada, Hazime, 4,577,245, Cl. 360-93.000.
Osborne, Robert E.: *See—*
Wooldridge, James E.; Osborne, Robert E.; and Sexton, Robert W., 4,576,618, Cl. 55-122.000.
Ost, Clarence S. Secure cable television access system with tiering control. 4,577,224, Cl. 358-114.000.
Osterloh, Rolf: *See—*
Schupp, Eberhard; Loch, Werner; Osterloh, Rolf; and Ahlers, Klaas, 4,576,979, Cl. 523-404.000.
Osthoff, Heinrich: *See—*
Bauer, Kurt H.; Ghyczy, Miklos; Etschenberg, Eugen; and Osthoff, Heinrich, 4,576,626, Cl. 71-28.000.
Otis Engineering Corporation: *See—*
Cox, Don C., 4,576,254, Cl. 188-67.000.
Otobe, Yutaka: *See—*
Yamato, Akihiro; and Otobe, Yutaka, 4,576,134, Cl. 123-480.000.
Otsuka, Shigeru, to NEC Corporation. Power saving system for time-division multiple access radiocommunication network. 4,577,315, Cl. 370-95.000.
Otting, Billy J.: *See—*
Thurman, Lamar; Otting, Billy J.; and Otting, David L., 4,576,020, Cl. 68-205.00R.
Otting, David L.: *See—*
Thurman, Lamar; Otting, Billy J.; and Otting, David L., 4,576,020, Cl. 68-205.00R.
Otting International, Inc.: *See—*
Thurman, Lamar; Otting, Billy J.; and Otting, David L., 4,576,020, Cl. 68-205.00R.
Ottle, Walter: *See—*
Worner, Siegfried; Ottle, Walter; and Klein, Herbert, 4,576,799, Cl. 422-176.000.
Otuka, Shinpei; Kawai, Kozo; and Kusunoki, Toshio, to Matsushita Electric Works, Ltd. Massager. 4,576,149, Cl. 128-33.000.
Oura, Toshio, to Nippon Electric Co. Ltd. Sound synthesizer. 4,577,343, Cl. 381-51.000.

Ovchar, Vladimir G.: *See—*
Lipets, Adolf U.; Kuznetsova, Svetlana M.; Galuskin, Vadim B.; Lafa, Jury I.; Sotnikov, Ivan A.; Ovchar, Vladimir G.; and Fedosov, Alexei Z., 4,576,226, Cl. 165-134.100.
Ovren, Christer: *See—*
Adolfsson, Morgan; Brogardh, Iorgny; and Ovren, Christer, 4,577,189, Cl. 340-794.000.
Owens-Corning Fiberglas Corporation: *See—*
Chappelear, Robert N.; and Symborski, Alex P., 4,576,621, Cl. 65-10.200.
Owens, Phillip M., to SCM Corporation. Adhesion promoters for sanitary can coatings. 4,576,695, Cl. 204-181.400.
Oy Tampella AB: *See—*
Issakainen, Onni; and Heikkila, Pertti, 4,576,525, Cl. 405-269.000.
Oyachi, Tomio; Fukuda, Hiroya; and Anami, Masahiko, to Bridgestone Corporation. Radio wave shielding materials and a method of producing the same. 4,576,859, Cl. 428-311.100.
Oyama, Yoshishige: *See—*
Yamauchi, Teruo; Nogi, Toshiharu; and Oyama, Yoshishige, 4,576,136, Cl. 123-590.000.
Ozaki, Toshifumi: *See—*
Ohba, Shinya; Ando, Haruhisa; Nakai, Masaaki; Ozaki, Toshifumi; Seki, Koichi; Takahashi, Kenji; Akiyama, Toshiyuki; Takemoto, Iwao; Imaide, Takuya; Okuda, Akihide; and Kubo, Masaharu, 4,577,231, Cl. 358-212.000.
Ozaki, Yuzo: *See—*
Watanabe, Masato; and Ozaki, Yuzo, 4,576,726, Cl. 252-62.540.
Ozasa, Susumu: *See—*
Saitou, Norio; Ozasa, Susumu; and Matsuzaka, Takashi, 4,577,111, Cl. 250-492.200.
Ozawa, Akimasa: *See—*
Okina, Toyohiko; Goto, Hiroshi; Ozawa, Akimasa; Nakamura, Kenji; and Oishi, Hiroshi, 4,576,855, Cl. 428-215.000.
Ozawa, Naoki; Akiyama, Toshiyuki; Nagahara, Shuusaku; and Takemoto, Iwao, to Hitachi, Ltd. Solid state imaging device. 4,577,230, Cl. 358-212.000.
Pace, Noel M., to Hewlett-Packard Company. Low drift broadband amplifier. 4,577,159, Cl. 330-9.000.
Packham, Charles C., to Gillette Company, The. Dry shavers. 4,575,941, Cl. 30-346.510.
Padgett, Thomas M.: *See—*
Dillon, Larry W.; Jamerson, Robert L.; and Padgett, Thomas M., 4,576,848, Cl. 428-89.000.
Paech, Hartmut: *See—*
Steiner, Helmut; Ebbinghaus, Wilfried; and Paech, Hartmut, 4,576,488, Cl. 384-291.000.
Pai, Damodar M.: *See—*
Badesha, Santokh S.; Pai, Damodar M.; Carmichael, Kathleen M.; and Tarnawskyj, Ihor W., 4,576,634, Cl. 75-0.50A.
Palayiwa, Eileen: *See—*
Hahn, Clive E. W.; Palayiwa, Eileen; Lindsay-Scott, David J.; Sugg, Basil R.; and Tyrrell, Paul J., 4,576,159, Cl. 128-203.140.
Palmer, David N., to Combustion Engineering, Inc. Synthesis of carbon-containing intercalatable layered transition metal chalocogenides. 4,576,697, Cl. 204-192.00N.
Palmer, Harold A.: *See—*
Dowling, Donald J.; and Palmer, Harold A., 4,576,231, Cl. 166-248.000.
Palmer, Joseph G.: *See—*
Iovine, Carmine P.; Palmer, Joseph G.; and Walker, James L., 4,577,031, Cl. 548-319.000.
Panavision, Inc.: *See—*
Fazekas, Carl F., 4,576,455, Cl. 352-78.00R.
Pancook, James J., to Columbus McKinnon Corporation. Lever-operated hoist or puller. 4,576,363, Cl. 254-372.000.
Panhandle Industries, Inc.: *See—*
Hidle, Jerry, 4,575,890, Cl. 15-104.00A.
Pann, Keh: *See—*
Kalkomey, Cynthia T.; Mason, Thomas J.; and Pann, Keh, 4,577,297, Cl. 367-24.000.
Panock, Richard L.: *See—*
Forrest, Stephen R.; and Panock, Richard L., 4,577,209, Cl. 357-30.000.
Panzarella, James S., to Quaker Oats Company, The. Toy bubble-blowing lawn mower. 4,576,582, Cl. 446-16.000.
Parg, Adolf; Hamprecht, Gerhard; Sauter, Hubert; and Wuerzer, Bruno, to BASF Aktiengesellschaft. Substituted 4,5-dimethoxypyridazones, herbicides containing these compounds, and their use for controlling undesirable plant growth. 4,576,630, Cl. 71-92.000.
Pargee, Robert W., Jr., to EECO Incorporated. Matrix control method and apparatus. 4,577,191, Cl. 340-825.790.
Paris, Claude: *See—*
Hardouin, Pierre; Lameyre, Felix; and Paris, Claude, 4,576,429, Cl. 339-95.00D.
Paris, Jean. Foot retention device for ski boot. 4,575,956, Cl. 36-119.000.
Paris, Jean-Marc: *See—*
Bourzat, Jean-Dominique; Cotrel, Claude; Farge, Daniel; Paris, Jean-Marc; and Taurand, Gerard, 4,576,954, Cl. 514-314.000.
Park, David B.; Snyder, James R.; McDonald, Gerard J.; and Hoet, Roland, to Park, David B. Conveyor system with removable wear members. 4,576,277, Cl. 198-803.010.
Park-Ohio Industries, Inc.: *See—*
Balzer, Norbert R., 4,577,081, Cl. 219-10.690.
Parker, John G.; and Stanbro, William D., to Johns Hopkins University, The. Electro-optical device and method for monitoring instanteous singlet oxygen concentration produced during photoradiation using a CW excitation source. 4,576,173, Cl. 128-633.000.
Parker, Robert R.; and DiGianfilippo, Dominic J., to Bell & Howell Company. Interactive training apparatus. 4,576,578, Cl. 434-307.000.
Parks, Gerald R.: *See—*
Dawson, Chris R.; Dondero, John; and Parks, Gerald R., 4,575,875, Cl. 2-422.000.
Parren, Joseph R. Decorative holder. 4,576,839, Cl. 428-13.000.
Parry, Lawrence J.; and Morrison, Bruce J., to Morrison, Bruce J. Pesticidal sheets or containers. 4,576,801, Cl. 427-288.000.
Partin, Dale L., to General Motors Corporation. Lead-ytterbium-tin telluride heterojunction semiconductor laser. 4,577,322, Cl. 372-44.000.
Pascoe, William M., Sr., to Milliken Research Corporation. Method for producing random-appearing patterns on fabric: nodes and line segments. 4,576,611, Cl. 8-482.000.
Passat Maschinenbau GmbH: *See—*
Bernecker, Gerhard, 4,575,949, Cl. 34-14.000.
Passemard, Jean-Robert; and Keledjian, Gaston, to Regie Nationale des Usines Renault. Swivelling handle with three axes of rotation for an industrial robot. 4,576,544, Cl. 414-735.000.
Paszek, Leon E.; and Gebbia, Barbara, to Sterling Drug Inc. Liquid disinfectant laundry detergents. 4,576,729, Cl. 252-106.000.
Patchett, Arthur A.: *See—*
Greenlee, William J.; and Patchett, Arthur A., 4,576,748, Cl. 260-239.00A.
Patel, Kishor J.: *See—*
Janecke, James P.; and Patel, Kishor J., 4,576,200, Cl. 137-624.130.
Paul, Jon D.: *See—*
Levy, Alfred; and Paul, Jon D., 4,577,067, Cl. 179-99.00H.
Pawloski, James C.: *See—*
McCreedy, Kathleen M.; Keskkula, Henno; Pawloski, James C.; and Yonkers, Edward H., 4,576,721, Cl. 210-640.000.
Payne, G. Houson, III: *See—*
Fulbright, Thomas G.; and Payne, G. Houson, III, 4,576,495, Cl. 400-328.000.
Peck, Lawrence J.; and Kreisher, John H., to International Biotechnologies, Inc. Analytical electroelution device. 4,576,702, Cl. 204-299.00R.
Peck, Lawrence J.; Kreisher, John H.; and Walker, Alan L., to International Biotechnologies, Inc. Preparatory electroelution device. 4,576,703, Cl. 204-299.00R.
Pedain, Josef: *See—*
Noll, Klaus; Potter, Terry; Pedain, Josef; and Schwindt, Jurgen, 4,576,989, Cl. 524-591.000.
Pelam, Inc.: *See—*
McCormick, James B., 4,576,796, Cl. 422-99.000.
Pellico, Michael A.: *See—*
Montgomery, Robert E.; and Pellico, Michael A., 4,576,817, Cl. 424-94.000.
Pencept, Inc.: *See—*
Blesser, Barry, 4,577,057, Cl. 178-18.000.
Penlon Limited: *See—*
Hahn, Clive E. W.; Palayiwa, Eileen; Lindsay-Scott, David J.; Sugg, Basil R.; and Tyrrell, Paul J., 4,576,159, Cl. 128-203.140.
Pentz, William J.: *See—*
Huffman, George W.; Pentz, William J.; Vietti, David E.; and Wuskell, Joseph P., 4,577,035, Cl. 549-472.000.
Percival, George E. Modular display unit for articles of merchandise. 4,576,292, Cl. 211-49.100.
Perkins, Earl, to Touchstone Corporation. Method and composition for cleaning and protecting metal. 4,576,730, Cl. 252-174.140.
Perna, Giorgino, to Newellpharma s.r.l. Process for manufacturing investment molds. 4,576,216, Cl. 164-21.000.
Perron, Robert: *See—*
Gauthier-Lafaye, Jean; and Perron, Robert, 4,576,809, Cl. 423-418.000.
Perrone, Ettore: *See—*
Alpegiani, Marco; Bedeschi, Angelo; Foglio, Maurizio; Franceschi, Giovanni; and Perrone, Ettore, 4,577,016, Cl. 544-182.000.
Perryman, Raymond A. G.: *See—*
Needham, James C.; Rivett, Robert M.; and Perryman, Raymond A. G., 4,577,086, Cl. 219-117.100.
Personal Products Company: *See—*
Tritsch, Ludwig, 4,576,598, Cl. 604-390.000.
Persson, Thomas B. Process for sealing the end of insulated pipes which have a number of monitoring wires, and means for carrying out the process. 4,576,661, Cl. 156-48.000.
Petch, David B.: *See—*
Koerner, Richard J.; Dumas, Christopher C.; Filia, Philip J.; Lawrence, Ronald L.; and Petch, David B., 4,576,148, Cl. 128-26.000.
Peter, Heinz: *See—*
Fryberg, Mario; Schaller, Heinrich; Steiger, Rolf; and Peter, Heinz, 4,576,885, Cl. 430-390.000.
Peters, Hubertus: *See—*
Bechem, Werner; Peters, Hubertus; Solms, Jurgen; and Wolfhard, Dietrich, 4,576,684, Cl. 204-28.000.
Peterson, Joe W., to Motorola, Inc. Clocked gain stage having differential inputs and outputs. 4,577,162, Cl. 330-253.000.
Peterson, Ralph W.: *See—*
Ho, Gary S.; and Peterson, Ralph W., 4,577,274, Cl. 364-200.000.
Petrarch Systems Inc.: *See—*
Arkles, Barry C.; and Hamon, Burrell N., 4,577,039, Cl. 556-409.000.
Petre, Tommy: *See—*
Katzeff, Kurt; and Petre, Tommy, 4,577,061, Cl. 179-2.0AM.

Petrini, Roland, to Salomon S.A. Rear entry ski boot. 4,575,957, Cl. 36-121.000.

Pettinari, Maurizio: *See—*
Bernardi, Dario; and Pettinari, Maurizio, 4,576,564, Cl. 425-337.000.

Pevzner, Boris, to Union Carbide Corporation. Cryogenic liquid pump. 4,576,557, Cl. 417-539.000.

Pfaff Industriemaschinen GmbH: *See—*
Albrecht, Ernst; and Busch, Edgar, 4,576,103, Cl. 112-73.000.

Pfizer Inc.: *See—*
Eggler, James F.; Johnson, Michael R.; and Melvin, Lawrence S., Jr., 4,576,964, Cl. 514-546.000.

Pham, Van Doan, to Alsthom-Atlantique. High voltage gas-blast circuit breaker. 4,577,074, Cl. 200-148.00A.

Pharmometrics Corporation: *See—*
Westerman, S. Thomas, 4,576,184, Cl. 128-733.000.

Philamon Incorporated: *See—*
Grib, Boris F., 4,577,164, Cl. 331-109.000.

Philipp, Clemens: *See—*
Artz, Gerd; Beckmann, Gerhard; Figge, Dieter; and Philipp, Clemens, 4,576,218, Cl. 164-431.000.

Phillips Petroleum Company: *See—*
Burgess, Kenneth W.; Bryant, William R.; and Erickson, Wayne K., 4,576,852, Cl. 428-171.000.
Miles, John M., 4,575,950, Cl. 34-27.000.
Schabron, John F., 4,576,917, Cl. 436-85.000.

Phillips, Victor R.: *See—*
Cowlam, Stephen K.; Moss, Steven Y.; Stockwell, Claude L.; and Phillips, Victor R., 4,576,765, Cl. 210-801.000.

Phone-Poulenc Sante: *See—*
Bourzat, Jean-Dominique; Cotrel, Claude; Farge, Daniel; Paris, Jean-Marc; and Taurand, Gerard, 4,576,954, Cl. 514-314.000.

Piazza, Pietro: *See—*
Amici, Francis R.; Berger, Hans S.; Farrington, Richard I.; and Piazza, Pietro, 4,576,586, Cl. 446-315.000.

Pilgram, Kurt H.; and Skiles, Richard D., to Shell Oil Company. Miticidal 2-(2-alkyl-2,3-dihydrobenzofuran-7-yl)-N-alkoxy-N-alkyldiazenecarboxamides. 4,577,011, Cl. 534-787.000.

Pinnow, Curtis C.; and Gill, Brian, to Carter-Hoffman Corporation. Food service cart door structure. 4,576,425, Cl. 312-324.000.

Pinson, George T., to Boeing Company, The. System for providing electrical energy to a missile and the like. 4,577,116, Cl. 290-43.000.

Pioneer Electronic Corporation: *See—*
Kuroda, Kazuo, 4,577,158, Cl. 329-104.000.
Matsuki, Seiichiro, 4,577,246, Cl. 360-96.500.

Piper, James R. Heating system. 4,576,333, Cl. 237-49.000.

Pithouse, Kenneth B.: *See—*
Harris, Richard J.; Pithouse, Kenneth B.; and Van Dijck, Frans S. J., 4,576,666, Cl. 156-85.000.

Pitney Bowes Inc.: *See—*
Soderberg, John H.; Jones, Howell A.; Eckert, Alton B.; and Duwel, Edward E., 4,577,283, Cl. 364-464.000.

Pitzenberger, Steven M., to Merck & Co., Inc. Tryptophan derivative. 4,576,750, Cl. 260-239.30D.

Piwinski, John J.: *See—*
Suh, John T.; Piwinski, John J.; Jones, Howard; and Neiss, Edward S., 4,576,941, Cl. 514-222.000.

PKG Trading Company, Inc.: *See—*
Griffin, Donnie R., 4,575,964, Cl. 42-94.000.

Plard, Christian; and Soulie, Jacques, to Electricite de France; and Spie-Batignolles. Device for electric heating of a gas mixture by direct Joule effect. 4,577,093, Cl. 219-376.000.

Plessey Company PLC, The: *See—*
Baskerville, Martin W.; Maltman, William R.; and Oliver, Stephen N., 4,576,766, Cl. 264-1.400.

Plessey Overseas Limited: *See—*
Eaton, Ralph M.; and Geen, Michael W., 4,576,224, Cl. 165-80.200.

Plessey South Africa Limited: *See—*
Schreuder, Jan, 4,577,150, Cl. 324-83.00R.

Plicchi, Gianni; and Canducci, Giancarlo. Electronic circuit for monitoring respiratory parameter for controlling operation of implantable medical device. 4,576,183, Cl. 128-723.000.

Plitt, Uwe: *See—*
Mathewes, Wolfgang; Fitzner, Klaus; and Plitt, Uwe, 4,576,088, Cl. 98-119.000.

Plotkin, George M.: *See—*
Lettvin, Jerome Y.; and Plotkin, George M., 4,577,160, Cl. 330-149.000.

Plouck, Richard E.: *See—*
Baltz, James P.; and Plouck, Richard E., 4,576,270, Cl. 192-150.000.

Plumet, Lucien: *See—*
Hageman, Jacques; Plumet, Lucien; and Robberechts, Marcel, 4,576,609, Cl. 8-103.000.

Plumly, George W., to Plumly Lighting Corporation. Lighting apparatus and system utilizing miniature incandescent lamps. 4,577,264, Cl. 362-252.000.

Plumly Lighting Corporation: *See—*
Plumly, George W., 4,577,264, Cl. 362-252.000.

Pohoreski, Anton P., to Continental Manufacturing and Sales Inc. System for the clarification of sewage and other liquid-containing wastes. 4,576,714, Cl. 210-195.100.

Pol, Vincent; and Dumas, Jean-Claude, to Clinique de la Residence du Parc. Implantable blood pump. 4,576,606, Cl. 623-3.000.

Polansky, Theodore J., to SmithKline Beckman Corporation. 7-D-Mandelamido-3(1-sulfomethyltetrazol-5-yl)thiomethyl-3-cephem-4-carboxylic acid monosodium salt. 4,576,937, Cl. 514-204.000.

Polychrome Corporation: *See—*
Golda, Eugene; and Wilkes, Alan, 4,576,892, Cl. 430-157.000.

Pomper, Michael: *See—*
Frosien, Jurgen; and Pomper, Michael, 4,577,147, Cl. 324-71.300.

Popa, Frank D.: *See—*
Alsop, Brian H.; Popa, Frank D.; and Edwards, William E., 4,576,787, Cl. 376-447.000.

Pope, Douglas R. Receptacle support. 4,576,388, Cl. 280-33.99F.

Popendiker, Kurt: *See—*
Hinze, Heinz-Joachim; Soder, Alfons; and Popendiker, Kurt, 4,576,947, Cl. 514-263.000.

Porta Systems Corp.: *See—*
DeLuca, Paul V.; and Hung, Peter, 4,576,428, Cl. 339-94.00R.

Porter, Michael J.: *See—*
Porter, William F.; Porter, Michael J.; and Johnson, Dwight E., 4,576,620, Cl. 65-9.000.

Porter, Robert B., Jr.: *See—*
Molnar, John; and Porter, Robert B., Jr., 4,576,414, Cl. 297-476.000.

Porter, William F.; Porter, Michael J.; and Johnson, Dwight E., to United States Gypsum Company. Apparatus for the production of mineral fibers having supplemental collection chamber exhaust. 4,576,620, Cl. 65-9.000.

Porter, William H. Building structure. 4,575,974, Cl. 52-86.000.

Porter, William H. Roof panel construction. 4,575,981, Cl. 52-309.900.

Position Orientation Systems, Ltd.: *See—*
Hansen, Per K., 4,576,481, Cl. 356-375.000.

Post, Steven W., to FMC Corporation. Arrangement for operating dual fluid systems. 4,576,337, Cl. 239-127.000.

Poth, Ulrich; and Hille, Hans-Dieter, to BASF Farben & Fasern Aktiengesellschaft. Coating composition process for the preparation of coatings and coated substrate. 4,576,868, Cl. 428-423.100.

Potter, Terry: *See—*
Noll, Klaus; Potter, Terry; Pedain, Josef; and Schwindt, Jurgen, 4,576,989, Cl. 524-591.000.

Poulin, Benoit L.: *See—*
Levine, Herbert R.; Gerrato, Stephen G.; and Poulin, Benoit L., 4,576,207, Cl. 138-177.000.

Powell, Larry D.; and Tidwell, Charles J., Jr., to Mohasco Corporation. Convertible sofabed with improved user comfort. 4,575,883, Cl. 5-13.000.

Praderio, Joseph J.: *See—*
Kraus, Robert G.; Kunica, Enora S.; and Praderio, Joseph J., 4,576,589, Cl. 604-8.000.

Prasad, Arun, to Jeneric Industries, Inc. Grain-refined gold-free dental alloys for porcelain-fused-to-metal restorations. 4,576,789, Cl. 420-464.000.

Press, Jeffery B.: *See—*
Marsico, Joseph W., Jr.; Wright, William B., Jr.; and Press, Jeffery B., 4,576,957, Cl. 514-383.000.

Preusker, Werner, to Niveau AG. Non-skid device, particularly for pneumatically tired vehicles wheels used on ice and snow. 4,576,214, Cl. 152-213.00A.

Pritchard, Dalton H., to RCA Corporation. Progressive scan video processor having common memories for video interpolation and speed-up. 4,577,225, Cl. 358-140.000.

Prival, Harri G.: *See—*
Hopper, Michael G.; and Prival, Harri G., 4,577,273, Cl. 364-200.000.

Prochaska, Helmuth H.: *See—*
Oliver, Vincent S.; Tames, Walter; Prochaska, Helmuth H.; and Wieser, Karl-Heinz, 4,576,649, Cl. 106-308.00Q.

Procter & Gamble Company, The: *See—*
Matthews, Randall S., 4,576,962, Cl. 514-530.000.
Stoddart, Barry, 4,576,728, Cl. 252-102.000.

Product Investment Incorporated: *See—*
Henning, John C., 4,576,304, Cl. 220-269.000.

Prokop, George S.: *See—*
Hueckel, Gary R.; and Prokop, George S., 4,577,212, Cl. 357-68.000.

Promocab, S.A.: *See—*
Fontaine, Guy; and Achard, Serge, 4,577,183, Cl. 340-541.000.

Prosenbauer, Otto, to Inject Star Pokelmaschinen GmbH. Apparatus for severing the meat from bones. 4,575,899, Cl. 17-1.00G.

Proto-Med. Inc.: *See—*
Mottram, William R.; Fisher, Gene A.; and Feierabend, Louis, 4,576,616, Cl. 55-68.000.

Proud, Todd A.; Lin, Tom F.; Mitchell, Wayne J.; and Kasper, James D., to Terumo Medical Corporation. Collection device for capillary blood. 4,576,185, Cl. 128-760.000.

Pryor, Timothy R., to Diffracto Ltd. Electro-optical inspection. 4,576,482, Cl. 356-376.000.

Przyklek, Rosemary: *See—*
Gunther, Wolfgang H. H.; Leone, Ronald E.; and Przyklek, Rosemary, 4,576,905, Cl. 430-401.000.

Puritch, George S.; and Kondo, Edward S., to Safer Agro-Chem Ltd. Alkyl pyridinium synergists for benzimidazole pesticides. 4,576,950, Cl. 514-358.000.

Putman, Richard E., to Westinghouse Electric Corp. Control system for fluid flow distribution. 4,577,280, Cl. 364-494.000.

Pyle, Stoddard H., to Speed Cut, Inc. Multiple intersecting planes cutting device. 4,576,076, Cl. 83-471.300.

Quaglino, Marino: *See—*
Bottazzini, Nicola; and Quaglino, Marino, 4,577,010, Cl. 528-487.000.

Quaker Oats Company, The: *See—*
Panzarella, James S., 4,576,582, Cl. 446-16.000.

Quinlan, Robert L., Jr., to Gerber Products Company. Height adjustment apparatus. 4,576,392, Cl. 280-87.02W.

R. F. Monolithics, Inc.: *See—*
Hartmann, Clinton S., 4,577,168, Cl. 333-170.000.

R. J. Reynolds Tobacco Company: *See—*
Deal, Philip A., 4,576,187, Cl. 131-336.000.

Rachwal, Anthony J.: *See—*
Hurley, Brian J. E.; and Rachwal, Anthony J., 4,576,719, Cl. 210-620.000.

Rader, Helmut. Drinker shroud. 4,576,119, Cl. 119-81.000.

Radiometer A/S: *See—*
Aas, Flemming; and Jeppesen, Borge, 4,576,595, Cl. 604-256.000.

Radke, Dietrich: *See—*
Doerr, Hermann; Hoster, Thomas; Neuschuetz, Dieter; Radke, Dietrich; Janssen, Wilhelm; and Ulrich, Klaus, 4,576,638, Cl. 75-80.000.

Raghuprasad, Puthalath K. Oral inhalation apparatus. 4,576,157, Cl. 128-200.230.

Ragsdale, William A., to Intermetrics, Inc. Area navigational system. 4,577,194, Cl. 343-401.000.

Raher, Loic: *See—*
Gallas, Gerard; Raher, Loic; and Renzo, Bernard, 4,576,366, Cl. 267-8.00R.

Raible, Thomas: *See—*
Wittwer, Fritz; and Raible, Thomas, 4,576,284, Cl. 206-530.000.

Raines, Charles D.: *See—*
Schilling, Hugh K.; Dayen, Leonid; and Raines, Charles D., 4,576,266, Cl. 192-70.120.

Rajbenbach, Henri: *See—*
Huignard, Jean P.; Rajbenbach, Henri; Loiseaux, Brigitte; and Herriau, Jean P., 4,576,434, Cl. 350-3.640.

Ralph McKay Limited: *See—*
Young, Hartley F., 4,576,334, Cl. 238-310.000.

Ramaker, Hermann: *See—*
Erdmann, Hermann; and Ramaker, Hermann, 4,576,105, Cl. 114-333.000.

Ramakers, Johannes A. H. M.: *See—*
Hupperetz, Willem J. H.; and Ramakers, Johannes A. H. M., 4,577,017, Cl. 544-193.000.

Randall Corporation, The: *See—*
Netzer, David; and Huebel, Robert R., 4,576,615, Cl. 55-43.000.

Randall Equipment Company: *See—*
Duda, Henry J., 4,576,192, Cl. 135-89.000.

Ranz, Erwin: *See—*
Kampfer, Helmut; Langen, Hans; and Ranz, Erwin, 4,576,907, Cl. 430-507.000.

Rasmussen, George P.; and Grimmett, Earl S., to Waste-Tech Services, Inc. Removal of tramp material from fluid bed vessels. 4,576,102, Cl. 110-346.000.

Rasmussen, Poul R.: *See—*
Lorck, Henning O. B.; and Rasmussen, Poul R., 4,576,961, Cl. 514-462.000.

Rassieur, Charles L., to Central Mine Equipment. Assembly structure for a soil sampler. 4,576,498, Cl. 403-24.000.

Rau, Jim L.; and LaHue, Ronald L., to TRW Inc. Hybrid load-sense vehicle hydrostatic steering system. 4,576,003, Cl. 60-384.000.

Ravel, Kanak K. R.; Vaidya, Bhupendra R.; and Nerizon, Nelly A., to Block Drug Co., Inc. Whipped gel composition. 4,576,645, Cl. 106-125.000.

Ray, Ranjan, to Allied Corporation. Method of making complex boride particle containing alloys. 4,576,653, Cl. 148-3.000.

Ray, Sudipta K.: *See—*
Lewis, Robert K.; and Ray, Sudipta K., 4,576,659, Cl. 148-127.000.

Raychem Limited: *See—*
Harris, Richard J.; Pithouse, Kenneth B.; and Van Dijck, Frans S. J., 4,576,666, Cl. 156-85.000.
Tamplin, Paul; and Heaven, Malcolm D., 4,576,993, Cl. 525-240.000.

Rayment, Arthur G., to Lamb-Weston, Inc. Food product defect sensor and trimmer apparatus. 4,576,071, Cl. 83-71.000.

RCA Corporation: *See—*
Avins, Jack, 4,577,226, Cl. 358-143.000.
Easter, Finis C.; and Aires, Ramon H., 4,577,268, Cl. 363-21.000.
Gale, Michael T.; Knop, Karl H.; and Ebnother, Martin, 4,576,439, Cl. 350-162.230.
Gurumurthy, Kadagattor V., 4,577,227, Cl. 358-147.000.
Harlan, Wayne E., 4,577,234, Cl. 358-243.000.
Hawrylo, Frank Z., 4,576,326, Cl. 228-171.000.
Kaganowicz, Grzegorz; Robinson, John W.; and Thomas, John H., III, 4,576,829, Cl. 427-39.000.
Kaiser, Donald B., 4,577,137, Cl. 313-533.000.
Pritchard, Dalton H., 4,577,225, Cl. 358-140.000.
Reed, Frank R., 4,577,130, Cl. 310-194.000.
Rentsch, Edward M.; and Freedman, Larry A., 4,577,115, Cl. 250-578.000.
Schiff, Leonard N., 4,577,316, Cl. 370-104.000.
Stewart, Roger G.; and Ipri, Alfred C., 4,577,215, Cl. 357-23.500.

Reap, James J., to Du Pont de Nemours, E. I., and Company. Herbicidal sulfonamides. 4,576,633, Cl. 71-93.000.

Redick, Hugh E., to Du Pont de Nemours, E. I., and Company. Carbon fiber production. 4,576,810, Cl. 423-447.100.

Redick, Hugh E.: *See—*
Riggs, Dennis M.; and Redick, Hugh E., 4,576,811, Cl. 423-447.200.

Reed, Frank R., to RCA Corporation. Pancake motor with insitu wound bobbinless stator coils. 4,577,130, Cl. 310-194.000.

Reed, Joseph, to International Telephone and Telegraph Corporation. Zero IF receiver AM/FM/PM demodulator using sampling techniques. 4,577,157, Cl. 329-50.000.

Reed, Mark A.; and Bate, Robert T., to Texas Instruments Incorporated. Process for fabricating quantum-well devices utilizing etch and refill techniques. 4,575,924, Cl. 29-576.00E.

Regie Nationale des Usines Renault: *See—*
Passemard, Jean-Robert; and Keledjian, Gaston, 4,576,544, Cl. 414-735.000.
Renevot, Gerard, 4,576,617, Cl. 55-96.000.

Regina, Ruth. Partial wig assembly with extension portion. 4,576,189, Cl. 132-53.000.

Region Wallone: *See—*
Boland, Michel A. G., 4,576,158, Cl. 128-92.00R.

Rehm, Josef: *See—*
Heigl, Franz; and Rehm, Josef, 4,577,171, Cl. 334-1.000.

Reichwein, Roy H.: *See—*
Buckley, Bruce S.; Buckley, Edward M.; and Reichwein, Roy H., 4,576,286, Cl. 209-558.000.

Reiff, Helmut: *See—*
Scholl, Hans-Joachim; Reiff, Helmut; and Sachs, Hanns I., 4,576,771, Cl. 264-109.000.

Reilly, Laurence W., Jr., to Minnesota Mining and Manufacturing Company. Water soluble Michler's ketone analogs in combined photoinitiator composition and polymerizable composition. 4,576,975, Cl. 522-13.000.

Reinhardt, Wilhelm; and Lipp, Helmut, to EBM Elektrobau Mulfingen GmbH & Co. Commutatorless D.C. motor with three-strand full-pitched stator winding. 4,577,139, Cl. 318-254.000.

Reinhold, Arnold G.: *See—*
Warren, Theodore L.; Whelan, Kenneth R.; and Reinhold, Arnold G., 4,577,344, Cl. 382-1.000.

Reischl, Artur; and Mack, Kurt, to Bayer Aktiengesellschaft. Use of water-absorbing, highly-filled polyurethane (urea) compositions for biological treatment of waste-containing liquids. 4,576,718, Cl. 210-616.000.

Reisman, Arnold, to Microelectronics Center of North Carolina. Method and apparatus for exposing photoresist by using an electron beam and controlling its voltage and charge. 4,576,884, Cl. 430-30.000.

Remsburger, Louis J.: *See—*
Barr, Millard G.; Barrett, William H.; Braidt, Joseph W.; Driscoll, John F.; Gregory, Joseph A.; Lucente, Samuel A.; and Remsburger, Louis J., 4,577,187, Cl. 340-700.000.

Rendek, Robert B.: *See—*
Tracy, Catherine O.; Binkerd, Evan F.; Rendek, Robert B.; and Wrobel, Raymond J., 4,576,825, Cl. 426-266.000.

Renevot, Gerard, to Regie Nationale des Usines Renault. Apparatus comprising the combination of filter apparatus and regeneration apparatus and process for regenerating the filter apparatus using the regeneration apparatus. 4,576,617, Cl. 55-96.000.

Rentsch, Edward M.; and Freedman, Larry A., to RCA Corporation. Apparatus for sensing transient phenomena in radiant energy images. 4,577,115, Cl. 250-578.000.

Renzo, Bernard: *See—*
Gallas, Gerard; Raher, Loic; and Renzo, Bernard, 4,576,366, Cl. 267-8.00R.

Reppert, Rudi; Zaunberger, Franz X.; and Kugler, Artur, to Zahnradfabrik Renk, A.G. High efficiency gear transmission. 4,576,062, Cl. 74-740.000.

Republic Steel Corporation: *See—*
Adams, James; and Belin, Felix, 4,576,570, Cl. 431-12.000.

Reschly, David C., to Detroit Stoker Company. Stoker. 4,576,101, Cl. 110-182.500.

Research Foundation of State University of New York, The: *See—*
Ehrlich, Paul; Anderson, Wayne A.; Kang, En T.; and Bhatt, Ansuya P., 4,576,887, Cl. 430-71.000.

Resener, Kenneth L., to Resener Machine & Tool Co., Inc. Quick disconnect arbor and die head for tube stock sizing apparatus. 4,576,031, Cl. 72-355.000.

Resener Machine & Tool Co., Inc.: *See—*
Resener, Kenneth L., 4,576,031, Cl. 72-355.000.

Retallick, William B., to Camet, Inc. Catalytic converter for an automobile. 4,576,800, Cl. 422-180.000.

Rey, Maria A.: *See—*
Takahashi, Yoshihiro; and Rey, Maria A., 4,577,338, Cl. 378-048.000.

Reynolds Metals Company: *See—*
Jarrett, Steve A.; and Krzyston, John F., 4,576,289, Cl. 209-631.000.

Rhone-Poulenc Specialities Chimiques: *See—*
Gauthier-Lafaye, Jean; and Perron, Robert, 4,576,809, Cl. 423-418.000.

Richard, Gary R.: *See—*
Conover, Gilbert, Jr.; and Richard, Gary R., 4,576,487, Cl. 374-183.000.

Richardson, Barry A.: *See—*
Dixon, Derek; and Richardson, Barry A., 4,576,038, Cl. 73-40.700.

Richeson, W. George. Knife with locking shroud. 4,576,164, Cl. 128-305.000.

Ricoh Company, Ltd.: *See—*
Kawamura, Atsushi, 4,576,444, Cl. 350-428.000.
Saito, Kinzi, 4,576,468, Cl. 355-15.000.
Sakamoto, Koji; and Kobayashi, Kazuo, 4,576,463, Cl. 355-3.0DD.

Ricoh Electronics, Inc.: *See—*
Shibata, Tomoo; and Jurdi, Wissam J., 4,577,204, Cl. 346-200.000.
Shibata, Tomoo; and Jurdi, Wissam J., 4,577,205, Cl. 346-204.000.

Rieck, James N., to Mobay Chemical Corporation. Conversion of incompatible mixed polyols to polyol products with increased resistance to phase separation. 4,576,731, Cl. 252-182.000.
Riederauer, Szilard: *See—*
Tamas, Istvan; Riederauer, Szilard; and Kovacs, Janos, 4,576,637, Cl. 75-10.00R.
Rieter Machine Works Limited: *See—*
Schwengeler, Peter, 4,576,342, Cl. 242-36.000.
Riggs, Dennis M.; and Redick, Hugh E., to Du Pont de Nemours, E. I., and Company. Process for adjusting the fiber structure of mesophase pitch fibers. 4,576,811, Cl. 423-447.200.
Rigler, Gunter; and Vollmer, Friedrich, to Voest-Alpine Aktiengesellschaft; and Friedrich Vollmer Fienmessgeratebau GmbH. Measuring arrangement, and a method, for measuring the gap formed between a first and a second roll or roller. 4,575,945, Cl. 33-182.000.
Riken Corporation: *See—*
Sugiuchi, Toshiyasu; Aoyama, Susumu; and Yoshida, Toshio, 4,575,913, Cl. 29-432.000.
Riley, Douglas H.: *See—*
Bimonte, Brian R.; Gauldin, Mark A.; and Riley, Douglas H., 4,577,066, Cl. 179-18.00B.
Rimma, John: *See—*
Crockatt, William B.; and Rimma, John, 4,576,987, Cl. 524-487.000.
Rinaldi, Michael. Turntable exercise machine. 4,576,372, Cl. 272-146.000.
Rines, Robert H.: *See—*
Lettvin, Jerome Y.; and Plotkin, George M., 4,577,160, Cl. 330-149.000.
Ritz, Josef: *See—*
Grosskinsky, Otto-Alfred; Frommer, Elmar; Ritz, Josef; Thomas, Erwin; and Weiss, Franz-Josef, 4,576,804, Cl. 423-265.000.
Rivett, Robert M.: *See—*
Needham, James C.; Rivett, Robert M.; and Perryman, Raymond A. G., 4,577,086, Cl. 219-117.100.
Rix, Albert; Martens, Horst; Drogi, Dieter; Frerichs, Klaus-Dieter; and Leschik, Wolfgang, to Olympia Werke AG. Cassette for the ink jet printer of an office machine. 4,577,200, Cl. 346-140.00R.
Rix Industries: *See—*
Slack, Don S., 4,576,381, Cl. 277-1.000.
Robberechts, Marcel: *See—*
Hageman, Jacques; Plumet, Lucien; and Robberechts, Marcel, 4,576,609, Cl. 8-103.000.
Robert Bosch GmbH: *See—*
Eschrich, Gerhard; Juhasz, Josef; and Schwab, Manfred, 4,577,143, Cl. 318-701.000.
Hafele, Walter; and Knorreck, Peter, 4,576,130, Cl. 123-372.000.
Leiber, Heinz, 4,576,419, Cl. 303-100.000.
Muller, Egbert; and Stumpe, Werner, 4,576,416, Cl. 303-15.000.
Roberts, Alan T.: *See—*
Mundt, Arnold L.; Beair, Charles E.; Naumann, Leo J.; Roberts, Alan T.; and LaPelle, Ronald J., 4,576,303, Cl. 220-89.00A.
Roberts, Donald K. Flotation trampoline. 4,576,375, Cl. 272-65.000.
Robertshaw Controls Company: *See—*
Lucas, William L.; Asbill, Clarence M., III; Frank, Gerald L.; and Miller, David M., 4,576,194, Cl. 137-84.000.
Robeson, Lloyd M.: *See—*
Hartsing, Tyler F.; Sauers, Marvin E.; and Robeson, Lloyd M., 4,576,842, Cl. 428-35.000.
Robinson, Frank, to Imperial Chemical Industries Limited. Process for the extraction of metal values and novel metal extractants. 4,576,815, Cl. 423-658.500.
Robinson, John W.: *See—*
Kaganowicz, Grzegorz; Robinson, John W.; and Thomas, John H., III, 4,576,829, Cl. 427-39.000.
Robinson, Joseph G.; and Foster, Pierce W., to Coal Industry (Patents) Limited. Polyimide product from phenanthrene. 4,577,009, Cl. 528-228.000.
Robinson, Michael; and Wilson, Harry B., to SCM Chemicals Limited. Process for beneficiating oxidic ores. 4,576,636, Cl. 75-1.00R.
Rock, Erich; and Hollenstein, Helmut, to Julius Blum Gesellschaft m.b.H. Joining device. 4,576,506, Cl. 403-407.100.
Rogak, Michael; Golan, Leonard W.; Witbeck, Charles; and Golan, Stephen L., to Hawk Industries, Inc. Unitary bolt face and firing pin device. 4,575,962, Cl. 42-1.00Q.
Rogers Corporation: *See—*
Jodoin, Raymond C., 4,577,258, Cl. 361-321.000.
Rogers, Elmer H., Jr: *See—*
Fields, James R.; Rogers, Elmer H., Jr; and King, Larry K., 4,576,690, Cl. 204-67.000.
Rogers, Gwyn D.: *See—*
O'Brien, Richard W.; and Rogers, Gwyn D., 4,575,909, Cl. 26-18.600.
Rogers, Phil H.: *See—*
Ballew, James D.; and Rogers, Phil H., 4,577,272, Cl. 364-200.000.
Rogier, Leonce, to SO.M.A. Europe Transmissions Societe Nouvelle Mecanique et Automobile. Wheel hub with built-in brake. 4,576,256, Cl. 188-71.600.
Rogler, Wolfgang: *See—*
Markert, Helmut; Rogler, Wolfgang; Bendel, Wolfgang; and Alber, Friedrich, 4,576,768, Cl. 264-27.000.
Rohm GmbH: *See—*
Baumgartner, Ehrenfried; Besecke, Siegmund; and Gaenzler, Wolfgang, 4,576,971, Cl. 521-108.000.
Liebler, Ralf; Besecke, Siegmund; and Munzer, Manfred, 4,576,870, Cl. 428-515.000.
Rohm GmbH Chemische Fabrik: *See—*
Krautter, Jurgen; and Dzialas, Willi, 4,576,864, Cl. 428-328.000.
Rohto Pharmaceutical Co., Ltd.: *See—*
Yoshida, Akiyoshi; Kametaka, Shigeru; and Hayashi, Shin'ichi, 4,576,914, Cl. 435-42.000.
Rolls-Royce Limited: *See—*
Mavrocostas, George, 4,576,002, Cl. 60-262.000.
Smith, Stanley, 4,576,001, Cl. 60-39.080.
Roper, Ralph E., to Wallace Expanding Machines, Inc. Stretch form die. 4,576,030, Cl. 72-296.000.
Rorer, Morris P., to Du Pont de Nemours, E. I., and Company. Benzofuran sulfamates. 4,576,632, Cl. 71-93.000.
Rosbotham, Ian D.: *See—*
Carroll, William G.; and Rosbotham, Ian D., 4,576,974, Cl. 521-173.000.
Roseland, Hermann; and Bark, Manfred, to Kloeckner Ferromatik Desma GmbH. Apparatus for lasting shoe uppers or shoes onto shoe lasts. 4,575,889, Cl. 12-15.000.
Rosen, Murray; and Lane, Thomas, to Marine Shield Corp. Anti-fouling coating composition, process for applying same and coating thereby obtained. 4,576,838, Cl. 427-385.500.
Rosensweig, Burton J.: *See—*
Bingham, George H.; Krupotich, Edward A.; and Rosensweig, Burton J., 4,576,287, Cl. 209-601.000.
Ross, Barry C.; and Johnson, Graham, to Hoechst AG. Penem derivatives. 4,576,939, Cl. 514-210.000.
Ross, Gerald W., to Ross, Norman R., a part interest. Device for cleaning electrical connectors. 4,575,892, Cl. 15-106.000.
Ross, Norman R.: *See—*
Ross, Gerald W., 4,575,892, Cl. 15-106.000.
Ross, Richard J.; and Speller, David J., to Baker Oil Tools, Inc. Unloading injection control valve. 4,576,196, Cl. 137-508.000.
Rothaut, Josef; Hausselt, Jurgen; Steinke, Rudi; and Klaus, Angela, to Degussa Aktiengesellschaft. Low gold dental alloys. 4,576,790, Cl. 420-464.000.
Rotta Research Laboratorium S.p.A.: *See—*
Rovati, Luigi; Makovec, Francesco; Senin, Paolo; and Casula, Pierluigi, 4,576,951, Cl. 514-282.000.
Roux, Michel: *See—*
Moufflet, Luc; Roux, Michel; and Valadier, Jean, 4,576,571, Cl. 432-9.000.
Rovati, Luigi; Makovec, Francesco; Senin, Paolo; and Casula, Pierluigi, to Rotta Research Laboratorium S.p.A. Proglumide, pharmaceutical preparations and compositions including it for use in human pain relief. 4,576,951, Cl. 514-282.000.
Rowe, Raymond G., to General Electric Company. Oxysulfide dispersion strengthened titanium compositions. 4,576,660, Cl. 148-407.000.
Rozek, Roy J., to Kohler Co. Perpendicular toilet trip lever assembly. 4,575,881, Cl. 4-405.000.
Rozenwaig, Boris: *See—*
Duquesne , Jean F.; and Rozenwaig, Boris, 4,577,311, Cl. 370-60.000.
Rozier, Henry. Broom with fixing device for holding bundles of plastic branches. 4,575,893, Cl. 15-171.000.
Rudnick, Leslie R., to Mobil Oil Corporation. Alkylation of durene utilizing high boiling condensed polyaromatic compounds. 4,577,049, Cl. 585-486.000.
Ruehenbeck, Wolfgang, to BASF Aktiengesellschaft. Heating a fixed-bed charge in a tube reactor, and an arrangement for carrying out the method. 4,576,573, Cl. 432-15.000.
Ruger, Roderich, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung. Aiming or sighting apparatus with synchronously rotating thermal imager and aiming head. 4,576,432, Cl. 350-1.200.
Ruger, Roderich, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung. Sighting mirror including a stabilizing device. 4,576,449, Cl. 350-500.000.
Ruger, William B.; and Melcher, Roy L., to Sturm, Ruger & Company, Inc. Pistol mechanism for blocking firing pin. 4,575,963, Cl. 42-70.00F.
Ruhrchemie Aktiengesellschaft: *See—*
Kalbfell, Heinz; Lieder, Bernhard; and Mercamp, Herbert, 4,577,043, Cl. 568-454.000.
Rullier, Pierre, to Salomon S.A. Adjustment display for ski binding. 4,576,397, Cl. 280-625.000.
Rummler, Jurgen, to Deutsches Elektronen-Synchrotron Desy. Driving circuit for pulse current power supplies. 4,577,118, Cl. 307-106.000.
Rutherford, Harry: *See—*
White, Cathleen A.; Senne, Richard K.; and Rutherford, Harry, 4,576,399, Cl. 282-8.00R.
Ruzicka, Alan V.: *See—*
Benson, Alan M.; Mawer, John D.; and Ruzicka, Alan V., 4,576,386, Cl. 277-165.000.
Ryan, John O., to Macrovision. Method and apparatus for modifying the color burst to prohibit videotape recording. 4,577,216, Cl. 358-19.000.
Rylatt, John A.: *See—*
Granata, Samuel J., Jr.; and Rylatt, John A., 4,576,222, Cl. 165-76.000.
S.A.I.A.G. S.p.A.: *See—*
Azzola, Roberto; and Carrera, Luciano, 4,576,773, Cl. 264-167.000.
S & B Engineers: *See—*
Slaughter, William B.; and Haynie, Henry C., Sr., 4,576,235, Cl. 166-374.000.

S.O.M., S.p.A.: *See—*
Lupo, Giorgio; Capra, Pier C.; and Marcarino, Aldo, 4,576,264, Cl. 192-48.910.
Saari, Oliver, to Illinois Tool Works Inc. Anti-friction nut/screw drive. 4,576,057, Cl. 74-424.80C.
Sacco, Decio: *See—*
Armida, Gennaro; Sacco, Decio; and Grilli, Walter, 4,575,914, Cl. 29-434.000.
Sace S.p.A. Costruzioni Elettromeccaniche: *See—*
Talpo, Gianpietro, 4,577,073, Cl. 200-148.00A.
Sachs, Hanns I.: *See—*
Scholl, Hans-Joachim; Reiff, Helmut; and Sachs, Hanns I., 4,576,771, Cl. 264-109.000.
Saenger, Dietrich; and Barzynski, Helmut. Process of making and using a positive working photosensitive film resist material. 4,576,902, Cl. 430-326.000.
Safer Agro-Chem Ltd.: *See—*
Puritch, George S.; and Kondo, Edward S., 4,576,950, Cl. 514-358.000.
Safeway Products, Inc.: *See—*
Hall, Henry B.; Hewes, Peter B.; Moore, Benjamin N.; and Sanzaro, Rosario, 4,576,798, Cl. 422-105.000.
Saiki, Eisaku; Kawamura, Satoshi; and Kawauchi, Masataka, to Hitachi, Ltd. Thermal transfer recording apparatus. 4,577,199, Cl. 346-76.0PH.
Saiki, Kazuaki; Ishikawa, Aiichi; Hashimoto, Noriyoshi; Kudo, Koichi; and Yoshikawa, Kuniyuki, to Nippon Kogaku K.K. System for driving a movable stage. 4,577,141, Cl. 318-590.000.
Saiko, Alfons: *See—*
Spieldiener, Robert; Saiko, Alfons; and Spieldiener, Reinhold, 4,576,373, Cl. 272-41.000.
Saint-Marc, Henri R.: *See—*
Derain, Christian; and Saint-Marc, Henri R., 4,576,540, Cl. 414-511.000.
Saint Margaret Hospital: *See—*
Andersen, Frieda, 4,577,185, Cl. 340-573.000.
Saito, Kinzi, to Ricoh Company, Ltd. Cleaning apparatus of electrophotographic copying machine. 4,576,468, Cl. 355-15.000.
Saito, Miyuki: *See—*
Uehara, Akira; Uehara, Takashi; Saito, Miyuki; and Ishida, Toshiyuki, 4,577,165, Cl. 331-109.000.
Saito, Syuichiro: *See—*
Okino, Tadashi; and Saito, Syuichiro, 4,576,456, Cl. 352-216.000.
Saito, Takayuki: *See—*
Cho, Michio; Suzuki, Masane; and Saito, Takayuki, 4,576,458, Cl. 354-199.000.
Saito, Yukio: *See—*
Shimaoka, Motohiro; and Saito, Yukio, 4,577,247, Cl. 360-97.000.
Saitoh, Mikio: *See—*
Kuriyama, Shizuo; and Saitoh, Mikio, 4,576,966, Cl. 514-648.000.
Saitoh, Shinichi: *See—*
Isogai, Masato; Hattori, Shintaroo; Iwasaki, Kishiroo; Kitamura, Teruo; Mukoh, Akio; Inukai, Takashi; Furukawa, Kenji; Terashima, Kanetsugu; and Saitoh, Shinichi, 4,576,732, Cl. 252-299.650.
Saitou, Norio; Ozasa, Susumu; and Matsuzaka, Takashi, to Hitachi, Ltd. Apparatus for electron beam lithography. 4,577,111, Cl. 250-492.200.
Saitou, Sinichi: *See—*
Nemoto, Shigeru; Kitajima, Goro; Saitou, Sinichi; and Osada, Hazime, 4,577,245, Cl. 360-93.000.
Saji, Keiichi: *See—*
Kondo, Haruyoshi; Takahashi, Hideaki; Saji, Keiichi; Takeuchi, Takashi; and Hayakawa, Kiyoharu, 4,576,705, Cl. 204-406.000.
Sakaguchi, Minoru: *See—*
Akita, Kenji; Sakaguchi, Minoru; and Suzuyama, Hiroshi, 4,577,075, Cl. 200-148.00R.
Sakaguchi, Yoichi: *See—*
Morinaga, Akio; Sakaguchi, Yoichi; Hyodo, Masakatsu; and Yagi, Isaburo, 4,576,205, Cl. 138-98.000.
Sakai, Minoru: *See—*
Takahashi, Osamu; and Sakai, Minoru, 4,576,906, Cl. 430-497.000.
Sakakibara, Tatsuo: *See—*
Donomoto, Tadashi; Koyama, Mototsugu; Fuwa, Yoshio; Miura, Nobuhiro; and Sakakibara, Tatsuo, 4,576,863, Cl. 428-325.000.
Sakakiyama, Ryuzo: *See—*
Yamakawa, Toru; Makita, Fujio; Umezawa, Mitsuo; and Sakakiyama, Ryuzo, 4,576,061, Cl. 74-665.00T.
Sakamoto, Koji; and Kobayashi, Kazuo, to Ricoh Company, Ltd. Developing apparatus for electrostatic photography. 4,576,463, Cl. 355-3.0DD.
Sakamoto, Masaharu: *See—*
Yoshikawa, Shoji; and Sakamoto, Masaharu, 4,577,320, Cl. 372-29.000.
Sakamoto, Shuichi: *See—*
Umezawa, Hamao; Umezawa, Sumio; Tsuchiya, Tsutomu; Takeuchi, Tomio; Tanaka, Akihiro; and Sakamoto, Shuichi, 4,576,931, Cl. 514-30.000.
Sakata, Hiromi; Kozuka, Nobuhiko; and Hiraoka, Hiroshi, to Mita Industrial Co., Ltd. Charge eliminating lamp device. 4,576,464, Cl. 355-3.00R.
Sako, Junichi; Yagi, Toshiharu; Higashihata, Yoshihide; Tatemoto, Masayoshi; Tomihashi, Nobuyuki; and Shimizu, Yoshiki, to Daikin Kogyo Co., Ltd. Polymeric dielectric material. 4,577,005, Cl. 526-254.000.
Sakoda, Ryozo: *See—*
Seto, Kiyotomo; Tanaka, Sakuya; and Sakoda, Ryozo, 4,576,934, Cl. 514-85.000.
Sakuraya, Takashi: *See—*
Ohki, Toshio; Matsumoto, Masaomi; Sakuraya, Takashi; Tokushige, Keinosuke; and Hoshino, Shuji, 4,575,972, Cl. 51-251.000.
Salibello, Cosmo: *See—*
Charney, Gregory S.; Hohner, Terrance D.; and Salibello, Cosmo, 4,576,454, Cl. 351-243.000.
Salomon S.A.: *See—*
Petrini, Roland, 4,575,957, Cl. 36-121.000.
Rullier, Pierre, 4,576,397, Cl. 280-625.000.
Salowe, Seymour, to Westinghouse Electric Corp. Method and apparatus for providing offset compensation. 4,577,279, Cl. 364-483.000.
Samblebe, Reinhard: *See—*
Norden, Jurgen; Aigner, Heinrich; Schindler, Fritz; and Samblebe, Reinhard, 4,576,625, Cl. 71-3.000.
Sammler, Louis S.: *See—*
Taylor, Dale F.; and Sammler, Louis S., 4,576,667, Cl. 156-89.000.
Sanders, Mark E. Hexaalkylmelamine-amino-oxy compounds. 4,576,945, Cl. 514-245.000.
Sandor, Darin: *See—*
Laszlo, Fiak; Sandor, Derzsenyi; and Sandor, Darin, 4,576,422, Cl. 308-6.00C.
Sandor, Derzsenyi: *See—*
Laszlo, Fiak; Sandor, Derzsenyi; and Sandor, Darin, 4,576,422, Cl. 308-6.00C.
Sano, Yoshiaki; Omura, Isamu; and Hiramatsu, Ryo, to Fujitsu Limited. Differential circuit. 4,577,121, Cl. 307-355.000.
Sanofi: *See—*
Wermuth, Camille G.; Biziere, Kathleen; and Davi, Horace, 4,576,946, Cl. 514-247.000.
Santos, Llandro C.: *See—*
Amariti, Luigi; and Santos, Llandro C., 4,576,899, Cl. 430-309.000.
Santrade Ltd.: *See—*
Muren, Sture, 4,575,888, Cl. 10-101.00R.
Olsson, Olle G.; Yaman, Melih; Waldenstrom, Mats G.; and Fischer, Udo K. R., 4,576,875, Cl. 428-627.000.
Sanyo Chemical Industries, Ltd.: *See—*
Okina, Toyohiko; Goto, Hiroshi; Ozawa, Akimasa; Nakamura, Kenji; and Oishi, Hiroshi, 4,576,855, Cl. 428-215.000.
Sanzaro, Rosario: *See—*
Hall, Henry B.; Hewes, Peter B.; Moore, Benjamin N.; and Sanzaro, Rosario, 4,576,798, Cl. 422-105.000.
Saran, Mohan S.: *See—*
Campbell, Donald H.; Fifolt, Michael J.; and Saran, Mohan S., 4,577,044, Cl. 568-677.000.
Saruhashi, Masakuni: *See—*
Koyama, Mikio; Okaniwa, Kenichiro; and Saruhashi, Masakuni, 4,576,793, Cl. 422-56.000.
Sasa, Hiroyuki: *See—*
Yabe, Hisao; Sasa, Hiroyuki; Nakajima, Yukio; Ishii, Fumiaki; Takamura, Koji; and Nakamura, Takeaki, 4,576,650, Cl. 134-22.120.
Sasaki Electric Manufacturing Co., Ltd.: *See—*
Hitora, Shozo, 4,577,178, Cl. 340-81.00R.
Sasaki, Ichitaro; Mori, Takashi; and Tsuyuguchi, Tadao, to Teijin Limited. Polyester film roll. 4,576,344, Cl. 242-67.10R.
Sasaki, Manji: *See—*
Ishii, Tamaki; Yachigo, Shinichi; Sasaki, Manji; Shionoya, Masahisa; and Okamura, Haruki, 4,576,734, Cl. 252-404.000.
Sasaki, Osamu: *See—*
Hirose, Naohiro; Sasaki, Osamu; and Takizawa, Yoshio, 4,576,886, Cl. 430-59.000.
Satake, Keigo: *See—*
Aoki, Katsumichi; Shida, Takafumi; Kanda, Yoichi; Satake, Keigo; Shinkawa, Hiroyasu; and Yamazaki, Shiro, 4,577,029, Cl. 548-162.000.
Sato, Kazuhiro; and Oguri, Katsuhiko, to Victor Company of Japan, Limited. Hall effect magnetic head. 4,577,250, Cl. 360-112.000.
Sato, Masanori: *See—*
Nishu, Mitsufumi; Takeuchi, Kenji; Sato, Masanori; Horiuchi, Ichiro; Muramatsu, Katsuhiko; and Kiryu, Koji, 4,576,059, Cl. 74-473.00P.
Sato, Noboru; and Tanaka, Tomiji, to Sony Corporation. Magneto-optical recording medium and method of making same. 4,576,699, Cl. 204-192.00M.
Sato, Shinichi: *See—*
Arai, Masatoshi; Futatsumori, Koji; Inoue, Takeo; and Sato, Shinichi, 4,577,041, Cl. 556-446.000.
Sato, Yoshio: *See—*
Sugano, Akira; Muramatsu, Masaru; Yamanobe, Sachio; and Sato, Yoshio, 4,577,270, Cl. 364-151.000.
Satoh, Kenji: *See—*
Tanaka, Yoshinari; Aoyama, Akimasa; Moritani, Takeshi; Satoh, Kenji; and Okaya, Takuji, 4,576,988, Cl. 524-503.000.
Satoh, Shuichi: *See—*
Morimoto, Keiji; Satoh, Shuichi; Iwai, Yoshiyuki; Ae, Osamu; Suda, Masao; Tsuchiya, Kiyoshi; Ogata, Kojiro; and Miyanagi, Naoki, 4,576,515, Cl. 405-184.000.
Satoh, Susumu; Obara, Takashi; and Nishida, Minoru, to Kawasaki Steel Corporation. Method of producing cold rolled steel sheets for deep drawing. 4,576,656, Cl. 148-12.00C.
Satoh, Susumu; Hashimoto, Osamu; and Irie, Toshio, to Kawasaki Steel Corporation. Process of manufacturing a cold rolled steel sheet having excellent press formability. 4,576,657, Cl. 148-12.00C.

Satou, Hiroshi: *See—*
Miura, Hirohisa; Satou, Hiroshi; Katagiri, Hidenori; Natsume, Toshio; and Azuma, Hidekazu, 4,576,725, Cl. 252-62.510.

Saud, Abel: *See—*
Tarancon, Gregorio; Acevedo, Efrain; and Saud, Abel, 4,576,837, Cl. 427-255.400.

Sauers, Marvin E.: *See—*
Hartsing, Tyler F.; Sauers, Marvin E.; and Robeson, Lloyd M., 4,576,842, Cl. 428-35.000.

Saulson, Stanley H.: *See—*
Hooven, Michael D.; and Saulson, Stanley H., 4,576,035, Cl. 73-4.00R.

Saunders, William T., to Weirton Steel Corporation. Sheet metal wall panel and integral opener structure. 4,576,305, Cl. 220-269.000.

Sauter, Hubert: *See—*
Parg, Adolf; Hamprecht, Gerhard; Sauter, Hubert; and Wuerzer, Bruno, 4,576,630, Cl. 71-92.000.

Sawanaka, Hiroshi: *See—*
Kiuchi, Eiichi; Sawanaka, Hiroshi; and Tomita, Yuichi, 4,577,193, Cl. 343-380.000.

Schabron, John F., to Phillips Petroleum Company. Method for analysis of additives in polyolefins. 4,576,917, Cl. 436-85.000.

Schade, Reinhart, to Siemens Aktiengesellschaft. Method for making contact with the electrode on the adhesive-coated side of an electrical component and the article made by such method. 4,576,670, Cl. 156-219.000.

Schaefer, Roland, to Kulzer & Co., GmbH. Process for the photopolymerization of vinyl compounds and photopolymerizable materials. 4,576,976, Cl. 522-16.000.

Schaefle , Henri: *See—*
Van de Caveye, Yves; and Schaefle , Henri, 4,576,561, Cl. 425-104.000.

Schaller, Heinrich: *See—*
Fryberg, Mario; Schaller, Heinrich; Steiger, Rolf; and Peter, Heinz, 4,576,885, Cl. 430-390.000.

Schantz, Robert E. Gas horseshoe forge. 4,576,574, Cl. 432-120.000.

Schaper, Leonard W., to AT&T Bell Laboratories. Low-inductance power/ground distribution in a package for a semiconductor chip. 4,577,214, Cl. 357-74.000.

Scharfenbergkupplung GmbH: *See—*
Forster, Hilmar, 4,576,294, Cl. 213-9.000.

Scharting, Gunter; and Neugebauer, Steffen, to FAG Kugelfischer Georg Schafer (KGaA). Protective cap for the sealing of a bushing around a pin in a cardan joint. 4,576,382, Cl. 277-12.000.

Schedele, Helmut; and Schweiger, Josef, to Siemens Aktiengesellschaft. Electromagnetic relay and method for the manufacture thereof. 4,577,172, Cl. 335-80.000.

Schedele, Helmut; Schweiger, Josef; and Stadler, Heinz, to Siemens Aktiengesellschaft. Electromagnetic relay and method for manufacturing such relay. 4,577,173, Cl. 335-80.000.

Schenk, Joerg: *See—*
Schwanitz, Manfred; Gaertner, Dietrich; Dressler, Wolfgang; and Schenk, Joerg, 4,577,195, Cl. 343-702.000.

Schepp, Frank, to Inline Plastics Corporation. Food tray with lockable lid. 4,576,330, Cl. 229-44.00R.

Schering AG: *See—*
Goffredo, Daniel L.; Meyer, Walter J.; and Blaising, Horst, 4,576,685, Cl. 204-30.000.

Scheuter, Siegbert; and Kuhn, Friedrich, to J. M. Voith GmbH. Double supporting roller winding machine. 4,576,343, Cl. 242-66.000.

Schiel, Christian, to J. M. Voith GmbH. Machine for making a fiber web with sharply defined edges. 4,576,681, Cl. 162-301.000.

Schiff, Leonard N., to RCA Corporation. Synchronization system for a regenerative subtransponder satellite communication system. 4,577,316, Cl. 370-104.000.

Schiff, Peter. Percutaneous intra-aortic balloon and method for using same. 4,576,142, Cl. 128-1.00D.

Schilling, Hugh K.; Dayen, Leonid; and Raines, Charles D., to Horton Manufacturing Co., Inc. Rotational control apparatus. 4,576,266, Cl. 192-70.120.

Schindele, Alfred, to Terrot Strickmaschinen GmbH. Stitch-forming machine. 4,576,018, Cl. 66-106.000.

Schindler, Fritz: *See—*
Norden, Jurgen; Aigner, Heinrich; Schindler, Fritz; and Samblebe, Reinhard, 4,576,625, Cl. 71-3.000.

Schindler, Wolfgang: *See—*
Krempl, Peter W.; and Schindler, Wolfgang, 4,577,105, Cl. 250-343.000.

Schlenz, Dieter: *See—*
Fink, Roland; Mayr, Maximilian; and Schlenz, Dieter, 4,576,860, Cl. 428-314.400.

Schlingmann, Merten: *See—*
Keil, Karl-Heinz; Engelhardt, Fritz; Greiner, Ulrich; Kuhlein, Klaus; Keller, Reinhold; Schlingmann, Merten; and Hess, Gerhard, 4,576,973, Cl. 521-149.000.

Schlosser, Erich J., to Weber-Stephen Products Co. Ash catcher for charcoal grill. 4,576,140, Cl. 126-25.00R.

Schlumberger Technology Corporation: *See—*
Sherman, Harold; and Ullo, John J., 4,577,102, Cl. 250-269.000.
Upchurch, James M., 4,576,234, Cl. 166-319.000.

Schmid, Gerard: *See—*
Hubschwerlen, Christian N.; and Schmid, Gerard, 4,576,751, Cl. 260-245.400.

Schmidt, Alfred; and Flachenecker, Gerhard, to M.A.N. Maschinenfabrik Augsburg-Nurnberg AG. Apparatus for guiding a trackless vehicle. 4,577,140, Cl. 318-587.000.

Schmidt, Howard W., Jr.: *See—*
Gallagher, James P.; and Schmidt, Howard W., Jr., 4,576,698, Cl. 204-192.00E.

Scholl, Hans-Joachim; Reiff, Helmut; and Sachs, Hanns I., to Bayer Aktiengesellschaft. Aqueous isocyanate emulsions and their use as binders in a process for the production of shaped articles. 4,576,771, Cl. 264-109.000.

Scholler, Peter: *See—*
Blaschke, Hans P.; Knappik, Winfried; Mette, Horst; and Scholler, Peter, 4,577,299, Cl. 367-120.000.

Scholten, Pieter C.; and Eijnthoven, Ronald K., to U.S. Philips Corporation. Method of forming a luminescent layer on a carrier and low-pressure mercury vapor discharge lamp having a layer applied to a carrier by means of such a method. 4,576,833, Cl. 427-67.000.

Schoof, Wendy M.: *See—*
Gloomis, Lawrence A.; and Schoof, Wendy M., 4,575,908, Cl. 24-650.000.

Schooler, Miles R.: *See—*
Carmichael, Hoagy C.; and Schooler, Miles R., 4,576,151, Cl. 128-80.00C.

Schreiber, William L.: *See—*
Fujioka, Futoshi; Boden, Richard M.; and Schreiber, William L., 4,576,739, Cl. 252-522.00R.
Sprecker, Mark A.; Belko, Robert P.; Schreiber, William L.; and Licciardello, Michael, 4,576,741, Cl. 252-522.00R.

Schrepfer, Rudolf. Leveling element. 4,576,357, Cl. 248-662.000.

Schreuder, Jan, to Plessey South Africa Limited. Phase measuring method and apparatus. 4,577,150, Cl. 324-83.00R.

Schultes, Tilmann; and Seidel, Joachim, to Kortenback & Rauh KG. Umbrella frame. 4,576,191, Cl. 135-30.000.

Schultz, Frederick E., to General Electric Co. Method of manufacturing a turbomachinery rotor. 4,576,770, Cl. 264-103.000.

Schupp, Eberhard; Loch, Werner; Osterloh, Rolf; and Ahlers, Klaas, to BASF Aktiengesellschaft. Heat-curable surface-coating agents, and their use. 4,576,979, Cl. 523-404.000.

Schutten, Herman P.; Benjamin, James A.; and Lade, Robert W., to Eaton Corporation. AC Solar cell. 4,577,052, Cl. 136-246.000.

Schutten, Herman P.; Lade, Robert W.; and Benjamin, James A., to Eaton Corporation. Bidirectional power FET with integral avalanche protection. 4,577,208, Cl. 357-23.400.

Schwab, Manfred: *See—*
Eschrich, Gerhard; Juhasz, Josef; and Schwab, Manfred, 4,577,143, Cl. 318-701.000.

Schwanitz, Manfred; Gaertner, Dietrich; Dressler, Wolfgang; and Schenk, Joerg, to International Standard Electric Corporation. Miniaturized mobile radio receiver with dipole antenna. 4,577,195, Cl. 343-702.000.

Schwartz, Eugene B.: *See—*
Kaye, Gordon E.; Schwartz, Eugene B.; and Sollins, Irving V., 4,576,591, Cl. 604-62.000.

Schwarz, Gerd-Ulrich; and Adolphi, Heinrich, to BASF Aktiengesellschaft. Dihalovinylphenyl phosphates and their use as pesticides. 4,576,935, Cl. 514-113.000.

Schwarz, Helmut; and Stickel, Heinz, to Siemens Aktiengesellschaft. Device for guiding a print element. 4,576,496, Cl. 400-352.000.

Schweiger, Josef: *See—*
Schedele, Helmut; and Schweiger, Josef, 4,577,172, Cl. 335-80.000.
Schedele, Helmut; Schweiger, Josef; and Stadler, Heinz, 4,577,173, Cl. 335-80.000.

Schwengeler, Peter, to Rieter Machine Works Limited. Apparatus for lifting a wound yarn package. 4,576,342, Cl. 242-36.000.

Schwieker, Horst H.; and Gieschen, Kurt, to U.S. Philips Corporation. Diaphragm arrangement for X-ray spot-film device. 4,577,341, Cl. 378-150.000.

Schwindt, Jurgen: *See—*
Noll, Klaus; Potter, Terry; Pedain, Josef; and Schwindt, Jurgen, 4,576,989, Cl. 524-591.000.

SCM Chemicals Limited: *See—*
Robinson, Michael; and Wilson, Harry B., 4,576,636, Cl. 75-1.00R.

SCM Corporation: *See—*
Owens, Phillip M., 4,576,695, Cl. 204-181.400.

Scott, Thomas: *See—*
McCann, James; Langley, James; Hopper, Ian; Durham, Steven; Scott, Thomas; and McOmish, Eric R., 4,576,517, Cl. 405-195.000.

Scuro, Samuel J., to Westinghouse Electric Corp. Linear fiber armature for electromagnetic launchers. 4,576,082, Cl. 89-8.000.

Seberger, Oswald P., Jr. Device for silencing firearms. 4,576,083, Cl. 89-14.400.

Seidel, Francis L.: *See—*
Kana, Kenneth W.; Kana, Willie H.; and Seidel, Francis L., 4,575,917, Cl. 29-520.000.

Seidel, Hans-Georg, to Hermann Heye. Machine for forming hollow articles of vitreous material. 4,576,624, Cl. 65-300.000.

Seidel, Joachim: *See—*
Schultes, Tilmann; and Seidel, Joachim, 4,576,191, Cl. 135-30.000.

Seitzer, Kenneth E.: *See—*
Smed, Jan P.; Seitzer, Kenneth E.; and Hultgren, Kent G., 4,576,548, Cl. 415-137.000.

Seki, Koichi: *See—*
Ohba, Shinya; Ando, Haruhisa; Nakai, Masaaki; Ozaki, Toshifumi; Seki, Koichi; Takahashi, Kenji; Akiyama, Toshiyuki; Takemoto, Iwao; Imaide, Takuya; Okuda, Akihide; and Kubo, Masaharu, 4,577,231, Cl. 358-212.000.

Sekiya, Toshiyuki: *See—*
Nakakita, Eiji; Koike, Akinobu; Sekiya, Toshiyuki; Misu, Hiroshi; and Kita, Nobuyuki, 4,576,893, Cl. 430-457.000.

Semtronics Corporation: *See—*
Breidegam, Albert C., 4,577,256, Cl. 361-220.000.

Senin, Paolo: *See—*
Rovati, Luigi; Makovec, Francesco; Senin, Paolo; and Casula, Pierluigi, 4,576,951, Cl. 514-282.000.

Senne, Richard K.: *See—*
White, Cathleen A.; Senne, Richard K.; and Rutherford, Harry, 4,576,399, Cl. 282-8.00R.

Senoo, Keüichi, to NEC Corporation. Method and circuit for detecting a training signal. 4,577,328, Cl. 375-13.000.

Seppic: *See—*
Branco, Bernard; and Malandain, Michel, 4,576,646, Cl. 106-163.100.

Sessions, Ronald L.: *See—*
Geary, Joseph M.; Vunck, Darius S.; Duneman, Dennis C.; Sessions, Ronald L.; Moeller, Charles E.; and Wick, Raymond V., 4,577,103, Cl. 250-316.100.

Setescak, Linda L.: *See—*
Martin, Lawrence L.; and Setescak, Linda L., 4,576,960, Cl. 514-450.000.

Seto, Kiyotomo; Tanaka, Sakuya; and Sakoda, Ryozo, to Nissan Chemical Industries Ltd. Antihypertensive dihydropyridine-5-phosphonic acid cyclic esters. 4,576,934, Cl. 514-85.000.

Sewhuk, David W.: *See—*
Crean, Peter A.; Birnbaum, David; Feldman, David B.; Liptak, Frank J.; and Sewhuk, David W., 4,577,197, Cl. 346-75.000.

Sexton, Robert W.: *See—*
Wooldridge, James E.; Osborne, Robert E.; and Sexton, Robert W., 4,576,618, Cl. 55-122.000.

Shannon, Robert A., to North American Manufacturing Company. Method and system for controlling a selected zone in a fuel fired furnace. 4,577,278, Cl. 364-477.000.

Sharp, Charles M., to SWS Inc. Method of laser butt welding. 4,577,088, Cl. 219-121.0LD.

Sharp Kabushiki Kaisha: *See—*
Yoshimura, Yutaka; and Hikami, Masahiro, 4,577,286, Cl. 364-708.000.

Sharpless, John: *See—*
Hastings, Donald R.; and Sharpless, John, 4,576,827, Cl. 427-27.000.

Shaughnessy, McKevin. Means for creating random patterns of variegated light, and light-reflective means therefor. 4,576,433, Cl. 350-4.100.

Shaul, Ronald E.: *See—*
Beery, Jack; Donahue, Frederick A.; and Shaul, Ronald E., 4,577,096, Cl. 250-205.000.

Shaw, Daniel, to General Motors Corporation. Stationary continuous automatic pouring process. 4,576,217, Cl. 164-130.000.

Shell Internationale Research Maatschappij B.V.: *See—*
Skantz, Kaj M.; and Christiansen, Ari R. E., 4,576,643, Cl. 106-14.240.

Shell Oil Company: *See—*
Chatterjee, Ananda M.; and Hayden, Earl E., 4,576,983, Cl. 524-101.000.
Denison, Early B., 4,576,516, Cl. 405-195.000.
Hudson, Henry C., 4,577,047, Cl. 585-260.000.
Mundell, Richard H., 4,576,242, Cl. 175-107.000.
Pilgram, Kurt H.; and Skiles, Richard D., 4,577,011, Cl. 534-787.000.

Shepherd, Charles E.: *See—*
Shepherd, G. Maury; and Shepherd, Charles E., 4,576,764, Cl. 261-111.000.

Shepherd, G. Maury; and Shepherd, Charles E., to C. E. Shepherd Company. Fill slat assembly for cooling towers. 4,576,764, Cl. 261-111.000.

Shepherd, Robin G.: *See—*
Crossley, Roger; and Shepherd, Robin G., 4,577,022, Cl. 546-14.000.

Sherman, Harold; and Ullo, John J., to Schlumberger Technology Corporation. Method and apparatus for distinguishing hydrocarbon from fresh water in situ. 4,577,102, Cl. 250-269.000.

Sherwood, Philip W.: *See—*
Dai, Shenghong A.; and Sherwood, Philip W., 4,576,980, Cl. 523-420.000.

Shetty, Bola V., to Euroceltique, S.A. Iodophor composition. 4,576,818, Cl. 424-150.000.

Shibata, Hiroshi, to VLSI Technology Research Association. Pattern forming method. 4,576,678, Cl. 156-643.000.

Shibata, Hiroshi: *See—*
Mazaki, Shiro; and Shibata, Hiroshi, 4,576,990, Cl. 524-602.000.

Shibata, Tomoo; and Jurdi, Wissam J., to Ricoh Electronics, Inc. Thermosensitive recording label. 4,577,204, Cl. 346-200.000.

Shibata, Tomoo; and Jurdi, Wissam J., to Ricoh Electronics, Inc. Releasable heat-sensitive label with E. B. setting printing ink. 4,577,205, Cl. 346-204.000.

Shida, Takafumi: *See—*
Aoki, Katsumichi; Shida, Takafumi; Kanda, Yoichi; Satake, Keigo; Shinkawa, Hiroyasu; and Yamazaki, Shiro, 4,577,029, Cl. 548-162.000.

Shields, Charles E. Method and apparatus for applying a connector having an injection molded cover to multiconductor cable. 4,575,935, Cl. 29-858.000.

Shields, D. Leet. Cast metal breaker apparatus. 4,576,380, Cl. 225-104.000.

Shiga, Koji; and Arito, Tatsunari, to Fuji Photo Film Co., Ltd.; and Fuji Micro Graphics Co., Ltd. Sensitive material cutting and transporting mechanism. 4,576,469, Cl. 355-29.000.

Shiiba, Suenobu: *See—*
Kozai, Shinji; Shiiba, Suenobu; and Higashitani, Yoshitaka, 4,575,970, Cl. 51-165.920.

Shiiki, Kazuo; Shiroishi, Yoshihiro; Kitakami, Osamu; and Uesaka, Yasutaro, to Hitachi, Ltd; and Hitachi Maxell, Ltd. Magnetic recording medium. 4,576,876, Cl. 428-679.000.

Shimamura, Tadaaki: *See—*
Naitoh, Katsumi; and Shimamura, Tadaaki, 4,575,916, Cl. 29-517.000.

Shimanaka, Hirotaka. Method of manufacturing alate medical needle. 4,576,671, Cl. 156-245.000.

Shimano, Akira: *See—*
Matsui, Isamu; Uchida, Hiroshi; Nakanishi, Kazuo; Kiriake, Masaharu; and Shimano, Akira, 4,576,341, Cl. 242-35.50A.

Shimano Industrial Company Limited: *See—*
Nagano, Masashi, 4,576,587, Cl. 474-152.000.

Shimaoka, Motohiro; and Saito, Yukio, to Alps Electric Co., Ltd. Recording and reproducing apparatus with cartridge retaining means. 4,577,247, Cl. 360-97.000.

Shimazaki, Kenji, to Toho Beslon Co., Ltd. Active carbon fibers as adsorbent for water purification. 4,576,929, Cl. 502-417.000.

Shimizu Pharmaceutical Co., Ltd.: *See—*
Sugiyama, Tohru; Suzuki, Yasuo; Katagiri, Katsumasa; and Furutani, Satoshi, 4,576,930, Cl. 514-23.000.

Shimizu, Yoshiki: *See—*
Sako, Junichi; Yagi, Toshiharu; Higashihata, Yoshihide; Tatemoto, Masayoshi; Tomihashi, Nobuyuki; and Shimizu, Yoshiki, 4,577,005, Cl. 526-254.000.

Shimotaka, Hisakuni: *See—*
Umeda, Yoshiaki; Matsumoto, Ryouhei; Isomura, Hiroyasu; and Shimotaka, Hisakuni, 4,576,588, Cl. 493-475.000.

Shin-Etsu Chemical Co., Ltd.: *See—*
Arai, Masatoshi; Futatsumori, Koji; Inoue, Takeo; and Sato, Shinichi, 4,577,041, Cl. 556-446.000.

Shinkawa, Hiroyasu: *See—*
Aoki, Katsumichi; Shida, Takafumi; Kanda, Yoichi; Satake, Keigo; Shinkawa, Hiroyasu; and Yamazaki, Shiro, 4,577,029, Cl. 548-162.000.

Shinohara, Shigeyuki: *See—*
Makino, Hiroshi; and Shinohara, Shigeyuki, 4,576,099, Cl. 104-287.000.

Shionogi & Co., Ltd.: *See—*
Makisumi, Yasuo; Murabayashi, Akira; Tawara, Katsuya; Watanabe, Yoshihachi; Takahashi, Toshio; and Konishi, Takao, 4,576,956, Cl. 514-380.000.
Miyazaki, Hiroshi; and Ikeda, Masato, 4,576,174, Cl. 128-639.000.
Totani, Tetsushi; and Aono, Katsutoshi, 4,577,038, Cl. 556-137.000.

Shionoya, Masahisa: *See—*
Ishii, Tamaki; Yachigo, Shinichi; Sasaki, Manji; Shionoya, Masahisa; and Okamura, Haruki, 4,576,734, Cl. 252-404.000.

Shiraishi, Atsushi; and Nishimura, Mizuho, to Fuji Photo Film Co., Ltd. Information input/output apparatus for disk film. 4,576,474, Cl. 355-75.000.

Shiroishi, Yoshihiro: *See—*
Shiiki, Kazuo; Shiroishi, Yoshihiro; Kitakami, Osamu; and Uesaka, Yasutaro, 4,576,876, Cl. 428-679.000.

Shoko Kiko Co., Ltd.: *See—*
Takami, Masaho, 4,575,994, Cl. 53-582.000.

Shukla, Jayendra G.; Sohn, Ki G.; Twickler, Carl; and de Pierne, Otto S., to Ferro Corporation. Fixed ophthalmic lens polishing pad. 4,576,612, Cl. 51-295.000.

Shuler, George C. Apparatus and method for straightening warped doors. 4,575,980, Cl. 52-291.000.

Shulman, Yuri. Holder for inconspicuously mounting a microphone. 4,577,070, Cl. 179-146.00R.

Siemens Aktiengesellschaft: *See—*
Bentele, Benedikt; and Heerlein, Manfred, 4,576,489, Cl. 384-469.000.
Diepers, Heinrich; Feigt, Ingmar; and Lange, Gottfried, 4,577,108, Cl. 250-370.000.
Erhardt, Werner; and Hieber, Udo, 4,577,257, Cl. 361-272.000.
Frosien, Jurgen; and Pomper, Michael, 4,577,147, Cl. 324-71.300.
Kriedt, Hans; and Fenk, Josef, 4,577,336, Cl. 377-111.000.
Markert, Helmut; Rogler, Wolfgang; Bendel, Wolfgang; and Alber, Friedrich, 4,576,768, Cl. 264-27.000.
Oestreich, Ulrich, 4,576,871, Cl. 428-521.000.
Schade, Reinhart, 4,576,670, Cl. 156-219.000.
Schedele, Helmut; and Schweiger, Josef, 4,577,172, Cl. 335-80.000.
Schedele, Helmut; Schweiger, Josef; and Stadler, Heinz, 4,577,173, Cl. 335-80.000.
Schwarz, Helmut; and Stickel, Heinz, 4,576,496, Cl. 400-352.000.

Siemens Gammasonics, Inc.: *See—*
Meeder, Raymond L., 4,577,107, Cl. 250-363.00S.

Silcock, Terence M. B.; and Timms, Colin T., to Lucas Industries Public Limited Company. Liquid fuel injection pumping apparatus. 4,576,133, Cl. 123-458.000.

Silcox, William H.: *See—*
Suh, Sung L.; Burns, Gerald E.; and Silcox, William H., 4,576,520, Cl. 405-224.000.

Silverberg, Morton, to Xerox Corporation. Sheet hinge forming apparatus. 4,576,461, Cl. 355-3.00R.

Silvestri, George J., Jr., to Westinghouse Electric Corp. Turbine protection system for bypass operation. 4,576,008, Cl. 60-662.000.
Simonson, John L.: *See—*
Marinak, Michael J.; and Simonson, John L., 4,577,027, Cl. 546-345.000.
Sindlinger, Raimund: *See—*
Baron, Winfried; Marquard, Kurt; Merrem, Hans-Joachim; Sindlinger, Raimund; and Thiel, Klaus-Peter, 4,576,903, Cl. 430-331.000.
Siskin, Michael; and Brons, Glen B., to Exxon Research and Engineering Co. Process for beneficiating coal. 4,576,707, Cl. 208-8.0LE.
Skantz, Kaj M.; and Christiansen, Ari R. E., to Shell Internationale Research Maatschappij B.V. Rust preventive and process for the preparation thereof. 4,576,643, Cl. 106-14.240.
SKF Kugellagerfabriken GmbH: *See—*
Brandenstein, Manfred; Walter, Lothar; Haas, Roland; and Dobhan, Herbert, 4,576,268, Cl. 192-98.000.
Skiles, Richard D.: *See—*
Pilgram, Kurt H.; and Skiles, Richard D., 4,577,011, Cl. 534-787.000.
Skinner, Russell A., Sr.; and Ciciora, Walter S., to American Television & Communications Corporation. Power safety device for CATV tap-off unit. 4,577,221, Cl. 358-86.000.
Slack, Don S., to Rix Industries. Spiral piston ring with tapered ends and recesses. 4,576,381, Cl. 277-1.000.
Slaughter, William B.; and Haynie, Henry C., Sr., to S & B Engineers. Downhole relief valve. 4,576,235, Cl. 166-374.000.
Slomianny, Jan, to Domino Printing Sciences Plc. Marking jet discharging head. 4,576,111, Cl. 118-313.000.
Slusarchyk, William A.: *See—*
Zahler, Robert; Koster, William H.; and Slusarchyk, William A., 4,576,749, Cl. 260-239.00A.
Smallhorn, Edward A.; and Oliver, John B., to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. Laminar flow element. 4,576,204, Cl. 138-44.000.
Smed, Jan P.; Seitzer, Kenneth E.; and Hultgren, Kent G., to Westinghouse Electric Corp. Self-aligning static seal for gas turbine stator vanes. 4,576,548, Cl. 415-137.000.
Smetak, Edward C., to Exxon Production Research Co. Pile release mechanism. 4,576,523, Cl. 405-227.000.
Smith, Dresden G. Air and water volume control apparatus for hydropneumatic tanks. 4,576,552, Cl. 417-2.000.
Smith, Henry E., to Xerox Corporation. Print wheel cartridge. 4,576,494, Cl. 400-175.000.
Smith, Henry I.; Atwater, Harry A.; and Geis, Michael W., to Massachusetts Institute of Technology. Thick crystalline films on foreign substrates. 4,576,676, Cl. 156-603.000.
Smith, Herman W., to Upjohn Company, The. Use of 5,6,7,8-tetrahydroquinolines and 5,6-dihydropyrindines as leukotriene and lipoxygenase inhibitors and the novel 3-substituted compounds therein. 4,576,949, Cl. 514-277.000.
Smith, James R. Pants closure. 4,575,873, Cl. 2-234.000.
Smith, Joseph E., to O & S Manufacturing Company. Ball and socket joints with wear indicator. 4,576,499, Cl. 403-27.000.
Smith, Kenneth C.: *See—*
Armond, John W.; and Smith, Kenneth C., 4,576,614, Cl. 55-18.000.
Smith Kline & French Laboratories Limited: *See—*
Manning, Graham P., 4,576,619, Cl. 55-213.000.
Smith, Lawrence E.: *See—*
Kohl, Paul A.; Smith, Lawrence E.; and Trop, Harvey S., 4,576,691, Cl. 204-129.300.
Smith, Malcolm S.; and Daigle, Colastie J., to Du Pont de Nemours, E. I., and Company. Long life semi-artificial bait. 4,576,821, Cl. 426-1.000.
Smith, Peter E.: *See—*
Laxton, Raymond; and Smith, Peter E., 4,577,220, Cl. 358-84.000.
Smith, Randel P.; and Steiner, Robert L., to Steiner Corporation. Fluid refill pouch and dispenser. 4,576,313, Cl. 222-81.000.
Smith, Stanley, to Rolls-Royce Limited. Gas turbine engine oil systems. 4,576,001, Cl. 60-39.080.
SmithKline Beckman Corporation: *See—*
Polansky, Theodore J., 4,576,937, Cl. 514-204.000.
Smolik, Robert A. Electrical receptacle box assembly. 4,576,302, Cl. 220-3.500.
Smyth, Laurence C.; and Deep, George, to Noranda Inc. Method and apparatus for maintaining an atmosphere around a predetermined portion of an endless discrete object conveyor. 4,576,220, Cl. 164-66.100.
Snider, Alan D.; Soporowski, Andrzej L.; and Herbst, Manfred O., to Esselte Pendaflex Corporation. Hanging partition folder. 4,576,328, Cl. 229-1.50R.
Snow, Bennie E.: *See—*
Martens, Alan; Wescott, Kermit R.; and Snow, Bennie E., 4,576,124, Cl. 122-406.0ST.
Snyder, James R.: *See—*
Park, David B.; Snyder, James R.; McDonald, Gerard J.; and Hoet, Roland, 4,576,277, Cl. 198-803.010.
Snyder, Richard N. Remote radio blasting. 4,576,093, Cl. 102-200.000.
Snyder, Robert H.; and Tolonen, Eric O., to Uniroyal, Inc. Scrap tire cutting apparatus. 4,576,339, Cl. 241-120.000.
SO.M.A. Europe Transmissions Societe Nouvelle Mecanique et Automobile: *See—*
Rogier, Leonce, 4,576,256, Cl. 188-71.600.
Sobczak, Zbigniew P., to NCR Corporation. Method for forming trench isolation structures. 4,576,834, Cl. 427-93.000.
Societe Alsacienne de Construction de Material Textile: *See—*
Gauvain, Roger, 4,575,903, Cl. 19-159.00R.
Societe Anonyme D.B.A.: *See—*
Carre, Jean J.; and Meynier, Guy, 4,576,257, Cl. 188-73.320.
Mery, Jean-Claude; Carre, Jean-Jacques; and Thioux, Alain, 4,576,255, Cl. 188-71.500.
Societe Nationale Industrielle Aerospatialle: *See—*
Jonca, Henri V. J., 4,575,931, Cl. 29-747.000.
Societe Nouvelle des Bennes Saphem: *See—*
Derain, Christian; and Saint-Marc, Henri R., 4,576,540, Cl. 414-511.000.
Socola, Helen M.; and Topor, Michael G., to Frito-Lay, Inc. Apparatus for applying viscous seasoning evenly to tumbling food articles. 4,576,108, Cl. 118-19.000.
Soder, Alfons: *See—*
Hinze, Heinz-Joachim; Soder, Alfons; and Popendiker, Kurt, 4,576,947, Cl. 514-263.000.
Soderberg, John H.; Jones, Howell A.; Eckert, Alton B.; and Duwel, Edward E., to Pitney Bowes Inc. Postage meter with keyboard keys for causing meter operations to be performed. 4,577,283, Cl. 364-464.000.
Sohn, Ki G.: *See—*
Shukla, Jayendra G.; Sohn, Ki G.; Twickler, Carl; and de Pierne, Otto S., 4,576,612, Cl. 51-295.000.
Solbern Corp.: *See—*
Eisenberg, Bernard C., 4,576,209, Cl. 141-1.000.
Solco Basel AG: *See—*
Oertli, Robert, 4,576,696, Cl. 204-182.600.
Solis s.r.l.: *See—*
Gazzarrini, Vinicio, 4,576,318, Cl. 223-52.000.
Sollami, Phillip A. Rotary tool holder. 4,576,528, Cl. 408-140.000.
Sollins, Irving V.: *See—*
Kaye, Gordon E.; Schwartz, Eugene B.; and Sollins, Irving V., 4,576,591, Cl. 604-62.000.
Solms, Jurgen: *See—*
Bechem, Werner; Peters, Hubertus; Solms, Jurgen; and Wolfhard, Dietrich, 4,576,684, Cl. 204-28.000.
SOLVAY & Cie (Societe Anonyme): *See—*
Viehe, Heinz; Mesmaeker, Nadine S.; and Merenyi, Robert, 4,576,759, Cl. 260-410.90R.
Sony Corporation: *See—*
Collins, Mark C., 4,577,237, Cl. 358-336.000.
Fukuda, Shinichi, 4,577,180, Cl. 340-347.0DD.
Kambara, Goro; and Fujii, Makoto, 4,576,113, Cl. 118-697.000.
Katsuyama, Akira; and Kimura, Shuichi, 4,577,300, Cl. 369-43.000.
Sato, Noboru; and Tanaka, Tomiji, 4,576,699, Cl. 204-192.00M.
Takanashi, Kenji, 4,577,236, Cl. 358-320.000.
Wilkinson, James H., 4,577,241, Cl. 360-51.000.
Soobitsky, James A., to Zygo Corporation. Piezoelectric micromotion actuator. 4,577,131, Cl. 310-328.000.
Soporowski, Andrzej L.: *See—*
Snider, Alan D.; Soporowski, Andrzej L.; and Herbst, Manfred O., 4,576,328, Cl. 229-1.50R.
Sorbini, Paolo, to Also Laboratori S.A.S. Dietary supplement and method. 4,576,932, Cl. 514-54.000.
Sorenson, Gregg R.: *See—*
Olson, Gene R.; and Sorenson, Gregg R., 4,577,089, Cl. 219-124.220.
Sotnikov, Ivan A.: *See—*
Lipets, Adolf U.; Kuznetsova, Svetlana M.; Galuskin, Vadim B.; Lafa, Jury I.; Sotnikov, Ivan A.; Ovchar, Vladimir G.; and Fedosov, Alexei Z., 4,576,226, Cl. 165-134.100.
Sougen, Katsuya, to AIWA Co., Ltd. Video tape recorder usable with different types of tape cassettes. 4,577,239, Cl. 360-15.000.
Soulie, Jacques: *See—*
Plard, Christian; and Soulie, Jacques, 4,577,093, Cl. 219-376.000.
Southwest Research Institute: *See—*
Light, Glenn M., 4,577,337, Cl. 378-044.000.
Spanko, Jacob E. Measurement templates for a dental restoration. 4,576,576, Cl. 433-72.000.
Spartanics Ltd.: *See—*
Mohan, William L.; and Willits, Samuel P., 4,576,262, Cl. 192-18.00B.
Spector, George: *See—*
Farrelly, Susan E.; and Spector, George, 4,576,668, Cl. 156-93.000.
Huhn, John H.; and Spector, George, 4,575,978, Cl. 52-234.000.
Jamerson, Willis B.; and Spector, George, 4,575,884, Cl. 5-420.000.
Speed Cut, Inc.: *See—*
Pyle, Stoddard H., 4,576,076, Cl. 83-471.300.
Speller, David J.: *See—*
Ross, Richard J.; and Speller, David J., 4,576,196, Cl. 137-508.000.
Spellman, Stanley. Refuse bag frame for vacuum cleaners. 4,575,895, Cl. 15-327.00R.
Spencer, Michael L., to Marliss Industries, Inc. Folding outrigger attachment for farm implements. 4,576,238, Cl. 172-311.000.
Spencer, Terrance D.: *See—*
Johnson, Thomas E.; and Spencer, Terrance D., 4,576,406, Cl. 294-86.410.
Spengler, Charles J.; and Whitlow, Graham A., to Westinghouse Electric Corp. Spalling and corrosion resistant ceramic coating for land and marine combustion turbines. 4,576,874, Cl. 428-623.000.
Speranza, Donald; Lane, E. James; and Markyvech, Ronald K., to Eaton Corporation. Automatic transmission controls with multiple downshift off-highway mode. 4,576,065, Cl. 74-866.000.
Sperr, Charles J.; Sperr, Douglas C.; and Genrich, Thad J., to Sperr, Charles J.; and Sperr, Douglas C. Evaporative cooling. 4,576,013, Cl. 62-171.000.

Sperr, Douglas C.: *See—*
Sperr, Charles J.; Sperr, Douglas C.; and Genrich, Thad J., 4,576,013, Cl. 62-171.000.
Sperry Corporation: *See—*
Hopper, Michael G.; and Prival, Harri G., 4,577,273, Cl. 364-200.000.
Zbinden, Terry B., 4,577,149, Cl. 324-73.0PC.
Spie-Batignolles: *See—*
Plard, Christian; and Soulie, Jacques, 4,577,093, Cl. 219-376.000.
Spieldiener, Reinhold: *See—*
Spieldiener, Robert; Saiko, Alfons; and Spieldiener, Reinhold, 4,576,373, Cl. 272-41.000.
Spieldiener, Robert; Saiko, Alfons; and Spieldiener, Reinhold. Aerial amusement ride. 4,576,373, Cl. 272-41.000.
Spisak, Andrew M.; and Adduci, Robert L., to General Motors Corporation. Adaptive ride hydraulic damper. 4,576,258, Cl. 188-299.000.
Sprecker, Mark A.; Belko, Robert P.; Schreiber, William L.; and Licciardello, Michael, to International Flavors & Fragrances Inc. Isomer-directed process for producing asymmetric ketones using catalytic Claisen rearrangement of allylic ethers, intermediates, and uses of products and intermediates of process in perfumery. 4,576,741, Cl. 252-522.00R.
Sprecker, Mark A.; Hanna, Marie R.; Tokarzewski, Richard J.; Belko, Robert P.; Watkins, Hugh; and Vock, Manfred H., to International Flavors & Fragrances Inc. Perfume uses of reactive product containing mono-oxomethyl substituted polyhydrodimethanonaphthalene derivatives. 4,576,742, Cl. 252-522.00R.
Spred-A-Bag Inc.: *See—*
Foster, Robert D., 4,576,316, Cl. 222-541.000.
Square D Starkstrom GmbH: *See—*
Lemmer, Helmut, 4,577,174, Cl. 335-261.000.
SSAB Svenskt Stal AB: *See—*
Grip, Carl E.; Hagstad, Bertil J.; and Andersson, Bjorn H., 4,575,912, Cl. 29-173.000.
Josefsson, Erik A. A., 4,576,655, Cl. 148-12.00F.
Stadler, Heinz: *See—*
Schedele, Helmut; Schweiger, Josef; and Stadler, Heinz, 4,577,173, Cl. 335-80.000.
Stahlecker, Fritz: *See—*
Griesinger, Rolf; and Fetzer, Gerhard, 4,576,000, Cl. 57-416.000.
Stahlecker, Hans: *See—*
Griesinger, Rolf; and Fetzer, Gerhard, 4,576,000, Cl. 57-416.000.
Stahlhofen, Paul; and Mack, Gerhard, to Hoechst Aktiengesellschaft. Process for producing negative copies by means of a material based on 1,2-quinone diazides with 4-ester or amide substitution. 4,576,901, Cl. 430-325.000.
Stamicarbon B.V.: *See—*
Corvers, Antonius; and Hofman, Johannes H. A., 4,577,023, Cl. 546-122.000.
Stanbro, William D.: *See—*
Parker, John G.; and Stanbro, William D., 4,576,173, Cl. 128-633.000.
Standard Oil Company, The: *See—*
Benton, Kenneth C.; and O'Kane, James L., 4,577,008, Cl. 526-342.000.
Hartman, Robert A., 4,577,051, Cl. 136-244.000.
Staniszewski, Tadeusz, to Ziyad Incorporated. Locking assembly for print wheel. 4,576,493, Cl. 400-175.000.
Starnes, Roger A. Serving dish with heating means. 4,575,928, Cl. 29-611.000.
Stauber, Siegfried T., to Wyler AG. Measuring arm for a multiple coordinate measuring machine. 4,575,947, Cl. 33-561.000.
Stauffer Chemical Company: *See—*
Carter, Charles G., 4,576,631, Cl. 71-92.000.
Steiger, Rolf: *See—*
Fryberg, Mario; Schaller, Heinrich; Steiger, Rolf; and Peter, Heinz, 4,576,885, Cl. 430-390.000.
Stein, Robert, to Vining Broom Company, Inc. Gravity feed merchandise display fixture. 4,576,291, Cl. 211-49.100.
Steiner, Alois, to Sulzer Brothers Limited. Weft severing device for a weaving machine. 4,576,208, Cl. 139-429.000.
Steiner Corporation: *See—*
Smith, Randel P.; and Steiner, Robert L., 4,576,313, Cl. 222-81.000.
Steiner, Eginhard: *See—*
Martin, Pierre; and Steiner, Eginhard, 4,577,028, Cl. 546-345.000.
Steiner, Helmut; Ebbinghaus, Wilfried; and Paech, Hartmut, to Bergische Achsenfabrik Fr. Kotz & Sohne. Bearing bushing. 4,576,488, Cl. 384-291.000.
Steiner, Robert L.: *See—*
Smith, Randel P.; and Steiner, Robert L., 4,576,313, Cl. 222-81.000.
Steinke, Rudi: *See—*
Rothaut, Josef; Hausselt, Jurgen; Steinke, Rudi; and Klaus, Angela, 4,576,790, Cl. 420-464.000.
Stelte, David J.: *See—*
Chu, Jean; Hinch, Mark G.; Johnson, James M., Jr.; Kafka, Henry J.; and Stelte, David J., 4,577,314, Cl. 370-94.000.
Steltenkamp, Robert J.: *See—*
Colodney, Daniel; and Steltenkamp, Robert J., 4,576,738, Cl. 252-559.000.
Stempfhuber, Lorenz, to Marker International Company. Electronic ski-binding. 4,576,396, Cl. 280-612.000.
Stenkvist, Sven-Einar: *See—*
Bergman, Kjell; and Stenkvist, Sven-Einar, 4,577,326, Cl. 373-103.000.
Sterling Drug Inc.: *See—*
Paszek, Leon E.; and Gebbia, Barbara, 4,576,729, Cl. 252-106.000.
Sterosynt Ltd.: *See—*
MacDonald, Peter, 4,576,936, Cl. 514-180.000.
Stevens, Joy; and Hemmeter, George T. Vertical action tooth brush. 4,575,894, Cl. 15-172.000.
Stewart, David G.: *See—*
Nay, Barry; and Stewart, David G., 4,576,968, Cl. 518-713.000.
Stewart, Roger G.; and Ipri, Alfred C., to RCA Corporation. Dual word line, electrically alterable, nonvolatile floating gate memory device. 4,577,215, Cl. 357-23.500.
Stickel, Heinz: *See—*
Schwarz, Helmut; and Stickel, Heinz, 4,576,496, Cl. 400-352.000.
Stieber, Michael; Meinke, Peter; and Dreher, Gunther, to M.A.N. Maschinenfabrik Augsburg-Nurnberg AG. Method and device for automatically steering a vehicle. 4,576,246, Cl. 180-168.000.
Stinson, Robert J. Saw blade guard. 4,576,073, Cl. 83-102.100.
Stockwell, Claude L.: *See—*
Cowlam, Stephen K.; Moss, Steven Y.; Stockwell, Claude L.; and Phillips, Victor R., 4,576,765, Cl. 210-801.000.
Stoddart, Barry, to Procter & Gamble Company, The. Cleaning compositions. 4,576,728, Cl. 252-102.000.
Stol, Israel, to Westinghouse Electric Corp. Pressure-differential method for sleeve-to-tube joining. 4,577,084, Cl. 219-85.00M.
Stolar, Inc.: *See—*
Stolarczyk, Larry G., 4,577,153, Cl. 324-334.000.
Stolarczyk, Larry G., to Stolar, Inc. Continuous wave medium frequency signal transmission survey procedure for imaging structure in coal seams. 4,577,153, Cl. 324-334.000.
Storage Technology Partners II: *See—*
Mathews, Harlan P.; and Cambier, Craig, 4,577,301, Cl. 369-44.000.
Woods, John W.; Kummli, Paul; and White, Edward M., 4,577,307, Cl. 369-270.000.
Stout, Gregg W.; Nelson, John A.; and Crisp, John H., to Baker Oil Tools, Inc. Perforation and isolation apparatus. 4,576,236, Cl. 166-386.000.
Strametz, Helmut: *See—*
Dorrer, Bernhard; and Strametz, Helmut, 4,576,994, Cl. 525-247.000.
Strock, Lynn E.: *See—*
Lott, Hamilton, Jr.; and Strock, Lynn E., 4,575,983, Cl. 52-544.000.
Strul, Bruno: *See—*
Corbet, Aaron B.; Holliger, Christoph; and Strul, Bruno, 4,576,477, Cl. 356-39.000.
Stumpe, Werner: *See—*
Muller, Egbert; and Stumpe, Werner, 4,576,416, Cl. 303-15.000.
Sturm, Ruger & Company, Inc.: *See—*
Ruger, William B.; and Melcher, Roy L., 4,575,963, Cl. 42-70.00F.
Sturm, Steven P., to AccuRay Corporation. Measuring the percentage or fractional moisture content of paper having a variable infrared radiation scattering characteristic and containing a variable amount of a broadband infrared radiation absorber. 4,577,104, Cl. 250-339.000.
Suburban Tool, Inc.: *See—*
Bailey, Donald H., 4,577,285, Cl. 364-560.000.
Suda, Masao: *See—*
Morimoto, Keiji; Satoh, Shuichi; Iwai, Yoshiyuki; Ae, Osamu; Suda, Masao; Tsuchiya, Kiyoshi; Ogata, Kojiro; and Miyanagi, Naoki, 4,576,515, Cl. 405-184.000.
Sueddeutsche Kuehlerfabrik Julius Fr. Behr GmbH & Co. KG: *See—*
Humpolik, Bohumil; Kluna, Vlastimil; Winterer, Wilfried; Kuchelmeister, Reinhold; and Bayer, Jurgen, 4,576,223, Cl. 165-79.000.
Suematsu, Yoshiyuki: *See—*
Echigo, Yoshiaki; Suematsu, Yoshiyuki; and Ishikura, Tadashi, 4,576,969, Cl. 521-28.000.
Sueyasu, Seisuke: *See—*
Yoda, Yasutada; Sueyasu, Seisuke; Orikawa, Michihiro; and Futamura, Shoji, 4,576,559, Cl. 425-28.00R.
Sugano, Akira; Muramatsu, Masaru; Yamanobe, Sachio; and Sato, Yoshio, to Hitachi, Ltd.; and Hitachi Engineering Co., Ltd. Plant control method. 4,577,270, Cl. 364-151.000.
Suganuma, Nobuo; Anzai, Masafumi; Takada, Nobuyuki; and Ichikawa, Hiromichi, to Lion Corporation. Dentifrice composition. 4,576,816, Cl. 424-50.000.
Sugawara, Fukuo; Iwane, Yasuhiko; Hori, Fumihisa; and Onozato, Takashi, to Alps Electric Co., Ltd. Multi-stage printer. 4,576,492, Cl. 400-146.000.
Sugg, Basil R.: *See—*
Hahn, Clive E. W.; Palayiwa, Eileen; Lindsay-Scott, David J.; Sugg, Basil R.; and Tyrrell, Paul J., 4,576,159, Cl. 128-203.140.
Sugimori, Shigeru; Isoyama, Toyoshiro; and Goto, Yasuyuki, to Chisso Corporation. 4-Halogenobenzoic acid esters. 4,576,733, Cl. 252-299.670.
Sugiuchi, Toshiyasu; Aoyama, Susumu; and Yoshida, Toshio, to Riken Corporation. Method of joining tubular member and annular parts. 4,575,913, Cl. 29-432.000.
Sugiyama, Keiichi, to Yamaha Hatsudoki Kabushiki Kaisha. Intake control system for multi-valve type internal combustion engine. 4,576,131, Cl. 123-432.000.
Sugiyama, Susumu, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Semiconductor transducer. 4,576,052, Cl. 73-862.630.
Sugiyama, Tohru; Suzuki, Yasuo; Katagiri, Katsumasa; and Furutani, Satoshi, to Shimizu Pharmaceutical Co., Ltd. Transfusion preparation for intravenous infusion. 4,576,930, Cl. 514-23.000.
Suh, John T.; Piwinski, John J.; Jones, Howard; and Neiss, Edward S., to USV Pharmaceutical Corp. Compounds for treating hypertension. 4,576,941, Cl. 514-222.000.

Suh, Sung L.; Burns, Gerald E.; and Silcox, William H., to Chevron Research Company. Motion damping apparatus. 4,576,520, Cl. 405-224.000.
Sujaku, Takamichi, to Kabushiki Kaisha Toshiba. Door of microwave oven. 4,577,079, Cl. 219-10.55D.
Sullivan, David O.: *See—*
Murray, W. Kirby; and Sullivan, David O., 4,576,402, Cl. 285-39.000.
Sullivan, Jeffrey R., to McGard, Inc. Tank hatch opening obstructing construction. 4,576,308, Cl. 220-327.000.
Sulzer Brothers Limited: *See—*
Ammann, Heinz, 4,576,120, Cl. 122-6.00A.
Kunzli, Albert, 4,577,091, Cl. 219-284.000.
Muller, Maurice E.; and Frey, Otto, 4,576,152, Cl. 128-92.00R.
Steiner, Alois, 4,576,208, Cl. 139-429.000.
Sumitomo Bakelite Company Limited: *See—*
Suzuki, Setsuo; Tsuge, Morio; and Nakayama, Syoichi, 4,576,896, Cl. 430-271.000.
Sumitomo Chemical Company, Limited: *See—*
Ishii, Tamaki; Yachigo, Shinichi; Sasaki, Manji; Shionoya, Masahisa; and Okamura, Haruki, 4,576,734, Cl. 252-404.000.
Tatsukami, Yoshiharu; Kato, Yasuyuki; and Wake, Shigeo, 4,576,438, Cl. 350-96.340.
Sumitomo Electric Industries, Ltd.: *See—*
Kawazoe, Chisato; Yoshida, Kenichi; and Tsuno, Koichi, 4,576,146, Cl. 128-6.000.
Tsuno, Koichi; and Nishimura, Akira, 4,576,145, Cl. 128-6.000.
Superior Electric Company, The: *See—*
Lenzing, Richard S., 4,577,146, Cl. 323-341.000.
Sutter Biomedical, Inc.: *See—*
Koerner, Richard J.; Dumas, Christopher C.; Filia, Philip J.; Lawrence, Ronald L.; and Petch, David B., 4,576,148, Cl. 128-26.000.
Suzuki, Masane: *See—*
Cho, Michio; Suzuki, Masane; and Saito, Takayuki, 4,576,458, Cl. 354-199.000.
Suzuki, Ryoichi; Ohno, Jiro; and Gondo, Hisashi, to Nippon Steel Corporation. Hydrogen storage metal material. 4,576,639, Cl. 75-123.00E.
Suzuki, Setsuo; Tsuge, Morio; and Nakayama, Syoichi, to Sumitomo Bakelite Company Limited. Optical recording medium. 4,576,896, Cl. 430-271.000.
Suzuki, Takeshi: *See—*
Yamatsu, Isao; Abe, Shinya; Inai, Yuichi; Suzuki, Takeshi; Kinoshita, Kensaku; Mishima, Mannen; Katoh, Yoshinori; Kobayashi, Seiichi; Murakami, Manabu; and Yamada, Kouzi, 4,576,963, Cl. 514-532.000.
Suzuki, Yasuo: *See—*
Sugiyama, Tohru; Suzuki, Yasuo; Katagiri, Katsumasa; and Furutani, Satoshi, 4,576,930, Cl. 514-23.000.
Suzuki, Yoichi: *See—*
Noda, Yasumasa; and Suzuki, Yoichi, 4,577,078, Cl. 219-10.55A.
Suzuki, Yuji: *See—*
Urata, Koichi; Takaishi, Naotake; and Suzuki, Yuji, 4,576,967, Cl. 514-772.000.
Suzuyama, Hiroshi: *See—*
Akita, Kenji; Sakaguchi, Minoru; and Suzuyama, Hiroshi, 4,577,075, Cl. 200-148.00R.
Svensson, Jan A.; and Axelsson, Robert. Slide valve and coupling unit. 4,576,199, Cl. 137-614.040.
Sweetana, Andrew S., to Westinghouse Electric Corp. Surge arrester equipped for monitoring functions and method of use. 4,577,148, Cl. 324-72.000.
Swell-Wear, Inc.: *See—*
Wolfe, Henry S., 4,576,087, Cl. 98-1.000.
Swick, George E., Jr., to Bennett Pump Company. Fuel dispensing station. 4,576,312, Cl. 222-27.000.
SWS Inc.: *See—*
Sharp, Charles M., 4,577,088, Cl. 219-121.0LD.
Sy, Kian-Bon K. Routing mechanism with encapsulated FCS for a multi-ring local area network. 4,577,313, Cl. 370-88.000.
Symborski, Alex P.: *See—*
Chappelear, Robert N.; and Symborski, Alex P., 4,576,621, Cl. 65-10.200.
Syska, Andrew J.: *See—*
Massey, Lester G.; Clawson, Lawrence G.; and Syska, Andrew J., 4,575,948, Cl. 34-10.000.
Szentivanyi, Zsolt: *See—*
Buding, Hartmuth; Konigshofen, Heinrich; Szentivanyi, Zsolt; and Thormer, Joachim, 4,576,992, Cl. 525-211.000.
T.A.D. Avanti, Inc.: *See—*
Hanscom, Bradford E.; and Mock, Gerald L., 4,577,063, Cl. 179-6.160.
Tabuchi, Makoto; and Imanishi, Kiyoshi, to Murata Manufacturing Co., Ltd. Automatic producing apparatus of chip-form electronic parts aggregate. 4,575,995, Cl. 53-591.000.
Tachibana, Noriki: *See—*
Mizukura, Noboru; Fujimori, Noboru; Masuda, Kosaku; Yoshimoto, Shinji; Tachibana, Noriki; and Ueda, Eiichi, 4,576,911, Cl. 430-548.000.
Tachikawa Spring Co. Ltd.: *See—*
Hatta, Susumu, 4,576,413, Cl. 297-408.000.
Kitamura, Masahiro, 4,576,411, Cl. 297-353.000.
Ohnishi, Yutaka, 4,576,323, Cl. 228-29.000.
Tacito, Louis D.: *See—*
Clark, Richard E.; Tacito, Louis D.; Miller, Bryan H.; and Beck, Martin H., 4,575,915, Cl. 29-509.000.
Tadenuma, Isao: *See—*
Tanahashi, Tooru; and Tadenuma, Isao, 4,576,253, Cl. 187-29.00R.
Tahara, Tetsuya; Ikebe, Tsuguo; Terasawa, Michio; and Imayoshi, Tomonori, to Yoshitomi Pharmaceutical Industries, Ltd. Anti-allergic 3-indolecarboxamides. 4,576,940, Cl. 514-212.000.
Taheri, Syde A. Method and apparatus for monitoring leg blood pressure of an ambulatory patient. 4,576,180, Cl. 128-673.000.
Tajima, Isao, to Asahi Kasei Kogyo Kabushiki Kaisha. Threaded fiber-reinforced plastic member and method of coating the same. 4,576,847, Cl. 428-67.000.
Takada, Juichiro. Latch buckle for seat belt. 4,575,907, Cl. 24-641.000.
Takada, Nobuyuki: *See—*
Suganuma, Nobuo; Anzai, Masafumi; Takada, Nobuyuki; and Ichikawa, Hiromichi, 4,576,816, Cl. 424-50.000.
Takagi, Katsuaki; Kita, Yuzo; Hagiwara, Yoshimune; Ogawa, Kazuyoshi; and Hara, Hideo, to Hitachi, Ltd.; and Hitachi Micro Computer Engineering Ltd. Pulse width modulation circuit and integration circuit of analog product using said modulation circuit. 4,577,154, Cl. 328-158.000.
Takagi Kogyo Co., Ltd.: *See—*
Takagi, Mitsuo, 4,576,106, Cl. 116-63.00R.
Takagi, Mitsuo, to Takagi Kogyo Co., Ltd. Marker rope. 4,576,106, Cl. 116-63.00R.
Takahashi, Hideaki: *See—*
Kondo, Haruyoshi; Takahashi, Hideaki; Saji, Keiichi; Takeuchi, Takashi; and Hayakawa, Kiyoharu, 4,576,705, Cl. 204-406.000.
Takahashi, Kenji: *See—*
Ohba, Shinya; Ando, Haruhisa; Nakai, Masaaki; Ozaki, Toshifumi; Seki, Koichi; Takahashi, Kenji; Akiyama, Toshiyuki; Takemoto, Iwao; Imaide, Takuya; Okuda, Akihide; and Kubo, Masaharu, 4,577,231, Cl. 358-212.000.
Takahashi, Koji; and Mochizuki, Akira, to Fuji Xerox Co., Ltd. Sorter having guide members. 4,576,371, Cl. 271-296.000.
Takahashi, Osamu; and Sakai, Minoru, to Fuji Photo Film Co., Ltd. Color diffusion transfer photographic element with heat treated pyrazolidinone developer. 4,576,906, Cl. 430-497.000.
Takahashi, Shuuji: *See—*
Nakazawa, Masao; Yashima, Michio; and Takahashi, Shuuji, 4,576,879, Cl. 429-86.000.
Takahashi, Tadashi: *See—*
Nishida, Naoto; Takahashi, Tadashi; and Kakizaki, Katsuyuki, 4,577,324, Cl. 372-95.000.
Takahashi, Toru: *See—*
Davis, George T.; Chiang, Chawan-Kang; Antonucci, Joseph M.; and Takahashi, Toru, 4,576,882, Cl. 429-192.000.
Takahashi, Toshio: *See—*
Makisumi, Yasuo; Murabayashi, Akira; Tawara, Katsuya; Watanabe, Yoshihachi; Takahashi, Toshio; and Konishi, Takao, 4,576,956, Cl. 514-380.000.
Takahashi, Yoshihiro; and Rey, Maria A., to Xertex Corporation. X-Ray fluorescence spectrometer and method of calibrating the same. 4,577,338, Cl. 378-048.000.
Takahashi, Yoshinobu: *See—*
Fukuta, Kenji; Kaneko, Takaoki; and Takahashi, Yoshinobu, 4,576,692, Cl. 204-165.000.
Takaishi, Naotake: *See—*
Urata, Koichi; Takaishi, Naotake; and Suzuki, Yuji, 4,576,967, Cl. 514-772.000.
Takakuwa, Yashio: *See—*
Arai, Kazutaka; Ohara, Yoshio; Takakuwa, Yashio; and Iizumi, Toyoko, 4,577,025, Cl. 546-198.000.
Takami, Masaho, to Shoko Kiko Co., Ltd. Package strapping machine. 4,575,994, Cl. 53-582.000.
Takamura, Koji: *See—*
Yabe, Hisao; Sasa, Hiroyuki; Nakajima, Yukio; Ishii, Fumiaki; Takamura, Koji; and Nakamura, Takeaki, 4,576,650, Cl. 134-22.120.
Takanashi, Kenji, to Sony Corporation. Apparatus for reproducing a color video signal. 4,577,236, Cl. 358-320.000.
Takata, Yoshinori; and Taki, Mamoru, to Hitachi, Ltd. Flowthrough-type electrolytic cell. 4,576,706, Cl. 204-409.000.
Takayanagi, Takashi: *See—*
Miyazaki, Nobuyuki; Takayanagi, Takashi; and Higaki, Hiromichi, 4,576,977, Cl. 523-137.000.
Takeda Chemical Industries, Inc.: *See—*
Nakabayashi, Masamitsu; Furukawa, Yuzo; and Tashiro, Akira, 4,576,995, Cl. 525-285.000.
Takeda Chemical Industries, Ltd.: *See—*
Imada, Isuke, 4,576,760, Cl. 558-37.000.
Tsurushima, Masaaki; Kokubu, Gozi; and Moriya, Koji, 4,577,012, Cl. 536-24.000.
Tsushima, Susumu; and Nishikawa, Kohei, 4,576,933, Cl. 514-77.000.
Takeda, Nobuhiro; Hattori, Masaichi; and Hanaki, Akira, to Kabushiki-Kaisha Tokai-Rika-Denki-Seisakusho. Light responsive switch structure for use in a motor vehicle or the like. 4,577,117, Cl. 307-10.00R.
Takemoto, Iwao: *See—*
Ohba, Shinya; Ando, Haruhisa; Nakai, Masaaki; Ozaki, Toshifumi; Seki, Koichi; Takahashi, Kenji; Akiyama, Toshiyuki; Takemoto, Iwao; Imaide, Takuya; Okuda, Akihide; and Kubo, Masaharu, 4,577,231, Cl. 358-212.000.
Ozawa, Naoki; Akiyama, Toshiyuki; Nagahara, Shuusaku; and Takemoto, Iwao, 4,577,230, Cl. 358-212.000.

Takemura, Minoru: *See—*
Kamei, Futoshi; Harada, Shinichi; Yasunishi, Akira; Takemura, Minoru; Fujikawa, Takeshi; Iida, Shinzo; and Katayama, Yasuyuki, 4,577,277, Cl. 364-472.000.
Takeuchi, Kenji: *See—*
Nishu, Mitsufumi; Takeuchi, Kenji; Sato, Masanori; Horiuchi, Ichiro; Muramatsu, Katsuhiko; and Kiryu, Koji, 4,576,059, Cl. 74-473.00P.
Takeuchi, Takashi; Nishimura, Keizo; Kobayashi, Masaharu; and Oiso, Kazumasa, to Hitachi, Ltd. Error flag processor. 4,577,319, Cl. 371-38.000.
Takeuchi, Takashi: *See—*
Kondo, Haruyoshi; Takahashi, Hideaki; Saji, Keiichi; Takeuchi, Takashi; and Hayakawa, Kiyoharu, 4,576,705, Cl. 204-406.000.
Takeuchi, Tomio: *See—*
Umezawa, Hamao; Umezawa, Sumio; Tsuchiya, Tsutomu; Takeuchi, Tomio; Tanaka, Akihiro; and Sakamoto, Shuichi, 4,576,931, Cl. 514-30.000.
Taki, Mamoru: *See—*
Takata, Yoshinori; and Taki, Mamoru, 4,576,706, Cl. 204-409.000.
Takimoto, Tadashi; Oishibashi, Hirotsugu; Ueyama, Katsuyoshi; Ohara, Muneyuki; Kobayashi, Akio; Aoki, Keiichi; Nakamura, Mitsuo; and Hagiwara, Kenzo, to Japanese National Railways; and Hakusan Seisakusho Co., Ltd. Gas pressure welding machine. 4,576,324, Cl. 228-44.300.
Takizawa, Kazushige: *See—*
Hirokazu, Sakaki; and Takizawa, Kazushige, 4,576,686, Cl. 204-33.000.
Takizawa, Yoshio: *See—*
Hirose, Naohiro; Sasaki, Osamu; and Takizawa, Yoshio, 4,576,886, Cl. 430-59.000.
Talbo, Henri: *See—*
Collin, Jean J.; Landreau, Alain; Talbo, Henri; Martin, Guy; and Morvan, Jean, 4,576,717, Cl. 210-610.000.
Talpo, Gianpietro, to Sace S.p.A. Costruzioni Elettromeccaniche. Electrical circuit breaker with arc extinguishing compressed fluid. 4,577,073, Cl. 200-148.00A.
Tamas, Istvan; Riederauer, Szilard; and Kovacs, Janos, to Vasipari Kutato es Fejleszto Vallalat. Process for preparing silicon-base complex ferrous alloys. 4,576,637, Cl. 75-10.00R.
Tames, Walter: *See—*
Oliver, Vincent S.; Tames, Walter; Prochaska, Helmuth H.; and Wieser, Karl-Heinz, 4,576,649, Cl. 106-308.00Q.
Tamplin, Paul; and Heaven, Malcolm D., to Raychem Limited. Low density polyethylene polymeric compositions. 4,576,993, Cl. 525-240.000.
Tamura, Yoshiharu: *See—*
Nakajima, Masataka; Mase, Yasushi; and Tamura, Yoshiharu, 4,576,132, Cl. 123-438.000.
Tanabe Seiyaku Co., Ltd.: *See—*
Wagatsuma, Mitsuyoshi; Hatsuno, Susumu; Yamaguchi, Totaro; and Ohshima, Satoshi, 4,576,938, Cl. 514-206.000.
Tanahashi, Tooru; and Tadenuma, Isao, to Mitsubishi Denki Kabushiki Kaisha. Velocity control apparatus for an elevator. 4,576,253, Cl. 187-29.00R.
Tanaka, Akihiro: *See—*
Umezawa, Hamao; Umezawa, Sumio; Tsuchiya, Tsutomu; Takeuchi, Tomio; Tanaka, Akihiro; and Sakamoto, Shuichi, 4,576,931, Cl. 514-30.000.
Tanaka, Masanori; Maehara, Atsushi; and Kanai, Junichi, to Hokuetsu Industries Co., Ltd. Screw rotor assembly. 4,576,558, Cl. 418-150.000.
Tanaka, Masanori: *See—*
Kobayashi, Osamu; Tanaka, Masanori; and Ishii, Jun, 4,576,275, Cl. 194-203.000.
Tanaka, Mitsuo, to Yanmar Diesel Engine Co., Ltd. Gas-diesel dual fuel engine. 4,576,137, Cl. 123-575.000.
Tanaka, Sakuya: *See—*
Seto, Kiyotomo; Tanaka, Sakuya; and Sakoda, Ryozo, 4,576,934, Cl. 514-85.000.
Tanaka Seiko Co. Ltd.: *See—*
Tanaka, Tomomasa, 4,576,288, Cl. 209-609.000.
Tanaka, Shinya, to Tokyo Kogaku Kikai Kabushiki Kaisha. Phototherapeutic apparatus with spot size regulating means. 4,576,160, Cl. 128-303.100.
Tanaka, Tomiji: *See—*
Sato, Noboru; and Tanaka, Tomiji, 4,576,699, Cl. 204-192.00M.
Tanaka, Tomomasa, to Tanaka Seiko Co. Ltd. Card sorting machine. 4,576,288, Cl. 209-609.000.
Tanaka, Yoshiaki: *See—*
Inami, Mamoru; Tanaka, Yoshiaki; and Ohtsuki, Zenju, 4,577,188, Cl. 340-721.000.
Tanaka, Yoshikazu: *See—*
Kumura, Haruyoshi; Tanaka, Yoshikazu; Abo, Keiju; Hirano, Hiroyuki; and Yamamuro, Sigeaki, 4,576,265, Cl. 192-0.055.
Tanaka, Yoshinari; Aoyama, Akimasa; Moritani, Takeshi; Satoh, Kenji; and Okaya, Takuji, to Kuraray Co., Ltd. Saponified products of silicon-containing ethylene-vinyl acetate copolymer as melt molding materials. 4,576,988, Cl. 524-503.000.
Tani, Isamu: *See—*
Fujita, Takayuki; Kitazawa, Yoshikazu; Akita, Tadashi; and Tani, Isamu, 4,577,032, Cl. 548-341.000.
Tani, Nobutaka; and Hayashi, Tsuneo, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Adsorbent and process for preparing the same. 4,576,928, Cl. 502-404.000.
Tanisaka, Satoshi; and Michiguchi, Yoshihiro, to Hitachi, Ltd. Spark monitor device for current collectors. 4,577,151, Cl. 324-158.0MG.
Tapp, William T.; and Fullinwider, Ranson R. Retrievable subsurface well casing slip and packer apparatus and method. 4,576,230, Cl. 166-382.000.
Tarancon Corporation: *See—*
Tarancon, Gregorio; Acevedo, Efrain; and Saud, Abel, 4,576,837, Cl. 427-255.400.
Tarancon, Gregorio; Acevedo, Efrain; and Saud, Abel, to Tarancon Corporation. Method of treating surfaces. 4,576,837, Cl. 427-255.400.
Tarnawskyj, Ihor W.: *See—*
Badesha, Santokh S.; Pai, Damodar M.; Carmichael, Kathleen M.; and Tarnawskyj, Ihor W., 4,576,634, Cl. 75-0.50A.
Tashiro, Akira: *See—*
Nakabayashi, Masamitsu; Furukawa, Yuzo; and Tashiro, Akira, 4,576,995, Cl. 525-285.000.
Tatemoto, Masayoshi: *See—*
Sako, Junichi; Yagi, Toshiharu; Higashihata, Yoshihide; Tatemoto, Masayoshi; Tomihashi, Nobuyuki; and Shimizu, Yoshiki, 4,577,005, Cl. 526-254.000.
Tatsukami, Yoshiharu; Kato, Yasuyuki; and Wake, Shigeo, to Sumitomo Chemical Company, Limited. Heat-resisting optical fiber. 4,576,438, Cl. 350-96.340.
Taurand, Gerard: *See—*
Bourzat, Jean-Dominique; Cotrel, Claude; Farge, Daniel; Paris, Jean-Marc; and Taurand, Gerard, 4,576,954, Cl. 514-314.000.
Tawara, Katsuya: *See—*
Makisumi, Yasuo; Murabayashi, Akira; Tawara, Katsuya; Watanabe, Yoshihachi; Takahashi, Toshio; and Konishi, Takao, 4,576,956, Cl. 514-380.000.
Taylor, Dale F.; and Sammler, Louis S., to General Electric Company. Process for preparing a sintered ceramic article with porous region. 4,576,667, Cl. 156-89.000.
Taylor, Lawrence H. Housing development building arrangement. 4,575,977, Cl. 52-169.300.
Team, Inc.: *See—*
Harrison, George W., 4,576,401, Cl. 285-15.000.
Technicare Corporation: *See—*
Carlson, Roland W.; and Blaskis, Edward A., 4,577,340, Cl. 378-132.000.
Technicon Instruments Corporation: *See—*
Yaverbaum, Sidney; and Kusnetz, Jacob, 4,576,912, Cl. 435-7.000.
Teculescu, Nicholas: *See—*
Bodenan, Rene; and Teculescu, Nicholas, 4,575,952, Cl. 34-54.000.
Tecumseh Products Company: *See—*
Ashenfelter, Roger N., 4,576,555, Cl. 417-372.000.
Tedder, Bob L. Wheel protector. 4,576,301, Cl. 220-1.00C.
Teijin Limited: *See—*
Kadokura, Sadao; Honjo, Kazuhiko; Tomie, Takashi; and Naoe, Masahiko, 4,576,700, Cl. 204-192.00M.
Sasaki, Ichitaro; Mori, Takashi; and Tsuyuguchi, Tadao, 4,576,344, Cl. 242-67.10R.
Telecommunications Radioelectriques et Telephoniques T.R.T.: *See—*
Brie, Richard; and Guidoux, Loic B. Y., 4,577,329, Cl. 375-14.000.
Telefunken electronic GmbH: *See—*
Heigl, Franz; and Rehm, Josef, 4,577,171, Cl. 334-1.000.
Tempo Sanys: *See—*
Caumont, Jean-Francois, 4,575,992, Cl. 53-520.000.
Tenore, Richard R.: *See—*
Guth, Jacob J.; Lukenbach, Elvin R.; and Tenore, Richard R., 4,576,757, Cl. 260-404.500.
Terada, Takami, to Aisin Seiki Kabushiki Kaisha; and Toyota Jidosha Kabushiki Kaisha. Seat reclining mechanism. 4,576,412, Cl. 297-362.000.
Teramachi, Hiroshi. Linear slide bearing. 4,576,421, Cl. 308-6.00C.
Terasawa, Michio: *See—*
Tahara, Tetsuya; Ikebe, Tsuguo; Terasawa, Michio; and Imayoshi, Tomonori, 4,576,940, Cl. 514-212.000.
Terashima, Kanetsugu: *See—*
Isogai, Masato; Hattori, Shintaroo; Iwasaki, Kishiroo; Kitamura, Teruo; Mukoh, Akio; Inukai, Takashi; Furukawa, Kenji; Terashima, Kanetsugu; and Saitoh, Shinichi, 4,576,732, Cl. 252-299.650.
Terio, Charles J. Terrorist vehicle barrier. 4,576,507, Cl. 404-6.000.
Terpstra, Daniel A.; and Brundage, Richard B., to Emerson Electric Co. Sawdust collection apparatus for a table saw. 4,576,072, Cl. 83-102.100.
Terrance D. Hohner: *See—*
Charney, Gregory S.; Hohner, Terrance D.; and Salibello, Cosmo, 4,576,454, Cl. 351-243.000.
Terrot Strickmaschinen GmbH: *See—*
Schindele, Alfred, 4,576,018, Cl. 66-106.000.
Terumo Medical Corporation: *See—*
Proud, Todd A.; Lin, Tom F.; Mitchell, Wayne J.; and Kasper, James D., 4,576,185, Cl. 128-760.000.
Terzian, Rouben T.: *See—*
Balogh, John M.; and Terzian, Rouben T., 4,576,585, Cl. 446-199.000.
Teshiba, Toko: *See—*
Miyake, Hidenori; Fujiwara, Shunji; Nakazato, Yoshio; Yanagishima, Fumiya; and Teshiba, Toko, 4,576,029, Cl. 72-205.000.
Tetra-Tech, Inc.: *See—*
Hodara, Henri; and Wells, Willard H., 4,577,184, Cl. 340-566.000.
Tetsuka, Shigeo, to Victor Company of Japan, Ltd. Tape recorder having a mechanism for preventing erroneous setting to a recording mode. 4,577,242, Cl. 360-60.000.

Texaco Inc.: *See—*
Dowling, Donald J.; and Palmer, Harold A., 4,576,231, Cl. 166-248.000.
Huang, Wann-Sheng; Mims, Donald S.; and Allen, Richard S., 4,576,036, Cl. 73-29.000.
Marshall, Hubert T., II; Vest, Eugene W.; and Villforth, Frederick J., III, 4,576,476, Cl. 356-28.000.
Martin, Roy D., 4,576,041, Cl. 73-151.000.
Texas Instruments Incorporated: *See—*
Caudel, Edward R.; and Magar, Surendar S., 4,577,282, Cl. 364-200.000.
Hynecek, Jaroslav, 4,577,232, Cl. 358-213.000.
Reed, Mark A.; and Bate, Robert T., 4,575,924, Cl. 29-576.00E.
Thai, Phi: *See—*
Brown, George W.; and Thai, Phi, 4,577,294, Cl. 365-200.000.
Thames Water Authority: *See—*
Hurley, Brian J. E.; and Rachwal, Anthony J., 4,576,719, Cl. 210-620.000.
Thayer, C. Kenneth. Fixture for securing an electrical connector. 4,576,431, Cl. 339-131.000.
Theeuwes, Felix: *See—*
Guittard, George V.; Deters, Joseph C.; Theeuwes, Felix; and Cortese, Richard, 4,576,604, Cl. 604-890.000.
Theurer, Josef, to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H. Ballast tamping machine. 4,576,095, Cl. 104-12.000.
Theurer, Josef; and Brunninger, Manfred, to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H. Box car. 4,576,538, Cl. 414-339.000.
Thew, Martin T.: *See—*
Colman, Derek A.; and Thew, Martin T., 4,576,724, Cl. 210-788.000.
Thiel, Klaus-Peter: *See—*
Baron, Winfried; Marquard, Kurt; Merrem, Hans-Joachim; Sindlinger, Raimund; and Thiel, Klaus-Peter, 4,576,903, Cl. 430-331.000.
Thioux, Alain: *See—*
Mery, Jean-Claude; Carre, Jean-Jacques; and Thioux, Alain, 4,576,255, Cl. 188-71.500.
Thistlethwaite, Stuart R., to Anglo Blackwells Limited. Aluminium-strontium-titanium-boron master alloy. 4,576,791, Cl. 420-552.000.
Thoene, Mark: *See—*
Combs, Cathy M.; Duffy, Joseph K.; and Thoene, Mark, 4,576,017, Cl. 62-372.000.
Thomas, Erwin: *See—*
Grosskinsky, Otto-Alfred; Frommer, Elmar; Ritz, Josef; Thomas, Erwin; and Weiss, Franz-Josef, 4,576,804, Cl. 423-265.000.
Thomas, Gary M. Rocking horse with interconnected rockers. 4,576,374, Cl. 272-52.500.
Thomas, John H., III: *See—*
Kaganowicz, Grzegorz; Robinson, John W.; and Thomas, John H., III, 4,576,829, Cl. 427-39.000.
Thompson, Howard J., to Medtronic, Inc. Roller pump. 4,576,556, Cl. 417-477.000.
Thomson-CSF: *See—*
Clerc, Guy, 4,577,134, Cl. 313-346.00R.
Cornet, Jean, 4,577,291, Cl. 365-126.000.
Huignard, Jean P.; Rajbenbach, Henri; Loiseaux, Brigitte; and Herriau, Jean P., 4,576,434, Cl. 350-3.640.
Thomson-CSF Broadcast, Inc.: *See—*
Kruger, Robert A.; and Nelson, James A., 4,577,222, Cl. 358-111.000.
Thormer, Joachim: *See—*
Buding, Hartmuth; Konigshofen, Heinrich; Szentivanyi, Zsolt; and Thormer, Joachim, 4,576,992, Cl. 525-211.000.
Thorogood, Robert M., to International Coal Refining Company. Convective heater. 4,576,121, Cl. 122-7.00R.
Thorpe, Denis, to Development Finance Corporation of New Zealand. Locking member. 4,576,247, Cl. 181-243.000.
Thorsen, Kjeld, to Cart-O-Matic Aktiebolag. Means for the storing of carts such as shopping carts. 4,576,274, Cl. 194-210.000.
Thurman, Lamar; Otting, Billy J.; and Otting, David L., to Otting International, Inc. Jet printer. 4,576,020, Cl. 68-205.00R.
Tidwell, Charles J., Jr.: *See—*
Powell, Larry D.; and Tidwell, Charles J., Jr., 4,575,883, Cl. 5-13.000.
TIE/Communications, Inc.: *See—*
Korsky, Vincent V.; and Laotetpitaks, Chansak, 4,577,310, Cl. 370-58.000.
Timberjack Inc.: *See—*
Johnson, Thomas E.; and Spencer, Terrance D., 4,576,406, Cl. 294-86.410.
Timms, Colin T.: *See—*
Silcock, Terence M. B.; and Timms, Colin T., 4,576,133, Cl. 123-458.000.
Ting, Sai-Pei: *See—*
Cooper, Glenn D., deceased; and Ting, Sai-Pei, 4,576,991, Cl. 525-146.000.
Titus, Timothy C., to Wells Manufacturing Corporation. Spring-biased tensioning device for a band saw blade. 4,576,077, Cl. 83-816.000.
Toda, Gyozo: *See—*
Kuroki, Takashi; Fujita, Tsuyoshi; Toda, Gyozo; Ishihara, Shousaku; and Ohzawa, Yoshiyuki, 4,576,735, Cl. 252-512.000.
Todd, Craig C.: *See—*
Allen, Ioan R.; and Todd, Craig C., 4,577,305, Cl. 369-86.000.
Toder, Ellis I. Wheeled locking carrier. 4,576,096, Cl. 104-94.000.
Togashi, Osamu: *See—*
Fujikawa, Junichi; Togashi, Osamu; and Kashio, Shigetra, 4,576,897, Cl. 430-273.000.
Toho Beslon Co., Ltd.: *See—*
Shimazaki, Kenji, 4,576,929, Cl. 502-417.000.
Tokarzewski, Richard J.: *See—*
Sprecker, Mark A.; Hanna, Marie R.; Tokarzewski, Richard J.; Belko, Robert P.; Watkins, Hugh; and Vock, Manfred H., 4,576,742, Cl. 252-522.00R.
Tokushige, Keinosuke: *See—*
Ohki, Toshio; Matsumoto, Masaomi; Sakuraya, Takashi; Tokushige, Keinosuke; and Hoshino, Shuji, 4,575,972, Cl. 51-251.000.
Tokuyama, Yoshio, to Victor Company of Japan, Ltd. Control signal generating circuit for a magnetic recording and/or reproducing apparatus. 4,577,243, Cl. 360-70.000.
Tokyo Denshi Kagaku Co., Ltd.: *See—*
Uehara, Akira; Uehara, Takashi; Saito, Miyuki; and Ishida, Toshiyuki, 4,577,165, Cl. 331-109.000.
Tokyo Gas Co., Ltd.: *See—*
Morinaga, Akio; Sakaguchi, Yoichi; Hyodo, Masakatsu; and Yagi, Isaburo, 4,576,205, Cl. 138-98.000.
Tokyo Kogaku Kikai Kabushiki Kaisha: *See—*
Tanaka, Shinya, 4,576,160, Cl. 128-303.100.
Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Kobayashi, Akira; and Kojima, Tadashi, 4,577,155, Cl. 328-164.000.
Kobayashi, Masahiro, 4,576,784, Cl. 376-352.000.
Watanabe, Tomohide, 4,577,095, Cl. 250-201.000.
Tolonen, Eric O.: *See—*
Snyder, Robert H.; and Tolonen, Eric O., 4,576,339, Cl. 241-120.000.
Tomcufcik, Andrew S.; Meyer, Walter E.; Dusza, John P.; and Tseng, Shin S., to American Cyanamid Company. Pyrazolo[1,5-a]pyrimidines. 4,576,943, Cl. 514-222.000.
Tomie, Takashi: *See—*
Kadokura, Sadao; Honjo, Kazuhiko; Tomie, Takashi; and Naoe, Masahiko, 4,576,700, Cl. 204-192.00M.
Tomihashi, Nobuyuki: *See—*
Sako, Junichi; Yagi, Toshiharu; Higashihata, Yoshihide; Tatemoto, Masayoshi; Tomihashi, Nobuyuki; and Shimizu, Yoshiki, 4,577,005, Cl. 526-254.000.
Tominaga, Katsuya, to Hakko Seiki Kabushiki Kaisha. Aiming telescope. 4,576,451, Cl. 350-566.000.
Tomita, Yuichi: *See—*
Kiuchi, Eiichi; Sawanaka, Hiroshi; and Tomita, Yuichi, 4,577,193, Cl. 343-380.000.
Tomy Kogyo Co., Inc.: *See—*
Yoneda, Yosuke, 4,576,583, Cl. 446-94.000.
Topor, Michael G.: *See—*
Socola, Helen M.; and Topor, Michael G., 4,576,108, Cl. 118-19.000.
Toray Industries, Incorporated: *See—*
Fujikawa, Junichi; Togashi, Osamu; and Kashio, Shigetra, 4,576,897, Cl. 430-273.000.
Ohigashi, Hiroji; Koga, Keiko; and Nakanishi, Toshiharu, 4,577,132, Cl. 310-800.000.
Torii, Nobutoshi: *See—*
Inaba, Hajimu; and Torii, Nobutoshi, 4,576,537, Cl. 414-222.000.
Torrey, Ralph H. Device of unitary construction for adjustably hanging a picture. 4,575,905, Cl. 24-129.00R.
Totani, Tetsushi; and Aono, Katsutoshi, to Shionogi & Co., Ltd. Glycolic acid type platinum complexes. 4,577,038, Cl. 556-137.000.
Totsuka, Masao: *See—*
Kitagawa, Takahiro; and Totsuka, Masao, 4,576,475, Cl. 355-91.000.
Touchstone Corporation: *See—*
Perkins, Earl, 4,576,730, Cl. 252-174.140.
Tournier, Joseph H.: *See—*
Felthuis, Jacob; and Tournier, Joseph H., 4,576,081, Cl. 87-6.000.
Townsend, Keith G.: *See—*
Keel, Frederick; Townsend, Keith G.; and Carter, Marshall C., 4,576,019, Cl. 66-147.000.
Toy, Wing N.: *See—*
Larson, Mikiel L.; and Toy, Wing N., 4,577,308, Cl. 370-9.000.
Toyo Soda Manufacturing Co., Ltd.: *See—*
Emura, Noriaki; Ariyoshi, Takashi; and Kato, Toshikazu, 4,577,004, Cl. 526-204.000.
Toyo Tire & Rubber Company Limited: *See—*
Watanabe, Masato; and Ozaki, Yuzo, 4,576,726, Cl. 252-62.540.
Toyoda, Keiichi: *See—*
Arakawa, Tadao; Ueno, Takeshi; Tsunematsu, Hiroshi; Toyoda, Keiichi; and Hashimoto, Tsuguo, 4,576,007, Cl. 60-660.000.
Toyota Jidosha Kabushiki Kaisha: *See—*
Akashi, Teruo; Ito, Hiroshi; and Yamada, Shigemichi, 4,576,063, Cl. 74-745.000.
Donomoto, Tadashi; Koyama, Mototsugu; Fuwa, Yoshio; Miura, Nobuhiro; and Sakakibara, Tatsuo, 4,576,863, Cl. 428-325.000.
Fukuta, Kenji; Kaneko, Takaoki; and Takahashi, Yoshinobu, 4,576,692, Cl. 204-165.000.
Miura, Hirohisa; Satou, Hiroshi; Katagiri, Hidenori; Natsume, Toshio; and Azuma, Hidekazu, 4,576,725, Cl. 252-62.510.
Terada, Takami, 4,576,412, Cl. 297-362.000.
Tracy, Catherine O.; Binkerd, Evan F.; Rendek, Robert B.; and Wrobel, Raymond J., to Conagra, Inc. Method and composition for curing meat. 4,576,825, Cl. 426-266.000.

Travis, Alan J. B., to United Kingdom Atomic Energy Authority. Optical alignment system. 4,576,480, Cl. 356-152.000.
Tri-State Oil Tool Industries, Inc.: *See—*
Murray, W. Kirby; and Sullivan, David O., 4,576,402, Cl. 285-39.000.
Trio Kabushiki Kaisha: *See—*
Naito, Michinori, 4,577,342, Cl. 381-13.000.
Tritsch, Ludwig, to Personal Products Company. Disposable diaper with improved adhesive tab system. 4,576,598, Cl. 604-390.000.
Trop, Harvey S.: *See—*
Kohl, Paul A.; Smith, Lawrence E.; and Trop, Harvey S., 4,576,691, Cl. 204-129.300.
Trotter, Jimmy R.; and McConnell, Richard L., to Eastman Kodak Company. Adhesive blends. 4,576,997, Cl. 525-444.000.
Trumpf GmbH & Co.: *See—*
Klingel, Hans; and Brekle, Erich, 4,575,969, Cl. 51-131.100.
Trustees Boston University: *See—*
McCaffrey, Ronald; Wright, George; and Baril, Earl F., 4,576,948, Cl. 514-274.000.
TRW Inc.: *See—*
Johnson, Ronald M., 4,576,135, Cl. 123-490.000.
Rau, Jim L.; and LaHue, Ronald L., 4,576,003, Cl. 60-384.000.
Tsang, Won-Tien: *See—*
Logan, Ralph A.; and Tsang, Won-Tien, 4,575,919, Cl. 29-569.00L.
Tsay, Wei-Shin: *See—*
Meeker, Thrygve R.; and Tsay, Wei-Shin, 4,577,169, Cl. 333-194.000.
Tseng, Shin S.: *See—*
Tomcufcik, Andrew S.; Meyer, Walter E.; Dusza, John P.; and Tseng, Shin S., 4,576,943, Cl. 514-222.000.
Tsuchiya, Kiyoshi: *See—*
Morimoto, Keiji; Satoh, Shuichi; Iwai, Yoshiyuki; Ae, Osamu; Suda, Masao; Tsuchiya, Kiyoshi; Ogata, Kojiro; and Miyanagi, Naoki, 4,576,515, Cl. 405-184.000.
Tsuchiya, Kunimasa: *See—*
Nakao, Shinroku; and Tsuchiya, Kunimasa, 4,575,896, Cl. 16-35.00R.
Tsuchiya, Tsutomu: *See—*
Umezawa, Hamao; Umezawa, Sumio; Tsuchiya, Tsutomu; Takeuchi, Tomio; Tanaka, Akihiro; and Sakamoto, Shuichi, 4,576,931, Cl. 514-30.000.
Tsuge, Morio: *See—*
Suzuki, Setsuo; Tsuge, Morio; and Nakayama, Syoichi, 4,576,896, Cl. 430-271.000.
Tsuji, Nobuo: *See—*
Okita, Tsutomu; Tsuji, Nobuo; and Mukaida, Yoshito, 4,576,866, Cl. 428-336.000.
Tsukahara, Daiki: *See—*
Daitoku, Koichi; and Tsukahara, Daiki, 4,576,460, Cl. 354-400.000.
Tsunashima, Yoshitaka, to Kabushiki Kaisha Toshiba. Method of manufacturing an insulated-gate field-effect transistor. 4,575,920, Cl. 29-571.000.
Tsunematsu, Hiroshi: *See—*
Arakawa, Tadao; Ueno, Takeshi; Tsunematsu, Hiroshi; Toyoda, Keiichi; and Hashimoto, Tsuguo, 4,576,007, Cl. 60-660.000.
Tsuno, Koichi; and Nishimura, Akira, to Sumitomo Electric Industries, Ltd. Fiberscope. 4,576,145, Cl. 128-6.000.
Tsuno, Koichi: *See—*
Kawazoe, Chisato; Yoshida, Kenichi; and Tsuno, Koichi, 4,576,146, Cl. 128-6.000.
Tsurushima, Masaaki; Kokubu, Gozi; and Moriya, Koji, to Takeda Chemical Industries, Ltd. Method of separation of nucleotides and nucleosides from each other. 4,577,012, Cl. 536-24.000.
Tsushima, Susumu; and Nishikawa, Kohei, to Takeda Chemical Industries, Ltd. Method of use of 1-(alkyl for alkylcarbanoyl)-2-carbamoylglycerol derivatives. 4,576,933, Cl. 514-77.000.
Tsuyama Mfg. Co., Ltd.: *See—*
Tsuyama, Sadaharu, 4,577,261, Cl. 362-72.000.
Tsuyama, Sadaharu, to Tsuyama Mfg. Co., Ltd. Lamp mounting structure for bicycle. 4,577,261, Cl. 362-72.000.
Tsuyuguchi, Tadao: *See—*
Sasaki, Ichitaro; Mori, Takashi; and Tsuyuguchi, Tadao, 4,576,344, Cl. 242-67.10R.
Twickler, Carl: *See—*
Shukla, Jayendra G.; Sohn, Ki G.; Twickler, Carl; and de Pierne, Otto S., 4,576,612, Cl. 51-295.000.
Tyler, Daniel W.: *See—*
Kelly, Thomas J.; and Tyler, Daniel W., 4,577,068, Cl. 179-100.00R.
Tyrell, John A.; and Freimiller, Gary L., to General Motors Company. Hydrolytically stabilized polycarbonates. 4,576,982, Cl. 524-84.000.
Tyrrell, Paul J.: *See—*
Hahn, Clive E. W.; Palayiwa, Eileen; Lindsay-Scott, David J.; Sugg, Basil R.; and Tyrrell, Paul J., 4,576,159, Cl. 128-203.140.
Tysoe, Nicholas W., to Britax Vega Limited. Vehicle lamp assemblies. 4,577,260, Cl. 362-61.000.
Tzifkansky, Guy; and Marchais, Jean-Claude, to Cidelcem. Food container. 4,576,309, Cl. 220-366.000.
Uchida, Hiroshi: *See—*
Matsui, Isamu; Uchida, Hiroshi; Nakanishi, Kazuo; Kiriake, Masaharu; and Shimano, Akira, 4,576,341, Cl. 242-35.50A.
Ueda, Eiichi: *See—*
Mizukura, Noboru; Fujimori, Noboru; Masuda, Kosaku; Yoshimoto, Shinji; Tachibana, Noriki; and Ueda, Eiichi, 4,576,911, Cl. 430-548.000.
Uehara, Akira; Uehara, Takashi; Saito, Miyuki; and Ishida, Toshiyuki, to Tokyo Denshi Kagaku Co., Ltd. High-frequency oscillator with power amplifier and automatic power control. 4,577,165, Cl. 331-109.000.
Uehara, Takashi: *See—*
Uehara, Akira; Uehara, Takashi; Saito, Miyuki; and Ishida, Toshiyuki, 4,577,165, Cl. 331-109.000.
Ueno, Takeshi: *See—*
Arakawa, Tadao; Ueno, Takeshi; Tsunematsu, Hiroshi; Toyoda, Keiichi; and Hashimoto, Tsuguo, 4,576,007, Cl. 60-660.000.
Uesaka, Yasutaro: *See—*
Shiiki, Kazuo; Shiroishi, Yoshihiro; Kitakami, Osamu; and Uesaka, Yasutaro, 4,576,876, Cl. 428-679.000.
Ueyama, Katsuyoshi: *See—*
Takimoto, Tadashi; Oishibashi, Hirotsugu; Ueyama, Katsuyoshi; Ohara, Muneyuki; Kobayashi, Akio; Aoki, Keiichi; Nakamura, Mitsuo; and Hagiwara, Kenzo, 4,576,324, Cl. 228-44.300.
UHDE GmbH: *See—*
Koch, Manfred; Muhlhaus, Ludwig; Lambach, Rolf; and Grochowski, Horst, 4,576,924, Cl. 502-56.000.
Ullo, John J.: *See—*
Sherman, Harold; and Ullo, John J., 4,577,102, Cl. 250-269.000.
Ulrich, Klaus: *See—*
Doerr, Hermann; Hoster, Thomas; Neuschuetz, Dieter; Radke, Dietrich; Janssen, Wilhelm; and Ulrich, Klaus, 4,576,638, Cl. 75-80.000.
Umeda, Yoshiaki; Matsumoto, Ryouhei; Isomura, Hiroyasu; and Shimotaka, Hisakuni, to Fuji Machinery Company, Ltd. Adjustable tube forming apparatus. 4,576,588, Cl. 493-475.000.
Umezawa, Hamao; Umezawa, Sumio; Tsuchiya, Tsutomu; Takeuchi, Tomio; Tanaka, Akihiro; and Sakamoto, Shuichi, to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai (Microbial Chemistry Research Foundation). 23-C-Substituted mycaminosyl tylonolide, pharmaceutical compositions and method of use. 4,576,931, Cl. 514-30.000.
Umezawa, Mitsuo: *See—*
Yamakawa, Toru; Makita, Fujio; Umezawa, Mitsuo; and Sakakiyama, Ryuzo, 4,576,061, Cl. 74-665.00T.
Umezawa, Sumio: *See—*
Umezawa, Hamao; Umezawa, Sumio; Tsuchiya, Tsutomu; Takeuchi, Tomio; Tanaka, Akihiro; and Sakamoto, Shuichi, 4,576,931, Cl. 514-30.000.
Uncles, Philip B.: *See—*
Moulton, Alexander E.; and Uncles, Philip B., 4,576,393, Cl. 280-276.000.
Ungchusri, Tep; and Jakubowski, William J., to FMC Corporation. Fluid packing assembly with alternating diverse seal ring elements. 4,576,385, Cl. 277-124.000.
Uni-Cardan Aktiengesellschaft: *See—*
Orain, Michel A., 4,576,503, Cl. 403-259.000.
Union Camp Corporation: *See—*
Hollis, Samuel D., 4,577,006, Cl. 526-283.000.
Union Carbide Corporation: *See—*
D'Silva, Themistocles D. J., 4,576,965, Cl. 514-564.000.
Hartsing, Tyler F.; Sauers, Marvin E.; and Robeson, Lloyd M., 4,576,842, Cl. 428-35.000.
Morland, Robert B.; Cooke, Anson R.; and Bishop, John R., 4,576,629, Cl. 71-90.000.
Pevzner, Boris, 4,576,557, Cl. 417-539.000.
Union Oil Company of California: *See—*
Hass, Robert H.; and Ward, John W., 4,576,814, Cl. 423-573.00G.
Ward, John W.; and Carlson, Timothy L., 4,576,711, Cl. 208-111.000.
Uniroyal, Inc.: *See—*
Snyder, Robert H.; and Tolonen, Eric O., 4,576,339, Cl. 241-120.000.
United Kingdom Atomic Energy Authority: *See—*
Cowlam, Stephen K.; Moss, Steven Y.; Stockwell, Claude L.; and Phillips, Victor R., 4,576,765, Cl. 210-801.000.
Duncombe, Edward; and Winstanley, John P., 4,576,781, Cl. 376-247.000.
Jeffries, Derek K.; and McMillan, Duncan J., 4,577,135, Cl. 313-362.100.
Lane, Edward S., 4,576,921, Cl. 501-12.000.
Travis, Alan J. B., 4,576,480, Cl. 356-152.000.
United States Gypsum Company: *See—*
Porter, William F.; Porter, Michael J.; and Johnson, Dwight E., 4,576,620, Cl. 65-9.000.
United States of America
Air Force: *See—*
Armington, Alton F.; and Larkin, John J., 4,576,808, Cl. 423-335.000.
deRonde, Henry M., 4,577,054, Cl. 174-35.00C.
Geary, Joseph M.; Vunck, Darius S.; Duneman, Dennis C.; Sessions, Ronald L.; Moeller, Charles E.; and Wick, Raymond V., 4,577,103, Cl. 250-316.100.
Milberger, Walter E.; and Jones, Franklin B., 4,577,166, Cl. 332-9.00T.
Wiegand, Richard J., 4,577,192, Cl. 343-18.00E.
Army: *See—*
Anitole. George, 4,576,904, Cl. 430-347.000.
Levy, Stephen; O'Connell, Joseph C.; Wright, William H., Jr.; and Weiner, Maurice, 4,577,114, Cl. 250-551.000.
Meador, Jacqueline C., 4,576,094, Cl. 102-202.120.
Commerce: *See—*
Dils, Ray R., 4,576,486, Cl. 374-131.000.
Energy: *See—*
Bates, John F.; Brager, Howard R.; and Korenko, Michael K., 4,576,641, Cl. 75-128.00P.

Glatthorn, Raymond H., 4,576,068, Cl. 82-1.400.
Glatthorn, Raymond H., 4,576,228, Cl. 165-162.000.
Guggenheim, S. Frederic, 4,576,201, Cl. 137-624.180.
Kerst, Donald W., 4,577,156, Cl. 328-237.000.

Health and Human Services: *See—*
Corbet, Aaron B.; Holliger, Christoph; and Strul, Bruno, 4,576,477, Cl. 356-39.000.

National Aeronautics and Space Administration: *See—*
Gahn, Randall F., 4,576,878, Cl. 429-15.000.

Navy: *See—*
Davis, George T.; Chiang, Chawan-Kang; Antonucci, Joseph M.; and Takahashi, Toru, 4,576,882, Cl. 429-192.000.

U.S. Philips Corporation: *See—*
Bertram, Leo, 4,577,129, Cl. 310-112.000.
Bremer, Joannes G.; and Compaan, Klaas, 4,577,101, Cl. 250-231.0SE.
Fink, Mathias A.; and Cardoso, Jean-Francois, 4,576,046, Cl. 73-631.000.
Haenen, Henricus W. G.; and van Leeuwen, Antonie, 4,577,217, Cl. 358-14.000.
Hooghordel, Rijk; and van Jole, Franciscus P., 4,577,136, Cl. 313-481.000.
Koken, Karel G. M.; van de Kerkhof, Hubertus F. W.; Olierook, John C. J.; and Beyersbergen van Henegouwen, Cornelis M., 4,576,345, Cl. 242-198.000.
Scholten, Pieter C.; and Eijnthoven, Ronald K., 4,576,833, Cl. 427-67.000.
Schwieker, Horst H.; and Gieschen, Kurt, 4,577,341, Cl. 378-150.000.
Van Den Crommenacker, Johannes D. P.; and Lohstroh, Jan, 4,577,123, Cl. 307-446.000.

United States Surgical Corporation: *See—*
Green, David T.; and McGarry, Richard A., 4,576,165, Cl. 128-305.000.
Noiles, Douglas G., 4,576,167, Cl. 128-334.00R.

United Technologies Corporation: *See—*
Adams, Don L.; Evans, Charles W.; and Wright, Stuart C., 4,577,275, Cl. 364-433.000.
Kubick, Frederick, 4,576,441, Cl. 350-355.000.
Meltz, Gerald; Allen, Louis B., Jr.; and Ferrar, Carl M., 4,577,100, Cl. 250-231.00P.
Newman, Leon A.; and Kennedy, John T., 4,577,323, Cl. 372-64.000.
Weiner, Harvey I.; and Allard, Kenneth L., 4,576,547, Cl. 415-116.000.

Unitika Ltd.: *See—*
Echigo, Yoshiaki; Suematsu, Yoshiyuki; and Ishikura, Tadashi, 4,576,969, Cl. 521-28.000.
Ida, Hiroaki; Fujii, Masahiro; and Haruta, Toshio, 4,576,716, Cl. 210-496.000.

University Hospital: *See—*
Kirksey, Patricia E., 4,576,281, Cl. 206-370.000.

University of California, Regents of the: *See—*
Hirschfeld, Tomas B., 4,577,109, Cl. 250-461.100.
Kung, Andrew H., 4,577,122, Cl. 307-425.000.

University of Michigan, The Regents of the: *See—*
O'Brien, William J.; and O'Brien, Matthew T., 4,576,922, Cl. 501-32.000.

University of New Mexico: *See—*
Hylarides, Mark D.; and Mettler, Fred A., Jr., 4,577,046, Cl. 568-312.000.

University of Utah: *See—*
Normann, Richard A., 4,576,182, Cl. 128-692.000.

Uno, Hideaki: *See—*
Ogawa, Yoshiyuki; Uno, Hideaki; and Baba, Misao, 4,576,368, Cl. 269-322.000.

UOP Inc.: *See—*
Greenwood, Arthur R., 4,576,712, Cl. 208-138.000.

Upchurch, James M., to Schlumberger Technology Corporation. Full bore sampler valve. 4,576,234, Cl. 166-319.000.

Upjohn Company, The: *See—*
Dai, Shenghong A., 4,576,747, Cl. 260-239.00A.
Gall, Martin, 4,577,020, Cl. 544-366.000.
McCall, John M., 4,577,021, Cl. 544-376.000.
Morris, Joel, 4,576,758, Cl. 260-405.500.
Smith, Herman W., 4,576,949, Cl. 514-277.000.
White, Cathleen A.; Senne, Richard K.; and Rutherford, Harry, 4,576,399, Cl. 282-8.00R.

Uram, Stuart Z., to Certech Incorporated. Molten metals filter apparatus. 4,576,219, Cl. 164-358.000.

Uranium Pechiney Ugine Kuhlmann: *See—*
Floreancig, Antoine, 4,576,802, Cl. 423-20.000.

Urata, Koichi; Takaishi, Naotake; and Suzuki, Yuji, to KAO Corporation. Novel polyol ether compounds, process preparing the compounds, and cosmetics comprising same. 4,576,967, Cl. 514-772.000.

USV Pharmaceutical Corp.: *See—*
Suh, John T.; Piwinski, John J.; Jones, Howard; and Neiss, Edward S., 4,576,941, Cl. 514-222.000.
Youssefyeh, Raymond D., 4,576,942, Cl. 514-222.000.

Utah Medical Products: *See—*
Wallace, William D.; and Cutler, Christopher A., 4,576,181, Cl. 128-675.000.

Vackier, Leo N.; Mampaey, Jozef L.; and Alaerts, Leo B., to AGFA-Gevaert N.V. Method for transferring xerographic images. 4,576,889, Cl. 430-126.000.

Vahlensieck, Hans-Joachim: *See—*
Matthes, Reinhard; and Vahlensieck, Hans-Joachim, 4,577,045, Cl. 568-851.000.

Vaidya, Bhupendra R.: *See—*
Ravel, Kanak K. R.; Vaidya, Bhupendra R.; and Nerizon, Nelly A., 4,576,645, Cl. 106-125.000.

Valadier, Jean: *See—*
Moufflet, Luc; Roux, Michel; and Valadier, Jean, 4,576,571, Cl. 432-9.000.

Valente, Mark. Toilet seat disinfectant wipe. 4,575,891, Cl. 15-104.930.

Valentini, Luigi; and Coccia, Mario, to Farmitalia Carlo Erba S.p.A. Safety device for connection of a syringe with the mouth or opening of a bottle containing a drug or a small tube for drug delivery from the syringe. 4,576,211, Cl. 141-329.000.

Valeo: *See—*
Cadars, Patrick, 4,576,227, Cl. 165-149.000.
Loizeau, Pierre, 4,576,267, Cl. 192-70.170.

Valeria, Hidvegi, to Kozponti Valto-Es Hitelbank RT. Carcase, favorably furniture-carcase. 4,576,353, Cl. 248-165.000.

Valio Meijerien Keskusosuusliiki: *See—*
Nordlund, Viljo T. J., 4,576,822, Cl. 426-43.000.

Vallarino, Angelo, to Minnesota Mining and Manufacturing Company. Ultraviolet absorber in photographic elements. 4,576,908, Cl. 430-512.000.

Valmet Oy: *See—*
Laapotti, Jorma, 4,576,682, Cl. 162-358.000.

Van de Caveye, Yves; and Schaefle , Henri, to Hanota Holdings S.A. Device for adjusting the height of building blocks. 4,576,561, Cl. 425-104.000.

van de Kerkhof, Hubertus F. W.: *See—*
Koken, Karel G. M.; van de Kerkhof, Hubertus F. W.; Olierook, John C. J.; and Beyersbergen van Henegouwen, Cornelis M., 4,576,345, Cl. 242-198.000.

Van Den Crommenacker, Johannes D. P.; and Lohstroh, Jan, to U.S. Philips Corporation. Integrated logic circuit having collector node with pull-up and clamp. 4,577,123, Cl. 307-446.000.

van der Lely, Cornelis. Tractor. 4,576,394, Cl. 280-490.00A.

Van der Togt, Jacobus C., to B.V. Haagse Bakkerijmachinefabriek. Apparatus for slicing bread products. 4,576,074, Cl. 83-358.000.

Van Dijck, Frans S. J.: *See—*
Harris, Richard J.; Pithouse, Kenneth B.; and Van Dijck, Frans S. J., 4,576,666, Cl. 156-85.000.

van Jole, Franciscus P.: *See—*
Hooghordel, Rijk; and van Jole, Franciscus P., 4,577,136, Cl. 313-481.000.

van Leeuwen, Antonie: *See—*
Haenen, Henricus W. G.; and van Leeuwen, Antonie, 4,577,217, Cl. 358-14.000.

Van Paradijs, Hendrikus J. A.; and Mynders, Gysbert J., to Multinorm B.V. Mowing device having improved drive and/or a crop separating drum. 4,575,997, Cl. 56-16.400.

Vartanov, Albert A.: *See—*
Alkhazov, Tofik G. O.; Korotaev, Jury P.; and Vartanov, Albert A., 4,576,925, Cl. 502-307.000.

Vasileff, Robert T.: *See—*
Lunn, William H. W.; and Vasileff, Robert T., 4,577,014, Cl. 544-022.000.

Vasipari Kutato es Fejleszto Vallalat: *See—*
Tamas, Istvan; Riederauer, Szilard; and Kovacs, Janos, 4,576,637, Cl. 75-10.00R.

Vaughn, Edward A.; and Clymin, Michael L., to C. H. Masland & Sons. Multi-layer pleated textile fiber product. 4,576,853, Cl. 428-181.000.

Ventola, Keijo: *See—*
Kahilathi, Matti; Ventola, Keijo; Virtanen, Matti; and Huhta, Pentti, 4,576,327, Cl. 228-212.000.

Verbicky, John W., Jr.; and Colley, Alice M., to General Electric Company. Heterocyclic quaternary ammonium salts as phase transfer catalysts for aromatic ether imide preparation. 4,577,033, Cl. 548-461.000.

Verbruggen, Marcel, to Burndy Corporation. Zero insertion and extraction force connector. 4,576,427, Cl. 339-61.00M.

Vercon, Inc.: *See—*
Fortuna, Vincent E., 4,575,987, Cl. 53-298.000.

Verdier, Alain; and Charton, Gilbert, to Black & Decker Inc. Battery pack. 4,576,880, Cl. 429-99.000.

Versteeg, Gijsbert, to IMEX AG. Construction element. 4,575,984, Cl. 52-589.000.

Vest, Eugene W.: *See—*
Marshall, Hubert T., II; Vest, Eugene W.; and Villforth, Frederick J., III, 4,576,476, Cl. 356-28.000.

Vestovich, Robert P.: *See—*
Ferree, Herbert E.; Klinvex, Daniel E.; and Vestovich, Robert P., 4,576,034, Cl. 73-1.0DV.

Victor Company of Japan, Ltd.: *See—*
Hirohashi, Kazutoshi; Ishigaki, Yukinobu; and Namiki, Yasuomi, 4,577,161, Cl. 330-149.000.
Inami, Mamoru; Tanaka, Yoshiaki; and Ohtsuki, Zenju, 4,577,188, Cl. 340-721.000.
Sato, Kazuhiro; and Oguri, Katsuhiko, 4,577,250, Cl. 360-112.000.
Tetsuka, Shigeo, 4,577,242, Cl. 360-60.000.
Tokuyama, Yoshio, 4,577,243, Cl. 360-70.000.
Watanabe, Yasuaki, 4,577,238, Cl. 358-340.000.

Vidal, Stephen P., Jr. Apparatus and method of creating and controlling an artificial water table. 4,576,511, Cl. 405-37.000.

Viehe, Heinz; Mesmaeker, Nadine S.; and Merenyi, Robert, to SOLVAY & Cie (Societe Anonyme). Polysubstituted dienes. 4,576,759, Cl. 260-410.90R.

Vietti, David E.: *See—*
Huffman, George W.; Pentz, William J.; Vietti, David E.; and Wuskell, Joseph P., 4,577,035, Cl. 549-472.000.

Villaveces, James; and Golden, Steven T. Cart for transporting shock sensitive loads, or unstable loads. 4,576,389, Cl. 280-43.160.

Villforth, Frederick J., III: *See—*
Marshall, Hubert T., II; Vest, Eugene W.; and Villforth, Frederick J., III, 4,576,476, Cl. 356-28.000.

Vining Broom Company, Inc.: *See—*
Stein, Robert, 4,576,291, Cl. 211-49.100.

Viramontes, Julio C. Method for abrading fabric garments. 4,575,887, Cl. 8-158.000.

Virtanen, Matti: *See—*
Kahilathi, Matti; Ventola, Keijo; Virtanen, Matti; and Huhta, Pentti, 4,576,327, Cl. 228-212.000.

Viswanathan, Thayamkulangara R.: *See—*
Kim, Suk K.; and Viswanathan, Thayamkulangara R., 4,577,119, Cl. 307-297.000.

Vitale, Ralph A. Safety closure for aerosol cans. 4,576,315, Cl. 222-153.000.

VLSI Technology Research Association: *See—*
Shibata, Hiroshi, 4,576,678, Cl. 156-643.000.

Vock, Manfred H.: *See—*
Sprecker, Mark A.; Hanna, Marie R.; Tokarzewski, Richard J.; Belko, Robert P.; Watkins, Hugh; and Vock, Manfred H., 4,576,742, Cl. 252-522.00R.

Voest-Alpine Aktiengesellschaft: *See—*
Rigler, Gunter; and Vollmer, Friedrich, 4,575,945, Cl. 33-182.000.

Vollmer, Friedrich: *See—*
Rigler, Gunter; and Vollmer, Friedrich, 4,575,945, Cl. 33-182.000.

von Au, Gunter: *See—*
Kaufmann, Rudolf; Braunsperger, Karl; Wegehaupt, Karl-Heinrich; and von Au, Gunter, 4,577,040, Cl. 556-462.000.

von Bismarck, Gottfried, to W. R. Grace & Co., Cryovac Div. Shrink packaging process. 4,575,990, Cl. 53-434.000.

von Hahn, Hardwin E. A. Chlorination of copper, lead, zinc, iron, silver and gold. 4,576,812, Cl. 423-491.000.

Vos, Henry J. Combination outrigger stabilizer and lift axle for vehicles. 4,576,390, Cl. 280-43.230.

Voser, Walter: *See—*
Merz, Jurg; and Voser, Walter, 4,577,013, Cl. 536-43.000.

Vunck, Darius S.: *See—*
Geary, Joseph M.; Vunck, Darius S.; Duneman, Dennis C.; Sessions, Ronald L.; Moeller, Charles E.; and Wick, Raymond V., 4,577,103, Cl. 250-316.100.

W. R. Grace & Co., Cryovac Div.: *See—*
Laiewski, Stanislaus; Hessen, Thomas A.; Hardy, Thomas R.; and Gilvin, Allie F., 4,576,278, Cl. 206-204.000.
von Bismarck, Gottfried, 4,575,990, Cl. 53-434.000.

W. S. Shamban & Company: *See—*
Benson, Alan M.; Mawer, John D.; and Ruzicka, Alan V., 4,576,386, Cl. 277-165.000.

W. Schlafhorst & Co.: *See—*
Aretz, Ulrich; and Buhren, Heinz, 4,576,340, Cl. 242-35.50A.

Wabash, Inc.: *See—*
Wolf, Ronald J., 4,576,138, Cl. 123-600.000.

Wacker-Chemie GmbH: *See—*
Kaufmann, Rudolf; Braunsperger, Karl; Wegehaupt, Karl-Heinrich; and von Au, Gunter, 4,577,040, Cl. 556-462.000.

Waco Jonserreds AB: *See—*
Andersson, Bengt, 4,576,212, Cl. 144-243.000.

Wadsworth, Donald H.: *See—*
Fletcher, George L., Jr.; Bender, Steven L.; and Wadsworth, Donald H., 4,577,024, Cl. 546-183.000.

Wagatsuma, Mitsuyoshi; Hatsuno, Susumu; Yamaguchi, Totaro; and Ohshima, Satoshi, to Tanabe Seiyaku Co., Ltd. Cephalosporin compound and process for preparing the same. 4,576,938, Cl. 514-206.000.

Wagenseil, Ludwig; and Lotter, Manfred, to Hydromatik GmbH. Swashplate axial piston pump. 4,576,554, Cl. 417-270.000.

Wagner, David P.: *See—*
Barth, Gerald D.; and Wagner, David P., 4,576,534, Cl. 411-412.000.

Wagner, Thomas R.: *See—*
Ferree, Herbert E.; and Wagner, Thomas R., 4,576,778, Cl. 376-203.000.
Ferree, Herbert E.; Wagner, Thomas R.; Hecht, Michael D.; and Donnelly, Thomas J., 4,577,127, Cl. 310-83.000.

Wake, Shigeo: *See—*
Tatsukami, Yoshiharu; Kato, Yasuyuki; and Wake, Shigeo, 4,576,438, Cl. 350-96.340.

Waldenstrom, Mats G.: *See—*
Olsson, Olle G.; Yaman, Melih; Waldenstrom, Mats G.; and Fischer, Udo K. R., 4,576,875, Cl. 428-627.000.

Walker, Alan L.: *See—*
Peck, Lawrence J.; Kreisher, John H.; and Walker, Alan L., 4,576,703, Cl. 204-299.00R.

Walker, Francis R.: *See—*
Mast, Robert F.; Cichanski, William J.; Walker, Francis R.; and Magura, Donald D., 4,576,519, Cl. 405-207.000.

Walker, Frank A., Jr., to Geotel, Inc. Method and apparatus for plasma spray coating. 4,576,828, Cl. 427-34.000.

Walker, George A., to International Business Machines Corporation. Self-aligning mask. 4,576,832, Cl. 427-43.100.

Walker, James L.: *See—*
Iovine, Carmine P.; Palmer, Joseph G.; and Walker, James L., 4,577,031, Cl. 548-319.000.

Walko, Ronald J.: *See—*
Bukowski, James M.; Midock, Gary E.; and Walko, Ronald J., 4,577,281, Cl. 364-494.000.

Wall, Robert G.: *See—*
Duerksen, John H.; Wall, Robert G.; and Knight, Jack D., 4,576,232, Cl. 166-274.000.

Wallace Expanding Machines, Inc.: *See—*
Roper, Ralph E., 4,576,030, Cl. 72-296.000.

Wallace, William D.; and Cutler, Christopher A., to Utah Medical Products. Disposable pressure transducer apparatus for medical use. 4,576,181, Cl. 128-675.000.

Wallenfang, Gerd; and Glockner, Manfred, to Klockner-Humboldt-Deutz Aktiengesellschaft. Fuel injection system for internal combustion engines. 4,576,129, Cl. 123-357.000.

Walter, Lothar: *See—*
Brandenstein, Manfred; Walter, Lothar; Haas, Roland; and Dobhan, Herbert, 4,576,268, Cl. 192-98.000.

Wang, Taylor G.; Elleman, Daniel D.; Lee, Mark C.; and Kendall, James M., Jr., to California Institute of Technology. Catalytic hollow spheres. 4,576,926, Cl. 502-339.000.

Ward, John W.; and Carlson, Timothy L., to Union Oil Company of California. Hydrocracking process and catalyst therefor. 4,576,711, Cl. 208-111.000.

Ward, John W.: *See—*
Hass, Robert H.; and Ward, John W., 4,576,814, Cl. 423-573.00G.

Ward, Melvyn, to Lucas Industries. Friction element and method of manufacture thereof. 4,576,872, Cl. 428-550.000.

Warner-Lambert Company: *See—*
Bruso, Loran H., 4,576,795, Cl. 422-58.000.
Greenland, John S., 4,576,594, Cl. 604-251.000.
Wittwer, Fritz; and Raible, Thomas, 4,576,284, Cl. 206-530.000.

Warner-Lambert Technologies, Inc.: *See—*
Carpenter, George J., 4,576,772, Cl. 264-154.000.

Warren, Theodore L.; Whelan, Kenneth R.; and Reinhold, Arnold G., to Automatix Incorporated. Vision system. 4,577,344, Cl. 382-1.000.

Wartian, George, to Wartian Lock Co. Door latch mechanism. 4,576,405, Cl. 292-191.000.

Wartian Lock Co.: *See—*
Wartian, George, 4,576,405, Cl. 292-191.000.

Waste-Tech Services, Inc.: *See—*
Rasmussen, George P.; and Grimmett, Earl S., 4,576,102, Cl. 110-346.000.

Watanabe, Eiji: *See—*
Kawatani, Kimio; Fujikawa, Takashi; and Watanabe, Eiji, 4,576,680, Cl. 162-158.000.

Watanabe, Masato; and Ozaki, Yuzo, to Toyo Tire & Rubber Company Limited. Magnetic coating composition. 4,576,726, Cl. 252-62.540.

Watanabe, Takeyoshi: *See—*
Kuwajima, Hideji; and Watanabe, Takeyoshi, 4,576,856, Cl. 428-241.000.

Watanabe, Tomohide, to Tokyo Shibaura Denki Kabushiki Kaisha. Automatic focusing apparatus for a semiconductor pattern inspection system. 4,577,095, Cl. 250-201.000.

Watanabe, Yasuaki, to Victor Company of Japan, Ltd. Circuit for reducing intermodulation distortion in a frequency-modulated signal. 4,577,238, Cl. 358-340.000.

Watanabe, Yoshihachi: *See—*
Makisumi, Yasuo; Murabayashi, Akira; Tawara, Katsuya; Watanabe, Yoshihachi; Takahashi, Toshio; and Konishi, Takao, 4,576,956, Cl. 514-380.000.

Watkins, Hugh: *See—*
Sprecker, Mark A.; Hanna, Marie R.; Tokarzewski, Richard J.; Belko, Robert P.; Watkins, Hugh; and Vock, Manfred H., 4,576,742, Cl. 252-522.00R.

Waydelis, Ronald A.: *See—*
Griffin, Michael D.; and Waydelis, Ronald A., 4,576,762, Cl. 261-65.000.

Weaver, David C. Jacket with sleeping bag. 4,575,876, Cl. 2-69.500.

Webb, Robert E.; Kreeft, Eugene H.; and Arnold, Jack T., to BBL Industries, Inc. Paging network. 4,577,060, Cl. 179-2.0EC.

Weber, Gunter, to Neimann S.A. Device for blocking the rotary movement of a steering column in a motor vehicle. 4,576,024, Cl. 70-252.000.

Weber, Joseph. Energy detection method and apparatus. 4,576,777, Cl. 376-153.000.

Weber, Paul S., to Exxon Research and Engineering Co. Bellows expansion joint. 4,576,404, Cl. 285-41.000.

Weber-Stephen Products Co.: *See—*
Schlosser, Erich J., 4,576,140, Cl. 126-25.00R.

Webster, Wilton W., Jr. Catheter for removing arteriosclerotic plaque. 4,576,177, Cl. 128-660.000.

Weetall, Howard H.: *See—*
Hertl, William; and Weetall, Howard H., 4,576,687, Cl. 204-157.500.

Wegehaupt, Karl-Heinrich: *See—*
Kaufmann, Rudolf; Braunsperger, Karl; Wegehaupt, Karl-Heinrich; and von Au, Gunter, 4,577,040, Cl. 556-462.000.

Weiner, Harvey I.; and Allard, Kenneth L., to United Technologies Corporation. Active clearance control. 4,576,547, Cl. 415-116.000.

Weiner, Maurice: *See—*
Levy, Stephen; O'Connell, Joseph C.; Wright, William H., Jr.; and Weiner, Maurice, 4,577,114, Cl. 250-551.000.
Weirton Steel Corporation: *See—*
Saunders, William T., 4,576,305, Cl. 220-269.000.
Weiss, Franz-Josef: *See—*
Grosskinsky, Otto-Alfred; Frommer, Elmar; Ritz, Josef; Thomas, Erwin; and Weiss, Franz-Josef, 4,576,804, Cl. 423-265.000.
Weissert, Helmut: *See—*
Hegemann, Karl-Rudolf; Weissert, Helmut; and Laimkuhler, Jurgen, 4,576,803, Cl. 423-242.000.
Welding Institute, The: *See—*
Needham, James C.; Rivett, Robert M.; and Perryman, Raymond A. G., 4,577,086, Cl. 219-117.100.
Wells, John R., to Du Pont de Nemours, E. I., and Company. Rotor having a chamber block with an absorbant plug. 4,576,110, Cl. 118-52.000.
Wells Manufacturing Corporation: *See—*
Titus, Timothy C., 4,576,077, Cl. 83-816.000.
Wells, Willard H.: *See—*
Hodara, Henri; and Wells, Willard H., 4,577,184, Cl. 340-566.000.
Wendschlag, James C.: *See—*
Glamm, Paul R.; and Wendschlag, James C., 4,576,011, Cl. 62-115.000.
Wenger, Hans. Panel unit. 4,575,982, Cl. 52-509.000.
Wenger, Otto, to Metacon Aktiengesellschaft. Apparatus for preventing air from contacting molten metal during discharge through a sliding closure unit. 4,576,317, Cl. 222-600.000.
Wentworth, Robert: *See—*
Belanger, James A.; Wentworth, Robert; and Lapham, James M., 4,576,098, Cl. 104-172.00B.
Wenzel, Michael D. Replaceable blade knife. 4,575,940, Cl. 30-335.000.
Wermuth, Camille G.; Biziere, Kathleen; and Davi, Horace, to Sanofi. Derivatives of 4-methyl 6-phenyl pyridazine active on the central nervous system. 4,576,946, Cl. 514-247.000.
Wescott, Kermit R.: *See—*
Martens, Alan; Wescott, Kermit R.; and Snow, Bennie E., 4,576,124, Cl. 122-406.0ST.
Westebbe, Klaus: *See—*
Keintzel, Gunter; and Westebbe, Klaus, 4,576,125, Cl. 122-483.000.
Westerman, S. Thomas, to Pharmometrics Corporation. Drug abuse detection. 4,576,184, Cl. 128-733.000.
Western Precooling Systems, Inc.: *See—*
Miller, Craig A.; and Miller, Floyd E., 4,576,014, Cl. 62-268.000.
Westinghouse Electric Corp.: *See—*
Abbondanti, Alberto, 4,577,269, Cl. 363-129.000.
Alsop, Brian H.; Popa, Frank D.; and Edwards, William E., 4,576,787, Cl. 376-447.000.
Blaushild, Ronald M., 4,576,788, Cl. 376-461.000.
Blickenderfer, Jack L., 4,575,930, Cl. 29-723.000.
Boltrek, Henry; and Coakley, Peter J., Jr, 4,576,276, Cl. 198-332.000.
Braginski, Aleksander I.; and Male, Alan T., 4,575,927, Cl. 29-599.000.
Bukowski, James M.; Midock, Gary E.; and Walko, Ronald J., 4,577,281, Cl. 364-494.000.
Copper, Frank W., Jr.; and Castner, Raymond P., 4,576,546, Cl. 414-744.00R.
DeMario, Edmund E., 4,576,786, Cl. 376-439.000.
Evans, Gary E., 4,577,167, Cl. 333-128.000.
Ferree, Herbert E.; Klinvex, Daniel E.; and Vestovich, Robert P., 4,576,034, Cl. 73-1.0DV.
Ferree, Herbert E.; and Wagner, Thomas R., 4,576,778, Cl. 376-203.000.
Ferree, Herbert E.; Wagner, Thomas R.; Hecht, Michael D.; and Donnelly, Thomas J., 4,577,127, Cl. 310-83.000.
Granata, Samuel J., Jr.; and Rylatt, John A., 4,576,222, Cl. 165-76.000.
Lahoda, Edward J.; and Eckhardt, David A., 4,576,123, Cl. 122-382.000.
Lambert, James L., 4,576,485, Cl. 374-130.000.
Loose, Robert A., 4,576,782, Cl. 376-282.000.
Martens, Alan; Wescott, Kermit R.; and Snow, Bennie E., 4,576,124, Cl. 122-406.0ST.
Putman, Richard E., 4,577,280, Cl. 364-494.000.
Salowe, Seymour, 4,577,279, Cl. 364-483.000.
Scuro, Samuel J., 4,576,082, Cl. 89-8.000.
Silvestri, George J., Jr., 4,576,008, Cl. 60-662.000.
Smed, Jan P.; Seitzer, Kenneth E.; and Hultgren, Kent G., 4,576,548, Cl. 415-137.000.
Spengler, Charles J.; and Whitlow, Graham A., 4,576,874, Cl. 428-623.000.
Stol, Israel, 4,577,084, Cl. 219-85.00M.
Sweetana, Andrew S., 4,577,148, Cl. 324-72.000.
Westphal, Klaus, to Carl-Zeiss-Stiftung. Microscope tube having relatively swinging sections. 4,576,450, Cl. 350-522.000.
Wexler, Ruth R., to Du Pont de Nemours, E. I., and Company. Antihypertensive 4,5-diaryl-1H-imidazole-2-methanol derivatives. 4,576,958, Cl. 514-400.000.
Whelan, Kenneth R.: *See—*
Warren, Theodore L.; Whelan, Kenneth R.; and Reinhold, Arnold G., 4,577,344, Cl. 382-1.000.
Whelan, Russell, Jr. Switch guard assembly. 4,577,076, Cl. 200-294.000.
Whirl-Air-Flow Corporation: *See—*
Mueller, Edward E.; and Jensen, Paul L., 4,576,572, Cl. 432-13.000.
Whitacre, James B.; and Binoeder, Peter P., to Burroughs Corporation. Self testing detection system for comparing digital signal transition times. 4,577,318, Cl. 371-1.000.
White, Cathleen A.; Senne, Richard K.; and Rutherford, Harry, to Upjohn Company, The. Blinded code sheet format and method for its use. 4,576,399, Cl. 282-8.00R.
White, David D., Jr.: *See—*
Booz, A. David; Barch, Daniel R.; Kuchera, Ray A.; and White, David D., Jr., 4,576,767, Cl. 264-12.000.
White, David W.: *See—*
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White, Edward M.: *See—*
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White, Steve R.: *See—*
Comerford, Liam D.; and White, Steve R., 4,577,289, Cl. 364-900.000.
White, William J., to Honeywell Inc. Method of fabricating a cold shield. 4,576,679, Cl. 156-644.000.
Whitlow, Graham A.: *See—*
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Whitt, Roy E.: *See—*
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Wiegand, Richard J., to United States of America, Air Force. Electronic countermeasures false target system. 4,577,192, Cl. 343-18.00E.
Wieser, Karl-Heinz: *See—*
Oliver, Vincent S.; Tames, Walter; Prochaska, Helmuth H.; and Wieser, Karl-Heinz, 4,576,649, Cl. 106-308.00Q.
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Wilkes, Alan: *See—*
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Wilkinson, James H., to Sony Corporation. Digital video tape recorder apparatus. 4,577,241, Cl. 360-51.000.
Willett, Richard A.; Faletti, Fred J.; and Faletti, Paul A., to All-Pak, Inc. Method and apparatus for packaging garments. 4,575,986, Cl. 53-118.000.
William A. Barr Memorial Trust: *See—*
Barr, William A., 4,576,261, Cl. 192-4.00A.
Williams, Albert L.: *See—*
Chen, Catherine S. H.; and Williams, Albert L., 4,577,000, Cl. 525-534.000.
Williams, Annie J. Comfort collar. 4,576,169, Cl. 128-402.000.
Williams, Harold R., to Lift-U-Inc. Wheelchair passenger lift apparatus for transit stations. 4,576,539, Cl. 414-391.000.
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Wilson, Harry B.: *See—*
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Wilson, Ronald E. Flat panel display and method of manufacture. 4,577,133, Cl. 313-103.0CM.
Windecker, Robert J., to Nhy-Temp, Inc. Cryogenic refrigeration control system. 4,576,010, Cl. 62-64.000.
Winstanley, John P.: *See—*
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Winston, Walter E.; and Atkinson, Lowell G., to Black & Decker Inc. Painting applicator with remote supply. 4,576,553, Cl. 417-9.000.
Winterer, Wilfried: *See—*
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Wittwer, Fritz; and Raible, Thomas, to Warner-Lambert Company. Closing of filled capsules. 4,576,284, Cl. 206-530.000.
Wolf, Ronald J., to Wabash, Inc. Capacitor discharge ignition system with improved control circuit. 4,576,138, Cl. 123-600.000.
Wolfe, Henry S., to Swell-Wear, Inc. Air vent for an article. 4,576,087, Cl. 98-1.000.
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Wong, Hee; and Chen, Carson, to National Semiconductor Corporation. Coherent data communications technique. 4,577,335, Cl. 375-86.000.
Wong, Thomas S. W., to Advanced Micro Devices, Inc. Compensation current generator. 4,577,296, Cl. 365-226.000.
Wong, Wah. Scaffolding system. 4,576,500, Cl. 403-49.000.

Woods, John W.; Kummli, Paul; and White, Edward M., to Storage Technology Partners II. Optical disk magnetic load/unload mechanism. 4,577,307, Cl. 369-270.000.
Wooldridge, James E.; Osborne, Robert E.; and Sexton, Robert W., to Allis-Chalmers Corporation. Self-cleaning collecting device. 4,576,618, Cl. 55-122.000.
Wootton, Malcolm J.; and Harris, Ivor R., to Lucas Industries Public Limited Company. Hydrogen storage material. 4,576,640, Cl. 75-123.00E.
Worner, Siegfried; Ottle, Walter; and Klein, Herbert, to J. Eberspacher. Filtering and post-combustion device for waste gases. 4,576,799, Cl. 422-176.000.
Worthington, Mark N. Skylight with a remotely operable light intensity reducing mechanism. 4,576,440, Cl. 350-258.000.
Wright, George: *See—*
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Wright, Paul C.; and Gault, Robert. Collapsible container. 4,576,329, Cl. 229-41.00R.
Wright, Stuart C.: *See—*
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Wright, William H., Jr.: *See—*
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Wrighton, Mark S.; Buchanan, Robert M.; and Calabrese, Gary S., to Massachusetts Institute of Technology. Production of hydrogen peroxide. 4,576,756, Cl. 260-396.00R.
Wrightson, Robert W.; and Colliver, Anthony D., to Coolair Corporation Pte. Ltd. Pulley mounting means. 4,576,505, Cl. 403-362.000.
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Yabe, Hisao; Sasa, Hiroyuki; Nakajima, Yukio; Ishii, Fumiaki; Takamura, Koji; and Nakamura, Takeaki, to Olympus Optical Co., Ltd. Method of cleaning endoscope channels. 4,576,650, Cl. 134-22.120.
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Ishii, Tamaki; Yachigo, Shinichi; Sasaki, Manji; Shionoya, Masahisa; and Okamura, Haruki, 4,576,734, Cl. 252-404.000.
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Yamakawa, Toru; Makita, Fujio; Umezawa, Mitsuo; and Sakakiyama, Ryuzo, to Fuji Jukogyo Kabushiki Kaisha. System for controlling the transmission of a four-wheel drive vehicle. 4,576,061, Cl. 74-665.00T.
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Yamaoka, Keijiro, to Mitsui Engineering & Shipbuilding Co., Ltd. Geothermal hot water transportation and utilization system. 4,576,006, Cl. 60-641.500.
Yamasaki, Masahiro; Hirose, Iwao; Fukushima, Masao; and Yoshida, Ichiro, to Dainippon Screen Mfg. Co., Ltd. Liquid developing apparatus. 4,576,467, Cl. 355-10.000.
Yamato, Akihiro; and Otobe, Yutaka, to Honda Giken Kogyo K.K. Fuel supply control method for internal combustion engines capable of improving accelerability of the engine from an idling region thereof. 4,576,134, Cl. 123-480.000.
Yamato, Yoshiharu, to Kohtaki & Co., Ltd. Uniform-pressure press apparatus. 4,576,092, Cl. 100-218.000.
Yamatsu, Isao; Abe, Shinya; Inai, Yuichi; Suzuki, Takeshi; Kinoshita, Kensaku; Mishima, Mannen; Katoh, Yoshinori; Kobayashi, Seiichi; Murakami, Manabu; and Yamada, Kouzi, to Eisai Co., Ltd. Polyprenyl compounds, process for the production thereof and medicines containing same. 4,576,963, Cl. 514-532.000.
Yamauchi, Teruo; Nogi, Toshiharu; and Oyama, Yoshishige, to Hitachi, Ltd. Fuel dispenser for internal combustion engine. 4,576,136, Cl. 123-590.000.
Yamaura, Mitsuru, to Kabushiki Kaisha Toshiba. Protective relay system. 4,577,254, Cl. 361-80.000.
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Yaverbaum, Sidney; and Kusnetz, Jacob, to Technicon Instruments Corporation. Fluoroimmunoassaying. 4,576,912, Cl. 435-7.000.
Yeung, Anthony C. Method of sampling and analyzing biocidal gas from a reaction chamber. 4,576,918, Cl. 436-179.000.
Yoda, Yasutada; Sueyasu, Seisuke; Orikawa, Michihiro; and Futamura, Shoji, to Bridgestone Tire Co. Ltd.; and Institute of Technology Precision Electrical Discharge Works. Vented tire molding mold. 4,576,559, Cl. 425-28.00R.
Yokogawa Medical Systems, Limited: *See—*
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Yoshida, Akiyoshi; Kametaka, Shigeru; and Hayashi, Shin'ichi, to Rohto Pharmaceutical Co., Ltd. Method for enhancing a fungus-lytic activity of beta-1,3-D-glucanase. 4,576,914, Cl. 435-42.000.
Yoshida, Fumio; and Kotera, Yoshikazu, to Mitsubishi Denki Kabushiki Kaisha. Rolling mill. 4,576,027, Cl. 72-11.000.
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Yoshimura, Yutaka; and Hikami, Masahiro, to Sharp Kabushiki Kaisha. Solar energy-powered calculator or the like. 4,577,286, Cl. 364-708.000.
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Youssef, Kamal A. Toothsticks "Toostix". 4,576,190, Cl. 132-89.000.
Youssefyeh, Raymond D., to USV Pharmaceutical Corp. Anti-allergic and anti-inflammatory bi- and tri- cyclo-1,4-thiazine derivatives, composition, and method of use therefor. 4,576,942, Cl. 514-222.000.
Yu, I-Ping, to Hughes Aircraft Company. Missile mounted waveguide antenna. 4,577,196, Cl. 343-705.000.
Yuasa, Yoshio; Yasumoto, Hidetoshi; Naruse, Kazuhiko; Kawagoe, Nobukazu; and Inaba, Masahito, to Minolta Camera Kabushiki Kaisha. Enlarger for use in photography. 4,576,470, Cl. 355-38.000.
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Zahler, Robert; Koster, William H.; and Slusarchyk, William A., to E. R. Squibb & Sons, Inc. 3-Acylamino-1-carboxymethylaminocarbonyl-2-azetidinones. 4,576,749, Cl. 260-239.00A.
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Zanin, Michael A., to AMCA International Corporation. Crane for nuclear waste handling facilities. 4,576,100, Cl. 105-49.000.
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Zbinden, Terry B., to Sperry Corporation. Detection of catastrophic failure of dielectric, improper connection, and temperature of a printed circuit assembly via one wire. 4,577,149, Cl. 324-73.0PC.
Zeigner, Willard L.; and MacIntosh, John A., to Zemco, Inc. Dieter's weighing scale. 4,576,244, Cl. 177-245.000.
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Zima, John P. Device for fighting fires in highrise buildings and towers. 4,576,249, Cl. 182-82.000.
Zimmerer, Wilhelm: *See—*
Mathis, Paul; Mathis, Bernhard; Mathis, Franz; and Zimmerer, Wilhelm, 4,576,483, Cl. 366-65.000.
Zimmermann, Heinrich. Test equipment for phono pickup needles. 4,577,303, Cl. 369-55.000.
Ziyad Incorporated: *See—*
Staniszewski, Tadeusz, 4,576,493, Cl. 400-175.000.
Zuccaro, Don R., to Board of Regents, University of Texas System. Method and apparatus for establishing a reference potential on satellites in planetary ionospheres. 4,576,348, Cl. 244-173.000.
Zullig AG Rheineck: *See—*
Chiusole, Erwin; and Zullig, Hans, 4,576,704, Cl. 204-402.000.
Zullig, Hans: *See—*
Chiusole, Erwin; and Zullig, Hans, 4,576,704, Cl. 204-402.000.
Zygo Corporation: *See—*
Soobitsky, James A., 4,577,131, Cl. 310-328.000.
501 Telecommunications Radioelectriques et Telephoniques T.R.T.: *See—*
Barazeche, Bahman; Alexis, Roger P. J.; and Guidoux, Loic B. Y., 4,577,309, Cl. 370-32.000.
501 Vickers PLC: *See—*
McCann, James; Langley, James; Hopper, Ian; Durham, Steven; Scott, Thomas; and McOmish, Eric R., 4,576,517, Cl. 405-195.000.
501 W B Lock Company: *See—*
Holden, Kenneth M., 4,576,021, Cl. 70-34.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 18TH DAY OF MARCH, 1986

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Davis, William G., to Liquid Modulators, Inc. Liquid modulator. Re. 32,092, Cl. 62-475.000.
General Electric Company: *See—*
Hale, Thomas E., Re. 32,093, Cl. 428-336.000.
Hale, Thomas E., to General Electric Company. Aluminum oxide coated titanium-containing cemented carbide product. Re. 32,093, Cl. 428-336.000.
Liquid Modulators, Inc.: *See—*
Davis, William G., Re. 32,092, Cl. 62-475.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Taylor, Glenn. Rotary dump. B1 4,077,328, 3-18-86, Cl. 105-261.00A.

LIST OF DESIGN PATENTEES

A/S E. Damberg Group: *See—*
Skillius, Hans, 283,074, Cl. D34-40.000.
ABC Industries, Inc.: *See—*
Yokers, Henry P.; and Conley, Janet M., 283,070, Cl. D34-15.000.
Abe, Karl H.; and Gevert, Klaus V., to Bayerische Motoren Werke AG. Fairing for motorcycles. 283,021, 3-18-86, Cl. D12-182.000.
Acme United Corporation: *See—*
Sharkany, Edward J., 283,048, Cl. D24-26.000.
Altman, Charles W. C., to Altman Stage Lighting Co., Inc. Rotatable detachable head for weather resistant spot light. 283,054, 3-18-86, Cl. D26-24.000.
Altman Stage Lighting Co., Inc.: *See—*
Altman, Charles W. C., 283,054, Cl. D26-24.000.
American Home Products Corporation (Del.): *See—*
Godsey, James H., 283,050, Cl. D24-31.000.
American Motors Corporation: *See—*
Teague, Richard A.; Nixon, Robert C.; and Krispinsky, George M., 283,019, Cl. D12-163.000.
Amiet AG: *See—*
Gisiger, Urs, 283,005, Cl. D8-331.000.
Anders Eriksson HB: *See—*
Eriksson, Anders, 283,047, Cl. D24-10.000.
Anheuser-Busch Companies, Inc.: *See—*
Moloney, Thomas E.; Chernikoff, Nelson N.; Traczyk, Edward S.; Shulski, Michael M.; Cassidy, Edward K.; and Mann, John M., 283,011, Cl. D9-398.000.
Ansems, Henricus J. Lamp. 283,056, 3-18-86, Cl. D26-61.000.
AT&T Information Systems, Inc.: *See—*
Gaus, Gary R.; McGarvey, John N.; Reeves, John P.; and Tilley, Alvin R., 283,025, Cl. D14-63.000.
AT&T Technologies, Inc.: *See—*
McGarvey, John N.; and Tilley, Alvin R., 283,024, Cl. D14-60.000.
Bart, Rick. Side chair. 282,983, 3-18-86, Cl. D6-369.000.
Bart, Rick. Side chair. 282,984, 3-18-86, Cl. D6-369.000.
Bartlett, Randall N., to Syntex (U.S.A.) Inc. Combined cup and towel dispenser. 282,992, 3-18-86, Cl. D6-516.000.
Bayerische Motoren Werke AG: *See—*
Abe, Karl H.; and Gevert, Klaus V., 283,021, Cl. D12-182.000.
Beal, Albert R. Strigil. 283,068, 3-18-86, Cl. D32-49.000.
Beattie Systems, Inc.: *See—*
Sadre-Marandi, Ehsan; and Smith, Harry L. O., 283,031, Cl. D16-44.000.
Berg, Peter H. Collapsible stamp pad and key fob. 283,033, 3-18-86, Cl. D18-15.000.
Bernhardt Industries, Inc.: *See—*
Keller, Huey T., 282,986, Cl. D6-397.000.
Beverly, Keith J. Wall mounted rack. 282,995, 3-18-86, Cl. D6-566.000.
Biesecker, Frederick N., to Drug Plastics & Glass Company, Inc. Bottle. 283,010, 3-18-86, Cl. D9-367.000.
Bosenberg, Herbert W. Grass-weed lying mat. 282,996, 3-18-86, Cl. D6-588.000.
Botich, Michael J., to Unitek Corporation. Dental furnace. 283,046, 3-18-86, Cl. D24-8.000.
Brooks/Kendall, Ltd.: *See—*
Sanford, Ronald W., 282,993, Cl. D6-526.000.
Brown Jordan Company: *See—*
Cronk, Jeffrey P., 282,985, Cl. D6-373.000.
Burke, Mary E.: *See—*
Pashley, Robert; Burke, Mary E.; Peters, William; Jacobi, Robert L.; and Gangelhoff, Ronald J., 283,001, Cl. D7-152.000.
C. S. Industrial International, Inc.: *See—*
Eugster, F. Josef, 283,052, Cl. D24-36.000.
Calavar Corporation: *See—*
Qureshi, Azam S.; and Murrill, William D., 283,072, Cl. D34-34.000.
Camens, Murray I. C., to U.S. Philips Corporation. Electric dry shaver with cover. 283,060, 3-18-86, Cl. D28-51.000.
Cameron, John A. Wheel chock. 283,022, 3-18-86, Cl. D12-217.000.
Camino Laboratories, Inc.: *See—*
Hermann, Robert A., 283,053, Cl. D24-53.000.
Carter, Joseph A., Jr.; and Everhard, Paul R., to Carter, Joseph A., Jr. Hold down bracket. 283,006, 3-18-86, Cl. D8-349.000.
Cassidy, Edward K.: *See—*
Moloney, Thomas E.; Chernikoff, Nelson N.; Traczyk, Edward S.; Shulski, Michael M.; Cassidy, Edward K.; and Mann, John M., 283,011, Cl. D9-398.000.
Cesaroni, William C.: *See—*
Dobson, William C.; and Cesaroni, William C., 283,069, Cl. D32-73.000.
Chernikoff, Nelson N.: *See—*
Moloney, Thomas E.; Chernikoff, Nelson N.; Traczyk, Edward S.; Shulski, Michael M.; Cassidy, Edward K.; and Mann, John M., 283,011, Cl. D9-398.000.
Chicago Cutlery Consumer Products, Inc.: *See—*
Pashley, Robert; Burke, Mary E.; Peters, William; Jacobi, Robert L.; and Gangelhoff, Ronald J., 283,001, Cl. D7-152.000.
Citizen Watch Co., Ltd.: *See—*
Kano, Hayao, 283,013, Cl. D10-32.000.
Cohen, Richard T., to Melrose Displays, Inc. Display rack. 282,987, 3-18-86, Cl. D6-449.000.
Conley, Janet M.: *See—*
Yokers, Henry P.; and Conley, Janet M., 283,070, Cl. D34-15.000.
Container Corporation of America: *See—*
Marshall, John J., 283,073, Cl. D34-38.000.
Cronk, Jeffrey P., to Brown Jordan Company. Chair frame. 282,985, 3-18-86, Cl. D6-373.000.
Daenen, Robert H. C. M., to Dart Industries Inc. Mixing bowl or the like. 283,002, 3-18-86, Cl. D7-319.000.
Dart Industries Inc.: *See—*
Daenen, Robert H. C. M., 283,002, Cl. D7-319.000.
Dobson, William C.; and Cesaroni, William C., 283,069, Cl. D32-73.000.

Data General Corporation: *See—*
Gundogan, Can I., 283,027, Cl. D14-113.000.
David, Thomas W., to Singer Company, The. Sewing machine or similar article. 283,029, 3-18-86, Cl. D15-69.000.
David, Thomas W., to Singer Company, The. Sewing machine or similar article. 283,030, 3-18-86, Cl. D15-69.000.
Dobson, William C.; and Cesaroni, William C., to Dart Industries Inc. Iron base. 283,069, 3-18-86, Cl. D32-73.000.
Drug Plastics & Glass Company, Inc.: *See—*
Biesecker, Frederick N., 283,010, Cl. D9-367.000.
DUPRO AG: *See—*
Maier, Siegfried, 283,065, Cl. D32-23.000.
Maier, Siegfried, 283,066, Cl. D32-23.000.
Eriksson, Anders, to Anders Eriksson HB. Tray for bite registration. 283,047, 3-18-86, Cl. D24-10.000.
Eugster, F. Josef, to C. S. Industrial International, Inc. Foot pedal massager. 283,052, 3-18-86, Cl. D24-36.000.
Evenson, Edward, to Milton Industries, Inc. Quick connecting cylinder air leakage tester. 283,016, 3-18-86, Cl. D10-85.000.
Everhard, Paul R.: *See—*
Carter, Joseph A., Jr.; and Everhard, Paul R., 283,006, Cl. D8-349.000.
Fichera, Alfred J., to Xomed. Sinus irrigation tray. 283,051, 3-18-86, Cl. D24-31.000.
Fukasawa, Naoto: *See—*
Suzuki, Susumu; Uchihori, Noritaka; and Fukasawa, Naoto, 283,014, Cl. D10-38.000.
Gangelhoff, Ronald J.: *See—*
Pashley, Robert; Burke, Mary E.; Peters, William; Jacobi, Robert L.; and Gangelhoff, Ronald J., 283,001, Cl. D7-152.000.
Gaus, Gary R.; McGarvey, John N.; Reeves, John P.; and Tilley, Alvin R., to AT&T Information Systems, Inc. Telephone handset. 283,025, 3-18-86, Cl. D14-63.000.
Gevert, Klaus V.: *See—*
Abe, Karl H.; and Gevert, Klaus V., 283,021, Cl. D12-182.000.
Gibson, J. Scott, to Mitel Corporation. Telephone branch exchange cabinet. 283,023, 3-18-86, Cl. D14-52.000.
Gisiger, Urs, to Amiet AG. Dual wheel combination lock for luggage or similar type article-retaining container. 283,005, 3-18-86, Cl. D8-331.000.
Godsey, James H., to American Home Products Corporation (Del.). Microbiological test tray. 283,050, 3-18-86, Cl. D24-31.000.
Goertz, Albrecht, to Rolodex Corporation. Heavy duty paper punch. 283,035, 3-18-86, Cl. D19-72.000.
Goorhouse, Donald E. Fluid injection apparatus for internal combustion engines. 283,028, 3-18-86, Cl. D15-5.000.
Gundogan, Can I., to Data General Corporation. Video display terminal or similar article. 283,027, 3-18-86, Cl. D14-113.000.
Hall, Gaddis G. Guy hook for attachment to transmission line poles or the like. 283,008, 3-18-86, Cl. D8-356.000.
Hasbro Industries, Inc.: *See—*
Knight, Elizabeth, 283,037, Cl. D21-165.000.
Knight, Elizabeth, 283,038, Cl. D21-165.000.
Hashimoto, Masanori. Sheet feeder for printer. 283,034, 3-18-86, Cl. D18-22.000.
Hayton, Paul. Cap. 282,980, 3-18-86, Cl. D2-248.000.
Henkel, Daniel P., to Square D Company. Electrical outlet cover plate enclosure therefor. 283,007, 3-18-86, Cl. D8-353.000.
Henry, Glenn F. Simulative toy whistle. 283,017, 3-18-86, Cl. D10-119.000.
Hermann, Robert A., to Camino Laboratories, Inc. Connector for invasive catheter system. 283,053, 3-18-86, Cl. D24-53.000.
Higa, Toshirou: *See—*
Kitashima, Tadashi; Komiya, Masaru; and Higa, Toshirou, 283,061, Cl. D28-53.000.
Hohulin, Samuel E.: *See—*
Thomas, Joyce K.; and Hohulin, Samuel E., 283,064, Cl. D32-18.000.
Holland, Darrel E.; and Holland, William P. Pistol. 283,040, 3-18-86, Cl. D22-1.000.
Holland, Darrell E.; and Holland, William P. Short rifle. 283,042, 3-18-86, Cl. D22-6.000.
Holland, William P.: *See—*
Holland, Darrel E.; and Holland, William P., 283,040, Cl. D22-1.000.
Holland, Darrell E.; and Holland, William P., 283,042, Cl. D22-6.000.
Holman, Paul D. Washing unit for cylindrical cartridge filters. 283,063, 3-18-86, Cl. D32-1.000.
Jack, Alister, to U.S. Philips Corporation. Water purifier. 283,044, 3-18-86, Cl. D23-3.000.
Jacobi, Robert L.: *See—*
Pashley, Robert; Burke, Mary E.; Peters, William; Jacobi, Robert L.; and Gangelhoff, Ronald J., 283,001, Cl. D7-152.000.
Jankens, Austin L. Utility tray. 283,012, 3-18-86, Cl. D9-456.000.
Jennette, Dale A. Beverage container. 283,009, 3-18-86, Cl. D9-307.000.
Joseph, Steven: *See—*
Sims, Julian; and Joseph, Steven, 282,990, Cl. D6-502.000.
Kabushi Kaisha Suwa Seikosha: *See—*
Suzuki, Susumu; Uchihori, Noritaka; and Fukasawa, Naoto, 283,014, Cl. D10-38.000.
Kano, Hayao, to Citizen Watch Co., Ltd. Wrist watch. 283,013, 3-18-86, Cl. D10-32.000.
Keller, Huey T., to Bernhardt Industries, Inc. Combined dual armoire, bridge and dresser unit. 282,986, 3-18-86, Cl. D6-397.000.
Kitashima, Tadashi; Komiya, Masaru; and Higa, Toshirou, to Kyusyu Hitachi Maxell, Ltd. Electric hair clipper. 283,061, 3-18-86, Cl. D28-53.000.
Knight, Elizabeth, to Hasbro Industries, Inc. Toy winged horse figure. 283,037, 3-18-86, Cl. D21-165.000.
Knight, Elizabeth, to Hasbro Industries, Inc. Toy unicorn. 283,038, 3-18-86, Cl. D21-165.000.
Koch, Adolf, to Sport-Service-Lorinser Sportliche Autoausruestung GmbH. Spoiler. 283,020, 3-18-86, Cl. D12-181.000.
Kodet, John. Information indicator for attachment to a garment hanger. 282,982, 3-18-86, Cl. D6-328.000.
Komiya, Masaru: *See—*
Kitashima, Tadashi; Komiya, Masaru; and Higa, Toshirou, 283,061, Cl. D28-53.000.
Krispinsky, George M.: *See—*
Teague, Richard A.; Nixon, Robert C.; and Krispinsky, George M., 283,019, Cl. D12-163.000.
Kyusyu Hitachi Maxell, Ltd.: *See—*
Kitashima, Tadashi; Komiya, Masaru; and Higa, Toshirou, 283,061, Cl. D28-53.000.
Lederrey, Marc, to Rado Uhren AG. Watch case. 283,015, 3-18-86, Cl. D10-39.000.
Lee, Alan Y. T. Knife. 283,041, 3-18-86, Cl. D22-1.000.
Lordi, Peter F., to Ulster Manufacturing, Inc. Disposable scoop. 283,062, 3-18-86, Cl. D30-99.000.
Lynn, John K., to Xomed Inc. Thermal myringotomy system. 283,045, 3-18-86, Cl. D24-8.000.
Maier, Siegfried, to DUPRO AG. Top portion for a canister-type suction apparatus. 283,065, 3-18-86, Cl. D32-23.000.
Maier, Siegfried, to DUPRO AG. Top portion for a canister-type suction apparatus. 283,066, 3-18-86, Cl. D32-23.000.
Mann, John M.: *See—*
Moloney, Thomas E.; Chernikoff, Nelson N.; Traczyk, Edward S.; Shulski, Michael M.; Cassidy, Edward K.; and Mann, John M., 283,011, Cl. D9-398.000.
Marshall, John J., to Container Corporation of America. Pallet. 283,073, 3-18-86, Cl. D34-38.000.
McGarvey, John N.; and Tilley, Alvin R., to AT&T Technologies, Inc. Telephone stand. 283,024, 3-18-86, Cl. D14-60.000.
McGarvey, John N.: *See—*
Gaus, Gary R.; McGarvey, John N.; Reeves, John P.; and Tilley, Alvin R., 283,025, Cl. D14-63.000.
McKinley, DeWitt, to McKinley Tree Grate Co., Inc. Tree grate. 283,003, 3-18-86, Cl. D8-1.000.
McKinley Tree Grate Co., Inc.: *See—*
McKinley, DeWitt, 283,003, Cl. D8-1.000.
McLin, Kenneth G., to Procter & Gamble Company, The. Dispensing applicator. 283,067, 3-18-86, Cl. D32-45.000.
Melrose Displays, Inc.: *See—*
Cohen, Richard T., 282,987, Cl. D6-449.000.
Meyer, David P. Vehicle lamp. 283,055, 3-18-86, Cl. D26-28.000.
Miller, Lawrence J., to Owens-Illinois, Inc. Tumbler or similar article. 282,997, 3-18-86, Cl. D7-6.000.
Milton Industries, Inc.: *See—*
Evenson, Edward, 283,016, Cl. D10-85.000.
Mitel Corporation: *See—*
Gibson, J. Scott, 283,023, Cl. D14-52.000.
Miyazaki, Masaru: *See—*
Satoh, Teizo; and Miyazaki, Masaru, 283,058, Cl. D28-50.000.
Satoh, Teizoh; and Miyazaki, Masaru, 283,059, Cl. D28-50.000.
Mobil Oil Corporation: *See—*
Prader, Randolph D., 282,994, Cl. D6-566.000.
Moloney, Thomas E.; Chernikoff, Nelson N.; Traczyk, Edward S.; Shulski, Michael M.; Cassidy, Edward K.; and Mann, John M., to Anheuser-Busch Companies, Inc. Can. 283,011, 3-18-86, Cl. D9-398.000.
Murrill, William D.: *See—*
Qureshi, Azam S.; and Murrill, William D., 283,072, Cl. D34-34.000.
Nakagawa Corporation: *See—*
Otake, Masao, 283,018, Cl. D11-12.000.
National Union Electric Corporation: *See—*
Thomas, Joyce K.; and Hohulin, Samuel E., 283,064, Cl. D32-18.000.
Nelson, Ronald M. Tape rack. 282,989, 3-18-86, Cl. D6-474.000.
Neuhaus, Stanley J. Utility cart. 283,071, 3-18-86, Cl. D34-24.000.
Nixon, Robert C.: *See—*
Teague, Richard A.; Nixon, Robert C.; and Krispinsky, George M., 283,019, Cl. D12-163.000.
Nottingham, John R.: *See—*
Spirk, John W., Jr.; and Nottingham, John R., 283,075, Cl. D99-34.000.
Oneida Ltd.: *See—*
Richmond, Colin B., II, 282,999, Cl. D7-137.000.
Richmond, Colin B., II, 283,000, Cl. D7-137.000.
Otake, Masao, to Nakagawa Corporation. Jewelry chain. 283,018, 3-18-86, Cl. D11-12.000.
Owens-Illinois, Inc.: *See—*
Miller, Lawrence J., 282,997, Cl. D7-6.000.
Pandya, Mahendra K. Organizer for holding drug detection kit articles or the like. 283,049, 3-18-86, Cl. D24-31.000.
Parker, Richard E. Door lock guard. 283,004, 3-18-86, Cl. D8-322.000.
Pashley, Robert; Burke, Mary E.; Peters, William; Jacobi, Robert L.; and Gangelhoff, Ronald J., to Chicago Cutlery Consumer Products, Inc. Knife handle. 283,001, 3-18-86, Cl. D7-152.000.

Pencept, Inc.: *See—*
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Peters, William: *See—*
Pashley, Robert; Burke, Mary E.; Peters, William; Jacobi, Robert L.; and Gangelhoff, Ronald J., 283,001, Cl. D7-152.000.
Petrus Products Limited: *See—*
Woolard, Russell, 282,988, Cl. D6-471.000.
Pierce, Melinda J. Mitten. 282,981, 3-18-86, Cl. D2-367.000.
Pitts, Larry E. Pistol holster. 283,043, 3-18-86, Cl. D22-13.000.
Prader, Randolph D., to Mobil Oil Corporation. Bag holder or the like. 282,994, 3-18-86, Cl. D6-566.000.
Procter & Gamble Company, The: *See—*
McLin, Kenneth G., 283,067, Cl. D32-45.000.
Quesnel, Ronald N. Guitar holder. 283,032, 3-18-86, Cl. D17-20.000.
Qureshi, Azam S.; and Murrill, William D., to Calavar Corporation. Self-propelled aerial work platform. 283,072, 3-18-86, Cl. D34-34.000.
Rado Uhren AG: *See—*
Lederrey, Marc, 283,015, Cl. D10-39.000.
Ransom, Barbara J. Collapsible plate. 282,998, 3-18-86, Cl. D7-23.000.
Reeves, John P.: *See—*
Gaus, Gary R.; McGarvey, John N.; Reeves, John P.; and Tilley, Alvin R., 283,025, Cl. D14-63.000.
Richmond, Colin B., II, to Oneida Ltd. Spoon or similar article. 282,999, 3-18-86, Cl. D7-137.000.
Richmond, Colin B., II, to Oneida Ltd. Spoon or similar article. 283,000, 3-18-86, Cl. D7-137.000.
Richmond, Dana M., to Pencept, Inc. Computer terminal. 283,026, 3-18-86, Cl. D14-106.000.
Rogers, Christopher M. Barber's comb. 283,057, 3-18-86, Cl. D28-25.000.
Rolodex Corporation: *See—*
Goertz, Albrecht, 283,035, Cl. D19-72.000.
Sadre-Marandi, Ehsan; and Smith, Harry L. O., to Beattie Systems, Inc. Camera support bracket. 283,031, 3-18-86, Cl. D16-44.000.
Sanford, Ronald W., to Brooks/Kendall, Ltd. Combined mirror and shaving gear holder. 282,993, 3-18-86, Cl. D6-526.000.
Satoh, Teizo; and Miyazaki, Masaru. Electric shaver. 283,058, 3-18-86, Cl. D28-50.000.
Satoh, Teizoh; and Miyazaki, Masaru, to U.S. Philips Corporation. Dry shaver. 283,059, 3-18-86, Cl. D28-50.000.
Sharkany, Edward J., to Acme United Corporation. Surgical staple remover. 283,048, 3-18-86, Cl. D24-26.000.
Shulski, Michael M.: *See—*
Moloney, Thomas E.; Chernikoff, Nelson N.; Traczyk, Edward S.; Shulski, Michael M.; Cassidy, Edward K.; and Mann, John M., 283,011, Cl. D9-398.000.
Sims, Julian; and Joseph, Steven. Lumbar support cushion. 282,990, 3-18-86, Cl. D6-502.000.
Singer Company, The: *See—*
David, Thomas W., 283,029, Cl. D15-69.000.
David, Thomas W., 283,030, Cl. D15-69.000.
Skillius, Hans, to A/S E. Damberg Group. Shelf bin. 283,074, 3-18-86, Cl. D34-40.000.
Smith, Harry L. O.: *See—*
Sadre-Marandi, Ehsan; and Smith, Harry L. O., 283,031, Cl. D16-44.000.
Solheim, Karsten. Golf putter head. 283,039, 3-18-86, Cl. D21-219.000.
Spirk, John W., Jr.; and Nottingham, John R. Coin bank or similar article. 283,075, 3-18-86, Cl. D99-34.000.
Sport-Service-Lorinser Sportliche Autoausruestung GmbH: *See—*
Koch, Adolf, 283,020, Cl. D12-181.000.
Square D Company: *See—*
Henkel, Daniel P., 283,007, Cl. D8-353.000.
Strongwater, Murray. Key purpose identifier. 283,036, 3-18-86, Cl. D20-28.000.
Suzuki, Susumu; Uchihori, Noritaka; and Fukasawa, Naoto, to Kabushi Kaisha Suwa Seikosha. Watch. 283,014, 3-18-86, Cl. D10-38.000.
Syntex (U.S.A.) Inc.: *See—*
Bartlett, Randall N., 282,992, Cl. D6-516.000.
Teague, Richard A.; Nixon, Robert C.; and Krispinsky, George M., to American Motors Corporation. Automobile grille. 283,019, 3-18-86, Cl. D12-163.000.
Thomas, Joyce K.; and Hohulin, Samuel E., to National Union Electric Corporation. Hand-held vacuum cleaner. 283,064, 3-18-86, Cl. D32-18.000.
Tilley, Alvin R.: *See—*
Gaus, Gary R.; McGarvey, John N.; Reeves, John P.; and Tilley, Alvin R., 283,025, Cl. D14-63.000.
McGarvey, John N.; and Tilley, Alvin R., 283,024, Cl. D14-60.000.
Traczyk, Edward S.: *See—*
Moloney, Thomas E.; Chernikoff, Nelson N.; Traczyk, Edward S.; Shulski, Michael M.; Cassidy, Edward K.; and Mann, John M., 283,011, Cl. D9-398.000.
Uchihori, Noritaka: *See—*
Suzuki, Susumu; Uchihori, Noritaka; and Fukasawa, Naoto, 283,014, Cl. D10-38.000.
Ulster Manufacturing, Inc.: *See—*
Lordi, Peter F., 283,062, Cl. D30-99.000.
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Jack, Alister, 283,044, Cl. D23-3.000.
Satoh, Teizoh; and Miyazaki, Masaru, 283,059, Cl. D28-50.000.
Unitek Corporation: *See—*
Botich, Michael J., 283,046, Cl. D24-8.000.
Wellington Home Products: *See—*
Wellington, Richard C., 282,991, Cl. D6-511.000.
Wellington, Richard C., to Wellington Home Products. Detachable tray. 282,991, 3-18-86, Cl. D6-511.000.
Woolard, Russell, to Petrus Products Limited. Display case. 282,988, 3-18-86, Cl. D6-471.000.
Xomed: *See—*
Fichera, Alfred J., 283,051, Cl. D24-31.000.
Xomed Inc.: *See—*
Lynn, John K., 283,045, Cl. D24-8.000.
Yokers, Henry P.; and Conley, Janet M., to ABC Industries, Inc. Golf cart. 283,070, 3-18-86, Cl. D34-15.000.

LIST OF PLANT PATENTEES

Anthurium Amazone Limited: *See—*
van der Laarse, Dirk, 5,696, Cl. 88.000.
Armstrong Nurseries, Inc.: *See—*
Christensen, Jack E., 5,693, Cl. 11.000.
Christensen, Jack E., to Armstrong Nurseries, Inc. Hybrid tea rose plant cv. Arolala. 5,693, 3-18-86, Cl. 11.000.
Conard-Pyle Company, The: *See—*
Meilland, Marie L., 5,694, Cl. 16.000.
Schwartz, Earnest, deceased, 5,690, Cl. 8.000.
Hughes, Mary L.: *See—*
Tremaine, Harry G.; and Hughes, Mary L., 5,695, Cl. 74.000.
Meilland, Marie L., to Conard-Pyle Company, The. Rose plant—Meirope variety. 5,694, 3-18-86, Cl. 16.000.
Nor'East Miniature Roses, Inc.: *See—*
Saville, F. Harmon, 5,691, Cl. 9.000.
Saville, F. Harmon, 5,692, Cl. 10.000.
Saville, F. Harmon, to Nor'East Miniature Roses, Inc. Rose plant. 5,691, 3-18-86, Cl. 9.000.
Saville, F. Harmon, to Nor'East Miniature Roses, Inc. Rose plant. 5,692, 3-18-86, Cl. 10.000.
Schwartz, Earnest, deceased (by Schwartz, Hazel E., executrix), to Conard-Pyle Company, The. Miniature rose plant-Schobitet variety. 5,690, 3-18-86, Cl. 8.000.
Schwartz, Hazel E., executrix: *See—*
Schwartz, Earnest, deceased, 5,690, Cl. 8.000.
Tremaine, Harry G.; and Hughes, Mary L. Chrysanthemum plant named Stargazer. 5,695, 3-18-86, Cl. 74.000.
van der Laarse, Dirk, to Anthurium Amazone Limited. Anthurium plant named Amazone. 5,696, 3-18-86, Cl. 88.000.

CLASSIFICATION OF PATENTS

ISSUED MARCH 18, 1986

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

6	4,575,871
69.5	4,575,876
144	4,575,872
234	4,575,873
268	4,575,874
422	4,575,875

CLASS 4

253	4,575,879
313	4,575,880
405	4,575,881
559	4,575,882

CLASS 5

13	4,575,883
420	4,575,884
450	4,575,885
	4,575,886

CLASS 8

103	4,576,609
158	4,575,887
471	4,576,610
482	4,576,611

CLASS 10

101 R	4,575,888

CLASS 12

15	4,575,889

CLASS 15

104 A	4,575,890
104.93	4,575,891
106	4,575,892
171	4,575,893
172	4,575,894
327 R	4,575,895

CLASS 16

35 R	4,575,896
110 A	4,575,897
274	4,575,898

CLASS 17

1 B	4,575,900
1 G	4,575,899
11	4,575,901

CLASS 19

2	4,575,902
159 R	4,575,903

CLASS 24

115 K	4,575,904
129 R	4,575,905
238	4,575,906
641	4,575,907
650	4,575,908

CLASS 26

18.6	4,575,909

CLASS 29

148.4 D	4,575,910
156.8 B	4,575,911
173	4,575,912
432	4,575,913
434	4,575,914
509	4,575,915
517	4,575,916
520	4,575,917
568	4,575,918
569 L	4,575,919
571	4,575,920
	4,575,921
574	4,575,922
576 B	4,575,923
576 E	4,575,924
576 W	4,575,925
598	4,575,926
599	4,575,927
611	4,575,928
620	4,575,929
723	4,575,930
747	4,575,931
751	4,575,932
765	4,575,933
787	4,575,934
858	4,575,935

CLASS 30

169	4,575,936
276	4,575,937
	4,575,938
296 A	4,575,939
335	4,575,940
346.51	4,575,941

CLASS 33

1 M	4,575,942
138	4,575,943
	4,575,944
182	4,575,945
200	4,575,946
561	4,575,947

CLASS 34

10	4,575,948
14	4,575,949
27	4,575,950
30	4,575,951
54	4,575,952

CLASS 36

77 R	4,575,953
89	4,575,954
117	4,575,955
119	4,575,956
121	4,575,957
	4,575,958

CLASS 37

4	4,575,959
63	4,575,960

CLASS 42

1 Q	4,575,962
1 S	4,575,961
70 F	4,575,963
94	4,575,964

CLASS 49

50	4,575,965
209	4,575,966
211	4,575,967
502	4,575,968

CLASS 51

131.1	4,575,969
165.92	4,575,970
170 TL	4,575,973
236	4,575,971
251	4,575,972
295	4,576,612

CLASS 52

24	4,575,979
86	4,575,974
109	4,575,975
118	4,575,976
169.3	4,575,977
234	4,575,978
291	4,575,980
309.9	4,575,981
509	4,575,982
544	4,575,983
589	4,575,984
677	4,575,985

CLASS 53

118	4,575,986
298	4,575,987
399	4,575,988
434	4,575,989
	4,575,990
509	4,575,991
520	4,575,992
534	4,575,993
582	4,575,994
591	4,575,995

CLASS 54

80	4,575,996

CLASS 55

1	4,576,613
18	4,576,614
43	4,576,615
68	4,576,616
96	4,576,617
122	4,576,618
213	4,576,619

CLASS 56

16.4	4,575,997
312	4,575,998

CLASS 57

333	4,575,999
416	4,576,000

CLASS 60

39.08	4,576,001
262	4,576,002
384	4,576,003
547.1	4,576,004
618	4,576,005
641.5	4,576,006
660	4,576,007
662	4,576,008

CLASS 62

3	4,576,009
64	4,576,010
115	4,576,011
157	4,576,012
171	4,576,013
268	4,576,014
292	4,576,015
320	4,576,016
372	4,576,017
475	Re.32,092

CLASS 65

9	4,576,620
10.2	4,576,621
13	4,576,622
30.14	4,576,623
300	4,576,624

CLASS 66

106	4,576,018
147	4,576,019

CLASS 68

205 R	4,576,020

CLASS 70

34	4,576,021
55	4,576,022
137	4,576,023
252	4,576,024
276	4,576,025
380	4,576,026

CLASS 71

3	4,576,625
28	4,576,626
41	4,576,627
88	4,576,628
90	4,576,629
92	4,576,630
	4,576,631
93	4,576,632
	4,576,633

CLASS 72

11	4,576,027
143	4,576,028
205	4,576,029
296	4,576,030
355	4,576,031
431	4,576,032
469	4,576,033

CLASS 73

1 DV	4,576,034
4 R	4,576,035
29	4,576,036
40.5 R	4,576,037
40.7	4,576,038
118	4,576,039
146	4,576,040
151	4,576,041
155	4,576,042
195	4,576,043
462	4,576,044
597	4,576,047
626	4,576,045
631	4,576,046
642	4,576,048
706	4,576,049
861.05	4,576,050
862.36	4,576,051
862.63	4,576,052
862.66	4,576,053
863.03	4,576,054

CLASS 74

200	4,576,055
388 PS	4,576,056
424.8 C	4,576,057
425	4,576,058
473 P	4,576,059
573 R	4,576,060
665 T	4,576,061
740	4,576,062
745	4,576,063
833	4,576,064
866	4,576,065

CLASS 75

0.5 A	4,576,634
0.5 AA	4,576,635
1 R	4,576,636
10 R	4,576,637
80	4,576,638
123 E	4,576,639
	4,576,640
128 P	4,576,641
239	4,576,642

CLASS 81

176.3	4,576,066
185.1	4,576,067

CLASS 82

1.4	4,576,068
2 R	4,576,069
82	4,576,070

CLASS 83

71	4,576,071
102.1	4,576,072
	4,576,073
358	4,576,074
464	4,576,075
471.3	4,576,076
816	4,576,077
833	4,576,078
886	4,576,079

CLASS 84

267	4,576,080

CLASS 87

6	4,576,081

CLASS 89

8	4,576,082
14.4	4,576,083
	4,576,084
36.13	4,576,085
43.01	4,576,086

CLASS 98

1	4,576,087
119	4,576,088

CLASS 99

332	4,576,089
443 C	4,576,090
455	4,576,091

CLASS 100

218	4,576,092

CLASS 102

200	4,576,093
202.12	4,576,094

CLASS 104

12	4,576,095
94	4,576,096
138 G	4,576,097
172 B	4,576,098
287	4,576,099

CLASS 105

49	4,576,100
261 A	B1 4,077,328

CLASS 106

14.24	4,576,643
100	4,576,644
125	4,576,645
163.1	4,576,646
193 R	4,576,647
269	4,576,648
308 Q	4,576,649

CLASS 110

182.5	4,576,101
346	4,576,102

CLASS 112

73	4,576,103
265.2	4,576,104

CLASS 114

333	4,576,105

CLASS 116

63 R	4,576,106
227	4,576,107

CLASS 118

19	4,576,108
50	4,576,109
52	4,576,110
313	4,576,111
415	4,576,112
697	4,576,113
720	4,576,114

CLASS 119

5	4,576,115
19	4,576,116
52 B	4,576,117
62	4,576,118
81	4,576,119

CLASS 122

6 A	4,576,120
7 R	4,576,121
26	4,576,122
382	4,576,123
406 ST	4,576,124
483	4,576,125

CLASS 123

41.38	4,576,126
90.15	4,576,127
198 F	4,576,128
357	4,576,129
372	4,576,130
432	4,576,131
438	4,576,132
458	4,576,133
480	4,576,134
490	4,576,135
575	4,576,137
590	4,576,136
600	4,576,138

CLASS 125

21	4,576,139

CLASS 126

25 R	4,576,140
120	4,576,141

CLASS 128

1 D	4,576,142
1 R	4,576,143
4	4,576,144
6	4,576,145
	4,576,146
	4,576,147
26	4,576,148
33	4,576,149
75	4,576,150
78	4,576,154
80 C	4,576,151
87 R	4,576,153
92 R	4,576,152
	4,576,158
132 R	4,576,155
	4,576,156
200.23	4,576,157
203.14	4,576,159
303 R	4,576,161
	4,576,162
303.1	4,576,160
305	4,576,163
	4,576,164
	4,576,165
325	4,576,166
334 R	4,576,167
342	4,576,168
402	4,576,169
419 D	4,576,170
421	4,576,171
422	4,576,172
633	4,576,173
639	4,576,174
660	4,576,175
	4,576,176
	4,576,177
670	4,576,178
671	4,576,179
673	4,576,180
675	4,576,181
692	4,576,182
723	4,576,183
733	4,576,184
760	4,576,185

CLASS 131

276	4,576,186
336	4,576,187

CLASS 132

39	4,576,188
53	4,576,189
89	4,576,190

CLASS 134

22.12	4,576,650
25.1	4,576,651

CLASS 135

30	4,576,191
89	4,576,192

CLASS 136

244	4,577,051
246	4,577,052

CLASS 137

15	4,576,193
84	4,576,194
315	4,576,195
508	4,576,196
565	4,576,197
596	4,576,198
614.04	4,576,199
624.13	4,576,200
624.18	4,576,201
625.17	4,576,202
625.63	4,576,203

CLASS 138

44	4,576,204
98	4,576,205
149	4,576,206
177	4,576,207

CLASS 139

429	4,576,208

CLASS 141

1	4,576,209
115	4,576,210
329	4,576,211

CLASS 144

243	4,576,212
371	4,576,213

CLASS 148

1.5	4,576,652
3	4,576,653
11.5 F	4,576,654
12 C	4,576,656
	4,576,657
12 F	4,576,655
111	4,576,658
127	4,576,659
407	4,576,660

CLASS 152

213 A	4,576,214

CLASS 156

48	4,576,661
52	4,576,662
64	4,576,663
71	4,576,664
72	4,576,665
85	4,576,666
89	4,576,667
93	4,576,668
145	4,576,669
177	4,576,672
219	4,576,670
245	4,576,671
350	4,576,673
463	4,576,674
468	4,576,675
603	4,576,676
642	4,576,677
643	4,576,678
644	4,576,679

CLASS 162

158 4,576,680
301 4,576,681
358 4,576,682

CLASS 164

15 4,576,215
21 4,576,216
66.1 4,576,220
130 4,576,217
358 4,576,219
431 4,576,218

CLASS 165

49 4,576,221
76 4,576,222
79 4,576,223
80.2 4,576,224
101 4,576,225
134.1 4,576,226
149 4,576,227
162 4,576,228

CLASS 166

177 4,576,229
248 4,576,231
274 4,576,232
297 4,576,233
319 4,576,234
374 4,576,235
382 4,576,230
386 4,576,236

CLASS 169

53 4,576,237

CLASS 172

311 4,576,238
751 4,576,239

CLASS 173

105 4,576,240
162 H 4,576,241

CLASS 174

7 4,577,053
35 C 4,577,054
48 4,577,055
52 FP 4,577,056

CLASS 175

107 4,576,242

CLASS 177

119 4,576,243
245 4,576,244

CLASS 178

18 4,577,057
4,577,058
22.17 4,577,059

CLASS 179

2 A 4,577,062
2 AM 4,577,061
2 EC 4,577,060
6.16 4,577,063
16 F 4,577,064
18 B 4,577,066
18 BC 4,577,065
99 H 4,577,067
100 R 4,577,068
119 R 4,577,069
146 R 4,577,070
170.2 4,577,071
175.1 R 4,577,072

CLASS 180

14.1 4,576,245
168 4,576,246

CLASS 181

243 4,576,247

CLASS 182

5 4,576,248
82 4,576,249
108 4,576,250
152 4,576,251

CLASS 185

39 4,576,252

CLASS 187

29 R 4,576,253

CLASS 188

67 4,576,254
71.5 4,576,255
71.6 4,576,256
73.32 4,576,257
299 4,576,258

CLASS 192

0.044 4,576,263
0.055 4,576,265
3.21 4,576,259
3.31 4,576,260
4 A 4,576,261
18 B 4,576,262
48.91 4,576,264
70.12 4,576,266
70.17 4,576,267
98 4,576,268
103 A 4,576,269
150 4,576,270

CLASS 194

203 4,576,275
209 4,576,273
210 4,576,274
215 4,576,272
233 4,576,271

CLASS 198

332 4,576,276
803.01 4,576,277

CLASS 200

148 A 4,577,073
4,577,074
148 R 4,577,075
294 4,577,076

CLASS 203

15 4,576,683

CLASS 204

20 4,576,689
28 4,576,684
30 4,576,685
33 4,576,686
67 4,576,690
129.3 4,576,691
157.5 4,576,687
157.62 4,576,688
165 4,576,692
180.1 4,576,693
181.1 4,576,694
181.4 4,576,695
182.6 4,576,696
192 E 4,576,698
192 M 4,576,699
4,576,700
192 N 4,576,697
280 4,576,701
299 R 4,576,702
4,576,703
402 4,576,704
406 4,576,705
409 4,576,706

CLASS 206

204 4,576,278
225 4,576,279
289 4,576,280
370 4,576,281
524 4,576,282
524.8 4,576,283
530 4,576,284
632 4,576,285

CLASS 208

8 LE 4,576,707
11 LE 4,576,708
57 4,576,709
58 4,576,710
111 4,576,711
138 4,576,712

CLASS 209

254 4,576,713
558 4,576,286
601 4,576,287
609 4,576,288
631 4,576,289

CLASS 210

195.1 4,576,714
347 4,576,715
496 4,576,716
610 4,576,717
616 4,576,718
620 4,576,719
626 4,576,720
640 4,576,721
699 4,576,722
709 4,576,723
788 4,576,724
801 4,576,765

CLASS 211

34 4,576,290
49.1 4,576,291
4,576,292
127 4,576,293

CLASS 213

9 4,576,294
32 R 4,576,295

CLASS 215

31 4,576,296
250 4,576,297
252 4,576,298
318 4,576,299

CLASS 217

13 4,576,300

CLASS 219

10.43 4,577,077
10.55 A 4,577,078
10.55 D 4,577,079
10.55 E 4,577,080
10.69 4,577,081
69 D 4,577,082
85 F 4,577,083
85 M 4,577,084
116 4,577,085
117.1 4,577,086
121 LC 4,577,087
121 LD 4,577,088
124.22 4,577,089
137.9 4,577,090
284 4,577,091
354 4,577,092
376 4,577,093
505 4,577,094

CLASS 220

1 C 4,576,301
3.5 4,576,302
89 A 4,576,303
269 4,576,304
4,576,305
271 4,576,306
324 4,576,307
327 4,576,308
366 4,576,309
404 4,576,310

CLASS 221

73 4,576,311

CLASS 222

27 4,576,312
81 4,576,313
97 4,576,314
153 4,576,315
541 4,576,316
600 4,576,317

CLASS 223

52 4,576,318

CLASS 224

42.41 4,576,319
311 4,576,320

CLASS 225

104 4,576,380

CLASS 226

173 4,576,321

CLASS 228

4.5 4,576,322
29 4,576,323
44.3 4,576,324
135 4,576,325
171 4,576,326
212 4,576,327

CLASS 229

1.5 R 4,576,328
41 R 4,576,329
44 R 4,576,330

CLASS 236

49 4,576,331

CLASS 237

2 B 4,576,332
49 4,576,333

CLASS 238

310 4,576,334

CLASS 239

1 4,576,335
33 4,576,336
127 4,576,337
452 4,576,338

CLASS 241

120 4,576,339

CLASS 242

35.5 A 4,576,340
4,576,341
36 4,576,342
66 4,576,343
67.1 R 4,576,344
198 4,576,345

CLASS 244

3.16 4,576,346
130 4,576,347
173 4,576,348

CLASS 248

27.1 4,576,349
97 4,576,350
118 4,576,351
165 4,576,353
188.4 4,576,352
354.5 4,576,354
544 4,576,355
559 4,576,356
662 4,576,357

CLASS 250

201 4,577,095
205 4,577,096
211 K 4,577,097
216 4,577,098
4,577,099
231 P 4,577,100
231 SE 4,577,101
269 4,577,102
316.1 4,577,103
339 4,577,104
343 4,577,105
347 4,577,106
363 S 4,577,107
370 4,577,108
461.1 4,577,109
461.2 4,577,110
492.2 4,577,111
506.1 4,577,112
548 4,577,113
551 4,577,114
578 4,577,115

CLASS 251

14 4,576,358
149.6 4,576,359
162 4,576,360

CLASS 252

62.51 4,576,725
62.54 4,576,726
90 4,576,727
102 4,576,728
106 4,576,729
174.14 4,576,730
182 4,576,731
299.65 4,576,732
299.67 4,576,733
404 4,576,734
512 4,576,735
4,576,736
522 A 4,576,737
522 R 4,576,739
4,576,740
4,576,741
4,576,742
524 4,576,743
554 4,576,744
559 4,576,738

CLASS 254

26 R 4,576,361
134.3 FT 4,576,362
372 4,576,363

CLASS 256

24 4,576,364

CLASS 260

112.5 R 4,576,745
239 A 4,576,746
4,576,747
4,576,748
4,576,749
4,576,753
239.3 D 4,576,750
245.2 R 4,576,754
245.4 4,576,751
245.78 4,576,755
349 4,576,752
396 R 4,576,756
404.5 4,576,757
405.5 4,576,758
410.9 R 4,576,759

CLASS 261

23 A 4,576,761
65 4,576,762
94 4,576,763
111 4,576,764

CLASS 264

1.4 4,576,766
12 4,576,767
27 4,576,768
51 4,576,769
103 4,576,770
109 4,576,771
154 4,576,772
167 4,576,773
267 4,576,774
323 4,576,775
510 4,576,776

CLASS 266

220 4,576,365

CLASS 267

8 R 4,576,366

CLASS 269

32 4,576,367
322 4,576,368

CLASS 270

54 4,576,369
4,576,370

CLASS 271

296 4,576,371

CLASS 272

41 4,576,373
52.5 4,576,374
65 4,576,375
69 4,576,376
130 4,576,377
146 4,576,372

CLASS 273

186 A 4,576,378
411 4,576,379

CLASS 277

1 4,576,381
12 4,576,382
53 4,576,383
81 S 4,576,384
124 4,576,385
165 4,576,386
176 4,576,387

CLASS 280

33.99 F 4,576,388
43.16 4,576,389
43.23 4,576,390
79.1 R 4,576,391
87.02 W 4,576,392
276 4,576,393
490 A 4,576,394
511 4,576,395
612 4,576,396
625 4,576,397
789 4,576,398

CLASS 282

8 R 4,576,399

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15 4,576,401
39 4,576,402
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CLASS 290

43 4,577,116

CLASS 292

191 4,576,405

CLASS 294

86.41 4,576,406
97 4,576,407
99.2 4,576,408

CLASS 296

97 H 4,576,409

CLASS 297

284 4,576,410
353 4,576,411
362 4,576,412
408 4,576,413
476 4,576,414

CLASS 301

37 S 4,576,415

CLASS 303

15 4,576,416
4,576,417
71 4,576,418
100 4,576,419

CLASS 307

10 R 4,577,117
106 4,577,118
297 4,577,119
355 4,577,121
425 4,577,122
446 4,577,123
451 4,577,124
455 4,577,125

CLASS 308

6 C 4,576,420
4,576,421
4,576,422

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83 4,577,127
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112 4,577,129
194 4,577,130
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800 4,577,132

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324 4,576,425

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103 CM 4,577,133
346 R 4,577,134
362.1 4,577,135
481 4,577,136
533 4,577,137
599 4,577,138

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254 4,577,139
587 4,577,140
590 4,577,141
592 4,577,142
701 4,577,143

CLASS 320

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CLASS 323

341 4,577,146

CLASS 324

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104 4,577,158

CLASS 330

9 4,577,159
149 4,577,160
4,577,161
253 4,577,162

CLASS 331

1 A 4,577,163
109 4,577,164
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9 T 4,577,166

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17 F 4,576,426
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76 PH 4,577,198
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204 4,577,205

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522 4,576,450
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216 4,576,456

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4,576,465
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3 R 4,576,461
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39 4,576,477
149 4,576,478
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376 4,576,482

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23.5 4,577,215
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255 4,577,265
296 4,577,266

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CLASS 364

151 4,577,270
174 4,577,271
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50 4,577,298
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CLASS 372

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97 4,577,334

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260 4,576,524
269 4,576,525

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CLASS 407

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56 4,576,793
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265 4,576,804
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329 4,576,807
335 4,576,808
418 4,576,809
447.1 4,576,810
447.2 4,576,811
491 4,576,812
522 4,576,813
573 G 4,576,814
658.5 4,576,815

CLASS 424

50 4,576,816
94 4,576,817
150 4,576,818
156 4,576,819
195.1 4,576,820

CLASS 425

28 R 4,576,559
103 4,576,560
104 4,576,561
126 S 4,576,562
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337 4,576,564
383 4,576,565
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549 4,576,567
577 4,576,568

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266 4,576,825
289 4,576,826

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385.5 4,576,838

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4,576,851
171 4,576,852
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260 4,576,857
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311.1 4,576,859
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317.7 4,576,862
325 4,576,863
328 4,576,864
335 4,576,865
336 Re.32,093
4,576,866
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515 4,576,871
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12 4,576,877
15 4,576,878
86 4,576,879
99 4,576,880
104 4,576,881
192 4,576,882
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59 4,576,886
71 4,576,887
106 4,576,888
126 4,576,889
137 4,576,890
138 4,576,891
157 4,576,892
264 4,576,894
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273 4,576,897
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313 4,576,900
325 4,576,901
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13 4,576,572
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10 4,576,920
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282 4,576,951
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383 4,576,957
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532 4,576,963
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149	4,576,973		CLASS 528	487	4,577,010	216	4,577,026	37	4,576,760	251	4,576,594
173	4,576,974	146	4,576,991		CLASS 534	345	4,577,027		CLASS 564	256	4,576,595
	CLASS 522	211	4,576,992	787	4,577,011		4,577,028	158	4,577,042	370	4,576,596
13	4,576,975	240	4,576,993		CLASS 536		CLASS 548		CLASS 568	390	4,576,597
16	4,576,976	247	4,576,994	24	4,577,012	162	4,577,029	312	4,577,046		4,576,598
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137	4,576,977	439	4,576,996		CLASS 544	319	4,577,031	677	4,577,044	398	4,576,600
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404	4,576,979	455	4,576,998	022	4,577,014	461	4,577,033		CLASS 585	410	4,576,602
420	4,576,980	476	4,576,999	182	4,577,016		CLASS 549	260	4,577,047	890	4,576,603
	CLASS 524	534	4,577,000	193	4,577,017	241	4,577,034	467	4,577,048		4,576,604
40	4,576,981		CLASS 526	225	4,577,018	472	4,577,035	486	4,577,049		CLASS 623
84	4,576,982	127	4,577,001	264	4,577,019	556	4,577,036		4,577,050	2	4,576,605
101	4,576,983	181	4,577,002	366	4,577,020		CLASS 556		CLASS 604	3	4,576,606
182	4,576,984	194	4,577,003	376	4,577,021	25	4,577,037			6	4,575,877
407	4,576,985	204	4,577,004		CLASS 546	137	4,577,038	8	4,576,589		4,575,878
450	4,576,986	254	4,577,005	14	4,577,022	409	4,577,039	26	4,576,590	11	4,576,607
487	4,576,987	283	4,577,006								4,576,608
		321	4,577,007								

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	397	282,986		319	283,002	D11—	12	283,018		22	283,034			283,050			283,066
	449	282,987	D8—	1	283,003	D12—	163	283,019	D19—	72	283,035			283,051		45	283,067
	471	282,988		322	283,004		181	283,020	D20—	28	283,036		36	283,052		49	283,068
	474	282,989		331	283,005		182	283,021	D21—	165	283,037		53	283,053		73	283,069
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	511	282,991		353	283,007	D14—	52	283,023		219	283,039		28	283,055		24	283,071
	516	282,992		356	283,008		60	283,024	D22—	1	283,040		61	283,056		34	283,072
	526	282,993	D9—	307	283,009		63	283,025			283,041	D28—	25	283,057		38	283,073
	566	282,994		367	283,010		106	283,026		6	283,042		50	283,058		40	283,074
		282,995		398	283,011		113	283,027		13	283,043			283,059	D99—	34	283,075

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PATENTS

01 :	4,575,904	4,576,203	4,577,109	4,576,789		4,577,145	4,577,056
	4,576,094	4,576,229	4,577,113	4,576,794		4,577,229	4,577,065
	4,576,122	4,576,232	4,577,122	4,576,798	13 :	4,575,905	4,577,066
	4,576,423	4,576,239	4,577,125	4,576,818		4,575,928	4,577,070
	4,576,447	4,576,244	4,577,152	4,576,941		4,575,986	4,577,072
	4,577,081	4,576,249	4,577,184	4,576,964		4,576,020	4,577,107
	4,577,116	4,576,271	4,577,191	4,576,980		4,576,104	4,577,179
04 :	4,575,985	4,576,282	4,577,196	4,577,034		4,576,118	4,577,259
	4,576,013	4,576,286	4,577,204	4,577,055		4,576,164	4,577,287
	4,576,023	4,576,287	4,577,205	4,577,100		4,576,272	4,577,308
	4,576,162	4,576,293	4,577,210	4,577,102		4,576,281	4,577,312
	4,576,213	4,576,301	4,577,216	4,577,131		4,576,596	4,577,314
	4,576,238	4,576,322	4,577,240	4,577,146		4,576,612	18 :	4,575,929
	4,576,430	4,576,333	4,577,244	4,577,157		4,577,006		4,575,968
	4,576,440	4,576,350	4,577,248	4,577,275		4,577,060		4,575,980
	4,576,551	4,576,356	4,577,249	4,577,283		4,577,207		4,575,983
	4,576,825	4,576,364	4,577,263	4,577,310		4,577,256		4,576,003
	4,576,839	4,576,379	4,577,268	4,577,323		4,077,328		4,576,004
	4,577,211	4,576,381	4,577,274	4,577,339	15 :	4,575,894		4,576,030
	4,577,258	4,576,386	4,577,294	10 :	4,576,185	16 :	4,576,102		4,576,031
	4,577,290	4,576,389	4,577,295		4,576,632	17 :	4,575,935		4,576,138
05 :	4,575,964	4,576,391	4,577,296		4,576,633		4,575,959		4,576,352
	4,576,337	4,576,408	4,577,302		4,576,752		4,575,962		4,576,376
06 :	4,575,875	4,576,455	4,577,305		4,576,857		4,575,966		4,576,553
	4,575,877	4,576,477	4,577,317		4,576,958		4,576,017		4,576,568
	4,575,879	4,576,494	4,577,318		4,577,003		4,576,090		4,576,959
	4,575,882	4,576,508	4,577,335		4,577,007		4,576,117		4,576,982
	4,575,885	4,576,511	4,577,338	12 :	4,575,890		4,576,140		4,576,996
	4,575,892	4,576,520	4,577,345		4,575,891		4,576,154		4,577,014
	4,575,922	4,576,530	08 :	4,576,042		4,575,951		4,576,155		4,577,148
	4,575,939	4,576,552		4,576,310		4,575,960		4,576,192		4,577,182
	4,575,940	4,576,581		4,576,335		4,576,008		4,576,262		4,577,185
	4,575,943	4,576,592		4,576,354		4,576,010		4,576,295		4,577,227
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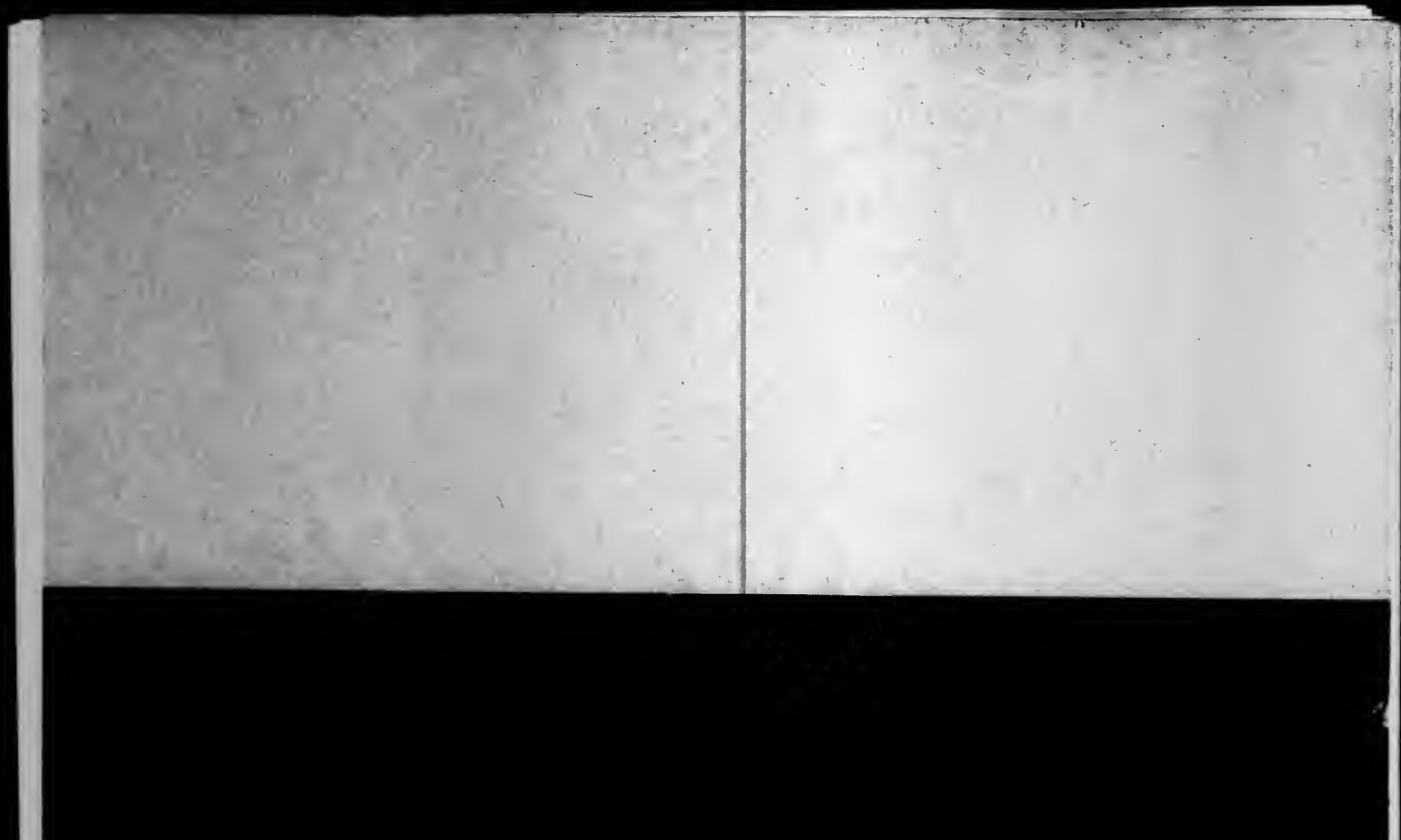
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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1052 O.G. 52 on Mar. 26, 1985.

For use of the European Patent Office as Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Certain domestic fees for international applications have been changed effective Oct. 5, 1985 in the rule change notice titled "Revision of Patent Fees" published at 1057 O.G. 24 on Aug. 20, 1985.

The Search fee of the European Patent Office has been changed as of Feb. 9, 1986 and is announced in the *Official Gazette* at 1061 O.G. 30 on Dec. 31, 1985.

International PCT fees have been changed effective Jan. 1, 1986 and were announced in the *PCT Gazette* on Oct. 24, 1985 and in the *Official Gazette* at 1061 O.G. 30 on Dec. 31, 1985.

The current schedule of PCT fees is as follows:

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—Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
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Basic Supplemental fee (for each page over 30):	
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DONALD J. QUIGG,
Dec. 17, 1985. *Assistant Secretary and Commissioner of Patents and Trademarks.*

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), as amended effective Oct. 5, 1985. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on Mar. 22, 1983, for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,377,007 through 4,377,871
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), as amended effective Oct. 5, 1985, which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 225.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:
By a small entity (§1.9(f)) . . . . . $ 225.00
By other than a small entity . . . . . $ 450.00"

The amounts of the surcharges as amended effective Oct. 5, 1985, are set forth in 37 CFR 1.20 (k) and (l) which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . . $ 110.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:
By a small entity (§1.9(f)) . . . . . $ 55.00
By other than a small entity . . . . . $ 110.00"

Section 1.20 paragraph (m) as amended as a result of enactment of Public Law 98-622 effective Nov. 8, 1984, is reproduced below:

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . . . $ 500.00"

PATENTS WHICH EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEES (SEPT. — DEC. 1985)

The following is a compilation of the NOTICE OF EXPIRATION OF PATENTS DUE TO FAILURE TO PAY MAINTENANCE FEES which have been published in the Official Gazette from Dec. 17, 1985, through Mar. 18, 1986.

The patents have issue dates in the range of Sept. 29, 1981 through Dec. 29, 1981.

Patent Number	Serial Number	Issue Date
4,291,808	06/215,853	09/29/81
4,294,398	06/227,542	10/13/81
4,297,354	06/216,423	10/27/81
4,298,873	06/222,104	11/03/81
4,300,288	06/217,250	11/17/81
4,301,214	06/216,196	11/17/81
4,301,602	06/223,566	11/24/81
4,301,921	06/241,282	11/24/81
4,303,154	06/225,733	12/01/81
4,304,277	06/231,337	12/08/81
4,304,355	06/229,725	12/08/81
4,304,663	06/225,597	12/08/81
4,304,719	06/228,013	12/08/81
4,305,243	06/216,825	12/15/81
4,305,878	06/225,289	12/15/81
4,305,954	06/233,653	12/15/81
4,306,354	06/218,860	12/22/81
4,306,962	06/231,819	12/22/81
4,307,160	06/217,269	12/22/81
4,307,203	06/247,808	12/22/81
4,307,703	06/249,944	12/29/81
4,307,706	06/215,977	12/29/81
4,307,768	06/215,710	12/29/81
4,307,869	06/216,304	12/29/81
4,307,964	06/238,191	12/29/81
4,308,041	06/232,466	12/29/81

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, th e patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED JANUARY 5, 1986 DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
4,309,265	06/225,443	1/05/82
4,309,355	06/229,411	1/05/82
4,309,356	06/235,280	1/05/82
4,309,367	06/230,891	1/05/82

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

4,557,767, Re. S.N. 822,475, Filed Jan. 27, 1986, Cl. 148/023, FUSIBLE POWDERED METAL PASTE, Jennie Shi-Lan Hwang, Owner of Record: *SCM, Inc., Cleveland, Ohio,* Attorney or Agent: Robert A. Sturges, et al., Ex. Gp.: 113

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

No Publications This Issue.

Department of the Treasury U.S. Customs Service (T.D. 86-11) Recordation of Trade Name: "SUPREME IMPORT EXPORT CO., INC."

Agency: U.S. Customs Service, Department of the Treasury
Action: Notice of Recordation
Summary: On Mar. 14, 1985, a notice of application for the recordation under section 42 of the Act of July 5, 1946, as amended (15 U.S.C. 1124), of the trade name "SUPREME IMPORT EXPORT CO., INC." was published in the Federal Register (50 FR 10341). The notice advised that before final action was taken on the application, consideration would be given to any relevant data, views, or arguments submitted in opposition to the recordation and received not later than May 31, 1985.

Supreme International Corporation commented in opposition to the recordation of the trade name citing concern that because "SUPREME IMPORT EXPORT CO., INC." is confusingly similar to Supreme International Corporation it might be restrained from participating in import transactions under their established name.

SUPREME IMPORT EXPORT CO., INC. has indicated that it has no objection to goods arriving in the United States for Supreme International Corporation. Therefore, goods bearing the name "Supreme International Corporation" shall not be seized or detained as confusingly similar to "SUPREME IMPORT EXPORT CO., INC."

Accordingly, as provided in section 133.14, Customs Regulations (19 CFR 133.14), the name "SUPREME IMPORT EXPORT CO., INC." is recorded as the trade name used by Supreme Import Export Co., Inc., a corporation organized under the laws of the State of New York, located at 900 Broadway, New York, N.Y. 10003. The trade name is used in connection with the following merchandise manufactured in Hong Kong, Korea, Japan, Taiwan and the Philippines; playing cards; cigarette lighters; cellophane tape; toothbrushes; padlocks; cassette tapes; pens; batteries; cameras and curling irons.
Effective Date: (Jan. 31, 1986)
For Further Information Contact: Harriet Lane, Entry, Licensing and Restricted Merchandise Branch, U.S. Customs Service, 1301 Constitution Ave., NW., Washington, D.C. 20229 (202-566-5765).

EDWARD T. ROSSE,
Jan. 24, 1986. *Acting Director, Entry Procedures and Penalties Division.*

Errata

The following registration number was inadvertently listed as renewed in the "Trademark Registrations Renewed" section of the Trademark Official Gazette of Nov. 26, 1985:

788,892	TM 179	Nov. 26, 1985

Consequently, the above-identified registration has not been renewed.

PATRICIA M. DAVIS,
Feb. 12, 1986. *Administrator for Trademark Operations.*

Errata

The Registrant of Registration No. 775,823 listed in the "Index of Registrants" Section of the Trademark Official Gazette of Dec. 25, 1984, at TMI 16, was incorrectly identified as "Schotte Glaswerke, Jenear Glaswerk Schott & Gen."

The Registrant's name as corrected is "Schott Glaswerke".

PATRICIA M. DAVIS,
Administrator for
Trademark Operations.

Feb. 10, 1986.

Errata

Registration Number 787,366, listed in the "Trademark Registrations Renewed" Section of the Trademark Official Gazette of Dec. 17, 1985 was inadvertently renewed as to International Classes 1, 6, 7, 9 and 10. The registration certificate should have been renewed as to International Classes 1, 6, 7, 9, 12 and 17.

787,366	TMOG 130	Dec. 17, 1985

Consequently, Registration Number 787,366 is renewed for International Classes 1, 6, 7, 9, 12 and 17.

PATRICIA M. DAVIS,
Administrator for
Trademark Operations.

Feb. 10, 1986.

Errata

The following registration numbers were inadvertently listed as cancelled in the "Trademark Registrations Canceled, Section 8" section of the Trademark Official Gazettes of:

1,108,367	TMOG 205	July 30, 1985
1,109,082	TMOG 202	Aug. 6, 1985
1,105,507	TMOG 216	July 2, 1985
1,115,141	TMOG 202	Nov. 12, 1985
1,110,972	TMOG 206	Sept. 3, 1985
1,083,335	TMOG 452	Apr. 9, 1985
1,116,457	TMOG 182	Nov. 26, 1985

Consequently, the above-identified registrations are still active.

PATRICIA M. DAVIS,
Administrator for,
Trademark Operations.

Feb. 10, 1986.

Service by Publication

A petition to cancel each of the registrations identified below having been filed, and the notice of such proceedings sent by registered mail to each registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days from the date of this publication, the cancellation will be proceeded with as in the case of default.

GRT Corp., Los Angeles, Calif., Reg. No. 1,130,736, for the mark "JANUS" and design, Canc. No. 14,725.

GRT Corp., Los Angeles, Calif., Reg. No. 1,144,819, for the mark "JANUS", Canc. No. 14,726.

Checkcard Systems, Inc., Little Rock, Ark., Reg. No. 833,096, for the mark "CHECK CARD", Canc. No. 14,810.

Robert J. Tanner, Hallandale, Fla., Reg. No. 1,153,883, for the mark "LEISURE TIMES", Canc. No. 15,033.

Westboro Shoe Manufacturing Co., Inc., Hazelwood, Mo., Reg. No. 567,119, for the mark "THE TAYLOR-MADE SHOE", Canc. No. 15,240.

ERMA S. BROWN,
Administrator
of the Trademark Trial
and Appeal Board.
For MARGARET M. LAURENCE,
Assistant Commissioner
for Trademarks.

Accelerated Examination and Accelerated Appeal Procedure in the Japanese Patent Office

The United States Patent and Trademark Office has been informed of an accelerated examination and appeal procedure available in the Japanese Patent Office for worked inventions.

In view of the interest expressed by practitioners in this country and in order to facilitate their patenting in Japan, the full text of the notice received from the Japanese Patent Office is reproduced below.

DONALD J. QUIGG,
Assistant Secretary &
Commissioner of
Patents and Trademarks.

Feb. 24, 1986.

Japanese Patent Office Introduction of an Accelerated Examination and Accelerated Appeal Examination System for Working-Related Patent (or Utility Model) Applications

Note for Foreign Applicants

1. The Japanese Patent office has decided, after long consideration, to introduce, through the administrative operation of the Patent Law and the Utility Model Law, an accelerated examination and accelerated appeal examination system for working-related patent (or utility model) applications, pursuant to the following basic polices:

(1) A part of the examination capability shall be allocated for accelerated examination and Accelerated appeal examination.

(2) The accelerated examination and accelerated appeal examination system shall initially begin on a test basis. The requirements and applications to which the accelerated examination and appeal examination are applied shall be reviewed, if necessary, taking into consideration the situation following the initial test period.

(3) Applicants shall be requested to submit the documents necessary for accelerated examination and accelerated appeal examination, such as the prior art search report and the comparison with prior art, that justify the accelerated procedure.

(4) Applicants shall be requested strictly to select requests for accelerated examination or accelerated appeal examination in order to attain fully the purpose of that system.

2. The acceptance of receipt by the Japanese Patent Office of the Explanation of Circumstances Concerning Accelerated Examination or Accelerated Appeal Examination for working-related patent (or utility model) applications shall commence on February 1, 1986.

3. The present text introduces the information that should be fully understood by foreign applicants who wish to make use of the above-mentioned system. Reference is made to the related Section of the Japanese Patent (or Utility Model) Law (Section 8):

(Patent administrator for residents abroad)

8. — (1) A person who has neither his domicile nor residence (nor, in the case of a legal entity, its establishment) in Japan (hereinafter referred to as "resident abroad") may not, except where a request for registration under subsection (3) is filed or as otherwise prescribed by Cabinet Order, proceed before the Office or institute a suit against any measure taken by an administrative agency in accordance with this Law or an order or ordinance thereunder, except through his representative with respect to his patent who has his domicile or residence in Japan (hereinafter referred to as "patent administrator").

(2) The patent administrator shall, in addition to the powers specially conferred on him, represent the principal in all procedures and in a suit instituted against measures taken by an administrative agency in accordance with this Law or an order or ordinance thereunder.

(3) Where a resident abroad is a patentee or has a registered right relating to a patent, the appointment or change of his patent administrator, the power of attorney or the extinguishment thereof shall not be effective against any third person unless it is registered.

4. Foreign applicants who submit the "Explanation of Circumstances Concerning Accelerated Examination or Accelerated Appeal Examination" for working-related patent (or utility model) applications shall proceed before the Japanese Patent Office in writing, in Japanese, through patent agents who have their domicile or residence in Japan.

5. The Guideline attached as an Appendix hereto should be fully reviewed by foreign applicants. The notes and italics appear especially for foreign applicants and are not contained in the original text of the Guideline.

6. The Guideline provides information necessary to patent agents who proceed before the Japanese Patent Office on behalf of foreign applicants. Therefore, foreign applicants are requested to consult fully with patent agents who have their domicile or residence in Japan and are familiar with such information.

Guideline for Accelerated Examination and Accelerated Appeal Examination System for Working-Related Patent (or Utility Model) Applications

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Introduction

The Japanese Patent Office is presently working on the promotion of comprehensive measures from a long-term perspective, represented by the following four major items designed to shorten the period of examination and appeal examination in order to deal with a greater number of pending applications:

(1) building up of a so-called "paperless system";
(2) guiding cooperation to improve patent management in domestic corporations;
(3) reformation of the patent system; and
(4) improvement in examination capacity.

As an immediate measure meeting applicants' needs before the establishment of such comprehensive measures, the accelerated examination and appeal examination system will be adopted in respect of working-related applications. The intention is to minimize the adverse effects that could accompany a delay in examination and appeal examination.

In introducing the accelerated examination and appeal examination system, however, a part of the examination capability will be allocated for accelerated examination and appeal examination with due regard to the effect on applications not eligible for accelerated examination and appeal examination. For that reason, the system will be put in practice as a test at the initial stage under certain

conditions limiting the applicable objectives to working-related applications only. The accelerated appeal examination system will also be applied, for the time being, only to those applications of particular urgency among working-related applications in view of the general importance of appeal cases.

From such points of view, applicants or patent agents concerned will be requested to submit the information necessary to justify accelerated examination and appeal examination for the purpose of attaining the goal of the accelerated procedure. At the same time, they will be requested also to select strictly such working-related applications as they really wish to be dealt with in an accelerated manner in order that the purpose of accelerated examination and appeal examination will fully be realized.

II. Accelerated Examination System

1. Accelerated Examination

(1) Applications eligible for accelerated examination.

The Japanese Patent Office may apply accelerated examination to patent (or utility model) applications that satisfy all the conditions mentioned below:

(a) a patent (or utility model) application for an invention that the applicant or one who has been granted a license*1 (licensee) from the applicant in respect of the invention has already worked or the working*2 of which has been scheduled to start by the applicant or his licensee within a period no longer than six months from the date of submission of "Explanation of Circumstances Concerning Accelerated Examination";
(b) examination by an examiner has not yet started;
(c) request for examination has already been made.

(2) Accelerated examination procedures.

(a) When the "Explanation of Circumstances Concerning Accelerated Examination" is submitted to the Patent Office, the Directors of the corresponding examination division shall decide whether or not the application is eligible for accelerated examination. The result of selection shall not be notified in writing.

(b) An examiner shall start promptly the examination of applications selected by the Directors as eligible for accelerated examination and shall speed up the entire examination process to the final decision, including the opposition procedure, without delay.

In the event, however, that the "Explanation of Circumstances Concerning Accelerated Examination" is submitted before the laying-open of applications for public inspection ("Kokai Koho"), the process shall be started promptly after the said laying-open of applications.

(c) As for the description for the state of working under the "Explanation of Circumstances Concerning Accelerated Examination", confirmation of the state of working by hearing or confirmation by field survey may be made if subsequently regarded as necessary.

[*Note 1*] The hearing shall not be open.

(3) Public access to documents.

The "Explanation of Circumstances Concerning Accelerated Examination" shall be open to public access as in the case of other application documents, regardless of the results of selection.

(4) Indication in the official publication ("Kokoku Koho").

Working-related applications concerning which publication is made following the accelerated examination procedure shall be so indicated in the official publication as follows:

(a) indication with certain mark in the table of contents; and
(b) indication of "Application through accelerated examination", in the official publication of patent (or utility model) applications.

2. Submission Procedures—Submission of "Explanation of Circumstances Concerning Accelerated Examination"

(1) Submitter.

A submitter of the "Explanation of Circumstances Concerning Accelerated Examination" for a working-related application eligible for accelerated examination shall be restricted to the applicant of the application concerned.

(2) Submission of documents.

Documents requesting accelerated examination shall either be submitted directly to the receiving window (Second Application Division, Japanese Patent Office; 3-1, Kasumigaseki 1-chome, Chiyoda-ku, Tokyo, Japan) or mailed to the Director General, Japanese Patent Office (4-3, Kasumigaseki 3-chome, Chiyoda-ku, Tokyo 100, Japan) with indication of "Explanation of Circumstances Concerning Accelerated Examination" on the envelope.

[*Note 2*] The contents of this matter relate only to patent agents who have their domicile or residence in Japan.

(3) Period of submission.

The "Explanation of Circumstances Concerning Accelerated Examination" may be submitted at any time after the request for examination has been made.

(4) Fee.

No fee shall be charged for the submission of the "Explanation of Circumstances Concerning Accelerated Examination".

(5) Documents to be submitted.

Documents concerning accelerated examination (the "Explanation of Circumstances Concerning Accelerated Examination") shall be submitted separately for each application requesting accelerated examination. (See II.3, below, for the preparation of the "Explanation of Circumstances Concerning Accelerated Examination".) The said submitted documents shall not be returned after receipt by the Patent Office.

(6) Supplement to submitted documents.

If the "Explanation of Circumstances Concerning Accelerated Examination" is submitted before the laying-open of the application concerned for public inspection, the supplement procedure for submitted documents shall be requested as follows:

(a) Supplementing documents on prior art investigation and comparison with prior art from the viewpoint of Section 29*bis* of the Patent Law and Section 3*bis* of the Utility Model Law shall be submitted after the laying-open of the application concerned.

[*Note 3*] (i) There are few advantages for both domestic and foreign applicants in submitting the "Explanation Concerning Accelerated Examination" before the laying-open of the applications concerned.

(ii) Since foreign applicants are not requested to investigate patent documents in Japanese unless they so wish, they need not submit a prior art investigation report from the viewpoints of Sections 29*bis* of the Patent Law and 3*bis* of the Utility Model Law.

(b) If all the invention information symbols of the IPC that appeared in the official publication of the said application ("Kokai Koho") are not included in the prior art investigation submitted before the laying-open of the application concerned, supplementary documents on prior art investigation covering fields of art defined by the IPC symbols not included in the original documents, and a comparison with prior art in respect of such additional fields from the viewpoint of Section 29(1) and (2) of the Patent Law and Section 3(1) and (2) of the Utility Model Law shall be submitted after the laying-open of the application concerned.

[*Note 4*] Since foreign applicants are not requested to investigate patent documents in Japanese unless they so wish, they need not submit supplementary documents on the prior art investigation and comparison with prior art from the above viewpoint.

3. Preparation of the "Explanation of Circumstances Concerning Accelerated Examination"

(1) Form

Explanation of Circumstances Concerning Accelerated Examination

To: Mr. Date:
The Director General of the Patent Office
1. Identification of the case:
2. Title of the invention (or utility model) and its IPC symbol appearing in the official publication ("Kokai Koho"): (IPC symbols)
3. Date of the request for examination of application:
4. Submitter (Applicant)
Domicile (residence):
Name: (seal)
5. Agent
Domicile (residence):
Name: (seal)
6. State of working
(1) Specification of the working-related act
(2) Period of working of the invention (or utility model)
(3) Relation between the invention (or utility model) and the specified working-related act
7. Prior art investigation and comparison with prior art
(1) Results of investigation
(2) Comparison with prior art
(3) Other particulars if necessary
8. List of attached documents

[*Note 5*] Contents of this matter relate only to patent agents who have their domicile or residence in Japan.

(2) Bibliography.

The spaces for bibliography (1–5) shall be completed in the following manner:

(a) For the space for "Identification of the case", the patent (or utility model) application number and the laying-open number of the patent (or utility model) application shall be entered. For an international application made in the Japanese language that includes Japan among the designated States or the elected States under the PCT, the patent (or utility model) application number shall be inserted as:

Patent (or utility model) application No.
WO **/*****;

and for an international application made in a foreign language that includes Japan among the designated States or the elected States under the PCT, the number shall be inserted as:

Patent (or utility model) application No.

Secondary publication number of an international application in the Japanese language ("Kohyo Koho") No. ...

(b) The IPC symbols consisting of invention information (the IPC symbols preceding double oblique strokes) appearing in the official unexamined publication of the application concerned ("Kokai Koho") shall be inserted in the space for the IPC symbols.

(c) Next to the domicile of the heading "Submitter (Applicant)" and "Agent", the telephone number of the submitter (applicant) or his agent shall be entered if possible.

(d) Other instruction shall be the same as items 1–3, proviso to 4, 6, 7, 10 and 12–14 of the Notes to Form No. 1 of the Regulations under the Patent Law.

As to the date of submission, the date of delivery in the case of direct submission to the receiving window of the Patent Office or the date of posting or receipt by the post office in the case of mailing shall be inserted.

[*Note 6*] Contents of this matter relate only to patent agents who have their domicile or residence in Japan.

(3) State of working.

The space for "state of working" in the "Explanation of Circumstances Concerning Accelerated Examination" shall be completed as follows:

(a) Specification of the working-related act. It shall be specified and described whether the act within Japan by the applicant or by his licensee comes under manufacturing, using, assigning, leasing, displaying for the purpose of assignment or lease, or importing to Japan.

(b) Period of working of the invention (or utility model). When the working-related act has started or is scheduled to start shall be described. However, the scheduled period within which working is to start shall be restricted to within six months from the date of submission of the "Explanation of Circumstances Concerning Accelerated Examination".

If, for example, the working-related act is manufacturing, the description may be as follows:

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*1 "License" as used herein includes any license contracted between foreigners.

*2 "Working of inventions" means manufacturing, use, assignment, importing and similar acts within Japan, as defined by Section 2*3 of the Japanese Patent Law.

*3 (Definitions)
2.—(1) "Invention" in this Law means the highly advanced creation of technical ideas by which a law of nature is utilized.
(2) "Patented invention" in this Law means an invention for which a patent has been granted.
(3) "Working" of an invention in this Law means the following acts:
(i) in the case of an invention of a product, acts of manufacturing, using, assigning, leasing, displaying for the purpose of assignment or lease, or importing, the product;
(ii) in the case of an invention of a process, acts of using the process;
(iii) in the case of an invention of a process of manufacturing a product, acts of using, assigning, leasing, displaying for the purpose of assignment or lease, or importing, the product manufactured by the process, in addition to the acts mentioned in the preceding paragraph.

"Manufacturing since ..., 19..."; or
"Scheduled for manufacture from ..., 19..."

[*Note 7*] It is not necessary to identify the location of use or name of licensee, and additional materials to describe state of working are not required in principle.

(c) Relation between invention (or utility model) and the specified working-related act. A description shall be given of how the invention (or utility model) that is the subject of the application is applied in the specified working-related act. If, for example, the working-related act is manufacturing, description may be given in that part of the product the art of the invention (or utility model) is applied.

[*Note 8*] The contents of the description in the explanation of the state of working are sufficient if they are provided to the extent as follows:

Examples of the Description in the Explanation of the State of Working

1. *When the working of an invention has commenced*

Item		*Working by Applicant*
(i)	Specification of the working-related acts	Export to Japan
(ii)	Time of working	Exporting as from (month) 1984
(iii)	Relation between the specified working-related act and the invention concerned	Exporting bolts worked with the invention of this application whose screwdriver setting groove on the bolt-head is made in cross-groove

Item		*Working by Licensee*
(i)	Specification of working-related acts	Export to Japan
(ii)	Time of working	Our licensee has been exporting as from (month) 1984
(iii)	Relation between the specified working-related act and the invention concerned	Exporting bolts worked with the invention of this application whose screwdriver setting groove on the bolt-head is made in cross-groove

2. *When the working of an invention is scheduled to start within six months from the date of submission of the "Explanation of Circumstances Concerning Accelerated Examination"*

Item		*Working by Applicant*
(i)	Specification of working-related acts	Export to Japan
(ii)	Time of working	Scheduled to export as from (month) 1986
(iii)	Relation between the specified working-related act and the invention concerned	Preparing the export of bolts worked with the invention of this application whose screwdriver setting groove on the bolt-head is made in cross-groove.

Item		*Working by Licensee*
(i)	Specification of working-related acts	Export to Japan
(ii)	Time of working	Our licensee is scheduled to export as from (month) 1986
(iii)	Relation between the specified working-related act and the invention concerned	Preparing the export of bolts worked within the invention of this application whose screwdriver setting groove on the bolt-head is made in cross-groove

(4) Prior art investigation and comparison with prior art.

On submitting the "Explanation of Circumstances Concerning Accelerated Examination", a description of the prior art investigation and comparison with prior art is requested to attain the objectives of accelerated examination. The prior art investigation and comparison with prior art should preferably be made in the manner in (a) through (e), below.

(a) Documents to be investigated

(i) The documents to be investigated shall cover at least Japanese unexamined publications, i.e., "Kokai Koho" (including the secondary publication of international applications in Japanese, i.e., "Kohyo Koho").

If, however, the submitter is a foreign applicant, the investigation of Japanese unexamined publications ("Kokai Koho") may be substituted by patent documents written in English, French or German.

(ii) *Depending on the particularity of the art, "specified publications" as shown in the attached material may be designated as documents to be investigated. If, however, the submitter is a foreign applicant, such publications as are in Japanese may be exempted from investigation.*

[*Note 9*] Foreign applicants are requested to investigate patent documents in any of the foreign language listed in (a)(i), above, from the viewpoint of Section 29(2) of the Patent Law and Section 3(2) of the Utility Model Law.

(Patentability of inventions)

29.—(1) Any person who has made an invention which is industrially applicable may obtain a patent therefor, except in the case of the following inventions:

(i) inventions which were publicly known in Japan prior to the filing of the patent application;
(ii) inventions which were publicly worked in Japan prior to the filing of the patent application;
(iii) inventions which were described in a publication distributed in Japan or elsewhere prior to the filing of the patent application.

(2) Where an invention could easily have been made, prior to the filing of the patent application, by a person with ordinary skill in the art to which the invention pertains, on the basis of an invention or inventions referred to in any of the paragraphs of subsection (1), a patent shall not be granted for such an invention notwithstanding subsection (1).

(Registrability of utility models)

3.—(1) Any person who has made a device which is industrially applicable and which relates to the shape or

construction of articles or a combination of articles may obtain a utility model registration therefor, except in the case of the following devices:

(i) devices which were publicly known in Japan prior to the filing of the utility model application;
(ii) devices which were publicly worked in Japan prior to the filing of the utility model application;
(iii) devices which were described in a publication distributed in Japan or elsewhere prior to the filing of the utility model application.

(2) Where a device could very easily have been made, prior to the filing of the utility model application by a person with ordinary skill in the art to which the device pertains, on the basis of a device or devices referred to in any of the paragraphs of subsection (1), a utility model registration shall not be granted for such a device notwithstanding subsection (1).

[*Note 10*] List of "Specified Publications" in (a)(ii), above

Title of Publication	*Related IPC Symbols*
Chemical Abstract	A 01 N, A 61 K C 07 B,C,D,F,G,H,J,K C 09 B,K, D 06 P
Applied Optics	G 02 B, G 03 B, F,H

(b) Extent of investigation. If Japanese unexamined publications are investigated, the extent of investigation shall cover the fields of art at least centered around the IPC symbol or symbols consisting of the invention information (the IPC symbol or symbols preceding double oblique strokes) appearing in the publication of the unexamined application concerned ("Kokai Koho"). In that case, the period of investigation shall extend from 1971 to the date of issue of the publication of the unexamined application concerned ("Kokai Koho").

[*Note 11*] Foreign applicants are not requested to do so, unless they so wish.

(c) Results of investigation.

(i) In the space for results of investigation, the titles of related documents obtained as a result of the prior art investigation shall be described in the manner corresponding to the instruction shown in 42.31A of the "Examination Manual for Patents and Utility Models" compiled by the Patent Office. *If no related document has been found after the prior art investigation, documents showing the general state of the art as technical background to the application may be described.*

In the space for results of investigation, the names of institutions and services, etc., if used, may be entered.

(ii) *Copies of prior art documents shall be attached.*
(iii) *For prior art documents written in a foreign language, the necessary part shall be indicated on a copy of the document and the translation thereof that is submitted. In the case of English documents, a translation may be omitted.*
(iv) *In the place of a prior art investigation by a foreign applicant, documents cited as results of investigations by examining patent offices or intergovernmental organizations or by International Searching Authorities pursuant to the PCT may be entered in the space for the results of investigation.* In the place of a prior art investigation by a domestic applicant, documents cited as results of investigations by International Searching Authorities pursuant to the PCT or by the European Patent Office (EPO) may be entered in the space for the results of investigation. In those cases, the examining patent office or organization that made such investigation shall also be entered.
(v) When submitting the "Explanation of Circumstances Concerning Accelerated Examination" before the laying-open of an application, the IPC symbols which define the fields of art, the investigation of which fields the applicant has made in advance, shall be entered in the space for the result of the prior art investigation, since an additional prior art investigation may become necessary so as to cover all the fields of art defined by the invention information symbols of the IPC appearing in the publication of the unexamined application concerned ("Kokai Koho").

[*Note 12*] Foreign applicants are not requested to do so regarding paragraph (v), above, unless they so wish.

(d) Comparison with prior art.

In the space for comparison with prior art, a concrete and concise description of different points holding the better part of inventions claimed in the patent (or utility model) application and its effect should be given, compared with the prior art described in the listed documents in the light of Sections 29(1) and (2) and 29*bis* of the Patent Law and Sections 3(1) and (2) and 3*bis* of the Utility Model Law. In this case, due consideration should also be given to the completeness of the specification in the light of Section 36 of the Patent Law and Section 5 of the Utility Model Law. The above description should be prepared, for example, in the same manner as in preparing a written argument against the examiner's reasons for refusal.

If it does not seem possible to maintain patentability without amendment of the specification, a draft amendment of the specification shall be presented and the comparison with prior art should be made on the basis of that draft.

If the specification includes a detailed comparison with prior art in the light of Section 29(1) and (2) of the Patent Law and Section 3(1) and (2) of the Utility Model Law, the description in the space for comparison with prior art may be replaced by an indication of the appropriate part of the specification. However, the prior art investigation and comparison with prior art in the light of Section 29*bis* of the Patent Law and Section 3*bis* of the Utility Model Law shall be described.

[*Note 13*] Foreign applicants are not requested to investigate from the viewpoint of Section 29*bis* of the Patent Law or Section 3*bis* of the Utility Model Law.

(e) Other particulars, if necessary.

An applicant that is a small or medium enterprise or an individual may be exempted from the investigation of "specified publications" mentioned in subparagraph (a)(ii), above, and from attachment of copies of prior art documents mentioned in subparagraph (c)(ii), above. If an applicant that is a small or medium enterprise or an individual omits the investigation of "specified publications" and the attachment of copies as mentioned above, the applicant shall state in the space for "Other particulars, if necessary" the fact that the applicant is a small or medium enterprise as provided for in the Small and Medium Enterprise Basic Law or an individual.

For a small or medium enterprise, it is requested to state the type of small or medium enterprise as shown in the following table and also to indicate whether the number of employees and capital fall with the number of employees and capital provided for in the said Law.

Definition of Small and Medium Enterprises Established by the Small or Medium Enterprise Basic Law

Type of business	*Number of Employees*	*Amount of Capital*
Manufacturing, mining, etc.	not more than 300	not more than Y100,000,000
Wholesalers	not more than 100	not more than Y 30,000,000
Retailers and services	not more than 50	not more than Y 10,000,000

4. Inquiry

(1) Inquiry Window.

An answer by telephone shall be given to any inquiry on the matters relating to accelerated examination from an applicant (or patent agent).

Inquiry Window
Coordination Division
Second Examination Department
Japanese Patent Office
Tokyo, Japan
Tel. 03-(501)-1511.

[*Note 14*] Contents of this matter relate only to patent agents who have their domicile or residence in Japan.

III. Accelerated Appeal Examination System

1. Accelerated Appeal Examination

The procedures of accelerated examination shall apply correspon dingly to accelerated appeal examination. The procedures that are particularly different are hereinafter introduc ed.

(1) Appeal cases eligible for accelerated appeal examination.

The Japanese Patent Office may apply accelerated appeal examination to appeal cases concerning patent (or utility model) applications satisfying all the conditions as specified below:

(a) Where the appeal case concerns a patent (or utility model) application for an invention which the demandant or one who has been granted a license*4 (licensee) in respect of that invention from the demandant has already worked or the working*5 of which has been scheduled to start by the demandant or his licensee within a period of no longer than six months from the date of submission of the "Explanation of Circumstances Concerning Accelerated Appeal Examination" and for which the granting of a patent is urgently required by the reason of (i) or (ii), below:

(i) in the case where any third party, without any consent of the demandant, has already worked the invention or in the case where the working of that invention has been scheduled to start by the third party without any prior consent of the demandant;
(ii) in the case where opposition to the grant of the patent was filed at the examination stage.

(b) When an appeal examination by a collegial body in charge has not yet commenced (in such an appeal case, since a patent (or utility model) application has proceeded again to the stage of appeal examination after reconsideration by the former examiner under Section 161*bis* of the Patent Law, appeal examination for the said case shall be deemed not to have started);

(c) Where the appeal case is against examiner's decision of refusal.

[*Note 15*] Accelerated appeal examination applies both to appeal cases proceeding to the appeal stage after the final decision of refusal by an examiner through accelerated examination and appeal cases for which demands for appeals have already been filed.

(2) Accelerated appeal examination procedures.

(a) When the "Explanation of Circumstances Concerning Accelerated Appeal Examination" is submitted to the Patent Office, the head of appeal examiner's group (appeal examiner-in-chief) of the corresponding appeal examiner's group shall decide whether or not the appeal case is eligible for accelerated appeal examination. The results of the selection shall not be notified in writing.

(b) A collegial body in charge shall promptly commence the examination of the appeal case as a case eligible for accelerated appeal examination by the head of appeal examiner's group and shall speed up the entire appeal examination process to the final decision, including the opposition procedure, without delay.

(c) As for descriptions in the space for the state of working, state of urgency, allegations concerning the completeness of the specification and allegations against the reasons for the examiner's refusal of the "Explanation of Circumstances Concerning Accelerated Appeal Examination", a request for the submission of materials, for a hearing or for suitable measures may be made if necessary.

[*Note 16*] Submitted documents and details of hearings are not open.

(3) Public access to documents.

The "Explanation of Circumstances Concerning Accelerated Appeal Examination" shall be open to public access as in the case of other appeal case documents, regardless of the results of selection.

(4) Indication in the official publication.

The procedure for indication in the publication of applications ("Kokoku Koho") through accelerated examination shall apply in the case of accelerated appeal examination.

2. Submission Procedures—Submission of "Explanation of Circumstances Concerning Accelerated Appeal Examination"

(1) Submitter.

A submitter of the "Explanation of Circumstances Concerning Accelerated Appeal Examination" shall be restricted to the demandant of the appeal case concerned.

(2) Submission of documents.

Documents concerning accelerated appeal examination ("Explanation of Circumstances Concerning Accelerated Appeal Examination") shall be either submitted directly to the receiving window (Clerical Division, Appeal Department, Japanese Patent Office; 3-1 Kasumigaseki 1-chome, Chiyoda-ku, Tokyo 100, Japan) or mailed to the Director-General, Japanese Patent Office (4-3), Kasumigaseki 3-chome, Chiyoda-Ku, Tokyo

*4 "License" as used herein includes any license contracted between foreigners with a veiw to implementing such a license in Japan.

*5 "Working of inventions" means manufacturing, use, assignment, importing and similar acts within Japan, as defined by Section 2 of the Japanese Patent Law.

100, Japan) with indication of "Explanation of Circumstances Concerning Accelerated Appeal Examination" on the envelope. (The submission of documents shall be made by patent agents in the case of foreign demandants.)

[*Note 17*] The contents of this matter relate only to patent agents who have their domicile or residence in Japan.

(3) Period of submission.

The "Explanation of Circumstances Concerning Accelerated Appeal Examination" may be submitted at any time after the demand for appeal has been filed.

(4) Fee.

No fee is charged as in the case of accelerated examination.

(5) Documents to be submitted.

The documents concerning accelerated appeal examination ("Explanation of Circumstances Concerning Accelerated Appeal Examination") shall be submitted separately for each appeal case requesting accelerated appeal examination. (Refer to III.3, below, for the preparation of the "Explanation of Circumstances Concerning Accelerated Appeal Examination".)
The said submitted documents shall not be returned after receipt by the Patent Office.

3. Preparation of the "Explanation of Circumstances Concerning Accelerated Appeal Examination"

Form.

Explanation of Circumstances Concerning Accelerated Appeal Examination

Date

To: Mr.
The Director General of the Patent Office

1. Identification of the case
2. Title of invention (or ut ility model) and its IPC symbol appearing in the official publication ("Kokai Koho") (IPC symbol)
3. Submitter (Demandant for Appeal)
   Domicile (residence):
   Name: (seal)
4. Agent
   Domicile in Japan (residence in Japan):
   Name: (seal)
5. State of working
   (1) Specification of the working-related act
   (2) Period of working of the invention (or utility model)
   (3) Relation between the invention (or utitlity model) and the specified working-related act
6. State of Urgency
7. Allegations
   (1) Allegation concerning the completeness of the specification
   (2) Allegation against the examiner's reasons for refusal
8. List of attached documents

The "Explanation of Circumstances Concerning Accelerated Appeal Examination" may be quoted in the space for state of working, if there is no change in the subsequent state of working.
A hearing may be conducted for the submitter on the descriptions in the space for 6, 7 and 8, if necessary.

[*Note 18*] The contents of this matter relate only to patent agents who have their domicile or residence in Japan.

(2) Bibliography.

The space for bibliography (1–4) in the "Explanation of Circumstances Concerning Accelerated Appeal Examination" shall be completed as follows:

(a) For the space "Identification of the case", the appeal case number, patent (or utility model) application number and the laying-open number of the patent (or utility model) application shall be entered.
(b) The IPC symbols consisting of the invention information (the IPC symbols preceding double oblique strokes) appearing in the official unexamined publication of the application concerned ("Kokai Koho") shall be inserted in the space for IPC symbols.
(c) Next to the domicile under the headings "Submitter" and "Agent", the telephone number of the submitter or his agent shall be entered, if possible.
(d) Other instructions shall be the same as in items 1–3, 6, 7, 10 and 12–14 of the Notes to Form No. 1 of the Regulations under the Patent Law.
As to the date of submission, the date of delivery in the case of direct submission to the receiving window of the Clerical Division, Appeal Examination Department, Patent Office, or the date of posting or receipt by the post office in the case of mailing, shall be inserted.

[*Note 19*] The contents of this matter relate only to patent agents who have their domicile or residence in Japan.

3. State of working.

The space for "State of working" in the "Explanation of Circumstances Concerning Accelerated Appeal Examination" shall be completed as follows:

(a) Specification of the working-related act. Whether the act within Japan by the demandant or his licensee comes under manufacturing, using, assigning or leasing, displaying for the purpose of assignment or lease, or *importing to Japan* shall be specified and described.
(b) Period of working of the invention (or utility model). When the working-related act has started or is scheduled to start shall be described. However, the scheduled period to start working shall be restricted to within six months from the date of submission of the "Explanation of Circumstances Concerning Accelerated Appeal Examination".
If, for example, the working related act is manufacturing, the description may be as follows:

"Manufacturing since ..., 19.."; or
"Scheduled for manufacture from ..., 19 ..."

[*Note 20*] It is not necessary to identify the location of the use and name of the licensee, and additional materials to describe the state of working are not required in principle.

(c) Relation between the invention (or utility model) and the specified working-related act. A description shall be provided of how the invention (or utility model) of the application is applied in the specified working-related act. If, for example, the working-related act is manufacturing, a description shall be provided of to what part of the product the art of the invention (or utility model) is applicable.

(4) State of urgency.

In the space for "State of Urgency", an explanation shall be given of at least one of the following cases as provided in (a) or (b) where urgent granting of the patent is required.

If the matters necessary for clarifying such state fall within the scope of corporate secrecy and it may interfere with commercial dealings to submit such matters, the omission of the submission of such matters may be allowed by indicating that the demandant is prepared to clarify such matters in hearing.

The details of such a hearing shall not be open.

(a) Where any third party, without consent of the demandant, has already worked the invention or has scheduled to start the working of the invention in an apparent manner.

Where a state of urgency is explained by this case, clarification of (A) the third party, (B) the working-related act by any third party and (C) the relation between the working-related act and the inventions claimed in the application concerned is required in principle. Where the third party has scheduled to start in an apparent manner the working of inventions claimed in the application concerned, clarification of the state of the schedule for working is required by means of attaching objective documents or other reliable materials.

A "third party" means any party other than the demandant in the appeal case and his licensee.

(b) When opposition to the grant of patent was filed in the stage of examination.

Where a state of urgency is explained by this case, the circumstances behind the grounds for the oppositions to the grant of the patent shall be explained in relation to inventions claimed in the patent (or utility model) application concerning which the examiner's decision of refusal has been brought about.

(5) Allegations.

Since it is necessary for an efficient accelerated appeal examination that the specification be complete and that the grounds against the reasons for refusal be based on the detailed description in the specificaiton, the following allegations are requested to be described for clarifying those matters.

(i) Allegation concerning the completeness of specification. In the space for "Allegation concerning the complet eness of the specification", it shall be alleged that the explanation is complete in the following respects:

(a) It shall be explained, according to "the itemized descriptions of patent (or utility model) specification" specified in the Regulations (Note 14 to Form No. 16 of the Regulations under the Patent Law and Note 13 to Form No. 3 of the Regulations under the Utility Model Law), for example, how the purpose, constitution and effects of the invention (or utility model) are clearly described in the space for a detailed explanation of the invention:

[*Note 21*] Example where itemized description is preferable:

Detailed Description of the Invention

(a) Industrial Field of Utilization
(b) Prior Art
(c) Problems that the Invention is to solve
(d) Means of Solving the Problems
(e) Operation of the Invention
(f) Working Examples
(g) Effects of the Invention

(b) It shall be explained how the constitution of the claimed invention (or utility model) is accurately described in the space for a detailed explanation of the invention.

The explanations in (a) and (b), above, may be omitted where the patent (or utility model) application has been published in the examination stage in the official publication ("Kokoku Koho").

(ii) Allegation against examiner's reasons for refusal. In the space for "Allegation against examiner's reasons for refusal", the grounds against the examiner's reasons for refusal shall be concretely alleged indicating the duly corresponding described parts in the specification.

4. Inquiry.

(1) Inquiry Window.

An answer by telephone shall be given to any inquiry on the matters relating to accelerated appeal examination from a demandant (or his patent agent).

Inquiry Window
Clerical Division
Appeal Examination Department
Patent Office
Tel. 03-581-1101

[*Note 22*] Contents of this matter relate only to patent agents who have their domicile or residence in Japan.

Attached Material
List of Specified Publications

Title of Publication	*Related IPC Symbols*
Chemical Abstract	A 01 N, A 61 K C 07 B,C,D,F,G,H,J,K C 09 B,K, D 06 P
Applied Optics	G 02 B, G 03 B, F,H

Status of PTO Services

The following is an update of the status of PTO services for February 1986:

Service Item	FY 1985 Goal (Calendar Days)	FY 1986 Goal (Calendar Days)	Monthly Average (Calendar Days)
Filing Receipts:			
Patents	22	22	36
Trademarks	30	30	32
Patent/Trademark Copies:			
Special Window Coupons	1	1	.4
Window Coupons	5	5	1.8
Mail Coupons	29	26	17
Letter Orders	34	26	17
Date of oldest unfilled order			Feb. 20, 1986
Current Mail Date being processed			Feb. 21, 1986
Certified Copies:			
Trademark Registrations	30	30	20
Applications-As-Filed	20	10	75% within 10 days
File-Wrapper/Contents	N/A	N/A	95% within 7 days
Walk-up Certification	1	1	51% within 24 hours
Trademark Search Library:			
Filing Pending Marks	21	21	29
Filing Reg. Certificates	3	Issue Date	7 Days Late
Assignments:			
Patents	25	20	19
Trademarks	25	20	18
Avg. Days from Issue Fee Payment to Issue Date	90–100	90–100	117
Issue Fee Receipts Mailed	4 weeks prior to Issue Date	4 weeks prior to Issue Date	On schedule
Patent Copies Available	Issue Date	Issue Date	93% on Issue Date
Trademark Copies Available	Issue Date	Issue Date	99% on Issue Date

IMPROVEMENTS IN SERVICES

- *File Information Unit* — At a recent users meeting, a concern was raised regarding the inability of the File Information Unit (FIU) to override erroneous location data in the PALM system when ordering a patent or abandoned file from the Eads Street Repository. An example of this situation would be when a customer requests a particular file and the PALM system indicates that the file is in one of the Patent Examining Groups. The customer then goes to the Group to request access to the file, but discovers the file is not in the Group. He/she would return to the FIU and submit a charge slip that would have to be hand carried to the Repository.

  A change to the PALM software now allows the FIU to override the PALM system and electronically order the file from the Repository. The printout at the Repository also identifies this request as a priority to ensure special handling of the request.

  This new procedure will reduce the amount of time and effort required to order a file when the PALM system indicates an incorrect location.

- *Improvements* — At the suggestion of a member of the Patent, Trademark and Copyright Law Section of the Bar Association of the District of Columbia, a check off box is being added to the PTOL-85c Issue Fee Transmittal to indicate authority to charge deficiencies in fees to a deposit account. This will avoid the issuance of Notices of Abandonment when the issue fee amount due is not satisfied by the fee remittance. It will also avoid delays in responding to associated requests for advanced patent order or assignment recordation.

HELPFUL HINTS FROM THE PTO

- *Response to Final Rejection — Expedited Processing and Reply by PTO*

  Many amendments or responses after Final Rejection are filed without the proper markings needed to ensure the "quick reply" benefits of the Expedited Procedure.

  In view of the enormous volume of mail and papers received in the PTO each day, it is essential that these special amendments or responses be clearly and distinctly marked so that the staff in the Mail Room, Finance Branch, and Patent Examining Corps Clerical Sections can readily identify them as After Final (AF) papers. When properly marked, they receive immediate attention and special handling throughout the PTO.

  The marking requirements are as follows:

  1. Mark the mailing envelope "BOX AF" in the lower left corner.
  2. Mark the paper, in the upper right portion:

"RESPONSE UNDER 37 CFR 1.116
EXPEDITED PROCEDURE
EXAMINING GROUP (Insert Group Number)".

3. Do not mail After Final (AF) papers and other, non-AF, papers in the same envelope.
4. If an AF paper is being hand-carried to an Examining Group (instead of mailing to Box AF), the paper should be marked:

"RESPONSE UNDER 37 CFR 1.116
EXPEDITED PROCEDURE
EXAMINING GROUP (Insert Group Number)".

5. Use a bright color felt point marker to make the markings prominent.
6. It would be helpful to print "AF" in bright color at the top of all After Final responses or amendments.

Applicants are encouraged to use this expedited procedure in order to facilitate rapid PTO processing and reply to amendments and responses after Final Rejection.

Direct questions to: Al Lawrence Smith
Director, Group 350
(703) 557-3414

- *Assignments* — When requesting correction or updating of a previously recorded patent or trademark assignment document, providing the reel and frame number of that document to the Assignment Branch will greatly expedite the recording process.
To ensure the correct printing of ownership information on a Trademark Registration at issue date, provide the Trademark Office examining attorney with the reel and frame number of the appropriate assignment document as soon as you are notified of it.

- *File Wrapper Continuation* — To expedite processing under Rule 1.62, make certain that the parent serial number cited in the transmittal letter is the correct serial number.

- *Continuation or Divisional Application* — When filing under Rule 1.60 retain at least one original claim from the parent application to assure a complete application. Only amendments reducing the number of claims or adding a reference to the prior application (Rule 1.78 (a)) will be entered, upon request, before calculating the filing fee and granting the filing date. *Reminder*: Applicant cannot file a CIP (continuation-in-part) under Rule 1.60.

- *Petition for License* — Rule 5.12 states that "filing of an application for patent for inventions made in the United States will be considered to include a petition for license under 35 U.S.C. 184 for the subject of the application. The filing receipt will indicate a license is granted". There is no need to request a corrected filing receipt deleting the words "License Granted". Its intent is to provide the necessary acknowledgement for those filing abroad.

For the prior four items direct questions to:

Peggy Dubose, Manager
Examining Services Division
(703) 557-3256

- *PTO Special Boxes* — The special box numbers have been established to allow forwarding of particular types of mail to the appropriate areas as quickly as possible. Such mail is forwarded directly to the appropriate area without being opened. Therefore, if any documents other than the specified type identified for each box are addressed to that box, they will be delayed in reaching the appropriate area for which they were intended.
The following special boxes should be used only for theirpurpose.

Address to:
Box_____
Commissioner of Patents and Trademarks
Washington, D.C. 20231

Box 4	—	Mail for the Office of Legislation and International Affairs.
Box 5	—	"No fee" mail related to trademarks.
Box 7	—	Reissue applications for patents involved in litigation and any subsequently filed papers for these applications.
Box 8	—	All papers for the Office of the Solicitor.
Box 9	—	Coupon orders of U.S. patent and trademark copies.
Box 10	—	Orders for certified copies of patent and trademark applications.
Box 12	—	Contributions to the Examiner Education Program.
Box AF	—	Amendments or Correspondence after Final Rejection of patent applications.
Box Interference	—	Communications relating to Interferences and applications and patents involved in Interference.
Box M. Fee	—	Correspondence related to a patent that is subject to the payment of a Maintenance Fee.
Box Pat. Ext.	—	Applications for patent term extension.
Box PCT	—	Mail related to applications filed under the Patent Cooperation Treaty.
Box Reexam	—	Mail related to reexamination applications.

Mar. 3, 1986.

THERESA A. BRELSFORD,
Assistant Commissioner
for Administration.

PATENT NOTICES

Certificates of Correction for the Week of Mar. 25, 1986

4,243,489	4,524,077	4,549,698	4,558,609
4,287,890	4,529,228	4,549,798	4,558,639
4,290,115	4,529,916	4,550,195	4,558,739
4,397,628	4,530,314	4,550,474	4,559,596
4,423,324	4,530,592	4,550,641	4,559,956
4,433,379	4,531,461	4,551,481	4,560,159
4,441,843	4,531,972	4,551,633	4,560,243
4,446,400	4,532,278	4,551,643	4,560,286
4,461,069	4,532,613	4,551,695	4,560,455
4,480,068	4,532,811	4,551,710	4,560,837
4,487,139	4,533,310	4,551,838	4,560,871
4,495,678	4,536,407	4,552,364	4,560,990
4,496,473	4,536,684	4,553,501	4,561,128
4,497,573	4,537,903	4,553,553	4,561,334
4,500,545	4,538,988	4,553,569	4,561,950
4,506,735	4,540,138	4,554,165	4,562,296
4,508,573	4,540,470	4,555,359	4,562,361
4,510,114	4,540,656	4,555,448	4,562,490
4,513,149	4,541,254	4,555,634	4,562,526
4,514,081	4,542,602	4,555,969	4,562,607
4,514,331	4,543,031	4,556,289	4,562,625
4,514,713	4,543,769	4,556,429	4,563,343
4,518,973	4,544,534	4,556,509	4,563,415
4,519,359	4,545,738	4,556,549	4,563,559
4,519,924	4,545,818	4,556,562	4,563,702
4,519,993	4,546,421	4,557,199	4,563,721
4,521,995	4,546,731	4,557,296	4,563,754
4,523,022	4,547,312	4,557,340	4,564,281
4,523,628	4,547,774	4,557,498	4,565,904
4,523,803	4,548,839	4,557,627	
4,523,953	4,548,994	4,558,449	

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

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Arkansas	Little Rock: Arkansas State Library	(501) 371-2090
California	Los Angeles Public Library	(213) 612-3273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale: Patent Information Clearinghouse*	(408) 730-7290
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware Library	(302) 451-2238
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	Miami-Dade Public Library	(305) 375-2665
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
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Illinois	Chicago Public Library	(312) 269-2865
	Springfield: Illinois State Library	(217) 782-5430
Indiana	Indianapolis-Marion County Public Library	(317) 269-1706
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 454-3037
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Transportation Library, University of Michigan	(313) 764-7494
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6570
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
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Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
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New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7815
New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 714-8529
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Oregon	Salem: Oregon State Library	(503) 378-4239
Pennsylvania	Cambridge Springs: Alliance College Library	(814) 398-2098
	Philadelphia: Franklin Institute Library	(215) 448-1227
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
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	Dallas Public Library	(214) 749-4176
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Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
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Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3247

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*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF February 15, 1986

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	3-01-85
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	2-15-84
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	4-12-84
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	3-01-85
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG, Director	3-02-84
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	8-11-83
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	11-21-83
PACKAGES, CLEANING, TEXTILES, AND GEOMETRICAL INSTRUMENTS, GROUP 240—E. E. KUBASIEWICZ, Director	6-15-84
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	3-28-83
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	8-30-83
DESIGN, GROUP 290—K. L. CAGE, Director	1-03-84
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	7-12-83
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	7-26-84
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	3-30-83
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	10-19-83
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	1-09-85

Expiration of patents: The patents within the range of numbers indicated below expire during February 1986, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,425,060 to 3,426,359, inclusive

Plant Patents ..... Numbers 2,861 to 2,869 inclusive

REISSUES

MARCH 25, 1986

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 32,094

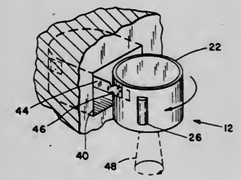
OVERFLYING MUNITIONS DEVICE AND SYSTEM

John V. Atanasoff, East Greenwich, R.I.; W. Kenneth Clark, Lowell, Mass.; David Henderson, Carlisle, Mass., and Kenneth W. Wreghitt, Andover, Mass., assignors to Avco Corporation, Wilmington, Mass.

Original No. 4,356,770, dated Nov. 2, 1982, Ser. No. 92,898, Nov. 9, 1979. Application for reissue Oct. 31, 1984, Ser. No. 666,870

Int. Cl.⁴ F42B *25/24*

U.S. Cl. 102—384 **31 Claims**



1. A munitions system comprising:

a missile having a projectile mounted for downward firing from the bottom of the missile;

means for propelling the missile along a *ballistic* trajectory to overfly a target;

stabilizing means for stabilizing the missile in flight with the projectile directed downward;

means for imparting a lateral precession motion to the missile relative to the [target] *trajectory;*

detector means carried by the missile for detecting a target below the missile; and

means carried by the missile for propelling the projectile downward from the missile toward the target upon detection of the target.

Re. 32,095

COOKED FLAVORS FOR SMOKING PRODUCTS

D. Louise Wu, and James W. Swain, both of Richmond, Va., assignors to Philip Morris Incorporated, New York, N.Y.

Original No. 4,379,464, dated Apr. 12, 1983, Ser. No. 235,456, Feb. 18, 1981. Application for reissue Jan. 13, 1984, Ser. No. 570,719

Int. Cl.⁴ A24B *3/12, 15/30*

U.S. Cl. 131—275 **12 Claims**

1. A process for preparing a reaction flavor product which comprises the following steps:

(a) Preparing a mixture of a reducing sugar [and] ammonium hydroxide *and a trace amount of a compound selected from the group consisting of an amino acid and a monoamide thereof,* wherein the weight ratio of reducing sugar to ammonium hydroxide (*30%*) is in the range of 5–15:1 *and the ratio of reducing sugar to said compound is in the range of 200–300:1;*

[(b) adding a trace amount of a compound selected from the group consisting an amino acid and a monoamide thereof to said mixture of step (a), wherein the ratio of reducing sugar to said compound is in the range of 200–300:1;]

[(c)] (*b*) heating said mixture to a temperature in the range of 90° to 105° C.; and thereafter

[(d)] (*c*) cooling said mixture to room temperature.

Re. 32,096

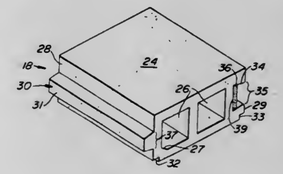
END BLOCK

Ernest H. Jeffries, Jr., Greensboro, N.C., assignor to Resco Products, Inc., Norristown, Pa.

Original No. 4,320,612, dated Mar. 23, 1982, Ser. No. 178,249, Aug. 15, 1980. Division of Ser. No. 15,038, Feb. 26, 1979, Pat. No. 4,243,385. Application for reissue Mar. 5, 1984, Ser. No. 586,373

Int. Cl.⁴ E27D *3/12;* E04C *1/10, 1/30*

U.S. Cl. 52—396 **11 Claims**



1. An end block designed for use on a kiln car comprising a refractory body having top and bottom horizontally disposed major faces and two vertically disposed end faces, a transverse projection extending from end face thereof generally parallel to said major faces and a transverse recess extending into an opposite end face thereof, said recess having means for retaining a layer of resilient refractory material therein without the use of fastening means for contact with a corresponding projection of another block, said retaining means comprising the shape of said recess such that the innermost surface of said recess has a vertical dimension greater than the vertical dimension of [any other] *another* portion of said recess and whereby the smallest vertical dimension of said recess is greater than the largest vertical dimension of said projection so that said corresponding projection of another block can enter said recess with a loose fit, and said projection having a cross-sectional shape different from the cross-sectional shape of said recess.

Re. 32,097

BLENDED GRAIN DIRECT-POSITIVE EMULSIONS AND PHOTOGRAPHIC ELEMENTS AND PROCESSES FOR THEIR USE

Robert A. Silverman, Rochester, and Harry A. Hoyen, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Original No. 4,444,865, dated Apr. 24, 1984, Ser. No. 418,314, Sep. 15, 1982. Continuation-in-part of Ser. No. 320,903, Nov. 12, 1981, abandoned. Application for reissue Jul. 2, 1984, Ser. No. 627,006

Int. Cl.⁴ G03C *1/02, 1/36, 7/00*

U.S. Cl. 430—217 **34 Claims**

1. A radiation-sensitive emulsion particularly adapted to forming a direct-positive image comprised of

a dispersing medium

a first, core-shell silver halide grain population having a coefficient of variation of less than 20%, and

a second silver halide grain population capable of *internally forming a latent image by* internally trapping photolytically generated electrons and substantially incapable of forming a surface latent image within the direct-positive exposure latitude of the first grain population,

said second grain population having an average diameter less than 70% that of said first grain population, and

said first and second silver halide grain populations being present in a weight ratio of from 5:1 to 1:5.

Re. 32,098

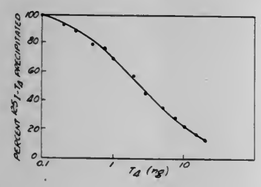
RADIOIMMUNOASSAY FOR MEASUREMENT OF THYROXINE (T_4) AND TRIIODOTHYRONINE (T_3) IN BLOOD SERUM

Inder J. Chopra, Los Angeles, Calif., assignor to Research and Education Institute, Inc., Torrance, Calif.

Original No. 3,911,096, dated Oct. 7, 1975, Ser. No. 265,586, Jun. 23, 1972. Application for reissue Aug. 10, 1978, Ser. No. 932,759

Int. Cl.[4] G01N *33/56, 33/56, 33/60;* **G01T** *1/00*

U.S. Cl. 424—1 **11 Claims**



1. A method of measurement of the concentration of a particular thyroid hormone selected from the group consisting of thyroxine (T_4) and triodo-L-thyronine (T_3) in unextracted human serum, which comprises:

A: adding to a measured quantity of unextracted human serum,

a. a blocking agent *selected from the group consisting 8-anilino-1-napthalene sulfonic acid and 3-(4-anilino-1-naphthylazo) 2,7 naphthalene disulfonic acid, and present* in an amount sufficient to displace essentially all of said particular thyroid hormone to be measured from thyroxine-binding globulin (TGB),

b. buffering ions to buffer said serum to a pH of between about 6.8 to about 9.6,

c. radioactive thyroid hormone, of the type to be measured, in an amount which will give a measurable counting rate of either antibody bound or free radioactivity after reaction equilibrium has been reached as set forth in Step B below; and

d. an antibody in sufficient quantity to bind a significant quantity of said radioactive thyroid hormone in the absence of any of the particular nonradioactive thyroid hormone to be measured,

B: allowing reaction of both particular thyroid hormone, to be measured, and said radioactive thyroid hormone, with said antibody to proceed substantially to equilibrium to thereby produce antibody bound radioactive thyroid hormone;

C: separating said antibody bound radioactive thyroid hormone, to be measured from said free radioactive thyroid hormone;

D: measuring the quantity of radioactive thyroid hormone selected from antibody bound radioactive thyroid hormone and free radioactive thyroid hormone;

E: preparing a standard curve with known amounts of the particular thyroid hormone to be measured, and

F: correlating the quantity of radioactive thyroid hormone measured with a known amount of said particular thyroid hormone read from said standard curve.

Re. 32,099

OPTICAL PRINTER

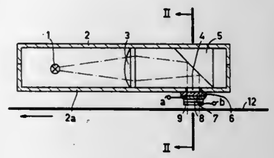
Bernhard Hill; Klaus Schmidt, and Gerhard Graf, all of Siegen, Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Original No. 4,278,981, dated Jul. 14, 1981, Ser. No. 21,127, Mar. 16, 1979. Application for reissue Sep. 13, 1982, Ser. No. 416,838

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1978, 2812206

Int. Cl.[4] G01D *9/42*

U.S. Cl. 346—108 **4 Claims**



5. An optical printer which comprises:

a light source,

a photosensitive record carrier disposed in spaced relation to said light source,

means for forming characters in situ, said means being responsive to electronic signals from an associated character generator, said means for forming being disposed between said light source and said photosensitive record carrier, said means for forming including a template which is a light switching mask including means selectively varying the light transmission through each of a plurality of points, the number of said points being sufficient to provide a high resolution,

said means for selectively varying the light transmission including integrated thin-film technology light switching elements and means for controlling said switching elements electronically with the associated character generator.

PLANT PATENTS

GRANTED MARCH 25, 1986

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,697

TUMMELBERRY

Derek L. Jennings, Dundee, Scotland, assignor to National Seed Development Organisation Limited, Newton, England

Filed Jun. 5, 1984, Ser. No. 617,392

Int. Cl.[4] A01H *5/03*

U.S. Cl. Plt.—46 **1 Claim**

1. A new and distinct variety of hybrid Rubus substantially as herein shown and described.

5,698

IMPATIENS PLANT NAMED VISTA IMPATIENS NO. 44

Claude Hope, Cartago, Costa Rica, assignor to Pan American Plant Co., Parrish, Fla.

Filed Dec. 29, 1983, Ser. No. 566,504

Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct cultivar of impatiens plant known by the cultivar name Vista Impatiens No. 44, as described and illustrated, and characterized by its large and brilliant lavender colored flowers with a white eye; profuse blooming, dark green foliage, compact, dense and spreading form, good self-branching habit, and moderate rate of growth, making it ideal for hanging baskets, pot culture and bedding plant use.

5,699

IMPATIENS PLANT NAMED VISTA IMPATIENS NO. 60

Claude Hope, Cartago, Costa Rica, assignor to Pan American Plant Co., Parrish, Fla.

Filed Dec. 29, 1983, Ser. No. 566,804

Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct cultivar of impatiens plant known by the cultivar name Vista Impatiens No. 60, as described and illustrated, and characterized by its very large, vivid dark salmon color flowers with a half eye, profuse blooming, dark green foliage, good self-branching habit, good keeping qualities, and tall, upright, and spreading form, making the cultivar suitable for bedding plants, hanging baskets and container culture.

5,700

AFRICAN VIOLET PLANT NAMED IMPROVED ORLANDO

Reinhold Holtkamp, Isselburg, Fed. Rep. of Germany, assignor to Gessellschaftsvertrag uber die Ergindergemeinschaft "OPTIMARA", Fed. Rep. of Germany

Filed Jan. 5, 1984, Ser. No. 568,449

Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—69 **1 Claim**

1. A new and distinct cultivar of African violet plant named Improved Orlando, as described and illustrated, and particularly characterized by its compact growth habit, girl-type leaves, short, sturdy and upright flower stems each carrying 7 and more violet shaped and frilled flowers, intensive violet blue flower color, compact flower bouquet, long lasting and non-dropping flowers, and by its ability to produce a saleable plant in 9–10 weeks after potting.

5,701

AFRICAN VIOLET PLANT NAMED MAUI

Reinhold Holtkamp, Isselburg, Fed. Rep. of Germany, assignor to Gessellschaftsvertrag uber die Ergindergemeinschaft "OPTIMARA", Fed. Rep. of Germany

Filed Jan. 5, 1984, Ser. No. 568,438

Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—69 **1 Claim**

1. A new and distinct cultivar of African violet plant named Maui, as illustrated and described, and particularly characterized by its relatively large dark lilac flowers with white edges, with the flowers being carried on strong flower stems; vigorous and uniform growth habit, dark green and serrated leaves, and by its floriferous habit, with a large and full bouquet of flowers being positioned centrally above the leaves.

PATENTS

GRANTED MAR. 25, 1986

ERRATA

For CLASS	See PATENT NO.
123–090	4,577,592
175–025	4,577,614
008–115	4,578,166
422–057	4,578,282
435–068	4,578,335
435–088	4,578,336

PATENTS

GRANTED MARCH 25, 1986

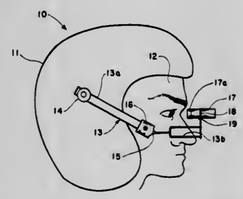
GENERAL AND MECHANICAL

4,577,346
ATHLETIC PADDED GARMENT
Bradley G. Hall, 60 Redcar Ave., Islington, Ontario, Canada M9B 1K1
Filed Nov. 28, 1984, Ser. No. 675,776
Int. Cl.[4] A41D *13/00*
U.S. Cl. 2—2 **19 Claims**



1. Protective sports garment comprising:
a plurality of padded generally flat rings designed to extend about the wearer adjacent the waist area,
the length dimension of said rings extending about the waist and the width dimension being approximately parallel to the wearers body, when worn,
each of said padded rings being attached to adjacent extents at attachment locations at the front and back of the garment,
arranged in overlapping relationship in the upright attitude of the wearer,
adjacent ones of said rings being connected to allow relative movement therebetween in the extents between the front and the back of the garment.

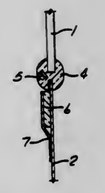
4,577,347
DIRECT VIEW HELMET MOUNTED TELESCOPE
Thomas R. Connon, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Jul. 25, 1984, Ser. No. 634,247
Int. Cl.[4] A42B *3/02*
U.S. Cl. 2—6 **5 Claims**



1. An improved helmet including means for telescopically acquiring a field of view for the wearer of said helmet, comprising:
(a) a hinged boom having first and second ends, and including first and second parts hingedly joined intermediate said ends;
(b) means for pivotally mounting said boom at said first end to the side of said helmet for pivotal movement of said first part in a plane substantially tangent to said helmet at the point of mounting;
(c) means for hingedly joining said second part of said boom to said first part for pivotal movement of said second part relative to said first part out of said plane;
(d) a telescope; and
(e) means for pivotally mounting said telescope to said boom at said second end thereof, whereby said telescope may be selectively rotated from a stored position beside said helmet to an operative position in front of said wearer.

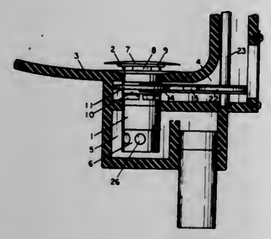
4,577,348
GAS-TIGHT PROTECTIVE GARMENT WITH HOOD
Wilfried Hoffmann, Berlin, Fed. Rep. of Germany, assignor to Auergesellschaft GmbH, Berlin, Fed. Rep. of Germany
Filed Aug. 11, 1982, Ser. No. 407,122
Int. Cl.[4] A62B *17/00*
U.S. Cl. 2—84 **7 Claims**





1. A hooded protective garment in which the front wall of a flexible hood has an opening provided with a rigid curved facepiece lens of a given peripheral profile mounted gas-tight therein, characterized in that in the region of the opening for the facepiece lens in the hood the protective garment is firmly attached to and framed by an annular curved frame which conforms to said given peripheral profile, the frame being bound by an overlapping frame of garment material, thus forming a firm connecting rim portion of said frame which is essentially coplanar with respective adjacent peripheral portions of said faceplate lens, and an elastic coupling gasket disposed between and in sealing engagement with peripheral portions of said connecting rim portion and said adjacent coplanar peripheral protions of the rigid curved facepiece lens whereby said gasket secures said facepiece lens with respect to said connecting rim portion continuously along the respective peripheries thereof and constitutes a continuous gas-tight seal between the hood and the facepiece lens.

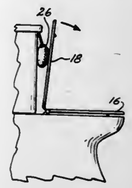
4,577,349
SINK OUTLET VALVE
John E. Clegg, 2320 Keystone Dr., Orlando, Fla. 32806
Filed May 28, 1985, Ser. No. 737,832
Int. Cl.[4] E03C *1/23*
U.S. Cl. 4—203 1 Claim



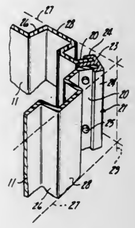
1. A basin outlet valve comprising a vertical fixed tubular casing having a circular top flange, a tubular walled outlet valve having a circular plate attached to the top of said tubular portion with said tubular portion mounted inside said casing, a vertical operating rod having a revolving crank disk attached to the bottom thereof, a revolving collar encircling the upper portion of said casing, a horizontal yoke having two opposed arms, said yoke being mounted between said crank disk and said revolving collar,
- a series of four inlet ports arranged in a circle in said wall of said valve to allow water to flow from said basin into said valve,
- an O-ring secured to said valve below said plate to make contact with an upper surface of said flange and serving as means of shutting off the flow of water when said valve is lowered in said casing,
- a flange having a slot therein, said flange being secured to said collar and communicating with at least one of said arms of said yoke via a crank pin attached to said one of said arms, said pin engaging said slot in said flange and serving as a means of revolving said collar when linear movement is applied to said yoke,
- a horizontal slot in said casing,
- an inclined cam slot in said valve adjacent to said horizontal slot,
- a cam pin secured through said collar and projecting through said horizontal slot in said casing to engage said inclined cam slot and serving as a means of lowering and raising said valve with respect to said casing when said collar is revolved,
- a pin secured in said casing,
- a vertical slot in said valve engaging said pin in said casing and serving as a means of preventing said valve from revolving with respect to said casing while allowing said valve to be disengaged from said casing by lifting,
- a slot in said revolving crank disk, and
- a crank pin in said yoke engaging said disk slot and serving as a means of imparting linear movement to said yoke when said operating rod is revolved, which movement further imparts rotation to said collar via said crank pin and flange slot, which rotation further causes said cam pin to force said valve open or closed by contact with said cam slot.

4,577,350
DEVICE TO AUTOMATICALLY LOWER A LIFTED TOILET SEAT
Emmett T. Clark, Rte. 1, Box 442, Pittsboro, N.C. 27312
Filed Apr. 8, 1985, Ser. No. 720,964
Int. Cl.[4] A47K *13/00*
U.S. Cl. 4—251 7 Claims

1. Apparatus for moving a hinged toilet seat or toilet cover from an open generally upright position on one side of the vertical plane of its hinge, to a lowered position on the bowl on the other side of the vertical plane of the hinge, by forcing the seat or lid through an overcenter position on the hinge to then pivot to the lowered position by gravity, said apparatus comprising, a hollow collapsible device containing air at ambient pressure, a check valve associated with the device for permitting rapid expelling of air from the device in response to compression and collapsing thereof, said hollow device including resilient means for expanding the device to its original shape, means for mounting said collapsible device at a location adjacent an upright surface such that the device is suffiently compressed and collapsed by the upper surface of the lid or seat upon movement thereof to the generally upright position so that the lid or seat remains in the upright position, an air bleed means associated with the collapsible device for permitting the device to reinflate slowly within a predetermined period of time after it is collapsed, said device being so mounted and of such an inflated size that the seat or lid is forced to said overcenter position and descends as said device expands to its original shape.



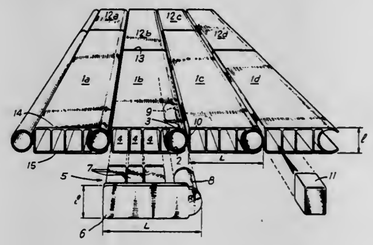
4,577,351
PORTABLE TOILET CABANA
George W. Harding, Clearwater, Fla., assignor to Poly-John Enterprises Corp., Whiting, Ind.
Filed Oct. 30, 1984, Ser. No. 666,560
Int. Cl.[4] A47K *11/02*
U.S. Cl. 4—460 3 Claims



1. A portable toilet-type cabana comprising:
- vertically arranged, relatively resilient plastic sheet walls which are fastened together along their adjacent vertical edges;
- the adjacent vertical edge portions of at least one pair of such walls being bent into parallel, spaced apart, vertically elongated flanges that are arranged at roughly 45° angles to their respective walls;
- a substantially T-shaped in cross section, vertically elongated, corner connector strip arranged with the stem of the T-shape between and in face to face contact with the respective flanges substantially throughout the entire length of said flanges and mechanically secured together with said flanges;
- the head of the T-shaped connector overlying and generally in face to face contact with the free ends of each of the flanges;

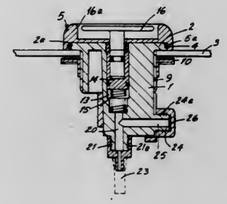
- integral, vertically arranged, relatively narrow channels formed in the walls closely adjacent to, but spaced a short distance from the junctures of their edge flanges with the vertical walls, with the channels opening inwardly of the cabana so that their bases and side walls are spaced outwardly of the planes of their walls;
- and the channels being sufficiently deep so that the bases of the channels are located in planes that are further outwardly of the planes of their walls, that is, relative to the interior of the cabana, than are the opposite ends of the head of the T-shaped corner connector, wherein the channels from relatively resilient, protective bumpers for the corner joint between the cabana walls, including the T-shaped corner connector, as well as form hand grips for manually grasping the cabana at its corner for moving the cabana;
- and with the flanges and stem being mechanically fastened together by rivets extended through them to form a three layer, structural reinforcing strip at the cabana corner.

4,577,352
EXTRUDED SECTION FOR SWIMMING POOL ROLLABLE COVER
Lucien Gautheron, 1, rue Louis, 92160 Antony, France
Filed Sep. 7, 1984, Ser. No. 648,310
Claims priority, application France, Sep. 14, 1983, 83 14614
Int. Cl.[4] E04H *3/19*
U.S. Cl. 4—499 8 Claims



1. In a swimming pool cover consisting of a plurality of longitudinally extending compartmented, interconnected and articulated sections, the combination comprising:
- at least two sections, each including upper and lower major faces interconnected by longitudinal side walls and further including at least one longitudinally extending compartment defining openings at each end of said section;
- connecting means extending outwardly along each side wall, each of complementary configuration with respect to the connecting means on an adjacent section and configured to permit articulation of each section within a predetermined range with respect to the next section of said plurality of interconnected sections when interconnected;
- one of said connecting means on each section being of substantially hollow circular cross-section open at each end and defining a male element, the other of said connecting means on each section being of discontinuous arcuate cross-section and defining a female receptacle dimensioned to partially encircle said male element when said male and female connecting means are interconnected, and
- an end plug for each end of each section, said plug having a base plate, and including means defining a projection mounted thereon configured to enter and seal the open circular end of said male connecting means on the adjacent section and preclude relative longitudinal displacement of a pair of interconnected male and female elements while permitting relative articulation within said predetermined range, said end plug further including at least one additional projection configured to enter and seal the open end of said compartment.

4,577,353
AIR-REGULATION DEVICE FOR THE INLET NOZZLES OF A WHIRLPOOL BATH
Walter Viegener, Attendorn, Fed. Rep. of Germany, assignor to Firma Franz Viegener II, Attendorn, Fed. Rep. of Germany
Filed Mar. 13, 1984, Ser. No. 589,190
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1983, 3309760
Int. Cl.[4] A61H *33/02*
U.S. Cl. 4—544 7 Claims



1. A device for controlling a whirlpool bath assembly having an injector nozzle and a pneumatically actuated circulation pump, the device comprising: a housing connectable to a whirlpool tub and having a first air passage therein with an inlet and an outlet connectable to the nozzle; an air control knob having an aperture therein and mounted in the housing for rotation relative to the inlet for controlling the flow of air into the first air passage; means forming a second air outlet in the housing for connecting to the circulating pump; and pneumatic switch means mounted in the housing for applying air via the second air outlet to actuate the pump, the switch means comprising means forming a cylinder chamber in the housing in communication with the second air outlet, a piston slidably mounted in the cylinder, a disk connected to the piston and mounted over the control knob for movement toward and away from the housing to move the piston and thereby force air through the second air outlet and wherein the disk is configured to cover the aperture in the knob and to form an air gap to permit the passage of air to the aperture.

4,577,354
PORTABLE BATHING APPARATUS
David M. Stratton, Marquette Heights, Ill., assignor to Morton Metalcraft Company, Morton, Ill.
Filed Aug. 10, 1984, Ser. No. 639,572
Int. Cl.[4] A47K *3/06*
U.S. Cl. 4—585 11 Claims



1. In a portable bathing apparatus of the type including

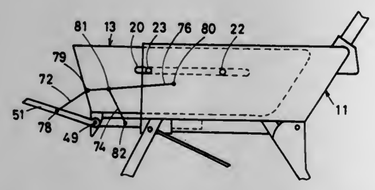
a rigid, generally horizontal support platform having a longitudinal and a lateral dimension;
support legs attached to the platform for supporting the platform above a floor;
a flexible, tub shaped, open top enclosure, having a bottom section and side sections to form the enclosure;
a generally circumferential frame for supporting the side sections of the enclosure as the bottom section is supported on the platform, said frame also having a longitudinal and a lateral dimension substantially coextensive with the corresponding platform dimensions;
the improvement comprising a frame support assembly for raising and lowering the frame and attached side sections between a raised tub enclosure configuration and a lowered collapsed position, said frame support assembly including a plurality of articulated lifting arm assemblies, each of said arm assemblies defining an intermediate pivot connection, and opposite end pivot connections, one end pivot connection of each arm assembly being attached to a leg, the opposite end pivot connection of each arm assembly being connected to the frame, each arm assembly being extensible between an unarticulated, straight position to raise the side sections and an articulated position to lower the side sections; said arm assemblies being arranged in cooperating pairs to move in unison, and transport the frame support assembly substantially vertically, at least one adjacent pair of arm assemblies being articulated to bend in opposite directions and connected by links operable to simultaneously extend the arm assemblies between the straight and articulated positions;
said arm assemblies each comprising a lower arm member and an upper arm member on the same longitudinal dimension side of the platform, and the links comprising a link from each lower arm member connected respectively with the opposite sides of an intermediate link, said intermediate link being rotatable about a point to shorten the total linkage legnth by two times the connective distance of the intermediate link, to thereby move the arm assemblies from the articulated to the straight position.

4,577,355

FRAME STRUCTURE FOR BABY CARRIAGE BED

Kenzou Kassai, Osaka, Japan, assignor to Kassai Kabushikikaisha, Osaka, Japan

Filed Aug. 1, 1984, Ser. No. 636,850
Claims priority, application Japan, Aug. 22, 1983, 58-153434; May 22, 1984, 59-104238
Int. Cl.⁴ B62B *7/06, 7/12, 9/12;* A47D *13/02*
U.S. Cl. 5—93 R **13 Claims**



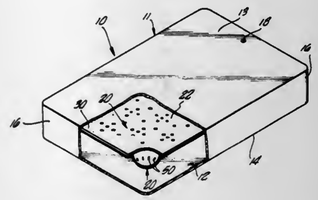
1. In a frame structure for a baby carriage bed (1), said bed having at least a bottom wall (2) and a rear wall (3), said front bottom wall (2) having a front bottom portion (6) and a rear bottom portion (7), said front bottom portion (6) being foldable with respect to said rear bottom portion (7), said frame structure enclosing said baby carriage bed (1) on both sides and supporting said baby carriage bed under said bottom wall (2), said front bottom portion (6) being movable between a horizontal position and a downwardly extending position for changing said baby carriage bed (1) between a form suitable as a bed and a form suitable as a seat, the improvement wherein said frame structure comprises a front support member (15) and rear support members (16, 17) for supporting said front bottom portion (6) and said rear bottom portion (7) of said bottom wall (2) respectively; a left side fixed member (11, 18) and a right side fixed member (12, 19) fixedly positioned on both sides of a rear portion of said baby carriage bed (1) for providing left and right side surfaces cooperating with said rear bottom portion (7), said rear support members (16, 17) being mounted across said left side fixed member (11, 18) and said right side fixed member (12, 19); a left sliding member (13, 26) and a right sliding member (14, 27) positioned on both sides of a front part of said baby carriage bed (1), and means mounting said left and right sliding members for a forward and backward sliding movement relative to said left side fixed member (11, 18) and relative to said right side fixed member (12,19) respectively for providing left and right side surfaces cooperating with said front bottom portion (6) when said front bottom portion (6) is in a horizontal position, said front support member (15) being mounted across said left sliding member (13, 26) and across said right sliding member (14, 27).

4,577,356

WATERBED MATTRESS WITH BAFFLE CHAMBERS

John B. Johenning, Los Angeles, and Charles P. Hall, Santa Rosa, both of Calif., assignors to Monterey Manufacturing Co., Carson, Calif.

Filed Apr. 1, 1982, Ser. No. 364,534
Int. Cl.⁴ A47C *27/08*
U.S. Cl. 5—450 **35 Claims**



1. In a waterbed mattress having an enclosing structure comprising a horizontally extending top wall, a horizontally extending bottom wall, and side walls, the improvement comprising a free-floating baffle structure in the enclosing structure comprising:
(a) plurality of hemi-spherodial chambers, each chamber having a planar wall and a depending wall which in double-curved, with the planar wall proximate to and substantially parallel with the top wall, and (b) at least one metering hole through the depending wall of at least a portion of the chambers for passage of water into and out of the chambers in a direction having both a horizontal component and a downward component.

4,577,357

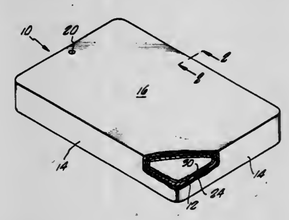
SELF-SEALING WATERBED MATTRESS

Charles P. Hall, Santa Rosa, and Joseph Philipson, Pasadena, both of Calif., assignors to Monterey Manufacturing Co., Carson, Calif.

Filed Mar. 11, 1983, Ser. No. 474,545
The portion of the term of this patent subsequent to Sep. 3, 2002, has been disclaimed.
Int. Cl.⁴ A47C *27/08*
U.S. Cl. 5—451 **25 Claims**

1. A self-sealing waterbed mattress comprising a polymeric, puncturable envelope and an internal layer of a self-adhering, water-resistant, sealing material for sealing leaks in the envelope, the sealing material being sufficiently tacky that it adhers to the envelope and can be pulled into a puncture in the envelope by the object that causes the puncture, the sealing material having a sufficiently high viscosity at 110° F. that it does not flow through a puncture in the envelope, the sealing material comprising a polyether polyurethane elastomer.

17. A method for fabricating a self-sealing waterbed mattress, the mattress comprising a polymeric puncturable envelope and an internal layer of a tacky, cured, self-adhering, water-resistant, sealing material for sealing leaks in the enve-



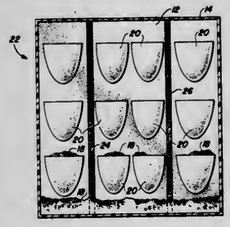
lope, the sealing material adhering to the envelope and having a sufficiently high viscosity at 110° F. that it does not flow through a puncture in the envelope, the method comprising the steps of:
(a) selecting first and second sheets of polymeric material;
(b) applying sealing material before it cures to the top sheet;
(c) allowing the sealing material to at least partially cure; and
(d) after step (c), heat sealing the top sheet and the bottom sheet together along their periphery to form the envelope.

4,577,358

BEAN BAG BODY SUPPORT

Ted A. Glass, 3666 N. Miller Rd., Scottsdale, Ariz. 85251

Continuation of Ser. No. 619,370, Jun. 11, 1984, abandoned. This application Jul. 30, 1985, Ser. No. 760,495
Int. Cl.⁴ A47C *27/10*
U.S. Cl. 5—455 **2 Claims**



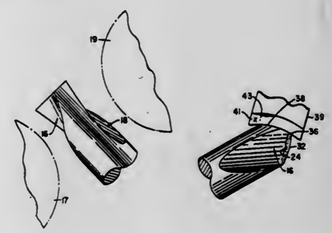
1. An improved bean bag structure, the bean bag comprising an envelope with filler material enclosed and contained therein, said filler material being free to migrate within the entire envelope, the improvement comprising:
a plurality of internal cup means for limiting migration of the filler material, each of said plurality of said internal cup means having an open end, each of said open ends of said internal cup means being oriented in a same direction.

4,577,359

METHOD OF MANUFACTURING A DRILL SCREW

Henry A. Sygnator, Arlington Heights, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Continuation of Ser. No. 513,582, Jul. 14, 1983, Pat. No. 4,532,663, which is a division of Ser. No. 279,103, Jun. 30, 1981, Pat. No. 4,395,173. This application Apr. 24, 1985, Ser. No. 726,740
The portion of the term of this patent subsequent to Aug. 6, 2002, has been disclaimed.
Int. Cl.⁴ B23G *9/00;* B21K *1/56*
U.S. Cl. 10—10 R **5 Claims**



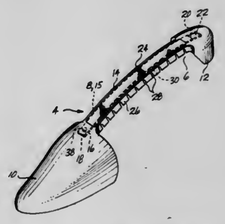
1. A method of manufacturing a drill screw having a pair of oppositely disposed flutes and a pair of oppositely disposed terminal end surfaces, said end surfaces intersecting to form a chisel, each end surface being bounded by a drag edge and a cutting edge, said method comprising the steps of heading a first end of a screw blank; forming two flutes in a second end of said screw blank; milling first and second terminal end surfaces on said second end, rotating peripheral teeth of a milling cutter in a direction from a drag edge of at least one of said end surfaces toward a cutting edge of said surface; leaving at least one burr positioned along outer portions of at least one of said cutting edges at a position spaced from said chisel and performing subsequent operations on said drill screw.

4,577,360

SHOE TREE

Robert D. Swenson, Seattle, Wash., assignor to Melvin D. Pountain, Everett, Wash.

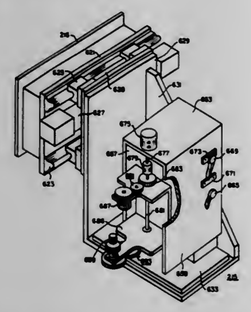
Continuation-in-part of Ser. No. 653,513, Sep. 21, 1984, abandoned. This application May 15, 1985, Ser. No. 734,630
Int. Cl.⁴ A43D *5/00*
U.S. Cl. 12—115.6 **16 Claims**



1. A shoe tree comprising a body including a toe portion, a heel portion, and a center portion connecting said toe and heel portions; and a flat spring including a main portion, and first and second opposite end portions; said center portion of the body being dimensioned to be easily grasped by a user of the shoe tree and having wall means defining a downwardly facing channel for receiving said main portion of the spring; said wall means having a plurality of slots extending therethrough and dimensioned and positioned to give said center portion a pre-

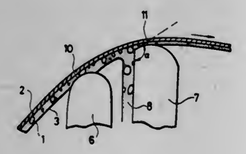
determined amount of flexibility, and means for slidably holding said main portion in position in said channel; said body having first and second engaging means for engaging said first and second end portions of the spring, respectively; and said first engaging means including means for allowing the first end portion of the spring to slide longitudinally.

4,577,361
BRUSH TOOL
Leonard P. Hornak, North Huntingdon, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Jun. 6, 1984, Ser. No. 617,851
Int. Cl.⁴ A46B *13/02*
U.S. Cl. 15—21 R **12 Claims**



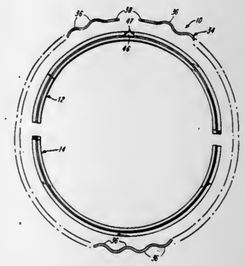
1. A brush tool for cleaning the opening in the flange of a lower guide tube of a nuclear reactor in which the split-pin assembly is secured, during the replacement of old split-pin assemblies by new split-pin assemblies, said opening having a common longitudinal axis, the said brush tool comprising an upper brush and a lower brush, means mounting said upper and lower brushes in position to be moved into brushing relationship with the upper and lower parts of the opening, but with their axes displaced with reference to each other transversely to said common axis, cam means connected to said mounting means, when actuated, for displacing said upper brush so that it is in brushing relationship with the upper part of the opening and for displacing said lower brush so that it is in brushing relationship with the lower part of the opening, means, connected to said cam means, for actuating said cam means as aforesaid, and means, connected to said brushes for operating said brushes to clean said opening.

4,577,362
APPARATUS FOR REMOVING FOREIGN MATTER FROM FLEXIBLE SUPPORT
Yasunori Tanaka, and Shinji Noda, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Feb. 17, 1984, Ser. No. 581,019
Claims priority, application Japan, Feb. 18, 1983, 58-24846
Int. Cl.⁴ B08B *1/02*
U.S. Cl. 15—256.5 **9 Claims**



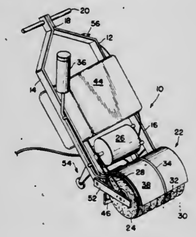
1. An apparatus for removing foreign matter from a flexible support, comprising: a supply of a solvent solution for application on said flexible support, means for applying said solvent to a flexible support to the surface of which foreign matter to be removed adheres; means for moving said support over said plates; means for tensioning said support; foreign matter and solvent removing means located downstream in the direction of movement from the applying means wherein said foreign matter and solvent are removed before the solvent evaporates, said removing means further comprising; at least two parallel adjacent plates extending widthwise perpendicular to the direction of movement of said support, each of said two plates having an edge surface which confronts said support, said surface being longer than the width of said support in the widthwise direction of said support and shorter in the direction of movement than said width of said support, at least said surface of one of said plates on the downstream side in the direction of movement of said support being sharply cut by an adjacent surface thereof to provide a cutting edge at the upstream end thereof, at least said surface of said plate provided on the downstream side in the direction of movement of said support and said support forming a gap therebetween of a size determined by the operation of said means for moving said support and said tensioning means, said gap being sufficiently small at an upstream end that said foreign matter to be removed cannot enter said gap, said gap being large enough to leave a solvent film at least 0.2 microns thick on said support after passing said plates.

4,577,363
SCRAPER RING FOR CLEANING A HYDRAULIC CYLINDER ROD OR SHAFT
Harold G. Wyse, 3629 N. Dixie Dr., P.O. Box 1431, Dayton, Ohio 45414
Filed Mar. 1, 1985, Ser. No. 707,099
Int. Cl.⁴ B08B *13/00*
U.S. Cl. 15—256.5 **14 Claims**



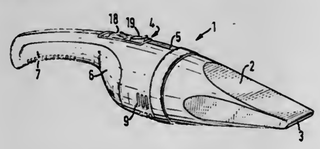
1. An improved scraper ring adapted to be mounted on a movable cylindrical shaft for scraping and cleaning the shaft, comprising a set of separate and mating part-circular ring sections fitted together to form an annular body, said body including a circumferentially extending inner surface and a side surface cooperating to form a scraping edge for cleaning foreign material from the outer cylindrical surface of the shaft, said ring sections defining an external groove extending circumferentially around said body, a resilient retaining means extending circumferentially within said groove and having opposite end portions, and means for connecting said opposite end portions of said retaining means to one of said ring sections.

4,577,364
FLOOR CLEANING MACHINE
Peter G. Demetriades, P.O. Box 1790, Henderson, N.C. 27536
Filed Jul. 6, 1984, Ser. No. 628,568
Int. Cl.⁴ A47L *11/282, 11/30*
U.S. Cl. 15—320 **20 Claims**



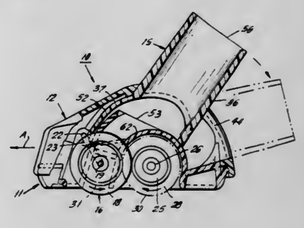
1. A floor cleaning machine comprising:
a frame having a frame lower end and a frame upper end,
a handle attached to said frame upper end,
a wheel assembly attached to said frame for supporting, at least in part, said frame on a floor,
a plurality of disc-shaped floor cleaning pads, each having an outer edge adapted to clean the floor,
a holding means for holding said floor cleaning pads longitudinally adjacent one another such that a floor pad cylinder having a longitudinal axis is formed and such that said longitudinal axis is horizontally disposed,
said outer edges together forming the circumferential floor cleaning surface of said floor pad cylinder,
a motor supported by said frame for rotating said floor cleaning pads about said horizontal longitudinal axis,
said holding means holding said floor cleaning pads so that said outer edges, when said motor rotates said floor cleaning pads, engage the floor in a vertical cleaning motion,
a spraying means supported by said frame for spraying cleaning fluid towards the floor and generally forward of said floor cleaning pads,
a fluid pick-up means supported by said frame for recovering cleaning fluid from the floor after said floor cleaning pads have been rotated on the floor by said motor, and
said fluid pick-up means including a wiping member engageable with the floor, a holding tank supported by said frame for holding the excess fluid recovered from the floor, and a suction means generally adjacent to said wiping member for sucking excess fluid to said holding tank.

4,577,365
RECHARGEABLE VACUUM CLEANER
John S. Yuen, Kwun Tong, Hong Kong, assignor to John Manufacturing Limited, Kowloon, Hong Kong
Filed Sep. 5, 1984, Ser. No. 647,454
Claims priority, application United Kingdom, Sep. 14, 1983, 8324628
Int. Cl.⁴ A47L *5/24*
U.S. Cl. 15—339 **2 Claims**



1. A rechargeable vacuum cleaner comprising a housing formed to present an intake nozzle, a body portion and a handle portion, wherein said body portion mounts a motor fan suction unit and a filter arrangement and has outlet apertures therein for air from said motor fan suction unit and said handle portion provides means for holding the rechargeable vacuum cleaner, houses a rechargeable battery and incorporates a socket whereby said battery can be connected to charging means thcrefore, wherein said filter arrangement comprises:
a disc of flexible filter material so mounted as completely to obstruct a passageway within said housing for air flowing from said intake nozzle to said motor fan suction unit such that all air passing through said passageway must pass through said disc of flexible filter material;
inner and outer annular members sandwiching therebetween said disc of flexible filter material, each of said two annular members includes a cylindrical wall with said cylindrical walls telescoped within each other, the inner one of said two annular members defines a grid frameword, the outer one of said two annular members is cup shaped and has slits in its said outer cylindrical wall to make said outer cylindrical wall flexible;
said disc of flexible filter material is stretched over said grid framework when said inner one of said two members is telescopically received and retained within said outer one of said two members with said disc of flexible filter material located therebetween; and
a forward part of said body portion has projecting plugs to engage within said inner cylindrical wall of said inner one of said two annular members to locate the filter arrangement on said body portion.

4,577,366
VACUUM CLEANER NOZZLE HAVING ROTATING BRUSH
Jonathan Miller, Haworth, N.J.; Robert C. Berfield, Jersey Shore, and Robert L. Crevling, Jr., Williamsport, both of Pa., assignors to Shop-Vac Corporation, Williamsport, Pa.
Filed Jun. 13, 1984, Ser. No. 620,149
Int. Cl.⁴ A47L *9/04*
U.S. Cl. 15—388 **7 Claims**



1. A nozzle assembly for a vacuum cleaner, said assembly including an inlet, outlet means at which low pressure is applied to said assembly to draw dirt particles through said inlet into and through said nozzle assembly, floor engaging first wheel means driven by movement of said nozzle assembly across a floor,
floor engaging rotatably mounted brush means and a second wheel means secured to said brush means for rotation therewith, and frictionally driven by rotation at said first wheel means said brush means, when so driven, brushing dirt particles toward said inlet; said first wheel means rotating at a speed substantially slower than the speed of rotation for the second wheel means; the first and second wheel means rotating in opposite directions on parallel axes;
a floor plate defining said inlet; said outlet means including a hollow swivel fitting pivotably connected to said floor plate and releasably connectable to a hollow handle through which low pressure is applied to said assembly;
said second wheel means being mounted for rotation on a first axis that is fixed with respect to said floor plate; said

first wheel means includes first and second wheels rotatably mounted at opposite sides of said floor plate and bodily movable with respect to said floor plate;

a cover secured to said floor plate and having first bearing means that cooperate with second bearing means on said floor plate to pivotably support and retain said swivel fitting;

said swivel fitting including a hollow neck having one end releasably connectable to a hollow handle, said cover including a slot within which said neck moves as said swivel fitting pivots about a swivel axis defined by said first and second bearing means, said neck extending transverse to said swivel axis.

4,577,367

DETACHABLE HANDLE INCLUDING A SPRING-BIASED PIVOTING LOCKING MEMBER

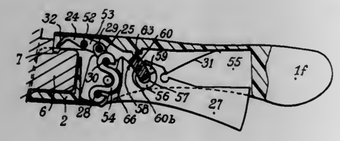
Philippe Durand, Arques, France, assignor to Verrerie Cristallerie d'Arques J. G. Durand & Cie., Arques, France

Filed Feb. 27, 1984, Ser. No. 584,243

Claims priority, application France, Feb. 28, 1983, 83 03235; Sep. 28, 1983, 83 15398

Int. Cl.⁴ B25G *3/18*

U.S. Cl. 16—114 A **10 Claims**



1. A device for fitting a removable handle to the body of a kitchen utensil having an upper edge, comprising an end piece formed on the lateral wall of the body of the utensil and having an upper face, a housing provided in the connecting end of the handle and in which said end piece can be inserted with a loose fit, and a locking device mounted in said housing and comprising a pivoting piece and means for causing said pivoting piece to pivot, the upper face of the end piece having a notch, said pivoting piece having an end curved in the shape of a nose for insertion in the notch of the end piece, and said means for causing said pivoting piece to pivot being arranged so as to selectively bring said curved end into or out of the notch and so as to lock the pivoting piece in this position or to unlock it, during fitting or removal of the handle, said end piece, in the locking position, being subjected to a compression force between said pivoting piece and the lower face of the housing provided in the connecting end of the handle, wherein said pivoting piece is a first link in the form of a pawl situated at one end of an assembly of links constituting a toggle joint, said locking means are formed by the other links of said assembly, one of these links being incorporated in a trigger serving as a locking lever and biased outwardly of the handle under the action of a return spring, so that when said trigger is pushed inwardly of the handle it brings said other links of the toggle joint into a bracing relation to said first link, and an unlocking push button is provided which, when it is pushed, exerts a pressure on the locking lever outwardly of the handle, which breaks the bracing effect of said other links of the toggle joint.

4,577,368

APPARATUS FOR CUTTING APART POULTRY WINGS

Jacobus E. Hazenbroek, Burg de Zeeuwstratt 52, Numansdorp, Netherlands

Filed Aug. 27, 1984, Ser. No. 644,514

Int. Cl.⁴ A22C *21/00*

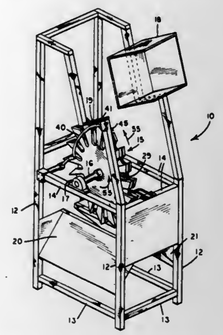
U.S. Cl. 17—11 **8 Claims**

1. Apparatus for cutting poultry wings having an elbow joint joining a drumette with a middle section and a flipper joint joining the middle section with a flipper, and with said apparatus comprising a wheel mounted for rotary movement with the wheel periphery having a plurality of circumferentially spaced troughs each formed with an axially spaced ridge and valley, and at least two annular slots formed in said wheel periphery with one slot passing through the trough ridges and the other slot passing through the trough valleys:

a first cutting blade positioned within said one slot;

a second cutting blade positioned within said other slot;

a first guide bar mounted to one side of said one slot and the path of travel of said trough ridges, and a second guide bar mounted on the other side of the path of travel of said one slot and in said other slot and over the path of travel of



said trough valleys, whereby the first and second guide bars first guide the elbow joint of a wing positioned in a trough into cutting engagement with the first cutting blade by simultaneous sliding contact with the drumette and middle section, respectively, so that the drumette is cut away from the middle section of the wing by the first cutting blade, and then after the drumette has been cut away from the middle section of the wing the second guide bar engages the back of the flipper joint and guides the front of the flipper joint into cutting engagement with the second cutting blade by sliding contact with the back of the flipper joint.

4,577,369

DE-BONING MACHINE

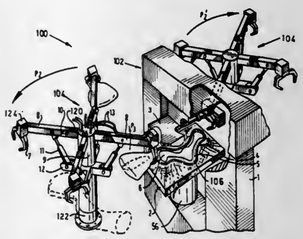
Christianus P. Langen, Cuyk, and Johannes C. Langen, Cuyk N.B., both of Netherlands, assignors to Langen Research B.V., Cuyk, Netherlands

Filed Jan. 31, 1983, Ser. No. 462,395

Claims priority, application Netherlands, Feb. 8, 1982, 8200469; Mar. 19, 1982, 8201159; Aug. 2, 1982, 8203078

Int. Cl.⁴ A22C *17/04*

U.S. Cl. 17—46 **24 Claims**



1. A device for de-boning boned pieces of meat having a bone structure which includes relatively flat bone portions such as shoulder pieces, comprising by a frame, a first die arranged in the frame and having a continuous cutting edge projecting therefrom which extends about the perimeter of an enclosure which has a shape substantially matching and slightly larger than the shape of the bone in the piece of meat, a second die arranged in said frame opposite the first die element and driving means for moving the first die element and the second die away from and towards one another to bring the cutting edge into a cutting engagement with the second die along a cutting line spaced outwardly from the bone of the boned pieces of meat which is to be de-boned and a clamping member for clamping said flat bone portion, said clamping member being mounted for movement toward and away from said first and second dies to remove the flat bone from the meat in response to movement of the clamp away from the dies.

4,577,370

METHOD AND APPARATUS FOR OPENING AXIALLY SHIRRING AND DIVIDING OFF THIN-WALLED, CORD-SHAPED TUBULAR CASING MATERIAL, ESPECIALLY CASINGS MADE OF SYNTHETIC MATERIAL, FOR THE SAUSAGE MANUFACTURE

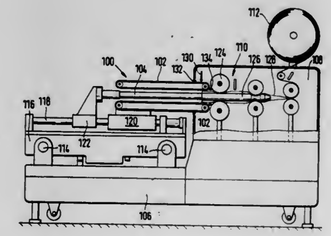
Günter Kollross, Am Wallerstädter Weg 20, D-6080 Gross Gerau-Dornheim, Fed. Rep. of Germany

Filed Nov. 22, 1983, Ser. No. 554,240

Claims priority, application Fed. Rep. of Germany, Nov. 29, 1982, 3244085

Int. Cl.⁴ A22C *11/02*

U.S. Cl. 17—49 **18 Claims**



1. A method for producing link sausages using tubular casing material which is wound on a reel in a flat condition, the method comprising;

unwinding a predetermined length of casing material from said reel,

opening said predetermined length of casing material to a tubular cross section,

moving a first point near the forward end of said tubular casing material into gripping engagement with a first gripping means,

synchroneously moving the first gripping means and the forward end of said predetermined length of tubular material for a predetermined distance,

gripping the tubular casing material by a second gripping means at a spaced point spaced by said predetermined distance from the first point, which predetermined distance corresponds to the distance which the tubular casing material and said first gripping means have moved,

moving the second gripping means together with the tubular casing means in the same direction but with a reduced speed relative to the unwinding speed of the casing material to axially shir the casing material to form a shirred length of tubular casing material having circumferential folds, with the portion of said casing material situated between said first point and said spaced point remaining unshirred,

cutting off said shirred length of tubular casing material from the remainder of the casing material,

laterally moving said shirred length of tubular casing material into a position ahead of the charging tube of a sausage filling machine and positioning said shirred length onto said charging tube, and

filling and closing said tubular casing material on said charging tube with sausage meat.

4. An apparatus for producing link sausages using tubular casing material which is wound on a reel in a flat condition, comprising:

means for feeding the wound casing material and for opening the casing material to a tubular cross-section,

a receiving means for receiving the tubular casing material,

said receiving means including a first gripping means for gripping a point near the forward end of the tubular casing material,

said receiving means including a means for synchronously moving the first gripping means and the said forward end for a predetermined distance,

said receiving means further including a second gripping means for gripping the tubular casing material at a spaced point spaced by said predetermined distance from the first point, which predetermined distance corresponds to the distance which the tubular casing material and said first gripping means have moved since the first gripping means grip the tubular casing material,

said receiving means having means for moving the second gripping means together with the tubular casing material in the same direction but with a reduced speed relative to the feeding means to thus axially shir the casing material to form a shirred length thereof which has circumferential folds, leaving the portion of said casing material between said first point and said spaced point unshirred,

cutting means for cutting off said shirred length of tubular casing material from the remainder of the casing material,

means for laterally moving the shirred length of tubular casing material to a position ahead of a charging tube of a sausage filling machine and means for positioning said shirred length onto said charging tube, thereby positioning said shirred length to be filled with sausage meat, and

means for closing the forward end of the shirred length prior to filling.

4,577,371

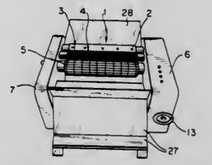
MACHINE FOR PEELING, SKIMMING, SKINNING AND/OR SLICING JOINTS OF MEAT, FISHES AND THE LIKE

Gilbert Simon, 475, rue Caroline, app. 20, Longueuil, Quebec, Canada J4H 3L7

Filed Dec. 19, 1984, Ser. No. 683,467

Int. Cl.⁴ A22C *25/17*

U.S. Cl. 17—62 **10 Claims**



1. A machine for peeling, skimming, skinning or slicing a cut of meat or fish, of the type comprising:

a cutting blade;

a drive roller mounted in cooperative relationship with respect of the blade for pushing towards said blade the cut of meat or fish to be peeled, skimmed, skinned or sliced, and

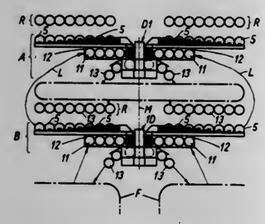
means for cleaning the roller;

said machine being characterized in that it further comprises:

a central compartment in which are transversally mounted the blade, the drive roller and said means for cleaning the roller, said blade being mounted on a pivotable blade-sup-

port, said cleaning means comprising a comb in contact with said roller;
a pair of lateral compartments located on both sides of the central compartment, said lateral compartments being tight and containing means for driving the roller and means for controlling the operation of the machine from the outside, one of said lateral compartment also containing a control member for adjusting the position of the pivotable blade support;
said blade support being mounted in the central compartment in such a manner that the upper surface of the drive roller is always located at a level slightly higher than the level of the blade to make the machine safer in use;
said machine further comprising a cylindrical container in which are tightly and removably mounted an electrical motor operatively connected to said driving means, and other electrical components necessary for operating the machine, said cylindrical container rigidly extending across the central compartment between said lateral compartments.

4,577,372
DRAWING FRAME
Kurt Roder, Seuzach, Switzerland, assignor to Rieter Machine Works, Ltd., Winterthur, Switzerland
Filed Jun. 20, 1984, Ser. No. 622,625
Claims priority, application Switzerland, Jun. 21, 1983, 3382/83
Int. Cl.⁴ D01H *5/00*
U.S. Cl. 19—159 A **3 Claims**



1. In combination,
at least a pair of drawing frames disposed in spaced sequential relation to define a passageway therebetween,
each said drawing frame having at least one sliver infeed table for receiving and guiding a plurality of slivers in a first direction, a first magazine for receiving a first row of sliver-containing cans at said infeed table, a sliver infeed means for feeding slivers from said infeed table in a second direction perpendicular to said first direction, means to divert the slivers from said first direction to said second direction, and a second magazine for receiving a second row of empty cans in parallel relation to said first row and perpendicular to said infeed means;
said rows of cans of one drawing frame being parallel to said rows of cans of the other drawing frame; and
means for conveying a third row of sliver-filled cans from said one drawing frame into a reserve row adjacent said first row of sliver-containing cans of said other drawing frame.

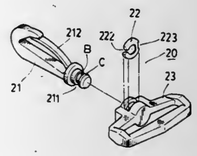
4,577,373
BUTTON COLLET
E. Dan Bush, Downers Grove, Ill., assignor to Handy Button Machine Company, Melrose Park, Ill.
Filed Nov. 8, 1984, Ser. No. 669,472
Int. Cl.⁴ A47C *27/00*
U.S. Cl. 24—90 B **9 Claims**

1. A button collet for a tufting button in combination with an attached tufting loop, said button collet having a resilient plastic body with a central axis, a base, a peripheral side surrounding said axis and joined to said base, and a structure projecting from said base, said stucture comprising a stem having a shank having opposite side faces and an opposed hook separated from said shank by a gap at the free end of the hook, said shank and hook defining a recess having a bottom portion for receiving and retaining the tufting loop, said loop having segments on opposite sides of said structure and lying adjacent to said structure when tensile force is applied to said loop in a general direction away from said base, thereby to apply forces to said hook tending to rotate the hook in a direction that widens said gap and increases the tensile stress on said structure, characterized by an improvement comprising a shoulder



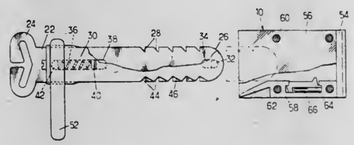
formed on each of said opposite side faces and with each shoulder extending from adjacent said bottom portion to an outer edge of said shank, each said shoulder being adjacent to one of said tufting loop segments and in pressure engagement therewith, said side faces shaped to provide unobstructed engagement of said segments with said shoulders, when said tensile force is applied to said tufting loop and with the shoulders being dimensioned and shaped to retain said segments thereon when said tensile force is applied thereby to produce components of forces in said segments including a component normal to each shoulder, said normal components of force tending to rotate said hook in a counter direction that reduces said gap and said tensile stress.

4,577,374
SNAP HOOK AND BUCKLE
Huei J. Lii, No. 8, Lane 46, Chung Teh Pa St., Tainan, Taiwan
Filed Dec. 4, 1984, Ser. No. 677,805
Int. Cl.⁴ A44B *11/00*
U.S. Cl. 24—165 **1 Claim**



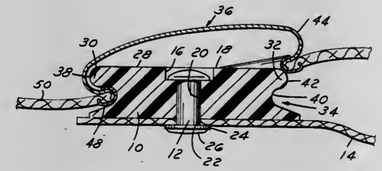
1. An elastic buckle construction comprising:
a base having a bore at its top end and a throughhole transversely passing from one side to another side of the bore;
an engaging ring having a cut on its one side, a recess on its other side, and a tapered annular wall surface at its inner side, the engaging ring being received in the throughhole of the base; and
a buckle body having, at its bottom side, an engaging rod which is contracted at its upper portion and is enlarged at it lower portion and which has a tapered end to facilitate the insertion of the engaging rod into the bore;
whereby, when the engaging rod of the buckle body is inserted in the bore and its contracted portion is clamped by the engaging ring, the base and the buckle body can be coupled into a buckle.

4,577,375
QUICK ATTACHMENT DEVICE FOR HARNESS OF A PIECE OF EQUIPMENT
Raymond Beaussant, Bretigny, France, assignor to Intertechnique, Plaisir, France
Filed Aug. 30, 1984, Ser. No. 645,779
Claims priority, application France, Aug. 31, 1983, 83 13974
Int. Cl.⁴ A41F *1/00*; A44B *11/25*
U.S. Cl. 24—580 **9 Claims**



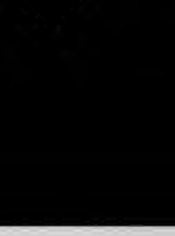
1. A quick attachment device for the harness of a piece of equipment, comprising a receiving member adapted to receive a bayonet member rigidly connected to the harness, the bayonet member cooperating with the receiver member via locking means which can be retracted by pulling on a control plate borne by the bayonet member and can slide thereon from an abutment position into which it is resiliently urged, wherein said bayonet member is formed by a solid blade having a pair of longitudinal edges formed with respective racks engaging with retractable locking fingers borne by the receiver member, and the control plate comprises two sets each of a plurality of notches distributed along said plate with the same pitch as the racks and whose profile is such that they displace the fingers out of the racks when the control plate is pulled, in the direction corresponding to the withdrawal of the bayonet member, from an abutment position into which said control plate is resiliently urged.

4,577,376
SNAP FASTENER
Charles D. Clendinen, 152 Lodewyck, Mount Clemens, Mich. 48043
Continuation-in-part of Ser. No. 340,204, Jan. 1, 1982, Pat. No. 4,409,706, which is a continuation-in-part of Ser. No. 255,370, Apr. 20, 1981, abandoned, and a continuation-in-part of Ser. No. 340,203, Jan. 18, 1982. This application Aug. 10, 1983, Ser. No. 522,056
Int. Cl.⁴ A44B *17/00*
U.S. Cl. 24—624 **5 Claims**



1. A snap fastener comprising, in combination:
a stud intended to upstand at one end from a member to be fastened;
receiver seats disposed on opposite sides of the stud;
a latching shoulder on the stud above one of the seats;
a retaining lobe on the stud above the other seat;
said stud, including the latching shoulder and retaining lobe having a continuous peripheral surface;
a receiver intended to association with a member to be fastened to the first mentioned member and having an aperture with a continuous internal surface dimensioned to allow telescoping over the stud for nesting in said seats;
said internal dimension of the receiver being sufficiently less than the dimension of the stud, measured from the apex of said shoulder to the seat on the opposite side of the stud, to provide an interference fit permitting the receiver to pass the shoulder while nested in such seat at the opposite side of the stud and upon the elastic deformation of the stud and/or receiver; and
wherein the stud head extends circumaxially around the stud at a substantially uniform distance from a first axis, and said receiver seats comprise portions of a groove at opposite sides of the stud which groove extends circumaxially around the stud at a substantially uniform distance from a second axis, and said axes are laterally displaced from each other.

4,577,377
BUCKLE FOR STRAPS
Kazumi Kasai, Namerikawa, Japan, assignor to Nippon Notion Kogyo Co., Ltd., Tokyo, Japan
Filed May 11, 1984, Ser. No. 609,426
Claims priority, application Japan, May 13, 1983, 58-71465[U].
Int. Cl.⁴ A44B *11/25*
U.S. Cl. 24—625 **11 Claims**



1. A buckle for fastening strap end portions comprising:
(a) a male member including a first connector frame connectable to one of the strap end portions, and a pair of resiliently flexible legs extending from said first connector frame in a common direction, each said leg having an abutment surface having toward said first connector frame; and
(b) a female member having a second connector frame connectable to the other strap end portion, and a socket portion joined with said second connector frame and releasably couplable with said legs, said socket portion including
(1) a plate extending from said second connector frame and a pair of spaced sidewalls disposed on one surface of said plate and extending longitudinally of said plate so as to define therebetween a slot for receiving therein said legs, each of said sidewalls having a retaining surface facing toward said second connector frame and respectively engageable with said abutment surfaces of said legs to interlock said male and female members,
(2) a pair of cantilevered arms disposed inwardly of said sidewalls and resiliently flexible toward and away from said sidewalls, each said arm having a distal end disposed outside of said slot and an actuating lug disposed on said distal end and engageable with one of said legs, said arms being resiliently flexible toward each other to cause said actuating lugs to urge said legs to flex resiliently toward each other for bringing said abutment surface and said retaining surface out of engagement with one another, and
(3) a central partition wall disposed on said surface of said plate and spaced equidistantly from said sidewalls to separate said slot into two slot portions for receiving therein said legs, respectively, said arms being con-

nected to said partition wall, one on each side of said partition wall.

4,577,378

BUCKLE FOR SAFETY BELTS

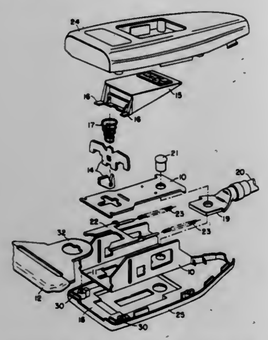
Holger Harenberg, Rellingen, Fed. Rep. of Germany, assignor to Autoflug GmbH, Rellingen, Fed. Rep. of Germany

Filed Jun. 21, 1984, Ser. No. 623,175

Claims priority, application Fed. Rep. of Germany, Jun. 21, 1983, 3322164

Int. Cl.⁴ A44B *11/26*

U.S. Cl. 24—635 **28 Claims**



1. A buckle for safety belts in passenger carrying vehicles; the buckle includes a housing means, and a tongue which is adapted to be connected to a belt and can be inserted into an insertion opening of said housing means and into a path therein for said tongue; said tongue can be locked in said housing means by at least one latching member, and is acted upon by a spring-loaded ejector; the improvement comprises;

at least one spring element disposed in said housing means in the vicinity of said insertion opening for said buckle tongue; each of said spring elements has at least one abutment surface which projects laterally into said path which said tongue must traverse upon its insertion into said housing means; said at least one abutment surface of each of said spring elements projects laterally into said path in such a way that a tongue present therein is acted upon transverse to its direction of insertion or ejection;

each of said spring element having an approximately S-shape including an S-path therewith, with the S-path being disposed in or parallel to the plane of said buckle tongue; each spring element having an outer S-curve which is closest to said insertion opening of said housing means; said outer S-curve acting upon the affected sides of said buckle tongue with respective force components counter to and transverse to the direction of insertion.

4,577,379

BEARING ASSEMBLY AND METHOD FOR ASSEMBLING A BEARING

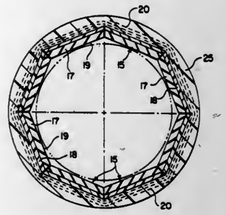
James H. Kramer, Akron, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Division of Ser. No. 525,521, Aug. 22, 1983, Pat. No. 4,473,308. This application Jul. 20, 1984, Ser. No. 632,915

Int. Cl.⁴ B21D *53/10*; B31C *13/00*; B65H *81/00*; B32B *1/00*

U.S. Cl. 29—149.5 S **9 Claims**

1. The method of making a bearing assembly having removable staves comprising the steps of building a flat rectangular layer of elastomeric material; vulcanizing said layer of elastomeric material; cutting said layer of elastomeric material into a plurality of strips; bonding each of said strips of elastomeric material to respective strips of ultra-high molecular weight material to form a plurality of individual bearing staves with trapezoidal cross sectional shape having an upper and lower flat surface; locating said staves onto a polygonal shaped mandrel with said layers of elastomeric material located radially inwardly to form a circumferential hoop whose outer peripheral surfaces defines a polygon bounded by straight sides; rotating said mandrel while wrapping a fiber fabric onto the outer periphery of said circumferentially spaced staves and impregnating said fiber fabric with a plastic resin; curing said resin to complete a fiber reinforced plastic outer shell having an inner periphery that is polygonal in contour which is non-adherent to said axially removable staves; and securing a pair of spaced annular rings to said outer shell to retain said staves in said shell.



7. The method of making a bearing assembly comprising the steps of supplying a plurality of bearing staves that are trapezoidal in cross section with an outer flat layer of ultra-high molecular weight material and an inner flat layer of elastomeric material; securing said staves on a mandrel with said layers of elastomeric material contacting said mandrel defining a polygonal bearing surface; wrapping a fiber fabric onto the outer periphery of said staves and impregnating said fiber fabric with a plastic resin; curing said resin to form a fiber reinforced outer shell having an inner polygonal shaped contour; and retaining said staves in said outer shell by securing annular rings to said shell which abuttingly engage said staves.

4,577,380

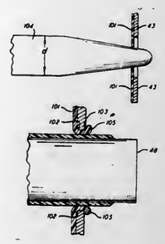
METHOD OF MANUFACTURING HEAT EXCHANGERS

Donald F. Warner, Latham, N.Y., assignor to Heat Exchanger Industries, Inc., Latham, N.Y.

Division of Ser. No. 406,774, Aug. 10, 1982, Pat. No. 4,487,139, which is a continuation-in-part of Ser. No. 252,297, Apr. 9, 1981, abandoned, which is a continuation-in-part of Ser. No. 81,789, Oct. 4, 1979, abandoned. This application Nov. 14, 1984, Ser. No. 671,494

Int. Cl.⁴ B21D *53/08*; B23P *15/26*; F28F *9/04*; B29C *51/00*

U.S. Cl. 29—157.3 C **6 Claims**



1. The method of fabricating a heat exchanger which comprises the steps of: heat-forming edge portions of holes in a plastic sheet having a plurality of holes to extend through and line holes in an adjacent metal sheet having holes which register with respective holes in said plastic sheet; inserting respective plug means in each plastic-lined hole before the plastic lining of the hole has cooled to limit diametrical reduction of the plastic-lined holes; removing said plug means from said holes; and entering the end of a respective tube through each plastic-lined hole sufficiently soon after removal of the plug means from the hole that the progressive diametrical reduction of the plastic-lined holes allows said end to be entered through said plastic-lined hole but then causes the plastic-lined hole to grip and fixedly locate said tube relative to said metal sheet.

4,577,381

BOILING HEAT TRANSFER PIPES

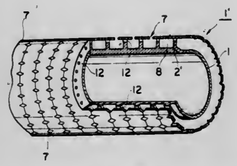
Yoshiyuki Sato; Akio Isozaki; Tomio Higo, and Tetsuo Uchida, all of Kanagawa, Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Feb. 6, 1984, Ser. No. 577,504

Claims priority, application Japan, Apr. 1, 1983, 58-58333; Apr. 26, 1983, 58-74351

Int. Cl.⁴ B23P *15/26*

U.S. Cl. 29—157.4 **2 Claims**



1. A method for producing a boiling heat transfer pipe having in the outer circumferential wall thereof a helical cavity the turns of which are separated by a helical fin, said helical cavity having a ceiling through which a plurality of openings lead from said helical cavity to the exterior of said boiling heat transfer pipe and said helical fin having a plurality of holes therethrough leading from one turn of said helical cavity to the next adjacent turn of saids helical cavity, said method comprising the steps of:

(a) pressing a set of rotating groove-rolling discs of gradually increasing diameter against the outer circumferential surface of a blank pipe to form a helical groove separated by a helical fin extending around the outer circumferential surface of said pipe; then

(b) pressing a rotating notching gear against the outer surface of said helical fin so as to cut notches in the outer surface of said helical fin which extend from one turn of said helical groove to the next adjacent turn of said helical groove, each of said notches comprising a first, V-shaped portion tapering from a first width at the outer circumferential surface of said pipe to a second, narrower width radially inwardly from the outer circumferential surface of said pipe and a second, slit portion extending radially inwardly from the bottom of the first portion; then

(c) pressing a set of rotating splitting roller discs with splitting edges of gradually increasing angle into the outer surface of said helical fin so as to split and spread apart the outer portion of said helical fin, said rotating splitting roller discs extending into said pipe to the level of the top of the second portion of said notches and serving to deform said pipe so as to seal off the tops of the second portions of said notches; and then

(d) pressing a rotating press roller against the split outer surface of said helical fin so as to form flat side wings on each side of said helical fin which abut against the flat side wings on the adjacent turns of said helical fin to form a ceiling covering said helical groove and converting said helical groove into a helical cavity, the first, V-shaped portion of said notches cut in said helical fin by said rotating notch gear serving as openings leading from said helical cavity to the exterior of said boiling heat transfer pipe and the second, slit portions of said notches serving as holes leading through said helical fin from one turn of said helical cavity to the next adjacent turn of said helical cavity, whereby migration of the boiling liquid takes place both outwardly through said openings and axially through said holes.

4,577,382

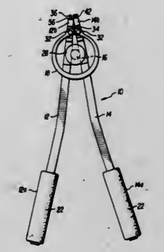
SNAP RING TOOL

David E. Weglage, Trotwood, Ohio, assignor to Harold K. McIntire, Xenia, Ohio, a part interest

Continuation of Ser. No. 602,085, Apr. 18, 1984, abandoned, which is a continuation of Ser. No. 300,126, Sep. 8, 1981, abandoned. This application Jan. 11, 1983, Ser. No. 690,827

Int. Cl.⁴ B23P *19/04*

U.S. Cl. 29—229 **8 Claims**



1. In a snap ring tool of the type comprising a pliers-like implement having at least two hand-grip members, at least first and second jaw members, and means for interconnecting said hand-grip members with said jaw members to cause said jaw members to separate when said hand-grip members are urged toward one another, each of said jaw members including snap-ring engaging means for respectively engaging a snap ring on opposite sides of a break in said snap ring to force said opposite sides apart and thereby expand said snap ring,

the improvement wherein said snap-ring engaging means of said first jaw member comprises projection means for extending along a projection axis into a snap-ring hole on a first side of the break in said snap ring, and said snap-ring engaging means of said second jaw member comprises means defining a slot having two opposite sidewall surfaces and an inside-wall surface, said two opposite sidewall surfaces lying substantially in planes transverse to said projection axis and said inside-wall surface being formed by a wall adjacent said projection axis, said slot having an open side in the direction facing laterally away from said projection axis in which the edge of said snap ring at said break can be inserted with a break edge surface of said snap ring on the second side of the break contacting said inside-wall surface of said slot and the two opposite sidewall surfaces of said slot being positioned on opposite sides of said snap ring for preventing swiveling thereof, whereby, when both of said snap-ring engaging means are engaged with said snap ring, said hand-grip members can be squeezed together to cause said jaw members to separate, thereby forcing the sides of said snap ring apart, while said tool holds said snap ring in a substantially planar configuration.

4,577,383

WELDING JIG

Robert S. Beesley, P.O. Box 152, Cleveland, Utah 84518, and Joe Feichko, 432 E. Sunset Rd., Henderson, Nev. 89015

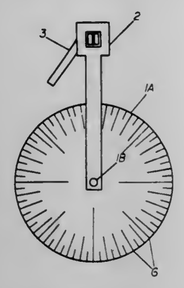
Filed Sep. 4, 1984, Ser. No. 606,934

Int. Cl.⁴ B25B *27/14*

U.S. Cl. 29—281.1 **5 Claims**

1. A welding jig for locating bored bit tool blocks on the

surface of a rotatable cutting head of a mining machine, said jig comprising a pair of assemblies each of which assemblies includes means for securing the same to one end of said rotatable drum head and having a lever rotatable about the axis of said drum said lever extending beyond the surface of said drum; a rigid bar secured to and extending between said levers parallel



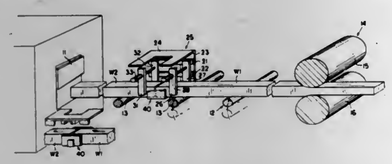
to the axis of said drum and at a location above the surface of said drum, at least one bit block holder adapted to hold bit blocks which are bored to accept cutting bits, means for mounting said bit block holder on said rigid bar to be non-rotational but slideable thereon, and means on said bit block holder for receiving and guiding bit blocks toward the surface of said drum.

4,577,384

METHOD FOR JOINING TOGETHER HEATED WORKPIECES FOR PROCESSING IN A ROLLING MILL

Francis H. Bricmont, 905 Bridgewater Dr., Pittsburgh, Pa. 15206

Filed Apr. 27, 1984, Ser. No. 604,901
Int. Cl.[4] B23P *19/04*
U.S. Cl. 29—460 **12 Claims**



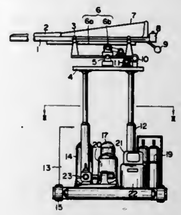
1. A method for joining together heated workpieces for processing in a rolling mill, said method including the steps of:
moving the leading end of a second heated workpiece in closely-spaced relation with a trailing end of a first heated workpiece on a conveyor,
maintaining a predetermined gap between the leading end of the second workpiece and the trailing end of the first workpiece while the first and second workpieces are continually advanced by said conveyor,
arranging a mold to span and seal said predetermined gap by surrounding peripheral end portions of said first and second workpieces,
feeding liquid-weld metal to said mold to essentially only fill said predetermined gap with the liquid-weld metal,
joining the first and second heated workpieces together by allowing the liquid-weld metal to at least partially solidify, and
removing the mold from the workpieces.

4,577,385

METHOD AND APPARATUS FOR REPAIRING A WALL OF COKE OVEN

Yoshihiro Omae; Kunio Ishikawa; Takahisa Fukao, and Katsushige Yoshida, all of Kitakyushu, Japan, assignors to Mitsubishi Chemical Industries, Ltd., Tokyo, Japan

Filed May 20, 1983, Ser. No. 496,511
Claims priority, application Japan, May 27, 1982, 57-88895
Int. Cl.[4] B67D *5/08;* **B23K** *9/04;* **B22D** *19/10;* **B23P** *7/00*
U.S. Cl. 29—402.18 **14 Claims**



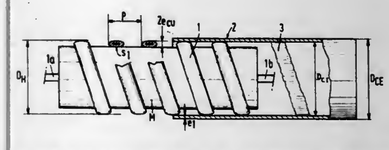
1. A method of repairing damages on a wall of an enclosed chamber in which a fuel is burned to provide heat, which comprises the steps of:
inserting a lance into the inside of the enclosed chamber from a front of the enclosed chamber, said lance being provided with at least an optical system having means for introducing light into said chamber, as well as means for reflecting, focussing and transmitting an image on the wall so as to permit observation at a position outside of the enclosed chamber, and a nozzle for spraying materials adapted for use in repairing the damages on the wall;
detecting the damages on the wall by moving the lance and means for introducing light horizontally and vertically within the enclosed chamber along the wall so as to direct light at damaged areas while observing the image on the wall through the optical system at the outside of the enclosed chamber; and
spraying repairing materials onto damaged area detected on the wall from the nozzle.

4,577,386

METHOD FOR MANUFACTURING A SLEEVE, IN PARTICULAR FOR A CONTAINER FOR STORING A CRYOGENIC FLUID

Jean-Yves Faudou, Villecresnes, and Pierre Pelioux-Gervais, Seyssins, both of France, assignors to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

Filed Jun. 25, 1984, Ser. No. 625,175
Claims priority, application France, Jun. 24, 1983, 83 10473
Int. Cl.[4] B21D *39/00;* **B23P** *17/00*
U.S. Cl. 29—455 R **13 Claims**



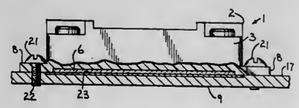
1. A method for manufacturing a sleeve of sheet metal, in particular for a container for storing a cryogenic fluid, comprising a tank disposed in said sleeve and spaced from said sleeve by an interwall space containing a vacuum, and at least one coiled heating tube placed in said interwall space, said method comprising:
winding on a radially expansible mandrel at least one metal tube having a flattened cross-sectional shape so as to produce a helical structure having a pitch p and an outside diameter D_H;
mounting on the mandrel and the tube a sheet metal cylinder which has a circular cross-sectional shape and an inside diameter $D_{CI}=D_H+\epsilon$ so that the cylinder is a slide fit on said tube;
applying the tube against the wall of the cylinder by expanding the mandrel, and
injecting into the flattened tube a fluid, in particular a hydraulic fluid, at a sufficient pressure to cause the tube to assume, by expansion, the shape of a coiled tube having a circular cross-sectional shape and thereby locally deform the wall of the cylinder in the shape of a helical impression.

4,577,387

METHOD OF MOUNTING A COMPACT CIRCUIT PACKAGE TO A HEAT SINK OR THE LIKE

Lance R. Kaufman, 131 N. White Oak Way, Mequon, Wis. 53092

Division of Ser. No. 546,999, Oct. 31, 1983, Pat. No. 4,546,411. This application Feb. 15, 1985, Ser. No. 702,147
Int. Cl.[4] B23P *25/00*
U.S. Cl. 29—458 **4 Claims**



1. A method of mounting a compact circuit package containing heat generating electrical components to the wall of a heat sink, and wherein said package includes a housing having a heat conducting substrate and with a bubble of film overlying said substrate and adhesively secured to said housing peripherally of said substrate and forming an enclosed grease containing chamber, said method comprising the steps of:
(a) applying external pressure to the outer side of said film to spread a layer of said grease onto said substrate within said chamber,
(b) removing said film from said housing so that said layer of grease on said substrate is exposed,
(c) and securing said compact circuit package to the wall of said heat sink so that said layer of grease is interposed therebetween.

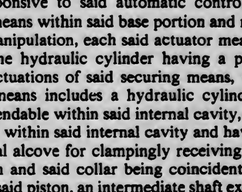
4,577,388

METHOD OF CUTTING APERTURES IN LINING IN UNDERGROUND PIPES

Eric Wood, Willingborough, England, assignor to Insituform Intl Inc, Channel Islands

Continuation of Ser. No. 346,866, Feb. 8, 1982, abandoned. This application Nov. 9, 1984, Ser. No. 669,780
Claims priority, application United Kingdom, Feb. 6, 1981, 8103660
Int. Cl.[4] B23P *17/00;* **B23C** *3/02;* **E03F** *3/06*
U.S. Cl. 29—558 **2 Claims**

1. A method of re-establishing a side connection in a pipeline or passageway which has been lined with a lining which covers the side connection, the method comprising the steps of
(a) introducing a cutter unit into the interior of the pipeline or passageway prior to the lining operation and moving it along the interior of said pipeline or passageway until it arraives at said side connection,
(b) recording the position of the cutter unit in a computer,
(c) withdrawing the cutter unit from the pipeline or passageway,
(d) lining the pipeline or passageway with a lining which covers the side connection,
(e) reintroducing said cutter unit into the interior of said pipeline or passageway,
(f) moving said cutter unit along said pipeline or passageway,



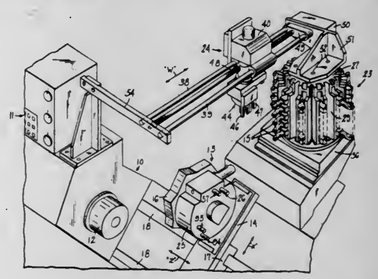
(g) stopping the movement of said cutter unit when it arrives at said side connection in accordance with the information derived from step (b), and
(h) activating a cutter device on said cutter unit so that the cutter device will cut through said lining and establish an opening therethrough to said side connection.

4,577,389

AUTOMATIC TOOL CHANGER

Walter Shultz, Newport, N.H., assignor to Textron, Inc., Providence, R.I.

Filed Apr. 19, 1983, Ser. No. 486,419
Int. Cl.[4] B23Q *3/155*
U.S. Cl. 29—568 **3 Claims**



1. A system for mounting a tool on a turret or tool block, comprising:
automatic control means;
a turret or tool block having a base portion and a tool clamping unit with securing means actuatable for engaging a tool deposited within the clamping unit, wherein said turret has a selectively indexable face plate member, said face plate member having a plurality of tool holders each provided with a discrete securing means with a leverarm actuating member, said base portion having an internal cavity;
actuator means mounted on said turret or tool block and being responsive to said automatic control means and actuator means within said base portion and responsive to manual manipulation, each said actuator means including at least one hydraulic cylinder having a piston, which initiates actuations of said securing means, wherein said actuator means includes a hydraulic cylinder having a piston extendable within said internal cavity, a split collar positioned within said internal cavity and having a generally central alcove for clampingly receiving a portion of said piston and said collar being coincidentally translatable with said piston, an intermediate shaft extending from a portion of said split collar distal from the central alcove and having an abutment end portion extendable without

said portion upon actuation of said hydraulic cylinder, a plurality of actuator pins each slidably mounted within a portion of the face plate member and having a first end engageable with a respective one of said leverarm actuating members and a second end being selectively engageable by the abutment end portion of said intermediate shaft in response to selective indexing of said face plate member and actuation of said hydraulic cylinder;

a tool storage and feeder mechanism for selectively presenting a tool at a predetermined storage location in response to said automatic control means; and

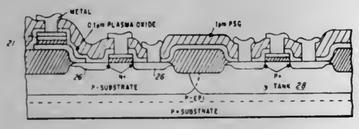
a tool manipulating and transporting means responsive to said automatic control means for obtaining the selected tool from said tool storage and feeder mechanism at said predetermined storage location and for positioning the selected tool within said tool clamping unit.

4,577,390

FABRICATION OF POLYSILICON TO POLYSILICON CAPACITORS WITH A COMPOSITE DIELECTRIC LAYER

Roger A. Haken, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 23, 1983, Ser. No. 468,920
Int. Cl.⁴ H01L *21/283*
U.S. Cl. 29—570 **7 Claims**



1. A method for fabricating a composite dielectric layer over a first conductive layer in an integrated circuit fabrication, comprising the steps of:

providing a substrate;

providing a first conductive layer over said substrate, said first conductive layer being polycrystalline and comprising doped silicon;

forming a silicon dioxide layer over said first conductive layer;

forming a silicon nitride layer over said silicon dioxide layer;

forming a bottom capacitor plate by selectively clearing areas of said silicon substrate where a plurality of transistors are to be formed;

oxidizing said cleared areas of said silicon to form a plurality of gate oxides, and simultaneously partially oxidizing said nitride layer, whereby a composite oxide/nitride/oxide dielectric is provided over said first conductive layer; and

depositing a second conductive layer selectively over said locations of said plurality of transistors and over portions of said first conductive layer.

4,577,391

METHOD OF MANUFACTURING CMOS DEVICES

Steve Hsia, Cupertino, and Paul Chang, Los Altos, both of Calif., assignors to Monolithic Memories, Inc., Santa Clara, Calif.

Filed Jul. 27, 1984, Ser. No. 635,371
Int. Cl.⁴ H01L *21/265, 21/32*
U.S. Cl. 29—571 **10 Claims**

1. The method of forming a semiconductor structure in and on a substrate having an N region and a P region extending to the surface of said substrate, said method comprising:

forming a first gate over a portion of said P region and a second gate over a portion of said N region;

forming a first and a second N^- source/drain region in said P region separated by a channel portion of said P region underlying said first gate;

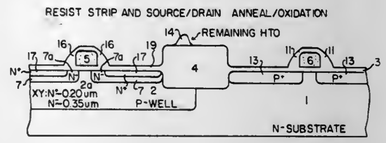
forming a first and a second sidewall spacer having a first selected width abutting the respective ends of said second gate;

forming, using said second gate and said first and second sidewall spacers a a mask, a first and a second P^+ source/drain region in said N region separated by a channel portion of said N region underlying said second gate;

forming a third and a fourth sidewall spacer having a second selected width abutting, the ends of said first gate;

forming, using said first gate and said third and fourth sidewall spacers as a mask, a first and a second N^+ source/drain region within said first and said second N^- source drain regions, respectively;

annealing after forming said first and second P^+ source/drain regions and said first and second N^+ source/drain regions,



wherein said first width is selected to be sufficiently narrow so that after said annealing, said P^+ source/drain regions extended laterally at least to the respective ends of said second gate, and wherein said second width is selected sufficiently wide so that after annealing, a portion of said first N^- source/drain region underlaps said first gate and separates said first N^+ source/drain region from said channel portion of said P region and a portion of said second N^- source/drain region underlaps said first gate and separates said second N^+ source/drain region from said channel portion of said P region and said N^+ source/drain regions are laterally separated from said first gate.

4,577,392

FABRICATION TECHNIQUE FOR INTEGRATED CIRCUITS

David R. Peterson, Mountain View, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Aug. 3, 1984, Ser. No. 637,449
Int. Cl.⁴ H01L *21/283, 21/28, 21/56*
U.S. Cl. 29—571 **7 Claims**

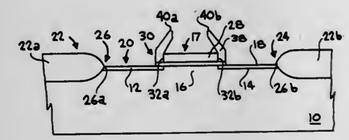
1. A method for forming conductive contacts to first and second regions separated by a third region of a respective one of an n-type and a p-type substrate having a portion of a surface thereof covered to a first thickness with an insulating layer having a slot therethrough which extends substantially to said surface, said surface in said slot being covered with an isolation layer, said slot having a sidewall structure having first and second edges, a conductive island covering said surface portion within said slot to substantially said first thickness and having a bank having first and second areas facing, respectively, said first and second edges of said sidewall structure, said first region and said second region being non-contiguous with one another, being located, respectively, between said first area of said bank and said first edge of said sidewall structure and said second area of said bank and said second edge of said sidewall structure, and being non-contiguous with said bank, said third region being generally beneath said island, said first and second regions being a respective other of n-type and p-type than is said substrate, comprising:

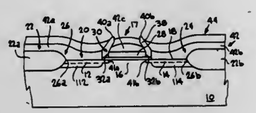
providing said substrate with said island covered with a first sacrificial layer which extends beyond said first thickness;

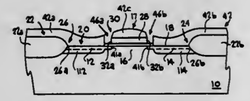
covering said insulating layer, said conductive island, and said isolation layer with a generallly conformal coating of a dielectric material;

anisotropically orthogonally etching said coating of said dielectric material off of said insulating layer, said isolation layer and said first sacrificial layer while retaining sacrificial portions of said dielectric material between said first area of said bank and said first region and between said second area of said bank and said second region;

removing said first sacrificial layer from said island and said isolation layer from said first region and said second region without significantly removing said sacrificial portions of said dielectric material;







depositing a conductive layer in covering relation upon said insulating layer, said island, said first region and said second region;

laying down a second sacrificial layer upon said conductive layer; and

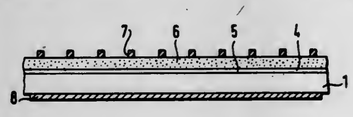
etching away said second sacrificial layer and said sacrificial portions of said dielectric material while not significantly removing said conductive layer.

4,577,393

PROCESS FOR THE PRODUCTION OF A SOLAR CELL

Wilfried Schmidt, Talheim, Fed. Rep. of Germany, assignor to Telefunken electronic GmbH, Heilbronn, Fed. Rep. of Germany

Filed Nov. 8, 1984, Ser. No. 669,526
Claims priority, application Fed. Rep. of Germany, Nov. 11, 1983, 3340874
Int. Cl.⁴ H01L *31/18*
U.S. Cl. 29—572 **17 Claims**



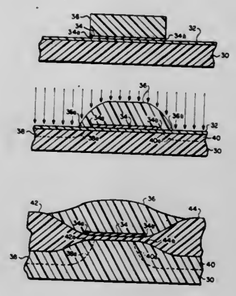
1. A process for producing a solar cell with a p-n junction and a conductive antireflection coating, wherein there is deposited on the front surface of a semiconductor body a first layer serving as a diffusion source for the production of the p-n junction and also for the doping of the antireflection coating, wherein a second layer for the production of the antireflection coating is deposited on the first layer, and wherein an annealing process is performed in which the p-n junction is produced, the antireflection coating is formed from the two layers, and the antireflection coating is doped and thereby made highly conductive.

4,577,394

REDUCTION OF FIELD OXIDE ENCROACHMENT IN MOS FABRICATION

John L. Peel, Sandy, Utah, assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Oct. 1, 1984, Ser. No. 655,810
Int. Cl.⁴ H01L *21/76, 21/316*
U.S. Cl. 29—576 W **10 Claims**



7. A method for reducing field oxide and field doping encroachment into an active area of a semiconductor substrate during the fabrication of an active device in said active area, said method comprising the steps of:

masking said active area with a pattern including a layer of anti-oxidant material deposited over said substrate surface and a layer of doped glass passivating material layer formed over said anti-oxidant layer;

flowing said passivation to cover both said anti-oxidant layer and a region of said substrate surface adjacent, but not covered by said anti-oxidant layer;

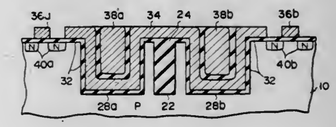
growing, over the portion of said substrate surface not covered by said anti-oxidant and passivation layers, a layer of oxide material.

4,577,395

METHOD OF MANUFACTURING SEMICONDUCTOR MEMORY DEVICE HAVING TRENCH MEMORY CAPACITOR

Tadashi Shibata, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 13, 1984, Ser. No. 681,129
Claims priority, application Japan, Jan. 13, 1984, 59-4364
Int. Cl.⁴ H01L *27/10, 29/78*
U.S. Cl. 29—576 C **6 Claims**



1. A method of manufacturing a semiconductor memory device having a trench memory capacitor comprising the steps of:

forming a first mask in an element forming region of a semiconductor substrate formed of said element forming region and an element isolation region;

depositing a film formed of a material different from that of

said first mask on an entire surface of the resultant structure, and etching said film by anisotropic dry etching so as to leave said film around said first mask as a second mask;

selectively etching said semiconductor substrate using said first and second masks as an etching mask so as to form a first groove in said element isolation region;

burying an insulation film in said first groove;

etching said first mask at least above a memory capacitor forming region in said element forming region so as to form a third mask on a portion excluding said memory capacitor forming region;

selectively etching said semiconductor substrate by using said second and third masks and said insulation film buried in said first groove as an etching mask so as to form a second groove in said memory capacitor forming region, thereby defining the distance between said first and second grooves by said second mask in a self-alignment manner; and

forming a capacitor electrode in said second groove through a gate insulation film.

4,577,396

METHOD OF FORMING ELECTRICAL CONTACT TO A SEMICONDUCTOR SUBSTRATE VIA A METALLIC SILICIDE OR SILICON ALLOY LAYER FORMED IN THE SUBSTRATE

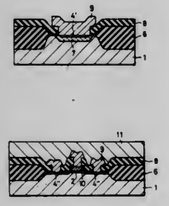
Naoki Yamamoto, Kawaguchi, and Noriyuki Sakudo, Ohme, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 15, 1984, Ser. No. 610,485

Claims priority, application Japan, May 16, 1983, 58-84221

Int. Cl.⁴ H01L *21/28, 21/265;* C23F *1/02*

U.S. Cl. 29—576 B **30 Claims**



1. A method of providing an electrical connection to a surface of a semiconductor substrate, comprising the step of: inplanting ions, of metal which can form metallic silicides or silicon alloys with silicon upon heating, into a desired portion of an impurity-doped region of a semiconductor substrate, said desired portion extending to the surface of the substrate, to form an ion-implanted region in the impurity-doped region; forming metallic silicides or silicon alloys in said ion-implanted region by heating; and forming a wiring layer or electrode in electrical connection with and on the surface of said ion-implanted region, whereby an ohmic contact is formed without peeling of the wiring layer or electrode from the ion-implanted region and wherein any decrease in the impurity concentration in the impurity-doped region is minimized.

4,577,397

METHOD FOR MANUFACTURING A SEMICONDUCTOR DEVICE HAVING VERTICAL AND LATERAL TRANSISTORS

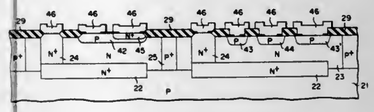
Shigeru Komatsu, Yokohama; Hiroshi Inoue, Tokyo, and Michio Nakamura, Kawasaki, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Division of Ser. No. 523,062, Aug. 15, 1983, abandoned, which is a continuation of Ser. No. 152,296, May 22, 1980, abandoned. This application Jan. 9, 1985, Ser. No. 689,966

Claims priority, application Japan, May 24, 1979, 54-63218

Int. Cl.⁴ H01L *21/425*

U.S. Cl. 29—576 B **4 Claims**



1. A method for manufacturing from a silicon substrate a semiconductor device including a vertical transistor having a first semiconductor region of a first conductivity type, a second semiconductor region of a second conductivity type opposite to the first conductivity type formed in the first semiconductor region and a third semiconductor region of the first conductivity type formed in the second semiconductor region, and a lateral transistor having a fourth semiconductor region of the first conductivity type, a fifth semiconductor region of the second conductivity type formed in the fourth semiconductor region and a sixth semiconductor region of the second conductivity type formed in the fourth semiconductor region and spaced from the fifth semiconductor region, the method comprising the steps of:

(a) forming, within the silicon substrate and extending from a first surface thereof, the first and fourth semiconductor regions, and isolating the first and fourth semiconductor regions from one another and providing each with an exposed surface at the first surface of the silicon substrate;

(b) forming on the first surface of the silicon substrate an anti-oxidation mask having a first mask portion at the desired location of the second semiconductor region and second and third mask portions, each spaced from the first mask portion, the mask leaving exposed the exposed surface of the fourth semiconductor region;

(c) simultaneously and selectively forming, with the forming step (b), a thick countersunk first oxide layer on the portions of the first surface of the silicon substrate including the exposed surface of the fourth semiconductor region, where the mask is not formed, by heat oxidizing the first surface of the silicon substrate;

(d) removing the first mask portion to form a first opening;

(e) selectively removing portions of the first oxide layer formed on the surface of the fourth semiconductor region at the desired location of the fifth and sixth semiconductor regions, thereby forming second and third openings partially exposing the surface of the fourth semiconductor region;

(f) forming the second, fifth and sixth semiconductor regions by introducing an impurity of the second conductivity type through the first, second and third openings; and

(g) forming the third semiconductor region by introducing an impurity of the first conductivity type into the second semiconductor region.

4,577,398

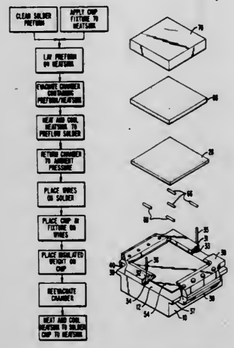
METHOD FOR MOUNTING A SEMICONDUCTOR CHIP

John W. Sliwa, Los Altos Hills; Roy J. Burt, Sunnyvale; Chune Lee, San Francisco; John MacKay, Saratoga, and Cindy A. Johnson, Sunnyvale, all of Calif., assignors to Trilogy Computer Development Partners, Ltd., Cupertino, Calif.

Filed Sep. 7, 1984, Ser. No. 648,570

Int. Cl.⁴ H01L *23/12*

U.S. Cl. 29—590 **35 Claims**



1. A method for attaching a semiconductor chip to a mounting surface comprising the step of:

applying a solder barrier to the mounting surface;

placing a prefrom of solder within the solder barrier;

heating and then cooling the preform in a vacuum to preflow the solder and secure the solder to the mounting surface substantially without voids;

locating the simconductor chip overlying the preflowed solder; and

reheating and then recooling the solder in a vacuum to secure the semiconductor chip to the mounting surface with the intervening solder.

4,577,399

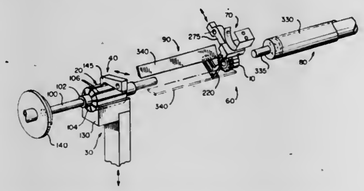
COMMUTATOR PLACING MACHINE

Kenneth A. Ott, Ludlow Falls, Ohio, assignor to Ott-A-Matic, Inc., Vandalia, Ohio

Filed May 29, 1984, Ser. No. 614,922

Int. Cl.⁴ H01R *43/06*

U.S. Cl. 29—733 **4 Claims**



1. A commutator placing apparatus comprising

means for directing a commutator into a loading position,

means for orienting said commutator including

(a) a first, fixed positioning means,

(b) a second, movable positioning means, said second positioning means including a commutator index slide movable from a first position to a second position and a commutator index pawl resiliently carried by said index slide and mounted above said commutator, and

(c) means for moving said index slide,

wherein said index pawl engages the commutator as said index slide is moved from the first position to the second position to impart to the commutator a rotational force to insure that it is properly oriented with respect to said first positioning means.

4,577,400

PIN INSERTION TOOL

Thomas A. Morgan, Billerica, Mass., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Feb. 1, 1984, Ser. No. 576,071

Int. Cl.⁴ H05K *3/30*

U.S. Cl. 29—739 **27 Claims**



1. A hand tool for inserting wire-wrap pins contained within a fanning strip, said fanning strip having a band section and a number of tubular sections for containing said pins, into holes of a wire-wrap printed circuit board or panel, said tool comprising:

a handle member including an automatic anvil and means for delivering an impact to said anvil; and,

a solid cylindrical tip, one section of said tip being mounted within said handle member and coupled to said anvil for receiving said impact from said anvil during an insertion operation and another section extending beyond said handle member, one end of said other section farthest away from said handle member having a stepped profile including a plurality of steps, a first one of said steps 120 having a hole for vertically positioning each of said pins during said insertion operation, said hole having a bottom which is a predetermined longitudinal distance from the end of a first adjacent step for preestablishing a depth at which said each pin can be driven into a selected one of said holes in said board and said first step and a second adjacent step being dimensioned for receiving corresponding ones of said band and tubular sections, respectively, when ejecting each of said pins completely from said strip into said selected one of said holes without damage or deformation to said strip or to the surrounding installation area during said insertion operation.

4,577,401

PROCESS AND APPARATUS FOR SEPARATING A SUSPENSION BAR FROM AN ELECTRODE

Constant T. Verhoeven, Poederlee; Hubert J. Tobback, Lichtaart, and John M. Dompas, Olen, all of Belgium, assignors to Metallurgie Hoboken-Overpelt, Hoboken, Belgium

PCT No. PCT/BE82/00025, § 371 Date Aug. 4, 1983, § 102(e) Date Aug. 4, 1983, PCT Pub. No. WO83/02289, PCT Pub. Date Jul. 7, 1983

PCT Filed Dec. 22, 1982, Ser. No. 520,209

Claims priority, application Luxembourg, Dec. 24, 1981, 83857

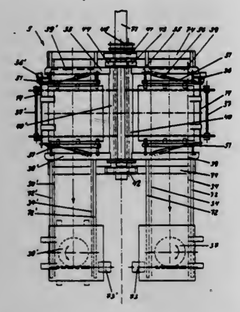
Int. Cl.⁴ H01R *43/00;* B23P *19/00*

U.S. Cl. 29—825 **15 Claims**

1. In an electrode comprising an electrolytic plate having one or more suspension loops attached to the plate and a suspension bar extending through the loops for vertical support of the plate, a method for separating the bar from the loops of the plate which comprises moving the plate from a vertical position to a substantially horizontal position; positioning the plate on support means thereby relieving the weight of the plate on the bar; and removing the bar from the loops of the plate while the plate is in contact with the support means.

7. In an electrode comprising an electrolytic plate having one or more suspension loops attached to the plate and a suspension bar having an longitudinal axis extending through the loops for vertical support of the plate, an apparatus for separat-

ing the bar from the loops of the plate comprising means for moving the plate from a vertical position to a substantially horizontal position; means operatively associated with the moving means for supporting the plate in the horizontal posi-



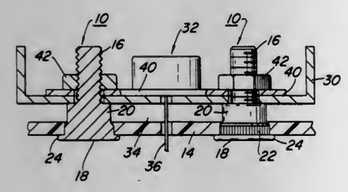
tion to relieve the weight of the plate on the bar; and means operatively associated with the support means for removing the bar from the loops of the plate while the plate is in contact with the support means.

4,577,402

STUD FOR MOUNTING AND METHOD OF MOUNTING HEAT SINKS ON PRINTED CIRCUIT BOARDS

Kenneth A. Swanstrom, Buckingham Township, Bucks County, Pa., assignor to Penn Engineering & Manufacturing Corp., Danboro, Pa.

Filed Jun. 13, 1984, Ser. No. 620,141
Int. Cl.⁴ H05K *3/39*; F16B *39/00, 37/04, 39/282*
U.S. Cl. 29—840 **8 Claims**



1. The method of securing a heat sink and a semi-conductor case to a circuit board comprising

inserting with suitable pressure a stud into a circuit board from the underside of said circuit board, said stud having knurled portion broaching into said circuit board and a head having a flange overhanging said knurled portion to limit by abutment of the flange and the underside of the circuit board the movement of the stud relative to the circuit board,

placing said heat sink and said semi-conductor upon a shoulder formed between a threaded shank and a collar of said stud, said collar being disposed between said threaded shank and a head, said threaded shank extending through suitable openings in said heat sink and said semi-conductor case, and

attaching a threaded nut to said threaded shank so as to secure said heat sink and said semi-conductor case against said shoulder.

3. A stud for assembling a heat sink and a semi-conductor cast to a circuit board wherein

said stud comprises a threaded shank at one end for receiving a threaded nut and a flat head at the other end,

a cylindrical collar between the threaded shank and the flat head,

said collar being of smaller diameter than said head but larger diameter than said threaded shank,

said collar having a knurled portion adjacent said head for securing said stud to said circuit board,

the large diameter of said collar relative to said threaded shank defining a shoulder, an annular ring perpendicular to the axis of said shank, upon which are seated said heat sink and semi-conductor case, and

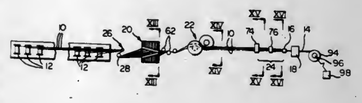
at least said head being suitably plated to facilitate its soldering to said circuit board.

4,577,403

MANUFACTURE OF TELECOMMUNICATIONS CABLE CORE UNITS

John N. Garner, Kingston, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed May 29, 1985, Ser. No. 738,714
Int. Cl.⁴ H01R *43/00*; B21D *39/04*; D07B *1/06*; B65H *57/14*
U.S. Cl. 29—872 **8 Claims**



1. Apparatus for forming a core unit from telecommunications conductor units each formed of twisted together insulated conductors comprising, in a downstream direction along a passline for the conductor units:

a position changing means for changing the positions of laterally spaced-apart conductor units across the passline and relative to other conductor units;

conductor unit array forming means comprising at least two rollers having rotational axes one downstream from the other with opposed peripheral surfaces of the rollers spaced apart one on each side of the passline, each surface changing in diameter along its length with one surface having its smallest diameter and the other its largest diameter at a position intermediate its axial ends, the positions and configurations of the surfaces being such that together they are operable to position the conductor units in an array as the conductor units move towards, past and then beyond the rollers, the array extending in two planes in a section taken across the passline, the rollers enabling the conductor units to move across the array dependent upon the positional change caused by the position changing means; and

a core unit forming means for causing convergence of the conductor units in the array to bring them together with the relative positions of the conductor units changing in the core unit as they extend along the core unit, each conductor unit extending around the axis of the core unit alternately in opposite directions as influenced by its movement across the array.

4,577,404

CONNECTOR POLARIZATION METHOD

Thomas P. Pellegrino, Lisle, Ill., assignor to Molex Incorporated, Lisle, Ill.

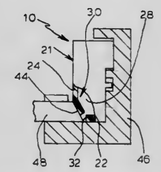
Continuation of Ser. No. 555,852, Nov. 28, 1983, abandoned.
This application Jul. 29, 1985, Ser. No. 761,321
Int. Cl.⁴ H01R *43/16*
U.S. Cl. 29—874 **3 Claims**

1. A method of selectively polarizing a female connector with respect to one of a plurality of arrays of mating pin conductors comprising the steps of:

mounting a plurality of pin conductors to form said arrays, each array including a plurality of pin locations in a row,

at least some of said positions having pin conductors mounted thereat and other of said positions defining blank positions;

providing a female connector including a housing having an exterior end wall, a pair of opposing parallel spaced apart exterior side walls extending from opposite edges of the end wall, and a plurality of terminal receiving cavities formed between said side walls and the end wall, each cavity having a pin receiving opening formed in the end



wall alignable with and corresponding to the pin locations of the arrays, and a plurality of female pin receiving terminals mounted in at least some of said cavities adjacent the opening to receive a corresponding pin conductor therethrough; and

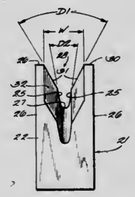
deforming the female connector housing to form individual deformed sections blocking only the pin receiving openings corresponding to the blank positions of a particular pin array.

4,577,405

COMPOUND-ANGLE BLADE FOR STRIPPING INSULATED ELECTRICAL CONDUCTORS

John D. Butler, New Berlin, Wis., assignor to Mechtrix Corporation, Wauwatosa, Wis.

Filed Sep. 17, 1984, Ser. No. 651,830
Int. Cl.⁴ H02G *1/12*
U.S. Cl. 30—90.1 **9 Claims**



1. A blade for cutting and stripping insulation from insulated electrical conductors comprising a member formed as a rectangular parallelopiped having first and second faces and surfaces connecting the faces, one of the surfaces being formed with an opening extending between the faces and extending at a compound angle toward the interior of the member, the angled opening being defined by a first pair of walls converging at a first angle toward the interior of the member and a second pair of walls intersecting the first pair of walls and converging at a second non-parallel angle greater than 0 degrees but less than 54 degrees toward the interior of the member to accommodate different size conductors, the opening terminating in a radius cutting edge adapted to partially encircle a round conductor to cut the insulation, the second pair of angled walls being tangent to the cutting edge,

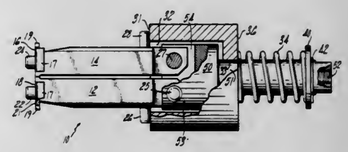
so that an insulated conductor is gathered into the opening between the first pair of walls and guided to the cutting edge along the second pair of walls.

4,577,406

RETRACTING INTERNAL TUBE CUTTER

Joseph J. Idzik, and Charles H. Kouse, both of Springfield, Ohio, assignors to Elliott Turbomachinery Co., Inc., Jeannette, Pa.

Filed Sep. 26, 1984, Ser. No. 655,118
Int. Cl.⁴ B23D *21/14*
U.S. Cl. 30—103 **5 Claims**



1. A retracting internal tube cutter which comprises:

a tube cutter body including pivotable mounting means and means through which said body may be caused to rotate;

at least two swing arms pivotably mounted to the pivotable mounting means such that upon rotation of the body the swing arms are forced outwardly;

cutter blades mounted on the ends of the swing arm to extend outwardly to effect cutting;

a retractor mounted to selectively engage the swing arms to prevent the swing arms from extending outwardly except when desired;

said retraction means including a spring biased slidable retractor which has a first at rest position encasing a portion of the swing arms to prevent outward displacement of the swing arms and a second retraction position wherein the retractor has been slidably displaced to allow outward displacement of the swing arms;

said tube body including a mounting portion defining a slot in which the swing arms are pivotally mounted and the retractor is annular in configuration and defines an arm containing space which is sized to slide over the mounting portion of the tube body and the swing arms mounted therein; and

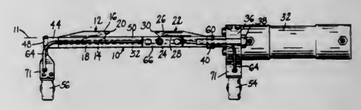
wherein the retractor defines a body opening through which an extension portion of the body extends and includes a spring mounted about the body extension and engaging the retractor; a retractor washer mounted to the body extension a distance from the retractor for engaging the spring; and a snap ring, securing the washer in position, wherein said spring biases the retractor away from the retractor washer to encase the swing arms for preventing outward displacement and wherein upon rotation of the tube cutter the swing arms are forced outwardly displacing the retractor and compressing the retractor spring to allow the swing arms to engage a workpiece.

4,577,407

DEHORNER

A. David Hahn, Middletown, Conn., assignor to Jarvis Products Corporation, Middletown, Conn.

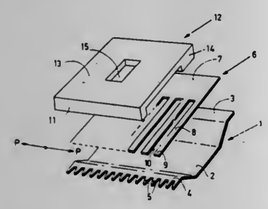
Filed Jun. 25, 1984, Ser. No. 624,297
Int. Cl.⁴ B26B *17/00*
U.S. Cl. 30—180 **7 Claims**



1. A dehorner comprising a frame having a cutting side

defining a first plane and an opposite, operator side, a pair of opposed blades mounted in the frame and having respective parallel cutting edges, motive means responsive to actuating means to operate at least one of the blades to provide relative straight line movement of the cutting edges between an open position and a closed, cutting position, each blade having a base portion mounted within the frame and a riser portion extending outwardly of the plane of the cutting side of the frame and having a beveled portion terminating in its respective cutting edge, the cutting path defined by movement of the cutting edge of at least one of the blades lying in a second plane spaced from the plane defined by the cutting side of the frame and parallel thereto.

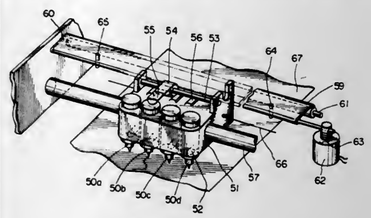
4,577,408
HAIR-CUTTING DEVICE
Eduard W. Tietjens, Drachten, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Dec. 8, 1983, Ser. No. 559,515
Claims priority, application Netherlands, Dec. 13, 1982, 8204808
Int. Cl.⁴ B26B *19/06*
U.S. Cl. 30—222 **1 Claim**



1. A hair-cutting devicd comprising a stationary cutter; a drivable cutter reciprocatingly movable with respect to the stationary cutter, each cutter being provided with teeth extending substantially at right angles to the driving direction; each tooth of the drivable cutter being formed at the free end of a flexible arm, the respective flexible arms being spaced from each other to provide a slot between each pair of adjacent flexible arms; a rigid pressure element located adjacent to and within the range of elastic deflection of the free ends of the respective flexible arms; and protrusions formed on the rigid pressure element and respectively extending into the slots between the pairs of adjacent flexible arms, each protrusion having two converging oblique pressure surfaces for engagement by said flexible arms upon deflection thereof; the opposite end of each flexible arm being connected to a common cutter beam, the respective flexible arms and the cutter beam being integrally formed in one piece from a flexible sheet material.

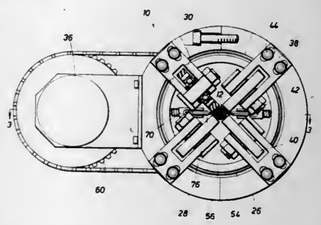
4,577,409
PEN CHANGING APPARATUS FOR PLOTTER
Masami Sakamoto; Ryoichi Nagumo, and Tamio Ishihara, all of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed May 24, 1985, Ser. No. 737,480
Int. Cl.⁴ B43L *13/00*; G01D *15/16*
U.S. Cl. 33—18.1 **16 Claims**

1. A pen changing apparatus for a plotter comprising:
a plurality of pens;
a carriage which slides linearly with a shaft as the sliding axis thereof and on which a plurality of pens are mounted in alignment with the axial direction of said shaft;
a moving means for moving said carriage;
a guide shaft which is fixed onto said carriage in the same direction as said shaft;
a sliding lever provided on said guide shaft such as to be movable in the axial direction of said guide shaft and rotatable around said guide shaft for pressing any of said plurality of pens;
positioning and retaining means for positioning said sliding lever over any of said plurality of pens and retaining the same when said sliding lever is moved;
stoppers provided approximately at both end portions of the travelling range of said carriage for stopping said sliding



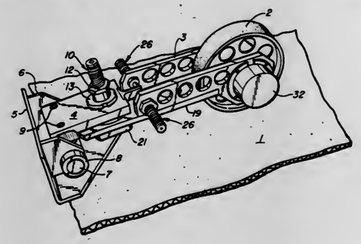
lever along at a position over a desired pen at the time of moving said carriage; and
sliding lever driving means for rotating said sliding lever so as to press down said pen in the position where said sliding lever is located in resistance to a pen lifting spring or restore said pen to its original position by the urging force of said pen lifting spring.

4,577,410
METHOD AND APPARATUS FOR PROVIDING ACCURATE WIRELINE DEPTH MEASUREMENTS
Thomas E. Ritter, Katy, Tex., assignor to Halliburton Company, Duncan, Okla.
Filed Jun. 11, 1985, Ser. No. 743,447
Int. Cl.⁴ G01B *5/04*
U.S. Cl. 33—129 **12 Claims**



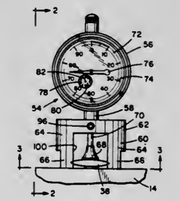
1. For use with tools lowered into a well borehole on a wireline having multiple strands wrapped into a running helix and where the wireline passes over a sheave above the borehole and into the borehole to support a tool at depths limited by the depth of the well and wherein the tool is subject to be raised or lowered in the well, apparatus for measuring the length of wireline in the borehole which apparatus comprises:
(a) wellhead mounting means positioned adjacent to the locus of the wireline supporting a tool in the well borehole;
(b) wireline guide means positioning the wireline along a specified path relative to said mounting means, said guide means cooperatively securing the wireline in a taut path in conjunction with the weight of a tool suspended in the borehole by the wireline;
(c) helix follower means engaging a helix defined by the multiple strands of the wireline, said means moving in circular movement as the helix moves therepast and wherein said means follows said helix for multiple revolutions dependent on wireline movement therepast; and
(d) signal forming means connected to said follower means for forming a signal proportional to revolutions of said follower means as the helix moves therepast, said signal forming means forming the signal dynamically as the helix moves therepast.

4,577,411
WHEEL FOR MEASURING HORIZONTAL TRAVELING STRIP
Merrill D. Martin, 2 Mall Court, Oakland, Calif. 94611
Filed Apr. 15, 1985, Ser. No. 723,490
Int. Cl.⁴ G01B *7/04*
U.S. Cl. 33—141 E **6 Claims**



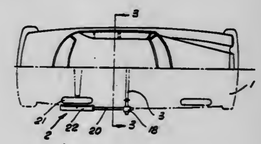
1. In a device for measuring the horizontal travel of a flat strip of material through a machine by means of a rotating wheel which engages the surface of said material and is connected to a digital counting mechanism, the improved method of support comprising:
a carriage positioned on said machine and disposed for pivoting in a vertical plane;
an arm extending horizontally from said carriage, one end being pivotally mounted thereon to permit pivoting of said arm in a horizontal plane;
said rotating wheel being rotatably on the opposite end of said arm;
whereby engagement between said wheel and said material is maintained despite horizontal or vertical deviation of said horizontal travel of said material from a straight line.

4,577,412
RHEOMETER ROTOR HEIGHT GAUGE
Robert L. McKinney, Mogadore, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Oct. 18, 1984, Ser. No. 662,235
Int. Cl.⁴ G01B *3/22*
U.S. Cl. 33—172 R **7 Claims**



1. A rheometer rotor height gauge for facilitating adjustment of the height of a rotor of a rheometer in relation to a die of the rheometer, the gauge comprising:
an indicator for visual indicating variation of a position variable;
a movable rotor contact member depending from and operatively connected to the indicator for contacting the rheometer rotor, whereby the position variable indicated by the indicator is rotor height;
a base for supporting the indicator atop the die of the rheometer and supporting the rotor contact member atop the rotor in which the base includes a cylindrical pedestal, arcuate legs define a clear viewing gap for viewing the rotor contact member through the base, and feet, the pedestal being atop the legs and the legs being atop the feet; and
leg portions depending downward of the pedestal between the feet for protecting the rotor contact member.

4,577,413
AUTOMOTIVE WHEEL ALIGNMENT GAUGE APPARATUS
James H. Mason, 786 Pittwater Road, Brookvale, New South Wales, 2100, Australia
Filed Oct. 12, 1984, Ser. No. 660,456
Claims priority, application Australia, Oct. 14, 1983, PG18477; Dec. 20, 1983, PG2919; May 20, 1984, PG5087
Int. Cl.⁴ G01B *5/255*
U.S. Cl. 33—203.18 **9 Claims**





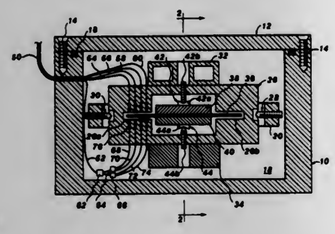
1. An automotive gauge apparatus for rear wheel alignment comprising:
an elongate datum bar;
attachment means for securing and horizontally positoning said datum bar to the underneath of a vehicle perpendicular to the desired direction of foreward moton of the vehicle, said attachment means including a pair of hangers, each having a banjo portion adapted to selectively clampingly secure said datum bar, and an attachment portion adapted to engage a formation on the underneath of the vehicle, the attachment portion including a yoke and a mating portion rotatably supported therein, the mating portion designed to rigidly engage the formation on the underneath of the vehicle;
wheel conforming means defining a horizontal line perpendicular to the axis of rotation of a rear wheel; and
measuring means sensing the angular displacement between said elongate datum bar and said wheel conforming means.

4,577,414

REMOTELY READABLE FIBER OPTIC COMPASS

Albert Migliori, Santa Fe; Gregory W. Swift, Los Alamos, both of N. Mex., and Steven L. Garrett, Pebble Beach, Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 30, 1985, Ser. No. 728,976
Int. Cl.⁴ G01C *17/26*
U.S. Cl. 33—363 K **8 Claims**



1. A remotely readable compass, comprising:
- a magnet rotatably mounted in a compass body so as to be freely rotatable with respect to said compass body, a rotatable sheet polarizer affixed to said magnet so as to be rotatable with respect to said compass body with said magnet about a common axis of rotation;
- first and second excitation optical fibers affixed to said compass body and terminating adjacent said rotatable sheet polarizer so as to direct light propagated through said fibers onto said rotatable sheet polarizer, and first and second return optical fibers affixed to said compass body and positioned respectively opposite said rotatable sheet polarizer from said excitation fibers, so as to receive light which is emitted from said first and second excitation fibers and transmitted through said rotatable sheet polarizer; and
- first and second fixed sheet polarizers, said first fixed sheet polarizer being affixed to said compass body so as to be optically interposed between said first excitation fiber and said first return fiber, said second fixed sheet polarizer being affixed to said compass body so as to be interposed between said second excitation fiber and said second return fiber, said fixed sheet polarizers having optical axes which are oriented substantially orthogonally with respect to one another;
- whereby the orientation of said magnet with respect to said compass body can be determined by transmitting two light beams through said excitation fibers, through said fixed sheet polarizers and through said rotatable sheet polarizer, and measuring the ratio of the intensities of the resulting light beams received in said return fibers.

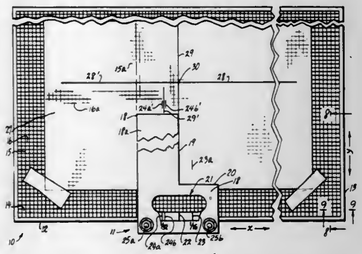
4,577,415

WINDOWED INDEXED CALIBRATED T-SQUARE AND PRECISION-LINED DRAFTING BOARD HAVING LINEAR EDGES

Saul Schiller, Brooklyn, N.Y.

Continuation-in-part of Ser. No. 149,711, May 14, 1980, Pat. No. 4,422,245, which is a continuation-in-part of Ser. No. 28,198, Apr. 9, 1979. This application Dec. 19, 1983, Ser. No. 563,154
Int. Cl.⁴ B43L *7/00*
U.S. Cl. 33—430 **5 Claims**

1. A scribing T-square consisting essentially of a blade having a straight edge along a first longitudinal axis of the blade, and a helve head unitary and rigidly connected with a proximal end of the blade, said helve head having an elongated portion elongated along a second longitudinal axis extending substantially at right angles to said straight edge, and at-least two spaced-apart flat-bottomed rollers each of predetermined roller-surfaces of widths sufficiently wide to jointly maintain said blade at a constant and parallel relationship with a scribing surface when the roller-surfaces are pressed against a first upright flat edge-surface of a flat scribing board, said widths being sufficiently wide to be the equivalent of spaced-apart rollers of a tripod arrangement, said rollers being mounted in series with one-another substantially aligned with said second longitudinal axis and axes of the rollers being positioned such that said roller-surfaces are rollable flushly against an upright flat edge-surface of a scribing board having an upper flat face and such that said roller-surfaces are rollable along said second longitudinal axis when pressed against the upper flat edge-surface of a scribing board, mounted on roller-axes and extending downwardly from a lower surface of said elongated portion and extending substantially transversely to said first and second longitudinal axes whereby the scribing T-square is prevented from wobbling on the helve head and the blade relative to the upper flat face of a scribing board when in use therewith, and said helve head being structured and shaped to form a closed-throated window and said helve head having an upper surface embodying the closed-throated window, and said location being spaced-across from a lower end of the straight edge and aligned therewith, said roller-axes being mounted on said elongated portion and extending downwardly relative to a lower surface of said elongated portion, mount-positions of said roller-axes being at locations positioned below said closed-throated window, said scribing board having said upper flat face and having said upright flat edge-surface extending along an imaginary x-axis of the scribing board, and said scribing board having a second upright edge extending along an imaginary y-axis, substantially at a right angle to said imaginary x-axis, and additionally including a first elongated member having a flat upper-surface mounted adjustably along said imaginary x-axis substantially parallel to said first upright edge, and having a top-edge toward a body-portion of the scribing board, that is linear and parallel to said first upright edge, and a first elongated member-mounting means for adjusting the first elongated member intermittently to different predetermined heights above an upper surface of the scribing board and for intermittently locking the first elongated member at any one of said different predetermined heights.



4,577,416

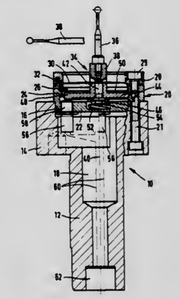
TRACING SENSOR

Wiesner Franz, Owen, Fed. Rep. of Germany, assignor to Traub GmbH, Reichenbach, Fed. Rep. of Germany

PCT No. PCT/EP83/00290, § 371 Date Jul. 5, 1984, § 102(e) Date Jul. 5, 1984, PCT Pub. No. WO84/01820, PCT Pub. Date May 10, 1984
PCT Filed Nov. 4, 1983, Ser. No. 629,728
Claims priority, application Fed. Rep. of Germany, Nov. 5, 1982, 8231029[U]
Int. Cl.⁴ G01B *7/28*
U.S. Cl. 33—561 **7 Claims**

1. A tracing sensor comprising
- a pot-shaped housing (**20**) having a closed bottom (**22**) and an inner shoulder (**24**);

- an annular insert support member (**26**) abutting against said shoulder (**24**);
- a disc-like member (**44**) arranged between said bottom (**22**) and said support member (**26**);
- an annular flange (**28**) fastened to said housing (**20**);
- a membrane-like, annular elastic disc (**30**) clamped at its radially outer edge between said support member (**26**) and said annular flange (**28**);



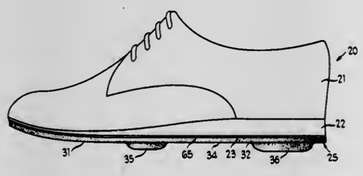
- a sensor pin (**38**) secured to a pin carrier having an axially outer carrier member (**36**) and said disc-like member (**44**) as parts thereof;
- said membrane-like, annular elastic disc (**30**) clamped at its radially inner edge between said disc-like member (**44**) and said axially outer carrier member (**36**);
- a spring (**54**) arranged between said bottom (**22**) and said disc-like member (**44**);
- a plurality of switches (**56**) cooperating with said disc-like member (**44**).

4,577,417

SOLE-AND-HEEL STRUCTURE HAVING PREMOLDED BULGES

George S. Cole, Pebble Beach, Calif., assignor to Energaire Corporation, Pebble Beach, Calif.

Filed Apr. 27, 1984, Ser. No. 604,895
Int. Cl.⁴ A43B *13/20*
U.S. Cl. 36—29 **20 Claims**



1. Sole-and-heel structure comprising an elongated, molded, one-piece resilient outer memeber including a sole portion and a heel portion, said outer member having interior and exterior surfaces, said outer member having a construction to be highly wear resistant to enable said exterior surface to contact a support surface during use, a heel bulge molded into said heel portion and projecting from said exterior surface, said heel bulge being located under the area occupied by the heel area of one's foot, a metatarsal bulge molded into said sole portion and projecting from said exterior surface, said metatarsal bulge being located under the area normally occupied by the metatarsal area of one's foot, said sole portion having no bulges in the area normally occupied by one's toes, said heel and metatarsal bulges respectively defining heel and metatarsal cavities opening at said interior surface, said heel bulge and said metatarsal bulge respectively projecting from said exterior surface without the application of any elevated fluid pressure in said heel and metatarsal cavities, a restricted passageway molded into said outer member between said heel and metatarsal cavities and opening to said interior surface, a sealing member having a shape that matches the shape of said outer member, said sealing member being impermeable to air and having a sealing surface, and adhesive means between said sealing surface and said interior surface for hermetically attaching said sealing member to said outer member, whereby air at atmospheric pressure is permanently located in the space jointly defined by said passageway and said cavities, whereby at rest a foot on said sole-and-heel structure is cushioned comfortably on the air in said cavities, and in moving such air alternates through said passageway between said heel and metatarsal cavities so as to provide shock absorption and an alternate lifting effect by said bulges which provide forward thrust both in said heel portion and said sole portion that facilitates moving.

4,577,418

SHOE PROTECTOR

Charles E. Nagy, 500-B N. Louise St., Glendale, Calif. 91206

Filed Nov. 28, 1983, Ser. No. 555,493
Int. Cl.⁴ A43B *13/22*
U.S. Cl. 36—72 B **9 Claims**



4. A protector for eliminating scuffing of a shoe in its heel and upper rear portion areas as the shoe seats on a vehicle's floor behind a pedal, comprising a flexible, waterproof, wear-resistent bonnet, the bonnet having a body being sufficiently extant to form a pocket to envelop heel and upper rear portions of a shoe clear around and under its heel and including opposing upper frontal corners,
- a non-folded elongated member disposed across such pocket,
- companion VELCRO-material first and second strips, the first strip attached atop said non-folded member and to said bonnet adjacent a first one of said opposing upper frontal corners, a first end of the second strip being attached to another end of said non-folded member,
- a noose secured to a second one of said opposing upper frontal corners,
- a second end of said second strip extending through said noose,
- said second strip reversible in direction against said noose to mate and lock with its companion first strip.

7. In a device for protecting heel and rear portions of a shoe, and including a bonnet for a snug fit about such portions, said bonnet having opposing upper frontal corners thereon, and an elastic band having ends each being secured to one of said opposing upper frontal corners,
- the improvement comprising
- a hollow expandable convoluted plastic member mounted on said elastic band,
- a bushing securely mounted at each end of and to said hollow convoluted member, each said bushing having an aperture therethrough for passage of said band,

an exposed radiused annular edge included in each said bushing,

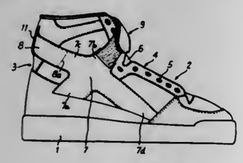
said member adapted to comfortably engage the dorsal area of a foot about which a shoe and said device thereon is mounted.

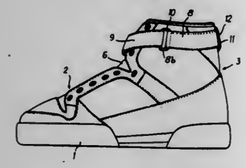
4,577,419

HIGH-TOP SHOE

Jacques Chassaing, Neuwiller les Saverne, France, assignor to ADIDAS FaLrique de Chaussures de Sport, Landersheim, France

Filed Apr. 2, 1984, Ser. No. 596,146
Claims priority, application France, Jan. 13, 1984, 84 00488
Int. Cl.⁴ A43B *7/20, 5/00, 7/14*
U.S. Cl. 36—89 **9 Claims**





1. A high-top shoe having a high-top portion with a shoe leg made of padded material,

the improvement wherein:

said shoe leg has externally secured on its outer side a piece of reinforcing material located so as to be substantially superimposed upon the outer malleolus of the shoe-wearer's ankle to provide a reinforcing zone when the shoe is worn;

at least one tightening strip extending generally around said shoe leg from said piece of reinforcing material;

said tightening strip comprising a first segment which rises obliquely from said reinforcing zone along the lateral surface of the shoe leg to adjacency with the upper edge of the shoe leg at the back of the shoe and then generally horizontally around the shoe leg to a site located above where the medial malleolus of the shoe-wearer's ankle is located when the shoe is worn;

said tightening strip further comprising a second segment which rises obliquely from said reinforcing zone along the front of the shoe leg towards the inner side of the shoe leg; and

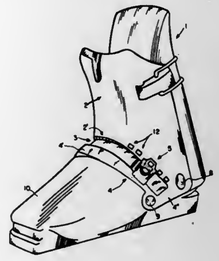
means constructed and arranged for releasably joining said first and second segments of said tightening strip to one another in at least the vicinity of said inner side of said shoe leg so as to hold said tightening strip in position with a desired degree of tightness.

4,577,420

SKI BOOT

Roland Petrini, Chambery; Serge Pradier, Alby-sur-Cheran, and Michel Mabboux, Seynod, all of France, assignors to Salomon S.A., Annecy, France

Filed May 25, 1984, Ser. No. 614,048
Claims priority, application France, May 30, 1983, 83 09449
Int. Cl.⁴ A43B *5/04*
U.S. Cl. 36—117 **31 Claims**



1. A ski boot having an instep, comprising:

(a) an upper comprising a front portion having a bottom portion;

(b) a shell base having two lateral sides;

(c) means for controlling the rigidity and flexional characteristics of said boot, wherein said control means comprises:

(i) a flexion band comprising an arch having two ends, wherein said arch extends across said instep of said boot, and two substantially horizontal lateral arms each attached to one end of said arch and extending along one lateral side of the shell base, and connected to said bottom portion of said front portion of said upper; and

(ii) means for maintaining a portion of said flexion band at a fixed position with respect to said shell base, wherein said fixed position is substantially in a zone in which said arch is connected to each of said lateral arms; and

(d) a journal, spaced from said fixed position, wherein said upper is adapted to pivot at least partially on said shell base around said journal, wherein each lateral arm extends continously between said fixed position and said journal.

4,577,421

FOOT LOCKING DEVICE PARTICULARLY FOR FRONT ENTRANCE SKI BOOTS

Mariano Sartor, Montebelluna, Italy, assignor to Nordica S.p.A., Montebelluna, Italy

Filed Aug. 14, 1984, Ser. No. 640,627
Claims priority, application Italy, Sep. 2, 1983, 22827/83[U]
Int. Cl.⁴ A43B *5/04, 11/00*
U.S. Cl. 36—119 **11 Claims**



1. A foot locking device particularly for a front entrance ski

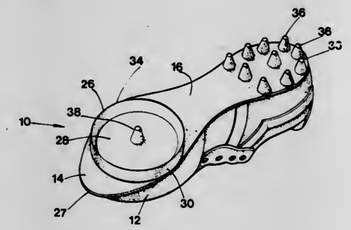
boot with a composite boot structure and with an inner boot arranged within said ski boot, the ski boot having a longitudinal direction, a widthwise direction and an upwards direction, the inner boot having outside surface portions facing said composite ski boot structure and including a heel bottom region surface portion extending along said longitudinal and widthwise directions, an Achilles tendon region surface portion extending in said upwards direction, an upper instep region surface portion, a front leg region surface portion, a talus region surface portion joining the upper instep region surface portion with the front leg region surface portion, the foot locking device comprising within said ski boot and between said composite structure thereof and said outside surface portions of said inner boot at least one flexible band-like member having at least one portion thereof facing said talus region surface portion, at least one end portion and at least another adjustable opposite end portion spaced from said one end portion thereof, at least one section of said flexible band-like member extending over said Achilles tendon region surface portion of said inner boot, said flexible band-like member having further at least one second section extending over said talus region surface portion, closure means connecting said one end portion and said another opposite end portion and adapted in closed position thereof to pull said one end portion and said another end portion towards each other thereby to tighten said band-like around said inner boot and press said at least one section of the band-like member against said Achilles tendon region surface portion in the direction towards said talus region surface portion.

4,577,422

ATHLETIC SHOE WITH IMPROVED PIVOT CLEATING

Michael L. Tanel, 119 N. 92nd St., Milwaukee, Wis. 53226

Filed Dec. 27, 1983, Ser. No. 565,746
Int. Cl.⁴ A43B *5/02, 5/00;* **A43C** *15/16*
U.S. Cl. 36—126 **9 Claims**



1. In an athletic shoe of the type having a sole with a main sole surface and cleats extending therefrom to provide traction, such sole having a heel portion, an arch portion, a ball-of-the-foot portion, and a toe portion, the improvement comprising:

a cleat forming a substantially circular edge encompassing substantially the entire ball-of-the-foot and toe portions of the sole and extending across substantially the entire width thereof;

said cleat being flexible to allow flexing of the sole; and

said cleat enclosing a sole area substantially all non-cleat portions of which are coincident with said main sole surface, said cleat having inner and outer annular surfaces angled with respect to said main sole surface and extending from said circular edge to intersection with said main sole surface,

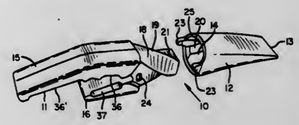
whereby both improved pivotability and traction are provided.

4,577,423

EXCAVATING TOOTH SYSTEM

Frederick C. Hahn, Aloha, Oreg., assignor to ESCO Corporation, Portland, Oreg.

Filed Dec. 24, 1984, Ser. No. 685,336
Int. Cl.⁴ E02F *9/28*
U.S. Cl. 37—142 R **12 Claims**



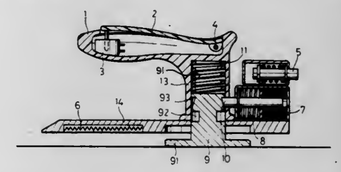
1. An excavating tooth for trenching or the like comprising an adapter member and a point member, a nose equipped with helical thread means on one member and a nose-conforming socket on the other member also equipped with helical thread means, said point member being rotatably mounted on said adapter member by movement along a longitudinal axis, said socket-equipped member being equipped with a pair of lateral tongues projecting longitudinally away from said socket, said nose member being equipped with a pair of recesses aligned with said tongues when said point member is installed on said adapter member, each of said tongues having an inner surface adapted to develop detent engagement with said recesses upon installation, said tongues being deflected as said point member is driven onto said adapter so that said inner surfaces snap into said recesses when said point member is fully installed on said adapter member, said tongues, recesses and helical thread means being the sole means securing said point member to said adapter member.

4,577,424

ELECTRICAL SAFETY IRON

Yung-Ho Liu, 111, Si Wei Street, San Chung City, Taipei Province, 241, Taiwan

Filed Aug. 24, 1984, Ser. No. 643,698
Int. Cl.⁴ D06F *75/26*
U.S. Cl. 38—88 **10 Claims**



1. An electric safety iron comprising:

an iron body and a grip section for the iron;

a main control switch for controlling a heater circuit of the iron, including a normally open switch that is closed by an operator during use of the iron;

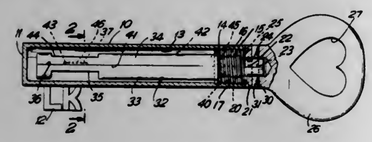
a tube interconnecting the grip section with the upper side of the iron body, said tube enclosing a hollow core;

an aperture in the iron body aligned with the hollow core of the tube;

a movable support rod slidably positioned for extension and retraction at least in part within the hollow core of the tube, said rod having a locking surface disposed thereon, the rod extending through the aperture in the iron body and terminating substantially flush with the bottom of the iron body when in its retracted position within the tube and extending beyond the bottom of the body of the iron in its extended position;

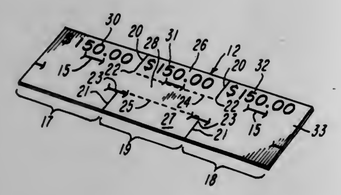
spring means normally biasing the rod toward its extended position;
a locking pin associated with the tube and movable between an extended position where it engages the locking surface of the support rod and a retracted position out of engagement with the locking surface of the rod, said rod being locked against extension when said pin engages said locking surface;
electrical control means for controlling movement of the locking pin between said extended and retracted positions, including a time delay circuit for causing retraction of the pin away from the support rod locking surface when the main control switch is left open for a predetermined time period while the iron is supplied with electrical energy; and
means for limiting the maximum degree of extension of the rod out of the tube relative to the body of the iron.

4,577,425
INFORMATION STORAGE APPARATUS
Dwight R. Foster, and Diane Foster, both of Budd Lake, N.J., assignors to Life Key Corporation, Budd Lake, N.J.
Filed Dec. 16, 1983, Ser. No. 561,952
Int. Cl.⁴ G09F *3/18*
U.S. Cl. 40—19 **10 Claims**



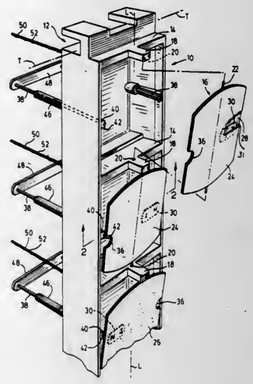
1. An information cartridge comprising, a transparent generally semiconductor male member having a supporting surface formed on the diametrical surface thereof, a protective window formed in the semicircular surface opposite to said supporting surface and threading formed on one of said semicircular ends, a transparent curved female member having a face that matches said diametrical surface, said matching face having a recess that mates with said supporting surface, a protective window formed on said curved female surface opposite to said recess, and threading formed on one of said female member ends, and a microfiche chip in said recess between said recess and said supporting surface and supported thereby.

4,577,426
COMPOSITE LABEL WEB
William A. Jenkins, Englewood, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio
Filed Dec. 21, 1984, Ser. No. 684,761
Int. Cl.⁴ G09F *3/10*
U.S. Cl. 40—21 R **8 Claims**



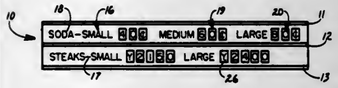
1. A composite label web, comprising: a longitudinally extending carrier web, a series of labels having one side free of adhesive and the other side releasably adhered by pressure sensitive adhesive to the carrier web, each label having longitudinally spaced lateral cuts defining a central portion with at least one lateral tab and a pair of end portions, the central portion being disposed between the end portions, the tab being laterally foldable so that the adhesive on the tab can be adhered to a laterally adjacent part of the central portion and no adhesive on the central portion is exposed, and wherein the central portion can be wrapped about an article and the end portions brought into contact at their adhesive faces to provide a tag.

4,577,427
DISPLAY
John Browne, Georgetown, Canada, assignor to Nei Canada Limited, Toronto, Canada
Filed May 14, 1984, Ser. No. 609,749
Int. Cl.⁴ G09F *9/00*
U.S. Cl. 40—449 **7 Claims**



1. Display or indicator device comprising: a plurality of pivotally mounted discs contrastingly coloured on opposite sides each carrying a permanent magnet defining a magnetic axis transverse to the pivot axis, magnetic field forming means exterior to the disc and arranged to provide a selectably reversible field causing rotation of the disc about the pivot axis to cause the display of one or of the other face of the disc in a predetermined viewing direction, characterized by:
a frame designed to pivotally mount a row of such discs,
the pivotal axis for each element being substantially contained in a plane parallel to said viewing direction and parallel the longitudinal direction of said row,
each said pivotal axis being inclined at substantially the same relative angle to the longitudinal direction of said row, said relative angle being of the order of 3°–10°.

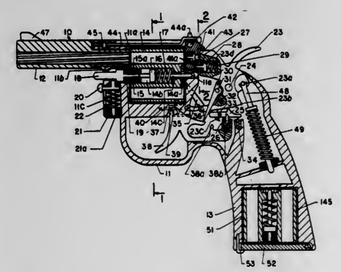
4,577,428
DISPLAY DEVICE WITH MOVABLE TAPE ASSEMBLIES
Charles E. Trame, Mequon, Wis., assignor to Everbrite Electric Signs, Inc., South Milwaukee, Wis.
Continuation-in-part of Ser. No. 508,015, Jun. 27, 1983, abandoned. This application Jul. 18, 1984, Ser. No. 631,932
Int. Cl.⁴ G09F *11/18*
U.S. Cl. 40—518 **15 Claims**



1. A device for selecting and displaying indicia that are on longitudinally movable tapes, said device comprising:

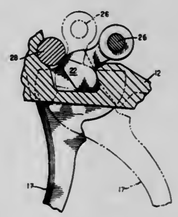
a generally planar panel having front and rear sides and at least a pair of parallel track means on the rear side, said panel having an elongated aperture between the track means,
an elongated planar strip for being mounted over said aperture on the front side of said panel and said strip having a plurality of windows through which indicia may be viewed,
a generally channel-shaped tape carrier having a front platen portion on which said tape is overlaid for said indicia to be presented in the aperture, said carrier having leg portions integral with and extending rearwardly from said platen portion in spaced relationship, said carrier being comprised of a sufficiently resilient material for allowing said leg portions to be forcibly flexed toward each other to contract said carrier and thereby permit it to be inserted between said track means for it to expand when the force is relieved so as to juxtapose said platen portion to said aperture, and
divider members engageable with said tape carrier from its front side and having guide portions that overlay said platen portion in spaced relationship to thereby define laterally spaced apart channels through which the laterally opposite edges of the tapes pass whereby they are retained in proximity with said platen portion and are guided for longitudinal movement.

4,577,429
FASTENING MEANS FOR A REMOVABLE REVOLVER CYLINDER
Shimon Waiser, P.O. Box 360, Midwood Station, Brooklyn, N.Y. 11230
Continuation-in-part of Ser. No. 387,166, Jun. 10, 1982, abandoned. This application Dec. 10, 1984, Ser. No. 680,320
Int. Cl.⁴ F41C *1/00*
U.S. Cl. 42—59 **4 Claims**



1. In a revolver having a frame, a handle, a barrel extending forwardly of the frame, a trigger, a cartridge firing hammer, an indexible and changeable cartridge cylinder located in a recess of the frame, said cylinder having a first and a second end and an axis of symmetry, means movably fastening said cylinder in said recess of the frame, the improvement comprising:
(a) the changeable cartridge cylinder having an elongated cylinder chamber which has an axis of symmetry coinciding with the axis of symmetry of the cartridge cylinder, said chamber shut from the front and from the rear by two end walls at least one of which is detachable, each of said walls having a through bore with a diameter smaller than the diameter of said cylindrical chamber and having an axis of symmetry coinciding with the axis of symmetry of said cylindrical chamber of the cylinder,
(b) a displaceable member having a first and a second end and a flange and disposed within said cylindrical chamber and said two bores, said displaceable member having a length at least approximately equal to the length of the cylinder,
(c) biasing means interposed between the displaceable member flange and one of said end walls of the cylindrical chamber to urge the displaceable member toward an initial position when the displaceable member is not under the action of said cylinder fastening means,
the frame characterized in that:
(1) it has at least one cavity in which is disposed said cylinder fastening means that is adjacent the first end of the cylinder,
(2) it has a hole adjacent the second end of the cylinder to receive the second end of the displaceable member when the displaceable member is pressed by the cylinder fastening means,
said cylinder fastening means consisting of:
(1) pushing means having an end which is located adjacent one of said bores in the end walls of said cylinder chamber of the cylinder, to be pushed into said bore, to fasten the cylinder in said recess of the frame,
(2) said end of the pushing means entering into the bore in the end wall of the cylindrical chamber and pressing the first end of the displaceable member thereby pushing the second end of the displaceable member into said hole in the frame when the cylinder is fastened in said recess of the frame.

4,577,430
TRIGGER AND SPRING MOUNT MECHANISM
William B. Ruger, Croydon, N.H., and Lawrence L. Larson, Branford, Conn., assignors to Sturm, Ruger & Company, Inc., Southport, Conn.
Filed Jun. 25, 1984, Ser. No. 624,181
Int. Cl.⁴ F41C *19/00*
U.S. Cl. 42—69 R **3 Claims**



1. In a firearm having a trigger mounted for movement therein the improvement comprising
(a) a trigger body including a finger grip section, a central trigger section and a trigger arm engaging section;
(b) a bearing cam positioned on the trigger body;
(c) a recess in the firearm frame for receiving the bearing cam; the recess including two substantially planar surfaces whose planes intersect; and
(d) arcuate retaining means adjacent the recess for preventing the bearing cam from moving out of the recess whereby the trigger body is pivotable about its bearing cam which cam is movable against the arcuate retaining means and the recess planar surfaces.

4,577,431
WEAR RESISTANT GUN BARREL AND METHOD OF FORMING
Paul A. Siemers, Clifton Park; Robert W. Kopp, Ballston Lake; Melvin R. Jackson, Schenectady, all of N.Y.; Steven R. Duke, Williston, Vt.; David P. Perrin, Charlotte, Vt., and Ying H. Liu, South Burlington, Vt., assignors to General Electric Company, Schenectady, N.Y.
Filed May 2, 1984, Ser. No. 606,110
Int. Cl.⁴ F41C *21/02*; B05D *1/08*
U.S. Cl. 42—76 A **7 Claims**



1. A composite gun barrel comprising,
an inner liner of a refractory metal,
a transition layer of said refractory metal and a jacket metal,
said transition layer being bonded to said liner,
an outer jacket of structural metal bonded to said transition layer,
said liner, transition layer and jacket being intimately metallurgically bonded together.

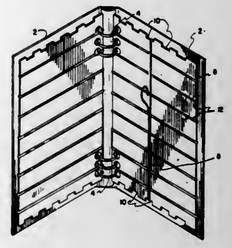
4,577,432
FISHING ROD HANDLE
John E. Brackett, Minneapolis, Minn., and Larry J. Dahlberg, Grantsburg, Wis., assignors to Fishing Designs, Inc., Minneapolis, Minn.
Continuation of Ser. No. 302,634, Sep. 15, 1981. This application May 15, 1984, Ser. No. 610,609
Int. Cl.⁴ A01K *87/00*
U.S. Cl. 43—23 **15 Claims**



1. An improved fishing rod handle comprising:
an elongated handle having a butt grip segment on the rear end thereof;
a rod receiving hole extending generally longitudinally substantially through the length of said handle, the londitudinal, central axis of said butt grip segment being offset from the longitudinal, central axis of said hole, the central axis of said butt grip segment being in the form of a helix transcribed about the longitudinal, central axis of said rod receiving hole;
said handle further comprises a reel seat segment to receive a reel on said handle forwardly of said butt grip segment; and
said rod receiving hole extends longitudinally completely through said reel seat segment as well as through said butt grip segment of said handle for receiving a fishing rod therein.

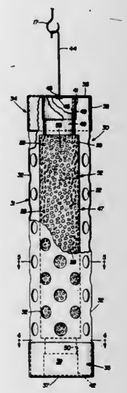
4,577,433
SNELLED HOOK, FLY, AND LURE HOLDER
Earl C. Jones, P.O. Box 123, Horeshoe Bend, Id. 83629
Filed Apr. 21, 1982, Ser. No. 362,231
Int. Cl.⁴ A01K *97/06*
U.S. Cl. 43—57.2 **11 Claims**

1. A compact and convenient fishing lure and leader holder comprising:
a substantially flat rectangular plate having a multiplicity of corresponding notches located along two opposite edges; and
a series of appropriately spaced rubber bands wrapped around said plate substantially parallel to the notched edges, whereby fishing snells may be wrapped around the plate through the corresponding notches and hooks and



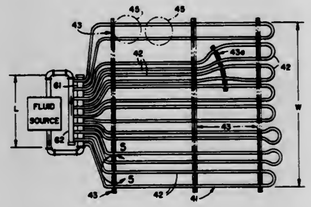
loose ends attached to or tucked under the rubber bands, thereby securing snelled lures to the plate.

4,577,434
FLYPAPER TRAP
Mitchell F. Davis, 1430 Hickory, Atwater, Ohio 44201
Continuation-in-part of Ser. No. 620,818, Jun. 15, 1984, abandoned. This application Mar. 18, 1985, Ser. No. 712,845
Int. Cl.⁴ A01M *1/14*
U.S. Cl. 43—115 **12 Claims**



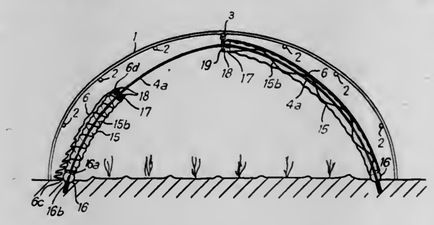
1. A flypaper trap including:
(a) a canister having a hollow interior and formed with a plurality of holes providing access into said interior;
(b) a pair of end caps mounted on opposite ends of the canister; and
(c) flypaper including a coating of a viscous tackifier material and a metalized prismatic material mounted within the interior of the canister, with said prismatic reflective material attracting insects into the canister interior through the canister holes for capture of the insects by the viscous tackifier material.

4,577,435
MICRO-CLIMATE TEMPERATURE CONTROL APPARATUS
Edward A. Springer, and Ronald D. Smith, both of 611 Mountain View Ave., Petaluma, Calif. 94952
Continuation-in-part of Ser. No. 293,681, Aug. 17, 1981, Pat. No. 4,411,101. This application Oct. 24, 1983, Ser. No. 545,072
Int. Cl.⁴ A01G *13/00*
U.S. Cl. 47—2 **10 Claims**



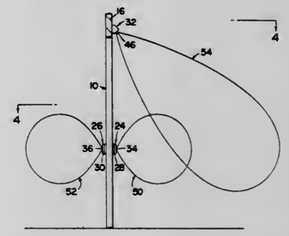
1. In a micro-climate temperature control apparatus for heating or cooling of plants including input manifold means, outlet manifold means, and an array of a plurality of heat transfer fluid conveying tubes each coupled to said input manifold means and said outlet manifold means for the flow of a heat transfer fluid therethrough, said tubes being formed of a flexible seif-supporting plastic material, adjacent tubes in said array being relatively spaced apart and said tubes being positioned adjacent to growing plants, and said tubes being independently movable over substantially the entire lengths thereof, the improvement in said micro-climate temperature control apparatus comprising:
elongated securement strip formed with a plurality of side-by-side tube receiving and retaining notches formed for and having said tubes removably mounted in press-fit relation in said notches.

4,577,436
DEVICE FOR OPENING OUT AND FOLDING BACK ONE OR MORE THERMAL SCREENS INSIDE A HOTHOUSE
Yves H. Dalle, Treémollier - Les Granettes, 13100 -Aix-en-Provence, France
Filed Dec. 14, 1982, Ser. No. 449,676
Claims priority, application France, Dec. 18, 1981, 81 24035; Feb. 22, 1982, 82 02990; Jul. 13, 1982, 82 12430
Int. Cl.⁴ A01G *9/22*
U.S. Cl. 47—17 **19 Claims**



1. A device for unfolding and for folding back at least one thermal screen inside a structure having a roof with a center, such as a hothouse, said device comprising: a plurality of hoops arranged at spaced intervals inside said structure, each hoop being formed of a tube having an upper end connected to said center inside said structure, and a lower end supported on the ground, a plurality of extensible sleeves, at least some of said hoops being surrounded by one each of said sleeves, each sleeve being an air chamber comprising a first end fixed at the lower end of the respective hoop and a second, movable end comprising a piston having a perforated center and slidable over the respective hoop, said screen having one end fixed to said lower ends of at least some of said plurality of hoops and another end fixed to said piston, said air chambers have helical reinforcements placed inside said chambers, and means for blowing air into said air chambers adjacent there lower ends to thereby cause displacement of the pistons and unfolding of the screen.

4,577,437
AUTOMATIC DOOR OBJECT SENSING SYSTEM
Daniel C. Gionet, and Harry V. Nguyen, both of St. Petersburg, Fla., assignors to Lanson Electronics, Inc., Pinellas Park, Fla.
Filed Nov. 26, 1984, Ser. No. 675,004
Int. Cl.⁴ E05F *15/20*
U.S. Cl. 49—25 **14 Claims**

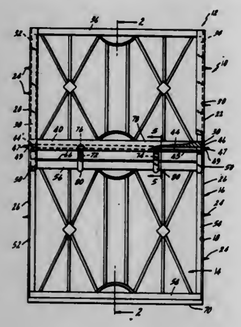


1. An automatic swing door structure comprising a door, adapted to be mounted in the doorway of a support structure for swing opening relative thereto, a motion detector fixedly mounted for projecting a motion detecting beam over a path within the door width and a few feet forward of the door on the approach side thereof, a motion detector fixedly mounted on the approach side of the door for projecting a motion detecting beam over a narrower and shorter path, forward of the approach side of the door, than the first beam, a motion detector fixedly mounted on the swing side of the door for projecting a motion directing beam over a path in size similar to the second beam, outwardly of the swing side of the door, and motor means operated by the motion detecting means when the beams are intercepted by an object.

4,577,438
SECURITY WINDOW
Antonio O. Santiago, 6865 Michigan Ave., Detroit, Mich. 48210
Filed Aug. 13, 1984, Ser. No. 639,729
Int. Cl.⁴ E06B *3/68*
U.S. Cl. 49—57 **7 Claims**

1. A security unit for a window opening in a building comprising a security panel, means for supporting said panel in said window opening for sliding movement from an installed position in which one edge of said panel is received in a channel to a second position in which said panel is withdrawn from said channel and may be removed or opened, and selectively operable means for either locking said panel in installed position by preventing sliding movement thereof to said second position or for unlocking said panel by permitting such sliding movement comprising means providing a track adjacent to the opposite edge of said panel, a plurality of pins independently slidably mounted on said track and extending toward and terminating in opposed relation to said opposite edge of said panel in the installed position thereof to prevent movement of said panel from said installed to said second position, means along said opposite edge of said panel providing a plurality of spaced, relatively deep openings capable of receiving said respective pins so that when the pins are aligned with said openings said panel may be moved from said installed to said second position

because said pins will enter said openings and not interfere with such movement, whereby said panel may be removed or opened, and opening means along said opposite edge adapted



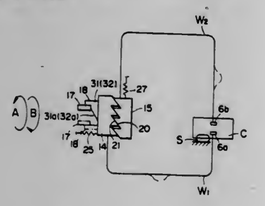
to receive said pins but of insufficient depth to permit said panel to be moved far enough toward said second position to clear said channel, whereby the panel remains locked in installed position.

4,577,439

WINDOW REGULATOR MECHANISM

Shojiro Seki, Hadano, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jun. 20, 1984, Ser. No. 622,454
Claims priority, application Japan, Jun. 25, 1983, 58-113635
Int. Cl.[4] E05F *11/48*
U.S. Cl. 49—352 **6 Claims**



1. A window regulator for operating a slidable window panel, comprising a carrier secured on said window panel and mounted for movement along a guide member, a first wire having one end mounted on said carrier, a second wire having one end mounted on said carrier, and a drive unit connected to the other ends of said first and second wires for winding one of said first and second wires and unwinding the other wire to move said carrier in one direction, said drive unit including:

(a) a drive drum rotatably and slidably mounted on a shaft for winding and unwinding said first wire;

(b) a driven drum rotatably and slidably mounted on said shaft adjacent said drive drum;

(c) a first ratchet mounted on said drive drum, said first ratchet having ratchet teeth that face in a direction to unwind said first wire;

(d) a second ratchet mounted on said driven drum, said second ratchet having ratchet teeth facing in a direction to unwind said second wire for engagement with said ratchet teeth of said first ratchet;

(e) a winding spring mounted in said drive unit for urging said driven drum in a direction to wind said second wire on said driven drum;

(f) resilient means for urging one of said drive and driven drums to bring said first and second ratchets into resilient engagement;

(g) a drive member secured on said shaft for rotation in unison therewith to rotate said drive drum in the same direction as said shaft rotates; and

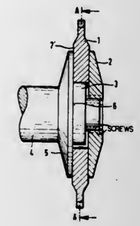
(h) means, responsive to rotation of said drive member in a direction to cause said drive drum to wind said first wire for preventing movement of said drive and driven drums along said shaft to hold said second ratchet in mesh engagement with said first ratchet.

4,577,440

CLAMPING DEVICE FOR A GRINDING RING

Erwin Junker, Talstrasse 78, D 7611 Nordrach/Baden, Fed. Rep. of Germany

Filed Jun. 13, 1984, Ser. No. 620,353
Claims priority, application Fed. Rep. of Germany, Jun. 21, 1983, 3322258; Feb. 16, 1984, 3405556
Int. Cl.[4] B24B *41/04*
U.S. Cl. 51—168 **15 Claims**





1. A grinding apparatus, for utilization on a grinding machine in which solid material is removed from a surface of a solid body by the rotary motion of a grinding disk, which comprises:

(a) a rotatable rectilinear driving shaft;

(b) a support flange, said support flange being mounted to said driving shaft and having an outer flat ring-shaped planar clamping surface, said clamping surface being oriented at a substantially right angle to the central longitudinal axis of said driving shaft;

(c) a clamping flange, said clamping flange being juxtaposed with and spaced from the clamping surface of said support flange;

(d) a generally circular grinding ring, said grinding ring being interposed between said clamping flange and said support flange, at least the outer edge of said grinding ring being composed of an abrasive material which is capable of grinding and comminuting the surface of a solid body, by the rotary motion of said grinding ring, while concomitantly contiguously contacting said surface of said solid body with said abrasive material, said grinding ring having a central generally circular borehole, one face of said grinding ring being mounted on said clamping surface of said support flange, so that said grinding ring is oriented at a substantially right angle to said central longitudinal axis of said drive shaft;

(e) a generally circular supporting portion means, said supporting portion means constituting an outer portion of said support flange at or adjacent the terminal end of said driving shaft, and extending centrally between said clamping flange and said clamping surface of said support flange;

(f) a first interacting guiding means, said first guiding means being disposed on the outer annular surface of said supporting portion means;

(g) a second interacting guiding means, said second guiding means being disposed on the inner surface of said borehole of said grinding ring, so that said first and second guiding means cooperate and interact to allow and permit good balancing and faultless whirling of said grinding ring, when centrally mounted and clamped between said clamping flange and said support flange, with balanced spinning and rotation of said grinding ring in exactly circular motion; and

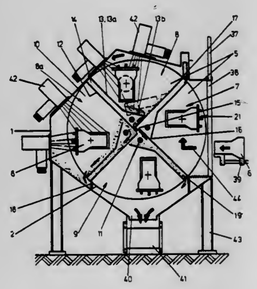
(h) means to urge said clamping flange towards said support flange, so that said grinding ring is restrained and revolved in rotary motion about said central longitudinal axis of said driving shaft, when said driving shaft is rotated, said grinding ring being thereby detachably attached and fastened to said driving shaft.

4,577,441

MULTIPLE-STATION CENTRIFUGAL BLASTING APPARATUS

Peter Brenner, Schaffhausen, Switzerland, assignor to Georg Fischer Aktiengesellschaft, Scaffhausen, Switzerland

Filed Mar. 9, 1984, Ser. No. 588,145
Claims priority, application Switzerland, Mar. 21, 1983, 1519/83
Int. Cl.[4] B24C *3/18*
U.S. Cl. 51—419 **10 Claims**



1. Blasting apparatus for passing workpieces through a plurality of process stations comprising:

conveyor drum means having a generally cylindrical configuration defining a plurality of receiving chambers each adapted to receive therein workpieces to be processed;

means for rotating said conveyor drum means about a central axis thereof for passing said receiving chambers through a plurality of process stations including at least one blasting process station and a loading and unloading station, said blasting process station including means for directing a blasting medium at said workpieces within said receiving chambers; and

wall means extending radially between each of said receiving chambers defining in said conveyor drum means between each of said receiving chambers thereof flow off channels extending radially of said conveyor drum means from the center to the outer circumference thereof for enabling outflow of said blasting medium;

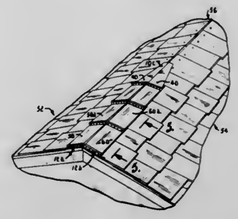
said wall means having radially innermost ends defining in a labyrinthine flow pattern at the center of said conveyor drum means flow paths through which each of said flow off channels is connected with said receiving chambers.

4,577,442

RIDGE ROW CLAMP

Ernest F. Callaway, 5413 Hedges, Raytown, Mo. 64133

Filed Jul. 18, 1983, Ser. No. 514,547
Int. Cl.[4] E04D *3/40*
U.S. Cl. 52—57 **7 Claims**



1. For use in shingling first and second opposed surfaces forming a ridge of a roof, a shingle mount apparatus comprising the combination of:

first and second roofing shingles;

a sheet member bendable about an imaginary longitudinal axis to present an edge having first and second plates sloping therefrom;

fastener means on said sheet and movable therewith to present first and second fastener elements on said first and second plates attaching a repective shingle atop said respective plate, each fastener element comprising:

an upstanding support member generally normal to said sheet and lying generally perpendicular to said ridge upon affixation of said sheet to said ridge; and

a lip extending from said upstanding support and above said plate and lying generally perpendicular to said ridge upon said affixation, each lip clamping a shingle to said associated plate upon insertion of an edge of said shingle therebetween; and

means for affixing said sheet to said roof with said sheet edge defining the edge of said roof ridge and said first and second plates respectively overlying said opposed surfaces of said roof forming said ridge, whereupon said attachment of said shingle to said affixed plate by said fastener element presents a shingling of a segment of said surface underlying said respective plate and forming said roof ridge.

4,577,443

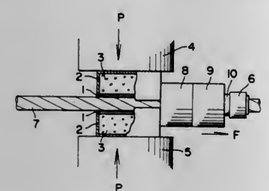
METALLIC SHEATH FOR POSTTENSIONING METHOD

Toshiyuki Kitta, Omiya; Wataru Abe, Hiratsuka, and Tadaaki Takase, Fujisawa, all of Japan, assignors to Oiles Industry Co., Ltd., Tokyo, Japan

Filed Nov. 12, 1982, Ser. No. 441,080
Claims priority, application Japan, Nov. 13, 1981, 56-181187
Int. Cl.[4] E04C *5/12*
U.S. Cl. 52—230 **8 Claims**

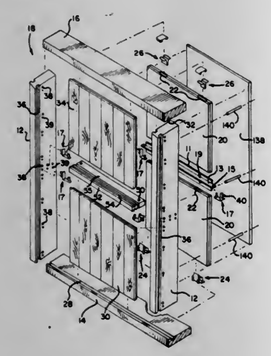
1. A metallic sheath for use in a posttensioning method, said sheath having an inner peripheral surface thereof coated with

a solid lubricating coating comprising 20–60 vol % of polytetrafluoroethylene, 10–50 vol % of a soft metal, a metal sulfide



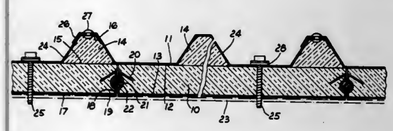
or a mixture thereof, and 30–70 vol % of styrenated alkyd as a binder.

4,577,444
CHANGEABLE WALL PANEL STRUCTURE
Dewey S. C. Sanderson, 3901 E. 26th Ave., Denver, Colo. 80205
Filed Sep. 2, 1983, Ser. No. 529,123
Int. Cl.⁴ B44F *7/00*
U.S. Cl. 52—311 **16 Claims**



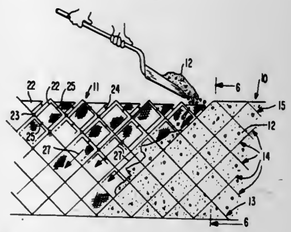
1. A changeable wall structure comprising a frame including upper, lower and side members, at least one inner panel, a first mounting means connected to said frame for removably holding said inner panel, said first mounting means comprising a bracket including a base plate secured to the lower member of the frame, and a member removably connected to and extending upwardly from said base plate for supporting the lower edge of said inner panel, at least two outer panels mounted one above the other, and second mounting means connected to said frame for removably holding said outer panels to conceal said inner panel, said second mounting means including a bracket secured to each side member of the frame at upper, lower or intermediate levels, and at least one shelf supported at each end by said brackets, grooves defined by the shelf and extending along its upper and lower surfaces for receiving the bottom and top edges, respectively, of said outer panels, said inner and outer panels being removably held so that each panel substantially fills the space between the side members of the frame and wherein, upon removal of an outer panel, the inner panel is exposed to view.

4,577,445
INSULATION PANEL ASSEMBLY FOR USE IN THE ROOFING AND/OR THE CLADDING OF WALLS OF BUILDINGS
William F. Price, Rhu, United Kingdom, assignor to Ecometal Limited, Glasgow, United Kingdom
Filed Aug. 28, 1984, Ser. No. 645,412
Int. Cl.⁴ E04B *1/62, 1/74*
U.S. Cl. 52—403 **5 Claims**



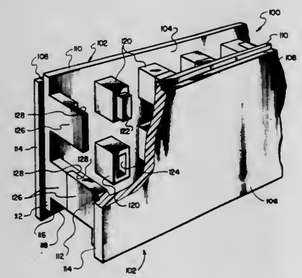
1. In an insulation panel assembly for use in the roofing and/or the cladding walls of buildings, comprising an elongate panel having two major faces and two longitudinal side edge faces, and two elongate metal sections, each comprising a web engaging on one side thereof one of the side edge faces, a first flange at one longitudinal edge of the web and extending at right angles to the web from one side thereof, a second flange at the other longitudinal edge of the web for the extending at an inclination to the web from the one side thereof and towards the first flange, and a channel in the web opening to the other side of the web for receiving a vapour seal, the improvement wherein the panel is preformed from mineral fibres having a density of not less than 180 kg/m^3, the first flange of each section is fitted flush against one of the major faces of the panel, the second flange is fitted into a correspondingly inclined first groove extending the full length of the panel and cut into the respective side edge face of the panel intermediate the major faces thereof, and the channel is fitted into a corresponding second groove cut into the respective side edge face of the panel intermediate the inclined first groove and the one major face of the panel exclusively by sliding the section along the respective side edge of the panel, and a metal sheet is placed loosely on the other major face of the panel.

4,577,446
MACHINE WALL
Alexander Stefan, 3120 S. Highland Dr., Las Vegas, Nev. 89109
Filed Mar. 8, 1984, Ser. No. 587,462
Int. Cl.⁴ E04F *15/14*
U.S. Cl. 52—425 **1 Claim**



1. A machine wall, comprising, in combination, a framework and a quantity of concrete for being poured into said framework, said framework comprising a plurality of horizontal courses laid one upon another and fastened together, each said course comprising a strip of bent up, expanded metal screening bent into a zig-zag configuration by right angle, alternate upwardly and downwardly bends and forming a plurality of same-sized flat panels between said bends, said courses being wired together at adjacent said bends to form said framework, all said panels of said courses extending angularly upwardly and forming a honey-combed structure for said framework, and some of said panels including a flap die cut in a center thereof, said flap being outwardly bent up at right angle, said bent up flaps together forming a vertical, general wall on one side of said framework, and means for said concrete being poured inside said honey-combed structure.

4,577,447
CONSTRUCTION BLOCK
William E. Doran, 524 Via Almar, Palos Verdes Estates, Calif. 90274
Continuation-in-part of Ser. No. 310,797, Oct. 13, 1981. This application Jun. 10, 1983, Ser. No. 503,358
Int. Cl.⁴ E04B *1/12, 2/00;* E04C *1/04*
U.S. Cl. 52—571 **3 Claims**

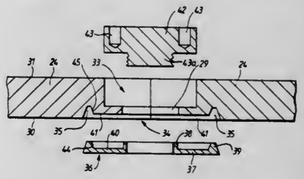


1. A construction building block formed of a lightweight, molded plastic material comprising:

a pair of half members, one of said half members being located in a reversed facing relationship relative to the other said half member forming therebetween an opening assembly, said half members being identical, said half members forming a front wall and a back wall and a top surface and a bottom surface, said front wall being connected to said back wall by a pair of spaced apart side walls, said top surface and said bottom surface and said side walls forming a peripheral edge of said construction building block; and

first interlocking means connected to said back wall, said first interlocking means of said one half member interlockingly matingly engaging with said first interlocking means of the other said half member, said first interlocking means being composed of a plurality of upstanding members, said first interlocking means being located within said opening assembly, said upstanding members comprising a plurality of connected pairs, each said connected pair including a polygonal shaped male member and a polygonal shaped female member with the said male member adhesively matingly engaging with its respective said female member, said opening assembly forming a plurality of openings between said connected pairs of said upstanding members, said openings extending between said top surface and said bottom surface, upon said building block being located in a vertically orientated stacked relationship said openings between vertically joined said building blocks forming a plurality of separate openings adapted to accommodate a quantity of poured masonry cement which when hardened provides the necessary strength for a wall structure produced by said building blocks.

4,577,448
FLOORS
David Howorth, Bacup, England, assignor to The British Picker Company, Ltd., Todmorden, England
Filed Jun. 3, 1982, Ser. No. 384,743
Claims priority, application United Kingdom, Jun. 17, 1981, 8118563
Int. Cl.⁴ E04C *1/30;* E04B *1/00;* F16B *1/00;* E01C *5/20*
U.S. Cl. 52—584 **9 Claims**



1. An artificial ice skating floor comprising:

(a) a plurality of panels of high molecular weight polyethylene arranged edge to edge to provide a substantially continuous planar skating surface;

(b) notches in the edges of the panels which co-operate with the notches in the edges of adjacent panels to define a plurality of bores extending vertically through the skating surface from the lower face of the skating surface to the upper face of the skating surface;

(c) a set of first rebates in the upper faces of the panels around the said notches, and said first rebates of the panels co-operating with the said first rebates of adjacent panels so that an upper counterbore is defined around the upper end of each said bore;

(d) a set of second rebates in the lower faces of the panels around the said notches, the said second rebates of the panels co-operating with the said second rebates of adjacent panels so that a lower counterbore is defined around the lower end of each said bore;

(e) a set of grooves in the lower faces of the panels;

(f) a set of flanged first locating members each of which engages in one of the said lower counterbores with the flanged portion of the first locating member engaging in the groove of the adjacent panels which define the said one lower counterbore thus preventing the panels from moving apart in the horizontal direction;

(g) and a set of second locating members each of which engages in one of the said upper counterbores and is screw-threadedly interconnected with one of said first locating members through the said bore associated with the said upper counterbore, sandwiching the panels between the first and second locating members so that the panels cannot move apart in the vertical direction.

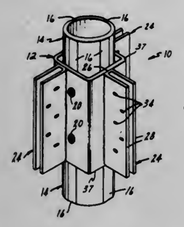
4,577,449
PREFABRICATED STRUCTURAL CONNECTOR FOR STEEL-FRAME BUILDINGS
Aldo Celli, Via Jacopo Palma 9, 20146 Milano, Italy
Filed Nov. 16, 1983, Ser. No. 555,365
Int. Cl.⁴ E04C *3/30*
U.S. Cl. 52—721 **10 Claims**

1. A prefabricated steel-frame building structural connector for interconnecting two vertical column members with each other end-to-end and with at least one horizontal beam member having a central web, said vertical column members having predetermined identical substantially square tubular cross sections, said structural connector comprising

a central hollow tubular portion having a central axis, axially spaced flat ends perpendicular to said axis, a substantially square cross section identical to said predetermined column cross section, and four flat outer surfaces facing laterally outwardly of said axis,

first and second hollow substantially cylindrical tubular end projections joined to said central portion and projecting from said ends of said central portion in opposite directions coaxially with said central portion,

each said cylindrical end projection including four perpendicularly spaced outwardly facing flat surface portions disposed in diametrically opposed pairs extending throughout the length of the associated end projection and diametrically spaced from each other by a distance substantially equal to separation between opposed inner surfaces of said predetermined substantially square cross



section, such that said cylindrical projections are constructed for close telescopic insertion into column members with said columns seated against said spaced ends of said central portions so as to align the column members axially and rotationally with said central portion and with each other, and

at least one mounting bracket permanently joined to one flat outer surface of said central portion and having a flange projecting laterally outwardly from said one surface parallel to said axis, said flange being structured for connection to the web of a beam member.

4,577,450

WATERPROOF FLOOR PANEL FASTENING SYSTEM, ACCESSIBLE FROM ABOVE

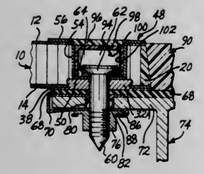
David T. Large, Everett, Wash., assignor to The Boeing Company, Seattle, Wash.

PCT No. PCT/US83/00889, § 371 Date Jun. 6, 1983, § 102(e) Date Jun. 6, 1983, PCT Pub. No. WO84/04948, PCT Pub. Date Dec. 20, 1984

PCT Filed Jun. 6, 1983, Ser. No. 515,712

Int. Cl.⁴ E04C *5/16*

U.S. Cl. 52—787 **31 Claims**



1. A fastener assembly for floor panels which permits floor panel removal and inspection from above, comprising:

an upwardly open first cup;

said first cup having a central hole in its bottom and having a fastening bolt extending therethrough;

an upper second cup fitted in the opening of the upwardly open first cup;

the upper second cup having a central portion forming a wall transverse to the bolt axis and spaced above on the bolt head; and

a hardened seal extending across and above said transverse wall of said upper cup and forming a seal across the opening of the upwardly open first cup.

4,577,451

DEVICE FOR DETECTING THE PRESENCE OF AN ARTICLE IN THE RECESSES OF THE FEEDING DISC OF A WRAPPING MACHINE

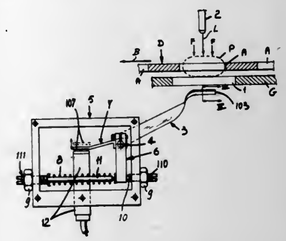
Sandro Salicini, Bologna, Italy, assignor to Carle & Montanari S.p.A., Bologna, Italy

Filed May 22, 1984, Ser. No. 612,833

Claims priority, application Italy, May 23, 1983, 12529 A/83

Int. Cl.⁴ B65B *57/10*

U.S. Cl. 53—58 **4 Claims**



1. Detecting device for detecting the presence or absence of an article in recesses of a feeding disc of a wrapping machine for articles, comprising at least one nozzle arranged at one side of said disc and emitting a continuous or a pulsating jet of air against a portion of the disc containing said recesses so that said jet is intercepted by a said article if present in a said recess, and passes through said recess and said disc in the absence of a said article, at least one movable target member being provided opposite said nozzle at a side opposite said disc and at a suitable distance therefrom, said target member being associated with sensor means adapted to issue different signals depending upon whether or not said target member is displaced by said jet of air and, therefore, depending upon whether an article is absent or present in a said recess, said nozzle being arranged above said feeding disc and at a suitable distance therefrom so as to avoid any contact with said article, a fixed guide member being provided below said feeding disc and in alignment with said recesses for supporting a said article housed in a said recess, said guide member having at least one opening axially aligned with said nozzle and said target member to permit the passage therethrough of said jet of air emitted by said nozzle, said target member being in the form of a shovel and constituting the end portion of a lever which is keyed on a shaft rotatably mounted in a housing enclosing said sensor means, said shaft having keyed thereon a control lever whose distance from said sensor means is controlled by a spring means, said control lever also being displaced with respect to said sensor means when said shovel-shaped target is displaced by said jet of air, thereby causing said sensor means to issue a different signal.

4,577,452

APPARATUS FOR LOADING AND UNLOADING A FILM CASSETTE, IN PARTICULAR AN X-RAY FILM CASSETTE

Peter Hösel, and Günther Schindlbeck, both of Munich, Fed. Rep. of Germany, assignors to Agfa-Gevaert AG, Leverkusen, Fed. Rep. of Germany

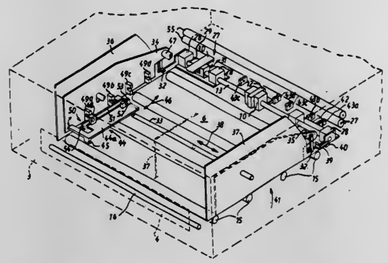
Filed Aug. 29, 1983, Ser. No. 527,308

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1982, 3232148

Int. Cl.⁴ B65B *5/08*

U.S. Cl. 53—266 R **15 Claims**

1. Apparatus for loading and unloading a film cassette, in particular an X-ray film cassette, comprising: a housing defining a compartment and including a front face having an opening to the compartment through which opening the cassette is introduced; first means for transporting the cassette from the opening into the compartment and for discharging the cassette from the compartment through the opening; means for unlocking the cassette at an unlocking station; second means for transporting the unlocked cassette to a removing station in which the film is removed from the cassette and subsequently



to a loading station in which the cassette is loaded with a new film; and means for removing the film from the cassette at the removing station and loading the cassette with a new film at the loading station, the unlocking means including at least one rocker arranged at the rear side of the compartment and movable in a direction parallel to the length of the cassette for unlocking the cover of the latter, and at least one hook insertable into the cassette and movable in an upward direction for lifting the cover from the remaining part of the cassette.

4,577,453

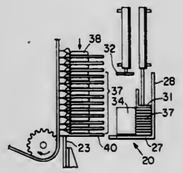
METHOD OF AND APPARATUS FOR FORMING AND CARTONING MULTI-STACK ARRAYS OF COMPRESSIBLE ARTICLES

Henry H. Hofeler, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Feb. 1, 1984, Ser. No. 576,097

Int. Cl.⁴ B65B *63/02*

U.S. Cl. 53—438 **8 Claims**



7. A method of forming and cartoning multi-stack arrays of compressible elongate articles having elongate side edges, said method comprising the steps of sequentially forming and marshalling a multi-stack array of stacks of articles with said stacks in side-by-side abutting relation by independently pushing each formed stack along a first path disposed orthogonally with respect to said elongate side edges until it is disposed in its respective position in said array being marshalled, independently compressing each of said stacks to a predetermined height prior to the next successive stack being pushed to its respective position in said array for forming an abutting stop for the next successive stack and for obivating interleaving of said articles of said next successive stack with said articles of the preceding said stack, and unitarily pushing said array into an empty carton having a height substantially equal to said predetermined height.

4,577,454

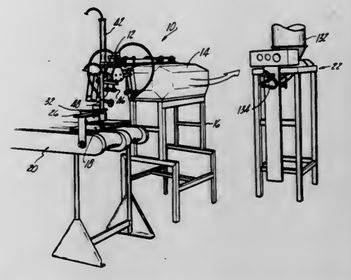
VALVE BAG PLACING MACHINE AND METHOD

Paul R. Wright, and Dale A. Hill, both of Humboldt, Iowa, assignors to Douglas & Lomason Company, Farmington Hills, Mich.

Filed May 31, 1984, Ser. No. 615,752

Int. Cl.⁴ B65B *43/30*

U.S. Cl. 53—492 **24 Claims**



1. An apparatus for placing a valve bag having a valve opening, sides, and an end flap, said apparatus picking up said valve bag, opening said valve opening and placing said valve opening over a material dispensing nozzle, said apparatus comprising;

a bag clamping assembly including one or more first vacuum cups movable by a first actuator means, said first vacuum cups attachable to said end flap of said valve bag, said bag clamping assembly further including a pair of articulated arms movable by a second actuation means, said articulated arms having one or more bag engaging means attached thereto which are movable toward one another to contact opposite sides of said valve bag, said bag engaging means further movable away from said first vacuum cups thereby opening said valve opening, and

a movable arm for positioning said bag clamping assembly in contact with said valve bag, rotating said valve bag and translating said bag such that said bag valve opening is placed over said material dispensing nozzle.

4,577,455

GRASS CUTTING HEIGHT INDICATOR FOR LAWN MOWER AND TRACTOR COMBINATION

Akira Amano, Tokyo, and Kazuhiko Sasaki, Saitama, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 30, 1984, Ser. No. 676,907

Claims priority, application Japan, Nov. 30, 1983, 58-184750

Int. Cl.⁴ A01D *34/54*

U.S. Cl. 56—17.1 **5 Claims**

1. A grass cutting height indicator in a power-driven tractor having an operator's seat, comprising:

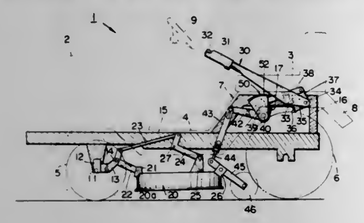
(a) a lawn mower unit suspended from a tractor frame of said tractor;

(b) an adjusting lever disposed to be pivotably supported on said tractor frame below and to the rear of said operator's seat;

(c) a link mechanism operatively connected between said adjusting lever and said lawn mower unit for adjusting the height of said lawn mower above ground in response to operation of said adjusting lever said link mechanism including a first arm pivotably supported by a first support shaft on said tractor frame and a second arm mounted on a second support shaft for angular movement with said

adjusting lever and operatively coupled to said first arm in substantially parallel relation thereto;

(d) an indicator member for indicating grass cutting heights comprising a sector-shaped plate having a center bearing fixedly supported on said first support shaft for angular movement with said support shaft and indicator means



mounted on an outer arcuate edge of said sector-shaped plate; and

(e) an indicator window defined in a tractor body at the top of the body portion next to the front side portion of the seat, and indicator member being positioned so that said indicator means has at least a portion thereof facing said indicator window.

4,577,456

MOWING MACHINE

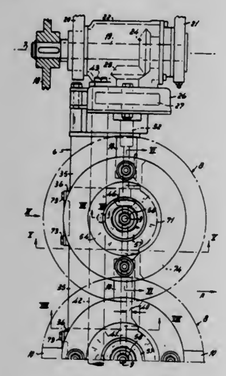
Ary van der Lely, Maasland, and Cornelis J. G. Bom, Rozenburg, both of Netherlands, assignors to C. Van Der Lely N.V., Maasland, Netherlands

Division of Ser. No. 416,047, Sep. 7, 1982, Pat. No. 4,476,666. This application Oct. 2, 1984, Ser. No. 656,881

Claims priority, application Netherlands, Sep. 10, 1981, 8104178

Int. Cl.⁴ A01D *55/18*

U.S. Cl. 56—13.6 **20 Claims**



1. A mowing machine having an elongated main frame comprising a plurality of driving units with cutters along the length thereof, said cutters being rotatable about respective upwardly extending axes and driving means connected to rotate said cutters about said axes, said units having end faces which extend across a major part of their length in the usual direction of operation, a tie member securing said units in place and said tie member extending through aligned apertures of said driving units intermediate the leading and trailing edges of said frame and approximately midway of each said end face's length, said tie member being heavily loaded in tension to apply compressive force substantially centrally to said driving units in a direction transverse to the machine's usual direction of operations and form a rigid main frame that resists bending and is uniformally loaded.

4,577,457

TREE TRIMMING APPARATUS

Spencer H. Grant, 1220 Millers Mil Rd., P.O. Box 450, Stockbridge, Ga. 30281

Continuation-in-part of Ser. No. 348,493, Feb. 12, 1982, Pat. No. 4,455,815. This application Mar. 8, 1984, Ser. No. 587,609

Int. Cl.³ A01D *55/8*

U.S. Cl. 56—235 **8 Claims**



1. Tree trimming apparatus adapted to be manually controlled by an operator including:

a support frame;

a single ground engaging wheel rotatably mounted in said support frame and adapted to partially support said support frame on the ground so that said frame and wheel can pivot from side-to-side about the point where the wheel engages the ground;

manually engageable handle means on said support frame so that the operator can grasp said handle means to guide the tree trimming apparatus, said handle means constructed and arranged so that the operator can exert side-to-side moments of force on said trimming apparatus to control the side-to-side pivoting movement thereof about the point where the wheel engages the ground;

mast means mounted on said support frame and extending upwardly and outwardly therefrom on one side of said wheel;

cutter means mounted on said mast means to trim a tree as the operator guides the apparatus around the tree, said cutter means having a cutting plane defining a prescribed angle with respect to the plane of the wheel so that when said wheel is vertically oriented, said cutting plane defines the prescribed angle with respect to the vertical, the combined weight of said mast means and said cutter means exerting a moment of force on said apparatus tending to pivot said apparatus from side-to-side in a first direction about the point where the wheel engages the ground; and

drive means mounted on said support frame on the opposite side of said wheel from said mast means and drivingly connected to said cutter means to operate same, the weight of said drive means exerting a moment of force on said apparatus tending to pivot said apparatus from side-to-side in the direction opposite said first direction about the point where the wheel engages the ground, said drive means positioned relative to said wheel so that the moment of force exerted on said apparatus by the combined weight of said mast means and said cutter means equals the moment of force exerted on said apparatus by the weight of said drive means only when said wheel is vertically oriented to provide an indication to the operator through the handle means when the wheel is vertically oriented.

4,577,458

JOINING OF YARNS BY PNEUMATIC SPLICING

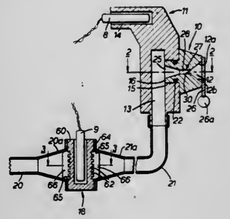
Russell K. Garnsworthy, Highton, Australia, assignor to Commonwealth Scientific and Industrial Research Organization, Australia

Filed Oct. 15, 1984, Ser. No. 660,674

Claims priority, application Australia, Oct. 14, 1983, PG1861

Int. Cl.⁴ B65H *69/06*; D01H *15/00*

U.S. Cl. 57—22 **20 Claims**



1. Apparatus for splicing fibrous yarns comprising structure having walls which define a chamber accessible to receive respective portions of the yarns and confine them adjacent one another, means to direct a gas stream into said chamber transversely to said yarn portions, and means to maintain the gas stream entering the chamber at an elevated temperature sufficient to produce an enhanced intermingling of fibres of the yarn portions which is effective to splice the yarns together.

4,577,459

PROCESS AND APPARATUS FOR MECHANICALLY SPLICING YARNS

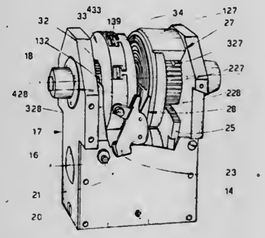
Claudio Speranzin; Roberto Badiali, both of Pordenone, and Luciano Bertoli, Salo', all of Italy, assignors to Officine Savio S.p.A., Pordenone, Italy

Filed Nov. 3, 1982, Ser. No. 438,805

Claims priority, application Italy, Nov. 4, 1981, 83494 A/81; May 26, 1982, 83396 A/82; May 26, 1982, 83397 A/82; Sep. 13, 1982, 83447 A/82

Int. Cl.⁴ B65H *69/06*; D01H *15/00*

U.S. Cl. 57—22 **38 Claims**



1. Procedure for splicing textile yarns mechanically whereby two yarns which are initially placed crosswise, awry or parallel to each other are first untwisted and then retwisted together utilizing two ring means comprising untwisting said yarns up to a desired value in positions of mutual noninterference, bringing together said yarns until they are substantially pressed against each other, clamping said yarn at a position lying at about the beginning of the desired taper of each remaining tail end in cooperation with said ring means so as to determine the length of said remaining tail ends, effecting a plucking-tearing action on the tails to be discharged, to obtain progressive remaining tail ends before said retwisting action, doubling and retwisting the remaining tail end by said ring means in at least two points located at least at about the ends of the splice, the action of mechanical retwisting taking place in a controlled manner from the middle of the ring means substantially up to the periphery of the same at the same time and is obtained with a mixed tangential and axial movement outwards.

14. A splicer for splicing textile yarns comprising a frame, a single pair of coaxial rings facing each other mounted on said frame to move relative to each other and between which said yarns are frictionally acted upon to be untwisted, coaxial retwisting means positioned within said rings for frictional action on said yarn, means on said retwisting means to bring the yarns together, plucking and tearing means positioned on said frame outside of said rings, clamping means on said retwisting means and drive means mounted on said frame to operate said rings, said retwisting means and said plucking and tearing means.

4,577,460

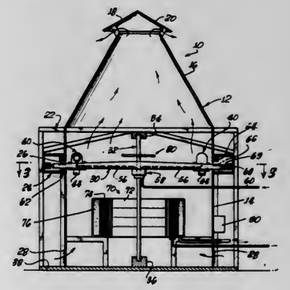
METHOD AND APPARATUS FOR GENERATING ENERGY

Wayne S. Wirsching, 85 Gentry Way, Reno, Nev. 89502

Filed Oct. 10, 1980, Ser. No. 195,798

Int. Cl.⁴ F02C *3/14*

U.S. Cl. 60—39.35 **1 Claim**



1. The method for converting fuel energy to mechanical or electrical energy which comprises: (1) affixing a circular disc means onto a shaft means at a point between the ends of said shaft means; (2) mounting said ends of said shaft means for rotation within bearing means; (3) affixing said bearing means to a frame means; (4) affixing at least one jet propulsion engine means onto said circular disc means proximate the outer edge of said circular disc means; (5) providing fuel to said jet propulsion engine means through a fuel conduit means; (6) placing a electromagnetic bearing means at the outer edge of said circular disc means for aiding the relieving of the pull of gravity upon said circular disc means and its associated jet propulsion engine means; (7) providing an electrical generating means at the periphery of said circular disc means in order to provide ignition energy for said jet propulsion engine means and the energy for energizing said electromagnetic bearing means; and (8) providing speed control means for controlling the rotational speed of said circular disc means.

4,577,461

SPACECRAFT OPTIMIZED ARC ROCKET

Gordon L. Cann, P.O. Box 279, Laguna Beach, Calif. 92652

Filed Jun. 22, 1983, Ser. No. 506,876

Int. Cl.⁴ F03H *1/00*

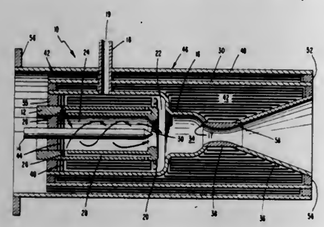
U.S. Cl. 60—203.1 **23 Claims**

1. A thruster for use in an extraterrestrial vehicle comprising:

(a) an outer casing;

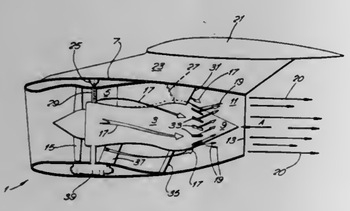
(b) a cathode mounted within said outer casing and having an end;

(c) an anode mounted within said outer casing and spaced a predetermined distance from said cathode end, said predetermined distance defining a gap in which an arc is formed;
(d) nozzle means mounted within said outer casing, and
(e) fuel supply means for supplying propellant fuel to said thruster comprising:
(i) an inlet conduit extending through said outer casing;



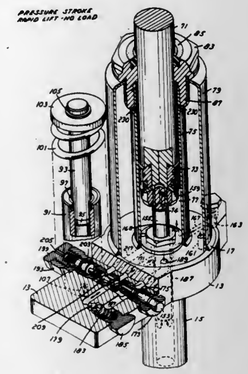
(ii) first passageway means connecting said inlet conduit with an area within said outer casing adjacent said gap,
(iii) said first passageway means including a supply conduit extending through said anode and including a portion thereof located upstream of said gap; and
(iv) second passageway means extending from said inlet conduit and bypassing said arc.

4,577,462
EXHAUST MIXING IN TURBOFAN AEROENGINES
John M. Robertson, Greenwich, Conn., assignor to Rolls-Royce Limited, London, England
Filed Oct. 26, 1984, Ser. No. 665,152
Claims priority, application United Kingdom, Nov. 8, 1983, 8329733
Int. Cl.[4] F02K *1/02*
U.S. Cl. 60—262 **11 Claims**



1. An improved exhaust mixing structure in a bypass gas turbine aeroengine, said aeroengine having an engine core surrounded by a bypass duct, wherein, during the operation of the aeroengine, a turbine exhaust stream is formed in the core of said engine having swirl and rearward components and a bypass airstream is formed in said bypass duct, said exhaust stream and bypass airstream being combined with each other before exit of the combined airstream from a final propulsion nozzle of said aeroengine, said exhaust mixing structure comprising:
means for dividing the turbine exhaust stream into an annular array of discrete turbine exhaust jets, each jet having (1) a rearward component of velocity, (2) a radially outward component of velocity, and (3) a tangential component of velocity, said means including a plurality of turbine exhaust ducts for conveying respective portions of the turbine exhaust stream from said engine core to thereby generate a plurality of turbine exhaust jets, said jets having an elongated shape in cross section and being oriented with the longitudinal centerlines of said cross-sections being substantially aligned with the direction of flow of said bypass stream airstream therepast, said ducts conveying said turbine exhaust stream into said bypass airstream without substantial modification to the direction of flow thereof immediately before entry of said exhaust stream into said ducts, the swirl and rearward components of velocity of the turbine exhaust streams thereby forming the tangential, radial and rearward components of velocity of said turbine exhaust jets, and
means for imparting a swirl component of velocity to said bypass airstream sufficient to balance the tangential momentum of said turbine exhaust jets, said combined bypass airstream and turbine exhaust jets having a substantially zero net swirl velocity.

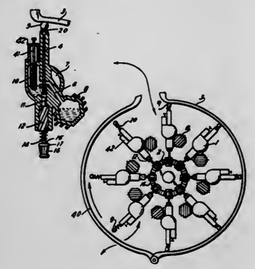
4,577,463
PALLET TRUCK WITH HYDRAULIC LIFT
Tuval Kedem, Miami, Fla., assignor to Equipment Company of America, Hialeah, Fla.
Division of Ser. No. 313,411, Oct. 26, 1981, Pat. No. 4,424,885. This application Oct. 25, 1984, Ser. No. 664,665
Int. Cl.[4] F16D *31/02*
U.S. Cl. 60—426 **8 Claims**



1. A hydraulic control system comprising a base plate forming a manifold, a lift cylinder mounted upon the base plate having therein a reciprocal rod and lift piston, and a pump cylinder mounted upon the base plate having an outlet and a reciprocal pump piston projecting therefrom;
a hydraulic control mechanism including a body depending from the base plate having an elongated bore extending axially of and communicating with said lift cylinder;
a plunger piston positioned within said body and projecting from said bore and at one end abutting said lift piston;
there being a first passage in said base plate interconnecting said pump cylinder outlet and said bore;
a reservoir mounted upon said base plate containing hydraulic fluid and having a first outlet communicating with said first passage for feeding hydraulic fluid into said pump cylinder on movement of said pump piston in one direction during its suction stroke;
first valve means within said base plate blocking pressurized hydraulic fluid from said reservoir first outlet;
movement of said pump piston in the opposite direction feeding pressurized hydraulic fluid through said first passage to said bore thereby moving said plunger piston and said lift piston and rod;
said reservoir having a second outlet;
there being a second passage in said base plate at one end communicating with said second outlet and at its other end communicating with said lift cylinder;

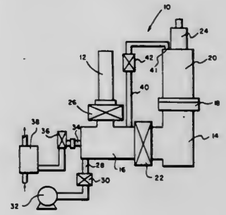
and a normally seated valve means within said second passage;
the movement of said lift piston and rod drawing hydraulic fluid from said reservoir through said second passage into said lift cylinder.

4,577,464
MULTIPLE POWER WHEEL ENGINE
Friedrich Weinert, 219-19 - 131st Ave., Jamaica, N.Y. 11413
Continuation-in-part of Ser. No. 345,720, Feb. 24, 1982, abandoned, which is a continuation-in-part of Ser. No. 156,419, Apr. 20, 1982, Pat. No. 4,340,970. This application Mar. 19, 1984, Ser. No. 590,963
Int. Cl.[4] F03G *7/06*
U.S. Cl. 60—531 **5 Claims**



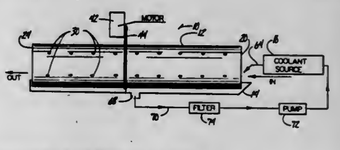
1. A heat engine comprising:
(a) a plurality of thermal actuators mounted radially about an output shaft;
(b) a gear means on said output shaft;
(c) each thermal actuator having an output element consisting of a pinion gear capable of rotation when the actuator is in an energized state;
(d) each pinion gear being selectively engageable with the gear means on said output shaft;
(e) each thermal actuator comprising,
(1) a heating element communicating with a pressure chamber,
(2) a vaporizable liquid in said pressure chamber,
(3) each output element extending into said pressure chamber and being actuated by vapor pressure within said pressure chamber,
(4) a cooling chamber,
(5) a valve member capable of establishing fluid communication between the cooling and pressure chambers in a first position, and closing communication between the chambers in a second position,
(6) a valve actuator communicating with said valve member and extending out of the thermal actuator in a radial direction opposite that of the output element,
(f) a circular cam means circumscribing the output shaft and the radially extending valve actuators,
(g) each valve actuator being in operative engagement with the cam means during at least part of the cycle of the engine,
whereby the operative engagement of the valve actuators with the cam means causes said valve members to alternately establish and disconnect the pressure chambers with the cooling chambers, such that alternating pressure pulses in said pressure chambers move said pinion gears on the output elements into operative engagement with the gear means on the output shaft while concurrently rotating said pinion gears to provide rotary motion to said gear means and the output shaft thereon.

4,577,465
OIL FREE VACUUM SYSTEM
Donald A. Olsen, Millis, and Michael J. Eacobacci, Randolph, both of Mass., assignors to Helix Technology Corporation, Waltham, Mass.
Filed May 11, 1984, Ser. No. 609,481
Int. Cl.[4] B01D *8/00*
U.S. Cl. 62—55.5 **22 Claims**



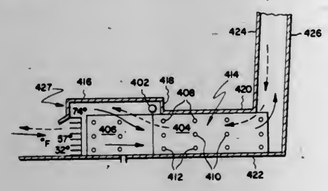
1. A vacuum system comprising:
a. a work chamber;
b. a load lock for receiving material to be introduced into and removed from the work chamber;
c. a first cryopump for fluid communication with the work chamber;
d. a second cryopump for fluid communication with the load lock through a valve; and
e. a gas ejector for initial depressurization of said load lock to a cross-over pressure when the valve to the second cryopump is closed and materail is introduced to the load lock for transfer to the work chamber.

4,577,466
BY-PRODUCTS CHILLER AND METHOD FOR USING SAME
Larry L. Cunningham, P.O. Box 142, Murray, Nebr. 68409
Filed Jun. 26, 1985, Ser. No. 748,917
Int. Cl.[4] F25D *13/06*
U.S. Cl. 62—63 **18 Claims**



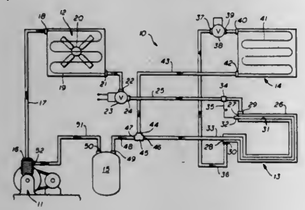
1. A by-product chiller comprising:
an elongated cylindrical tank having an inlet end for introducing fresh animal by-products into said tank and an outlet end for removing said by-products from said tank;
support means for rotatably supporting said tank;
means for introducing a liquid coolant from a coolant source into said tank;
an elongated rectangular trough, being larger in width and breadth than the longitudinal cross-section of said tank and centered therebelow, said tank having a plurality of rows of circumferentially spaced apertures therein, whereby said coolant will drain from said tank more or less evenly across its width and breadth into said trough;
pump means operatively connected to said trough for recirculating said coolant to said coolant source for recooling thereby; and
means operatively connected to said tank for rotating said tank about its longitudinal axis such that said by-products are tumbled within said tank for exposure to said coolant and chilled thereby.

4,577,467
FROST DIFFUSION SYSTEM FOR REFRIGERATION APPARATUS
Fayez F. Ibrahim, and Edward E. Bowman, both of Niles, Mich., assignors to Tyler Refrigeration Corporation, Niles, Mich.
Filed Oct. 30, 1984, Ser. No. 666,327
Int. Cl.[4] A47F *3/04*
U.S. Cl. 62—82 34 Claims



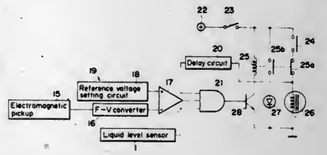
1. In a refrigerated container apparatus having a plurality of outer walls and a product storage compartment located therein, an air conduit adapted to conduct refrigerated air within said apparatus, and air moving means for propelling an air band within said air conduit in a first direction during a refrigeration cycle and in a second direction during a defrost cycle and an access opening for placing and withdrawing products into and from said storage compartment, the improvement comprising:
an evaporator unit having a cooling tube core and associated guide panels, said cooling tube core having a front air opening, at least one side air opening, and a back air opening positioned for permitting unimpeded flow through of said propelled air band;
said evaporator unit adapted to permit simultaneous inflow of said air band from at least, two directions during the refrigeration cycle, one of which is into said front air opening and another of which is into said side air opening for contact with said cooling tube core to diffuse frost formation uniformly during the refrigeration cycle, and
said guide panels adapted to permit a part of said air band to bypass said front air opening of said cooling tube core and to flow adjacent to a substantial length of said side air opening prior to flow thereinto during the refrigeration cycle and to direct said air band flow out of said cooling tube core through said back air opening and said guide panels adapted to permit reverse air flow through said air openings during a defrost cycle.

4,577,468
REFRIGERATION SYSTEM WITH REFRIGERANT PRE-COOLER
John O. Nunn, Jr., P.O. Box 397, and John O. Nunn, Sr., 4414 Durant, No. 66, both of Deer Park, Tex. 77536
Filed Jan. 4, 1985, Ser. No. 688,727
Int. Cl.[4] F25B *41/00*
U.S. Cl. 62—113 20 Claims



1. A refrigeration system comprising a compressor, a condenser, and an evaporator connected in series with the outlet of the compressor being connected to the inlet to the condenser to conduct compressed refrigerant gas thereto, the outlet of the condenser connected to the inlet of the evaporator to conduct liquid refrigerant thereto, and the outlet of the evaporator connected to the inlet to the compressor to conduct vaporized refrigerant thereto,
further including
heat exchange means positioned between the outlet from said condenser and the inlet to said evaporator to pre-cool the liquid refrigerant flowing therebetween by vaporization of part of the liquid refrigerant before said refrigerant reaches said evaporator,
said heat exchange means comprising a heat exchanger having two flow passages one inside the other, each having an inlet and an outlet, and in heat exchange relation one with the other,
the outer one of said heat exchange flow passages being connected between said condenser and said evaporator in series therewith to conduct the main body of liquid refrigerant flowing therebetween surrounding said inner flow passage, and
the inner one of said heat exchange flow passages being connected to receive a small portion of said liquid refrigerant and permit the same to evaporate to cool the main body of liquid refrigerant flowing through said outer surrounding flow passage.

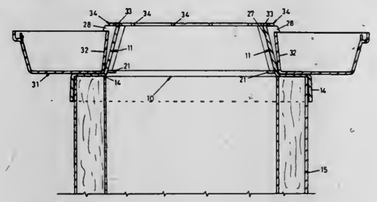
4,577,469
DEVICE FOR DETECTING OVERCHARGE OF REFRIGERANT IN AIR CONDITIONER FOR AUTOMOBILES
Eiji Okura, Konan, Japan, assignor to Diesel Kiki Co., Ltd., Tokyo, Japan
Filed Jun. 20, 1984, Ser. No. 623,766
Claims priority, application Japan, Jul. 2, 1983, 58-103246[U]
Int. Cl.[4] F25B *49/00*
U.S. Cl. 62—126 4 Claims



1. A device for detecting overcharge of refrigerant in an air-conditioner for automobiles, comprising a speed detector means for detecting the rotational speed of the compressor drive system in a cooling cycle, a liquid level sensor for detecting the liquid refrigerant level in a receiver tank in said cooling cycle, a means for delaying the ON signal of said compressor for a predetermined period of time, and a control means which outputs an overcharge detection signal only when all of said speed detector means, liquid level sensor and delay means gave an output.

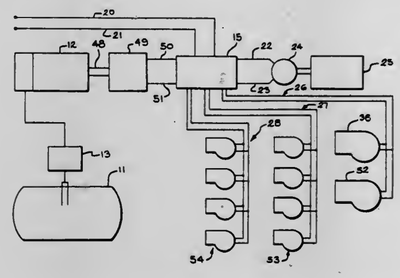
4,577,470
AIR COOLER ADAPTOR
Anthony D. Kearney, St. Marys, Australia, assignor to F. F. Seeley Nominees Pty Ltd, St. Marys, Australia
Filed Nov. 2, 1984, Ser. No. 667,650
Claims priority, application Australia, Nov. 4, 1983, PG2219
Int. Cl.[4] F25D *23/12*
U.S. Cl. 62—259.4 8 Claims

1. An adaptor for supporting an air cooler, said air cooler being of the type having walls extending upwardly from a base and within the cooler perimeter for defining a cool air outlet, said adaptor comprising at least one pair of opposed, relatively fixed panels, each of said pair of panels terminating along its lower edge in an L-shaped flange extending outwardly and downwardly in a direction away from the other of said pair of panels, and each of said pair of panels having outwardly projecting barbs,



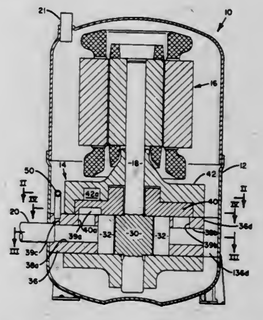
the sizes and shapes of said L-shaped flanges and said barbs being such that, when the adaptor supports an air cooler from the upper end of ducting, said flanges overlie and surround said ducting upper end and said barbs engage the walls of said cool air outlet of said air cooler.

4,577,471
AIR CONDITIONING APPARATUS
Gershon Meckler, New York, N.Y., assignor to Camp Dresser & McKee, Inc., Boston, Mass.
Continuation of Ser. No. 87,391, Oct. 22, 1979, abandoned, which is a continuation of Ser. No. 886,389, Mar. 14, 1978, abandoned. This application Jun. 1, 1982, Ser. No. 383,450
Int. Cl.[4] F25D *23/00*
U.S. Cl. 62—271 22 Claims



1. Apparatus for dehumidifying air, said apparatus comprising, in combination, a dehumidifier which employs a desiccant, a cooling coil, power means effective to convert a fuel into heat energy and electrical energy, means for transferring heat from said power means into regenerating relationship with the desiccant of said dehumidifier, means including a sensor-controller operable to control said power means to maintain the temperature at which heat is transferred therefrom into regenerating relationship with the desiccant of said dehumidifier within limits, means including at least one blower for circulating air in dehumidifying relationship with said dehumidifier and for circulating air in heat transfer relationship with said cooling coil, refrigeration apparatus including a heat collecting section, a heat rejection section and an energy input section, means for transferring heat from said cooling coil to the heat collecting section of said refrigeration apparatus, and means operatively connected to receive electrical energy from said power means, and effective to supply such energy to power at least some of the pumps, blowers and the like of the dehumidifying apparatus.

4,577,472
REVERSIBLE ROTATING VANE ROTARY COMPRESSOR HAVING A MOVABLE SUPPLEMENTAL SUCTION PORT
Prakash N. Pandeya, Clay, and Tsuwei Chu, Liverpool, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.
Filed Feb. 25, 1985, Ser. No. 705,294
Int. Cl.[4] F25B *13/00*; F01C *21/12*; F04B *35/04*
U.S. Cl. 62—324.6 5 Claims

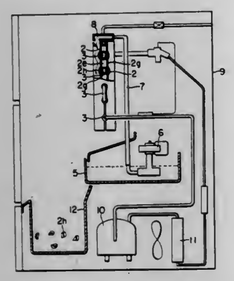


1. A reversible hermetic compressor unit comprising:
shell means having first and second lines connected thereto;
rotary compressor means within said shell means;
motor means within said shell means for selectively driving said rotary compressor means in a clockwise or a counterclockwise direction;
said rotary compressor means including:
a compressor chamber with a rotating vane rotor therein;
a first fluid passage means fluidly connected to said first line and said compressor chamber;
a second first passage means fluidly connected to said second fluid line and said compressor chamber;
a third fluid passage means fluidly connected to said first fluid passage means;
a fourth fluid passage means fluidly connected to said second fluid passage means; and
means movable in response to the pressure differential between said first and second lines to position a supplemental suction port in communication with either said first fluid passage means via said third fluid passage means or said second fluid passage means via said fourth fluid passage means and said chamber according to which of said first and second fluid passage means is the suction line as determined by the direction in which said motor means drives said rotary compressor means.

4,577,473
ICE PRODUCT MAKING MACHINE
Fumio Ishiguro, Toyohashi, Japan, assignor to Hoshizaki Electric Co., Ltd., Toyoake, Japan
Filed Oct. 16, 1984, Ser. No. 661,327
Claims priority, application Japan, Oct. 17, 1983, 58-159379[U]
Int. Cl.[4] F25C *1/12*
U.S. Cl. 62—347 1 Claim

1. A freezing unit for an ice product making machine which comprises one or more substantially upright freezing plates having a plurality of vertically extending and transversely spaced apart rib-like projections, and a meandering cooling coil in direct mechanical contact with the reverse side or sides of said freezing plate or plates, said cooling coil being composed of a plurality of straight sections connected together by bends, wherein the straight sections are flattened on lateral side portions, the terminal portions of said bends contiguous to said straight sections are flattened on lateral side portions to a

thickness approximately equal to the thickness of the flattened lateral side portions of the straight sections, the central portions of said bends being of a lesser thickness than the thickness of said flattened lateral side portions of said straight sections and wherein the flattened lateral side portions of the said



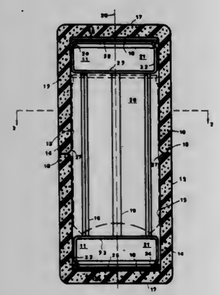
straight sections and the terminal portion of said bends contiguous to said straight sections are in direct mechanical contact with the back side or sides of said freezing plate or plates and said central portions of said bends are substantially out of contact with said freezing plate or plates.

4,577,474

THERMALLY INSULATED HOLDER FOR A SINGLE BEVERAGE CAN

Walter E. Peterson, Box 696, Diablo, Calif. 94528

Filed Feb. 28, 1985, Ser. No. 706,939
Int. Cl.⁴ F25D *3/08*
U.S. Cl. 62—457 **4 Claims**



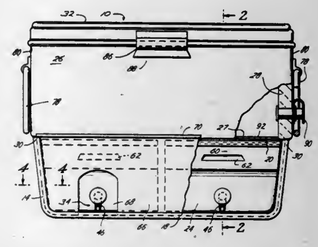
1. A thermally insulated holder for a single beverage-containing can comprising:
(a) two identical holding jackets, each being an integral monolithic structure fabricated of closed cell foam of a resilient polymeric material and having a cylindrical sidewall, a substantially flat bottom closure wall, an open upper extremity defined by a flat circular end face disposed in a plane perpendicular to the axis of said sidewall, and a series of equally spaced grooves within the interior surface of said sidewall in parallel disposition to said axis and terminating in said open upper extremity, and
(b) two identical refrigerant containers, each comprised of a thin-walled can having a flat bottom, a cylindrical sidewall adapted to fit snugly within the sidewall of said jacket, and a flat closure lid, the height of the refrigerant container, measured along the axis of its sidewall being between about 30% and 40% of the interior height of the jacket, measured along the axis of the sidewall of the jacket, the ratio of height/diameter of said can being in the range of about 0.5 and 0.8,
(c) each refrigerant container residing in abutment with the bottom closure of each jacket, whereby
(d) when the two jackets are brought together about a beverage can, the can makes close-fitting contact with the interior surfaces of the sidewalls of the jacket, the top and bottom of the can contact the refrigerant containers, and the flat circular end faces of the jackets are in abutment.

4,577,475

PORTABLE COOLER

Samuel R. Herrera, 2303 Santa Rosa, Austin, Tex. 78702

Filed Apr. 9, 1985, Ser. No. 721,199
Int. Cl.⁴ F25D *3/08*
U.S. Cl. 62—457 **6 Claims**



1. A portable cooler comprising:
a base compartment having insulated walls, an insulated bottom, at least one accessible recess and a top;
a generally rectangular container having insulated walls secured to and extending upwardly from the top of said base compartment and a bottom, the bottom being a transverse partition also indentified as the top of the base compartment;
at least two closable bins slidably insertable into the recesses of said base in a position generally beneath said rectangular container, said bins being fully removable from said recesses, having upward openings with lids slidably or hingedly attached thereto, each said bin further having walls and means for draining liquids from the bin by way of a drip-proof spigot in one of the walls in a position to be accessible when the bin is inserted into a recess to the base compartment;
means for draining liquid from said container; and
means for covering said container.

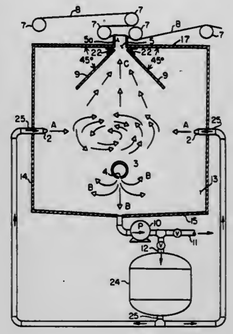
4,577,476

LOW WET PICKUP FABRIC FINISHING APPARATUS

Allan H. Lambert, Metairie; Esmond J. Keating, New Orleans, and Gerald B. Verburg, Metairie, all of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Jul. 31, 1984, Ser. No. 636,451
Int. Cl.⁴ D06B *5/08*
U.S. Cl. 68—5 D **10 Claims**

1. An apparatus for applying atomized spray solutions to fabric to produce low wet pickup, uniformly finished fabrics comprising:
(a) a chamber;
(b) means for spraying solution mixed with air into said chamber to form a cloud of atomized solution spray particles;
(c) a manifold with open ends mounted to and through opposing chamber sides so that air can be externally fed through the open ends thereof and out of a plurality of exit air holes which are located laterally along the side of the manifold facing the bottom side of the chamber so that air exiting the holes strikes the bottom side of the chamber and returns to mix the atomized spray solution in the center of the chamber as well as incresae the internal air pressure; and,



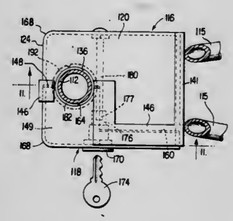
(d) an opening in said chamber through which said cloud, moved by internal air pressure, exits and contacts fabric juxtaposed across the external periphery of said opening, said fabric adsorbing the solution particles on contact and allowing air to pass through, thereby producing a low wet pickup, uniformly finished fabric.

4,577,477

ACCESSORY LOCK AND ARTICLE STORAGE DEVICE FOR BICYCLES AND THE LIKE

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Continuation-in-part of Ser. No. 457,459, Jan. 12, 1983, Pat. No. 4,468,939. This application Nov. 7, 1983, Ser. No. 549,415
The portion of the term of this patent subsequent to Sep. 4, 2001, has been disclaimed.
Int. Cl.⁴ E05B *73/00*
U.S. Cl. 70—58 **5 Claims**



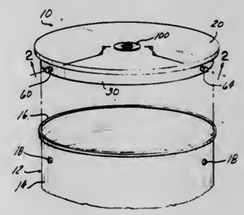
1. An article storage device adapted to be attached to a frame of a bicycle or the like comprising:
(a) first and second members adapted to frictionally engage said frame member, said first and second members each having a side wall connected to spaced-apart top and bottom walls and together forming an enclosed storage space when brought into engagement with said frame member, said top and bottom walls each have an indented portion shaped to surround a portion of said frame, said shape of said indented portion of at least one of said members being less than a full semi-circle to enable said frictional engagement with said frame member to be varied when said first and second members are drawn together into contact with said frame member,
(b) support means adapted to be positioned on said frame to prevent said first member individually or said first and second members when in engagement with each other from sliding on said frame, said support means having a cylindrical-shaped body portion with a radially extending flange adapted to engage and support said top wall of said first member, and
(c) means for locking said first and second members together to effect securement of said device to said frame member.

4,577,478

LOCKING FILLER TUBE COVER APPARATUS FOR UNDERGROUND FUEL TANKS

Dennis O. Economopoulos, and Othon Economopoulos, both of 3589 Beaconsfield, Detroit, Mich. 48224

Filed Aug. 26, 1983, Ser. No. 526,709
Int. Cl.⁴ B65D *55/14*
U.S. Cl. 70—168 **8 Claims**



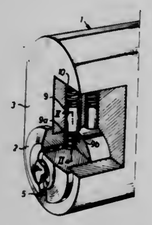
1. A locking apparatus for underground fuel tanks having a vertically extending filler tube with a plurality of apertures in the side walls thereof, the locking apparatus comprising:
a cover having top and bottom surfaces and a centrally located aperture;
an annular flange depending from the bottom surface of the cover, having a plurality of apertures formed in the flange and alignable with the apertures in the fuel tank filler tube;
lock means mounted on the cover and selectively movable between a first locked position and a second unlocked position;
a plate mounted on and rotated by the lock means between the first and second positions;
a plurality of lock bars, each slidingly received in one aperture on the flange of the cover, the lock bars having first and second ends, with the first end being pivotally mounted on the plate, and the second end being slidingly engagable with an aperture in the filler tube when the lock means and plate are rotated to the first locked position to lock the cover on the filler tube when the lock means and plate are rotated to the second unlocked position to unlock the cover from the filler tube; and
first means for removably covering the lock means to prevent access to the lock means, comprising:
a first boss mounted on the bottom surface of the cover, the first boss having a bore co-axially aligned with the aperture in the cover and including internal threads extending from an upper end thereof;
a disc having external threads on the first boss; engagable with the internal threads on the first boss;
a cavity formed in the disc; and
a first key means having an outwardly extending projection complementary to the cavity in the disc and insertable into the cavity to permit removal of the disc from the first boss.

4,577,479

CYLINDER LOCK ARRANGEMENT FOR PREVENTING PICKING

Bo Widén, Torshälla, Sweden, assignor to GKN-Stenman AB, Eskilstuna, Sweden

Continuation of Ser. No. 435,202, Oct. 19, 1982, abandoned. This application Apr. 30, 1985, Ser. No. 727,626
Claims priority, application Sweden, Nov. 2, 1981, 8106467
Int. Cl.⁴ E05B *15/14, 35/10, 27/04*
U.S. Cl. 70—364 A **3 Claims**



1. A master set type of cylinder lock, comprising: a cylindrical plug (2) rotatably mounted in a plug housing (3), said plug being rotatable in said housing when a correct key is inserted in said plug, and said housing closely surrounding said plug without any significant gaps therebetween, a plurality of transverse pin passages (6, 8) respectively defined in said plug and housing, said passages being axially aligned during key insertion, a plurality of transversely slidable, rotatable pin pairs (7, 9) disposed in said passages, one pin in each pair being spring biased (10) in a direction towards the other pin, and abutment surfaces of said pin pairs, when the correct key is inserted, being located in a dividing plane between the plug and the housing, at least one pin (9), at an end thereof facing an opposite, co-acting pin, having a portion of smaller diameter than the remainder thereof, said portion forming a necked region (9*a*) between a main part of said at least one pin and a generally cylindrical head (9*b*) on the end of said at least one pin, a passage for said at least one pin defining a pair of diametrically opposed, laterally extending recesses (6*a*) in line with said at least one pin at a distance from a mouth of the passage shorter than the axial length of the necked region of said at least one pin and having widened portions defined on one side by an edge (2*a*) of the mouth of the passage, said edge, upon the rotation of the plug through a small angle, being able to overlap the head of said at least one pin and hook-latch said at least one pin in a locked position, said widened portions having an eccentric shape with a largest dimension transverse to a longitudinal axis of the plug, at least one disc-like pin member (11) of the same diameter as said pin pairs disposed between said at least one pin and its coacting pin, the head of said at least one pin having a smaller diameter than the main part thereof; and the radii of the widened portions of the recesses transverse to the plug axis being less than half the diameter of said at least one pin, whereby the smaller diameter pin head may enter the recesses but the disc-like pin member may not.

4,577,480

METHOD AND APPARATUS FOR CONTROLLING ROLLING CORRECTION IN ROLLING MILL

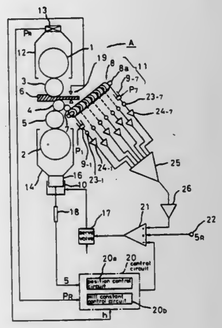
Kanji Kizaki, Ebina; Hajime Ishii, Tokyo; Noboru Taguchi, and Hiroshi Kuwamoto, both of Fukuyama, all of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha and Nippon Kokan Kabushiki Kaisha, both of Tokyo, Japan

Filed Jun. 7, 1984, Ser. No. 618,132
Claims priority, application Japan, Jun. 22, 1983, 58-112099; Jun. 22, 1983, 58-112100
Int. Cl.⁴ B21B *37/12, 29/00*
U.S. Cl. 72—8 **3 Claims**

1. In a rolling mill of the type having a rolling device responsive to displacement of a rolling drive body for producing a vertical rolling force between a pair of work rolls, a horizontal bending device for exerting pushing forces to at least one of said pair of work rolls in a direction substantially in parallel with passage of a strip being rolled, thereby bending the work roll, and a rolling control device for receiving a rolling position setting signal so as to set a position of said rolling drive body and for controlling said rolling device such that a thickness of the strip leaving said pair of work rolls can be maintained constant,

a method for controlling correction in the rolling mill which comprises detecting the forces exerted by said horizontal bending device to the corresponding work roll or detecting a position of said rolling drive body in a direction of said pushing forces and applying a thus detected signal to an input point of said rolling position setting signal in said rolling control device, whereby variations in rolling load due to the pushing forces can be eliminated or cancelled.

2. A rolling mill comprising: a pair of work rolls, and a rolling drive body connected to said rolls, a rolling device responsive to displacement of said rolling drive body for producing a vertical rolling force between said pair of work rolls,



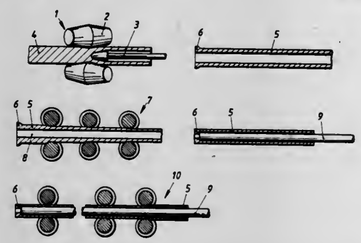
a horizontal bending device operatively connected to at least one of said work rolls and including a plurality of pushing means for individually exerting pushing forces to at least one roll of said pair of work rolls in a direction substantially in parallel with passage of a strip being rolled between said work rolls, and a rolling control device operatively connected to said rolling drive body and said bending device, for receiving a rolling position setting signal therefrom for setting a position of said rolling drive body and for controlling said rolling device such that a thickness of the strip leaving the pair of work rolls may be maintained constant, said control device comprising sensors connected to said plurality of pushing means for detecting the pushing forces produced by said plurality of pushing means or for detecting positions, in a direction of said pushing forces, of individual pushing drive bodies in said pushing means, and an operational means operatively connected to said sensors for obtaining a sum of output signals from said sensors and for applying an output signal derived from said sum to an input point of said rolling position setting signal in said rolling control device with such a polarity that variations in rolling load due to the pushing forces produced by said plurality of pushing means can be eliminated or cancelled.

4,577,481

PROCESS FOR PRODUCTION OF SEAMLESS TUBE AND APPARATUS FOR PROCESSING SEAMLESS TUBE

Karlhans Staat, Homberg, Fed. Rep. of Germany, assignor to Kocks Technik GmbH & Co., Hilden, Fed. Rep. of Germany

Filed Mar. 12, 1984, Ser. No. 588,244
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1983, 3309797
Int. Cl.⁴ B21B *19/04*
U.S. Cl. 72—68 **7 Claims**



1. A process for the production of seamless tube comprising the steps of

(a) centrally piercing an ingot to form a generally axial hole through its entire length by diagonally rolling said ingot over a piercing mandrel on the end of a mandrel rod;

(b) forming a short wall thickening at one end of said ingot extending one of radially outwardly, radially inwardly and both radially outwardly and inwardly around said axial hole at the end of the piercing operation.

(c) Rolling said short wall thickening at said one end of said ingot without internal support to reduce the diameter of the axial hole at said one end to form a thickened support member of generally uniform thickness for the end face of a mandrel;

(d) inserting a push bench mandrel into said axial hole to abut the previously formed support member;

(e) rolling said ingot in a push bench to form a seamless tube having a thickened support member at one end; and

(f) removing said support member to form a completed seamless tube.

4,577,482

METHOD AND APPARATUS FOR TREATING WORK ROLLS IN A ROLLING MILL

Joseph I. Greenberger, Pittsburgh, Pa., assignor to Wean United, Inc., Pittsburgh, Pa.

Filed Jun. 18, 1984, Ser. No. 621,754
Int. Cl.⁴ B21B *27/10*
U.S. Cl. 72—201 **11 Claims**

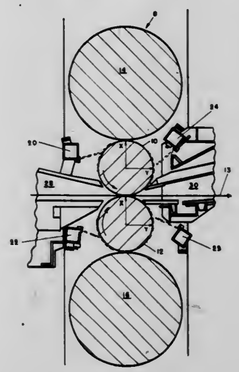
1. A method for the treatment of a rotating work roll of a rolling mill or the like for working a workpiece wherein the roll absorbs heat during the rolling process due to its contact with an external element, such as said workpiece, the steps comprising:

creating at least one wall of treatment medium by a medium discharge header means, said wall being in the form of a non-turbulent low pressure coherent curtain wall applied continuously across at least a selected axial portion of the face of said roll,

controlling the placement of said at least one coherent curtain wall so that said medium is caused to be uniformly delivered to said roll substantially coextensive with said selected portion,

causing said wall to be directed against said portion from a position where the header means is spaced from said portion and is located at a point remote from where said external element leaves contact with said roll, and wherein because of the inherent nature of the wall it maintains its wall-like form from the time it leaves the header means until it first contacts the roll at said portion without any assistance from any physical medium directing means, and

causing said coherent curtain upon impingement to separate into two opposed film-like fields around and on said face of said roll, which said fields freely adhere to said face for a certain length of time without assistance from any physical film-forming and retaining means,



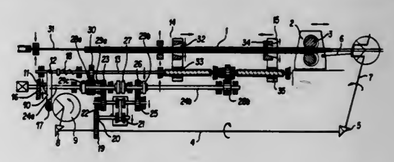
said one film-like field travelling in a direction opposite to that of said rotation of said work roll toward the general region where said external element leaves contact with said roll to thereby uniformly treat the peripheral surface of said roll between said initial point of application of said medium and said contact area of said external element.

4,577,483

SYSTEM FOR THE CONTINUOUS OPERATION OF A COLD PILGER ROLLING MILL

Klaus Rehag, Monchen-Gladbach, and Josef Gerretz, Viersen, both of Fed. Rep. of Germany, assignors to Mannesmann Demag Wean, Pittsburgh, Pa.

Filed Jan. 31, 1984, Ser. No. 575,607
Claims priority, application Fed. Rep. of Germany, Feb. 2, 1983, 3304002
Int. Cl.⁴ B21B *21/04*
U.S. Cl. 72—214 **10 Claims**



1. In a cold pilger rolling mill having a reciprocating roll stand with repetitive cyclic periods of operation, an improved feed system arranged on the entry side of said mill for continuously feeding a shell along a passline of said mill between rolls in said roll stand to be reduced therebetween, comprising:

feed carriage means positioned along said passline for displacement towards and away from said stand respectively corresponding to a shell feed starting position and a shell feed finishing position, said feed carriage means including first and second tandemly arranged feed carriages having chucks engageable with said shell for said advancement of

said shell through said mill in said shell feed starting position of each carriage,

feed screw means mounted in each of said feed carriages for effecting said displacement of said feed carriages relative to said stand and each said feed screw means having an adjacent end arranged in coaxial alignment relative to each other,

first drive means driven in a timed relationship to said mill reciprocation and connected to said each feed screw means to impart a translational movement thereto to reciprocate said feed carriages together as a unit with said reciprocation of said rolling stand, and

second drive means selectively driven by said first drive means including a gear unit connected to each said feed screw means of said first and second carriages and shaft clutch assembly means selectively engaging and disengaging said each gear unit so that upon said engagement superimposed on said reciprocation of said each feed carriage rotation is imparted to said feed screw means to move said first and second feed carriages separately and independently in unison in the same direction or in opposite directions relative to each other and said stand, and upon said disengagement rotation of said feed screw means is discontinued to maintain said feed carriages separately and independently in a fixed position,

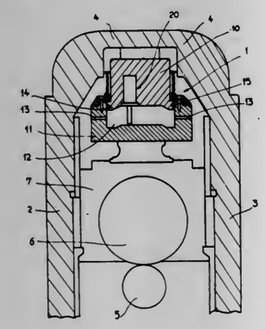
said gear unit for said second carriage which is closer to said roll stand than said first feed carriage includes thrust bearing means supporting and mounting said adjacent end of both said feed screw means in said coaxial alignment and effectively located between said two gear units in close proximity to said carriages to offset thrust loads on both said feed screw means and their said respective gear unit caused by said operation of said first and second carriages and said roll stand.

4,577,484

HYDRAULIC SAFETY DEVICE FOR A MECHANISM FOR CLOSING UP THE ROLLS OF A ROLLING MILL

Michel Morel, Chelles, and Bernard Pillac, Montrouge, both of France, assignors to CLECIM, Courbevoie, France

Filed Jul. 12, 1984, Ser. No. 630,170
Claims priority, application France, Jul. 22, 1983, 83 12148
Int. Cl.⁴ B21B *31/32*
U.S. Cl. 72—245 **5 Claims**



1. An hydraulic safety device for a mechanism for closing up the rolls of a rolling mill comprising working rolls between which a product to be rolled is passed, and an hydraulic jack for controlling the pressure for closing up said rolls, said hydraulic jack consisting of first and second elements comprising a fixed element and a movable element, one of said elements comprising a piston and the other element a casing surrounding said piston, said two elements being slidably axially movable with respect to one another and delimiting a control chamber connected with a system for supplying pressurized hydraulic fluid comprising a supply duct and a return duct, said safety device comprising

(a) a discharge flap slidably mounted for closing at least one outlet orifice at said control chamber, said outlet orifice being connected with said return duct for reducing the pressure in said control chamber by passage of hydraulic fluid when said discharge flap is opened;

(b) a rod slidably mounted parallel to said axis on said first element of said jack and extending within said control chamber; and

(c) means for applying said rod against said second element of said jack, said rod following the displacement of said second element;

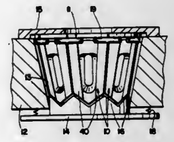
(d) said rod comprising means for opening said discharge flap for a predetermined limiting position as soon as the stroke between said first and second elements of said jack reaches a predetermined limit.

4,577,485

SPLIT BACK DIE SEGMENT

Luis Moreiras, Mentor, Ohio, assignor to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Dec. 23, 1983, Ser. No. 564,875
Int. Cl.⁴ B21D *41/04, 19/10*
U.S. Cl. 72—402 **10 Claims**





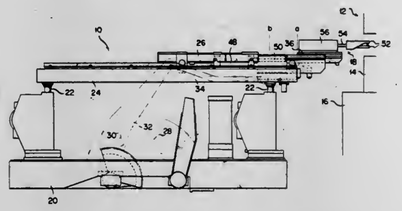
5. An array of die segments arranged in a circle in a tapered bowl of a crimping machine said tapered bowl being defined by a bowl surface having a narrower end relative to an opposite end with the ends being located along an axis, said die segments arranged in said bowl for axial movement toward the narrow end of the bowl and radial contracting movement directly toward the center of the bowl without angular shifting of adjacent die segments, each die segment comprising a pair of conical, outer spaced surfaces contracting said bowl surface, and a central surface intermediate and radially recessed from said outer surfaces, said central surface being free from contact with said bowl and structure external of said surfaces of said die segment, such that said die segment is unguided by means other than said bowl at said outer surfaces, during movement relative to said bowl, and means for moving said array of die segments simultaneously toward the narrow end of said bowl with all of said spaced outer surfaces in continuous contact with said bowl surface.

4,577,486

RETRACTING MECHANISM AND JAW ASSEMBLY FOR A POWER PRESS

Kiyokazu Baba, Komatsu, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed May 13, 1983, Ser. No. 494,397
Claims priority, application Japan, May 17, 1982, 57-70552[U]
Int. Cl.⁴ B21D *43/02, 43/10, 43/13*
U.S. Cl. 72—421 **1 Claim**



1. A retracting mechanism for a power press including a die assembly and bolster comprising:

(a) guide means;

(b) a plurality of columns for supporting thereon said guide means;

(c) a main carriage movable along said guide means toward and away from the press;

(d) means for reciprocating the main carriage along said guide means in synchronization with the operation of the press;

(e) a subcarriage mounted on said main carriage for movement relative to same toward and away from the press;

(f) means for moving said subcarriage between a forward working position and a retracted position relative to said main carriage;

(g) a jaw assembly mounted on said subcarriage, said jaw assembly having a pair of gripping jaws and a fluid actuated cylinder fixedly mounted on said subcarriage for operating said gripping jaws; and

(h) means for retracting said subcarriage independently of said means for reciprocating the main carriage, whereby said subcarriage may be retracted for purpose of changing said die assembly and bolster.

4,577,487

PRESSURE VESSEL TESTING

John G. Dooley, 5282 Pastatiemop Dr., Yorba Linda, Calif. 92686

Filed Dec. 14, 1984, Ser. No. 681,605
Int. Cl.⁴ G01N *29/04;* G01M *3/24*
U.S. Cl. 73—37 **19 Claims**

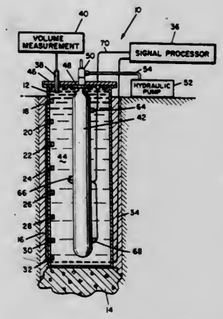
1. In combination:

(a) a container for water;

(b) means for immersing a pressure vessel in water in said container;

(c) pressurization means for altering pressure in the vessel and maintaining the pressure at selected pressures;

(d) sensor means in the form of at least one acoustic event sensor for sensing acoustic events emanating from flaws which do not extend through the wall of the pressure vessel at predetermined positions relative to the surfaces of said vessel; and



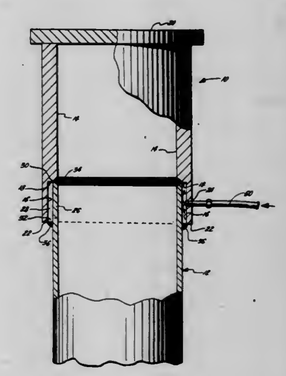
(e) recording means for recording the characteristics of acoustic events sensed by said sensors.

4,577,488

APPARATUS AND METHOD FOR INSPECTING WELDS

Ronnie J. Broadus, and Randall Slade, both of P.O. Box 418, Belle Chasse, La. 70037

Filed Oct. 22, 1984, Ser. No. 663,563
Int. Cl.⁴ G01M *3/04*
U.S. Cl. 73—40 **20 Claims**



1. A method of testing for leaks in the welds securing a first annular conduit to a second annular conduit, comprising the steps of:

providing first and second adjacent, coaxially aligned conduits, an open end of the first conduit receiving therein an open end of the second conduit in overlapping, co-axially aligned relationship, the areas of overlap of the two conduits forming an annular chamber between the overlapping conduits, the chamber having an open upper juncture and an open lower juncture;

placing a continuous weld along the upper juncture and a continuous weld along the lower juncture to secure the first conduit to the second conduit;

heating a fluid to a temperature similar to the temperature of the conduit and welds after welding;

introducing the heated fluid into the chamber before the welds have cooled to test for leaks.

4,577,489

DETECTING LEAKS

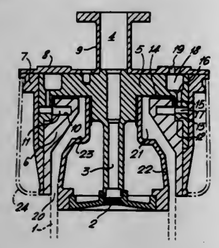
Peter E. G. Marshall, Stratford-Upon-Avon; Francis R. Piper, Evesham, and John F. Wilson, Thornbury, all of United Kingdom, assignors to BL Technology Limited, Great Britain

Filed Jan. 17, 1984, Ser. No. 571,665

Claims priority, application United Kingdom, Jan. 19, 1983, 8301407

Int. Cl.⁴ G01M *3/04*

U.S. Cl. 73—40.7 **12 Claims**



1. A leak detector having a probe and a circular opening surrounding the probe through which circular opening a barrier gas can be fed, wherein there is provided: a relatively wide annular chamber having a plurality of inlet channels for entry of barrier gas spaced around its circumference or a continuous inlet channel around its circumference and having a plurality of outlet channels spaced around its circumference or a continuous outlet channels around its circumference, the inlet and outlet channel(s) being inclined to each other so no straight path exists through the inlet and outlet channel(s); a relatively narrow circumferential orifice which is coaxial with the annular chamber and communicates with the outlet channel(s); and an annular duct defined by inner and outer walls which is coaxial and in communication with the circumferential orifice, is symmetrical about the axis of the duct, and defines the circular opening.

4,577,490

DETECTING LEAKS

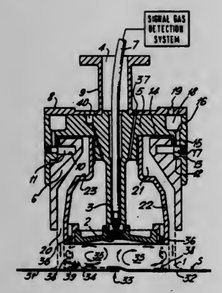
David J. Bray, Bromsgrove; Peter E. Johnson, Redditch; Peter E. G. Marshall, Stratford on Avon; Francis R. Piper, Evesham, and Iain H. Murdoch, Meriden, all of United Kingdom, assignors to BL Technology Limited, England

Filed Sep. 6, 1984, Ser. No. 647,547

Claims priority, application United Kingdom, Sep. 7, 1983, 8323997

Int. Cl.⁴ G01M *3/20*

U.S. Cl. 73—40.7 **10 Claims**



1. A leak detector comprising a detector head for scanning a surface for detection of escape of signal gas through the surface, the head comprising a sample inlet, an annular opening surrounding the inlet, means for directing a barrier gas through the annular opening to provide a gas curtain around the inlet and a plurality of orifices within the area enclosed by the curtain for providing gas jets to impinge on the surface.

4,577,491

METHOD FOR DETERMINING THE STABILITY OF FOAM

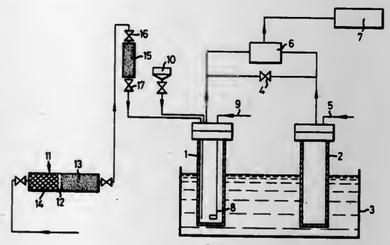
Ian C. Callaghan, Wokingham, and Clive M. Gould, Staines, both of England, assignors to The British Petroleum Company, p.l.c., London, England

Filed Oct. 31, 1984, Ser. No. 666,651

Claims priority, application United Kingdom, Nov. 5, 1983, 8329624

Int. Cl.⁴ G01N *33/22*

U.S. Cl. 73—60.1 **1 Claim**



1. A method for determining the stability of a live crude oil/gas foam which method comprises the steps of

(a) pressurising a sample of crude oil containing gas,

(b) introducing the sample into a sample cell connected to a reference cell initially at the same pressure,

(c) reducing the pressure on the sample whereby a foam is generated,

(d) isolating the sample cell and the reference cell when the foam has developed and

(e) determining the subsequent change in pressure of the sample cell with reference to the reference cell.

4,577,492

ANALYTICAL METHOD AND APPARATUS

Albert G. Holba; Susanne B. Doe, both of Bartlesville, and William B. Hughes, Osage County, all of Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 493,842, May 12, 1983, abandoned. This application Sep. 18, 1984, Ser. No. 652,155

Int. Cl.⁴ G01N *31/08*

U.S. Cl. 73—61.1 C **20 Claims**

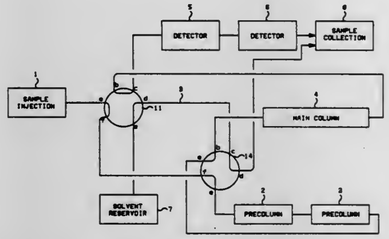
1. A method for analysis of a liquid sample of matter comprising a first organic constituent, a second organic constituent and an elemental sulfur constituent, the method comprising:

passing the sample of matter in a mobile phase through a first separations zone comprising a stationary phase under conditions effective for the retention of essentially all of the first organic constituent in the first separations zone;

passing an effluent comprising the second organic constituent and the elemental sulfur through a second separations zone under conditions effective for the separation of the second organic constituent from the elemental sulfur constituent;

removing the second organic constituent from the second separations zone and detecting a property of the second organic constituent;

removing the elemental sulfur constituent from the second separations zone and determining a property of the elemental sulfur constituent; and



removing the first organic constituent from the first separations zone and determining a property of the first organic constituent.

4,577,493

DEVICE FOR PERFORMING MICROMECHANICAL MEASUREMENTS OF THE SURFACE OF TEST OBJECTS

Kurt M. Oesterle, Goldbacherstrasse 88, CH-8700 Küsnacht, Switzerland

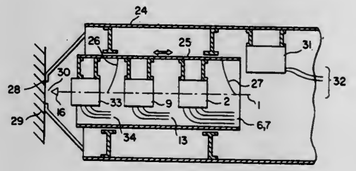
PCT No. PCT/CH83/00001, § 371 Date Sep. 23, 1983, § 102(e) Date Sep. 23, 1983, PCT Pub. No. WO83/02666, PCT Pub. Date Aug. 4, 1983

PCT Filed Jan. 6, 1983, Ser. No. 548,885

Claims priority, application Switzerland, Jan. 25, 1982, 440/82

Int. Cl.⁴ G01N *3/42*

U.S. Cl. 73—81 **18 Claims**



3. A measuring head for use in a micromechanical materials measurement system, comprising; a housing having a longitudinal axis, a contact surface at one end of said housing for positioning said housing on a surface layer of a test object, said contact surface being substantially perpendicular to said axis and having an opening therein about said axis, a measuring shaft disposed within said housing for displacement along said axis, said shaft being provided with an indentor at its end adjacent to said contact surface of said housing, said opening in said contact surface permitting the passage of said indentor beyond said contact surface, an electrically controllable displacement actuation device disposed within said housing and associated with said measuring shaft for displacing said measuring shaft along said axis towards said contact surface of said housing, and an electrical load sensor disposed within said housing and associated with said measuring shaft for continually measuring the load on said measuring shaft, said displacement actuation device and said load sensor being provided with electrical cable means for remote connection to an electronic control and processing device.

4,577,494

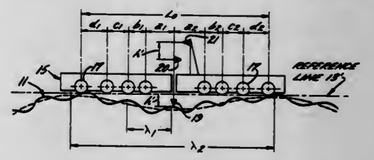
APPARATUS AND METHOD FOR MEASURING THE WEAR OF RAILROAD RAIL

Hans P. Jaeggi, Lugano, Switzerland, assignor to Jackson Jordan, Inc., Ludington, Mich.

Filed Aug. 19, 1983, Ser. No. 524,724

Int. Cl.⁴ G01B *5/28*

U.S. Cl. 73—105 **20 Claims**



1. Apparatus for measuring corrugations and undulations along the running surface of railroad rail comprising:

a chassis adapted for travel along said railroad rail;

at least four bearing points positioned between said chassis and said railroad rail for supporting said chassis on said rail and for allowing movement of said chassis over said rail, said bearing points being aligned so as to collectively define a reference line with any space between said bearing points being in an asymmetrical pattern to establish the reference line substantially between the highest points encountered by the bearing points by, whereby the distance between a sensing point on the reference line and said running surface represents substantially the actual wear of the running surface;

sensing means at the sensing point for continuously sensing the vertical distance between the reference line defined by the bearing points and the surface of the rail as the chassis travels along the rail, the sensing means having an output wheich is a function of the sensed distance between the reference line and the rail surface; and

means responsive to the output of said sensing means to indicate the corrugation and undulation in the rall surface.

4,577,495

APPARATUS FOR SHIELDING AND PROTECTING AN AIR FLOW RATE METER DISPOSED IN THE INTAKE TUBE OF AN INTERNAL COMBUSTION ENGINE FROM AIR COLUMN FLUCTUATIONS

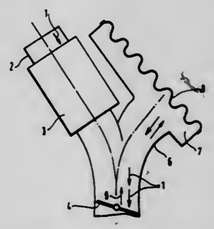
Franz Bamer, Vienna, Austria, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 12, 1985, Ser. No. 710,786

Claims priority, application Fed. Rep. of Germany, May 9, 1984, 3417050

Int. Cl.⁴ G01M *15/00*

U.S. Cl. 73—118 **5 Claims**



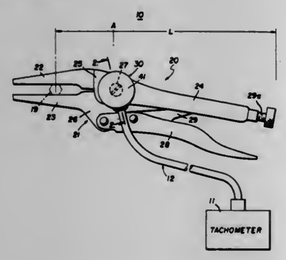
1. An apparatus for shielding and protecting an air flow rate meter, comprising a temperature-dependent resistor, which measures the mass the air aspirated by an internal combustion engine having an intake tube, an elastic diaphragm disposed on said intake tube downstream of said flow rate meter, said elas-

tic diaphragm adapted to divide a damping chamber which communicates with said intake tube from the atmosphere and said elastic diaphragm further arranged to maintain a virtually constant pressure in said damping chamber.

4,577,496
TRANSDUCER AND HOLDER THEREFOR FOR ULTRASONIC ACOUSTIC TACHOMETER

Donald D. Grover, and Glenn A. Kaufman, both of Kenosha, Wis., assignors to Snap-on Tools Corporation, Kenosha, Wis.

Filed Jan. 31, 1985, Ser. No. 696,930
Int. Cl.⁴ G01M *15/00*
U.S. Cl. 73—119 A **20 Claims**

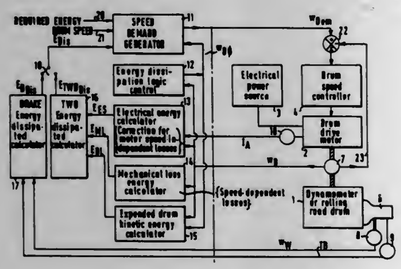


1. Apparatus for holding a transducer to sense ultrasonic acoustic emissions of a predetermined frequency caused by fluid flow through an orifice in a fuel injector body, said apparatus comprising: manually operable clamp means adapted to be clamped to the injector body so that the ultrasonic acoustic emissions thereof are transmitted to said clamp means, said clamp means having a length such that the ultrasonic acoustic emissions transmitted thereto establish therein standing waves substantially at the predetermined frequency or a harmonic thereof, and means mounting the transducer on said clamp means substantially at a region of maximum displacement in said standing wave for generating electrical signals in response thereto.

4,577,497
DYNAMOMETERS

Colin J. Ray, Chandler's Ford, and Geoffrey Smith, Eastleigh, both of England, assignors to Vickers Public Limited Company, London, England

Filed Nov. 1, 1984, Ser. No. 667,028
Claims priority, application United Kingdom, Nov. 11, 1983, 8330217; Aug. 15, 1984, 8420741
Int. Cl.⁴ G01L *5/28*
U.S. Cl. 73—126 **13 Claims**

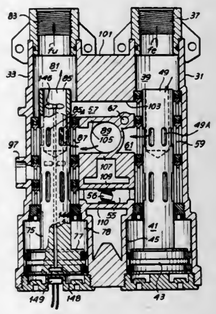


13. A dynamometer comprising a drum mounted for rotation and driven by drive means, a test body coupled to the drum for rotation therewith in a fixed velocity relationship, means for deriving the energy absorbed or dissipated by the test body, means for determining the rotational velocity of the drum or body, and control means responsive to the energy absorbed or dissipated and to the rotational velocity and operative to supply a control signal to the drive means to maintain the energy absorbed or dissipated as a predetermined function of the drum speed.

4,577,498
DOUBLE MULTIPLE CHANGE-OVER VALVE, FOR CONTROLLING THE OPERATION OF A WATER TREATMENT PLANT

Luigi Ferrali, Florence, Italy, assignor to S.I.A.T.A. Società Italiana Apparecchiature Trattamento Acqua S.p.A., Florence, Italy

Continuation of Ser. No. 356,303, Mar. 10, 1982. This application Feb. 14, 1984, Ser. No. 579,287
Claims priority, application Italy, Mar. 16, 1981, 9364 A/81
Int. Cl.⁴ G01F *15/00*; B01D *29/42*
U.S. Cl. 73—198 **6 Claims**

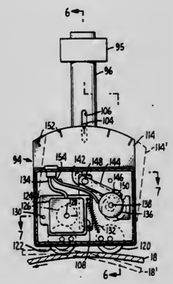


1. A double multiple change-over valve for connection to a resin column of a water treatment plant, said valve unit comprising a molded plastic body defining two cylindrical valve units, the cylindrical valve units being disposed parallel to each other and spaced apart by a connecting portion therebetween, each valve unit including a cylinder having an open end forming a port, the port of one of said cylinders forming an inlet port, the port of the other of said cylinders forming an outlet port, a movable assembly having a first and second ends slidable between first and second positions in said cylinder, piston means disposed at the first end of said movable assembly, said second end of said movable assembly including a first hollow cavity, lateral apertures disposed proximate said first hollow cavity and an open end for fluid communication between said first hollow cavity and said cylinder port, and an intermediate portion separate from said second end including a second hollow cavity having apertures through which fluid may flow, spacer and gasket means for forming annular throats about said movable assembly, said connecting portion of said valve body including transverse passage communicating with said annular throats, said connecting portion of said valve body including passages for fluid communication between said cylinders and said resin column, said connecting portion of said valve including concentric passages for connection to the top and bottom connections of the resin column, and said connecting portion of said valve body further including regenerating solution feeder passages for fluid communication with said resin column, said feeder passages including venturi means.

4,577,499
SLOPE-SPEED SENSOR FOR SEAM WELDING APPARATUS

Gerald W. Silke, El Cajon, and Frank D. Weber, Poway, both of Calif., assignors to Cyclomatic Industries, Inc., San Diego, Calif.

Division of Ser. No. 442,617, Nov. 18, 1982, abandoned. This application Jun. 18, 1984, Ser. No. 595,502
Int. Cl.⁴ G01B *5/20, 9/00*; G01D *21/02*; G01P *4/00*
U.S. Cl. 73—432 R **11 Claims**

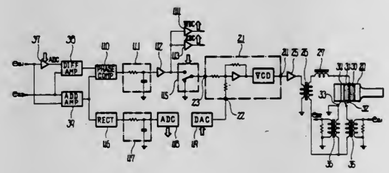


1. A slope/speed sensor for sensing slope and speed of an object comprising:
a base,
a mounting member,
pivot means pivotally attaching said base to said mounting member, and
slope sensing means on said base for contacting a workpiece and causing said base to be pivoted relative to said mounting member in proportion to the slope of the workpiece, and
tachometer means for sensing and transforming surface speed of a workpiece into an electrical characteristic proportional to the surface speed.

4,577,500
DRIVING CONTROL METHOD OF ULTRASONIC TRANSDUCER

Shoji Mishiro, Kanagawa, Japan, assignor to Taga Electric Co., Ltd., Tokyo, Japan

Filed Aug. 1, 1984, Ser. No. 636,629
Claims priority, application Japan, Aug. 5, 1983, 58-143593
Int. Cl.⁴ G01N *29/00*
U.S. Cl. 73—579 **4 Claims**

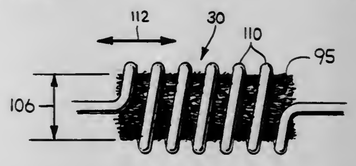


1. A driving control method for an ultrasonic transducer, comprising the steps of:
measuring the transducer currents and determining the transducer current characteristics;
locating the resonant points of the operation of said transducer based upon said current characteristics;
determining the vibratory velocity detecting signal of said transducer based upon said transducer currents;
determining the phase characteristics of said vibratory velocity detecting signal with respect to said transducer currents;
determining the fundamental resonant point based upon the relationship of zero cross points of said phase characteristics with respect to the location and current value of said resonant point; and
performing a phase lock-loop control oscillation to drive said transducer.

4,577,501
PROBE COIL SNUBBER

Tyag R. Sehgal, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed May 17, 1984, Ser. No. 611,277
Int. Cl.⁴ F16F *1/00, 13/00, 7/00*
U.S. Cl. 73—577 **3 Claims**

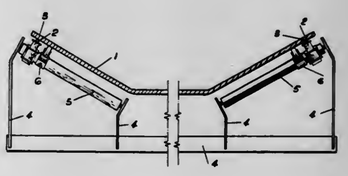


1. In the coil of a coiled tube in a gas turbine engine which provides a communication conduit leading to a sensor, the improvement comprising:
a stiffening element contained within the coil for inhibiting bending of the coil.

4,577,502
CONVEYOR BELT MONITOR

Jock B. Cunningham, Mount Isa, Australia, assignor to Mount Isa Mines Limited, Queensland, Australia

Continuation-in-part of Ser. No. 390,665, Jun. 21, 1982, abandoned. This application Jun. 13, 1984, Ser. No. 620,015
Claims priority, application Australia, Jun. 29, 1981, PE9491
Int. Cl.⁴ G01N *29/04*
U.S. Cl. 73—600 **25 Claims**



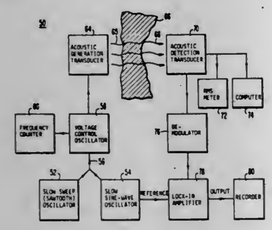
7. A method for detecting a rip in a conveyor belt comprising a rubber or rubberlike composition, the method comprising the steps of:
(a) transmitting ultrasound of a particular frequency to the belt at a first zone;
(b) detecting ultrasound of said particular frequency propagated by the belt from the first zone to a second zone spaced apart from the first; and
(c) issuing a signal responsive to the intensity of ultrasound, if any, so detected, whereby said signal is indicative of discontinuities in the belt intermediate said zones.

4,577,503

METHOD AND DEVICE FOR DETECTING A SPECIFIC ACOUSTIC SPECTRAL FEATURE

Wayne I. Imaino, San Jose, and Andrew C. Tam, Saratoga, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 4, 1984, Ser. No. 646,406
Int. Cl.[4] G01N *29/00*
U.S. Cl. 73—602 **11 Claims**



1. A method of detecting a single spectral feature in the acoustic response of a sample under test, said method comprising the steps of:

providing an acoustical beam having a frequency bandwidth which is narrower than the width of the spectral feature, and having a center frequency f_c which lies near the feature;

modulating the acoustical beam with a single frequency f_s to provide a pure FM spectrum having upper and lower sidebands;

exposing the sample to the modulated acoustical beam so that only one of the FM sidebands probes the spectral feature; and

detecting the amplitude modulation (AM) of the acoustical beam emerging from the sample at the frequency f_s to determine

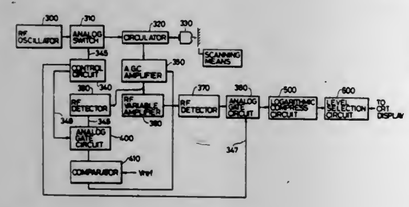
the strength of the spectral feature.

4,577,504

ACOUSTIC MICROSCOPE

Hiroshi Kanda, Tokorozawa, and Isao Ishikawa, Hino, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 19, 1984, Ser. No. 601,960
Claims priority, application Japan, Apr. 22, 1983, 58-69956
Int. Cl.[4] G01N *29/00*
U.S. Cl. 73—606 **2 Claims**



1. An acoustic microscope comprising:

an acoustic transducer which has a piezoelectric element and an acoustic lens;

a specimen holding means which holds a specimen in a manner to be opposed to said transducer via an acoustic propagation medium, the back surface of said specimen holding means being lined with a reflective material;

a drive means which drives said transducer in a pulse-like manner responsive to electric signals;

a receiving means which amplifies and detects reflected echoes that are detected by said transducer;

an AGC circuit means which samples an echo reflected from an interface between said acoustic lens and said acoustic propagation medium among said reflected echoes, and which controls the amplification factor of said receiving means such that the output thereof will reach a predetermined value;

a sampling means which samples an echo reflected from said specimen among said reflected echoes; and

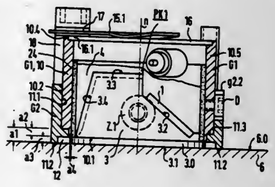
a display means which displays the echo sampled by said sampling means.

4,577,505

SPECIAL ANGLE BEAM PROBE FOR ULTRASONIC TESTING

Hans-Achim Jestrich, Ratingen, and Paul Friedrich, Uttenreuth, both of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Filed Jul. 27, 1984, Ser. No. 634,990
Claims priority, application Fed. Rep. of Germany, Aug. 1, 1983, 3327736
Int. Cl.[4] G01N *29/04*
U.S. Cl. 73—629 **25 Claims**



1. Special angle beam probe for ultrasonic testing of a test piece, comprising a multiplicity of prefabricated beam probe subassemblies disposed on a surface of the test piece, said beam probe subassemblies each having a first housing, a wedge-shaped support body disposed in said first housing, at least one ultrasonic vibrator fastened to said support body, and damping means disposed in said first housing, and a multiplicity of second beam probe housings each surrounding a respective one of said beam probe subassemblies, said vibrators each delivering an ultrasonic beam striking a given point along the surface of the test piece at the same predetermined incidence angle other than 0° as measured from a perpendicular to the surface of the test piece at the given point, said beams arriving at the surface of the test piece at oblique angles between 0° and 360° subtended between a principal axis of the beam probe and said beam, as seen in direction perpendical to the beam probe from above, means for fastening said beam probe subassemblies at least at one different predetermined oblique angle in said second beam probe housings, and means for assembling said second beam probe housings with said beam probe subassemblies having the same incidence angle and different oblique angles with different oblique angle relationships.

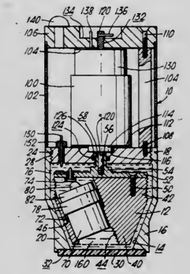
4,577,506

ULTRASONIC SCANNING PROBE

Michael J. Poole, Abingdon, and Michael J. Crook, Faringdon, both of England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Jun. 5, 1984, Ser. No. 617,544
Claims priority, application United Kingdom, Jun. 24, 1983, 8317247
Int. Cl.[4] G01N *29/04*
U.S. Cl. 73—633 **8 Claims**

1. An ultrasonic scanning probe comprising, a casing having at one end an ultrasonically-transparent window, a block of ultrasonically-absorbent material close-fitting within the casing and close to the window, having an axis of rotation which passes through the centre of the window and defining a hole extending from the window at an angle to the axis of rotation of the block, the fit being such as to define a narrow gap between the block and the casing of width not more than about 2 mm, a transducer mounted within the hole, an attenuating coupling medium filling the gap and the space between the transducer and the window, so as to scan a sector centred on the axis of rotation.

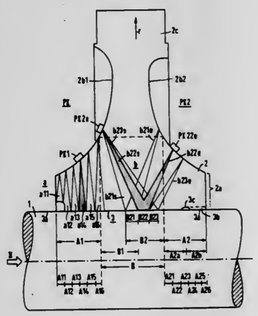


4,577,507

METHOD FOR THE ULTRASONIC TESTING OF DISCS SHRINK-FITTED ONTO SHAFTS IN VICINITY OF SHRINK-FITTED SEATS, AND APPARATUS FOR CARRYING OUT THE METHOD

Hans-Achim Jestrich, Ratingen, and Ewald Werntgen, Mülheim, both of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Filed May 24, 1984, Ser. No. 613,902
Claims priority, application Fed. Rep. of Germany, May 24, 1983, 3318748
Int. Cl.[4] G01N *29/04*
U.S. Cl. 73—640 **23 Claims**



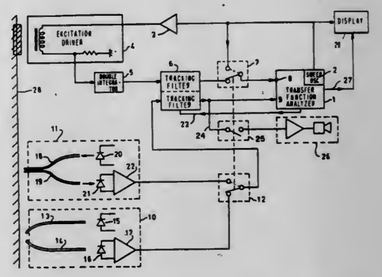
15. Apparatus for the ultrasonic testing of disc bodies shrunk onto shafts, the disc bodies having shrink-fitted seats adjoining the shafts, a shrinkage influence zone adjoining the seats, hubs adjoining the shafts and having inner surfaces subdivided into test regions and subregions, wheel discs adjoining the hubs, a rim of the wheel discs, and side walls of the wheel discs having contours being tapered radially outwardly from the hub to the wheel disc rim as seen in cross section, comprising a manipulator, at least one manipulator arm having a free end and being attached to the manipulator, a portion of said arm being movable in and out and being movable and adjustable in at least axial and transverse to axial directions, different probe mountings interchangeably fastened to said free end of said manipulator arm, said mountings comprising templates, said templates having shapes adapted to the contour of the side wall in vicinity of a respective subregion, ultrasonic angle beam probes disposed on said templates, and measuring feelers disposed on said templates.

4,577,508

OPTICAL VIBRATION ANALYZER

Russell Chaplin, Dibden Purlieu, United Kingdom, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 24, 1984, Ser. No. 664,139
Claims priority, application European Pat. Off., Oct. 25, 1983, 83306458.7
Int. Cl.[4] G01H *9/00*
U.S. Cl. 73—655 **8 Claims**



1. An optical analyzer including a fiber optic probe having a predetermined field of view, characterized in that said analyzer further comprises:

means for illuminating with non-coherent light a limited area of a surface to be analyzed;

a light intensity detection device for producing a first electrical signal directly related to the intensity of light received by said fiber optic probe;

sweep oscillator means for providing an excitation signal to the surface to be analyzed;

means for connecting said first electrical signal and said excitation signal to inputs of a tracking filter which operates to eliminate background interference signals from said first signal; and

means for feeding the output of said tracking filter to an output monitor device,

whereby the vibration amplitude of the surface to be monitored is output to an output device.

4,577,509

ARRANGEMENT FOR DETERMINING THE TRAVEL OF A PISTON

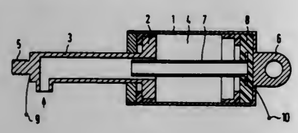
Bernd Moser, Wissen, Fed. Rep. of Germany, assignor to Boge GmbH, Eitorf, Fed. Rep. of Germany

Filed Jun. 15, 1984, Ser. No. 621,075
Claims priority, application Fed. Rep. of Germany, Jun. 15, 1983, 3321510; Aug. 30, 1983, 3331170
Int. Cl.[4] G01R *27/26*
U.S. Cl. 73—658 **20 Claims**

1. A damping cylinder of a vibration damper, said damping cylinder having an arrangement for determining a position of piston means therewithin, said cylinder having a space therewithin with said piston means disposed in said space for axial slidable movement within said cylinder;

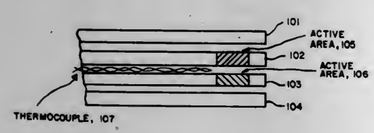
at least one damping medium being disposed within said cylinder for damping said axial movement of said piston means with respect to said cylinder;

said arrangement for determining the position of said piston means comprising:
means for sensing a position of said piston means within said cylinder;
said position sensing means having a first element and a second element;
said first element of said position sensing means being disposed to be movable with said piston means;
said second element of said position sensing means being disposed to be substantially stationary with respect to said cylinder;
said first element and said second element being electrical insulated one from the other;



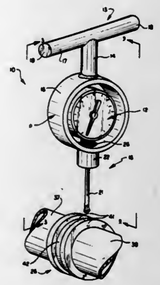
said two elements forming a variable impedance component which is substantially electrically reactive;
and wherein said variable reactive electrical impedance varies, in operation, with said position of said piston means in said cylinder;
an electrical signal generated by at least one of said elements and being indicative of said position of said piston means; and
electrical connecting means, connected to at least one of said elements, for sensing said electrical signal, indicative of said position of said piston means.

4,577,510
DYNAMIC POLYMER PRESSURE TRANSDUCER WITH TEMPERATURE COMPENSATION
Anthony J. Bur, Rockville, and Steven C. Roth, Frederick, both of Md., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Sep. 6, 1984, Ser. No. 647,782
Int. Cl.[4] G01L *9/08*; G01K *7/10*
U.S. Cl. 73—708 **9 Claims**



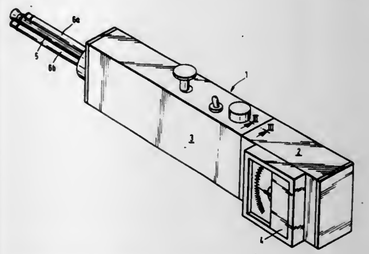
1. A pressure gage used to obtain accurate dynamic pressure data in a changing thermal environment, comprising:
an active transducer producing a transducer output signal which is uncorrected for thermal effects, said active transducer being composed of polyvinylidene fluoride;
a thermocouple having a short rise time and producing an output thermal signal which dynamically responds to changing thermal conditions, said thermocouple being a copper-constant thermocouple made with wire, said thermocouple residing within said transducer; and
a compensation means receiving said transducer output signal from said transducer and said output thermal signal from said thermocouple, said compensaton means producing a corrected pressure signal, said corrected pressure signal representing accurate pressure data which is corrected for changing thermal conditions.

4,577,511
AIR LINE PRESSURE TESTER
Donald C. Wetzel, c/o Quest Corporation, 9009 Freeway Dr., Macedonia, Ohio 44056
Filed Nov. 5, 1984, Ser. No. 667,971
Int. Cl.[4] G01L *19/14*
U.S. Cl. 73—756 **11 Claims**



1. A device for determining air pressure in an air line at a hose coupling thereon having a pair of connectors containing resilient gaskets on the ends of the hoses in sealing engagement with each other, said device comprising:
means for gauging air pressure;
a protective member supporting said gauge means therein;
means for sampling air pressure in the air line, said sampling means being mounted on said protective member and extending outwardly therefrom, having a distal portion adapted to pass between said gaskets at a sealing interface thereof and into said air line, said sampling means providing fluid communication between said air line and said gauge means;
handle means on said protective member, said handle means and protective member coacting a transfer a force applied on said handle means to said sampling means to position said distal portion in fluid communication with said air line without the force being applied to said gauging means.

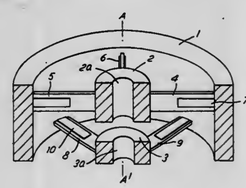
4,577,512
THREAD-TENSION METER
Konrad Löwenheck, Basel, Switzerland, assignor to N. Zivy & Cie, S.A., Oberwil, Switzerland
Filed Aug. 20, 1984, Ser. No. 642,206
Claims priority, application Switzerland, Sep. 21, 1983, 5134/83
Int. Cl.[4] G01L *5/04*; G01D *11/24*
U.S. Cl. 73—862.45 **2 Claims**



1. A thread-tension meter comprising
a housing consisting of a main portion and an end portion,

a device projecting from the main portion of the housing and intended for sensing the thread tension,
mechanical and electronic equipment, cables and accessories arranged within the housing for measuring the thread tension, and
an indicator device located in the end portion of the housing for reading off the measured value,
wherein the end portion of the housing in which the indicator device is located is self-contained,
wherein the end portion is pivotable at least 45° relative to the main housing portion,
wherein a bushing extends through the end wall of the end portion of the housing and the adjacent end wall of the main housing portion and serves as a pivot bearing and cable duct,
wherein the end wall of the end portion of the housing adjacent the main housing portion is pressed by means of spring pressure against the adjacent end wall of the main housing portion, and
wherein an annular tensioning spring on the periphery of the bushing is adjustable by means of a nut screwed onto the bushing.

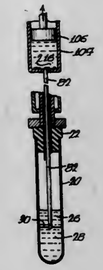
4,577,513
STRAIN SENSING ARRANGEMENT
Alan R. Harwood, Hayes, and Julie A. Ward, Camberley, both of England, assignors to EMI Limited, Hayes, England
Filed Nov. 2, 1983, Ser. No. 547,899
Claims priority, application United Kingdom, Nov. 9, 1982, 8231907
Int. Cl.[4] G01L *5/16, 1/22*
U.S. Cl. 73—862.04 **7 Claims**



1. A strain sensing arrangement comprising
a first support member,
two further support members arranged coaxially with respect to the first support member,
a first array of beam members interconnecting said first support member and one of said further support members,
a second array of beam members interconnecting said first support member and the other of said further support members, and respective strain sensing means associated with the beam members of the first and second arrays for sensing relative axial displacement of the first support member and said one of the further support members and relative angular displacement of the first support member and said other of the further support members and for generating electrical signals indicative of angular and/or axial displacements which are sensed.

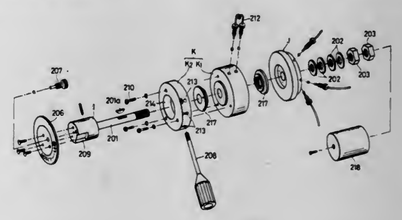
4,577,514
METHOD AND APPARATUS FOR SAMPLING LIQUID PHASE COMPONENTS FROM A LIQUID-SEMISOLID FLUID
Charles A. Bradley, Brentwood; Herman Benge, Nashville; Fritz F. Parl, Nashville, and William R. Seebaugh, Nashville, all of Tenn., assignors to Vanderbilt University, Nashville, Tenn.
Filed Apr. 9, 1984, Ser. No. 598,074
Int. Cl.[4] G01N *1/18, 33/48*
U.S. Cl. 73—863.01 **19 Claims**

1. Apparatus for isolating liquid phase components from semisolid phase components of a fluid mixture of the type in which the liquid phase components overlie the semisolid phase components and a liquid-semisolid interface is defined therebetween, comprising a probe; means for moving an end of said probe into and through the liquid phase components and toward and to the interface; means on said probe for sensing a change in pressure on said end of said probe upon said end contacting the interface and for generating a signal in response



thereto; means for terminating movement of said probe upon generation of said signal, said probe having an opening therein close to but spaced from said end thereof so that said opening is located close to but spaced from the interface and entirely in the liquid phase components when said end reaches the interface; and means for withdrawing liquid phase components through said opening and probe after termination of movement of said probe.

4,577,515
SAMPLING VALVE FOR USE IN HIGH-SPEED LIQUID CHROMATOGRAPHY
Noboru Someya, Chiba, and Rikizo Horikawa, Toyama, both of Japan, assignors to Tokyo Rika Kikai Co., Ltd., Japan
Filed Jun. 19, 1984, Ser. No. 622,151
Int. Cl.[4] G01N *1/10, 30/20*
U.S. Cl. 73—863.73 **2 Claims**

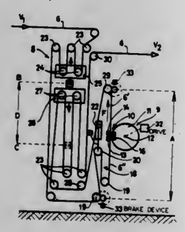


1. A sampling valve for use in a high-speed liquid chromatography comprising a first stator having therein a sample injection flow passage and a solution flow passage; a second stator having therein a solution flow passage and a discharge passage; a rotor having therein three or more sample holding bores of different diameter, said rotor being rotatably interposed between said first and second stators; and an axial shaft fixed between said stators, said axial shaft extending through said rotor in such a manner as to allow said rotor to rotate; either one of said stators or said shaft being provided with a length of engaging groove adapted to engage with a front end of a lever for rotating said rotor; a plurality of mounting holes being provided in such a positions as to permit the adjustment of the angular position of said rotor.

4,577,516
DEVICE FOR TAKING A SAMPLE FROM A CONTINUOUSLY ADVANCING WEB

Johann Wyser, Ligerz, Switzerland, assignor to Stork Brabant B.V., An Boxmeer, Netherlands

Filed Jun. 4, 1984, Ser. No. 617,278
Claims priority, application Netherlands, Jun. 17, 1983, 8302175
Int. Cl.⁴ G01N *1/04*
U.S. Cl. 73—864.41 8 Claims

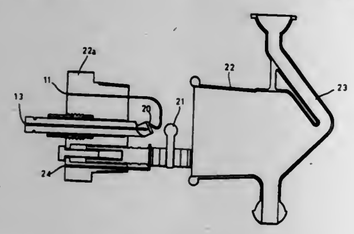


1. A device for taking a sample from a continuously advancing web which is subsequently continuously discharged, the device comprising means for bringing about a temporary stop zone for the web, said stop zone means comprising a combination of a first accumulator and a second accumulator for storing the supplied web, and a web supporting surface movably disposed at one side near the stop zone and positioned between said first and second accumulators, said stop zone means cooperating with sample taking means, and sample taking means comprising means for temporarily retaining the web; means for cutting the temporarily retained web twice thereby dividing said web into a first portion having a cut end, a second portion having a cut end, and a relatively small sample portion; and means for rejoining the first and second portions, the means for temporarily retaining the web comprising two fixed suction bars provided on the side of the web opposite the side adjacent to the web supporting surface, and a third suction bar provided on said web supporting surface, said cutting means being movable between the two fixed suction bars.

4,577,517
NEBULIZER

Trevor V. Knight, Albany Creek, Australia, assignor to Labtest Equipment Co. (S.E. Asia) Pty. Ltd., Braeside, Australia

PCT No. PCT/AU83/00120, § 371 Date Apr. 27, 1984, § 102(e) Date Apr. 27, 1984, PCT Pub. No. WO84/00906, PCT Pub. Date Mar. 15, 1984
PCT Filed Aug. 30, 1983, Ser. No. 609,566
Claims priority, application Australia, Aug. 30, 1982, PF5631; Jul. 25, 1983, PG0459
Int. Cl.⁴ G01N *35/00*
U.S. Cl. 73—864.81 15 Claims

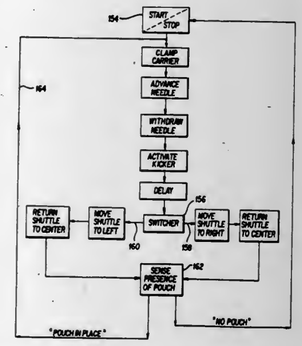


1. A nebulizer assembly including a sample liquid lnlet; an interface to which said sample liquid may be introduced for forming into an aerosol; actuating means cooperable with said interface to form said aerosol; decontamination means operable to substantially reduce contamination of said interface; a cloud chamber for containing said aerosol; an aerosol sample outlet from said cloud chamber; and purging means for purging said cloud chamber of said aerosol.

4,577,518
GAS SAMPLING DEVICE

Wing C. Fong, Scarborough; Albert J. Fournier, Ajax, and Bernard B. Gil, Brampton, all of Canada, assignors to The Government of Canada, Ottawa, Canada

Filed Jan. 3, 1985, Ser. No. 688,222
Claims priority, application Canada, Jan. 9, 1984, 444910
Int. Cl.⁴ G01N *1/14, 1/22*
U.S. Cl. 73—864.91 3 Claims

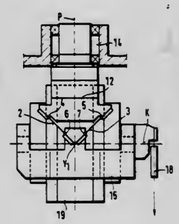


1. Apparatus for injecting samples of a fluid into sealed pouches of a type having a self-sealing portion, the apparatus comprising:
a framework;
an injection needle for coupling to a source of said fluid to supply fluid to the pouches;
a drive mechanism attached to the framework and coupled to the injection needle and operable to move the needle between a withdrawn position and an engagement position along a first line of travel;
a hopper attached to the framework for containing the pouches in a stack;
a transport mechanism attached to the framework and having a shuttle moveable along a second line of travel at right angles to the first line of travel for moving pouches one at a time from the hopper to a position in line with the needle to receive said samples from the needle with the needle in the engagement position;
ejection means coupled to the framework and operable to push the pouches off the shuttle to make space for another one of the pouches from the hopper; and
control means coupled to activate the drive mechanism, transport mechanism, and ejection means sequentially to position the shuttle at the hopper to receive the pouches, to move the shuttle to bring one pouch at a time in line with the needle, to move the needle to the engagement position to provide a sample in this pouch, to move the needle to the withdrawn position, to push the pouch off the shuttle, and to then move the shuttle into position to receive another one of the pouches contained in the hopper before repeating the steps to place a sample in said another one of the pouches.

4,577,519
GYROSCOPE LOAD CELL

Hans W. Häfner, Aichach, Fed. Rep. of Germany, assignor to Pfister GmbH, Fed. Rep. of Germany

Filed Jun. 17, 1983, Ser. No. 505,345
Claims priority, application Fed. Rep. of Germany, Jul. 23, 1982, 3227497
Int. Cl.⁴ G01L *1/00*
U.S. Cl. 74—5 F 4 Claims

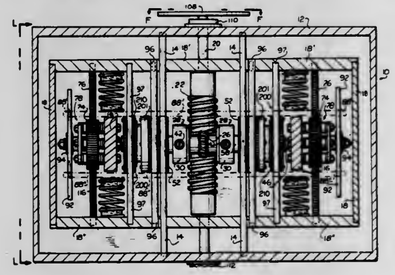


1. A gyroscope load cell comprising:
a housing,
an inner gimbal and an outer gimbal arranged in said housing,
a gyroscope arranged to rotate about a gyroscope axis and suspended in said housing by means of said outer and inner gimbals such that the precessional motion of said gyroscope about its precessional axis is proportional to the force to be measured when applied to said inner gimbal, and
a link joint comprising a pair of straps having first ends connected to the outer gimbal at points located at a distance to each other in an essentially horiztonal plane and at equal distances from said precessional axis, said straps having their second ends connected to a common point on the inner gimbal, said common point being located at the intersection of said precessional axis and said gyroscope axis.

4,577,520
MECHANICAL PROPULSION SYSTEM

Joseph Colla, 730 Santa Susana St., Sunnyvale, Calif. 94086

Continuation-in-part of Ser. No. 685,333, Dec. 24, 1984, abandoned, which is a continuation-in-part of Ser. No. 426,261, Sep. 29, 1982, abandoned, which is a continuation-in-part of Ser. No. 403,555, Jul. 30, 1982, abandoned. This application Jun. 26, 1985, Ser. No. 749,188
Int. Cl.⁴ F16H *33/20*
U.S. Cl. 74—84 R 1 Claim

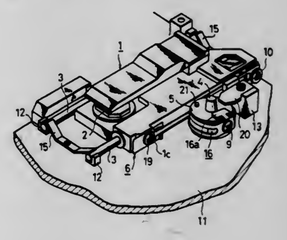


1. A mechanical propulsion sytem comprising:
(a) a support structure having a thrust axis;
(b) rack means attached to said support structure parallel to said thrust axis;
(c) a load carriage coupled to said rack means for forward or reverse movement with recoil action parallel to said thrust axis;
(d) a power carriage coupled to said load carriage for independent forward or reverse movement parallel to said thrust axis;
(e) transverse drive means having an axis of rotation substantially perpendicular to said thrust axis and engaging said rack means, said load carriage, and said power carriage;
(f) means for storing potential energy developed by the relative motion of said load carriage and said power carriage; and
(g) means for powering said transverse drive means such that energy that is not stored by said means for storing potential energy is converted into a thrust force on said rack means.

4,577,521
CARRIAGE DRIVE UNIT

Makito Takikawa, Furukawa, Japan, assignor to Alps Electric Co., Ltd., Japan

Filed Jun. 13, 1984, Ser. No. 620,014
Claims priority, application Japan, Jun. 13, 1983, 58-89075[U]
Int. Cl.⁴ F16H *21/44*
U.S. Cl. 74—89.2 7 Claims



1. A carriage drive unit comprising:
(a) a carriage;
(b) guide means for guiding said carriage;
(c) a drive motor having a rotatable shaft;
(d) a pulley fixed to said rotatable shaft of said drive motor;
(e) a drive belt having a looped portion extending around and fixed by a screw on a peripheral surface of said pulley and having end portions fastened to said carriage for moving said carriage along said guide means in response to rotation of said pulley; and
(f) a resilient member disposed between said peripheral surface of the pulley and said drive belt for normally urging said looped portion of the drive belt radially outwardly, said resilient member being elastically deformable under pressure, of said screw toward said peripheral surface of the pulley.

4,577,522
TORSIONAL THRUST TOOL

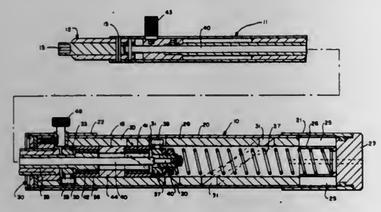
James D. Cox, Jr., 250 Morrison Canyon Rd., Fremont, Calif. 94538

Filed Jun. 19, 1984, Ser. No. 622,268
Int. Cl.⁴ F16H *27/02, 31/00*
U.S. Cl. 74—127 4 Claims

1. A reversible rotary torque-producing tool comprising:
a. an elongated cylindrical handle;
b. a cylindrical housing located completely within and concentric to said handle, said housing being fixed against relative motion with respect to said handle, having first and second helical slots in the cylindrical surface thereof with said slots being axially displaced from one another, with said first slot defining a right hand helix and said second slot defining a left hand helix each of said slots

extending substantially 360° around said housing and with the end of said first slot being intermediate the ends of said second slot;

c. a tool-operating shaft located within and concentric to said housing, said tool-operating shaft
1. being journaled for rotating around its long axis,
2. having a large diameter clutch-engaging part,
3. having a small diameter part,
4. having an extending part extending beyond said handle



d. first drive means including a first clutch that grips in one direction of rotation and second drive means including a second clutch that grips in a direction of rotation opposite said one direction, said first drive means engaging said first helical slot and said second drive means engaging said second helical slot;

e. shift means for selectively positioning said large diameter clutch-engaging part within one of said drive means; and

f. a closure surrounding said extending part and enclosing said housing within said handle.

4,577,523

SILICONE TRACTION FLUIDS

Eugene D. Groenhof, Freeland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Nov. 28, 1983, Ser. No. 555,757
Int. Cl.⁴ F16H *15/08*
U.S. Cl. 74—200 **28 Claims**

1. In a traction drive system having at least two relatively rotatable members in a torque transmitting relationship and a traction fluid disposed on the tractive surfaces of said members, the improvement comprising employing, as said traction fluid, a fluid consisting essentially of a polyorganosiloxane fluid which contains 7 to 45 weight percent siloxane units of formula $[RSiO_{3/2}]$, 40 to 90 weight percent siloxane units of formula $[R_2SiO]$, and 0 to 20 weight percent siloxane units of formula $[(CH_3)_3SiO_{\frac{1}{2}}]$, where the molar ratio of $[(CH_3)_3SiO_{\frac{1}{2}}]$ siloxane units to $[RSiO_{3/2}]$ siloxane units in said polyorganosiloxane fluid is less than 1, where R is independently selected from the group consisting of methyl, cyclohexyl, and phenyl radicals, and where said polyorganosiloxane fluid has a kinematic viscosity of about 20 to 200 centistokes at 77° F.

4,577,524

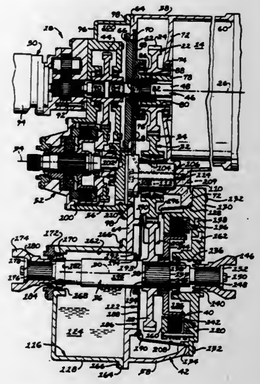
VEHICLE TRANSFER GEAR AND DRIVE LINE BRAKE MECHANISM

David L. Richards, Peoria, and Willis E. Windish, Pekin, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US82/00832, § 371 Date Jun. 18, 1982, § 102(e) Date Jun. 18, 1982
PCT Filed Jun. 18, 1982, Ser. No. 601,772
Int. Cl.⁴ F16H *57/04, 57/10*
U.S. Cl. 74—411.5 **17 Claims**

1. In a vehicle transfer gear and drive line brake mechanism including a depending gear transfer train and a drive line brake assembly for respectively propelling and stopping movement of a vehicle, the gear transfer train having an output gear connected to an output shaft disposed on a lower axis and the drive line brake assembly being connected to the output shaft and disposed on the lower axis, the improvement comprising:

housing means for defining an enclosed compartment containing the gear transfer train and the drive line brake assembly in juxtaposed relation and a common lubrication fluid therein, the housing means including a main case defining an opening on the lower axis; and



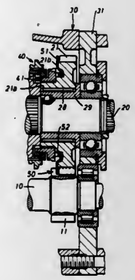
the drive line brake assembly including a brake body releasably secured to the case in closing relationship to the opening and a plurality of annular plates and discs, the drive line brake assembly being modularized and being removable with the brake body from the output shaft independent of the output gear.

4,577,525

GEAR ASSEMBLY FOR AUTOMOBILE TRANSMISSION

Kazuhito Ikemoto; Yukio Terakura, and Takashi Miyake, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Dec. 6, 1982, Ser. No. 447,188
Claims priority, application Japan, Dec. 23, 1981, 56-208530
The portion of the term of this patent subsequent to Jul. 23, 2002, has been disclaimed.
Int. Cl.⁴ F16H *55/18*
U.S. Cl. 74—440 **3 Claims**



3. In a gear assembly including having a pair of driving and driven gears permanently in meshing engagement with each other to provide a torque transmission therebetween, said driven gear being formed at one side thereof with a boss portion, and an additional gear axially slidable and rotatable on the boss portion of said driven gear and being permanently in meshing engagement with said driving gear to rotate at a gear ratio different from that of said driving and driven gears, and in which said additional gear is resiliently in contact with a synchronizer mechanism assembled adjacent to said additional gear and having a spline piece fixed to the boss portion of said driven gear, and resilient means for resiliently pressing said additional gear against one end face of said driven gear to restrain a relative rotation between said driving and driven gears.

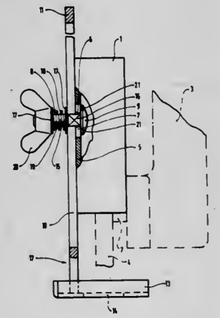
the improvement wherein a toothed portion of said driven gear is formed at one end thereof with an annual stepped portion for provision of a predetermined annular gap between said additional gear and the one end face of the toothed portion of said driven gear, and wherein said resilient means is a waveshaped ring spring arranged in surrounding relationship with the boss portion of said driven gear and is engaged at its one end face with said additional gear and at its other end face with the spline piece of said synchronizer mechanism.

4,577,526

PROTECTIVE ELEMENT FOR HAND-HELD POWER TOOL

Manfred Stäbler, Echterdingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 5, 1984, Ser. No. 586,094
Claims priority, application Fed. Rep. of Germany, Mar. 22, 1983, 8308464[U]
Int. Cl.⁴ F16P *1/00*; B24B *55/04*
U.S. Cl. 74—609 **8 Claims**



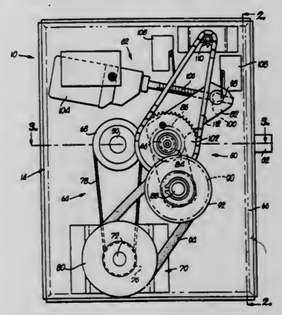
1. A protective element for a hand-held power tool with a rotary tool, such as a grinding disk, a circular saw, or the like, comprising a protective member provided with a plurality of elongated cut-outs each having two ends spaced from one another in the direction of elongation and provided in one of said ends with an increased portion; an additional member connectable with said protective member; and means for connecting said additional member with said protecting member, said connecting means including a plurality of holding screws having heads arranged to be inserted from outside through said increased portions and engage behind said protective member, said increased portions of said cut-outs having a shape on a plan view which corresponds to the shape of said heads of said screws and being provided at the same ends of said cut-outs in said protective member, and at least one locking projection, which projects outwardly beyond said protective member and is arranged near at least one of said increased portions in a path of an associated one of said heads sliding on said protective member in a respective one of said cut-outs from said one end to said other end of each of said cut-outs and vice versa so that when the head of one of said holding screws is inserted through the increased portion of respective one of said cut-outs said head is located at one side of said locking projection, and after said head has been slid to the other end of the same cut-out said head is located at the other side of said locking projection.

4,577,527

DIFFERENTIAL DRIVE MECHANISM

Michael L. Shackelford, Emporia, Kans., assignor to Didde Graphic Systems Corporation, Emporia, Kans.

Filed Oct. 24, 1983, Ser. No. 544,514
Int. Cl.⁴ F16H *33/00*
U.S. Cl. 74—640 **12 Claims**



1. A drive mechanism for operably connecting an input shaft and an output shaft for varying the rotational velocity of the output shaft relative to the rotational velocity of the input shaft, said drive mechanism comprising:

pulley means operably coupled to said input shaft for rotation therewith;

arm means operably mounted for pivotal movement about the axis of rotation of said output shaft;

variable sheave means operably mounted to said arm means and rotatable about an axis spaced from the axis of rotation of said output shaft;

means operably interconnecting said pulley means and said variable sheave means for rotating said variable sheave means in response to rotational movement of said pulley means;

means operably coupling said variable sheave means and said output shaft for rotating said output shaft in response to rotational movement of said variable sheave means; and

positioning means operably connected to said arm means for pivoting said arm means thereby changing the rotational velocity of said variable sheave means when the position of said variable sheave means is changed and effecting a corresponding change in the rotational velocity of said output shaft.

4,577,528

DRIVING/TURNAROUND DEVICE FOR A REMOTE CONTROLLED TOY VEHICLE

Tuneo Hanzawa, Tokyo, Japan, assignor to K. K. Hanzawa Corporation, Tokyo, Japan

Filed Dec. 31, 1984, Ser. No. 687,591
Claims priority, application Japan, Sep. 14, 1984, 59-140319
Int. Cl.⁴ F16H *5/72*; A63H *17/36*
U.S. Cl. 74—665 GA **1 Claim**

1. A driving/turnaround device in use with a remote controlled toy vehicle comprising:

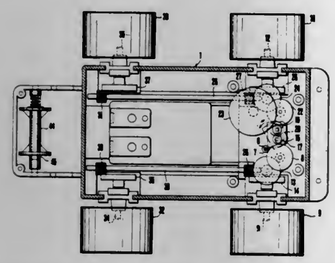
a reversible motor rotatable in a forward direction or a backward direction in response to a command applied from a remote controller;

an intermediate gear being in mesh with a gear rotated by said motor;

a pair of axles being independently provided for right and left driving wheels, and rotatably supported by a car body;

said intermediate gear being in mesh with a gear for transmitting a drive force to one of said axles;

a rectilinear movement gear like said intermediate gear and a turnaround reduction gear being in mesh with a gear for transmitting a drive force to the other of said axles;



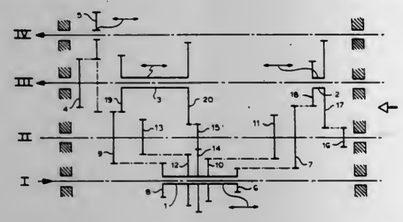
a swing member rotatably mounted to said car body being provided with a pair of switch gears meshing with each other, said swing member being swung so that one of the pair of said switch gears meshes with said intermediate gear, while the other is in mesh with said rectilinear movement gear in the forward rotation, and is meshed with said reduction gear in the reverse rotation.

4,577,529

GEAR TRANSMISSION ASSEMBLY

Romeu Romi, Av. Perola Byington 56, Santa Barbara d'Oeste C., Brazil

Filed Aug. 30, 1982, Ser. No. 412,852
Int. Cl.⁴ F16H *37/06*
U.S. Cl. 74—665 GA **10 Claims**



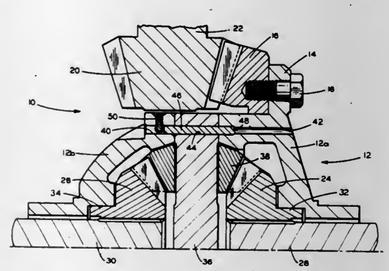
1. A gear transmission assembly, comprising a speed change gearbox including a drive shaft, an intermediate shaft, set of five slideable gears for driving said intermediate shaft from said drive shaft, a first driven shaft, two slideable double gears constrained for rotation with said first driven shaft, a secondary driven shaft with a 1:1 gear ratio in relation to said first driven shaft and another gear ratio, a multiple of 2 in relation to the first driven shaft, six non-slideable gears constrained for rotation with said intermediate shaft of which four non-slidable gears are selectively meshable with corresponding sliding gears on said drive shaft and with corresponding double gears slideable on said first driven shaft, a slideable gear constrained for rotation with said secondary driven shaft and alternatively meshable with one of said four non-slideable gears constrained for rotation with said intermediate shaft, and said gears constrained for rotation with said drive, said intermediate shaft and said first driven shaft producing 17 different output speeds on said first driven shaft.

4,577,530

DIFFERENTIAL CROSS SHAFT RETAINING MEANS

John L. Hickey, Fort Wayne, Ind., assignor to Dana Corporation, Toledo, Ohio

Filed Feb. 24, 1984, Ser. No. 582,395
Int. Cl.⁴ F16H *1/40*
U.S. Cl. 74—713 **9 Claims**



1. In a differential axle assembly having a rotatable casing enclosing side gears cooperating with pinion gears mounted on a cross shaft, the improvement comprising:

a rotatable casing having a casing channel formed therein;

a cross shaft supported in openings formed in said rotatable casing and having a cross shaft channel formed therein adapted to be aligned with said casing channel;

lock pin means disposed in said cross shaft channel and said casing channel for retaining said cross shaft within said casing;

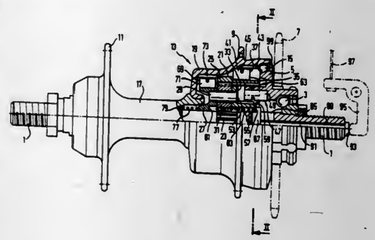
boss means attached to said casing and extending transversely into said casing channel adapted to retain said lock pin means therein.

4,577,531

MULTI-RATIO DRIVE HUB FOR BICYCLES WITH AT LEAST THREE DIFFERENT DRIVE TORQUE PATHS

Eduard Bergles, Graz, Austria, assignor to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

Filed Mar. 2, 1984, Ser. No. 585,891
Claims priority, application Fed. Rep. of Germany, Mar. 5, 1983, 3307820; Feb. 28, 1984, 3407164
Int. Cl.⁴ F16H *3/44, 57/10*
U.S. Cl. 74—781 B **14 Claims**



1. In a multi-ratio drive hub having at least three gears, for bicycles, comprising

(a) a hub spindle;

(b) a driver carrying at least one chain wheel and mounted rotatably on the hub spindle;

(c) a hub sleeve carrying two spoke flanges and mounted rotatably on the hub spindle for one part and the driver on the other;

(d) a planetary gearing enclosed by the hub sleeve and the driver, including

a sun wheel having external toothing, arranged non-rotatably on the hub spindle,

an internally toothed hollow wheel rotatable about the hub spindle in relation to the hub sleeve,

a planet wheel carrier rotatable about the hub spindle in relation to the hub sleeve, and

at least one planet wheel meshing with the sun wheel and the hollow wheel and mounted rotatable on the planet wheel carrier;

(e) controllable coupling elements which couple the driver with the hub sleeve through one of at least three drive torque paths according to choice, a first of the drive torque paths leading from the driver by way of the hollow wheel to the planet wheel carrier and thence to the hub sleeve, a second of the drive torque paths leading from the driver parallel with the planetary gearing to the hub sleeve and a third of the drive torque paths leading from the driver by way of the planet wheel carrier to the hollow wheel and thence to the hub sleeve,

(f) a control device displaceable manually axially in relation to the hub spindle for the control of the coupling elements;

(g) a free wheel coupling in at least one of the drive torque paths,

(h) the improvement comprising forming each of the controllable coupling elements which switch the drive torque paths as a controllable pawl ratchet with a pawl toothing in each case, at least one pawl in each case engaging under resilient initial stress in the pawl toothing and a control element in each case, said pawl or pawls and the control element of each pawl ratchet being axially displaceable in relation to one another by means of the control device in such a way that the control element in a first relative position holds the pawl or pawls liberated for resilient engagement in the pawl toothing and in a second relative position holds the pawl or pawls lifted out of the pawl toothing, a first controllable pawl ratchet is arranged in a drive torque path from the hollow wheel to the hub sleeve and a second controllable pawl ratchet is arranged in a drive torque path from the driver to the planet wheel carrier, the control element of the second controllable pawl ratchet comprises an annular lift-out ramp and is displaceable in relation to the hub spindle by means of the control device, and the pawl toothing of the second controllable pawl ratchet is formed as external pawl toothing of an annular part connected non-rotatably with the planet wheel carrier and the driver is formed as pawl carrier of the pawl or pawls of the second controllable pawl ratchet.

4,577,532

AUTOMATIC DEVICE FOR ADVANCEMENT OF REVOLVING MECHANICAL ORGANS

Walter Cavalli, Villanova di Castenaso, Italy, assignor to O.M.C. s.n.c. di Walter & Dante Cavalli, Villanova di Castenaso, Italy

Filed May 22, 1984, Ser. No. 612,920
Claims priority, application Italy, May 30, 1983, 3443 A/83
Int. Cl.⁴ F16H *35/00*
U.S. Cl. 74—841 **5 Claims**

1. A device for automatic advance of a rotating tool towards a workpiece, said tool including a cutting tool, comprising:

(a) a rotating tool holder for holding said cutting tool for operation on said workpiece;

(b) a gear wheel bearing against said rotating tool holder toward said workpiece;

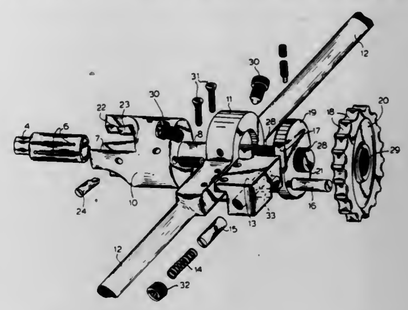
(c) holding means secured to said workpiece for holding said gear wheel with respect to said workpiece;

(d) means associated with said rotating tool holder for engaging said gear wheel and rotating the same as said tool holder rotates;

(e) means associated with said holding means and said gear wheel for advancing said gear wheel towards said workpiece as said gear wheel rotates; and

(f) a stop motion means associated with said gear wheel and said rotating tool holder for stopping the rotational movement of said gear wheel, said stop motion means comprising:

a non-rotatable cam which operates on said gear engaging



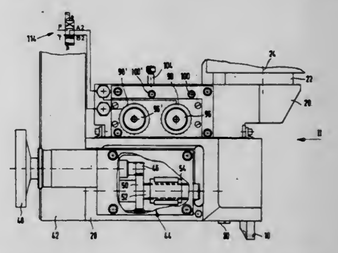
means associated with said rotating tool holder to disengage said gear engaging means from said gear wheel, stopping the rotating movement thereof during a segment of the rotation of said tool holder.

4,577,533

ADJUSTING MECHANISM FOR A GRINDING WHEEL ON A SHARPENING MACHINE FOR SAWS

Peter Lenard, Biberach an der Riss; Erich Pokorny, and Norbert Bailer, both of Schemmerhofen, all of Fed. Rep. of Germany, assignors to Vollmer Werke Maschinenfabrik GmbH, Biberach an der Riss, Fed. Rep. of Germany

Filed May 1, 1984, Ser. No. 605,928
Claims priority, application Fed. Rep. of Germany, May 10, 1983, 3317085
Int. Cl.⁴ B23D *63/14*
U.S. Cl. 76—41 **5 Claims**



1. An adjustment mechanism for a grinding wheel on a sharpening machine for workpieces, such as saws, comprising:

a carrier member reciprocable in a first direction;

a carriage mounted on said carrier member for movement relative to said carrier member in a second direction which is transverse to said first direction;

bearing means supported on said carriage for movement relative thereto in said second direction;

a shaft rotatably carried by said bearing means for rotation about an axis extending in said second direction;

a grinding wheel carried by said shaft so as to be rotatable with said shaft about said axis;

front and back end stops arranged to limit the reciprocal stroke of said carriage toward and away from a workpiece;

drive means for reciprocating said carriage between said front and back end stops in a predetermined timed relationship with movement of said carrier member;

at least one intermediate stop movable from a retracted position to an operative position between said front and back end stops for limiting the extent of said reciprocable stroke of said carriage; and

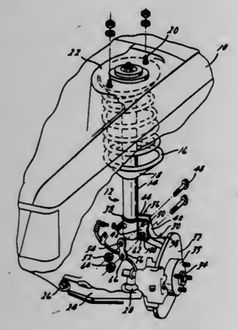
control means responsive to movements of said carrier member for moving said intermediate stop between said retracted position and said operative position.

4,577,534

FRONT SUSPENSION ALIGNMENT TOOL

Joseph Rayne, Clinton, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Apr. 1, 1985, Ser. No. 718,765
Int. Cl.⁴ B25B *27/00, 13/48*
U.S. Cl. 81—484 **2 Claims**



1. A tool comprising a cylindrical socket having its one end formed with handle attachment means and its other end formed with a bolt head receiving recess having flat wall portions adapted to drivingly engage a head of a bolt with which the tool is to be used, said recess end having an eccentric cam portion thereon, said eccentric cam portion defining a cylindrical cam surface having its radius of curvature offset a defined distance from the principal axis of said socket, said cylindrical cam surface adapted to be positioned in cammed engagement with raised guide surfaces adjacent slot means in a first structural member, a second stationery structural member having a through bore aligned with said first structural member slot means, the through-bolt adapted to extend through the first structural member slot means and the second structural member through bore, whereby upon rotation of the socket causing threaded turning of the through-bolt, the first structural member is moved along the slot means relative to the second structural member and the through-bolt to achieve selected adjustment of the first structural member relative to the second structural member within the range of movement permitted by said slot means.

4,577,535

CONTOURING MACHINE WITH RADIAL SLIDE HEAD

Steven E. Klabunde; Edward H. Hankwitz, and Charles Maastricht, all of Fond du Lac, Wis., assignors to AMCA International Corporation, Hanover, N.H.

Filed Jun. 3, 1982, Ser. No. 384,744
Int. Cl.⁴ B23B *3/12*
U.S. Cl. 82—2 E **15 Claims**

1. A numerically controlled contour boring machine adapted for interior and exterior machining operations and comprising, in combination:

(a) a machine base;

(b) a numerical control;

(c) a headstock mounted for sliding movement along a first axis and having drive means actuated by said numerical control for effecting such movement;

(d) means connected with said numerical control for continuously sensing the precise position of said headstock along said first axis;

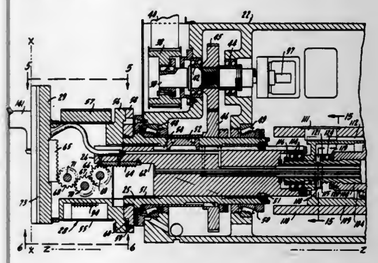
(e) a spindle sleeve journaled within said headstock and having drive means actuated by said numerical control for rotating same;

(f) a spindle housed within said spindle sleeve and adapted for axial sliding movement with respect to said sleeve;

(g) a mounting flange fixed to one end of said spindle sleeve;

(h) a contouring head fixed to said mounting flange;

(i) a radial tool slide in said contouring head movable along a second axis;



(j) drive means actuated by said numerical control for feeding said spindle axially toward and away from said contouring head;

(k) gear connection means interposed between said spindle and said radial slide for positioning same along said second axis in response to said axial feeding motion of said spindle;

(l) means for eliminating perceptible backlash from said gear connection means;

(m) means connected with said numerical control for continuously sensing the precise position of said radial tool slide along said second axis;

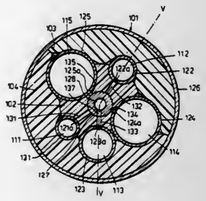
(n) whereby said machine is adapted to execute a machining sequence with said contouring head.

4,577,536

FEED APPARATUS FOR AUTOMATIC LATHES

André Lechot, Orvin, and Alexandre Louis, Le Landeron, both of Switzerland, assignors to LNS, S.A., Berne, Switzerland

Continuation of Ser. No. 396,666, Jul. 9, 1982, abandoned. This application Nov. 30, 1984, Ser. No. 676,230
Claims priority, application Switzerland, Jul. 15, 1981, 4650/81
Int. Cl.⁴ B23B *13/08, 15/00*
U.S. Cl. 82—2.7 **22 Claims**



1. A guide for precisely aligning and advancing bar stock for engagement with the head stock of an automatic lathe, said guide comprising:

an elongate inner member having a central longitudinal axis and an outer surface including a plurality of longitudinal grooves extending parallel to said central axis,

a first elongate outer member having an inner surface positioned opposite to a portion of the outer surface of said inner member and including at least one first longitudinal groove extending parallel to said central axis,

a second elongate outer member having an inner surface positioned opposite to another portion of the outer surface of said inner member and including at least one second longitudinal groove extending parallel to said central axis,

said first and second outer members being positioned relative to said inner member such that said at least one first and said at least one second longitudinal grooves are each aligned with a different one of said plurality of longitudinal grooves in said inner member to define a plurality of straight passages each having a longitudinal axis parallel to said central axis and equidistant therefrom,

a guide tube disposed and retained within each of said straight passages defined by said outer and inner members, said inner surfaces of said first and second outer members cooperating with said outer surface of said inner member to support rigidly said guide tubes such that a longitudinal axis of each guide tube is coaxial with the longitudinal axis of a corresponding straight passage, said guide tubes each being straight, parallel and equidistant from said central axis,

support means for rigidly securing said inner and outer members with said guide tubes therebetween to form a drum having a longitudinal axis coaxial with said central axis, and

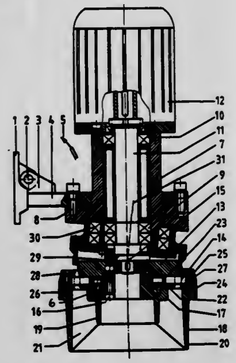
means for supporting said drum for allowing indexed rotation of said drum about said central axis to align coaxially the longitudinal axis of a guide tube with said head stock.

4,577,537

STAPLE FIBER CUTTING MACHINE

Ernst Bauch, Bordesholm, Fed. Rep. of Germany, assignor to Neumuenstersche Maschinen- und Apparatebau Gesellschaft mbH (NEUMAG), Neumuenster, Fed. Rep. of Germany

Continuation of Ser. No. 341,161, Jan. 19, 1982, abandoned. This application Sep. 17, 1984, Ser. No. 651,638
Claims priority, application Fed. Rep. of Germany, Feb. 18, 1981, 3105877
Int. Cl.⁴ D01G *1/04*
U.S. Cl. 83—343 **10 Claims**



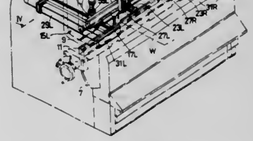
1. A staple fiber cutting machine for continuously cutting cables of synthetic fibers, comprising a rotation-symmetrical rotary cutter supporting member having an outer surface and an axis and rotatable with a predetermined speed; a plurality of cutters provided with radially extending upwardly facing cutting edges, distributed over a periphery of said cutter supporting member, and having end portions extending outwardly beyond the latter; a first ring member having an inner diameter and being mounted on said end portions of said cutters and forming together with said outer surface of said cutter supporting member an annular passage, said first ring member having an outlet side; a pressing member extending at one portion of its periphery into said annular passage with a lateral play and to said cutting edges of said cutter, and forming at another portion of its periphery an inlet slot for a cable having an end, said pressing member being rotatable about an axis which is inclined to said axis of said cutter supporting member and with a speed substantially corresponding to said speed of the latter; a rotatable drum member having an inner diameter substantially corresponding to said inner diameter of said first ring member, and a length that could be anything but shorter than the distance between said cutting edges of two neighboring ones of said cutters, said outlet side of said first ring member being fixedly connected to said drum member so that said drum member laterally supports the end of the cable to be cut and so that the centrifugal force, created by said rotary cutter supporting member, that would tend to pull the cable end outwardly is compensated so as to assure that the cut cables are of uniform length; a hub having an end side and being oriented coaxially of said drum member; and a plurality of spokes extending between and connecting together said drum member and said hub so that said hub, said drum member and said spokes form a one piece element, said hub being further connected at its end side with said cutter supporting member.

4,577,538

BACKGAUGE DEVICE

Tadashi Hirata, and Tadashi Amano, both of Isehara, Japan, assignors to Amada Company Limited, Japan

Filed Apr. 17, 1984, Ser. No. 601,287
Int. Cl.⁴ B26D *7/02*; B23Q *3/00*
U.S. Cl. 83—467 R **12 Claims**



1. A backgauge device, comprising:

an upper frame member which supports an upper tool;

a lower frame member which supports a lower tool which carries out the processing of a workpiece in cooperation with the upper tool;

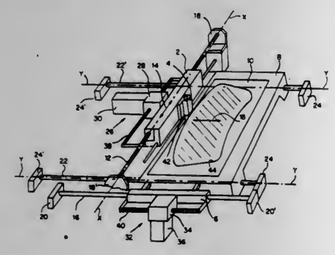
a plurality of guide members extending transversely from the back position of one of said upper frame and said lower frame, said guide members being installed such that they are separated from each other, each said guide member being provided with a movable body supported thereon which is movable in the direction of the guide members, and individually provided with a drive mechanism which drives individually the respective movable body;

a work stopper for a butting against the workpiece; and

a beam member extending transversely to the guide members for supporting the work stopper one end of the beam member horizontally pivotably supported on one of said movable bodies and the other end of the beam member

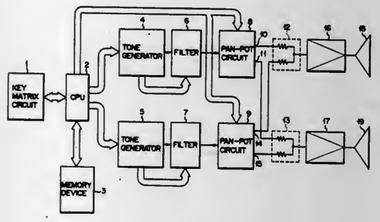
horizontally pivotably supported on and longitudinally slidable with respect to the other movable body;
wherein said movable bodies are capable of individual movement along their respective guide members such that the angle of the beam member with respect to the upper and lower tools may be adjusted.

4,577,539
APPARATUS FOR CUTTING SHEETS OF PLATE GLASS ACCORDING TO A PROGRAMMED PROFILE
Carlo Bonacci, Leghorn, Italy, assignor to Societa Italiana Vetro SIV S.p.A., Vasto, Italy
Filed May 14, 1984, Ser. No. 609,688
Claims priority, application Italy, May 12, 1983, 48284 A/83
Int. Cl.⁴ C03B *33/04*
U.S. Cl. 83—886 **6 Claims**



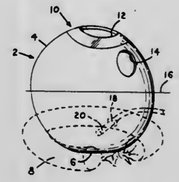
1. Apparatus for cutting sheets of plate glass according to a programmed profile, used particularly for automobile windows, comprising in combination:
a chassis;
a first piston rod fixed to said chassis, with a first hydraulic piston fixed to it;
a first cylinder in hydraulic and sliding engagement with said first rod and said first piston;
a first hydrodynamic control device fixed to the chassis, which hydrodynamically controls the sliding movement of said first cylinder;
a cutting head fixed to said first cylinder for cutting a sheet of plate glass;
at least two guide bars disposed perpendicular to said first piston rod and fixed to the chassis;
a table, sliding on said guide bars in a direction perpendicular to said first piston rod, for supporting on its surface the sheet of glass in a position enabling engagement with said cutting head for a cutting operation;
a second piston rod fixed to the chassis and parallel to said guide bars, having a second hydraulic piston fixed to it;
a second cylinder in sliding and hydraulic engagement with said rod and said second piston, and connected rigidly to said table; and
a second hydrodynamic control device which controls the sliding movement of said second cylinder, so that coordinated commands for the movements of said first and second cylinders, by means of said first and respectively second hydrodynamic control device, effect a cut of the glass according to the desired profile.

4,577,540
ELECTRONIC MUSICAL INSTRUMENT HAVING A PAN-POT FUNCTION
Kozi Yamana, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 530,028, Sep. 7, 1983. This application Apr. 22, 1985, Ser. No. 726,168
Claims priority, application Japan, Sep. 9, 1982, 57-157044
Int. Cl.⁴ G10H *1/02*
U.S. Cl. 84—1.27 **4 Claims**



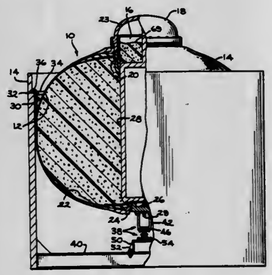
1. An electronic musical instrument having pan-pot means for generating musical sounds with pan-pot of the performed sounds in accordance with digital pan-pot data, the pan-pot means including:
control means including:
means for providing a plurality of preset pairs of first and second mutually complementary control signals, said control signal providing means including a reference voltage generator and first and second resistance type voltage division circuits for dividing a reference voltage generated from said reference voltage generator; and
switching means coupled to said control signal providing means and including first and second analog multiplexers for selectively outputting pairs of said first and second mutually complementary control signals in a given sequence in accordance with said digital pan-pot, said selected pairs of first and second control signals always having a mutually complementary relationship, said first and second analog multiplexers each having a plurality of control signal input terminals, said pairs of control signals respectively generated from said first and second resistance type voltage division circuits being coupled to said plurality of control signal input terminals of the first and second analog multiplexers while maintaining said complementary relationship between said control signals, and said first and second analog multiplexers each also having digital control input terminals for receiving said digital pan-pot data;
first sound volume variation means controlled as a function of said first control signal to vary the sound volume of a musical tone; and
second sound volume variation means controlled as a function of said second control signal to vary the sound volume of a musical tone;
said first and second sound volume variation means each including amplifier means having an amplification factor controlled by the respective control signals applied thereto, such that when said complementary control signals are applied at the same time to the respective amplifier means, the total musical sound produced and heard by a listener is substantially constant, irrespective of the pan-pot of the musical sound;
whereby a pan-pot of a sound performed in controlled in accordance with said first and second control signals by said pan-pot means.

4,577,541
MUSICAL DRUM
Neil R. Edge, 487 Joralemon, Belleville, N.J. 07109
Filed May 31, 1985, Ser. No. 739,738
Int. Cl.⁴ G10D *13/02*
U.S. Cl. 84—411 R **7 Claims**



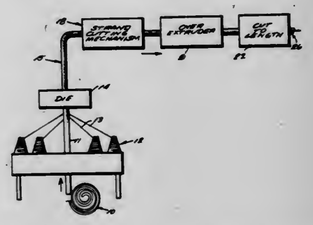
1. A musical drum comprising:
a generally spherical shell defining a resonant cavity;
said shell having a bottom and an upper end;
said shell being cut-out at said upper end thereof to define a first opening; and
said shell being cut-out, at a position between said first opening and a plane substantially mid-way between said bottom and said upper end, to define a second opening smaller than said first opening.

4,577,542
DOME RESTRAINT ASSEMBLY FOR ROCKET MOTORS
Peter F. O'Driscoll, Los Altos, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Mar. 7, 1984, Ser. No. 586,952
Int. Cl.⁴ F42B *3/00*
U.S. Cl. 86—20 D **5 Claims**



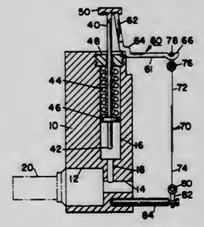
1. A support assembly for adjustably restraining the dome portion of a solid propellant rocket motor case during propellant loading and curing, comprising:
first attaching means for connection to said dome portion;
a substantially rigid base;
second attaching means connected to said rigid base and
a screw coupling connected between said first and second attaching means for selectively adjusting the spacing between said dome portion and base.

4,577,543
CONSTRUCTION OF A MONOLITHIC REINFORCED CATHETER WITH FLEXIBLE PORTIONS
Bruce C. Wilson, Glens Falls, N.Y., assignor to American Hospital Supply Corporation, Evanston, Ill.
Filed Aug. 18, 1983, Ser. No. 524,347
Int. Cl.⁴ D04C *1/06*; A61M *25/00*
U.S. Cl. 87—11 **10 Claims**



1. A method of constructing a selectively reinforced monolithic elongated generally cylindrical catheter, comprising the steps of:
(a) forming a relatively flexible elongated generally cylindrical body of relatively soft material by forming an inner core of thermoplastic material; and
(b) disposing reinforcing material in operative association with a part, but not all, of said body so that where the reinforcing material is disposed the body has significantly less flexibility, and where the reinforcing material is not disposed the body is relatively flexible, by: (i) passing said inner core through a reinforcement material wrapping apparatus; (ii) periodically interrupting wrapping action of the wrapping apparatus while continuing to pass the inner core therethrough so as to form relatively straight strand portions along the length of the outer surface of the inner core, and then restarting the wrapping action of the wrapping apparatus; and (iii) cutting off the relatively straight strand portions on the circumference of the inner core to provide the reinforcement-free, relatively flexible, portions of the monolithic catheter.

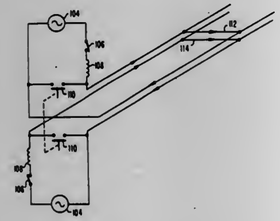
4,577,544
ULTRAFAST THERMAL ACTUATOR
John T. M. Lee, Phoenixville, Pa., assignor to ICI Americas Inc., Wilmington, Del.
Filed May 14, 1984, Ser. No. 609,632
Int. Cl.⁴ F42C *19/00*; A62C *37/08, 35/02*
U.S. Cl. 89—1.14 **3 Claims**



1. An actuation system comprising:
(a) a percussion-initiated radially expandable actuator having a percussion-initiated explosive input charge, an explosive output charge and a casing, at least a portion of which expands radially outwardly when sid output charge is fired;

(b) a normally retracted percussion member which when released initiates said actuator; and
(c) a thermally responsive fusible link having a thin layer of fusible material for controlling the release of said percussion member.

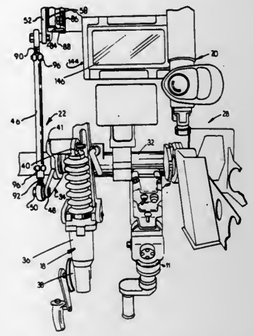
4,577,545
PARALLEL RAIL/ELECTROMAGNETIC LAUNCHER WITH MULTIPLE CURRENT PATH ARMATURE
George A. Kemeny, Wilkins Township, Allegheny County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Continuation of Ser. No. 381,603, May 24, 1982, Pat. No. 4,485,720. This application Sep. 13, 1984, Ser. No. 650,025
The portion of the term of this patent subsequent to Dec. 4, 2001, has been disclaimed.
Int. Cl.⁴ F41F *1/02*
U.S. Cl. 89—8 **4 Claims**



1. An electromagnetic projectile launcher comprising:
four generally parallel conductors lining a bore;
a source of high current;
means for switching current from said high current source to said conductors;
means for conducting current between a first pair of said conductors and for propelling a projectile along said first pair of said conductors;
means for conducting current between a second pair of said conductors and for propelling said projectile along said second pair of said conductors;
said conductors extending along the entire acceleration distance of said projectile such that said means for conducting current between said first pair of conductors and said means for conducting current between said second pair of conductors each conduct current and propel said projectile over the entire projectile acceleration distance;
said means for conducting current between said first pair of said conductors including a first arc extending between said first pair of conductors;
said means for conducting current between said second pair of said conductors including a second arc extending between said second pair of conductors and being substantially parallel to said first arc; and
a gap between said first and second arcs wherein said first and second arcs are allowed to short as said projectile is propelled along said conductors.

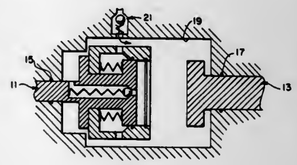
4,577,546
GUN SIGHT RANGE EXTENDER
Theodore A. Jackson, Utica, Mich., assignor to Ex-Cell-O Corporation, Troy, Mich.
Filed Nov. 21, 1983, Ser. No. 553,457
Int. Cl.⁴ F41G *1/40*
U.S. Cl. 89—41.19 **2 Claims**

1. A gun sight system for a pair of guns mounted on a turret operator-controlled trunnion shaft comprising: gun sight means having means including an input shaft to adjust optics to select a target range; sight linkage means including a sight drive arm for coupling said input shaft for concurrent rotation with the trunnion shaft; first range indicator means fixed to said gun sight means and including range indicia thereon; a sight slide arm directly coupled to said input shaft for rotating it independently of said sight linkage means and including means positioned with respect to said first range indicator means to



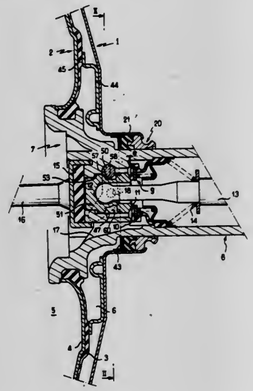
indicate range adjustment of said optics; and second range indicator means fixedly secured to said trunnion shaft and movable therewith to indicate the amount of gun inclination independently of said first range indicator means.

4,577,547
IMPACT TOOL
Bill L. Jaworski, 1257 S. Yank Ct., Lakewood, Colo. 80228
Continuation-in-part of Ser. No. 402,291, Jul. 27, 1982, abandoned. This application Sep. 6, 1983, Ser. No. 529,884
Int. Cl.⁴ F15B *15/17*
U.S. Cl. 91—39 **20 Claims**



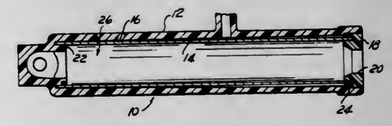
1. A method for accelerating a mass under the force of a compressed gas, said method comprising the steps of:
(a) providing a chamber having at least first and second outlets spaced from each other substantially along a common axis,
(b) mounting a first member in a sealing relationship in said first outlet for movement along said axis relative to said chamber,
(c) mounting a second member in a sealing relationship in said second outlet for movement along said axis relative to said chamber,
(d) pressurizing said chamber with a gas,
(e) moving at least one of said first and second members along said axis toward the other to a first position relative to the other of said first and second members,
(f) sealingly engaging portions of first and second members together within said chamber at said first relative position to define a first volume of gas therebetween,
(g) moving at least one of said first and second members toward the other along said axis to a second relative position to reduce the size of said first volume to a second, smaller volume,
(h) placing the gas between the portions of said first and second members in fluid communication with the gas in said chamber,
(i) sealing the gas remaining between said portions from further fluid communication with the gas in said chamber,
(j) noving at least one of said first and second members away from the other to a third relative position to enlarge the volume of the gas remaining between said portions until the pressure of said remaining gas is less than the gas pressure of said chamber,
(k) moving both of said first and second members along said axis in a first direction while maintaining the lesser pressure of step (j),
(l) placing the gas remaining between the portions of said first and second members in fluid communication with the higher pressure gas in said chamber to accelerate at least one of said first and second members under the force of the higher pressure gas in said chamber along said axis in a direction opposite to said first direction and,
(m) repeating steps (e)–(l).

4,577,548
SERVOMOTOR FOR BRAKING ASSISTANCE
Jean P. Gautier, Aulnay Sous Bois, France, assignor to Societe Anonyme D.B.A., Paris, France
Filed Feb. 15, 1985, Ser. No. 701,895
Claims priority, application France, Feb. 22, 1984, 84 02656
Int. Cl.⁴ F15B *9/10*
U.S. Cl. 91—369 A **7 Claims**



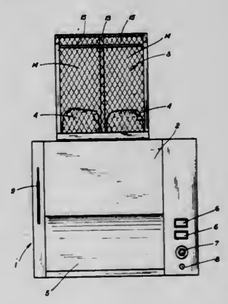
1. A servomotor for braking assistance incorporating:
a casing,
a piston structure dividing the casing internally into two chambers,
distribution valve means situated in a valve body firmly fixed centrally to the piston structure and actuated by an input component to create selectively a differential pressure between the chambers, the valve means incorporating:
a plunger mounted so as to slide in the valve body, joined to the input component and defining at one of its ends a movable valve seat,
a valve body seat formed in the valve body, concentric with the movable valve seat,
valve means mounted in the valve body and elastically pushed towards the valve body seat and movable valve seat,
a return spring bearing against the valve body and pushing the input component in the direction opposite to that of the valve body seat and movable valve seat, and
a retaining component lying in the valve body and incorporating a first zone co-operating in contact engagement with a shoulder of the plunger and a second zone, outside the valve body, intended to co-operate in abutment with a stationary component firmly fixed to the casing in order to determine, in the configuration of the servomotor at rest, the rest position of the plunger,
characterized in that the retaining component is mounted in the valve body so as to pivot about an axis perpendicular to the direction of sliding of the plunger and incorporates a third zone intended, during hinging of the retaining component about the said axis, to co-operate in abutment with a corresponding surface of the plunger in order to determine for the latter a position of maximum retraction relative to the valve body under the effect of the return spring.

4,577,549
HYDRAULIC CYLINDER PROVIDED WITH LOW FRICTION PLATED INTERNAL SURFACE
Charles A. Frank, Farmington Hills, and David J. Compton, Troy, both of Mich., assignors to Automotive Products plc, Warwickshire, England
Filed Mar. 28, 1984, Ser. No. 594,325
Int. Cl.⁴ B21D *39/00*; B32B *15/08, 27/00*
U.S. Cl. 92—169 **20 Claims**



1. A hydraulic cylinder having an internal metallic surface provided with an adhering autocatalytically deposited nickel plating forming a matrix containing from 20 to 30% by volume of particles of a fluorocarbon resin of a particle size in the range of 0.1 micron to 1 micron, said plating being in the range of 2 to 25 microns in thickness, wherein said matrix contains 2 to 14% by weight of phosphorous.

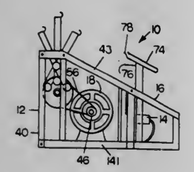
4,577,550
TOASTER
Steven Maroti, and Daniel Formosa, both of Ft. Lee, N.J., assignors to Hickory Industries, Inc., Long Island City, N.Y.
Filed Dec. 24, 1984, Ser. No. 686,011
Int. Cl.⁴ A47J *37/08*
U.S. Cl. 99—329 RT **4 Claims**



1. A toaster apparatus including:
a. at least two toaster elements defining a chamber in which a slice of bread is held to be toasted;
b. gravity means for feeding additional slices of bread to said chamber above said slice of bread being toasted;

c. a holding means adapted to be pivoted about an axis, said holding means being provided, on one side of said axis, with a portion to retain said bread in said chamber, between said toaster elements, during a toasting operation, and a portion on the opposite side of said axis to restrain a piece of bread above said bread held within said chamber from dropping, by gravity, through a slot into said toasting chamber;
d. pivot means for said holding means; and
e. means to rotate said holding means about said pivot means upon completion of a toasting operation to release said piece of bread being toasted and to restrain a piece of bread above that from dropping into said toasting chamber.

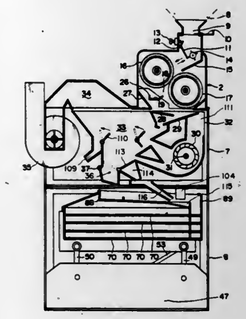
4,577,551
FETTUCCINE COOKING APPARATUS
Guido Bellanca, 220 E. 54th St., New York, N.Y. 10022
Filed Nov. 26, 1984, Ser. No. 674,767
Int. Cl.⁴ A47J *37/12*; B01F *15/06*
U.S. Cl. 99—348 **9 Claims**



1. A cooking machine for preparation of fettuccine or the like, comprising in combination: a stove frame, a heat source mounted to said stove frame, a plurality of pan supports mounted to said stove frame, said pan supports each defining open-ended track means extending along an angle to the horizontal and adapted to receive and confine movement of a pan roller within said track means, a pan comprising a pan body, a handle secured to said pan body and a plurality of pan rollers each corresponding to one of said pan supports, each of said pan rollers of said pan being adapted to enter and move along said track means, said pan rollers being coaxial and adapted to allow said pan body to pivot on an axis through said rollers, and drive train means adapted to engage said handle of said pan and to move said handle of said pan in a closed vertical loop so as to reciprocate said pan along the length of said pan supports while pivoting said pan on the axis defined by said pan rollers.

4,577,552
RICE-HULLING APPARATUS
Soichi Yamamoto, 813-17 Oaza Tendou Kow, Tendou-Shi, Yamagata-Ken, Japan
Filed Aug. 11, 1983, Ser. No. 522,029
Claims priority, application Japan, Jun. 17, 1983, 58-108889
Int. Cl.⁴ B02B *3/04*
U.S. Cl. 99—524 **11 Claims**

1. A rice-hulling apparatus comprising a hulling section, an air-blow separating section disposed beneath and in communication with said hulling section for directing a blast of air into processed grain received from said hulling section thereby to separate hulls therefrom, a vibratory separating section disposed beneath and in communication with said air-blow separating section for separating the mixture of hulled and unhulled rice obtained from the air-blow separating section, an unhulled rice lifter disposed near one side of said sections and communicating directly with the upper end of said hulling section for supplying unhulled rice to said hulling section, a hulled rice lifter having an inlet communicating with said vibratory separating section for receiving and lifting the separated hulled rice discharged from said vibratory separating section, a pair of discharge gutters leading from an outlet of said hulled rice lifter to the hulling apparatus located at a next process station, and to said vibratory separating section, respectively, and a

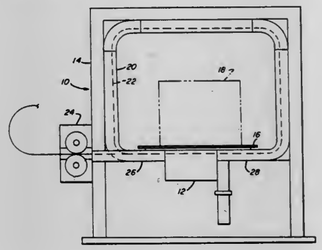


change-over valve for switching said discharge gutters selectively into communication with the outlet of said hulled rice lifter.

4,577,553
APPARATUS FOR ATTACHMENT TO A BALER
Jorn U. Weidemann, Rudkobing, Denmark, assignor to L. P. Weidemann & Sonner, Rudkobing, Denmark
Filed Mar. 22, 1984, Ser. No. 592,118
Claims priority, application Denmark, Mar. 22, 1983, 1292/83
Int. Cl.⁴ B65B *13/28*
U.S. Cl. 100—4 **2 Claims**

1. For use with a baler for baling straw material with twine, having means for compressing bales of straw material under high pressure, and means for looping a plurality of twine bindings around each bale of compressed straw material by a corresponding plurality of twine knotters, each of which ties a knot for each twine binding;
apparatus for attachment to said baler for reducing twine tension in the twine bindings, comprising
(a) a gripper device (10) adapted to be rotatably journalled in said baler,
(b) a plurality of gripper means (11), one for each twine binding, secured to said gripper device (10),
(c) hydraulic or pneumatic mechanism (13) for moving said gripper device (10) between a first position in which each gripper means (11) is disposed at a top face of a bale of compressed straw material where it can grip and retain a corresponding twine binding, and a second position in which each gripper means (11) is disposed at a predetermined distance from said top face of the bale which the twine knotters operate, and
(d) means (20) for releasing each twine winding from its corresponding gripper means (11) in said second position upon completion of the knotting operation.

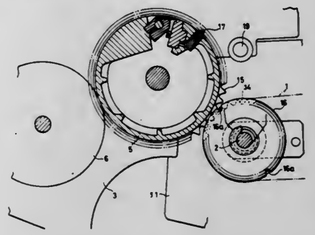
4,577,554
KNOTTING APPARATUS FOR WIRE STRAPPING MACHINE
S. Bernard Brouse, Orland Park, Ill., assignor to United States Steel Corporation, Pittsburgh, Pa.
Filed Mar. 22, 1985, Ser. No. 714,744
Int. Cl.⁴ B30B *13/28*
U.S. Cl. 100—26 **16 Claims**



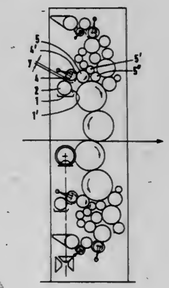
1. A knotter mechanism for a wire-tying machine comprising:
a. a support housing having means defining a wire path therethrough;
b. an axial shaft journaled in said housing;
c. means to rotate said shaft in a first direction and in a reverse direction;
d. first drive means releasably connected to said shaft so as to be rotatable with said shaft only when said shaft rotates in said first direction;
e. a twister pinion journaled in said housing along said wire path and in operative engagement with said first drive means;
f. second drive means releasably connected to said shaft so as to be rotatable with said shaft only when said shaft rotates in said reverse direction;
g. a cutter bar pivotally attached to said housing and in operative engagement with said second drive means, said cutter bar being pivotable by being engaged by said second drive means when said second drive means is rotated by said shaft when said shaft is rotated in said reverse direction;
h. third drive means releasably connected to said shaft so as to be rotatable with said shaft only when said shaft rotates in said reverse direction; and,
i. wire ejector means slidably mounted in said housing and adjacent said twister pinion, said ejector means being reciprocable between a retracted position and an extended position by said third drive means when said third drive means is rotated by said shaft when said shaft is rotated in said reverse direction.

4,577,555
NUMBERING DEVICE FOR OFFSET PRESS
Koji Ishii, and Kenso Maehara, both of Hiroshima, Japan, assignors to Ryobi Ltd., Hiroshima, Japan
Filed Jan. 28, 1985, Ser. No. 695,325
Claims priority, application Japan, Jan. 30, 1984, 59-12583[U]; Jan. 30, 1984, 59-12584[U]; Jan. 30, 1984, 59-12585[U]
Int. Cl.⁴ B41J *45/00*
U.S. Cl. 101—76 **3 Claims**

1. A slide mechanism for a numbering device for an offset printing press, wherein the numbering device is provided independently of a main machine of said offset press and is disposed rearwardly of a paper discharger of said main machine, said numbering device comprising: a pair of slide plates fixed to respective frames of said numbering device; first and second pairs of guide rollers provided on respective frames of said main machine, said rollers being positioned so as to receive said slide plates such that said numbering device is slidable towards and away from said main machine; a first gear mounted on a drive shaft of said main machine; a second gear mounted on a numbering impression cylinder of said numbering device, said first and second gears being relatively positioned so as to be brought into and out of engagement as said numbering device slides towards and away from said main machine; and detent means for selectively locking said frames of said main machine and said numbering device in a first position where said first and second gears are in mesh and a second position where said first and second gears are out of mesh.



4,577,556
DAMPING FLUID APPLICATION AND METERING APPARATUS FOR A PRINTING MACHINE
Hermann Fischer, Augsburg, Fed. Rep. of Germany, assignor to M.A.N. Roland Druckmaschinen Aktiengesellschaft, Offenbach am Main, Fed. Rep. of Germany
Filed Nov. 30, 1984, Ser. No. 676,781
Claims priority, application Fed. Rep. of Germany, Dec. 10, 1983, 3344777
The portion of the term of this patent subsequent to Mar. 25, 2003, has been disclaimed.
Int. Cl.⁴ B41F *7/26, 7/36, 31/14*
U.S. Cl. 101—148 **20 Claims**



1. Damping fluid application and metering apparatus for an offset printing machine, particularly rotary offset printing machine, having
a plate cylinder being driven at a predetermined circumferential machine speed;
a damping fluid supply roller (2) carrying a film of damping fluid;
a damping fluid-receiving foller (5);
a damping fluid transfer roller structure having a plurality of rotatable axially spaced roller elements (4); and
comprising,
means (6) for rotatably supporting said spaced roller ele-

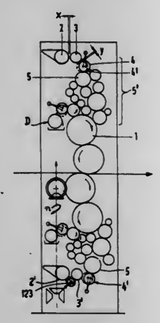
ments for selectively establishing a controlled continuous serial linear damping fluid transfer path from the damping fluid supply roller (2) to the receiving roller (5) or, selectively, interrupting said continuous transfer path,
wherein,
the receiving roller (5) is an axially reciprocating roller and is driven to operate at machine speed;
the support means (6) individually support the individual roller elements (4) in continuous surface engagement with the axially reciprocating receiving roller (5);
means for mounting said support means for individual movement of selected roller elements about an axis located on the opposite side of said roller elements from said fluid-receiving roller, said mounting means including means to maintain engagement of said fluid-receiving roller and said roller elements as said support means is moved about said axis for controlled proximity of said roller elements with the supply roller (2) and consequent transfer of damping fluid from the supply roller (2) to the receiving roller (5) as selectively controlled, in axially spaced zones, in accordance with individual selective engagement or disengagement of said roller elements (4) with the supply roller (2)
and individual stop means (12, 13, 17') are provided, coupled to the support means for adjustably controlling the extent of movement of the support means (6) and hence the degree of proximity of the respective roller element (4) with the damping fluid supplied roller.

4,577,557

INK APPLICATION AND METERING APPARATUS FOR A PRINTING MACHINE

Hermann Fischer, Augsburg, Fed. Rep. of Germany, assignor to M.A.N. Roland Druckmaschinen Aktiengesellschaft, Offenbach am Main, Fed. Rep. of Germany

Filed Nov. 30, 1984, Ser. No. 676,784
Claims priority, application Fed. Rep. of Germany, Dec. 10, 1983, 3344778
Int. Cl.⁴ B41F 7/02
U.S. Cl. 101—217 **20 Claims**



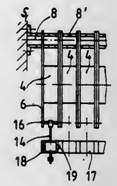
1. Ink application and metering apparatus for a printing machine, particularly rotary offset printing machine, having
a plate cylinder (1) being driven at a predetermined circumferential machine speed;
an ink supply (2) carrying a film of ink of predetermined and controlled thickness, and driven at a speed which is slow with respect to machine speed;
an ink film transfer roller (3) driven at machine speed and having ink in film form applied thereto from the ink supply roller (2);
an ink roller train (5') transferring ink from the ink film transfer roller (3) to the plate cylinder of the printing machine, and operating at machine speed, said ink roller train including
an ink transfer roller structure (4') having a plurality of rotatable, axially spaced roller elements (4), said ink roller train (5') including an ink-receiving roller (5), engageable by said roller elements (4');
means (6) for movably supporting said spaced roller elements for selectively controllably establishing a continuous serial linear ink transfer path from the ink film transfer roller (3) to the ink receiving roller (5), or selectively, interrupting said continuous transfer path,
wherein,
the ink film transfer roller (3) and the ink-receiving roller (5) are driven to operate at machine speed;
and the support means (6) individually support the individual roller elements (4) in continuous surface engagement with the ink-receiving roller (5),
means for mounting said support means for individual movements of selected roller elements about an axis located on the opposite side of said roller elements from said ink-receiving roller, said mounting means including means to maintain engagement of said ink-receiving roller and said roller elements as said support means is moved about said axis for controlled individual selective movements through a movement path (y) toward and up to engagement with the ink film transfer roller (3) for relative application of ink from the ink film transfer roller to the ink-receiving roller, as selectively controlled in axially spaced zones in accordance with selective engagement or with controlled disengagement of said roller elements with the ink film transfer roller (3);
the ink supply roller (2) and the ink film transfer roller (3) are spaced from each other by an ink transfer gap (x) transferring ink, but permitting bridging of speed difference of the relatively slow speed of the ink supply roller and the machine speed of the ink film transfer roller (3);
and wherein the roller elements (4) of the transfer roller structure are driven by surface-frictional engagement with the ink-receiving roller (5).

4,577,558

INK METERING APPARATUS FOR A PRINTING MACHINE

Hermann Fischer, Augsburg, Fed. Rep. of Germany, assignor to M.A.N. Roland Druckmaschinen Aktiengesellschaft, Offenbach am Main, Fed. Rep. of Germany

Filed Nov. 30, 1984, Ser. No. 676,783
Claims priority, application Fed. Rep. of Germany, Dec. 10, 1983, 3344776
Int. Cl.⁴ B41F 31/26
U.S. Cl. 101—365 **20 Claims**



1. Ink application and metering apparatus for a printing machine, particularly rotary offset printing machine, having
a plate cylinder (1) being driven at a predetermined circumferential machine speed;
a ductor roller (2) carrying a film of ink of predetermined and controlled thickness, and driven at a speed which is slow with respect to machine speed;
an ink receiving roller (5);
an ink transfer roller structure (4'), having a plurality of rotatable, axially spaced roller elements (4), and

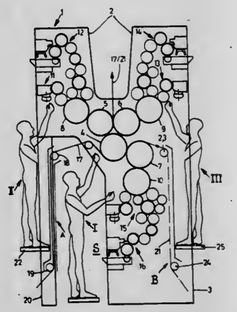
comprising
means (6) for movably supporting said spaced roller elements (4) for selectively establishing a controlled continuous serial linear ink transfer path from the ink ductor roller (2) to the ink-receiving roller (5) or, selectively, interrupting said continuous transfer path via said spaced roller elements,
wherein,
the ink-receiving roller (5) is driven to operate at machine speed;
the support means (6) individually support the individual roller elements (4) in continuous surface engagement with the ink-receiving roller (5),
means for mounting said support means for individual movement of selected roller elements about an axis located on the opposite side of said roller elements from said ink-receiving roller, said mounting means including means to maintain engagement of said ink-receiving roller and said roller elements as said support means is moved about said axis for individual selective movement of said roller elements through a movement path (y) towards said ductor roller (2) through a limited extent up to a predetermined gap or nip (x) from the surface of the ductor roller in which the respective roller elements can receive ink from an ink film on the ductor roller in accordance with the width of said gap or nip;
and adjustable stop means (17; 12, 13, 22) are provided adjusting the width of the gap or nip between the respective individual roller elements (4) and the ductor roller (2) when moved towards the ductor roller by said support means.

4,577,559

ROTARY WEB PRINTING MACHINE

Rainer Burger, Augsburg, Fed. Rep. of Germany, assignor to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Offenbach am Main, Fed. Rep. of Germany

Filed Sep. 18, 1984, Ser. No. 651,676
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1983, 3335235
Int. Cl.⁴ B41F 7/10
U.S. Cl. 101—221 **8 Claims**



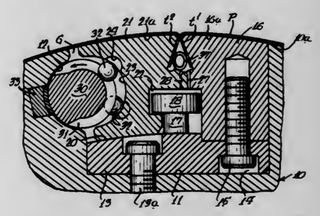
1. Rotary newspaper web printing machine having
a pair of side walls (1);
a plurality of cylinders and rollers (4–15) positioned and retained between said side walls,
two of said cylinders (5, 6, 7; 4) forming, respectively, a printing cylinder and an impression cylinder for printing on a web (17, 21) being guided in an upward direction (A; B) for printing between said two cylinders,
at least one of said rollers forming an inker roller,
wherein
the side walls (1) comprise an upright structure substantially taller than the height of an operator in essentially amputated H shape having two upwardly extending arms (2) and only one downwardly extending single support leg (3), located essentially in vertical alignment with one and only one of said arms (2) and leaving a free space (S) adjacent the single downwardly extending support leg (3) and beneath the one of said upwardly extending arms which is not essentially in vertical alignment with said single support leg; and wherein said plurality of cylinders or rollers have their centers of rotation located in an asymmetrical Y configuration, the rollers located in one upper arm of said asymmetrical Y being mounted in one of said arms of said side walls, the rollers located in the other upper arm of said asymmetrical Y being mounted in the other of said arms of said side walls, and the rollers located in the downwardly extending leg of said asymmetrical Y being mounted in the downwardly extending leg of said side walls and comprising
a column or post structure (20), located at a far region of said free space, and positioned to support said one upwardly directed arm, which arm is out of alignment with, and remote from said single support leg (3), and the cylinders between the side walls of said one arm;
and guide roller means (18, 19) secured to and retained on said column or post structure (20) and located to guide the web in a rising path (A),
said free space (S) being of sufficient size to provide for access by an operator (I) between the column or post structure (20) and said single upright leg (3) of the side wall, and
an operator support platform (22) secured to the column or post structure (20).

4,577,560

GAPLESS LOCK-UP FOR OFFSET PRINTING CYLINDERS

Ronald Banike, Orland Park, Ill., assignor to R. R. Donnelley & Sons Company, Chicago, Ill.

Filed Aug. 20, 1984, Ser. No. 642,080
Int. Cl.⁴ B41F 27/12
U.S. Cl. 101—415.1 **25 Claims**



1. In a cylinder of a high speed rotary offset web printing machine, gapless lock-up means for an offset plate or a metal backed offset blanket with metal end tabs, said lock-up means comprising, in combination:
a slot in the cylinder surface extending substantially the entire length of the cylinder, said slot being provided with an outwardly facing arcuate surface that is concentric with the cylinder surface;
a fixed jaw and a movable jaw mounted in and occupying the full length of said slot and defining a recess, said jaws having extended arcuate outer surfaces flush with the surface of the cylinder and having facing undercut surfaces the outer margins of which intersect said arcuate outer surfaces along small radii of curvature so that an offset plate or blanket having metal end tabs wraps smoothly around the cylinder with said end tabs lying in uninterrupted facing contact with said outer margins and said undercut surfaces of said jaws, said movable jaw having a multiplicity of inclined recesses spaced generally evenly along a surface that is remote from the fixed jaw,

and said movable jaw being seated on said outwardly facing arcuate surface;

intermeshing flanges at the inner margins of said undercut surfaces, said flanges having top faces that cooperate to define the bottom of the recess;

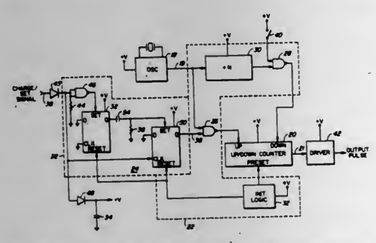
and rigid means for applying effectively uniform lateral force to the movable jaw throughout its length so as to impart translatory motion to said movable jaw across said outwardly facing arcuate surface between an open position and a closed position in which the end tabs at opposite ends of an offset plate or blanket are firmly and rigidly clamped against one another between the undercut jaws immediately adjacent the outer margins of said jaws, said rigid means comprising a rotatable screw with an arcuate groove that extends substantially the entire length of said movable jaw immediately adjacent said inclined recesses, and a ball in each recess engaged with the groove.

4,577,561

DIGITAL TIME FUZE METHOD AND APPARATUS

John W. Perry, Little Rock, Ark., assignor to BEI Electronics, Inc., Euless, Tex.

Filed Apr. 19, 1982, Ser. No. 369,749
Int. Cl.⁴ F42C *11/06*
U.S. Cl. 102—215 **26 Claims**



1. A digital timing apparatus for providing an output signal at a selected and precise time interval following the occurrence of a start signal and in accordance with time interval data which is contained within a charge/set signal, the charge/set signal including a charging portion having a charge level and a setting portion which are separated by a single transition to a predetermined threshold level, wherein the time interval data is designated by a continuous interval of the charge/set signal throughout which the predetermined threshold level is attained, the apparatus comprising

oscillator means for providing a clock signal having a series of clock pulses;

control means responsive to the charge/set signal, the start signal and the clock signal, for providing an accumulate signal, the control means including means for detecting the duration of the continuous interval in the charge/set signal beginning at the single transition between the charge portion and the setting portion, and for inserting an interval of the clock signal into the accumulate signal which clock signal interval has a length determined by the duration of the continuous interval, and for providing a count-down signal which is initiated by the start signal and which has a frequency rate which is derived from the clock signal frequency; and

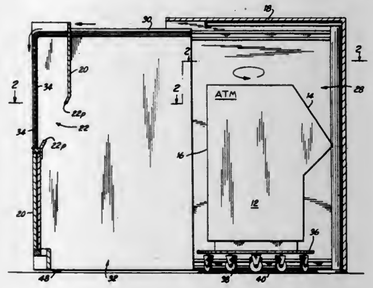
counter means responsive to the count-down signal and to the accumulate signal for counting the number of clock pulses in the accumulate signal to form a timer count, and for counting down from the timer count in accordance with the frequency rate of the count-down signal, the counter means providing the output signal when the count reaches a predetermined count state.

4,577,562

TELLER MACHINE ENCLOSURE

James Berman, 160 E. 93rd St., New York, N.Y. 10028

Filed Apr. 18, 1984, Ser. No. 601,649
The portion of the term of this patent subsequent to Apr. 30, 2002, has been disclaimed.
Int. Cl.⁴ G07G *5/00*; E06B *7/32*
U.S. Cl. 109—24.1 **7 Claims**



1. A securely enclosed teller machine comprising:

a teller machine having an operable front panel and an openable service panel; and

a secure enclosure around said teller machine, said enclosure including;

a first side wall extending at least from a floor at a first side of the teller machine, up, over and down to the floor on the second side of the teller machine;

a front wall, said front wall being formed with a cut-out zone therein, said front wall movable between an inward position in which it is secured to said first side wall and an outward position in which it is disconnected from said first side wall, said front wall in said outward position being spaced from said first side wall, said cut-out zone having a perimeter sized and shaped to contact said teller machine when said front wall is in said inward position to expose said front panel;

said first side wall and said front wall in said inward position, defining a first enclosure space;

a second side wall connected to said front wall, and extending in from said front wall;

said second side wall, when said front wall is in said outward position, extending between said first side wall and said front wall to provide a second enclosure space outward of and in communication with said first enclosure space, and

a flexible shield movable between a retracted position and a protracted position, said shield when in said protracted position covering said cut-out zone and protecting said enclosure space when said front wall is in said outward position, said shield when in said retracted position uncovering said cut-out zone and permitting said cut-out zone to expose said operable front panel when said front wall is in said inward position.

4,577,563

SAFEKEEPING BOX ASSEMBLY

Karl J. Sidler, 420 Touzin Ave., Dorval, Quebec, Canada H9S 2N2

Filed Jul. 11, 1984, Ser. No. 629,902
Int. Cl.⁴ E05G *1/04*
U.S. Cl. 109—52 **14 Claims**

1. An improved safety box assembly of the type comprising:

(a) a container defining an enclosure for the safekeeping of valuables, said container having a bottom wall and wall edges at one end defining an opening;

(b) a door hinged to the container for closing the opening;

(c) a mounting base having a bottom wall and means for allowing rigid fixation of said bottom wall onto a supporting surface; and

(d) means for removably securing the container onto the mounting base over the fastening means whereby to render said fastening means inaccessible when said container is so secured, said securing means comprising:

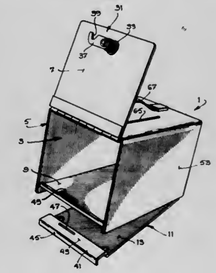
releasable interlocking means at the end of the container which is opposite to the opening for securing said opposite end to one end of the mounting base; and

locking means for simultaneously locking the door in the opening and securing the end of said container where is defined the opening to the other end of the mounting base, the improvement wherein said locking means comprises:

a lock mechanism mounted on and fixed to the door of the container;

hooking means movably by said lock mechanism; and

retaining means on the container and mounting base respectively, for simultaneously receiving said hooking



means when the door is locked, whereby engagement of said hooking means in said retaining means when the door is closed and the lock mechanism operated, causes simultaneous attachment of the door, the container and the mounting base by said hooking means with the door locked in closed position and the container secured onto the mounting base,

wherein said improved assembly further comprises a bracket upstanding from the bottom wall of the base, said bracket including a horizontal wall extending parallel to the bottom wall of the base in spaced apart position with respect thereto for supporting the opened end of the container when said container has its other end interlocked with the mounting base, and

wherein said retaining means for receiving the hooking means consist of a pair of facing slots respectively provided for in the bottom wall of the container and the horizontal wall of the bracket in contact with said bottom wall of the container, said slots being positioned to receive the hooking means when the door is closed and the lock mechanism operated.

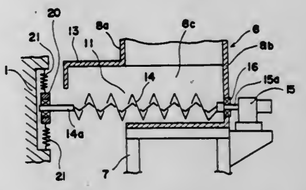
4,577,564

APPARATUS FOR FEEDING WASTE TIRE CHIPS

Yukio Tomita, Osaka; Kenjiro Nabeshima, Kobe, and Nobuji Shibamoto, Nara, all of Japan, assignors to Hitachi Zosen Corporation, Osaka, Japan

Filed Jan. 17, 1985, Ser. No. 692,388
Int. Cl.⁴ F23K *3/14, 3/16*
U.S. Cl. 110—110 **6 Claims**

1. An apparatus for feeding waste tire chips to an incinerator, the apparatus comprising a chip container having a front wall, a rear wall and an outlet at the lower end of the front wall, a screw feeder having a shaftless helical screw blade provided at an inner bottom portion of the container, the screw blade having one end supported by a first bearing provided on the rear wall of the container and the other end projecting from the outlet of the container, a rod of circular cross section attached to said other end, and a second bearing rotatably supporting the rod, the second bearing being disposed outside



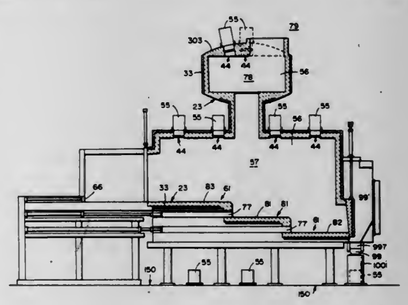
the container outlet and being supported by and connected between a pair of springs biasing the second bearing in opposite directions whereby the rod is displaceable radially and axially within a predetermined range and is tiltable within a predetermined range.

4,577,565

DETECTION OF RADIOACTIVE ACCUMULATIONS WITHIN AN INCINERATOR

Frederick C. Schoenig, Jr., Wilmington, N.C., and Leonard N. Grossman, Bratenahl, Ohio, assignors to General Electric Company, San Jose, Calif.

Continuation of Ser. No. 486,523, Apr. 19, 1983, abandoned.
This application Dec. 4, 1984, Ser. No. 677,374
Int. Cl.⁴ F23G *7/00*
U.S. Cl. 110—237 **9 Claims**

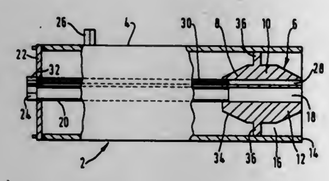


1. An incinerator for burning combustible material contaminated by radiation whereby radioactive ash is a combustion product, comprising a combustion chamber having containment walls of high density refractory brick provided with at least one window opening through said high density refractory brick containment walls comprising a low density body of ceramic fibers whereby any radiation from residual radioactive ash within the incinerator containment and inhibited by the high density refractory brick can penetrate outward through the window of low density fiber to beyond the incinerator containment walls, and a radiation detector mounted outside the incinerator containment walls adjacent to the said window of low density ceramic fiber for measuring any radiation passing out from the combustion chamber through the low density window whereby the amount of retained radioactive ash accumulted in the incinerator combustion chamber is indicated.

4,577,566
METHOD OF CONDITIONING FIRESIDE FOULING DEPOSITS USING LARGE PARTICLE SIZE AMORPHOUS SILICA
Gene A. Merrell, Huntingdon Valley, Pa., assignor to Betz Laboratories, Inc., Trevose, Pa.
Continuation of Ser. No. 364,378, Apr. 1, 1982, Pat. No. 4,458,606. This application May 11, 1984, Ser. No. 609,174
The portion of the term of this patent subsequent to Jul. 3, 2001, has been disclaimed.
Int. Cl.⁴ F23B *7/00*
U.S. Cl. 110—343 **4 Claims**

1. Method of minimizing the deleterious effects of combustion residues emanating from coal burned as fuel in a boiler of the type having a furnace combustion zone in which said coal is burned and a convection zone located downstream from said combustion zone, said method comprising adding to said furnace an effective amount of amorphous silica particles at a location upstream from said convection zone, wherein at most about 10% of said particles, by volume, are greater than about 170 microns in diameter and wherein at least about 90%, by volume, of said particles are greater than about 38 microns in diameter.

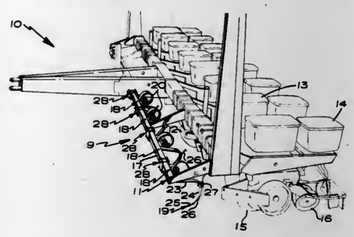
4,577,567
METHOD OF COMBUSTION AND BURNERS
Colin Moore, Bradford, England, and David P. Jenkins, Neath, Wales, assignors to The BOC Group, plc, London, England
Filed Jun. 12, 1984, Ser. No. 619,865
Claims priority, application United Kingdom, Oct. 5, 1983, 8326685
Int. Cl.⁴ F23D *1/00*
U.S. Cl. 110—347 **12 Claims**



1. A method of burning a particulate fuel which comprises atomising a composition which comprises 50 to 70% by weight of particulate fuel and 30 to 50% by weight of an aqueous carrier and which composition is able to be pumped without the presence in the composition of an emulsifying agent or lubricant to facilitate such pumping, supplying said composition to a combustion zone and supplying to the combustion zone substantially pure oxygen or oxygen-enriched air at substantially ambient temperature such that a flame temperature of at least about 2000° F. is established in said zone and combustion of the particulate fuel is supported.

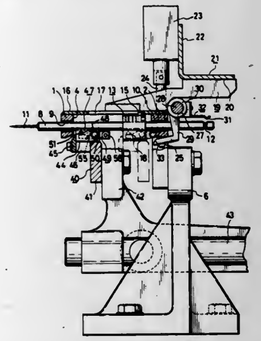
4,577,568
BRACKET AND TOOTH ASSEMBLY FOR PLANTER
Miles Netsch, Rte. 2, Terril, Iowa 51364
Filed Oct. 25, 1984, Ser. No. 664,520
Int. Cl.⁴ A01C *23/00*
U.S. Cl. 111—7 **4 Claims**

1. A bracket and tooth assembly for a planter type implement having a horizontal tool bar, comprising:
- a furrowing tooth including an upper arcuate portion terminating in a flat horizontal forwardly extending attachment tab, an intermediate portion integral with said arcuate portion and extending rearwardly and downwardly therefrom, a lower portion integral with said intermediate portion and extending forwardly and downwardly therefrom, a vertically disposed fertilizer tube for dispensing fertilizer therefrom into a furrow formed by the furrowing tool and being secured to the rear surface of the lower portion of the furrowing tool,
- a bracket comprising a pair of substantially flat vertically disposed clamping plates engaging opposed surfaces of the horizontal tool bar of the planter implement, means engaging said clamping plates for releasably clamping the same against the tool bar,
- an elongate arm rigidly affixed to one of said clamping plates extending outwardly therefrom in a direction substantially normal to the tool bar,



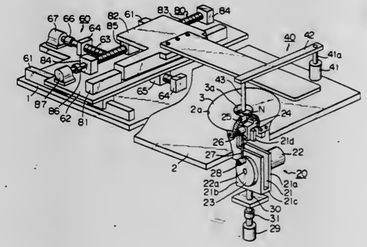
means connecting the attachment tab of the furrowing tooth to said arm comprising an elongate bar having one end thereof affixed to said arm and extending at substantially right angles thereto, said attachment tab being secured to said bar, whereby the position of the furrowing tooth is closely adjacent, but laterally of the seed furrow so that liquid fertilizer will be dispensed into the furrow formed by said furrowing tooth.

4,577,569
APPARATUS FOR HOLDING UNOPERATING NEEDLE BAR OF BRAIDING MACHINE
Yoshio Okugawa, Iruma, Japan, assignor to Hiraoka Kogyo Kabushiki Kaisha, Hanno, Japan
Filed Sep. 20, 1983, Ser. No. 533,942
Claims priority, application Japan, Sep. 20, 1982, 57-162165
Int. Cl.⁴ D05C *3/04;* **D05B** *55/16*
U.S. Cl. 112—83 **1 Claim**



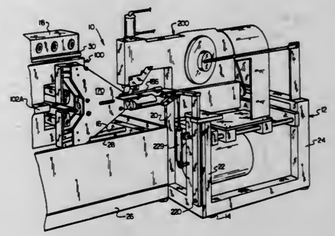
1. An apparatus for holding a plurality of needle bars of an embroidering machine, comprising:
- support means upon which said needle bars are reciprocably mounted;
- a moving block connected to each of said needle bars for advancement and retraction thereof and having stopper means extending therefrom at a right angle to a direction of movement of said moving block;
- a driving band connected to said moving block and which includes a locating plate;
- a plurality of L-shaped operating lever means corresponding to said needle bars, each of said levers including an inclined surface positioned at a front portion thereof and supported on said support means so as to be freely rotatable, said lever means including means for fixing said needles in an idle position;
- a plurality of solenoids having operation bars attached thereto which are respectively rotated by said solenoids;
- a plurality of engagement levers each of which includes a roller mounted at a rear end thereof for engagement with said inclined surface of said L-shaped operating lever means and a pressure member for engaging said stopper means; and
- means for biasing said engagement means upwardly so as to connect said engagement means and said moving block upon advancement of said moving block.

4,577,570
AUTOMATIC APPARATUS FOR PICK-UP SEWING OF CURVED EDGES OF A FABRIC PIECE ON CLOTHING
Masatoshi Ichimura, Higashi-Osaka, Japan, assignor to Eagle Industry Company Limited, Osaka, Japan
Filed Sep. 5, 1984, Ser. No. 647,619
Claims priority, application Japan, Aug. 27, 1983, 58-179874
Int. Cl.⁴ D05B *3/02, 21/00*
U.S. Cl. 112—121.12 **7 Claims**



1. Automatic apparatus for pick-up sewing of curved edges of a fabric piece on clothing comprising
- a flat horizontal base plate,
- a flat horizontal operation table coupled to said base plate and provided with a rotary disc having a center opening,
- a sewing unit secured to the bottom face of said rotary disc, and provided with a sewing needle facing said center opening of said rotary disc, a needle drive motor for driving said sewing needle for said pick-up sewing and a first servo motor for driving said sewing needle for horizontal rotation about the center of said rotary disc,
- a pressor unit arranged on said operation table, and provided with a pressor rod directed towards said center of said rotary disc and means for causing axial displacement of said pressor rod,
- an X-directional shifter unit arranged on said base plate and provided with a second servo motor,
- a Y-directional shifter unit arranged on said X-directional shifter unit and provided with a third servo motor,
- a clothing controller carried by said Y-directional shifter unit and extending almost horizontally over said operation table in order to clamp said clothing therebetween, and
- a center control circuit connected to said servo motors for supply of operation signals as programmed under computer control.

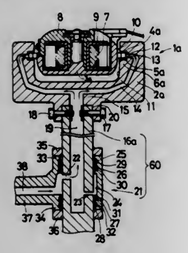
4,577,571
APPARATUS FOR FINISHING WAISTBAND END PORTIONS
Charles F. Carson, 2503 Lakeshore Dr., Greensboro, N.C. 27407
Filed Mar. 6, 1985, Ser. No. 708,650
Int. Cl.⁴ D05B *23/00, 35/00*
U.S. Cl. 112—121.15 **10 Claims**

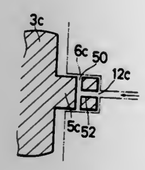


1. An improved automatically and sequentially operated apparatus for inverting a tubular portion of a garment waistband having fabric plies opposite each other with an open terminal free end portion and for stitching the plies of the open inverted free end together, said apparatus comprising:
- (a) an inverting head assembly including a waistband impaling tongue means for supporting said waistband and said waistband open terminal end portion thereon, said inverting head assembly further comprising:
  - (i) automatically actuated means for initially releasably clamping and spreading the fabric plies of the waistband in spaced relation to the open terminal free end portion thereof;
  - (ii) automatically actuated means for thereafter inverting the open terminal free end portion of the waistband into the spread waistband thereby forming an inturned edge having a thickness of four plies and making a selected bulky area adjacent the juncture of the lower edge of the waistband adjacent said inturned edge;
  - (iii) automatically actuated flattening means for thereafter pressing said selected bulky area of the end portion of the waistband to reduce the thickness thereof in preparation for the ensuing stitching operation;
- (b) a sewing head assembly comprising sewing instrumentalities positioned in transversely spaced relation to said inverting head assembly;
- (c) said sewing head assembly and said inverting head assembly being so arranged with respect to each other that said waistband end portion is inverted and sewn while being maintained in substantially the same horizontal plane;
- (d) shifting means for moving said inverting head assembly toward said sewing head assembly while maintaining said waistband end portion in said horizontal plane;
- (e) gripping means associated with said sewing head assembly and in the path of movement of said inverter head assembly for receiving and gripping said waistband portion, said gripping means further including shifting means for positively moving the inturned edge of said waistband portion into proper alignment with said sewing head assembly for stitching the open free ends together.

9. An automatically and sequentially operated apparatus for stitching the open inverted free end of a tubular portion of a garment waistband having fabric plies opposite each other with an open terminal free portion thereof which has been previously inverted, said apparatus comprising a sewing head assembly and a gripping means associated with said sewing head assembly for receiving and gripping said waistband portion, said gripping means further including transferring means for positively moving the inturned finished edge of said waistband portion into proper position for stitching the open inverted free ends together.

4,577,572
FULLY ROTATING HOOK FOR A LOCK STITCH SEWING MACHINE
Tokuzo Hirose, Osaka, Japan, assignor to Hirose Manufacturing Company Limited, Osaka, Japan
Filed Mar. 16, 1984, Ser. No. 591,194
Claims priority, application Japan, Sep. 6, 1983, 58-164876
Int. Cl.⁴ D05B *57/08, 57/26, 71/02*
U.S. Cl. 112—231 **2 Claims**





1. In a vertically oriented fully rotating hook assembly for a lock stitch sewing machine and being of the type including an inner bobbin case for supporting a thread bobbin, said bobbin case having formed on an outer peripheral surface thereof a track projection extending circumferentially of said bobbin case over a portion of the circumference thereof, an outer loop taker mounted about said bobbin case said loop taker having formed in an inner peripheral surface thereof a track groove extending circumferentially of said loop taker over a portion of the circumference thereof, means for rotating said loop taker about a vertical axis such that relative rotation occurs between said loop taker and said bobbin case, with such rotation being guided by said projection fitting within said groove, and means for reducing friction during such rotation between adjacent surfaces of said projection and groove, the improvement wherein said friction reducing means comprises:

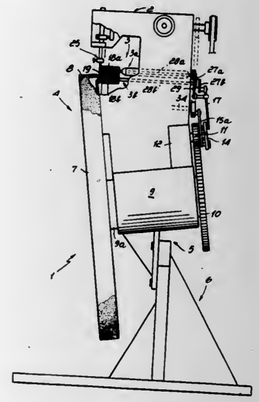
means for injecting compressed air into a clearance between said adjacent surfaces and thereby for forming air films between upper, lower and radially outermost said surfaces of said projection and adjacent complementary said surfaces of said groove;

said injecting means comprising at least one air passage formed in said loop taker, a plurality of air holes opening into said groove and connected to said air passage, and means for supplying compressed air to said air passage and thereby injecting the compressed air through said air holes into said clearance;

said supplying means comprising said rotating means being in the form of a hollow rotatable shaft fixed to the bottom of said loop taker, said shaft having therethrough a passage connected to said air passage in said loop taker, said shaft having therethrough a hole connected to said passage in said shaft, and means for introducing compressed air through said hole into said passage in said shaft; and

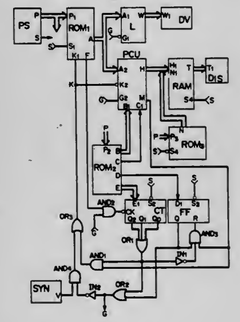
said introducing means comprising a pipe fixed in position surrounding a portion of said shaft having therein said hole, said shaft being rotatable within said pipe, means defining a sealed clearance between said shaft and said pipe, said sealed clearance being connected to said hole, and an air feed pipe connected to said pipe for supplying compressed air therethrough and into said sealed clearance.

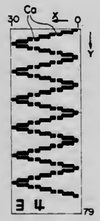
4,577,573
PRECISION-STITCH SEWING MACHINE
Alessandro Peloggio, Brignano Gera D'Adda, Italy, assignor to Exacta S.p.A., Brignano Gera D'Adda, Italy
Filed Jan. 3, 1984, Ser. No. 567,837
Claims priority, application Italy, Jan. 10, 1983, 19044 A/83
Int. Cl.⁴ D05B *27/10, 27/00*
U.S. Cl. 112—318 **6 Claims**



1. A precision stitch sewing machine for attaching hems to wearing apparel, comprising: a bearing frame; motor means carried on said frame; a sewing assembly carried on said frame and kinematically connected to and receiving its motion from said motor means; a feeding assembly for an article of clothing to be sewn carried on said frame substantially beneath said sewing assembly; a hem entrainment assembly carried on said frame adjacent to said feeding assembly, said hem entrainment assembly comprising a pair of entrainment rollers defining a passage for the hems therebetween; and drive means carried on said frame and interposed between said sewing assembly and said entrainment rollers, said drive means comprising rate changing means for changing the hem entraining rate relatively to the apparel feeding rate and control means arranged between said rate changing means and each of said rollers for moving said entrainment rollers in substantially equal and oppositely directed peripheral speeds, said rate changing means comprising an actuating lever kinematically connected to said sewing assembly for receiving its motion therefrom and to said feeding assembly for transferring its motion thereto, said rate changing means further comprising at least one rod adjustably interposed between said actuating lever and said control means for controlling the actuation rate of said control means.

4,577,574
ELECTRONIC SEWING MACHINE WITH A PATTERN DISPLAY
Yoshitaka Takahashi, Kanagawa, Japan, assignor to Janome Sewing Machine Co., Ltd., Tokyo, Japan
Filed Mar. 26, 1984, Ser. No. 594,774
Claims priority, application Japan, Mar. 28, 1983, 58-50520
Int. Cl.⁴ D05B *3/02, 35/12*
U.S. Cl. 112—445 **7 Claims**





1. An electronic sewing machine with a dot matrix display for representing the image of a selected pattern to be stitched, the selected pattern consisting of a plurality of cycles, the sewing machine comprising:

(a) pattern selecting means selectively operated to produce a pattern signal (P) and an activating pulse signal (S);

(b) first memory (ROM 1) for storing stitch control data and sequentially reading out said data per rotation of the sewing machine in dependence upon the selected pattern, said first memory being responsive to said activating pulse signal and said pattern signal to produce an initial stitch control data (A1) of said selected pattern;

(c) drive means which receives said stitch control data from said first memory means and drives the sewing machine according to said stitch control data;

(d) second memory means (ROM 2) for storing display condition data including data (E) defining a set number of cycles to be displayed of the selected pattern, said second memory means being responsive to said pattern signal (P) to produce said data (E) defining the set number of cycles;

(e) counting means being reset in response to said activating pulse signal (S) from said pattern selecting means to latch said data defining the set number of cycles and simultaneously produce a start signal (G);

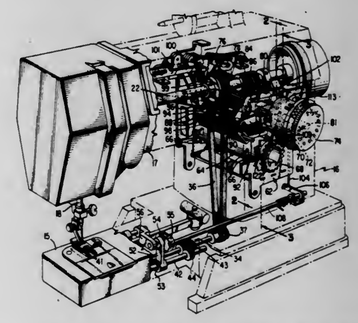
(f) calculator means (CPU) being responsive to said start signal to latch said initial stitch control data of said selected pattern from said first memory means and simultaneously produce a data renewing signal (K);

said first memory means being responsive to said data renewing signal to produce the next stitch control data and simultaneously a cycle renewing signal (F), said counting means being responsive to said cycle renewing signal to start counting said number of cycles, said calculator means receiving said next stitch control data from said first memory means to make a calculation with said initial stitch control data and said next stitch control data to thereby produce a display data and simultaneously produce said data renewing signal, said operations

being continued in series until said set number of cycles is reached by the counting of said counting means while said calculator means is operated to repeatedly produce said display data of the selected pattern; and

(g) display means which receives said display data from said calculator means, temporarily stores said display data and displays it on the dot matrix display.

4,577,575
FOUR-STEP BUTTONHOLE MECHANISM FOR SEWING MACHINES
Victor G. Stevens, Westfield, and Pao-Ter Huang, Edison, both of N.J., assignors to The Singer Company, Stamford, Conn.
Filed Sep. 23, 1985, Ser. No. 778,654
Int. Cl.⁴ D05B *3/06*
U.S. Cl. 112—449 **4 Claims**

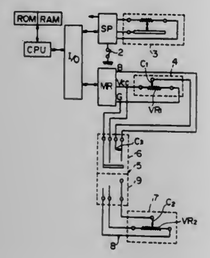


1. In a sewing machine having reversible work feeding mechanism, driven work feed pattern cam means, cam follower mechanism, operative connections between said cam follower mechanism and said work feeding mechanism including an operator influenced balance control for shifting the location of zero work feed within a range of cam follower mechanism movements, a four-step buttonhole mechanism including three work feed controlling cam means cooperable with said cam follower mechanism, a first of said buttonholing cam means for influencing zero work feed during bar tacking at each end of a buttonhole, the other two of said buttonholing cam means for influencing work feeding in opposite directions during stitching along opposite sides of a buttonhole, means securing said buttonholing cam means stationary on said sewing machine during buttonhole stitching, and operator influenced means for selectively varying the stationary position of said first of said buttonholing cam means so that it will influence zero work feed in any selected setting of said balance control.

4,577,576
STITCHING ADJUSTMENT DEVICE OF A SEWING MACHINE

Susumu Hanyu, and Kenji Kato, both of Tokyo, Japan, assignors to Janome Sewing Machine Co., Ltd., Tokyo, Japan

Filed Aug. 23, 1984, Ser. No. 644,126
Claims priority, application Japan, Sep. 5, 1983, 58-136694[U]
Int. Cl.⁴ D05B *3/02*
U.S. Cl. 112—456 **2 Claims**



1. In a sewing machine comprising a stitch forming device; an electronic control device including a memory storing stitch control signals which may be selectively read out to control said stitch forming device to produce a selected pattern of stitches; means (3) for controlling a rotation speed of an electric motor for driving said sewing machine, said means being connected to said electronic control device and said motor by a speed control circuit; and means (4) for adjusting the amplitude of the stitches, said amplitude adjusting means being connected to said electronic control device by an amplitude adjusting circuit, the improvement comprising an external foot-operated controller for adjusting the amplitudes of the stitches, said foot-operated controller being positioned separately from said sewing machine; a first group of lead wires each having one end connected to said electronic control device through said amplitude adjusting circuit; a second group of lead wires each having one end connected to said foot-operated controller; and connector means including a first connector and a second connector, said first connector being provided on said sewing machine and holding an opposite end of each lead-wire of said first group, said second connector holding an opposite end of each lead wire of said second group, said second connector being detachably-connectable to said first connector so as to connect said foot-operated controller to said electronic control device through said amplitude adjusting circuit by said first and second groups of lead wires and disconnect said amplitude adjusting means from said electronic control device.

4,577,577
SLIDING DOOR ARRANGEMENT

Runar Eriksson, Turku, Finland, assignor to Oy Wärtsilä AB, Helsinki, Finland

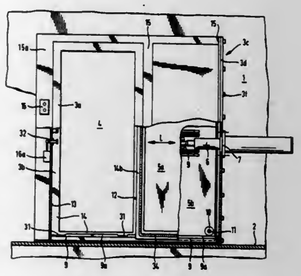
Filed May 16, 1984, Ser. No. 610,642
Claims priority, application Finland, May 27, 1983, 831912
Int. Cl.⁴ B63B *19/00*
U.S. Cl. 114—120 **20 Claims**

1. A sliding door arrangement for closing a passage opening in a generally vertical wall construction, said door arrangement comprising:

a frame unit attachable to said wall construction and bounding a door opening which corresponds to the passage opening when the frame unit is attached to the wall construction, said frame unit including two frame members arranged in spaced relationship and having respective sealing surfaces which surround the door opening in mutually confronting relationship;

a door unit mounted in the space between the frame members and including two door plates, said door unit being movable relative to the frame unit between an open position in which the door unit leaves the door opening essentially clear and a closed position in which the door unit blocks the door opening and the two door plates are in tight contact with the two sealing surfaces respectively about substantially the entire periphery of the door opening; and

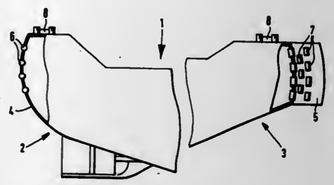
means for guiding the door unit to move relative to the frame unit in sliding manner without contacting the sealing surfaces during at least the major part of the movement of the door unit between the open position and the closed position, and for bringing about movement of at least one of the door plates away from the other door plate when the door unit has substantially completed its sliding movement from the open position towards the closed position, and for bringing about movement of said one door plate towards said other door plate before the door unit undergoes substantial sliding movement from the closed position towards the open position.



4,577,578
METHOD FOR TRANSPORTING GOODS BY FREIGHTER FROM AN ARCTIC PORT TO AN ICE-FREE PORT, AND FREIGHTER FOR THAT PURPOSE

Hans Meyer, Ratingen, Fed. Rep. of Germany, assignor to Ruhrgas LNG Flussigerdgas Service GmbH, Essen, Fed. Rep. of Germany

Filed Jan. 12, 1984, Ser. No. 570,232
Claims priority, application Fed. Rep. of Germany, Jan. 13, 1983, 3300894; Jan. 13, 1983, 3300898
Int. Cl.⁴ B63B *21/00*
U.S. Cl. 114—248 **12 Claims**



1. An ice-breaking freighter adapted to be coupled in tandem to at least one other ice-breaking freighter, said freighter comprising:

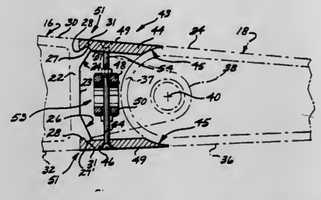
a stern of substantially spherical convex surface, and

a bow having a substantially vertically disposed channel of convex vertical cross-section and concave horizontal cross-section, said stern and said bow shaped to cooperatively couple with the bow or stern, respectively, of a like freighter to allow relative movement of coupled like freighters.

4,577,579
HYDROFOIL SEAL

John W. Williams, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Sep. 13, 1984, Ser. No. 650,251
Int. Cl.⁴ B63B *1/24*
U.S. Cl. 114—274 **9 Claims**



1. Apparatus for sealing the surface spaces between the leading portion of a hydrofoil and its movable trailing flap, wherein the leading portion of the hydrofoil has upper and lower surfaces and a trailing edge, the hydrofoil flap also having an upper and lower surface and the trailing edge, the flap also having a leading edge spaced apart from the trailing edge of the leading portion of the hydrofoil, said apparatus comprising:

a. an upper seal member spanning the space between the upper surface of the leading portion of the hydrofoil and the upper surface of the flap;

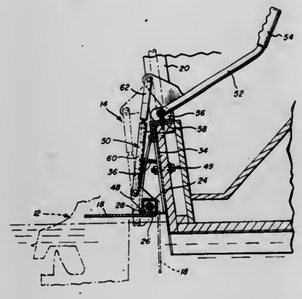
b. a lower seal member spanning the space between the lower surface of the leading portion of the hydrofoil and the lower surface of the flap; and,

c. seal retention means positioned between the upper seal member and the lower seal member and interconnected between those members for ensuring continuous contact between the upper seal member and the upper surfaces of the leading portion of the hydrofoil and the flap, and for ensuring continuous contact between the lower seal member and the lower surfaces of the leading portion of the hydrofoil and the flap.

4,577,580
TROLLING ATTACHMENT FOR BOATS

Robert J. Diffely, Sr., P.O. Box 79, Plaza, N. Dak. 58771

Filed Aug. 31, 1983, Ser. No. 528,050
Int. Cl.⁴ B63B *1/16*
U.S. Cl. 114—285 **15 Claims**



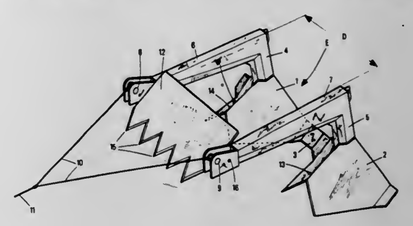
3. A trolling attachment for a motorboat comprising a trolling flap connected with a shaft, journal means for rotatably mounting the shaft on a transom of a boat so that rotation of the shaft enables the flap to be lowered into and raised from water in which the boat operates, a collar on the shaft having an outer surface with adjacent angularly displaced outer surface portions, an elongate leaf spring, and means for securing the leaf spring to the transom with one end of the spring bearing against the outer surface of said collar to provide frictional resistance to rotation of the shaft between positions in which the spring engages respective ones of said surface portions, the flap being in raised position out of the water when the spring is in engagement with one of said surface portions and being in lowered position in the water when the spring is in engagement with the other of said surface portions, and the spring positively engaging one or other of said surface portions to provide positive location and retention of the flap in one or other of said positions, means for varying the tension with which the spring engages the outer surface of said collar so as to adjust the force required to move the flap between the raised and lowered positions, the means for securing the leaf spring to the transom including a protruding bolt extending through an opening in the spring and a nut engaging the free end of the bolt, the nut providing said means for varying the tension of the spring.

13. A trolling attachment on a transom of a motorboat comprising shaft means, a pair of trolling flap assemblies on the shaft means each comprising a trolling flap connected to a rectangular section tube coaxially mounted on the shaft means, the trolling flap assemblies being spaced apart to accommodate the boat's motor therebetween, elongate brackets at respective ends of the shaft means rotatably attaching the shaft means to the transom and respective elongate leaf springs having upper ends attached to the transom above the shaft means and lower ends engaged over the outsides of the respective rectangular section tubes, the leaf springs resiliently engaging respective surface portions of the tubes for positively locating the flap assemblies in raised and lowered positions of the flaps determined by rotation of the shaft means.

4,577,581
ANCHORING DEVICE

Alain Puech, Rueil-Malmaison, France, assignor to Societe Nouvelle Construction Metalliques de Provence, Paris La Defense, France

PCT No. PCT/FR83/00002, § 371 Date Aug. 31, 1983, § 102(e) Date Aug. 31, 1983, PCT Pub. No. WO83/02432, PCT Pub. Date Jul. 21, 1983
PCT Filed Jan. 4, 1983, Ser. No. 536,159
Claims priority, application France, Jan. 5, 1982, 82 00043
Int. Cl.⁴ B63B *21/34*
U.S. Cl. 114—294 **23 Claims**



1. An anchoring device for a floating installation to which the device is connected by an anchoring line, the device comprising:

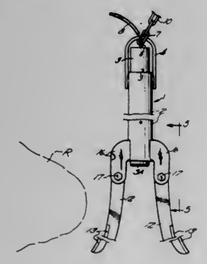
an assembly of at least two plowshare anchors wherein each anchor includes an interior part of a shape facilitating penetration into ground and a posterior part, each anchor including a dihedron having an upper edge with a front portion;

at least two rigid shanks having an axis and first and second ends, each shank being connected at its first end to one of the dihedrons by a rigid strut extending upwardly from a location adjacent to both the upper edge and the posterior of the dihedron, the shanks being disposed in an orientation wherein the plane passing through the front portion of each upper edge of the dihedrons and the second end of the shanks define with the axis of each shank an angle in the range of about 15° to about 35°;

an anchoring plate rigidly fixed to the shanks and extending therebetween at a location adjacent to the second ends of the shanks; the anchoring plate having a pair of exposed, parallel surfaces which are substantially parallel to the upper edges of the dihedrons, and the anchoring plate having a leading edge defined by a plurality of teeth, and

means disposed at both ends of each shank for attaching anchor lines.

4,577,582
ANCHOR WITH PIVOTING ARMS
Roger L. Hedden, Box 33 Bl. Sky Hts., Clancy, Mont. 59634
Filed Aug. 27, 1984, Ser. No. 644,622
Int. Cl.⁴ B63B *21/44*
U.S. Cl. 114—298 **3 Claims**



1. An anchor having positionable arm members enabling anchor stowage in a compact manner and also anchor release when fouled on an underwater obstruction, said anchor comprising,

a tubular shank structure including an upright tubular main body and an elongate arm control member slidably disposed in the tubular main body, a bail secured to the upper end of said main body and projecting thereabove, a limit stop limiting travel between said main body and said arm control member,

arm members having their proximal ends located adjacent one end of said tubular main body, pairs of flanges secured to and depending below said one end of the tubular main body with one each of said arm members swingably mounted between one of said pairs of flanges for travel through approximately 180 degrees whereby the arms may be placed in juxtaposition with the tubular main body of the shank structure for anchor stowage purposes and additionally in a trailed position offset below the tubular main body for anchor retrieval purposes,

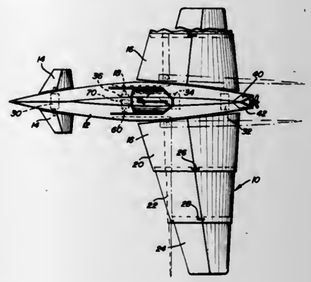
said arm control member engageable with the proximal ends of the arm members to retain same in an operative position substantially perpendicular to the tubular shank structure,

an anchor line,

means securing the lowermost end of the anchor line to the upper end of said arm control member, and

a breakaway tie passing through said bail on the main body and normally securing the anchor line to said tubular main body for imparting raising or lowering forces to the anchor whereby upon rupture of the breakaway tie by anchor line exerted forces said anchor line will impart axial movement to said arm control member for disengagement of same with the arm member ends to permit a fouled arm member to swing out of contact with an underwater obstruction.

4,577,583
SMALL GLIDING UNDERWATER CRAFT
John G. Green, II, 9041 SW. 156th St., Apt. B-5, Miami, Fla. 33157
Filed Jun. 28, 1984, Ser. No. 625,799
Int. Cl.⁴ B63G *8/00*
U.S. Cl. 114—332 **9 Claims**



1. A gliding underwater craft including an elongated streamlined hull having front and rear ends, a first pair of rear opposite side horizontally outwardly projecting foils having their centers of plan area disposed aft of amidships of said hull, a second pair of forward opposite side horizontally outwardly projecting foils considerably smaller in plan area than said first pair of foils and mounted from opposite side forward portions of said hull spaced considerably forward of amidships for controlled angular displacement relative to said hull about generally horizontal axes extending transversely of said hull, first control means for simultaneously angularly displacing said forward foils about said axes, said hull including front and rear buoyancy tank means, compressed gas storage tank means mounted within said hull centrally intermediate said buoyancy tank means, and second control means operatively associated with said storage and buoyancy tank means for selectively flooding and blowing said buoyancy tank means with ambient water and compressed gas from said storage tank, a rear lower portion of said hull defining a closed sided, horizontally rearwardly opening recess in which an electric motor driven rearwardly discharging marine propeller equipped propulsion assembly is mounted for adjustable angular displacement about an upstanding axis, third control means operatively connected between said hull and propulsion assembly for angularly displacing the latter relative to said hull, opposite side rear lower portions of said hull including water ingress passages formed therein opening outwardly of opposite sides of said hull and opening inwardly into the inner portion of said recess, said outwardly opening portions of said passages including lightly spring biased closed inwardly swingably openable closure doors.

4,577,584
BELL LOCK (II)
Nan C. Shih, 116, Changstao Rd., Changhua City, Taiwan (500)
Filed Dec. 24, 1984, Ser. No. 685,491
Int. Cl.⁴ G08B *13/08*
U.S. Cl. 116—10 **2 Claims**

1. A lockable door knob able to ring, comprising:

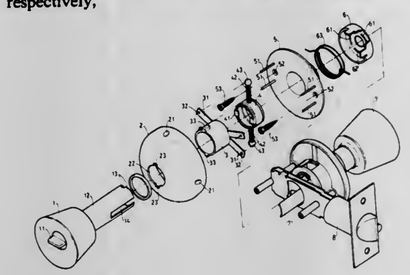
an inside knob constructed with a pipe shaft whose end is shaped as two protruding edges able to fix in two slots cut in a linking cover, said pipe shaft having elongate slots wherein a tip of a rotator can fit, a round-shaped bell with several pointed concavities,

said rotator containing springs whose ends are each provided with a steel ball,

a fixing frame fixed on hindrance rods of a fixing plate and able to restrict the position of said rotator between said fixing plate and the fixing frame,

the hindrance rods combining with said fixing frame to hinder the passing of said steel balls,

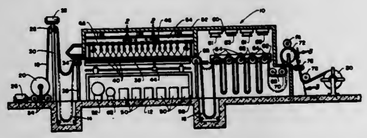
the linking cover combining with said protruding edges of said inside knob and with a key plate of an outside knob respectively,



the key plate combining with said linking cover to force a latch to move when either said inside knob or said outside knob is turned,

wherein manual rotation of said inside knob or said outside knob causes said rotator to rotate, and due to said hindrance rods said steel balls set on said rotator are temporarily hindered then forced to surpass said rods knocking against the concavities of said bell and making a sound of ringing by means of the springs set between said rotator and said balls.

4,577,585
METHOD AND APPARATUS FOR MAKING A COLOR BLENDED WALL COVERING
Anthony G. Anselmo, 819 - 19th St., Santa Monica, Calif. 90403
Filed Apr. 23, 1984, Ser. No. 602,765
Int. Cl.⁴ B05B *7/06, 3/00, 1/28;* B05C *5/00*
U.S. Cl. 118—50 **5 Claims**



1. A machine for applying a multiple colored pattern onto a ground or wall covering comprising:

a supply roll section for supplying a continuous strip of said ground, said ground having a width defined by a pair of spaced apart lateral parallel edges;

a paint spray chamber, said ground to be moved into and through said paint spray chamber along a lineal axis, a nozzle assembly mounted within said paint spray chamber, said nozzle assembly being adapted to spray paint, said nozzle assembly being movable in a direction transverse to said lineal axis so paint is applied to said ground across said ground, said movement of said nozzle assembly being continuous from one said lateral edge to the other said lateral edge, said nozzle assembly creating a smooth blend of colors on said ground with there being no visual break from one color to the next, said paint spray chamber including an elongated planar bed, said ground to be moved onto said bed and momentarily fixed in position by fixing means during which time painting of said ground is to occur;

a drying chamber, said ground being movable from said paint spray chamber into said drying chamber;

a collecting roll section for collecting the now painted and dried said ground;

first means for rotating of said supply roll section for continuously unwinding of said ground at a steady rate; and

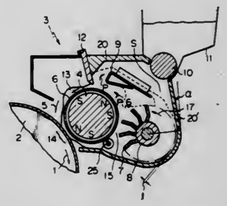
second means for continuously rotating of said collecting roll section at a steady rate causing winding of said ground onto a collecting roll.

4,577,586
AUTOMATIC SKI WAXING MACHINE
Fredric H. Morris, and Alvan M. Morris, both of 7148 Loch Lomond Dr., Bethesda, Md. 20817
Filed May 2, 1985, Ser. No. 729,715
Int. Cl.⁴ B05C *1/02, 11/02*
U.S. Cl. 118—63 **16 Claims**



1. An automatic ski waxing apparatus comprising conveyor means for transporting a person wearing skis along an elongated processing path, said conveyor means including guide means for locating said skis at predetermined positions relative to one another and relative to said conveyor means as said person is transported along said path, and a plurality of processing stations disposed along said path adjacent said positioned skis, said stations including first means for removing old wax from the under surface of said positioned skis, and second means downstream of said first means for applying new wax to the under surface of said positioned skis.

4,577,587
DEVELOPING APPARATUS
Yasushi Kamezaki, Sakai, Japan, assignor to Mita Industrial Co., Ltd., Osaka, Japan
Filed Mar. 28, 1985, Ser. No. 717,012
Claims priority, application Japan, Mar. 30, 1984, 59-47155; May 16, 1984, 59-47528; May 16, 1984, 59-72527; May 16, 1984, 59-72529
Int. Cl.⁴ G03G *15/09*
U.S. Cl. 118—658 **8 Claims**



1. A developing apparatus using a two-component type developer, which comprises a hopper provided with a toner feed roller, a developer delivery sleeve rotating in a direction reverse to the rotation direction of a photosensitive drum and having a magnet arranged in the interior thereof, a stirring roller for effecting frictional charging of toner particles and uniform mixing of a toner and a carrier, said stirring roller rotating in the same direction as the rotation direction of the developer delivery sleeve and being provided with a plurality of stirring vanes, an earing plate for controlling the earing

length of a magnetic brush formed on the developer delivery sleeve, and a developer flow guiding mechanism arranged above the stirring roller, wherein the top end of each stirring vane is bent in the rotation direction of the stirring roller and a notch is formed on each stirring vane, a spiral passage is formed on the stirring roller by the notches of the stirring vanes, and the developer flow guiding mechanism comprises a partition plate and a plurality of guide plates arranged at predetermined intervals at least on the upper face of the partition plate.

4,577,588

DEVICE FOR PROCESS-TYPE DEPOSITION OF POLYCRYSTALLINE SILICON ON CARBON FILM

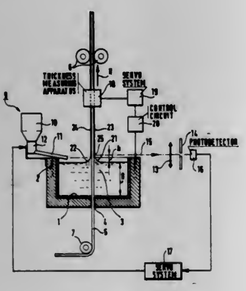
Michel Mautref, Ozoir la Ferriere, and Christian Belouet, Sceaux, both of France, assignors to Compagnie Generale d'Electricite and Societe Nationale Elf Aquitaine, both of, France

Filed Aug. 28, 1984, Ser. No. 644,910

Claims priority, application France, Aug. 29, 1983, 83 13834; Dec. 1, 1983, 83 19212

Int. Cl.⁴ B05C *3/132*

U.S. Cl. 118—665 **7 Claims**



1. A device for process-type deposition of a coat of polycrystalline silicon or carbon film, said device comprising a crucible, an electrical system for feeding silicon to said crucible, crucible heating means enabling the formation of a silicon melt in said crucible, and means for upwardly transporting at a constant speed the carbon film passing vertically through the equilibrium surface of the melt in order to deposit said silicon coat, said device further comprising:

an optical system centered on an axis fixed in relation to said crucible, with said optical system fixed axis set to form a hot silicon radiation image of one specific target area of the silicon surface extending from just above to just below the interface line between the liquid silicon and the solid silicon deposited onto said carbon film,

a photodetector arranged to receive said image and operable to responsively deliver an electric measuring signal representative of the liquid level in said crucible,

and a servo system connected to the electrical output of said photodetector and operable to compare the measuring signal with reference signal representative of a preset level of the melt to yield an error signal, and said servo system being connected to the electrical drive for the crucible's silicon feed system so as to control crucible feed to reduce said error signal.

4,577,589

WIRE BASKET BIRD CAGE WHICH CAN BE ASSEMBLED FROM WIRE GRATING PARTS

Josef Voss, Haus Dreizehneichen, 5760 Arnsberg 1, and Gilles Thévenot, Schlossbergstrasse 2, 7570 Baden-Baden, both of Fed. Rep. of Germany

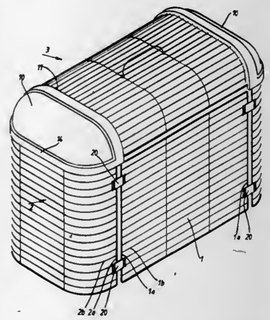
PCT No. PCT/EP83/00235, § 371 Date Nov. 9, 1984, § 102(e) Date Nov. 9, 1984, PCT Pub. No. WO84/03814, PCT Pub. Date Oct. 11, 1984

PCT Filed Sep. 6, 1983, Ser. No. 673,559

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1983, 3312474

Int. Cl.⁴ A01K *31/00*

U.S. Cl. 119—17 **2 Claims**



1. A wire basket bird cage which can be assembled from wire grating parts, characterized by the following features:

it includes two equal wall grating parts lying opposite one another, two further equal wall grating parts lying opposite one another and joined to said first wall grating parts, and one roof grating part;

the wall grating parts are connected to one another by clip-like connecting parts;

at the connecting parts grooves are formed, which insertably accomodate the vertical wires of the wall grating parts, and abutments are formed for the horizontal wires, characterized by the following further features:

a solid shoulder part (**10**) is provided for the connection of the roof to each grating part (**2**) being attached to the flat walls (**1**);

each shoulder part has a curved edge (**11**) on the roof side with an inserting groove (**13**), which accomodates the curved roof;

each shoulder part has a side edge (**14**) with an inserting groove (**16**), which accomodates a curved grating part (**2**);

the respective wires of the wall grating parts and roof grafting parts are held in the respective grooves of the shoulder parts by elastic cross-pieces (**12,15**) with barbs (**12*a*, 15*a***).

4,577,590

WILD MOUSE CAT SCRATCH POLE

David D. Skroch, 2002 W. 13th, The Dalles, Oreg. 97058

Filed Oct. 17, 1984, Ser. No. 661,752

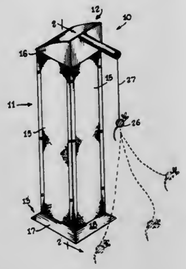
Int. Cl.⁴ A01K *29/00*

U.S. Cl. 119—29 **4 Claims**

1. An apparatus for providing entertainment and exercise for cats; wherein, the apparatus comprises:

a housing unit including a base plate, an elongated main frame member, and a hollow cap element disposed on top of said main frame member, and having an elongated hollow extension arm projecting outwardly therefrom; and

a mouse suspension and retraction unit including a weighted member connected by an elongated lanyard to a simulated mouse member; wherein the weighted member is moveably disposed within the main frame member, and the simulated mouse member is disposed outside the main frame member; wherein the housing unit further comprises a plurality of fabric covered panel elements releasably associated with the main frame member; and, wherein the main frame member is further provided with a plurality of spaced apart outwardly extending projections which are adapted to releasably secure said plurality of panel elements intermediate said projections and said main frame member.



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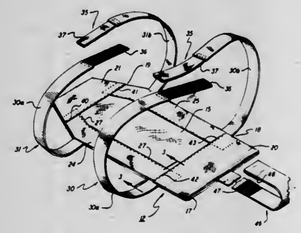
INCONTINENCE AND PROTECTIVE DEVICE FOR ANIMALS

Dianne M. Wesseldine, 313 Willard St., Minoa, N.Y. 13116

Filed Jan. 14, 1985, Ser. No. 691,204

Int. Cl.⁴ A01K *23/00*

U.S. Cl. 119—143 **14 Claims**



1. An incontinence and protective device for use on the underside of a four legged animal that includes

a retainer means formed of a flexible cloth material that includes a bottom panel consisting of a rectangular front section and a tapered rear section for passing between the hind legs of the animal and a series of pocket-forming facing panels overlying the bottom panel that include a pair of side facing panels positioned along the side edges of the bottom panel, a front facing panel positioned over the front section of the bottom panel and a back facing panel positioned over the tapered section of the bottom panel,

seam means for stitching the facing panels to the bottom panel along its peripheral edge and to each other to form an open topped pocket in said retainer means,

a sanitary pad removably mounted within the pocket that includes a stiff semi-flexible frame adapted to pass under the facing panels and to retain the shape of the pad when inserted into said retainer means, but conform to the underside of the animal, and an absorptive core attached to the frame that is adapted to fill the pocket opening and thus contact the region on the animal to be protected,

a pair of two-piece straps that include a first strap having ends sewn into the seam means on opposite sides of the front section of the bottom panel immediately adjacent to the front edge thereof and a second strap having ends sewn into the seam means on opposite sides of the bottom panel immediately adjacent to the rear tapered section, and

separable fastener means associated with each strap for permitting the straps to pass about the torso of the animal and be secured thereto to apply a gentle holding pressure against the pad mounted in the retainer means.

4,577,592

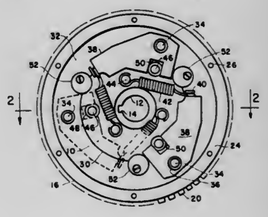
SELF ADJUSTING CAMSHAFT GEAR FOR INTERNAL COMBUSTION ENGINES

Henery G. K. Bosch, 240-B S. Pecos, Denver, Colo. 80223, and Thomas W. Pouliot, 2574 S. Yates, Denver, Colo. 80219

Filed Jun. 27, 1984, Ser. No. 625,242

Int. Cl.⁴ F01L *1/34*

U.S. Cl. 123—90.15 **8 Claims**



1. A camshaft gear for an internal combustion engine, said gear comprising:

a hub member having an axial bore for receiving a camshaft and having a circular periphery coaxial with said camshaft bore;

a toroidal gear member coaxial with said hub member bore and having an inner surface in slideable contact with the periphery of said hub member, the periphery of said gear member being circular and having timing gear teeth thereon;

a plurality of at least three centrifugal weights coupled to a side face of said gear member for pivotal movement in a plane parallel with said side face, each of said plurality being slideably coupled to a first post extending from a corresponding side face of said hub member for rotating said hub member with respect to said gear member upon pivotal movement of said plurality of weights;

stop means including a plurality of discs, each disc adjustably connected by a screw through an off-center hole in said disc to said side face of said gear member and at a location overlying a portion of said hub member and adjacent the pivotal end of one of said weights for locking said hub against removal from said gear member and for adjusting the position of said weights when said camshaft is stationary; and

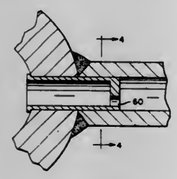
resilient means coupled between said hub member and each of said plurality of weights for preventing said pivotal movement of said plurality of weights below a predetermined rotational velocity of said camshaft.

4,577,593

WATERWALL TUBE ORIFICE MOUNTING ASSEMBLY

Bard C. Teigen, Enfield, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Nov. 8, 1984, Ser. No. 669,478
Int. Cl.[4] F22B 15/00, 25/00, 37/10
U.S. Cl. 122—235 D 1 Claim



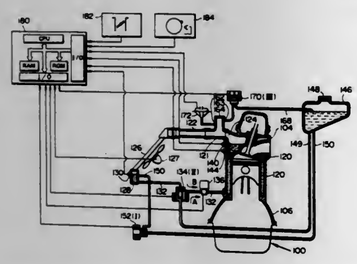
1. In combination, a steam generator having a furnace, tubes lining the walls of the furnace, each tube having a portion having a horizontal component near its inlet end, header means for supplying fluid to the tubes, pump means for forcing fluid through the header means into the tubes, restriction means positioned in the inlet of each tube in the portion having a horizontal component for insuring adequate flow of fluid to each of the tubes, each restriction means comprising an orifice in a plate located within each tube, each orifice being located at the very bottom of the plate adjacent to the bottom of each tube, so that when the steam generator is shutdown, each tube is completely self-drainable by means of gravity and substantially no fluid is trapped on the upstream side of the restriction means.

4,577,594

COOLING SYSTEM FOR AUTOMOTIVE ENGINE

Yoshimasa Hayashi, Kamakura; Takao Kubozuka, Yokosuka, and Yoshinori Hirano, Yokohama, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Feb. 22, 1985, Ser. No. 704,269
Claims priority, application Japan, Feb. 23, 1984, 59-32994; May 18, 1984, 59-100157; May 18, 1984, 59-100155
Int. Cl.[4] F01P 11/02, 3/22
U.S. Cl. 123—41.08 13 Claims



1. A cooling system for an internal combustion engine comprising:

a coolant jacket formed about structure of said engine subject to high heat flux;

a radiator in which coolant vapor is condensed to its liquid form;

a vapor transfer conduit leading from said coolant jacket to said radiator;

means for returning liquid coolant from said radiator to said coolant jacket in a manner to maintain said structure subject to high heat flux immersed in liquid coolant and define a vapor collection space within said coolant jacket;

a reservoir containing liquid coolant;

valve and conduit means for selectively establishing fluid communication between said coolant jacket and said reservoir;

valve and conduit control means including circuitry for:

(a) conditioning said valve and conduit means so as to establish fluid communication between said reservoir and a cooling circuit which includes said coolant jacket, said radiator and said second vapor transfer conduit, when the temperature of the coolant within said coolant jacket is below a first predetermined level and the pressure prevailing within said cooling circuit is below ambient atmospheric pressure by a second predetermined amount;

(b) conditioning said valve and conduit means so as to introduce excess coolant from said reservoir into said cooling circuit when the engine is started and the temperature of the coolant in said coolant jacket is below a third predetermined level and thus purge out any non-condensible matter in said cooling circuit;

(c) conditioning said valve and conduit means so as to permit coolant to be displaced from said engine under the influence of the vapor pressure produced within said cooling circuit when the engine is running and the temperature of said coolant is above said third predetermined level, and for terminating the displacement when said the amount of coolant contained in said cooling circuit has been reduced to a predetermined desired level; and

(d) monitoring the operation of said liquid coolant returning means to determine if the correct amount of coolant has been retained in said cooling circuit and for conditioning said valve and conduit means to permit correction of the amount of coolant to said desired level.

6. A method of cooling an internal combustion engine comprising the steps of:

introducing liquid coolant into a coolant jacket formed about structure of said engine subject to high heat flux in a manner to immerse said structure in a predetermined depth of liquid coolant;

allowing the liquid coolant in said coolant jacket to boil;

condensing the vapor produced by the boiling in said coolant jacket to its liquid form in a radiator;

transferring the coolant vapor from said coolant jacket to said radiator using a vapor transfer conduit;

returning liquid coolant from said radiator to said first coolant jacket using a coolant return arrangement in a manner to maintain said structure subject to high heat flux immersed in said predetermined depth of liquid coolant and define a vapor collection space within said coolant jacket;

storing additional coolant in a reservoir;

conditioning said valve and conduit means so as to establish fluid communication between said reservoir and a cooling circuit which includes said coolant jacket, said radiator and said second vapor transfer conduit, when the temperature of the coolant within said coolant jacket is below a first predetermined level and the pressure prevailing within said cooling circuit is below ambient atmospheric pressure by a second predetermined amount;

conditioning said valve and conduit means so as to introduce excess coolant from said reservoir into said cooling circuit when said engine is started and the temperature of the coolant in said coolant jacket is below a third predetermined level and thus purge out any non-condensible matter in said cooling circuit;

conditioning said valve and conduit means so as to permit coolant to be displaced from said engine under the influence of the vapor pressure produced within said cooling circuit when the engine is running and the temperature of said coolant is above said third predetermined level, and for terminating the displacement when the amount of coolant contained in said cooling circuit has been reduced to a predetermined desired level;

monitoring the operation of said liquid coolant returning arrangement to determine if the correct amount of coolant has been retained in said cooling circuit; and

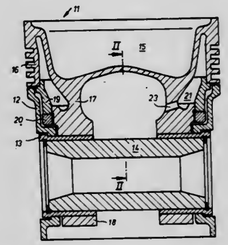
correcting the amount of coolant retained in said cooling circuit in the event that said step of monitoring reveals that the amount of coolant retained in said cooling circuit is not at a desired level.

4,577,595

PISTON FOR A RECIPROCATING PISTON INTERNAL COMBUSTION ENGINE

Herbert Deutschmann, and Karl Schier, both of Friedrichshafen, Fed. Rep. of Germany, assignors to MTU Motoren-und Turbinen-Union Friedrichshafen, GmbH, Friedrichshafen, Fed. Rep. of Germany

Filed Jul. 19, 1984, Ser. No. 632,323
Claims priority, application Fed. Rep. of Germany, Oct. 22, 1983, 3338419
Int. Cl.[4] F01P 3/10; F16J 1/00
U.S. Cl. 123—41.35 5 Claims



1. A piston for a reciprocating piston internal combustion engine, comprising a piston top, a piston skirt and wrist pin means for interconnecting the piston top and piston skirt, the piston top including a combustion space recess, a piston ring carrier means surrounding the combustion space recess and a ring-shaped extension disposed at the bottom of the combustion space recess having two support bearing means and supporting the piston top at the wrist pin means, and means for connecting the piston ring carrier means with the ring-shaped extension including a ring-shaped support element, said ring-shaped support element being clamped between the piston ring carrier means and ring-shaped extension by a nut means cooperating with the ring-shaped extension.

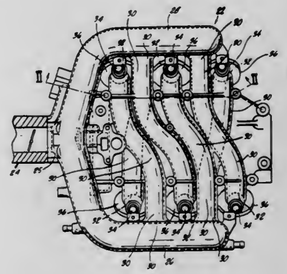
4,577,596

INTAKE MANIFOLD STRUCTURE FOR A V-TYPE INTERNAL COMBUSTION ENGINE

Akihisa Senga, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 21, 1983, Ser. No. 563,942
Claims priority, application Japan, Dec. 22, 1982, 57-228866
Int. Cl.[4] F02B 75/22
U.S. Cl. 123—52 MV 8 Claims

1. An intake manifold for a V-type internal combustion engine with two cylinder banks and a plurality of cylinder inlet ports, comprising, an air inlet opening, two supply tubes connected to said inlet opening, said supply tubes arranged substantially in the shape of a "U", each said supply tube being mounted substantially above and parallel to one cylinder bank, a plurality of branch tubes formed longitudinally along each said supply tube and extending across the engine with an open end extending substantially perpendicular to said supply tubes, said branch tubes being arranged such that at least two of said branch tubes extending from the same supply tube are vertically aligned one on top of the other at the supply tube along a plane normal to said supply tube and for a portion of their lengths extending from that supply tube, and means to connect each said branch tube open end to a cylinder inlet port on an



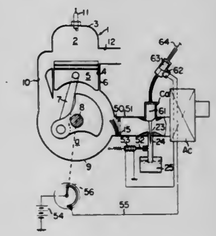
opposite side of the engine from the supply tube to which that branch tube is connected.

4,577,597

METHOD AND APPARATUS FOR SUPPLYING FUEL TO INTERNAL COMBUSTION ENGINE

Takao Tomita, Niiza, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 11, 1982, Ser. No. 387,553
Claims priority, application Japan, Jun. 18, 1981, 56-94457; Jun. 22, 1981, 56-96329
Int. Cl.[4] F02B 33/00; F02D 1/00
U.S. Cl. 123—73 A 15 Claims



1. An apparatus for supplying fuel to a two-cycle internal combustion engine having a rotating crankshaft in a crank chamber, comprising an intake port provided in said engine and open to said crank chamber of the engine, a single intake passage connected at one end to said intake port and at an opposite end leading to atmosphere, and means connected to an intermediate portion of said intake passage for supplying fuel to the latter and suspending fuel supply thereto, wherein said means comprises:

a carburetor disposed in the intermediate portion of said intake passage, said carburetor having a venturi portion, a float chamber and a fuel injection nozzle connecting between said venturi portion and said float chamber;

a stop valve for controlling injection of fuel into said intake passage through said fuel injection nozzle;

a valve actuator operatively connected to said stop valve; and

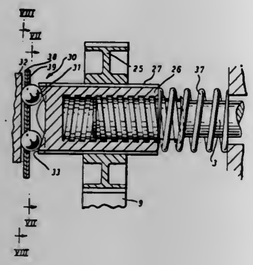
a switch means disposed in a circuit connecting said stop valve and said value actuator, said switch means being operatively connected to said crankshaft of said engine to actuate said stop valve in accordance with revolution speed of said engine, such that said means acts to alternately admit air-fuel mixture and fresh air only, respectively, during alternate revolutions of said engine.

4,577,598

INTERNAL COMBUSTION ENGINE AND CAM DRIVE MECHANISM THEREFOR

Thomas T. Ma, Chelmsford, United Kingdom, assignor to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 386,851, Apr. 9, 1982, abandoned. This application Jan. 30, 1985, Ser. No. 696,674
Int. Cl.[4] F01L *1/34*
U.S. Cl. 123—90.18 4 Claims



1. A cam drive mechanism for driving the camshaft of a four-stroke internal combustion engine having one or more sets of n number of cylinders where n is a positive integer, a piston connected to a crankshaft and reciprocable in each cylinder and being either in phase or out of phase with any other piston in the set to which it belongs by a phase angle A°, or an integral multiple thereof, and a camshaft carrying a plurality of rotatable cams for actuating inlet and/or exhaust valves for each cylinder in the set, characterized in the cam drive mechanism comprising means for rotating the camshaft with a rotational movement which is a combination of a circular motion about its axis of rotation which has a predetermined phase relationship with the circular movement of the crankshaft and an oscillatory motion about its axis of rotation to advance and retard the angular position of the cams relative to the valves with which they are associated, the oscillatory motion having a predetermined phase relationship with the crankshaft, and means for varying the amplitude of the oscillatory motion whereby the timing of the opening and closing of the valves may be varied, characterized in that the speed of the circular movement of the camshaft is half the speed of the crankshaft and the frequency of oscillations of the camshaft is f times the frequency of rotation of the crankshaft, wherein:

f=2n when the number of engine cylinders n=1;

f=n or n/2 when n=2;

f=n when n/2=3 or more;

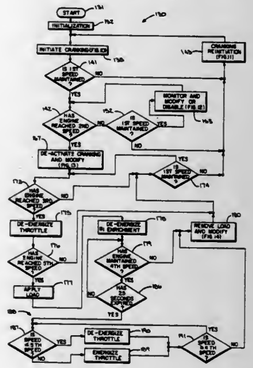
the cam drive mechanism means comprising a rotatable drive member drivable by the crankshaft, and a connection between the drive member and camshaft for transmitting the rotary motion of the drive member thereto, said connection including a sleeve element rotatable by said drive element and axially slidable relative thereto and having a helically splined connection with the camshaft whereby axial movement of the sleeve element effects a rotation of the camshaft relative to the drive member, and means effecting a continuous reciprocation of the sleeve element first in one axial direction and then in the return opposite direction, to provide a continuous oscillatory movement of the camshaft relative to the drive member and crankshaft.

4,577,599

REMOTE STARTER FOR INTERNAL COMBUSTION ENGINE

Cary J. Chmielewski, N. Fond du Lac, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Filed Sep. 27, 1982, Ser. No. 423,816
Int. Cl.[4] F02N *11/08*
U.S. Cl. 123—179 B 11 Claims
MICROFICHE APPENDIX INCLUDED
(1 Microfiche, 19 Pages)



1. A control to remotely start an internal combustion engine, comprising

a remote start command remotely located with respect to said engine and operable to provide a start command signal,

a local start command electrically connected to said remote command to provide a start initiation signal in response to said start command signal,

means electrically connected to said local start command and to said engine to initiate a starting sequence for said engine in response to said remote start command signal,

sensing means connected to sense a plurality of operating conditions of said engine during cranking,

modifying means operatively connected to said sensing means to selectively modify at least one of a plurality of operating sequences for said engine in response to the failure of said engine to reach one of a plurality of predetermined operating conditions to optimize the starting performance of said engine, and

cranking reinitiation means operatively connected to said sensing means to de-activate said starting sequence and initiate another starting sequence in response to the failure of said engine to reach one of said plurality of predetermined operating conditions.

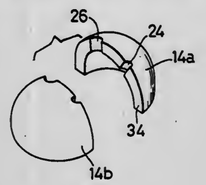
4,577,600

STRUCTURE OF DIVIDED COMBUSTION CHAMBER FOR DIESEL ENGINE

Tetuya Morita; Akinori Wakasa, both of Hiroshima; Yutaka Ogawa, and Takayuki Ogasawara, both of Nagoya, all of Japan, assignors to Mazda Motor Corporation and NGK Insulators, Ltd., both of, Japan

Filed Oct. 9, 1984, Ser. No. 658,884
Claims priority, application Japan, Oct. 6, 1983, 58-155875[U]; Oct. 6, 1983, 58-155876[U]
Int. Cl.[4] F02B *3/00*
U.S. Cl. 123—270 25 Claims

1. A structure defining a divided combustion chamber of a Diesel engine, comprising: an upper ceramic member having a substantially hemispherical head and a lower ceramic member having an injection port, said lower ceramic member meeting with the upper ceramic member at an interface to form the divided combustion chamber therein, said upper ceramic member including at least one through hole extending from an outer surface thereof to an inside surface of said divided combustion



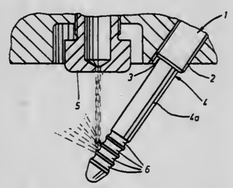
chamber and at least one structural feature selected from the group consisting of a cut and a slit formed in a straight plane on at least said outer surface and extending from said at least one through hole to another at least one through hole or to said interface.

4,577,601

GLOW PLUG ARRANGEMENT

Roland Klak, Ost fildern, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 18, 1984, Ser. No. 571,824
Claims priority, application Fed. Rep. of Germany, Jan. 19, 1983, 3301559
Int. Cl.[4] F02B *3/00*
U.S. Cl. 123—298 5 Claims



1. Glow plug arrangement for a compressed air charged combustion engine for motor vehicles and the like, comprising:

a glow plug housing; and

a heating rod extending outwardly of the housing into an engine combustion space in a region intersecting with a fuel stream supplied from an injection nozzle;

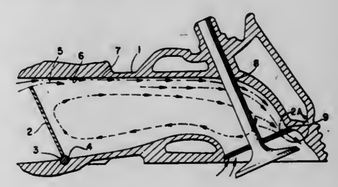
wherein the heating rod is disposed at a sharp angle to the injected fuel stream and is provided in the region impinged on by the fuel stream with an irregular surface to improve the atomization and ignition of the fuel, said irregular surface being formed as a plurality of ring grooves around the circumference of the heating rod, and wherein said ring grooves include sharp edged outer surface portions.

4,577,602

HIGH SWIRL VERY LOW POLLUTION PISTON ENGINE EMPLOYING OPTIMIZABLE VORTICITY METERING

Merle R. Showalter, Madison, Wis., assignor to Automotive Engine Associates, Madison, Wis.

Continuation of Ser. No. 328,850, Dec. 9, 1981, abandoned, which is a division of Ser. No. 47,472, Jun. 11, 1979, Pat. No. 4,344,394, which is a continuation-in-part of Ser. No. 914,857, Jun. 12, 1978, abandoned, which is a continuation of Ser. No. 791,422, Apr. 27, 1977, abandoned, which is a continuation of Ser. No. 547,040, Feb. 4, 1975, abandoned. This application Mar. 19, 1984, Ser. No. 589,869
The portion of the term of this patent subsequent to Aug. 17, 1999, has been disclaimed.
Int. Cl.[4] F02B *31/00*
U.S. Cl. 123—306 3 Claims



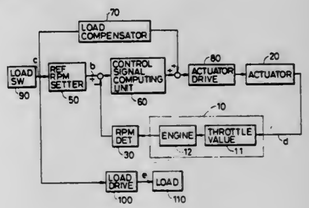
1. In a multicylinder four stroke engine having an exhaust passage and a common intake manifold passage volume for several cylinders with depending intake ports wherein said intake manifold passage volume is maintained below atmospheric pressure during low power operation of said engine wherein said engine has in each intake port a variable restriction adapted to close off at least 70% of each port's flow cross section wherein for each such port the restriction is configured so that flow past it will form a wall attached stream and a step-up protrusion intake manifold passage wall to break up any wall attached backflowing stream of exhaust backflow past said restriction so that said exhaust backflow does not penetrate deeply enough into said manifold passage to disrupt the even delivery of air, exhaust gases, and fuel to the individual cylinders of said engine.

4,577,603

DEVICE FOR CONTROLLING ENGINE RPM

Masanobu Murakami, and Masaaki Miyazaki, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 524,254, Aug. 18, 1983. This application Feb. 22, 1985, Ser. No. 704,689
Claims priority, application Japan, Aug. 18, 1982, 57-144419; Aug. 18, 1982, 57-144429
Int. Cl.[4] F02D *11/10*
U.S. Cl. 123—339 1 Claim



1. A device for controlling engine RPM, comprising:

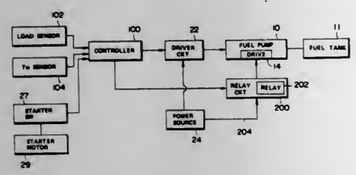
(a) means for setting a reference engine RPM;
(b) means for detecting an instantaneous engine RPM;
(c) means for computing a control signal based on the difference between the engine RPM detected by said detecting means and the reference engine RPM and for changing the engine RPM in response to the control signal;
(d) a load switch for detecting a load energization setting or a load de-energization setting of an engine load, wherein said means for setting is responsive to said load switch to increase said reference engine RPM when a load energization setting is detected and to decrease said reference engine RPM when a load de-energization setting is detected, said increase in the reference engine RPM lasting for the duration said load is operatively connected to the engine;
(e) a load compensator for adding a predetermined load compensation signal, dependent on the load setting detected by said load switch, to said control signal; and
(f) load drive means responsive to said load switch detection and said instantaneous RPM for actuating or de-actuating said load in accordance with the status of said load switch, said drive means being operative to actuate or de-actuate said load when said instantaneous RPM is near the reference RPM set by said setting means upon switching of said load switch.

4,577,604

CONTROL SYSTEM FOR FUEL PUMP FOR INTERNAL COMBUSTION ENGINE

Yoichi Hara, Hiratsuka, and Yasuo Seimiya, Kanagawa, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Sep. 28, 1984, Ser. No. 655,554
Int. Cl.⁴ F02M *19/00*
U.S. Cl. 123—397 **14 Claims**



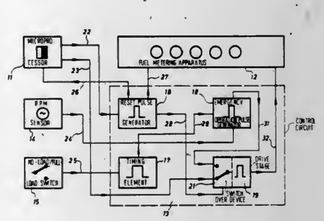
1. A control system for a fuel pump in a fuel supply system for an internal combustion engine comprising:
a fuel pump driver associated with said fuel pump to drive the latter at a controlled speed;
a sensor for monitoring a preselected engine operating parameter and producing a sensor signal indicative of the engine operating parameter;
a controller responsive to said sensor signal for deriving a desired fuel pump speed value on the basis of the value of said sensor signal and operating said fuel pump driver to drive said fuel pump in accordance with said desired speed in one of a predetermined speed range defined by a first maximum speed and a second minimum speed, and a predetermined ultimate speed in excess of said first speed and said controller being responsive to the sensor signal representative of a desired fuel pump speed in excess of said first maximum speed to operate said fuel pump driver to drive said fuel pump at said ultimate speed.

4,577,605

ARRANGEMENT FOR CONTROLLING A FUEL METERING APPARATUS AND HAVING AN EMERGENCY COTROL SYSTEM

Herbert Arnold, Eberdingen; Michael Horbelt, Schwieberdingen; Berthold Seibel, Kornwestheim; Hans-Peter Ströbele, Stuttgart, and Peter Werner, Wiernsheim, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 21, 1984, Ser. No. 673,869
Claims priority, application Fed. Rep. of Germany, Nov. 24, 1983, 3342379
Int. Cl.⁴ F02M *51/00*
U.S. Cl. 123—479 **12 Claims**



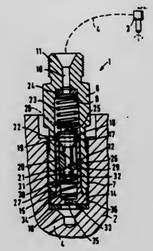
1. An arrangement for controlling a fuel metering apparatus of an internal combustion engine such as for a motor vehicle, the arrangement comprising:
a microprocessor for generating control pulses corresponding to a program for controlling said fuel metering apparatus, said microprocessor including monitor means for transmitting check pulses indicative of a normal operation of said microprocessor;
a driver stage having an input connected to said microprocessor for receiving said control pulses and having an output for transmitting said control pulses on to said fuel metering apparatus;
a reset pulse generator for receiving said control pulses and for supplying, in the absence of said control pulses, a restart pulse to said microprocessor to restart said program;
an emergency control system for controlling the operation of said fuel metering apparatus in the event of a malfunction of said microprocessor, the emergency control system including: circuit means for recognizing the absence of said control pulses and for generating a switching pulse in response to said absence; an emergency operation pulse generator for generating pulses to control said fuel metering apparatus; and, switching means actuable in response to said switching pulse for separating said input of said driver stage from said microprocessor and connecting the same to the output of said emergency operation pulse generator;
timing means for generating pulses for determining the duration of said pulses generated by said emergency operation pulse generator; and,
a no-load switch/full-load switch operatively connected to said timing means;
said timing means including means for adjusting the duration of said pulses generated thereby in dependence upon the position of said no-load/full-load switch.

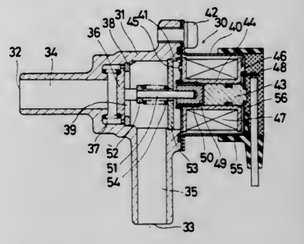
4,577,606

PRESSURE VALVE ASSEMBLY FOR FUEL INJECTION PUMPS

Wilfried Böhringer, Flein; Franz Eheim, deceased, late of Stuttgart (by Helga Eheim, legal representative); Wolfgang Fehlmann; Helmut Laufer, both of Stuttgart, and Karl Zibold, Asperg, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 13, 1984, Ser. No. 671,432
Claims priority, application Fed. Rep. of Germany, Nov. 17, 1983, 3341575
Int. Cl.⁴ F02M *39/00*
U.S. Cl. 123—506 **15 Claims**





1. A pressure valve, which is inserted in a fuel delivery conduit between a pump working chamber of a fuel injection pump and an injection valve of an internal-combustion engine, and comprising a connection element (6) having an axial recess (8) at a pump-side thereof and a connection channel (10) extended from said recess and connectable to the fuel delivery conduit; a valve member (12) provided with a valve seat (17) and having a periphery and formed with a flange (14) at said periphery, said connection element having at the pump side an end face (15), said pump having a housing receiving the pressure valve and being formed with a shoulder (16), said flange being clamped between said end face (15) and said shoulder (16), said valve member having a through passage (21); a locking member (19) cooperating with said valve seat; a compression spring (23) positioned in said axial recess at a side thereof facing said channel, said locking member being inserted between said valve seat and said compression spring and including an axial passage (26); a back-pressure relief valve (30, 60) including a closing member (31) for closing said axial passage (26) and a compression spring (34) which is fixedly supported at least immediately on said valve member, said axial passage being connected with said axial recess; throttle means (28) connecting said axial passage with said axial recess at the side thereof facing said connection channel, said valve member having an axial bore (44) forming said through passage; and a sleeve pressed in said axial bore and forming a support for the compression spring of the back-pressure relief passage.

4,577,607

CONTROL VALVE DEVICE

Shigeru Nishio, Kariya, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed May 15, 1984, Ser. No. 610,432
Claims priority, application Japan, May 20, 1983, 58-087578; Sep. 12, 1983, 58-168544; Sep. 26, 1983, 58-177679; Sep. 28, 1983, 58-181438
Int. Cl.⁴ F02M *33/02, 5/08*
U.S. Cl. 123—516 **7 Claims**

1. A control valve device for an internal combustion engine having a carburetor outer vent control system, a carburetor float chamber and a canister, said device controlling fluid communication in a fluid passage in response to an input current signal from a switch device and changes in ambient temperature, comprising:
a body member having an inlet port and an outlet port;
a fluid passage formed in said body member and connecting said inlet port and said outlet port;
a valve member disposed in said fluid passage and controlling fluid communication in said fluid passage;
a first spring biasing said valve member in a direction closing said fluid passage;
a solenoid coil connected to said body member forming a magnetic circuit by receiving an input current;
a plunger member positioned in said magnetic circuit and attracted by an inner core upon energization of said solenoid coil;
a shaft fixed to said plunger member at one end and facing said valve member at the opposite end;

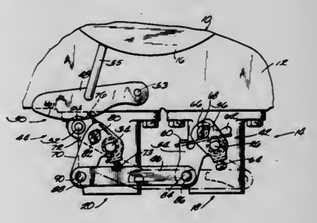
a second spring biasing said valve member in a direction opening said fluid passage, wherein said second spring is coil-shaped, is made of a shape memory alloy and is expandable to a memorized shape at a high temperature; and
a retainer member made of a heat insulating material interposed between said solenoid coil and said second spring so as to thermally insulate said second spring from said solenoid coil wherein said inlet port is connected to said carburetor float chamber and said outlet port is connected with said canister of said internal combustion engine and wherein said device is installed in said carburetor float chamber.

4,577,608

CARBURETION SYSTEM INCLUDING AN ADJUSTABLE THROTTLE LINKAGE

Chester G. DuBois, Zion, and John D. Flaig, Libertyville, both of Ill., assignors to Outboard Marine Corporation, Waukega, Ill.

Filed Jul. 27, 1984, Ser. No. 635,240
Int. Cl.⁴ F02B *13/00*
U.S. Cl. 123—583 **9 Claims**



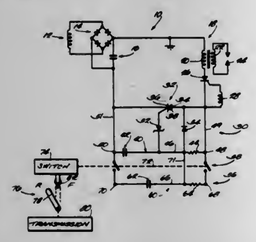
1. A throttle linkage assembly comprising a throttle shaft rotatable about a throttle shaft axis between an idle position and a wide open throttle position, a throttle plate fixed on said throttle shaft, a driven lever pivotable about said throttle shaft axis between various angles relative to said throttle plate, and means for fixing said driven lever at a selected angle relative to said throttle plate an adjustment lever fixedly connected to said

throttle adjacent said driven lever, and means for releasably securing said driven lever to said adjustment lever.

4,577,609
CD IGNITION SYSTEM WITH SPARK RETARD IN NEUTRAL

James A. Donohue, Pewaukee, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Dec. 7, 1984, Ser. No. 679,576
Int. Cl.⁴ F02P *3/00*
U.S. Cl. 123—602 **25 Claims**

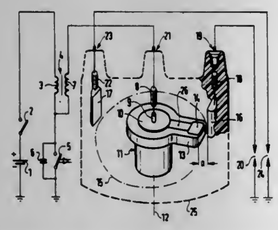


1. A capacitor discharge ignition circuit adapted for use with an internal combustion engine, said circuit comprising a charge capacitor, a primary ignition coil, an ignition SCR, first spark retard circuit means in series with said charge capacitor, said ignition SCR, and said primary coil and operative for selectively preventing discharge of said capacitor through said primary coil for a first predetermined period of time after said ignition SCR is rendered conductive, thereby providing for automatic spark retard at higher engine rpm, second spark retard circuit means connectable to said first spark retard circuit means for further preventing discharge of said capacitor through said primary coil for a second predetermined period of time in addition to said first predetermined period of time after said ignition SCR is rendered conductive, and means for connecting said second spark retard circuit means to said first spark retard circuit means when said engine is in neutral.

4,577,610
IGNITION DISTRIBUTOR SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Jürgen Schmatz, Mundelsheim, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 10, 1984, Ser. No. 648,666
Claims priority, application Fed. Rep. of Germany, Dec. 29, 1983, 3347409
Int. Cl.⁴ H01H *19/00*
U.S. Cl. 123—633 **16 Claims**



1. A simplified, radio-noise-suppressing ignition distributor, for a multi-cylinder Otto-type internal combustion engine, comprising

a housing (25);
a rotor (13) of insulating material;
a unitary constructional element embedded in the rotor (13) and having portions, of the same material, defining a center terminal (10), a peripheral distributor terminal (14), and an electrically-high-conductivity connection (26) between the center terminal (10) and the peripheral distributor terminal (14);
a center connecting terminal (9) of carbon secured to the housing (25) and positioned for sliding contact under spring pressure with the center terminal (10) of the rotor (13);
a center ignition coil cable connector (21) secured to the housing (25);
peripheral spark plug cable terminal connectors (19, 23) secured substantially within the housing;
gap terminals (16, 17) peripherally positioned within the housing, and located so that the peripheral distributor terminal (14) of the rotor (13), upon rotation thereof, sweeps past said gap terminals (16, 17);
a noise suppression resistor (8) connected between said center connecting terminal (9) and said ignition coil cable connector (21);
and at least one radio noise suppression resistor (18, 22) electrically connected between each of the peripheral cable connectors (19, 23) and the associated terminal (16, 17);
and wherein the peripheral terminal (14) of the rotor is positioned on said rotor (13) with a spacing (a) of between 0.5 and 3 mm from each gap terminal (16, 17) when rotationally aligned respectively therewith.

4,577,611
RECIPROCATING INTERNAL-COMBUSTION ENGINE OF LOW-TEMPERATURE CATALYTIC-COMBUSTION TYPE

Shigeo Hagino, No. 953, Oizumigakuenmachi, Nerima-ku, Tokyo, Japan

Filed May 28, 1982, Ser. No. 382,944
Claims priority, application Japan, Jun. 5, 1981, 56-85679
Int. Cl.⁴ F02B *75/08*
U.S. Cl. 123—669 **6 Claims**



1. A reciprocating combustion engine powered by an air-fuel mixture and which includes a reciprocal piston and a cylinder defining a combustion chamber, said piston having a head which includes a top surface, said combustion chamber having inner walls with a piston-sliding region and areas separate from the piston-sliding region, along which areas a relatively thin low-temperature quench layer is formed juxtaposed thereto during operation of the engine, characterized by the improvement that:

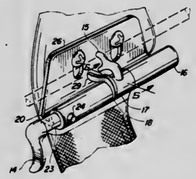
surfaces of the inner wall of said chamber at the areas separate from the piston-sliding region and including at least the entire top surface of the piston head of said piston are coated with a means for promoting complete combustion of at least the quench layer using a catalyst layer comprising a catalyst carried on a carrier, said catalyst consisting of a powdered metal selected from platinum group metals, which catalyst is adapted to initiate catalytic non-flame combustion of the air fuel mixture in the quench layer formed along said areas which are at a temperature below

250° C. during an initial period of combustion of said mixture and which do not exceed 500° C. during the course operation of the engine.

4,577,612
ARROW HOLDER

John T. Zell, 2676 Clute Rd., Boyne City, Mich. 49712, assignor to John T. Zell, Boyne City and Michael R. Franchino, Petoskey, both of, Mich.

Filed Jun. 18, 1984, Ser. No. 621,368
Int. Cl.⁴ F41D *10/00*; F41B *5/00*
U.S. Cl. 124—41 A **5 Claims**



1. An arrow holder which may be attached to an archery bow which comprises:

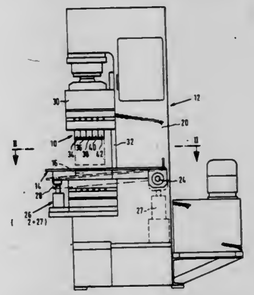
a. a rotatable arrow clamp,
b. a trigger,
c. a means for biasing the arrow clamp toward the body of the bow when the trigger is not depressed,
d. a hollow arrow clamp collar onto which the arrow clamp is mounted,
e. a follower affixed to the inner surface of the hollow arrow clamp collar,
f. a rotation lock pin,
g. a hollow trigger shaft sleeve having a rotation lock aperture, which may accommodate the insertion of said rotation lock pin, the hollow trigger shaft sleeve comprising two hollow sections separated by the axial length of the arrow clamp collar so as to facilitate coaxial alignment of the two sections and the collar, and
h. a trigger shaft onto which the trigger is mounted and which may be inserted into the hollow passage provided by the trigger shaft sleeve and the arrow clamp collar when coaxially aligned, the trigger shaft also comprising a rotation lock groove which aligns with the rotation lock pin when inserted in the rotation lock aperture, and further comprises a spiral passageway which aligns with the follower so as to cause the arrow clamp to be rotated away from the body of the bow when the trigger is depressed.

4,577,613
PAVEMENT AND MASONRY STONE CUTTER

Friedhelm Porsfeld, Spitalhofstr. 86, 8390 Passau, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 378,490, May 14, 1982, abandoned. This application Nov. 6, 1984, Ser. No. 668,869
Claims priority, application Fed. Rep. of Germany, May 18, 1981, 3119693; May 18, 1981, 3119694
Int. Cl.⁴ B28D *1/32*
U.S. Cl. 125—23 C **19 Claims**

1. A pavement and masonry stone cutter apparatus comprising an upper tool drive so as to reciprocate in a frame and cooperating with a lower tool, said upper and lower tools each comprising a plurality of individual cleaving wedges which are movable relative to one another in a cutting direction, at least one of said upper and lower tools being movable in response to a pumped fluid, improvement comprising said frame being C-shaped and including a supporting table having a slot-like opening for passage of said lower tool, said apparatus including a fluid operated piston and cylinder unit with said unit including a piston rod, said supporting table having an inner end which is pivotably mounted on said C-shaped frame and an outer end supported by means of said rod of said fluid operated piston and cylinder unit for moving said supporting table down during a cutting operation and moving said table up again to a starting position upon the completion of a cutting operation, said movement upward to said starting position of said supporting table corresponding to the return movement of said upper tool, said lower tool being positioned below the top of said supporting table when said supporting table is in said

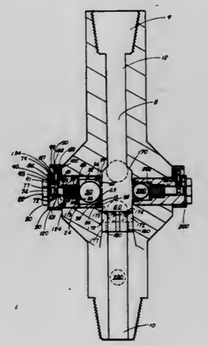


starting position, said piston and cylinder unit being associated with fluid system including a pressure limiting valve for deactivating said unit in a controlled manner during a cutting operation whereby said supporting table is tilted in a downward direction regardless of the weight of the rock to be cut, said piston and cylinder unit for said supporting table being actuatable to raise said table to its starting position after said cutting operation so that said lower tool will lie below the surface of said supporting table.

4,577,614
ADVANCED QUICK BALL RELEASE SUB

William N. Schoeffler, P.O. Box 91105, Lafayette, La. 70509

Filed May 2, 1983, Ser. No. 490,555
Int. Cl.⁴ E21B *21/08*
U.S. Cl. 125—25 **4 Claims**



1. A quick ball release blowout preventor apparatus mounted above a kelly for preventing oil and gas well blowouts occasioned by excessive downhole pressure, comprising:

(a) a sub-assembly fluidly connected on its top end to a fluid flow passageway of a kelly cock valve and on its bottom end to a fluid flow passageway of a drillstring intermediate the kelly, wherein said sub-assembly is provided with a longitudinal bore therethrough and a transverse bore

through one side thereof, said transverse bore directly communicating with said longitudinal bore at its inner end, and wherein further, said sub-assembly comprises a valve seat disposed within said longitudinal bore and a ball securing means positioned downstream of said valve seat in the longitudinal bore;

(b) a ball valve release mechanism mounted substantially within the transverse bore, comprising a head portion and a stud portion extending inwardly into the transverse bore from said head portion, wherein said stud portion comprises:

i. an internal chamber having an inner end disposed in direct communication with said longitudinal bore of said sub-assembly;

ii. a ball mounted within said internal chamber;

iii. a ball retainer means;

iv. a plunger means mounted within said chamber and engaging the ball on the opposite side from said ball retainer means;

v. an actuator means disposed in functional relationship to said plunger mechanism actuatable by external means to selectively actuate said plunger means between an operating and non-operating mode, said actuator means comprising an actuator pin having a head portion and a downwardly extending shank portion, a collar circumferentially mounted onto the stud portion of the ball valve release mechanism adjacent the head portion thereof; and

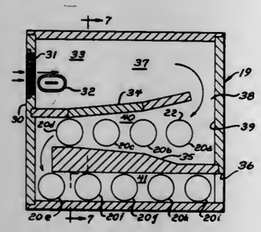
vi a means for transmitting rotational force to the actuator collar, said means for transmitting rotational force comprising a cable attached to said actuator collar and extending downwardly therefrom to enable personnel situated on an oilrig floor to exert a downward pull thereto, to thereby impart rotational force to said collar and actuate the plunger.

4,577,615

HEAT PIPE CENTRAL FURNACE

Ronald S. Tomlinson, Antioch Township, Davidson County, Tenn., assignor to Heil-Quaker Corporation, Lewisburg, Tenn.

Filed Dec. 24, 1984, Ser. No. 685,711
Int. Cl.[4] F24H *3/00*
U.S. Cl. 126—99 A **24 Claims**



1. In a furnace having input heat source means, means defining a heat exchange chamber having heat input and heat output portions, said heat input exchange portion including an input heat transfer chamber, and means for conducting a fluid to be heated through said heat exchange output portion of the heat exchange chamber for transfer of heat to said fluid, the improvement comprising:

a plurality of heat pipes each having an evaporator portion, a condenser portion, and a condensable heat transfer fluid therein, at least a given number of said evaporator portions being arrranged to serially receive heat from said input heat source means in said heat transfer chamber; and

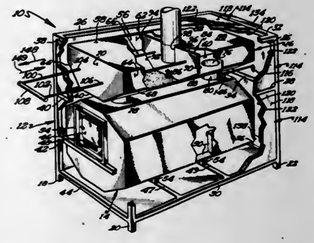
means for uniformly loading said given number of said serially heated heat pipes in said heat input portion as an incident of transferring said heat from the input heat source means through said evaporator portions and condenser portions of said heat pipes to said fluid to be heated in said heat exchange chamber output portion.

4,577,616

WOOD BURNING FURNACE

Arnold D. Lillo, Rte. 1, Box 111, Good Thunder, Minn. 56037

Filed Dec. 10, 1984, Ser. No. 679,644
Int. Cl.[4] F24H *3/02*
U.S. Cl. 126—110 R **9 Claims**



1. An improved furnace for burning wood and which is resistant to creosote deposits from smoke comprising:

an upright frame;

a fire box carried by said frame and having a door for the insertion of the wood;

a heat exchanger carried on said fire box and having an interior chamber with a top and bottom;

means connecting said fire box and said heat exchanger and directing smoke from said fire box into said exchanger chamber;

a chimney stack fixed to and extending upwardly from said exchanger to discharge smoke, said stack also extending substantially downwardly within said exchanger chamber to receive smoke from adjacent the bottom of said chamber to thereby retain hot smoke adjacent the top of said exchanger for an increased time interval to allow additional heat transfer from the smoke to said exchanger;

an insulative housing carried on said frame to define an air plenum within said housing and about said fire box and exchanger to permit air in said plenum to be heated by contact with said fire box and said exchanger; and

an air inlet for cold air to enter said plenum and an air outlet by which heated air may leave said plenum.

4,577,617

VESTIBULE FOR ANY STOVE

Frank Fusco, Pennsylvania-U.S.A.

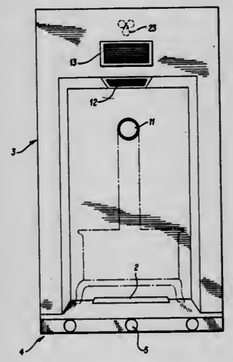
Filed Nov. 19, 1984, Ser. No. 673,033
Int. Cl.[4] F24C *15/08*
U.S. Cl. 126—279 **2 Claims**

1. A vestibule for a stove which will accommodate any stove or heater of different sizes and shapes for separating the stove or heater from the floor and wall of a room, said vestibule comprising

(a) a platform arranged to form the bottom wall of said vestibule, opposite sidewalls extending upwardly from said platform, a backwall extending between said sidewalls, and a top wall at the upper ends of said opposite side and back wall, said vestibule having an opened front,

(b) said platform including a top surface for supporting the stove or heater and also including a vertical front surface having lower air inlet openings therein, a lower air outlet opening in said top surface of the platform adjacent the backwall, lower conduit means in said platform for communicating said lower air inlet openings with said lower air outlet opening, and first electrically operated forced air circulating means positioned in said lower conduit means for drawing room air into said lower air inlet openings and forcing said air out of said lower air outlet opening whereby said air is heated by the radiation of the heat of the stove or heater through said top surface of the platform,

(c) said top wall including a bottom surface and a vertical front surface, an upper air inlet openings in said bottom surface of the top wall and an upper air outlet opening in



said front surface of the top wall, upper conduit means in said top wall for communicating said upper air inlet opening with said upper air outlet opening, and second electrically operated forced air circulating means positioned in said upper conduit means for drawing room air into said upper air inlet opening and forcing said air out of said upper air outlet opening whereby said air is heated by the radiation and convection from the heat of the stove or heater through said bottom surface of the top wall, and

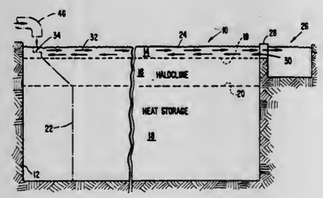
(d) said backwall having an aperture therein for accommodating a flue pipe of the stove or heater.

4,577,618

METHOD OF AND APPARATUS FOR DYNAMICALLY STABILIZING THE WIND-MIXED LAYER OF A SOLAR-WATER POND

Gad Assaf, Rehovot, Israel, assignor to Solmat Systems Ltd., Yavne, Israel

Continuation of Ser. No. 396,759, Jul. 9, 1982, Pat. No. 4,553,529. This application Aug. 6, 1984, Ser. No. 637,699
Int. Cl.[4] F24J *3/02*
U.S. Cl. 126—415 **3 Claims**



1. A method for dynamically stabilizing the convective wind-mixed layer of a salt-water solar pond, which covers a nonconvective halocline, the method comprising providing a source of brine whose salinity differs from the salinity of the water in the wind-mixed layer, and exchanging brine between the source and the wind-mixed layer for creating a two-layer flow regime in the wind-mixed layer due to differences in salinity whereby lighter less dense water flows adjacent the surface of the pond into the source, and heavier, more dense water, flows beneath the lighter water out of the source.

2. A solar pond comprising:

(a) a convective wind-mixed layer of water on the surface of the pond;

(b) a nonconvective halocline covered by the wind-mixed layer having a density that increases with depth;

(c) a heat storage layer under the halocline for storing heat created in the pond by the absorption of solar radiation; and

(d) a reservoir associated with the wind-mixed layer and containing water whose salinity is different from the average salinity of water in the wind-mixed layer, and means to exchange water between the reservoir and the wind-mixed layer for establishing a two-layer flow regime in the wind-mixed layer due to a difference in salinity between the layers whereby lighter less dense water flows adjacent the surface of the pond into the reservoir, and heavier, more dense water, flows beneath the lighter water out of the reservoir.

4,577,619

ENERGY EFFICIENT WINDOW AND SKYLIGHT ASSEMBLIES

William C. Howe, Jr., 4311 Park View Dr., Salt Lake City, Utah 84117

Filed Sep. 8, 1983, Ser. No. 531,172
Int. Cl.[4] E04D *13/18*
U.S. Cl. 126—431 **19 Claims**



1. A totally self-contained apparatus for use as a window or skylight assembly, and adapted for simultaneously controlling the amount of both sunlight and air admitted into a building, said apparatus comprising:

a head member and a sill member;

a first sheet of material through which sunlight can pass, said first sheet of material forming a major portion of the exterior surface of said apparatus and being mounted between said head and sill members;

a second sheet of material through which sunlight can pass, said second sheet of material being spaced from said first sheet of material said second sheet of material forming a major portion of the interior surface of said window apparatus and being mounted between said head and sill members;

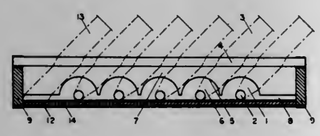
first and second window jams positioned between said first and second sheets of material and extending from said head member to said sill member so as to form an essentially enclosed air flow channel;

means, positioned in said air flow channel, for regulating the amount of sunlight passing through said apparatus; and

ventilation means for directing air through said air flow channel, and comprising a motor-driven fan mounted within said air flow channel at one end thereof so as to circulate air through said air flow channel together with a plurality of apertures disposed in said head and sill mem-

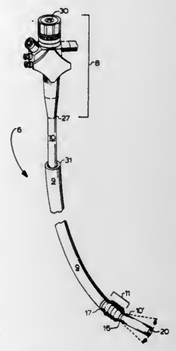
bers for placing said air flow channel in communication with the interior and exterior of said building and means for selectively opening and closing said apertures whereby air may selectively flow from one of (a) the outside to the inside of said building, (b) from the inside to the outside of said building, (c) from the inside of said building through said air flow channel and back to the inside of said building and (d) from the outside of said building through said air flow channel and back to the outside of said building.

4,577,620
HEMISPHERIC SOLAR PANEL
John E. Clegg, 2320 Keystone Dr., Orlando, Fla. 32806
Filed Feb. 25, 1985, Ser. No. 705,153
Int. Cl.[4] F24J *2/24*
U.S. Cl. 126—440 **1 Claim**



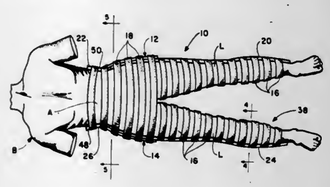
1. A hemispheric solar panel comprising;
an array of multiple hemispheric lenses (1) having concentric outer and inner spherical faces and arranged in parallel rows and integrally mounted on a planar glass base plate (8) occupying a horizontal plane below said hemispheric lenses (1),
multiple solid heat-absorbing metal spheres (2) embedded in the center of said hemispheric lenses (1),
a metal base plate (12) mounted below said glass base plate (8),
a sheet (14) of thermal insulation mounted below said metal base plate (12),
a top glass plate (4) mounted above said hemispheric lenses (1) and spatially separated therefrom,
two opposed parallel vertical side walls (9),
two opposed parallel vertical end walls,
a fluid conduit (7) having a top formed by said top glass plate (4), having a base formed by said hemispheric lenses (1) and by said glass base plate (8), having sides formed by said two opposed parallel vertical side walls (9), and having ends formed by said two opposed parallel vertical end walls,
an inlet pipe (10) opening into said fluid conduit (7) through one said parallel end wall, and
an outlet pipe (11) opening into said fluid conduit (7) through the opposite said parallel end wall;
said hemispheric lenses (1) serving as mounting means of said metal spheres (2), serving as means of focusing solar beams (6) onto said metal spheres (2), serving as means of absorbing heat from said metal spheres (2) and conducting the heat to a fluid flowing through said fluid conduit (7), and serving as a basal portion of said fluid conduit (7),
said glass base plate (8) serving as mounting means of said hemispheric lenses (1) and serving as a basal portion of said fluid conduit (7),
said metal spheres (2) serving as elements which absorb the heat of said solar beams (6) and which release the heat to said hemispheric lenses (1) and to said metal base plate (12),
said metal base plate (12) serving as an element which absorbs the heat of solar beams (13) and of said metal spheres (2) and which releases the heat to said glass base plate (8),
said top glass plate (4) serving as a window which transmits solar beams (3) to said hemispheric lenses (1) and to said glass base plate (8),
said fluid conduit (7) serving as a channel through which a heat-transfer fluid flows.

4,577,621
ENDOSCOPE HAVING NOVEL PROXIMATE AND DISTAL PORTIONS
Jayendrakumar I. Patel, 502 Rector St., Valdese, N.C. 28690
Filed Dec. 3, 1984, Ser. No. 677,558
Int. Cl.[4] A61B *1/06*
U.S. Cl. 128—4 **13 Claims**



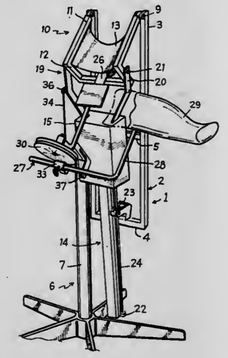
1. An endoscope comprising:
(a) a control unit;
(b) a first flexible tube member having a proximate end portion in optical communication with the control unit, a body portion and a distal end portion having a free end containing means therein to transmit light to and from said control unit so that images outside of the distal portion may be illuminated and viewed through the control unit and the proximate end portion;
(c) a second flexible tube member having a proximate and distal end portions and a body portion partially circumscribing the body portion of said first tube member; and,
(d) a first expansion and contraction means attached to the distal end portion of the second flexible tube member and to the first flexible tube member at a point other than its distal portion so that it will expand and contract along its own and the longitudinal axis of the first and second flexible tube members.

4,577,622
ANTI-SHOCK TREATMENT METHOD AND GARMENT
Thomas J. Jennings, 5011c Cheswick, Dayton, Ohio 45431
Filed Jul. 12, 1984, Ser. No. 630,159
Int. Cl.[4] A61F *13/08*; A61H *11/00*
U.S. Cl. 128—24 R **3 Claims**



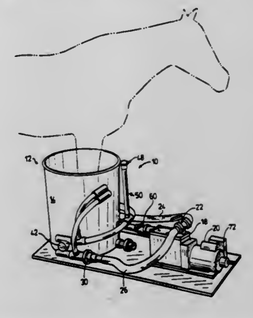
1. An improved anti-shock treatment method, consisting of the steps of:
(a) supporting a series of resilient, stretchable straps on a first set of rods positioned along the midline of the outer side of each of the legs of a shock victim;
(b) stretching each of said straps about a portion of each leg;
(c) detachably fastening each strap about said leg portion in a stretched condition which applies pressure about said leg portion;
(d) applying each strap in a stretched condition about an adjacent portion of each leg in a sequence beginning with a lowermost strap and proceeding strap by strap upwardly along said leg so as to create a milking action on blood contained within said leg which tends to return the same to the heart of said victim;
(e) supporting a series of resilient, stretchable belts on a second set of rods slidably interconnected with said first set of rods and positioned along the midline of the outer sides of the abdomen of said victim;
(f) stretching each of said belts about a portion of the abdomen;
(g) detachably fastening each belt about said abdomen portion in a stretched condition which applies pressure about said abdomen portion; and
(h) applying each belt in a stretched condition about an adjacent portion of the abdomen in a sequence beginning with a lowermost belt and proceeding belt by belt upwardly along said abdomen after application of the sequence of straps has been completed so to continue creation of the milking action on blood contained in the abdomen of the victim.

4,577,623
SPLINT MOBILIZING AN UPPER LIMB
Jean C. Pecheux, Charleville Mezieres, France, assignor to Compagnie Generale de Materiel Orthopedique, France
Filed Nov. 3, 1983, Ser. No. 549,242
Claims priority, application France, Nov. 8, 1982, 82 19102
Int. Cl.[4] A61H *1/02*; A63B *21/24*
U.S. Cl. 128—25 R **11 Claims**



1. A splint allowing mobilization of an upper limb, wherein it comprises a vertical framework supporting, in its upper part, a brachial cradle which is articulated about a horizontal geometrical axis intended substantially to coincide with the scapulo-humeral joint of the upper limb, and which is connected to the frame by a drive member capable of pivoting the cradle about said axis in abduction/adduction movements with respect to the framework, said cradle being provided with an adjustable axial extension bearing a bent bar whose part substantially parallel to the extension supports an adjustable antebrachial splint.

4,577,624
HYDROMASSAGE AND WHIRLPOOL BATH
Larry Patton, 38 Guardsman Rd., Thornhill, Ontario, Canada
Continuation-in-part of Ser. No. 416,955, Sep. 13, 1982, abandoned. This application Jun. 15, 1984, Ser. No. 621,258
Int. Cl.[3] A61N *1/100*
U.S. Cl. 128—40 **2 Claims**



1. A hydromassage and whirlpool bath for massaging the legs of four legged animals, comprising:
(a) a bath container having a center, a bottom and peripheral upstanding wall formation made from yieldable plastics material, the wall formation upstanding from the bottom and enclosing the bath container;
(b) a water suction outlet secured to the lower part of the peripheral wall;
(c) massage means consisting of four multi-directional jets secured to the bath, two proximate the bottom and two proximate the top of the wall formation the jets for directing a mixture of water and air into the bath, the two lower jets being substantially diametrically opposed on the peripheral wall formation equally spaced from the water suction outlet, the other two jets being circumferentially disposed between the two lower jets on either side of the outlet, the circumferential distances between one of the upper jets and the nearest lower jet to it, and the other upper jet and nearest lower jet to it being about equal, the upper jets forming together with the center of the bath, an angle of about 90° and the distance between one of the lower jets and the outlet and the other lower jet and the outlet being about equal, and the distance between one of the upper jets and the outlet and the other upper jet and the outlet being about equal;
(d) a pump adjacent to the bath container provided with means comprising tubing to pump water through the jets in the bath;
(e) an air injector means secured to the tubing carrying water to the bath for injecting air into the water;
(f) further tubing connecting the suction outlet to the pump and
(g) a motor secured to the pump for operating the pump.

4,577,625
ROTATING BALL MASSAGER
Aladar Lohati, and Gizella Lohati, both of 1310 Morningside Way, Venice, Calif. 90291
PCT No. PCT/US82/01621, § 371 Date Mar. 6, 1984, § 102(e) Date Mar. 6, 1984, PCT Pub. No. WO84/02410, PCT Pub. Date Jun. 21, 1984
PCT Filed Nov. 15, 1982, Ser. No. 600,555
Int. Cl.[4] A61H *15/00*
U.S. Cl. 128—57 **7 Claims**

1. An improved rotating ball massager comprising:
(a) a flexible hand enclosure
(b) a side strip of flexible material wrapped and attached

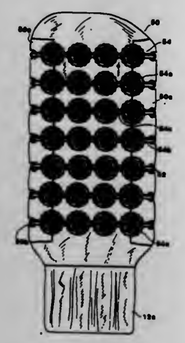
around the side edges of said hand enclosure with said strip having a plurality of slots cut perpendicular to the length of the enclosure where the slots provide an opening into the side surface of said hand enclosure,

(c) means for attaching said side strip to the side of said flexible hand enclosure,

(d) a cross-joint comprised of a horizontal rod and a vertical tube having an upper and lower opening where the vertical tube is centrally attached at 90-degrees to the side of the horizontal rod, and where the horizontal rod is slipped into the slot and held within the side strip by the pressure of the side strip against the side edges of said hand enclosure, and where the upper and lower openings of said cross-joint extend slightly above and below said side strip,

(e) means for attaching the vertical tube to the side of the horizontal rod on said cross-joint,

(f) a rotating circular bead assembly comprising:



(1) a plurality of circular knurled beads each having a central bore therethrough,

(2) a bead retaining rod having a horizontal center section with a contiguous downwardly angled vertical section on each end, with said rod having a diameter that allows the knurled beads to be easily inserted and rotated about the horizontal center section and where the length and diameter of the vertical section is sized to fit into and be captively held within the upper and lower openings of the vertical tube on said cross joint, and where the length of the vertical section is also selected to allow the beads to easily rotate against the surface of said enclosure, and

(g) means for captively holding the vertical sections of the bead retaining rod within the respective vertical tube openings on said cross-joint.

4,577,626

MASSAGER

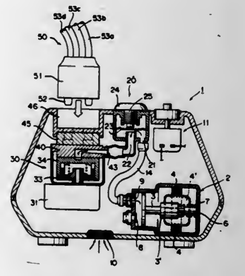
Toshio Marukawa; Haruki Nakao, and Toshio Mikiya, all of Tokyo, Japan, assignors to Nikki Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 233,079, Feb. 9, 1981, abandoned. This application Oct. 9, 1984, Ser. No. 658,465
Int. Cl.⁴ A61H *7/00*
U.S. Cl. 128—64 **6 Claims**

1. A massager comprising:

an electromagnetic linear compressor for producing compressed air and which has a compression chamber with an intake port and a discharge port, a piston slidably mounted within said compression chamber and movable in a direction into and a direction out of said compression chamber for compressing air therein and further having an armature thereon which is capable of being attracted by a magnetic force, a coil spring engaged with said piston for urging said piston in a direction into said compression chamber, and an electromagnet means adjacent the path of movement of said piston for generating a magnetic force when current is applied thereto and positioned for applying a magnetic force to said armature for moving said piston out of said compression chamber against the force of said coil spring;

distributing means having a stationary member having a central air admission passage opening out of one end thereof and connected with the discharge port of said compressor, and having a compressed air inlet passage opening into said air admission passage and a plurality of exhaust ports extending through said stationary member from said one end to the other and spaced along a circle around the central air admission passage; a rotary member having one end engaged against said one end of said stationary member and rotatable relative thereto about an axis of rotation concentric with said circle and having a connecting recess in said one end with one end on the axis of rotation and aligned with said central air admission passage and the other end on said circle for successively communicating said central air admission passage and said



exhaust ports as said rotary member rotates, and at least one throttle hole substantially smaller in diameter than said exhaust ports extending through said rotary member from said one end to the other and lying on said circle and behind, relative to the direction of rotation of said rotary member, said connecting recess; a motor having a drive shaft; a rotary disk mounted on said drive shaft and in driving engagement with said rotary member; and a spring between said rotary disk and said rotary member urging said rotary member into engagement with said stationary member;

at least one bag means shaped for being wound directly around a part to be massaged, said bag means having a plurality of air tight sections which are expanded by the force of compressed air; and

air delivering means connected between said exhaust ports of said distributing means and said bag means for delivering compressed air from the respective exhaust ports of said distributing means and the corresponding sections of said bag means, said air delivering means having no safety valve means.

4,577,627

ANTERIOR TRACTION MYOTATIC CHIN STRAP FOR THE TREATMENT OF MANDIBULAR RETROGNATHISM

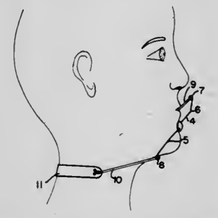
Antonio Facal Garcia, Gran Via, 50-1° , Vigo, Spain

Filed Dec. 22, 1983, Ser. No. 564,551
Claims priority, application Spain, Apr. 18, 1983, 521.582
Int. Cl.⁴ A61F *5/08*
U.S. Cl. 128—76 R **4 Claims**

1. An anterior traction myotatic appliance for the treatment of mandibular retrognathism or Skeletal Class II malocclusion, said appliance comprising:

a generally flat member anatomically configured to fit in the labiomenton groove of a patient;

a band to be applied around the back of the neck of the patient and connected to said member by means for causing, in cooperation with said band, said member to impart to the lower mandible of the patient a rearward and downward force, thereby causing excitation of the myotatic reflex action mandible advance wherein the muscles of the lower mandible stretch against said force and promote forward mandible growth; and



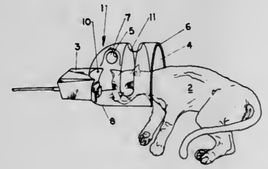
further means, extending from said member in a direction substantially opposite that of said first mentioned means and adapted to be connected to a conventional orthodontic appliance adapted to be inserted in the mouth of the patient, for imparting to the teeth of the patient a forward and upward force, thereby positioning the teeth favorably with respect to the position of the mandible at the end of treatment after said forward mandible growth.

4,577,628

OXYGEN DOME FOR SMALL ANIMALS

Horst R. Hickmann, 1455 Montegor, Cincinnati, Ohio 45230

Filed Feb. 25, 1985, Ser. No. 704,740
Int. Cl.⁴ A61M *16/00*
U.S. Cl. 128—205.26 **14 Claims**



1. A dome to be used in inhalation therapy for small animals comprising:

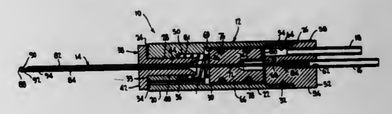
a dome having a first closed end portion and an opposite open end portion, said closed end portion being spherically shaped, said open end portion being semi-cylindrically shaped, said dome having at least one orifice for introducing one or more gases into the interior of the dome and a semicircular arcuate rib projecting into the interior of the dome, said at least one orifice being located between said rib and said closed end whereby said rib serves as a curtain to aid in maintaining any gas introduced into the interior of the dome through said at least one orifice, said open end portion terminating in a semicircular opening of sufficient size to permit the introduction of a small animal into the interior of said dome, said semicircular rib being spaced in close proximity to said semicircular opening.

4,577,629

SURGICAL CUTTING INSTRUMENT FOR OPHTHALMIC SURGERY

Miguel Martinez, Irvine, Calif., assignor to CooperVision, Inc., Irvine, Calif.

Filed Oct. 28, 1983, Ser. No. 546,418
Int. Cl.⁴ A61B *17/32*
U.S. Cl. 128—305 **10 Claims**



1. A surgical cutting instrument useful in ophthalmic surgery comprising

a cylindrical, hollow body having a front end, a rear end and a centrally disposed chamber therein;

a front plug received in said front end of said body and having an axial bore therethrough;

a piston disposed in said chamber to be movable in a reciprocating manner toward and away from said front end, said piston carrying sealing means therearound and having a front end, a rear end and an axial bore therethrough with a widened portion adjacent said rear end of said piston;

spring means disposed in said body engaging said front end of said piston to bias said piston away from said front end of said body;

probe means including an elongate tubular outer member having a proximal end secured in said axial bore in said front plug, a closed distal end, and a port adjacent said distal end, and an elongate tubular inner member slidably disposed in said outer member and having a portion fixed in said axial bore in said piston and a distal end movable across said port to provide a cutting action;

a rear plug received in said rear end of said body and having an axial bore therethrough aligned with said probe inner member to permit passage of cut material through said surgical cutting instrument and a second bore therethrough communicating with said chamber for receiving pressure to move said piston and said probe inner member against the bias of said spring means; and

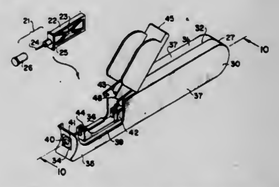
evacuating tube means communicating with said probe inner member and adapted to be connected with a source of suction to draw cut material through said probe inner member.

4,577,630

REUSABLE BREACH LOADING TARGET PRESSURE ACTIVATED LANCET FIRING DEVICE

Raymond P. Nitzsche, Edison, and Kenneth E. Geiger, Hackensack, both of N.J., assignors to Becton, Dickinson and Co., Paramus, N.J.

Filed Feb. 14, 1984, Ser. No. 580,056
Int. Cl.⁴ A61B *17/34*
U.S. Cl. 128—314 **22 Claims**



1. A reusable breach loading target pressure activated lancet firing device for use with a lancet including a handle portion

and a lancet point extending outwardly from a distal end of the handle portion comprising:

a hollow housing including a distal end, a proximal end and a side wall therebetween, said housing having an aperture in said distal end and a side aperture defining a breach in said side wall;

a trigger member movably engaged in said housing having a distal end extending outwardly from said distal aperture;

a sled slidably engaged within said housing adjacent to said trigger member including lancet engagement means for releasably engaging the lancet handle portion in order to permit the lancet point to extend outwardly from a distal end of said sled when the lancet is engaged therein, said sled capable of sliding to a first rest position with said lancet engagement means being accessible from said side aperture, the lancet point being maintained internally of said distal aperture when the lancet handle portion is engaged in said lancet engagement means and said sled is in said first position;

a side hood substantially covering said side aperture, said hood being movably engaged to said housing so that said hood may be opened to expose said lancet engagement means;

spring means positioned in said housing for biasing the distal end of said sled toward the distal end of said housing;

sear means for holding said sled in a second position in a direction toward said proximal end of said housing so that said spring means is partially deflected and cooperating means on said side hood and said sled for facilitating the movement of said sled toward said proximal end of said housing, deflecting said spring means and engaging said sear means; and

trigger means for releasing said sear means and allowing said sled to slide toward said distal aperture to a third position, said sled being closer to said distal end of said housing in said third position than in said first position, the lancet point, when the lancet handle portion is engaged in said lancet engagement means, being positioned outwardly from said distal aperture when said sled is in said third position, the activation of said trigger means being responsive to contact pressure between the patient's skin in an area adjacent to the site of the intended skin puncture and said trigger member.

4,577,631

ANEURYSM REPAIR APPARATUS AND METHOD

Jeffry W. Kreamer, 5615 Forest Ave., Des Moines, Iowa 50311

Filed Nov. 16, 1984, Ser. No. 671,994

Int. Cl.⁴ A61B *17/12*

U.S. Cl. 128—334 R **11 Claims**

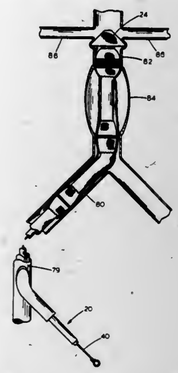
1. A method for repairing inside the body a damaged section of a blood vessel, comprising the steps of:

a. making an incision into a vessel distal of and communicating with the damaged section of the blood vessel;

b. blocking the flow of blood through the vessel and the damaged section by inserting an occlusion catheter into the vessel through the incision and opening the catheter upstream of the damaged section of the vessel;

c. feeding into the vessel a prosthetic graft affixed temporarily to a second catheter, which graft extends longitudinally beyond the damaged section to healthy portions of the vessel; and

d. adhering the graft to healthy sections of the vessel on either side of the damaged section by an adhesive on the



outer periphery of the graft which is contacted to the vessel by the second catheter.

4,577,632

ARTICLE FOR INFANTS, FORMING PACIFIER AND TEETHING RING SIMULTANEOUSLY

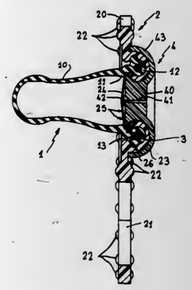
Joseph Grasset, Ecole Publique de Saint-Vidal, FR 43320 Loudes, France

Filed Feb. 6, 1984, Ser. No. 577,649

Claims priority, application France, Feb. 10, 1983, 83 02444

Int. Cl.⁴ A61J *17/00*

U.S. Cl. 128—360 **5 Claims**



1. A pacifier article for infants, comprising:

an annular flange part having an opening therethrough;

a hollow elastic teat body closed at one end and having an opening through its other end, the teat body entering the opening in the flange part and having its opening registering therewith;

a stopper having an axial channel therethrough, the stopper passing through the flange part and entering the teat body through its opening, with the channel in communication with the hollow teat body;

means for retaining the teat body and the flange part and the stopper mutually assembled; and

one-way valve means cooperatively associated with the channel through the stopper and operative to resist the passage of air outwardly from the hollow teat body through the channel but to freely admit air from the channel into the hollow teat body.

4,577,633

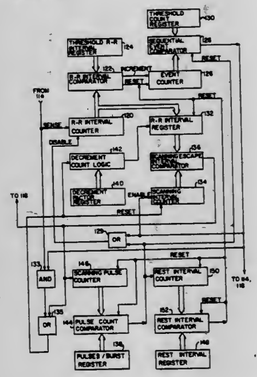
RATE SCANNING DEMAND PACEMAKER AND METHOD FOR TREATMENT OF TACHYCARDIA

Barouh V. Berkovits, Newton Highlands, Mass.; Menashe B. Waxman, Toronto, Canada, and William J. Combs, Shoreview, Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Mar. 28, 1984, Ser. No. 594,606

Int. Cl.⁴ A61N *1/36*

U.S. Cl. 128—419 PG **29 Claims**



1. The method of controlling a tachycardia condition comprising the steps of:

(a) sensing natural heart depolarizations and providing sense signals in response thereto;

(b) confirming a tachycardia condition;

(c) generating a burst of a plurality of spaced heart stimulating pulses which potentially allow tachycardia to be terminated;

(d) establishing escape intervals between each of said plurality of spaced heart stimulating pulses; and

(e) restarting an escape interval in the event that a sense signal is provided during an escape interval in response to a natural heart depolarization during the provision of said burst of heart stimulating pulses, whereby the provision of a stimulating pulse in the vulnerable phase of the heart cycle is avoided.

4,577,634

METHOD AND APPARATUS FOR ALLEVIATING PAROXYSMAL ATRAIL TACHYCARDIA

Lawrence J. Gessman, 1929 W. Point Ct., Cherry Hill, N.J. 08003

Division of Ser. No. 554,179, Nov. 22, 1983, Pat. No. 4,543,963. This application Jul. 2, 1985, Ser. No. 751,602

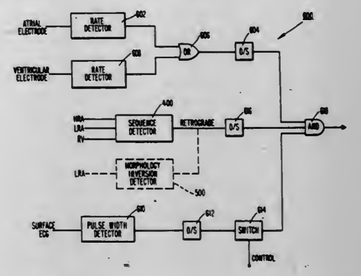
Int. Cl.⁴ A61N *1/36*

U.S. Cl. 128—419 PG **8 Claims**

1. A method for alleviating paroxysmal atrial tachycardia in a human heart, said method comprising the steps of:

a. detecting heart beat rates which exceed a predetermined level;

b. detecting the presence of retrograde P-waves; and



c. providing atrial pacing pulses in a predetermined format upon simultaneous occurrence of conditions detected in steps a and b.

4,577,635

MEDICAL INSTRUMENT

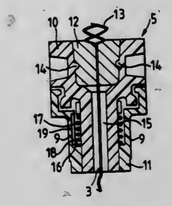
Hadyn G. Meredith, London, Great Britain, assignor to Rocket of London Limited, Watford, Great Britain

Filed Dec. 22, 1983, Ser. No. 564,164

Claims priority, application United Kingdom, Dec. 30, 1982, 8236922

Int. Cl.⁴ A61B *5/04*

U.S. Cl. 128—642 **4 Claims**



1. An electrode assembly for fetal monitoring comprising:

a rotatable elongate drive member, said drive member having a forward end and a rear end;

a rotatable handle disposed on said rear end of said drive member for rotating said drive member;

an electrode holder, said electrode holder being mounted on said forward end of said drive member, said electrode holder having inner and outer relatively rotatable molded members, said outer molded member being connected to and rotatable with said drive member;

an electrically conductive electrode mounted on said inner molded member of said electrode holder, said electrode projecting from said inner molded member of said electrode holder and being rotatable with said inner molded member of said electrode holder;

means for electrically connecting the electrically conductive electrode to a monitoring device; and

a torque limiting means for limiting the amount of torque applied to said electrode by said drive member, said torque limiting means having a resiliently deformable member, said deformable member extending within an annular passage formed between said inner molded member and said outer molded member of said electrode holder, said deformable member being in frictional engagement with said inner molded member and held

against rotation relative to said outer molded member so that relative rotation of said deformable member between said molded members causes deformation of said deformable member to limit the extent of frictional engagement and prevent over rotation of said electrode.

4,577,636

METHOD FOR DIAGNOSIS OF ATHEROSCLEROSIS

J. Richard Spears, Boston, Mass., assignor to The Beth Israel Hospital Association, Boston, Mass.

Continuation-in-part of Ser. No. 443,958, Nov. 23, 1982, Pat. No. 4,512,762. This application Jan. 27, 1984, Ser. No. 574,682
Int. Cl.[4] A61B 6/00, 5/02
U.S. Cl. 128—654 10 Claims

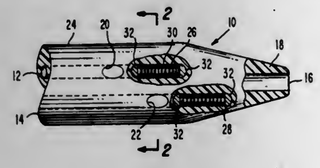
1. A method for diagnosing atherosclerosis, said method comprising:
injecting a porphyrin solution into the blood vessels to be examined;
detecting the quantity of porphyrins absorbed by tissues in the blood vessels; and
contrasting the quantity of porphyrins in different areas of the blood vessels to determine location, size, and quantity of athermatous plaques.

4,577,637

FLEXIBLE METAL RADIOPAQUE INDICATOR AND PLUGS FOR CATHETERS

Richard L. Mueller, Jr., Athens, Tex., assignor to Argon Medical Corp., Athens, Tex.

Filed Jul. 13, 1984, Ser. No. 630,570
Int. Cl.[4] A61M 25/00
U.S. Cl. 128—658 5 Claims



1. An improved multi-lumen catheter of the type comprising at least two lumens which extend from a proximal end to a distal end thereof of the type requiring at least one plugging device to terminate at least one of said lumens, wherein the improvement comprises:
at least one radiopaque lumen plug comprised of a coiled metal spring having rounded end caps attached to either end of said coiled spring, said rounded end caps having an outside diameter substantially equal to the inside diameter of the lumen in which said plug is inserted, whereby said lumen will be blocked by said plug and said plug will act as a radiopaque indicator.

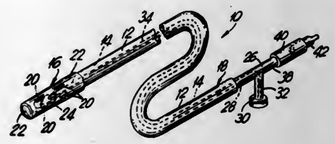
4,577,638

ESOPHAGEAL STETHOSCOPE

John R. Graham, White Plains, N.Y., assignor to Biomedical Concepts, Inc., Elmsford, N.Y.

Division of Ser. No. 267,046, May 26, 1981, Pat. No. 4,484,583. This application Jun. 28, 1984, Ser. No. 625,811
Int. Cl.[4] A61B 5/02
U.S. Cl. 128—671 2 Claims

1. An esophageal stethoscope comprising a flexible plastic tube of a particular length and having a first bore extending over said length, said tube having a distal end for insertion in the esophagus of a patient and a proximal end opposite said distal end wherein said first bore audibly conducts breath and heart sounds produced in the vicinity of said distal end through said tube for monitoring at said proximal end, an audio transducer element mounted at said distal end of said tube for detecting the breath and heart sounds and providing output signals representative of the breath and heart sounds as produced only in the vicinity of said distal end, said audio transducer element being arranged in said tube so that said output signals are substantially unaffected by vibrations produced over the length of said tube outside the vicinity of said distal end, terminal means at the proximal end of said tube for providing said output signals for further processing, connecting means arranged in said tube and coupled to said audio transducer element for connecting said audio transducer element to



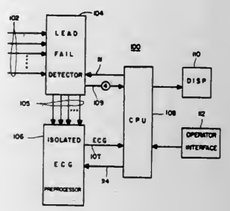
said terminal means, and fitting means communicating with said first bore of said tube at said proximal end for enabling the heart and breath sounds audibly conducted by said first bore to be monitored by a stethoscope earpiece and wherein said audio transducer element includes a thin membrane which vibrates in response to sound pressure corresponding to the breath and heart sounds and a light emitting diode means for providing a light beam to be modulated by said membrane, and said connecting means includes an optic fiber means extending over the length of said tube for conducting the modulated light beam from the distal end of said tube to said terminal means at the proximal end of said tube.

4,577,639

APPARATUS AND METHOD FOR AUTOMATIC LEAD SELECTION IN ELECTROCARDIOGRAPHY

Mark I. Simon, Chatsworth; Christopher G. Cotter, Van Nays, and Carolyn Stein-Gelinas, Agoura, all of Calif., assignors to Spacelabs, Inc., Chatsworth, Calif.

Filed Nov. 8, 1984, Ser. No. 669,290
Int. Cl.[4] A61B 5/04
U.S. Cl. 128—709 8 Claims



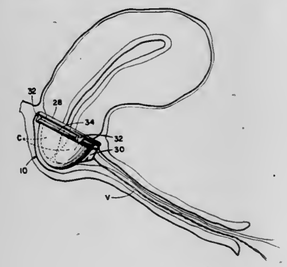
1. An ECG monitor comprising:
a plurality of ECG leads and associated electrodes for coupling said leads to a patient;
an ECG signal preprocessor coupled to said leads for combining the signals of said leads in accordance with selected ECG lead configurations chosen from a plurality of possible lead configurations to generate a combined ECG signal, said ECG signal preprocessor further comprising switching means for switching to said selected configurations of ECG leads in response to command signals;
means coupled to said ECG leads for identifying lead failures continuously during monitoring of said ECG signal; and
processor means for generating said command signals and coupled to said switching means for automatically switching said leads to change said ECG lead configuration in response to the output of said identifying means.

4,577,640

METHOD AND APPARATUS FOR DIRECT IN VIVO MONITORING OF UTERINE ELECTRICAL ACTIVITY

John F. Hofmeister, 3860 E. Easter Pl., Littleton, Colo. 80122

Filed Mar. 20, 1984, Ser. No. 591,530
Int. Cl.[4] A61B 5/05
U.S. Cl. 128—738 15 Claims



1. For use in a system for charting the uterine electrical activity in the human female, an improved pick-up which comprises: a cervical cup made of an insulating material shaped and sized to closely fit the cervix upon insertion into the vagina, at least three low profile metal electrodes having broad smooth-surfaced heads exposed inside the cup for contacting the adjacent cervical tissue with an impedence between each electrode and the tissue of the cervix of less than about ten thousand ohms, said electrodes being arranged in a non-linear pattern effective to provide at least two unaligned current paths defined by selected pairs of electrodes for detecting and monitoring any electrical activity between said selected pairs of electrodes and producing a signal corresponding to such electrical activity, means connected to each of said electrodes for separately conducting said signals outside the body, and means connected to said electrodes for recording each of said signals separately from other signals.

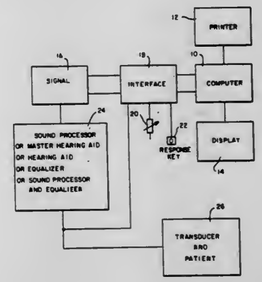
4,577,641

METHOD OF FITTING HEARING PROSTHESIS TO A PATIENT HAVING IMPAIRED HEARING

Ingeborg J. Hochmair, and Erwin S. Hochmair, both of A-1130 Wien Jaunerstrafse 27, Vienna, Austria

Filed Jun. 29, 1983, Ser. No. 509,239
Int. Cl.[4] A61N 1/36; H04R 25/00
U.S. Cl. 128—746 16 Claims

1. A method of fitting a hearing prosthesis to a hearing impaired user comprising the steps of
connecting said hearing prosthesis to the user,
applying a signal to said hearing prosthesis,
sweeping said signal in discrete frequency steps,
visually displaying said signal as transmitted by said hearing prosthesis for user observation as the frequency thereof is varied,
determining user response to said signal at each of said discrete frequency steps as the user observes the visual display, and



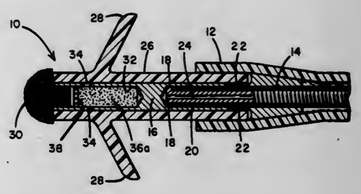
adjusting frequency response of said hearing prosthesis so that the user detects a desired response to said signal at each frequency step.

4,577,642

DRUG DISPENSING BODY IMPLANTABLE LEAD EMPLOYING MOLECULAR SIEVES AND METHODS OF FABRICATION

Kenneth B. Stokes, Minneapolis, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Feb. 27, 1985, Ser. No. 706,215
Int. Cl.[4] A61N 1/04
U.S. Cl. 128—784 9 Claims



1. A body implantable electrode lead, comprising:
an elongated insulative lead body having a proximal end and a distal end;
an electrical conductor mounted within said lead body, having a proximal end and a distal end;
an electrical connector mounted to the proximal end of said lead body and electrically coupled to said electrical conductor;
electrode means for contacting body tissue along an exterior surface of said electrode, said electrode mounted to said lead body and electrically coupled to the proximal end of said electrical conductor, said electrode having a cavity therein open to said exterior surface; and
dehydrated molecular sieve material mounted within said cavity.

4,577,643

MOVABLE MULTI-CONTACT ELECTROMECHANICAL CONNECTION

William J. Beranek, Cooper City, Fla., assignor to Cordis Corporation, Miami, Fla.

Filed May 10, 1984, Ser. No. 608,785
Int. Cl.[4] A61N 1/04
U.S. Cl. 128—785 20 Claims

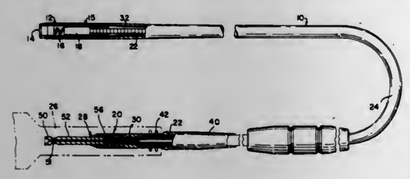
1. An improved cardiac pacer lead of the type having an

electrode at its distal end for attachment to and the transmittal of an electrical impulse to cardiac tissue, a terminal at its proximal end for insertion into a cardiac pulse generator adapted to generate an electrical impulse, and an insulating sleeve interconnecting the distal end to the proximal end containing means to transmit electrical current from said pulse generator to said electrode and means to rotate said electrode from said terminal end, the improvement comprising:

an elongated terminal pin at the proximal end of said lead having a generally cylindrical cross-section, said terminal pin extending into said insulating sleeve and engaging said electrode rotating means;

an elongated coupling having a generally cylindrical cross-section and defining an annular passage therewithin, said coupling engaging said current transmitting means at one end;

external retaining means including a collar member having an axial bore therewithin and further having a counter-



bore, both said bore and counterbore adapted to receive said terminal pin, said counterbore defining an annular cavity between said collar member and said terminal pin within said collar member, said terminal pin extending through said bore and counterbore and contained within said collar member, said terminal pin being capable of rotation within said collar member, said collar member engaging said coupling; and

a multi-contact electromechanical connection having a connector coil disposed within said collar member annular cavity, said connector coil being a mandrel-wound and tension-deformed length of springwire having a configuration wherein a plurality of individual coil turns are circumferentially offset from adjacent wound coil turns and project radially outwardly from the axis of said coil and springingly contact said collar member counterbore to create an electrical contact between said collar member and said terminal pin while allowing rotation of said terminal pin within said collar.

4,577,644

APPARATUS FOR TIP TURNING FILTER CIGARETTES OR THE LIKE

Karl-Heinz Grieben, Schwarzenbek, Fed. Rep. of Germany, assignor to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

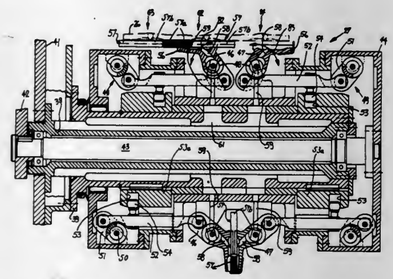
Filed Mar. 26, 1982, Ser. No. 362,409

Claims priority, application Fed. Rep. of Germany, Apr. 9, 1981, 3114331

Int. Cl.⁴ A24F *5/32*

U.S. Cl. 131—94 **16 Claims**

1. Apparatus for inverting filter cigarettes or analogous rod-shaped articles each of which has a filter at one end thereof, comprising means for transporting two parallel rows of articles sideways along a first path so that the filters of articles in one of said rows are adjacent to the filters of articles in the other of said rows; means for turning the articles of said one row through at least substantially 180 degrees about axes which are at least substantially normal to the longitudinal directions of such articles and are remote from the respective filters so that the filters of the thus inverted articles face away from the articles of said other row, said turning means comprising at least one pair of holders each having article retaining means, means for moving said holders along a second path, and means for pivoting said holders relative to said moving means between first positions in which the receiving means of one of said holders is adjacent to the articles of one row in said first path and the other holder is remote from said first path, and second positions in which the article receiving means of said holders are adjacent to each other so that the receiving means of said one holder can accept an article of said one row from



said first path in the first position of said one holder and such article can be transferred into the receiving means of said other holder in the second positions of said holders for pivotal movement with said other holder during pivoting of the latter to said first position thereof; and means for shuffling the articles of said rows to form a single third row of articles wherein the orientation of all filters is the same.

4,577,645

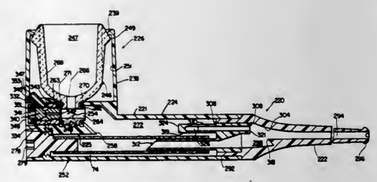
REDUCED MOISTURE SMOKER'S PIPE

Edward H. Calkins, 333 E. Main St., Gaylord, Mich. 49735

Continuation-in-part of Ser. No. 213,725, Dec. 5, 1980, Pat. No. 4,362,169. This application Dec. 16, 1981, Ser. No. 331,316

Int. Cl.⁴ A24F *5/00, 5/04, 7/02*

U.S. Cl. 131—196 **25 Claims**



1. A smoker's pipe comprising:

a hollow stem having an enlarged cooling chamber therein;

a mouthpiece having a longitudinal bore therein and mounted on the rearward end of said stem; and

a bowl assembly mounted on the forward upper portion of said stem, said bowl assembly comprising

a combustion bowl having walls which define an interior combustion chamber, the interior surface of said walls converging about a centrally located, axial bore, said bowl also having a passageway longitudinally extending completely through the bottom portion thereof below said combustion chamber and in communication with said axial bore and with said stem cooling chamber, the effective length of said longitudinal passageway being short with respect to the width of said combustion chamber and the diameter of said longitudinal passageway being smaller than the diameter of said stem cooling chamber.

4,577,646

PROCESS FOR IMPROVING THE FILLABILITY OF TOBACCO

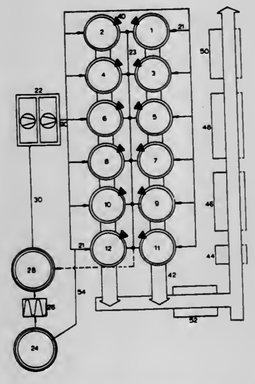
Klaus-Dieter Ziehn, Pinneberg, Fed. Rep. of Germany, assignor to H.F. & Ph.F Reemtsma GmbH & Co., Hamburg, Fed. Rep. of Germany

Filed Apr. 20, 1984, Ser. No. 602,425

Claims priority, application Fed. Rep. of Germany, Apr. 21, 1983, 3314474

Int. Cl.⁴ A24B *3/18*

U.S. Cl. 131—296 **18 Claims**



1. In a process for improving the fillability of tobacco by treatment with a treatment gas containing at least one of the following: nitrogen gas, argon gas or a mixture thereof at pressures up to 1000 bar in an autoclave, decompressing the tobacco, and subjecting the tobacco to a heat treatment, the improvement comprising:

supplying the autoclave with both tobacco and treatment gas and decompressing the treated tobacco in such manner that the decompressed tobacco supplied to the subsequent heat treatment has an inlet temperature for the heat treatment of below 0° C., said treatment gas being non-polar.

4,577,647

HAIR CURLER DEVICE

Larry A. Fenster, Roslyn, N.Y., and Fritz Hostettler, Freehold, N.J., assignors to Mercury Foam Corporation, South Hackensack, N.J.

Filed Nov. 1, 1984, Ser. No. 667,330

Int. Cl.⁴ A45D *2/02*

U.S. Cl. 132—39 **7 Claims**



1. A hair curler device having an outer skin of predetermined frictional characteristics, a resilient foam sheath of a foamed material and a bendable core element having anchoring means for binding the same to the resilient foam sheath, wherein the anchoring means consist of adhesive securement or transversely positioned elements disposed within and transversely to the longitudinal axis of said hair curler device and embedded in said hair curler foam sheath.

4,577,648

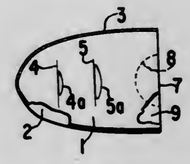
FINGERNAIL SHIELDING DEVICE

Frances Dinerstein, 100 W. 57th St., New York, N.Y. 10019, and Lia Dinerstein, 30 E. 9th St., New York, N.Y. 10003

Filed Dec. 19, 1979, Ser. No. 105,256

Int. Cl.⁴ A45D *29/00*

U.S. Cl. 132—73 **4 Claims**



1. A non-adhesive containing nail shielding device for use in applying a formaldehyde-containing liquid nail-hardening composition to human nails while protecting the cuticle and surrounding soft skin tissue from contact with said liquid composition, said shielding device consisting of an integral device having (i) a top surface comprising a forward end which is placed under the white tip of the nail, side portions which cover skin adjacent to side edges of the nail, a rear portion to cover the cuticle and skin to the rear of the cuticle, and two transverse apertures between the forward and rearward edges, the transverse aperture closer to the forward edge being smaller than the other transverse aperture, and (ii) a bottom surface which covers the bottom portion of the finger, the bottom surface and the top surface being joined on their forward and lateral edges and having a rearward opening into which the finger is inserted.

4,577,649

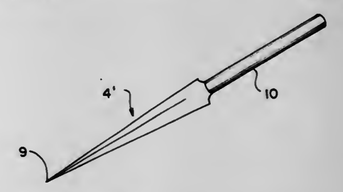
TOOTHPICK

Marat Shimenkov, 65-46 Parson Blvd., #2A, Flushing, N.Y. 11365

Filed May 1, 1980, Ser. No. 145,690

Int. Cl.⁴ A61C *15/00*

U.S. Cl. 132—93 **10 Claims**



1. A toothpick, comprising

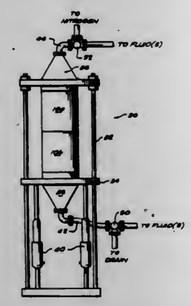
an elongated trihedral hollow body having two side walls forming two straight faces extending in direction of elongation and inclined relative to one another so as to form an acute angle therebetween, said body also having a third wall which connects said first-mentioned side walls with one another and defines a third face which is concave so as to form two lower edges which are substantially sharp, said body being elastic in direction transverse to the direction of elongation so as to be compressed during insertion of the toothpick between teeth whereby said straight side faces act upon the teeth, and said third wall being upwardly convex so as to elastically urge said side walls in the transverse direction away from one another and thereby against the teeth.

4,577,650

VESSEL AND SYSTEM FOR TREATING WAFERS WITH FLUIDS

Christopher F. McConnell, 978 S. Gulph Rd., Gulph Mills, Pa. 19406

Filed May 21, 1984, Ser. No. 612,355
Int. Cl.[4] B08B *3/04*
U.S. Cl. 134—59 34 Claims



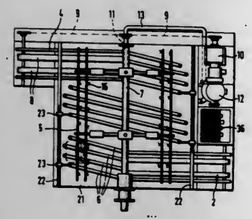
1. A vessel for treating semiconductor wafers by passing a fluid about said wafers after said vessel has been loaded and incorporated within a fluid flow line, said vessel comprising:
lateral walls adapted to enclose therebetween a plurality of wafers and defining open ends;
means integral with said walls for supporting the wafers within said walls;
first sealing means which, in operation, is integral with one of said open ends for sealingly engaging means communicating with a fluid inlet; and
second sealing means about the other open end for sealingly engaging means communicating with a fluid outlet.

4,577,651

DEVICE FOR CLEANING CONTAINERS

Robert Mürtz, Neuwiederstrasse 12, 5470 Andernach 12, Fed. Rep. of Germany

Filed Apr. 19, 1984, Ser. No. 601,800
Claims priority, application Fed. Rep. of Germany, Apr. 28, 1983, 3315413
Int. Cl.[4] B08B *3/02*
U.S. Cl. 134—111 8 Claims



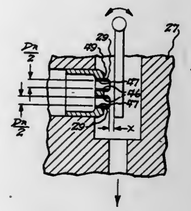
1. Apparatus for cleaning bottle-shaped containers, comprising: container intake means; helical guide means located in a path after said intake means for guiding said containers along a path of travel; at least one container carrier positioned within said helical guide means and having integrated spray nozzles for cleaning agent; and container outtake means downstream of said helical guide means, said container carrier being rotatable and extending transverse through the inside of said helical guide means, said container carrier being free of separate container receptacles; an input of said container intake means having a pneumatically controlled stop for synchronizing operations; stationary cleaning-agent spray nozzles outside of said helical guide means and aimed inward; said helical guide means comprising four parallel helical tubes with two outer helical tubes positioning side walls of the containers, said two outer helical tubes being higher than two inner helical tubes supporting bottoms of the containers.

4,577,652

NOZZLE AND IMPINGEMENT PLATE VALVE

John R. Blatner, Amherst, N.Y., assignor to Hydraulic Servo-controls Corporation, Buffalo, N.Y.

Filed Mar. 8, 1984, Ser. No. 587,607
Int. Cl.[4] G05D *16/00*
U.S. Cl. 137—82 5 Claims



1. A servovalve comprising a housing, a fluid inlet in said housing, a fluid outlet in said housing, a plurality of nozzles in communication with said fluid inlet, a flapper, an armature mounting said flapper in cantilevered fashion and in contiguous relationship to said plurality of nozzles, a gap between said plurality of nozzles and said flapper, said gap having a dimension which is quite small in relation to the diameter of each of said nozzles so that the fluid metering area is the product of the flow periphery which is the sum of the peripheries of each of said nozzles times the dimension of said gap, moving means in said servovalve for moving said armature to effect relative positioning between said plurality of nozzles and said flapper, said armature requiring an actuating force from said moving means to effect relative positioning between said flapper and said plurality of nozzles which is the product of the pressure drop across said gap times the projected area of said plurality of nozzles on said flapper, said plurality of nozzles having a smaller projected area than that of a single cylindrical nozzle of equivalent periphery, whereby said moving means which is used to cause said armature to effect relative movement between said plurality of nozzles and said flapper may produce a smaller force output than that of moving means which is used to effect relative movement between a flapper and said single cylindrical nozzle.

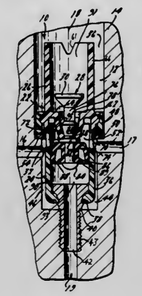
4,577,653

ANTI-SIPHON AND ANTI-KNOCK DIVERTER VALVE

Garry R. Marty, Holly, Mich., assignor to Masco Corporation, Taylor, Mich.

Filed Jun. 30, 1983, Ser. No. 509,302
Int. Cl.[4] F16K *11/02*
U.S. Cl. 137—119 12 Claims

1. A diverter valve assembly characterized by:
a housing having an inlet, a first outlet and a second outlet;
said housing comprising a first member and a second member snap-fitted to said first member;
said second member including said inlet and said second outlet;
said first member includes said first outlet;
a valve element mounted in said first section movable between a closed position and an open position with respect to said first outlet;
a piston means for moving said valve element and positioned in said second section with said piston means being responsive to pressure differential between said second outlet and said inlet for movement to a first and second position such that when a lower pressure exists at said second outlet, said piston means moves to said second position and moves said valve element to said closed position;
means for passing fluid from said inlet to said second outlet by said piston means;
said housing positionable in a body defining a valve chamber having a first body outlet, a second body outlet; and a



body inlet; said housing seated in said chamber; said valve chamber being open to said inlet or said outlets through said body and capable of being totally filled with fluid flowing from said inlet to both outlets; said second section includes an end section fixedly engageable to said second body outlet; said end section has a longitudinal aperture therethrough defining said second outlet; and
sealing means associated with said housing for sealing said body inlet from said body outlets such that fluid flowing from said body inlet, through said chamber and to said body outlets flows through said housing.

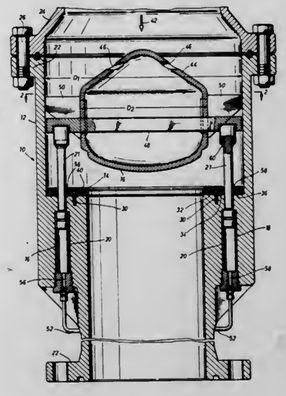
4,577,654

FLUID ACTUATED PIPELINE VALVE

Ronald E. Pringle, Houston, Tex., assignor to Camco, Incorporated, Houston, Tex.

Filed Jun. 10, 1985, Ser. No. 742,683
Int. Cl.[4] F16K *31/124*
U.S. Cl. 137—219 1 Claim

1. A pipeline valve comprising,
a vertically positioned body,
a valve seat positioned coaxially in the body in a horizontal plane,
a valve element positioned upstream of said seat and axially movable in the body for movement towards and away from the valve seat whereby the weight of the valve element acts to move the valve element towards the seat,
the cross-sectional area of the valve element being substantially less than the cross-sectional area of the body thereby reducing the restriction of flow through the body by the valve element when the valve is opened,
first and second hydraulic piston and cylinder assemblies positioned in the body and connected between the valve element and the valve body for moving the valve element away from the valve seat, said first and second assemblies being diametrically opposed to each other and parallel to the longitudinal axis of the body,
sealing valve and seat means positioned upstream of said valve seat about each piston and cylinder assembly and adapted to close and seal off said assemblies when the valve is closed,
said piston and cylinder assemblies being in communication with the exterior of the body at a location downstream of the valve seat for repairing the assemblies when the valve is closed, and



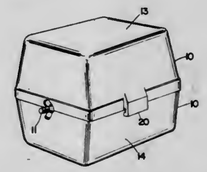
guide means between the valve element and the body for axially guiding the valve element in the body.

4,577,655

APPARATUS FOR INSULATING WATER FAUCETS

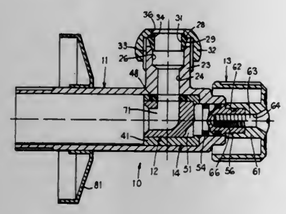
James M. Carroll, Sowell Rd., Madison, Miss. 39110

Filed Jun. 22, 1984, Ser. No. 623,500
Int. Cl.[4] F16K *51/00*
U.S. Cl. 137—375 2 Claims



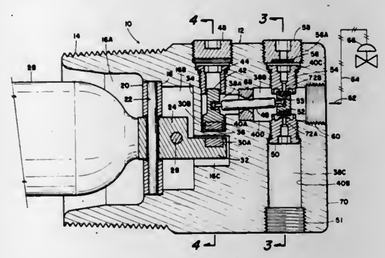
1. An apparatus for protecting faucets comprising a cover, a rigid foam insulator enclosed in said cover, a threaded hook member for holding said cover firmly to the faucet or the like, a rubber foam end seal mounted on said cover, said cover being formed of two halves with each of said halves being formed in the horizontal plane together forming an upper and lower part of said cover, said rigid foam insulator being enclosed in each of said halves of said cover, said rubber foam end seal being mounted separately on each of said halves of said cover, said cover halves each having a partial hole therein on the front of each of said cover halves so that engagement of said cover halves to each other forms said cover having a hole therein on its front through which said threaded hook member passes, said threaded hook member attaching to the faucet by passing through said cover front and said enclosed insulator being formed having a central cavity therein for insertion of said faucet into said cavity.

4,577,656
VALVE
Jose M. F. Beltran, No. 10 - 12 Doctor Fleming Street, Bonrepos (Valencia), Spain
Filed Jun. 13, 1984, Ser. No. 620,199
Int. Cl.⁴ F16L *7/00*
U.S. Cl. 137—375 **4 Claims**



1. A valve assembly, comprising:
a valve body comprising a tubular portion having an interior wall defining therein a main supply passage extending coaxially thereof, said tubular portion having an inlet opening associated with one end thereof for communication with said supply passage, and means associated with said tubular portion adjacent the other end thereof for defining an outlet opening adapted for communication with said supply passage, said outlet opening extending through the sidewall of said tubular portion in substantially transverse relationship with respect to the longitudinal axis of said supply passage;
valve means rotatably disposed within said tubular portion adajcent said other end thereof and movable between open and closed positions for controlling flow of fluid from said main supply passage to said outlet opening;
a socketlike sleeve member snugly seated within said main supply passage adjacent said other end of said tubular portion, said socketlike sleeve member being nonrotatably coupled to said tubular portion and defining therein a central opening which is coaxially aligned with and communicating with said main supply passage, said sleeve member also having a communication opening formed radially through the sidewall thereof and disposed in axial alignment with said outlet opening, said communication opening being of larger diameter than said outlet opening;
said valve means including a substantially cylindrical valve member snugly but rotatably positioned within the central opening of said sleeve member, said valve member having a substantially L-shaped flow passage extending therethrough, said L-shaped flow passage including an inlet which opens axially through an end face of said valve member for direct communication with main supply passage, said L-shaped flow passage including an outlet at its other end which is formed in the surrounding exterior cylindrical sidewall of said valve member, said outlet being of smaller diameter than said communication openng, and said outlet being radially aligned with the communication opening in said socketlike sleeve member when the valve member is rotatably moved onto its open position;
an elastomeric seal ring positioned within and extending around the radially outer portion of said communication opening and being compressively held between the interior wall of the tubular portion and the exterior cylindrical side wall of the rotary valve member for creating a first annular sealed arrangement with the interior wall of the tubular portion in surrounding relationship to the outlet opening and a second annular sealed engagement with the exterior cylindrical sidewall of said valve member, said seal ring sealingly engaging the exterior cylindrical sidewall in surrounding relationship to said outlet when said valve member is in its open position; and
handle means positioned externally of said tubular portion adjacent said other end thereof and coaxially aligned with and nonrotatably fixed to said valve member for controlling rotation thereof between said open and closed positions.

4,577,657
MAGNETIC-PNEUMATIC LIQUID LEVEL CONTROL
Jack L. Alexander, P.O. Box 1016, Tulsa, Okla. 74101
Filed Mar. 12, 1984, Ser. No. 589,177
Int. Cl.⁴ F16K *31/08, 31/18, 33/00*
U.S. Cl. 137—448 **3 Claims**

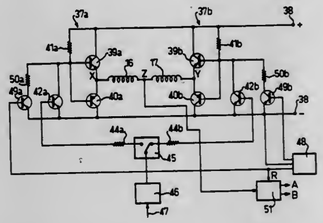


1. A liquid level control means comprising:
(a) body means adapted to be inserted and sealed into the wall of a chamber containing a liquid to be controlled to a selected level; said body having a first end and a second end, each having a cavity of selected size and shape, with a wall sealing between the first cavity in the first end and the second cavity in the second end; said body being positioned in elevation relative to the selected liquid level;
(b) arm means pivotally supported in said first cavity; said arm means having a float on one end and a first magnet on the other end being disposed in a portion of said first cavity, said first magnet positioned to move in a plane that is parallel to the pivotal movement of said float;
(c) reciprocating magnet holder means positioned in a bore of said second cavity defined by the first cavity and the first cavity portion so as to be guided to move perpendicular to said plane of said first magnet; said holder having a second magnet in its end, facing said first magnet with said wall between said first and second magnets; said magnets arranged to attract each other, or to repel each other depending on the position of said float and said first arm;
(d) pivoted shuttle rod means positioned with a first end controlled by the position of said magnet holder; the second end of said pivoted shuttle rod having means to control said selected liquid level.

4,577,658
CALIBRATED FLUID FLOW CONTROL DEVICE
Michel Bosteels, 157 Avenue Haras, B 1150 Bruxelles, Belgium, and Ambro Oliva, 180 Boulevard de Montmorency, 95170 Deuil la Barre, France
Filed Jun. 29, 1984, Ser. No. 626,322
Claims priority, application France, Jun. 30, 1983, 83 10922
Int. Cl.⁴ F16K *31/08;* H01H *47/00*
U.S. Cl. 137—599 **2 Claims**

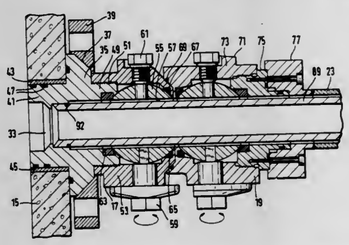
1. A device for calibrated flow control of at least one fluid, comprising a plurality of bistable electrovalves of the on-off type mounted on a single body having therein a plurality of recesses containing a plurality of seats for a plurality of valves and a plurality of calibrated nozzles, each of which determines a given flow, and at least one fluid inlet pipe and one fluid outlet pipe leading, respectively, upstream of said seats and downstream of said nozzles in said recesses,

the improvement wherein the bistable electrovalves comprise
permanent magnetic means for maintaining each said valve in each of its two positions and,
for each valve, electromagnetic means for moving each said valve from each of its positions to its other position,
the permanent magnetic means comprising two fixed permanent magnets and, for each valve, a moving magnetic core integral with the valve,
the electromagnetic means comprising, for each valve, two coils which may be fed in both directions and are disposed in such a way that when the two coils are fed in one direction, the field of one coil reinforces the action exerted by the field of one magnet on the core, while the field of



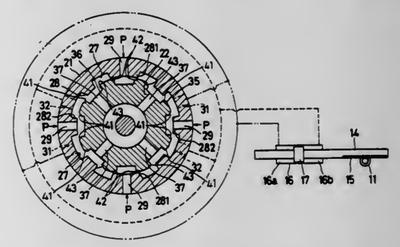
the other coil reduces or cancels the action exerted by the field of the other magnet on the core, and inversely,
the two coils of each valve being fed in one direction and in the other by a continuous polarity power supply passing through a pulse-controlled circuit, the two coils being mounted in series,
valve position detecting means for each valve comprising a frequency generator feeding the two coils at their extremities and a synchronous detector with a reference input connected to one of the outputs of the frequency generator, and a detection input connected to the junction of the coils for determining the position of the moving core on the base of impedance variations affecting the coils according to the position of the moving core.

4,577,659
COUPLING ARRANGEMENT FOR PIPE CONDUITS CONDUCTING A MEDIUM CONTAINING RADIOACTIVE SUBSTANCES
Hans-Dieter Gembus, Pattensen, and Rainer Wolf, Weingarten, both of Fed. Rep. of Germany, assignors to Deutsche Gesellschaft für Wiederaufarbeitung von Kernbrennstoffen mbH, Hanover, Fed. Rep. of Germany
Filed Oct. 22, 1984, Ser. No. 663,383
Claims priority, application Fed. Rep. of Germany, Oct. 21, 1983, 3338241
Int. Cl.⁴ F16L *37/28, 27/12*
U.S. Cl. 137—614.06 **8 Claims**



1. A coupling arrangement for joining two pipe conduits to each other for conducting a medium containing toxic or radioactive materials therethrough, the arrangement comprising:
a first coupling unit mounted on the end of a first one of the pipe conduits;
a conduit engaging assembly mounted at the end of the second one of said pipe conduits, said conduit engaging assembly including:
an inner conduit segment tightly connected to and aligned with said second pipe conduit;
a tubular member arranged in surrounding relationship to said inner conduit segment so as to be coaxial therewith, said tubular member having a forward free end facing toward said first coupling unit; and,
a second coupling unit mounted on said forward free end of said tubular member and being joinable to said first coupling unit;
each of said coupling units including valve means movable between a first position for blocking the flow of the medium and a second position for defining a clear through bore communicating with said first and second pipe conduits when said coupling units are joined together; and,
said conduit engaging assembly further including displacing means for displacing said tubular member and said inner conduit segment relative to each other so as to permit said inner conduit segment to penetrate and pass through said bores thereby establishing a clear through connection between said first and second pipe conduits to allow the passage of the medium from one of said pipe conduits to the other one of said pipe conduits.

4,577,660
ROTARY SERVOVALVE
Kyosuke Haga, Anjoh, and Tsuneo Tanaka, Okazaki, both of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan
Filed Jul. 2, 1984, Ser. No. 627,097
Claims priority, application Japan, Jul. 4, 1983, 58-121410
Int. Cl.⁴ F15B *9/10;* F62D *5/083;* F16K *11/083*
U.S. Cl. 137—625.24 **8 Claims**



1. A rotary servovalve comprising:
(a) a valve sleeve having a plurality of sleeve lands on an inner peripheral surface;
(b) a rotor having a plurality of rotor lands on an outer peripheral surface and relatively rotatably fitted in said valve sleeve;
(c) first and second fluid supply inlets opening into a space between said valve sleeve and said rotor;
(d) a plurality of fluid discharge outlets opening in said space;
(e) a pressure control section composed of selected ones of said sleeve lands and said rotor lands, said selected sleeve and rotor lands being angularly spaceable from each other when the rotary servovalve is in a neutral condition to allow communication between said first fluid supply inlet and at least a first one of said fluid discharge outlets;
(f) a pressure characteristic adjusting section composed of other selected ones of said sleeve lands and said rotor

lands, said other selected sleeve and rotor lands being positionable in overlapping relation to each other when the rotary servovalve is in the neutral condition to prevent communication between said second fluid supply inlet and said at least a first one of said fluid discharge outlets;

(g) first chamfers formed on at least one of the sleeve and rotor lands constituting said pressure control section, said first chamfers comprising means for gradually reducing the area of communication between said first fluid supply inlet and said first one of said fluid discharge outlets when said valve sleeve and said rotor are relatively rotated;

(h) second chamfers formed on at least one of the sleeve and rotor lands constituting said pressure characteristic adjusting section, said second chamfers comprising means for gradually increasing the area of communication between said second fluid supply inlet and said first one of said fluid discharge outlets when said valve sleeve and said rotor are relatively rotated; and

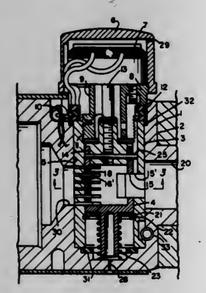
(i) third chamfers formed on at least one of the sleeve and rotor lands constituting said pressure characteristic adjusting section, said third chamfers comprising means for gradually reducing the area of communication between said second fluid supply inlet and said first one of said fluid discharge outlets, with a delay from the action of said second chamfers, when said valve sleeve and said rotor are relatively rotated.

4,577,661

HIGH SPEED-HIGH FLOW SPOOL VALVE

David R. Melrose, Ringoes, and Mario A. Russo, Edison, both of N.J., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Continuation of Ser. No. 624,790, Jun. 25, 1984, abandoned, which is a continuation of Ser. No. 330,226, Dec. 14, 1981, abandoned. This application Mar. 25, 1985, Ser. No. 715,766
Int. Cl.⁴ F16K *3/26, 31/06*
U.S. Cl. 137—625.33 **3 Claims**



1. A valve for interrupting flow of pressurized fluid comprising:

a cylindrical body having a central cylindrical bore extending along an axis with an inlet opening on one side of the body for receiving pressurized fluid and an outlet opening on an opposing side of the body for discharging pressurized fluid;

a cylindrical sleeve disposed within said central bore having a sleeve opening adjacent to said inlet opening and having sleeve slots generally perpendicular to said axis across said outlet opening;

a valve spool disposed within said cylindrical sleeve and movable along said axis within said cylindrical sleeve to a first and second position, said spool having a spool opening having substantially the same cross-sectional area as said sleeve opening and positioned adjacent said sleeve opening and having spool slots generally perpendicular to said axis communicating with said spool opening and positioned adjacent said slots in said sleeve to form a grill-like structure with said slots in said sleeve, said spool slots and sleeve slots having a size selected so that in said one position of said valve spool the slots close the grill-like structure and in said second position of said valve spool said slots open the grill-like structure; and

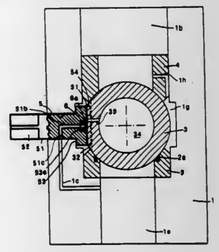
a solenoid operator connected to move said valve spool to said first and second position.

4,577,662

PLUG VALVE EQUIPPED WITH PRESSURE EQUALIZATION MEANS

Bernard Doremus, Echouboulains, France, assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Jan. 26, 1984, Ser. No. 574,237
Claims priority, application France, Jan. 28, 1983, 83 01725
Int. Cl.⁴ F16K *5/06, 39/00*
U.S. Cl. 137—630.14 **4 Claims**



1. A plug valve comprising:

a valve body having a fluid flow passage therein;

a ball element having an outer surface and a bore therethrough, said ball element being sealingly received within said valve body for rotation from a valve-closed position in which fluid flow between upstream and downstream portions of said flow passage is blocked to a valve-open position in which said fluid flow is permitted;

displacement means for rotating said ball element sealingly crossing through said valve body and having a pin, the longitudinal axis of which is substantially perpendicular to said bore; and

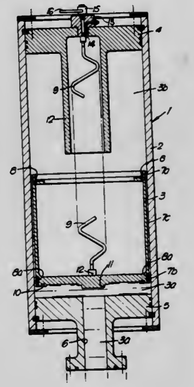
means for equalizing pressure between said upstream and downstream portions of said flow passage prior to movement of said ball element from said valve-closed to said valve-open positions, including means communicating pressure between said bore of said ball element and one of said upstream and downstream portions of said flow passage, at least one lateral channel within said ball element connecting said bore with said outer surface, at least one passageway formed within said pin, and a bypass channel formed within said valve body; said lateral channel, passageway and bypass channel being arranged to establish pressure communication between said bore and the other of said upstream and downstream portions of said flow passage when said pin is turned by a given angle from an extreme position to bring said lateral channel, said passageway and said bypass channel into alignment; and said displacement means acting on said ball element to open said valve only after said pin has turned by said angle.

4,577,663

FLUID ACCUMULATOR

Per B. Andersen, Åneby, Norway, and Ole J. Richter, Karlstad, Sweden, assignors to Myrens Verksted A/S, Oslo, Norway

Filed May 31, 1984, Ser. No. 615,794
Claims priority, application Norway, Jun. 6, 1983, 832042
Int. Cl.⁴ F16L *55/04*
U.S. Cl. 138—31 **8 Claims**



1. In a fluid accumulator, for use in a hydraulic system which receives and delivers large quantities of working fluid during a short period of time, including a cylinder having end walls, a piston slidably operable in the cylinder between the end walls, a compressible fluid acting on one side of the piston in the cylinder, and a liquid port in the cylinder through which liquid flows into and out of the cylinder to act on the opposite side of the piston so that when the liquid pressure is higher than the pressure of the compressible fluid it moves the piston to compress the compressible fluid so that more liquid can be stored in the cylinder and when the pressure of the liquid is lower than the pressure of the compressible fluid, the compressible fluid moves the piston to force the liquid out of the cylinder, the improvement comprising:

a cup-shaped piston having a base portion and a relatively long axial extending cylindrical wall portion with the opening thereof facing towards the end of the cylinder containing the compressible fluid;

said wall portion being relatively thin compared to the base portion and having an outer dimension less than the dimension of the inner surface of the cylinder to provide a space therebetween the full length of said wall portion;

sliding support rings mounted in axially spaced relationship on the outer surface of said wall portion having an outer dimension less than the inner dimension of the surface of the cylinder so that said piston floats freely between said liquid and compressible fluid ends in the cylinder;

a stroke limiting extension projecting from the end wall at the compressible fluid end of the cylinder toward said piston having a length so that the end remote from the cylinder end engages said base portion of the piston when said piston is in its limit of travel toward the compressible fluid end with the end of said wall portion of the piston abutting said compressible fluid end of the cylinder; and

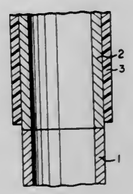
a sealing ring on the liquid side of the piston around said liquid port which abuts against the liquid end of the cylinder when the piston is in its limit of travel toward the liquid end of the cylinder.

4,577,664

CONDUIT TUBE OF AN ELECTRODE DEVICE FOR ELECTRICALLY HEATING UNDERGROUND HYDROCARBON RESOURCES

Ichiro Takahashi, Suita; Goro Okamoto, Itami, and Kazuo Okahashi, Toyonaka, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 17, 1984, Ser. No. 601,278
Int. Cl.⁴ F16L *9/14;* **B65H** *81/00*
U.S. Cl. 138—149 **8 Claims**



1. An improved electrically insulating covering for conduit tubes used for encasing electrode devices which are used in the extraction of oil from oil sand wherein said conduit tubes have a metal conduit tube and an electrically insulating covering adhered to said outer peripheral surface of said metal conduit tube wherein said improved electrically insulating covering comprises:

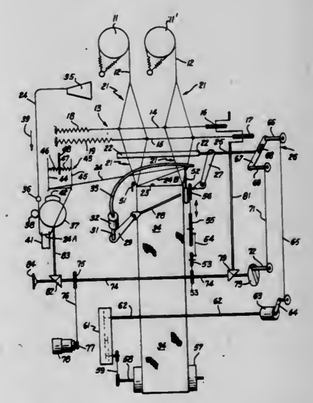
a powdered polyether/ether/ketone resin having a particle size of the range of from 10 to 100 μm which has been placed in contact with said metal conduit tube by way of electrostatic coating said metal conduit tube and wherein said powdered polyether/ether/ketone adhered to said metal conduit tube, by way of fusionbonding, in a temperature range of from 350° C. to 450° C. to and wherein said metal conduit tube has been preheated prior to the adherance of said polyether/ether/ketone to a temperature range of from 350° C. to 450° C.

4,577,665

NARROW-FABRIC NEEDLE LOOM WEAVING SYSTEM

Willi Diesner, Wuppertal, Fed. Rep. of Germany, assignor to Petig Corporation, Pittsfield, N.H.

Filed Oct. 7, 1983, Ser. No. 539,966
Int. Cl.⁴ D03D *47/42*
U.S. Cl. 139—431 **53 Claims**



1. In an improved needle loom machine for narrow width weaving comprising means for supplying warp thread, means

for supplying weft thread, a header sub-assembly for maintaining the warp thread spread in a predesigned pattern and forming a shed, a reciprocally movable needle for insertion of the weft thread into the shed during each successive pick, a needle-like pick for picking off a predetermined length of weft thread from the needle during each successive insertion of the needle in the shed at the far end of the travel thereof, a reed assembly for beating-up the warp and weft threads to form the fell of the fabric at a beat-up region at the output end of the shed during each pick, and a take-up roll for withdrawing the woven material after it is beaten up in the beat-up region; the improvement comprising means for automatically feeding weft thread to the needle during reciprocal movement thereof while weaving, a hook supported on the machine on the side of the shed into which the needle enters at the near end of the travel thereof during each reciprocation, the hook having an open jaw hooked end facing the fell around which the bend in a weft thread segment is supported while the needle is at the far end of the travel thereof into the shed during each reciprocation, the end of the open jaw hooked end of the hook being terminated immediately adjacent the beat-up region where the fell is formed as close thereto as possible whereby as the reed drives home the weft thread segment during beat-up, the bend in the weft thread segment is maintained straight by the hook and is forced off the open jaw hooked end at the end of the beat-up into the fell to form a straight line selvage for the woven material, and a leader guide member mounted immediately adjacent the hook on the side thereof away from the shed and beat-up region for engaging and guiding weft thread segment into the open jaw hooked portion of the hook while the needle is withdrawn from the shed during each reciprocation thereof.

4,577,666

WEFT YARN TENSIONING DEVICE

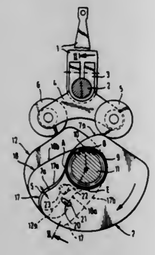
Josef Kathriner, Kollbrunn, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Apr. 18, 1984, Ser. No. 601,701

Claims priority, application Fed. Rep. of Germany, Apr. 28, 1983, 3315433

Int. Cl.⁴ D03D *47/34*

U.S. Cl. 139—450 **8 Claims**



1. A weft yarn tensioning device for a weaving machine comprising

a tensioning lever for movement between a yarn-tensioning position and a yarn-releasing position;

a cam follower lever mounting said tensioning lever thereon;

a pair of follower rolls rotatably mounted on said follower lever;

a pair of cams, each said cam having a control surface for guiding a respective roll thereon; and

at least one adjusting element between said cams for controlling a movement of said tensioning lever, said element having a pair of cam segments, each said cam segment having a control surface defining a continuation of said control surface of a respective cam whereby movement of said adjusting element adjusts said pair of cam segments simultaneously relative to said pair of cams to vary said movement of said tensioning lever from one of said positions.

4,577,667

LOG SPLITTING DEVICE

Kevin Gray, Manti, Utah, and Frederic A. Johnson, 235 E. 100 North, Manti, Utah 84642, assignors to Frederic A. Johnson, Manti, Utah

Filed Sep. 13, 1984, Ser. No. 650,098

Int. Cl.⁴ B27L *7/00*

U.S. Cl. 144—193 C **5 Claims**



1. A log splitting apparatus comprising:

an elongated driving shaft having top and bottom ends;

a wedge-shaped slitting tip attached to the bottom end of the shaft,

an elongated driver sleeve formed by an enclosing sleeve wall slidably mounted around an upper part of the driving shaft and having an open bottom end and a closed top end, and having a lengvth less that that of the shaft, said top end comprising a driver cap adapted for impact at the top end of the driving shaft;

said driver sleeve further including catch means coupled through the sleeve wall and operable with respect to the driving shaft for providing releasable engagement at an enclosed portion of the upper end of the driving shaft and being operable to lock the driving shaft in a fixed position when the catch means is depressed by a user and the shaft is in a substantially recessed position within the sleeve, said catch means including means for biasing to a nonengaging position to allow the driving shaft to freely move within the driving encasement except when the catch means is depressed to thereby retain the shaft in a fixed position.

4,577,668

VEHICLE WHEEL

Hans Seitz; Henner Pieper; Udo Frerichs, all of Langenhagen, and Heinz-Dieter Rach, Garbsen, all of Fed. Rep. of Germany, assignors to Continental Gummi-Werke Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Aug. 16, 1983, Ser. No. 523,695

Claims priority, application Fed. Rep. of Germany, Aug. 20, 1982, 3231012

Int. Cl.⁴ B60C *17/00, 15/02*

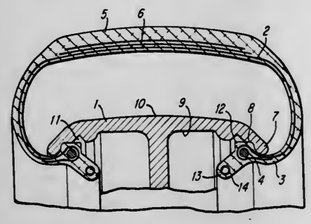
U.S. Cl. 152—520 **12 Claims**

1. A vehicle wheel in combination with a belted pneumatic tire having two beads and a pull-resistant core in each bead; comprising:

a rigid one-piece rim with two essentially radially inwardly extending rim flanges; adjacent each rim flange and on the radially inner surface of said rim, the latter is provided with a respective seat, one for each of said tire beads; said rim also being provided on said radially inner surface with two recessed portions respectively disposed between one

of said seats and a central plane of said rim, with the base of each of said recessed portions being disposed on a diameter of said rim which is greater than the average diameter of said rim on which said seats are disposed; the radially outer surface of said rim being provided with a circumferential supporting surface for the radially inner surface of said tire; and

means which are provided on at least one of said rim and said



tire beads, and which, at least in the region of that part of said tire being supported on a driving surface at any given time, effect a disengagement of said tire beads from said seats when said tire experiences a loss of air pressure, and also prevent an only periodic return of said tire beads to said seats while said tire is being driven after having experienced said loss of air, with said supporting surface of said rim riding on said radially inner surface of said tire during such an emergency operation.

4,577,669

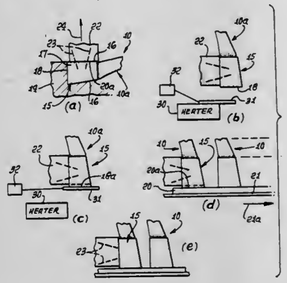
FABRICATION OF GOLF CLUB HEADS

Glenn H. Schmidt, 1857 Los Encinos, Glendale, Calif. 91208, and Howard F. Schmidt, S. Gate, Calif., assignors to Glenn H. Schmidt, Glendale, Calif.

Continuation-in-part of Ser. No. 406,337, Aug. 9, 1982, Pat. No. 4,472,092. This application Aug. 1, 1984, Ser. No. 636,486

Int. Cl.⁴ B22C *7/02*

U.S. Cl. 164—45 **16 Claims**



1. In apparatus for transporting wax structure including a replica of a golf club head between first and second positions, said structure having a gate, the combination comprising

(a) a support relatively movable into adjacency to said structure,

(b) prong means associated with said support and movable relative thereto between retracted and advanced positions, the prong means in advanced position or positions penetrating said gate for carrying said wax structure during said transporting,

(c) and including auxiliary means to soften a local surface area of said wax gate whereby said softened area may be adhered to transport means for transport thereby, after retraction of said prong means from said gate.

14. In the method of transporting wax structure between first and second positions, and including

(a) a support relatively movable into adjacency to said structure,

(b) prong means associated with said support and movable relative thereto between retracted and advanced positions,

the steps that include

(i) advancing said prong means in non-parallel directions into said advanced position penetrating said wax structure,

(ii) displacing said support and prong means to transport said wax structure,

(iii) and wherein said wax structure has an associated gate penetrated by the prong means pursuant to step (i) and including the step of softening a local surface area of said wax gate whereby said softened area may be adhered to transport means for transport thereby, after retraction of said prong means from said gate.

4,577,670

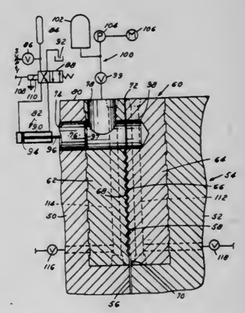
VACUUM CONTROL SYSTEM FOR CASTING MACHINE DIES

James I. Moore, Zeeland, Mich., assignor to Ex-Cell-O Corporation, Troy, Mich.

Filed Jul. 19, 1984, Ser. No. 632,352

Int. Cl.⁴ B22D *17/14*

U.S. Cl. 164—155 **2 Claims**



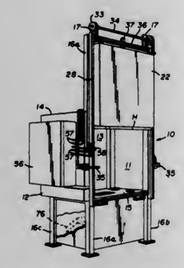
1.) A cavity evacuation system for a casting machine having die halves defining a casting cavity with a vent opening therein comprising:

vacuum system means with a receiver for accommodating the air volume of the casting cavity;

means defining a chill block assembly having first and second halves forming a vent passage for venting molten material from the cavity when the cavity is filled with casting material;

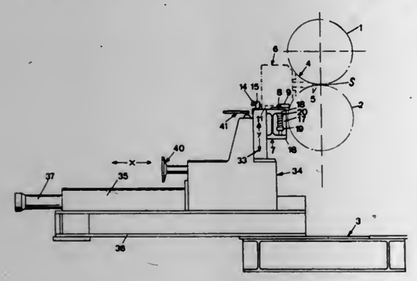
means including a reciprocating plug with a vacuum-on position and a vacuum-off position for controlling communication between said receiver and the casting cavity; said plug being positioned in its vacuum-on position to cause evacuation of the casting cavity through said vent passage; said reciprocating plug having an O.D. segment extending across said vent passage and having an end face thereon in sealing engagement with one of said halves when in its vacuum-off position to cause vented molten material to encircle the O.D. of the plug in the vent passage without imposing molten material pressure forces on said end face so as to block communication between said receiver and said vent passage during the casting process.

4,577,671
CASTING DECORING DEVICE
Mark C. Stephan, 333 S. Hazel St., Upper Sandusky, Ohio 43351
Continuation-in-part of Ser. No. 406,349, Aug. 9, 1982, abandoned. This application Jun. 21, 1984, Ser. No. 623,028
Int. Cl.[4] B22D *29/00*
U.S. Cl. 164—401 3 Claims



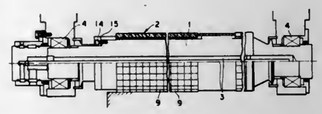
1. A casting decoring device comprising in combination an enclosure having side walls, a top and apertured bottom, a door on said enclosure having a main support frame with a sound isolation panel secured thereto and a plurality of roller assemblies thereon; means for soundproofing said enclosure, a door guide means on said enclosure, a pair of door clamps comprising pneumatic piston and cylinder assemblies selectively activated mounted on said enclosure movably engaging said door assembly in sealing relation to said enclosure, a support fixture removably positioned within said enclosure, isolation means on said support fixture isolating said fixture from said apertured bottom, said isolation means comprising isolation bags positioned between an isolation support plate and said support fixture, a plurality of locator wells on said apertured bottom aligned with support feet extending from said isolation support plate, a pneumatic gun removably secured on said support fixture, means for centrally controlling said pneumatic gun and said door clamps in an interdependent controlled cycle.

4,577,672
DEVICE FOR MANUFACTURING METAL STRIP
Bruno Frischknecht, Gwatt, and Rolf Würgler, Esslingen, both of Switzerland, assignors to Swiss Aluminium Ltd., Chippis, Switzerland
Filed Oct. 11, 1983, Ser. No. 540,778
Claims priority, application Switzerland, Oct. 18, 1982, 6068/82
Int. Cl.[4] B22D *11/06*
U.S. Cl. 164—428 18 Claims



1. Device for horizontal casting of metal strip which comprises two substantially vertically disposed rolls of a roll type continuous casting unit one above the other having a roll gap therebetween, a supporting section mounting said rolls, a substantially horizontally disposed nozzle which introduces molten metal into said gap, a nozzle beam mounting said nozzle including an inlet channel which includes facing, turret-shaped projections which accommodate plates for limiting the casting width, a slide supporting said nozzle beam such that the slide is moveable in the substantially horizontal direction (x), a rail on which said slide moves and a power drive for moving said slide.

4,577,673
GUIDE ROLL
Shinichi Harada, Kobe; Yoshinobu Ishihara, Takatsuki, and Shigeru Matsushita, Nishinomiya, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan
Filed Jul. 12, 1983, Ser. No. 513,092
Claims priority, application Japan, Jul. 13, 1982, 57-105888[U]; Jul. 13, 1982, 57-105887[U]; Aug. 2, 1982, 57-118098[U]
The portion of the term of this patent subsequent to Mar. 25, 2003, has been disclaimed.
Int. Cl.[4] B22D *11/12*
U.S. Cl. 164—448 14 Claims

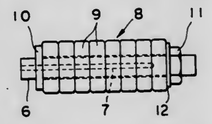


1. A guide roll having a ceramic sleeve around a circumference of a steel roll shaft with an internal cooling water passage formed therein, said guide roll comprising:
a cylindrical ceramic sleeve including a plurality of discrete ceramic segments forming a plurality of annular rings;
means for unitarily and individually fitting each of said rings around said circumference and along the length of said roll shaft such that said ceramic segments are each restricted at least in radial and circumferential directions of said roll shaft; and
first and second end plates securely fixed to opposite ends of said roll shaft for holding said rings in position on the circumference of said roll shaft wherein said roll shaft includes a plurality of axial grooves formed on the circumference thereof and said rings further comprise a plurality of said ceramic segments each having a leg portion, said ceramic segments being aligned in an axial direction and having said leg portions respectively slidably fitted in said axial grooves formed on the circumference of said roll shaft.

4,577,674
GUIDE ROLL
Shinichi Harada; Hiroshi Toyoda, both of Kobe; Katsuhiko Honma, Akashi, and Shigeru Matsushita, Nishinomiya, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan
Filed Jul. 22, 1983, Ser. No. 516,280
The portion of the term of this patent subsequent to Mar. 25, 2003, has been disclaimed.
Int. Cl.[4] B22D *11/12*
U.S. Cl. 164—448 10 Claims

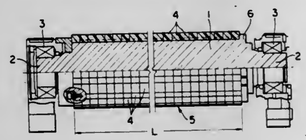
1. A guide roll, comprising:
a steel core shaft internally provided with a cooling water passage along an axis thereof;
a ceramic sleeve covering a circumferential portion of said core shaft wherein said ceramic sleeve further comprises a plurality of separable annular ceramic segments loosely fitted on and along a length of said core shaft; and

fixing means for holding said annular ceramic segments in an axially abutted state on said core shaft wherein said fixing



means further comprises an end plate fixed to a first end of said core shaft and a nut tightly threaded on a second end of said core shaft opposite said first end.

4,577,675
CERAMIC GUIDE ROLLS FOR USE IN CONTINUOUS CASTING
Yoshinobu Ishihara, Osaka, and Shinichi Harada, Kobe, both of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan
Filed Aug. 2, 1983, Ser. No. 519,713
Claims priority, application Japan, Aug. 2, 1982, 57-118097[U]
The portion of the term of this patent subsequent to Mar. 25, 2003, has been disclaimed.
Int. Cl.[4] B22D *11/12*
U.S. Cl. 164—448 4 Claims

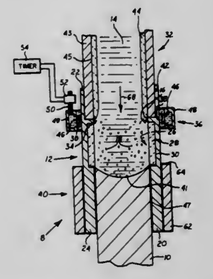


1. A ceramic guide roll having a steel core and a cylindrical ceramic sleeve positioned around the circumference of the steel core shaft, said cylindrical ceramic sleeve consisting of an assembly of a plurality of discrete ceramic segments, said guide roll comprising:
a stopper member provided at a first end of said steel core shaft; and
a segment retainer attached to a second end of said steel core shaft opposite said first end; and
resilient means for holding said ceramic segments constantly in abutting engagement with each other in the axial direction of said steel core shaft in cooperation with said stopper member.

4,577,676
METHOD AND APPARATUS FOR CASTING INGOT WITH REFINED GRAIN STRUCTURE
William G. Watson, Cheshire, Conn., assignor to Olin Corporation, New Haven, Conn.
Filed Dec. 17, 1984, Ser. No. 682,530
Int. Cl.[4] B22D *11/124, 27/02*
U.S. Cl. 164—468 19 Claims

1. A method for producing a cast metallic ingot having refined grain structure, comprising the steps of:
providing a casting mold;
supplying a metallic melt to said casting mold;
intermittently cooling a section of said mold to form a narrow zone of fine dendrites having secondary dendrite arms on an inner peripheral surface of said mold;
reheating said zone of fine dendrites to detach secondary dendrite arms from said fine dendrites;
mixing said detached secondary dendrite arms in said melt to provide nuclei for grain refinement of said cast ingot; and
solidifying said melt into a cast ingot having a relatively refined grain structure.

13. An apparatus for casting a metallic melt into an ingot with a refined grain structure, comprising:
a direct chill casting mold having an inlet section and outlet section, said casting mold having an inner peripheral surface between said inlet section and said outlet section, said casting mold having an insulated section disposed on the inner peripheral surface between said inlet sections and said outlet sections;
feed nozzle means disposed in said inlet section for pouring a melt into said mold;
a narrow zone along the inner peripheral surface of said casting mold between said feed nozzle means and said insulated section, said narrow zone being in contact with said melt flowing through said mold;

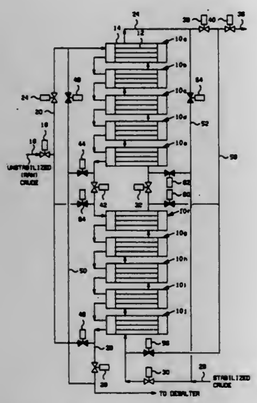


means for intermittently cooling an outer peripheral surface of said casting mold that includes and extends upstream and downstream from said narrow zone along the inner peripheral surface for solidifying said melt into a thin zone of dendrites with secondary dendrite arms
and for detaching the secondary dendrite arms;
means for mixing the detached secondary dendrite arms with said melt in the insulated section of said casting mold to provide nuclei for grain refinement of said cast ingot; and
means for solidifying said melt into a casting having a relatively refined grain structure.

4,577,677
METHOD FOR CLEANING HEAT EXCHANGERS
Robert C. Ezzell, Teesside, Great Britain, assignor to Phillips Petroleum Company, Bartlesville, Okla.
Filed Mar. 25, 1985, Ser. No. 715,310
Claims priority, application United Kingdom, Jan. 7, 1985, 8500316
Int. Cl.[4] F28G *13/00*
U.S. Cl. 165—1 7 Claims

1. A method of operating a heat exchange system of the type adapted to receive two fluids therethrough such that heat is exchanged between the fluids, wherein the system comprises a plurality of heat exchangers connected in series such that a fluid passed to a first exchanger in the series is passed successively through each exchanger in the series, a portion of the exchangers making up a first group of exchangers and the remainder making up a second group of exchangers, said method comprising the steps:
(a) passing a first fluid and a second fluid through the entire system for a period of time such that heat exchange between the first and second fluids occurs, wherein the first fluid is at a higher temperature than the second fluid upon entering the system, and wherein the first fluid is passed through the first group before being passed to the second group;
(b) terminating flow of second fluid through the first group of exchangers after completion of step (a) while continu-

ous flow of first fluid is maintained through the entire system for a period of time, wherein no other materials are



introduced into the system during this step, whereby the system is cleaned.

4,577,678

STORAGE MATERIAL FOR HEAT TRANSFER

Martin Frauenfeld, Heidelberg, and Rüdiger von Wedel, Heiligkreuzsteinach-Elterbach, both of Fed. Rep. of Germany, assignors to Kraftanlagen AG, Heidelberg, Fed. Rep. of Germany

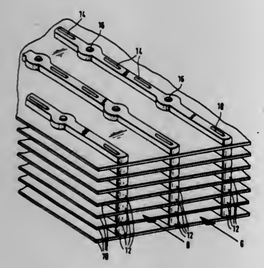
PCT No. PCT/EP84/00189, § 371 Date Mar. 22, 1985, § 102(e) Date Mar. 22, 1985, PCT Pub. No. WO85/00879, PCT Pub. Date Feb. 28, 1985

PCT Filed Jun. 23, 1984, Ser. No. 718,022

Claims priority, application Fed. Rep. of Germany, Aug. 8, 1983, 3328548

Int. Cl.⁴ F28D *17/02, 19/04*

U.S. Cl. 165—10 **11 Claims**



1. Storage material for the transfer of heat between gas streams in heat exchangers, composed of stick-like molded spacing elements and a plurality of plate-like molded elements (12) serving as storage elements of heat-resistant plastic, which are assembled into storage blocks, characterized in that the molded elements (10; 12; 32) are made from polyetherimide.

4,577,679

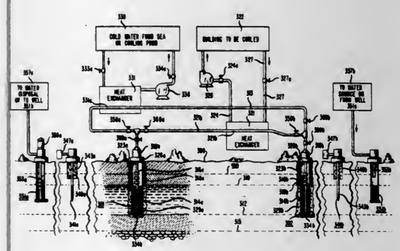
STORAGE SYSTEMS FOR HEAT OR COLD INCLUDING AQUIFERS

Henry J. Hibshman, 1325 Watchung Ave., Plainfield, N.J. 07060

Filed Oct. 25, 1978, Ser. No. 954,666

Int. Cl.⁴ F28D *21/00*

U.S. Cl. 165—45 **18 Claims**



1. A system for storing heat or cold in material aquifers in the form of hot or cold water, comprising in combination:

a first subsystem for heat or cold utilization disposed above ground-water level including a first set of conduits with circulating heat-transfer fluid;

a second subsystem including a second set of conduits connected to means in heat-transfer relation with said first subsystem;

said second subsystem including at one terminal a core well configuration extending substantially vertically down from ground level to an aquifer stratum disposed below said ground level for storing hot or cold water, and connected at the other terminal to means for returning at a point spaced apart from said core well configuration, water derived from said means in heat transfer with said first subsystem;

and means for at least partially controlling the thermal and hydraulic gradients surrounding said core well configuration.

4,577,680

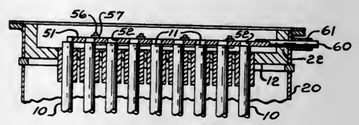
AIR RECUPERATOR CLEANER

Jack L. Clem, and Oscar T. Scott, IV, both of Borger, Tex., assignors to J. M. Huber Corporation, Borger, Tex.

Filed May 23, 1984, Ser. No. 613,110

Int. Cl.⁴ F28G *13/00*

U.S. Cl. 165—95 **10 Claims**



1. In an air recuperator having a plurality of individual recuperator tubes supported at a discharge outlet by a tube sheet and carried within a shell through which a heat transfer medium is passed in thermal contact with the exterior surface of the recuperator tubes to transfer heat from a finely-divided particle-bearing transport gas passing through the recuperator tubes to the heat transfer medium, and wherein the finely-divided particles adhere to the interior surface of the recuperator tubes, the improvement comprising

a shutter plate having a plurality of apertures formed therein and positioned adjacent to the discharge outlet end of the plurality of individual recuperator tubes, with each such discharge outlet end aligned with one of said plurality of apertures permitting the uninterrupted flow of the particle-bearing transport gas therethrough, and

means for abruptly sliding said shutter plate across the discharge outlet end of said plurality of individual recuperator tubes to block each such discharge outlet end for loosening the finely-divided particles adhering to the interior surface of the recuperator tubes.

4,577,681

HEAT EXCHANGER HAVING A TURBULATOR CONSTRUCTION

Dennis R. Hughes, Germantown, Wis., assignor to A. O. Smith Corporation, Milwaukee, Wis.

Filed Oct. 18, 1984, Ser. No. 662,346

Int. Cl.⁴ F28F *13/12*

U.S. Cl. 165—109.1 **4 Claims**





1. In a heat exchanger, a generally cylindrical tube, a turbulator freely disposed in said tube, said turbulator comprising a generally flat strip of metal having a plurality of spaced transverse slits, each of said slits extending from a side edge of the strip more than one-half the width of the strip and terminating at a base, generally triangular edge portions of said strip bordering each slit being disposed generally normal to the strip, a first edge portion bordering each slit extending laterally from one side of the strip and a second edge portion bordering said slit extending laterally from the opposite side of said strip, an end portion of the strip extending from the base of one of said slits to a corresponding end of the strip being disposed at an acute angle to the remainder of the strip, said end portion being firmly engaged with said tube to retain the turbulator in said tube.

4,577,682

HEAT EXCHANGER

Jack S. Yampolsky, and David P. E. Carosella, Jr., both of San Diego, Calif., assignors to GA Technologies Inc., San Diego, Calif.

Filed Aug. 30, 1984, Ser. No. 645,999

Int. Cl.⁴ F28F *9/22*

U.S. Cl. 165—160 **4 Claims**

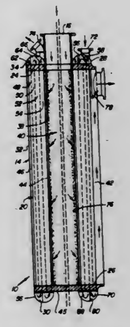
1. Heat exchange apparatus comprising:

a generally cylindrical tank defining a longitudinal axis and having an inlet port for entry of a first fluid and an outlet port for exit of said first fluid;

an annular tube bundle disposed within said tank, said annular tube bundle comprising a plurality of elongated metal tubes, said annular tube bundle defining a longitudinal axis substantially parallel to that of said tank and offset therefrom, and having a generally cylindrical interior communicating with said inlet port so as to define an axial inlet plenum for said first fluid;

means for effecting flow of said first fluid into said inlet plenum and thence outward through said tube bundle over said tubes; and

means for effecting flow of a second fluid through the interiors of said tubes to effect heat transfer between said first fluid and said second fluid;



said outlet port being located on said tank substantially diametrically opposite said axis of said annular tube bundle whereby an asymmetrical outlet. Plenum is defined within said tank outside of said annular tube bundle.

4,577,683

HEAT EXCHANGER WITH SEPARATE HELICAL DUCTS

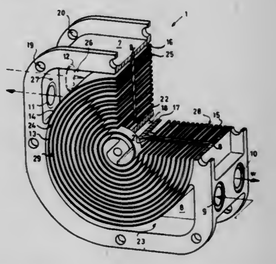
Heinz Kelch, Königsfeld, Fed. Rep. of Germany, assignor to Kienzle Apparate GmbH, Villingen-Schwenningen, Fed. Rep. of Germany

Filed May 25, 1984, Ser. No. 614,447

Claims priority, application Fed. Rep. of Germany, May 28, 1983, 3319521

Int. Cl.⁴ F28D *7/10*

U.S. Cl. 165—164 **9 Claims**



1. A heat exchanger for indirect heat transfer between fluid media flowing in ducts disposed in close thermal relation, comprising a duct member extending around a generally central axis and laterally enclosing a space, said duct member having a pair of opposite ends extending transversely of the central axis, first means extending transversely of the central axis of said duct member and spaced in the axial direction of said duct member from the opposite ends thereof for dividing said space into a first partial space and a second partial space, second means extending transversely of said first means for dividing each of said first and second partial spaces into a first duct and a separate second duct each having a pair of opposite ends within each of said first and second partial spaces, third means extending in the axial direction of and spaced inwardly from said duct member between said first partial space and said second partial space for affording a flow connection between the first ducts in said first and second partial spaces and between the second ducts in said first and second partial spaces, fourth means extending transversely of the central axis of said duct member and across each of the opposite ends of said duct

member for forming a sealed closure for each of said first and second partial spaces, said second means comprises a pair of webs helically wound in each of said first and second partial spaces and extending from adjacent said duct member around said central axis inwardly toward said central axis, one of the opposite ends of each of said first and second ducts being located adjacent said duct member and the other located at said third means, and an inlet member for said first ducts connected to the said duct member and opening into said first partial space and an outlet member for said first ducts connected to said duct member and opening from said second partial space, an inlet member for said second ducts connected to said duct member and opening into said second partial space and an outlet member for said second ducts connected to said duct member and opening from said first partial space for flowing the fluid media therethrough so that it passes through said first and second ducts in each of said first and second partial spaced in counterflow relation.

4,577,684

PROFILED-TUBE HEAT EXCHANGER

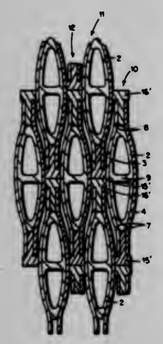
Klaus Hagemeister, Munich, Fed. Rep. of Germany, assignor to MTU Motoren- und Turbinen-Union Munchen GmbH, Munich, Fed. Rep. of Germany

Filed Aug. 13, 1984, Ser. No. 640,396

Claims priority, application Fed. Rep. of Germany, Aug. 12, 1983, 3329202

Int. Cl.⁴ F28F *9/00*

U.S. Cl. 165—172 **17 Claims**



1. In a heat exchanger having a plurality of tubes of oblong cross-section arranged in spaced relation to longitudinal columns and transverse rows to establish a matrix field in which a fluid flows in a longitudinal direction around the tubes for heat exchange with fluid flowing in the tubes, the tubes in adjacent transverse rows being transversely offset from one another with the ends of the tubes in one row interposed between the ends of the tubes of adjacent rows,

the improvement comprising:

means interposed between adjacent tubes in adjacent rows and columns for maintaining the position of the tubes in the matrix field,

said means comprising a pair of profiled strips for each tube, said strips being disposed in said matrix field in a common plane extending perpendicular to said tubes, each profiled strip including a portion curved in shape in conformance with said tube, said curved portions of said strips being secured to respective opposite sides of said tube to substantially surround said tube, each tube and the pair of profiled strips secured therewith being freely expandible lengthwise of the tubes independently of the adjacent tubes and strips, said strips further including ends extending longitudinally beyond the ends of the associated tube to be interposed between strips of adjacent tubes at the center of the curved portions of said adjacent tubes, and connecting members inserted between said ends of the strips of each tube to form with said ends, spacers for said tubes and contact locations of said strips and said tubes to resist torsional deformation of the matrix field,

said tubes each including a central transverse web at the center of said curved portions.

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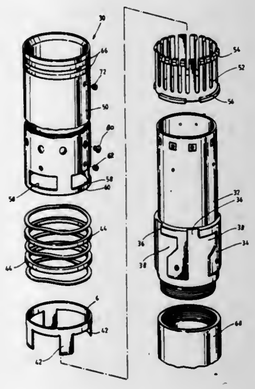
NIPPLE PROTECTOR SLEEVE FOR USE IN A WELL CONDUIT

William D. Eatwell, Houston, Tex., assignor to Camco, Incorporated, Houston, Tex.

Filed Aug. 31, 1984, Ser. No. 645,982

Int. Cl.⁴ E21B *23/00*

U.S. Cl. 166—115 **2 Claims**



1. A nipple protector sleeve for a well conduit comprising,

a body including supporting means for engaging no go lugs on the interior of a nipple in a well conduit for supporting the body from the well nipple,

releasable latching means on the body for releasably latching the body to the no go lugs for preventing longitudinal and rotative movement of the body relative to the nipple,

a sleeve section telescopically engaging the body and engaging said latching means for releasing said latching means and releasing said body when the section is moved relative to the body,

said supporting means including,

an annular ridge about the exterior of the body,

a slot extending upwardly through the ridge whereby a no go lug may enter the bottom of the slot,

a recess offset from and in communication with the slot between the top and bottom of the ridge for receiving a no go lug,

the top of the slot receiving a portion of the latching means for movement in the top of the slot for locking and releasing a no go lug in the recess, and

spring means engaging the latching means and yieldably urging the latching means into the slot.

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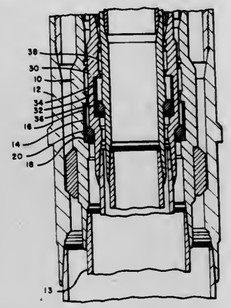
MUDLINE SUPPORT HANGER ASSEMBLY

Lionel J. Milberger; Glen E. Lochte, both of Houston, and Anthony J. Mascioplnto, Kingwood, all of Tex., assignors to Vetco Offshore, Inc., Ventura, Calif.

Filed Apr. 26, 1984, Ser. No. 604,199

Int. Cl.⁴ E21B *23/02*

U.S. Cl. 166—208 **4 Claims**



1. A mudline support hanger assembly for supporting a second hanger body within a first hanger body comprising:

a first hanger body having an inside diameter and a vertically extending horizontally oriented slot around its inner circumference, and a load surface near the lower end of the slot;

a substantially elliptical support ring having its major outside diameter greater than the inside diameter of said first hanger body and its minor outside diameter less than the inside diameter of said first hanger body, a support surface at the lower edge of said support ring, a landing surface on the top of said support ring for supporting a later run second hanger body, the inside diameter of said support ring being substantially circular and significantly smaller than said first hanger body inside diameter sufficient to support the second hanger body; and

said support ring thereby being capable of passing vertically through the interior of said first hanger body when rotated at an angle around its minor diameter axis, but fitting within said slot when in a horizontal position.

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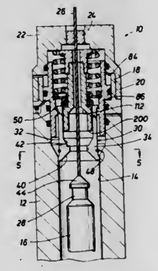
CABLE HEAD CATCHER MECHANISM

C. P. Lanmon, II, Longview, Tex., assignor to Hydrolex, Inc., Longview, Tex.

Filed Feb. 27, 1984, Ser. No. 583,864

Int. Cl.⁴ E21B *33/072, 23/000*

U.S. Cl. 166—243 **22 Claims**



1. A cable head catcher mechanism for establishing releasable latching engagement with a fishing neck of a cable supported well tool to provide structural support preventing downward movement of the fishing neck and well tool, comprising:

(a) housing means defining a passage through which a wire line cable of the well tool is capable of extending;

(b) collet means being disposed within said housing means and being radially yieldable to permit upward passage of the fishing neck of the well tool into said collet means, said collet means defining catching shoulder means for engagement with a catching surface of said fishing neck;

(c) means positioning said collet means at a radially restrained position within said housing means and being yieldable to permit movement of said collet means to expanded fishing neck receiving and releasing positions within said housing means; and

(d) operator means being linearly movable within said housing means for selectively moving said segmented collet means linearly to a position inducing radial expansion of said collet means to the releasing position thereof for selective release of the fishing neck therefrom.

4,577,688

INJECTION OF STEAM FOAMING AGENTS INTO PRODUCING WELLS

Zean Z. Gassmann; Jeffrey T. Hawkins, and Alfred Brown, all of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Continuation-in-part of Ser. No. 576,694, Feb. 3, 1984, abandoned. This application Aug. 8, 1984, Ser. No. 638,920

Int. Cl.⁴ E21B *43/24, 43/30*

U.S. Cl. 166—245 **12 Claims**

3. A process for recovering hydrocarbons from an underground hydrocarbon formation penetrated by at least one injection well and at least one production well, which comprises:

injecting into a production well a mixture of steam and about 0.01% to about 5% by weight of a foaming agent, based upon the weight of steam in the injected mixture,

said foaming agent represented by the formula,

$$RO(R'O)_nR''SO_3^-M^+,$$

where R is an alkyl radical, branched or linear, having from about 15 to about 21 carbon atoms in the alkyl chain, R' is ethyl or propyl, n has an average value of about 2 to about 5, R'' is ethyl, propyl, hydroxypropyl or butyl, and M^+ is an alkali metal or ammonium ion;

injecting steam into said production well; and

recovering hydrocarbons and other fluids from a nearby well.

4,577,689

METHOD FOR DETERMINING TRUE FRACTURE PRESSURE

Charles E. Dotson, Houston, Tex., assignor to Completion Tool Company, Houston, Tex.

Filed Aug. 24, 1984, Ser. No. 644,043

Int. Cl.⁴ E21B *47/06, 33/16*

U.S. Cl. 166—250 **6 Claims**

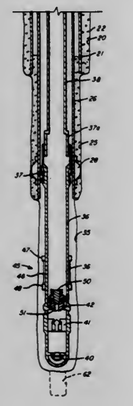
5. A method for determining the fracture pressure of earth formations below a cemented pipe in well bore comprising the steps of:

lowering a pipe into a well bore containing well control liquid where the pipe has a casing shoe and an inflatable packer with an elastomer packing element located proximate to the casing shoe until the casing shoe is located just above the bottom of the well bore;

injecting a volume of cement through the pipe by using a well control fluid under pressure behing the volume of cement and displacing the well control fluid in the well bore in front of the volume of cement through the annulus between the pipe and the well bore until the cement fills

the annulus between the pipe and the well bore and the lower end of the pipe above the inflatable packer;

before the cement sets, inflating the inflatable packer with cement in the pipe under pressure for compressing the packing element between the cement and wall of the borehole and for stressing the earth formations contacted by the packing element of the inflatable packer;



after the cement sets, removing the casing shoe and obtaining access to the earth formations below the end of the liner; and

applying pressure to the well control fluid in the pipe until the fracture pressure of the earth formations below the pipe is determined, and discontinuing the application of pressure upon determining the fracture pressure.

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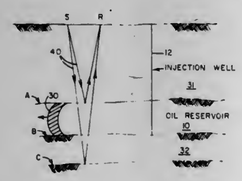
METHOD OF USING SEISMIC DATA TO MONITOR FIREFLOODS

William L. Medlin, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 18, 1984, Ser. No. 601,465

Int. Cl.⁴ E21B *43/243, 47/00*

U.S. Cl. 166—251 **3 Claims**



1. A method for identifying the extent of travel of a combustion front through a subterranean oil reservoir from an injection well following an in situ combustion operation for the recovery of oil from the reservoir, comprising the steps of:

(a) energizing a source of seismic energy;

(b) receiving seismic reflection signals from boundaries between subterranean formation mediums exhibiting seismic velocity contrasts; and

(c) identifying the extent of travel of the combustion front through the oil reservoir from the injection well by detecting

(i) the presence of a seismic reflection signal from a first point on an overlying or underlying reservoir boundary which is absent at a spaced apart second point along said overlying or underlying reservoir boundary due to the combustion front having traveled to a location between said first and second points on said overlying or underlying reservoir boundaries, or

(ii) the absence of a seismic reflection signal from a first point on an overlying or underlying reservoir boundary which is present at a spaced apart second point along said overlying or underlying reservoir boundary due to the combustion front having traveled to a location between said first and second points on said overlying or underlying reservoir boundaries.

4,577,691

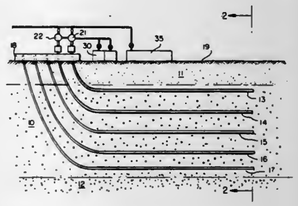
METHOD AND APPARATUS FOR PRODUCING VISCOUS HYDROCARBONS FROM A SUBTERRANEAN FORMATION

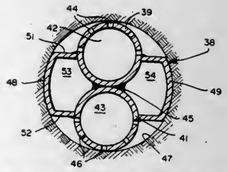
Wann-Sheng Huang, and Sze-Foo Chien, both of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Sep. 10, 1984, Ser. No. 649,260

Int. Cl.⁴ E21B *43/24, 43/30*

U.S. Cl. 166—263 **8 Claims**





1. Method for thermally enhanced production of a viscous hydrocarbon fluid from a productive layer of a formation in which the viscous hydrocarbon is releasably held, whereby to progressively heat discrete segments of the formation to decrease the viscosity of said hydrocarbon fluid, which method includes the steps of;

forming in said formation a plurality of substantially parallel well completions which extend in a generally horizontal direction and which are vertically spaced apart one from the other to define a series of contiguous horizontal formation segments striated by the respective well completions,

selectively introducing steam to the upper one of said contiguous horizontal formation segments whereby to release hydrocarbon fluid therefrom and to enhance the downward flow of a hot hydrocarbon emulsion, and

producing said hydrocarbon emulsion from said horizontal well completion positioned at the lower side of said upper horizontal formation segment, and thereafter individually heating said discrete horizontal formation segments one at a time in descending order, and producing emulsion form each of said horizontal segments by way of the well completion immediately below the heated segment.

5. A well liner for insertion into a horizontal extending well bore within a productive formation which releasably holds a viscous hydrocarbon, to release the hydrocarbon by thermal stimulation through the introduction of a hot pressurized heating medium into said formation, which well liner includes

a plurality of discrete conductors disposed one above the other, that are capable of selectively directing said pressurized heating medium into the formation, and of conducting the hydrocarbon emulsion therefrom,

perforations formed in the walls of said discrete conductors,

lateral panels which depend from and commonly engage the respective conductors, each of which panels includes a contoured wall positioned to slidably engage the adjacent well bore wall during insertion of the liner into said well bore.

4,577,692

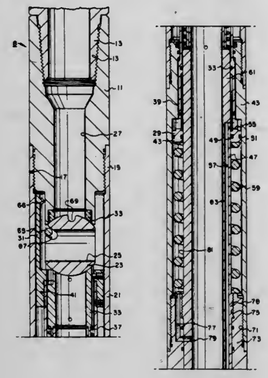
PRESSURE OPERATED TEST VALVE

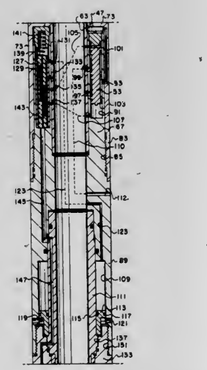
Daniel R. Reardon, Houston, Tex., assignor to Hughes Tool Company, Houston, Tex.

Filed Mar. 4, 1985, Ser. No. 707,914

Int. Cl.⁴ F21B *34/10*

U.S. Cl. 166—321 **11 Claims**





1. A pressure operated test valve for use in a well test string in a well bore, the test string having a packer arranged for sealing the well bore to isolate the annulus between the well bore and the test string above the packer from that portion of the well bore below the packer, comprising:

a rotating ball valve movable between open and closed positions relative to the interior of the test string;

a ball piston for shifting said rotating ball between said open and closed positions;

biasing means for urging said ball piston to its valve closing position;

a power fluid reservoir containing a power fluid;

an axially shiftable power valve located within a power chamber, said power valve having opposed piston faces exposed by means of fluid passageways to fluid in said power fluid reservoir; and

an axially slidable control valve located within a control chamber, said control valve having a pressure responsive annular area exposed to said power fluid for shifting said control valve and having internal passages for supplying pressurized power fluid to a selected face of said power valve to shift said power valve between a first position which isolates said ball piston and a second position which exposes said ball piston to annulus fluid pressure for shifting said ball to said open position.

4,577,693

WIRELINE APPARATUS

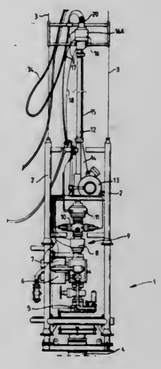
James A. Graser, Newton of Forbes, Alford, Aberdeenshire AB3 8PU, Scotland

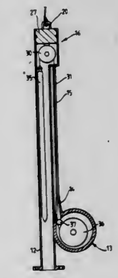
Filed Jan. 15, 1985, Ser. No. 691,554

Claims priority, application United Kingdom, Jan. 18, 1984, 8401315

Int. Cl.⁴ E21B *19/08*

U.S. Cl. 166—338 **7 Claims**



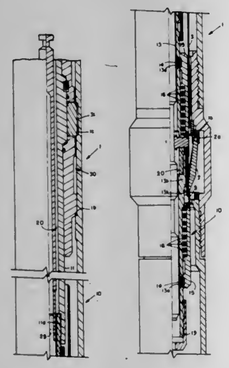


1. Subsea wireline apparatus comprising

(a) a feed tube sealingly engageable with a subsea wellhead so that the interior of the feed tube communicates in use with a subsea drill hole,

(b) a wireline extending within the feed tube and having means for receiving a tool to be transported into the drill hole,
(c) a housing whose interior communicates sealingly with the interior of the feed tube, the housing and the feed tube forming parallel arms of an inverted U-shaped passageway,
(d) a winch mechanism disposed within the housing and having a portion of the wireline secured thereto,
(e) a sealing cap in sealing engagement with the housing,
(f) means for releasing the sealing cap from the housing,
(g) connection means on the sealing cap for attachment of lifting means thereto, and
(h) a pulley mounted on the sealing cap and around which the wireline passes.

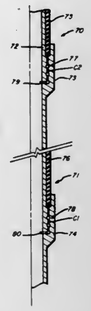
4,577,694
PERMANENT LOCK OPEN TOOL
William L. Brakhage, Jr., Broken Arrow, Okla., assignor to Baker Oil Tools, Inc., Orange, Calif.
Filed Dec. 27, 1983, Ser. No. 565,380
Int. Cl.[4] E21B *34/06, 23/00*
U.S. Cl. 166—382 **20 Claims**



1. Apparatus for permanently locking a shiftable valve in a well conduit in an open position comprising: a mandrel; a resiliently expandable peripheral lock element surrounding said mandrel, shiftable latch means mounted on said mandrel to retain said lock element in a peripherally contracted position; and means operable by movement of said mandrel for shifting said latch means to a non-retaining position relative to said contracted lock element, thereby permitting said resilient lock element to peripherally expand to lock said shiftable valve in the open position.

16. The method of permanently depositing a peripherally expandable element within the bore of a well tool comprising the steps of:
(1) Peripherally contracting the peripherally expandable element about a tubular run-in tool, said run-in tool including an axially shiftable mandrel;
(2) Securing each axial end of the contracted peripherally expandable band by a separate axially shiftable latch; and
(3) Concurrently moving saift shiftable latches by a single axial movement of said mandrel to simultaneously release both axial ends of the peripherally expandable band to expand into the desired position in the tool bore and permit withdrawal of the run-in tool.

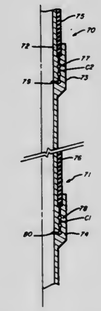
4,577,695
SEQUENTIAL INFLATABLE PACKER
Edward T. Wood, Kingwood, Tex., assignor to Completion Tool Company, Houston, Tex.
Filed Apr. 4, 1984, Ser. No. 596,666
Int. Cl.[4] E21B *33/12*
U.S. Cl. 166—387 **5 Claims**



1. A method of setting more than one inflatable packer means in sequence while disposed in a casing string in a well bore traversing earth formations including the steps of:
disposing at least two inflatable packer means in a longitudinally spaced apart relationship in a tubular casing string in a well bore traversing earth formations where said well bore contains fluid, and said packer means each have inflatable packer elements which are responsive to fluid under pressure in the casing string to inflate into a sealing relationship with a wellbore;
applying pressure to the fluid in the interior of the casing string sufficient to cause fluid to flow through a passage from the interior of the casing string to the interior space behind each of said inflatable packer elements;
controlling the flow rate of fluid in the passage to the interior space behind each of said inflatable packer elements at predetermined different flow rates so that the inflation of the packer elements occurs simultaneously but progressively in a upward direction with the lowermost packer means inflating faster than the next above packer means,
controlling said predetermined different flow rates independently of the amount of pressure applied to the fluid.

4. Apparatus for use in a well bore traversing earth formations comprising:
first and second inflatable packer means coupled in a string of tubular casing traversing earth formations where the well bore contains fluid and each of said packer means has inflatable packer elements which are inflatable into sealing engagement with a well bore,
first means including a first passageway for transmitting fluid under pressure from the interior of the string of casing to an interior space behind said inflatable packer element in said first packer means for inflating such packer element, a first flow rate control valve system in said first passageway for controlling the flow rate of fluid to the interior space behind said inflatable packer element to provide a first flow rate of inflation, said first flow rate control valve system including,
first means for receiving fluid flow from the interior of the mandrel at a first pressure value,
first pressure loss means for developing a second pressure value lower than said first pressure value in response to fluid flow through said pressure loss means, and
first flow rate regulating means for regulating the fluid flow from said pressure loss means and for providing fluid flow at a given flow rate to the internal space between the mandrel and the inflatable element, as a function of said first and second pressure values,
said first flow rate regulating means having a first variable flow regulating member between said pressure loss means and said internal space and first means for controlling said regulating member as a function of said first and second pressure values,
second means including a second passageway for transmitting fluid under pressure from the interior of the string of casing to an interior space behind said inflatable packer element in said second packer means for inflating such packer element, second flow rate control valve system in said second passageway for controlling the flow rate to the interior space behind said inflatable packer element to provide a second flow rate of inflation, said second flow rate control valve system including,
second means for receiving fluid flow from the interior of the mandrel at a first pressure value,
second pressure loss means for developing a second pressure value lower than said first pressure value in response to fluid flow through said pressure loss means, and
second flow rate regulating means for regulating the fluid flow from said pressure loss means and for providing fluid flow at a given flow rate to the internal space between the mandrel and the inflatable element, as a function of said first and second pressure values,
said second flow rate regulating means having a second variable flow regulating member between said pressure loss means and said internal space and second means for controlling said regulating member as a function of said first and second pressure values, p1 said first and second pressure loss means being functionally related to one another to provide a higher flow rate of fluid in a lowermost packer means than in the next above packer means for inflating a packer element on the lowermost packer means into sealing engagement with a wellbore prior to inflating a packer element on a packer means into sealing engagement with a well bore.

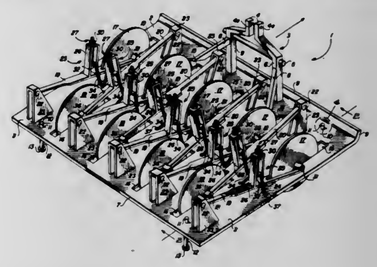
4,577,696
SEQUENTIAL INFLATABLE PACKER
George O. Suman, Houston, Tex., assignor to Completion Tool Company, Houston, Tex.
Filed Apr. 5, 1984, Ser. No. 596,854
Int. Cl.[4] E21B *33/12*
U.S. Cl. 166—387 **4 Claims**



1. A method of setting more than one inflatable packer means in sequence while disposed in a casing string in a well bore traversing earth formations including the steps of:
disposing at least two inflatable packer means in a longitudinally spaced apart relationship in a tubular casing string in a well bore traversing earth formations where said well bore contains fluid, and said packer means each have inflatable packer elements which are responsive to fluid under pressure in the casing string to inflate into a sealing relationship with a wellbore;
applying pressure to the fluid in the interior of the casing string sufficient to cause fluid to flow through a passage from the interior of the casing string to the interior space behind each of said inflatable packer elements;
controlling the flow rate of fluid in the passage to the interior space behind each of said inflatable packer elements at different flow rates so that the inflation of the packer elements occurs simultaneously but progressively in a upward direction with the lowermost packer means inflating faster than the next above packer means.

4. Apparatus for use in a well bore traversing earth formations comprising:
first and second inflatable packer means coupled in a string of tubular casing traversing earth formations where the well bore contains fluid and each of said packer means has inflatable packer elements which are inflatable into sealing engagement with a well bore,
first means including a first passageway for transmitting fluid under pressure from the interior of the string of casing to an interior space behind said inflatable packer element in said first packer means for inflating such packer element, first flow rate control means in said first passageway for controlling the flow rate of fluid to the interior space behind said inflatable packer element to provide a first flow rate of inflation,
second means including a second passageway for transmitting fluid under pressure from the interior of the string of casing to an interior space behind said inflatable packer element in said second packer means for inflating such packer element, second flow rate control means in said second passageway for controlling the flow rate to the interior space behind said inflatable packer element to provide a second flow rate of inflation,
said first and second flow rate control means being functionally related to one another to provide a higher flow rate of fluid in a lowermost packer means than in the next above packer means for inflating a packer element on the lowermost packer means into sealing engagement with a wellbore prior to inflating a packer element on a packer means into sealing engagement with a well bore.

4,577,697
SOD CUTTING APPARATUS
Ross D. Moak, Rte. 1, Box 33, Athens, La. 71003
Filed Mar. 19, 1984, Ser. No. 591,025
Int. Cl.[4] A01B *45/02*
U.S. Cl. 172—21 **19 Claims**



1. A sod cutting apparatus comprising:
(a) a slide member;
(b) at least one slot provided in longitudinal orientation in said slide member;
(c) at least one fulcrum secured to said slide member in substantial alignment with said slot;
(d) at least one hinge arm having one end pivotally attached

to said fulcrum and the opposite end of said hinge arm extending to said slot;

(e) at least one blade means rotatably secured to said opposite end of said hinge arm and positioned in registration with said slot; and

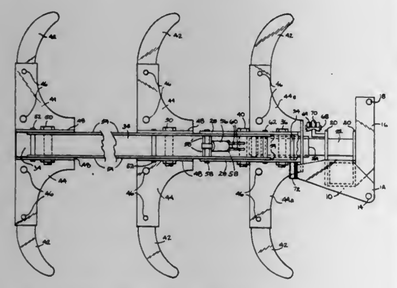
(f) an adjusting bracket attached to said hinge arm, a bolt extending upwardly through said adjusting bracket, bias means attached to said bolt and to said slide member and a nut threadably secured on said bolt for maintaining said bolt in said adjusting bracket, adjusting the tension in said bias means and adjusting the depth of penetration of said blade means into the soil beneath said slide member when said slide member is caused to traverse the soil by a motive force.

4,577,698

VARIABLE WIDTH TWO-WAY GANG PLOW

Glen A. Watts, Rte. 3, Box 120, McMinnville, Oreg. 97129

Filed Jan. 20, 1984, Ser. No. 572,677
Int. Cl.[4] A01B *3/42*
U.S. Cl. 172—225 **5 Claims**



1. A two-way gang plow comprising:

(a) a main frame having horizontal axis pivot means for attachment to a tractor,

(b) a plow bottom frame support mounted on the main frame for rotation about the longitudinal axis of the main frame,

(c) power means interconnecting the main frame and the plow bottom frame support for rotating the latter,

(d) a pair of plow bottom attachment members secured in fixed position to the plow bottom frame support,

(e) a plow bottom secured detachably to each of said fixed plow bottom attachment members, the latter being positioned to dispose the plane of the land sides of the associated plow bottoms substantially parallel to the longitudinal axis of the main frame,

(f) an elongated plow bottom support frame supported adjacent its forward end by the plow bottom frame support for pivotal movement about a vertical axis displaced laterally from the longitudinal axis of the main frame for adjusting the angular disposition of the plow bottom support frame relative to the longitudinal axis of the main frame,

(g) adjustment means interengaging the plow bottom frame support and the plow bottom support frame for adjusting the latter relative to the longitudinal axis of the main frame,

(h) a plurality of pairs of plow bottom attachment members disposed at longitudinally spaced intervals along the length of the plow bottom support frame,

(i) a plow bottom secured detachably to each plow bottom attachment member, each plow bottom having a land side,

(j) pivot means securing each pair of plow bottom attachment members to the plow bottom support frame for pivotal movement about an axis extending parallel to the plane of the land sides of the associated plow bottoms, and

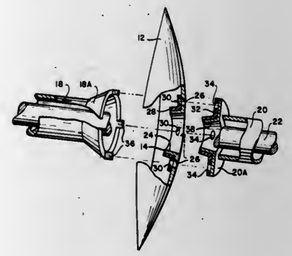
(k) a tie rod member pivotally interconnecting all of the pivoted plow bottom attachment members and secured pivotally adjacent its forward end to the plow bottom frame support for pivoting all said pivoted attachment members simultaneously and to the same degree for maintaining the planes of the land sides substantially parallel to the longitudinal axis of the main frame.

4,577,699

CUSHION MOUNTED DISC WITH INTERCONNECTING SPOOL ASSEMBLY

Robert B. Rottinghaus, 4121 S. Canfield Rd., Jesup, Iowa 50648

Filed Mar. 13, 1984, Ser. No. 589,201
Int. Cl.[4] A01B *61/00, 71/04*
U.S. Cl. 172—570 **12 Claims**



1. A yieldable disc assembly for use on a shaft rotatably mounted to an implement, said assembly comprising:

a disc having a conical hub portion with a center aperture within which said shaft is positioned and a plurality of peripheral apertures spaced around said center aperture;

a first spool section positioned on said shaft adjacent a first lateral portion of said disc, said first spool section including a first end portion adapted to receive said hub in complementary tight-fitting relation and including a plurality of spacer means extending therefrom;

a second spool section positioned on said shaft adjacent a second, opposing lateral portion of said disc, said second spool including a second end portion adapted to receive said hub in complementary tight-fitting relation; and

first and second resilient spacer members respectively positioned between said disc hub and said first and second spool sections and around the center aperture of said disc, each of said resilient spacer members including a center aperture aligned with the center aperture of said disc and a plurality of peripheral apertures positioned around said center aperture for receiving a respective spacer means therein, wherein a distal end of each of said spacer means is maintained in flush alignment with a peripheral surface on said second end portion of said second spool section, wherein each of said first and second resilient spacer means further includes an outer, generally flat peripheral portion containing said outer peripheral apertures and abutting facing, generally flat surfaces of said disc and an inner conical portion positioned in tight fitting relation with the conical hub portion of said disc.

4,577,700

METHOD AND SYSTEM FOR DISPLACING DRILLING FLUID FROM A DRILL STRING IN A WELL DRILLING SYSTEM

Thomas B. Dellinger, Duncanville; William G. Boston, Dallas; James H. Sexton, Duncanville, and Robert T. Strong, Plano, all of Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 16, 1984, Ser. No. 600,698
Int. Cl.[4] E21B *19/00, 21/10, 47/04*
U.S. Cl. 175—40 **13 Claims**

1. In the rotary drilling of a wellbore with a drill string,

formed with a plurality of sections of drill pipe, and having a drill bit at the lower end thereof, the method of disconnecting and breaking out at least one section of drill pipe from said drill string at a select drill string joint with minimized drilling fluid spillage, comprising steps of:

(a) pulling the drill string out of the wellbore,

(b) continuously rotating the drill string with a top drive drilling motor and circulating drilling fluid through said drill string while said drill string is being pulled from the wellbore,

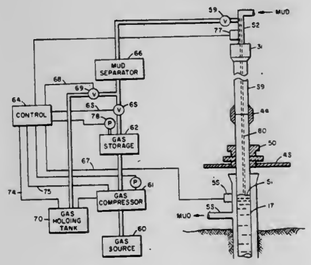
(c) stopping said drill string rotation and said drilling fluid circulation when a select drill string joint is above the drilling rig floor,

(d) injecting compressed gas into the drill string to displace the drilling fluid in that portion of the drill string above said select drill string joint,

(e) stopping the injection of compressed gas into the drill string when the drilling fluid level has fallen below said select drill string joint, and

(f) breaking out that portion of the drill string above said selected drill string joint.

8. In a well drilling system wherein a power rotating means delivers torque to rotate a drill string suspended from a travel-



ing block moving in response to movement of a cable arranged over multiple sheaves mounted in a crown block, the drill string turns a bit drilling a borehole into subsurface formations and a drilling fluid is circulated to keep the bit and bottom of the borehole cleaned of cuttings, a system for breaking out a portion of the drill string which has been pulled out of the well after drilling operations, comprising:

(a) a source of compressed gas,

(b) a first valve which is opened to allow compressed gas from said source to be injected into the drill string,

(c) means for sensing the level of the drilling fluid into the drill string as the ompressed gas displaces the drilling fluid,

(d) means for closing said first valve to stop the injection of compressed gas into the drill string when the sensing means indicates the drilling fluid level to be below that portion of the drill string which is to be broken out,

(e) a second valve which is opened following the closing of said first valve to vent the compressed gas from the drill string, and

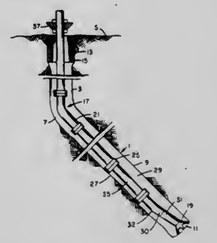
(f) means for breaking out said portion of the drill string upon the completion of the venting of said compressed gas.

4,577,701

SYSTEM OF DRILLING DEVIATED WELLBORES

Thomas B. Dellinger, Duncanville, and Wilton Gravley, Farmers Branch, both of Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 8, 1984, Ser. No. 638,915
Int. Cl.[4] E21B *7/04, 7/08*
U.S. Cl. 175—61 **4 Claims**



1. A system for the rotary drilling of a deviated wellbore into the earth, comprising

(a) a drill string,

(b) a drill bit,

(c) a drill motor for rotating said drill bit independently of rotation of said drill string,

(d) a bent sub affixing said drill motor to the lower end of said drill string for directing the axis of rotation of said drill bit such that it is angularly displaced from the axis of said drill string,

(e) a measuring-while-drilling system for providing an indication of the directivity of said wellbore,

(f) means responsive to said measuring-while-drilling system for rotating said drill string along with the independent rotation of said drill bit for effecting a straight path for said wellbore, and

(g) means responsive to said measuring-while-drilling system for stopping the rotation of said drill string and maintaining only rotation of said drill bit for effecting a change in the direction of the wellbore from said straight path.

4,577,702

METHOD OF PREVENTING DRILL STRING OVERFLOW

Ben V. Faulkner, Washington, Okla., assignor to Faulkner Oil Field Services, Inc., Washington, Okla.

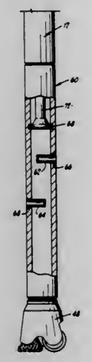
Filed Mar. 28, 1985, Ser. No. 717,497
Int. Cl.[4] E21B *7/00, 17/00*
U.S. Cl. 175—65 **12 Claims**

1. A method of preventing drilling fluid overflow when raising a drill string suspended within a well bore and removing drill pipe sections therefrom comprising the steps of:

connecting a tool joint in said drill string near the bottom end thereof, said tool joint including at least one shear plug sealingly attached thereto for providing a drilling fluid flow passageway from the interior to the exterior of said tool joint when sheared;

shearing said shear plug in said tool joint whereby drilling

fluid contained in said drill string is drained therethrough when said drill string is raised; and then



raising said drill string and removing drill pipe sections therefrom.

4,577,703

APPARATUS FOR MAKING BOREHOLES IN THE LATERAL WALLS OF NARROW UNDERGROUND MINE WORKINGS

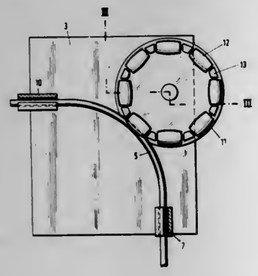
Frieda Cyriacy, Berliner Ring 61, 7150 Backnang; Horst Albers, Sanatorium Calmette, 7542 Schömberg, and Ingeborg Havemann, Schwarenbergs Trasse 50, 7000 Stuttgart, all of Fed. Rep. of Germany

Filed Dec. 20, 1983, Ser. No. 563,410

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1982, 3247921

Int. Cl.⁴ E21B *7/04*

U.S. Cl. 175—79 **19 Claims**



1. In apparatus for drilling boreholes into the lateral mining face of subterranean mining areas of narrow width having: a movable drilling means transportable within the mining area; means for propelling and advancing a drill bit attached to a drill shaft provided with a passage for a flushing fluid, and formed in part with a flexible spiral and including a drive unit for rotating the drill shaft and advancing the drill shaft in the direction of movement of the drilling means; and including a deflection unit positioned behind the drive unit on the drilling means for diverting the flexible steel spiral of the drill shaft to move the core bit in the direction of work at an angle to the direction of movement of the drill shaft, the improvement wherein the flexible spiral is formed with flat opposing surfaces contacting each other and wherein the passage for flushing fluid comprises a hose running inside the flexible spiral provided at its ends with pipe extensions and coupling pieces secured to the ends of the flexible spiral sealing the pipe extension and therefore said hose thereto.

4,577,704

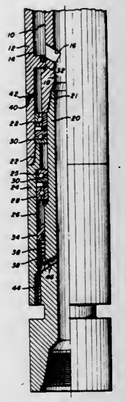
BEARING SYSTEM FOR A DOWNHOLE MOTOR

James T. Aumann, Salt Lake City, Utah, assignor to Norton Christensen, Inc., Salt Lake City, Utah

Filed Sep. 15, 1980, Ser. No. 187,011

Int. Cl.⁴ E21B *4/02*

U.S. Cl. 175—107 **4 Claims**



1. A bearing means for the driven shaft of a rotating tool in an oil well or the like, the driven shaft being hollow to convey drilling fluid flowing down the drill string to a drill bit, there being a motor adapted to rotate the driven shaft and wherein the drilling fluid is forced down the drill string under pressure to flow through and then out of the drill bit to clear debris from around the drill bit and flush the debris out of the well, comprising relatively stationary tubular means supported from the lower end of the drill string having an interior wall forming a chamber, said driven shaft extending downwardly through said chamber and having its outer wall spaced from the interior wall of said tubular means, said shaft supporting said drill bit on its lower end and being rotatably supported within said chamber with the tool extending beyond the lower end of said tubular means, main bearing means within said chamber for rotatably supporting said driven shaft, oil seal means in said chamber disposed above and below said main bearing means, one of said sealing means including a piston that is longitudinally slidable in said chamber, oil for lubricating said bearing means being confined between said seals within said chamber, said oil seal means being exposed to the pressure of the fluid flowing down through the hollow shaft to said tool before the fluid enters the well being drilled, and a restricted passage to allow drilling fluid to flow outwardly from between and to the outside of said driven shaft and said tubular means into said well said restricted passage serving to maintain internal fluid pressure against said piston whereby there is substantially no pressure drop across the lubricant chamber seals, all of the radial thrusts of the driven shaft being taken up by said main bearing means.

4,577,705

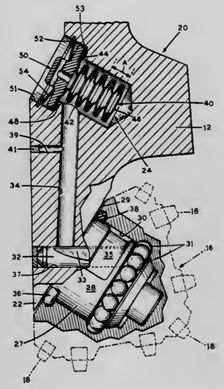
BELLOWS LUBRICANT PRESSURIZER FOR SEALED BEARING ROCK BITS

Donald G. Cross, Laguna Beach, Calif., assignor to Smith International, Inc., Newport Beach, Calif.

Filed Apr. 23, 1984, Ser. No. 602,771

Int. Cl.⁴ E21B *9/08*

U.S. Cl. 175—228 **6 Claims**



1. A means for pressurizing a bearing lubrication system for a sealed bearing rotary cone rock bit prior to use of said bit in a drilling operation, said rock bit consisting of a bit body with at least one rotary cutter cone rotatively secured to a journal bearing projecting from a leg extending from said body, said pressurizing means comprising:

a grease reservoir chamber formed in said body of said bit,

conduit means formed within said body and leg in communication with said reservoir and bearing surfaces formed between said at least one cutter cone and said journal bearing projecting from said leg,

seal means positioned between said rotary cutter cone and said journal bearing,

a pressure responsive cover cap adapted to release internal pressure in excess of 160 pounds per square inch for said reservoir chamber,

a lubricant distributed within said reservoir chamber, conduit means and between said bearing surfaces, and

means to pressurize said lubricant within said rock bit lubrication system to establish a positive internal pressure differential to prevent liquid and detritus from entering said bit past said seal and cover cap means to said bearing surfaces during operation of said rock bit, said means to pressurize said lubricant within said reservoir is a convoluted metal bellows entrapped within said reservoir chamber, said convoluted bellows being compressed to exert a predetermined positive pressure differential between 75 and 150 pounds per square inch, the pressure differential is between the internal lube system and the outside of the bit.

4,577,706

ROTARY DRILL BITS

John D. Barr, Cheltenham, England, assignor to NL Petroleum Products Limited, London, England

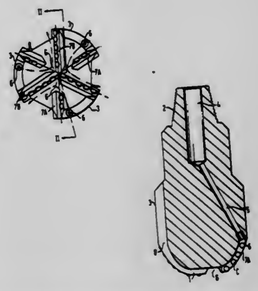
PCT No. PCT/GB83/00227, § 371 Date May 10, 1984, § 102(e) Date May 10, 1984, PCT Pub. No. WO84/01186, PCT Pub. Date Mar. 29, 1984

PCT Filed Sep. 16, 1983, Ser. No. 611,008

Claims priority, application United Kingdom, Sep. 16, 1982, 8226466

Int. Cl.⁴ E21B *10/00, 10/60, 10/46*

U.S. Cl. 175—329 **14 Claims**



1. A rotary bit for use in drilling a borehole in a subsurface formation comprising a bit body having a central bore, the body having a leading face and a trailing gauge region, said gauge region having a plurality of generally longitudinally-extending, circumferentially spaced flow slots recessed therein into for permitting flow of fluid longitudinally along said gauge region, and a plurality of flow-restrictive surfaces interposed between said flow slots for contacting the wall of such borehole, walls on the bit dividing the leading face into fluid channels, cutting elements on at least some of the walls, passageways connecting the central bore to openings in the fluid channels, wherein, as to at least one of said openings, the nearest portion of said gauge region generally radially aligned with said opening is an adjacent one of said flow-restrictive surfaces, wherein at least two wall portions are arranged relative to such opening so that most of the fluid emerging therefrom is directed to travel in a path inwardly along said leading face towards the central axis of the bit and then to one of said slots in the gauge region, at least some of said cutting elements being disposed in said path, the adjacent flow restrictive surface of said gauge region being adapted to cooperate with the wall of such borehole to inhibit fluid from such opening from flowing directly outwardly in a generally radial direction and thence along said gauge region.

4,577,707

METHOD OF AND APPARATUS FOR COMBINATORIAL COMPUTATION

Masao Fukuda, Shiga, Japan, assignor to Kabushiki Kaisha Ishida Koki Seisakusho, Kyoto, Japan

Filed Nov. 29, 1982, Ser. No. 445,013

Claims priority, application Japan, Nov. 30, 1981, 56-193343

The portion of the term of this patent subsequent to Apr. 16, 2002, has been disclaimed.

Int. Cl.⁴ G01G *19/22, 19/52*

U.S. Cl. 177—25 **3 Claims**

1. An apparatus for combinatorial computation comprising:

a plurality of weighing heads charged with batches of articles to be weighed, for respectively weighing the batches of articles and for generating respective weighing data items;

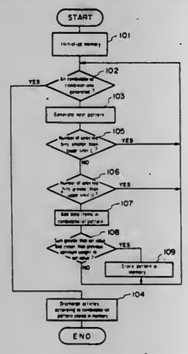
a combinatorial pattern generating unit for successively

generating combinatorial patterns corresponding to combinations of the weighing data items;

a combinatorial processing unit, coupled to said weighing heads and said combinatorial pattern generating unit, for adding the weighing data items according to the combinatorial patterns generated by said combinatorial pattern generating unit;

a numerical range setting unit for setting a range with upper and lower limits for the number of weighing data items required to take part in the adding operation of said combinatorial processing unit; and

a range discriminator, coupled to said combinatorial pattern generating unit, said combinatorial processing unit, and said numerical range setting unit, for determining whether the number of weighing heads, corresponding to a combination of the weighing data items according to a combinatorial pattern produced by said combinatorial pattern generator, falls within the range set by said numerical range setting unit, and for skipping the adding operation and causing said combinatorial pattern generator to produce a next combinatorial pattern when said number of weighing heads falls outside of said range, the lower limit of the range set by said numerical range setting unit being greater than zero and less than substantially half the number of weighing heads, the upper limit being less than the total number of weighing heads and greater than substantially half the number of weighing heads, whereby combinations of weighing data items corresponding to a number of weighing heads which is less than all of said weighing heads, will be added together to find a combination of weighing data items which is equal or closest to a set value.



4,577,708

WEIGHING APPARATUS

Richard M. Brook, Huddersfield, England, assignor to Autosystems Limited, Huddersfield, England

Filed Aug. 17, 1984, Ser. No. 641,590

Claims priority, application United Kingdom, Sep. 2, 1983, 8323557

Int. Cl.[4] G01G *19/00, 19/04;* B65G *17/32*

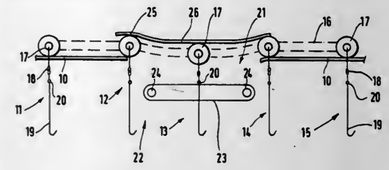
U.S. Cl. 177—145 8 Claims

1. Apparatus for weighing a succession of articles, said apparatus comprising:

a weighing device positioned at a weighing station, said weighing device having a weighing surface;

a plurality of article carriers, each said article carrier including a first part and an associated second part for carrying an article, said first and second parts being movable relative to each other in a vertical direction, said first parts being interconnected for moving said carriers through said weighing station, each said second part including a contact surface engageable with said weighing surface, each said contact surface and said weighing surface being in substantially the same plane in said weighing station;

means for lowering each said first part in said weighing station when each said contact surface and said weighing surface are in contact with each other to thereby transfer



to said weighing surface the weight of the article carried by the associated second part while maintaining adjacent second parts in said weighing station in the same vertical position with respect to each other, whereby physical interference between adjacent articles in the weighing station is minimised.

4,577,709

WEIGHING SCALE WITH A LOAD CELL

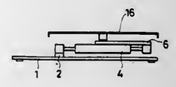
Yoshihumi Shibahara, and Akira Komoto, both of Shiga, Japan, assignors to Shimadzu Corporation, Kyoto, Japan

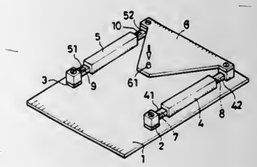
Filed Dec. 22, 1983, Ser. No. 565,019

Claims priority, application Japan, Dec. 24, 1982, 57-229607

Int. Cl.[4] G01G *3/14, 3/08, 21/24;* G01L *1/22*

U.S. Cl. 177—211 4 Claims





1. A weighing scale in which a load cell is used to detect a weight value to be measured, said weighing scale comprising:

two parallel cantilevers with the free ends connected to each other through a connecting means, which provides a loading portion;

four strain gauges as strain detecting means, every two of which are stuck separately on two predetermined strain-detecting portions in the longitudinal direction of each of said two parallel cantilevers; and

a weighing tray connected to said loading portion,

said two parallel cantilevers, said connecting means and said four strain gauges constituting a load cell having four strain detecting means; and

the outputs from said four strain gauges giving the weight value of a weight placed on said weighing tray.

4,577,710

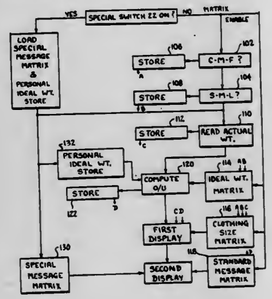
APPARATUS FOR PROMOTING GOOD HEALTH

Edward Ruzumna, 3974 Winterset Ct., West Bloomfield, Mich. 48003

Filed Dec. 12, 1983, Ser. No. 560,341

Int. Cl.[4] G01G *23/00*

U.S. Cl. 177—245 2 Claims



1. Apparatus for promoting good health and addressing both the user's weight and a particular medical condition other than departure of the user's weight from a standardized weight but which bears a medically recognized correlation with departure of a user's weight from a standardized weight, comprising a scale having a weighing platform onto which a user steps, a display for displaying information to the user standing on the platform and control means acting upon the measured weight of the user and certain other inputs, including an electronic medium which is manually installable on and removable from the apparatus and contains data relating to the particular medical condition correlated with departure of measured weight from standardized weight, to provide messages on the display relating to both departure of the user's measured weight from a standardized weight and also to the particular medical condition with respect to which departure of measured weight from desired weight has a medically recognized correlation, the particular message presented on the display relating to the particular medical condition being developed from departure of the user's measured weight from standardized weight.

4,577,711

TANDEM WHEEL FLEXIBLE DRIVE SUSPENSION

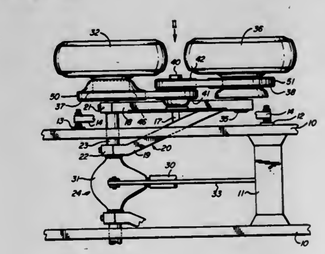
Claude O. Butler, 7074 Brentwood Dr., Brentwood Bay Post Office British Columbia, Canada V0S 1A0

Filed May 24, 1984, Ser. No. 614,110

Claims priority, application Canada, Oct. 24, 1983, 439573

Int. Cl.[4] B62D *61/10*

U.S. Cl. 180—24.1 16 Claims



1. A tandem rear wheel assembly for a vehicle, the assembly comprising:

(a) an axle having a drivable first pair of wheels mounted thereon;

(b) a pair of arms, each arm having its one end secured to the axle at a position between the centre of the axle and a respective one of the wheels mounted thereon, the arms extending from the axle in generally parallel spaced relation and being of equal length;

(c) a second pair of wheels, each wheel of the second pair of wheels being mounted for rotation on the other end of a respective one of the pair of arms, the rotational axes of the second pair of wheels being parallel to the axle;

(d) actuable drive connection means being positioned between each wheel of the second pair of wheels and a respective one of the first pair of wheels, each wheel of the second pair of wheels being adapted to be driven by the respective one of the first pair of wheels during actuation of the drive connection means; and

(e) a suspension assembly, the suspension assembly extending from the frame of the vehicle to a central position on the arms.

4,577,712

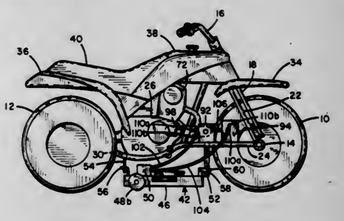
OFF-THE ROAD VEHICLE FOR RECREATIONAL AND WORK APPLICATIONS

Douglas C. Foote, Coon Rapids, and James E. Grinde, Anoka, both of Minn., assignors to Yamaha Hatsudoki Kabushiki Kaisha, Japan

Filed Aug. 31, 1984, Ser. No. 645,821

Int. Cl.[4] B60K *17/28*

U.S. Cl. 180—53.4 9 Claims



1. In combination with an off-the-road motor power recreational vehicle of the type comprising at least one steering front wheel, two relatively large size, low pressure driving rear wheels, an engine unit mounted in the vicinity of the center of a vehicular body for transmitting the revolutions of the output shaft of said engine unit to said rear wheels through a transmission, and a rider's seat arranged above and at the back of said engine unit, a means for rapidly converting said recreational vehicle to a working vehicle and vice versa comprising:

(a) a hydraulic pump means adapted to be driven by said output shaft at a point upstream of said transmission;

(b) a hydraulic fluid reservoir;

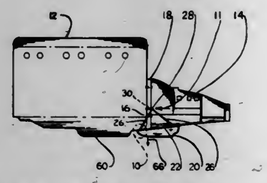
(c) a manually operable hydraulic pump clutch interposed between said engine output shaft and said pump means;

(d) a hydraulic motor coupled in driving relation to a working accessory;

(e) quick-disconnect coupler means disposed in a hydraulic line connecting said hydraulic pump to said hydraulic motor, said quickdisconnect coupler means having valve members for preventing hydraulic fluid from flowing out of said lines when said coupler is in its separated state; and

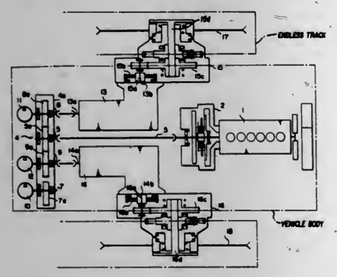
(f) means for rapidly coupling and uncoupling said working accessory to and from said vehicular body.

4,577,713
AUTOMOTIVE ENGINE OIL DRIP PAN
Donald A. Moon, 7000 Brighton Rd., Brighton, Mich. 48116
Filed Feb. 8, 1984, Ser. No. 577,957
Int. Cl.⁴ B62D *25/20*
U.S. Cl. 180—69.1 **14 Claims**



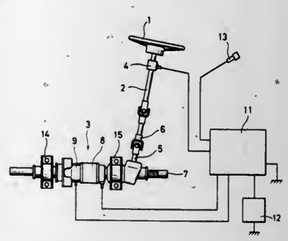
1. In combination with an oil lubricated automotive vehicle engine and powertrain combination wherein the engine has a power output coupled to the powertrain so that power from the engine can be delivered through the powertrain for propelling the vehicle, said engine having a bearing and seal adjacent the operative coupling of its power output with the powertrain, the improvement which comprises means to collect oil which leaks through the bearing and seal comprising an open-top pan disposed in association with the engine and powertrain to catch oil leaking from the bearing and seal, an oil absorbent medium disposed in said pan for absorbing oil, said medium having a preference for absorption of oil over water, and means for releasably mounting said pan on the engine and powertrain combination so as to secure the pan on the engine and powertrain combination during use and to permit the pan to be released to a position for replacement of the oil absorbent medium during service in which the engine has an oil pan at the bottom of the engine and wherein said open-top pan is disposed above and behind the bottommost portion of the engine oil pan such that said open-top pan does not decrease the road clearance of the vehicle nor extend forwardly of the bottommost portion of the engine oil pan.

4,577,714
POWER TRANSMISSION ARRANGEMENT FOR A HYDROSTATICALLY DRIVEN VEHICLE
Noriyasu Tokunaga, Komatsu, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan
Filed Dec. 20, 1983, Ser. No. 563,343
Int. Cl.⁴ B60K *17/00*
U.S. Cl. 180—70.1 **1 Claim**



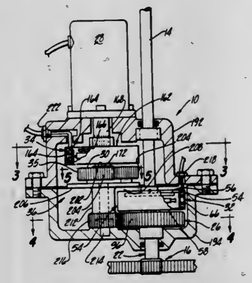
1. A power transmission arrangement for a hydrostatically driven vehicle having a vehicle body and a pair of endless tracks each mounted on each side of the vehicle body comprising:
a prime mover mounted at the rear of the vehicle;
a power transmission shaft connected to said prime mover;
power distributor means mounted on a front section of the vehicle body, said power distributor means having a power input connectible to said power transmission shaft and at least two power outputs;
a pair of pump and motor units each unit being mounted on either side of the vehicle body relative to said power transmission shaft, intermediate said prime mover and said power distributor means, and forming a hydrostatic transmission, each unit having a power input connectible to the power output of said power distributor means and a power output; and
a pair of final drive means for driving said endless tracks, each of said final drive means being connectible to a power output of said pump and motor unit.

4,577,715
POWER ASSIST STEERING GEAR ASSEMBLY
Naoki Saito, Maebashi, Japan, assignor to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 16, 1984, Ser. No. 631,071
Claims priority, application Japan, Jul. 22, 1983, 58-132828
Int. Cl.⁴ B62D *5/04, 5/06*
U.S. Cl. 180—79.1 **3 Claims**



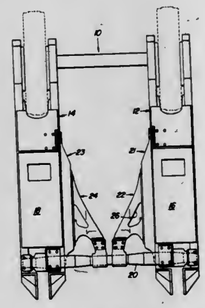
1. Power assist steering assembly for vehicles comprising:
rotary shaft means connected to a steering wheel to be rotated in unison therewith;
an elongated member linearly movable in opposite directions for pivoting of dirigible wheels;
rack and pinion gear means for drivingly connecting the rotary shaft means and the elongated member, the gear means including a pinion gear rotatable in unison with the rotary shaft means and a rack gear provided on the elongated member at a first axial position and disposed in meshing engagement with the pinion gear;
ball screw and nut means including thread means provided on the elongated member at a second axial position, rotatable nut means circumscribing at least a portion of said thread means and ball means for transmitting force between said nut means and said thread means;
an electric motor disposed at a third axial position axially between the first and second positions and including a stator, a rotor and a rotation output member connected to the rotor, the stator, rotor and rotation output member being coaxially arranged around the elongated member;
rotation transmitting means from the motor to the nut means of the ball screw and nut means, the rotation transmitting means including electromagnetic clutch means disposed at a fourth axial position axially between the rotation output member of the motor and said nut means of the ball screw and nut screws, said electromagnetic clutch means being controlled independently of the motor and including a pair of radially extending clutch faces connected to said rotation output member and said nut means respectively and coil means for controlling the clutch faces electromagnetically so that when the clutch faces are brought into frictional contact with each other rotation of the motor is transmitted to the nut means and when the clutch faces are spaced apart from each other the nut means is completely released from the motor;
means for detecting torque applied to the steering wheel; and
means for controlling the motor and the electromagnetic clutch means in response to detection of torque by the torque detecting means.

4,577,716
SERVO STEERING SYSTEM
Peter Norton, 170 Beaver Brook, Lincoln Park, N.J. 07035
Filed Jun. 21, 1984, Ser. No. 623,203
Int. Cl.⁴ B62D *5/04*
U.S. Cl. 180—79.1 **26 Claims**



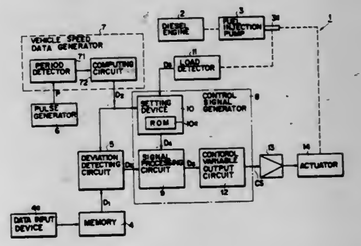
1. In a vehicle power steering system of the type comprising dirigible wheels, a manual input means, an electric servomotor, a steering gear, means for generating a torque signal corresponding to torque transmitted by said manual input means, and control means adapted to control energization of said servomotor in accordance with the torque signal, the improvement comprising:
restoring means responsive to turning of the dirigible wheels toward a straight ahead direction for controlling the energization of the servomotor to reduce its resistance to the turning of the dirigible wheels toward the straight ahead direction.

4,577,717
TRACK UNIT EXTENSION FOR WIDE TRACK CRAWLER VEHICLES
Joseph J. Smith, and Paul K. Erickson, both of Dubuque, Iowa, assignors to Deere & Company, Moline, Ill.
Filed May 17, 1982, Ser. No. 378,699
Int. Cl.⁴ B62D *55/10*
U.S. Cl. 180—9.1 **2 Claims**



1. In a track frame assembly of the type including transversely spaced track frames, each of said track frames including fore-and-aft extending main frame portions, a transverse horizontal pivot shaft means extending between and connected to the main frame portions at a rearward location thereof, a plurality of inwardly and rearwardly extending generally diagonal braces, and means for securing a respective diagonal brace to a respective one of said main frames such that the rearward section of said braces are pivotally connected to said pivot shaft means, wherein the improvement comprises, said means for securing said respective diagonal brace to a respective one of said main frames including a spacer having a first member having a generally flat top surface and opposite outwardly extending end walls angled outward with respect to said top surface leading to respective outwardly extending mounting walls fixably mounted to a respective main frame, a plurality of second members each extending generally horizontally fixably mounted along a portion of its inward surface to a respective side of each one of said end walls of said first member, said top surface having a portion overhanging a portion of one side of each of said second member and fixably mounted thereto; said diagonal brace fixably mounted to said top surface of a respective one of said first member, said spacer being fixably mounted to a respective one of said main frame portions.

4,577,718
APPARATUS FOR CONTROLLING THE SPEED OF A VEHICLE WITH INTERNAL COMBUSTION ENGINE
Masahito Ueno, Higashimatsuyama, Japan, assignor to Diesel Kiki Co., Ltd., Japan
Filed May 3, 1984, Ser. No. 606,699
Claims priority, application Japan, May 4, 1983, 58-77570
Int. Cl.⁴ B60K *31/04*
U.S. Cl. 180—179 **8 Claims**



1. A vehicle speed controlling apparatus for controlling the speed of an internal combustion engine with PID control to maintain the speed of a vehicle driven by the internal combustion engine at a desired target vehicle speed, said apparatus, comprising:
means for generating a first signal indicative of the desired target vehicle speed;
means for generating a second signal relating to the actual vehicle speed at each instant;
means for producing a load signal relating to the load of the internal combustion engine;
a deviation detecting means responsive to the first and second signals for producing a third signal indicative of the deviation of the actual vehicle speed from the target vehicle speed;
a signal generating means responsive to at least the load signal and the third signal for generating a control signal which has been signal processed in such a way that PID control of the speed of the internal combustion engine can be carried out in accordance with desired PID control characteristic dependent upon at least the load signal; and
means responsive to the control signal for driving a speed adjusting member of the internal combustion engine so as

to maintain the actual vehicle speed at the target vehicle speed.

4,577,719

MOTORCYCLE FUEL SYSTEM WITH FLOW FROM A MAIN TANK THROUGH A LOWER AUXILIARY TANK TO ITS ENGINE

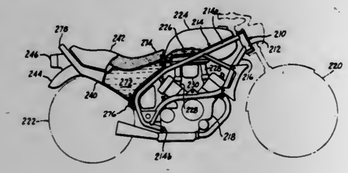
Kazuhiko Nomura; Hisashi Kazuta, and Hiroshi Kimura, all of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Division of Ser. No. 393,542, Jun. 30, 1982, abandoned, which is a continuation of Ser. No. 162,910, Jun. 25, 1980, abandoned. This application Dec. 12, 1984, Ser. No. 680,745

Claims priority, application Japan, Jun. 29, 1979, 54-83110; May 16, 1980, 55-64803; May 16, 1980, 55-64804

Int. Cl.⁴ B60K *15/00*

U.S. Cl. 180—219 **3 Claims**



1. In combination with a motorcycle which has a main frame and an engine mounted to said frame, a fuel supply system for said engine comprising: an upper main tank having a filler neck for filling the same, and a lower outlet port; a separate auxiliary tank disposed at a lower elevation than said main tank, said auxiliary tank having an upper inlet port and a lower outlet port, both of said tanks being mounted to said motorcycle; first conduit means connecting the outlet port of said main tank to the inlet port of said auxiliary tank; and a second conduit means connecting the outlet port of said auxiliary tank to said engine, whereby fuel flow is from said main tank through said auxiliary tank to said engine.

4,577,720

MOTORCYCLE ENGINE COOLING SYSTEM

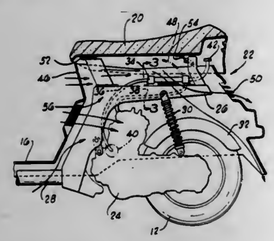
Masumi Hamane, and Masahiko Kimoto, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 9, 1983, Ser. No. 531,217

Claims priority, application Japan, Sep. 11, 1982, 57-138082

Int. Cl.⁴ B60K *11/04*; B62M *7/06*

U.S. Cl. 180—229 **9 Claims**



8. A motorcycle having a rear body containing a rear mounted engine, comprising

a radiator mounted in the rear body above the rear mounted engine;

inlet openings in the front of the rear body;

a passage above the engine in the rear body from said inlet openings to said radiator; and

a seat above the rear body, said seat being hinged to allow access to said radiator.

4,577,721

FOUR-WHEEL DRIVE CAR

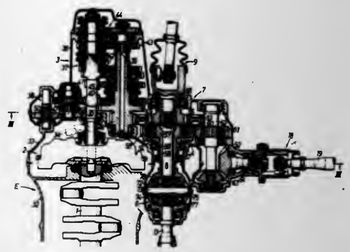
Noboru Ashikawa, Sayama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 6, 1984, Ser. No. 568,843

Claims priority, application Japan, Jan. 18, 1983, 58-6244; Jan. 18, 1983, 58-6245

Int. Cl.⁴ B60K *17/344*

U.S. Cl. 180—248 **5 Claims**



1. A drive train in a four-wheel drive vehicle having an engine mounted on one end thereof with a crankshaft oriented transverse to the direction of vehicle travel, comprising:

a transmission having an output gear driven by the crankshaft and rotatable around an axis parallel to the axis of said crankshaft;

a reduction gear operatively engaged with said output gear;

a first differential gear having a gear and being concentrically engaged with said reduction gear to transmit the output of the reduction gear in a divided manner;

a second differential gear transmitting power from one output of said differential gear to left and right wheels of said one end of the vehicle;

a transmission gear meshing with said gear of the first differential gear for transmitting power from another output of said first differential gear in a direction generally perpendicular to the crankshaft through a propeller shaft to the other end of the vehicle, opposite said one end;

a third differential gear receiving power from said propeller shaft for transmitting power to left and right wheels on said other end; and

wherein a mesh portion where the transmission gear meshes with the gear of the first differential gear is closer to the crankshaft axis of engine than is the axis of said reduction gear.

4,577,722

COMMERCIAL VEHICLE, ESPECIALLY FORKLIFTER

Horst Schibisch, Leonberg, Fed. Rep. of Germany, assignor to Dr. Ing. h.c.F. Porsche AG, Fed. Rep. of Germany

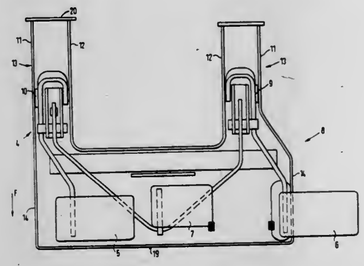
Filed Oct. 19, 1983, Ser. No. 543,419

Claims priority, application Fed. Rep. of Germany, Oct. 19, 1982, 3238597

Int. Cl.⁴ G05G *1/14*

U.S. Cl. 180—315 **23 Claims**

1. A forklift assembly with an operator's platform mounted on the vehicle frame, said platform having mounting supports for actuating elements disposed beneath a floor plate, said elements being accessible from the operator's platform and connected by connecting lines with the devices to be actuated, the assembly comprising a on-piece tub-shaped housing mounted interchangeably by releasable fastening means between cross members in the bottom of the body structure of the vehicle, said tub-shaped housing being open toward the floor plate, and wherein the tub-shaped housing constitutes a preassembled module with operating elements and their connections and the bearing and the mounting supports of actuating elements are disposed within the tub-shaped housing in sealed off capsule-fashion from the interior of the vehicle by a floor plate which is held by fastening elements.



4,577,723

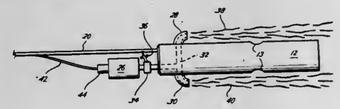
METHOD FOR IMPROVING THE EFFICIENCY OF AIR GUNS

Carl H. Savit, Houston, Tex., assignor to Western Geophysical Company of America, Houston, Tex.

Filed Aug. 3, 1981, Ser. No. 289,564

Int. Cl.⁴ G01V *1/02*

U.S. Cl. 181—120 **1 Claim**



1. A method for generating seismic waves in a body of water comprising the steps of:

immersing an air gun, having at least one exhaust port, in said body of water;

metering a desired amount of a selected long-chain polymer into the water around the exhaust port of said air gun; and

firing said air gun.

4,577,724

EXHAUST MUFFLERS FOR INTERNAL COMBUSTION ENGINES

David Vizard, Cheltenham, England, assignor to Shelburne Incorporated, Grand Terrace, Calif.

Division of Ser. No. 326,002, Nov. 30, 1981, Pat. No. 4,467,887. This application Jun. 18, 1984, Ser. No. 621,874

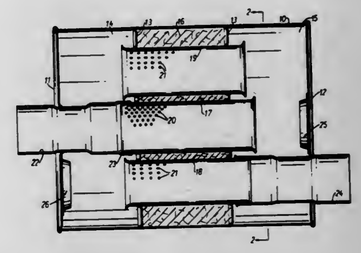
Claims priority, application United Kingdom, Nov. 14, 1981, 8134369

The portion of the term of this patent subsequent to Aug. 28, 2001, has been disclaimed.

Int. Cl.⁴ F01H *1/08*

U.S. Cl. 181—265 **3 Claims**

1. An exhaust muffler comprising a closed chamber, an inlet pipe leading into the chamber, an outlet pipe leading from the chamber, two spaced bulkheads dividing the chamber into first and second buffer compartments separated by an intermediate compartment, at least three pass tubes extending through the bulkheads and across the intermediate compartment, two of the pass tubes forming continuations of the inlet and outlet pipes respectively and having open ends in the buffer compartments respectively, and a noise reflector located opposite the open end of at least one of the pass tubes, the noise reflector being aligned with said at least one pass tube and so shaped as



to reflect down said at least one pass tube a portion of the noise carried by gases flowing along said at least one pass tube.

4,577,725

VEHICLE MOUNTED FIRE ESCAPE CHUTE

Danny P. Hunter, 17226 Eddon, Melvindale, Mich. 48122

Filed May 16, 1984, Ser. No. 610,955

Int. Cl.⁴ A62B *1/20*

U.S. Cl. 182—48 **5 Claims**



1. A fire escape chute for use on a vehicle having an extensible boom with a passenger basket attached at an upper end comprising:

a fire escape chute mounted on the boom, the chute including a plurality of telescoping chute sections; and

means for supporting the sides of the chute, the supporting means including:

cables attached to opposite sides of the chute sections; and

means, mounted on the vehicle, for applying tension to the cables to limit sideways movement of the chute sections.

4,577,726

SAILBOAT MAST LADDER

Gary Wheeler, 855 China Basin, San Francisco, Calif. 94107

Filed May 29, 1985, Ser. No. 738,923

Int. Cl.⁴ B63B *35/28, 29/20*; E06C *1/56, 9/14*

U.S. Cl. 182—93 **10 Claims**

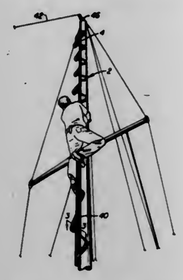
1. A mast ladder for use with a mast on a sailboat of the type having a sail track along the length of the mast and a halyard extending from an upper portion of the mast, the mast ladder comprising:

a flexible, flat support strap having inner and outer edges, first and second opposite sides, an upper end and a lower end;

a plurality of foot loops extending from the first and second support strap sides at alternating positions along the support strap, the foot loops sized for receipt of a user's foot; and

means for coupling the inner edge of the support strap to the sail track; whereby

securing the halyard to the upper support strap end permits the user to raise and lower the mast ladder along the mast



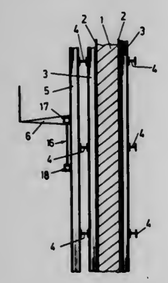
with the inner support strap edge guided along the sail track.

4,577,727

SCAFFOLD FOR THE CONSTRUCTION OF ROUND BUILDINGS OF CONCRETE OR THE LIKE

Peter Frei, Widnau, Switzerland, assignor to Patenver AG, Altstätten, Switzerland

Filed Jun. 16, 1983, Ser. No. 504,784
Claims priority, application Austria, Jun. 16, 1982, 2324/82
Int. Cl.[4] E04G *11/20, 17/14*
U.S. Cl. 182—128 13 Claims



1. A scaffold structure for the construction of a round building from concrete or like material, said structure comprising:

a mounting scaffold including a plurality of vertically spaced, horizontal, substantially annular polygonal rings;

a plurality of vertical supports supported on first sides thereof by said polygonal rings;

a horizontal substantially annular polygonal frame adapted to carry a working platform and to be movable vertically, said frame comprising a plurality of unitary frame portions;

each said frame portion having horizontally spaced opposite ends and comprising parallel horizontal upper and lower members extending longitudinally between said ends and members, including at least one inclined strut, connecting said upper and lower members in fixed vertically spaced relationship;

means for releasably connecting said frame portions end-to-end at varying relative angular relationships and thereby for forming polygonal frames of varying diameter; and

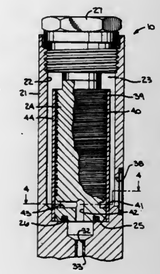
holding means on selected said horizontal members of said frame portions for adjustably connecting said frame to second sides of said vertical supports and thereby for adjusting the vertical height of said frame.

4,577,728

LUBRICANT METERING VALVE

Donald G. Gruett, Manitowoc, Wis., assignor to Oil Rite Corporation, Manitowoc, Wis.

Continuation of Ser. No. 489,258, Apr. 27, 1983, abandoned.
This application Dec. 5, 1984, Ser. No. 678,359
Int. Cl.[4] F16N *27/00;* F15D *1/00*
U.S. Cl. 184—7.4 3 Claims



1. In a valve for metering a liquid lubricant from a source of lubricant to a lubrication point, a valve body having a stepped through bore forming a valve chamber, said chamber having an inlet and outlet, said inlet providing for receipt of the lubricant to fill the chamber with a bath of the lubricant and said outlet being formed by a radially reduced portion of the bore that provides a shoulder serving as the floor of the chamber, a metering assembly disposed in the chamber and immersed in the bath of lubricant, said metering assembly comprising a cylindrical member having a base and a peripherally disposed spiral groove, a sleeve press fit on said cylindrical member to render the groove a closed spiral metering channel having an inlet at the upper end of the member for receiving lubricant from the chamber, said channel commuicating with an outlet in the base of said cylindrical member generally aligned with the bore outlet from the chamber, an O-ring seal disposed between the base of the member and the floor of the chamber and circumferentially relative to the aligned outlets, and means to depress the cylindrical member and thereby the O-ring seal to generally preclude passage of lubricant from the chamber to the lubrication point except by passage through the metering assembly.

4,577,729

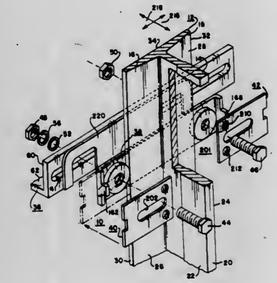
GUIDE RAIL CLAMPING ASSEMBLY

Herman S. Karol, Bricktown, N.J., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 5, 1984, Ser. No. 678,522
Int. Cl.[4] B66B *7/02*
U.S. Cl. 187—95 5 Claims

1. In a guide rail clamping assembly for fixing rail clips to an elevator guide rail while facilitating both fore-aft and between guide (B.G.) adjustment of the guide rail relative to a support structure, including a first mounting member adapted to be fastened to the support structure and which defines an elongated opening, a second mounting member adjacent to the first mounting member having first and second tapped openings aligned with the elongated opening of the first mounting member, first and second rail clip members for engaging the flanges of a guide rail, with each rail clip member having first and second ends, and an opening intermediate its ends aligned with a tapped opening of the second mounting member, first and second bolts extending through the openings in the first and second rail clip members, respectively, and engaging the first and second tapped openings, respectively, in the second mounting member, to enable the flanges of the guide rail to be tightly clamped and locked by the first ends of the rail clips against the second mounting member, with the first and second bolts further extending through the elongated opening in the first mounting member, permitting fore-aft and B.G. adjustment of the guide rail section relative to the first mounting member without releasing said lock, and first and second nuts on the first and second bolts, respectively, for clamping the rail clip members, second mounting member and associated guide rail to the first mounting member, the improvement comprising:

said opening in each of the first and second rail clip members being elongated in a direction between its ends to enable lateral movement of each rail clip relative to its associated



bolt for receiving a guide rail, and including a notch in the second end of each rail clip,

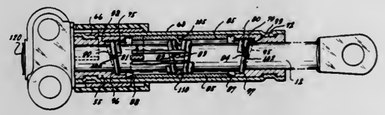
and first and second projections on the second mounting member, said first and second projections being adapted to extend into the elongated openings of the first and second rail clips, respectively, to orient, laterally guide and prevent rotation of the associated rail clip while it is being moved to receive a guide rail, said first and second projections extending into the notches at the second ends of the first and second rail clips, respectively, to orient and prevent rotation and retraction of the rail clips when they are in their clamping position relative to a guide rail.

4,577,730

MECHANICAL LOCK

Clyde R. Porter, Los Angeles, Calif., assignor to P. L. Porter Company, Woodland Hills, Calif.

Filed Aug. 30, 1983, Ser. No. 527,689
Int. Cl.[4] B65H *59/10*
U.S. Cl. 188—67 22 Claims



18. As an article of manufacture, an infinitely positionable mechanical lock comprising:

a housing;

at least one bushing fixed to said housing, said bushing having an inclined spring abutment surface;

a rod axially slidable through said least one bushing relative to said housing;

a coil spring on said rod, said coil spring having a normal inner diameter smaller than the diameter of said rod such that said coil spring normally grips said rod against translational motion within said housing,

pre-biasing means for normally biasing at least one coil of said coil spring against said inclined spring abutment surface and into locking engagement with said rod absent an axial load on said rod relative to said housing; and

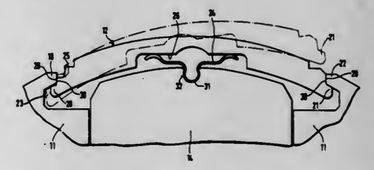
release means actuatable for partly unwinding said coil spring to release said rod for movement through said housing.

4,577,731

FLOATING CALIPER SPOT TYPE DISC BRAKE

Jochen Burgdorf, Offenbach-Rumpenheim, Fed. Rep. of Germany; Alfred Birkenbach, Rochester, Mich., and Ulrich Klimt, Gross-Umstadt, Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Continuation of Ser. No. 440,102, Nov. 8, 1982, abandoned. This application Dec. 27, 1984, Ser. No. 685,606
Claims priority, application Fed. Rep. of Germany, Dec. 16, 1981, 3149883
Int. Cl.[4] F16D *65/14*
U.S. Cl. 188—73.33 8 Claims



1. A floating-caliper spot-type disc brake for use in cooperation with a brake disc mounted on a support for rotation about a disc axis relative thereof, comprising

a pair of brake shoes;

means for supporting said brake shoes at opposite axial sides of the brake disc for movement substantially parallel to the disc axis toward and away from the disc, including a carrier member rigidly connected to the support at one of the axial sides of the brake disc and extending past the brake disc to the other axial side thereof;

means for moving said brake shoes at least toward the brake disc to frictionally engage the same, including a caliper member so mounted on said carrier member for displacement substantially parallel to the disc axis as to straddle the brake disc and having two extensions, one of said extensions protruding generally circumferentially outwardly from one end of said caliper and the second of said extensions protruding substantially circumferentially outwardly from an end of said caliper opposite said one end thereof, and an actuator including two relatively substantially axially displaceable elements arranged on the one axial side of the brake disc and one directly applying braking force to the closer one of said brake shoes while the other is rigid with said caliper member to transmit the braking force through the latter to the other of said brake shoes;

means for guiding said caliper member on said carrier member for said displacement including means for bounding at least one substantially axially extending guiding opening in one of said members, and at least one substantially axially extending guiding pin secured to the other of said members and slidingly received in said guiding opening;

abutment means on said carrier member for said caliper member, including two abutments on said carrier member, one of said abutments extending substantially circumferentially inwardly from one end of said carrier defining a first cut-out radially inwardly of said one abutment, and the second abutment extending circumferentially inwardly from an end of said carrier opposite said one end thereof defining a second cut-out radially inwardly of said second abutment;

means for resiliently urging said caliper member outwardly from the disc axis and generally radially of said axis into a mounted positon relative to said carrier member in which

said one and said second extensions are respectively in said one and said second cut-outs engaged radially outwardly and circumferentially against said abutments; and

said one and said second abutments and said one and said second cut-outs are dimensioned to receive the respective said one and said second extensions of said caliper member so that said caliper member may be moved against the urging of said resilient means into an assembling position in which one of said caliper member extensions is received in one of said cut-outs and said second extension is free to move substantially radially out of said second cut-out past said second abutment.

4,577,732

BRAKE APPARATUS TO RETARD RELATIVE MOVEMENT BETWEEN TWO MEMBERS

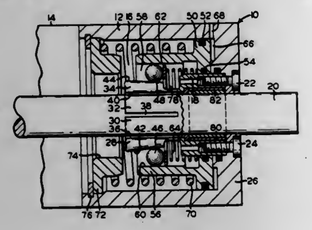
Helmut Gottling, Isernhagen, Fed. Rep. of Germany, assignor to WABCO Westinghouse Steuerungstechnik GmbH, Hanover, Fed. Rep. of Germany

Filed May 21, 1984, Ser. No. 612,113

Claims priority, application Fed. Rep. of Germany, May 26, 1983, 3319042

Int. Cl.⁴ F15B *15/26*

U.S. Cl. 188—67 **18 Claims**



1. A brake apparatus for retarding relative movement between a movable member and a second member, said apparatus comprising:

(a) a housing positioned around the perimeter of at least a portion of one of such members;

(b) a collar fixedly secured to said housing generally around said perimeter of at least a portion of one of such members;

(c) at least two clamping elements fixedly secured to said collar, said clamping elements each having a respective first surface positioned generally coaxial with and a predetermined distance from at least one of such members, each of said clamping elements being flexible and radially movable to frictionally engage one of such members with said respective first surface to thereby apply a braking force, said clamping elements each having a respective second surface generally radially opposite said respective first surface;

(d) at least two ball means within said housing, one of said ball means arranged in abutting engagement and longitudinal rolling relationship with a respective said second surface of one of said clamping elements and a second of said ball means arranged in abutting engagement and longitudinal rolling relationship with a respective second surface of a second of said clamping elements for urging said clamping elements into frictional engagement with said one of such members when said ball means longitudinally rolls along each of said a respective second surface in a first longitudinal direction;

(e) an actuating means disposed within said housing and in coaxial alignment with at least a portion of said clamping elements for imparting rotational movement to said ball means, said actuating means having a third surface spaced from said each of said a respective second surface and arranged in abutting engagement and longitudinal rolling relationship with said ball means in said first longitudinal direction;

(f) an urging means positioned between and coaxial with each of such members and in abutting engagement with said ball means for urging said ball means in said first longitudinal direction; and

(g) at least one of said second and said third surfaces having a preselected inclined with respect to the longitudinal axis of said at least one of such members such that the radial distance between said second and said third surfaces decreases in said first longitudinal direction.

4,577,733

DRUM BRAKE OR CLUTCH

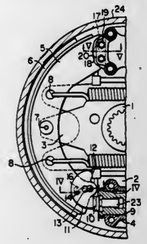
Tadayuki Oguro, Oobu; Teturo Yoshimoto, and Hazime Niki, both of Nagoya, all of Japan, assignors to Nisshin Spinning Co., Ltd. and Sumitomo Heavy Industries Ltd., both of Tokyo, Japan

Filed May 31, 1984, Ser. No. 615,648

Claims priority, application Japan, May 31, 1983, 58-96661

Int. Cl.⁴ F16D *65/24*

U.S. Cl. 188—217 **2 Claims**



1. A torque-transmitting friction device comprising:

(a) a fixing member;

(b) a drum adapted to be rotatable relative to said fixing member;

(c) a pair of actuating devices attached to said fixing member in point symmetry with each other with respect to the center of said drum, said actuating device having a primary bore blanked at one end;

(d) a pair of abutment members projecting from said fixing member inward of said actuating devices;

(e) a pair of arcuate shoes disposed within said drum adjacent to the inner surface of said drum;

(f) one or more return springs acting to separate each of said shoes from said drum;

(g) an actuator piston slidably mounted within each of said actuating devices carrying an abutment surface adjustably retained within said piston; and

(h) a pair of lever members, each pivotally attached to a pin securely attached to one end portion of each of said shoes, said lever member engaging said abutment member at one end and said actuator abutment surface at the opposite end, said lever member being located upon said shoe by a bolt and nut means carried in a slot in said shoe.

4,577,734

BRAKE DRUM

Richard J. Williams, Kenton, Ohio, assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Jan. 20, 1984, Ser. No. 572,274

Int. Cl.⁴ F16D *65/10*

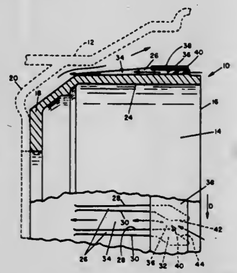
U.S. Cl. 188—218 R **3 Claims**

1. A brake drum comprising:

(a) a cylindrical braking drum including a flanged end and an open end;

(b) a plurality of generally axially extending fins spaced around the exterior surface of the braking drum, with the profiles of the fins being devoid of any portion thereof which overlap in an axial direction;

(c) each of the fins including radially extending side walls which diverge along a length thereof from the open end to provide a widest distance therebetween at a predetermined location from the open end and converge along the length thereof from the predetermined location to the flanged end, wherein adjacent side walls of adjacent fins collectively defining a space therebetween having its narrowest portion at the predetermined location;



(d) the brake drum being intended for rotation in a given direction and wherein the side walls of each fin diverging from the open end to the predetermined location including a first portion extending axially of the drum and facing towards the direction of rotation, and a second portion inclined from the open end to the predetermined location and facing away from the direction of rotation; and

(e) a steel band secured to and encircling the braking drum at the predetermined location, the steel band cooperating with the adjacent side walls and the exterior surface of the braking drum to define a venturi-shaped cooling air channel at the narrowest portion of each of the spaces.

4,577,735

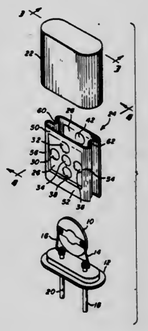
SHOCK ABSORBER FOR QUARTZ CRYSTAL ENCLOSURES USING MULTIPLE CONTACT POINTS TO DISTRIBUTE STRESS

Charles W. Mooney, Lake Worth; Robert E. Phipps, Pompano Beach, and William J. Kuznicki, Coral Springs, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 2, 1984, Ser. No. 627,248

Int. Cl.⁴ F16F *7/00*

U.S. Cl. 188—268 **6 Claims**



1. A shock absorbing mechanism for protection of a planar crystal device against impact with a crystal enclosure wall, said crystal device having opposed major surfaces, said shock absorbing mechanism comprising:

shock absorbing means having a plurality of deformable protuberances for contacting one as said major surfaces when said crystal device is subjected to mechanical shock; and

carrier means for holding said shock absorbing means between one of said major surfaces and said enclosure wall so that said plurality of deformable protuberances contact one of said opposed major surfaces substantially simultaneously when said crystal device is shocked by a force exceeding a predetermined magnitude in a direction toward said shock absorbing means and substantially perpendicular to said opposed major surfaces.

4,577,736

TUBULAR MEMBER, ESPECIALLY FOR A SAFETY STEERING COLUMN FOR MOTOR VEHICLES

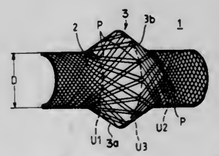
Bernd Bongers, Kirchheim, and Horst Bansemir, Munich, both of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

Filed May 21, 1984, Ser. No. 612,139

Claims priority, application Fed. Rep. of Germany, Jun. 11, 1983, 3321197

Int. Cl.⁴ F16F *7/12*

U.S. Cl. 188—371 **4 Claims**



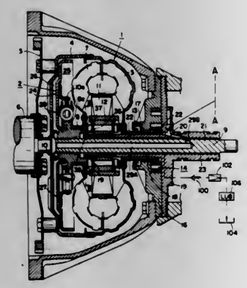
1. A tubular member having a longitudinal axis, especially for a safety steering column for motor vehicles, made of wound fiber-reinforced material strands with a fiber winding angle of essentially ±45° to said longitudinal axis for transmitting a defined torque load and a defined axial load through said tubular member, comprising at least one outwardly bulging section (3) intermediate end portions of said tubular member (1), said outwardly bulging section (3) having a diameter larger than a diameter of said end portions and extending around the entire circumference of the tubular member (1), said outwardly bulging section comprising fiber strands also wound at a winding angle of ±45° relative to said longitudinal axis and so that a spacing between neighboring crossing junctions of fiber strands increases from said diameter of said end portions to said larger diameter, and wherein said fiber strands form said crossing junctions (P) at least where said outwardly bulging section (3) has its largest diameter and where said outwardly bulging section (3) merges into said tubular member, namely at circumferential sites (U1, U2, U3) of largest bending in said fibers.

4,577,737

LOCK-UP TORQUE CONVERTER AND METHOD FOR CONTROLLING CLUTCH SLIP IN LOCK-UP TORQUE CONVERTER

Yasuhiro Nilkura; Yoshiro Morimoto; Hideo Hamada, all of Yokosuka; Masaaki Suga, and Takashi Murasugi, both of Yokohama, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Aug. 1, 1983, Ser. No. 518,915
Claims priority, application Japan, Aug. 2, 1982, 57-134900; Aug. 2, 1982, 57-134901
Int. Cl.[4] F16D *47/06;* G01L *3/02*
U.S. Cl. 192—0.032 14 Claims



3. A lock-up torque converter associated with a prime mover, comprising:

a torque converter including a stationary sleeve, an input shell driven by a prime mover, a pump impeller secured to said input shell and cooperating therewith to form an enclosed fluid space, a turbine runner disposed in said enclosed fluid space between said input shell and said pump impeller and cooperating with said pump impeller to form a toroidal fluid circuit, and an output hub connected to said turbine runner;

a fluid operated friction clutch disposed between said turbine runner and said input shell to define an engagement chamber between said fluid operated clutch and said turbine runner, a disengagement chamber between said fluid operated clutch and said input shell, and a plurality of spring means for providing a drive torque transmitting connection between said turbine runner and said output hub;

a torque sensor means for measuring an actual value of torque transmission from said turbine runner to said output hub and generating a sensor output signal indicative of said actual value of torque transmission;

means for detecting an operating state of said prime mover when said prime mover is operating;

means for determining a desired value of torque transmission from said turbine runner to said output hub in response to the detected operating state of the prime mover and generating a desired signal indicative of said desired value of torque transmission; and

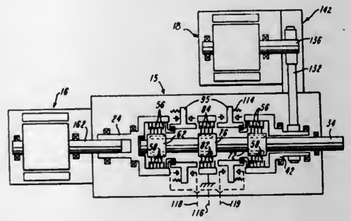
control means for controlling an engaging fluid pressure provided to said fluid operated clutch so as to control slip in said fluid operated clutch in such a manner as to adjust said actual value of torque transmission toward said desired value of torque transmission.

4,577,738

DRIVE SYSTEM WITH OIL SHEAR CLUTCH-BRAKE UNIT

Jerry L. Yater, Hamilton, Ohio, assignor to Force Control Industries, Inc., Fairfield, Ohio

Filed Jul. 6, 1984, Ser. No. 628,405
The portion of the term of this patent subsequent to Jul. 10, 2001, has been disclaimed.
Int. Cl.[4] B60K *41/24*
U.S. Cl. 192—18 A 13 Claims



1. A drive system adapted for use in providing a high speed reversible or multiple speed drive for a machine, said system comprising an oil shear clutch-brake unit including a housing containing a supply of oil, a first input shaft and an output shaft supported by said housing for rotation on an axis, an annular second input shaft supported by said housing for rotation on the axis of said first input shaft and said output shaft, a first annular clutch within said housing and including means for selectively connecting said first input shaft to said output shaft, a second annular clutch within said housing and including means for selectively connecting said second input shaft to said output shaft, an annular brake within said housing and including means for selectively braking said output shaft relative to said housing, annular actuating means within said housing for axial movement between first and second clutch engaging positions and a brake engaging position, means for driving said first and second input shafts, means for recirculating oil within said housing and radially outwardly within each of said annular clutches and radially outwardly within said annular brake, and means for moving said annular actuating means selectively between said clutch engaging positions and said brake engaging position.

4,577,739

HYDROSTATIC CLUTCH

Ivan J. Cyphelly, Gran Canaria, Spain, assignor to Glycoantriebstechnik GmbH, Wiesbaden, Fed. Rep. of Germany

Filed Dec. 5, 1983, Ser. No. 558,164
Claims priority, application Fed. Rep. of Germany, Dec. 4, 1982, 3244980
Int. Cl.[4] F16D *31/04*
U.S. Cl. 192—61 12 Claims

1. In a hydrostatic clutch which comprises:

a clutch housing;

a drive shaft extending into said housing and rotatable about an axis therein;

an output shaft extending into said housing;

a casing rotatable in said housing about said axis and connected to one of said shafts;

a positive displacement gear pump in said casing connecting to the other of said shafts;

an intake compartment formed in said housing at one side of said casing;

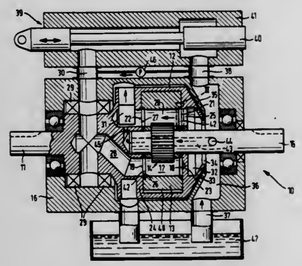
means in said casing defining a flow path from said compartment through said pump; and

a throttle valve for controlling the flow of fluid along said path, the improvement wherein:

said pump is formed with a pump body having an intake passage and a pressure passage;

said casing is formed with openings communicating with said passages to define said path; and

said casing and said body are formed with means enabling relative rotation of said body and said casing through an angle less than a full rotation whereby said passages are functionally reversed to enable switchover in the rotational sense of the output shaft upon reversal of the rotational sense of the input shaft, said casing being



fixed on said input shaft and said output shaft being connected to gears cooperating with said body to form said pump, said pump having an upstream side in the region of said output shaft and said casing having a downstream side turned toward said input shaft, said casing defining with said output shaft at said upstream side, an annular intake opening around said output shaft of the smallest possible cross section consistent with no significant increase in the flow resistance along said path.

4,577,740

CLUTCH COVER ASSEMBLY

Roger F. L. Carmillet, Paris, France, assignor to VALEO, Paris, France

Filed Jun. 15, 1983, Ser. No. 504,397
Claims priority, application France, Jun. 21, 1982, 82 10785
Int. Cl.[4] F16D *13/18*
U.S. Cl. 192—70.18 32 Claims



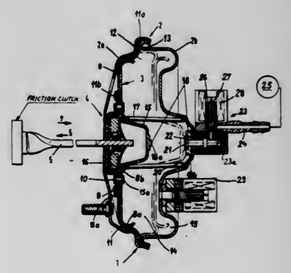
1. A clutch cover assembly comprising an axially fixed part, an axially movable part, means mounting said axially movable part for axial movement relative to said axially fixed part and for rotational movement with said axially fixed part, elastic means for urging said axially movable part toward a storage position, means for limiting axial movement of said axially movable part and for retaining said axially movable part in the radial direction, said mean for limiting and for retaining defining the storage position for said axially movable part comprising at least one retaining member carried by a first of said parts and at least one limiting member carried by a second of said parts, said limiting and retaining members being out of frictional contact in the operative position of said clutch cover assembly, said limiting member having at least one surface inclined relative to the axial direction and said retaining member having at least an edge engageable with said inclined surface in the storage position to prevent the movement of said axially movable part in the radial and axial directions.

4,577,741

FLUID-OPERATED SERVOMOTOR FOR ACTUATION OF CLUTCHES OR THE LIKE

Christoph Schmid, Wooster, Ohio, assignor to Luk Lamellen und Kupplungsbau GmbH, Bühl, Fed. Rep. of Germany

Filed Feb. 9, 1983, Ser. No. 465,266
Claims priority, application Fed. Rep. of Germany, Feb. 13, 1982, 3205155
Int. Cl.[4] F16D *25/08;* F15B *13/04*
U.S. Cl. 192—85 V 16 Claims



1. A fluid-operated servomotor for actuation of clutches in automotive vehicles or the like, comprising a prime mover including a first component constituting a cylinder and a second component constituting a piston reciprocable in said cylinder between first and second end positions and defining with the cylinder a chamber whose volume changes in response to movement of said piston between said end positions; means for yieldably urging said piston to one of said end positions; means for moving said piston to the other of said end positions, including means for establishing a pressure differential between said chamber and the atmosphere, said pressure differential establishing means including a device for maintaining a body of air at a given pressure and means defining a path for the flow of fluid between said device and said chamber; and a valve for sealing said path in response to movement of said piston to said other end position, said valve including a first portion comprising a valving element provided on and movable with said piston and a second portion comprising a seat provided on said cylinder and sealingly engaged by said valving element in said other end position of said piston so that the chamber is then sealed from said device, the pressure in said chamber deviating from said given pressure in said other end position of said piston.

4,577,742

CLUTCH DISC

Chiaki Saida, Tokoname, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Apr. 22, 1983, Ser. No. 487,681
Claims priority, application Japan, Apr. 27, 1982, 57-70684; May 21, 1982, 57-84926
Int. Cl.[4] F16D *3/14*
U.S. Cl. 192—106.2 13 Claims

1. In a clutch disc in which a clutch hub having a hub flange

comes into rotating engagement with a disc plate through damping means and friction means, a clutch disc including:

said hub flange comprising an inner flange portion and an outer flange portion mounted to be relatively rotatable by a given angle with respect to said inner flange portion and with an angular clearance;

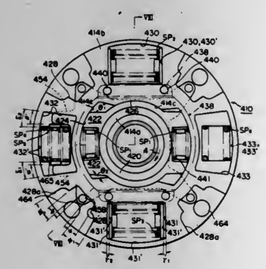
at least one plate fixed to said outer flange portion so as to limit the axial relative movement between said inner and outer flange portions;

first damping means arranged operatively between said inner and outer flange portions through said fixed plate and designed to be resiliently compressed during relative angular displacement between said inner and outer flange portions;

a first friction means disposed between said fixed plate and one of said inner and outer flange portions operatively associated with said inner and outer flange portions;

at least one disc plate adapted to be relatively rotatable with respect to said outer flange portion and provided with a facing member on the disc plate outer periphery;

second and third damping means arranged operatively between said disc plate and said outer flange portion, said second and third damping means being designed to be resiliently compressed during relative angular displacement between said disc plate and said outer flange portion;



second and third friction means arranged between said fixed plate and said disc plate and acting between said outer flange portion and said disc plate;

a control plate interposed between said fixed plate and said disc plate for determination of a point of commencement of action of said third friction means; and

a resilient control means disposed to control the angular position of said control plate relative to said outer flange portion so as to maintain a predetermined angular position of said control plate relative to said outer flange portion during a predetermined relative rotation angle (α) between said outer and inner flange portions;

said resilient control means being constructed and disposed so that it takes substantially no part in torque transmittance; and

an outer periphery of said control plate being capable of engaging its said outer flange portion with a given angular clearance corresponding to said predetermined angle (α), and circumferentially engaging said resilient control means adapted to engage circumferentially within a window provided in said disc plate and to loosely and circumferentially fit in an associated window provided in said outer flange portion with an angular clearance corresponding to said predetermined angle (α).

4,577,743

CLUTCH DISC FOR A MOTOR VEHICLE FRICTION CLUTCH

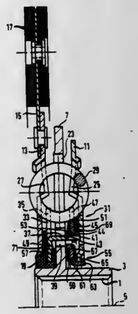
Harald Raab, Schweinfurt, and Hilmar Göbel, Grafenrheinfeld, both of Fed. Rep. of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

Filed Aug. 9, 1984, Ser. No. 639,353

Claims priority, application Fed. Rep. of Germany, Aug. 23, 1983, 3330343

Int. Cl.⁴ F16D *3/14*

U.S. Cl. 192—106.2 **6 Claims**



1. In a clutch disc for a motor vehicle friction clutch comprising:

(a) a hub which defines a rotation axis of the clutch disc and carries a radially protruding hub disc,

(b) two side discs arranged on axially opposite sides of the hub disc and being firmly connected with one another and mounted rotatably as a unit through a limited angle of rotation on the hub in relation to the hub disc about the rotation axis,

(c)clutch friction linings fixedly connected with one of the side discs,

(d) a plurality of damping springs retained in windows of the hub disc and the side discs and stressable on relative rotation of the hub disc and the side discs,

(e) an under-load friction damper device dimensioned for operation under load,

with two annular control discs rotatable through a limited angle of rotation in relation to the hub disc and the side discs and co-operating with at least one of the damping springs, a first one of the two control discs being arranged axially between the hub disc and a first one of the two side discs, said first control disc being provided with several tabs staggered in the circumferential direction and passing axially through openings of the hub disc and a second one of the two control discs being arranged axially between the hub disc and a second one of the two side discs, said second control disc being arranged substantially radially outside the diameter defined by the tabs and being guided non-rotatably but axially displaceably on the tabs of the first control disc,

with a first friction ring arranged axially between the first control disc and the first side disc,

with a second friction ring clamped axially in between the second control disc and the second side disc and with an axially acting first spring of annular disc form which is arranged axially between the hub disc and the second of the two side discs and is stressed in the axial direction between the tabs of the first control disc and the second side disc, said first spring being arranged axially between the hub disc and the second control disc and supported with its internal circumference on the tabs and with its external circumference on the second control disc, and

(f) an idling friction damper device dimensioned for idling operation with a third friction ring arranged axially between one of the two side discs and the hub disc and an axially acting second spring stressed in axially between the other of the two side discs and the hub disc, in each case radially within the diameter radially defined by the tabs of the first control disc.

4,577,744

MULTICOIN DISCRIMINATOR

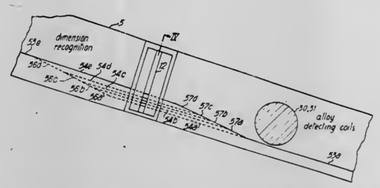
Joël Doucet, 15, rue Roger Salengro, 92130 Issy-les-Moulineaux, France

Filed Oct. 27, 1982, Ser. No. 437,145

Claims priority, application France, Oct. 27, 1981, 81 20170

Int. Cl.⁴ G07F *3/02*

U.S. Cl. 194—318 **51 Claims**



1. A multicoin discriminator comprising a chute having a vertically inclined track on which coins roll, and an inclined side wall against which one face of said coins rests as the coins roll on the inclined track, and means including photoreceptive means and photoemissive means on opposite sides of said chute for detecting the dimensions of said coins, said chute track in front of said dimension detecting means having a cross-section transverse to the direction the coin rolls along the inclined track, the cross-section being shaped as a staircase having plural steps each having a riser and landing, the spacings between the inclined wall and each riser being approximately equal to the thicknesses of acceptable coins, the spacings between adjacent landings being approximately equal to the difference in radii of acceptable coins, the landing of the lowest step abutting against the inclined wall.

4,577,745

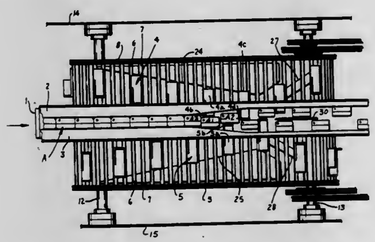
APPARATUS FOR ARRANGING ARTICLES IN GROUPS

Rodney K. Calvert, Dunwoody, and Alton J. Fishback, Austell, both of Ga., assignors to The Mead Corporation, Dayton, Ohio

Continuation of Ser. No. 475,522, Mar. 15, 1983, abandoned. This application Jan. 28, 1985, Ser. No. 695,413

Int. Cl.⁴ B65G *47/26*

U.S. Cl. 198—420 **3 Claims**



1. Apparatus for arranging articles in two laterally spaced streams from a single stream comprising conveyor means for carrying said articles, endless means on each side of the conveyor having longitudinally spaced pushers which are laterally movable relative to the conveyor, said pushers having a longitudinally extending surface and a laterally extending trailing surface, drive means to drive the endless means slower than the conveyor in the longitudinal direction, means to move laterally the pushers into contact with the lateral side of the articles, said pushers being positioned longitudinally relative to the articles on the conveyor to initially contact only a portion of the lateral side of the article which is longitudinally spaced downstream of the trailing side of the article and the trailing surface of said pusher being longitudinally spaced downstream from the leading side of the following article to prevent contact between said following article and said trailing side of said pusher as the article is being laterally moved to prevent rotary movement of said following article, the speed difference between the pushers and the conveyor causing the articles to move longitudinally relative to said pushers and to eventually contact the trailing surface of the next downstream pusher after substantial lateral movement of said article, fixed stabilizing means for preventing rotation of the articles as said pushers are laterally withdrawn relative to said conveyor.

4,577,746

CONTROL SYSTEM FOR BLANK PRESSER

Masateru Tokuno, Hyogo; Tetsuya Sawada, Kyoto, and Yasuharu Mori, Hyogo, all of Japan, assignors to Rengo Co., Ltd., Osaka, Japan

Continuation of Ser. No. 399,134, Jul. 16, 1982, abandoned. This application Mar. 18, 1985, Ser. No. 712,475

Claims priority, application Japan, Nov. 20, 1981, 56-114543; Jul. 2, 1982, 57-115905

Int. Cl.⁴ B65G *47/31*

U.S. Cl. 198—462 **2 Claims**

1. In a system having a conveyor and an upstream conveyor and a blank presser above said conveyor used to press each of the blanks fed one after another from said upstream conveyor and a control system for controlling the blank presser, the improvement comprising:

a setting means for setting a value (L) proportional to the length of the blanks fed from said upstream conveyor and a value (l) proportional to the distance by which said blank presser moves in one cycle of its operation;

a means for generating a signal (ϕ_A) proportional to the speed at which said blanks are fed;

a means for generating a signal (ϕ_B) proportional to the speed of said blank presser;

a counter which starts to count the signal (ϕ_A) upon the arrival of a blank at said upstream conveyor and generates a timing signal (T) when its counter becomes equal to a value (X) representing the effective length of said upstream conveyor;

a divider for making a division (l/L) and generating a result of the division in response to the timing signal (T):

a multiplier for multiplying the result of the division (l/L) by the signal ϕ_A;

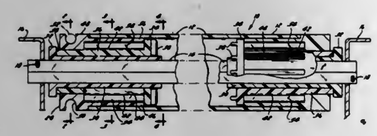
a computing means for the performing a computation expressed by $l/L \times \phi_A - \phi_B$;

a first converting means for generating a reference voltage (V_A) proportional to the result of said division;

a second converter for generating an error voltage (V_C) proportional to the result of said computation;

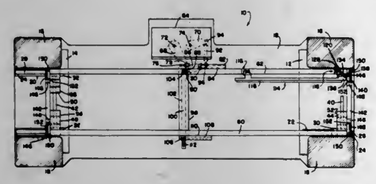
an operational amplifier for combining said reference voltage (V_A) and said error voltage (C_C); and
a means for controlling a drive for said blank presser by use of the combined voltage so that the blanks will be held down by said blank presser at a correct timing.

4,577,747
CONVEYOR ROLLER AND BEARING ASSEMBLY
Donald E. Martin, Waukesha, Wis., assignor to Rexnord Inc., Brookfield, Wis.
Filed Feb. 28, 1985, Ser. No. 706,698
Int. Cl.⁴ B65G *45/02*
U.S. Cl. 198—500 **13 Claims**



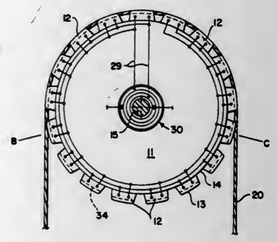
1. A conveyor roller and bearing arrangement adapted for rotary movement about a stationary axle fixedly secured between spaced, side-support frame rails comprising:
a hollow cylindrical roller having two open ends;
a pair of bearing assemblies mounted in the ends of said roller, each bearing assembly having
a hollow, inner bearing race surrounding and keyed to said axle to prevent rotation about but permit sliding movement along said axle, said inner bearing race having an annular flange lying outside the end of said roller;
a hollow, outer bearing race rotatably mounted on said inner bearing race and having an annular flange positioned radially inwardly of said roller, said flange being provided with a plurality of cooling fins; and
a hollow outer cushioning sleeve secured within the end of said roller and to said outer bearing race, said sleeve being constructed and arranged to maintain axial bearing contact between said inner and outer bearing races upon misalignment of said roller and axle due to uneven loading thereon.

4,577,748
PRESS MOUNTED TRANSFER APPARATUS
Gregory J. Boegner, Baltimore; Harry J. Walters, Fallston, and Robert L. Marshner, Timonium, all of Md., assignors to M. S. Willett, Inc., Cockeysville, Md.
Filed Sep. 30, 1982, Ser. No. 431,418
Int. Cl.⁴ B65G *25/00*
U.S. Cl. 198—621 **23 Claims**



1. Transfer apparatus comprising a base for mounting on a press bed, longitudinal rail means attached to the base for supporting the transfer apparatus on the base, longitudinal slide means mounted on the longitudinal rail means for moving forward and rearward in longitudinal directions with respect to the base, transverse rail means mounted on the longitudinal slide means, transverse slide means mounted on the transverse rail means for moving transversely in and out on the transverse rail means with respect to the base, first and second longitudinal transfer bars connected to the transverse slide means for moving transversely with the transverse slide means, longitudinal drive means connected to one of the transfer bars for driving the transfer bars longitudinally forward and rearward, transverse drive means connected to the first transfer bar for driving the transfer bar transversely in and out, and a transverse rod having a first end connected to the transverse drive means and a second end connected to the second transfer bar for imparting coordinated transverse in and out movement to the second transfer bar.

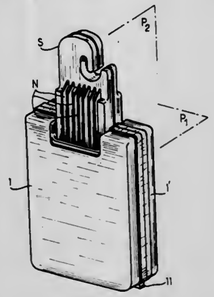
4,577,749
FRICTIONAL DRIVE MEANS AND METHOD FOR DRIVING FRICTIONAL ROLLERS
Gerald R. O. Pentith, Sturgis, Ky., assignor to Continental Conveyor & Equipment Co., Inc., Winfield, Ala.
Filed Jun. 27, 1984, Ser. No. 625,059
Claims priority, application United Kingdom, Jul. 1, 1983, 8317922
Int. Cl.⁴ B65G *39/08*
U.S. Cl. 198—805 **12 Claims**



1. In a friction roller having an outer friction surface and an inner surface and including a bearing surface, the improvement comprising:
(a) a plurality of arcuate sections positioned upon and surroundingly affixed to the friction roller, each arcuate section having at least one channel positioned upon an arcuate section surface obverse to the internal surface of the friction roller;
(b) the channel being configured to receive a rope having magnetic properties, similar channels on adjacent arcuate sections being aligned for smooth transitional transmittal of the rope from one arcuate section to the next;
(c) the friction roller including means for transferring electrical current to the arcuate sections; and
(d) the arcuate sections including: (i) an electromagnetic field generating coil embeddedly positioned beneath the channel, a longitudinal axis of the coil arranged in parallel relationship with a longitudinal axis of the channel; (ii) means for sensing the proximity of the rope to the channel on a particular arcuate section and for transmitting an electrical current through the coil of the particular arcuate section when the rope is in contact with the particular arcuate section.

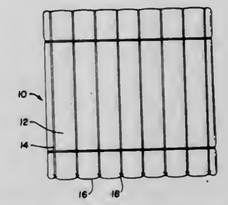
4,577,750
IMPREGNABLE LOCKING SYSTEM
Gilbert Bennardo, Nice, France, assignor to S.A.M. Microtechnic, Monaco
Filed Jul. 15, 1985, Ser. No. 755,149
Claims priority, application France, Dec. 11, 1984, 84 19035
Int. Cl.⁴ A45C *13/10*
U.S. Cl. 206—1.5 **7 Claims**

1. Impregnable locking system of the fastening of displayboxes called "blisters", consisting in a box in two articulated halves having on the side opposite their hinge fastening flaps destined to be held one against the other by this system, characterized in that it consists in a clip destined to cover these two flaps, and between which is attached a transversal shaft; a vertical notch made in the flaps allowing this shaft to go through when the clip is put into place, two gears being slid onto this shaft, between the outer side of each flap and the corresponding side of the clip, the means being provided so



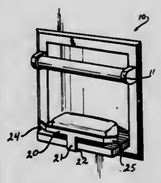
that these gears are constantly pushed towards each other, and once this clip placed on the flaps, the gears come to rest in the lodgings made in the outer sides of the flaps therefore immobilizing the clip onto the flaps, external means being provided to push the gears in the opposite direction to take them out of the lodgings to allow the extraction of the clip and to free the flaps of the blister to allow its opening.

4,577,752
HIGH DENSITY TOW BALE AND METHOD FOR FORMING IT
Thomas D. Meredith, Jr., Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed May 4, 1984, Ser. No. 607,049
Int. Cl.⁴ B65D *71/00*
U.S. Cl. 206—83.5 **4 Claims**



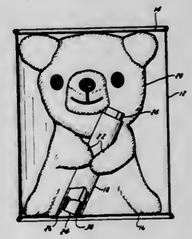
1. A bale in which filamentary tow such as filter tow has been compressed by a tow baler and wrapped with a cardboard or the like covering and held in compressed condition by multiple strappings which extend around the wrapped bale in different directions at right angles with respect to each other; said bale characterized by its bottom and the filamentary tow that is adjacent the covering at the bottom of the bale having embossed therein a pattern of multiple pads and unrelieved areas between the pads, said unrelieved areas adapted to receive said strappings and said pads adapted to make contact with the floor while the bale is seated thereon for opening and thereby enable the strappings to be readily slidably removed from the bottom of the bale.

4,577,751
RETAINER FOR SOAP DISH
Jean St-Jacques, R.R. #2 Cregheur Rd., Luskville, Quebec, Canada J0X 2G0
Filed Aug. 24, 1984, Ser. No. 643,986
Claims priority, application Canada, Apr. 19, 1984, 452386
Int. Cl.⁴ A47K *5/00*
U.S. Cl. 206—77.1 **15 Claims**



1. A soap stop attachment for use with a soap tray or dish of the type which is attached to a vertical surface and has an inclined soap-receiving surface, said soap stop comprising:
a horizontally disposed, elongated stop arm adapted to be disposed in a soap-retaining position in front of and above the edge of said soap-receiving surface, said stop arm extending substantially completely across the width of said soap-receiving surface so as to retain a bar of soap thereon; and
a retaining means connected to said stop arm and adapted to contact said soap tray for attachment thereto to secure said stop arm in said soap-receiving position.

4,577,753
SEALED MESSAGE CARRIER
Joseph Marhal, 3567 E. Fitzsimmons Rd., Oak Creek, Wis. 53154
Filed Sep. 27, 1984, Ser. No. 654,894
Int. Cl.⁴ B65D *85/46*
U.S. Cl. 206—232 **5 Claims**



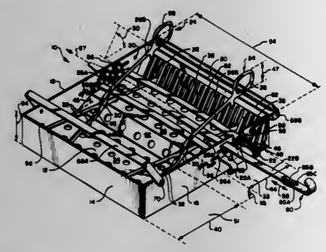
1. A message carrier comprising
a container having a movable top and a bottom, said bottom have a small opening therein,
a tubular message holder for holding a rolled up message, said holder being adapted to be inserted into said container through said opening in the bottom of the container
means removably positioned in said container for holding the message holder on insertion through the opening on the bottom of the container, said holding means comprising a teddy bear having a pair of arms for supporting said holder, and means for sealing the opening in the bottom of the container whereby on removal of the top of the container the message holder will be carried by the holding means.

4,577,754
NAIL CLIPPINGS RECEPTACLE
Joyce D. Jones, 9056 King Dr., Chicago, Ill. 60619
Filed Jan. 23, 1984, Ser. No. 573,151
Int. Cl.[4] A45C *11/26*
U.S. Cl. 206—349 5 Claims



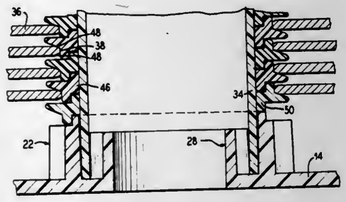
1. A nail clipping receptacle for use with a nail clipper having a pair of opposed blades, each of said blades having a cutting edge opposed to the other cutting edge, a pin extending through the blades, and a lever connected to the pin for selectively moving the cutting edges toward each other for cutting nails; said receptacle comprising a pouch having a continuous top, and a continuous bottom, said top having a plurality of top edges, said bottom having a plurality of bottom edges defining a shape similar to a shape defined by the top edges, said top edges being sealingly fixed to like bottom edges to form continuous edges of the pouch, said pouch having an opening for receiving said nail clipper, said opening extending into the top, said nail clipper positionable in the opening with the cutting edges of the clipper being substantially aligned with a junction of the top and the bottom to allow positioning of a nail between the cutting edges for cutting the nail.

4,577,755
SURGICAL INSTRUMENT TRAY
Mitchell Ramsay, 5948 S. Suwannee Cir., Salt Lake City, Utah 84107
Filed Feb. 22, 1984, Ser. No. 582,385
Int. Cl.[4] B65D *83/10*
U.S. Cl. 206—370 17 Claims



1. A surgical instrument tray comprising:
a base member;
first and second opposite side members each affixed to said base and extending away therefrom to form an area therebetween for the placement of surgical instruments, each of said instruments having movable lever members which are movable with respect to one another about a pivot;
a plurality of apertures formed in each of the side members wherein some of the apertures in the first side member are substantially opposite some of the apertures in the second side member;
retaining members each sized to extend through an aperture in said first side member to and through an aperture in said second side member, said retaining members being removably and selectively positionable through said apertures and against said movable lever members of said surgical instrument to retain said surgical instruments with said movable lever members in a predetermined orientation within said area.

4,577,756
PROTECTIVE CANISTER FOR COMPUTER DISCS
Michael P. Hennessy, 1359 Portsmouth Ct., Carol Stream, Ill. 60788, and Andrew B. Prueher, 1016 Sheridan Rd., Highland Park, Ill. 60035
Filed Apr. 26, 1984, Ser. No. 604,169
Int. Cl.[4] B65D *85/30, 45/18*
U.S. Cl. 206—444 8 Claims



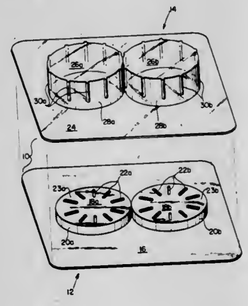
1. A protective canister for protecting a plurality of computer discs of the type having a pair of opposite main surfaces, a central aperture and a pair of bevel surfaces each extending from a respective main surface into the central aperture, said canister comprising:
a hollow tube including two ends;
a pair of caps for closing said two ends;
cooperable latch means on said two ends and on said caps for securing said caps to said ends;
a post and post mounting means carried by said caps for holding said post centrally within said hollow tube, said post including a cross-sectional dimension slightly smaller than that of the aperture of a disc to receive the discs thereover in a stack;
a platform on each of said caps about said post;
a plurality of spacer rings for placement over said post between adjacent discs in the stack and between each end disc of the stack and the respective platform, each of said rings comprising a ring body and a plurality of arcuate projections extending from each side of said ring body, each of said arcuate projections being generally L-shaped as viewed in the radial direction including a first leg for extending into and engaging the inner diameter of the central aperture and a second leg carrying a support surface for engaging a respective bevel surface; and
said hollow tube and said post including lengths such that the stack of computer discs is clamped against movement when said caps are latched to said hollow tube.

4. In a protective package for protecting computer discs having opposite main surfaces, a central aperture and a pair of bevel surfaces extending from the main surfaces into the central aperture, in which spacer rings are alternately positioned between the discs to form a stack positioned by a central post through the rings and discs and mounted within a container by a pair of n structures, the improvement wherein:
each of said rings comprises at least one surface on each side thereof for engaging only the bevel surface of a respective disc;
each of said rings comprises a ring body and a plurality of arcuate projections extending from each side of said ring body; and
each of said arcuate projections being generally L-shaped as viewed in radial section and including a first leg for extending into engagement with the inner diameter of the central aperture of a disc and a second leg carrying a support surface complemental to a bevel surface for engaging a bevel surface,

said support surface constituting said at least one surface on each side of the ring.

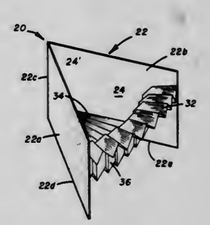
7. A spacer ring for receiving a post therethrough and spacing a pair of discs, each of the discs having a pair of main surfaces, a central aperture for receiving the post, and a pair of bevel surfaces each extending from a respective main surface into the central aperture, said spacer ring comprising:
a ring body; and
a plurality of arcuate projections extending from each side of said ring body,
each of said arcuate projections being generally L-shaped as viewed in radial section and including a first leg for extending into and into engagement with the inner diameter of a central aperture of a disc, and a second leg carrying a surface complemental to and for engaging a bevel surface of a disc.

4,577,757
GROOVED BASE PACKAGE
Gerald O. Hustad, McFarland; Ray H. Griesbach, Monona, and James Anderson, Madison, all of Wis., assignors to Oscar Mayer Foods Corporation, Madison, Wis.
Filed Aug. 20, 1984, Ser. No. 642,470
Int. Cl.[4] B65D *6/02*
U.S. Cl. 206—461 13 Claims



1. In a container for sliced meat products or the like comprising: (a) a base which is horizontal in use including a marginal base flange, a raised pedestal having a flat support surface upon which the product rests, and a short peripheral sidewall extending vertically from said marginal base flange to said pedestal around the periphery of said pedestal; and (b) a cover which is horizontal in use including a marginal cover flange shaped complementary to said marginal base flange, a raised top wall under which the product is located, and a long peripheral sidewall extending vertically from said marginal base flange to said top wall around the periphery of said top wall and provided with concave channels along the interior surface extending vertically from said marginal cover flange to said top wall; said short peripheral sidewall of said base being snugly received inside said long peripheral sidewall of said cover with said marginal base flange sealingly attached to said marginal cover flange, a space being provided between said pedestal and said top wall in which the product is located; the improvement wherein:
said concave channels terminate at a height above said marginal cover flange which is equal to or greater than the height of said short peripheral sidewall of said base such that after said short peripheral sidewall of said base is received inside said long peripheral sidewall of said cover, said concave channels terminate at or above said short peripheral sidewall; and
a plurality of depressions are provided in the flat support surface of said pedestal in which free liquids from the product are collected wherein said depressions are grooves which extend longitudinally away from an adjacent portion of said short peripheral sidewall said flat support surface being spaced above said marginal cover flange.

4,577,758
ASHTRAY
Patricia Gilda, 6 Hermann Dr., Monterey, Calif. 93940; William F. Mann, 25 Main St., and Winthrop D. Allen, III, 25 Clawson St., both of Bisbee, Ariz. 85603
Filed May 17, 1985, Ser. No. 735,799
Int. Cl.[4] B65D *73/00*
U.S. Cl. 206—496 12 Claims

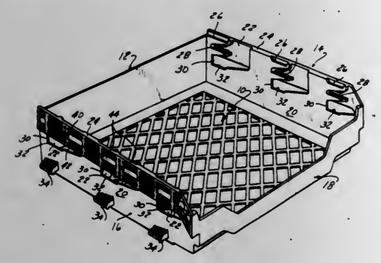


1. An ashtray comprising:
a folded member having a substantially V-shaped cross-section formed by two panels with a common side, the two panels forming two sides of the ashtray, two adjoining sides of the two panels contiguous to the common side adapted for contact with a supporting surface to support the two panels thereon in an upright position, said two sides defining the bottom side of the ashtray, said two panels defining an angular space there between, said angular space having an apical portion near the common side;
an upper member connected to the two panels for supporting cigarettes or cigars in substantially horizontal positions, said upper member being spaced apart from the common side to allow the lighted ends of cigarettes or cigars to protrude into the apical portion and to allow ashes from such lighted ends to fall through the apical portion towards the bottom side of the ashtray;
a lower member connected to the two panels to hold ashes and refuse, said lower member positioned to receive the ashes falling through the apical portion from the lighted ends of cigars or cigarettes supported on the upper member, said lower member being at a lower elevation than the upper member when the two panels are in the upright position; and
a side member connected to the two panels and the upper and lower members, the side and lower members being of such shape that they, together with the two panels, form a receptacle to securely contain any ash and refuse on the lower member, said two panels and the upper, lower and side members being made of or lined with a fire resistant material.

4,577,759
THREE-LEVEL STACKING CONTAINER
Elsmer W. Kreeger, Howell, Mich., assignor to Pinckney Molded Plastics, Inc., Howell, Mich.
Filed Jan. 18, 1985, Ser. No. 692,612
Int. Cl.[4] B65D *21/04*
U.S. Cl. 206—505 3 Claims

1. In a multilevel stacking container having a rectangular bottom, a pair of upwardly projecting sidewalls and a rear wall projecting upwardly respectively from opposed side edges and the rear edge of said bottom to a substantially uniform height, and a front wall projecting upwardly from the front edge of said bottom to a height less than said uniform height;
the improvement wherein each of said sidewalls comprises a

main web lying in a general plane inclined upwardly and outwardly from said bottom, said web having a plurality of like openings therethrough extending downwardly from the upper edge of said web at spaced locations along said web, each of said openings having a front edge and a rear edge, means on said web defining first, second and third horizontal shelves extending forwardly from the rear edge of the opening in vertically spaced, substantially vertical alignment with each other, said third shelf constituting the bottom edge of the opening, a plurality of like stacking feet projecting outwardly from the outer side of



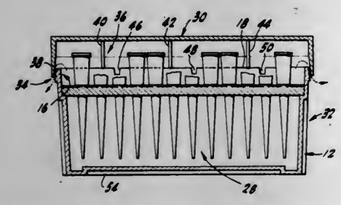
said web adjacent said bottom in respective vertical alignment with the shelves of said openings, the front edge of each opening being spaced forwardly from the front ends of the shelves by a distance greater than the front-to-rear dimensions of the aligned stacking foot, each of said shelves being adapted to receive and support a stacking foot of a like container, and continuous reinforcing rib means integral with said first and second shelves and projecting outwardly from the outer side of said main web, said rib means extending the entire length of said sidewall and passing across said openings outwardly of said main web.

4,577,760

APPARATUS FOR SUPPORTING PIPETTE TIPS

Kenneth Rainin, Piedmont, and Stephen Ruskewicz, Kensington, both of Calif., assignors to Rainin Instrument Company, Inc., Emeryville, Calif.

Filed Sep. 14, 1984, Ser. No. 650,505
Int. Cl.⁴ B65D *85/30*
U.S. Cl. 206—508 **14 Claims**



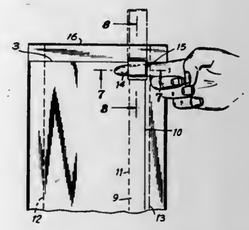
1. An apparatus for supporting pipette tips prising:
a. a container having a bottom and a side portion connected to and extending from said bottom terminating in a top portion;
b. a sole tray including means for holding at least one pipette tip thereto, said container further including means for supporting said tray such that at least a portion of the at least one pipette tip lies within said container;
c. a cover, said cover being supported by said container adjacent said tray, said cover and container forming an enclosure for the at least one pipette tip, said tray forming a first chamber between one side thereof and said container bottom, and a second chamber between another side of said tray and said cover, said bottom of said container being capable of contacting said cover; and
d. means for venting said enclosure, said venting means including means for separating and fixing said cover from said top portion of said side portion of said container, forming a gap therebetween, said venting means further including means for joining said first chamber to said second chamber to permit circulation of of fluid between said first and second chambers other than through any pipette top or means for holding any pipette tip to said sole tray and to permit circulation between the inside and outside of said enclosure.

4,577,761

EASY-OPEN PINCH CLOSURE BAG

Richard J. Nadaskay, Camden, Ark., assignor to International Paper Company, New York, N.Y.

Filed Mar. 26, 1985, Ser. No. 716,046
Int. Cl.⁴ B65D *33/00*
U.S. Cl. 206—604 **8 Claims**



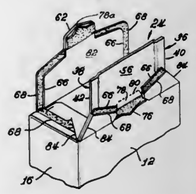
1. An easy-open pinch closure bag comprising a multi-ply bag having a front wall, a back wall, and a pinch closure at one end, said pinch closure being formed by folding an extension of at least one of the plies of the back wall over the outside of the outermost ply of the front wall and adhesively securing said extension to the outermost ply of the front wall, said outermost ply of said front wall having a longitudinal seam formed by overlapped longitudinal edges of said outermost ply and means for breaking the outermost ply across said longitudinal seam.

4,577,762

RECLOSABLE PACKAGE AND CARTON BLANK AND PROCESS FOR MAKING THE SAME

Morris W. Kuchenbecker, Neenah, Wis., assignor to James River Corporation of Virginia, Richmond, Va.

Filed Jun. 27, 1985, Ser. No. 749,886
Int. Cl.⁴ B65D *5/54*
U.S. Cl. 206—612 **30 Claims**



1. In a carton blank made of carton stock having front and rear main panels, side panels articulated by fold lines to a set of end closure flaps, which comprises dust flaps, a cover flap, and a sealing flap, and coated, at least on the end closure flaps, with a heat sealing coating:
the improvement in which:

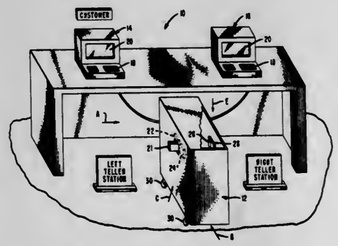
said dust flaps and said cover flap have sealing areas adjacent to the fold lines thereof;
said cover flap has cut-away end portions corresponding to the sealing areas of said dust flaps so that, when they are folded in on top of the dust flaps, the dust-flap sealing areas are exposed;
said cover flap, save for said cover flap sealing area, is coated with a non-heat-sealing coating to provide a non-sealing area which, in the end of a closed carton erected therefrom, stretches from one cut-away portion to the other and to the edge of the cover flap;
said sealing flap is adapted to be folded down onto the infolded dust flaps and adhered to the sealing areas thereof and to the sealing area of said cover flap;
said sealing flap has a centrally-located pull tab;
an area of the sealing flap which, in the closed end, overlies the non-sealing area of the cover flap is circumscribed by a sealing-flap ply-separation means forming a ply-separable area which extends from the sealing flap fold line along the sealing area of each dust flap and along the cover flap sealing area to said pull tab;
and said sealing flap has a line of weakness which angles in from each corner to said ply separation means.

4,577,763

CASH DISPENSING SYSTEM

Dale L. Placke, Dayton; Mark D. Filliman, Beavercreek; Robert H. Granzow, Miamisburg; Jack R. Gross, Waynesville, and Charles S. Nagy, Dayton, all of Ohio, assignors to NCR Corporation, Dayton, Ohio

Filed Mar. 28, 1984, Ser. No. 594,453
Int. Cl.⁴ B07C *5/00*; B65H *7/00*
U.S. Cl. 209—534 **11 Claims**



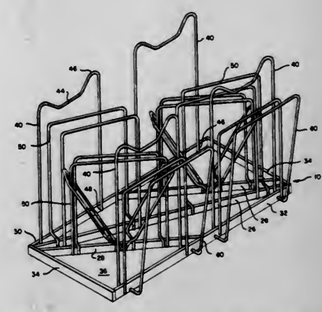
6. A system for dispensing sheets comprising:
means for entering a value of sheets to be dispensed in which said value of sheets may be comprised of a single sheet representing said value or a plurality of sheets having individual values whose collective sum represents said value; and
a sheet dispenser for dispensing sheets representing said value of sheets entered on said entering means;
said sheet dispenser comprising:
means for storing a plurality of sheets having different individual values and for selecting those sheets whose collective individual values equal said value of sheets to be dispensed;
first and second delivery areas where sheets representing said value to be dispensed are retained to be grasped by an operator using said system;
means for controlling the movement of said sheets from said storing and selecting means to said first and second delivery areas;
a collecting means located at a home position in said sheet dispenser for collecting the sheets representing said value to be dispensed;
means for transporting said sheets from said storing and selecting means to said collecting means;
a collecting bin located within said sheet dispenser;
diverting means operatively coupled to said transporting means and said collecting means for diverting to said collecting bin those sheets which are suspected by said controlling means of producing an incorrect value of sheets to be dispensed;
means for securing said sheets on said collecting means when sheets representing said value of sheets to be dispensed have been collected on said collecting means as determined by said controlling means; said securing means including a member which resiliently retains said sheets on said collecting means;
means for moving said collecting means with said sheets thereon from said home position to said first or second delivery areas in response to data also entered on said entering means so as to enable said sheets to extend from said sheet dispenser to enable a said operator to grasp said sheets moved to said first or second delivery areas;
each of said first and second delivery areas having means for holding said sheets moved thereto by said moving means against the bias of said member of said securing means while said moving means moves said collecting means to said home position;
said first delivery area comprising:
a closure for normally closing off access to said first delivery area by said operator;
means for moving said closure between opened and closed positions relative to said first delivery area; and
means responsive to said sheets on said collecting means approaching said first delivery area to activate the associated closure moving means to move said closure to said open position permitting said sheets to extend from said dispenser to be grasped;
said retaining means including a timer to energize said moving means for said closure after a predetermined amount of time to move said closure towards said closed position to retain said sheets at said first delivery area while said moving means moves said collector towards said home position.

4,577,764

WIRE RACK FOR PROCESSING HARD CONTAINER SYSTEMS IN WASHING-STERILIZERS

John L. Silka, Union City, and Gerald L. Yeaney, Erie, both of Pa., assignors to American Sterilizer Company, Erie, Pa.

Filed Jul. 9, 1984, Ser. No. 629,168
Int. Cl.⁴ A47G *19/08*
U.S. Cl. 211—41 **9 Claims**



1. In a rack for holding at least one of either a first sized or a second sized rigid container within a basket of a predetermined size for insertion into apparatus for washing, sterilizing or both, where fluid is directed toward the containers through the basket from at least the bottom of the apparatus and each container includes a deep bottom portion defining a chamber,

a shallow lid for enclosing the chamber, and an intermediate portion for insertion into the chamber, and where the basket also holds a tray of instruments of a predetermined size for subsequent insertion into the bottom portion of the container, the improvement comprising:

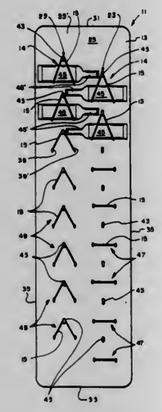
a rigid frame lying in a horizontal plane relative to the bottom of the apparatus and defining an opening, said frame having at least one substantially diagonal member crossing said opening;

a first set of wire components supported by said frame, said first set of components being positioned to support at least one of either the first or second container bottom portions in such an inverted position in a spaced relationship relative to said frame over at least a portion of said opening that the chamber can be exposed to the fluid directed from the bottom of the apparatus and can be positioned to prevent the retention of fluid within the bottom portions;

a second set of wire components disposed along said at least one diagonal member of said frame, said second set of wire components being positioned to support at least one of either of the first or second container intermediate portions in such a substantially vertical position relative to said plane in a spaced relationship beneath the bottom portion when a bottom portion is supported by said first set of components, that the retention of fluid in the intermediate portions is substantially prevented; and

a third set of wire components supported by said frame, said third set of components being positioned to support at least one of either of the first or second component lids in such a substantially obtusely angular position relative to said frame that the retention of fluid in the lids can be substantially prevented, and positioned in such a spaced relationship relative to the bottom portions and the intermediate portions when the portions are supported in said first and second sets of components, respectively, that the direction of fluid from the bottom of the apparatus toward the chambers and the intermediate portions is unobstructed by the lids.

4,577,765
WINE RACK
Terry R. Crosby, 7237 Cotton Plant Cv., Memphis, Tenn. 38119
Filed May 23, 1985, Ser. No. 737,181
Int. Cl.⁴ A47B *73/00*
U.S. Cl. 211—75 **8 Claims**



1. A rack for displaying at least one bottle or the like comprising:

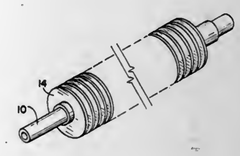
(a) a body member including a front wall having at least a pair of apertures therethrough, said front wall having a front side and a back side;

(b) an elongated flexible member movably extending through a pair of said apertures to provide a bight portion disposed adjacent said front side of said front wall and to provide a portion of said flexible member disposed adjacent said back side of said front wall;

(c) securement means attached to said body member for securing a portion of said bight portion of said flexible member to said body member and for causing said bight portion to form a pair of cradle portions for stably and removably cradling a bottle; and

(d) means attached to said portion of said flexible member adjacent said back side of said front wall for limiting movement of said flexible member through said apertures in a direction from said back side to said front side of said front wall.

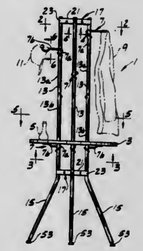
4,577,766
COAT HANGER SUPPORT
Charles R. Miller, 6123 S. Quebec, Tulsa, Okla. 74136
Filed Mar. 28, 1983, Ser. No. 481,381
Int. Cl.⁴ A47F *5/00*
U.S. Cl. 211—123 **20 Claims**



1. A coat hanger support comprising a hollow plastic tube of sufficient length and sufficient internal diameter to slip over a closet rod of the type normally employed for holding hangers thereon in a closet; a plurality of circular plastic disks mounted in spaced parallel relation on the tube and at right angles to the longitudinal central axis of the tube, the spacing between adjacent disks being between ⅜ of an inch and ¾ of an inch, said disks having an outer diameter such that the disks would extend beyond the location of the tip of a coat hanger which was supported on said tube, the plastic tube being provided with a centering recess between each pair of adjacent disks for centering a coat hanger between the disks.

4,577,767
KNOCKDOWN RACK
Robert C. Geschwender, Lincoln, Nebr., assignor to New Products I, Inc., Lincoln, Nebr.
Filed May 11, 1983, Ser. No. 493,607
Int. Cl.⁴ A47F *5/01*
U.S. Cl. 211—190 **23 Claims**

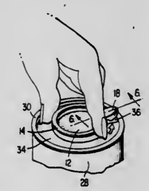
1. A knockdown rack comprising three vertical posts having diverging legs at their lower ends for stably supporting the rack, and a pair of supports adapted to be fastened between the posts at vertically spaced locations for rigidly interconnecting the posts in a formation wherein the posts, as viewed from above the rack, lie generally on a first circle with the posts spaced at about 120 degree intervals on the circle and the lower ends of said legs lie generally on a second circle larger in diameter than said first circle, each support comprising a relatively flat horizontal member having three peripheral recesses therein for receiving said posts, each recess having a mouth for insertion of a respective post inwardly through the mouth into the recess, and a wall structure formed and configured for contact by the post at three separate locations on the circumference of the post, said wall structure having a height not substantially less than the diameter of a respective post for engagement with a substantial length of the post at said locations, and means for releasably fastening each post in a respective recess in each support member.



4,577,768
ETHYLENE POLYMER BLEND AND CONTAINERS PREPARED THEREFROM
Santos W. Go, deceased, late of Toledo, Ohio (by John W. Yager, administrator), and Saleh A. Jabarin, Holland, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio
Filed Nov. 3, 1983, Ser. No. 548,469
Int. Cl.⁴ C08L *23/18, 23/04*
U.S. Cl. 215—1 C **18 Claims**

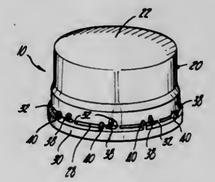
1. A plastic container having improved resistance to environmental stress cracking comprising a container formed from an intimate fusion blend of ethylene polymers; said blend containing about 75–90 weight percent of at least one linear high-density ethylene polymer and about 10–25 weight percent of at least one linear low-density ethylene polymer, said ethylene polymers constituting at least about 98 weight percent of the total polymers contained in said blend; each of the high-density ethylene polymer(s) included in the blend having a density of at least about 0.94 gm/ml, a melt index of less than about 0.5 gm/10 min, and having polymerized therein at least about 98 mol percent ethylene with any comonomer polymerized therein being an alpha-monoolefin containing about 3 to 12 carbon atoms; each of the linear low-density ethylene polymer(s) included in the blend having a density of less than about 0.93 gm/ml, a melt index of less than about 2.0 gms/10 min, and having polymerized therein about 2–6 mol percent of an alpha-monoolefin containing about 3 to 12 carbon atoms with the balance of the monomer polymerized therein being ethylene and the linear low-density ethylene polymer(s) included in the blend having a melt index higher than the melt index of the linear high-density ethylene polymer(s) included in the blend.

4,577,769
CHILD RESISTANT CONTAINER
Anthony Delia, West Redding, Conn., assignor to The Drackett Company, Cincinnati, Ohio
Filed Mar. 26, 1985, Ser. No. 716,277
Int. Cl.⁴ B65D *55/02*
U.S. Cl. 215—211 **11 Claims**



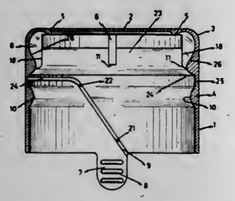
1. A child resistant closure construction for a container, the container having a wall portion, the wall portion having a circular dispensing opening therethrough, the dispensing opening having a removable and reinsertable closure plug normally positioned therein to close the dispensing opening, the closure plug including locking means to normally maintain it in the dispensing opening against casual upward withdrawal, the closure plug carrying a radially extending ear, the closure plug and ear being capable of executing at least limited angular movement about an axis passing through the center of the circular dispensing opening, an abutment carried by the closure member and being located radially outwardly of the periphery of the circular dispensing opening and being in the annular path of at least a portion of the ear upon angular movement of the ear and closure plug, the abutment and the ear being configured to cause the ear to to tilt away from the container interior, whereby the closure plug and/or the ear can be manually grasped and removed to thereby gain access to the contents of the container.

4,577,770
TAMPER INDICATING SCREW CAP
David M. Wright, Evansville, Ind., assignor to Sunbeam Plastics Corporation, Evansville, Ind.
Filed Mar. 18, 1985, Ser. No. 713,276
Int. Cl.⁴ B65D *41/34*
U.S. Cl. 215—252 **12 Claims**



1. A one-piece tamper indicating closure for a container having external threads and an annular flange below said threads, said closure comprising: a cylindrical skirt having internal threads complementary to the external threads on said container, a tamper indicating ring spaced radially outward from and extending below said cylindrical skirt defining an open area therebetween, a retaining bead on the inner surface of said ring engageable with the underside of the annular flange on said container to prevent removal of said ring, drive lug means extending radially outward from said skirt into said open area and driven lug means extending radially inward from said ring into said open space in proximate circumferentially spaced relationship to each other, a plurality of shear webs circumferentially spaced from said lug means extending into said open area and joining said skirt and said ring, first land means associated with said skirt and second land means associated with said ring disposed in proximate circumferentially spaced relationship to each other, said lug means and land means being movable circumferentially into engagement with each other, said engagement between lug means being in a radially extending vertical plane, upon application of a capping torque on said skirt and simultaneous engagement of said retaining bead with the top of said annular flange to maintain said ring axially and circumferentially stationary relative to said skirt while said bead is snapped over said annular flange, said webs being sheared upon opening movement of said skirt relative to said ring as said ring is maintained stationary relative to said container to separate said ring and skirt, said ring being retained on said container as said closure is removed.

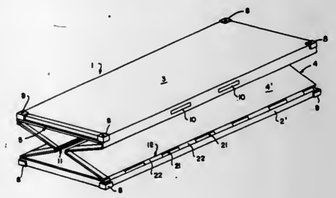
4,577,771
TEARABLE BOTTLE CAPS
Francisco P. Martinez, Callejon de Pino Suarez 1636, Col. Libertad, Tijuana, B. C., Mexico, D. F., Mexico
Filed Jan. 22, 1985, Ser. No. 693,129
Int. Cl.[4] B65D *41/48*
U.S. Cl. 215—256 **7 Claims**



1. A tearable bottle cap for large capacity bottles comprising a top planar disk, an approximately cylindrical skirt depending from said planar disk to snugly fit around the neck of the bottle, a slant score line starting at the lower edge of said skirt, a pull tab projecting downwardly of said lower edge of the skirt, one of the side edges of the pull tab being arranged to terminate at the point of said lower edge of the skirt where the score line starts, a first inner solid bead having an arcuate surface and extending throughout the circumference of said skirt at a predetermined distance from said top disk, in order to engage the lower portion of the upper bead of a bottle neck, a second solid inner bead extending throughout the circumference of said skirt and at a predetermined distance above said first solid inner bead for forming a channeled depression therebetween in order to trap in said depression the upper bead of the associated bottle neck, a plurality of vertical, radially inwardly directed lugs projecting from the inner surface of said skirt from said top disk to said second solid inner bead and having their lower edges as well as part of their lengths embedded within said second solid inner bead to be reinforced thereby, said lugs being equidistantly distributed around the periphery of said disk and having a width such that they will accomodate therebetween the upper terminal portion of a threaded bottle neck, said radially inwardly directed lugs together with said second solid inner bead serving as a rigidifying assembly for the upper portion of the cap in order to provide a shock absorber when the cap is used with unthreaded neck bottles, and a circumferential internal rib projecting from the inner surface of said top disk, said internal rib being of a diameter such that the upper edge of the terminal portion of a threaded neck bottle will abut thereon, in order to serve as a shock absorber for the upper edge of the bottle neck when the cap is used with threaded neck bottles, said radially inwardly directed lugs serving as rigidifying elements of the upper portion of the cap by abutment of the outer edges on the threads of the terminal portion of the threaded neck bottle, in order to avoid sidewardly directed movements of the cap.

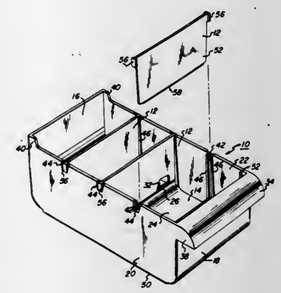
4,577,772
COLLAPSIBLE CONTAINERS
Juan B. Bigliardi, Sante Fe 3735 4th Floor "A", 1425 Buenos Aires, Argentina
Filed Mar. 26, 1985, Ser. No. 697,515
Int. Cl.[4] B65D *7/26*
U.S. Cl. 220—1.5 **7 Claims**

1. Improvements on collapsible containers comprising a box-like prismatic structure formed by a floor section, a top section, a pair of sidewalls connected by hinge means to said floor section and said top section, respectively, along a central hinge line to define portions of equal surface area in said sidewalls adapted to be folded upon themselves and toward the interior of the container, with the ends of the structure closed by respective door members or end portions pivotably mounted and adapted to be folded backward toward the interior of the container, with said top section and said floor section comprising a profiled frame with generally prismatic corner brackets which form engaging means used in hoisting the container, and with the container walls provided with cooperating locking members to keep the walls rigidly connected in the assembled position of the container, characterized in that said door members or end portions are mounted so that they can pivot or swivel toward the top section of the structure on coaxially disposed pivot pins extending from opposite sides of said top section, that the hinge members of the sidewalls engaging the floor section and the top section, respectively, are formed by a pair of sets of U-shaped oppositely oriented plates, that the legs of the plates of one of the sets are integral with the hinge means rigidly connected to the legs of a U-shaped profile forming part of the sidewalls, whereas the



legs of the plates of the other set are connected to the legs of a U-shaped profile forming an integral part of said top section, that a set of U-shaped plates of said hinge means is rigidly joined with a hinge line extending across the U-shaped plates of the other set and adapted to move freely with respect to said hinge line, that the intermediate portions of said U-shaped plate form an enclosure of the hinge means in said U-shaped profiles integral with the respective sidewall and the top section in the assembled state of the container, that the plates of the two sets remain connected and pivotable around said axis in a second, collapsed state of the container, and that the frames forming the top section and the floor section are provided with supports for connecting corresponding protruding locking means extending from the frames of said sidewalls and from the door members or end portions of the container.

4,577,773
UTILITY BOX
Vincent J. Bitel, Rockfall, Conn., assignor to The Rogers Manufacturing Co., Rockfall, Conn.
Filed Aug. 10, 1984, Ser. No. 639,451
Int. Cl.[4] B65D *25/06*
U.S. Cl. 220—22.3 **8 Claims**



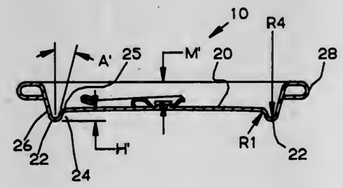
1. A utility box having a generally rectangular configuration comprising:

A. a container having a generally rectangular bottom wall,

and a pair of end walls and a pair of side walls extending upwardly from said bottom wall and defining a generally rectangular cavity, said side walls having aligned slots extending through the upper edges thereof, said side wall having opposed pairs of vertically extending ribs on the inner surface thereof aligned with said slots to form channels said bottom wall having upstanding ribs extending transversely between said side walls; and

B. a plurality of compartment dividers extending between said side walls of said container member and having engagement arm portions adjacent the upper end thereof extending through said slots and having flange portions exending along the outer surface of said side walls about said slots to maintain said dividers and side walls in assembly, said dividers having their side edge portions seated in said channels of said side walls and their bottom edges seated on ribs of said bottom wall, said dividers being of a height not greater than that of said container.

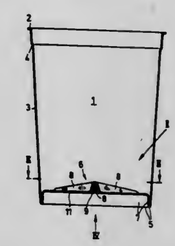
4,577,774
BUCKLE RESISTANCE FOR METAL CONTAINER CLOSURES
Tuan A. Nguyen, Broomfield, Colo., assignor to Ball Corporation, Muncie, Ind.
Continuation of Ser. No. 565,995, Dec. 27, 1983, abandoned, which is a division of Ser. No. 357,032, Mar. 11, 1982, Pat. No. 4,434,641. This application Mar. 12, 1985, Ser. No. 711,001
Int. Cl.[4] B65D *8/08, 17/00*
U.S. Cl. 220—66 **2 Claims**



1. A metal closure comprising a circular domed central panel portion, a generally U-shaped sidewall having inner and outer upstanding legs, and an intermediate curved section integrally connecting said panel portion to said inner leg adjacent to the upper extremity thereof, said intermediate curved section having a thinned annular band of cold flowed metal formed therein immediately adjacent the upper surface thereof wherein said annular band of cold flowed metal is a frustoconical surface which angles upward and away from the horizontal in the radially inward direction and the lower surface of said intermediate curved section immediately opposite said thinned annular band of cold flowed metal is of an arcuate concave configuration, said thinned annular band being compressed cold worked and defined by a flat surface having a width of between about 0.020 and about 0.040 inches, the flow of said metal of said thinned annular band being sufficient resulting in said panel portion of said metal closure being domed axially outwardly and said inner leg being deflected towards a substantially vertical configuration.

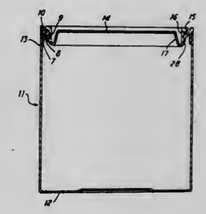
2. A metal closure comprising a circular domed central panel portion, a generally U-shaped sidewall having inner and outer upstanding legs, and an intermediate curved section integrally connecting said panel portion to said inner leg adjacent to the upper extremity thereof, said intermediate curved section having a thinned annular band of cold flowed metal formed therein immediately adjacent the upper surface thereof wherein said annular band of cold flowed metal is straight and substantially parallel to the horizontal and the lower surface of said intermediate curved section immediately opposite said thinned annular band of cold flowed metal is of an arcuate concave configuration, said thinned annular band being compressed cold worked and defined by a flat surface having a width of between about 0.020 and about 0.040 inches, the flow of said metal of said thinned annular band being sufficient resulting in said panel portion of said metal closure being domed axially outwardly and said inner leg being deflected towards a substantially vertical configuration.

4,577,775
CUP-SHAPED CONTAINER
Hermann Kresin, Bergneustadt, Fed. Rep. of Germany, assignor to Gizeh-Werk GmbH, Bergneustadt, Fed. Rep. of Germany
Filed Dec. 10, 1984, Ser. No. 679,949
Claims priority, application Fed. Rep. of Germany, Dec. 10, 1983, 3344779
Int. Cl.[4] B65D *41/20*
U.S. Cl. 220—66 **7 Claims**



1. A plastic cup-shaped container having a longitudinal axis, a generally frustoconical peripheral wall, a base wall, and means providing for flexure of the base wall in the direction of the longitudinal axis between volume-increasing and volume-decreasing positions, the flexure providing means comprising radially extending folds in the base wall projecting from a common central depression toward the periphery of the base wall and triangular base wall panels connecting adjacent folds for providing opening and closing of the folds when the base wall is flexed between said positions.

4,577,776
CONTAINERS AND LEVER RING
Adrien P. Rayner, Iver, and Kenneth R. Clark, Standlake, both of England, assignors to Metal Box Plc, Berkshire, England
Filed Nov. 27, 1984, Ser. No. 675,315
Claims priority, application United Kingdom, Dec. 2, 1983, 8332287
Int. Cl.[4] B65D *41/16*
U.S. Cl. 220—307 **14 Claims**



1. A lever ring for a container body and adapted to receive a plug lid removable from the ring by means of a lever, wherein the ring is moulded from a plastics material and comprises an annular flange adapted to fit in an open upper end of the container body and to engage with the interior surface of the container body, a flared portion and a ring portion adapted to receive and grip, when in use, a plug portion of a plug lid,

said flared portion extending from the upper end of the annular flange radially and axially into the ring portion in the downward direction inwardly of the container body, whereby said flared portion permits easy entry of the plug portion of the plug lid and thereafter firm retention of the lid.

4,577,777

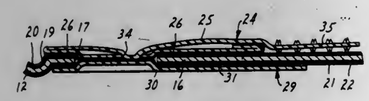
TAPE CLOSURE FOR A CAN END

Wilfred R. Brochman, Oakdale, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 561,462, Dec. 14, 1983, Pat. No. 4,500,011, which is a continuation-in-part of Ser. No. 458,564, Jan. 7, 1983. This application May 10, 1985, Ser. No. 732,842

Int. Cl.⁴ B65D *41/00*

U.S. Cl. 220—359 **6 Claims**



1. A container end assembly comprising:

a container end formed of tin plated steel having an exterior surface and an interior surface and being formed with a pour opening;

a polymeric layer comprising epoxy/urea formaldehyde bonded to said exterior surface of said end; and

a tape strip comprising a backing and a thermoplastic adhesive coating on one surface of said backing, said tape strip being bonded by said adhesive to an area of the exterior surface of said layer circumjacent and covering said pour opening, said adhesive forming a bond between said tape strip and said polymeric layer, the bond between said adhesive and said backing and said layer having greater strength than the bond between said layer and the exterior surface of said tin plated steel end supporting said layer, causing said layer to break and peel from said end upon removal of the tape strip from the container end.

4,577,778

REFUSE RECEPTACLE

Myong H. Kim, Seoul, Rep. of Korea, assignor to Woo Kyong Industrial Co., Ltd., Seoul, Rep. of Korea

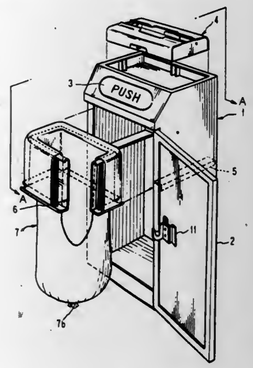
Filed May 3, 1985, Ser. No. 730,057

Claims priority, application Rep. of Korea, Dec. 31, 1984, 14575/84

Int. Cl.⁴ B65D *67/04*

U.S. Cl. 220—404 **5 Claims**

1. A refuse receptacle comprising, an outer upstanding enclosure and a refuse collecting bag mounted therein, said outer enclosure having a refuse inlet opening in a front upper portion thereof and an opening for removing the bag when filled with refuse, a tubular bag holder mounted on the inside of the upper portion of said outer enclosure, said holder having outwardly extending flanges at a lower end thereof, said bag comprising a continuous elongated vinyl sleeve having a fanfolded upper end of several upstanding folded layers, said upper end of said sleeve being mounted on the outer peripheral surface of said holder which has substantially the same length and outer dimension as the folded length and inner diameter of said fanfolded upper end of said sleeve, and said fanfolded upper end of said sleeve being solely supported by said flanges, said sleeve extending from said fanfolded upper end thereof over an upper end of said holder and through the inside of said holder



so as to terminate at its free end beyond said lower end thereof, said free end of said sleeve being tied for closing same.

4,577,779

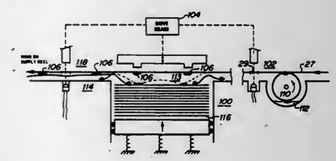
CURRENCY-DISPENSING METHOD AND APPARATUS

Martin M. Atalla, Atherton, Calif., assignor to Atalla Corporation, San Jose, Calif.

Continuation-in-part of Ser. No. 446,074, Dec. 1, 1982, Pat. No. 4,515,288. This application Jan. 3, 1984, Ser. No. 567,688

Int. Cl.⁴ B65H *5/28*

U.S. Cl. 221—1 **7 Claims**



1. Apparatus for selectively dispensing units of currency, comprising:

housing means for confining a quantity of units of currency to be dispensed in a configuration from which single units of currency are extractable in succession;

means supporting said housing means for movement of the units of currency confined thereby between first and second positions;

transport means having isolated adhesive regions disposed along the length thereof and being supported for movement selectively along a path that passes adjacent the quantity of units of currency between said first and second positions; and

means operable with said housing means to engage selected ones of said adhesive regions and a single unit of currency of said quantity thereof, and to move said single unit and said transport means substantially along said path at the same velocities between said first and second positions to adhesively attach said single unit and said transport means.

4,577,780

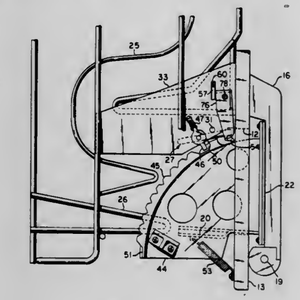
ARTICLE-DISPENSING ASSEMBLY FOR A VENDING MACHINE

Charlie R. Holland, St. Louis, and Michael J. DelPercio, Fenton, both of Mo., assignors to Coin Acceptors, Inc., St. Louis, Mo.

Filed Dec. 20, 1982, Ser. No. 451,035

Int. Cl.⁴ G07F *11/00*

U.S. Cl. 221—125 **27 Claims**



1. An article-dispensing assembly, comprising:

(a) a plate provided with an opening,

(b) a door movably mounted on the plate, the door being movable selectively to a first closed position and to a second open position relative to the opening, and the door including a shelf extending inwardly of the opening and providing a bin for holding an article to be dispensed,

(c) feed means for feeding articles to the bin,

(d) a control means movable to a first position to allow transfer of an article from the feed means to the bin, and movable to a second position to block transfer of an article from the feed means to the bin,

(e) operating means selectively interconnecting the control means and door to allow loading of the bin when the door is in its first closed position and to preclude loading of the bin when the door is moved from its first closed position,

(f) a slide bar slidably mounted and extending transversely of the bin,

(g) an interlock means movably mounted at one side of the opening and movable to a first position blocking sliding movement of the slide bar, and to a second position allowing sliding movement of the slide bar to an extended position,

(h) coin-actuating means connected to the interlock means and selectively moving the interlock means from its first position to its second position, and

(i) a slide bar actuating means carried by the control means and operatively interconnecting the door and the slide bar and operatively engaging the slide bar to move the slide bar to the extended position to allow movement of the door from its first closed position to its second open position when the interlock means is in its second position.

4,577,781

APPARATUS FOR CONTROLLING THE REGULATOR OF A DEVICE FOR SPREADING SALT OR THE LIKE ON ROADS

Otto P. Braun, Ludwigsburger Strasse 80, D-7141, Freiberg/-Neckar, Fed. Rep. of Germany

Filed Nov. 8, 1983, Ser. No. 549,775

Claims priority, application Fed. Rep. of Germany, Nov. 9, 1982, 3241285

Int. Cl.⁴ E01G *1/00*

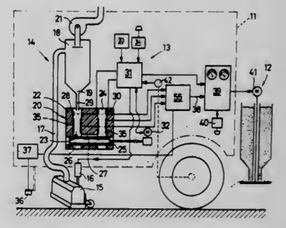
U.S. Cl. 222—54 **10 Claims**

1. An apparatus for controlling the regulator of a device for spreading salt and the like onto road surfaces, the apparatus comprising:

means for measuring the temperature of liquid on the road surface;

means for collecting liquid from the road surface, adapted for operation on a moving vehicle;

means operatively associated with the collecting means for measuring the concentration of salt in the collected liquid; and,



means operatively associated with the collecting means for measuring the quantity of liquid present per surface unit area of the road, based upon the quantity of collected liquid, a width of said collecting means, and a measured factor related to movement of the vehicle along the road, whereby sufficient information is available from the apparatus for regulation of a device for spreading salt and the like to achieve a salt concentration on the road surface just sufficient to avoid freezing at any predetermined temperature and for any predicted quantity of precipitation.

4,577,782

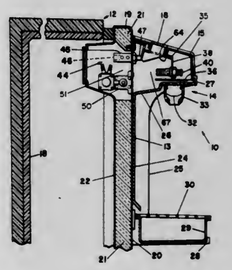
BEVERAGE DISPENSING STATION

Herman S. Fessler, Coon Rapids, Minn., assignor to The Cornelius Company, Anoka, Minn.

Filed May 2, 1983, Ser. No. 492,870

Int. Cl.⁴ B67D *5/56*

U.S. Cl. 222—129.1 **16 Claims**



1. A beverage dispensing machine having an improved beverage dispensing station mounted upon a panel of the machine, comprising

(a) a chassis mounted upon the panel;

(b) a beverage dispensing head supported from the chassis;

(c) beverage lines leading from the panel to the head, said lines being above an underpanel of the chassis;

(d) a cover removably mounted upon the chassis, said cover having apertures for selector buttons and means for enclosing the beverage lines;

(e) beverage selector buttons mounted to the panel by a horizontal axis hinge underneath and inside of the cover, said buttons being registered with and being accessible through respective apertures and being operable when the cover is either mounted upon or removed from the chas-

sis, said buttons being movable to an alternative position for withdrawal of valve elements normally operable by the buttons, and

(f) means under the cover and mounted to the machine independently of the cover for normally restraining the selector buttons against the valve elements when the cover is removed.

4,577,783

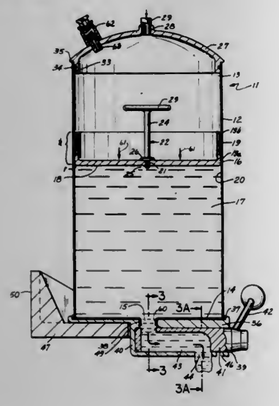
DISPENSER

Richard F. Racca, Melrose; Willem Swier, and Anthony E. Di Maio, both of Georgetown, all of Mass., assignors to Marson Corporation, Chelsea, Mass.

Continuation of Ser. No. 624,642, Oct. 22, 1975, abandoned, which is a continuation of Ser. No. 341,759, Mar. 15, 1973, abandoned, which is a continuation-in-part of Ser. No. 292,722, Sep. 27, 1972, abandoned, which is a continuation of Ser. No. 833,259, Jun. 16, 1969, abandoned. This application Dec. 13, 1979, Ser. No. 103,526

Int. Cl.⁴ B67D *5/54*

U.S. Cl. 222—386.5 **1 Claim**



1. A device for dispensing high viscosity fluid material which includes a container having an inner wall of predetermined diameter, a selectively operable valve means providing in open condition a flow passage for fluid material out of the container and propelling means movable along a wall in any one of a plurality of containers in repeated use for forcing the fluid material through the flow passage and out of the container with which it is then in use, the improvement wherein said propelling means includes:

(a) a follower plate at commencement of each use situated in contact with the fluid material within the container and mounted for movement toward the valve means, said follower plate having a bottom wall which normally is relatively flat yet deformable nonpermanently to a substantially dish-like shape under conditions of a negative clearance between said inner wall of said container and an upstanding side wall located about the periphery of the bottom wall, said upstanding side wall consisting of a wiping portion and a guide portion extending from the wiping portion throughout the remainder of the side wall, said guide portion being located to trail the wiping portion as determined with reference to the direction of movement of the follower plate within the container, and said side wall maintaining substantially its peripheral contour under circumstances resulting in deformation of said bottom wall, said follower plate being further characterized by:

1. the outer diameter of the wiping portion being greater than that of the guide portion and having one of a positive and negative clearance with respect to the inner diameter of the container of up to about 0.018 inch;

2. the side wall having an effective height equal to at least 10% of said outer diameter, said follower plate being formed of a sufficiently flexible and resilient material to undergo flexure without permanent deformation into a configuration such that the outer diameter of said wiping portion may be reduced in dimension by an amount approximately equal to any negative clearance which may exist between the follower plate and the inner wall of the container with which it is then in use, said wiping portion providing a seal to flow of fluid material from one side of said follower plate to the other,

3. the guide portion having an outer diameter substantially uniform in dimension, and

4. an orifice in said bottom wall to provide a flow path for fluid from one side of said follower plate to the other in movement of said follower plate into contact with said fluid material, yet adapted to be sealed in use of said device; and

(b) drive means for forcefully moving the follower plate toward the open valve means to force fluid material out of the container through said flow passage.

4,577,784

VALVE FOR DISPENSING A MEASURED VOLUME OF FLUID FROM A CONTAINER CONTAINING A FLUID SUBSTANCE UNDER PRESSURE

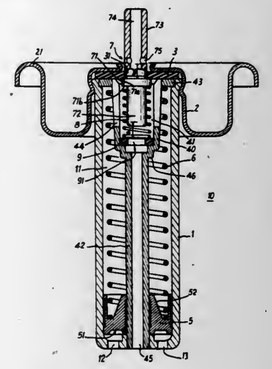
Michel Brunet, Sainte Colombe La Commanderie, France, assignor to Etablissements Valois, Le Neubourg, France

Filed Jan. 16, 1985, Ser. No. 691,816

Claims priority, application France, Feb. 10, 1984, 84 02045

Int. Cl.⁴ B65D *83/14*

U.S. Cl. 222—402.2 **4 Claims**



1. A valve for dispensing a measured volume of a fluid from a container containing a fluid substance under pressure, the valve comprising a variable volume chamber constituted by a rigid body in which a piston subjected to the pressure in the container is free to move against the force of a piston return spring, the valve further comprising a plunger subjected to the action of a plunger return spring and capable of controlled movements to put the variable volume chamber into communication with the substance, or else, after interrupting said communication, to put the variable volume chamber into communication with the outside, the valve including the improvement wherein the said rigid body is a tubular body containing a plunger-receiving chamber and a central tube coaxial with the said tubular body, the plunger-receiving chamber being located at a substance-dispensing end of the tubular body and being connected to one end of the central tube whose other end opens out at the opposite end of the tubular body, said variable volume chamber being generally annular in section and extending inside the tubular body and outside the central tube and the plunger-receiving chamber, and the piston being an annular piston mounted to move axially in said variable volume chamber, said variable volume chamber being connectable to the interior of the container via the plunger-receiving chamber and the central tube under the control of the plunger.

4,577,785

HINGED ROTARY NOZZLE

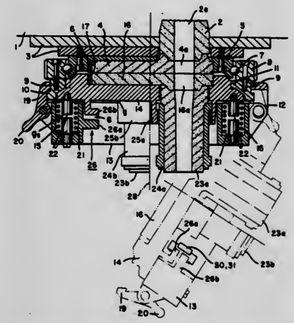
Senzo Wakabayashi, Tokyo, Japan, assignor to Nippon Kokan Kabushiki Kaisha, Tokyo; Nippon Rotary Nozzle Co., Ltd., Kawasaki; Kokan Kikai Kogyo Kabushiki Kaisha and Tokyo Yogyo Kabushiki Kaisha, both of Tokyo, all of, Japan

Continuation-in-part of Ser. No. 138,845, Apr. 10, 1980, abandoned. This application Nov. 2, 1984, Ser. No. 667,758

Claims priority, application Japan, Apr. 13, 1979, 54-44266

Int. Cl.⁴ B22D *41/08*

U.S. Cl. 222—598 **3 Claims**



1. A door-type rotary nozzle for attachment to a bottom discharge opening of a molten metal container such as ladle or tundish, said nozzle comprising: a stationary bottom plate brick having a nozzle bore in register with said discharge opening; a stationary frame mounted to the bottom of said container for attaching said stationary bottom plate brick in surrounding relationship with said discharge opening; an annular door frame carried by said stationary frame; hinge means for pivotably connecting said door frame with said stationary frame; a sliding plate brick having a nozzle bore capable of communicating with said nozzle bore of said stationary bottom plate brick when the sliding plate brick is in surface contact with said stationary bottom plate brick; an inner frame supported within said door frame and adapted for holding said sliding plate brick in surface contact with said stationary bottom plate brick when said door frame is closed, said inner frame removably carrying a molten metal discharging collector nozzle to be removably attached thereto within an annular inner periphery of said door frame so that the collector nozzle is in communication with the nozzle bore in said sliding plate brick; a plurality of dogs pivotably mounted to the outer periphery of said door frame and holding the door frame closed by engaging with said stationary frame; compressible resilient means carried between said door frame and said inner frame and adapted for pressing said sliding plate brick toward said stationary plate brick which is in surface contact with said stationary bottom plate when said door frame is closed, so that the pressing is supported by said stationary frame when said dogs are kept engaged with said stationary frame; lug pairs securely mounted to said door frame and said inner frame within the annular inner periphery of said door frame and in opposition to each other; said lug pairs adapted to receive means for urging said lug pairs together to maintain said resilient means in compression when said door frame is opened; and drive means for driving said inner frame in rotation to thereby rotate said sliding plate brick relative to said stationary plate brick while said door frame remains closed.

4,577,786

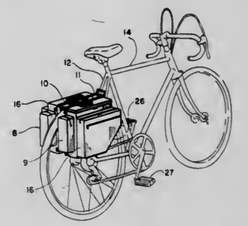
PANNIER BAG HAVING A CLAMPING DEVICE WITH LOCKING MEMBER

David C. Dowrick, Boulder; Edward K. Hine, Jr., Louisville, and Gregory S. Hine, Boulder, all of Colo., assignors to Hine-Snowbridge, Inc., Boulder, Colo.

Filed Jul. 13, 1984, Ser. No. 630,645

Int. Cl.⁴ B62J *9/00*

U.S. Cl. 224—32 A **12 Claims**



1. A clamping device for securing a pannier bag assembly to a bicycle structure, said device comprising:

first structure engaging means having one portion mounted on said assembly and a second portion extending from said assembly for engaging structure positioned adjacent to said assembly;

second structure engaging means;

lever means mounted on said assembly, said lever means including a lever arm one portion of which has said second structure engaging means thereon, and a second portion for actuating said lever arm to cause movement of said second structure engaging means in a direction to exert a force upon said structure between said first and second engaging means; and

latching means including, at least in part, stiff wall means extending substantially parallel to the path of travel of said second structure engaging means during said movement of said second structure engaging means in said first direction, with said stiff wall means being positioned adjacent to said second structure engaging means throughout said movement of said second structure engaging means in said first direction, so that, after said movement in said first direction, said stiff wall means acts in conjunction with said lever means to exert a continuing force on said structure between said first and second structure engaging means until said lever arm is actuated to cause said second structure engaging means to be moved in a direction opposite to said first direction to thereby release said force applied while said lever arm was in said force exerting position.

4,577,787

INVERTIBLE AND REVERSIBLE HOLSTER

Fredrick B. Hersey, 360 Fairview Dr., Carson City, Nev. 89701

Filed May 10, 1984, Ser. No. 608,706

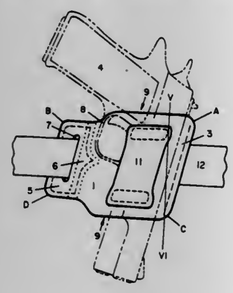
Int. Cl.⁴ F41C *33/02*

U.S. Cl. 224—243 **5 Claims**

1. A belt holster made of sheet-like material having sufficient flexibility to allow insertion and withdrawal of a handgun from either end and sufficient stiffness to retain said handgun until intentionally withdrawn, comprising in combination:

a. a handgun carrier with its outer faces joined together such that the joining forms the shape of a double-ended gun

pocket, and said joining forms a trigger guard stop, against which the trigger guard seats when the gun is inserted from either end, and with said gun pocket being fitted to the gun to be carried, and capable of enclosing major



portions of the barrel, slide, receiver and trigger guard, and

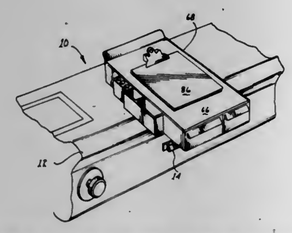
b. means for positioning said gun pocket on a belt in different directions and angles at any point on said belt.

4,577,788

PORTABLE MULTIPURPOSE DESK CONTAINER

Jennings R. Richardson, 49 S. Cholla, Gilbert, Ariz. 85234

Filed Sep. 24, 1984, Ser. No. 653,568
Int. Cl.⁴ B60R *7/00*
U.S. Cl. 224—273 **19 Claims**



1. A portable multipurpose desk container, comprising:

a body means having at least one side compartment integral thereto for holding a variety of objects, said compartment having at least one enclosure extending along the height of said side of said compartment;

an upper lid means operably and removably coupled to said body means for opening and closing said body means so that objects can be placed within and removed from said body means;

a lower lid means operably coupled to said body means for holding said upper lid means in place when said upper lid means is closed; and

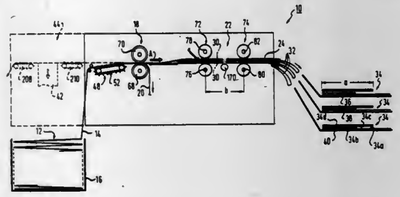
a support means operably coupled to said body means for removably mounting said body means to a vehicle dashboard and for mounting said body means on a substantially flat surface after said body means is removed from said vehicle dashboard, said support means comprising (a) a hinged member coupled to the bottom portion of said body means for supporting one end of said body means while said body means is mounted to said vehicle dashboard, said hinged member has apertures passing therethrough and a quick attach-detach surface fastened thereto for operably and removably coupling said quick attach-detach surface to a corresponding quick attach-detach surface fastened to said vehicle dashboard; and (b) at least one support arm operably and removably coupled to the bottom portion of said body means for supporting the other end of said body means while said body means is mounted to said vehicle dashboard, said support arm suitable for being bendable at a plurality of portions therethroughout said support arm.

4,577,789

DEVICE FOR SEVERING SETS OF ENDLESS FORMS OR THE LIKE

Horst Hofmann, and Jürgen Reckert, both of D-Prien am Chiemsee, Fed. Rep. of Germany, assignors to Systemform Datenbelege GmbH, D-Prien am Chiemsee, Fed. Rep. of Germany

PCT No. PCT/DE83/00089, § 371 Date Jan. 12, 1984, § 102(e) Date Jan. 12, 1984, PCT Pub. No. WO83/04013, PCT Pub. Date Nov. 24, 1983
PCT Filed May 13, 1983, Ser. No. 572,671
Claims priority, application Fed. Rep. of Germany, May 14, 1982, 3218304
Int. Cl.⁴ B65H *35/10*
U.S. Cl. 225—100 **32 Claims**



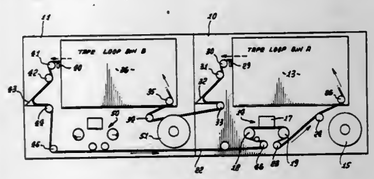
1. Device (10) for severing multi-layer sets (14; 14') of endless forms or the like provided with transverse perforations (28), with a tear-off arrangement (22) of two transporters arranged with spacing (b) from one another in the transport path of the set (14; 14'), the forward transporter in the transport direction (A) being drivable with higher speed than the rear transporter in order to generate, in the section of the set (14; 14') situated between the transporters a tension stress causing the tearing of one of the transverse perforations (28), characterized in that between two successive layers (13) of the set (14) there are provided elongated separating members (30) which extend in the transport direction (A) between a rear securing point (138) behind the rear transporter and a forward securing point before the forward transporter.

4,577,790

TAPE LOOP BIN CONTROL SYSTEM

Barrett P. Bingaman, Burbank; Richard G. Krum, Thousand Oaks, and James R. Williams, Sun Valley, all of Calif., assignors to Cetec Corporation, El Monte, Calif.

Filed Apr. 23, 1985, Ser. No. 726,404
Int. Cl.⁴ B65H *20/24*; G11B *15/58*
U.S. Cl. 226—118 **9 Claims**



1. In a control system for operating two magnetic tape loop bins in series with a continuous tape having an end of tape marker, the combination of:

guide means for guiding a tape from a first bin to a second bin and from said second bin past a magnetic head station to said first bin;

a first end of tape sensor positioned between said first and second bins, and providing a first signal when an end of tape marker passes said first sensor;

a second end of tape sensor positioned between said second and first bins, and providing a second signal when an end of tape marker passes said second sensor;

first and second tape drive motors for driving tape through said first and second bins, respectively;

a first motor control for one of said drive motors for driving a tape at about a constant tension;

a second motor control for the other of said drive motors for driving tape at a controlled speed which varies as a function of an error signal;

error signal computer means having said first and second signals as inputs and providing as an output, an error signal which varies as a function of the differences in time for said tape marker to move from said first sensor to said second sensor, and from said second sensor to said first sensor; and

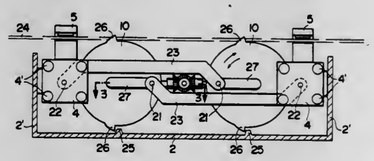
means for connecting said error signal to said second motor control.

4,577,791

GRIPPER FEED ADVANCE MECHANISM FOR A PRESS OR THE LIKE

Werner Leinhaas, Alte Leipziger Str. 40a, D-6460 Gelnhausen, Fed. Rep. of Germany

Filed Apr. 27, 1984, Ser. No. 604,729
Claims priority, application European Pat. Off., May 4, 1983, 83710024.7
Int. Cl.⁴ B65H *17/26*
U.S. Cl. 226—142 **12 Claims**



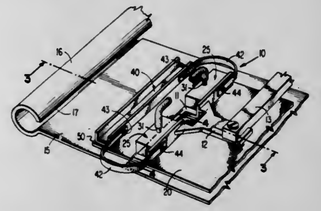
1. A gripper mechanism for feeding sheet metal bands, strips or profiled stock in a feed advance direction into a processing station, comprising housing means, two movable feed advance clamps spaced from each other in said feed advance direction by an adjustable spacing, two carriages, each carriage carrying on feed advance clamp, guide means mounted in said housing means for guiding the movement of said carriages of said feed advance clamps, direction reversible drive means supported by said housing means, two crank drive assemblies mounted in said housing means for transmitting driving power from said direction reversible drive means through said crank drive assemblies to said carriages to move said carriages in unison back and forth, said crank drive assemblies comprising two adjustable crank radius determining members, one member for each assembly, and crank radius adjustment means connected in common to both crank radius determining members for adjusting both crank radii in synchronism to make said spacing between said feed advance clamps larger or smaller, and wherein said crank radius adjusting means comprise a first bevel gear, adjustment means connected to said first bevel gear for rotating said first bevel gear, two second bevel gears arranged for meshing with said first bevel gear, two screw shafts operatively connected to said second bevel gears, each of said crank radius determining members having a threaded hole through which the respective one of said two screw shafts extends for rotating said screw shafts to thereby move said crank radius determining members along the respective screw shaft.

4,577,792

ROBOTIC WORK FABRIC MANIPULATOR

John M. Franke, Sr., Glendale, Calif., assignor to The Singer Company, Stamford, Conn. and AVG Productions, Inc., Valencia, Calif.

Filed Apr. 2, 1985, Ser. No. 719,096
Int. Cl.⁴ B65H *20/22*
U.S. Cl. 226—162 **5 Claims**



1. In a fabric manipulating device for performing a robotic fabric handling operation including a fabric engaging shoe having a fabric engaging sole plate, means for gripping a ply of fabric against said sole plate, and means for shifting said fabric engaging shoe relatively to a fabric supporting platform, means for directing the free edge of a fabric ply extending from said fabric engaging shoe into the constricted mouth of a fabric influencing folder or the like comprising:

a fabric depressing element,

means carried by said fabric engaging shoe for supporting said fabric depressing element above the free edge of a fabric ply extending from said fabric engaging shoe on said fabric supporting platform, and

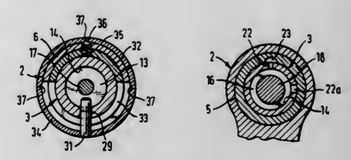
biasing means extending between said fabric depressing element and said fabric engaging shoe accomodating movement of said fabric depressing element toward and away from said fabric engaging shoe.

4,577,793

POWDER CHARGE OPERATED FASTENING ELEMENT SETTING DEVICE

Peter Jochum, Meiningen, Austria, assignor to Hilti Aktiengesellschaft, Fürstentum, Liechtenstein

Filed May 14, 1985, Ser. No. 734,037
Claims priority, application Fed. Rep. of Germany, May 16, 1984, 3418238
Int. Cl.⁴ B25C *1/08*
U.S. Cl. 227—10 **7 Claims**



1. Powder charge operated setting device for driving fastening elements, such as bolts, nails and the like, into a hard receiving material, comprising a housing, a barrel located within said housing and having an axially extending bore therethrough, said barrel having a front end and a rear end, an

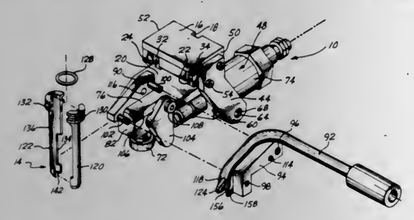
axially extending driving piston mounted within said bore in said barrel and being axially displaceable therein, said piston having a front end and a rear end, said driving piston being axially displaceable between a ready-to-fire position with the rear end of said piston located in the rear end of said barrel and a fired position with the rear end of said piston displaced axially toward the front end of said barrel, a guide bush located in said housing at the rear end of said barrel and being coextensive with and laterally enclosing an axially extending portion of said barrel extending from the rear end thereof, said guide bush forming a combustion chamber in communication with said bore in said barrel, said barrel is rotatably supported in said housing for rotational displacement relative to said guide bush, wherein the improvement comprises that said barrel has at least one outlet opening extending therethrough adjacent the rear end thereof and in the region where said barrel and said guide bush are coextensive, said guide bush has an outlet flow duct in communication with the atmosphere exterior of said housing, said at least one outlet opening in said barrel is selectively placeable into and out of flow communication with said outlet flow duct in said guide bush when said driving piston is in the ready-to-fire position for regulating the power output of the powder charge directed against said driving piston.

4,577,794

RIVET INJECTOR/REJECTOR DEVICE

Thomas E. Armstrong, Issaquah; Douglas L. Boob, Kent; Homer R. Burrous, Bellevue; Oldrich Fryc, Renton, and David L. Wagner, Kent, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Dec. 7, 1984, Ser. No. 679,238
Int. Cl.⁴ B21J *15/28, 15/32*
U.S. Cl. 227—119 **8 Claims**



1. A rivet injector/rejector apparatus for use with a riveting machine having a plurality of rivet gripping fingers that are movable back and forth between the injector/rejector and a workpiece, the fingers being spreadable relative to each other and having surfaces for gripping a shank portion of a rivet received from the injector/rejector, the gripping surfaces holding the rivet while it is delivered from the injector/rejector to the workpiece, the apparatus comprising:

a supporting member mounted fixedly to said riveting machine;

a tubular member for delivering the rivet to the fingers, the tubular member having an end portion that is positioned and shaped to spread the fingers when the fingers are moved toward the injector/rejector and against the end portion, for the purpose of injecting a rivet into a region between the fingers that is adjacent their shank gripping surfaces, the tubular member being connected to the supporting member in a manner so as to permit downward movement of the end portion relative to the fingers; and

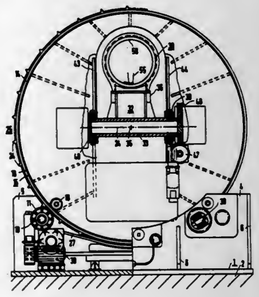
means for moving the end portion downwardly relative to the fingers, to reject a rivet from the fingers during certain conditions, and wherein the end portion is shaped for sufficiently spreading the fingers during such downward movement so that a received rivet is rejected free of the fingers by dropping therefrom.

4,577,795

DEVICE FOR OVERLAY-WELDING PIPES BENDS

Siegfried Förner, Erlangen; Karl-Heinz Langhammer, Berlin; Dieter Peilkofer, Herzogenaurach, and Wolfgang Nahr, Erlangen, all of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Filed Dec. 24, 1984, Ser. No. 685,299
Claims priority, application Fed. Rep. of Germany, Dec. 28, 1983, 3347319
Int. Cl.⁴ B23K *5/18, 9/04, 31/02, 37/04*
U.S. Cl. 228—29 **10 Claims**



1. Device for overlay-welding a pipe interior having an arm extensible into the interior of a respective pipe, the arm carrying a welding head at a free end thereof, comprising a rotating device in the form of a wheel surrounding and supporting the pipe, and swiveling means disposed in said wheel for moving the pipe in a circular arc about the center of said wheel and transversely to the plane of said wheel, the arm being curved and being secured to a part of said swiveling means connected to said wheel, said welding head being rotatable in the plane of said wheel for overlaywelding pipes formed at least partly with a bend therein.

4,577,796

METHOD AND APPARATUS FOR TRACKING SEAM WELDS ON PIPES AND THE LIKE

Joseph E. Powers, and Calvin C. Williamson, both of Napa, Calif., assignors to Kaiser Steel Corporation, Fontana, Calif.

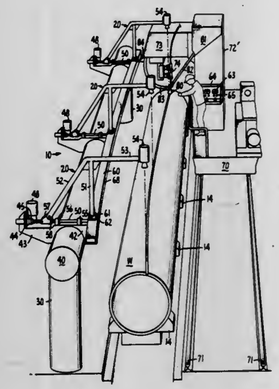
Filed Oct. 10, 1984, Ser. No. 658,992
Int. Cl.⁴ B23K *37/02, 5/02, 11/30*
U.S. Cl. 228—102 **9 Claims**

1. A method for automatically tracking an inside weld seam of a large diameter thick guage steel pipe in order to apply an outside weld seam thereto in precise alignment with said weld seam which comprises,

optically scanning said weld seam at intermediate stations along the length of said pipe section,

adjusting the position of said optical scanning means for precise positioning with respect to the center of said intermediate weld seam as scanned at a particular point by adjusting the position of the support for said optical scanner and thereby moving a flexible girder guide means attached to said support and extending generally parallel to said pipe section to thereby deflect said beam sufficiently to enable said guide means to assume a contour corresponding to the contour of said weld seam,

and thereafter applying the outside weld over said weld seam by causing a welding machine to traverse the length



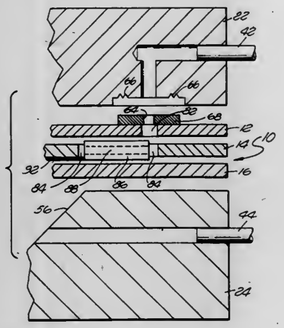
of said pipe section by using said flexible box beam as a guide for said outside weld seam path.

4,577,797

APPARATUS AND METHOD FOR MAKING LAMINATE STRUCTURES

Roger S. Raymond, Redondo Beach, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Mar. 21, 1984, Ser. No. 592,044
Int. Cl.⁴ B23K *1/20*
U.S. Cl. 228—118 **13 Claims**



11. A method of making laminate structure between first and second forming members with the use of pressurized fluid from a first sheet made of a first sheet material and a second sheet made of a second sheet material, said second sheet material being the same or different from said first sheet material, which comprises:

positioning said first sheet and said second sheet into a stack;

applying a stopoff material at preselected areas of opposing surfaces of said sheets;

positioning said stack between said forming members;

providing a slot in one of said sheets at a predetermined position adjacent to said stopoff material;

providing a fluid line in said forming member that is coupled to said slot, said line allowing pressurized fluid to flow into said slot;

providing a ceramic inflation tube having an internal bore within said slot, said tube being thicker than said one of said sheets having the slot, said tube having a compressive strength of at least about 3000 psi, the compressive strength being sufficient to enable said tube to form a groove in at least one of the sheets with application of diffusion bonding pressures, a portion of said tube snugly fitting within the groove, said tube being positioned in said slot such that it provides fluid communication from said prssurized fluid to said stopoff material, said ceramic being noncontaminating relative to said first sheet material and said second sheet material;

sealing said first forming member about said slot; and

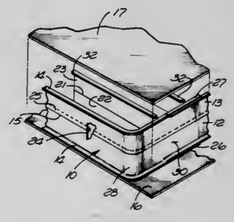
applying heat and differential pressure to inflate said stack to form said laminate structure.

4,577,798

METHOD OF FABRICATING EXPANDED SANDWICH PANELS HAVING AN ENCLOSED CORE

Gilles Rainville, Northridge, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Nov. 21, 1983, Ser. No. 553,661
Int. Cl.⁴ B23K *31/00*
U.S. Cl. 228—157 **12 Claims**



1. A method of forming a sandwich structure with a core close-out, comprising:

providing two face sheets, each face sheet having two opposed principal surfaces;

providing at least one core sheet, said at least one core sheet having two opposed principal surfaces;

providing at least one set of close-out sheets, each sheet of said set having two opposed principal surfaces, and having substantially the same shape, each of said close-out sheets having a pair of elongated lip portions, each of said close-out sheets having a central hole;

positioning said sheets in a stack, contacting at said principal surfaces, such that said central holes of said close-out sheets are in alignment and said face sheets sandwich said close-out sheets and said at least one core sheet, said at least one core sheet being positioned within said central holes of said close-out sheets such that said close-out sheets substantially frame said at least one core sheet;

joining one of said lip portions from each of said close-out sheets together;

joining said other lip portion from each of said close-out sheets to the respective contacting face sheet;

joining at selected areas said at least one core sheet to said face sheets; and

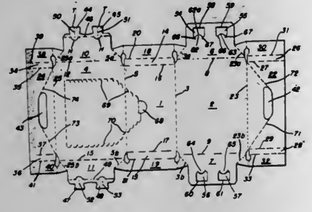
expanding the joined stack such that the core of said sandwich structure is formed by said at least one core sheet and said close-out sheets unfold into a core close-out that extends continuously around the periphery of the core.

4,577,799

PANEL INTERLOCKING MEANS

James R. Oliff, Austell, Ga., assignor to The Mead Corporation, Dayton, Ohio

Filed Jan. 28, 1985, Ser. No. 695,184
Int. Cl.[4] B65D 5/08
U.S. Cl. 229—40 4 Claims



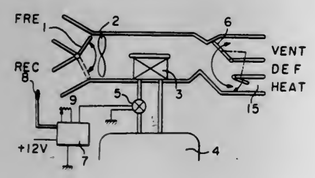
1. Interlocking means for securing two end wall panels of a carton together in overlapping relation, said interlocking means comprising a locking tab joined to one of the panels along a first fold line and having an integral locking toe and an integral locking heel extending in opposite directions from said first fold line and generally transverse thereto, weakened fold line formed in said locking tab generally transverse to said first fold line, a locking aperture formed in the other panel and having a locking edge for engaging said locking heel upon insertion of said locking heel into said locking aperture in coordination with folding of said locking tab along said first fold line out of the plane of said one panel and relative movement of the panels toward each other, and said locking toe being of a size and configuration such that said locking toe is wider than the width of said aperture so that swinging movement of said locking tab causes at least one side edge portion of said locking toe to overlap a corresponding part of said other panel and so as to fold said locking tab along said weakened fold line, and a holding tab formed integrally with said other panel and disposed opposite said locking edge and having an arcuate end portion projecting inwardly into said locking aperture for engaging the outer surface of the extremity of said locking tab in flat face contacting relation thereby to aid in holding said locking tab in locked condition.

4,577,800

AIR CONDITIONING DEVICE FOR A VEHICLE

Kazuhide Yuchi, Shizuoka, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 523,581, Aug. 16, 1983, abandoned. This application Feb. 19, 1985, Ser. No. 701,812
Claims priority, application Japan, Aug. 19, 1982, 57-143805
Int. Cl.[4] G05D 23/00
U.S. Cl. 237—2 A 4 Claims



1. An air conditioning device for a vehicle adapted to feed a cooling liquid for cooling an engine to a hot water coil provided in a vehicle cabin and to control temperature of the vehicle cabin which comprises:

(a) a blower means which sucks at least internal air in said vehicle from an intake port and flows out from a foot-spot diffuser provided in said vehicle cabin a hot air which is heated during its passing through a hot water coil for heating placed in an air passage;

(b) an ON-OFF interruption means for interrupting intermittently flow of the cooling liquid fed into said hot water coil for heating;

(c) a first temperature sensor for detecting temperature of air in said vehicle cabin to be air-conditioned;

(d) a second temperature sensor for detecting temperature of air blown from said foot-spot diffuser;

(e) a reference temperature setting means for a cabin which allows manually setting of temperature for air-conditioning said vehicle cabin;

(f) a reference temperature setting means for a passenger's feet region which allows predetermination of temperature of air blown from said foot-spot diffuser; and

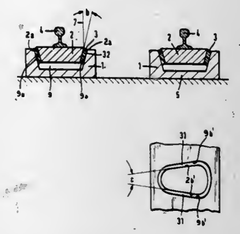
(g) a controlling unit comprising a first comparator for comparing a signal from said first temperature sensor with a set signal from said reference temperature setting means for a cabin, a second comparator for comparing a signal from said second temperature sensor with a set signal from said reference temperature setting means for a passenger's feet region and a driving circuit for driving said ON-OFF interruption means by receiving output from said first and/or second comparator, whereby said vehicle cabin is air-conditioned and said ON-OFF interruption means is controlled to keep the temperature of air blown from said foot-spot diffuser to be maintained at a predetermined minimum temperature regardless of the result of the comparison of said first comparator so as to keep the feet of the passengers comfortable.

4,577,801

ELASTOMERIC MOUNTING FOR RAILWAY RAIL WITH DIFFERENTLY ANGLED FLANKS

Hermann Ortwein, Cologne, Fed. Rep. of Germany, assignor to Clouth Summiwerke Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Filed Aug. 14, 1981, Ser. No. 292,789
Claims priority, application Fed. Rep. of Germany, Aug. 16, 1980, 3030937
Int. Cl.[4] E01B 9/38
U.S. Cl. 238—283 9 Claims



1. A mounting for one rail of a pair of railroad rails having inner sides turned toward each other and outer sides turned away from each other, said mounting comprising:

a base supported on the ground under said one rail and formed with an upwardly open recess having inner and outer base side flanks respectively generally under and parallel to said inner and outer sides and end base flanks extending between said side base flanks and transverse to said rail, said side flanks forming with the vertical an angle different from that of said end flanks;

an insert attached to said rail, received in said recess, and having respective side and end insert flanks juxtaposed with, generally parallel to, and spaced from the respective base flanks; and

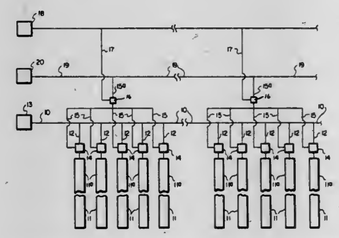
respective side and end elastomeric bodies lying between said base and insert flanks and supporting said insert in said recess of said base.

4,577,802

METHOD AND SYSTEM FOR FURROW IRRIGATION

Jack Keller, Logan, and Glen E. Stringham, Millville, both of Utah, assignors to Utah State University Foundation, Logan, Utah

Continuation of Ser. No. 651,048, Sep. 14, 1984, abandoned, which is a continuation of Ser. No. 61,693, Jul. 30, 1979, abandoned. This application Aug. 6, 1985, Ser. No. 763,314
Int. Cl.[4] B05B 17/04; A01G 25/16; E02B 13/00
U.S. Cl. 239—11 15 Claims



1. An intermittent flow irrigation method for advancing irrigation water down a furrow, the method comprising the steps of:

advancing irrigation water down a portion of the length of the furrow using an on/off irrigation cycle comprising the steps of:

supplying a continuous flow of irrigation water into a head end of the furrow during a first predetermined time period such that the irrigation water advances down a portion of the length of the furrow; and

refraining from supplying irrigation water into the furrow during a second predetermined time period, thereby allowing the irrigation water supplied to the furrow during the first predetermined time period to seep into the furrow; and

repeating the on/off irrigation cycle so as to advance the irrigation water further down the length of the furrow, the on/off irrigation cycle being repeated until the water extends to substantially near a bottom end of the furrow.

4,577,803

CONTAINERS

David J. Owen, Cleveland, England, assignor to Imperial Chemical Industries PLC, London, England

Filed Feb. 7, 1984, Ser. No. 577,883
Claims priority, application United Kingdom, Mar. 2, 1983, 8305816
Int. Cl.[4] B05B 5/02
U.S. Cl. 239—690 9 Claims

1. A combination, comprising:

(a) a container having:

(i) a body enclosing a reservoir,

(ii) a nozzle providing an orifice for dispensing a fluid from said reservoir,

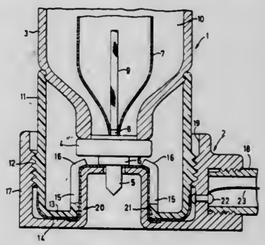
(iii) a valve, biassed to the closed position, between said reservoir and said orifice,

(iv) a valve operating member incorporating said nozzle, said valve being actuatable by effecting predetermined relative movement between said valve operating member and said body, and

(v) at least one sprung member biassed to engage with said valve operating member to prevent said predetermined relative movement, and

(b) an enabling device connectable to said container and provided with:

(i) first engaging means for engaging with said at least one



sprung member to urge the latter out of engagement with said valve operating member, and

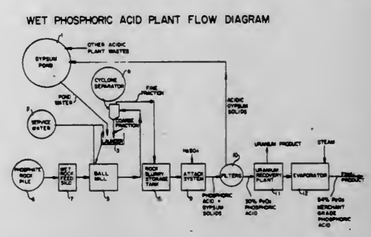
(ii) an opening through which said nozzle is exposed when said enabling device is connected to said container.

4,577,804

WET GRINDING PHOSPHATE ROCK IN AN ACIDIC SLURRY

Vivian C. Astley, New Orleans, La.; Rudolph R. Milan, Albany, Calif., and Jody J. Taravella, Harvey, La., assignors to Freeport Minerals Company, New York, N.Y.

Filed Aug. 7, 1984, Ser. No. 638,420
Int. Cl.[4] B02C 23/36
U.S. Cl. 241—16 16 Claims



1. A method for grinding phosphate rock with mild steel grinding balls in an acidic slurry comprising:

(a) establishing control curves relating three variables of said slurry, said variables being:

(i) pH;

(ii) particulate iron content; and

(iii) ball consumption;

(b) determining particulate iron content in said slurry after a period of operation of said mill;

(c) correlating said particulate iron content to said control curve; and

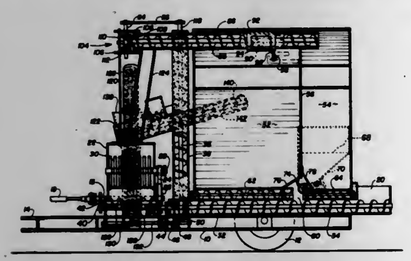
(d) adjusting said slurry variables of pH by altering a blend of low pH pond water and a substantially neutral pH service water togehter which form an aqueous phase of the acidic slurry, and particulate iron content to an extent required to produce a predetermined ball consumption rate.

4,577,805

AGRICULTURAL MIXING AND GRINDING MACHINE

Shaun A. Seymour, New Holland, Pa., assignor to Sperry Corporation, New Holland, Pa.

Filed May 31, 1984, Ser. No. 615,616
Int. Cl.[4] B02C *19/00*
U.S. Cl. 241—101 B 10 Claims



1. An agricultural mixing and grinding machine comprising in combination, a frame having forward and rearward ends and supporting a plurality of bins for different agricultural materials, material receiving means on said frame comprising a hopper adjacent the rearward end of said frame, delivery means on said frame operable to move material from said receiving means and distribute the same selectively to said bins, said delivery means including a confluence mixing auger located below said bins and extending longitudinally of said frame, metering augers respectively positioned to receive individual materials from said bins and discharge measured quantities thereof to said confluence mixing auger, adjustable drive means for each of said metering augers operable to selectively and respectively drive the same at variable independent speeds in desired ratios to each other to provide desired proportions of materials in the final mixed product grinding means on said frame adjacent said forward end of said frame positioned to receive said mixed material from said confluence mixing auger, discharge means on said frame arranged to receiving mixed and ground material from said grinding means and to discharge it from said machine, said delivery means also including an upper distributing auger extending along the upper portions of said bins and arranged to distribute material thereto from an elevating auger communicating with the delivery end of said confluence mixing auger, said upper distributing auger also having a portion extending toward said grinding means, and reversible drive means for said upper distributing auger operable selectively to drive said upper distributing auger in one direction to deliver unmixed material to said bins from said hopper when said metering augers are idle and to drive said upper distributing auger in another direction to deliver mixed material to said grinding means when said metering augers are operating.

4,577,806

IMPELLER ASSEMBLY FOR AN IMPACT CRUSHER

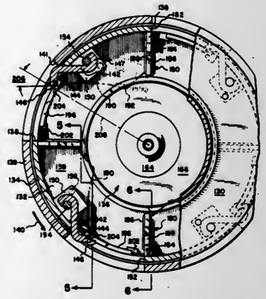
Gabriel M. Terrenzio, Seattle, Wash., assignor to Acrowood Corporation, Everett, Wash.

Filed Nov. 18, 1983, Ser. No. 553,222
Int. Cl.[4] B02C *17/20*
U.S. Cl. 241—275 6 Claims

1. An impeller assembly for use in a centrifugal impact rock crusher, comprising:

a rotatable cylindrical impeller housing with a vertically disposed central rotary axis, said housing having an upper impeller unit which has a feed opening disposed coaxially with said housing for receiving rock, said housing also having a lower impeller unit which has a landing surface disposed coaxially with said housing for ipingement on said landing surface of rock being fed through said feed opening, said impeller units being connected to each other by a generally cylindrical side wall unit which has a plurality of exit openings spaced around said side wall unit, each of said exit openings having an upper opening edge, a bottom opening edge, and two opposing side opening edges, wherein rotation of the impeller housing about said axis defines one of said side opening edges of each of said exit openings of each of said exit openings as a forward side edge and the other of said side edges as a rearward side edge with respect to the direction of rotation of the impeller housing;

lip means including a plurality of removable lip providing members disposed within respective of said exit openings and being disposed adjacently the rearward side edge thereof, each of said lip members having first and second ends spaced apart circumferentially around said side wall unit, and each of said lip members being formed with a generally right-angle bend near said first end, a curved



bend near said second end and directed oppositely to said generally right-angle bend, and a central portion between said generally right-angle bend and curved bend said generally right-angle bend defining a lip portion adjacent said first end, said lip portion having inner and outer lip surfaces with respect to bend, said generally right angle said inner lip surfaces extending substantially the full height of a respective exit opening and being directed generally inwardly with respect to said cylindrical side wall unit for facilitating retention of a portion of rock to be crushed to thereby protect the rearward side edge of each exit opening, and an outer surface of said central portion being placed adjacently the rearward side edge of it respective opening; and

retaining means for each lip providing member, said retaiing means including said curved bend ad a vertical column attached between said upper and lower impeller units near said side wall unit and partially surrounded and engaged by the curved bend of the lip member.

4,577,807

OPEN FACE ROTATABLE SPOOL FISHING REEL

Charles L. Urso, 215 Newton St., Waltham, Mass. 02154

Continuation-in-part of Ser. No. 558,821, Dec. 7, 1983, abandoned. This application May 20, 1985, Ser. No. 736,424
Int. Cl.[4] A01K *89/015, 89/04*
U.S. Cl. 242—84.2 C 7 Claims

1. A fishing reel comprising:

a spool positioned with an open end such that line wound upon the spool can pay-off longitudinally of the spool axis during a line cast;

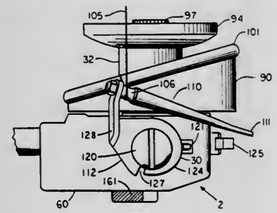
a line traversing cam, encircling the spool, comprising a support cup and an endless rail of substantially elliptical circuit configuration fixedly mounted to the support cup at an oblique angle relative to the spool;

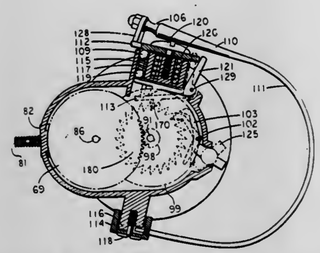
a stationary housing;

means for rotatably mounting the spool and the line cam to the housing about a common axis;

a hand crank rotatably supported by the housing;

means for drivingly connecting the crank with the spool and the line cam such that rotation of the crank compels the





spool and the line cam to rotate such that the rotation rate of the spool is greater than the rotation rate of the line cam; and

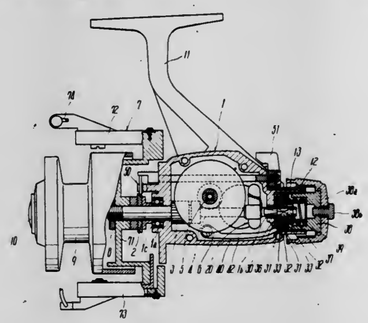
a line pick-up mounted to the housing, adjacent the line cam, the line pick-up being movable between a line engaged retrieval position and a line disengaged casting position.

4,577,808

SPINNING REEL BRAKE

Yuzo Kawabe, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Filed Feb. 8, 1984, Ser. No. 578,105
Claims priority, application Japan, Feb. 16, 1983, 58-21420[U]
Int. Cl.[4] A01K *89/01, 89/02*
U.S. Cl. 242—84.5 R 2 Claims



1. A spinning reel comprising:

a reel body;

a spool shaft having a spool supported thereon, said spool shaft rotatably supported to said reel body and movable longitudinally of said body;

a line-winding mechanism for winding a fishing line onto said spool; and

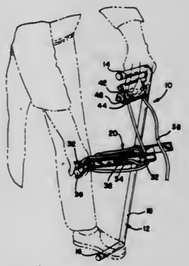
a drag mechanism comprising a first drag washer supported non-rotatably to said spool shaft, a second drag washer supported non-rotatably to said reel body, and a lining plate interposed between said first and second drag washers, said first drag washer comprising a tubular holding portion disposed at a central position of said first drag washer, said tubular holding portion having a non-circular through bore, said first drag washer being supported to said spool shaft by said tubular holding portion, said drag mechanism further including a rotary cylinder supported rotatably to said reel body, said rotary cylinder comprising a non-circular inner peripheral surface having a non-circular cross-section and a non-circular outer peripheral surface having a non-circular cross-section, said spool shaft being inserted into said rotary cylinder such that said spool shaft and said rotary cylinder are axially movable relative to each other but are not rotatable relative to each other, and said tubular holding portion being supported to said outer peripheral surface of said rotary cylinder such that said tubular holding portion and said rotary cylinder are axially movable relative to each other but are not rotatable relative to each other, said tubular holding portion being longer in axial length than a widthwise thickness of said lining plate, said lining plate and said second drag washer being supported on an outer periphery of said tubular holding portion, said drag mechanism further comprising first and second sets of drag components, each set comprising a said first drag washer and a said second drag washer and a said lining plate interposed therebetween, said second set comprising a said first drag washer having a projection abutting against a said second drag washer of said first set, a said tubular holding portion of said first drag washer of said first set being longer than a combined thickness of said second drag washer of said first set and a said lining plate of said first set.

4,577,809

GATHERING AND STORING DEVICE FOR ELECTRIC CABLE

William F. Auer, 1654 Walnut, DesPlaines, Ill. 60016

Filed Feb. 27, 1985, Ser. No. 706,197
Int. Cl.[4] B65H *75/40*
U.S. Cl. 242—96 6 Claims



1. A portable, manually operated cord gathering and storage device for an extension cord and the improvement comprising:

a frame member providing a handle to be grasped by a user;

a reel rotatably mounted on the frame member below said handle and also including a grasping portion for rotating the reel to gather and store said extension cord;

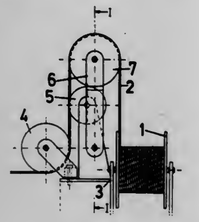
a slack adjuster with manually operated means aligned with the reel as it rotates cooperating with an associated tension

roller to contact said extension cord and apply tension as the cord moves from the roller and is being gathered on the reel;
said manually operated means of said slack adjuster including a pressure plate with a hand engaging portion and also including a cord engaging lip; and
guide means operating in conjunction with the slack adjuster to insure proper positioning of the cord on said reel.

4,577,810
FEED DEVICE FOR GUIDING A ROPE ONTO A WINDING DRUM

Johannes Sandvik, Stokke, Norway, assignor to Elkem A/S, Oslo, Norway

Filed Sep. 18, 1984, Ser. No. 652,177
Claims priority, application Norway, Sep. 26, 1983, 833449
Int. Cl.[4] B65H *57/28*
U.S. Cl. 242—157.1 **4 Claims**



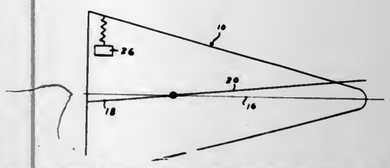
1. A device for guiding rope comprising:
(a) a frame;
(b) a drum rotatably mounted on said frame for receiving said rope;
(c) a frame pulley mounted on said frame;
(d) a first guide pulley mounted on said frame between, with respect to the movement of said rope, said frame pulley and said drum, and such that said rope runs vertically between said frame pulley and said first guide pulley;
(e) an arm, one end of said arm being pivotally mounted to said frame at a point on said frame below the mounting point of said first guide pulley; and
(f) a second guide pulley mounted at the other end of said

positioning a machine reel of said device for proper insertion and removal of said leader block into a slot in a hub of said machine reel, comprising;
rotating means for rotating said machine reel in winding and unwinding directions;
reflective means attached to said hub of said machine reel and being positioned such that tape wound on said machine reel will block light from reaching said reflective means;
a light source mounted adjacent said machine reel for directing light at said reflective means;
light detection means for receiving light from said reflective means; and
controller means attached to said light detection means and said rotating means for rotating said machine reel until light is detected by said light detection means;
whereby said machine reel is rotated in an unwinding direction until said reflective surface is uncovered and said reel is further rotated until light from said light source is detected by said light detection means whereupon said machine reel rotation is stopped thereby positioning said machine reel in a proper position to remove or insert said leader block.

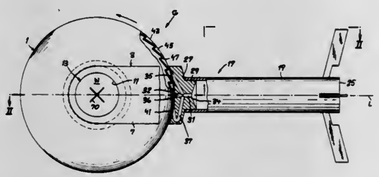
4,577,812
CENTRIFUGALLY OPERATED MOVING-MASS ROLL CONTROL SYSTEM

Daniel H. Platus, Los Angeles, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sep. 26, 1973, Ser. No. 398,281
Int. Cl.[4] F41G *7/00*
U.S. Cl. 244—3.21 **1 Claim**



a stabilizer connected to said fork and including a tube having a longitudinal axis;
an explosive charge carried by said fork;
a disk-shaped body rotatable between the arms of said fork; and

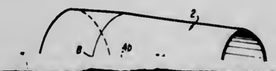


means for directing a portion of propellant gases from said tube against said body for rotating said body to stabilize the projectile along its flight toward a target.

4,577,814
VARIABLE SECTION NOZZLE FOR A TURBO-JET ENGINE AND AN AIRCRAFT COMPRISING SUCH EQUIPMENT

Gérard J. P. Bayle-Laboure, Avon; Jean G. Bouiller, Brunoy; Marc F. B. Buisson, Le Mee sur Seine, and Marcel R. Soligny, Chevilly-Larue, all of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "S.N.E.C.-M.A.", Paris, France

Filed Nov. 22, 1983, Ser. No. 554,301
Claims priority, application France, Dec. 8, 1982, 82 20530
Int. Cl.[4] B64C *15/00*; F02K *1/00*
U.S. Cl. 244—12.5 **9 Claims**



4,577,815
WING ASSEMBLIES FOR AIRCRAFT

Paul Orazi, Box 32, Miami Beach, Fla. 33139

Continuation-in-part of Ser. No. 97,342, Nov. 26, 1979, abandoned. This application Aug. 12, 1982, Ser. No. 407,550
Int. Cl.[3] B64C *3/00*
U.S. Cl. 244—39 **29 Claims**



1. A rotary wing assembly for an aircraft, said assembly comprising a spar intended to be rotatably mounted upon an aircraft fuselage, and wing sheets forming flying surfaces and floating upon a frame including said spar, whereby during rotation of the wing assembly the said spar can flex without transmission of corresponding flexural movement to the wing sheets, the wing sheets cooperating with the frame to achieve the flexing of the spar while maintaining an internal clearance between said frame and said wing sheets.

4,577,816
VACUUM-PACKED SURVIVAL EQUIPMENT

Gordon T. Foster, La Habra, Calif., assignor to Gulf & Western Manufacturing Company, Southfield, Mich.

Continuation-in-part of Ser. No. 318,328, Nov. 5, 1981, abandoned. This application Aug. 22, 1983, Ser. No. 525,574
Int. Cl.[4] B64D *17/40*
U.S. Cl. 244—148 **17 Claims**



roller to contact said extension cord and apply tension as the cord moves from the roller and is being gathered on the reel;

said manually operated means of said slack adjuster including a pressure plate with a hand engaging portion and also including a cord engaging lip; and

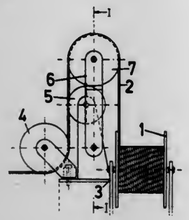
guide means operating in conjunction with the slack adjuster to insure proper positioning of the cord on said reel.

4,577,810

FEED DEVICE FOR GUIDING A ROPE ONTO A WINDING DRUM

Johannes Sandvik, Stokke, Norway, assignor to Elkem A/S, Oslo, Norway

Filed Sep. 18, 1984, Ser. No. 652,177
Claims priority, application Norway, Sep. 26, 1983, 833449
Int. Cl.[4] B65H *57/28*
U.S. Cl. 242—157.1 **4 Claims**



1. A device for guiding rope comprising:

(a) a frame;

(b) a drum rotatably mounted on said frame for receiving said rope;

(c) a frame pulley mounted on said frame;

(d) a first guide pulley mounted on said frame between, with respect to the movement of said rope, said frame pulley and said drum, and such that said rope runs vertically between said frame pulley and said first guide pulley;

(e) an arm, one end of said arm being pivotally mounted to said frame at a point on said frame below the mounting point of said first guide pulley; and

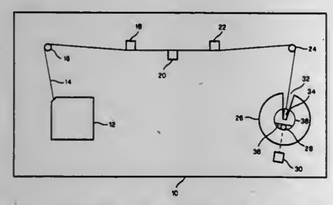
(f) a second guide pulley mounted at the other end of said arm such that the axis of said second guide pulley is substantially perpendicular to a vertical plane which is parallel to the axis of said drum, said second guide pulley guiding said rope on to said drum when said rope is wound onto said drum.

4,577,811

TAPE REEL POSITION SENSOR

Stuart W. Bray; Timothy C. Hughes, and Susan E. Ariniello, all of Boulder County, Colo., assignors to Storage Technology Corporation, Louisville, Colo.

Filed Feb. 28, 1985, Ser. No. 706,553
Int. Cl.[4] G03B *1/04*; G11B *15/32*
U.S. Cl. 242—195 **13 Claims**



5. In a magnetic tape device having an automatic tape threading mechanism using a tape leader block, apparatus for positioning a machine reel of said device for proper insertion and removal of said leader block into a slot in a hub of said machine reel, comprising;

rotating means for rotating said machine reel in winding and unwinding directions;

reflective means attached to said hub of said machine reel and being positioned such that tape wound on said machine reel will block light from reaching said reflective means;

a light source mounted adjacent said machine reel for directing light at said reflective means;

light detection means for receiving light from said reflective means; and

controller means attached to said light detection means and said rotating means for rotating said machine reel until light is detected by said light detection means;

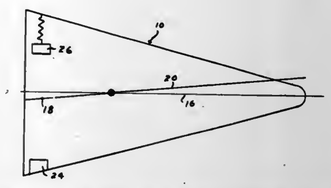
whereby said machine reel is rotated in an unwinding direction until said reflective surface is uncovered and said reel is further rotated until light from said light source is detected by said light detection means whereupon said machine reel rotation is stopped thereby positioning said machine reel in a proper position to remove or insert said leader block.

4,577,812

CENTRIFUGALLY OPERATED MOVING-MASS ROLL CONTROL SYSTEM

Daniel H. Platus, Los Angeles, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sep. 26, 1973, Ser. No. 398,281
Int. Cl.[4] F41G *7/00*
U.S. Cl. 244—3.21 **1 Claim**



1. A roll control system for a reentry missile comprising: means for offsetting the center of gravity from the aerodynamic axis of said missile; a roll control mass assembly positioned at the aft end of said missile within the heat shield; said roll control mass assembly including means for tilting the principal axis of inertia of said missile in a plane orthogonal to the center of gravity offset of the missile; said tilting means including means for controlling the tilt of the principal axis of inertia as a function of roll rate of said missile at a predetermined level above the critical roll rate.

4,577,813

DISCUS-SHAPED PROJECTILE

Rudolf Romer, Kaarst, and Manfred Moll, Düsseldorf, both of Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Dusseldorf, Fed. Rep. of Germany

Filed May 5, 1980, Ser. No. 153,921
Claims priority, application Fed. Rep. of Germany, May 7, 1979, 2918129
Int. Cl.[4] F42B *13/24*
U.S. Cl. 244—3.23 **10 Claims**

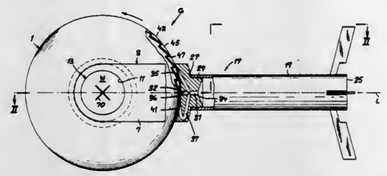
1. A weapons system, especially for foot attack upon armored vehicles, comprising a discus-shaped projectile, said projectile comprising:

a fork having an upper arm and a lower arm;

a stabilizer connected to said fork and including a tube having a longitudinal axis;

an explosive charge carried by said fork;

a disk-shaped body rotatable between the arms of said fork; and



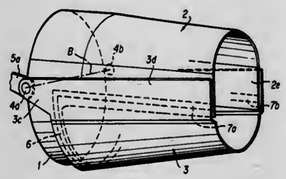
means for directing a portion of propellant gases from said tube against said body for rotating said body to stabilize the projectile along its flight toward a target.

4,577,814

VARIABLE SECTION NOZZLE FOR A TURBO-JET ENGINE AND AN AIRCRAFT COMPRISING SUCH EQUIPMENT

Gérard J. P. Bayle-Laboure, Avon; Jean G. Bouiller, Brunoy; Marc F. B. Buisson, Le Mee sur Seine, and Marcel R. Soligny, Chevilly-Larue, all of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "S.N.E.C.-M.A.", Paris, France

Filed Nov. 22, 1983, Ser. No. 554,301
Claims priority, application France, Dec. 8, 1982, 82 20530
Int. Cl.[4] B64C *15/00*; F02K *1/00*
U.S. Cl. 244—12.5 **9 Claims**



1. A variable section nozzle for a turbo-jet engine comprising

means defining a substantially frusto-conical convergent duct including

a fixed semi-shell arranged to be secured to the jet pipe of an aircraft engine,

a pivotal semi-shell mounted for pivotal movement about a diametral axis transverse to the longitudinal axis of the jet pipe,

the semi-shells together defining the nozzle and having generally coincident longitudinal edge portions in opposed pairs, said longitudinal edge portions of both of said shells being plane and overlapping, and

means for ensuring fluid-tightness of the semi-shells at the longitudinal edge portions in all poritions of the pivotal semi-shell, and including

means for pivoting the pivotal semi-shell between two extreme positions corresponding to maximum and minimum openings of the nozzle.

4,577,815

WING ASSEMBLIES FOR AIRCRAFT

Paul Orazi, Box 32, Miami Beach, Fla. 33139

Continuation-in-part of Ser. No. 97,342, Nov. 26, 1979, abandoned. This application Aug. 12, 1982, Ser. No. 407,550
Int. Cl.[3] B64C *3/00*
U.S. Cl. 244—39 **29 Claims**



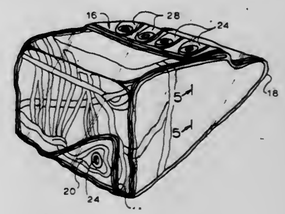
1. A rotary wing assembly for an aircraft, said assembly comprising a spar intended to be rotatably mounted upon an aircraft fuselage, and wing sheets forming flying surfaces and floating upon a frame including said spar, whereby during rotation of the wing assembly the said spar can flex without transmission of corresponding flexural movement to the wing sheets, the wing sheets cooperating with the frame to achieve the flexing of the spar while maintaining an internal clearance between said frame and said wing sheets.

4,577,816

VACUUM-PACKED SURVIVAL EQUIPMENT

Gordon T. Foster, La Habra, Calif., assignor to Gulf & Western Manufacturing Company, Southfield, Mich.

Continuation-in-part of Ser. No. 318,328, Nov. 5, 1981, abandoned. This application Aug. 22, 1983, Ser. No. 525,574
Int. Cl.[4] B64D *17/40*
U.S. Cl. 244—148 **17 Claims**



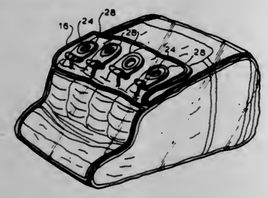
1. A vacuum-packed assembly comprising:

a compressible article of survival equipment;

a first flexible, substantially gas-impermeable envelope of relatively thin material encasing said compressible article, said article being compressed to a significant degree, said first envelope having sufficient size to receive said article in its uncompressed state and being evacuated to form a skin-tight covering about said compressed article, there being a considerable amount of excess first envelope material drawn against said compressed article; and

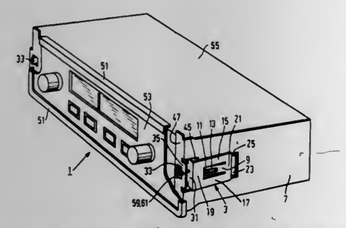
a second flexible, substantially gas-impermeable envelope of relatively thicker material than said first envelope, having a smaller volume than said first envelope and having greater resistance to punctures, said second envelope encasing said compressed article and said first envelope and being evacuated to form a skin-tight covering thereabout.

4,577,817
THREE-DIMENSIONAL VACUUM ENVELOPE
Santiago Hernandez, Anaheim, Calif., assignor to Gulf & Western Manufacturing Company, Southfield, Mich.
Filed Dec. 14, 1983, Ser. No. 561,415
Int. Cl.⁴ B64D *17/50*
U.S. Cl. 244—148 **16 Claims**



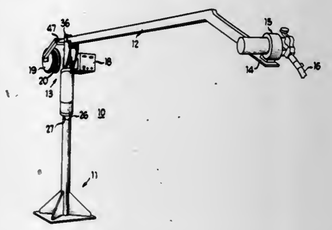
1. A three-dimensional vacuum container comprising upper and lower walls of flexible, substantially gas-impermeable material, said upper and lower walls being secured to each other along opposing sealing lines and defining a first envelope portion, said upper wall including an integral loop therein defining a second envelope portion in fluid communication with said first envelope portion, said loop having a closed end and a pair of opposing sealed edges, each of said sealed edges extending between said closed end and said first envelope portion with at least one of said sealed edges positioned between said opposing sealing lines, said second envelope portion being pivotable with respect to said first envelope portion along a line at which it adjoins said first envelope portion such that it may be positioned against said upper wall upon being pivoted about an axis defined by said line.

4,577,818
APPARATUS ADAPTED TO BE MOUNTED IN A MOUNTING WALL
Eddy J. Clarisse, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Nov. 16, 1984, Ser. No. 672,442
Claims priority, application Netherlands, Nov. 17, 1983, 8303946
Int. Cl.⁴ G12B *9/00*
U.S. Cl. 248—27.3 **7 Claims**



1. An apparatus having means for mounting in an opening in a mounting wall by engaging inner and outer surfaces of the wall, comprising a flange formed on the apparatus, and a mounting spring mounted on a wall of the apparatus, said mounting spring being resilient in a direction transverse to the insertion direction and having a shoulder arranged for clamping a part of the mounting wall against the flange,
characterized by comprising means for guiding the mounting spring slidably on said apparatus wall in a direction parallel to said insertion direction,
a bolt having a shoulder, and
screw thread means for connecting the bolt to the spring shoulder, arranged such that, when the apparatus is mounted in a mounting wall, the bolt pulls the apparatus flange and the mounting spring shoulder toward each other so as to clamp the apparatus flange and part of the mounting wall between the shoulder on the bolt and the shoulder of the mounting spring.

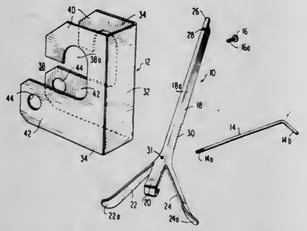
4,577,819
SELF-BALANCING BOOM APPARATUS
Richard C. Bennett, 7333 Armitage Ave., Elmwood Park, Ill. 60635
Filed May 14, 1984, Ser. No. 610,127
Int. Cl.⁴ F16L *3/00*
U.S. Cl. 248—123.1 **22 Claims**



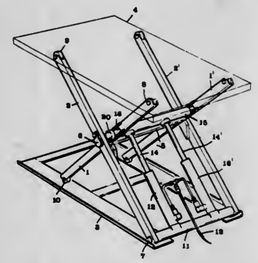
10. A self-balancing boom apparatus comprising a vertically extending support member, a boom pivotally mounted near its proximal end to said support member for movement about a pivot axis, and adapted to carry a load at its distal end, and balancing means for counteracting downward force at the distal end of said boom and including spring means and spring force coupling means, said spring means being carried by said support member and producing a force which is directed along a force axis, said spring force coupling means being constructed and arranged to apply the spring force to said boom at a point located between the pivot axis and the distal end of said boom, said spring force coupling means including a cam member and a cam follower, said cam member being coupled to said spring means and defining a cam surface, said cam follower being fixed to said boom at the point of application of the spring force and engaging said cam surface, said cam member being movable relative to said support member as said boom is pivoted to vary the force produced by said spring along the force axis while cooperating with said cam follower to vary the distance between the force axis and the point of application of the spring force to said boom whereby the moment of the force exerted on said boom by said spring means is maintained substantially constant as said boom is pivoted.

4,577,820
PAINT PAIL HOLDER AND WOODEN LADDER ADAPTOR FOR SAME
Jeffrey J. Michaud, Bellows Falls, Vt., assignor to J. D. Tools, Inc., Bellows Falls, Vt.
Filed Jul. 13, 1984, Ser. No. 630,602
Int. Cl.⁴ E06C *7/14*
U.S. Cl. 248—211 **9 Claims**

1. A paint pail holder for supporting an open paint pail having an internally flanged rim to the side of an aluminum type ladder having hollow rungs opening through side rails of the ladder at both ends thereof; said holder comprising: an elongated sheet metal bar of inverted V-shaped cross-section sized to slide freely at one end into a given hollow run of said ladder, the opposite end of said bar being bifurcated to form outwardly flared wings, and a downwardly facing, integral hook projecting between the bifurcated wings at said other end, said hook being engageable with the rim of the paint pail with said wings contacting the outside of said pail below said rim to securely grasp the pail and hold it in upright, open position; and wherein the edges of said inverted V-shaped cross-section sheet metal bar at the end adjacent the bifurcation engages the edges of the open end of said rung within which said bar is inserted; and wherein the apex of the inverted V-shaped cross-section sheet metal bar remote from said bifurcation projects upwardly towards the top of said hollow rung to effect frictional contact at the end to the top of said hollow rung interior, such that the weight of the paint pail and its contents causes effective frictional locking between said elongated sheet metal mounting bar and said hollow rung.

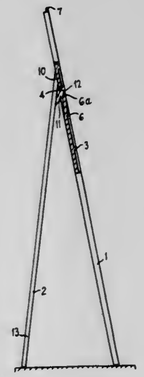


4,577,821
LIFTING TABLE
Torbjörn Edmo, Härnösand, and Per-Olof Sehlstedt, Ålandsbro, both of Sweden, assignors to Torbjörn Edmo AB, Härnösand, Sweden
Filed Aug. 14, 1984, Ser. No. 641,307
Claims priority, application Sweden, Aug. 29, 1984, 8304655
Int. Cl.⁴ B66F *3/22*
U.S. Cl. 248—421 **6 Claims**



1. Lifting table comprising two pairs of scissor arms, each pair having an inner arm and an outer arm pivotally interconnected by means of a joint or an axle and adapted to cooperate in raising and lowering a table or the like in relation to an underlying base portion by means of at least one longitudinally extensible power transmission device, for example a hydraulic cylinder, positioned in the area between the inner scissor arms, the scissor arms having ends which extend backwards from the joint and which are fixedly but hingedly connected to the table and the base portion, respectively, whereas the opposite ends of the arms are movable, for example by rollers or wheels, along the base portion and the table, respectively, and a carrier member, coupled with the power transmission device transversely of the longitudinal direction thereof, being inserted through an oblong hole in an inner scissor arm and adapted to cooperate with a sloping slideway on the associated outer scissor arm, said slideway being adapted, on displacement of the carrier member from an initial position in which the scissor arms are in one plane, to swing at least the inner scissor arm into a position in which a substantial moment arm has been established between the carrier member and the joint between the scissor arms, wherein the carrier member has the form of a single axle, the two opposite end portions of which protrude through the holes in the two inner scissor arms and which axle is directly coupled with one end of the power transmission device the opposite end of which is connected to a transverse attachment axle extending between the two outer scissor arms, wherein the carrier axle and consequently said slideways are located between the attachment axle and said joints, and wherein the carrier axle includes at least one rotatably mounted pin protruding through the oblong holes and roller-shaped portions that are rotatably mounted on said at least one pin and that are positioned to engage the slideways.

4,577,822
BACKING FOR A PHOTO OR PICTURE FRAME
David T. Wilkerson, Pinner, England, assignor to Masters Wilkerson Manufacturing Co. Ltd., London, England
Filed May 2, 1983, Ser. No. 490,896
Claims priority, application United Kingdom, May 11, 1982, 8213661
Int. Cl.⁴ A47B *97/08*
U.S. Cl. 248—463 **6 Claims**



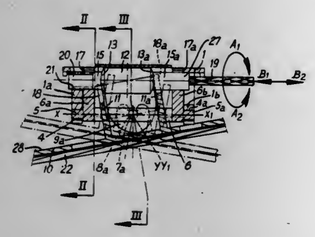
5. A back for a photo or picture frame in combination with a strut by means of which the frame can be supported in a display position, and wherein:
said back is a moulded synthetic plastics member having at least one three-sided slot generally coplanar with the back and defining a substantial part of a boundary of a region which can flex relative to the remainder of said back,
said strut is a moulded synthetic plastics member having one end abutting said back, the abutting portion of said one end being inclined or bevelled at an angle which determines the angle of the strut to the back when the frame is stood in a display position and an integrally formed lip or flange extending obliquely from said strut adjacent said one end and on the same side thereof as said abutting portion,
said lip or flange being engaged in said slot with one edge of said slot being embraced between said one end and said lip or flange said engagement being affected by the inward flexing of said region, and a projecting edge on said lip or flange engaging on a second edge of said slot which second edge is a bevelled edge of said flexing region,
said strut being disengageable from said back by swinging the strut across said back to cause said flexing region to flex and disengage said projecting edge from said second edge and thereby release said lip or flange from said slot.

4,577,823

DEVICE FOR REMOTELY CONTROLLING A REARVIEW MIRROR

Stéphane Manzoni, 1, rue Pasteur, 29200 Saint-Claude, France

Filed Jul. 13, 1984, Ser. No. 630,780
Claims priority, application France, Jul. 13, 1983, 83 11758
Int. Cl.[4] B60R *1/06*
U.S. Cl. 248—487 **8 Claims**



1. A control device for positioning a rearview mirror, said control device comprising:
- a support member having a front face and a rear face, said rearview mirror being attached to said front face, said support member further having two coupling tabs extending outwardly from said rear face;
- a pair of arms affixed to said rear face of said support member, said pair of arms extending outwardly from said rear face;
- a spider having two cylindrical lugs defining a first axis of rotation, said two coupling tabs of said support member being mounted to pivot about said first axis, said spider further having two additional cylindrical lugs defining a second axis of rotation substantially located in a plane normal to said first axis of rotation;
- a base attached to said two additional cylindrical lugs defining said second axis of rotation, said spider being mounted to said base to pivot about said second axis of rotation;
- a shaft rotatably and slidably mounted to said base, said shaft having a free end engaging said spider, a second end rotatably mounted to said spider, and an enlarged center portion between said free end and said second end adapted to engage said base, said pair of arms affixed to said rear face of said support member further communicating with said free end and said second end, respectively, of said shaft such that axial movement of said shaft rotates said support member about said first axis; and
- means for rotating said support member about said second axis of rotation such that said support member rotates about said first and said second axis of rotation to provide positioning of said rearview mirror.

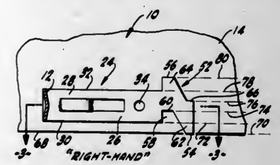
4,577,824

FASTENING DEVICE FOR FIXING A BODY TO A STRUCTURAL MEMBER

James B. Druffel, and Joel S. Cohen, both of Oakland, Calif., assignors to Prescolite, Inc., San Leandro, Calif.

Filed Jul. 9, 1984, Ser. No. 629,209
Int. Cl.[4] F16L *5/00*
U.S. Cl. 248—544 **6 Claims**

1. A fastener for fixing body to a structural member having an edge comprising:
- a. an end element connected to the body, said element having a first side and a second opposite side with first and second edges spaced from one another along a certain direction respectively;
- b. means for penetrating the structural member said means being connected to said end element;
- c. means for guiding the position of said end element in relation to the edge of the structural member, said guiding means including first and second edges each capable of being aligned with the edge of the structural member, said guiding means being formed as a portion of said end element, said first edge of said guiding means lying outwardly from said first edge of said first side of said end



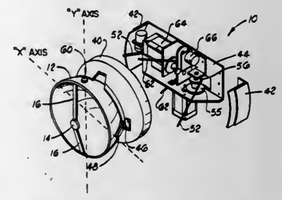
element along said certain direction, and said second edge of said guiding means lying outwardly from said second edge of said opposite second side of said end element along said certain direction.

4,577,825

OCULAR POINTING AND TRACKING DEVICE

George T. Pinson, Huntsville, Ala., assignor to The Boeing Company, Seattle, Wash.

Filed Aug. 12, 1983, Ser. No. 522,604
Int. Cl.[4] F16M *11/12, 13/00*
U.S. Cl. 248—550 **5 Claims**



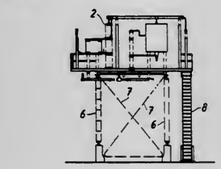
5. An ocular pointing and tracking device for complete hemispherical scan, the device comprising:
- a movable sensor platform adapted for receiving a sensor and the like in the front thereof, the platform conical in shape;
- a socket for receiving a portion of the conical sensor platform thereon, the platform rotatably mounted in the socket, the socket attached to support brackets secured to a support beam, the socket further attached to a pair of guide channels for slidably receiving a drive guide, the ends of the guide attached to the sides of the platform;
- a Y axis drive motor having Y axis drive belt connected to the ends of the drive guide for rotating the platform around a vertical Y axis, the Y axis drive motor mounted on the support beam;
- a Y axis position sensing potentiometer connected to the Y axis drive motor for sensing the movement of the platform around the vertical Y axis;
- a X axis drive motor having X axis drive belt connected to the platform for rotating the platform around a horizontal X axis, the X axis drive motor mounted on the support beam; and
- a X axis position sensing potentiometer connected to the X axis drive motor for sensing the movement of the platform around the horizontal X axis.

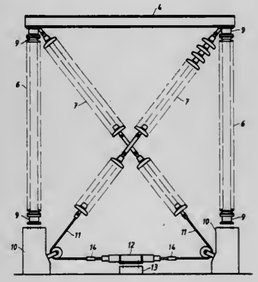
4,577,826

STAND STRUCTURE FOR SUPPORTING ELECTRIC HIGH VOLTAGE EQUIPMENT

Tommy Bergström; Göran Boman, and Leif Englund, all of Västerås, Sweden, assignors to ASEA Aktiebolag, Västerås, Sweden

Filed Jul. 9, 1984, Ser. No. 628,907
Claims priority, application Sweden, Jul. 11, 1983, 8303928
Int. Cl.[4] H02B *5/00*; F16F *15/00*
U.S. Cl. 248—638 **8 Claims**





1. A stand structure adapted to support electric high-voltage equipment, said structure comprising:
- a platform on which said equipment can be mounted,
- a plurality of substantially vertically extending insulator columns carrying said platform,
- universal joints at opposite ends of said insulator columns articulately connecting said columns at their top to the platform and at their bottom to column foundations,
- bracing means for said insulator columns, said bracing means including insulators which are stretched cross-diagonally between the ends of two adjacent of said insulator columns and interconnected by means of flexible connecting means, and
- a spring damper operatively connected to said flexible connecting means, said damper comprising a housing which is fixedly mounted in relation to said column foundations or in relation to said platform.

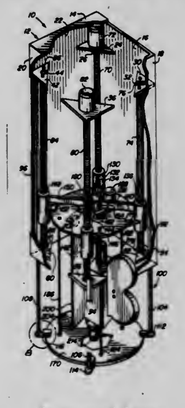
4,577,827

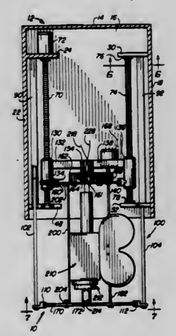
CAMERA HOLDER APPARATUS

Joshua Eliscu, Tucson, Ariz., assignor to Lois G. Langley, Tucson, Ariz.

Continuation-in-part of Ser. No. 432,076, Sep. 30, 1982, abandoned, which is a continuation-in-part of Ser. No. 275,616, Jun. 22, 1981, abandoned, which is a continuation of Ser. No. 88,414, Oct. 26, 1979, abandoned. This application Jul. 30, 1984, Ser. No. 635,560
Int. Cl.[4] F16M *13/00*
U.S. Cl. 248—656 **10 Claims**

1. Apparatus for holding and positioning a camera, comprising, in combination:
- base means;
- first plate means rotatable on the base means;
- second plate means pivotally secured to and movable with the first plate means;
- outer housing means secured to and movable with the second plate means, including
  - fixed shaft means,
  - rotating shaft means spaced apart from and aligned parallel to the fixed shaft means, and
  - means for supporting the fixed shaft means and the rotating shaft means;
- inner housing means disposed in the outer housing means and movable relative thereto in response to rotation of the rotating shaft means, including
  - bearing means secured to and axially movable on the fixed shaft means and the rotating shaft means, and
  - third plate means secured to the bearing means, including an upper plate and a lower plate spaced apart from each other and secured together for longitudinal movement and for rotational movement relative to the inner housing means;
- camera means secured to the third plate means and movable therewith; and
- motor means, including
  - first motor means for rotating the first plate means,
  - second motor means for pivoting the second plate means,
  - third motor means for moving the inner housing means relative to the outer housing means by rotating the rotating shaft means,
  - fourth motor means for rotating the third plate means within the inner housing means and relative to the outer housing means; and
  - control means for controlling the motor means for moving and positioning the camera means.



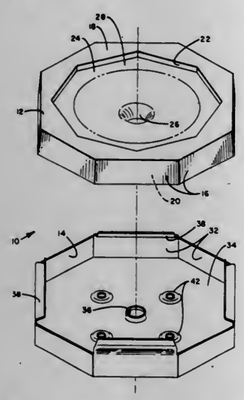


4,577,828

FAN COIL BASE PAD ASSEMBLY

Alan S. Drucker, Dewitt, and King H. Kwok, Liverpool, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Jun. 8, 1984, Ser. No. 618,656
Int. Cl.⁴ F16M *5/00*
U.S. Cl. 248—678 **4 Claims**



1. A base pad assembly for supporting, during assembly, shipping, installation and operation, a fan coil unit of the type having a generally cylindrical heat exchanger enclosed in a polygon shaped cabinet, comprising:

a first member including a base portion, a top portion, side walls connecting said base portion with said top portion, a top surface recessed into said top portion and dimensionally generally coextensive in area with the area of the bottom of the polygon shaped cabinet, and an aperture axially extending therethrough for draining liquid from said top surface; and

a second member including a bottom portion, a side portion extending generally perpendicular from said bottom portion and defining a partial cover for said first member, and a plurality of integral projection means attached to and extending inwardly from said side portion for releasably securing said first member within said second member, wherein said second member bottom portion includes an aperture which is so located as to be in registration with said first member aperture.

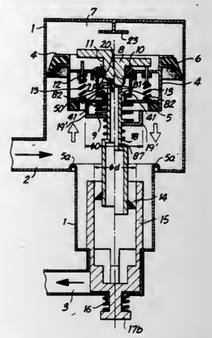
4,577,829

SELF CLOSING VALVE

Reiner Strangfeld, Bückeburg, Fed. Rep. of Germany, assignor to Georg Rost und Soehne Armaturenfabrik GmbH und Co. KG., Porta Westfalica, Fed. Rep. of Germany

Filed Aug. 20, 1984, Ser. No. 642,300
Claims priority, application Fed. Rep. of Germany, Aug. 20, 1983, 3330135
Int. Cl.⁴ F16K *21/04*
U.S. Cl. 251—15 **2 Claims**

1. In a self closing valve having a housing including a water inlet and outlet and a valve piston mounted in the housing with one end of the piston facing away from a valve seat forming a discharge chamber in conjunction with the housing which communicates with the inlet and outlet through flowthrough passages, supplementary-valve control means for controlling the flow through the passages by effecting a decelerated opening stroke of the valve piston and a rapid closing stroke of the valve piston and including means for hydraulically maintaining an initiating position of the supplementary-valve control means during opening of the valve piston and shifting the supplementary-valve control means upon discontinuance of the maintenance including a choking device, the improvement comprising supplementary-valve means for any leakage flows that directly occur at the hydraulically maintaining means to the outlet without being choked off, wherein the supplementary-valve means is opened in response to the initiating position of the supplementary-valve control means and is closed in response to a shift in the supplementary-valve control means when maintenance is discontinued, thereby eliminating any bypass flow parallel to flow through the choking device.

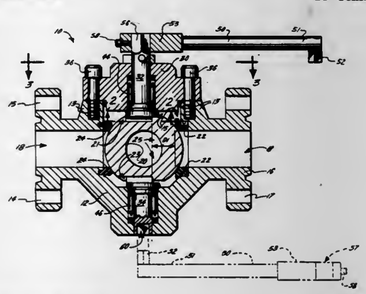


4,577,830

HIGH PRESSURE BALL VALVE WITH AN INTERFERENCE FIT CLOSURE SEAL

Mitchel E. Winegeart, 4512 Hessmer Ave., Metairie, La. 70002

Filed Aug. 27, 1985, Ser. No. 770,621
Int. Cl.⁴ F16K *25/00*
U.S. Cl. 251—84 **18 Claims**



1. A valve comprising:

a. a valve housing having inlet and outlet portions connected by a flow bore with a straight linear central axis;

b. a ball valving member having a flow opening and being mounted for rotation within the valve body between open and closed flow position;

c. a pair of transverse slots formed on generally opposite surfaces of the ball valving member, above and below the flow opening respectively;

d. a removable valve bonnet forming a portion of the valve housing;

e. a first valve stem rotatably mounted in the housing generally opposite the removable valve bonnet and upon an axis of rotation that is transverse with respect to the flow bore axis, and including an end portion that engages one of the slots of the ball so that the first valve stem rotates and the ball are connected together for rotation;

f. a second valve stem rotatably mounted in the removable valve bonnet and upon an axis of rotation that is transverse with respect to the flow bore axis and including an end portion that engages one of the slots of the ball so that the stem and the ball are connected together for rotation;

g. a valve seat on the valve body for forming a closure to the flow bore with the ball valving member; and

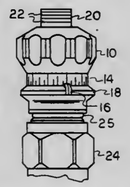
h. cam means, responsive to rotating at least one of the stems and the connected ball valving member to the closed position, for producing an interference fit between the ball valving member and the valve body at the seat, wherein load is transferred between the valve body including the bonnet and seat through both of the stems.

4,577,831

CALIBRATED HANDKNOB ASSEMBLY

Ernest A. DiBartolo, Sarasota, Fla., assignor to Sun Hydraulics Corporation, Sarasota, Fla.

Filed Apr. 1, 1985, Ser. No. 718,784
Int. Cl.⁴ F16K *35/06*
U.S. Cl. 251—93 **16 Claims**



14. A calibrated handknob assembly for use with a valve having a fixed body with a groove and an outer serrate edge thereon and a control stem moveable in said fixed valve body comprising:

a stem secured to said control stem and having axially spaced circumferential graduations along one end;

a handknob having an axial passage therethrough for said stem, a plurality of circumferentially spaced graduations thereon, an outer serrate edge and a plurality of axially extending fingers terminating in inwardly extending lugs;

a lock ring having first and second inner serrate edges and first, second and third axial positions;

in said first axial position said first lock ring serrate edge and said valve serrate edge are engaged, said second lock ring serrate edge and said handknob serrate edge are engaged, said lugs are positioned in said valve groove and said handknob fingers are restricted from radial movement, whereby said handknob is prevented from turning and from being removed from said stem;

in said second axial position said first lock ring serrate edge and said valve serrate edge are engaged, said second lock ring serrate edge and said handknob serrate edge are disengaged, said lugs are positioned in said valve groove and said handknob fingers are restricted from radial movement, whereby turning said handknob will change the valve opening and cause a corresponding change in the length of said stem extending through said handknob passage and said handknob is prevented from being removed from said stem; and

in said third axial position said first lock ring serrate edge and said valve serrate edge are disengaged, said second lock ring serrate edge and said handknob serrate edge are disengaged and said handknob fingers are free to move radially outwardly, whereby the circumferential position of said lock ring can be changed and said handknob may be removed and repositioned without causing the valve opening to change.

4,577,832

ROTARY DRIVING APPARATUS

Ichita Sogabe, Gifu, Japan, assignor to Nippondenso Co., Ltd., Kariya and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan

Filed Feb. 21, 1985, Ser. No. 704,031
Claims priority, application Japan, Feb. 24, 1984, 59-34879
Int. Cl.⁴ F16K *31/02*
U.S. Cl. 251—129.11 **11 Claims**

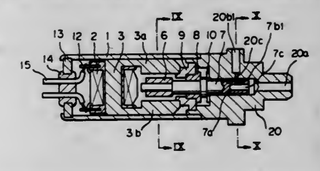
1. A rotary drive apparatus comprising:

an axially elongated casing having a circular cross-sectional shape;

a rotor rotatably arranged in said casing about an axis of the casing, said rotor being a permanent magnet;

a first stator fixedly arranged in the casing and made of magnetic material, said stator having a connection portion and a pair of circumferentially spaced pole portions extending from the connection portion, each pole portion defining a pair of spaced side surfaces extending substantially radially and inner and outer circumferential surfaces connecting said side surfaces, said outer circumferential surface forming, in cross section, an arc shape corresponding to the inner periphery of the casing, allowing the outer circumferential surface to be located closely adjacent to the inner surface of the circular cross-sectional shape casing;

said rotor having a pair of radially spaced and oppositely magnetized pole portions, each of which defines a pair of spaced side surfaces extending substantially radially outward of the inner surfaces of the pole portions of the



stator, allowing rotation of the rotor to a limited angle between a position where at least one pair of opposing side surfaces of the stator pole portions and the rotor pole portions are engaged with each other and another position where at least another one pair of the opposing surfaces of the stator pole portions and the rotor pole portions are engaged with each other;

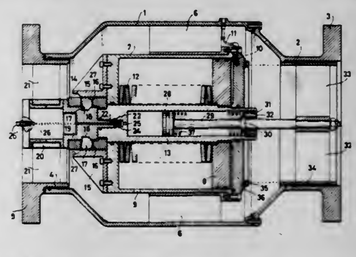
coil means, arranged on one side of the rotor along the axis of the casing, for magnetizing said first stator so that the pole portions of the stator are oppositely magnetized, whereby a closed loop of magnetic flux, the direction of which is determined in accordance with the direction of an electric current in the coil means, is generated in order to attain the rotational movement of the rotor in a desired direction between said positions.

4,577,833

HOSE FITTING WITH AUTOMATIC SEPARATION UNDER STRONG TENSILE STRESS

Giorgio Bormioli, via Galileo Galilei,, 11-35100 Padova, Italy

Filed Mar. 12, 1984, Ser. No. 588,450
Claims priority, application Italy, Apr. 20, 1983, 20686 A/83
Int. Cl.⁴ F16L *29/00*
U.S. Cl. 251—149.1 **8 Claims**



1. A hose fitting comprising a fluid product conveying tubular casing having a fixed inlet portion attachable to a first hose and an axially removable outlet portion attachable to a second hose, a fixed cylinder coaxially connected to said inlet portion,

a piston slidingly housed in said fixed cylinder, thrust means acting on said piston normally to urge it towards said inlet portion with a force greater than that exerted on said outlet portion by the fluid product fed to said outlet portion from said inlet portion, an axially movable cylinder coaxially housed in said fixed cylinder and integral with said piston, means for releasably connecting together said movable cylinder and said outlet portion, and operative in response to axial stresses between said inlet and outlet portions initially to cause movement of said outlet portion, said movable cylinder and said piston in unison with respect to said inlet portion and against the resistance of said thrust means, and then, if said stresses are greater than a predetermined value, to cause said connecting means operatively to release said outlet portion from said movable cylinder and thereby from said inlet portion, said fixed cylinder being coaxially housed inside said tubular casing.

4,577,834

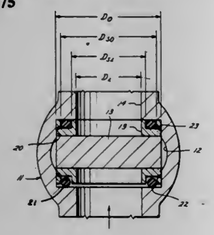
DOWNSTREAM SEALING DEVICE

John P. Oliver, 37 Stillforest, Houston, Tex. 77024

Continuation-in-part of Ser. No. 300,215, Sep. 8, 1981, abandoned. This application Feb. 25, 1985, Ser. No. 704,915

Int. Cl.⁴ F16K *3/20*

U.S. Cl. 251—175 **8 Claims**



1. A downstream sealing valve, comprising a body having a flowway therethrough and a cavity therein intersecting the flowway, a closure member received within the cavity for movement between the flowway opening and closing positions, and a pair of seats carried within the body each having an inner end with a bearing surface facing one side of the gate and an outer end with a bearing surface facing an annular surface of the body, the outer bearing surface of each seat having an annular groove therein, having radially inner and outer side walls which extend inwardly from the outer bearing surface and a bottom wall extending between the side walls, a seal member carried within each groove and being thicker than the depth of the groove so as to protrude from the outer bearing surface when unstressed, said closure member and seats being free to float in the direction of the flowway, so that, when the closure member is in flowway closing position, one side of the closure member will be urged by upstream line pressure against the downstream seat, each seat having means fluidly connecting the groove near its bottom wall with the exterior of the seat radially outwardly of the engagement of the seal member within said groove with the opposite annular surface of the body, and the bearing surfaces on the inner ends of the seats having metal-to-metal engagement with opposite sides of the closure member.

4,577,835

INSERT FOR A FAUCET VALVE FOR INCREASING FLOW RATE

Frank R. Holycross, Jr., Batesville, Ind., assignor to Masco Corporation of Indiana, Taylor, Mich.

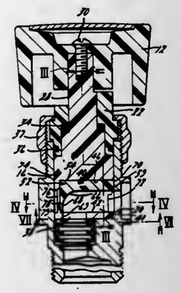
Filed May 17, 1984, Ser. No. 611,146

Int. Cl.⁴ F16K *5/04*

U.S. Cl. 251—310 **6 Claims**

5. In a faucet body having a cylindrical bore therein; an inlet port opening into and offset from the axis of said bore and an outlet port; a valve assembly rotatable in said bore and having an inlet offset from the axis of rotation and a cavity passage extending laterally from said inlet; the improvement in the valve assembly characterized by:

an insert member having contoured walls forming a notch within said insert member, said contoured walls in con-



junction with a wall of said cavity passage forming a passage of reduced cross-sectional area substantially equal to the area of said inlet port at one end of said cavity passage and said outlet port at another end of said cavity passage.

4,577,836

FLAP FOR A HEATER OR AIR CONDITIONER INSTALLATION FOR A MOTOR VEHICLE CABIN

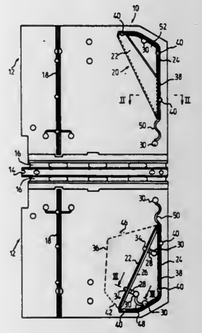
Jean Guillemin, Elancourt, France, assignor to VALEO, Paris, France

Filed Jun. 14, 1984, Ser. No. 620,739

Claims priority, application France, Jun. 14, 1983, 83 09834

Int. Cl.⁴ F16K *51/00*

U.S. Cl. 251—356 **11 Claims**



1. In a flap for an air flow installation, in particular for the cabin of a motor vehicle, said flap comprising a support plate and at least one air-guiding blade mounted on said plate; the improvement wherein said blade comprises at least two thin walls of substantially rigid plastics material molded to said support plate and projecting laterally therefrom in generally spaced relation to each other, at least one of said walls being folded toward and fixed to the other wall outward of said support plate to define a blade on said plate having a volume which is greater than the sum of the volumes of said thin walls.

4,577,837

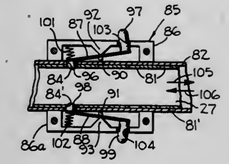
LOCKING MECHANISM FOR EXTENDIBLE TELESCOPING TUBULAR MEMBERS

Marvin Berg, 1785 Lois Dr., and Bruce Grachek, 1800 Hillview Rd., both of New Brighton, Minn. 55112

Filed Jul. 30, 1984, Ser. No. 635,574

Int. Cl.⁴ A47G *27/04;* **F16B** *7/10;* **F16D** *1/00*

U.S. Cl. 254—212 **6 Claims**



2. A locking mechanism for inner and outer telescoping tubular members formed with axially aligned, radial openings, said locking mechanism comprising:

(a) a hollow housing surrounding the outer tubular member;

(b) a lever mounted for pivotal movement within said housing;

(c) oppositely directed locking plunger and lever actuating plunger mounted at opposite end sections of said lever, said locking plunger projecting out of said housing and entering registering openings in said inner and outer telescoping tubular members for restraining relative axial displacement between said inner and outer telescoping tubular members, said actuating plunger projecting out of said housing and actuated to remove said locking plunger from registering openings in said inner and outer tubular members for relative axial displacement between said inner and outer telescoping tubular members;

(d) a spring disposed within said housing and connected to said lever for urging said locking plunger to remain in entered registering openings, the actuation of said actuating plunger to remove said locking plunger from registering openings being against the urgency of said spring; and

(e) a fulcrum member fixedly positioned in said housing and a fixedly positioned block in said housing having an apex confronting said fulcrum member, said lever being disposed between said block and said fulcrum member intermediate the end portions of said lever.

4,577,838

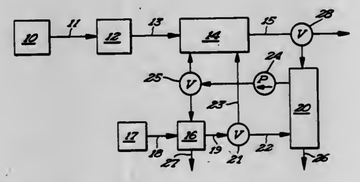
TREATMENT OF PELLETIZED IRON ORES

Mait M. Mathiesen, Arild, Sweden, assignor to Plasma Holdings, N.V., Minneapolis, Minn.

Continuation of Ser. No. 458,565, Jan. 17, 1983, abandoned. This application Jun. 18, 1984, Ser. No. 621,882

Int. Cl.⁴ C22B *4/08*

U.S. Cl. 266—171 **4 Claims**



1. Material processing apparatus for the production of pelletized iron ore concentrates of the type wherein the material is introduced for processing as ore fines, is pelletized and is fired in an indurator to produce feedstock for reduction by remote reducing means, the improvement which comprises:

low temperature plasma means;

on-site reduction plant means;

means for selectively diverting a portion of said material in process as fired, pelletized ore concentrates from the output of the indurator including a first valving mechanism to divert the ore concentrates to said on-site reduction plant means;

means suppling solid fuel to said low temperature plasma means for gasification thereby; and

a second valving mechanism for selectively directing effluent from the plasma means to the on-site reduction plant means and to the indurator and for further selectively diverting effluent as needed from the on-site reduction plant means to the indurator.

4,577,839

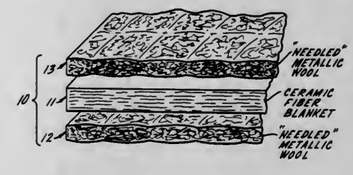
REFRACTORY INSULATOR BLANKET AND COVER

Robert A. Carlson, Northbrook, Ill., and Nicholas H. Smith, Chesterton, Ind., assignors to Reptech, Inc., Nortfield, Ill.

Filed Jan. 9, 1984, Ser. No. 569,032

Int. Cl.⁴ C21C *5/48*

U.S. Cl. 266—272 **48 Claims**



1. A light weight, flexible, composite insulator blanket capable of extended, repetitive use as a cover or insulator wrapping or gasket for a very high temperature heat source comprising a vessel or conduit employed in transporting, processing, or storing molten or near-molten metal, at temperatures in excess of 1600° F., the insulator blanket comprising:

a principal insulator layer of a light weight, flexible, fibrous ceramic material, subject to deterioration through devitrification and abrasion when subjected to prolonged exposure to a very high temperature heat source;

a protective layer of light weight, flexible fibrous metallic material, covering one surface of the principal insulator layer to a depth many times greater than the thickness of the metallic fibers; and

fastening means securing the protective layer to the principal insulator layer at a multiplicity of locations throughout the surface area of the insulator blanket.

4,577,840

SELF-PUMPING HYDROPNEUMATIC SPRING LEG OR STRUT WITH INTERNAL LEVEL CONTROL FOR MOTOR VEHICLES

Theo Meller; Heinz Knecht, both of Eltorf, and Werner Kuchheuser, Windeck, all of Fed. Rep. of Germany, assignors to Boge GmbH, Eltorf, Fed. Rep. of Germany

Filed Feb. 24, 1984, Ser. No. 583,187

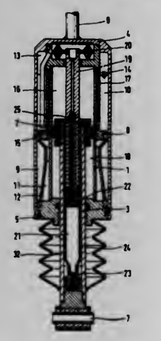
Claims priority, application Fed. Rep. of Germany, Feb. 24, 1983, 3306393

Int. Cl.⁴ B60G *17/04;* **F16F** *9/18*

U.S. Cl. 267—64.17 **14 Claims**

1. In a self-pumping hydropneumatic telescopic spring leg with internal level control, particularly for motor vehicles, comprising an oil-filled working cylinder, gas cushion means for subjecting said oil-filled working cylinder to gas cushion pressure, a working piston displaceable in the working cylinder for transmitting forces, a hollow space in a piston rod connected with said piston, the hollow space in the piston rod forming a pump cylinder, a pump rod secured to the working cylinder and extending into said pump cylinder, said working

piston dividing said working cylinder into two working chambers, means forming a low pressure oil chamber, a bore formed in said pump rod and communicating at one end with said low pressure oil chamber, a suction valve carried by said pump rod at the other end for controlling said bore, discharge valve means communicating with said pump cylinder for passing pumped oil from said pump cylinder into one of said working chambers subjected to said gas cushion pressure, whereby relative reciprocation of said pump rod and pump cylinder pumps oil from said low pressure oil chamber to said one working chamber to increase the pressure in said working cylinder, and control means responsive to a predetermined working position of said working piston in said working cylinder for connecting said one working chamber with said low



pressure chamber, said control means comprising a control opening in said pump rod extending between said working cylinder and said bore in the pump rod, control edge means movable with said working piston for closing said control opening and for opening said control opening when said working piston is in said predetermined working position, wherein the improvement comprises a sleeve in said pump rod for preventing said control opening from having direct access to said pump rod bore and said low pressure chamber, and for routing oil flow from said control opening indirectly via a connecting duct and throttle means to said pump rod bore when said control opening is in the open state so as to retard pressure reduction in said one working chamber upon opening of said control opening.

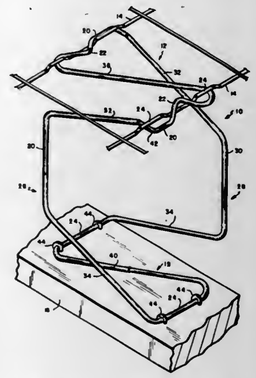
4,577,841

BENT WIRE SPRING UNIT

Robert C. Hagemeister, Boston, Mass., assignor to Webster Spring Co. Inc., Oxford, Mass.

Filed Jul. 18, 1984, Ser. No. 631,991
Int. Cl.⁴ A47C *23/02*
U.S. Cl. 267—103 **7 Claims**

1. A bent wire spring unit comprising first spaced, parallel attaching elements adapted to be attached at longitudinally and transversely-spaced intervals to pairs of spaced, parallel grid wires of the grid frame and the support members of a base frame of a spring assembly comprising a base frame and a grid frame wherein the grid frame comprises a border wire and crossing grid wires attached at their ends to the border wire and the base frame comprises rectangularly-arranged, spaced, parallel end and side members and longitudinally-spaced, parallel support members fixed at their opposite ends to the side members, and spaced, parallel, C-shaped lengths of wire disposed between the attaching elements and connected thereto, said C-shaped lengths of wire being disposed in planes perpendicular to the planes of the attaching elements and at a spacing corresponding to the length of the attaching elements and each comprising a first length of wire connected at one end to one end of the top attaching element and inclined downwardly from said one end, said first lengths of wire being inclined downwardly in opposite directions, second lengths of wire connected at one end to one end of the bottom attaching element and inclined upwardly, said second lengths of wire being inclined in opposite directions, third lengths of wire perpendic-



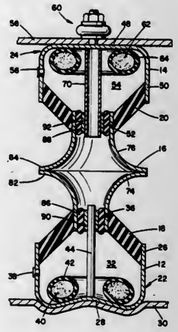
ular to the top and bottom lengths of wire connected at their upper and lower ends with the inclined lengths of wire and diagonal lengths of wire situated in the planes of the top and bottom attaching elements connected at their opposite ends to the other ends of the top and bottom attaching elements.

4,577,842

SELF-STABILIZING DRY VISCOUS SPRING DAMPER

Emile M. Shtarkman, Cleveland, Ohio, assignor to Imperial Clevite Inc., Glenview, Ill.

Continuation-in-part of Ser. No. 554,906, Nov. 25, 1983, Pat. No. 4,555,098. This application May 17, 1984, Ser. No. 611,489
Int. Cl.⁴ F16F *5/00*
U.S. Cl. 267—140.1 **7 Claims**



1. A viscous spring damper for damping and leveling structural agitation which is resistant to nonaxial deformation comprising:

a first outer housing and a second outer housing;

an elastomeric shear spring associating said first outer housing with said second outer housing;

a selectively pressurizable gas chamber and a subchamber within said gas chamber contained within at least one of said first and second housing and constant pressure means in fluid communication with selectively pressurizable gas chamber; and

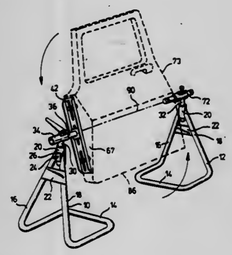
a rigid structural member in which one end is mounted in one of said housings and said other end is received in a bearing which is mounted to the other housing by an elastomeric bushing whereby said bushing and said structural member allow and control nonaxial deformation within said damper.

4,577,843

VEHICLE DOOR SUPPORT

Donald R. Milwain, General Delivery, Hwy. 48, Baldwin, Ontario, Canada L0E 1A0

Filed Sep. 17, 1984, Ser. No. 651,142
Claims priority, application Canada, Feb. 27, 1984, 449581
Int. Cl.⁴ B23Q *1/04*
U.S. Cl. 269—51 **6 Claims**



1. An apparatus for supporting a vehicle door having threaded holes on one edge for receiving bolts and a closable recess formed by the door locking mechanism on the opposite edge, said apparatus comprising, in combination:

first and second spaced-apart stands, said first stand having an elongated connector adapted to be secured to one edge of the door by bolts threaded into the holes, axle means for securing said connector to said stand for pivoting about a horizontal axis, and means for locking said securing means to prevent pivoting of the connector;

said second stand having a horizontal spindle secured to said stand adapted to be received in the closable recess of the door for rotation of the door about the spindle;

means for adjusting the height of the elongated connector and the spindle for substantial coaxial alignment of the connector axle means relative to the spindle about on axis passing through the door whereby the vehicle door can be pivoted and locked at a desired position about said axis, said elongated connector having a longitudinal slot formed at each end for receiving the bolts threaded into the door holes and a central longitudinal slot for receiving connecting means for securement of the axle means substantially perpendicular to the elongated connector.

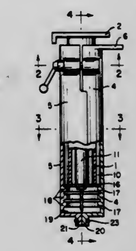
4,577,844

VERTICALLY ADJUSTABLE DEVICE

Wolfgang Schlegel, Oehringen; Arthur Wilke, Bad Friedrichshall-Jagstfeld, and Roland Stein, Oehringen-Verrenberg, all of Fed. Rep. of Germany, assignors to Schlegel GmbH, Oehringen, Fed. Rep. of Germany

Continuation of Ser. No. 540,326, Oct. 11, 1983, abandoned. This application Feb. 11, 1985, Ser. No. 700,398
Claims priority, application Fed. Rep. of Germany, Nov. 19, 1982, 3242832
Int. Cl.⁴ B23Q *1/04*
U.S. Cl. 269—71 **17 Claims**

17. A vertically adjustable device for vises and assembly platforms, comprising a vertical support tube for supporting said vise, a mounting for attaching said support tube to a work bench, said mounting comprising two semicylindrical clamping shells embracing said support tube, one of said shells being stationary and having connected to it a supporting extension for attachment to said work bench, the other shell being movable with respect to the stationary shell, means for clamping said clamping shells together directly against the support tube to fix said support tube in any desired vertical position, said shells extending downwardly from said supporting extension beyond a lower end of the support tube lower and defining a cavity closed beyond the end of the support tube, each shell having at its end beyond the support tube an axially extending



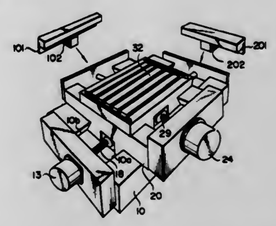
projection, a spring ring member which embraces the closed ends of the shells, said shells being formed with a circumferential groove in the outer surfaces of the axially extending projections for receiving the spring ring, and spring means positioned within said cavity and extending into said support tube, said spring means having one end in abutting relation with said support tube and the other end in abutting relation with said shells beyond the end of said support tube.

4,577,845

HYDROSTATIC PRESSURE XY TABLE

Sosaku Kimura, and Toshikazu Hatsuse, both of Saitama, Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Jan. 9, 1984, Ser. No. 569,217
Claims priority, application Japan, Jan. 18, 1983, 58-5279; Mar. 8, 1983, 58-36667
Int. Cl.⁴ B23Q *1/18*
U.S. Cl. 269—73 **5 Claims**



1. In an XY table comprising a bed, a first lead screw supported on the bed by bearings, a first motor provided on the bed for rotatingly driving the first lead screw, a first sliding table mounted on the bed for sliding motion in the X direction, the first sliding table having a first nut for engagement with the first lead screw, a second lead screw supported on the first sliding table by bearings, a second motor provided on the first sliding table for rotatingly driving the second lead screw, and a second sliding table mounted on the first sliding table for sliding motion in the Y direction, the second sliding table having a second nut for engagement with the second lead screw, the improved hydrostatic pressure XY table characterized in that the bed has a first trapezoidal groove; the first sliding table is engaged with the first trapezoidal groove and has a second trapezoidal groove running perpendicular to the first trapezoidal groove; the second sliding table is engaged

with the second trapezoidal groove; four hydrostatic pressure guides are provided in the bed, one on either inclinded lateral wall of the first trapezoidal groove and one on either side of the first trapezoidal groove on the upper surface of the bed, to engage with engaging surfaces of the first sliding table; four hydrostatic pressure guides are provided in the first sliding table, one on either inclined lateral wall of the second trapezoidal groove and one on either side of the second trapezoidal groove on the upper surface of the first sliding table, to engage with engaging surfaces of the second sliding table; a plurality of fluid pressure lines are provided for supplying hydrostatic pressure from an external hydrostatic fluid pressure source to the engaging surfaces of the first and second sliding tables, each of the fluid pressure lines for supplying hydrostatic fluid pressure from an external hydrostatic fluid pressure source to engaging surfaces of the first and second sliding tables comprises a pantograph fluid pressure line consisting of a first rotatable member on whichever of the base and the first sliding table constitutes the stationary side and connected with the external hydrostatic fluid pressure source, a second rotatable member fixed on whichever of the first sliding table and the second sliding table constitute the moving side, and a rotatable coupling provided with a fluid passage for connecting the first member with the second member, the pantographic fluid pressure line being disposed within the area of the bed as viewed from the top and within the space between the bed and first sliding table or between the first sliding table and the second sliding table; a first hydrostatic pressure feed mechanism consisting of the first lead screw, the first nut and a fluid pressure line for supplying hydrostatic pressure through the first nut to opposite screw faces of the first lead screw is provided for the first sliding table; and a second hydrostatic pressure feed mechanism consisting of the second lead screw, the second nut and a fluid pressure line for supplying hydrostatic pressure through the second nut to opposite screw faces of the second lead screw is provided for the second sliding table.

4,577,846

DEVICE FOR MOUNTING AN OBJECT

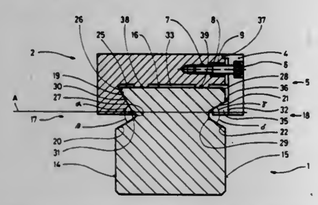
René Büchler, Weidweg 2, CH-9245 Sonnental, Switzerland

Filed Jan. 18, 1984, Ser. No. 571,754

Claims priority, application United Kingdom, Jan. 18, 1983, 8301296

Int. Cl.⁴ B23Q *1/04*

U.S. Cl. 269—82 **23 Claims**



1. A device for mounting an object in a desired position in space, with a guiding piece and with a guided piece on which the object may be attached, wherein marginal parts of two opposite lateral faces of the guiding piece, which adjoin a surface of the guiding piece common to them, are provided with channels to form a profile, the flanks of these channels forming an angle other than 0° with the median plane A of the channels, the guided piece exhibits a recess with a bottom to receive the profiled part of the guiding piece and one of two lateral walls of said recess is undercut so that it can be brought into engagement with the first of the channels in the guiding piece; and wherein the other lateral wall is oriented approximately at right angles to the bottom of said recess and is provided with a holding device which can be in engagement with the second channel, located therebeneath, of the guiding piece.

4,577,847

CLAMPING DEVICE

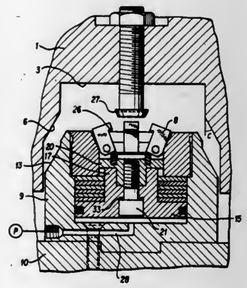
Sven-Erik Schedwin, Box 8280, Falun, Sweden

Filed Apr. 11, 1984, Ser. No. 599,183

Claims priority, application Sweden, Apr. 12, 1983, 8302028

Int. Cl.⁴ B23Q *3/02*

U.S. Cl. 269—309 **6 Claims**



1. In a clamping device for clamping such apparatus as worktables and fixtures on a base, such as on the machine table of a machine tool, said clamping device including a holding means (2) having an enlarged head (4) and being secured to either of said apparatus or said base, and a housing (9) being secured to the other of said apparatus or said base, said housing (9) having a central opening (14), a clamping mechanism (7) received in said central opening (14) and carrying clamping means (8) comprising clamping hooks pivotal between a clamping position for engaging head (4) of said holding means (2) and a disengagement position for completely disengaging said head of said holding means, the improvement comprising clamping means (7) for clamping and unclamping said clamping hooks so that in a normal condition said clamping means acts with its full clamping force against said clamping hooks and in a disengaging condition said clamping means unloads said clamping hooks when a disengagement force is applied thereto, said clamping means (7) comprising a mechanical clamping force means (18) for acting between a collar (19) positioned at the inner wall of housing (9) and a piston (15) sealingly engaging said inner wall of housing (9) and having a piston rod (17) having an end extending from a first side of said piston and facing said holding means (2), said end carrying the clamping hooks (8); said piston (15) being constantly acted upon by said clamping force means (18) for urging piston 15 and thereby piston rod (17) and said clamping hooks in a direction away from holding means (2) but being urged in the opposite direction when said disengagement force, counteracting and exceeding said clamping force, is applied to a second side of piston (15) opposite said first side to which said piston rod is connected; and, said clamping hooks (8) being slidable in central opening (14) of housing (9) and engaging a guide surface (24) provided on said inner wall of housing (9) for swinging movement of said clamping hooks towards the clamping position during movement of said clamping hooks in the clamping direction and for preventing movement from the clamping position during clamping.

4,577,848

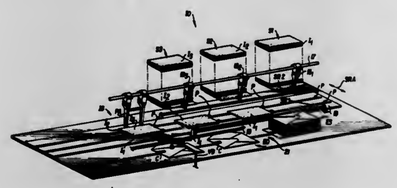
METHOD AND APPARATUS FOR CONTROLLING THE ACTUATION OF GRIPPER ARMS

Kenneth A. Hams, Easton, Pa., assignor to Bell & Howell Company, Allentown, Pa.

Continuation of Ser. No. 648,407, Sep. 7, 1984, abandoned. This application Jul. 11, 1985, Ser. No. 754,204

Int. Cl.⁴ B65H *5/30*

U.S. Cl. 270—55 **13 Claims**



1. An insertion machine comprising:

a plurality of insert stations whereat supplies of insert material are at least temporarily stored;

an insert track which is indexed along said plurality of insert stations for the transport of inserts deposited thereon;

gripper arm means associated with a plurality of insert stations, said gripper arm means each comprising:

a first jaw member;

a second jaw member, said second jaw member being selectively movable with respect to said first jaw member for the engagement of insert material therebetween; and,

means for selectively actuating said first and second jaw members to a first position whereby insert material is engageable between said jaws and to a second position whereby insert material is released from between said jaws and deposited on said insert track;

means for controlling said plurality of actuating means whereby the actuation of each of said gripper arms for the release of insert material is delayable, said control means including master presettable delay means whereby for said plurality of gripper arms said delay has a uniform release delay component which is related to a predetermined input value.

4,577,849

MULTIPLE SOURCE PAPER CONVEYOR SYSTEM

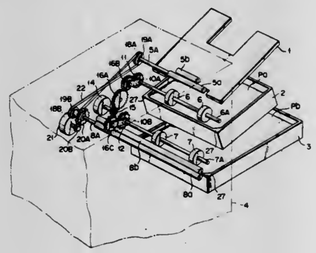
Junji Watanabe, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed May 16, 1983, Ser. No. 494,888

Claims priority, application Japan, May 31, 1982, 57-91173

Int. Cl.⁴ B65H *3/06, 3/44*

U.S. Cl. 271—9 **12 Claims**



1. A paper conveyor system comprising:

first feeding means disposed rotatably and rotating in a direction for feeding paper along a first path of travel;

second feeding means disposed rotatably and rotating in a direction for feeding paper along a second path of travel;

first clutch means attached to the first feeding means, for transmitting rotation in said first paper feeding direction to the first feeding means, and for preventing rotation in the other direction opposite to said first paper feeding direction from being transmitted to the first feeding means;

second clutch means attached to the second feeding means, for transmitting rotation in said second paper feeding direction to the second feeding means, and for preventing rotation in the other direction opposite to said second paper feeding direction from being transmitted to the second feeding means;

a first reversible motor capable of selectively rotating in either direction;

first transmission means arranged between the first reversible motor and the first clutch means to transmit the rotation of the first reversible motor to the first clutch means so that the first clutch means rotates in the same direction as the rotating direction of the first reversible motor; and

second transmission means arranged between the first reversible motor and the second clutch means to transmit the rotation of the first reversible motor to the second clutch means so that the second clutch means rotates in the opposite direction to the rotating direction of the first reversible motor;

third feeding means disposed rotatably and rotating in a direction for feeding paper along a third path of travel;

fourth feeding means disposed rotatably on the downstream side of the third path of travel and rotating in a direction for feeding along a fourth path of travel paper received from said first, second and third feeding means;

third clutch means attached to the third feeding means, for transmitting rotation in said third paper feeding direction to the third feeding means, and for preventing rotation in the other direction opposite to said third paper feeding direction from being transmitted to the third feeding means;

fourth clutch means attached to the fourth feeding means, for transmitting rotation in said paper feeding direction to the fourth feeding means, and for preventing rotation in the other direction opposite to said paper feeding direction from being transmitted to the fourth feeding means;

a second reversible motor capable of selectively rotating in either direction;

third transmission means arranged between the second reversible motor and the third clutch means to transmit the rotation of the second reversible motor to the third clutch means so that the third clutch means rotates in the same direction as the rotating direction of the second reversible motor; and

fourth transmission means arranged between the second reversible motor and the fourth clutch means to transmit the rotation of the second reversible motor to the fourth clutch means so that the fourth clutch means rotates in the opposite direction to the rotating direction of the second reversible motor.

4,577,850

AUTOMATIC PAPER FEEDER FOR REPRODUCING MACHINE

Kokichi Takeyama; Kiyoshi Sugawara, and Yasuyuki Fukagawa, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

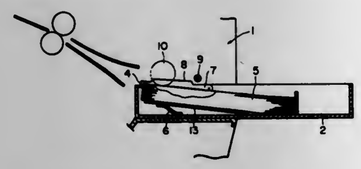
Continuation of Ser. No. 317,734, Nov. 3, 1981, abandoned. This application May 21, 1984, Ser. No. 613,009

Int. Cl.⁴ B65H *3/30*

U.S. Cl. 271—22 **5 Claims**

1. In an automatic paper feeder or a reproducing machine, of the type comprising a cassette insertable into a paper feeding

station, said paper feeding station including a roller for feeding paper from said cassette into said reproducing machine and said cassette including means for supporting said paper, the improvement comprising:



separating means for automatically providing a clearance between said roller and said paper during insertion of said cassette into said paper feeding station by automatically urging said paper away from said roller in response to movement of said cassette into said station.

4,577,851

DEVICE FOR SINGLING OUT STACKED SHEETS

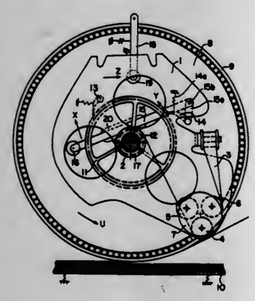
Wilhelm Müller, Frankfurt, Fed. Rep. of Germany, assignor to Postalia GmbH, Berlin, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 367,895, Apr. 13, 1982, abandoned. This application Apr. 16, 1985, Ser. No. 723,977

Claims priority, application Fed. Rep. of Germany, Apr. 15, 1981, 3115989

Int. Cl.⁴ B65H *3/20*

U.S. Cl. 271—33 **5 Claims**



1. Device for individually separating sheets from a stack thereof by means of a band-shaped adhesive carrier extending from a supply roller over guide rollers to a wind-up roller, action of the adhesive carrier being adaptable to characteristics of the sheet surface by selection of various guide-roller profiles, comprising an adhesive head and a drum mounted on a disk so as to afford both angular displacement as well as rotation of said adhesive head, said disk forming an inner bearing ring of said drum for feeding the sheets, said adhesive head having a side mounting plate, one of the guide rollers projecting in use beyond said side mounting plate of said adhesive head and beyond said drum at a location of adhesion between said adhesive carrier and a sheet to be individually separated from a stack thereof.

4,577,852

APPARATUS FOR COUNTING THE SHEETS IN A STREAM OF PARTLY OVERLAPPING SHEETS

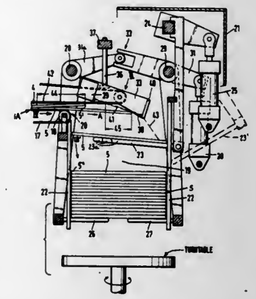
Roland Grunder, Vordemwald, Switzerland, assignor to Grapha-Holding AG, Hergiswil, Switzerland

Division of Ser. No. 402,891, Jul. 29, 1982, abandoned. This application Sep. 10, 1984, Ser. No. 648,899

Claims priority, application Switzerland, Aug. 11, 1981, 5151/81

Int. Cl.⁴ B65H *29/34*

U.S. Cl. 271—188 **4 Claims**



1. Apparatus for manipulating sheets in a stream of successive partially overlapping sheets, comprising a sheet receiving duct; means for transporting successive sheets of the stream in a predetermined direction to a position above said duct; a plurality of sheet intercepting and stacking means disposed at different levels of said duct; means for moving said intercepting and stacking means into and for withdrawing such intercepting and stacking means from said duct at the respective levels so as to effect a cascading of sheets from each upper level to the respective lower level; means for receiving stacks of sheets from said duct upon withdrawal of the intercepting and stacking means form the lowermost one of said levels; guide means for deflecting downwardly and into said duct successive sheets which are supplied by said transporting means to said position above said duct, said transporting means defining a first path extending to said guide means and said guide means defining for the sheets a second path which is inclined with reference to said first path; and means for counting the thus deflected successive sheets, comprising an optoelectronic counter including a radiation source arranged to direct a beam of radiation across the course of advancement of the leaders of successive sheets along said second path.

4,577,853

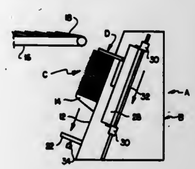
STACKING APPARATUS

B. Michael Duke, Plattsburgh, N.Y., assignor to Harris Graphics Corporation, Melbourne, Fla.

Filed Jan. 16, 1984, Ser. No. 570,923

Int. Cl.⁴ B65H *31/10*

U.S. Cl. 271—217 **16 Claims**



1. Apparatus comprising stacking means for stacking sheet-like articles into a stack and moving such stack to a stack transfer position during which an edge of the articles in the stack drags along a guide surface and causes separation of articles from the stack at the trailing end thereof, follower means for engaging the trailing end of the stack and preventing separation of articles therefrom during movement of the stack to the stack transfer position, means for moving said follower means into engagement with the trailing end of the stack after the stack has been formed and for moving said follower means in one direction with the stack to the stack transfer position and in an opposite direction to a ready position for cooperation with a new stack being formed, and means for continuously maintaining said follower means in a stack engaging position while said follower means moves in the one direction and for shifting said follower means to a stack-clearing position while said follower means moves in the opposite direction.

4,577,854

METHOD AND APPARATUS FOR THE POSITIONING OF TEXTILE SURFACE CONFIGURATIONS

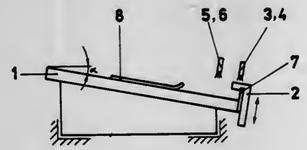
Bernd Bachmann, Altenburg; Peter Kuss, Dittsmannsdorf; Frank Schuhmann, Altenburg, and Jürgen Wöllner, Nobitz, all of German Democratic Rep., assignors to VEB Kombinat Textima, Karl-Marx-Stadt, German Democratic Rep.

Filed Feb. 16, 1983, Ser. No. 467,058

Claims priority, application German Democratic Rep., Mar. 22, 1982, 238342

Int. Cl.⁴ B65H *7/02*

U.S. Cl. 271—227 **6 Claims**



1. An apparatus for positioning thin materials in two directions, comprising:

a positioning table having a contact edge along one side thereof,

at least two air nozzles situated in the positioning table equidistantly away from the contact edge, said air nozzles being oriented toward the contact edge so that air is blown toward the contact edge,

at least two first sensors situated adjacent to the contact edge and operationally connected to the air nozzles so that when one of the first sensors senses that the material is situated adjacent the contact edge, that sensor operates to actuate the nozzle located more remote from that sensor to cause air to flow therethrough to align the material along the contact edge,

a clamping device situated along the contact edge of the positioning table so that when the material is located in a proper position, the clamping device is operated to fixedly hold the material on the positioning table,

means for moving the positioning table parallel to the contact edge for a predetermined distance, and

at least one second sensor situated away from the positioning table in the direction of movement thereof, said second sensor sensing the position of the material on the positioning table to stop the positioning table after it has moved the predetermined distance.

4,577,855

APPARATUS AND METHOD FOR REMOVING AND CONVEYING AWAY A SAMPLE COPY FROM AN ORDERLY FLOW OF PRINTED PRODUCTS

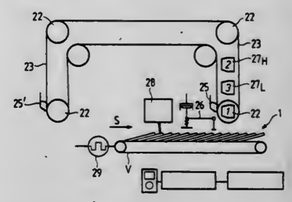
Walter Reist, Hinwil, Switzerland, assignor to Feramatic AG, Hinwil, Switzerland

Filed Feb. 2, 1984, Ser. No. 576,472

Claims priority, application Switzerland, Feb. 2, 1983, 589/83

Int. Cl.⁴ B65H *29/04*

U.S. Cl. 271—281 **20 Claims**



1. An apparatus for removing and conveying away a sample copy from an orderly imbricated material flow of printed products, comprising:

a power driven conveyor for conveying an orderly imbricated flow of printed products;

a conveying chain mounted on guide pulleys, one of said pulleys located adjacent the material flow;

a first gripper coupled to said chain, said gripper having relatively movable first and second gripping members and an elongated, flexible cushioning spring extending from said first gripping member, said cushioning spring being bendable about an axis transverse to a longitudinal axis thereof and being movable between a ready position in which said cushioning spring is bent and pretensioned such that a free end of said cushioning spring is biased toward said conveyor and a guiding position in which said free end engages the material flow to guide the sample copy between said gripping members;

a cushioning spring clamp releasably coupled to said cushioning spring for maintaining said cushioning spring in said ready position; and

control means for regulating operation of said gripper and said clamp in response to detection of individual products and speed thereof.

4,577,856

THEATRICAL RISERS

Dale W. Blackaby, 913 S. 13th St., Pekin, Ill. 61554

Filed Aug. 17, 1983, Ser. No. 524,055

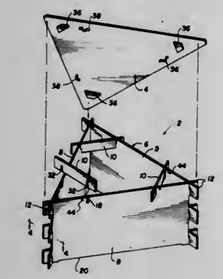
Int. Cl.⁴ A63J *5/00*

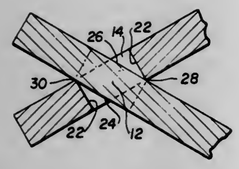
U.S. Cl. 272—25 **20 Claims**

1. A collapsible theatrical riser usable by choral groups, drama groups and the like, comprising, a base formed of a plurality of vertical panels, a horizontal top panel which is supported on said base; each of said vertical panels having an exterior surface, an interior surface, an upper edge, a lower edge and two vertical ends; said base having corners where said vertical panels are connected to each other,

each of said panels having hook and slot connection means formed in both of its ends, said hooks being similar to each

other but being directed upwardly at one end of the panel and downwardly at the other end of the panel, one hook





at each end of a panel having an upper edge which extends to and is aligned with the upper edge of the panel.

4,577,857

SIMPLIFIED APPARATUS FOR USE IN ARM WRESTLING OR WRIST PULLING CONTESTS

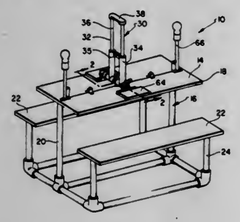
Exsior Dion, 547 River Rd., Lincoln, R.I. 02865

Filed Jun. 8, 1983, Ser. No. 502,224

The portion of the term of this patent subsequent to Jan. 24, 2001, has been disclaimed.

Int. Cl.⁴ A63B *5/00, 67/00*

U.S. Cl. 272—67 **3 Claims**



1. Apparatus for conducting arm wrestling contest between a pair of opposed contestants comprising a generally planar contest surface having a pair of longitudinally separated posts positioned along the median line of said surface and having stop means mounted thereon, an elongated lever arm having upper and lower ends, said lever arm pivotally supported at its lower end proximate said contest surface and adapted to contact said stop means at opposite ends of its side-to-side arcuate travel movement within the limits defined by said stop means, said lever arm including a laterally extending generally tubular base portion positioned at opposite ends thereof in trunnions in turn supported by said surface, means for maintaining said lever arm in a generally upright position between the side-to-side limits of its travel movement, said means for maintaining said lever arm upright including a pin adapted to pass through a portion of said trunnion and thence at least partially through said tubular base, there being a pair of such pins, each positioned adjacent one of a pair of said trunnions, said lever arm further including a pair of laterally spaced hand grip portions positioned along the extent of said arm intermediate the ends thereof, signal means supported by said posts above said surface and separate longitudinally spaced activation means positioned on said surface between said pivot support and said stop means for contact by said arm just prior to movement to either of its side-to-side limits for activating said signal means, said activation means including a pair of switches positioned along said median line for contact by said lever arm and said signal means activated upon contact between said lever arm and either of said switches.

4,577,858

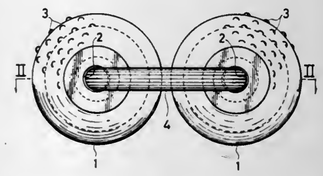
FINGERTIP EXERCISER

Masanobu Higami, 14-10 2-chome, Takarazuka-shi, Asahi-machi, Hyogo-ken, Japan

Filed Sep. 4, 1984, Ser. No. 646,808

Int. Cl.⁴ A63B *23/00*

U.S. Cl. 272—67 **1 Claim**



1. A fingertip exerciser, comprising in combination:

(a) a synthetic resin pair of deformable balls (1), each ball having a bore (2) extending centrally therethrough and an outer peripheral ball surface where the portion of the ball surface surrounding each end of the bore is a planar surface, each ball of said pair being formed of two hollow hemispheres force fitted one onto the other with a vacant chamber (5) therein;

(b) a multiplicity of rounded projections (3) on said peripheral surface; and,

(c) a connector (4) comprising a pair of U-shaped bars, each having a tenor at one end and a mortice at the other end, the bars being joined together into a rectangular shape to form said connector, the outer ends being force fitted one into the other within the bores of each ball, wherein the connector and bores are sized so as to permit the balls to be deformable while being rotated.

4,577,859

IN-PLACE SWIMMING APPARATUS

Burnham N. Gossett, 2919 S. Lakeridge Trail, Boulder, Colo. 80302

Filed Sep. 30, 1983, Ser. No. 537,524

Int. Cl.⁴ A63B *31/00*

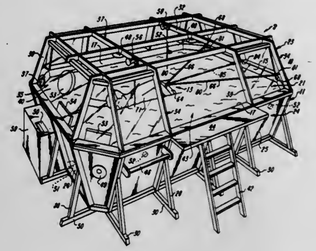
U.S. Cl. 272—71 **18 Claims**

1. A device for in-place swimming, said device comprising:

structural tank defining means having a first portion with dimensions to contain a predetermined quantity of liquid just sufficient to enable an in-place swimmer to execute strokes common to normal swimming without appreciable extra liquid quantities being contained by said first portion, and a second portion for providing at least support means contiguous to said first portion; and

restraint means having a first portion including belt means adapted to be releasably secured about the body of a swimmer in said liquid, and slidable fastening means having a first unit extending along said belt means a distance sufficient to substantially span the width of the body of a swimmer wearing said belt means with said first unit being connected with said first portion of said restraint means

adjacent to the opposite sides of the width of the body of a swimmer wearing said belt means, and a second unit cooperable with said first unit to allow sliding movement of said second unit substantially entirely along said first unit between said connections of said first unit to said first portion of said restraint means so that said second unit can slide along substantially the entire width of the body of a swimmer, and said restraint means also having a second portion physically connected with said support means and said second unit of said slidable fastening means, said



second portion of said restraint means including force means for at least exerting a force on a swimmer opposing forward movement of said swimmer from a predetermined position in said liquid due to the forwardly force exerted by said swimmer when executing said strokes common to normal swimming so that said swimmer, when secured to said restraint means, is able to swim in a normal manner and yet remain substantially in place in said liquid to thereby avoid contact with said structural means while swimming in said normal manner.

4,577,860

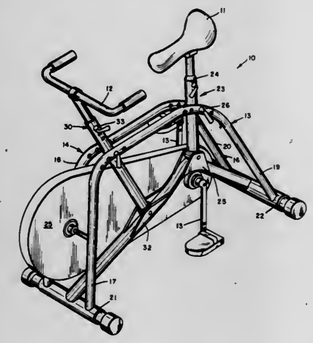
ADJUSTABLE EXERCYCLE FOR PROVIDING SIMULATED RUNNING EXERCISES

René Matias, 2414 Fidelidad St., Hacienda Heights, Calif. 91745; Leroy R. Perry, Jr., 3283 Motor Ave., Los Angeles, Calif. 90034

Filed Jul. 6, 1984, Ser. No. 628,644

Int. Cl.⁴ A63B *21/00, 69/16*

U.S. Cl. 272—73 **6 Claims**



1. An exercising apparatus for simulating the riding of a exercycle which includes a seat, a set of handlebars and a pair of pedals, said exercising apparatus comprising:

a. a frame including a first inverted U-shaped member and a second inverted U-shaped member which is parallelly disposed to said first inverted U-shaped member, each of said first and second inverted U-shaped members having a front leg and a rear leg, and a first base member which is fixedly coupled to said front leg of said first and second inverted U-shaped members and a second base member which is fixedly coupled to said rear leg of said first and second inverted U-shaped members;

b. an inverted V-shaped supporting member having a front leg which is fixedly coupled to said first base member and a rear leg which is fixedly coupled to said second base member;

c. driving means for providing a user with resistence to driving in response to his movement of the pair of pedals, said driving means being mechanically coupled to said inverted V-shaped supporting member and to said first and second inverted U-shaped members;

d. handlebar mounting means for mounting the set of handlebars, said handlebar mounting means being mechanically coupled to said inverted V-shaped supporting member and to said first and second inverted U-shaped members;

e. pedal mounting means for mounting the pair of pedals, said pedal mounting means being mechanically coupled to said inverted V-shaped supporting member;

f. a seat support pole which is adjustably coupled to the seat;

g. first pivotal mounting means for pivotally coupling said seat support pole at multiple angles to said inverted V-shaped supporting member; and

h. first locking means for adjustably locking said seat support pole in place to said first and second inverted U-shaped members.

4,577,861

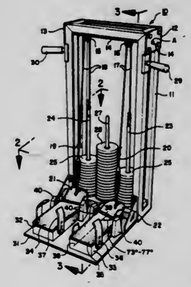
EXERCISE MACHINE FOR LIMB EXTREMITY DIGITS

Blauer L. Bangerter, and James M. Streeter, both of Provo, Utah, assignors to Brigham Young University, Provo, Utah

Filed Jun. 4, 1984, Ser. No. 617,081

Int. Cl.⁴ A63B *23/04*

U.S. Cl. 272—96 **12 Claims**



1. A digits' exerciser device including, in combination: a fixed, limb extremity planar platform having an upper surface; a movable digits' support member having an upper planar surface essentially disposed, when at a medial-point operative position, in the same plane of said platform upper surface; transversely disposed pivot means pivotally mounting said support member proximate said platform at a common juncture for lateral pivotal movement of said digits' support member, relative to said platform, in accordance with digits' pressure thereon; strap means coupled to said support member and positioned and dimensioned for constraining said limb extremity to and against said platform at a position such that the metacarpal/metataursal phlangeal joints of such digits are proximate the said juncture of said platform and said digits' support member; and means for selectively, progressively resisting said digits' pressure coupled to said digits' support member.

2. A digits' exerciser device including, in combination: a fixed, limb extremity platform having an upper surface; a mov-

able digits' support member having an upper surface essentially disposed, when at a medial-point operative position, in the same plane of said platform upper surface; transversely disposed pivot means pivotally mounting said support member proximate said platform for lateral pivotal movement of said digits' support member, relative to said platform in accordance with digits' pressure thereon; and means for resisting said digits' pressure coupled to said digits' support member, and wherein said resisting means comprises a flexible elongate connector laterally coupled at one end to said digits' support member, a fixed pulley supporting said flexible elongate connector intermediate its ends, and weight means coupled to said flexible elongate connector at its remaining end for resisting said digits' support member toward the latter's original position.

4,577,862

ISOKINETIC EXERCISE APPARATUS AND METHOD

Steven M. Sagedahl, 4814 37th Ave. South, Minneapolis, Minn. 55414

Filed Jan. 30, 1984, Ser. No. 575,209
Int. Cl.[4] A63B *21/00*
U.S. Cl. 272—125 **11 Claims**



1. An exercise apparatus for a person, comprising:
a shaft rotatable about a first axis;
means for resisting the rotation of said shaft;
a torque arm;
first means for connecting said torque arm to said shaft such that said torque arm is nonparallel to said first axis;
means for unrestrainably sliding on said torque arm;
second means for connecting said sliding means to said person, said second connecting means including means for moving in rotation; and
means for attaching said second connecting means to an extremity of said person.

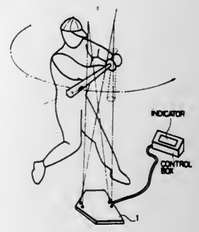
10. An apparatus for isokinetically exercising muscles used while hitting a baseball, said apparatus comprising:
a rotatable shaft;
an arm for applying a torque to said shaft;
means for attaching said torque arm to said shaft so that said arm is non-parallel to said shaft;
means for applying at a predetermined angular speed a counter torque to said shaft;
means for adjusting the angular speed at which said applying means applies counter torque;
a baseball bat for an exercising person to swing;
a flexible member;
means for connecting said flexible member to said torque arm, said connecting means including means for unrestrainably sliding along said torque arm; and
means for fastening said flexible member to said baseball bat.

4,577,863

SWING MEASURING DEVICE

Sho Ito; Kenji Tatsumi; Kumio Kasahara; Tomoyuki Nakaguchi; Toshio Takei, and Shojiro Nakahara, all of Kanagawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 1, 1983, Ser. No. 510,098
Claims priority, application Japan, Jul. 1, 1982, 57-114623
Int. Cl.[4] A63B *71/02*
U.S. Cl. 273—26 R **19 Claims**



1. A swing measuring device, comprising:
a laser oscillator disposed in a sensor unit, and optical means for splitting the output laser beam of said laser oscillator into first, second, third and fourth laser beams;
said optical means being arranged such that first and fourth laser beams are emitted in a manner such that said first and fourth laser beams are spaced from one another and are emitted perpendicularly to said sensor unit, said second laser beam is emitted from substantially the same location of said sensor unit as that from which said first laser beam is emitted, in a manner such that said second laser beam intersects said fourth laser beam at a first predetermined height above said sensor unit, and such that said third laser beam is emitted from substantially the same location of said sensor unit, and such that said third laser beam is emitted from substantially the same location of said sensor unit as that from which said fourth laser beam is emitted, in a manner such that said third laser beam intersects said first laser beam at a second predetermined height above said sensor unit;
means for measuring the time intervals required for a swinging object to cross said respective four laser beams; and
means for calculating the height and inclination of said swinging object's swing plane and the speed of said swinging object from said time intervals.

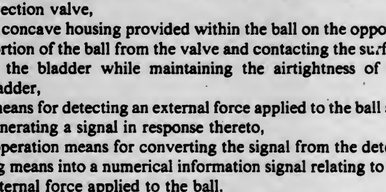
4,577,864

BATTING AID

Michael A. Aldrich, Cool, Calif.

Filed Jun. 6, 1985, Ser. No. 741,967
Int. Cl.[4] A63B *69/40*
U.S. Cl. 273—26 E **6 Claims**

1. An apparatus for improving the eye hand coordination of a softball or baseball batter comprising:
a handle, adapted to be held generally vertically,
a flexible rod mounted in said handle for rotational movement, about a generally vertical axis, said rod including a terminal portion mounted in said handle, and a main body portion extending 90° from said terminal portion, and having a distal end in the main body portion,
a rope having a first portion and a second portion, the first portion being longer than the second portion, and the second portion being shorter than the main body portion of the rod, said main portion of the rod being disposed within said rope's first portion, and
a ball simulating a baseball or softball attached to the end of the second portion of the rope dangling from the distal end of the rod,



whereby upon swirling of the handle vertically the flexible rod rotates in a generally horizontal plane, and the dangling portion of rope with the ball attached moves by centrifugal force outwardly toward a horizontal disposition for a batter to hit the ball.

(f) a battery power source for driving the above means, said detecting means, operation means, displaying means and battery power source being accommodated in the housing, and the sum of the weight of the housing, the detecting means, the operation means, displaying means and battery power source being substantially the same as the weight of the valve, and said weight sum being small enough such that said housing and elements disposed therein do not substantially interfere with the impact resilience of the ball.

4,577,866

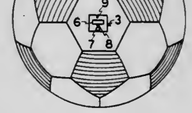
Patent Not Issued For This Number

4,577,865

ATHLETIC BALL

Hideomi Shishido, Hiroshima, Japan, assignor to Molten Corporation, Hiroshima, Japan

Filed Jun. 13, 1984, Ser. No. 620,289
Claims priority, application Japan, Jun. 16, 1983, 58-109053; Mar. 26, 1984, 59-58978
Int. Cl.[4] A63B *41/00*
U.S. Cl. 273—58 G **19 Claims**



1. An athletic ball, comprising:
(a) a ball having an airtight bladder for giving impact resilience to the ball in which compressed air is charged through an air injection valve,
(b) a concave housing provided within the ball on the opposite portion of the ball from the valve and contacting the surface of the bladder while maintaining the airtightness of the bladder,
(c) means for detecting an external force applied to the ball and generating a signal in response thereto,
(d) operation means for converting the signal from the detecting means into a numerical information signal relating to the external force applied to the ball,
(e) means for displaying the numerical information obtained in the operation means, and

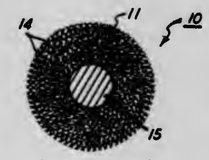
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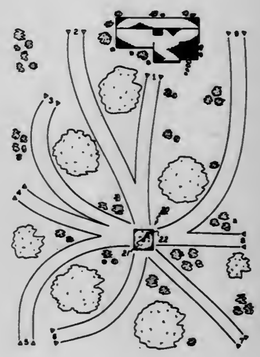
4,577,867

SHORT FLIGHT GOLF BALL AND GAME

John W. Lenhart, Hilton, N.Y., assignor to Lenkin Ltd., Rochester, N.Y.

Filed Nov. 9, 1983, Ser. No. 550,179
Int. Cl.[4] A63B *67/02, 37/14*
U.S. Cl. 273—176 AB **17 Claims**





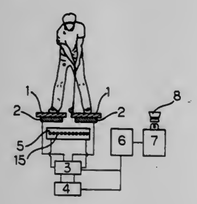
1. A short flight golf ball comprising:
a. a spherical foam body approximately the size of a regulation golf ball for hitting with regulation golf clubs;

b. said foam body being formed of reticulated resinous veins;
c. a core weighing substantially less than a regulation golf ball;
d. said core being substantially smaller than a regulation golf ball;
e. said core being located in the center of said foam body;
f. said reticulated veins being severed at the spherical exterior of said foam body; and
g. said reticulated veins in the region between said core and said severed exterior having a sufficient void volume so that air moves through voids between said veins as said ball flies through air, and air movement relative to said reticulated veins produces sufficient aerodynamic drag to make the flight of said ball substantially shorter than the flight of a regulation golf ball.

4,577,868
GOLF SWING TRAINING DEVICE WITH VISUAL AND AUDIBLE ALERTS

Norio Kiyonaga, 4-13-1 Iwatominami, Komae-shi, Tokyo, Japan

Filed Apr. 9, 1984, Ser. No. 598,459
Claims priority, application Japan, Apr. 15, 1983, 58-65284
Int. Cl.[4] A63B *69/36*
U.S. Cl. 273—183 A **2 Claims**

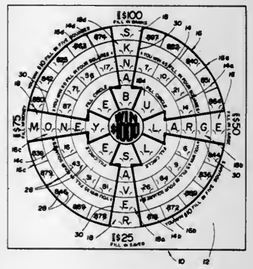


1. A golf swing practice device, comprising:
a pair of address plates for supporting the two feet of a golfer at address;
a pair of sensors operatively positioned beneath said pair of address plates for producing signals corresponding to the weight placed on said address plates;
a first circuit coupled to said sensors and including a memory element adapted to record the relative weight distribution of the two feet of the golfer during the course of a golf swing in response to the signals produced by said sensors;
a second circuit including a first sound generating element operative to develop signals for a first sound representing a state in which the golfer's weight is properly shifted to the right foot and a second sound representing a proper timing at which a downswing is initiated upon completion of a backswing by the golfer, and a second sound generating element operative to develop a third sound representing a state wherein the golfer's weight is properly shifted to the left foot, and sound means for generating said first, said second and said third sounds; and
regulator means associated with said first sound generating element for enabling an interval of time between said first and said second sounds to be adjusted by the golfer.

4,577,869
PROMOTIONAL GAME

Winford L. Brinkman, 20135 S. Greenway, Southfield, Mich. 48076

Filed Feb. 1, 1985, Ser. No. 697,565
Int. Cl.[4] A63F *3/00*
U.S. Cl. 273—269 **10 Claims**

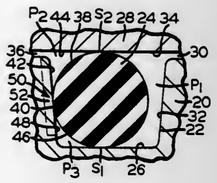


1. A promotional game comprising: a game card having a first set of indicia arranged in a circular shape; a second set of indicia arranged on the game card in a circular shape around the first set of indicia in a concentric relationship; a third set of indicia on the game card extending radially between the first and second sets of indicia at angularly spaced locations from each other; each set of indicia including at least one series of distinctive markings; game tickets having selected indicia corresponding to the indicia of the first, second, and third sets such that a prize is won by matching tickets with the markings of any series of indicia on the game card; and means for securing the game tickets to the card over the appropriate markings.

4,577,870
O-RING SEAL IN CHANNEL WITH FLUID PRESSURE EQUALIZATION MEANS

Daniel G. Scott, Swissvale, and Theodore B. Hill, N. Versailles, both of Pa., assignors to American Standard Inc., Wilmerding, Pa.

Filed Feb. 13, 1984, Ser. No. 579,311
Int. Cl.[4] F16J *15/48;* **F15B** *13/042*
U.S. Cl. 277—1 **44 Claims**



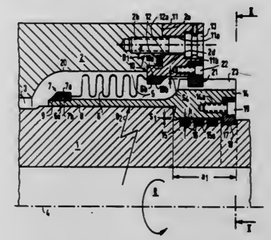
1. A sealing apparatus to maintain fluid sealing between members in a fluid flow control application in which the sealing member is subjected to an application of a differential pressure on opposite sides thereof, said sealing apparatus comprising:
(a) a first member having at least one generally U-shaped channel formed in said first member;
(b) a deformable O-ring sealing member positioned at least partially within said U-shaped channel in sealing contact with a point on the bottom surface of said U-shaped channel to form a first seal between said first member and said O-ring sealing member, said first seal being maintained throughout an application of pressure on aaid O-ring sealing member;
(c) a second member positioned to have sealing contact with said O-ring sealing member to form a second seal between said second member and said O-ring sealing member at a point on said O-ring sealing member substantially diametrically opposite said first seal, said second seal being maintained throughout such application of pressure on said O-ring sealing member to allow a differential pressure on opposite sides of said O-ring sealing member located between said maintained first seal and said maintained second seal;
(d) said maintained first seal and said maintained second seal preventing fluid leakage from one side of said O-ring sealing member to the opposite side of said O-ring sealing member;
(e) said deformable O-ring sealing member having a cross-section such that at least one point on said cross-section which is intermediate said first seal and said second seal and is on the low pressure side of said O-ring sealing member is closely adjacent one side wall of said U-shaped channel and wherein contact of said at least one point with said U-shaped channel side wall establishes at least two pressure zones on said low pressure side of said O-ring sealing member; and
(f) a fluid communication means for providing fluid communication between said at least two pressure zones, said fluid communication means positioned adjacent said side wall of said U-shaped channel and said at least one point whereby said fluid communication between said at least two presusre zones will substantially equalize the pressure on said low pressure side of said O-ring sealing member between said substantially diametrically oppositely maintained first seal and second seal.

4,577,871
DEVICE FOR COUPLING TWO SHAFTS OF A ROTATING MACHINE FOR HEAT TRANSFER AND SEALING

Erich Weghaupt, Mulheim an der Ruhr; Lutz Intichar, and Christoph Schnapper, both of Erlangen, all of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mulheim an der Ruhr, Fed. Rep. of Germany

Filed Feb. 27, 1985, Ser. No. 706,045
Claims priority, application Fed. Rep. of Germany, Feb. 28, 1984, 3407275
Int. Cl.[4] F16J *15/00;* **H02K** *9/00*
U.S. Cl. 277—8 **8 Claims**

1. Device for coupling two shafts of a rotating machine for permitting simultaneously a thermal dilatation and a sealing of the shafts with respect to each other, in combination with the shafts, comprising inner and outer normally synchronously rotating mutually concentric shafts defining a ring gap therebetween, at least said outer shaft being hollow defining a space between said shafts, an expansion compensator with a given maximal permissible twist disposed between the inner periphery of said outer shaft with one end and the outer periphery of said inner shaft with its other end sealing said space between said shafts and permitting relative axial, radial and tangential motion between said shafts, a holding ring rotatably and sealingly supported on said inner shaft connected sealingly to said other end of said expansion compensator thereby permitting a twisting movement thereof with respect to said inner shaft, and at least one driver element attached to said outer shaft engaging said inner shaft via said holding ring with tangential play (S_2) between said shafts being smaller than said given maximal

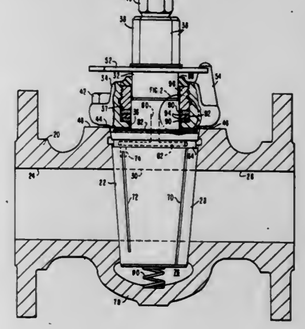


permissible twist, said driver element mechanically connecting said holding ring and said other end of said expansion compensator to said outer shaft when twists of said expansion compensator exceed said tangential play (S_2).

4,577,872
VALVE STEM SEAL WITH MULTIPLE RING MEANS

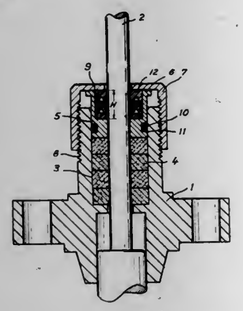
Earl A. Bake, Pittsburgh, and Clair W. Hartle, Jr., Monroeville, both of Pa., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 637,186, Aug. 2, 1984, abandoned. This application Sep. 10, 1985, Ser. No. 774,622
Int. Cl.[4] F16J *15/06, 15/30;* **F16K** *41/04*
U.S. Cl. 277—12 **5 Claims**



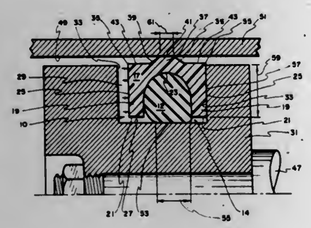
1. A lubricated plug valve having a housing comprised of a body and cover enclosing a chamber defined by a seating surface formed in said body, a plug seated on said surface and adapted to rotate between valve open and valve closed positions, a valve stem drive connected to said plug and projecting through said housing to the exterior thereof, a bore in said housing surrounding and radially spaced from said stem to provide an annular seal receiving chamber between said stem and said housing, a stem seal comprised of first ring means of carbonaceous material coated with a dispersion of PTFE with a latex binder in radial sealing engagement with said bore and said stem, second ring means of PTFE in radial sealing engagement with said bore and said stem and an annular gland projecting into and axially adjustable in said chamber for applying an axial load on said first and second ring means.

4,577,873
DUAL VALVE STEM PACKING ARRANGEMENT
Hans D. Baumann, 32 Pine St., Rye, N.H. 03870
Filed Mar. 29, 1985, Ser. No. 717,834
Int. Cl.[4] F16J 15/24
U.S. Cl. 277—110 3 Claims



1. Dual packing arrangement comprising a valve stem sealingly engaging one lower set of packing rngs and one upper set of packing rings, a slidingly arranged packing follower engaging and capable of compressing said lower packing ring set, said packing follower having a cylindrical recess of pre-determined depth to house the upper set of packing rings, a valve bonnet having a recessed chamber snuggly containing within said set of lower packing rings and allowing for sliding engagement of said packing follower, additional means to motivate said packing follower against said set of lower packing rings having a shouldered portion over-lapping and closing the cylindrical recess in said packing follower.

4,577,874
SEAL ASSEMBLY
Gordon T. Zitting, Sandy, Utah, assignor to Microdot Incorporated, Chicago, Ill.
Division of Ser. No. 503,941, Jun. 13, 1983, Pat. No. 4,566,703, which is a continuation-in-part of Ser. No. 257,045, Apr. 24, 1981, which is a continuation-in-part of Ser. No. 58,341, Jul. 17, 1979, abandoned, which is a continuation of Ser. No. 883,448, Mar. 6, 1978, abandoned. This application Jul. 16, 1985, Ser. No. 755,639
Int. Cl.[4] F16J 15/24
U.S. Cl. 277—165 2 Claims



2. A two compression seal assembly, solely made up of two elements, for use between two closely spaced relatively reciprocable machine parts, the first of the machine parts having a radial groove comprising spaced sidewalls and a base between the sidewalls, the assembly comprising:

an endless relatively soft annular spring element of yieldable material with memory and having a solid cross-sectional configuration;

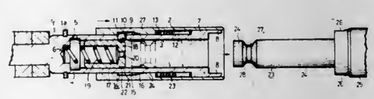
an endless annular sealing element comprising a house-shaped body of relatively hard wear resistant synthetic resinous material having a generally U-shaped cross-sectional configuration;

said sealing element further comprising spaced radially directed elongated anti-extrusion and anti-roll legs, the length of said elongated legs being coextensive with substantially the entire adjacent sidewall, a thin separation existing between the end of each elongated leg and the base of the groove, the spring element being positioned between and extending radially beyond the ends of the elongated legs across said thin separation to compressively engage the base while preserving the thin separation thereby accommodating creation of a first static seal solely and directly between the extended part of the spring element and the base of the groove in the first machine part, the interior surface formed by and between the elongated legs being contiguous with in excess of fifty percent of the exterior surface of the spring element, a second static seal being formed solely and directly between one exterior elongated leg surface and substantially all of one sidewall of the groove so that at all times, when under pressure from one side or the other of the seal assembly, the elongated leg away from the pressure is caused to be contiguous with essentially the entire surface of the adjacent sidewall and at all times the elongated leg at one element only entirely prevents the other element in the form of said spring from reaching the sidewall of the groove;

said house-shaped sealing element further comprising a delta-shaped projection having central disposed thin apex means, the projection extending radially away from said anti-extrusion and anti-roll legs and beyond said groove, the apex compressively engaging the surface of a second machine part in such a fashion so as to cause said apex to no more than slightly flattened solely at the tip region thereof and to create an annular line dynamic seal solely along the entirety of the 360 degrees of said slightly flattened tip region whereby a surprisingly high stable pressure resistance is developed in excess of any hydraulic or pneumatic pressure applied to the seal assembly;

said delta-shaped projection extending radially and the tip portion thereof having an undulating surface when in an unstressed condition.

4,577,875
EXCHANGE CHUCK FOR A TOOL
Eiji Miyakawa, Tokyo, Japan, assignor to Miyakawa Industry Co., Ltd., Seki, Japan
Filed Oct. 29, 1982, Ser. No. 437,615
Int. Cl.[4] B23B 31/22
U.S. Cl. 279—75 9 Claims



1. An exchange chuck for a tool such as a drill, said tool including a tool shank which may be extractably introduced into the chuck and which has a shank portion with first and second ends and an exchange inhibit groove proximate the first end of the shank portion, said chuck comprising;

a spindle having a tubular portion with a mounting bore in which the shank portion may be introduced;

a connecting means provided to the second end of said shank portion and said tubular portion and operable upon insertion of said shank portion into said mounting bore to cause rotation of said tool shank in unison with said spindle;

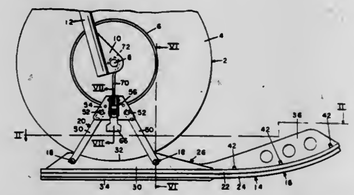
ejector means in the form of a roofed cylinder received in a bottom end of said mounting bore and being adapted to eject said tool shank, said ejector means having an annular groove formed on the outer peripheral edge of said cylinder and an engaging step formed at one end of said annular groove;

a coil spring interposed between the roof of said cylinder and the bottom end of said mounting bore for perpetually biasing said ejector means in a first longitudinal direction;

at least one ball mounted in said tubular portion; and

a movable sleeve received on said tubular portion for movement longitudinally thereof, said sleeve having an undercut annular groove formed on the inner periphery of said movable sleeve and said undercut annular groove including cam means on one end thereof, said sleeve being adapted through longitudinal movement to cause said ball to be moved radially into said mounting bore between first and second positions, said ball being operative when intruded into said mounting bore in said first position to engage with the extraction inhibit groove of said tool shank to inhibit extraction of said tool shank and operative when intruded into said mounting bore in said second position upon removal of the tool shank to engage said engaging step of said annular groove in said ejector means to inhibit extraction of said ejector means in said first longitudinal direction.

4,577,876
SKI ATTACHMENT FOR VEHICLE WHEELS
Walter L. Harris, 9736 Reeder, Overland Park, Kans. 66214
Filed Feb. 14, 1985, Ser. No. 701,919
Int. Cl.[4] B62B 19/02
U.S. Cl. 280—13 5 Claims



1. A ski attachment for a non-driven, free-turning vehicle wheel having a compressible tire, said attachment comprising:

a. a ski having a substantially straight rear portion and an upwardly curved front portion, and adapted to be positioned beneath said wheel parallel to the line of travel thereof,

b. a rigid cradle member affixed to the top surface of said straight rear ski portion, the top of said cradle member being configurated to receive and support the lower portion of said tire therein, and

c. tension means detachably interconnecting said cradle member with an axle of said wheel, and manually operable to draw said cradle member into compressing engagement with said tire, whereby said ski is held in substantially fixed relation to said tire, said tension means comprising:

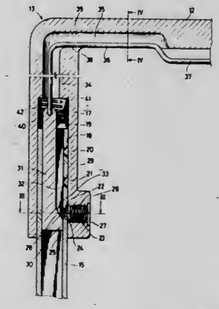
(1) a pair of straps secured at their lower ends to said cradle member respectively adjacent the forward and rearward ends of the latter, and converging upwardly in a plane parallel to the plane of the wheel, there being a pair of said straps at each of the respectively opposite sides of the cradle,

(2) a plate secured to the upper ends of each of said pairs of straps,

(3) a pair of hooks disposed at the respectively opposite sides of said tire, each detachably engageable at its upper end over the axle of said wheel, and extending downwardly therefrom, and

(4) a toggle link interconnecting each of said plates to the lower end of the associated hook and manually operable both to extend said hook upwardly when open, and to retract said hook downwardly when closed, and to lock said hook releasably in said retracted position.

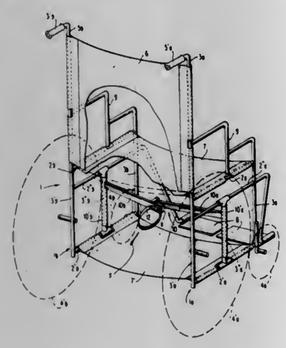
4,577,877
PUSHCART HANDLE HEIGHT ADJUSTING MECHANISM
Kenzou Kassai, Osaka, Japan, assignor to Kassai Kabushikikaisha, Osaka, Japan
Filed Jun. 10, 1985, Ser. No. 742,887
Claims priority, application Japan, Jun. 22, 1984, 59-93944]U]
Int. Cl.[4] B62B 7/08
U.S. Cl. 280—47.37 R 2 Claims



1. A pushcart handle height adjusting mechanism comprising: a horizontally extending handle portion having hollow cylindrical right and left upper rod portions extending downwardly from the right and left ends of said handle portion, right and left lower hollow rods adapted to be respectively received within the inner wall surfaces of said right and left upper rod portions for slidably supporting said upper rod portions, a plurality of locking holes formed in the wall of each of said right and left lower rods, said locking holes being arranged in vertical alignment and at predetermined intervals, right and left locking pins located within the walls of said upper rod portions and adapted to slide in a direction at right angles to said wall surfaces, said locking pins having respective shaft portions capable of extending through said locking holes into the hollow interior portion of said right and left lower rods, one of said locking holes and said locking pins having an inclined surface permitting the entry and exit of said locking pins into said locking holes, right and left locking springs for urging said right and left locking pins to move toward said right and left lower rods, respectively, right and left slide rods slidably installed within the hollow interior portion of said right and left lower rods and said right and left upper rod portions, a connecting rod disposed along said upper rod and connected at its opposite ends to said right and left slide rods, said connecting rod being vertically movable between upper and lower positions with respect to said handle, and spring means for urging said connecting rod and said right and left slide rods to move downwardly, said right and left slide rods being formed with inclined surfaces such that when said right and left slide rods are located at a lower position, the inclined surfaces are positioned below the level of the shaft portions of said right and left locking pins, and when said right and left slide rods are slid upwardly, said inclined surfaces abutt against the shaft portions of said right and left locking pins which project beyond the inner wall surfaces into the hollow interior portion of said right and left lower rods, and when said right and left slide rods are located at an upper position, said inclined surfaces are positioned above the level of the shaft portions of said right and left locking pins, wherein said shaft portions are displaced from the interior of said lower rods when said connecting rod is moved to said upper position thereby permitting

said shaft portions to move along the outer wall surfaces of said lower rods for vertical adjustment of said handle.

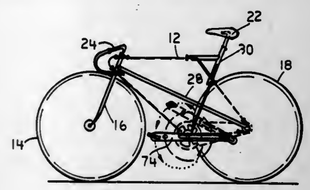
4,577,878
FOLDING WHEELCHAIR
Jehan Roy, and Jean Dubois, both of Tours, France, assignors to Lacoste, SA, Tours Cedex, France
Filed May 29, 1984, Ser. No. 614,787
Claims priority, application France, May 30, 1983, 83 09612
Int. Cl.⁴ B62B *11/00*
U.S. Cl. 280—242 WC **4 Claims**



1. A folding wheelchair comprising a framework, a seat and a backrest mountd on said framework, two front caster wheels permitting steering and two large rear wheels permitting propulsion, said framework comprising two symmetrical rectangular side frames mounted to be moved away or brought back by means of a jointing device, each of said rectangular side frames comprising at least one lower and one upper horizontal sidebar spaced by means of one front and one rear vertical side-bar, said jointing device comprising a compass-member having two legs whose outer ends are rotatively mounted around two parallel supporting pins, each of which is disposed within the corresponding side frame and said framework parallel to and spaced between two of said parallel side-bars of the associated said side frame, the inner ends of said legs being pivotally interconnected by a joint, two pieces of canvas, said two pieces being parallelly stretched between the lower and the upper horizontal side-bars of said side frames, said two pieces of canvas being located on opposite sides of the compass-member and one of said pieces of canvas comprising said seat, one of said legs of the compass-member of the jointing device comprising a shoulder located at the joint, said shoulder overlapping a portion of the end of the other leg when the compass is extended, whereby said shoulder limits the extending movement of the compass-member, said shoulder abutting said other leg when said legs have passed overcenter upon extension of the compass-member, the canvas of said seat being tensioned in the extended position of the compass-member, the tension in the canvas preventing unwanted collapse of the compass-member.

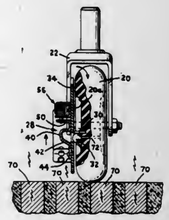
4,577,879
BICYCLE
Franciscus A. Vereyken, 397 Wainwright Ave., San Jose, Calif. 95128
Filed Sep. 19, 1983, Ser. No. 533,829
Int. Cl.⁴ B62M *1/04*; B62K *15/00*
U.S. Cl. 280—256 **11 Claims**

1. A bicycle comprising: a frame; a front wheel and a rear wheel rotatably mounted on the frame; a chain and sprocket assembly coupling the frame and the rear wheel to allow for forward movement of the wheels over a surface, said assembly including a sprocket and a pair of cranks rotatably mounted on the frame and coupled to the sprocket; and a pair of bars, there being a bar for each crank, respectively, each bar having a front end and a rear end and a longitudinal slot near the rear end thereof, each crank having an outer end pivotally coupled to the corresponding bar near to but spaced from the front end of the respective bar, there being a pedal on the forward end of each bar, respectively, and pin means carried by the frame and



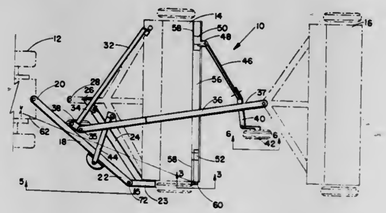
shiftably received within the slot of the respective bar for pivotally coupling the rear part of the respective bar to the frame, each bar permitting the respective pedal to follow a generally semicircular path when the pedal moves during its power stroke from the top of its arc forwardly and then downwardly to the bottom of its arc, each pedal traversing a curved, substantially vertical path as it returns to the top of its arc from the bottom of its arc, whereby the pedal will return quickly to the top of its arc from said bottom of its arc.

4,577,880
THEFT PREVENTION APPARATUS FOR SHOPPING CARTS
Eric L. Bianco, 448 W. Second Ave., Roselle, N.J. 07203
Filed Jan. 6, 1984, Ser. No. 568,720
Int. Cl.⁴ B62D *39/00*
U.S. Cl. 280—33.99 C **6 Claims**



1. Theft-prevention apparatus for a shopping cart of the type having body means, a plurality of wheels and wheel support means secured to said body means for rotatably supporting said plurality of wheels, said apparatus comprising:
a. stopper means secured to one of said wheels;
b. engagement means movable between a first inoperative position and a second operative position at which said engagement means is engageable with said stopper means, said engagement means including ball means movable between said first inoperative position and said second operative position at which said ball means is engageable with said stopper means; and
c. actuator means secured to said wheel support means for controlling movement of said engagement means from said first inoperative position to said second operative position for engagement with said stopper means in response to movement of said shopping cart in the proximity of a predetermined magnetic field to prevent rotation of said one of said wheels, said actuator means including plate means secured to said wheel support means and having a cut-out section defining an aperture, ball support means for supporting said ball means at said first inoperative position, and solenoid means secured to said plate means for moving said ball support means to a position adjacent said aperture in response to movement of said shopping cart in the proximity of said predetermined magnetic field to cause said ball means to move from said first inoperative position through said aperture to said second operative position, such that said ball means is wedged between said plate means and said stopper means upon continued rotation of said one of said wheels to prevent further rotation thereof.

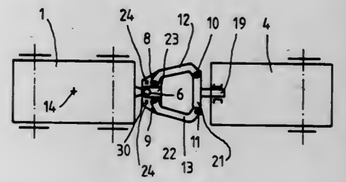
4,577,881
IMPLEMENT HITCH ASSEMBLY
Jerome J. Gerber, Rte. 1, Box 32, Murdock, Kans. 67211
Filed Jun. 19, 1985, Ser. No. 746,274
Int. Cl.⁴ B60D *1/00*
U.S. Cl. 280—412 **9 Claims**



1. An improved implement hitch assembly attached to the rear of a self-propelled pulling vehicle, the assembly towing a front implement and a rear implement in a tandem position when traveling on a roadway, the assembly towing the front implement in a side by side position with the rear implement when in the field, the assembly comprising:
a hitch bar having a first end adapted for pivot attachment to the pulling vehicle and a second end;
a draw bar laterally disposed to the direction of travel and mounted on the front of the first implement, the draw bar pivotally attached to the second end of the hitch bar, the draw bar mounted on a front wheel;
a side bar having a first end pivotally attached to the draw bar and a second end mounted on a rear wheel, the rear implement pivotally attached to the second end of the side bar;
a pivot arm havng a first end pivotally attached to the side bar and a second end pivotally attached to the hitch bar;
slide means attached to the rear of the first implement and the side bar for holding the rear implement in a tandem position; and
release means attached to the slide means for releasing the slide means and allowing the rear implement to move into a side by side position with the front implement.

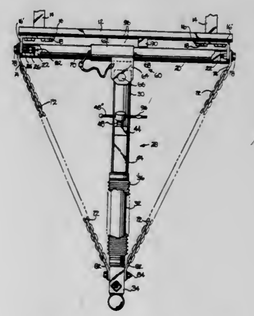
4,577,882
TRACTOR TRAILER COMBINATION WITH A COUPLING CONNECTION
Kurt Kober, Kötz; Rudolf Wohrle, Tschenhausen-Rieden, and Robert Kohler, Kemnat, both of Fed. Rep. of Germany, assignors to Alois Kober KG, Kotz, Fed. Rep. of Germany
Division of Ser. No. 445,952, Dec. 1, 1982, Pat. No. 4,502,561.
This application Dec. 7, 1984, Ser. No. 679,462
Claims priority, application Fed. Rep. of Germany, Dec. 15, 1981, 3149700
Int. Cl.⁴ B60D *1/14, 1/06*; B62D *53/06*
U.S. Cl. 280—446 R **5 Claims**

1. A tractor-trailer combination which comprises:
a tractor vehicle provided with a coupling ball fixed rearwardly of a center of gravity of said vehicle beyond a rear end thereof;
a trailer vehicle rearwardly of said tractor vehicle;
a hitch connecting said vehicles and being journaled on said trailer vehicle for rotation about a longitudinal axis thereof in a forward travel direction of said vehicles with said vehicles aligned in said travel direction, said hitch comprising:
a pair of bridge members spaced apart along said axis and extending generally transversely thereto,
means for mounting one of said bridge members on said ball,
means for journaling the other of said bridge members on said trailer vehicle for rotation relative to said trailer vehicle about said axis,



means defining respective pairs of pivots having vertical pivot axes on each of said bridge members athwart said longitudinal axis with the pair of pivots on the bridge member mounted on said ball, being more closely spaced than the pair of pivots on the bridge member journaled on said trailer vehicle, and
respective rigid links connecting corresponding pivots of each of said pairs whereby said links are disposed on opposite sides of said longitudinal axis and define with said bridge members a unit forming the hitch and coupling said vehicles together; and
means for restricting swingability of the bridge member mounted on said ball about a vertical axis through said ball and relative to said ball.

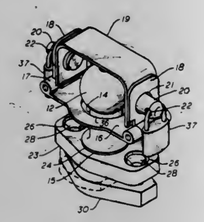
4,577,883
VEHICLE TOW BAR
Lee H. Duncan, 88806 Greenhill Rd., Eugene, Oreg. 97402
Filed Jul. 13, 1984, Ser. No. 630,702
Int. Cl.⁴ B60D *1/14*
U.S. Cl. 280—491 D **7 Claims**



1. For attachment to a vehicle to be towed, a vehicle tow bar, comprising:
(a) an elongated cross bar member configured for attachment to the front end of a vehicle to be towed and arranged to extend laterally across the front end thereof,

(b) a forwardly projecting reach mounted at its rear end centrally to the laterally extending cross bar, the reach comprising at least two longitudinally telescoping sections, the reach mounting at its forward end a coupler component of a trailer hitch,
(c) flexible tow line means connecting the forward end portion of the reach to the opposite ends of the laterally extending cross bar member, and
(d) securing means engaging the telescoping sections of the reach to releasably lock the sections in fully extended condition for releasably tensioning the flexible tow line means in taut, towing condition.

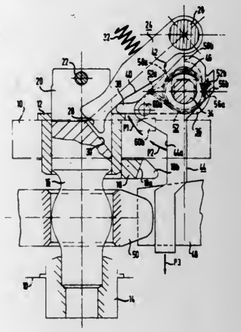
4,577,884
TRAILER HITCH
Joe L. Harris, Rte. 2, Box 2812, Porter, Tex. 77365
Filed Apr. 30, 1984, Ser. No. 605,461
Int. Cl.[4] B60D *1/12, 1/06*
U.S. Cl. 280—507 **8 Claims**



1. A safety and anti-theft locking device for use with ball and socket type couplings as may be used in the coupling of a tongue of a trailer to a towing vehicle tow bar comprising:
a. a tow ball characterized by a ball, a shank, a shoulder, a threaded shaft and a nut therefore;
b. a yoke means having a central bore therethrough and through which rests the shank, the diameter of said bore being large enough to loosely encircle said shank but smaller than the diameter of said ball thereby not allowing said yoke means to be removed over said ball so that said yoke means will rotate freely about said shank in conjunction with the trailer tongue;
c. a locking hat means placed over the trailer tongue and removably affixed to said yoke means so that when said locking hat means is coupled to said yoke means the ball socket of the trailer tongue cannot become disengaged from said ball and said locking hat means will rotate about said ball in unison with the ball socket.

4,577,885
TRAILER COUPLING
Johann Breu, Munich, Fed. Rep. of Germany, assignor to Rockinger Spezialfabrik für Anhängerkupplungen GmbH & Co., Fed. Rep. of Germany
Filed Dec. 6, 1984, Ser. No. 678,649
Claims priority, application Fed. Rep. of Germany, Dec. 15, 1983, 3345474
Int. Cl.[4] B60D *1/02*
U.S. Cl. 280—508 **6 Claims**

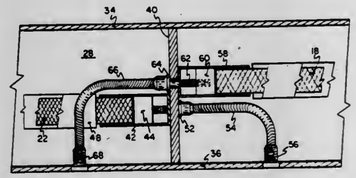
1. Trailer coupling, comprising:
(a) a coupling body;
(b) a coupling bolt which is guided displaceably in the coupling body between a coupling position with engagement through a towing eye and a non-coupling position permitting the driving of the towing eye into and out of the coupling body;
(c) an opener lever pivotable about an opener lever pivot spindle and stressed by first spring means in the direction towards a securing position in which it secures the coupling bolt in its coupling position, which opener lever is transferrable by means defining an actuating shaft against the action of the first spring means into a holding position in which it holds the coupling bolt in the non-coupling position;
(d) a support lever pivotable about means defining a support lever pivot spindle, for supporting the opener lever in its holding position; and
(e) a release lever pivotable about the support lever pivot spindle, displaceable transversely of this spindle and subject to the turning and displacement effect of further spring means, which release lever in the entry and exit of the towing eye runs through different sequences of operational positions and in the course of the operational position sequence effected by the entry of the towing eye transmits a release moment to the support lever in the direction of cancellation of its supporting function, characterized in that



(f) the actuating shaft is offset parallel in relation to the opener lever pivot spindle;
(g) the support lever is seated non-rotatably and non-displaceably on the actuating shaft and is in entraining engagement with the opener lever so that in pivoting out of a rest position into a support position it entrains the opener lever out of its securing position into its holding position;
(h) the release lever is mounted rotatably and displaceably on the actuating shaft; and
(i) on the support lever and the release lever there are fitted release moment transmission stops which, when the towing eye is moving out, shifting the release lever, pass into a mutual readiness position, and when the towing eye is entering, transmit a pivot release movement from the release lever to the support lever.

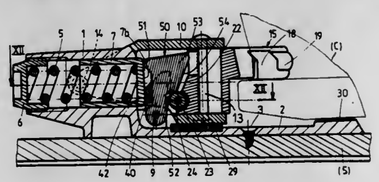
4,577,886
ADJUSTABLE FLEX SKI
John O. Chernega, P.O. Box 1094, Taos, N. Mex. 87571
Filed Jul. 26, 1984, Ser. No. 634,554
Int. Cl.[4] A63C *5/07*
U.S. Cl. 280—602 **4 Claims**

1. An adjustable flex ski comprising:
a ski body including a foam core, upper and lower load-bearing surfaces, sidewalls, and a neutral plane, and having a center section, a shovel section and a tail section; and
first, second and third elongate flexible tensile members slidably embedded in said foam core below the neutral plane of the ski and located respectively in said center, shovel and tail sections of said ski, each of said tensile members having opposite ends and being affixed to the ski at said opposite ends of the member, and further comprising three tension adjustment means associated respectively with said tensile members, each of said tension adjustment means including a thrust plate embedded in said foam core, a hollow housing abutting said thrust plate, a tensile member anchor slidably engaged in said housing and affixed to one end of the respective tensile member, a threaded shaft engaged in said anchor and passing through said thrust plate for effecting longitudinal displacement of said anchor in said housing with consequent stretching or relaxation of the tensile member, and



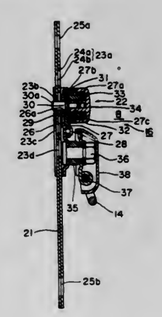
manually operable drive means opening on the exterior surface of one of said sidewalls of said ski body for effecting rotation of said threaded shaft, said tension adjustment means being operable to selectively vary the tension in the tensile members, whereby the flex pattern of the ski as determined by the levels of tension in said tensile members may be selectively varied by adjustment of said tension members.

4,577,887
SAFETY SKI BINDING
Roland Bardin, Varennes Vauzelles; Jean Bernard; Henri Peyre, both of Nevers, and Patrice Viodet, Imphy, all of France, assignors to Ste Look, Nevers, France
Filed May 31, 1984, Ser. No. 615,767
Claims priority, application France, Jun. 27, 1983, 83 10554
Int. Cl.[4] A63C *9/08*
U.S. Cl. 280—628 **12 Claims**



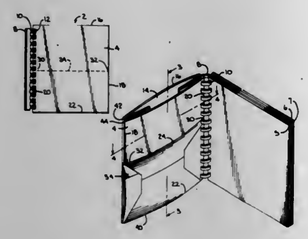
1. A safety ski binding comprising a hollow body to be mounted on a ski, a yoke pivoted on said body about a horizontal cross-pin which extends transversely with respect to the ski, a boot-retaining jaw unit carried by the yoke and capable of lateral pivotal displacement on each side of the axis of the ski, a locking lever mounted within said body and pivoted about a horizontal cross-pin which extends transversely with respect to the ski, a spring housed within said body and adapted to produce action in opposition to the locking lever so as to ensure that said lever prevents lateral pivotal displacement of the jaw unit while at the same time preventing upward displacement of the assembly consisting of said jaw unit and said yoke by means of a guide ramp, wherein the jaw unit is guided in sliding motion within the yoke in the longitudinal direction of the ski and wherein said jaw unit is normally maintained stationary and prevented from moving in a lateral direction by two bearing means which are associated with said jaw unit and comprise:
a first bearing means directed toward the ski boot and adapted to cooperate with a first complementary support which is rigidly fixed to the yoke; and
a second bearing means directed away from the ski boot and adpated to cooperate with a second complementary support which is rigidly fixed to the locking lever; said first bearing means comprising a pair of vertical grooves cut in the jaw unit symmetrically with respect to the axis of the ski, said first support comprising a pair of vertical cylindrical rods attached to the yoke and spaced at a distance from each other which corresponds to the distance between said grooves, the jaw unit having a front extension on the side remote from the ski boot, said extension having a vertical opening having an approximately rectangular contour and traversed by said vertical cylindrical rods, and said grooves being cut in that wall of said opening which is located on the side remote from the ski boot.

4,577,888
SEAT BELT ANCHOR ASSEMBLY
Juichiro Takada, 12-1, 3 chome, Shinmachi, Setagaya-ku, Tokyo, Japan
Filed Apr. 10, 1984, Ser. No. 598,841
Claims priority, application Japan, Apr. 11, 1983, 58-052666[U]
Int. Cl.[4] A62B *35/00;* B60R *21/10*
U.S. Cl. 280—808 **3 Claims**



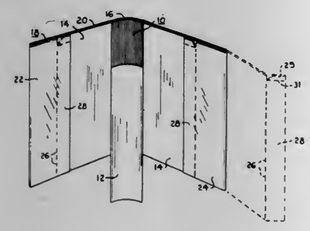
1. A seat belt anchor assembly comprising a rail having a plurality of holes spaced-apart in a row lengthwise of the rail, a slider movable along the rail and having a hole positioned to register with any selected one of the holes in the rail, a locking arrangement including a manually operable latch pin receivable through the hole in the slider and any selected one of the holes in the rail by which the slider is latched to the rail against movement from a selected position and an anchor ring connected to the slider for guiding the belt characterized in that the locking arrangement includes an operating assembly carried by the slider that includes a retainer affixed to the slider and having a cylindrical portion surrounding the latch pin and extending outwardly from the slider, a stop member affixed to the latch pin and received within the cylindrical portion of the retainer, at least one stop lug on the stop member engageable in a first rotational position of the latch pin with a stop shoulder on the cylindrical portion to prevent the pin from moving out of an engaged position in a hole in the rail and disengageable from the stop shoulder in a second rotational position of the latch pin to enable the pin to be disengaged from the selected hole in the rail, and a spring urging the latch pin and stop member axially toward the engaged position of the latch pin and rotationally toward the first rotational position of the stop lug.

4,577,889
BAG BOOK
Judith D. Schulz, 212 S. Fourth St., Delavan, Wis. 53115
Filed Apr. 20, 1984, Ser. No. 602,600
Int. Cl.[4] B42D *5/00, 13/00;* **B31B** *1/90, 1/60*
U.S. Cl. 281—15 R **18 Claims**



1. A bag book comprising a plurality of bags bound together along an edge to provide a book, each bag forming a page of said book and providing a pocket in the interior of said bag;
wherein each said bag is open at the top and is closed at the right, left and bottom edges, and is bound at said left edge;
wherein said bags are folded upwardly to define an upwardly facing edge prior to binding, to form an auxiliary pocket between said upwardly facing edge and the body of the bag, such that each bag page comprises two pockets.

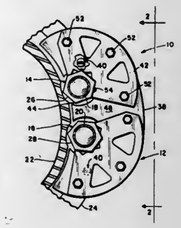
4,577,890
REMOVABLE BOOK MARKER STRIP
Gladys D. Boyett, 1418 Argyle Dr., Fort Myers, Fla. 33907
Filed Mar. 19, 1984, Ser. No. 591,119
Int. Cl.[4] B42D *3/00, 3/12, 3/04;* **B42C** *11/00*
U.S. Cl. 281—29 **5 Claims**



1. The combination with a book having a plurality of stacked pages and a binding securing one edge of the pages together as by gluing, sewing, etc., of covers overlying opposite sides of the stacked pages and secured in the binding, a dust shield overlying the binding and the covers and having inturned flaps, and perforations along the inner edges of one of the flaps to define a removable narrow book marker strip.

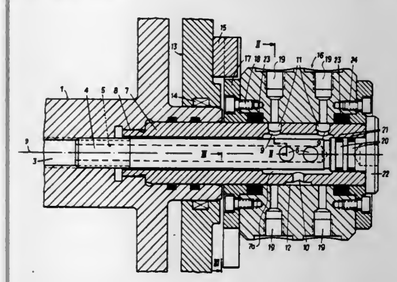
4,577,891
TORQUE LIMITING COLLAR
Lawrence E. Fielding, Enon, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Oct. 27, 1983, Ser. No. 546,222
Int. Cl.[4] F16L *25/00*
U.S. Cl. 285—62 **4 Claims**

1. A torque limiting collar for rigidly coupling a fitting to a stationary structure to prevent transmission of damage-inducing torque through said fitting to a conduit as a first portion of said fitting is rotatably adjusted against a second portion thereof to seal parts of said conduit together, said torque limiting collar comprising:
(a) a support member for rigid connection to said stationary structure between said stationary structure and said fitting;
(b) a locking member including means for engaging one of said first and second portions of said fitting to prevent said one fitting portion from rotating relative to said locking member; and
(c) means for rigidly fastening said locking member to said support member, said fastening means including,



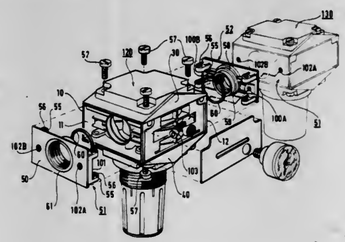
means defining a first plurality of holes in said support member, and means defining a second plurality of openings in said locking member, said second plurality of openings being aligned with said first plurality of holes when said locking member engages said one fitting portion;
wherein said holes and openings in said respective first and second pluralities thereof are in the form of elongated slots orthogonally oriented to ensure alignment between said pluralities of holes and openings when said locking member engages said one fitting portion; and
a plurality of bolts received through said aligned holes and openings and rigidly connecting said support member and locking member together.

4,577,892
ARRANGEMENT FOR SUPPLYING A PRESSURIZED LIQUID TO A ROTATING MACHINE PART
Herwig Wrülich, Zeltweg; Franz Schöffmann, Leoben, and Wilfried Maier, Zeltweg, all of Austria, assignors to Voest-Alpine Aktiengesellschaft, Vienna, Austria
Filed Sep. 6, 1983, Ser. No. 529,743
Claims priority, application Austria, Sep. 9, 1982, 3382/82
Int. Cl.[4] F16L *39/00*
U.S. Cl. 285—136 **8 Claims**



1. In a machine including a stationary part and a rotatable part: apparatus for supplying pressurized liquid from the stationary part to the rotating part, said apparatus comprising a liquid supply tube extending from said stationary part into said rotatable part, said supply tube having a closed end within said rotatable part; a non-rotatable bushing surrounding said liquid supply tube arranged in sealing relationship with said rotatable part, said bushing defining with said supply tube, at a location within said rotatable part, an annular distributing chamber, said supply tube having at least one radial bore opening into said annular distributing chamber, said bushing having at least two radial bores in communication with said distributing chamber, said radial bores in said bushing being axially spaced apart and extending in opposite radial directions, and said rotatable part having liquid passages extending between the periphery of said rotatable part and the locations of said radial bores in said bushing.

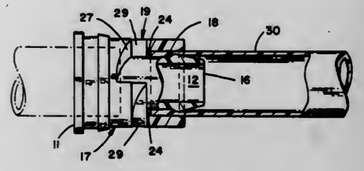
4,577,893
CONNECTING CLAMP FOR PNEUMATIC APPARATUS
Pierre Bonino, Annecy; Christian Ducret, Annecy le Vieux, and Cyrille Mazzoleni, Rumilly, all of France, assignors to Compagnie Parisienne d'Outillage a Air Comprime, Bonneville, France
Filed May 4, 1984, Ser. No. 607,325
Claims priority, application France, May 4, 1983, 83 07406
Int. Cl.[4] F16L *3/04*
U.S. Cl. 285—158 **5 Claims**



1. A connecting clamp for a pneumatic apparatus which comprises a substantially parallelepiped shaped body of plastic material associated with a bottom and with a lid which are placed on respective opposite faces of the body, wherein the clamp is constituted by a rectangular aluminum alloy plate of substantially the same size as one of the other faces of the body, against which it is applied, the clamp including a central tapped sleeve for making a pneumatic connection to other pneumatic equipment and lugs projecting perpendicularly from the plate, each lug having an orifice with its axis extending in a plane parallel to the plane of the plate and capable of receiving a rod or screw for fixing the clamp to the body, the rod or screw also passing through the lid or the bottom to fix the lid or the bottom to the body.

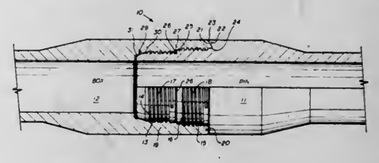
4,577,894
AXIAL COMPRESSION HOSE COUPLING
Harold E. Wake, 915 E. South Strathmore Ave., Lindsay, Calif. 93247
Filed Aug. 1, 1983, Ser. No. 519,083
Int. Cl.[4] F16L *33/02*
U.S. Cl. 285—242 **10 Claims**

1. The combination of a coupling mechanism with a flexible hose of resilient material having an end portion of given wall thickness, said coupling mechanism comprising:
(a) a body having a nipple of rigid material projecting therefrom and received within said end portion of said hose, said nipple comprising a shank and a head, said shank having a right circular cylindrical exterior diameter substantially equal to the interior diameter of said end portion of said hose, said head having a maximum circular exterior diameter larger than said exterior diameter of said shank;
(b) a right circular cylindrical collar of rigid material surrounding said nipple and receiving said end portion of said hose, said collar having an interior diameter larger than said exterior diameter of said head of said nipple by an amount less than said given wall thickness of said end portion of said hose and an axial length shorter than the axial length of said shank of said nipple, said collar having an inwardly extending abutment member at one end thereof, said abutment member extending inwardly into close spaced relation less than said wall thickness of said end portion of said hose from said shank of said nipple, said collar being received on said nipple with said inwardly extending abutment member at the opposite end of said collar from said head of said nipple; and



(c) means when rotated urging said collar to move axially of said nipple toward said head thereof, said means being adapted to selectively maintain said collar at a given point in its movement toward said head of said nipple, said inwardly extending abutment member applying axial compressive force to said end portion of said hose compressing said end portion of said hose axially and causing the side wall thickness of said end portion of said hose between said head of said nipple and said abutment member of said collar to expand radially into sealing and gripping contact with the exterior surfaces of said shank and said head of said nipple and with the interior surface of said collar at said given point in said movement of said collar.

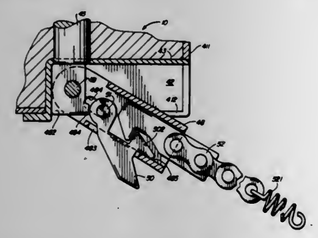
4,577,895
PIPE JOINT HAVING PRESSURE ACTIVATED SEALING MEANS
Alan J. Castille, Lafayette, La., assignor to Hub City Iron Works, Inc., Lafayette, La.
Filed Jan. 23, 1984, Ser. No. 573,216
Int. Cl.[4] F16L *15/00*
U.S. Cl. 285—334 **6 Claims**



1. In a stepped-thread pipe connector, including a pin and box member with a tapered metal seal seat formed at the end of a pin member fitting in sealed relation with a complementary metal seal seat formed within a box member, co-acting inner step threads formed by said box member and said pin member axially adjacent to said metal seal seats, and co-acting outer step threads of larger diameter than said inner step threads formed by said box member and said pin member axially adjacent to said inner step threads, the improvement comprising in combination:
(a) a radial box torque shoulder formed in said box member and having an outside diameter the same as the inside diameter of the outer female step threads and of internal

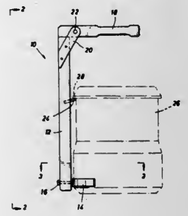
diameter the same as the outside diameter of the male inner step threads;
(b) a radial pin torque shoulder formed on said pin member and having an outside diameter the same as the inside diameter of the female outer step female threads and of inside diameter the same as the outside diameter of the male inner step threads;
(c) a seal ring groove defined into the outside diameter of said pin member as a radial continuation of said pin torque shoulder between said male upper step threads and said male lower step threads;
(d) a counterbore defined within said box member to extend axially from the internal diameter of said said box torque shoulder for a distance sufficient to enclose said seal ring groove is a cavity defined by said counterbore, torque shoulders and groove when said pin torque shoulder and said box torque shoulder are brought into abutment;
(e) said seal ring as confined being adapted to be readily moved into sealing relation across the juncture of said box torque shoulder and said pin torque shoulder; in response to fluid pressure application and
(f) said seal ring being substantially free of pinches or cuts as said counterbore is moved across said groove to form said cavity.

4,577,896
STRIKE PLATE AND SECURITY CHAIN LATCH
Alois Crepinsek, 97 N. Arizona Pl., Chandler, Ariz. 85224
Filed Aug. 26, 1982, Ser. No. 411,687
Int. Cl.⁴ E05C *17/36*
U.S. Cl. 292—264 **21 Claims**



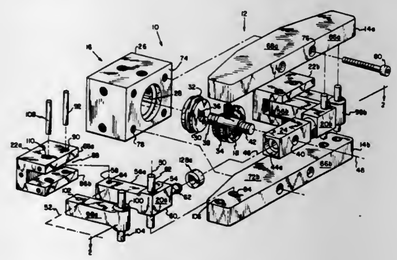
1. In combination with a door frame having at least two orthogonal surfaces an improved lock strike plate and security chain latch comprising:
strike plate means having at least two orthogonal faces mating with two complementary with two complementary orthogonal surfaces of said door frame;
security chain latch means recessed within a first one of said two orthogonal faces of said strike plate means and being further recessed within one of said at least two orthogonal surfaces of said door frame when said strike plate face is so mated with said door frame surface,
wherein said first one of said two orthogonal faces of said strike plate means comprises a recess for receiving said security chain latch means;
rotary coupling means for rotatingly coupling said security chain lath means within said recess; and
orthogonal coupling means matingly coupled within said door frame for coupling said at least two orthogonal faces of said strike plate means to two complementary orthogonal surfaces of said door frame,
wherein said orthogonal coupling means comprises first reinforcing means coupled to the interior of said door frame through a first one of said at least two orthogonal surfaces of said door frame, said orthogonal coupling means further comprises a second reinforcing means coupled to the interior of said door frame through a second one of said at least two orthogonal surfaces of said door frame, first reinforcing means further comprises means for matingly coupling with said second reinforcing means within the interior of said door frame.

4,577,897
LIFTING TOOL
Joe O. Mazac, 1409 Kathy, Sealy, Tex. 77474
Filed Oct. 7, 1983, Ser. No. 540,151
Int. Cl.⁴ B65G *7/12*
U.S. Cl. 294—15 **12 Claims**



1. A manipulating tool for carrying loads, comprising:
a. body means;
b. support means mounted on said body means for preventing rotational movement of such a load;
c. handle means pivotally mounted on said body means remote from said support means and movable relative to said body means between a collapsed configuration relative to said body means and an extended configuration wherein said handle means may be maintained rigid against said body means as said tool is supported by said handle means; and
d. latch means carried by said body means between said handle means and said support means for engaging a load generally above said support means and applying lifting force thereto whereby said load may be carried with said handle means generally extending over said load.

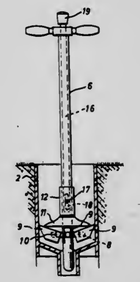
4,577,898
GRIPPER APPARATUS
Kay T. Nusbaumer, Fort Wayne, and Bruce D. McIntosh, Monroeville, both of Ind., assignors to PHD, Inc., Fort Wayne, Ind.
Filed Jun. 12, 1984, Ser. No. 619,819
Int. Cl.⁴ B25B *1/00*
U.S. Cl. 294—88 **16 Claims**



1. A gripping apparatus which comprises:
a supporting body;
a first jaw lever pivotally attached to said supporting body and having a remote end that is distal from said pivotal attachment thereof;

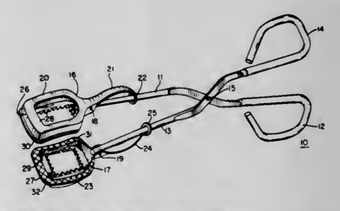
means carried by said supporting body for actuating said remote end of said jaw lever arcuately about said pivotal attachment thereof said actuating means including an actuator movable in a straight line;
jaw pad means attached to said supporting body for performing a gripping operation as said remote end of said jaw lever is moved arcuately by said actuating means, said first jaw pad being pivotally attached to the remote end of said jaw lever; and
parallel link means, comprising a link that is parallel to said first jaw lever and pivotally attached to said first jaw pad distal from said pivotal attachment of said jaw lever thereto, and that is pivotally attached to said supporting body distant from said pivotal attachment of said jaw lever thereto, for arcuately positioning said first jaw pad around said pivotal attachment of said jaw lever with said supporting body, and for achieving parallel movement of said first jaw pad as said jaw lever is moved arcuately.

4,577,899
LINER CUP REMOVER
James K. Hemingway, Berkhamsted, England, assignor to H. Pattison & Company Ltd., Middlesex, England
Filed Aug. 8, 1984, Ser. No. 638,692
Claims priority, application United Kingdom, Sep. 9, 1983, 8324183
Int. Cl.⁴ B66C *1/00*
U.S. Cl. 294—95 **10 Claims**



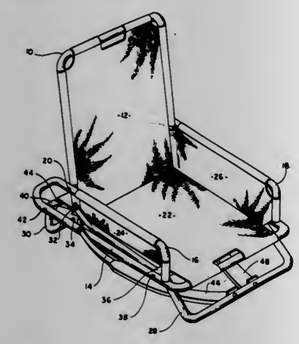
1. A tool for removing the liner cup from a golf hole comprising:
a straight elongate shaft;
a sleeve slidable longitudinally on said shaft;
at least two like members extending generally radially outwards from near one end of the said shaft;
a pivot axis for each member located in each case at right angles to the shaft and at right angles to the general radial orientation of the said member;
an outer edge on each said member, capable of frictional engagement with an inner surface of said liner cup;
the said members being freely pivotable about their respective pivot axes between (a) positions in which their outer edges are located at distances greater than the standard radius of a golf hole from the elongate shaft longitudinal axis and (b) positions in which their outer edges are located at distances less than the said standard radius from the said longitudinal axis;
a handle at the end of said shaft remote from the generally radial members, said handle extending transversely to each side of the shaft;
laterally extending pressure exerting means attached to one end of said sleeve; and means permitting selective positioning of said sleeve in relation to said shaft between a first position remote from the radially extending pivotable members, whereby said members can pivot freely towards the shaft and a second position with the pressure exerting means contacting and immobilizing said radially extending pivotable members, whereby they are positively held with their outer edges frictionally engaging the inner surface of the liner cup; said means permitting selective positioning of said sleeve comprising:
a elongate hollow extending from the top of the said shaft at least to the sleeve, said shaft being formed with radially aligned longitudinal slots in the walls beneath said sleeve;
a rod extending movably along said hollow shaft;
transverse pins extending diametrically from said rod to protrude through each said slot for attachment to said sleeve, whereby said sleeve is capable of movement to an extent defined by abutment of said pins with the ends of said slots;
said rod protruding longitudinally from the upper end of said shaft centrally of said handle;
whereby thumb pressure can be exerted on the protruding end of said rod, as the handle is pulled, to force the sleeve downwardly and bring the pressure-exerting means into immobilizing contact with the pivoted members.

4,577,900
SELF ADJUSTING TONGS
Lee R. Chasen, Port Chester, N.Y., assignor to Coats & Clark, Inc., Stamford, Conn.
Filed Apr. 8, 1985, Ser. No. 720,579
Int. Cl.⁴ B25B *5/04*
U.S. Cl. 294—118 **4 Claims**



1. A pair of self-adjusting tongs, comprising:
a first stem having a first handle at one end;
a first jaw pivotally mounted to the other end of the first stem, for rotation about a first axis transverse to the first stem,
said first jaw having an annular grasping portion and an arcuate spring portion extending from said first axis in the direction of said first handle, said spring portion terminating in a loop surrounding and slidably movable along said first stem;
a second stem pivotally mounted to said first stem and having a second handle at one end adjacent the handle of the first stem;
a second jaw pivotally mounted to the other end of the second stem, for rotation about a second axis transverse to the second stem,
said second jaw having an annular grasping portion and an arcuate spring portion extending from said second axis in the direction of said second handle, said spring portion terminating in a loop surrounding and slidably movable along said second stem;
the spring portions of said first and second jaws interacting with said first and second stems respectively to urge the annular grasping portions of said jaws to rotate about said first and second respective axes through a limited angular range toward each other, while permitting pivoting of said first and second jaws about said first and second axes respectively to enable said jaws to orient themselves in conformity with an object engaged between the jaws when the handles are moved toward each other.

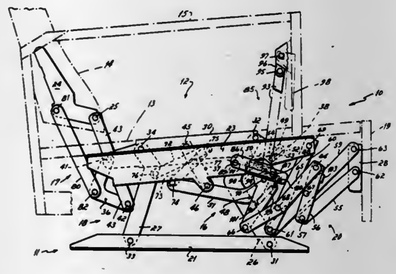
4,577,901
CONVERTIBLE UTILITY CHAIR
Mark R. Phillips, 65 Montsalas Dr., Monterey, Calif. 93940
Filed Apr. 30, 1985, Ser. No. 729,120
Int. Cl.[4] A47C *4/00*
U.S. Cl. 297—17 **6 Claims**



1. A chair that is convertible into a carry-all comprising, in combination:
(a) a tubular, substantially U-shaped back frame;
(b) a back panel, said panel being supported by said back frame;
(c) a tubular seat frame having a substantially U-shape and including portions spaced from said generally U-shape defining armrests, said last-named frame being pivotally jointed to said back frame;
(d) a seat panel, said panel being supported by said seat frame;
(e) arm panels, said panels being supported by said seat frame;
(f) a tubular front leg base frame having a generally U-shape, said last-named frame being pivotally joined to said back frame; and
(g) a tubular rear leg base frame having a generally U-shape, said last-named frame being pivotally joined to said back frame.

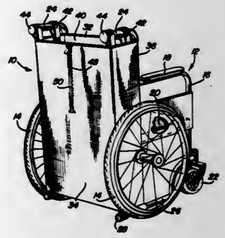
4,577,902
ROCKER RECLINER AND AWAY-FROM-THE-WALL RECLINER CHAIRS
Michael A. Crum, LaGrange, Ky., assignor to Leggett & Platt, Incorporated, Carthage, Mo.
Filed Feb. 8, 1983, Ser. No. 464,874
Int. Cl.[4] A47C *1/02*
U.S. Cl. 297—85 **20 Claims**

1. A three position rocker recliner chair mechanism comprising,
a fixed base,
a rocker cam movably mounted upon the fixed base,
a rocker base plate fixedly mounted upon the rocker cam,
a carrier plate, the front of said carrier plate being pivotally connected to said rocker base plate,
rear linkage means connecting the rear of said carrier plate to said rocker base plate, said rear linkage means permitting the rear of said carrier plate to move downwardly relative to said rocker base plate as the front of said carrier plate pivots about the front of said rocker base plate,
a seat support plate,
a backrest support plate mounted for pivotal movement relative to said seat support plate,
recliner linkage means supporting the seat support plate from said carrier plate, the rear of said seat support plate being movable downwardly with the rear of said carrier plate as the mechanism moves from an upright position to a TV position in response to the weight of a person in the chair,
releaseable locking means for preventing movement of said seat support plate from said upright to said TV position,
release means for releasing said locking means to allow movement of said seat from said upright to said TV position,
a footrest,
footrest linkage means mounted to the seat for moving the footrest between a retracted position adjacent the seat and



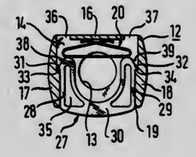
an extended position projected forwardly of the seat in response to movement of the seat from said upright to said TV position, and
backrest linkage means cooperable with said recliner linkage means to effect forward and upward movement of said seat support plate relative to said carrier plate while said carrier plate remains in a fixed position relative to said rocker base plate as said rocker recliner chair mechanism moves from the TV to the full recline position in response to pivotal movement of said backrest support plate relative to said seat support plate.

4,577,903
WHEELCHAIR ATTACHED STORAGE BAG
Carol L. Wells, 1897 Citrus Hill Rd., Palm Harbor, Fla. 33563
Filed Apr. 2, 1984, Ser. No. 595,964
Int. Cl.[4] A47C *7/62*
U.S. Cl. 297—188 **5 Claims**



1. In combination with a wheelchair having a seat for an occupant, a frame with rearwardly extending tip bars at the rear lower ends thereof and a pair of handles at the upper ends thereof, a pair of large wheels supporting said wheelchair, a vertically disposed flexible storage bag oriented rearwardly of the seat, between the rearward portions of the wheels and between the handles and tip bars, said bag including a peripheral wall, means on said bag detachably engaged with said handles and tip bars, and means incorporated into said bag enabling access into the interior thereof, said means on the bag engaging the handles including loops at laterally outer edges of the top of the bag, said means engaging the tip bars including a pair of sleeves at the laterally outer edges of the bottom of the bag to support the bag taut between the handles and tip bars and inwardly of the wheels, said bag being generally of rectangular configuration with a front-to-rear dimension confining the bag to the area between the rear portions of the wheels to eliminate interference with operation of the wheelchair and enabling the bag to fold with the wheelchair when used in combination with a folding wheelchair.

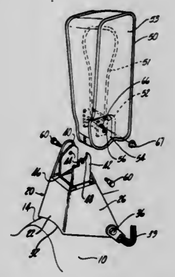
4,577,904
GUIDING SLEEVE FOR HEAD RESTS AT VEHICLE SEATS
Heiner Wiese, Hamburg, and Rainer Gramss, Norderstedt, both of Fed. Rep. of Germany, assignors to ITW Ateco GmbH, Norderstedt, Fed. Rep. of Germany
Filed Jan. 30, 1984, Ser. No. 574,830
Int. Cl.[4] A47C *7/36*
U.S. Cl. 297—410 **5 Claims**



1. An improved adjustable guiding sleeve wherein the improvement comprises:
a hollow elongated sleeve;
a flange integral with said sleeve at one end thereof having an aperture co-axial with the bore of said sleeve and having a narrow rectangular slot extending through said flange, perpendicular to the longitudinal axis of said sleeve and across the aperture of said sleeve said slot being defined by a pair of oppositely facing side walls, top and bottom walls, an end wall and a narrow rectangular opening opposte said end wall;
a spring biasing member within said slot having a normal and a depressed position and being formed of a resilient elongated base member conforming to the shape of said slot and having a rearwardly bent leg on each of its ends which extend a predetermined distance from said base so that when in its normal position crosses said aperture of said flange a predetermined distance to frictionally engage a member within said sleeve and when in its depressed position no longer crosses said aperture; and
an actuating means for compressing said biasing member against said end wall to move it from said normal to said depressed position.

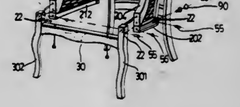
4,577,905
VEHICLE ARMREST
Robert J. Grant, 7846 Normile, Dearborn, Mich. 48126
Filed Jul. 7, 1983, Ser. No. 511,463
Int. Cl.[4] A47C *7/54*
U.S. Cl. 297—411 **7 Claims**

1. For use in conjunction with a vehicle having a seat mounted on a floor of the vehicle and said floor having a transmission hump which protrudes upwardly from the floor and has two sides, an armrest assembly comprising:
a base having an upper end, a lower end, and two side panels, said side panels having tail sections which extend downwardly along the sides of the transmission hump,
means for securing said tail sections of said base side panels to the transmission hump so that said upper end of said base is spaced upwardly from the transmission hump,
an elongated cushion,
means for pivotally mounting one end of said cushion to said upper end of said base;
wherein said pivotal mounting means comprises a pair of spaced plates secured to the top end of said base, said one end of said cushion positioned in between said plates, and said pivotal mounting means extending between said plates and said cushion;
means for limiting the pivotal position of said cushion in one



direction so that a surface of said cushion lies in substantially a horizontal plane, said limitng means comprising a pin secured to said one end of said cushion and a notch formed in one of said plates, said pin nesting in said notch when said cushion is in said limited position; and
wherein said limiting means and said pivotal mounting means together comprise the sole means for supporting said cushion so that said surface lies in said horizontal plane.

4,577,906
ARMCHAIR WITH KNOCKED DOWN FRONT LEGS
Shu-Jen Hsiung, No. 549, Hsin-Shu Rd., Hsin-Chuang, Taipei Hsien, Taiwan
Filed Jun. 29, 1984, Ser. No. 626,375
Int. Cl.[4] A47C *7/00*
U.S. Cl. 297—440 **1 Claim**



1. An armchair including a back having a pair of upright rear legs each being formed with a forward-facing flat mounting surface, a pair of armrests each being formed at its front and rear ends with respective forward-facing and rearward-facing flat mounting surfaces, a front leg frame having a pair of upright front legs each being formed with a rearward-facing mounting surface, fastener means for assembling said back, said pair of armrests and said front leg frame together as an armchair with the facing flat mounting surfaces of the back, armrests and front leg frame in abutting relationship to form respective joints, said fastener means further providing for disassembly of said back, said pair of armrests and said front leg frame in a knocked-down manner, said fastener means including a bolt member and a cylindrical member for each joint, each bolt member having a head at one end and a screw thread at the other end, means forming a first threaded hole in each

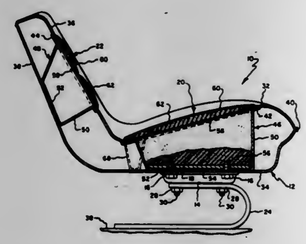
cylindrical member for receiving the screw thread of the bolt member, means forming a second hole in each cylindrical member extending perpendicular to the longitudinal axis of the first hole, means forming cavities in the flat mounting surfaces of the back, armrests and front leg frame, each cavity being sized to seat a respective cylindrical member, and locking pin means for insertion into the second holes of each cylindrical member for locking such cylindrical member in the respective cavity.

4,577,907

SEAT ASSEMBLY

Floyd H. Talmon, Fairview Park, Ohio, and David K. Talmon, Williamsville, N.Y., assignors to Air-Lock Plastics, Inc., Tonawanda, N.Y.

Filed Oct. 19, 1984, Ser. No. 662,501
Int. Cl.⁴ A47C *7/02*
U.S. Cl. 297—452 **7 Claims**



1. A seat assembly comprising:

a support;

a generally rigid integral one piece blow molded seat construction having bottom and back portions, the bottom portion having a bottom cushion receiving surface and an opposed surface, and the back portion having a back cushion receiving surface and an opposed surface, each of said cushion receiving surfaces being provided with a recessed area, the recessed area in the bottom portion being provided with a pair of spaced apart reinforcing wells, each well having spaced apart sidewalls and an interconnecting well bottom wall which is bonded to the corresponding opposed surface, said reinforcing wells maintaining the bottom cushion receiving surface at a substantially fixed distance from the corresponding opposed surface;

bottom and back cushions received within the recessed areas of said bottom and back cushion receiving surfaces, each of said cushions including a backing, a covering, and resilient foam disposed between said backing and said covering, the backing and the recessed area of the associated cushion receiving surface being in juxtaposition;

a pair of mounting plates received within the pair of reinforcing wells in the bottom portion, one surface of each of said mounting plates and a corresponding well bottom wall being in juxtaposition; and

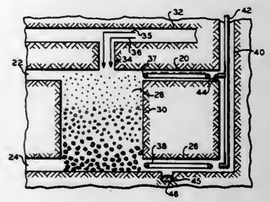
fastening means extending through said support, said opposed surface of the bottom portion, a well bottom wall and an associated mounting plate to secure said blow molded seat construction to said support.

4,577,908

METHOD FOR IN SITU SHALE OIL RECOVERY

Joseph M. McKee, Bartlesville, Okla., and Robert L. Horton, South Russell, Ohio, assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 19, 1984, Ser. No. 652,024
Int. Cl.⁴ C10B *53/06*; E21C *41/10*
U.S. Cl. 299—2 **7 Claims**



1. A method of in situ processing of oil shale in a subterranean formation comprising the steps of:

rubblizing a section of oil shale in the subterranean formation, wherein the section has boundaries which form a retort chamber having a top end and a bottom end;

removing the rubblized shale from the retort chamber;

crushing the rubblized shale so as to produce shale particles of various sizes within a certain overall size range;

separating the shale particles according to size into a plurality of shale particle groups, wherein each group includes shale particles within a predetermined group size range, and wherein each group size range makes up a portion of the overall size range;

sequentially reloading substantially all of the shale particle groups into the retort chamber so that the shale particle groups are graded according to particle size within the chamber, wherein the largest shale particles are at the bottom end of the retort chamber and the smallest shale particles are at the top end of the retort chamber, the particles being evenly distributed throughout the retort chamber during reloading;

retorting the reloaded shale particles such that liquid hydrocarbon products are produced;

removing the liquid hydrocarbon products from the retort chamber.

4,577,909

WHEEL COVER CENTER RETENTION SYSTEM

James E. Browning, Adel, Ga., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Feb. 2, 1983, Ser. No. 463,069
Int. Cl.⁴ B60B *7/00*
U.S. Cl. 301—37 TP **8 Claims**

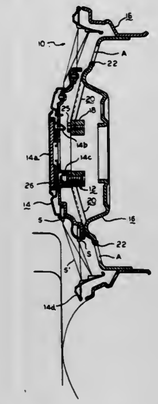
1. A center retention system for retaining a wheel cover on a vehicle wheel of the type having a plurality of slots disposed along a radially inward circle of the wheel, said system comprising:

a center piece disposed about the axis of said wheel;

a plurality of radially extending straps, each strap having an inner end fastened to said center piece and an outer end for engaging the radially inward wall of a respective one of said slots thereby to limit the radially inward movement of said strap;

means for removably fastening said wheel cover to said center piece; and,

wherein said straps are provided with a generally U-shaped cross section at least along a portion thereof which engages said center piece and wherein the engaging portions of said center piece are provided with corresponding slots



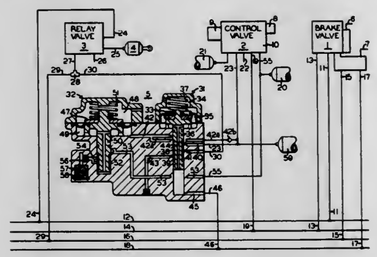
for receiving the legs of the U-shaped portions of said straps.

4,577,910

QUICK RELEASE VALVE ARRANGEMENT

Robert J. Worbois, North Huntingdon, Pa., assignor to American Standard Inc., Wilmerding, Pa.

Filed May 4, 1984, Ser. No. 607,061
Int. Cl.⁴ B60T *15/32*
U.S. Cl. 303—69 **13 Claims**



1. For use in a locomotive having an automatic and an independent brake system including a brake pipe, an auxiliary reservoir charged to the pressure carried in said brake pipe, an actuating pipe, a brake valve device having an automatic brake valve handle to vary the pressure of fluid carried in said brake pipe and an independent brake valve handle to pressurize and depressurize said actuating pipe, braking means, and a control valve device operative in response to a pressure differential between said brake pipe and said auxiliary reservoir in a first sense to connect said auxiliary reservoir pressure to a brake cylinder pipe connected to said braking means to effect operation of said braking means and operative in response to a pressure differential between said brake pipe and said auxiliary reservoir in a sense opposite said first sense to exhaust said brake cylinder pipe, there is provided quick release valve means for effecting the release of a brake pressure applied through said independent brake system application without releasing brake pressure applied through said automatic brake system comprising:

(a) first valve means for interrupting fluid pressure communication between said control valve and said braking means via said brake cylinder pipe and for concurrently exhausting fluid pressure from said braking means when said actuating pipe is pressurized; and

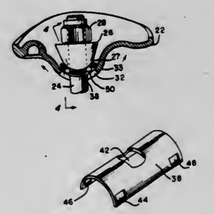
(b) second valve means for exhausting said auxiliary reservoir pressure when said actuating pipe is pressurized until the auxiliary reservoir pressure is such as to establish said pressure differential in said opposite sense.

4,577,911

OSCILLATING BEARING

Arnold E. Fredericksen, Colebrook, and Robert D. Richtmeyer, Goshen, both of Conn., assignors to The Torrington Company, Torrington, Conn.

Filed Sep. 26, 1985, Ser. No. 780,281
Int. Cl.⁴ F16C *11/00*
U.S. Cl. 308—2 R **2 Claims**



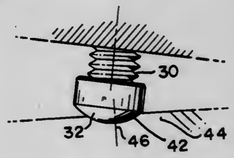
1. An oscillating bearing comprising: arcuate inner raceway means; arcuate outer raceway means; and an arcuate retainer between said inner raceway means and said outer raceway means, the inner raceway means, the outer raceway means and the retainer having aligned openings for receiving a stud, said retainer having two pairs of arcuate roller pockets, one pair of pockets being axially spaced from the retainer opening in one direction, the other pair of pockets being axially spaced from the retainer opening in the other direction, one pocket of each pair being spaced in the oscillating direction on the opposite side of the retainer opening from the other pocket; and a single roller in each pocket.

4,577,912

SELF-ALIGNING LOAD TRANSMISSION POST

Robert F. Snyder, Hamden, Conn., assignor to Raymond Engineering Inc., Middletown, Conn.

Filed Apr. 26, 1984, Ser. No. 604,171
Int. Cl.⁴ F16C *11/00*
U.S. Cl. 308—2 R **8 Claims**



1. A self-aligning post for transmitting a load to a bellows including:

a cylindrical body portion having a planar end surface substantially perpendicular to the axis of said cylindrical body portion;

a semispherical tip, said tip having a flat surface perpendicular to the central axis of said tip and in contact with said planar surface of said cylindrical body portion, said tip also having a spherical shaped surface for engagement with a concave receptacle of the bellows, the radius of curvature of said

spherical surface being less than the radius of the concave receptacle, whereby said spherical shaped surface of said tip is always in contact with the same part of the concave receptacle of the bellows when imposing a load, regardless of the alignment of said cylindrical body portion with respect to the bellows; and

means for retaining said cylindrical body portion in contact with said semispherical tip, said retaining means comprising an annular skirt disposed along the perimeter of said flat surface of said tip, and wherein said cylindrical body portion is removably disposed within said annular skirt.

4,577,913

WRAPAROUND SUPPORT FOR A LINEARLY GUIDED SLIDE

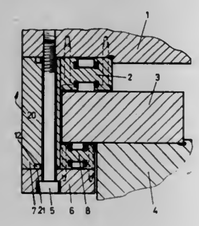
Andrezej Metelski, Romanshorn, Switzerland, assignor to Hydrel AG, Romanshorn, Switzerland

Filed Jun. 7, 1984, Ser. No. 618,172

Claims priority, application Switzerland, Jun. 10, 1983, 3212/83

Int. Cl.⁴ F16C *29/04*

U.S. Cl. 308—6 R **10 Claims**



1. A wraparound support for guiding an elongated slide along a stationary guide bar having a top face, a bottom face and a side face joining the top and bottom faces, comprising:

an upper guide member mounted to the bottom of the slide and having bearing means on the bottom side thereof for sliding along the top face of the guide bar;

an intermediate support member mounted to the bottom of the slide and adjacent to the upper guide member and positioned adjacent to the side face of the guide bar;

a lower guide member including bearing means on the upper surface thereof for sliding along the bottom face of the guide bar secured to the intermediate support member; and

at least two tension screws mounted through the intermediate support member for applying tensional force between the upper and lower guide members;

the intermediate support member including a support portion and a spacer portion, the support portion being spaced apart from the side face for firmly coupling the lower guide member and the slide, the spacer portion being adjacent to side face and having openings therethrough adapted to receive the tension screws, the spacer portion defining an adjustable distance between the lower guide member and the slide where the tension screws pass from the lower guide member through the respective openings in the spacer portion of the intermediate support member, the adjustable distance being less than the distance between the lower guide member and the slide at the support portion of the intermediate member.

4,577,914

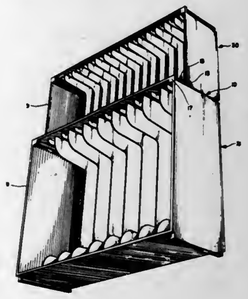
ASSEMBLY OF SLIDABLY INTERFITTING STORAGE UNITS

David M. Stravitz, 16 Park Ave., Suite 14 A, New York, N.Y. 10016

Filed May 16, 1984, Ser. No. 610,699

Int. Cl.⁴ A47B *87/02*

U.S. Cl. 312—10 **6 Claims**



1. A storage unit for interfitting with at least one like storage unit to form an assembly of said storage units, each of said storage units comprising:

a top section (2), a rear section (7), a pair of side sections (6) and a bottom section (5), said sections being integrally connected to form a box-shape storage unit having a front edge defining an open front end for receiving items to be stored, opposed ends of said side sections being integrally connected to opposed ends of said top and bottom sections, respectively to define four corners of the box shaped unit;

a pair of generally L-shaped projections (10) located at opposed ends of said top section (2) at upper corners defined by said side sections (6) and said top section (2), said L-shaped projections (10) being integrally connected to said side sections (6) and having first arms (11) extending upward therefrom above said top section (2) and extending over substantially the complete length of said opposed ends of said top section (2), each of said L-shaped projections (10) having a second arm (12) extending inwardly of said storage unit and connected substantially perpendicularly to said first arm (11) at an end of said first arm (11) remote from said top section and defining a space (41) between said top section (2) and said second arms (12); and

a pair of projection receiving channels (15) located at opposed ends of said bottom section (5) at lower corners defined by said side sections (6) and said bottom section (5), said projection receiving channels (15) being integrally formed at said lower corners and recessed within the confines of said lower corners, said projection receiving channels (15) each having an L-shaped recess (19) opening from the side of the storage unit and extending in a direction toward the interior of the storage unit, for receiving therein an L-shaped projection (10) of another like storage unit, each of said projection receiving channels comprising first and second walls (21, 20; FIG. 8) defining said L-shaped recess (19), said first wall (21) being coextensive with said bottom section (5) and terminating short of said side section (6) so as to be recessed inwardly of said side sections, and said second wall (20) being substantially parallel to said bottom section (5) and extending inwardly from said side section (6) above said first wall to define a space with said first wall to receive a second arm (12) of an L-shaped projection, the thickness of said first wall (21) corresponding to the height of said space (41), said projection receiving channels (15) each having an open end (16) at the rear of said storage unit for slideably receiving said L-shaped projection (10), and a closed end (17) at the front of said storage unit for preventing further movement of said L-shaped projection (10) in said projection receiving channels (15), said closed end defining a plate-like member flush with the front of said storage unit for covering said L-shaped recess, said projection (10) having at least one end (13) which terminates a given distance from a front edge of said top section to accommodate said closed end (17), whereby a projection (10) of said another storage unit is removably slideable into said projection receiving channels in interfitting engagement to connect two like storage units together to form an assembly, said assembly having substantially flat sides even at the connection area therebetween and said top section of a storage unit is in substantial contact with a bottom section of said another storage unit.

4,577,915

REFRIGERATOR CABINET

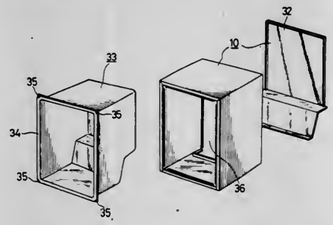
Susumu Nishida, Katano; Seiji Kimura, Yao; Akio Kobayashi, and Tadashi Fuchigami, both of Hirakata, all of Japan, assignors to Sanyo Electric Co., Ltd., Japan

Filed Jun. 13, 1983, Ser. No. 503,848

Claims priority, application Japan, Jun. 15, 1982, 57-103159; Apr. 20, 1983, 58-70297

Int. Cl.⁴ E65D *25/14*

U.S. Cl. 312—214 **10 Claims**



1. An improved refrigerator cabinet of the type wherein an inner enclosure is mounted inside an outer housing, said outer housing comprising:

a top wall and side walls integrally formed from a single bent metal sheet;

a top front flange connected to said top wall along a front edge of said top wall, said flange being bent inwardly and substantially perpendicularly to said top wall; and

side front flanges connected to said side walls along front edges of said side walls, respectively, said flanges being bent inwardly and substantially perpendicularly to said side walls, said top front flange being substantially adjacent to said side front flanges at upper corners of said outer housing;

turnover flange portions, each connected to a respective front flange, each said turnover flange portion being bent substantially behind said respective front flange;

rear-bent flange portions, each connected to a respective turnover flange portion, bent rearwardly so as to extend rearwardly from said turnover flange portions and substantially parallel to said respective top and side walls;

each rear-bent flange portion having a free edge portion, said free edge portions being bent inwardly so as to be substantially parallel and in spaced relationship to said turnover flange portion so as to define therebetween a space for receiving an outer front fringe extending around the front periphery of said inner enclosure when said inner enclosure is mounted in said outer housing;

one of said front flanges at an upper corner partially overlapping its adjacent front flange, said overlapping flange further comprising:

a corner rear-bent portion bent substantially behind said overlapping front flange along a reference line inclined at a predetermined angle with respect to horizontal, said line extending from said corner inwardly in substantially the plane of said front flange, said corner rear-bent portion leaving a predetermined space between said corner rear-bent portion and said front flange;

said overlapped front flange adjacent to said overlapping front flange further comprising:

a stepped portion connected to said overlapped front flange substantially along said reference line, said stepped portion extending from said overlapped front flange substantially parallel to and behind said overlapping front flange, said stepped portion extending across and substantially obstructing a gap between said overlapping and overlapped front flanges at said upper corner, said gap extending between said flanges along said inclined reference line, and further so as to maintain said front flanges substantially flush with one another.

4,577,916

FURNITURE FASTENER ASSEMBLY

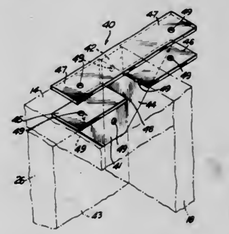
Emile Seigneur, 72 Avenue Herbillon, 94160 Saint Maude, and Philippe Paillart, 13, Rue Mercerie, 05100 Briancon, both of France

Filed Jan. 18, 1984, Ser. No. 571,844

Claims priority, application France, Jan. 25, 1983, 83 01055

Int. Cl.⁴ F16B *12/00*

U.S. Cl. 312—257 R **8 Claims**



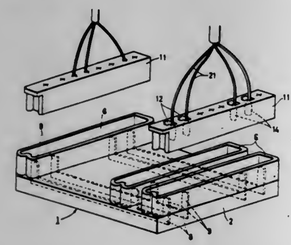
1. A fastener assembly for fastening together parts of furniture, comprising in combination:

A. a front corner fastener means comprising a rectangular web, a first rectangular means flange integrally attached at a right angle along one entire side of the web; a second rectangular flange integrally attached at a right angle along only a part of the other side of the web; a first end of the second flange beginning at one end of the web and the other end of the second flange terminating before the other end of the web; the web and flanges having a U-shaped cross-section, the distance between the other end of the second flange and the other end of the web defining a cut-out portion and having a size sufficient to cover the thickness of a board abutting the web at that other end; an aperture in that other end of the web to receive a screw to fasten the web to a first board at one corner thereof; an aperture in the first flange to receive a screw to fasten a second board to it; the end of the second board abutting the side of the first board; and

B. a rear corner fastener means comprising a rectangular web, triangular portion integrally attached to the web in the same plane as the web beginning at one end of the web and terminating before the other end of the web; the triangular portion having a leg extending at a right angle away from the web; a first rectangular flange integrally attached to the leg at a right angle to it; a second rectangular flange integrally attached to the other end of the web at a right angle to it and extending in the same direction as the first rectangular flange; the web having an aperture at

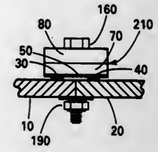
each end to receive screws to fasten it to the first board along its inner face and abutting the second rectangular flange; and an aperture in each of the first and second rectangular flanges to receive screws to fasten them to the second board passing between them and abutting the side of the first board.

4,577,917
COUPLER CONNECTING DEVICE
Ryo Nashimoto, Tokyo, and Shoji Motodate, Saitama, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 452,007, Dec. 21, 1982, abandoned.
This application Mar. 6, 1985, Ser. No. 709,350
Claims priority, application Japan, Dec. 25, 1981, 56-209030
Int. Cl.[4] H01R *9/28, 13/50, 13/64*
U.S. Cl. 339—150 T **4 Claims**



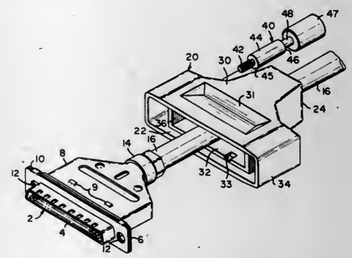
1. In a two wheeled vehicle, a device for selectively connecting electrical elements of said two wheeled vehicle to a power source of said two wheeled vehicle, said device comprising power source wires, one end of said power source wires being connected to said power source, electrical element wires, one end of said electrical element wires being selectively connected to said electrical elements, and a terminal holder (1) interposed between said power source wires and said electrical element wires for connecting the other ends of said power source wires to the other ends of said electrical element wires, said terminal holder (1) comprising:
- a substrate (2) having at least a length and a width;
- a plurality of linear metal terminal plates (8), each of said plates having a length, width and depth, said length and width of each terminal plate defining a rectangular shape, said plurality of terminal plates being arranged in said substrate at predetermined intervals across substantially the entire widthwise direction of said substrate and in parallel with one another, the lengths of all of said plates parallel to the length of said substrate extending across the entire length of said substrate;
- a plurality of terminals (9) attached to the depth portion of each of said terminal plates; and
- a plurality of coupler fitting parts (6) for receiving couplers (11), said coupler fitting parts (6) being arranged perpendicular to the longitudinal direction of said terminal plates (8) and parallel to one another, each of said terminal plates (8) extending, without interruption, across all of said plurality of coupler fitting parts;
- said coupler fitting parts (6) having a commonly shaped inner surface and one key grooved side in the widthwise direction for preventing incorrect mating of a coupler fitting part with a coupler, there being contained within each of said coupler fitting parts a predetermined number of said terminals (9);
- whereby a coupler can be mated with any of the coupler fitting parts and the same electrical interconnection will result.

4,577,918
COPPER AND DUAL DUROMETER RUBBER MULTIPLE CONNECTOR
Dino G. Kasdagly, Rome, Pa., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed May 1, 1984, Ser. No. 606,086
Int. Cl.[4] H01R *9/09*
U.S. Cl. 339—17 M **7 Claims**



1. A device for electrically connecting two spaced apart lands comprising:
- (a) a relatively rigid member;
- (b) a compressible member operatively connected to said relatively rigid member along a bond line therebetween, said compressible member having a cavity for receiving a wire;
- (c) an electrically conductive wire having an irregularly shaped cross-section having an acute protuberance shaped thereon, said protuberance being operatively connected to at least a portion of said bond line and said wire being seated in a first portion in said cavity and extending therefrom; and
- (d) two lands adjacent one another and adapted to move relative to said wire so that when said relatively rigid member is forced generally towards said lands, said wire is pivoted into contact with both of said lands in a wiping action to form an electrically conductive connection therebetween.

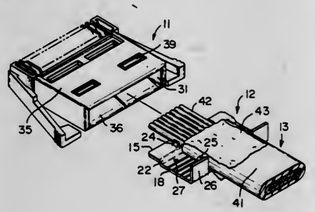
4,577,919
BOOT AND SHIELDED CABLE CONNECTOR
Mark H. Waters, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Filed Feb. 19, 1985, Ser. No. 703,020
Int. Cl.[4] H01R *13/621*
U.S. Cl. 339—59 M **3 Claims**



1. An elastomeric boot assembly combination with a cable and a cable connector of the type having a mating face and an opposed cable receiving face, the boot assembly comprising a boot having an open connector receiving end and an opposed cable receiving end, said boot being received on said connector by sliding over a cable terminated thereto, said cable being received through a cable receiving aperture in said cable receiving end, said mating face remaining exposed through said connector receiving end of said boot, characterized in that:
- said boot assembly is adapted for use with a shielded cable connector of the type having a flange about the periphery of said mating face, said assembly further comprising screw means passing through said cable receiving end of said boot and said flange to retain said connector against a complementary connector, said screw means comprising at least one screw having a threaded end, an opposed head, and an enlarged shank therebetween, said shank having a first shoulder facing said threaded end and a second shoulder facing said head, said second shoulder and said head defining a constricted neck therebetween, said boot having a screw receiving aperture therein which receives said screw therethrough for alignment with a hole in said flange, said screw receiving aperture being sized to closely receive said constricted neck, said aperture being expansible to receive said enlarged shank portion therethrough, whereby

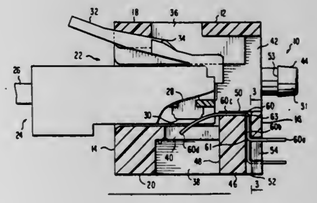
upon assembling said boot to said connector and inserting said screw into said screw receiving aperture so that said threaded end extends through the hole in the flange, the constricted neck will be captured in said screw receiving aperture in said boot, the first shoulder bearing against said flange to draw the connector to a complementary connector as the head is rotated.

4,577,920
ELECTRICAL ASSEMBLY WITH CABLE GUIDING MEMBER
Daniel R. Coldren, Enola, and James Pritulsky, Harrisburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.
Filed Oct. 15, 1984, Ser. No. 660,626
Int. Cl.[4] H01R *13/46*
U.S. Cl. 339—143 R **13 Claims**



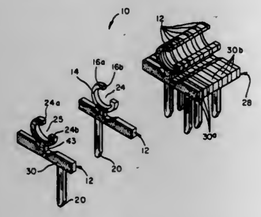
1. An electrical plug assembly comprising an insulated housing having a cable-receiving mouth opening to a rear end of the housing and communicating internally of the housing with a row of conductor-receiving pathways extending to a front end of the housing in alignment with respective terminals, a shield member of conductive material extending around the housing forwardly from the rear end to provide a substantially continuous shield around the mouth;
- a one-piece cable guide member of conductive material having front and rear ends between which extends a cable supporting base, cable locators upstanding from the base in spaced apart relation to locate between them an insulated conductor row and cable sheath extending between front and rear ends of the cable guide member and, shielding flanges upstanding from the base to extend along the rear end between opposite side edges of the base and the cable locators;
- whereby on loading a shielded cable into the guide member with an outer insulation sheath stripped cut back from a front end to expose the row of insulated conductors free of the shield with the cable located between the cable locators, the cable guide member can be inserted, front end leading, into the mouth, drawer fashion, as a sliding fit, guiding the conductors into respective ones of said pathways with the shield flanges completely closing the mouth on each side of the cable and electrically connected to the shield.

4,577,921
MODULAR CONNECTOR WITH IMPROVED HOUSING AND CONTACT STRUCTURE
Stephen B. Bogese, II, Roanoke, Va., assignor to Virginia Patent Development Corp., Roanoke, Va.
Continuation of Ser. No. 326,133, Nov. 30, 1981, Pat. No. 4,501,464, which is a continuation-in-part of Ser. No. 215,054, Dec. 10, 1980, Pat. No. 4,457,570, which is a continuation-in-part of Ser. No. 120,846, Feb. 12, 1980, which is a continuation of Ser. No. 915,457, Jun. 14, 1978, abandoned.
This application Aug. 17, 1984, Ser. No. 641,678
Int. Cl.[4] H01R *13/50*
U.S. Cl. 339—176 M **13 Claims**



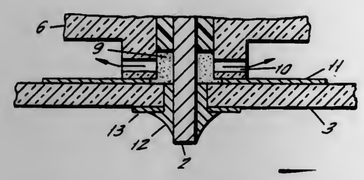
1. A telephone-type modular jack for interfacing a telephone-type modular plug with a printed circuit board, which comprises:
- a housing having a front portion, a front wall, a rear portion and an outer wall, said outer wall including means extending integrally therefrom for mounting said housing to the printed circuit board;
- an opening formed through said front wall in said front portion of said housing for receiving the telephone-type modular plug having a multi-conductor cord terminated by a plurality of side-by-side, substantially planar, insulation-piercing, contact terminals positioned in the forward portion of the plug, said opening defined by an inner end wall and inner side walls, a rear partition extending transversely across said rear portion of said housing and including a plurality of side-by-side conductor-receiving means formed therein; and
- a plurality of electrical conductors arranged in a side-by-side, spaced-apart fashion in said housing, each of said conductors including an end portion extending normally from said outer wall for insertion through a corresponding hole formed in the printed circuit board, a second intermediate portion positioned in said conductor-receiving means in said rear partition, a first intermediate portion formed between said end portion and said second intermediate portion and extending across said rear portion of said housing, and a spring contact portion extending from said second intermediate portion into said opening from said rear portion of said housing towards said front portion of said housing, said spring contact portion terminating in a free end portion that is closer to said front wall than the rest of said spring contact portion;
- said contact terminals of said telephone-type modular plug engaging said spring contact portions of said conductors upon insertion of said telephone-type modular plug into said opening of said telephone-type modular jack.

4,577,922
LAMINATED ELECTRICAL CONNECTOR ARRANGEMENT
John M. Stipanuk, Glen Ellyn; Alan S. Walse, LaGrange, and Kent E. Regnier, Lombard, all of Ill., assignors to Molex Incorporated, Lisle, Ill.
Filed Apr. 4, 1985, Ser. No. 719,944
Int. Cl.[4] H01R *13/50, 3/00*
U.S. Cl. 339—176 MP **8 Claims**



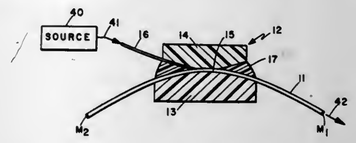
1. An electrical connector arrangement for mounting to a printed circuit board comprising:
a plurality of generally side-by-side free standing metal terminals adapted to be mounted to said board, each terminal having a body with oppositely facing nesting surfaces, a depending circuit board tail for electrical engagement with said board and means to mate with another electrical member; and
dielectric means being disposed between said terminal bodies in such a manner to insulate the nesting surfaces of adjacent terminals and to form a continuous mutually supported stacked array of terminals when mounted to a printed circuit board.

4,577,923
MICROWAVE INTEGRATED CIRCUIT AND MOUNTING DEVICE THEREFOR
Hiroshi Ikemizu, Tokyo, Japan, assignor to NEC Corporation, Japan
Filed Mar. 26, 1984, Ser. No. 593,614
Claims priority, application Japan, Mar. 24, 1983, 58-42241[U]; Mar. 24, 1983, 58-42242[U]
Int. Cl.[4] H01R *4/02*
U.S. Cl. 339—275 B **7 Claims**



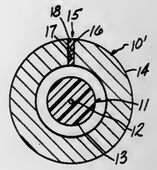
1. A microwave integrated circuit having at least one lead extending therefrom, said microwave integrated circuit comprising:
a protrusive portion being coaxial with and arranged around said lead that an axially extending space is defined between said lead and an inside surface of said protrusive portion, said protrusive portion being formed of an electrically conductive material; and
degasifying means extending from said space to an area external of said protrusive portion.

4,577,924
OPTICAL RECURSIVE FILTER
Ronald F. Mathis, San Diego, Calif., assignor to General Dynamics Electronics Division, San Diego, Calif.
Continuation of Ser. No. 384,186, Jun. 3, 1982, abandoned. This application Jan. 2, 1985, Ser. No. 688,271
Int. Cl.[4] G02B *6/26, 6/42*
U.S. Cl. 350—96.15 **21 Claims**



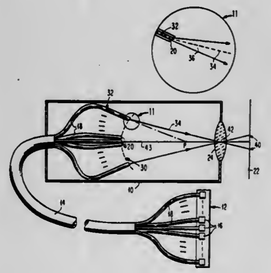
1. An optical recursive RF bandpass filter for extracting light varying in intensity at a predetermined intensity modulation frequency from light varying in intensity over a band of intensity modulation frequencies, comprising:
a segment of multimode optical fiber;
a first mirror on one end of said fiber;
a second mirror on the other end of said fiber; and
means for directing light varying in intensity over a band of intensity modulation frequencies at a substantially constant optical wavelength into said fiber;
wherein said fiber has a length equal to half the wavelength of a predetermined intensity modulation frequency in said band of intensity modulation frequencies in said fiber, said fiber with said first and second mirrors on opposite ends thereof defining a resonant cavity which permits resonance of light at said predetermined intensity modulation frequency, a portion of the resonating light within said resonant cavity exiting through one of said first and second mirrors as filtered output light varying in intensity at said predetermined intensity modulation frequency with said filtered output light being at said optical wavelength.

4,577,925
OPTICAL FIBER COMMUNICATION CABLES AND METHOD AND APPARATUS FOR ASSEMBLING SAME
Joseph Winter, New Haven, and Michael J. Pryor, Woodbridge, both of Conn., assignors to Olin Corporation, New Haven, Conn.
Continuation-in-part of Ser. No. 408,087, Aug. 13, 1982, abandoned. This application May 24, 1983, Ser. No. 497,533
Int. Cl.[4] G02B *6/44*
U.S. Cl. 350—96.23 **34 Claims**



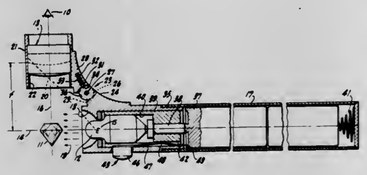
1. An improved individually armored fiber optic core assembly having a diameter less than about 0.050" comprising:
a fiber optic element;
a protective layer surrounding said fiber optic element and forming in combination with said fiber optic element a fiber optic core; and
a high strength drawn metal sheath surrounding said fiber optic core, said sheath including a generally longitudinally extending seam, with the ratio of the outside diameter of said fiber optic core to the inside diameter of said sheath comprising at least about 0.6:1, said seam being defined by opposing nonlinear deformed sheath edges each of whose length from the outside of said sheath to the inside of said sheath exceeds the thickness of said sheath.

4,577,926
FIBER OPTIC WRITING HEAD
Anthony G. Dewey, and Charles P. Marinelli, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Sep. 30, 1983, Ser. No. 537,478
Int. Cl.[4] G02B *6/04*
U.S. Cl. 350—96.25 **9 Claims**



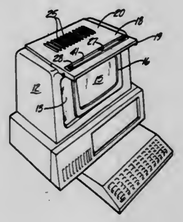
8. An optical system for imaging an array of beams onto a writing surface comprising
a plurality of lasers,
a lens having an entrance pupil with a center,
an array of optical fibers into which the light from said lasers is coupled, said fibers having ends which are imaged by said lens onto the writing surface, said ends are positioned along a curved first surface which is the image of the writing surface as produced by said lens, said fibers being positioned at predetermined angles so that the axis of the refracted beam being emitted at each of said ends is directed at the center of said entrance pupil of said lens wherein the image on said writing surface has a constant focus and intensity.

4,577,927
PORTABLE UNITARY BATTERY POWERED HAND-HELD MAGNIFYING APPARATUS
Gerard E. Raney, 1278 Edgewood Rd., Redwood City, Calif. 94062
Filed Mar. 7, 1983, Ser. No. 472,731
Int. Cl.[4] G02B *25/02, 27/04*
U.S. Cl. 350—235 **9 Claims**



1. A portable unitary battery powered hand-held magnifying apparatus where the eye of a viewer may observe a specimen comprising:
a light source having substantially parallel rays centered around a light axis;
a viewing lens having an optical axis perpendicular to said light axis and a focal point substantially at said light axis when in an operating position;
means for holding and retaining said lens;
a tubular battery case for holding battery means to power said light source and also for retaining said light source and including actuating means for energizing said light source;
hinge means for connecting said lens holding means to said battery case in a stowed position to form an essentially continuous tubular like structure;
said hinge means, when opened in said operating position, placing said optical axis perpendicular to said light axis, and offsetting said lens from said light source to prevent substantially all direct rays from the light source from entering said lens and the eye of said viewer whereby dark field illumination of said specimen which is placed at the intersection of the focal point of said lens and said light axis is accomplished to illuminate inclusions in said specimen.

4,577,928
CRT MAGNIFYING LENS ATTACHMENT AND GLARE REDUCTION SYSTEM
Eugene C. Brown, Birmingham, Mich., assignor to Data Vu Company, Birmingham, Mich.
Continuation-in-part of Ser. No. 487,309, Apr. 21, 1983, Pat. No. 4,529,268. This application Jul. 2, 1985, Ser. No. 751,180
Int. Cl.[4] G07B *3/08;* H04N *5/72*
U.S. Cl. 350—276 R **5 Claims**



1. An optical element for magnifying and enhancing the image projected from a screen and for reducing glare produced by light generated externally of said screen and reflected from said screen, comprising:
at least one fresnel lens supported adjacent said screen for magnifying the image generated by said screen;
a laminated light filter supported adjacent and parallel to said fresnel lens for reducing said glare and for enhancing said image;
said laminated light filter having a first element to retard said light generated externally and passing therethrough;
a second element positioned parallel to and adjacent said first element to vary the color of the image projected from said screen; and
a third element positioned parallel to and adjacent said first and second element to capture said retarded light preventing said light from exiting said filter;
whereby said glare is reduced and said images magnified and enhanced.

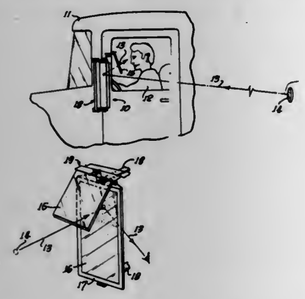
4,577,929
ANTI-GLARE DEVICE FOR SIDE MOUNTED REAR VISION MIRRORS
Richard H. Guillen, 9027 Rendalia, Bellflower, Calif. 90706
Filed Feb. 21, 1984, Ser. No. 581,962
Int. Cl.[4] G02B *5/08, 7/24*
U.S. Cl. 350—283 **8 Claims**

1. A rear vision mirror anti-glare and rain deflecting device

combination affixable to the exterior of a motor vehicle, said device comprising:

a mirror mounting bracket affixed to the exterior of a motor vehicle;

mirror means affixed to said mirror mounting bracket by an upper arm affixed to the bracket and to the top of the mirror means and a lower arm affixed to the bracket and to the bottom of the mirror means, said mirror means



being mounted about vertically on said mounting bracket between said upper arm and said lower arm; and

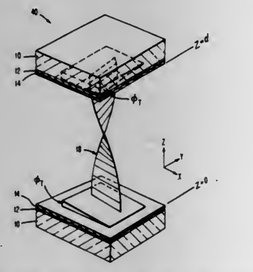
transparent shield means affixed to said upper arm at a small distance above the top edge of the mirror means and affixed at an angle of between 10 and 80 degrees with respect to said mirror means, said transparent shield means having a length which is less than the length of said mirror means.

4,577,930

WEAK BOUNDARY STORAGE LIQUID CRYSTAL DISPLAY DEVICES WITH BIAS VOLTAGE

Kei-Hsiung Yang, Somers, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 24, 1982, Ser. No. 381,281
Int. Cl.⁴ G02F *1/133*
U.S. Cl. 350—332 **19 Claims**



1. In a liquid crystal display cell of the type comprising:

upper and lower spaced substrates;

upper and lower electrodes respectively formed on the inner surfaces of said upper and lower substrates;

liquid crystal material interposed between said upper and lower electrodes;

means for imposing an electric field between said upper and lower electrodes having an adjustable range from a *bias voltage with a* magnitude below a threshold level for said liquid crystal material to [one] *a voltage* exceeding said threshold level and sufficient for causing the molecules of said liquid crystal material to orient from a first orientation arrangement to a second orientation arrangement; and

means on said upper and lower electrodes providing a surface treatment of said upper and lower electrodes adjacent said liquid crystal material;

the improvement wherein said liquid crystal material is a nematic liquid crystal material, having both its boundary layer and bulk molecules aligned in said first orientation in the field free state, and a storage effect is achieved by:

said surface treatment means [comprising means for] rendering the liquid crystal material-to-substrate anisotropic surface anchoring force sufficiently weak so as to prevent the restoration of said molecules from said second orientation to said first orientation arrangement, when said electric field is lowered from above said threshold level to [a level below] said *bias voltage* [threshold level].

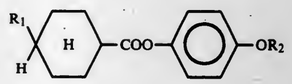
4,577,931

LIQUID CRYSTAL COMPOSITION

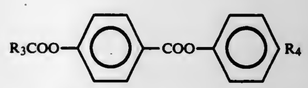
Bunzo Kiyonaga, Shiojiri, Japan, assignor to Epson Corporation, Nagano, Japan

Filed May 24, 1983, Ser. No. 497,532
Claims priority, application Japan, May 26, 1982, 57-89296
Int. Cl.⁴ C09K *3/34*; G02F *1/13*
U.S. Cl. 350—350 R **25 Claims**

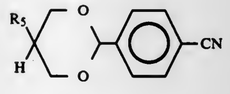
1. A liquid crystal composition comprising at least one compound of each of formulas (1) and (2), and at least one of the compounds of formulas (3) and (6):



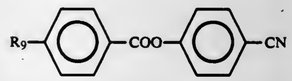
(1)



(2)



(3)



(6)

where R_1 is a straight-chain alkyl group having 2 to 6 atoms; R_2 is a straight-chain alkyl group having 1 to 6 carbon atoms; R_3 is a straight-chain alkyl group having 3 to 6 carbon atoms; R_4 is a straight-chain alkyl group having 1 to 5 carbon atoms; R_5 is a straight-chain alkyl group having 2 to 8 carbon atoms, and R_9 is a straight-chain alkyl group having 2 to 8 carbon atoms, and including about 40 to 65 weight percent of compounds of formula (1), about 20 to 30 weight percent of compounds of formula (2), and when present about 7 to 20 weight percent of compounds of formula (3) and when present about 7 to 20 weight percent of compounds of formula (6).

4,577,932

MULTI-SPOT MODULATOR USING A LASER DIODE

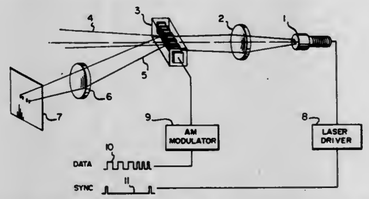
Daniel Gelbart, Burnaby, Canada, assignor to Creo Electronics Corporation, Burnaby, Canada

Filed May 8, 1984, Ser. No. 608,222
Int. Cl.⁴ G02F *1/11*; H04N *5/74*
U.S. Cl. 350—358 **3 Claims**

1. A multi-spot light modulator comprising:

a laser operating in the pulsed mode; an acousto-optic modulator and means for converting a data pattern into a corresponding acoustic wave inside said modulator, said modulator for diffracting a beam from said laser; a lens for focussing a light pulse from said laser onto said acoustic wave;

a light sensitive material for generating a permanent record;



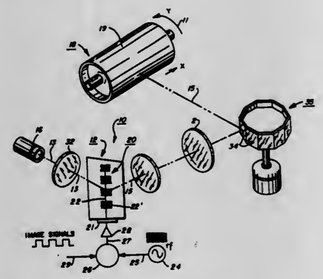
a second lens located in said diffracted output beam of said modulator for forming an image of said acoustic wave onto said light sensitive material; and means for synchronizing said light pulse with said data pattern in order to generate a permanent record of said data pattern on said light sensitive material.

4,577,933

GAP MODULATOR FOR HIGH SPEED SCANNERS

Kwok-leung Yip, Webster, and Joseph J. Daniele, Pittsford, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 15, 1983, Ser. No. 561,860
Int. Cl.⁴ G02F *1/33*; H04N *3/08*
U.S. Cl. 350—358 **3 Claims**



1. A pulse imaging scanner comprising:

a recording member, the scanner being operable in a resolution mode to scan said recording member and create images thereon;

a high intensity beam of electromagnetic radiation;

a rotatable scanning element interposed between said recording member and said beam, said scanning element having a plurality of facets for intercepting said beam to repeatedly scan said beam across said recording member;

an acousto optic type modulator for modulating said beam in response to image signals to create images on said member in response to the signal content of said image signals, said modulator comprising a substantially pure, undoped gallium phosphide crystal, said modulator having a center operating frequency of at least 500 MHz to permit high frequency modulation of said beam in response to said image signals for high speed, high resolution scanning, said modulator having an operating bandwidth of approximately 175 MHz at a relative operating intensity of 0.9 for capturing said beam center band and at least said beam upper and lower side bands to provide sufficient intensity to expose said recording member at said high frequency while enabling facet tracking of said beam on said scanning element facets;

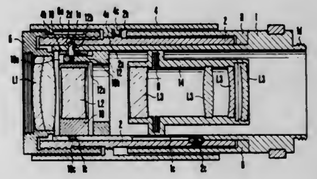
said scanning element facets having a facet width sufficient to capture said beam center and first upper and lower side bands whereby to scan said beam across said recording member without intensity loss.

4,577,934

MECHANICAL MOUNTING FOR A ZOOM LENS

Masao Aoyagi, Kanagawa; Kazufumi Kobayashi, and Keiichi Yasuda, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 21, 1985, Ser. No. 703,737
Claims priority, application Japan, Feb. 21, 1984, 59-24078[U]
Int. Cl.⁴ G02B *7/10*
U.S. Cl. 350—430 **1 Claim**



1. A mechanical mounting for a zoom lens comprising:

(a) a body tube;

(b) a single actuator member;

(c) an intermediate sleeve arranged between said body tube and said single actuator member, said intermediate sleeve moving axially as a unit with said actuator member and rotating relative to said actuator member;

(d) a variator lens cell arranged inside said body tube, said lens cell having a groove and a penetration hole;

(e) a rotary ring arranged inside said body tube, said rotary ring having an armed portion in engagement with said groove of said lens cell;

(f) a connection pin engaging with said armed portion, said connection pin passing through said penetration hole of said lens cell to engage with said body tube and said intermediate sleeve, whereby axial movement of said single actuator member gives rotative movement to said lens cell through said connection pin and said rotary ring; and

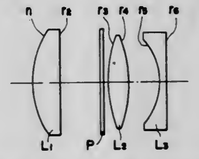
(g) an engaging member and a camming groove arranged between said lens cell and said body tube, whereby the rotative movement of said lens cell is converted to an axial movement.

4,577,935

VIDEO PROJECTOR LENS SYSTEM

Kazuo Yamakawa, Sakai, and Toshihide Dohi, Minamikawachi, both of Japan, assignors to Minolta Camera Kabushika Kaisha, Osaka, Japan

Continuation-in-part of Ser. No. 234,990, Feb. 17, 1981, abandoned. This application Feb. 8, 1982, Ser. No. 347,032
Claims priority, application Japan, Mar. 3, 1980, 55-28859; Sep. 8, 1980, 55-109604; Jan. 8, 1982, 57-1947
Int. Cl.⁴ G02B *3/02, 9/12*
U.S. Cl. 350—432 **11 Claims**



1. A lens system for projecting onto a screen a video image formed on a face plate of a cathode ray tube comprising, from the screen to the tube side:

a first positive lens unit;

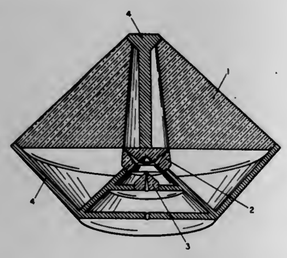
a second positive lens unit defined between a pair of convex surfaces, and

a third negative lens unit having a screen side concave surface, wherein the lens system includes at least one aspheric surface and fulfills the following condition:

$1.5f<f_1<2.0f,$

wherein f represents the focal length of the whole lens system; and f_1 represents the focal length of the first positive lens unit.

4,577,936
CONICAL BEAM CONCENTRATOR
John E. Clegg, 2320 Keystone Dr., Orlando, Fla. 32806
Filed Oct. 1, 1984, Ser. No. 656,807
Int. Cl.⁴ G02B *13/18*
U.S. Cl. 350—432 **1 Claim**



1. A conical beam concentrator comprising in general three component lenses which receive a convergent conical incipient beam of diffused sunlight and emit a concentrated circular whole beam parallel to the optic axis of the lenses, and comprising in particular;

an upper component lens RT (1) having a convex conical section (6) which receives and transmits a convergent conical incipient beam (5) of diffused sunlight, and having a concave conical section (7) which refracts incipient beam (5), forming annular beam (9), and having a planar section (8) which refracts incipient beam (5), forming convergent conical beam (10),

a middle component lens RT (2) mounted below upper component lens RT (1) and having a planar section (11) which transmits annular beam (9), having a convex conical section (12) which transmits convergent conical beam (10), having a convex conical section (14) which refracts annular beam (9) and a concave conical section (13) which refracts convergent conical beam (10), forming convergent conical beam (15), and

a lower component lens RT (3) mounted below middle component lens RT (2) and having a convex conical section (16) which transmits convergent conical beam (15), and having a concave conical section (17) which refracts convergent conical beam (15), forming concentrated whole beam (18) which is emitted parallel to the optic axis of the concentrator.

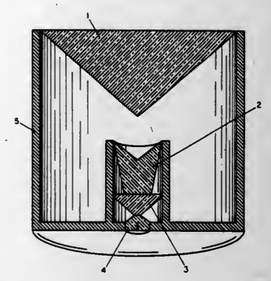
4,577,937
CONICAL BEAM CONCENTRATOR
John E. Clegg, 2320 Keystone Dr., Orlando, Fla. 32806
Filed Oct. 1, 1984, Ser. No. 656,569
Int. Cl.⁴ G02B *13/18*
U.S. Cl. 350—432 **1 Claim**

1. A conical beam concentrator 4RT:C comprising in general four conical component lenses which receive a circular whole incipient beam of direct sunlight and emit a circular whole concentrated beam, and comprising in particular;

an upper component lens RT (1) having a planar section (7) which receives and transmits a circular whole incipient beam (6) of direct sunlight and having a convex conical section (8) which refracts incipient beam (6), forming a convergent conical beam (9),

a first middle component lens RT (2) having a concave conical switch (10) which transmits convergent conical beam (9) and having a convex conical section (11) which refracts convergent conical beam (9), forming annular beam (12),

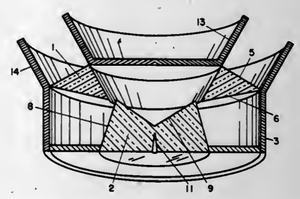
a second middle component lens RT (3) having a planar



section (13) which transmits annular beam (12) and having a convex conical section (14) which refracts annular beam (12), forming a convergent conical beam (15), and

a lower component lens RT (4) having a convex conical section (16) which transmits convergent conical beam (15) and having a concave conical section (17) which refracts convergent conical beam (15), forming a concentrated circular whole beam (18) which is emitted parallel to the vertical optic axis of the lenses.

4,577,938
CONICAL BEAM CONCENTRATOR
John E. Clegg, 2320 Keystone Dr., Orlando, Fla. 32806
Filed Sep. 17, 1984, Ser. No. 651,015
Int. Cl.⁴ G02B *13/18*
U.S. Cl. 350—432 **1 Claim**

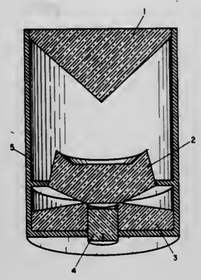


1. A conical beam concentrator comprising in general two component lenses which receive a convergent conical incipient beam of diffused sunlight and emit a concentrated whole beam parallel to the optic axis of the lenses, and comprising in particular;

an upper component lens RT (1) having a convex conical section (5) which receives and transmits a convergent conical incipient beam (4) of diffused sunlight, and having a convex conical section (6) which refracts and emits incipient beam (4), forming convergent conical concentrated beam (7), and

a lower component lens RLT (2) having a convex conical section (8) which transmits concentrated beam (7), having a convex conical reflective section (9) which reflects concentrated beam (7), forming convergent conical beam (10), and having a concave conical section (11) which refracts and emits convergent conical beam (10), forming concentrated whole beam (12) which is emitted parallel to the vertical optic axis of the lenses.

4,577,939
MONOCHROMATIC BEAM CONCENTRATOR
John E. Clegg, 2320 Keystone Dr., Orlando, Fla. 32806
Filed Oct. 11, 1984, Ser. No. 659,813
Int. Cl.⁴ G02B *13/18, 17/08*
U.S. Cl. 350—443 **1 Claim**



1. A monochromatic beam concentrator 2RR-RLT-RT:CM comprising in general four component lenses which receive a circular whole incipient beam of direct sunlight and emit a concentrated circular whole beam of monochromatic light, and comprising in particular;

An upper component lens RD (1) having a planar section (7) which receives and transmits a circular whole incipient beam (6) of direct sunlight and having a convex conical section (8) which refracts said incipient beam (6), forming a convergent conical beam (9),

A first middle component lens RLT (2) mounted below said upper component lens RT (1) and having a concave conical section (10) which transmits said convergent conical beam (9), and having a convex conical reflective section (11) which reflects said convergent conical beam (9), and having a convex conical section (12) which refracts said convergent conical beam (9), forming a convergent conical beam (13),

A second middle component lens RR (3) mounted below said first middle component lens RLT (2) and having a convex conical section (14) which refracts said convergent conical beam (13), forming spectral beam (15), and having a concave cylindrical section (16) which refracts and emits said spectral beam (15), and

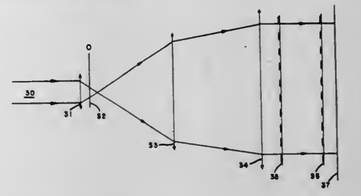
A lower component lens RR (4) mounted below said second middle component lens RR (3) and having a convex cylindrical section (17) which refracts said spectral beam (15), and having a concave conical section (18) which refracts said spectral beam (15), forming a concentrated monochromatic circular whole beam (19) which is emitted parallel to the vertical optic axis of the lenses.

4,577,940
MOIRE MICROSCOPE
Jerzy S. Krasinski, Green Brook; Donald F. Heller, Bound Brook, both of N.J., and Oded Kafri, Beer-sheva, Israel, assignors to Allied Corporation, Morris Township, N.J.
Filed Dec. 19, 1984, Ser. No. 683,832
Int. Cl.⁴ G02B *21/36*
U.S. Cl. 350—502 **7 Claims**

1. An apparatus for moire microscopy comprising, in combination and spaced apart successively along an optic axis,

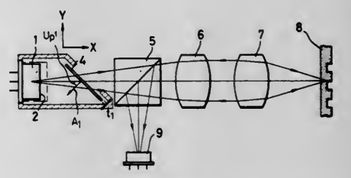
(a) an objective lens for focusing a light beam from an object,

(b) a collimating lens, for collimating the beam from the objective lens, and



(c) two spaced-apart gratings for producing from the collimated beam a magnified moire deflectogram of the object.

4,577,941
OPTICAL APPARATUS
Shigeo Kubota, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Continuation of Ser. No. 459,932, Jan. 21, 1983. This application Aug. 26, 1985, Ser. No. 770,000
Claims priority, application Japan, Feb. 19, 1982, 57-25522; Aug. 6, 1982, 57-136986
Int. Cl.⁴ G02B *5/00*
U.S. Cl. 350—582 **1 Claim**



1. An optical apparatus comprising:

a semiconductor laser having first and second emitting points for first and second groups of light rays, respectively, said first group of light rays being emitted in a junction plane of said semiconductor laser, and said second group of light rays being emitted in a plane perpendicular to said junction plane and in the direction of propagation as said first light rays;

a cap element covering said semiconductor laser and having an aperture formed therein;

focusing means to produce focused light of said first and second group of light rays; and

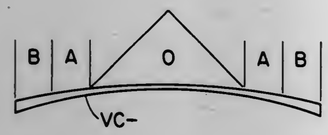
at least one plane-parallel, light transmitting body of predetermined thickness arranged in the aperture of said cap element and before the focusing means and inclined at a predetermined angle relative to the direction of propagation so as to cause the astigmatism of said optical apparatus to be substantially zero and to minimize the coma of said optical apparatus.

4,577,942
LAMINATED HIGH CORRECTION EYEGLASS LENS
Philip M. Frieder, Miami, and Edward de Rojas, Lauderhill, both of Fla., assignors to Optical Systems International, Inc., Hialeah, Fla.
Filed Feb. 22, 1983, Ser. No. 468,694
Int. Cl.⁴ G02C *7/02, 7/06*
U.S. Cl. 351—159 **10 Claims**

1. A high correction eyeglass lens comprising, in combination,

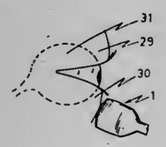
a prescription base lens having a high index of refraction,

said prescription base lens being conformed to a high plus or minus correction,
a veneer lens proportioned to physically and optically laminate to the front of the base lens,
said veneer lens having a central zone without correction and a peripheral annular zone,



said peripheral annular zone having only progressive negative correction proceeding from the central zone to the edge of the lens,
said negative correction offsetting vertex power error.

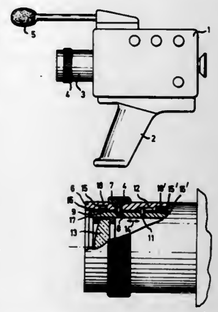
4,577,943
METHOD AND APPARATUS FOR SELF-EXAMINATION OF THE OCULAR GLOBE
Miguel Salia-Munoz, 7a. Privada de Azafran Col., Granjas, Mexico
Filed Jan. 21, 1983, Ser. No. 459,967
Claims priority, application Mexico, Aug. 27, 1982, 194193
Int. Cl.⁴ A61B *3/10, 3/00*
U.S. Cl. 351—205 **3 Claims**



1. A method of self-examining by a patient of the interior of the ocular globe, which comprises applying a light source to the outer surface of the lower eyelid, with the eye closed in order to permit the entrance of the light from said light source only through the thickness of said lower eyelid and without said light passing directly through the crystalline or other focusing element of the eye, whereby the interior structure of the eye is rendered visible to the patient directly through perception by the light sensitive cells of the retina.

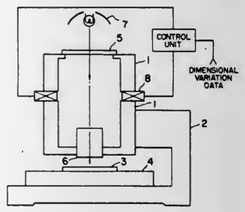
4,577,944
LENS MOUNT WITH NOISE REDUCING MEANS
Siegfried Grosser, Heidenheim; Christian Ludwig, Oberkochen; Kurt Wallner, Eching/Dietersheim; Karl Herzog, Taufkirchen, and Eugen Bayerl, Kirchheim, all of Fed. Rep. of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim on the Brenz, Fed. Rep. of Germany
Filed Nov. 28, 1984, Ser. No. 675,507
Int. Cl.⁴ G03B *31/00*
U.S. Cl. 352—35 **10 Claims**

1. A camera lens mount having provision for impeding transmission of sound from within a camera through the mount to a point in front of the camera, comprising a first mounting part attached to a camera, a second mounting part movable with respect to the first mounting part for focusing, said second part carrying at least one optical component, a groove formed in one of said mounting parts in a direction transverse to the direction of movement of said second mounting part relative to said first mounting part, and a sound damping element of material having good dry-sliding properties seated in said groove and resiliently engaging the other of said mounting



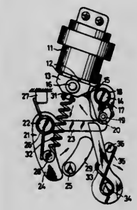
parts to impede transmission of sound in an axial direction along said lens mount.

4,577,945
PATTERN TRANSFER DEVICE AND METHOD
Kuniya Shimazaki, Kawasaki, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
Filed Feb. 10, 1984, Ser. No. 578,815
Claims priority, application Japan, Feb. 14, 1983, 58-22511
Int. Cl.⁴ G03B *3/10*
U.S. Cl. 353—101 **7 Claims**



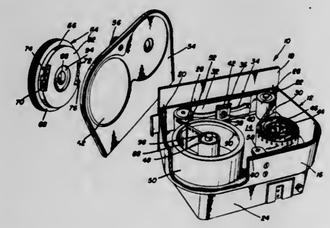
1. A pattern transfer device comprising:
a main table upon which is mounted an object;
a lens barrel having a first section and a second section, one end of said first section being adapted to receive an original and a distal end of said second section being adapted to receive a high resolving power lens for focusing an image of said original on said object;
control means for determining a dimensional variation in said object and for producing a control signal based on said dimensional variation as detected; and
a reduction ratio adjustment means, coupled between said first and second sections and responsive to said control means, for varying the length of said lens barrel in response to said control signal to vary the size of the image focused on said object through said high resolving power lens.

4,577,946
ELECTROMAGNETIC RELEASE DEVICE FOR SINGLE-LENS REFLEX CAMERA
Tahei Morisawa, Tokyo, Japan, assignor to Asahi Kogaku Kogyo K.K., Tokyo, Japan
Filed Apr. 4, 1984, Ser. No. 596,750
Claims priority, application Japan, Apr. 6, 1983, 58-50245[U]
Int. Cl.⁴ G03B *19/12*
U.S. Cl. 354—152 **5 Claims**



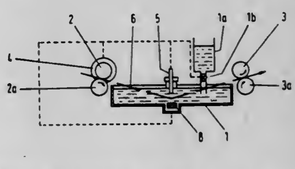
1. In an electromagnetic release device for a single-lens reflex camera having an electromagnet adapted to release an armature therefrom, and an armature lever including said armature, said armature lever being turned to release a mirror driving lever from locking engagement upon release of said armature from said electromagnet, said mirror driving lever being turned when unlocked by rotation of said armature lever to lift the mirror of said camera, the improvement comprising:
an energizing spring urging said armature lever towards said electromagnet; and
an armature disengaging spring connected between said armature lever and said mirror driving lever urging said armature lever away from said electromagnet,
said armature disengaging spring being positioned and having a spring constant such that a tensile force provided thereby for moving said armature lever away from said electromagnet when said mirror driving lever reaches an upper position thereof is smaller than the force of said energizing spring urging said armature lever towards said electromagnet.

4,577,947
FILM MAGAZINE
Anthony G. Fox, Signal Mountain; Harry L. O. Smith, Cleveland, and Ehsan Sadre-Marandi, Chattanooga, all of Tenn., assignors to Beattie Systems, Inc., Cleveland, Tenn.
Filed Feb. 25, 1985, Ser. No. 705,141
Int. Cl.⁴ G03B *17/26*
U.S. Cl. 354—275 **17 Claims**



1. In a film magazine for use with a camera, said magazine comprising a housing having a base and upstanding wall means extending from the base defining a container for accommodating a web of film wound in a roll around a supply spool means, means for rotatably mounting said supply spool means in said container, take-up means for receiving the film from said supply, an aperture defined in said container intermediate said supply means and said take-up means, guide means for guiding the film from the supply means across the aperture to the take-up means, feed means for feeding and winding the film on the take-up means, and a cover for closing the container, the improvement comprising: a second housing defined by another upstanding wall means disposed within said container about said take-up means, a slit formed in said second housing defining a light trap opening from the container into said second housing for permitting film to enter the interior of said second housing for receipt by said take-up means, means defining an access port in said cover opening into said second housing to isolate entry into the second housing from the remainder of said container, and closure means for securely closing said port and selectively permitting access through said port into the second housing, whereby film on said take-up means may be removed without removal of said cover.

4,577,948
METHOD AND APPARATUS FOR CONTROLLING THE PROCESSING OF RADIATION SENSITIVE PLATES WITH A LIQUID BY MONITORING THE ELECTRICAL CONDUCTIVITY OF THE LIQUID
Leslie E. Lawson, Surbiton, and Michael Ingham, Bramley, both of England, assignors to Vickers PLC, England
Filed Oct. 20, 1983, Ser. No. 543,919
Claims priority, application United Kingdom, Oct. 21, 1982, 8230105
Int. Cl.⁴ G03D *3/06, 3/08*
U.S. Cl. 354—299 **9 Claims**

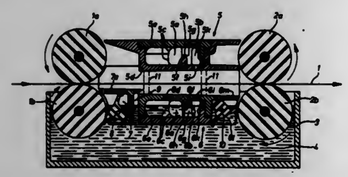


1. An apparatus for processing image-wise exposed radiation sensitive plates which apparatus comprises
(i) a container for processing liquid,
(ii) a means of moving the plates along a path through the apparatus so that they are contacted by the processing liquid under given processing conditions,
(iii) a means for measuring the electrical conductivity of the processing liquid and for producing an output signal in dependence on said conductivity, and
(iv) a means of varying the processing conditions in dependence on said output signal
wherein said means of varying the processing conditions includes a variable speed motor for driving the plate moving means and controlled by said output signal so that the period of time for which the plates are in contact with the processing liquid is dependent on the conductivity.

4,577,949
DEVELOPING DEVICE FOR A HORIZONTALLY, TRANSPORTED PHOTOGRAPHIC LAYER CARRIER
Erwin Geyken, Neubiberg; Franz Heckl, Toeging am Inn; Alfons Kastl, Munich; Klaus Lehnert, and Rudolf Loistl, both of Unterhaching, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert AG, Leverkusen, Fed. Rep. of Germany
Filed Nov. 30, 1984, Ser. No. 678,004
Claims priority, application Fed. Rep. of Germany, Dec. 13, 1983, 3345084
Int. Cl.⁴ G03D *3/02, 3/08*
U.S. Cl. 354—319 **24 Claims**

1. A developing device for developing a photographic layer carrier, particularly sheet film, comprising an inlet pair of rotary transport rollers; an outlet pair of rotary transport rollers spaced from said inlet pair, said inlet pair of rollers and said

outlet pair of rollers transporting a photographic layer carrier to be developed in the horizontal direction; means forming an upper liquid-admitting chamber and means forming a lower liquid-admitting chamber positioned opposite to each other and spaced from each other to define a processing space therebetween in which the layer carrier is transported, each of said chambers being supplied with a processing liquid under pressure, each means including a passage extended over the entire width of each means and a slot extended over about the entire



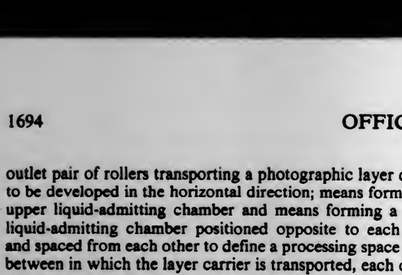
width of the layer carrier, the processing liquid being admitted through said passage of each means and being discharged through the slot of each means into said processing space towards the layer carrier, each chamber including a comb-like partition means subdividing each chamber into two substantially parallel passage portions, said partition means extending over the length of each chamber and over the width of the layer carrier, the processing liquid being pumped into a first one of said two portions of each chamber, and said slot being formed in a second portion of each chamber.

4,577,950

COMPUTER CONTROLLED REPLENISHING SYSTEM FOR AUTOMATIC FILM PROCESSOR

Richard G. Mackson, 2239 - 26th St., Santa Monica, Calif. 90405

Filed Jul. 13, 1984, Ser. No. 630,825
Int. Cl.⁴ G03D *3/06*
U.S. Cl. 354—324 **5 Claims**



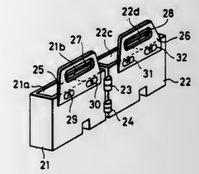
1. A system for controlling replenishment solution to a photographic film processor, said system comprising: a reservoir containing a solution concentrate; metering means coupled to the reservoir for transferring a metered quantity of the concentrate from the reservoir to the processor as a replenishment solution; computer means electrically connected to said metering means for activating said metering means for a time interval computed by said computer means, said computer means including a memory in which data representing pre-calculated amounts of concentrate consumed by various sizes of films is stored; and input means including a manually operated keyboard connected to said computer means for inputing data to said computer means concerning the size of the next film to be processed by the film processor so as to enable said computer means to compute the correct time interval required for the metering means to transfer the correct replenishing amount of said concentrate to the processor for the next film to be processed, and to activate said metering means for said correct time interval.

4,577,951

PROCESSING SOLUTION TANK WITH HINGED SECTIONS

Yutaka Takahashi, and Hiroshi Matsuoka, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 21, 1984, Ser. No. 652,995
Claims priority, application Japan, Sep. 28, 1983, 58-150080[U]
Int. Cl.⁴ G03D *13/04, 3/13*
U.S. Cl. 354—331 **6 Claims**



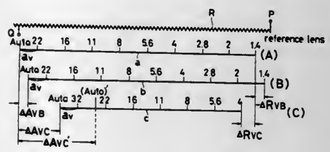
1. In a processing solution tank for a lightsensitive material-processing apparatus having a plurality of processing vessels separated from each other by partitions, the improvement wherein said processing solution tank is divided into two sections hingedly connected to one another, and a carrying handle is fitted to a main body of each of said sections, said handle having a solid portion such that processing solutions in said two sections are prevented from mixing with each other when said sections are folded into abutment.

4,577,952

PHOTOGRAPHIC CAMERA HAVING A DIAPHRAGM ACTUATOR WITH PRELIMINARY DISPLACEMENT FOR LENS COMPENSATION

Fumio Urano; Zenichi Okura, and Masahiro Kawasaki, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 28, 1984, Ser. No. 584,521
Claims priority, application Japan, Feb. 28, 1983, 58-32589
Int. Cl.⁴ G03B *17/18*
U.S. Cl. 354—455 **12 Claims**



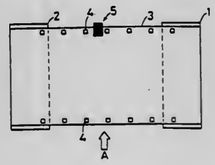
1. Method for display of diaphragm value and shutter speed in a multimode photographic camera using an interchangeable lens in which light intensity error in the film plane and light intensity error as measured at a position of a photometric element both depending on an individual interchangeable lens have been determined collectively as a primary quantity of error peculiar to this interchangeable lens relative to a reference lens, said interchangeable lens has been provided with its diaphragm value indices at positions deviating from the respective diaphragm value indices carried on the reference lens by said primary quantity of error peculiar to this particular interchangeable lens, the method comprising steps of providing said interchangeable lens with an AUTO position at a suitable angular distance from the minimum diaphragm value position of said interchangeable lens, taking out a signal representative of this AUTO position as an electric signal, and subjecting such electric signal together with the other exposure determining information such as brightness of an object to be photographed to arithmetic processing to effect display of a diaphragm value and/or a shutter speed in a shutter speed priority mode or in a programmed mode.

4,577,953

APPARATUS FOR DETECTING NORMAL/ABNORMAL MOUNTING OF BELT-LIKE PHOTOSENSITIVE MEMBER IN COPYING MACHINE

Atsushi Narukawa, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 21, 1984, Ser. No. 684,738
Claims priority, application Japan, Dec. 24, 1983, 58-248341
Int. Cl.⁴ G03G *15/00*
U.S. Cl. 355—3 BE **1 Claim**



1. An apparatus for automatically identifying either the satisfactory or improperly installed condition of a belt-like photosensitive member in such a copying machine provided with a belt-like photosensitive member freely mountable and detachable between a pair of rollers and also with either a plurality of cutout portions or markers on the lateral sides of the belt-like photosensitive member detectable by sensor means incorporated in the copy machine wherein the identifying apparatus comprises;

a timer starting the counting operation when the photosensitive member diagnosis mode is entered simultaneous with the start of the roller rotation after turning the power of the copy machine ON;

means for identifying whether the output signal from sensor means varies or not during a period when the timer counts a specific period of timer; and

means for alarming the operator that the photosensitive member is improperly installed onto rollers only when the output signal from sensor means remains unchanged within a specific period of time counted by the timer.

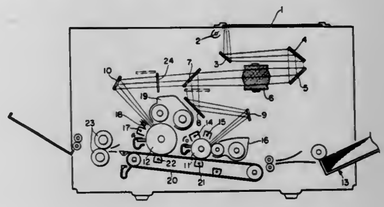
4,577,954

TWO-COLOR COPYING APPARATUS

Norio Kajiwara, Ichikawa, Japan, assignor to Ricoh Company, Ltd., Japan

Filed Mar. 6, 1984, Ser. No. 586,672
Claims priority, application Japan, Mar. 7, 1983, 58-36010
Int. Cl.⁴ G03G *15/01*
U.S. Cl. 355—4 **7 Claims**

1. A two-color copying apparatus for producing copies in two colors from an original having regions of black color and regions of a second color which is a chromatic color, comprising two photosensitive drums having substantially parallel axes and located adjacent each other, one of the two photosensitive drums serving as a chromatic color image forming photosensitive drum and the other photosensitive drum serving as a black image forming photosensitive drum, and an exposing optical system having an image forming lens, and a half reflecting mirror located in a path of light beam posterior to said image forming lens, said half reflecting mirror being operative to split a light beam reflected by the original into two sub-beams of light which are projected on to outer circumferential surfaces of said two photosensitive drums in two predetermined positions of the respective drums to form electrostatic latent images corresponding to the regions of the chromatic color and the image regions of black color respectively of the original, said electrostatic latent image having the image regions of the chromatic color being developed by using a toner of the chromatic color to form a toner image of the chromatic color on an outer circumferential surface of the chromatic color image forming photosensitive drum and said electrostatic latent image having the image regions of black color image being developed by using a toner of black color to form a toner image of black color on an outer circumferential surface of the black image forming photosensitive drum, said toner image of the chromatic color and said toner image of black color being



successively printed by transfer-printing in overlapping relation on a transfer-printing sheet conveyed by a conveyor belt and brought into contact with the outer circumferential surfaces of the two photosensitive drums in such a manner that the image regions of the chromatic color and the image regions of black color of the toner images printed on the photosensitive sheet have substantially the same positional relations to the regions of the chromatic color and the regions of black color of the original to thereby produce a copy of the original in two colors, wherein the improvement resides in that:

one of said two sub-beams of light obtained by splitting the light beam reflected by the original which is reflected by said half reflecting mirror serve only as a chromatic color image forming sub-beam of light and the other sub-beam of light transmitted tnrough said half reflecting mirror serves as the black image forming sub-beam of light.

4,577,955

ELECTROPHOTOGRAPHIC COPYING APPARATUS INCLUDING A GUILLOTINE CLEANER BLADE ARRANGEMENT AND METHOD OF OPERATION

Edward F. Mayer, and Donald F. Pfeuffer, both of San Jose, Calif., assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Nov. 18, 1983, Ser. No. 553,108
Int. Cl.⁴ G03G *21/00*
U.S. Cl. 355—15 **14 Claims**

1. An assembly for cleaning the charged surface of a developing drum of electrically charged toner particles which are attracted to the surface of said drum comprising:

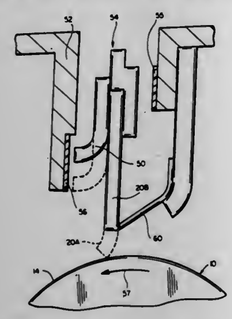
a movable parallelogram-shaped frame for carrying a cleaning blade toward and away from contact with said developing drum,

a support for said parallelogram frame, said parallelogram frame being movable with respect to said support,

means for initiating movement of said parallelogram frame toward said drum,

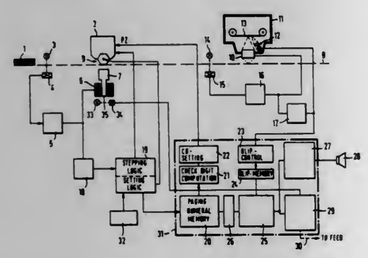
said parallelogram frame providing both axial and radial components of movement of said blade with respect to said developing drum in moving said blade into contact with said drum, said parallelogram frame being relatively loosely mounted in said support, rotation of said drum causing a limited deflection of said blade in the direction

of movement of said drum whereby a wiping action of said drum surface is established, said parallelogram frame



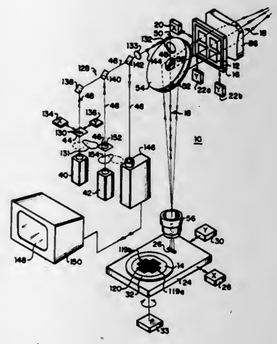
including a finger extending laterally of the direction of travel of said parallelogram frame to limit the deflection of said blade.

4,577,956
PROCESS FOR THE CHAOTIC FILMING OF DOCUMENTS AND DEVICE FOR THE COMPLETION THEREOF
Rolf Klosterhuber, Stieglitzweg 17, D-8033 Krailling, and Wolfgang Herrle, Hohenzollernstr. 14, 8000 Müchen 40, both of Fed. Rep. of Germany
Filed Jun. 3, 1983, Ser. No. 500,710
Claims priority, application Fed. Rep. of Germany, Jun. 3, 1982, 3220977; Feb. 3, 1983, 3303647
Int. Cl.⁴ G03B *27/52*
U.S. Cl. 355—40 **34 Claims**



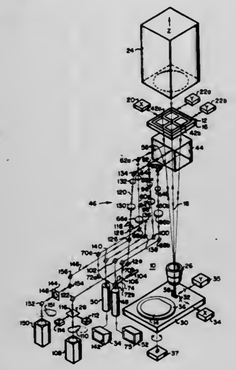
26. Device for chaotic filming of documents which are provided with a first code, comprising a camera (**111**) which is fitted with a device (**112**) for selectively issuing a pulse code recordable on the film, a force feed for the documents to be filmed, a scanner (**106**) in front of said camera (**111**) which reads the first code on said document (**102**), a check computer (**117**) to which signals from the scanner (**106**) are fed, said check computer controlling a device for actuating said camera (**111**) and/or the device (**112**) for the selective issuing of a pulse code and feeding a signal to a first intermediate memory (**129**) connected to the check computer (**117**), a second intermediate memory (**126**) which adds up the pulse codes recorded on the film, and a linkage circuit (**127**) which links incoming signals from the first and second intermediate memories (**129,126**) and conveys them to a computer (**103**) for being stored in it.

4,577,957
BORE-SIGHTED STEP-AND-REPEAT PROJECTION ALIGNMENT AND EXPOSURE SYSTEM
Edward H. Phillips, Middletown, Calif., assignor to Eaton-Optimetrix, Inc., San Jose, Calif.
Continuation of Ser. No. 456,494, Jan. 7, 1983, abandoned. This application Mar. 11, 1985, Ser. No. 710,231
Int. Cl.⁴ G03B *27/52, 27/70*
U.S. Cl. 355—43 **68 Claims**



1. A step-and-repeat alignment system for aligning first and second objects, said system comprising:
first stage means for holding the first object;
second stage means for holding the second object;
a first reference indicium disposed on the second stage means;
first optical means for producing an image of the first object in an image plane of the first optical means and for viewing an image of one of the first reference indicium and the second object as illuminated by the image of the first object;
said first stage means being operable with the first optical means for aligning an image of a first portion of the first object with respect to a first portion of the first reference indicium;
said second stage means being operable with the first optical means for aligning the second object with respect to an image of the first object and for aligning a second portion of the first reference indicium with respect to an image of a second portion of the first object;
a second reference indicium;
second optical means, operable with the first optical means, for producing an image of the second reference indicium in the image plane of the first optical means and for viewing an image of one of the first reference indicium and the second object as illuminated by the image of the second reference indicium; and
adjustment means, operable with the first and second optical means, for aligning the image of the second reference indicium with respect to a third portion of the first reference indicium;
said second stage means also being operable with the first and second optical means for aligning the second object with respect to the image of the second reference indicium.

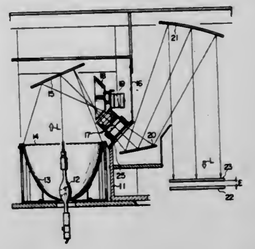
4,577,958
BORE-SIGHTED STEP-AND-REPEAT PROJECTION ALIGNMENT AND EXPOSURE SYSTEM
Edward H. Phillips, Middletown, Calif., assignor to Eaton Optimetrix, Inc., San Jose, Calif.
Continuation of Ser. No. 389,678, Jun. 18, 1982, abandoned. This application Mar. 11, 1985, Ser. No. 710,232
Int. Cl.⁴ G03B *27/52, 27/70, 27/42*
U.S. Cl. 355—43 **57 Claims**



1. A step-and-repeat alignment system for aligning first and second objects, said system comprising:
first positioning means for holding the first object;
second positioning means for holding the second object;
a first reference indicium disposed on the second positioning means;
first optical means for producing an image of the first object in an image plane of the first optical means;
said first positioning means being operable for aligning the image of the first object with respect to the first reference indicium;
third positioning means for holding a second reference indicium; and
second optical means, operable with the first optical means, for producing an image of the second reference indicium in the image plane of the first optical means;
said third positioning means being operable for aligning the image of the second reference indicium with respect to the first reference indicium; and
said second positioning means being operable for aligning the second object with respect to the image of the second reference indicium.

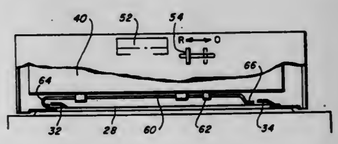
4,577,959
EXPOSURE APPARATUS
Yoshio Yazaki, Chofu, Japan, assignor to ORC Manufacturing Co., Ltd., Tokyo, Japan
Filed May 29, 1984, Ser. No. 615,032
Claims priority, application Japan, Feb. 10, 1984, 59-24093
Int. Cl.⁴ G03B *27/54*
U.S. Cl. 355—67 **9 Claims**

1. An exposure apparatus for exposing a workpiece to light, which light passes through a mask so that exposed portions of the workpiece correspond to a pattern of the mask, said apparatus comprising: light source means for emitting light to expose the workpiece, first optical system means for condensing the light emitted from said light source means to form a light beam and to project the light beam along a first path, a fly eye lens operatively disposed along said first path wherein the light beam condensed by said first optical system means passes through said fly eye lens, second optical system means for collimating the light beam passing through said fly eye lens to direct the collimated light beam along a second path to the workpiece through the mask to expose portions of the workpiece to the collimated light beam which correspond to the pattern of the mask, mounting means for mounting said fly eye



lens for rotation about an axis established by said first path, and lens drive means for rotating said fly eye lens at a predetermined number of revolutions about said axis.

4,577,960
DOCUMENT REGISTRATION APPARATUS
Robert G. Zambelli, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Aug. 22, 1984, Ser. No. 643,121
Int. Cl.⁴ G03B *27/62*
U.S. Cl. 355—75 **4 Claims**

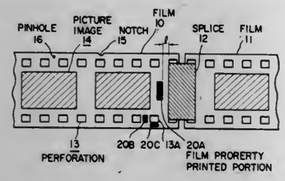


1. In an electrophotographic document reproduction apparatus which includes a transparent document support platen and an optical projection system for projecting light images of said document from said platen to said photosensitive member, a document registration apparatus comprising:
at least one movable document registration guide associated with said platen, and
a pivotable platen cover assembly including mechanical engagement means for selectively engaging at least one of said registration guides whereby upon engagement, a pivoting movement of said cover conveys said registration guide into and out of optical alignment with the projection means.

4,577,961
PHOTOMETRIC CONDITION CORRECTING METHOD FOR PHOTOGRAPHIC FILM
Takaaki Terashita, Kaisei, Japan, assignor to Fuji Photo Film Co., Ltd., Ashigara, Japan
Filed Oct. 25, 1983, Ser. No. 545,195
Claims priority, application Japan, Nov. 2, 1982, 57-192824
Int. Cl.⁴ G03B *27/32*
U.S. Cl. 355—77 **9 Claims**

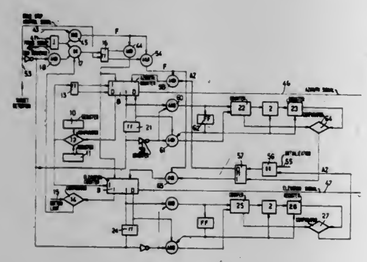
1. A photometric condition correcting method of the type comprising measuring and analyzing B, G and R densities of a piece of photographic film and determining print exposure values therefrom comprising the steps of:

measuring the density of a portion printed in advance of a film by a film property printing means;
comparing the measuring value with a standard value;



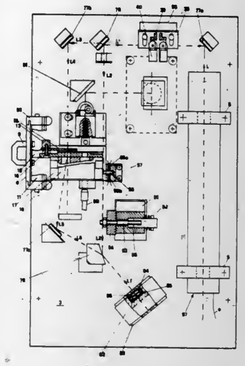
calculating correction values of sensitivity correction values and correction value of γ value for respective films; and correcting the photometric conditions on images of the film.

4,577,962
METHOD AND EQUIPMENT FOR THE CONTROL OF AIMING AND FIRING AT A REAL TARGET
Pièrre de Guillenschmidt, Neuilly S/Seine; Jacques Hubert, Asnieres; Michel Goujon, Chauteloup les V., and Christian Saunier, Ermont, all of France, assignors to Giravions Dorand, Suresnes, France
Continuation of Ser. No. 235,616, Feb. 19, 1981, abandoned. This application Oct. 6, 1983, Ser. No. 539,694
Claims priority, application France, Mar. 7, 1980, 80 05126
Int. Cl.⁴ G01C *3/08*; G01B *11/26*; F41G *3/26*
U.S. Cl. 356—5 **8 Claims**



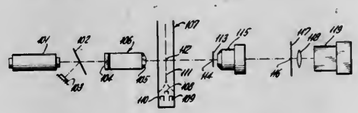
1. A method of fire control for firing at a real target comprising the steps of: associating a firing weapon with a laser radiation source and a detector sensitive to said radiation mounted in proximity to said weapon, automatically adjusting the orientation of the radiation from said source independently of the aiming of the weapon for continuous detection of the target as a result of detection of radiation by said detector after reflection from the target, determining said orientation and the time of transit of radiation between source and target, obtaining from said orientation and time of transit target data relating to the target position in elevation and azimuth, and to the target distance, and evaluating the result of a simulated shot by comparing said data quantitatively with the position of a simulated projectile along an expected trajectory, wherein said adjusting step comprises carrying out a first field scan by the radiation until detection of said radiation after reflection from the target, then tracking the target by a second field scan wherein the orientation of the radiation is maintained centered on the target during all target displacements.

4,577,963
APPARATUS TO EVALUATE OBJECTIVELY THE CONCENTRATION AND MOTILITY OF PARTICLES SUSPENDED IN A SAMPLE OF LIQUID WITH DATA PROCESSOR AND DISPLAY OF THE RESULTS
Vincenzo Traina, Via A. De Ferraris, 18/D - Bari, Italy (70124)
Filed Oct. 31, 1983, Ser. No. 547,394
Int. Cl.⁴ G01P *3/36*
U.S. Cl. 356—28.5 **7 Claims**



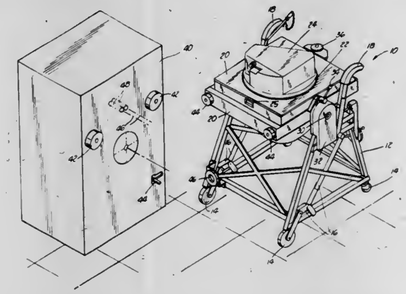
1. An apparatus to evaluate objectively the concentration and motility of particles suspended in a liquid sample/samples examined sequentially by exploiting the Doppler effect, such apparatus comprising:
a box-container (1) wherein all the mechanical, electromechanical, optical component members as well as the component members of a data processor (100) are enclosed to examine sequentially one or more test-pieces and process the respective results;
a polarized LASER (87) energized through conductors (c) to emit a coherent monochromatic light beam (L) which is reflected, divided and/or refracted by means of a suitable optical system; in order that the favourable conditions for exploiting the Doppler effect may be realized;
an optical system comprising reflecting members (77*a*,77*b*, 77*c*), a divider (78) and a prism (79), so that the firstly reflected light beam (L1) is divided in two sub-beams (L2, L4), the former being a reference sub-beam (L2) the frequency of which is like the frequency (f_o) of the original beam (L) emitted by the LASER, while the latter is the sub-beam incident on the examining test-piece and influenced by the characteristics of same, so that a scattered light sub-beam (L5) is provided having a very near frequency (f) which is rejoined with reference sub-beam (L2) to finally provide a single rejoined beam (L7) the output signal of which is detected and amplifier by a photodetector (101) and processed by the data processor of the apparatus;
an electromechanical system to support and move a sample-holder (16) which is provided with a set of grooves to seat a respective set of test-pieces, the support (17) of sample-holder (16) being driven by a synchronous gear motor (94) in order that the test-pieces may be sequentially and automatically positioned for the examination in accordance with a previously programmed motion of support (17) and term of each examination through programming cards housed in a suitable card-holder (74,75,76) of box-container (1);
a data processor (100) to process and display the final results as alpha-numerical evaluations and/or graphic diagrams;
a monitor (90) to visually display the results;
a printing device (92) to display in a print form the results, either as singly referred to each test-piece and/or on the whole;
a keyboard (91) the keys of which are acted by the operator to carry out the operative phases of a sample examination.

4,577,964
APPARATUS AND METHOD FOR DETECTING PLATELETS IN WHOLE BLOOD
William P. Hansen, Jr., Middleborough, Mass., assignor to Ortho Diagnostics, Inc., Raritan, N.J.
Filed Sep. 6, 1978, Ser. No. 939,943
Int. Cl.⁴ G01N *33/48, 21/00*
U.S. Cl. 356—39 **11 Claims**



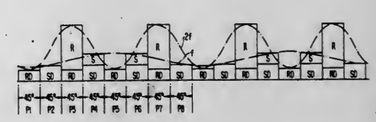
1. A method of analyzing blood cells of a sample comprising:
(a) providing all cells to be analyzed through a predetermined area in a single sample stream analysis;
(b) illuminating respective blood cells in said sample by providing to said area focused illumination zone which dimensionally accommodates both red cells and platelets;
(c) detecting light scattered by cells in said zone to the exclusion of other light; and
(d) discriminating platelets from red blood cells based on the parameters of cell volume and cell refractivity and duration of light so detected.

4,577,965
WEAPON SYSTEM TRANSPORTER
Clarence J. Russnak, Huntsville, Ala., assignor to The Boeing Company, Seattle, Wash.
Filed Sep. 30, 1983, Ser. No. 537,853
Int. Cl.⁴ G01B *11/00*
U.S. Cl. 356—138 **7 Claims**



1. A weapon system transporter for receiving a unit under test thereon and releasable engagement to a test collimator used for testing the electro-optics of the unit under test, the transporter comprising:
a frame having wheels mounted thereon;
a frame housing mounted on top of the frame for receiving the unit under test thereon;
means for engaging the test collimator and holding the collimator to the transporter, the means for engaging mounted on the frame housing; and
alignment means mounted on the frame housing for aligning the axis of the unit under test with an orthogonal autocollimator in the test collimator.

4,577,966
SPECTROPHOTOMETER
Yoshiro Fukasawa, Tokyo, Japan, assignor to Japan Spectroscopic Co., Ltd., Hachioji, Japan
Filed Feb. 9, 1984, Ser. No. 578,758
Claims priority, application Japan, Feb. 12, 1983, 58-21949
Int. Cl.⁴ G01J *3/08, 3/42*
U.S. Cl. 356—325 **12 Claims**



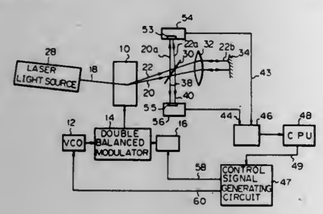
1. A double-beam spectrophotometer comprising
a source for emitting a beam of light,
a first sector for alternately distributing the beam from said source between reference and sample beam paths to form reference and sample beams, respectively,
reference and sample cells located in the reference and sample beam paths, respectively,
a second sector disposed substantially at the crossing of the reference and sample beam paths for guiding the reference and sample beams into a common beam path,
a monochromator disposed in the common beam path,
a detector located downstream of said monochromator for detecting the intensity of the monochromatic light from said monochromator, and
signal processing means electrically connected to said detector for processing an output signal of said detector,
wherein said first and second sectors are coordinated such that said detector receives from said monochromator the following eight light inputs (a) to (h):
(a) radiant light from the reference cell which does not receive the light beam from the source,
(b) radiant light from the sample cell which does not receive the light beam from the source,
(c) the light beam transmitted by the reference cell which receives the light beam from the source,
(d) the light beam transmitted by the sample cell which receives the light beam from the source,
(e) radiant light from the reference cell which does not receive the light beam from the source,
(f) the light beam transmitted by the sample cell which receives the light beam from the source,
(g) the light beam transmitted by the reference cell which receives the light beam from the source, and
(h) radiant light from the sample cell which does not receive the light beam from the source,
in this sequence with a phase difference of 45 degrees in one cycle, and
said signal processing means comprises
a first amplifier for amplifying that component of the output signal of said detector which has a frequency f corresponding to said cycle,
a first synchronous rectifier for synchronously rectifying the output of said first amplifier,
a second amplifier for amplifying that component of the output signal of said detector which has a frequency 2f twice the frequency f,
a second synchronous rectifier for synchronously rectifying the output of said second amplifier, and
divider means for computing the ratio of the output of said first rectifier to the output of said second rectifier.

4,577,967

SURFACE SHAPE MEASUREMENT APPARATUS

Hiroo Fujita, Tanashi, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed May 17, 1984, Ser. No. 611,062
Claims priority, application Japan, May 20, 1983, 58-88827; May 24, 1983, 58-90998
Int. Cl.⁴ G01B *9/02*
U.S. Cl. 356—349 **10 Claims**



1. A surface shape measurement apparatus for generating data representing the shape of a body surface, comprising:

scanning means for producing a probe light beam pair comprising first and second light beams mutually differing in frequency and for directing said light beams onto said surface, and for scanning said pair of light beams across a portion of said surface in a succession of steps of fixed amplitude;

phase detection means for sensing heterodyne interference between first and second reflected light beams from said surface resulting respectively from said first and second light beams incident thereon, to thereby producing during each of said scanning steps data representing a phase value which corresponds to a degree of phase difference between said first and second reflected light beams; and

data-processing circuit means operating on said phase values produced by said phase detection means to produce a set of phase measurement error values which respectively represent an amount of measurement error produced during each of said scanning steps and are in accordance with a phase error function, and for subtracting from each of said phase values produced by said phase detection means the corresponding one of said phase measurement error values to thereby derive a set of corrected phase values, and for performing integration of said set of corrected phase values to derive said data representing the shape of said surface.

4,577,968

METHOD AND ARRANGEMENT FOR OPTICAL DISTANCE MEASUREMENT

Günter Makosch, Sindelfingen, Fed. Rep. of Germany, assignor to International Business Machines Corporation, Armonk, N.Y.

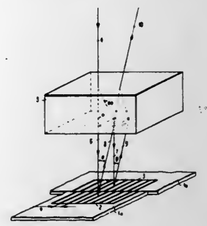
Continuation of Ser. No. 288,426, Jul. 30, 1981, abandoned. This application Jan. 24, 1985, Ser. No. 694,576
Claims priority, application Fed. Rep. of Germany, Jul. 31, 1980, 80104529[U]
Int. Cl.⁴ G01B *9/02*
U.S. Cl. 356—356 **11 Claims**

1. A method for determining distances optically wherein the phase shift of two light beams upon diffraction from an optical grating is determined, comprising the steps of:

forming two perpendicularly polarized light beams,

directing said light beams to at least one optical grating associated with an object whose displacement is to be measured to cause a phase shift between two said light beams,

combining said light beams after diffraction from said optical grating, the light beams that are combined after striking said optical grating having the same diffraction order, and measuring said phase shift caused by diffraction from said



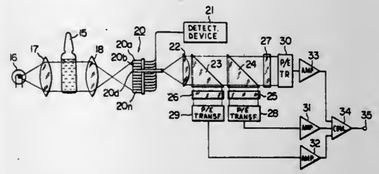
grating, said phase shift being a measure of the displacement of said object.

4,577,969

TESTING METHOD FOR SUBJECTS TO BE TESTED AND A DEVICE FOR SAID METHOD

Ryosaku Tagaya, Gunma, Japan, assignor to Eisai Co., Ltd., Tokyo, Japan

Filed Feb. 2, 1983, Ser. No. 463,107
Claims priority, application Japan, Jun. 3, 1982, 57-94012
Int. Cl.⁴ G01B *11/00*
U.S. Cl. 356—394 **7 Claims**



1. A testing method for testing a plural number of subjects comprising: sequentially and continuously measuring said subjects to obtain measured values, storing in plural respective memory circuits sequentially obtained ones of a plural number of said measured values as they are sequentially obtained, computing a mean value of the stored measured values, determining a standard value for judgement from said mean value, comparing the next obtained measured value with said standard value for judgement for judging, then using said next obtained measured value to replace one of the measured values stored in a said memory circuit, said mean value being computed after each such replacement is made, and repeating the foregoing steps to update said memory circuits and thereby vary said mean value and said standard value for judgement in correspondence to variation of subsequent measured values.

4,577,970

CUVETTE WITH INTEGRAL OPTICAL ELEMENTS

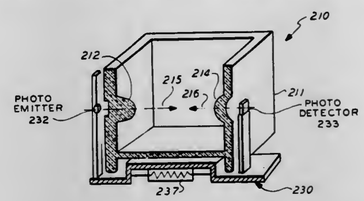
Peter M. Meserol, Montville, N.J., assignor to Personal Diagnostics, Inc., Whippany, N.J.

Filed Jul. 8, 1983, Ser. No. 512,119
Int. Cl.⁴ G01N *21/00*
U.S. Cl. 356—440 **15 Claims**

1. A molded cuvette with molded optical elements for use in photometric measurements, comprising:

molded transparent means providing a cell for receiving fluid undergoing change in optical characteristics which change modifies the energy level of a transluminating ray entering said transparent means, passing through and transluminating said fluid, and exiting said transparent means;

said molded transparent means provided with molded collimating lens for collimating said transluminating ray upon entering said transparent means and provided with molded collecting lens for collecting said transluminating



ray upon passing through said fluid and exiting said transparent means; and

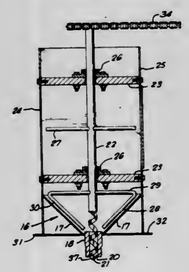
at least a portion of said molded transparent means and said molded collimating and said molded collecting lens molded together as a single unit.

4,577,971

BLENDING RUBBER FOR RETREADING

George R. Burcham, 104 E. Mohawk Dr., LaFollette, Tenn. 37766

Filed Jan. 12, 1983, Ser. No. 457,366
Int. Cl.⁴ B01F *15/04*
U.S. Cl. 366—76 **17 Claims**



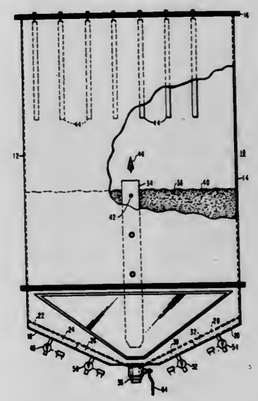
1. Retreading apparatus including means for blending reclaimed rubber buffing dust with tread rubber for tire retreading comprising a reteading unit, container means for holding said buffing dust, vertically orientated discharge pipe means from the container means for substantially directly discharging buffing dust from the container means into an upwardly directed mouth of hopper means, said hopper means being for receiving tread rubber in substantially ribbon form, auger means extending in the discharge pipe for meteringly expelling the buffing dust from the pipe predetermined by the rotational speed of the auger and the feed speed of the tread rubber into the hopper means, screw extruder means in the retreading unit for removing tread rubber and rubber dust from the hopper means and for effectively blending the tread rubber and buffing dust together thereby to provide a blended rubber product and means for winding said blended product on a tire casing to effect tire retreading.

4,577,972

SPOUTED BED BLENDER APPARATUS

David L. Shuck, Golden, Colo., and Irving E. Knudsen, Murrysville, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 197,320, Oct. 15, 1980, abandoned. This application Oct. 19, 1982, Ser. No. 435,167
Int. Cl.⁴ B01F *13/02*
U.S. Cl. 366—101 **5 Claims**



1. In a blender apparatus for homogenizing at least two nuclear fuel powder material, the combination of

container means for holding a bed of said nuclear fuel powder materials,

first shear producing means including a draft tube positioned vertically within said container means and including a gas stream for transporting powder material through said tube from the bottom of said bed in a first direction toward the top of said bed,

diverter means positioned within said container means and located in relation to the top of said draft tube for diverting the resultant powder and gas stream produced by said first shear producing means onto the top of said bed, and

second shear producing means positioned within the container means and operated relative to said first shear producing means for increasing the velocity of some portion of the powder material within said draft tube in a second direction different than said first direction for the purpose of breaking up agglomerates of powder material within said draft tube thereby improving both the rate and extent of powder material homogeneity.

4,577,973

METHOD AND DEVICE FOR MIXING UNDER VACUUM MIXTURES USED IN DENTAL, GOLDSMITH FIELDS OR THE LIKE

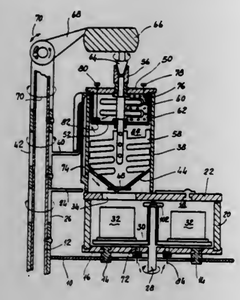
Luciano Occelli, Via Solari 52, Milan, Italy (20144)

Filed Feb. 14, 1984, Ser. No. 580,556
Claims priority, application Italy, Feb. 24, 1983, 19725 A/83
Int. Cl.⁴ B01F *13/06*
U.S. Cl. 366—139 **14 Claims**

1. A method for forming under a vacuum a mixture of a powder and a liquid, intended to be admitted into containers for the subsequent production of molds in the dental or goldsmith fields or the like, said method comprising:

individually degassing the liquid and powder components of the mixture in separate respective liquid and powder

vessels under vacuum before mixing said liquid and powder components; and



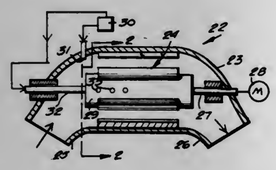
then combining said liquid and powder components and subjecting them to a mixing operation, while maintaining vacuum conditions.

4,577,974

MEDIUM CONSISTENCY MIXER ROTOR AND STATOR CONSTRUCTION

J. Robert Prough, and Louis O. Torregrossa, both of Glens Falls, N.Y., assignors to Kamyr, Inc., Glens Falls, N.Y.

Filed May 4, 1984, Ser. No. 607,309
Int. Cl.⁴ B01F 7/02
U.S. Cl. 366—307 **11 Claims**



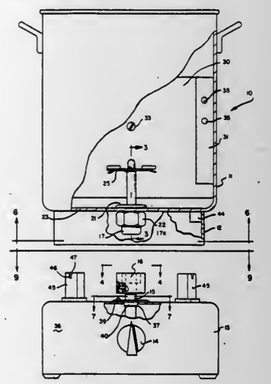
1. Apparatus for continuously mixing fluid into a fibrous suspension, comprising:
- a housing having a first, generally circular cross-section portion, with an inlet to, and an outlet from, said housing;
- a shaft mounted for rotation within said housing substantially along the center of the first portion thereof;
- a rotor rotatable with said shaft, including a plurality of fluidizing axially extending, and radially upstanding ribs, said rotor, including said ribs, having a diameter smaller than said housing first portion diameter;
- means for introducing fluid into fibrous suspension within said housing, adjacent said rotor;
- means for effecting rotation of said shaft about said axis to effect fluidization of suspension acted upon by said rotor;
- wherein each of said ribs comprises a first, generally radially extending, side wall; a second side wall being generally tangent to said rotor, and being disposed on the opposite side of said rib as said first wall; and a substantially flat top; and wherein said first side of each rib is closest to the second side of a circumferentially adjacent rib, and vice versa;
- a plurality of axially extending, radially inwardly extending stationary ribs formed on the inner surface of said housing at said first portion of said housing, said stationary ribs being radially spaced from said rotor ribs; and
- wherein each of said stationary ribs comprises: a generally flat radially innermost surface; a first, generally radially extending, side wall; and a second side wall, opposite said first side wall, said second side wall sloping gradually from said rib top to an inner surface of said housing; and wherein said first side wall of each of said stationary ribs is closest to the second side wall of a circumferentially adjacent stationary rib, and vice versa; and wherein when a rib of said rotor is in radial alignment with one of said stationary ribs, said first side wall of said rotor rib is in alignment with said second side wall of said stationary rib, and said second side wall of said rotor rib is in alignment with said first side wall of said stationary rib.

4,577,975

MIXING AND BLENDING APPARATUS

Carl E. McCrory, West Covina, and Herbert G. Hall, Calabasas, both of Calif., assignors to Carl McCrory Enterprises, Inc., West Covina, Calif.

Continuation-in-part of Ser. No. 608,641, May 9, 1984, abandoned. This application Sep. 14, 1984, Ser. No. 650,278
Int. Cl.⁴ B01F 7/10
U.S. Cl. 366—314 **12 Claims**



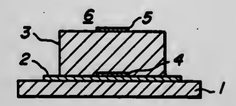
1. A mixer for liquids comprising:
- a. a container;
- b. impeller means mounted in said container for rotation and comprising rotatable impeller blade means for imparting rotational motion with respect to the axis of said impeller to a mixable material in contact therewith;
- c. a motor base having a casing and rotatable drive shaft means adapted to couple with connecting means to rotate said impeller when said container is mounted on said motor base, said drive shaft means extending upwardly from said motor base through an opening in said casing and said drive shaft having a generally circular cross-section and a flattened portion extending on one side thereof; and
- d. a disk means fixed to said drive shaft to rotate therewith above said opening, said disk extending radially outwardly over said opening whereby liquid contacting the upper surface of said disk will be spun off as said disk is rotated said disk having an opening extending therethrough of a corresponding cross-section through which said drive shaft extends whereby said disk can be fitted on said drive shaft in fixed liquid sealing engagement to rotate with said drive shaft.

4,577,976

MULTI-LAYERED THIN FILM HEAT TRANSFER GAUGE

Masanori Hayashi; Akira Sakurai, and Shigeru Aso, all of Fukuoka, Japan, assignors to Kyushu University, Fukuoka, Japan

Filed Oct. 19, 1984, Ser. No. 662,899
Claims priority, application Japan, Mar. 27, 1984, 59-57426
Int. Cl.⁴ G01K 17/00
U.S. Cl. 374—29 **2 Claims**



1. A multi-layered heat transfer gauge, comprising
- a heat resistive thin film having a heat conductivity κ and a thickness L between upper and lower opposite surfaces;
- a first metallic thin film having a resistance r_1 and a temperature coefficient of resistance a_1 bonded to the upper surface of said heat resistive thin film and a second metallic thin film having a resistance r_2 and a temperature coefficient of resistance a_2 bonded to the lower surface of said heat resistive thin film; and
- measuring means for measuring the temperature gradient across said heat resistive thin film, said measuring means including
- a first resistor R_1 connected in series with said first metallic thin film to form a first series circuit;
- a second resistor R_2 connected in series with said second metallic thin film to form a second series circuit; and
- third and fourth resistor R_S and r_s respectively connected in series to form a third series circuit, said first, second and third series circuits being connected in parallel, a voltage V being connected across the parallel connection of said first, second and third series circuits, a voltage e_1 being generated at the connection of said first resistor and said first metallic thin film, a voltage e_2 being generated at the connection of said second resistor and said second metallic thin film and a voltage e_0 being generated at the connection of said third and fourth resistors, whereby the heat flux qw entering said heat resistive thin film is given by the equation:

$$qw=\gamma(\epsilon_{12}+\delta\cdot\epsilon_{20}),$$

where
$\epsilon_{12}=(e_1-e_2)V$
$\epsilon_{20}=(e_2-e_0)/V$
$\delta=(a_2-a_1)/a_2$; and
$\gamma=(\kappa/L)\cdot(1/a_1)\cdot(m+1)^2/m$, where
$m=R_s/r_s$.

4,577,977

ENERGY SUBMETERING SYSTEM

Jane H. Pejsa, Minneapolis, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

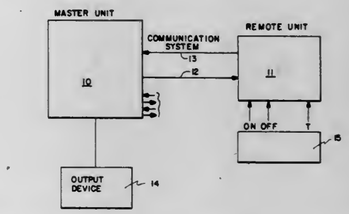
Filed Apr. 1, 1985, Ser. No. 718,146
Int. Cl.⁴ G01K 17/08
U.S. Cl. 374—39 **5 Claims**

1. A method for submetering artificial energy consumption in a multi-user environment in which a central source services a plurality of individual users by means of individual space conditioning subsystems comprising the steps of:
- monitoring the time interval of the OFF segment and the time interval of the entire OFF/ON cycle for each cycle of each individual space conditioning subsystem;
- monitoring the temperature of each conditioned space to determine temperature decay function during the OFF segment and the actual space temperature at the conclusion of each OFF/ON cycle for each cycle of each individual space conditioning means;

determining the total artificial heating or cooling energy supplied by each such individual space conditioning subsystem during each complete OFF/ON cycle according to the relationship

$$Q=MC(T_2-T_{est})$$

wherein:
Q is the artificial heating or cooling energy;



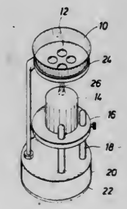
$\overline{MC}$ is the relative heat capacity of the conditioned space;
T_2 is the conditioned space temperature at the conclusion of the ON segment of the control cycle; and
T_{est} is the theoretical extrapolated decay temperature at the end of the complete OFF/ON cycle; and utilizing the total artificial energy supplied by each individual space conditioning subsystem to determine the heat consumption of each such subsystem relative to all such subsystems served by said central source as a fraction of the total thereof.

4,577,978

FIELD TEST FOR DETERMINING WATER IN OIL

Julian R. Schneider, and Gene A. Pullen, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Oct. 22, 1984, Ser. No. 663,293
Int. Cl.⁴ G01N 25/00, 25/10
U.S. Cl. 374—45 **5 Claims**



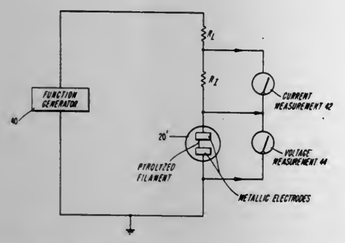
1. A rapid field method for determining small amounts of water in industrial and lubricating oils which comprises:
- placing a measured sample of a test oil in one or more compartments of a suitable heating container;
- placing an equal amount of a reference oil containing a known quantity of water in one or more additional compartments of said heating container;
- heating said container rapidly to heat said test oil and said reference oil and to thereby increase the temperature of said reference oil and said test oil to approximately equal temperatures and to generate a quantity of bubbles rising through said reference oil and said test oil; and
- observing said quantity of bubbles generated in said test oil and said reference oil to provide a relative indication of the amount of water in said test oil.

4,577,979

ELECTRICAL TEMPERATURE PYROLYZED POLYMER MATERIAL DETECTOR AND ASSOCIATED CIRCUITRY

Ilmar L. Kalnin, Millington; Harris A. Goldberg, Colonia, and Clyde C. Williams, Roselle, all of N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Apr. 21, 1983, Ser. No. 487,378
Int. Cl.[4] G01K *11/16*; H01L *49/00*
U.S. Cl. 374—178 14 Claims



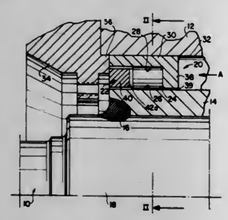
1. An ambient temperature detector comprising:
at least one filament of partially pyrolyzed organic polymer material connected between two spaced electrical terminals, said material exhibiting switching to a negative resistance portion of a voltage-current domain upon attaining a voltage, V_{BO}, wherein said switching voltage, V_{BO}, varies with the temperature of the material; and
means for detecting a shift in the at least one filament from a higher resistance to a lower resistance, including means for applying a voltage across said two terminals, wherein the ambient temperature is at least 300° C. below a maximum pyrolysis temperature of the at least one filament.

4,577,980

ANTI-FRICTION BEARING UNIT OF A SYNTHETIC RESIN PROCESSING MACHINE

Erich Weichenrieder, Egling-Neukolbing, Fed. Rep. of Germany, assignor to Recycloplast AG, Egling-Neukolbing, Fed. Rep. of Germany

Filed Jul. 24, 1984, Ser. No. 634,084
Claims priority, application Fed. Rep. of Germany, Jul. 27, 1983, 3327132
Int. Cl.[4] F16C *19/26, 33/46, 33/66, 33/80*
U.S. Cl. 384—488 9 Claims



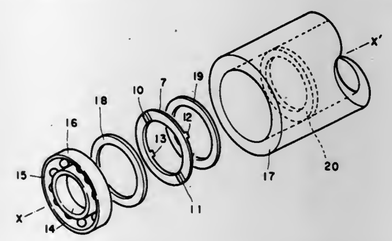
1. An anti-friction bearing unit, positioned in a housing and placed around a shaft, for a synthetic resin processing machine comprising; means defining an inner and outer bearing running face having a radial space between said faces, said means positioned between said housing and said shaft, rolling bodies placed in said radial space, said rolling bodies running on said inner and outer bearing running faces, a cage placed in said radial space, adjacent to said rolling bodies, for selective circumferential spacing of said rolling bodies around said shaft, means for substantially shutting off resin flow into said radial space, said means for shutting off resin flow positioned adjacent to said rolling bodies and facing toward said machine's inside chamber, a small gap positioned between said shut-off means and said shaft for providing resin flow into said radial space for lubricating said rolling bodies when said machine is at working temperature.

4,577,981

SPINDLE DEVICE

Quanbee Kimura, Kawasaki, Japan, assignor to Yoshizuka Seiki Co., Ltd., Japan

Filed Jun. 12, 1984, Ser. No. 620,043
Claims priority, application Japan, Jun. 21, 1983, 58-111631
Int. Cl.[4] F16C *23/08*
U.S. Cl. 384—495 4 Claims



1. In a spindle device comprising a shaft having an output mounting portion in a front end thereof, a pair of bearings for supporting the shaft on front and rear side portions thereof and arranged at a certain distance from one another, each bearing including an inner race in which said shaft is mounted, an outer race, and rolling elements between said inner and outer races, a housing having a bore through which the shaft axially extends, a pair of bearing mounting counter bores in which the respective bearings are coaxially slip-fitted, and a spring for applying a pre-load to said bearings, the improvement comprising
a ring member having a pair of opposite side surfaces,
a pair of first projections extending from one of said side surfaces and situated at substantially diametrically opposite positions, and
a pair of second projections extending from the other one of said side surfaces and situated at substantially diametrically opposite positions,
said second projections being shifted substantially 90° with respect to said first projections,
a shoulder provided in said bearing mounting counter bore having a surface in opposed relationship to said outer race of said front side bearing, and
said ring member being situated in said bearing mounting counter bore between said outer race of said front side bearing and said shoulder surface of said bearing mounting counter bore.

4,577,982

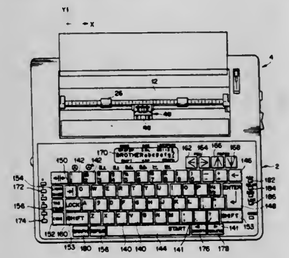
RECORDING APPARATUS

Ryoichi Sasaki, Nagoya, Japan, assignor to Brother Industries, Ltd., Nagoya, Japan

Filed Mar. 18, 1985, Ser. No. 713,005
Claims priority, application Japan, Mar. 26, 1984, 59-58586
Int. Cl.[4] B41J *3/04*
U.S. Cl. 400—17 2 Claims

1. A recording apparatus comprising:
(a) a keyboard comprising a multiplicity of character and symbol keys corresponding to various kinds of characters and symbols, and a plurality of functional keys;
(b) a paper feeding device for supporting a recording paper and feeding same in the usual direction and also the opposite direction;

(c) a carriage for supporting writing instruments movable in a direction perpendicular to the direction in which the recording paper is fed;
(d) A carriage drive means for driving the carriage;
(e) a writing instrument drive means for driving each said writing instrument to bring same into and out of contact with the recording paper;
(f) a character and symbol pattern memory for storing character symbol pattern data; and
(g) a control unit operative for reading out, as said character and symbol key are actuated, the character and symbol pattern data corresponding to the actuated character and symbol keys and controlling the operation of the paper feeding device, carriage drive means and writing instrument drive means in accordance with the read-out character and symbol patten data;
wherein the improvement comprises:



(h) a recorded posture command key located in the keyboard for giving instructions to the recording control unit as to whether the characters and symbols are to be recorded on the recording paper in an upright position or in a lying position;
(i) a writing instrument position memory for storing the position in which the writing instrument is located on the recording paper when the recorded posture is switched from the upright position to the lying position by actuating the recorded posture command key; and
(j) a writing instrument restoring means operative, when the recorded posture is switched from the lying position back to the upright position by actuating the recorded posture command key, to restore the writing instrument to the position on the recording paper which is stored in the writing instrument position memory.

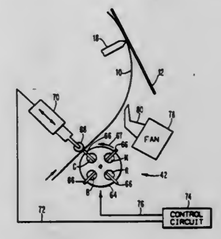
4,577,983

COLOR-ON-DEMAND RIBBON PRINTING

Ari Aviram, Yorktown Heights; Derek B. Dove, Mount Kisco, and Ramon Lane, Crompond, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 29, 1984, Ser. No. 626,162
Int. Cl.[4] B41J *3/20, 35/18*
U.S. Cl. 400—120 8 Claims

1. A color-on-demand resistive ribbon printing apparatus including in combination:
a ribbon including a resistive layer and having a fusible ink layer thereon, said ink layer including all of the ink components with the exception of a desired colorant,
color means for applying said desired colorant to said fusible ink layer, said color means being located between a supply reel supplying said ribbon and a printing head for melting said fusible ink layer, said color means containing a colorant solution and a transfer means for transferring said colorant solution to said ribbon, said color means further including contact means for contacting said ribbon and said transfer means to transfer said colorant solution to said fusible ink layer on said ribbon, and



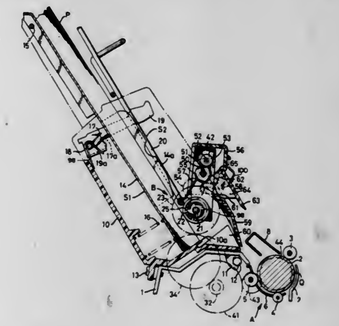
said printing head including a plurality of electrical current carrying styli for printing onto a receiving medium colored indicia using said colored ribbon.

4,577,984

PAPER FEEDING DEVICE FOR A PRINTING APPARATUS PROVIDING ALTERNATIVELY DIFFERENT FEED PATHS

Takemi Yamamoto; Susumu Kuzuya; Isao Kagami, and Yuuichi Takenaka, all of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Oct. 13, 1983, Ser. No. 541,419
Claims priority, application Japan, Dec. 7, 1982, 57-214315; Dec. 13, 1982, 57-188769[U]
Int. Cl.[4] B41J *13/10*
U.S. Cl. 400—625 19 Claims



1. A paper feeding device for a printer having a printing assembly, which comprises:
a frame secured to said printer;
a first paper handling assembly supported by said frame and having a first paper stacker for storing sheets of paper of one kind and paper feeding means for feeding said sheets of paper of one kind from said first paper stacker along a first paper inlet path to said printing assembly;
a second paper handling assembly having ejection rollers and a second paper stacker for receiving said sheets of paper of one kind through said ejection rollers after said sheets of paper of one kind are printed by said printing assembly;
a sub-frame supporting said ejection rollers and retained by said frame pivotally between a first position and a second position;
at least one paper guide pivotally supported by said sub-frame;
paper guide actuating means for pivoting said at least one paper guide between a first position and a second position

according to the pivotal movement of said sub-frame between said first position and said second position, said at least one paper guide defining, when placed in its first position, a paper exit path opening to guide the printed sheets of paper of said one kind from said first paper stacker toward said second paper stacker, said at least one paper guide closing said paper exit path opening when said at least one paper guide is placed in its second position; and

means for defining a second paper inlet path adjacent to said second paper handling assembly and leading to said printing assembly when said sub-frame is placed in said second position thereof,

whereby sheets of paper of another kind different from said one kind are loaded to said printing assembly along said second paper inlet path when said sub-frame is placed in its second position, and the printed sheets of paper of said another kind are prevented from being received in said second paper stacker.

4,577,985

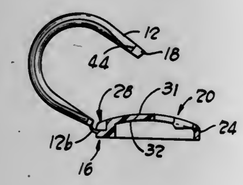
RING BINDER

Lewis R. Beyer, P.O. Box 416, Hinckley, Ohio 44233

Filed Dec. 29, 1983, Ser. No. 566,917

Int. Cl.⁴ B42F *3/02, 13/02*

U.S. Cl. 402—22 **3 Claims**



1. A ring binder comprising:

an elongated backplate having a convex top surface facing away from a spine of a binder a concave wall surface facing toward said spine and futher comprising first and second longitudinal edges defining a base surface;

a plurality of elongated binder ring elements with one end integrally hinged along the first longitudinal edge of said backplate, said ring elements extending outward from said top surface to a free end with flanged sides;

said backplate defining apertures, one for each ring element, transversely aligned with the right elements across said backplate and having a wide portion to receive said free end, a narrow portion adjacent the second longitudinal edge of said backplate narrower than the flanged end of said ring elements, and a neck portion intermediate the wide and narrow portions;

said wall surface defining a planar camming surface angled from said second edge toward, said back surface along said narrow portion to inhibit movement of said flanged end along the wall surface past the neck portion to said wide portion.

4,577,986

JOINT MECHANISM FOR FOLDING LADDERS, FURNITURE AND THE LIKE

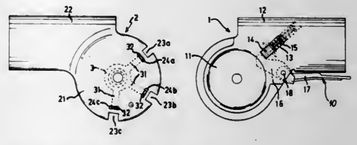
Chien-Yuan Wang, No. 17, Alley 6, Lane 24, Pa Te Rd., Sec. 4, Taipei, Taiwan

Filed Sep. 14, 1983, Ser. No. 532,096

Claims priority, application Japan, Jan. 20, 1983, 58-007041[U]

Int. Cl.⁴ F16C *11/00;* **E05D** *11/10*

U.S. Cl. 403—93 **4 Claims**



1. A joint mechanism comprising:

a first joint member including

a disk-shaped portion comprising a pair of opposing, spaced apart disk members,

a tubular portion extending from said disk-shaped portion and including a pair of opposing, spaced apart sides in each of which is formed a slot,

a pawl slidably supported in said slots,

spring means for biasing said pawl in a first direction,

a pivotable operating lever including a manually actuable handle portion and a pawl-actuating portion engageable with said pawl when said handle portion is actuated, for pushing said pawl opposite said first direction against the bias of said spring,

a second joint member mounted to said first joint member for relative rotation about an axis of rotation, said second joint member comprising

a hollow locking disk element including a plurality of circumferentially spaced notches on its outer periphery, said disk element disposed between said disk members and being connected thereto by a pivot pin defining said axis of rotation, said pivot pin extending centrally through said disk element and said disk members such that relative rotation between said disk element and said disk members sequentially orients said pawl in alignment with said notches, said disk element including a plurality of slits situated adjacent respective ones of said notches and extending through said disk element,

a control member mounted on said disk element and including a plurality of fingers projecting through respective ones of said slits so as to emerge beyond a side of said disk element, each of said fingers including a stop surface and a cammable surface, said stop surface being engageable with said lever when said pawl approaches the associated notch from a first direction, to block movement of said pawl into such notch, said cammable surface being engageable with said lever when said pawl approaches the associated notch from a second direction such that said finger is cammed into its slit to permit the pawl to enter the respective notch, and

a tubular portion extending from said disk element.

4,577,987

BALL AND SOCKET JOINT

Reihard Buhl, Bohmte, and Paul Westphal, Lemförde, both of Fed. Rep. of Germany, assignors to Lemförder Metallwaren AG, Fed. Rep. of Germany

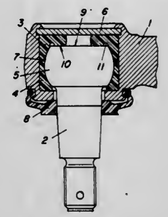
Filed Apr. 25, 1984, Ser. No. 603,589

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1983, 3315658

Int. Cl.⁴ F16C *11/06*

U.S. Cl. 403—133 **4 Claims**

1. A ball and socket joint, particularly a track rod joint for motor vehicles, comprising a hollow cylindrical casing having an opening at one end and having an opposite end, a ball stud having a spherical ball head located within said casing and having a flat polar top surface adjacent the opposite end of said casing, a ring-shaped socket member having an annular portion engaged around a portion of said spherical ball head and having a top end portion overlying the flat polar top surface of said



ball stud, and a cover engaged peripherally against the interior of said casing and held by said casing into compressive engagement with said end portion, said ring-shaped socket member forming an annular thrust area radially spaced from said annular portion and extending axially from said end portion and with a free end substantially parallel to said cover and kept under biasing load by said cover.

4,577,988

BALL JOINT

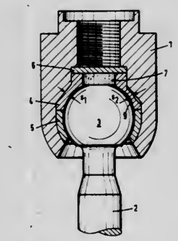
Erwin Gollub, Neuss, and Reinhardt Muller, Krefeld, both of Fed. Rep. of Germany, assignors to TRW Ehrenreich GmbH & Co., KG, Dusseldorf, Fed. Rep. of Germany

Filed Jul. 26, 1984, Ser. No. 634,709

Claims priority, application Fed. Rep. of Germany, Jul. 27, 1983, 3326960

Int. Cl.⁴ F16C *11/00*

U.S. Cl. 403—140 **3 Claims**



1. A ball joint comprising:

a housing,

a ball stud having a ball head disposed in said housing,

two substantially semispherical bearing shells interposed between said housing and said ball head, one of said bearing shells being composed of a soft elastic material and the other of said bearing shells being composed of a hard elastic material,

said bearing shells having inner surfaces at least partially engaging said ball head,

said one bearing shell having ridges formed on an outer surface thereof and elastically engaging the wall of said housing, and

the wall thickness of said one bearing shell in zones between said ridges being one half or less than the wall thickness of said one shell in zones of said ridges so that lubricant pockets are formed between the inner surface of said one shell and said ball head in the zones between said ridges when said ridges elastically engage the wall of said housing upon initial preloading thereof.

4,577,989

BALL JOINT

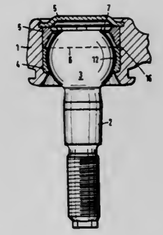
Eiichi Ito, Meerbusch, Fed. Rep. of Germany, assignor to TRW Ehrenreich GmbH & Co. KG, Dusseldorf, Fed. Rep. of Germany

Filed Jun. 25, 1984, Ser. No. 624,300

Claims priority, application Fed. Rep. of Germany, Jul. 23, 1983, 3326586

Int. Cl.⁴ F16C *11/06*

U.S. Cl. 403—140 **3 Claims**



1. A ball joint for a vehicle comprising:

a housing for receiving a ball head,

a bearing insert disposed between said housing and said ball head, said bearing insert having a body portion engaging said ball head on one side of the equatorial plane thereof and axially extending tongues defining slots therebetween and gripping said ball head on the other side of the equatorial plane thereof, and

a clamping ring supported in said housing in surrounding relationship with respect to said tongues,

the inner surface of said clamping ring and the outer surface of said tongues defining complimentary conical surfaces,

said clamping ring having circumferentially extending grooves on the inner surface thereof and axially extending projections in the form of annular segments on the outer surface thereof engaging said housing to thereby provide for prestressing said ball joint.

4,577,990

COAXIAL COUPLING AND LOCKING MECHANISM

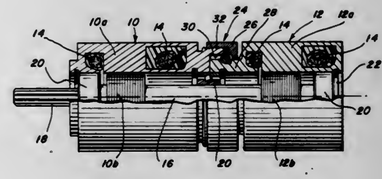
Richard K. Carlson, Wilmette, Ill., assignor to MPC Products Corporation, Skokie, Ill.

Division of Ser. No. 381,950, May 26, 1982, Pat. No. 4,430,632.

This application Jan. 26, 1984, Ser. No. 559,978

Int. Cl.⁴ B25G *3/00;* **F16B** *7/18*

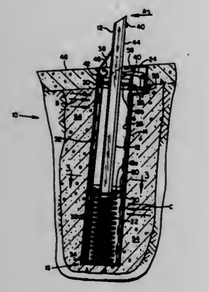
U.S. Cl. 403—342 **9 Claims**



1. In a coaxial coupling assembly which includes a pair of axially aligned coupling members interengaged and drawn together by a rotatable coupling ring, means for permanently locking said coupling members against rotation after being drawn together by the coupling ring, comprising an annular

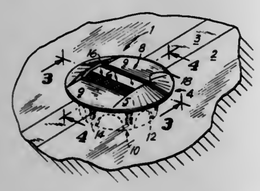
locking member sandwiched between and generally axially abutting said coupling ring and each of said coupling members.

4,577,991
DEPLOYABLE VEHICULAR BARRICADE
Willard J. Rolow, Rte. 3, Box 350, Alsea, Oreg. 97324
Filed Nov. 28, 1984, Ser. No. 675,726
Int. Cl.⁴ E01F *13/00*
U.S. Cl. 404—6 **9 Claims**



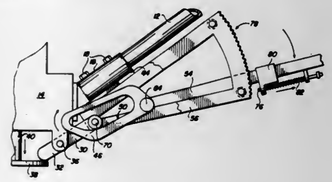
1. A deployable vehicle barricade apparatus for resisting and absorbing vehicular impact comprising:
(a) an elongate rigid post having two ends, a top end and bottom end;
(b) elongate rigid tubular casing means for receiving said post, said casing means having an inner surface and an outer surface;
(c) propellant means for rapidly causing an upper portion of said post proximate said top end to extend beyond said casing means;
(d) brace means cooperating between said post and said inner surface of said tubular casing means for resisting and transferring the force of a vehicular impact upon said upper portion of said post to said casing means; and
(e) said brace means including at least two spaced-apart brace elements, each of said brace elements cooperating between said post and said inner surface of said casing means to transfer said force to said casing means, said brace elements spaced apart a distance greater than one-half the length of said post.

4,577,992
SNOWPLOWABLE ROAD MARKER APPARATUS
George S. Jefferies, 413 Nassau Ave., Freeport, N.Y. 11520
Filed Aug. 31, 1984, Ser. No. 645,874
Int. Cl.⁴ E01F *9/06*
U.S. Cl. 404—16 **19 Claims**



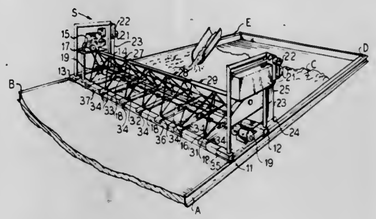
1. A snowplowable road marker apparatus securable in a pre-formed opening in road material without the use of adhesive comprising:
an outwardly dished top section having a relieved elongated channel extending across said top section with said channel being adapted to receive therein an indicator means;
a bottom section with means connected to a bottom surface of said top section having a plurality of spaced apart gripping means disposed on an outside surface of said bottom section with said bottom section being adapted to be fixably disposed in road material of a road; and
said indicator means with means connected to at least one surface of said channel for indicating the position of said marker apparatus.

4,577,993
POWER TROWEL WITH CAM-ACTUATED BLADE PITCH ADJUSTMENT MECHANISM
J. Dewayne Allen, and Edward F. Randolph, both of Paragould, Ark., assignors to Allen Engineering Corporation, Paragould, Ark.
Filed Feb. 22, 1985, Ser. No. 704,379
Int. Cl.⁴ E01C *19/22*
U.S. Cl. 404—112 **16 Claims**



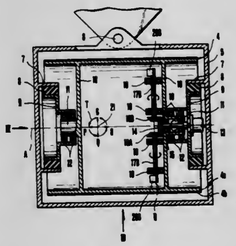
1. A power trowel having a cam-actuated blade pitch adjustment mechanism, comprising:
a. a trowel frame;
b. an engine coupled to said frame and including an output shaft;
c. a set of blades rotated within a fixed plane by the output shaft of said engine;
d. a blade pitch control unit for controlling the pitch of said blades;
e. a handle having a first end coupled to said trowel frame and a second end laterally spaced apart from said trowel and elevated above the plane of said blades;
f. said blade pitch control unit including
i. a swash plate;
ii. a swash plate actuator arm having an inboard end engaging said swash plate and an outboard end;
iii a pivot pin for pivotally coupling said actuator arm to said trowel;
g. means for displacing the outboard end of said swash plate actuator arm, including
i. a support bracket coupled to said trowel frame in proximity to said actuator arm;
ii. a fixed stud secured to and extending laterally outward from said bracket;
iii. a moveable stud extending laterally outward from the outboard end of said actuator arm;
iv. a cam rotatably coupled to said fixed stud and including a camming surface engaging said moveable stud; and
v. means for rotating said cam in first and second directions about said fixed stud to cause said camming surface to alternately displace said moveable stud and said actuator arm in first and second directions to thereby alternately increase or decrease the pitch of said trowel blades.

4,577,994
VIBRATORY CONCRETE SCREED
Thomas E. Miller, Mequon, Wis., assignor to Metal Forms Corporation, Milwaukee, Wis.
Continuation of Ser. No. 336,307, Dec. 31, 1981, abandoned. This application May 29, 1984, Ser. No. 615,696
Int. Cl.⁴ E01C *19/40*
U.S. Cl. 404—114 **2 Claims**



1. Screed apparatus comprising:
an elongate frame adapted for movement along a pair of spaced side forms;
a pair of screed bars mounted on said frame spaced apart in the direction of movement and extending transversely to the direction of movement, each of said screed bars comprising first and second opposed sides; and
mounting means for releasably mounted said screed bars at points of attachment to said frame such that either of said first and second opposed sides may be oriented for contact with the concrete.

4,577,995
MECHANISM FOR GENERATING VIBRATIONS FOR A GROUND COMPACTING MACHINE
Hisanori Sadahiro, Kawagoe, Japan, assignor to Sakai Heavy Industries Ltd., Tokyo, Japan
Filed Apr. 3, 1984, Ser. No. 596,278
Claims priority, application Japan, Apr. 7, 1983, 58-61408
Int. Cl.⁴ E01C *19/38*
U.S. Cl. 404—117 **6 Claims**

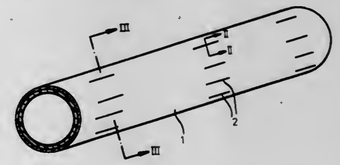


1. In a mechanism for generating vibrations for a ground compacting machine of the type including a rolling wheel, the improvement consisting in that at least one rotary shaft with an eccentric mass fixedly mounted thereon is rotatably supported in the rolling wheel in such a manner that the center line of rotation of said rotary shaft is located on a linear line extending in parallel with the radial direction relative to the center line of rotation of the rolling wheel whereby the ground contact portion on the rolling wheel is vibrated in the horizontal plane by rotating the rotary shaft for the eccentric mass.

4,577,996
METHOD OF CONTROLLING AQUATIC PLANT GROWTH AND SILICONE RUBBER BENTHIC BARRIERS
Michael G. Elias, Mayfield Heights, Ohio, and George D. Pullman, Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.
Filed Jul. 10, 1984, Ser. No. 628,942
Int. Cl.⁴ E02B *3/00*
U.S. Cl. 405—17 **4 Claims**

1. A method for controlling the growth of aquatic plants in a body of water which is exposed to sunlight comprising depositing on the surface of the body of water over the location where plant life is to be controlled, a benthic barrier which comprises a fabric coated on at least one side with silicone rubber thick enough to prevent root penetration and thin enough to allow gases forming below the barrier to pass through the coating and escape, said silicone rubber comprising crosslinked polyorganosiloxane and filler which blocks the passage of light through the barrier to the bottom of the body of water and raises the specific gravity above 1.0 to a value which allows the barrier to readily settle to the bottom where it covers the aquatic plants or the bottom on which aquatic plant growth is to be prohibited, after the barrier is placed on the water surface, it settles to the bottom and is anchored as necessary to avoid displacement by turbulence in the body of water.

4,577,997
IRRIGATION PIPE
Eino Lehto, Linnankatu 53 F 224, 20100 Turku 10, Finland; Göran Möller, Enrisvägen 16, 14144 Huddinge, Sweden, and Lasse Sjövall, Hämeenkatu 5 A 10, 20500 Turku 50, Finland
Filed Jul. 7, 1983, Ser. No. 511,793
Claims priority, application Finland, Jul. 7, 1982, 822376
Int. Cl.⁴ E02B *3/00*
U.S. Cl. 405—43 **2 Claims**

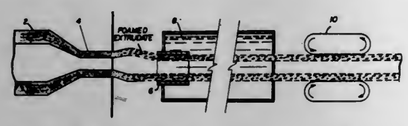


1. A method of irrigation which comprises the steps of:
forming a two-layer irrigating pipe by
producing a hot tubular first layer of polyethylene plastic,
allowing said first layer to cool,
then applying a second layer of polyethylene plastic so that it completely ensheathes said first layer in continuous contact with said first layer uniformly all around the periphery thereof and with a thickness less than that of said first layer but such that material of said second layer does not blend with material of the first layer, and
incising through both said layers with parallel incisions extending longitudinally of the pipe and uniformly spaced apart all around the circumference of the both layers and spaced apart along the length of the resulting pipe;
burying said pipe in a region irrigated; and
passing irrigating water under pressure through said pipe, thereby widening said incision outwardly and permitting water to flow outwardly through the outwardly widened incisions.

4,577,998
PRODUCTION OF PVC IRRIGATION PIPE AND THE PIPE SO PRODUCED

Clive Dorra, Bedfordshire, England, assignor to Imperial Chemical Industries, PLC, London, England

Filed Oct. 4, 1982, Ser. No. 432,675
Claims priority, application United Kingdom, Oct. 22, 1981, 8131949
Int. Cl.⁴ A01G *25/02*; B29C *67/22, 55/22*
U.S. Cl. 405—45 9 Claims



1. A process for producing water-permeable flexible PVC pipe suitable for irrigation applications which process comprises extruding a plasticised PVC composition, containing a melt strength-enhancing aid and a chemical blowing agent system, using an extruder equipped with a pipe-forming die, wherein said extrusion comprises

(a) the extruded melt being expanded by foaming thereof immediately on leaving the die into a substantially closed-cell extrudate of greater outer diameter than the outer diameter of the die exit orifice with the surfaces of the extrudate being substantially unpunctured, said expansion being into the surrounding atmosphere,

(b) drawing down the extrudate in the atmosphere causing rupturing of the foam cell walls of the extrudate to form a substantially open-cell extrudate having punctured surfaces, and

(c) when the extrudate has been drawn down in the atmosphere to a degree which is prior to any cellular collapse which would lead to the formation of substantially water-impervious pipe, cooling the extrudate by passing it through a cooling means in order to prevent said collapse.

7. A water-permeable PVC pipe suitable for irrigation purposes which is produced by a process according to claim 1.

4,577,999
PROCESS FOR STORING LIQUID WASTE IN SALT CAVITIES

Walter Lindorfer, Kassel; Wilhelm Jahn-Held, Staufenberg; Lutz J. Gerschler, Diekholzen; Berthold Jandel, Hildesheim, and Friedel Wartenpfuhl, Giesen, all of Fed. Rep. of Germany, assignors to Wintershall AG, Kassel, Fed. Rep. of Germany

Filed Nov. 18, 1983, Ser. No. 553,143
Claims priority, application Fed. Rep. of Germany, Nov. 25, 1982, 3243594
Int. Cl.⁴ B65G *15/00*
U.S. Cl. 405—53 13 Claims

1. A process for storing liquid waste in a salt cavity said process comprising the steps of treating the liquid waste above ground to produce a pumpable mixture with a pH of 7 or more, which has a

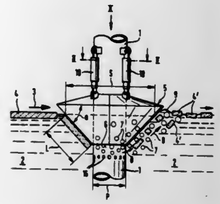
boiling point above 85° C.,
flash point above 65° C.,
vapor pressure at 60° C. of up to 0.5 kp/cm^2 and
viscosity of less than 300 cP

and which forms no toxic or flammable gases; conveying said mixture to the salt cavity; allowing the mixture to stand until separation of the mixture into a heavier and a lighter liquid phase occurs; separately pumping both phases out of the cavity, and feeding in a further corresponding volume of the pumpable mixture into the cavity.

4,578,000
METHOD OF PROTECTION

Gustav Lindqvist, Espoo, and Kimmo Juurmaa, Vantaa, both of Finland, assignors to Oy Wärtsilä Ab, Helsinki, Finland

Filed Jun. 10, 1983, Ser. No. 503,337
Claims priority, application Finland, Jun. 15, 1982, 822157
Int. Cl.⁴ B63B *35/08*; E02B *17/00*
U.S. Cl. 405—211 17 Claims



1. A method for protecting a stationary construction located in water and surrounded thereby, against strain caused by a moving ice field in said water, said method comprising:

providing a protective structure having a cross-section considerably greater than the cross-section of said stationary construction and being formed to have a sloping outer surface;

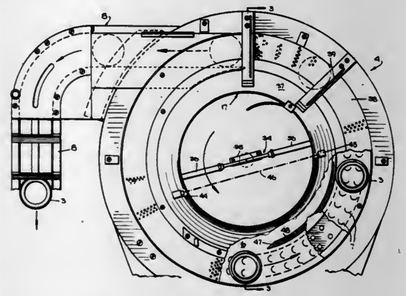
arranging the protective structure around said stationary construction so that said sloping surface slopes downwards towards said stationary construction and is located at the water surface level and extends below the water surface level, to form an ice breaking surface which bends downwards ice moving against said protective structure; and

maintaining the protective structure normally in a rigid and fixed relationship with respect to the stationary construction, so as to take up upwardly directed reaction forces provided by the ice.

4,578,001
AIR CONVEYING HOPPER

Charles S. Ochs, Lancaster, and Harold L. Siler, Rockbridge, both of Ohio, assignors to Anchor Hocking Corporation, Lancaster, Ohio

Filed Dec. 29, 1980, Ser. No. 220,960
Int. Cl.⁴ B65G *53/40*
U.S. Cl. 406—10 6 Claims

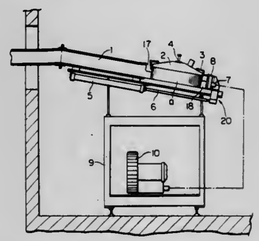


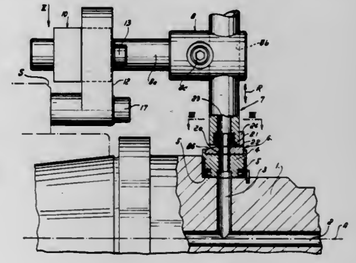
1. A hoppering apparatus for feeding rings with depending skirt portions comprising the combination of a hopper including a support disc for engaging a plurality of the rings, means for rotating said support disc for carrying the rings to an exit chute, and air nozzles in said disc for directing streams of air under pressure generally circumferentially and in the direction of disc rotation and against the skirt portions of said rings for carrying the rings to said exit chute.

4,578,002
TRANSPORT APPARATUS FOR FLAT ARTICLES

Kozo Taneda, Kodaira; Masae Chiba, Kawasaki; Junichi Naka, Tokyo, and Shunichi Watanabe, Machida, all of Japan, assignors to Snow Brand Milk Products Co., Ltd., Sapporo, Japan

Filed Jun. 12, 1984, Ser. No. 619,769
Claims priority, application Japan, Jun. 22, 1983, 58-113176
Int. Cl.⁴ B65G *53/40, 51/02*
U.S. Cl. 406—28 6 Claims





1. In a transport apparatus in which articles to be transported are inserted in a transport pipeline and the articles are transported under the application of air flow through the pipeline, the improvement which comprises; a transport pipeline which is inclined upwards in the direction of transport at a loading station of said transport pipeline and stands uprightly to terminate in a downwardly directed opening at an unloading station, push means provided at said loading station of said pipeline, said push means comprising a cylinder having a piston rod, movable therein, a push plate coupled to said piston rod and an air pipe mounted on said push plate, said push plate being movable in the longitudinal direction of said pipeline and adapted to push said articles into said pipeline while pressurized air is fed through said air pipe to move said articles through said pipeline and, an annular resilient band provided near said downward opening, and an air supply means for projecting said resilient band toward the center of said downward opening.

4,578,003
ARRANGEMENT FOR SUPPLYING COOLANT TO ROTATING CUTTING TOOLS FOR METAL MACHINING, IN PARTICULAR BORING TOOLS, PROVIDED WITH COOLANT DUCTS

Otto Eckle, Loechgau, Fed. Rep. of Germany, assignor to Komet Stahlhalter-und Werkzeugfabrik Robert Breuning GmbH, Besigheim, Fed. Rep. of Germany

Filed Jul. 19, 1983, Ser. No. 515,318
Claims priority, application Fed. Rep. of Germany, Sep. 1, 1982, 3232495
Int. Cl.⁴ B23B *51/06*
U.S. Cl. 408—56 11 Claims

1. In an apparatus for supplying a fluid coolant to a cutting tool which is supported for rotation about a tool axis, which has a coolant channel therein, and which has a coolant ring rotatably supported on a shank thereof for movement about said tool axis relative to said tool, said coolant ring having sealing means which engages said tool shank and effects a seal between said tool shank and said coolant ring and having a radially projecting coupling piece which has a coolant bore extending radially inwardly thereinto; said apparatus further including a carrier piece supported on a stationary machine part, a holder which is supported on said carrier piece for movement generally parallel to said tool axis and for rotation about an adjusting axis, means for releasably clamping said holder in a selected position with respect to said carrier piece, and a coupling head which is supported on said holder for movement generally radially of said tool axis and has a radially extending outlet bore, rotation of said cutting tool when said coupling piece and coupling head are free of engagement causing said coolant ring to rotate with said cutting tool until said coupling piece and coupling head are in a position of sealing engagement in which said coolant bore and said outlet bore are in fluid communication; the improvement comprising: two spaced intermediate pieces which each have at one end an extension which projects outwardly in a direction substantially parallel to said tool axis, a bore therethrough which extends through said extension thereon substantially parallel to said tool axis, and a slot which extends radially with respect to said bore; two fastening bolts which each extend substantially parallel to said tool axis through the bore in a respective said intermediate piece and engage a respective threaded opening provided in said stationary machine part; and two clamping bolts which each extend parallel to said tool axis through the slot in a respective said intermediate piece and engage a respective threaded opening provided in said carrier piece; wherein said carrier piece is generally T-shaped and has a stem and a cross-part, said carrier piece having said threaded openings for said clamping bolts at opposite ends of said cross-part and having in said stem a bore which axially slidably receives a shaft of said holder which extends parallel to said tool axis.

4,578,004
APPARATUS FOR PUNCHING A HOLE IN A PAPER WEB

Wilhelm Reil, Bensheim, Fed. Rep. of Germany, assignor to Tetra Pak Developpement S.A., Switzerland

Filed May 3, 1982, Ser. No. 374,316
Claims priority, application Fed. Rep. of Germany, May 16, 1981, 3119602
Int. Cl.⁴ B23B *41/00*
U.S. Cl. 408—87 11 Claims

1. Apparatus for making a circular cut of predetermined depth in a paper web, said apparatus comprising:

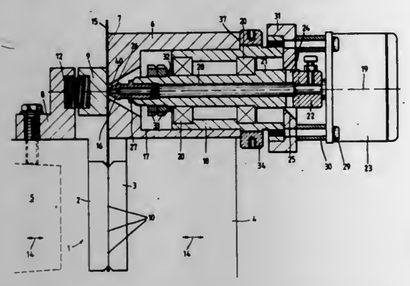
a rotatably-driven circular cutting head;

means for supporting said paper web comprising a resiliently-mounted counterplate positioned to face said cutting head perpendicular to the axis thereof, said counterplate having a surface area, facing said cutting head, which is substantially larger than the circular cutting area defined by said cuttting head;

means for moving said cutting head from a first position in which it is spaced from said paper web to a second position in which it engages said paper web and makes circular cut therein; and

means including a reciprocably movable outer carrier for adjusting the axial position of said cutting head relative to

said outer carrier and for securing said cutting head in a fixed axial position relative to said outer carrier to thereby



limit the depth of said circular cut to a preselected depth which is less than the thickness of said paper web.

4,578,005

MACHINING REFORMING APPARATUS FOR ELECTRODE OF RESISTANCE WELDING MACHINE

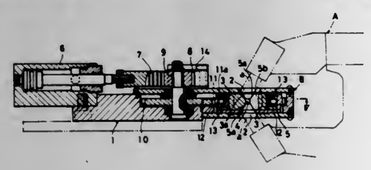
Genzo Fuse, Higashimatsuyama; Kaoru Abe, Tsurugashima, and Isao Matsumoto, Kawagoe, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 22, 1983, Ser. No. 564,533

Claims priority, application Japan, Dec. 24, 1982, 57-225923; Dec. 24, 1982, 57-225924; Jun. 16, 1983, 58-106785

Int. Cl.⁴ B23C *3/12*

U.S. Cl. 409—140 **6 Claims**



1. A machining reforming apparatus for machining electrodes of a resistance welding device, said apparatus comprising;

(a) a body, said body having an insertion means for receiving at least one electrode;

(b) receiving base means positioned within said body for abutting a front end surface of an electrode inserted therein; and

(c) at least one rotary cutter means rotatable in said body about an axis substantially perpendicular to said base means, said cutter means having a cutter portion for removing from the electrode inserted therein portions on said electrode projecting only from sides of said front end surface abutting said base means.

4,578,006

IMPELLER UNDER FILE MACHINE

Stanley J. Gray, Bixby, Okla., assignor to Borg-Warner Corporation, Chicago, Ill.

Continuation of Ser. No. 39,634, May 16, 1979, abandoned. This application Oct. 21, 1983, Ser. No. 544,181

Int. Cl.⁴ B23D *5/02*

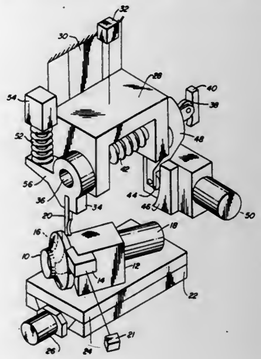
U.S. Cl. 409—303 **2 Claims**

1. Apparatus for underfiling curvilinear vanes on centrifugal pump impellers which are cast with vanes of substantially uniform thickness and which are filed to vanes which taper from a relatively thin edge to a thicker and unchanged central thickness comprising:

a non rotating cutting tool movable along a predetermined path of travel;

indexing means for supporting and rotating an impeller about its axis to sequentially position each impeller vane so that its edge is facing upwardly beneath the cutting tool;

actuating means to move said cutting tool vertically downward toward and into engagement with a vane for an initial portion of its predetermined path of travel and then in a curvilinear direction for the remainder of its movement along the predetermined path of travel so that it



shapes one surface only of the vane therebeneath to provide the taper to said vane; said actuating means comprising first operative means for imparting generally vertical movement to said cutting tool along a spatially fixed generally vertical axis, second operative means including a first cam and follower for controlling the movement of said cutting tool generally downwardly and then in a curvilinear direction, third operative means including a second cam and follower for moving said cutting tool laterally across said vane to insure that the entire vane is underfiled, and means to resiliently urge each cam into engagement with its respective follower.

4,578,007

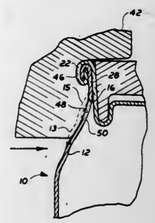
REFORMING NECKED-IN PORTIONS OF CAN BODIES

Hans H. Diekhoff, Greensburg, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 428,492, Sep. 29, 1982, abandoned. This application Mar. 12, 1984, Ser. No. 588,355

Int. Cl.⁴ B21D *51/32*

U.S. Cl. 413—6 **6 Claims**



1. A method of providing an essentially right cylindrical-shaped portion of a multiple necked-in and flanged can body adjacent a double-seamed bead of a closed can, the method comprising:

rotating said can body about its longitudinal axis; and

contacting said rotating can body with means for reforming at least a portion of the necked-in can body to produce an essentially right cylindrical-shaped reformed portion adjacent the double-seamed bead of the closed can.

4,578,008

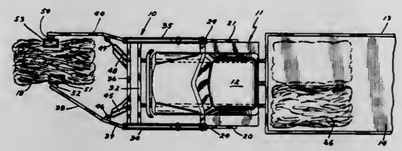
HAY BALE LOADER

Harold T. Gleason, Box 119, Tolna, N. Dak. 58380

Filed Apr. 27, 1984, Ser. No. 604,875

Int. Cl.⁴ A01D *87/12*; B60P *1/48*

U.S. Cl. 414—24.5 **17 Claims**



1. A lifting and loading apparatus for use in conjunction with a vehicle having a load-bearing bed, comprising:

stationary frame means fixed to the vehicle on first and second opposite sides of the vehicle with respect to a vehicle center line;

a lift frame assembly movably assembled to the stationary frame means, said lift frame including a first lift leg having an inner end and an outer end, means pivotally connecting the inner end of the first lift leg to the stationary frame means on a first side of the vehicle permitting rotation of the outer end about a first horizontal axis in an arc extended between a generally horizontal extended position with respect to the vehicle and an overhead past vertical position with respect to the vehicle, a second lift leg having an inner end and an outer end, means pivotally connecting the inner end of the second lift leg to the stationary frame means on the second side of the vehicle in coaxial relationship with the first lift leg permitting rotation of the outer end of the second lift leg about said first horizontal axis in an arc in parallel relationship to the first lift leg, means connecting said outer ends of the first and second lift legs, and first power means for rotating the first and second lift legs between said positions;

a first rigid load arm having an inner end and an outer end, means pivotally connecting the inner end of the first load arm to the lift frame assembly on the first side of the vehicle in fixed relation to the lift frame assembly with respect to rotation about said first horizontal axis and permitting pivotal movement of its outer end about an axis perpendicular to the first horizontal axis and said outer end being movable in and through an arc intersecting the vehicle center line, a second rigid load arm having an inner end and an outer end, means pivotally connecting the inner end of the second load arm to the lift frame assembly on the second side of the vehicle in fixed relation to the lift frame assembly with respect to rotation about said first horizontal axis and permitting rotation of the outer end about an axis parallel to and spaced apart from the axis of rotation of the first load arm and said outer end being movable in and through an arc intersecting the vehicle center line, said outer ends of the first and second load arms movable toward and away from one another in side-by-side relationship with respect to the vehicle upon pivotal movement about respective pivotal axes, second power means for pivotal movement of the first and second load arms toward and away from one another, a first gripping member pivotally connected proximate the outer end of the first load arm and a second gripping member pivotally connected proximate the outer end of the second load arm whereby the second power means can be actuated to bring the outer ends of the first and second load arms toward one another to grip a load for lifting of the load upon pivotal movement of the first and second lift legs from the generally horizontally extended position to the overhead position for deposit of a load on the vehicle bed.

4,578,009

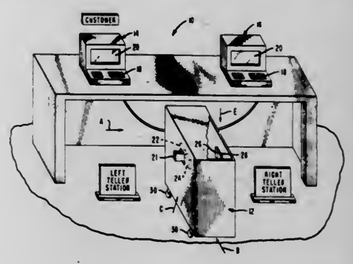
COLLECTOR AND CARRIAGE MECHANISM FOR USE IN A SHEET DISPENSER

Robert H. Granzow, Miamisburg; Richard H. Daulton, Kettering; Dale L. Placke; Donald L. Adelberger, both of Dayton; Jack R. Gross, Waynesville, and Charles S. Nagy, Dayton, all of Ohio, assignors to NCR Corporation, Dayton, Ohio

Filed Mar. 28, 1984, Ser. No. 594,451

Int. Cl.⁴ B65H *39/42*

U.S. Cl. 414—43 **11 Claims**



9. A sheet dispenser comprising:

a housing having first and second sheet dispensing area therein;

means for storing sheets within said housing;

means for collecting sheets at a home position within said housing;

means for delivering sheets to be dispensed from said storing means to said collecting means;

a member having one end pivotally mounted on said collecting means and a resilient means for biasing said member from a first position past a dead center position to a second position in which a free end of said member resiliently compresses said sheets on said collecting means;

actuating means located at said home position for selectively moving said member beyond said dead center position to enable said resilient means to bias said free end to said second position and also for returning said member to said first position;

a support structure;

first means for mounting said support structure for pivotal movement between associated first and second positions in said housing;

second means for mounting said collecting means on said support structure for movement from said home position to said first and second sheet dispensing areas;

first moving means located on said support structure for selectively moving said collecting means from said home position to said first and second sheet dispensing areas and also for returning said collecting means to said home position;

a purge bin located beneath said collecting means when said collecting means is in said home position;

second moving means for selectively moving said support structure from said associated first position to said associated second position to enable sheets left on said collecting means to fall into said purge bin; and

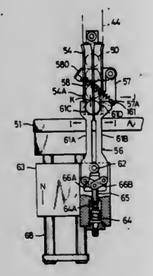
control means operatively coupled to said delivering means, actuating means and first and second moving means to control the movement of sheets from said storing means to said first and second sheet dispensing areas and said purge bin.

4,578,010

ELECTRONIC COMPONENT SELECTION AND SUPPLY APPARATUS IN AUTOMATIC ELECTRONIC COMPONENT INSERTING MACHINE

Kotaro Harigane; Keiichi Ihara; Tetsuro Ito, and Hirokazu Shudo, all of Tokyo, Japan, assignors to TDK Corporation, Japan

Filed Oct. 28, 1982, Ser. No. 437,329
Claims priority, application Japan, Oct. 31, 1981, 56-173702; Nov. 16, 1981, 56-169518[U]; Nov. 20, 1981, 56-172155[U]
Int. Cl.⁴ H05K *3/30*
U.S. Cl. 414—126 **15 Claims**



1. In a machine for processing and inserting electronic components into lead receiving openings in a printed circuit board,

a selection and supply apparatus for selecting and moving an electronic component to a first position and supplying said selected electronic component to a second predetermined position, comprising:

electronic component sequence means for selecting a predetermined electronic component, said sequence means including a shaft mounted for intermittent rotation, a plurality of substantially vertical electronic component magazines coupled to said shaft at locations therearound, adjacent pairs of magazines being mutually spaced from each other by equal angular distances, each of said magazines adapted to accommodate a plurality of substantially vertically stacked electronic components therein, and intermittently activated drive means for rotating said shaft through angles equal to an integral multiple of said angular distance between adjacent magazines in response to an instruction to supply a predetermined kind of electronic component to the first position located below or at the bottom of a corresponding one of said electronic component magazines to thereby situate a lowermost one of the electronic components in any of said magazines which constitutes the predetermined kind of component in the first position; and

chuck means for receiving the predetermined electronic component which was selected by said electronic component sequence means and moved to said first position and for supplying said electronic component to said second predetermined position, said chuck means including a first chuck for gripping a body of the selected electronic component to extract the same from said first position and move the same to an intermediate position, and a second chuck for gripping a lead of the electronic component at said intermediate position and moving the component to said second predetermined position, said first chuck being movable in a longitudinal direction of the corresponding one of said electronic component magazines.

4,578,011

DEVICE FOR CHARGING STEEL PRODUCTS IN A REHEATING OR TREATMENT FURNACE

Yves Braud, Maurepas, and Jean Fromentin, Paris, both of France, assignors to Stein Heurtey Ste Anonyme, Ros Orangis, France

Filed May 17, 1984, Ser. No. 611,402
Claims priority, application France, May 18, 1983, 83 08656
Int. Cl.⁴ F27B *9/14*
U.S. Cl. 414—152 **3 Claims**

1. In combination with:

a treatment furnace having a longitudinally and horizontally extending charging opening;

a horizontally and transversely extending furnace conveyor in the furnace and having an upstream end in the vicinity of the charging opening; and

a loading conveyor including a longitudinally extending array of transversely extending approach rollers adjacent the charging opening, whereby a workpiece to be treated in the furnace can be rolled longitudinally along the approach rollers to a position transversely aligned with the charging opening,

a loading apparatus including:

at least two transversely extending arms each having an inner end pivoted inside the furnace about a longitudinal axis at the upstream end of the furnace conveyor and an outer end outside the furnace, the arms extending through the charging opening and between the approach rollers;

an array of longitudinally extending loading rollers rotatable about horizontal and longitudinal axes on the arms;

means for raising the outer ends of the arms and thereby pivoting the arms and the loading rollers carried thereby from a lower position with the loading rollers below the approach rollers to an upper position with the loading rollers above the approach rollers, whereby a longitudinally extending workpiece in transverse alignment with the charging opening is supported for longitudinal movement on the approach rollers in the lower position of the arms and is supported for transverse movement on the loading rollers in the upper position of the arms; and

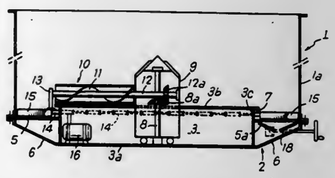
means for transversely pushing a workpiece supported on the loading rollers outside the furnace through the charging opening into the furnace and onto the upstream end of the furnace conveyor.

4,578,012

DEVICE FOR DISCHARGING PULVERULENT PRODUCTS CONTAINED IN A SILO

Raymond Petit, Tours, France, assignor to Guery S.A., Chemille, France

Filed Feb. 2, 1984, Ser. No. 576,138
Int. Cl.⁴ B65G *65/46*
U.S. Cl. 414—310 **3 Claims**



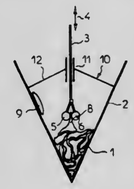
1. A device for discharging pulverulent products contained in a cylindrical silo, the discharge of said products taking place in an appropriate part of the lower periphery of the silo, said device comprising a radial horizontal arm equipped with an Archimedean screw, said arm being placed in the immediate vicinity of the lowest part of the silo and being mounted on a turret while a fixed vertical shaft is placed inside the turret co-axially with the silo and is provided with a first pinion which cooperates with a second pinion wedged on the shaft of the Archimedean screw, whereas means are provided to drive the arm and turret in rotation about the axis of the silo, wherein a cylindrical bin of diameter smaller than that of the silo and having an upper tray which constitutes both the support for the device and the lowest part of the silo, which bin comprises a flange which extends radially as far as the cylindrical wall of the silo and defines a peripheral groove with said upper tray and wherein said drive means are constituted by an endless chain housed in said groove and coupled to the outer end of the horizontal arm, said groove further presenting an opening in which is placed a sprocket-wheel which cooperates with the chain and is driven by a motor situated inside the bin.

4,578,013

DEVICE FOR PICKING UP LOOSE ARTICLES

Christian Barillec, Tourcoing; Dominique Janvier, Lille, and Marc Bonneton, Tourcoing, all of France, assignors to Societe Anonyme Redoute Catalogue, Roubaix, France

Filed Feb. 10, 1984, Ser. No. 578,865
Claims priority, application France, Nov. 29, 1983, 83 19256
Int. Cl.⁴ B65G *3/04*
U.S. Cl. 414—323 **9 Claims**



1. A device for picking up loose articles one at a time said articles being inherently soft such as textiles or being packaged in a supple envelope such as a plasticized film bag, said articles being disposed in bulk in a flared container having an open top to provide access to said articles, said device comprising:

a manipulatable mobile arm adapted to descend vertically through the opening of said container in order to lift one of the articles from the container,

a pair of cylindrical wheels of small diameter rotatably mounted at a lower end of said arm, each of said wheels having a periphery and a concentric axis of rotation substantially perpendicular to the direction of vertical displacment of said arm, said wheels being mounted resiliently with their peripheries pressed against one another and being separable by entry of an article between them,

means for driving said wheels continuously for rotation in opposite directions so as to nip an article or its envelope between them, and

control means for detecting the presence of an article taken between the wheels and controlling said driving means to stop the rotation of said wheels.

4,578,014

AUTOMOBILE TRAY TRAILER

Ralph Colet, 6018 Paxton Ct., San Jose, Calif. 95123

Filed Nov. 17, 1983, Ser. No. 552,607
Int. Cl.⁴ B60P *3/12*
U.S. Cl. 414—483 **14 Claims**

1. A transportable tray trailer apparatus for towing behind a tractor vehicle and adapted for transporting motor vehicles thereon comprising:

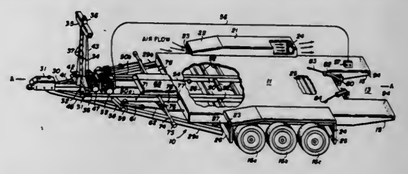
a tiltable tray portion including a first flat rectangular bed attached to a primeter framework, a securing means for securing and centering a vehicle about a vehicle loading portion of said bed, the tray further including a first and a second longitudinal member positioned parallel to each other and to an axis of motion of the trailer and rigidly attached to a front portion of said perimeter framework;

a wheel means attached to opposite lateral sides of said perimeter framework for movably supporting the tray portion at an elevated position above the ground;

a towbar means for attaching the tray to a tractor vehicle, the towbar means including a first and a second V-member pivotably attached to each front lateral side of said perimter framework and rigidly attached to a longitudinal neck member, said neck member having at an anterior terminal end a hitch formed for attachment to said tractor vehicle;

a winch means secured to said longitudinal members for loading a motor vehicle onto the tray;

a tilting means formed to the towbar means and to the tray and including a vertical column pivotably mounted to said neck member, said column including a plurality of spaced-



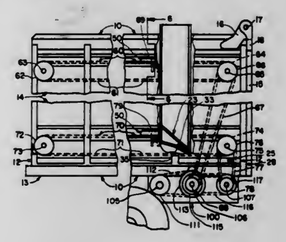
apart apertures, a horizontal cross member secured to said first and second longitudinal members and slidably fitting over said column and including a lift means for lifting said first and second longitudinal members relative to said column and a locking means to secure said longitudinal members in a lifted position about said apertures; and said wheel means are partially enclosed by a fender means, said fender means including a front angled portion, an intermediate horizontal portion, and a rear vertical portion, said front and rear portions each including apertures, with said front aperture being smaller than said rear aperture resulting in a slight downward force on the trailer during transport, said slight downward force improving stability of said trailer during transport, said fender means further including a front air dam extend laterally underneath the tray and immediately in front of the wheel means, and a rear air dam extending laterally underneath the tray and behind the wheel means.

4,578,015

TRUCK BODY WITH PULL-OFF DOOR

Wallace E. Baldarelli, West Boylston, and Wilfred J. Grenier, Rutland, both of Mass., assignors to Baldarelli Bros., Inc., West Boylston, Mass.

Filed Jun. 16, 1983, Ser. No. 505,055
Int. Cl.⁴ B60P *1/00*
U.S. Cl. 414—513 **1 Claim**



1. In an elongated load carrying body arranged to be mounted fixedly on a track or truck trailer including an elongated bottom panel and elongated opposite side panels, all three with smoothly contoured inner surface, a rearwardly

located load constraining door selectively closed and latched to contain a load within the elongated body or unlatched and open to release a load from the elongated body, an initially forwardly located load moving door having bottom and side edge sealing portions maintained in sealed sliding engagement with the inner surfaces of the bottom panel and the opposite side panels, respectively, the load moving door being supported upon opposed door supporting arms respectively passing through cooperating elongated slots extending lengthwise of and through the opposite side panels for engagement with and synchronous movement by load moving door driving means respectively mounted upon the opposite side panels outwardly beyond each of said slots and operative to move the load moving door lengthwise of the elongated body toward and away from the load constraining door to form a load carrying compartment of a length variable with movement of the load moving door, the improvement comprising:

relatively shallow and relatively wide elongated channels disposed lengthwise of and recessed in and outwardly from the otherwise smoothly contoured inner surfaces of the opposite side panels and each having a back wall including upper and lower portions thereof together straddling one of the relatively narrower lengthwise elongated slots,

elongated flexible sealing strips disposed entirely within and closely interfitted within and filling each said elongated channel, the exposed inner surface of each said flexible sealing strip being smoothly contoured and coacting with the otherwise smoothly contoured inner surface of the adjoining and coacting side panel to form an uninterrupted smoothly contoured and fully sealed inner surface throughout the load carrying compartment of the elongated body in uninterrupted sealed engagement with the edge sealing portions of the load moving door, wherein the upper and lower portions of the back wall of each said relatively wide elongated channel, respectively adjacent the upper and lower edges of each relatively narrow elongated slot and each fixedly supported by the coacting elongated side panel, respectively fixedly support the upper and lower edges of its associated elongated flexible sealing strip, and thereby support the entire elongated flexible sealing strip, against any substantial outward deflection thereof by the accumulated weight of material confined within the load carrying compartment of the elongated body, thereby maintaining each said relatively narrow elongated slot fully sealed lengthwise of the entire load carrying compartment,

fastening means securing the upper edge of each said flexible sealing strip to the upper portion of the back wall of each said channel, to maintain each said flexible sealing strip in operative relation to its coacting side panel and to allow inward deflection of the lower edge of each said flexible sealing strip outside of the load carrying compartment of the elongated body to permit the passage therebehind of one of the supporting arms for the load moving door, and

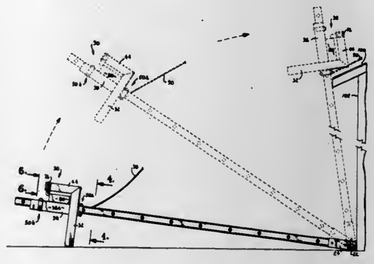
a plurality of elongated constraining means for the load moving door, each mounted fixedly upon the elongated load carrying body adjacent to and outwardly beyond each fully sealed elongated slot, and each including an opposed pair of elongated straight rigid track members together supporting and closely confining a slide assembly fixedly attached to the outer end of each door supporting arm for movement of the respective slide assemblies freely lengthwise of the elongated load carrying body only, responsive to the operation of the door driving means, and not otherwise either vertically or horizontally.

4,578,016

SHINGLE LOADING LADDER

John H. Richardson, 804 Duck Rd., Grandview, Mo. 64030

Filed Jun. 20, 1983, Ser. No. 506,201
Int. Cl.[4] E06C *1/00, 7/16*
U.S. Cl. 414—680 **35 Claims**



1. For use with a conventional ladder having first and second parallel side rails with a plurality of parallel rungs laterally extending therebetween, structure for raising ground-adjacent material, such as shingles, to the roof of a structure comprising:

an imaginary axis of rotation extending between the bottom ends of said side rails;

cradle means attached to said ladder adjacent the upper end thereof for releasably engaging said material therein, said cradle comprising:

first and second support arms;

means for mounting said respective support arms to a respective side rail in a direction extending away from said side rails; and

a leg member extending from each support arm and towards the upper end of said ladder, each leg member terminating in an end spatially adjacent said respective side rail to allow for insertion of said material therebetween, said support arms offering basal support and cooperating with said leg members to maintain said material in place during ladder rotation; and

means for rotating said ladder about said axis between ground-adjacent and upstanding positions to concurrently raise the cradle and present the same to a user on said roof for release of said material from said cradle.

4,578,017

METHOD FOR STOPPING A MULTI-STAGE HYDRAULIC MACHINE

Taizo Nakamura, and Katsuyuki Kawahara, both of Hachioji, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 13, 1984, Ser. No. 599,773
Claims priority, application Japan, Apr. 14, 1983, 58-66020
Int. Cl.[4] F01D *21/14;* F03B *13/10*
U.S. Cl. 415—1 **6 Claims**

1. A method for stopping a multi-stage hydraulic machine having an inlet valve, guide vanes including highest stage movable guide vanes and lowest stage movable guide vanes, and a return passage connected between flow passages of respective stages, said multistage hydraulic machine being in turbine operation, said method comprising the steps of:

initiating the closing of said highest stage movable guide vanes;

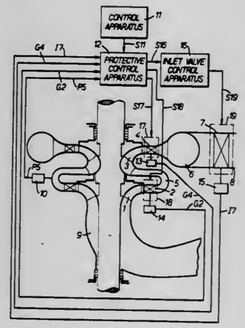
initiating the closing of said lowest stage movable guide vanes after initiation of closing said highest stage movable guide vanes;

judging whether a closing relation between said highest stage movable guide vanes and said lowest stage movable guide vanes is normal or not in accordance with predetermined criteria after initiation of closing said lowest stage movable guide vanes, said judging step including the steps of,

continuing to close said lowest stage movable guide vanes when said closing relation is judged to be normal and said lowest stage movable guide vanes are in closing operation,

stopping the closing of said lowest stage movable guide vanes when said closing relation is judged to be abnormal and said lowest stage movable guide vanes are in closing operation, and

continuing to stop the closing of said lowest stage movable guide vanes when said closing relation is judged to be



abnormal and closing of said lowest stage movable guide vanes is stopped;

resuming closing of said lowest stage movable guide vanes when said closing relation is judged to be normal and closing of said lowest stage movable guide vanes is stopped;

repeating said judging step if said lowest stage movable guide vanes are not completely closed; and

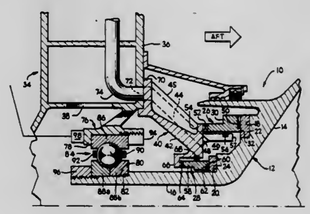
closing said inlet valve after said highest stage movable guide vanes are completely closed.

4,578,018

ROTOR THRUST BALANCING

Adam N. Pope, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Continuation of Ser. No. 506,141, Jun. 20, 1983, abandoned. This application Jul. 8, 1985, Ser. No. 752,498
Int. Cl.[4] F01D *3/04*
U.S. Cl. 415—14 **5 Claims**



5. In a gas turbine engine, including a rotor supported axially by at least one rotor thrust bearing, means for reducing the axial thrust on said bearing, comprising:

(a) an annular, sealed pressure chamber coaxial with the center axis of said rotor wherein said chamber is bounded by a portion of said rotor, a non-rotating member, and sealing means operatively connecting said rotor and non-rotating member, said sealing means positioned as to define a radially outer and inner seal for said sealed pressure chamber; and

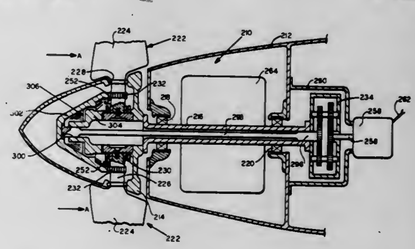
(b) means for supplying hydraulic fluid to said chamber at a pressure proportional to said axial thrust on said thrust bearing.

4,578,019

RAM AIR TURBINE

William F. Safarik, Manhatten Beach, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed May 28, 1982, Ser. No. 383,084
Int. Cl.[4] F01D *7/02;* F03D *7/04*
U.S. Cl. 416—1 **23 Claims**



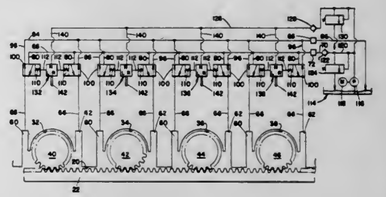
1. The method of pivotally adjusting the relative pitch of a fluid energy reactive blade member carried upon a rotor member comprising the steps of providing a reference speed shaft, coupling said reference speed shaft to said blade member via linkage means rotatable with said rotor member, pivoting said blade member via said linkage means in response to a rotational speed difference between said reference speed shaft and said rotor member, and providing a centrifugally responsive apparatus in association with said linkage means for pivotally adjusting the pitch of said blade member in response to rotation of said rotor member.

4,578,020

HYDRAULIC MOTOR

Josef Bartos, 8955 N. Shiloh Dr., Chesterland, Ohio 44026

Continuation of Ser. No. 574,977, Jan. 30, 1984, abandoned. This application Oct. 1, 1985, Ser. No. 782,189
Int. Cl.[4] F01C *1/08*
U.S. Cl. 418—196 **5 Claims**



1. A variable hydraulic motor comprising, housing means providing a primary chamber having a first axis and a plurality of secondary chambers opening into said primary chamber, a primary gear in said primary chamber rotatable about said first axis, a secondary gear in each of said secondary chambers rotatable about a corresponding second axis parallel to said first axis, each of said secondary gears being in meshing engagement with said primary gear along a line through said first axis and the corresponding one of said second axes, each of said secondary chambers having a pair of fluid flow ports, the ports of each pair opening into the corresponding secondary chamber on circumferentially opposite sides of the corresponding one of said lines, means providing hydraulic fluid inlet and outlet lines, said pair of ports of each said secondary chamber being connected across said inlet and outlet lines, and means for selectively controlling fluid flow to each port of said pair of

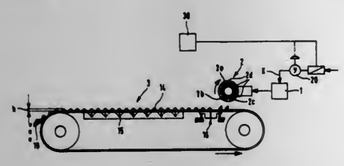
ports of each said secondary chamber including valve means for each port of said pair of ports, each said valve means having a first position blocking fluid flow through said inlet line to the corresponding one of said pair of ports and permitting fluid flow through said outlet line from said one port, and a second position permitting fluid flow through said inlet line to said one port and blocking fluid flow through said outlet line from said one port; and valve control means operatively associated with the valve means of each said pair of ports for normally maintaining each said valve means in said first position and for selectively moving one of said valve means from said first position to said second position thereof while maintaining the other valve means in said first position thereof.

4,578,021

APPARATUS FOR THE PRODUCTION OF GRANULES FROM TWO-PHASE MIXTURES

Konrad Schermutzki, Remseck, Fed. Rep. of Germany, assignor to Santrade Ltd., Lucerne, Switzerland

Filed Nov. 1, 1983, Ser. No. 547,492
Int. Cl.[4] B29C *39/38, 39/44*
U.S. Cl. 425—6 **12 Claims**



1. An apparatus for producing granules from two-phase mixtures comprising a temperature controlled precrystallizer means for cooling an initial substance enriched with crystal nuclei and wherein the resultant precrystallized melt is fully crystallized on a cooling surface, said apparatus further comprising a droplet former disposed over said cooling surface and including inner and outer telescoping tubes, said tubes having mutually facing surfaces which interengage, said inner tube communicating downstream with said precrystallizer and having a plurality of outlet orifices for conducting the precrystallized melt outwardly therethrough, said outer and inner tubes being arranged for relative rotation, said outer tube having a plurality of discharge orifices which are intermittently alignable with said outlet apertures in response to relative rotation between said tubes for discharging drops of precrystallized mass onto said cooling surface, and means for effecting relative rotation between said inner and outer tubes.

4,578,022

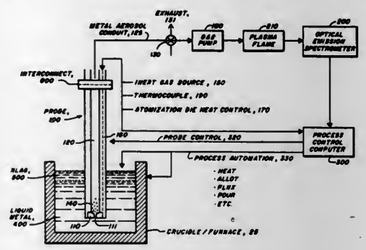
APPARATUS FOR IN-PROCESS MULTI-ELEMENT ANALYSIS OF MOLTEN METAL AND OTHER LIQUID MATERIALS

George B. Kenney, 131 Green St., Medfield, Mass. 02052

Filed Aug. 12, 1983, Ser. No. 522,913
Int. Cl.[4] B22F *9/00*
U.S. Cl. 425—7 **21 Claims**

1. A probe apparatus, for generating from a melt an aerosol powder for being subject to in-process analysis, the apparatus comprising:

an atomization die having an orifice through which the melt is aspirated along a flow axis to create an aerosol, such orifice (i) being in the size range at and above that size which is just sufficient to permit generation of such powder by flow of the melt therethrough and (ii) having in at least one direction perpendicular to the flow axis a dimension less than approximately five millimeters.

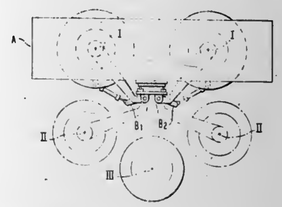


4,578,023

APPARATUS FOR LOADING GREEN TIRES

Nobuhiko Irie, Nagasaki, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 512,129, Jul. 8, 1983. This application Jul. 23, 1985, Ser. No. 757,867
Claims priority, application Japan, Jul. 23, 1982, 57-128363; Jul. 28, 1982, 57-131860
Int. Cl.[4] B29H *5/02*
U.S. Cl. 425—38 **15 Claims**



1. A curing press apparatus, comprising:

a curing press having first and second laterally aligned chambers for curing respective green tires therein, and having a center portion therebetween, each chamber being defined by an upper mold having an upper bead ring and a lower mold, at least one of said upper and said lower molds being reciprocally vertically movable with respect to the other to open and close said chambers;

a green tire loading mechanism mounted to said press in front of said center portion of said press, said loading mechanism including first and second movable green tire loading devices having upwardly directed gripping claws, for respectively loading a first green tire having first and second opposite bead portions from a first standby position in front of said first chamber into said first chamber, and loading a second green tire having third and fourth opposite bead portions from a second standby position in front of said second chamber into said second chamber;

a green tire placing table which is angularly movable 180° C. about a horizontal axis, located at a center position in front of said center portion of said tire curing press, and having means for supporting the first and second green tires with their respective first and third bead portions down; and

means for transferring the first green tire from said center position on said table with the first bead portion down to said first standby position on the gripping claws of said first loading device with the second bead portion down, and for transferring the second green tire from said center position on said table with the third bead portion down to said second standby position on the gripping claws of said second loading device with the fourth bead portion down, said transferring means including

means for moving the first green tire from said center position to said first standby position on one of said table and the gripping claws of said first loading device,

means for moving the first green tire from said table onto the gripping claws of said first loading device with the second bead portion down,

means for inverting said table with the first green tire thereon,

means for moving the second green tire from said center position to said second standby position on one of said table and the gripping claws of said second loading device,

means for moving the second green tire from said tire onto the gripping claws of said second loading device with the fourth bead portion down and

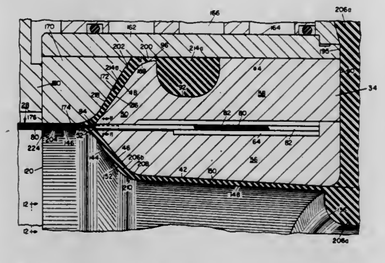
means for inverting said table with the second green tire thereon.

4,578,024

COEXTRUSION APPARATUS

Richard W. Sicka, Brecksville, and Dale A. Tompkins, Akron, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Feb. 22, 1985, Ser. No. 704,243
Int. Cl.[4] B29F *3/04, 3/10*
U.S. Cl. 425—114 **32 Claims**



1. A coextrusion head for producing a generally tubular elastomeric ply made up of first and second coaxial tubular streams of elastomeric materials having interposed adjacent to their interface a closely and uniformly spaced large array of parallel and independent reinforcing elements, said coextrusion head comprising in combination:

(a) a reinforcing element guide subassembly including a generally annular guide element having an outer wall surface and an inner wall surface as well as axially-directed guide means for individually and independently directing and accurately positioning a circular array of closely and uniformly spaced individual reinforcing elements;

(b) a generally annular inner die assembly, having inner and outer wall surfaces, coaxial with and located substantially radially inwardly of said annular guide element, at least one of said annular guide element and said inner die assembly having a 360° annular contoured channel in the wall surface, opposed to the wall surface of the other, said channel together with said opposed wall surface forming a first distribution channel;

(c) a generally annular outer die assembly, having inner and outer wall surfaces, coaxial with and located substantially radially outwardly of said annular guide element;

(d) at least one of said annular guide and said outer die assembly having a 360° annular channel in the wall surface opposed to the wall surface of the other, said channel together with said opposed wall surface forming a second distribution channel;

(e) the axial outer portions of the inner and outer wall surfaces of said annular guide element having converging portions merging into an end portion having a narrow annular outer end surface with said guide means having axial outlet end faces co-planar with said guide element narrow annular end surface;

(f) a portion of the outer wall surface of said inner die assembly and a portion of the inner wall surface of said annular guide element, both axially outward of said first distribution channel, cooperating to form a first generally tubular extrudate path;

(g) a portion of the outer wall surface of said annular guide element and a portion of the inner wall surface of said outer die assembly,, both axially outward of said second distribution channel, cooperating to form a second generally tubular extrudate path;

(h) the axially outermost portions of the inner wall surface of said outer die and the outer wall surface of said inner die cooperating to form a third generally tubular extrudate path, said first and second extrudate paths merging together into said third generally tubular extrudate path at the narrow annular end surface of said guide element;

(i) first and second inlet streams of elastomeric materials enter said first and second distribution channels and consequently said first and second annular tubular extrudate paths, respectively, and produce said first and second tubular streams which merge together into a combined third tubular stream of elastomeric material in said third extrudate path;

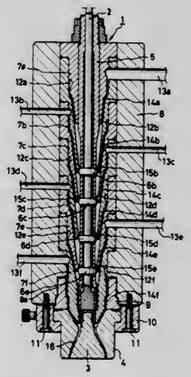
(j) said individual reinforcing elements being introduced into the interface between said first and second streams of tubular elastomeric material as they merge together simultaneously with said individually and independently guided reinforcing elements into said third tubular stream of elastomeric material thus producing said tubular elastomeric ply that is internally provided with said closely and uniformly spaced array of parallel reinforcing elements.

4,578,025

DIE ASSEMBLY FOR EXTRUDING MULTILAYER PARISONS

Kazuo Ando, 18-14, Hirata 2-chome, Ichikawa-shi, Chiba-ken, and Yoshiaki Matsuo, 33-13, Hanada 1-chome, Koshigaya-shi, Saitama-ken, both of Japan

Filed Nov. 21, 1984, Ser. No. 673,589
Int. Cl.[4] B29C *47/06*
U.S. Cl. 425—133.1 **1 Claim**



1. A die assembly for extruding multilayer parisons which comprises a parison programming shaft, having a lowermost end; a core pin which is attached to said lowermost end of said parison programming shaft; a mandrel which encircles said parison programming shaft; a plurality of control rings which

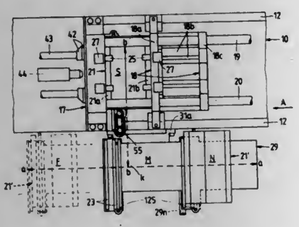
are mounted on said mandrel at predetermined intervals; a plurality of sleeves which are installed around said mandrel, and each said sleeve has an outside wall that is provided with an inclined groove and has a lower part which is of an inverted frustoconical shape; each said sleeve having an inner wall, with a lower end, an annular rib formed on said lower end of said inner wall of each said sleeve, a housing which holds therein the above members; the housing having a bottom part; a controlling member to control the resin quantity of the outer layer of parisons, said controlling member is movably attached to said bottom part of said housing and around the lowermost of said sleeves; said housing bottom part having a bottom face; a die supporting member which is attached to said bottom face of said housing; and a die which is supported by said die supporting member and which encircles said core pin a resin passage in said die assembly is defined and regulated by each of said control rings together with said annular rib that is formed on said lower end of the respective said inner wall of said sleeve at said ring, by said controlling member acting together with said lowermost sleeve, and by said die acting together with said core pin.

4,578,026

SAFETY COVER ARRANGEMENT FOR INJECTION MOLDING MACHINE WITH DIE EXCHANGE MECHANISM

Karl Hehl, Arthur-Hehl-Strasse 32, 7298 Lossburg 1, Fed. Rep. of Germany

Filed Jan. 9, 1984, Ser. No. 569,158
Int. Cl.[4] B29C *45/17, 45/84*
U.S. Cl. 425—151 **17 Claims**



1. A safety cover assembly for die closing unit of an injection molding machine equipped with a die exchange mechanism for the program-controlled insertion into and removal from the die closing unit of a succession of injection molding die assemblies or die halves, wherein the die exchange mechanism includes an elongated horizontal translation table with two longitudinally spaced die emplacements thereon and a translation drive moving the table longitudinally between two positions in which alternatingly one or the other of the two die emplacements occupies a central transfer position located laterally outside the clamping space of the die closing unit, while the other die emplacement occupies one of two waiting positions, and said mechanism further includes transfer guides and a transfer drive adapted to move said die assembly or die half transversely between the transfer position and the clamping space, and wherein the die closing unit and the translation table are supported on a machine base, the safety cover assembly comprising in combination:

a stationary central cover portion having a vertical stationary cover panel covering said central transfer position against lateral access thereto, while defining access an opening on opposite axial sides thereof, in approximate transverse alignment with said two waiting positions, for access to a die emplacement in waiting position; and

two sliding covers arranged to cover the two access openings, when the covers are in their closed position and movable longitudinally away from said openings, along cover guides extending parallel to the translation table; and wherein

each sliding cover is openable by moving said sliding cover in the direction of the central stationary cover portion so that, in the position of said sliding cover, is substantially superposed with the stationary cover portion; said sliding cover and

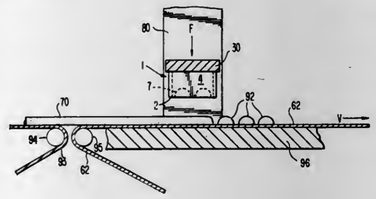
the two sliding covers move to substantally the same open position so that, when a first one of the two sliding covers is held in this position, said first sliding cover prevents the second sliding cover from being opened.

4,578,027

DIE HAVING AIR PASSAGES

Daniel A. Koppa, Bloomfield, and Walter Schaeder, Bergenfield, both of N.J., assignors to Nabisco Brands, Inc., Parsippany, N.J.

Filed May 29, 1984, Ser. No. 614,859
Int. Cl.[4] A21C *5/00, 11/10*
U.S. Cl. 425—298 **14 Claims**



1. An apparatus for producing separated pieces from an extrudate rope, comprising:

a die having a lower surface;

said lower surface having at least one indentation formed therein;

a means for driving said die in a cyclic operation having an upstroke and a downstroke, in which said die travels during a portion of its operation with a downward velocity as well as a forward velocity;

a means for conveying an extrudate rope under said generally flat surface of said die;

and at least one passage through a portion of said die;

a supply of fluid communicating with said passage;

said die having a vertical leading surface and a vertical trailing surface;

a leading indentation intersection a portion of said leading surface and said bottom surface;

a trailing indentation intersecting said trailing vertical surface and said bottom surface;

whereby said die moves downward against the extrudate rope to separate the extrudate rope into pieces, the lower surface of said die and said means for conveying forcing dough therebetween toward said at least one indentation, thereby forming the extrudate rope into pieces during cyclic operation of said die; and

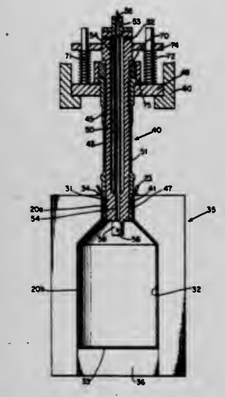
whereby during a stamping operating said trailing indentation forms a leading edge of a piece of extrudate rope, while simultaneously said leading indentation conforms to a trailing edge of a trailing piece previously formed from extrudate rope.

4,578,028

EXPANDABLE CORE PIN FOR BLOW-MOLDING A CONTAINER HAVING A NECK-PORTION WITH INTERNAL ATTACHMENT MEANS

William P. Dirksing; Marvin G. Leman, and Robert H. Van Coney, all of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 6, 1984, Ser. No. 678,623
Int. Cl.[4] B29C *17/07, 17/02*
U.S. Cl. 425—525 **8 Claims**



1. A radially expandable core pin for blow-molding a thermoplastic container having a body-portion and a neck-portion, said neck-portion including a dispensing orifice and internal attachment means, said core pin being radially expandable to compression mold said internal attachment means and comprising:

(a) a plurality of circumferentially disposed core sections surrounding the central axis of said core pin, said core sections being radially moveable between a normally collapsed position and an expanded position and having outer surfaces which mate along their longitudinal adjacent sides to form a substantially continuous neck-forming surface thereabout when radially displaced to expanded position, said neck-forming surface being relieved in a predetermined pattern to form said internal attachment means of said thermoplastic container;

(b) expansion means for moving the core sections to said expanded position, said expansion means comprising a tapered expansion pin; and

(c) blowing means formed through said core pin and adapted to be connected to a pressure source for providing blow-molding pressure for forming the body portion of said thermoplastic container, said blowing means comprises an axial blow-channel formed through said tapered expansion pin and includes at least one radially disposed exit port.

4,578,029

METHOD FOR DRIVING A ROTARY KILN FOR ROASTING CEMENT RAW MEALS

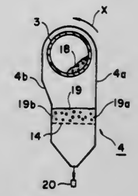
Tetsuo Fujisawa, Kobe, Japan, assignor to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Apr. 11, 1984, Ser. No. 598,965
Claims priority, application Japan, Oct. 17, 1983, 58-194516
Int. Cl.[4] F27B *15/00, 7/02*
U.S. Cl. 432—14 **3 Claims**

1. A method for driving a rotary kiln for roasting cement raw meals and producing clinker of a more uniform size, said kiln being provided with a clinker inlet communicating a suspension preheater having a calcining furnace and a raw meal outlet spaced from said inlet along the axis of rotation of said kiln, comprising the steps of:

orienting said kiln body with a downward slope towards said outlet, said slope being in a range from 1.5% to 3.5%; and

shortening a granulating zone of said kiln by driving said kiln body with a number of rotations in a range represented by the following equation:



$$N=(0.2\text{-}0.4)\times 42.3/\sqrt{D}$$

wherein N is the number of rotations of the kiln body in revolutions per minute and D is the inside diameter in meters of refractory materials in a granulating zone of the kiln, wherein said slope is selected as a function of a desired residence time of said raw meals in said kiln and of said number of rotations,

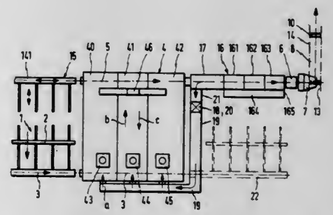
wherein said kiln having said shortened granulating zone produces clinker of more uniform size.

4,578,030

METHOD OF AND A PLANT FOR PREHEATING AND, POSSIBLY, HEAT-TREATING AND SUBSEQUENTLY DIVIDING ROD-SHAPED MATERIAL INTO SLUGS

Friedrich W. Elhaüs, Dorfstrasse 21, 7761 Moos, Fed. Rep. of Germany

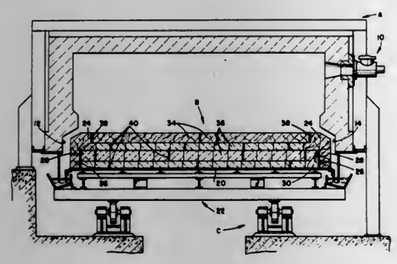
Filed Jun. 25, 1984, Ser. No. 623,966
Claims priority, application Fed. Rep. of Germany, Jun. 24, 1983, 3322874
Int. Cl.[4] F27B *9/12, 9/02*
U.S. Cl. 432—18 **12 Claims**



1. In a method of preheating and, possibly, heat-treating rod-shaped material, in particular of aluminum or aluminum alloys, in a furnace and subsequently dividing said rod-shaped material into slugs with hot shears, the improvement comprising the step of:

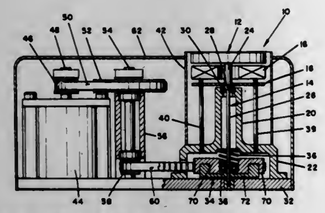
selectively air-cooling or heating the material in controlled fashion as said material is passed between the furnace and the hot shears.

4,578,031
DIMENSIONALLY STABLE MOVABLE FURNACE HEARTH
Keith A. Johnson, Toledo, and Vijay M. Kamlani, Maumee, Ohio, assignors to Midland-Ross Corporation, Cleveland, Ohio
Filed Nov. 9, 1984, Ser. No. 669,682
Int. Cl.⁴ F27B *9/16;* **F27D** *3/12, 23/00, 1/00*
U.S. Cl. 432—138 **18 Claims**



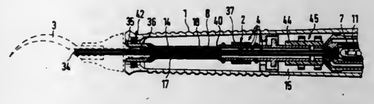
10. A furnace hearth having a dimensionally stable periphery, the furnace hearth comprising:
a base plate;
a plurality of anchoring plates extending upwardly from the base plate adjacent a peripheral edge thereof and disposed generally peripherally thereround;
a plurality of peripheral refractory elements disposed adjacent the base plate peripheral edge and exteriorally anchored to the anchoring plates against outward movement; and,
a plurality of refractory members supported by the base plate and disposed within the peripheral refractory elements to define a workpiece supporting surface.

4,578,032
WORKPIECE HEATER
C. Fredrick Miller, 1551 E. Pacifico Ave., Anaheim, Calif. 92805
Filed Nov. 26, 1984, Ser. No. 674,790
Int. Cl.⁴ F24J *3/00;* **F27D** *23/00, 11/00;* **F27B** *9/06*
U.S. Cl. 432—230 **15 Claims**



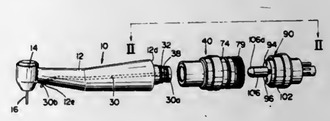
1. In a work heater for a wire bonding machine:
a turntable;
a non-rotatable, radiant energy turntable heater disposed at the lower side of and proximate to said turntable;
an elongated shaft fixed to said turntable and extending to said lower side of said turntable, the turntable and shaft being rotatable together about the axis of the shaft;
a thrust bearing supporting said shaft subjacent to said turntable and heater against axial movement in the direction away from said turntable; and
a spring positioned at the side of said bearing away from the turntable and heater and acting to urge said shaft in said direction away from the turntable, whereby displacement of said turntable is an incident to expansion and contraction of the length of said shaft.

4,578,033
TARTAR-REMOVING DENTAL HANDPIECE
Walter Mössle, Bad Waldsee, and Eugen Eibofner, Biberach, both of Fed. Rep. of Germany, assignors to Kaltenbach & Voight GmbH & Co., Biberach, Fed. Rep. of Germany
Filed Jul. 26, 1984, Ser. No. 634,784
Claims priority, application Fed. Rep. of Germany, Aug. 8, 1983, 3328604
Int. Cl.⁴ A61C *3/00*
U.S. Cl. 433—29 **28 Claims**



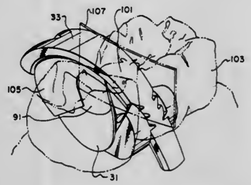
1. In a tartar-removing dental handpiece, including an elongated gripping sleeve; a vibratable tartar-removing instrument arranged at one end of said gripping sleeve; a pneumatically operated vibration generator arranged within said gripping sleeve and connected with said tartar-removing instrument to transmit vibrations thereto; media supply conduits in said gripping sleeve to conduct media therethrough; and coupling means at the end of said gripping sleeve distal from said instrument for connecting the media supply conduits with media sources; said media supply conduits including a compressed-air conduit for conducting compressed air from the coupling means to the vibration generator; the improvement comprising: said medium supply conduits further include a forward, fiber optic light conductor extending through the compressed-air conduit, and having a forward end directed towards said tartar-removing instrument; and light supplying means arranged at the end of the coupling means toward the instrument for supplying light to a rearward end of the forward light conductor.

4,578,034
DENTAL HANDPIECE HAVING AN OPTICAL FIBERSCOPE
Yuichi Shibata, and Tadashi Baba, both of Kanuma, Japan, assignors to Nakanishi Dental Mfg. Co., Ltd., Kanuma, Japan
Filed Aug. 31, 1984, Ser. No. 646,210
Claims priority, application Japan, Aug. 31, 1983, 58-134597[U]
Int. Cl.⁴ A61C *3/00*
U.S. Cl. 433—29 **2 Claims**



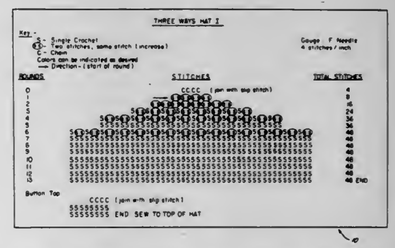
1. A dental handpiece for connection to a dental unit, comprising:
a handle portion having a power head assembly integrally supported on the front end of said handle portion, said power head assembly having therein an air turbine for driving a dental tool; a base cylindrical member located in the cylindrical hollow interior of said handle portion, said base cylindrical member having a first axial central passage with a fiberscope therein, a second side passage for supplying air under pressure to said air turbine, a third side passage for supplying water to the dental tool and a fourth passage for exhaust of air from said air turbine, the rear end of said fiberscope projecting slightly out of the rear end portion of said first central passage, each of said second, third and fourth passages extending parallel to said axial central passage and being equally peripherally spaced therearound;
a middle connecting means having an outer cylindrical member and an inner cylindrical member which is integrally fitted into said outer cylindrical member, said inner cylindrical member having a large diameter front hollow portion fitting into said handle portion around said base cylindrical member in fluid tight engagement therewith and a small diameter rear hollow portion into which the rear end of said base cylindrical member extends, three further side passages extending parallel to the axis of said cylindrical members in peripheral positions corresponding to the peripheral positions of said three side passages in said base cylindrical member and being in fluid communication with said three side passages, and releasable locking means engaging said base cylindrical member for locking said middle connecting means to said handle portion; and
a rear connecting means having a first axial central passage, a still further second side passage for supplying air under pressure, a still further third side passage for supplying water, and a still further fourth side passage for exhaust, said still further passages being aligned with corresponding ones of said further side passages in said middle connecting means, a stop element projecting radially from the outer periphery of said rear connecting means, a jack in said central passage, a lampholder and a lamp inserted into said jack, said lamp projecting into the rear hollow portion of said middle connecting means adjacent the end of said fiberscope, and a cap having internal threads and rotatably mounted around the outer periphery of said rear connecting means over said stop and threadedly engaged with the rear end of said middle connecting means for firmly attaching said rear connecting means to said middle connecting means.

4,578,035
DENTAL WEDGE
Darrell K. Pruitt, 2817 Stark, Suite A, Fort Worth, Tex. 76112
Filed May 20, 1985, Ser. No. 735,949
Int. Cl.⁴ A61C *7/00*
U.S. Cl. 433—149 **18 Claims**



1. An apparatus for use for dental restoration, comprising:
two flexible members, one being defined as a gingival member and the other being defined as an occlusal member,
said gingival member having first and second ends and being generally C-shaped between said first and second ends,
said gingival member having an outer side and two other sides which extend from opposite edges of said outer side to a pointed edge where they meet each other,
said occlusal member having a first end and a second end,
said occlusal member having an outer side and two other sides which extend from opposite edges of its outer side to a pointed edge where they meet each other,
means for connecting said second end of said occlusal member to said first end of said gingival member and for connecting said first end of said occlusal member to said second end of said gingival member such that a closed loop wedge is formed by said gingival and occlusal members with their pointed edges defining a central opening, said gingival member being adapted to be inserted partially through the gingival embrasure of two adjacent teeth from its first end with its outer side facing the gum whereby the pointed edge of said occlusal member may be fitted within the occlusal embrasure of the two adjacent teeth and second end of said occlusal member connected to said first end of said gingival member and said first end of said occlusal member connected to said second end of said gingival member to form a closed loop wedge which fills the gingival, buccal, lingual, and occlusal embrasures between the two adjacent teeth.

4,578,036
METHOD OF INSTRUCTIONS FOR KNITTING AND CROCHETING
Estelle Leighton, 205 Graham St., Stratford, Conn. 06947
Filed Apr. 15, 1983, Ser. No. 485,198
Int. Cl.⁴ G09B *19/20*
U.S. Cl. 434—95 **11 Claims**

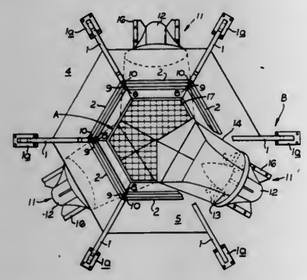


1. A method for use in preparing knitted and crocheted articles constructed of more than one type of stitch comprising the steps of:
forming a pattern of the article,
displaying on that pattern the symbols representative of each type of stitch to be formed, and indicating on said pattern the position, number, and character of each stitch.

4,578,037
SKYDIVING SIMULATOR
Alexander Macangus, 16 Chapel Street, and Thomas Dickson, 4 Burgess Terrace, both of Edinburgh, Scotland
PCT No. PCT/GB82/00298, § 371 Date Jun. 16, 1983, § 102(e) Date Jun. 16, 1983, PCT Pub. No. WO83/01380, PCT Pub. Date Apr. 28, 1983
PCT Filed Oct. 20, 1982, Ser. No. 511,348
Claims priority, application United Kingdom, Oct. 20, 1981, 8131665; Dec. 4, 1981, 8136577
Int. Cl.⁴ G01M *9/00;* **A63B** *71/02;* **A63G** *31/16*
U.S. Cl. 434—258 **26 Claims**

1. A skydiving simulator comprising a framework (B), a flying chamber (A) supported within the framework (B), the flying chamber (A) having an air inlet at the base thereof and an air outlet at the top thereof, and means (11) for producing an upward stream of air within the flying chamber (A), wherein the flying chamber (A) is made of tensioned sheet material (6), and the flying chamber (A) having a lower section (A'), whose side walls (6*a*) are substantially vertical about a central longitudinal axis, and the flying chamber (A) further having an upper section (A''), concentrically mounted about the central longitudinal axis and having a lower end coincident with the upper end of the lower section (A'), and the side walls (6*b*) of the upper section (A'') inclined at a small angle to the vertical and

divergent with respect to the central longitudinal axis, whereby the upper end of the upper section (A") has a larger



cross-sectional area than the lower end of the upper section (A').

4,578,038

ELONGATED PROPELLING MEANS FOR MANUALLY MOVING A SAILING CRAFT OVER THE WATER SURFACE

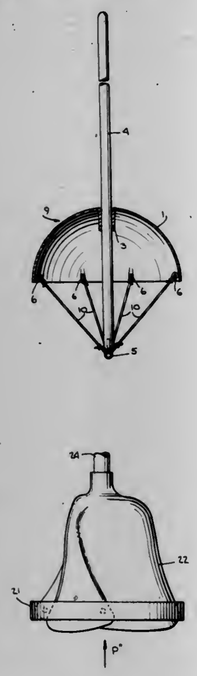
Hendrik Lenten, Zijlroede 20, 8604 BB Sneek, Netherlands

Continuation of Ser. No. 507,011, Jun. 23, 1983, abandoned. This application Jun. 17, 1985, Ser. No. 745,373

Claims priority, application Netherlands, Aug. 3, 1982, 8203091; Aug. 18, 1982, 8203246

Int. Cl.⁴ B63H *1/32*

U.S. Cl. 440—19 **6 Claims**



1. A thrust device for manually propelling a water craft over the surface of the water, the thrust device including an elongated pole member and thrust means disposed adjacent to one end of the pole member, the thrust means comprising:

a flexible substantially circular foil;

a tubular collar formed at the center of the substantially circular foil, the collar being fastened to the pole member at a location adjacent to but spaced from said one end of the pole member;

a plurality of elongated flexible tension members, each tension member having a first end and a second end;

means for attaching the first ends of the tension members at spaced apart locations around the circumference of the substantially circular foil; and

means for attaching the second ends of the tension members to said one end of the pole member, the lengths of the tension members being selected to hold the substantially circular foil open at a predetermined apex angle between the pole member and the foil, wherein:

the foil is made of soft plastics material and is provided with three equally spaced folds formed at the periphery of the foil and extending toward the center thereof, the plurality of tension members consist of six flexible lines attached to six locations equally spaced around the periphery of the foil, and alternate ones of the means for attaching the first ends of the tension members to the circumference of the foil are means for applying said folds to the foil; and wherein when the device is in the stored condition the folds are wrapped around the pole in a spiral direction, and the device further comprises an annular band surrounding the foil when the device is in the stored condition so as to set a spiral curve in the folds of the plastic foil to facilitate opening of the foil during a thrust stroke of the pole into the water and to facilitate collapse of the foil during a retraction stroke of the pole from the water.

4,578,039

MARINE HYDRAULIC STEERING SYSTEM CONTROL

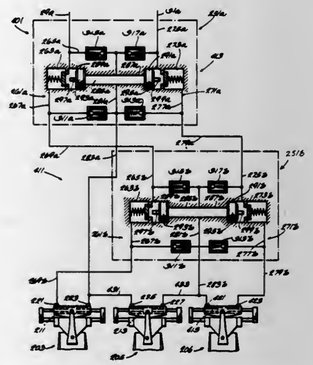
Charles B. Hall, Ingleside, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Continuation-in-part of Ser. No. 258,874, Apr. 29, 1981, Pat. No. 4,431,422. This application Dec. 1, 1983, Ser. No. 556,963

The portion of the term of this patent subsequent to Feb. 14, 2001, has been disclaimed.

Int. Cl.⁴ B63H *25/22*

U.S. Cl. 440—61 **21 Claims**



8. A hydraulic control unit for a marine installation comprising a helm station comprising a pump including first and second pump discharge ports, and means for selectively and alternatively delivering fluid under pressure from the pump to the first and second pump discharge ports, a plurality of steerable propulsion units, a corresponding plurality of hydraulic steering cylinders respectively connected to each of said propulsion units and including respective first ports which, when subject to fluid under pressure, tend to steer the propulsion units in one direction and including respective second ports which, when subject to fluid under pressure, tend to steer the propulsion units in the opposite direction, a first tie line connecting the first steering cylinder second port and the second steering cylinder first port, additional tie lines connecting successive steering cylinder second ports and the following steering cylinder first ports, said hydraulic control unit including a first hydraulic fluid line adapted for communication between the first pump discharge port and the first steering cylinder first port, a second hydraulic fluid line adapted for communication between the second pump discharge port and the last steering cylinder second port, and means adapted for communication with each of the tie lines and operably connected to said first and second fluid lines, and operable, during the presence of fluid under pressure supplied by the pump in one of the first and second fluid lines, and in response to the absence of fluid under pressure in any one of the tie lines, for preventing propulsion unit steering movement.

4,578,040

FISH LINE ENTERING PREVENTION DEVICE FOR MARINE PROPELLER

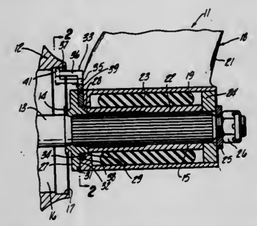
Yoshitsugu Sumino, and Hiroshi Harada, both of Shizuoka, Japan, assignors to Sanshin Kogyo Kabushiki Kaisha, Japan

Filed May 29, 1984, Ser. No. 614,880

Claims priority, application Japan, May 30, 1983, 58-94107

Int. Cl.⁴ B63H *1/28*

U.S. Cl. 440—73 **4 Claims**



1. In a fish line cutter or the like for a marine outboard drive having a lower unit housing defining a rearwardly opening annular recess, a propeller shaft journaled in said lower unit housing and having a portion juxtaposed to said annular recess, a propeller affixed for rotation with said propeller shaft and juxtaposed to said recess, and a fish line cutting device affixed for rotation with said propeller shaft and having a plurality of circumferentially spaced cutting edges disposed rearwardly of and in proximity to said recess, each of said cutting edges further having a portion extending axially forwardly at least in part into said recess and spaced radially inwardly from said recess to define a gap, the improvement comprising at least one area on said cutting device extending radially outwardly from each of said portions axially within said annular recess and in close proximity to the portion of said housing defining said recess to define a space sized to prevent the forward entry of fish line past said cutting edges and said gap into said recess.

4,578,041

WATER ACTUATED INFLATABLE FLOAT DEVICE

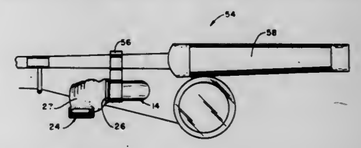
Lawrence F. Heitkamp, III, Chesterfield, and John J. Heitkamp, Jr., Union, both of Mo., assignors to Trip-Saver Inc., Chesterfield, Mo.

Filed Aug. 20, 1984, Ser. No. 642,390

Int. Cl.⁴ B63B *22/22*

U.S. Cl. 441—30 **6 Claims**

1. A flotation device comprising an inflatable member having an inlet opening therein, a compressed gas source including a container therefor with a port therein, means normally sealing said port, a body member having a bore extending therethrough, means connecting the port of the compressed gas container to the body member adjacent the bore and in registration therewith in position so that the means closing the port extends across said bore, a piston member positioned in the bore and movable therein between a first position engaging the means sealably closing the port in the compressed gas container and a second position spaced from said sealing means, said piston member having means thereon capable of rupturing the means sealably closing the port in the compressed gas container in the first position thereof, an outlet port through the body member communicating the bore with the inlet opening of the infaltable member when said piston member is in the second position thereof, piston engaging means positioned on said body member and movable between one position wherein said piston engaging means retains said piston member in the first position thereof and another position wherein said piston



engaging means allows said piston member to be moved to said second position thereof, liquid responsive means adaptable for retaining said piston engaging means in the one position thereof and adaptable for releasing said piston engaging means when exposed to a liquid thereby enabling the compressed gas in the compressed gas container to move the piston from said first position to said second position thereby establishing communication between the compressed gas in the compressed gas container and the inflatable member by way of the bore and the outlet port in the body member, liquid flow regulator means comprising a non-permeable cover member placed over and around said device, said cover member having a first opening therein to allow said inflatable member to resiliently pass therethrough and a second opening to allow the port of said compressed gas container to extend therethrough to adjacent the bore, and means adjacent said second opening to regulate the amount of liquid that can pass therethrough.

4,578,042

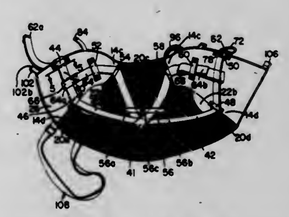
SAFETY HARNESS PERSONAL FLOTATION DEVICE

Karla R. Evert, St. Cloud, Minn., assignor to Stearns Manufacturing Company, St. Cloud, Minn.

Filed Mar. 4, 1983, Ser. No. 472,091

Int. Cl.⁴ B63C *9/08*

U.S. Cl. 441—117 **10 Claims**



1. A safety harness personal flotation device to be worn on the body of an individual which comprises:

(a) a buoyant body portion comprising a front section having a top zone and a bottom zone and right-front and a left-front section, and a back section having a top zone and a bottom zone, the back section being cooperatively connected to the front section at both the top zones and the bottom zones, at least one of the front and back sections

comprising a mass of buoyant material, the body portion also having an inside and an outside surface;

(b) a floating harness formed of webbing carried adjacent to the inside surface but not otherwise significantly permanently attached to the body portion;

(c) means for carrying the floating harness adjacent to the inside surface, comprising:

(i) a first strap, the first strap having first and second ends, the ends being attached to the inside surface of the body portion such that the first strap resides in a substantially horizontal alignment within the top zone of the right front section;

(ii) a second strap, the second strap having first and second ends, the ends being attached to the inside surface of the body portion such that the second strap resides in a substantially horizontal alignment near an intersection between the top zone of the right front section and the back section;

(iii) a third strap, the third strap having first and second ends, the ends being attached to the inside surface of the body portion such that the third strap resides in a substantially horizontal alignment near an intersection between the top zone and the bottom zone of the back section, the third strap having sufficient length to permit the webbing to pass twice between the third strap and the inside surface while the webbing resides in a substantially single plane;

(iv) a fourth strap, the fourth strap having first and second ends, the ends being attached to the inside surface of the body portion such that the fourth strap resides in a substantially horizontal alignment near an intersection between the top zone of the left front section and the back section; and

(v) a fifth strap, the fifth strap having first and second ends, the ends being attached to the inside surface of the body portion such that the fifth strap resides in a substantially horizontal alignment with the top zone of the left front section, such that the webbing is threaded sequentially beneath the first strap, the second strap, twice through the third strap, the fourth strap and the fifth strap so as to allow horizontal and vertical movement of the webbing beneath the straps;

(d) a ring-like member connected to the floating harness and readily accessible for attachment to a rescue line, located between the right-front and the left-front section, wherein the device has sufficient integrity to support the dead weight of an individual wearing the device when the device is attached at the ring-like member to a rescue line and the individual is pulled into the air by the line, and wherein when the device is worn by an individual, the ring-like member is attached to a rescue line, and the rescue line pulls the individual into the air, stress caused by the dead weight of the individual will be borne substanitally by the floating harness rather than by the body portion.

4,578,043

METHOD AND APPARATUS FOR MANUFACTURING LIGHT BULB WITH BEAD SEALING GAS

Toru Teshima; Masanobu Aizawa; Mitsunari Yoshida, all of Yokohama; Toshiyuki Shima, Kawasaki, and Masakazu Takeda, Tokyo, all of Japan, assignors to Stanley Electric Co., Ltd., Tokyo, Japan

Filed Feb. 26, 1985, Ser. No. 705,747

Claims priority, application Japan, Mar. 5, 1984, 59-41718

Int. Cl.[4] H01J *9/18*

U.S. Cl. 445—40 **21 Claims**

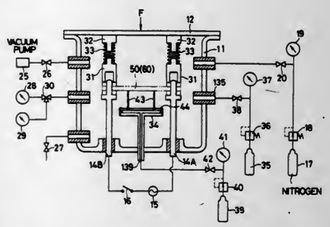
1. A method of manufacturing a light bulb with a bead sealing gas therein, comprising:

setting a bead mount and a glass bulb in a recess in an upper surface of a heater arranged inside a hermetically sealed chamber;

evacuating said chamber;

supplying a first gas to the interior of said chamber at a predetermined pressure after said chamber is evacuated;

supplying a second gas, which includes at least one sealing gas, into a space between said glass bulb and said bead mount at a pressure higher than that of said first gas to exhaust said first gas from said space between said glass bulb and said bead mount to substitute said second gas for said first gas in said space; and



energizing said heater after gas substitution is performed or while said gas substitution is being performed, so that the bead of said bead mount and an edge portion of said glass bulb are heated and melted to seal together said glass bulb and said bead mount to form a sealed bulb with said second gas sealed therein.

4,578,044

MAGNETICALLY MOVABLE MODEL TOY

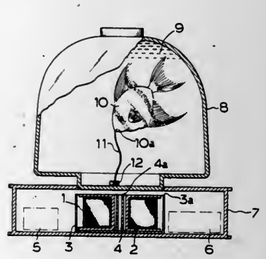
Shigeru Saitoh, Tokyo, Japan, assignor to Masudaya Corporation Limited, Tokyo, Japan

Filed Jul. 30, 1984, Ser. No. 635,897

Claims priority, application Japan, Jan. 30, 1984, 59-13515

Int. Cl.[4] A63H *33/26, 3/52, 13/00*

U.S. Cl. 446—134 **19 Claims**



1. A toy, comprising:

a vessel having a base portion;

a fluid contained within said vessel;

a buoyant moveable model buoyantly supported by said fluid;

means for generating and alternating a magnetic field in response to a direct current;

a permanent magnet located on said base portion, disposed in said generated magnetic field and moveable in response to the latter; and

means for transmitting the movement of said permanent magnet in said generated magnetic field to said moveable model, said transmitting means including a string having ends respectively attached to said permanent magnet and said moveable model so that movement of said permanent magnet in said generated magnetic field causes said string to move thereby transmitting said movement to said moveable model.

4,578,045

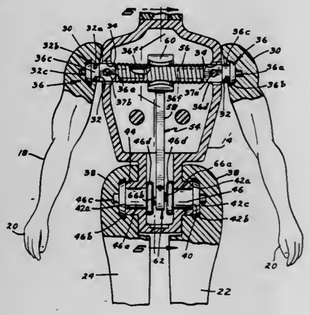
ACTION FIGURE WITH LEG MOVEMENT DERIVED FROM ARM MOVEMENT

John F. Mayer, Fort Thomas, Ky.; Nick H. Langdon, Cincinnati, Ohio; Stuart A. Cook, New Richmond, Ohio; L. Todd Nicholson, Cincinnati, Ohio, and John R. Belcher, Opelika, Ala., assignors to CPG Products Corp., Minneapolis, Minn.

Filed Jan. 30, 1984, Ser. No. 574,826

Int. Cl.[4] A63H *3/20*

U.S. Cl. 446—330 **19 Claims**



1. A toy action figure comprising a hollow torso, first and second arms, first means mounting said first arm to said torso for lateral rocking movement about a first axis, first and second legs, second means mounting said first leg to said torso for pivotal movement about a second axis, and an actuating mechanism within said torso connecting said first arm to said first leg for causing the pivotal movement of said first leg about said second axis by transmitting movement of said first arm to said first leg when said first arm is rocked about said first axis in a lateral direction relative to one side of said torso, said actuating mechanism including coil spring means having one end portion thereof coupled to said first means and further including third means coupled to said coil spring means at a location spaced from said first means, said spring means and said third means connecting said first arm to said first leg through said first and second means.

4,578,046

REVERSIBLY TRANSFORMABLE TOY BLOCK ASSEMBLY

Kouzin Ohno, Tokyo, Japan, assignor to Takara Co., Ltd., Tokyo, Japan

Filed Mar. 18, 1983, Ser. No. 476,822

Claims priority, application Japan, Mar. 24, 1982, 57-41463[U]

Int. Cl.[4] A63H *3/46, 17/00*

U.S. Cl. 446—376 **12 Claims**

1. A reversibly transformable toy block assembly, comprising:

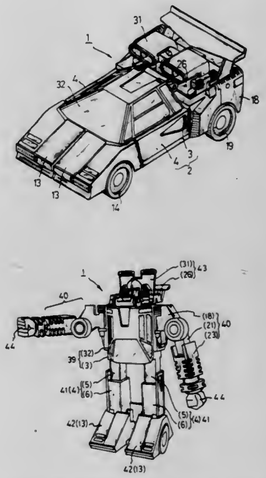
a frame means for supporting said toy block assembly;

a pair of first movable elements mounted on both sides of said frame means so as to be shiftable between a first position and a second position;

a second movable element mounted on said frame means so as to be shiftable between a third position and a fourth position;

a pair of third movable elements slidably mounted on said frame means so as to be slidable between a fifth position and a sixth position; and

a pair of fourth movable elements each attached to the end portion of each said third movable elements so as to be movable between a seventh position and an eighth position; wherein said toy block assembly forms a toy vehicle when said toy first, second, third and fourth movable elements are respectively in the first, third, fifth and seventh positions and said toy block assembly forms a toy humanoid robot different in appearance from said toy vehicle when the first to fourth movable elements are respectively in the second, fourth, sixth and eighth positions, when said toy block assembly is transformed into



said toy robot, said frame means forms a trunk of said toy robot and said first to fourth movable elements respectively form arms, a head, legs and feet of said toy robot, each of the elements being permanently connected together as a unitary toy assembly.

4,578,047

STATION-SELECTING DEVICE FOR A RADIO RECEIVER

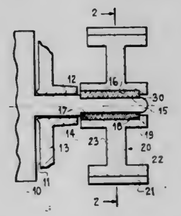
Guy Pissot, Bressolles, France, assignor to Thomson-Brandt, Paris, France

Filed Nov. 14, 1983, Ser. No. 551,531

Claims priority, application France, Nov. 16, 1982, 82 19144

Int. Cl.[4] F16D *7/02;* **F16H** *35/18, 55/00*

U.S. Cl. 464—30 **5 Claims**



1. A selecting device for tuning a radio receiver comprising:

a rotatable control knob;

a shaft fastening said control knob to one end thereof; a cylindrical sleeve which is elastic in the radial direction, frictionally and movably mounted on said shaft;

a rigid driven member fixed to an outer surface of said sleeve for rotating between two end positions by the rotation of said knob;

a part driven by said driven member; and

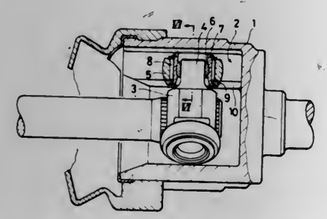
said sleeve absorbing radial forces and compensating for

play between the shaft and the driven member, and between the driven member and the part;
the value of the coefficient of friction between the shaft and the sleeve being sufficiently high to produce a driving movement of the driven member when the member is located between its end positions and sufficiently low to produce relative rotation of the shaft in the sleeve when said driven member is stopped at an end position.

4,578,048
SLIDABLE TYPE CONSTANT VELOCITY UNIVERSAL JOINT

Selichi Hirai, Saitama; Akira Nishizawa, Asaka, and Nobuyuki Otsuka, Kawagoe, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 6, 1981, Ser. No. 236,914
Claims priority, application Japan, Feb. 25, 1980, 55-22377[U]
Int. Cl.⁴ F16D *3/20*
U.S. Cl. 464—111 **25 Claims**



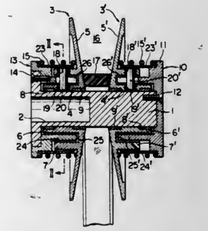
11. A constant velocity universal joint comprising inner and outer rotatable members having respective longitudinal axes of rotation and being relatively pivotable with respect to one another, trunnions extending radially outwards on said inner member, said outer rotatable member having longitudinal grooves therein, one for each trunnion, each of said grooves having opposite curved side walls, roller means on said trunnions rollably supported in said grooves for axial travel therein, said roller means comprising a roller rotatably mounted on each said trunnion for universal pivotal movement and being slidable axially thereof, said roller having a curved outer surface complimentary to the curved side walls of the respective groove and being rollably engaged therein for axial travel in said groove, said roller being undersized relative to the maximum width of the groove measured between the side walls to provide a clearance in said groove so that with the roller disposed at the maximum width of the groove the outer surface of the roller does not contact both of the respective side walls of the groove simultaneously, and abutment means carried by each of said roller means for travel therewith as said roller means travels in the respective groove and on the respective trunnion said abutment means being positioned for engaging the side walls of the respective said groove to limit axial travel of the roller means on the trunnion and preserve the clearance of the roller in the groove when the roller means slides axially on the trunnion.

4,578,049
PULLEY DEVICE

Yoshitaka Sakai, Nagoya, Japan, assignor to Sakai Manufacturing Co., Ltd., Nagoya, Japan

Filed Feb. 20, 1985, Ser. No. 703,573
Claims priority, application Japan, Sep. 18, 1984, 59-195076
Int. Cl.⁴ F16H *55/56*
U.S. Cl. 474—8 **5 Claims**

1. A pulley device comprising:
a driving shaft;
a pair of discs each having a centre opening through which said disc is mounted on said driving shaft for slidable movement along an axis of said driving shaft, each of said discs being provided at one end thereof with a truncated cone surface and at the other end with concentric tubular portions, and axes of said concentric tubular portions being concentrated to an axis of said disc;
at least a pair of roll pins each radially extending through aligned bores formed in peripheral walls of said concentric tubular portions of respective discs, said roll pin being restrained from a movement along an axis thereof;
oilless bearing means interposed between an outer periphery of the respective roll pin and an inner periphery of said aligned bores in said concentric tubular portions for rotation of said roll pin about the axis thereof as well as for slidable movement of said roll pin along the axis thereof;

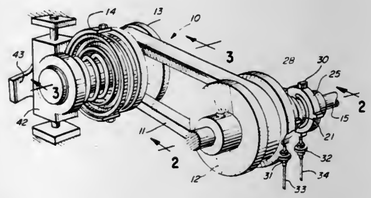


a pair or urging means each interposed between said the other end of said disc and an end member fixed to said shaft, each of said urging means urging one of said disc toward the other one to define between said truncated cone surface thereof an annular groove for a driving belt; and
a pair of cylindrical portions each fixed to said shaft and able to be loosely accommodated in an annular space defined by said concentric tubular portions of the respective discs, said cylindrical portion being provided at a peripheral wall thereof with at least one axial notch having a circumferential width substantially equal to a diameter of said roll pin for movement of said roll pin along the axis of said driving shaft.

4,578,050
BELT-TYPE TORQUE CONTROL SYSTEM

Hiroshi Takano, Hyogo, Japan, assignor to Mitsuboshi Belting Ltd., Kobe, Japan

Filed May 8, 1985, Ser. No. 731,997
Int. Cl.⁴ F16H *11/06*
U.S. Cl. 474—17 **16 Claims**



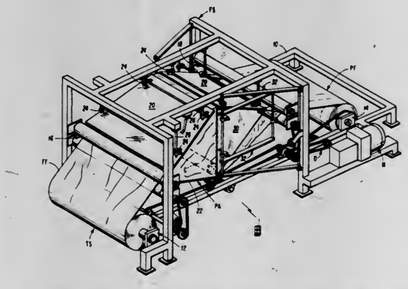
1. In a drive system having a first variable speed pulley, a second variable speed pulley having first and second pulley halves defining axially opposite radially inwardly converging belt groove sidewalls coaxially mounted to a shaft, means for fixedly securing one of the pulley halves to said shaft, means for rotatably, axially slidably mounting the second pulley half to said shaft, and spring means associated with said pulley halves for resiliently biasing said pulley halves to have a prese-

lected minimum spacing between the belt groove sidewalls and causing an increase in the spacing between said sidewalls as a result of said second pulley half being rotatively displaced about said shaft as a result of drive forces developed between the belt and said second pulley half, and a belt entrained about said pulleys to provide a driving connection therebetween, the improvement comprising:
electrical means for sensing the angular displacement between said fixed first and movable second pulley halves; and
adjusting means for adjusting said first pulley effectively to maintain said angular displacement within a preselected range.

4,578,051
FILM TUBE GUSSET FORMING MACHINE

Wayne F. Everman, Cedar Falls, Iowa, assignor to Container Corporation of America, Chicago, Ill.

Filed Feb. 25, 1985, Ser. No. 705,325
Int. Cl.⁴ B31B *1/12, 1/36*
U.S. Cl. 493—8 **10 Claims**



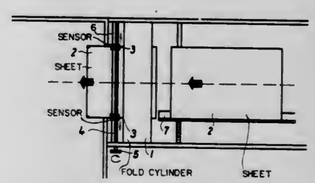
1. A machine for converting tubular plastic film from flat fold to pleated fold cross section, comprising:
(a) a frame;
(b) first and second film holding means mounted on said frame and spaced from each other for holding tubular plastic film in flat fold condition and pleated fold condition, respectively;
(c) a film pleat forming assembly mounted on said frame intermediate said first and second film holding means;
(d) said pleat forming assembly including:
(i) first and second sets of nip rolls spaced from each other adjacent said first and second film holding means, respectively;
(ii) means for advancing said film between said sets of nip rolls;
(iii) means for inflating that portion of the film passing between said sets of nip rolls;
(iv) means for maintaining said inflated film in a specific shape;
(v) means for forming pleats or gussets in opposite sides of said film before said film enters said second set of nip rolls;
(e) said inflating means including an air filled container positioned within said tube of film between said sets of nip rolls and having a valve including a radio receiver for operating same;
(f) a radio transmitter located without said tube for transmitting signals to said valve operating receiver.

2. A method for converting tubular plastic film from flat fold to pleated fold cross section, comprising:
(a) providing a length of plastic film in the form of a tube;
(b) inserting into said length of said tubular film a container of air having a radio controlled valve for releasing from said container a sufficient amount of air to inflate said length of tubular film to the desired degree;
(c) providing outside of said length of tubular film a radio for controlling said valve;
(d) confining opposite ends of a length of said film between first and second said sets of nip rolls;
(e) inflating said length of film between said sets of nip rolls through said radio controlled container valve;
(f) advancing said length of film between said sets of nip rolls;
(g) while said length of film is being advanced:
(i) maintaining a predetermined contour therefor by engaging upper and lower surfaces thereof with forming elements;
(ii) forming gussets therein by engaging the sides thereof with gusset forming elements.

4,578,052
METHOD AND APPARATUS TO DETERMINE FOLDING DEVIATIONS

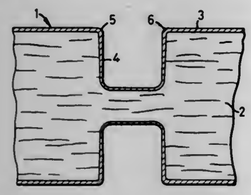
Andreas Engel, Liebertwolkwitz; Frank Schumann, Machern; Werner Stiefel, and Reinhold Freistedt, both of Rückmarsdorf, all of German Democratic Rep., assignors to VEB Kombinat Polygraph "Werner Lamberz" Leipzig, Leipzig, German Democratic Rep.

Filed Sep. 15, 1982, Ser. No. 418,129
Claims priority, application German Democratic Rep., Nov. 27, 1981, 235195
Int. Cl.⁴ B31B *49/00;* B31F *1/00*
U.S. Cl. 493—11 **14 Claims**



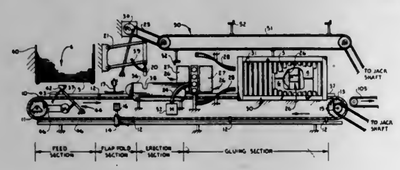
1. Method for determining folding deviations from desired positions of folds in a material having a given print format, comprising marking a plurality of sheets of material to be folded with markings according to the print format, said markings having determined spacings from the position of the material at which it was desired that a fold be made, folding said sheets of material inside a folding machine and then sensing the respective said markings with sensors to obtain the position information of said markings, electronically evaluating the obtained position information to determine the deviation of the folding from the desired positions thereof, the step of electronic evaluation of the obtained position information comprising determining the statistical characteristics typical for the distribution of the folding deviations values, such as ranges of folding deviation values and standard deviation values and comparing said deviation to reference values for the determination of systematic folding deviations, said systematic folding deviations being dependent on the setting of the folding machine, whereby the folding machine may be adjusted in accordance with said systematic folding deviations to minimize folding deviations in subsequently folded sheets of material.

4,578,053
TOBACCO-SMOKE FILTERS
John A. Luke, Eastleigh, England, assignor to British-American Tobacco Company Limited, London, England
Filed Jan. 16, 1984, Ser. No. 570,829
Claims priority, application United Kingdom, Jan. 26, 1983, 8302058
Int. Cl.[4] A24C *5/50*
U.S. Cl. 493—45 **2 Claims**



1. A method of manufacture of filter rod which comprises feeding filtration material and plugwrap, being a thermally mouldable paperlike material contains theomaplastic material in the range of 25 to 95 percent of the plug wrap, continuously to a rod maker, and bringing the rod into contact with a heated moulding means, whereby an impression is produced in the peripheral surface of said plugwrap and the impressed part of the plugwrap is transformed from said paperlike material to a film-like material of reduced permeability whilst the continuity of said plugwrap is preserved.

4,578,054
CARTON ERECTION AND SEALING APPARATUS
Robert M. Herrin, P.O. Box 4509, Albany, Ga. 31706
Filed Nov. 17, 1983, Ser. No. 552,678
Int. Cl.[4] B31B *1/06, 3/00, 5/00*
U.S. Cl. 493—126 **11 Claims**



1. Apparatus for erecting and sealing flattened cardboard cartons, said cartons having a pair of major flaps and a pair of minor flaps, comprising:

a. conveyor means for moving an initially flattened carton forward at a constant rate, said flattened carton disposed on said conveyor means in a horizontal plane;

b. flat folding means cooperating with said conveyor means for folding a first pair of a minor flap and a major flat upward and a second pair of a minor flap and a major flap downward;

c. mechanical clamping means for grasping both sides of the upward folded major flap;

d. erecting means for drawing said clamping means upward as said conveyor means moves said carton forward thereby opening said carton, said erecting means releasing said clamping means when said carton is fully open;

e. means maintaining said container in an erect condition during said movement,

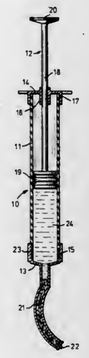
f. glue applying means adjacent said conveyor means for applying glue to said minor flaps as said carton moves past said glue applying means;

g. major flap folding means for folding said upward and downward folded flaps inward and in contact with said glue on said minor flaps;

h. platen means moving in said direction and at the same rate as said conveyor means, said platen means extending into said carton for contacting the inside surfaces of said minor flaps after folding in of said major flaps; and

i. platen backing means adjacent said conveying means for contacting said folded in major flaps as said conveying means moves said carton along said platen backing means, said platen means applying pressure to said minor and major flaps against said platen backing means.

4,578,055
CONTROLLED DIFFUSION MEDICAMENT APPLICATOR
Dan E. Fischer, 1345 E. 3900 South, Salt Lake City, Utah 84016
Continuation of Ser. No. 60,382, Jul. 25, 1979, abandoned, which is a continuation-in-part of Ser. No. 799,168, May 23, 1977, abandoned. This application Apr. 26, 1984, Ser. No. 604,029
Int. Cl.[4] A61B *10/00*
U.S. Cl. 604—2 **17 Claims**



1. An apparatus for use in applying a hemostatic agent to bleeding gingival tissue during dental procedures, comprising:

reservoir means for holding a quantity of hemostatic agent;

means for applying the hemostatic agent at a desired location of the gingival tissue, the proximal end of the applying means being in communication with the reservoir means such that the hemostatic agent is applied under hydraulic pressure to the desired location by the distal end of the applying means;

porous means secured to the applying means such that a portion of the porous means extend sufficiently beyond the distal end so as to provide for at least partial sealing of the distal end of the applying means when pressed against the gingival tissue, thereby causing the hemostatic agent to be forced into said tissue by the hydraulic pressure of the applying means, and the porous means further protecting the gingival tissue from damage by the applying means as the tissue is mechanically burnished during application of the hemostatic agent; and

means for controlled dispensing of the hemostatic agent under hydraulic pressure from the reservoir means to the distal end of the applying means.

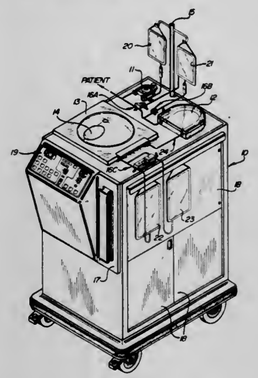
4,578,056
PATIENT PHOTOPHERESIS TREATMENT APPARATUS AND METHOD
Martin J. King, Largo, and Vernon H. Troutner, St. Petersburg, both of Fla., assignors to Extracorporeal Medical Specialties, Inc., King of Prussia, Pa.
Filed Oct. 29, 1984, Ser. No. 665,833
Int. Cl.[4] A61M *37/00*
U.S. Cl. 604—6 **12 Claims**

1. Apparatus for use in a patient treatment system wherein blood, in contact with a photoactivatable reagent, is collected from said patient, centrifuged to provide a leukocyte enriched portion which is irradiated for activating said reagent, all portions including the irradiated portion being returned to said patient, said apparatus comprising:

infusion pump means for controlling the addition of anticoagulation agent means to said patient's blood;

receiving means for receiving an irradiation cassette adapted to provide said photoactivating irradiation;

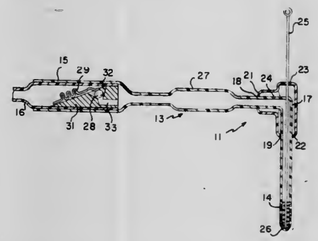
continuous centrifuge means for separating patient blood into at least a plasma portion and a leukocyte enriched portion, said centrifuge means including a revolution sensor for monitoring rotation;



blood pump means for pumping blood from said patient to said centrifuge, said blood pump means including revolution counter means and having known pumping characteristics whereby blood volume pumped may be determined;

central control means for regulating said infusion pump means, said receiving means, said continuous centrifuge means and said blood pump means whereby blood withdrawn from said patient, is contacted with said anticoagulant agent means, separated into a leukocyte enriched portion which, while in contact with said photoactivatable reagent, is irradiated prior to its return to the patient.

4,578,057
VENTRICULAR RIGHT ANGLE CONNECTOR AND SYSTEM
Marvin L. Sussman, Miami, Fla., assignor to Cordis Corporation, Miami, Fla.
Filed Aug. 31, 1984, Ser. No. 645,849
Int. Cl.[4] A61F *2/20*
U.S. Cl. 604—9 **9 Claims**



1. A right angle connector, catheter and hydrocephalus valve system, comprising:

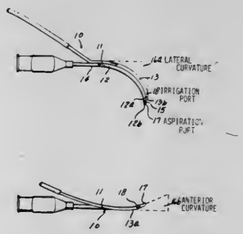
a tubing assembly having a ventricular catheter at its distal end, said tubing assembly including a cerebrospinal fluid drainage valve mounted therealong at a location caudal of said ventricular catheter, said tubing assembly also including a tubing portion that is cephalic of said cerebrospinal fluid drainage valve;

right angle connector means for insertingly receiving said ventricular catheter and at least a portion of said cephalic tubing portion, said right angle connector means being a substantially elbow-shaped tubular member having a passageway therethrough, said passageway having an internal cross-section that is greater than the external cross-section of the ventricular catheter and of the cephalic tubing portion, said passageway including a distal end opening and a proximal end opening, said right angle connector means and its said passageway being substantially closed and including means for substantially preventing leakage of cerebrospinal fluid from said right angle connector;

a self-sealing port is included on said right angle connector means, said self-sealing port being in generally straight-line alignment with said distal end opening of the passageway of the right angle connector means; and

stylet means for puncturing passage through said self-sealing port, for puncturing passage through said cephalic tubing portion at a location that is caudal of said ventricular catheter and for inserting passage into said ventricular catheter, and said self-sealing port closes upon removal of said stylet means from the right angle connector for substantially preventing cerebrospinal fluid leakage therethrough and out of said right angle connector.

4,578,058
INTRAOCULAR CATHETER APPARATUS AND METHOD OF USE
Stanley C. Grandon, 4529 Tanbark, Bloomfield Hills, Mich. 48013
Filed Apr. 2, 1984, Ser. No. 595,676
Int. Cl.[4] A61M *1/00*
U.S. Cl. 604—27 **10 Claims**



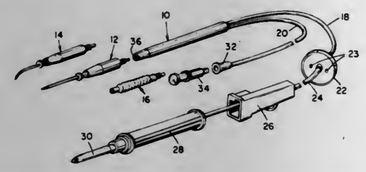
1. Surgical catheter apparatus for catheterized intraocular irrigation and aspiration of an aphakic eye, having an axially elongated tubular body along a longitudinal axis comprising an aspiration tube and an irrigation tube in double-barrel side by side relation for transport of fluid therein, each tube having a proximal portion and a distal portion, said distal portion with respect to the longitudinal axis of the proximal portion having a permanently fixed curved portion forming a compound curve means comprising both lateral curvature means and transverse curvature means with respect to the longitudinal axis, the degree of curvature means being such that during aspiration the curved extremity of the distal portion of the aspiration tube engages the capsular cortex behind the iris in the posterior chamber in the capsule of a aphakic eye, said distal portion including an aspiration port and an irrigation port, the aspiration port being located at the extreme distal portion and being spaced apart on the curvature in a direction facing away from the irrigation port on the distal end of the aspiration tube.

4,578,059

EXTRA-CAPSULAR CATARACT SURGERY SYSTEM

Robert N. Fabricant, 285 E. 24th St., Upland, Calif. 91786, and Ronald J. Gangemi, 14625 Youbet Rd., Grass Valley, Calif. 94545

Filed May 7, 1984, Ser. No. 607,411
Int. Cl.[4] A61M *3/00, 35/00*
U.S. Cl. 604—43 **13 Claims**



1. In a system for use in extra-capsular cataract surgery, the combination comprising:
   a handpiece having first and second longitudinally extending passageways for aspiration and irrigation purposes;
   a device attachable to said handpiece in axial alignment therewith, said device having a main body portion with a bore therein and having a first generally rigid cannula secured thereto generally centrally relative to said bore for providing a first flow passage for communication with said first passageway of said handpiece, said first cannula having first port means adjacent the tip thereof; and
   a piston member rotatably and slidably assembled within said bore on said main body portion, said piston member having a second generally flexible cannula secured thereto in an axial direction, said second cannula being configured for being assembled on said first cannula with the terminal end of said second cannula being in generally sealing relation, said second cannula having port means adjacent the terminal and thereof, said member and said second cannula being in flow communication with said second passageway means within said device whereby the port means of said second cannula may be displaced axially and circumferentially relative to said port means of said first cannula during use thereof.

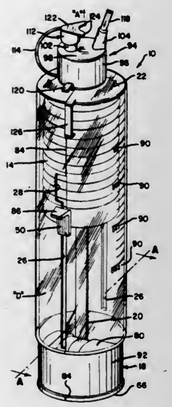
4,578,060

WOUND DRAINAGE DEVICE

Charles M. Huck, Pottersville, N.J., and Edward W. Larrabee, Bronxville, N.Y., assignors to Howmedica, Inc., New York, N.Y.

Filed Jul. 20, 1983, Ser. No. 515,504
Int. Cl.[4] A61M *1/00*
U.S. Cl. 604—133 **27 Claims**

1. A device for drawing fluids therein comprising:
   a. a housing having an end wall and an opening therein;
   b. an airtight and watertight resilient container disposed within the housing and being collapsible and expandable therein;
   c. means for communicating with the interior of the container;
   d. means for collapsing the container within the housing; and
   e. variable force means for automatically expanding the container from its collapsed state such that the combined resultant force of the variable forces provided by the container and the variable force expansion means allows for the creation of a substantially constant level of negative pressure within the container so as to provide for the drawing of fluids therein at a substantially constant level



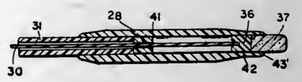
of suction, said variable force expansion means being disposed outside the container.

4,578,061

INJECTION CATHETER AND METHOD

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Continuation of Ser. No. 201,531, Oct. 28, 1980, which is a continuation-in-part of Ser. No. 885,263, Mar. 10, 1978, abandoned. This application Jul. 31, 1984, Ser. No. 636,239
Int. Cl.[4] A61M *5/00, 25/00*
U.S. Cl. 604—164 **8 Claims**



1. A catheter comprising:
   an elongated hollow flexible tubular member adapted to be inserted into and moved along a body duct, such as an artery,
   an operating head attached to and terminating at one end of said flexible tubular member and having a side wall portion facing lateral to the longitudinal axis of said flexible tubular member,
   an elongated narrow passageway extending longitudinally and laterally through said operating head and terminating at one end at an opening in said side wall of said head,
   a hollow hypodermic needle having a dispensing front end with an opening therein, said needle being completely disposed and supported within said operating head and movable longitudinally through said passageway in said head from a retracted position therein whereby the dispensing end of said needle is below said opening in said side wall of said head to an extended position whereby said dispensing end of said needle projects laterally outwardly beyond the side wall of said head so as to permit said dispensing end of said needle to penetrate tissue against the side wall of said head,
   first means at the other end of said elongated hollow flexible tubular member for applying a force for urging movement of said needle through said passageway in said head from said retracted position therein to said extended position lateral of said head and for returning said needle from said extended to said retracted position within said head when said head is selectively located within a passageway of a living being,
   second means for introducing a liquid into said needle and ejecting said liquid through the opening in the dispensing end of said needle into tissue penetrated by the end of said needle.

4,578,062

INTRAVENOUS CATHETER HOLDER

Paul E. Schneider, 300 N. Main St., Woodsfield, Ohio 43793

Filed Dec. 14, 1984, Ser. No. 681,801
Int. Cl.[4] A41D *1/04;* A61M *5/00*
U.S. Cl. 604—174 **1 Claim**



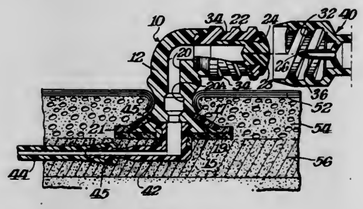
1. A re-usable intravenous catheter holder configured in the shape of a cut-off tank top body garment comprising:
   a. an integral frontal support pouch for holding and supporting an indwelling catheter tubing and coupling, and being disposed on the garment side adjacent the chest of the patient;
   b. an elastic band integrally disposed around the bottom of said holder;
   c. an integral shoulder strap, on the frontal side of the garment where the catheter protrudes from the patient's chest, that may be opened or closed by a fastening means wherein said fastening means may be comprised of one of:
      i. garment snaps;
      ii buttons; or
      iii. hook and loop fasteners; and
   d. a second elastic band integrally disposed along the open lip of said support pouch to maintain the shape thereof.

4,578,063

CENTRAL VENOUS CATHETER

Charles M. Inman, Flagstaff, and Donald J. Stone, Rimrock, both of Ariz., assignors to W. L. Gore & Assoc., Inc., Newark, Del.

Filed Sep. 14, 1984, Ser. No. 650,722
Int. Cl.[4] A61M *5/00*
U.S. Cl. 604—175 **20 Claims**



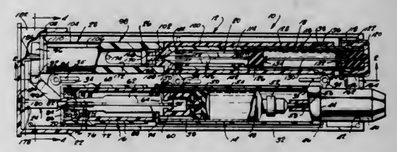
1. A percutaneous implant device to provide a port of entry into the body comprising:
   a nonporous, bicompatible conduit having an upper inlet opening and a lower attached flange, the flange having a top with a continuously curved perimeter and a continuously curved side wall which tapers to a bottom wall having a continuously curved perimeter of larger diameter than said top, and having a central opening therethrough extending from said top through said flange to said bottom wall,
   said conduit extending from the top of the attached flange and having an angle bend above said flange which, in use, extends at an angle to the skin, from the bend location to the conduit inlet, wherein said conduit extends from the top of said flange, first necking inwardly and then flaring outwardly, forming an hourglass configuration and having said angle bend just above said hourglass configuration, and wherein said conduit, within a part of said hourglass portion, has an inside diameter which is larger than the inside diameter of the remainder of said conduit providing a decreased conduit wall thickness at said hourglass configuration.

4,578,064

PLURAL DOSAGE AUTOMATIC INJECTOR WITH IMPROVED SAFETY

Stanley J. Sarnoff; George B. Calkins, and William R. Tarello, all of Bethesda, Md., assignors to Survival Technology Inc., Bethesda, Md.

Filed Dec. 21, 1983, Ser. No. 563,768
Int. Cl.[4] A61M *5/00*
U.S. Cl. 604—191 **16 Claims**



1. In a plural hypodermic needle and plural spring actuated injecting device of the type comprising outer housing means adapted to be exteriorly manually engaged by a user, a first cylindrical liquid container within said outer housing means, a first hypodermic needle disposed within said outer housing means in a storage position in operative association with said first container, first plunger means operatively associated with said first container, first spring means operatively associated with said first plunger means within said outer housing means, first releasable means normally retaining said first spring means in a stressed condition within said outer housing means, operable upon actuation in response to a predetermined manual actuating procedure to effect release of the stressed condition of said first spring means so that the spring force resulting from said release acts upon said first plunger means to move (1) said first hypodermic needle from said storage position to an extended position into the user and (2) liquid within said first container outwardly through said first hypodermic needle into the user; a second cylindrical liquid container, a second hypodermic needle operatively associated with said second liquid container, second plunger means operatively associated with said second liquid container, second spring means operatively associated with said second plunger means, second releasable means normally retaining said second spring means in a stressed condition operable upon actuation to effect release of the stressed condition of said second spring means, manually operable safety means including first safety means operable (1) when in a safety position with respect to said first releasable means to prevent actuation thereof as aforesaid and (2) when removed from said safety position in relation to said first releasable means to permit the actuation of said first releasable means as aforesaid, the improvement which comprises
   automatic safety means operable (1) when in a safety position with respect to said second releasable means to prevent actuation thereof as aforesaid and (2) when removed

from said safety position in relation to said second releasable means to permit the actuation of said second releasable means as aforesaid, and

mechanical motion transmitting means operable to transmit a movement occurring as a result of the actuation of said first releasable means into a secondary actuating movement operable to (1) effect a relative movement between said automatic safety means and said second releasable means sufficient to remove said automatic safety means from said safety position and (2) thereafter actuate said second releasable means to insure that the spring force resulting from the release of said second spring means by said second releasable means acts upon said second plunger means to move (a) said second hypodermic needle longitudinally outwardly into an extended position into the user in generally side-by-side relation to said first hypodermic needle and (b) liquid within said second container outwardly through said second hypodermic needle into said user.

4,578,065

PROTECTIVE SEALING COMPOSITION IN MOLDED FORM

Wagdi W. Habib, Roselle, Ill., assignor to Hollister Incorporated, Libertyville, Ill.

Continuation-in-part of Ser. No. 272,191, Jun. 10, 1981, Pat. No. 4,534,767, which is a continuation-in-part of Ser. No. 185,003, Sep. 8, 1980, abandoned, which is a continuation-in-part of Ser. No. 90,855, Nov. 2, 1979, abandoned. This application Apr. 19, 1985, Ser. No. 725,318

Int. Cl.⁴ A61F *5/44*

U.S. Cl. 604—336 **8 Claims**

1. A protective sealing composition in the form of a molded gelled ring, sheet, or the like, said composition comprising essentially a gelled mixture of gelable, water-absorbing, particulate hydrocolloid gum and a non-toxic liquid polyhydroxy alcohol, wherein the improvement comprises having dispersed in said composition an amount of colloidal silica gel within the range from 0.1 to 4.0% by weight, said amount of colloidal silica gel being effective to increase appreciably the mechanical endurance of said sealing composition when exposed to urine.

4,578,066

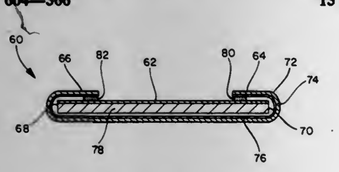
INCONTINENT GARMENT, CATAMENIAL DEVICE OR WOUND DRESSING

James J. O'Connor, Calumet County, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed May 29, 1984, Ser. No. 614,583

Int. Cl.⁴ A61F *13/16*

U.S. Cl. 604—366 **13 Claims**



1. A rectangular absorbent pad comprising an impervious outer layer comprising a polymer sheet integrally adhered to a fabric and oriented such that fabric is on the exterior of said pad, an inner absorbent member, and a pervious body-side liner adhered to the body side of said absorbent member wherein said impervious outer layer overlaps the long edges of said absorbent member and is adhered to said pervious liner on the body side of said pad.

4,578,067

HEMOSTATIC-ADHESIVE, COLLAGEN DRESSING FOR SEVERED BIOLOGICAL SURFACES

Mamerto M. Cruz, Jr., Pennington, N.J., assignor to Alcon (Puerto Rico) Inc., Humacao, Puerto Rico

Continuation of Ser. No. 367,455, Apr. 12, 1982, abandoned. This application Mar. 4, 1985, Ser. No. 708,008

Int. Cl.⁴ A61L *15/00*; A61F *13/16*

U.S. Cl. 604—368 **19 Claims**

1. A hemostatic-adhesive, collagen dressing for severed biological surfaces, comprising a dry-laid, non-woven, self-supporting web formed from a mass of hemostatic-adhesive, collagen fibers having a moisture content of from about 7% to about 15% by weight, said collagen fibers consisting essentially of an ionizable, water insoluble, partial acid salt of collagen containing from about 50% to about 90% of the theoretical stoichiometric amount of ionizable acid, said web having been calendered to improve its integrity.

4,578,068

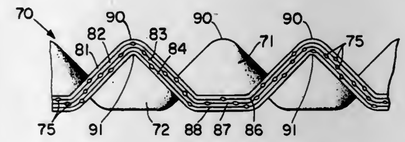
ABSORBENT LAMINATE STRUCTURE

Timothy A. Kramer, Cincinnati; Gerald A. Young, Springfield Township, Hamilton County, and Ronald W. Kock, Wyoming, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 20, 1983, Ser. No. 563,339

Int. Cl.⁴ A61F *13/16*

U.S. Cl. 604—368 **32 Claims**



1. A layered absorbent structure of substantially uniform overall density, said structure having an upper surface and a lower surface, said structure comprising:

(a) n webs of fibrous materials, n being an integer of two or more, said webs being layered such that there is an uppermost web, a lowermost web, n−2 intermediate webs, and n−1 interfaces of two opposed adjacent contacting surfaces of adjacent webs, each of said interfaces having a surface area; and

(b) discretely spaced absorbent particles forming a discontinuous layer at one or more of said interfaces;

said opposed adjacent contacting surfaces, at each said interface where said particles are present, being substantially entirely frangibly bonded to one another by fiber entanglement at substantially all points of contact between said contacting surfaces without creating discrete areas of densification in said webs of fibrous materials, said frangible bonding of said opposed adjacent contacting surfaces by fiber entanglement being strong enough to keep said discretely spaced particles immobilized at said interface(s) while said layered absorbent structure remains dry, yet weak enough to separate and allow substantially unconstrained expansion of said absorbent particles when said layered absorbent structure is wetted by an aqueous fluid.

4,578,069

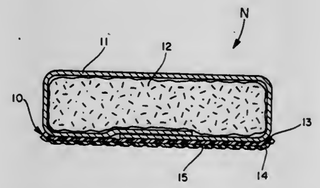
BREATHABLE BAFFLE COMPOSITE

Howard A. Whitehead, Outagamie County, Wis., and Ralph V. Braun, Fulton County, Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Aug. 10, 1984, Ser. No. 639,467

Int. Cl.⁴ A61F *13/16*

U.S. Cl. 604—370 **6 Claims**



1. In a sanitary napkin with a top surface and a bottom surface comprising a fluid pervious cover on a top surface an absorbent positioned beneath said cover and an essentially moisture impermeable baffle forming a bottom surface of said napkin, and pressure sensitive garment attachment adhesive attached to the bottom surface the improvement characterized by said baffle being formed by a multi-layer composite of a spunbonded polymeric web of at least 8 grams per square meter and a meltblown polymeric web between 13.0 and 28.0 grams per square meter with said adhesive attached to said spunbonded web.

4,578,070

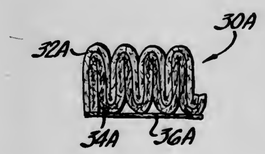
ABSORBENT STRUCTURE CONTAINING CORRUGATED WEB LAYERS

Dennis C. Holtman, Flemington, N.J., assignor to Personal Products Company, Milltown, N.J.

Filed Aug. 15, 1983, Ser. No. 523,473

Int. Cl.⁴ A61F *13/16*

U.S. Cl. 604—378 **17 Claims**



1. An absorbent product comprising a first fibrous layer of synthetic resilient fibers in the form of a nonwoven web and a second layer substantially united to said first layer, said second layer having a higher capillary pressure than said first layer to provide preferential attraction and wicking of liquid in said second layer, said layers being corrugated to provide a corrugated structure, said corrugated structure being stabilized to retain its corrugations when wet.

4,578,071

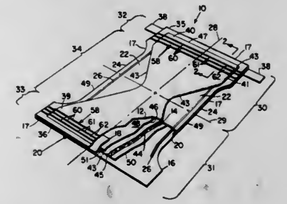
DISPOSABLE ABSORBENT ARTICLE HAVING AN IMPROVED LIQUID MIGRATION RESISTANT PERIMETER CONSTRUCTION

Kenneth B. Buell, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 463,182, Feb. 2, 1983, abandoned, which is a continuation-in-part of Ser. No. 237,785, Feb. 24, 1981, abandoned. This application Jan. 7, 1985, Ser. No. 689,279

Int. Cl.⁴ A61F *13/16*

U.S. Cl. 604—379 **10 Claims**



1. A disposable diaper comprising:

a fibrous liquid permeable topsheet;

a liquid impermeable backsheet;

an attachment means for affixing said topsheet to said backsheet;

an absorbent core means for absorbing liquids, said absorbent core means being encased between said topsheet and said backsheet and having a core edge, said absorbent core means having a barriered core edge segment comprising at least a segment of said core edge;

a liquid impermeable barrier member having an outward portion extending from said barriered core edge segment and having an inward portion interposed between said topsheet and said absorbent core means, said topsheet having a liquid migration resistant segment comprising a compacted portion affixed to said inward portion of said barrier member, said compacted portion comprising a multiplicity of continuous bands.

4,578,072

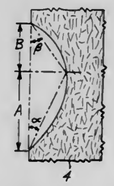
LEAK RESISTANT DIAPER OR INCONTINENT GARMENT

Eugene P. Lancaster, Gig Harbor, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.

Filed Dec. 8, 1983, Ser. No. 559,597

Int. Cl.⁴ A41B *13/02*

U.S. Cl. 604—385 A **12 Claims**



1. In a disposable diaper of incontinent brief having an essentially coextensive thin moisture impervious thermoplastic backsheet, a moisture absorbent cellulose pad, and a moisture previous skin contacting nonwoven topsheet, the diaper being of generally rectangular configuration having longitudinal side portions and transverse front and back end portions, the improvement which comprises:

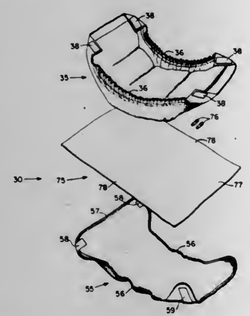
a. front and rear flap means formed by extensions of the backsheet and topsheet beyond the absorbent pad, the front flap being longer than the rear flap and the combined lengths of the flaps being from 15–25% of the total length of the diaper;
b. two attachment straps means permanently bonded at their proximal ends to each rear flap means, each strap having an adhesive distal end for securing the diaper to a wearer and an adhesive free zone between the proximal and distal ends;
c. elastic means located adjacent to and parallel to each longitudinal edge, each elastic means running essentially the full length of the diaper and serving to hold the edges of the brief in close leak-resisting contact with the body of the wearer;
d. the moisture absorbent pad having a crotch area cutout portion along each longitudinal side to give it a generally hourglass-shaped configuration, the longitudinal centers of the cutout portions being located forward of the front-to-back transverse centerline of the pad so that when in use by a wearer the back edge of the diaper is located near the waistline and is higher on the body than the front edge, the crotch area cutout being formed so that the acute angle between a chord drawn from the front of the cutout to the deepest portion and a projection of the side of the diaper is smaller than the acute angle between the chord drawn from the rear of the cutout to the deepest portion and the side projection.

4,578,073

COMPOSITE WASTE-CONTAINMENT GARMENT HAVING DISPOSABLE ELASTICIZED INSERT

John K. Dysart, and Frederick M. Joffe, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jun. 27, 1983, Ser. No. 508,444
Int. Cl.⁴ A61F *13/16*
U.S. Cl. 604—397 **11 Claims**



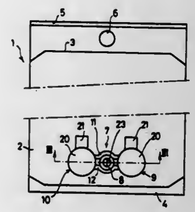
1. A composite waste-containment garment comprising an over-garment having elasticized leg cuffs and liquid impervious construction, an insert having elasticized leg cuffs and a liquid impervious backsheet, and means integral with said insert for securing said insert inside said over-garment so that said leg cuffs of said insert are sealingly tensioned in juxtaposition with skin areas of the wearer when said over-garment having a said insert secured therewithin is applied to an intended wearer, said composite waste-containment garment further comprising an outer-garment which comprises elasticized leg cuffs and liquid impervious construction, said outer-garment further comprising side-closure means which are so disposed and configured to sealingly tension said leg cuffs of said outer-garment in addition to sealingly tensioning said leg cuffs of said insert upon applying said composite garment to a wearer and securing said side-closure means, said outer-garment being sized and configured relative to said insert and said over-garment that said composite garment can be applied to a wearer so that the leg cuffs of said insert are disposed inboard of the longitudinal side edges of said over-garment, and so that the leg cuffs of said outer-garment are disposed outboard of the longitudinal side edges of said over-garment.

4,578,074

INFUSION LIQUID POUCH

Hans M. L. van Leerdam, Berkhout, Netherlands, assignor to Medistad Holland V.V., Medemblik, Netherlands

Filed Jul. 18, 1983, Ser. No. 514,472
Claims priority, application Netherlands, Jul. 22, 1982, 8202952
Int. Cl.⁴ A61B *19/00*; B65B *7/02*; B65D *33/16, 33/36*
U.S. Cl. 604—408 **9 Claims**



1. An infusion liquid pouch comprising:
a tubular pouch closed at both ends and having a planar side wall;
a unitary structure including a pair of hollow necks and a filling tube connector supported by a common flange, said flange having a flange surface attached to said planar pouch wall, at least one of said necks having an enlarged bore portion extending from the flange surface and terminating in a transverse shoulder which is substantially parallel to said flange surface; and
a pierceable pad enclosed in said enlarged bore and held against said shoulder only by said planar pouch wall;
said necks and said filling tube connector extending at an angle substantially less than 90 degrees to said flange surface, and said transverse shoulder being substantially parallel to said flange surface such that said pierceable pad is held flat against said planar pouch wall.

4,578,075

DELIVERY SYSTEM HOUSING A PLURALITY OF DELIVERY DEVICES

John Urquhart, Palo Alto, and Felix Theeuwes, Los Altos, both of Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Filed Dec. 20, 1982, Ser. No. 451,329
Int. Cl.⁴ A61M *7/00*
U.S. Cl. 604—892 **2 Claims**

1. A delivery system for delivering a beneficial agent formulation, the delivery system comprising:
(a) a wall that surrounds and forms an internal space, the wall comprising an inner lamina comprising a pH sensitive material that loses its physical and chemical integrity at a pH of 1.0 to 8.0 inclusive, and an outer lamina comprising a pH sensitive material that maintains its physical and chemical integrity at a pH of 1.0 and 3.5 inclusive, and loses its physical and chemical integrity at a pH of 3.5 to 8.0;
(b) a plurality of tiny osmotic delivery devices useful for delivering a beneficial agent formulation and for co-delivering beneficial agent formulation combinations having a different biological half-life and therapeutic index in the space, the osmotic delivery devices comprising:
(1) a semipermeable wall that surrounds and forms an internal compartment in the osmotic delivery device,

the wall comprising a material that is permeable to the passage of an external fluid and substantially impermeable to the passage of a beneficial agent formulation;
(2) a beneficial agent formulation in the compartment of each tiny osmotic delivery device that is soluble in fluid imbibed into the compartment and exhibits an osmotic pressure gradient across the semipermeable wall of the osmotic delivery device against an external fluid; and,



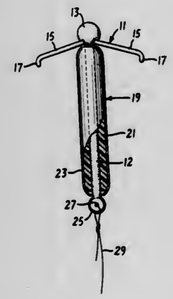
(3) an osmotic passageway in the semipermeable wall of each tiny osmotic delivery device that communicates with the compartment containing the beneficial agent formulation and the exterior of the osmotic device for delivering the beneficial agent formulation through the passageway from the tiny osmotic device over time.

4,578,076

MEDICATED INTRACERVICAL AND INTRAUTERINE DEVICES

Tapani Luukkainen, Helsinki, and Ahti M. K. Liukkonen, Naantali, both of Finland, assignors to The Population Council, Inc., New York, N.Y.

Filed Mar. 20, 1984, Ser. No. 591,610
Int. Cl.⁴ A61F *5/46*
U.S. Cl. 604—892 **8 Claims**



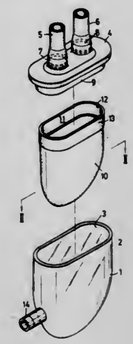
1. A medicated device for retention in the cervix comprising a T-shaped platform, the platform having a vertical stem portion with a drug release attachment thereon, a rounded knob portion at the top thereof and two flat flexible downwardly slanting arms extending from the knob, the arms tapering to a lesser dimension from the knob to the end of the arms, and the ends of the arms having a downward bend of about 45°–110°, said vertical stem being about 18–22 mm in length, and said arms measuring about 5–7 mm from the knob to the downward bend.

4,578,077

BLOOD PUMP APPLICABLE TO AN ARTIFICAL HEART

Yasushi Joh, Yokohama, Japan, assignor to Nippon Zeon Co., Ltd., Tokyo, Japan

Filed Nov. 9, 1981, Ser. No. 319,718
Claims priority, application Japan, Nov. 10, 1980, 55-157942
Int. Cl.⁴ A61F *1/00*
U.S. Cl. 623—3 **24 Claims**



1. A blood pump comprising:
(a) a housing provided with a port for introducing and discharging fluid;
(b) a cover portion closing the housing tightly;
(c) an inlet conduit portion formed integrally and seamlessly into said cover, said inlet conduit portion including a check valve;
(d) an outlet conduit portion formed integrally and seamlessly into said cover, said outlet conduit portion including a check valve; and
(e) a flexible sac portion defining a blood chamber, said sac portion being oval in cross-section, curved at the bottom, and seamlessly connected to said cover portion, having a maximum width D, a maximum height L and a thickness of that portion below the line described by ½L, which is between 20% and 95% less than the mean thickness of the sac wherein, when the volume of the blood chamber is decreased, the initial contact point between the opposite inner surfaces of the sac is in the area defined by a circle of radius 0.15D the center of which is on the central axis of the wider side of the sac and between 0.2 and 0.45L above the bottom of the sac.

4,578,078

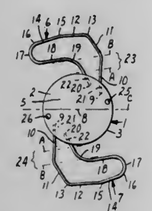
INTRAOCULAR LENS WITH ASYMETRIC VAULTED SUPPORT LOOPS

James J. Arkell, Lake Elmo, and Robert N. Hamlin, Stillwater, both of Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Apr. 2, 1982, Ser. No. 364,396
Int. Cl.⁴ A61F *2/16*
U.S. Cl. 623—6 **14 Claims**

1. An intraocular lens comprising a lens body; first and second support members extending from the lens body for engaging adjacent portions of the anterior or posterior chamber of the eye, at least one of said support members comprising a resilient spring-like asymmetric support loop extending outwardly from the periphery of said lens body, said support loop having first and second end portions attached to the lens body at first and second attachment locations, first and second legs extending from said first and second end portions, respectively, each of said legs containing a sloped portion with the sloped portion of said first leg being nearly equal in length to the sloped portion of said second leg; and a transverse portion

extending generally transversely relative to said first and second legs and with opposite sides being respectively unitarily connected to outer ends of said first and second legs and having at least one outer contact portion dimensioned and shaped to engage adjacent portions of the anterior or posterior chambers of the eye with an outward radial force when positioned



therein so that at least one of said outer contact portions is deflected inwardly from the normal relaxed position by the adjacent portion of the eye to provide support for said lens body, said transverse portion lying in a plane which is spaced apart from but substantially parallel to the plane of said lens body.

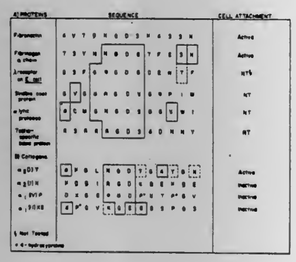
4,578,079
TETRAPEPTIDE

Erkki Ruoslahti, Olivenhain, and Michael Pierschbacher, San Diego, both of Calif., assignors to La Jolla Cancer Research Foundation, La Jolla, Calif.

Continuation-in-part of Ser. No. 405,239, Aug. 4, 1982, Pat. No. 4,517,686, and Ser. No. 433,457, Oct. 8, 1982, and Ser. No. 518,036, Jul. 28, 1983. This application Nov. 22, 1983, Ser. No. 554,821

Int. Cl.⁴ A61F *1/00*; A61K *37/00*; C07C *103/52*; C07G *7/00*

U.S. Cl. 623—11 **44 Claims**



1. A composition of matter which promotes the attachment of cells to substrate when immobilized on the substrate and consisting essentially of the peptide X-Arg-Gly-Asp-R-Y wherein X is H or at least one amino acid and Y is OH or at least one amino acid, and R is an amino acid selected from Thr or Cys, characterized in that it has cell-attachment-promoting activity.

4,578,080
JOINT PROSTHESES

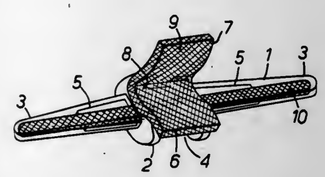
Basil H. Helal, Broomer Cottage, Churchgate, Cheshunt, Hertfordshire, England

Filed Sep. 8, 1983, Ser. No. 530,302

Int. Cl.⁴ A61F *1/00*

U.S. Cl. 623—13 **8 Claims**

1. A joint prosthesis, comprising: an elongated body of resilient biocompatible material having an enlarged main part for positioning between two bones of a joint, first and second intermedullary stems projecting from respective opposite points of said main part, tendon retaining means for retaining at least a portion of a tendon, said tendon-retaining means comprises a flap integrally connected to said main part and adapted



to lie thereover defining a continuous channel therebetween for receiving and slidably guiding at least part of the tendon, where the tendon is positionally stabilized relative to said main part and is contiguous with said main part.

4,578,081
BONE PROSTHESIS

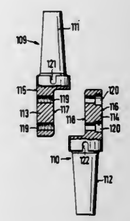
Hans E. Harder, Probsteierhagen; Klaus Behrens, Rickling, both of Fed. Rep. of Germany, and Rainer Kotz, Vienna, Austria, assignors to Howmedica International, Inc., Kiel, Fed. Rep. of Germany

Filed May 24, 1982, Ser. No. 381,607

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1982, 3205577

Int. Cl.⁴ A61F *1/04*

U.S. Cl. 623—22 **13 Claims**



1. A bone prosthesis assembly for replacement of at least part of a natural joint of a patient comprising a connection member adapted to be connected to the bone of the patient at one end of said connection member, a set of joint components, each of said joint components including a cylindrical shank portion of different length adapted to be connected by a mutually engaging frictional self-locking cone-type connection to said connection member at the other end of said connection member, and a set of elongation pieces of varying length each adapted to be arranged between any one of the joint components and the connection member, with said connection member being provided with an outer male conical portion and each of said joint components being provided with an inner female conical portion adapted for reception of and mutual engagement with said outer male conical portion, with each of said elongation pieces comprising a cylindrical body portion provided with an inner female conical portion opening to one end of the body portion, and an outer male conical portion extending from the other end of the body portion, with the outer diameter of each of said elongation piece body portions being equal to the outer diameter of each of said joint component shank portions, and with the shank portion abutting the adjacent body portion when a joint component and elongation piece are connected.

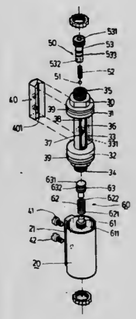
4,578,082
FLUID CUSHIONING APPARATUS ACTING AS A PIVOTING MEDIUM OF TWO OBJECTS HAVING A PIVOTING FEATURE

Chen Sen-Jung, No. 236, Sec. 3, Ho Ping W. Rd., Taipei, Taiwan

Filed Jan. 3, 1984, Ser. No. 567,798

Int. Cl.⁴ A61F *2/72, 2/74, 2/62*; F16M *1/00*

U.S. Cl. 623—26 **7 Claims**



1. A fluid cushioning apparatus acting as a pivoting medium of two objects having a pivoting feature comprising:

a sleeve adapted to be mounted on a first object; two annulations coaxially mounted in the two ends of said sleeve respectively;

a shaft mounted in the openings of the centers of said two annulations and having a dividing wall being axially and radially extended between said two annulations to closely engage with the interior wall of said sleeve and being adapted to be mounted on a second object which is always to have a pivoting relationship with said first object;

a partitioning piece capable of being fitted among said sleeve, said shaft and said two annulations and secured on said sleeve so that the space formed between said shaft and said sleeve is divided into two compartments; and

a means controlling the flow of a cushioning fluid contained in said space when said first and second objects are in relative pivoting movement and thus the fluid contained in one of said two compartments will flow through said means to the other one compartment so that said pivoting movement of said first and second objects is cushioned by said controlled fluid flow.

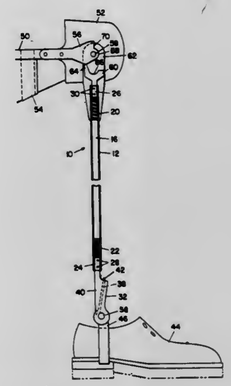
4,578,083
ARTIFICIAL LEG

Allton C. Williams, 5118 Longridge, Sherman Oaks, Calif. 91423

Filed May 16, 1983, Ser. No. 495,149

Int. Cl.⁴ A61F *1/02*

U.S. Cl. 623—42 **4 Claims**



1. An artificial leg comprising an elongated lower leg portion comprising a tubular sleeve having therein a rod and springs means fixedly attached to each end of said rod within said sleeve, an ankle joint having one end attached to a shoe and an opposite end attached to a lower end of said rod;

an upper leg portion, means to attach said upper leg portion to the thigh of the wearer;

a knee joint located at an upper end of said rod comprising an upper cam and a lower cam, said upper cam is attached to said upper leg portion and adapted to rotate about a pivot, said upper cam having a convex surface defined by a semi-circle wherein a flat surface extending forward of said surface is substantially perpendicular to the tangent of said circle and a rearwardly extending surface is substantially parallel to the tangent of said circle; and

said lower cam is attached to the said upper portion of said rod and having a concave surface and an elongated rearwardly extending finger and a planar surface extending in a forward direction wherein each of said surfaces of the lower cam compliment said upper cam surfaces so as to lock with said upper cam when pressure is placed on the leg and wherein said springs maintain constant friction between said upper cam and lower cam.

4,578,084

FIBER-TREATING METHOD AND COMPOSITION THEREFOR COMPRISING EPOXY-SILICONE AND ACRYLAMIDE RESIN

Hideo Kakinoki, Hino, and Isao Ona, Sodegaura, both of Japan, assignors to Toray Silicone Co., Ltd., Tokyo, Japan

Filed Sep. 17, 1984, Ser. No. 651,387
Claims priority, application Japan, Oct. 28, 1983, 58-203395
Int. Cl.⁴ D06M *1/00*
U.S. Cl. 8—115.61 **14 Claims**

1. An aqueous composition comprising a fiber-treating agent consisting of

(a) 10 to 99.5 percent by weight, based on the weight of the fiber-treating agent, of an organopolysiloxane having an average of at least two epoxy group-containing, silicon-bonded organic groups per molecule, substantially all other organic groups of the organopolysiloxane being selected from the group consisting of monovalent hydrocarbon groups and halogenated monovalent hydrocarbon groups and

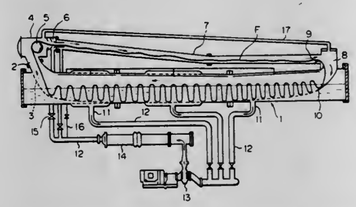
(b) 0.5 to 90 percent by weight, based on the weight of the fiber-treating agent, of a water-soluble polyacrylamide resin.

4,578,085

APPARATUS FOR LIQUID FLOW TREATMENT OF FABRICS

Osamu Ishimaru, Matsubara, Japan, assignor to Hisaka Works, Ltd., Osaka, Japan

Filed Nov. 20, 1984, Ser. No. 673,264
Claims priority, application Japan, Sep. 13, 1984, 59-190612
Int. Cl.⁴ D06B *3/28*
U.S. Cl. 8—152 **19 Claims**



1. Apparatus for wet treatment of a fabric as an endless rope comprising, an elongate fabric reservoir tank for wet-treating fabrics therein as an endless rope, said fabric reservoir tank containing in use treating liquid gradually increasing in depth in a direction in which a fabric endless rope being treated is advanced longitudinally therein, a fabric delivery tube above the level of the treating liquid in said fabric reservior tank, means for lifting the fabric out of the treating liquid in said fabric reservoir tank and for introducing it into said fabric delivery tube for advancement longitudinally by a high-speed stream of treating liquid therein, means comprising a treating liquid jet nozzle for receiving treating liquid from said fabric reservoir tank and developing a jet flow treating liquid as said high-speed stream in the fabric delivery tube for advancing the fabric as an endless rope, the fabric delivery tube having a discharge end portion above the level of the treating liquid in the fabric reservoir tank for discharging the jet flow of treating liquid for return to said fabric reservoir tank and for discharging the accompanying advancing fabric, means for spreading laterally the advancing fabric as it is discharged from the fabric delivery tube comprising a fabric-spreading plate having upper surfaces defining a path of advancement for the advancing fabric over which the fabric travels relative to a path of travel in said discharge end portion of the fabric delivery tube to effectively subject the advancing fabric to lateral flow of the discharged treating liquid of said jet flow relative to said path of advancement from said discharge end portion of said fabric delivery tube to thereby spread the fabric laterally, said fabric-spreading plate terminating so that the spread advancing fabric falls downwardly therefrom accompanied with discharged treating liquid, a curved plate below the fabric-spreading plate on to which the spread fabric falls above the level of the treating liquid in said fabric reservoir tank accompanied by discharged treating liquid, and said curved plate extending into said treating liquid in said fabric reservoir tank for smoothly guiding the spread advancing fabric into said treating liquid in said fabric reservoir tank.

4,578,086

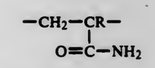
METHOD FOR CONTROLLING BORIC ACID PARTICLE SIZE DISTRIBUTION

Avinash D. Puri, Ridgecrest; James L. Fairchild, Trona, and James B. Rodosevich, Ridgecrest, all of Calif., assignors to Kerr-McGee Chemical Corporation, Oklahoma City, Okla.

Filed Sep. 2, 1983, Ser. No. 528,956
Int. Cl.⁴ B01D *9/02*
U.S. Cl. 23—300 **7 Claims**

1. A method for controlling particle size distribution of boric acid during the crystallization of said acid from a saturated aqueous feed solution thereof comprising adding to said saturated solution prior to commencement of the crystallization of said acid at least one water soluble polymeric material, in an amount ranging from about 20 to about 150 parts per million, selected from the group consisting of:

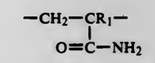
A. homopolymers containing repeating units of the structural formula



(I)

wherein R is selected from the group consisting of hydrogen atom and methyl radical, and

B. copolymers containing from 1% to 99% of repeating units corresponding to structural formula (I) and from about 99% to 1% of repeating units corresponding to the structural formula



(II)

wherein R_1 is selected from the group consisting of hydrogen atom and methyl radical provided, however, that R and R_1 are not the same said homopolymers and copolymers having molecular weights ranging from about 200,000 up to about 5,000,000 and separating said crystallized boric acid by means selected from the group consisting of filtration and centrifugation.

4,578,087

NITRIDE BASED CUTTING TOOL AND METHOD FOR PRODUCING THE SAME

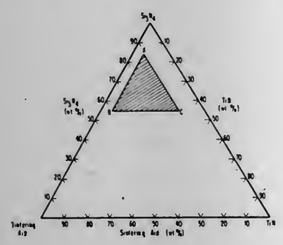
Hiroshi Tanaka, and Hidetoshi Baba, both of Aichi, Japan, assignors to NGK Spark Plug Co., Ltd., Aichi, Japan

Filed Jan. 10, 1984, Ser. No. 569,683
Claims priority, application Japan, Jan. 10, 1983, 58-1988; Jun. 3, 1983, 58-99901; Jun. 3, 1983, 58-99902
Int. Cl.⁴ B24D *3/02*
U.S. Cl. 51—295 **4 Claims**

1. A nitride based ceramic cutting tool comprising from 50 to 90% by weight Si_3N_4, from 5 to 45% by weight TiN and from 5 to 45% by weight a composite oxide sintering aid, said sintering aid comprising (1) at least one of Y_2O_3 and Dy_2O_3 and (2) Al_2O_3 alone or a mixture of AlN and Al_2O_3, said mixture comprising from 5 to 65% by weight AlN, and the weight ratio of (1) at least one of Y_2O_3 and Dy_2O_3 to (2) Al_2O_3 alone or the AlN and Al_2O_3 mixture being 3:1 to 1:3,

wherein the Si_3N_4, TiN and sintering aid comprise from 50 to 80%, from 10 to 45% and from 5 to 40% by weight,

respectively said sintering aid comprising (1) at least one of Y_2O_3, and Dy_2O_3 and (2) Al_2O_3, the weight ratio of (1)



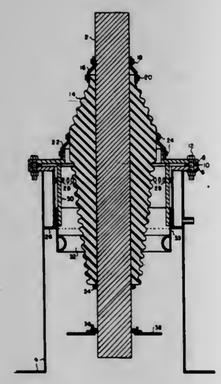
at least one of Y_2O_3 and Dy_2O_3 to (2) Al_2O_3 being 3:1 to 1:3, further comprising a surface coating layer of Al_2O_3 formed thereon.

4,578,088

ELECTRICAL INSULATING AND SEALING APPARATUS AND PROCESS FOR USING SAME

Denver D. Linscheid, American Falls, Id., assignor to FMC Corporation, Philadelphia, Pa.

Filed Dec. 17, 1984, Ser. No. 682,624
Int. Cl.[4] B03C *3/00*
U.S. Cl. 55—2 **8 Claims**



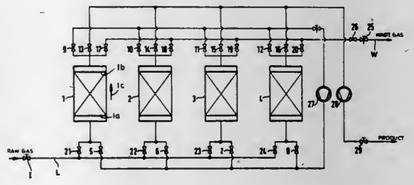
1. A process of keeping an electrical insulator seal clean of deposits and particulates, wherein said insulator seal seals a lead-in conductor passing through it and through the wall of an electrical precipitating apparatus comprising passing a pressurized gas into a manifold extending concentrically around the lower portion of said insulator seal, removing the gas through a plurality of holes in the manifold adjacent the insulator seal, allowing the removed gas to impinge on the surface of the insulator seal, passing the impinged gas downwardly through a cylindrical member having a lower lip of decreased internal diameter extending concentrically around the lower portion of said insulator seal, said lip creating a venturi section at the base of said cylindrical member, said gas increasing in velocity as it flows downwardly through the venturi and over the surface of said insulator seal, thereby hindering deposition of particulates and condensables on the surface of said insulator seal.

4,578,089

METHOD OF SEPARATING HIGHLY ADSORBABLE COMPONENTS IN A GAS STREAM IN A PRESSURE-SENSING ADSORBER SYSTEM

Ekkehard Richter, Essen; Werner Körbacher, Mülheim; Karl Knoblauch, Essen; Klaus Giessler, Gelsenkirchen, and Klaus-Burkhard Harder, Oberhausen, all of Fed. Rep. of Germany, assignors to Bergwerksverband GmbH, Essen, Fed. Rep. of Germany

Filed Dec. 14, 1984, Ser. No. 682,036
Claims priority, application Fed. Rep. of Germany, Dec. 15, 1983, 3345379
Int. Cl.[4] B01D *53/04*
U.S. Cl. 55—26 **21 Claims**



1. In a method of recovering, in a pressure swing adsorption process, at least one relatively highly adsorbable product gas component for a raw gas containing said product gas component in admixture with at least one less adsorbable gas component in a cycle wherein:

(a) in an adsorption phase in a pressure swing adsorber, said raw gas is passed through an adsorber bed at an adsorption pressure in a first gas flow direction to adsorb said highly adsorbable product gas component on said bed and past a waste gas containing said less adsorbable component, the adsorption phase of step (a) being terminated before breakthrough of said highly adsorbable product gas component through said bed;

(b) said bed is flushed in a flushing phase with a flushing gas such that at least toward the end of said flushing phase said flushing gas has a concentration of said highly adsorbable product gas component substantially equal to that in a product gas;

(c) the pressure is thereafter reduced in said adsorber in a desorption gas to desorb said highly adsorbable product gas component from said adsorber to produce said product gas containing said highly adsorbable product gas component, said product gas being withdrawn from said adsorber, and a portion of said product gas is fed as a flushing gas for use in a subsequent practice of step (b); and

(d) the pressure in the adsorber desorbed in step (c) is thereafter rebuilt to said adsorption pressure,

the improvement which comprises:

(e) intermittently between the end of said adsorption phase and before the commencement of said desorption phase in the cycle of said adsorber, drawing a partial gas flow from said adsorber in the same direction as the flow of gas therethrough during an immediately prior period of the cycle to reduce the pressure in said adsorber; and

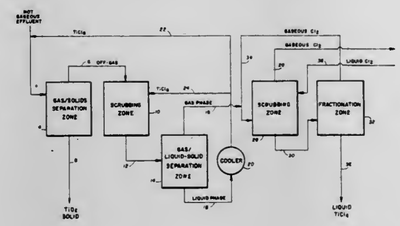
(f) reusing said partial gas flow in said pressure swing adsorption process.

4,578,090

METHOD FOR PROCESSING GASEOUS EFFLUENT STREAMS RECOVERED FROM THE VAPOR PHASE OXIDATION OF METAL HALIDES

Theodore A. Rado, Oklahoma City, Okla., assignor to Kerr-McGee Chemical Corporation, Oklahoma City, Okla.

Filed Oct. 15, 1984, Ser. No. 660,875
Int. Cl.[4] B01D *47/05*
U.S. Cl. 55—48 **10 Claims**



1. A method for processing a hot gaseous effluent stream recovered from a vapor phase oxidation of a volatile metal halide to produce a particulate metal oxide thereof, said effluent stream containing a residual amount of said particulate metal oxide suspended therein, unreacted volatile metal halide vapors and by-product halogen gas comprising the steps of:

contacting said hot, gaseous effluent stream with a first quantity of a recycle stream of cool, volatile metal halide, said contact causing evaporation of said first quantity of said recycle stream of cool, volatile metal halide to thereby effect a cooling of said hot gaseous effluent stream to provide a lower temperature gaseous effluent stream;

subjecting said lower temperature gaseous effluent stream to separation to effect removal of at least a major portion of the residual amount of said particulate metal oxide suspended therein and provide an off-gas stream containing any remaining minor portion of the residual amount of said particulate oxide, the unreacted volatile metal halide vapors and by-product halogen gas;

contacting the off-gas stream with a second quantity of said recycle stream of cool, volatile metal halide to effect a further cooling of said off-gas stream and thereby form a mixture, said mixture comprising a liquid phase and a gas phase, wherein said liquid phase contains said second quantity of the recycle stream of cool, volatile metal halide, a major portion of condensed volatile mtal halide vapors and any remaining minor portion of the residual amount of particulate metal oxide and wherein said gaseous phase contains any remaining minor portion of the volatile metal halide vapors and by-product halogen gas;

separating the liquid phase and gaseous phase from said mixture thereof, wherein said liquid phase is cooled and comprises the recycle stream of cool, volatile metal halide for contacting with said hot gaseous effluent stream and said off-gas stream;

contacting said gaseous phase with a stream of cold liquid halogen to absorb the remaining minor portion of volatile metal halide vapors therein and to provide a gaseous phase of by-product halogen gas; and

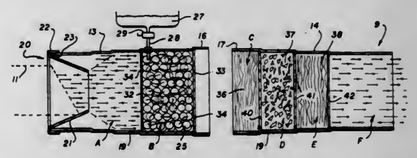
recovering from said stream of cold liquid halogen the remaining minor portion of the volatile metal halide vapors absorbed therein as a separate volatile metal halide liquid phase.

4,578,091

MULTI-CHAMBERED AIR CLEANER

Antonio B. Borja, 1925 S. Corona, Denver, Colo. 80210

Filed Apr. 20, 1984, Ser. No. 602,598
Int. Cl.[4] B01D *47/14*
U.S. Cl. 55—90 **15 Claims**



1. A process for removing impurities from hot exhaust air, said process comprising:

providing treating chamber means having heat absorbing solid discrete particle material therein extending across the path of the treating chamber means;

introducing water into said treating chamber means into contact with said discrete particle material;

passing hot exhaust air through said treating chamber means with said hot exhaust air contacting said heatable solid material to slow the flow of said hot exhaust air and to heat the same to vaporize water in said treating chamber means to thereby coagulate particles of matter to be removed from said hot exhaust air; and

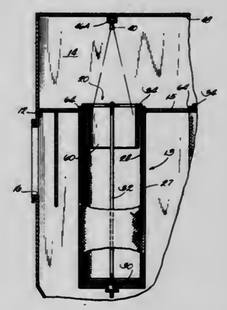
passing said treated air with said coagulated particles of matter therein through at least one filter to remove said coagulated particles of matter from said air.

4,578,092

METHOD AND APPARATUS FOR IMPROVING THE OPERATION OF A DUST COLLECTOR

William J. Klimczak, Racine, Wis., assignor to Wehr Corporation, Milwaukee, Wis.

Filed Nov. 4, 1983, Ser. No. 548,911
Int. Cl.[4] B01D *46/04*
U.S. Cl. 55—302 **5 Claims**



1. A dust collector comprising, in combination,

a hopper,

an exhaust chamber,

a wall separating said hopper and said exhaust chamber, said wall including an opening having a diameter,

means for filtering contaminated air flowing through said opening from said hopper, said filtering means including a hollow fitler assembly comprising filter medium and having upper and lower ends, said upper end of said filter assembly registering with said wall opening, said hopper being generally sealed from said exhaust chamber except through said wall opening and said filter medium of said

filter assembly, and said filtering means further including means for supporting said filter assembly and for sealing said lower end of said filter assembly, said supporting and sealing means copmrising an end plate generally parallel to said wall and at said lower end of said filter assembly,

means defining an inlet into said hopper for introducing contaminated air into said hopper so that said contaminated air is caused to flow to said exhaust chamber through said filter medium and airborne contaminants are accumulated on said filter medium,

means for selectively directing reverse pulses of air into said wall opening from said exhaust chamber whereby said reverse air pulses enter said filter assembly and generate airflow through said filter medium in the reverse of the direction of contaminated airflow to remove accumulated contaminants from said filter medium, said air pulse directing means including nozzle means spaced above said wall opening, said nozzle means being constructred to accelerate the air emitted toward said wall opening such that said air pulses are emitted from said nozzle means and propagate toward said wall opening in a cone-shaped pattern and enter said wall opening, and

means for reducing the velocity of said reverse air pulses and for preventing said reverse air pulses from impinging upon said filter medium as said reverse air pulses propagate to said lower end of said hollow filter assembly, said reducing and preventing means including an air impermeable sleeve having upper and lower ends, an outer surface and an inner cylindrical surface, and an outside diameter substantially equal to said diameter of said wall opening, said sleeve being positioned inside said hollow filter assembly with said outer surface closely adjacent but spaced from said filter medium, and with said upper end of said sleeve registering with said wall opening and said lower end of said sleeve opening into said filter assembly, said sleeve extending into said filter assembly a substantial distance and with the lower end thereof being spaced from said nozzle means a preselected distance to insure that air pulse cone-shaped pattern impinges on said inner surface of said sleeve, said preselected distance also being such that the velocity of said air pulses emitted from said lower end of said sleeve is reduced sufficiently as compared to the velocity of said air pulses at said opening so that said air pulses emitted from said lower end of said sleeve do not grow by drawing air through said filter medium so as to impinge upon said filter medium as said air pulses propagate from said lower end of said sleeve to said lower end of said hollow filter assembly but impinge directly on said end plate.

4,578,093

WET AND DRY DISTILLATIVE FREEZING PROCESS FOR SEPARATING MIXTURES AND APPARATUSES FOR USE THEREIN

Chen-Yen Cheng, and Sing-Wang Cheng, both of 9605 La Playa St., NE., Albuquerque, N. Mex. 87111

Continuation-in-part of Ser. No. 480,932, Mar. 31, 1983, Pat. No. 4,451,273, which is a continuation of Ser. No. 296,130, Aug. 25, 1981, Pat. No. 4,378,984, which is a continuation-in-part of Ser. No. 181,002, Aug. 22, 1980, abandoned, Ser. No. 930,312, Aug. 2, 1978, Pat. No. 4,218,893, Ser. No. 816,852, Jul. 18, 1977, abandoned, and Ser. No. 676,640, Apr. 13, 1976, abandoned. This application May 24, 1984, Ser. No. 613,573

Int. Cl.⁴ B01D *9/04*; F25J *3/00*

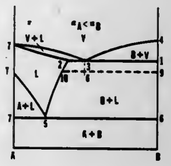
U.S. Cl. 62—12 **19 Claims**

1. A wet and dry distillative freezing process for separating a feed mixture that contains a volatile crystallizing component, denoted as B-component, and one or more non-crystallizing components into a refined B-product and a B-lean product through formation of a mass of B-enriched solid that comprises the following steps:

(1) a first step of forming a condensed mass, denoted as the first step condensed mass, and K_{-1} mixture, which contains a mass of B-enriched solid phase by removing heat from at least a major part of the feed mixture.

(2) a second step of bringing a mass of liquid in contact with the first step condensed mass to thereby form a solid-liquid mixture, denoted as the second step condensed mass and K_0 mixture, which has a solid phase mass, S_0, enriched in B-component, and a mother liquor phase mass M_0 that contains the B-component and one or more volatile and non-crystallizing components, the volatile and non-crystallizing component present in the greatest amount in the K_0 mixture, denoted as A-component, and the B-component forming a pair of two key volatile components, wherein the two key volatile components form a binary system

(a) whose characteristic vapor pressure ratio defined as the ratio of the vapor pressure of A-component to that of B-component both evaluated at the triple point temperature of B-component is in the range of 0.1 to 10 and



is less than the ratio of the heat of sublimation to the heat of melting of B-component evaluated at the triple point temperature of B-component, and

(b) whose constant pressure phase diagram that includes a three phase (B-enriched solid, liquid and vapor) state has a two phase (B-enriched solid and vapor) region covering a substantial concentration range above the temperature of the three phase state and a two phase (B-enriched solid and liquid) region below the temperature of the three phase state, and

(3) a third step of subjecting the K_0 mixture to a dry distillative freezing operation by concurrently vaporizing the volatile components from the mixture in a first zone under a first temperature and first pressure that are respectively lower than the triple point temperature and the triple point pressure of the pure B-component to form a vapor mixture, denoted as the third step vapor, and a condensed mass, denoted as the third step condensed mass, which becomes the refined B-product.

4,578,094

HYDROCARBON SEPARATION WITH A PHYSICAL SOLVENT

Yuv R. Mehra, P.O. Box 3986, Odessa, Tex. 79760

Continuation-in-part of Ser. No. 532,005, Sep. 13, 1983, which is a continuation-in-part of Ser. No. 507,564, Jun. 24, 1983, which is a continuation-in-part of Ser. No. 374,270, May 3, 1982, Pat. No. 4,421,535. This application Aug. 3, 1984, Ser. No. 637,210

Int. Cl.⁴ F25J *3/02*

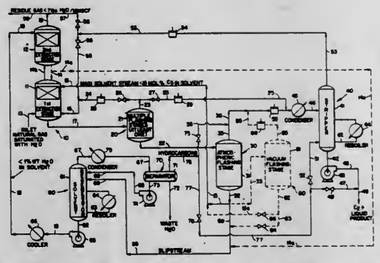
U.S. Cl. 62—17 **22 Claims**

1. In a continuous process for producing a liquid hydrocarbon product of a selected composition, which is selectively adjustable to substantially any selected degree in accordance with market conditions, and a residue natural gas stream of pipeline quality that selectively includes ethane (C_2), propane (C_3), and butanes (C_4) by extraction of an inlet natural gas stream, containing at least 0.2 mol percent of C_5+ hydrocarbons, with a stream of a physical solvent, an improvement which comprises:

minimizing the energy required for said process while recovering up to 100% of said C_5+ hydrocarbons in accordance with said market conditions by the following steps:

A. selectively extracting said inlet natural gas stream in a first extraction stage with a major solvent stream and in a second extraction stage with a minor solvent stream, said major solvent stream containing up to an equilibrium amount of C_5+ hydrocarbons and said minor solvent stream being lean with respect to C_1+ hydrocarbons, whereby a rich solvent stream and a residue natural gas stream are produced, said residue natural gas stream containing selected maximum amounts of C_2+ hydrocarbons in accordance with said market conditions;

B. successively flashing said rich solvent stream in a plurality of flashing stages at pressures that successively decrease to about atmospheric pressure in order to produce



a plurality of successive C_1+ gas fractions, having successively lower methane contents, and flashed solvent streams containing said solvent and hydrocarbons having successively lower methane contents, the flashing pressures of said successive flashing stages being selectively varied in order to adjust the compositions of said successive gas fractions and of said successive flashed solvent streams;

C. dividing said physical solvent stream into said major solvent stream and a slipstream; and

D. regenerating said slipstream in order to produce said minor solvent stream for said second extraction stage.

4,578,095

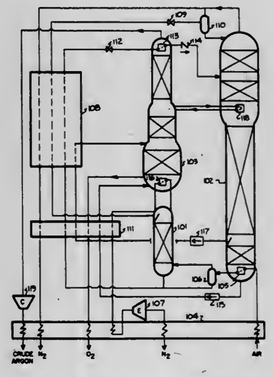
LOW ENERGY HIGH PURITY OXYGEN PLUS ARGON

Donald C. Erickson, 1704 S. Harbor La., Annapolis, Md. 21401

Filed Aug. 20, 1984, Ser. No. 642,103

Int. Cl.⁴ F25J *3/04*

U.S. Cl. 62—22 **20 Claims**



1. In a distillative apparatus for producing high purity oxygen comprising a triple pressure distillation arrangement comprised of a high pressure (HP) rectifier, a medium pressure (MP) nitrogen rejection column, and a low pressure (LP) oxygen-argon separation column, wherein both the LP and MP columns have oxygen-argon stripping sections, and wherein the LP column feed is from a means for withdrawing MP column liquid sidestream from above the argon stripping section of the MP column, the improvement comprising:

an intermediate reflux condenser in the LP column, which exchanges latent heat with a boiling liquid;

means for introducing said boiling liquid into an intermediate height of the MP column;

a means for withdrawing crude argon fluid from the LP column overhead and removing it from the triple pressure distillation apparatus means for evaporating bottom liquid of said MP and LP columns of O_2 product of at least 98% purity.

13. A process for obtaining high purity oxygen and crude argon from air comprising

(a) compressing, cleaning, and cooling the air to near its dewpoint

(b) partially condensing the air in a reboiler of a nitrogen rejection distillation column (MP column);

passing the remaining uncondensed air to a high pressure (HP) rectifier;

(d) rectifying said remaining air to at least a liquid N_2 overhead product and an oxygen enriched liquid (kettle liquid) bottom product;

(e) passing said kettle liquid to said MP column as feed therefor by at least one of the steps of

(I) feeding it directly to the column after expansion to column pressure;

(II) at least partially evaporating it by latent heat exchange with vaporous reflux fluid from the LP column described in step (f) prior to passing it to said MP column;

(f) withdrawing a sidestream of liquid oxygen containing argon impurity from near the bottom of the MP column and passing it to an argon-oxygen distillation column (LP column) as feed therefor;

(g) distilling said sidestream to high purity oxygen bottom product and crude argon overhead product

(h) withdrawing said crude argon;

(i) refluxing said LP column at at least two vertically spaced locations by latent heat exchange with at least two evaporating liquids, which are obtained from at least one of the following sources:

(I) a midlength location of the MP column,

(II) the kettle liquid as per step (e) (II);

(j) introducing said at least partially evaporated liquids from step (i) into said MP column at vertically spaced locations;

(k) evaporating the bottom product from said MP and LP columns, and withdrawing the resulting gaseous oxygen of at least 98% purity.

4,578,096

GRADIENT INDEX OPTICAL COMPONENTS

Walter P. Siegmund, Woodstock, Conn., assignor to Warner-Lambert Technologies, Inc., Tex.

Filed Aug. 13, 1980, Ser. No. 177,549

Int. Cl.⁴ G02B *6/18*

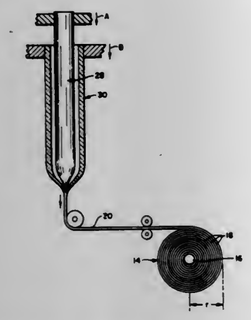
U.S. Cl. 65—3.11 **10 Claims**

1. The method of making a gradient refractive index optical component comprising the steps of:

drawing a thin and flexible glass fiber having a longitudinally variable index of refraction;

winding said fiber over a glass core member in multiple layer fashion;

fusing said wound fiber and core member together as a solid mass;



drawing the mass to the reduced cross-sectional size desired of said optical component; and

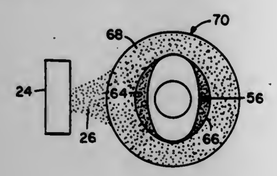
transaxially cutting said component from the draw.

4,578,097

METHOD OF FORMING A POLARIZATION PRESERVING OPTICAL WAVEGUIDE

George E. Berkey, Pine City, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Sep. 26, 1983, Ser. No. 535,466
Int. Cl.⁴ C03B *25/02*
U.S. Cl. 65—3.11 **12 Claims**



10. In a method of forming a single-mode optical fiber having polarization-retaining characteristics comprising the steps of

depositing on a substantially cylindrical mandrel a coating of core glass particles,

depositing on the surface of said core glass particles a coating of inner cladding glass particles,

removing said mandrel to form a hollow porous preform having a circular outer surface,

heating said porous preform to a temperature within the consolidation temperature range to form a consolidated dense glass preform having an aperture therethrough,

closing both ends of said aperture,

removing diametrically opposed regions of said inner cladding glass to form a preform foreproduct having two rounded sides and two flattened sides,

grinding the flattened surfaces formed by removing said diametrically opposed regions to smooth the surface of said foreproduct and to round any sharp corners thereon to form a preform foreproduct having an oblong cross-section,

depositing on said oblong foreproduct a layer of glass particles having the same composition as said inner cladding glass and then,

depositing on the surface of the resultant article a layer of glass particles having a thermal coefficient of expansion which differs from that of the inner cladding layer by at least 1×10^{-7}/C.° which forms a circular outer stress cladding,

heating the resultant article to consolidate said layer of glass particles, thereby forming a solid glass draw blank, and

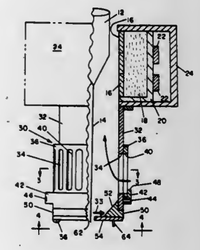
drawing said solid glass draw blank to form a single-mode optical fiber comprising a circular core, on oblong layer of inner cladding glass and a circular outer stress cladding, said inner cladding layer having a high aspect ratio and a thin minimum thickness on opposite sides of said core whereby said optical fiber exhibits stress-induced birefringence sufficient to form polarization, wherein the step of depositing on said oblong foreproduct substantially preventing the formation of seeds at the interface between the inner and outer cladding of said optical fiber.

4,578,098

APPARATUS FOR CONTROLLING LIGHTGUIDE FIBER TENSION DURING DRAWING

Un C. Paek, Lawrenceville, and Charles M. Schroeder, Wrightstown, both of N.J., assignors to AT&T Technologies, Inc., Berkeley Heights, N.J.

Filed Jun. 15, 1984, Ser. No. 621,291
Int. Cl.⁴ C03B *23/04*
U.S. Cl. 65—13 **1 Claim**



1. Apparatus for regulating the flow of a cooling gas into a lightguide furnace to control the drawing tension of a lightguide comprising:

means for directing a cooling gas into the furnace so that the cooling gas flows at least partially around the lightguide fiber and generally upwardly along the walls of the lightguide furnace away from the lightguide fiber to cool the fiber, said means having at least one cooling gas opening therein; and

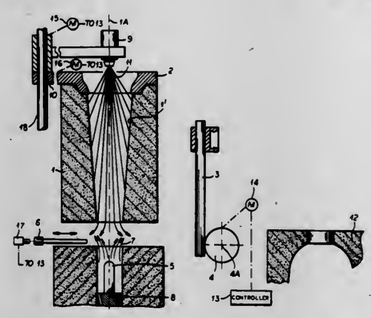
a sleeve coaxially aligned with, and rotatable about, said cooling gas directing means, said sleeve having at least one cooling gas opening therethrough in communication with, but substantially misaligned relative to, said cooling gas directing means opening so that cooling gas entering said cooling gas directing means is directed substantially tangentially to the inner surface of said cooling gas directing means to cool the lightguide fiber, the amount of cooling being controlled by rotating said sleeve relative to said cooling gas directing means to vary the degree of misalignment of each said sleeve opening relative to each said cooling gas directing means opening.

4,578,099

APPLYING A LIQUID TO A GLASSWARE-MAKING PREFORM MOLD

Jochen Hübner, Bottrop-Welheim; Werner-Dieter Knoth, and Helmut Hüllen, both of Essen, all of Fed. Rep. of Germany, assignors to Veba-Glas AG, Essen, Fed. Rep. of Germany

Filed Apr. 13, 1984, Ser. No. 600,188
Claims priority, application Fed. Rep. of Germany, Apr. 16, 1983, 3313851
Int. Cl.⁴ C03B *40/02*
U.S. Cl. 65—26 **6 Claims**



1. An apparatus for making hollow glassware, the apparatus comprising:

a preform mold having an upright throughgoing passage with an upper end and a lower end;

a bottom molding unit below the preform mold displaceable between an upper position engaged in the lower passage end and a lower position spaced below the preform mold;

a final mold adjacent the preform mold;

a neck-forming mold displaceable between one end position blocking the lower end of the passage and another end position at a final mold;

means including nozzles displaceable into a position above the upper passage end for spraying a liquid into the upper end of the passage of the preform mold; and

drive means for retaining the neck-forming mold temporarily in an intermediate position between the two molds and simultaneously spraying the liquid into the passage, whereby the sprayed liquid can pass freely through the passage since its one end is not blocked by the shear; and

means for shielding the bottom molding unit below the one end of the passage and in the lower position of the unit during spraying of the liquid into the upper passage end.

4. A method of making glassware using a multipart preform mold closable to form an upright mold passage having upper and lower ends, a final mold adjacent the preform mold, and a neck-forming mold displaceable between the preform and final molds, the method comprising the steps of:

(a) spraying a mold-release liquid through the upper end into the passage of the closed preform mold while holding the neck-forming mold in an intermediate position spaced from the lower passage end and between the preform and final molds and while shielding a bottom-blowing unit below the lower end of the passage;

(b) thereafter displacing the neck-forming mold from the intermediate position into a position covering the lower passage end;

(c) thereafter introducing a gob of molten glass through the upper end into the passage whose lower end is closed by the neck-forming mold;

(d) thereafter blowing the gob into a preform;

(e) thereafter opening the preform mold;

(f) thereafter moving the neck-forming mold and the gob carried thereby from the preform mold to the final mold and positioning the gob therein;

(g) thereafter releasing the neck mold from the gob and moving the neck mold into the intermediate position; and

(i) thereafter repeating steps (a) through (g), the preform mold being closed generally during at least one of steps (f) and (g).

4,578,100

METHOD OF MAKING NON-GLARE COATED GLASS

J. Shannon Breininger, Gibsonia, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Apr. 1, 1985, Ser. No. 718,755
Int. Cl.⁴ C03C *17/44*
U.S. Cl. 65—60.8 **14 Claims**

1. A method for making a non-glare glass article comprising the steps of:

a. contacting a surface of the glass with an alkali silicate composition which forms an alkali silicate coating on said glass surface; and

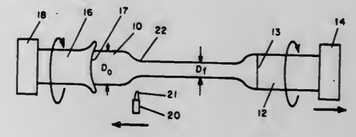
b. contacting said alkali silicate coating with a compound which removes excess alkali from the coating, said compound selected from the group consisting of acids and salts of weak acids.

4,578,101

METHOD FOR STRETCHING A GLASS ROD

Harold R. Clark, Plainfield Township, Union County, and David A. Nicol, Hamilton Township, Mercer County, both of N.J., assignors to AT&T Technologies, Inc., Berkeley Heights, N.J.

Filed Sep. 26, 1984, Ser. No. 654,600
Int. Cl.⁴ C03B *23/04*
U.S. Cl. 65—109 **3 Claims**



1. A method for stretching a solid glass rod comprising the steps of:

reflowing a portion of the rod with a heat source which creates a zone of heat about the rod;

stretching the reflowed portion of the rod to establish a region on the rod where the diameter tapers from the original diameter of the rod to a smaller desired diameter;

reducing the temperature of the heat source to a level sufficient to maintain the reflow of the glass within the tapered diameter region on the rod at a reduced temperature;

progressively reflowing, at said reduced temperature, the portion of the rod not yet reflowed by imparting a relative motion between the heat source and the rod such that the zone of heat moves axially along the rod towards the original diameter portion of the rod; and

stretching the rod as it is progressively reflowed to reduce the diameter of that portion of the rod not previously reduced to the smaller desired diameter.

4,578,102

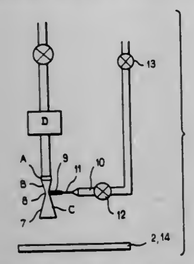
QUENCHING OR TEMPERING BY MEANS OF A TWO-PHASE JET

Daniel Colmon, and Bernard Letemps, both of Thourotte, France, assignors to Saint-Gobain Recherche, Aubervilliers, France

Filed Aug. 3, 1984, Ser. No. 637,286
Claims priority, application France, Aug. 5, 1983, 83 12989
Int. Cl.⁴ C03B *27/02*
U.S. Cl. 65—114 **11 Claims**

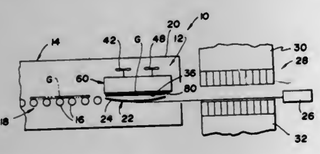
1. A method of quenching or tempering a glass sheet which comprises directing a jet comprising a gas and liquid onto at

least one face of said glass sheet by means of a nozzle where said gas is supplied at a sufficient pressure to produce a jet



velocity which is at least sonic at the exit of said nozzle, said liquid being atomized prior to exiting said nozzle.

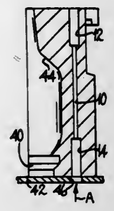
4,578,103
GLASS SHEET PROCESSING SYSTEM INCLUDING TOPSIDE TRANSFER APPARATUS
Lee E. Fackelman, Perrysburg, Ohio, assignor to Glasstech, Inc., Perrysburg, Ohio
Filed Nov. 23, 1984, Ser. No. 674,083
Int. Cl.[4] C03B *23/025, 23/03, 23/035*
U.S. Cl. 65—182.2 **15 Claims**



1. Glass sheet processing apparatus comprising: a horizontal heating conveyor having rolls for conveying glass sheets for heating; a stationary topside transfer platen having a downwardly facing planar surface located adjacent and extending away from the heating conveyor at an elevation just slightly above the rolls thereof to receive heated glass sheets from the heating conveyor; said transfer platen surface including a first set of holes through which a vacuum is drawn to support a heated glass sheet received from the heating conveyor; the transfer platen surface having a second set of holes through which pressurized gas is supplied to space the glass sheet from the surface; and a curved mold that is positioned below the trasfer platen to receive the heated glass sheet therefrom for forming.

4,578,104
MANUFACTURE OF MOULDED ARTICLES OF GLASSWARE
Stanley P. Jones, Tickhill, England, assignor to Emhart Industries, Inc., Farmington, Conn.
Filed Feb. 27, 1984, Ser. No. 584,067
Int. Cl.[4] C03B *9/38*
U.S. Cl. 65—267 **6 Claims**

1. A mould portion for use in manufacturing articles of glassware, the mould portion having at least one cooling passage extending longitudinally therein so that cooling fluid can flow through the cooling passage and cool the mould portion, wherein the cooling passage comprises a central portion extending through a central region of the mould portion and connecting entrance and exit portions of the cooling passage, so that cooling fluid can flow from the entrance portion into the central portion and from thence into the exit portion, said exit portion being co-axial with said central portion, the central portion being of substantially uniform cross-sectional area, and the exit portion having a greater cross-sectional area throughout than the central portion sufficient to result during flow of



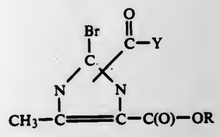
the cooling fluid in reduced heat extraction along the portion of the mould adjacent said exit portion.

4,578,105
STABLE UREAFORM DISPERSION FERTILIZERS
William P. Moore, Hopewell, Va., assignor to Hawkeye Chemical Company, Clinton, Iowa
Filed Jan. 7, 1985, Ser. No. 689,098
Int. Cl.[4] C05C *9/00*
U.S. Cl. 71—28 **18 Claims**

1. A method for producing storage stable ureaform dispersion fertilizers comprising:
(a) admixing between 1 and 3 mols of urea per mol of monomethylolurea in water to form an aqueous solution containing between 10 and 20 percent total nitrogen by weight;
(b) acidifying the aqueous solution to a pH between 3.0 and 4.5 by admixing a mineral acid;
(c) maintaining the acidified solution at a temperature between 25° and 75° C. until the urea and monomethylolurea have reacted sufficiently to form a dispersion of water insoluble ureaform particles containing between 15 and 40 percent of the total nitrogen of the acidified solution;
(d) neutralizing the aqueous dispersion to a pH of 6.5 to 7.5 by admixing a base;
(e) and admixing a water insoluble, film-forming oil with the aqueous dispersion until the dispersed ureaform particles are coated with an amount of oil sufficient to substantially prevent contact between the ureaform particles and the aqueous solution.

4,578,106
HERBICIDAL ESTERS OF 2-BROMO-4-METHYLIMIDAZOLE-5-CARBOXYLIC ACID
Andrea Leone-Bay, Ridgefield, Conn., and Peter E. Timony, Valley Cottage, N.Y., assignors to Stauffer Chemical Company, Westport, Conn.
Filed Sep. 10, 1985, Ser. No. 774,280
Int. Cl.[4] A01N *43/50*; C07D *233/90*
U.S. Cl. 71—92 **12 Claims**

7. The method of controlling undesirable vegetation comprising applying to the area where control is desired an herbicidally effective amount of a compound having the structural formula

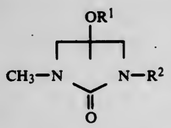


wherein R is C_1–C_{10} alkyl; C_3–C_8 cycloalkyl, C_3–C_8 cycloalkylalkyl wherein the alkyl has 1 to 6 carbon atoms,

C_3–C_{10} alkenyl, C_5–C_8 cycloalkenyl; benzyl or mono- or di-substituted benzyl wherein the substituents are C_1–C_4 alkyl, halogen, nitro or C_1–C_4 haloalkyl and Y is substituted or unsubstituted phenyl wherein the substituent is (a) nitro; (b) C_1–C_4 alkoxy; (c) C_1–C_4 alkyl; (d) C_1–C_4 haloalkyl; (e) SO_nR^1 wherein R^1 is C_1–C_4 alkyl or C_1–C_4 haloalkyl and n is the integer 0, 1 or 2; or (f) halogen.

4,578,107
HERBICIDAL IMIDAZOLIDINE-2-ONE DERIVATIVES
Tetsuya Imai, Naruto, Japan, assignor to Otsuka Kagaku Kabushiki Kaisha, Osaka, Japan
PCT No. PCT/JP83/00318, § 371 Date May 25, 1984, § 102(e) Date May 25, 1984, PCT Pub. No. WO84/01383, PCT Pub. Date Apr. 12, 1984
PCT Filed Sep. 27, 1983, Ser. No. 619,149
Claims priority, application Japan, Sep. 27, 1982, 57-169207; Sep. 30, 1982, 57-171311; Feb. 18, 1983, 58-26592
Int. Cl.[4] A01N *43/50*; C07D *233/40*
U.S. Cl. 71—92 **12 Claims**

9. A method of controlling weeds comprising applying to the weeds a herbicidally effective amount of an imidazolidine-2-one derivative represented by the formula:

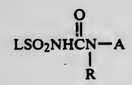


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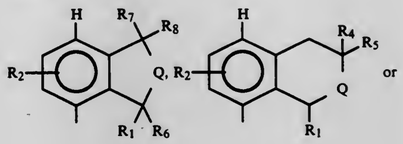
wherein R^1 represents hydrogen, lower alkyl, lower alkoxy lower alkyl, benzyl, lower alkoxycarbonyl lower alkyl or lower alkylcarbamoyloxy and R^2 represents —Ar or —CONH—Ar wherein Ar represents phenyl, phenoxyphenyl, benzyloxyphenyl or phenethyloxyphenyl, each of which may be substituted with a halogen atom, nitro group, lower alkyl group, lower alkoxy group or haloalkyl group of 1–3 carbons and up to 3 halogens.

4,578,108
HERBICIDAL BENZENESULFONAMIDES
James V. Hay, Newark, and Richard F. Sauers, Hockessin, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Division of Ser. No. 533,773, Sep. 19, 1983, Pat. No. 4,521,241. This application May 3, 1985, Ser. No. 730,156
Int. Cl.[4] C07D *401/12*; A01N *43/66, 43/70*; C07D *405/12*
U.S. Cl. 71—93 **18 Claims**

1. A compound having the formula:

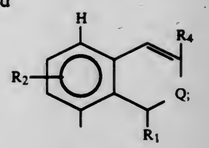


where L is



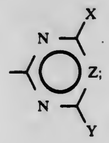
L-1 L-2

-continued



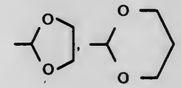
L-3

Q is O, $S(O)_n$ or NR_3;
n is 0, 1 or 2;
R_1 is H, CH_3, Cl or F;
R_2 is H, Cl, Br, C_1–C_3 alkoxy or CF_3;
R_3 is H or C_1–C_4 alkyl;
R_4 is H or CH_3;
R_5 is H or CH_3;
R_6 is H, Cl or F;
R_7 is H and their agriculturally suitable salts, Cl or F;
R_8 is H and their agriculturally suitable salts, Cl or F;
R is H or CH_3;
A is



A-1

X is C_1–C_2 alkyl, C_1–C_2 alkoxy, OCF_2H or CF_3;
Y is H, NH_2, $NHCH_3$, $N(CH_3)_2$, C_1–C_4 alkyl, C_1–C_4 alkyl substituted with 1–3 atoms of (a) F, (b) Cl or (c) Br, CH_2OCH_3, $CH_2OC_2H_5$, C_1–C_4 alkoxy, C_1–C_2 alkylthio, C_3–C_4 alkenyloxy, C_3–C_4 alkynyloxy, $OCH_2CH_2OCH_3$, OCH_2CH_2F, OCH_2CH_2Cl, OCH_2CH_2Br, OCH_2CF_3, $CH(OCH_3)_2$, $CH(OC_2H_5)_2$,



or GCF_2T;
G is O or S;
T is H, CHClF, CHBrF, CF_2H or $CHFCF_3$;
Z is N;
provided that when R_1 is F or Cl, then R_6, R_7 and R_8 are the same as R_1 and Q is O or S; and when R_1 is H or CH_3, then R_6, R_7 and R_8 are H.

4,578,109
PROCESS FOR THE PRODUCTION OF ANODE ACTIVE MATERIALS FOR USE IN CELLS
Kazuhide Miyazaki; Toyohide Uemura, and Katsuzo Nakaso, all of Takehara, Japan, assignors to Mitsui Mining & Smelting Co., Ltd., Tokyo, Japan
Filed May 17, 1985, Ser. No. 735,229
Claims priority, application Japan, May 17, 1984, 59-97481
Int. Cl.[4] C22C *1/04, 18/00*
U.S. Cl. 75—0.5 C **34 Claims**

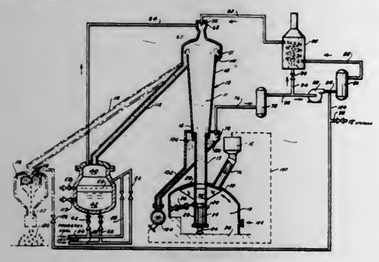
1. A process for the production of anode active materials for use in cells, comprising atomizing a molten zinc to which mercury has been added to obtain pre-amalgamated zinc powder, and dispersing the thus obtained pre-amalgamated zinc powder in a liquid, and contacting the so dispersed zinc powder with mercury or an amalgam to further amalgamate said pre-amalgamated zinc powder.

4,578,110

METHOD OF REDUCING IRON OXIDES

Juan F. Price-Falcón, and Ricardo Viramontes-Brown, both of Nuevo Leon, Mexico, assignors to Hylsa, S.A., Monterrey, Mexico

Filed May 7, 1984, Ser. No. 607,466
Int. Cl.⁴ C21B *13/02*; F27B *1/20*
U.S. Cl. 75—34 **19 Claims**



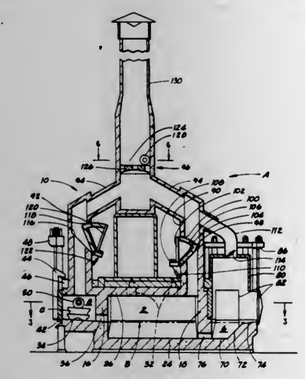
1. A method for the direct gaseous reduction of particulate iron ore to sponge iron in a vertical shaft reactor which comprises gasifying carbon-containing fuel in a gasifier to produce a hot reducing gas, forcing said ore into said reactor near the bottom thereof to form a substantially vertically arranged, self-supporting, upwardly moving ore bed in said reactor, causing said hot reducing gas to flow downwardly through the upwardly moving bed of ore in said reactor to reduce the ore to sponge iron and removing product sponge iron from a point near the top of said reactor.

4,578,111

FURNACE AND PROCESS FOR PROVIDING A SOURCE OF MOLTEN METAL

John R. Gillespie, Ballwin, and Daniel M. Corley, Eureka, both of Mo., assignors to Gillespie & Powers, Inc., St. Louis, Mo.

Filed May 3, 1985, Ser. No. 730,120
Int. Cl.⁴ C22B *9/16*; F27B *3/04*
U.S. Cl. 75—65 R **20 Claims**



1. A process for providing a source of molten metal, said process comprising: confining molten metal in a main chamber so that a bath of the molten metal exists in the main chamber; directing a flame into the main chamber to heat the metal in the main chamber and maintain it molten; placing rearwardly large solid pieces of metal in a sweat chamber that is separated from the main chamber by a division wall which contains at least one port through which the sweat chamber communicates with the main chamber, the total cross-sectional area of the port or ports being substantially less than the corresponding cross-sectional area of the chambers beyond either end of the ports; venting the main chamber through the sweat chamber and thence through a vent that leads away from the sweat chamber so as to preheat the solid pieces of metal in the sweat chamber; thereafter directing a flame into the sweat chamber to melt the solid pieces of metal in the sweat chamber allowing the molten metal in the sweat chamber to flow into the bath within the main chamber; and while the flame is directed into the sweat chamber, venting the sweat chamber through the port or ports, the main chamber and another vent that leads away from the main chamber, so that the heat produced in the sweat chamber serves to maintain the bath in the main chamber molten.

4,578,112

CATALYTIC REACTION PROCESS

Toshikatsu Mori, Hitachi; Seizi Takeuchi, Hitachiota; Shimpei Matsuda, Tokai; Teruo Kumagi, Hitachi; Akira Kato, Hitachi; Hisao Yamashita, Hitachi, and Masato Takeuchi, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 347,721, Feb. 10, 1982, which is a continuation of Ser. No. 127,057, Mar. 4, 1980, abandoned. This application May 2, 1983, Ser. No. 490,517
Claims priority, application Japan, Mar. 12, 1979, 54-29754; Mar. 12, 1979, 54-29755; Mar. 12, 1979, 54-29756; Mar. 12, 1979, 54-29757; Mar. 12, 1979, 54-29758; Mar. 12, 1979, 54-29759
Int. Cl.⁴ C22B *3/00*
U.S. Cl. 75—108 **10 Claims**

1. A catalytic reaction process for oxidizing S^{--} or HS^- in an aqueous solution, which comprises contacting an aqueous solution containing S^{--} or HSA^- ions with an oxidative gas in the presence of a catalyst which is solid in the aqueous solution, said solid catalyst consisting essentially of a non-electroconductive, porous carrier of a hydrophobic polymeric material and a catalytic component containing a metal element having a catalytic activity to S^{--} or HS^- in the aqueous solution in the presence of the oxidative gas, wherein a water-repellant agent capable of forming a discontinuous film of the aqueous solution on the surface of the solid catalyst is made co-present with the catalytic component so that said oxidative gas is allowed to arrive at active sites of the catalytic component together with the ions to oxidize the ions.

4,578,113

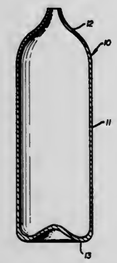
HIGH STRENGTH STEEL

Mahendrasinh D. Rana, North Tonawanda, and Ronald J. Selines, North Salem, both of N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Division of Ser. No. 496,078, May 19, 1983, Pat. No. 4,461,657. This application May 14, 1984, Ser. No. 610,012
The portion of the term of this patent subsequent to Jul. 24, 2001, has been disclaimed.
Int. Cl.⁴ C22C *38/06, 38/24*
U.S. Cl. 75—124 **10 Claims**

1. A low alloy steel, particularly suited for a vessel for the storage of gas at pressure, exhibiting leak-before-break behavior, having an ultimate tensile strength of at least 150 thousands of pounds per square inch and a fracture toughness of at least 70 ksi square root inch, consisting essentially of:
(a) from 0.28 to 0.50 weight percent carbon;
(b) from 0.6 to 0.9 weight percent manganese;
(c) from 0.15 to 0.35 weight percent silicon;
(d) from 0.8 to 1.1 weight percent chromium;
(e) from 0.15 to 0.25 weight percent molybdenum;
(f) from 0.005 to 0.05 weight percent aluminum;
(g) from 0.04 to 0.10 weight percent vanadium;

(h) not more than 0.040 weight percent phosphorus;
(i) not more than 0.015 weight percent sulfur;



(j) calcium in a concentration of from 0.8 to 3 times the concentration of sulfur; and
(k) the remainder of iron.

4,578,114

ALUMINUM AND YTTRIUM OXIDE COATED THERMAL SPRAY POWDER

Subramaniam Rangaswamy, Port Jefferson Station, and John H. Harrington, Warwick, both of N.Y., assignors to METCO Inc., Westbury, N.Y.

Continuation-in-part of Ser. No. 597,139, Apr. 5, 1984, abandoned. This application Jul. 3, 1985, Ser. No. 753,803
Int. Cl.⁴ B22F *7/02, 7/04*
U.S. Cl. 75—252 **38 Claims**

1. A thermal spray composite characterized by ability to produce tenacious and corrosion resistant coatings, comprising:
an alloy base constituent comprising at least one metal selected from the group consisting of nickel, iron, cobalt and chromium; and
additional constituents comprising aluminum and yttrium oxide.

4,578,115

ALUMINUM AND COBALT COATED THERMAL SPRAY POWDER

John H. Harrington, Warwick, and Subramaniam Rangaswamy, Port Jefferson Station, both of N.Y., assignors to Metco Inc., Westbury, N.Y.

Filed Apr. 5, 1984, Ser. No. 597,140
Int. Cl.⁴ B32B *15/00, 15/18*
U.S. Cl. 75—255 **25 Claims**

1. A thermal spray composite characterized by ability to produce tenacious and corrosion resistant coatings, comprising:
a base constituent comprising at least one base metal selected from the group consisting of nickel, iron and cobalt, and at least one modifying element selected from the group consisting of chromium and aluminum; and
elemental constituents comprising aluminum and cobalt.

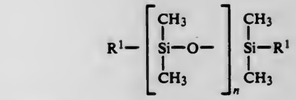
4,578,116

ORGANOSILICON COMPOUNDS AND TEXTILE FIBER FINISHES CONTAINING THESE

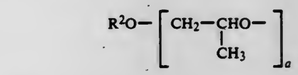
Hans Rott; Götz Koerner, and Günter Schmidt, all of Essen, Fed. Rep. of Germany, assignors to Th. Goldschmidt AG, Essen, Fed. Rep. of Germany

Filed Oct. 25, 1984, Ser. No. 664,705
Claims priority, application Fed. Rep. of Germany, Oct. 25, 1983, 3338663
Int. Cl.⁴ C09D *5/16*
U.S. Cl. 106—18.12 **6 Claims**

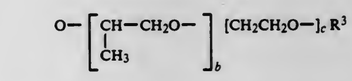
1. Compound of the formula



whereby, in the average molecule
20 to 100% of the R^1 radicals are



in which
R^2 is an alkylphenyl, dialkylphenyl or trialkylphenyl radical and the sum of the alkyl carbon atoms per phenyl radical is 6 to 12,
a=1 to 2; and
0 to 80% of the R^1 radicals are



in which
R^3 is an alkyl radical with 1 to 16 carbon atoms, an organoacyl radical with 1 to 12 carbon atoms or an aryl radical,
b=1 to 2,
c=1 to 30, and
n=3 to 30.

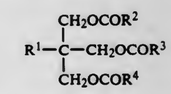
4,578,117

ERASABLE INK COMPOSITION

Mikihiko Nakanishi, Osaka, Japan, assignor to Sakura Color Products Corp., Osaka, Japan

Filed Jun. 20, 1984, Ser. No. 623,762
Claims priority, application Japan, Jun. 22, 1983, 58-113029
Int. Cl.⁴ C09D *11/00*
U.S. Cl. 106—20 **11 Claims**

1. An erasable ink composition for writing on an impervious writing surface to form thereon a writing or marking which is erasable by wiping the surface; the composition consisting of:
about 40–90% by weight of a volatile organic solvent;
about 1–20% by weight of a colorant;
about 0.5–30% by weight of a resin which is soluble in the organic solvent;
about 0–10% by weight of a surfactant;
about 0–12% by weight of an auxiliary separating agent;
about 1–25% by weight of a fatty acid ester of trimethylolalkane of the general formula



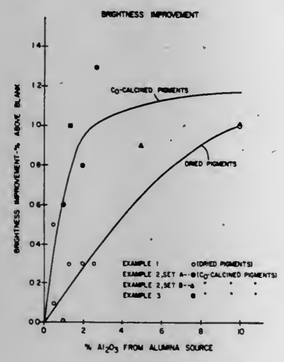
wherein R^1 represents an alkyl of 1–3 carbons, R^2 and R^3 represent independently hydrogen or an alkyl of 1–21 carbons, and R^4 represents an alkyl of 3–21 carbons.

4,578,118

KAOLIN CLAY-BASED PIGMENT

Fred R. Huege, Belle Mead; Richard A. Slepetys, Bricktown, both of N.J., and David L. Catone, Hopkinton, Mass., assignors to Engelhard Corporation, Menlo Park, N.J.

Filed Feb. 13, 1985, Ser. No. 701,110
Int. Cl.[4] C09C *1/22, 1/40*
U.S. Cl. 106—288 B 26 Claims



1. A method of making a white, calcined kaolin clay-based pigment comprises combining an uncalcined, iron compound-containing kaolin clay in fine particulate form with a 0.1 to 15% by weight of alumina and calcining the resultant clay-alumina combination at a temperature of about 870° C. to 1400° C.

4,578,119

METHOD FOR CLEAN-UP OF BLOOD SPILLS

David L. Marcus, 317 E. 10th St., New York, N.Y. 10009, and Peter F. Lordi, P.O. Box 902, Highland, N.Y. 12528

Division of Ser. No. 413,061, Aug. 30, 1982. This application Nov. 7, 1983, Ser. No. 549,498
Int. Cl.[4] B08B *15/00*
U.S. Cl. 134—4 9 Claims

1. A method for absorbing liquid in and destroying the pathogen activity of pathogen contaminated blood spills from a surface without human exposure to the pathogens in the spill, comprising the steps of

(a) contacting said blood spill with a solid, pulverulent composition for absorbing the liquid in the blood spill and physically containing the spill for inhibiting its spread on and further contamination of the surface, said solid pulverulent composition consisting essentially of a sufficient amount of a pourable particulate diatomaceous earth for absorbing the liquid in the blood spill and converting the spill to a substantially solid and readily removable form and a sufficient amount of a chlorine source which is physically and chemically compatible with said diatomaceous earth for providing an available chlorine level in said composition of at least 5,000 ppm;

(b) forming hypochlorous acid by reaction of said chlorine source with water in said blood spill for destroying pathogen activity in said spill on contact therewith;

(c) causing the blood in said spill to change color from red to brown for providing a color indication that pathogen destruction has occurred;

(d) removing the resulting pathogenically inactivated, substantially solid material from the surface; and

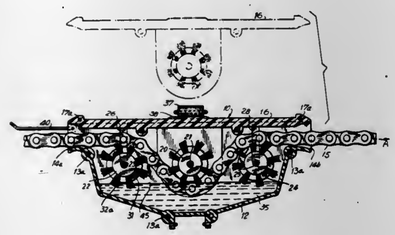
(e) disposing of said solid material.

4,578,120

BICYCLE CHAIN CLEANING DEVICE AND METHOD

Michele A. Chiarella, Via Vallorba 22, 6907 Lugano, Switzerland

Filed Jun. 15, 1984, Ser. No. 621,248
Int. Cl.[4] B08B *7/00*
U.S. Cl. 134—9 20 Claims



1. An enclosed device for solvent cleaning of bicycle chains, said device comprising:

(a) an elongated receptacle having means defining an open top and adpapt for enclosing a bicycle chain portion therein, said receptacle having means defining an opening at its opposite ends sized to permit passing the bicycle chain therethrough, said receptacle being further adapted for retaining a solvent liquid in a lower portion thereof;

(b) a mating cover member for closing the top opening of said receptacle, said cover member having at least one primary rotatable sprocket brush attached to the cover and extending into the receptacle, said brush being rotatable about an axis oriented substantially perpendicular to the direction of movement of the bicycle chain when passed through the receptacle, said brush having multiple tufts of bristles located about its periphery, said tufts being spaced apart and sized so as to interfit closely into openings of the bicycle chain passed through the receptacle;

(c) guide means associated with said receptacle for maintaining the bicycle chain in an interfitting relation with said rotatable sprocket brush; and

(d) clamping means attached to said device for retaining the receptacle and the mating cover member together in a closed position, so as to enclose the bicycle chain and retain a solvent liquid material in the lower portion of the receptacle, whereby the bicycle chain can be passed through the receptacle and interfitted with the tufts of said sprocket brush to provide for effective solvent and brush cleaning of the chain.

17. A method for cleaning or lubricating a bicycle chain, said method comprising

(a) filling a receptacle having an open top to a selected level with a solvent or lubricant;

(b) placing a bicycle chain intermediate portion into the receptacle so that the chain extends past opposite ends of the receptacle;

(c) inserting into the receptacle an upper mating member and closing the top opening; said mating member carrying a primary rotary sprocket brush and enclosing the bicycle chain within the receptacle in contact with the solvent or lubricant therein so as to interfit with said primary rotary brush; and

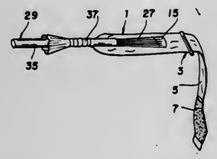
(d) pulling the bicycle chain through the receptacle by tension applied to one end of the chain, thereby contacting the chain with the solvent or lubricant and rotating the primary sprocket brush to interfit with said bicycle chain so as to brush the chain.

4,578,121

METHOD FOR THE CLEANING OF CABLE ENDS

Udo Seidel, Hamburg, Fed. Rep. of Germany, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sep. 6, 1984, Ser. No. 647,737
Claims priority, application Fed. Rep. of Germany, Sep. 19, 1983, 3333760
Int. Cl.[4] B08B *3/10*
U.S. Cl. 134—25.4 4 Claims



1. A method for cleaning a bundle of cable ends of a multiconductor transmission cable positioned with its longitudinal axis horizontal, comprising:

providing a manually kneadable, flexible, elongate pouch containing a cleaning fluid,

inserting the bundle of cable ends into the pouch until the open end of the pouch is on the cable sheath with the closed end of the pouch containing the cleaning fluid hanging vertically,

sealing the open end of the pouch around the cable sheath,

moving the closed end of the pouch to a horizontal position to cause the cleaning fluid to be distributed throughout the bundle of cable ends,

manually kneading the pouch to forcefully move the cleaning fluid around and between the cable ends and,

moving the closed end of the pouch back to the vertically hanging position to allow the cleaning fluid to drain off the cable ends.

4,578,122

NON-PEROXIDE TRIVALENT CHROMIUM PASSIVATE COMPOSITION AND PROCESS

David E. Crotty, Highland Park, Mich., assignor to OMI International Corporation, Warren, Mich.

Filed Nov. 14, 1984, Ser. No. 670,384
Int. Cl.[4] C23F *7/26*
U.S. Cl. 148—6.2 20 Claims

1. An aqueous acidic peroxide-free solution for treating receptive metal substrates to impart a chromium passivate film thereon comprising chromium ions substantially all of which are present in the trivalent state, hydrogen ions to provide an acidic pH, at least one additional activating metal ion selected from the group consisting of iron, cobalt, nickel, molybdenum, manganese, aluminum, lanthanum, cerium, lanthanide mixtures as well as mixtures thereof present in an amount effective to activate the formation of the chromate passivate film, and nitrate ions as the essential oxidizing agent present in an amount to provide a mol ratio of nitrate ions to chromium ions and activating metal ions of at least about 4:1 and sufficient to activate the hydrated trivalent chromium to form a chromate film on the substrate.

4,578,123

METHOD FOR MANUFACTURING A METALLIC BODY USING AN AMORPHOUS ALLOY

Ludwig Schultz, Bubenreuth, and Franz Gaube, Herzogenaurach, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed May 7, 1985, Ser. No. 731,507
Claims priority, application Fed. Rep. of Germany, May 16, 1984, 3418209
Int. Cl.[4] C22C *1/00*
U.S. Cl. 148—11.5 Q 18 Claims

1. In a method for manufacturing a metallic body using an amorphous alloy formed by at least two predetermined starting alloy partners, said method including the steps of:

producing a preliminary product having respectively adjacent layers of said starting alloy partners with each said respective layer having a thickness of at most 0.001 mm;

developing from said preliminary product an intermediate product having a non-crystalline structure using a rapid diffusion reaction at a predetermined relatively low temperature; and then

further processing said intermediate product to form said metallic body;

the improvement comprising:

forming a starting product by means of a bundling or stacking technique from a predetermined number of mutually adjacent parts of said respective starting alloy partners; and

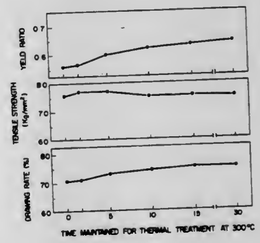
reducing the thickness of said starting product by at least one cross-section reducing treatment to provide said preliminary product having predetermined adjacent layer thicknesses.

4,578,124

HIGH STRENGTH LOW CARBON STEELS, STEEL ARTICLES THEREOF AND METHOD FOR MANUFACTURING THE STEELS

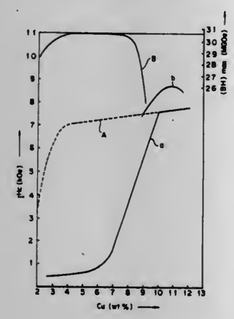
Toshiaki Yutori, Hyogo; Masatoshi Sudo, Kobe; Takehiko Kato, Kobe, and Yasuhiro Hosogi, Kobe, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Dec. 27, 1984, Ser. No. 686,884
Claims priority, application Japan, Jan. 20, 1984, 59-9055; Jan. 20, 1984, 59-9056; Aug. 24, 1984, 59-177191
Int. Cl.[4] C21D *7/14*
U.S. Cl. 148—12 F 15 Claims



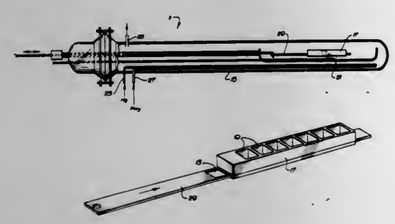
1. A high strength low carbon steel having good ultraworkability which consists essentially of 0.01–0.3 wt% of C, below 1.2 wt% of Si, 0.3–2.5 wt% of Mn and the balance of iron and inevitable impurities, the steel having such a metal structure that a low temperature transformation product phase having an average calculated size not larger than 3 microns consisting of acicular martensite, bainite or a mixed structure thereof is uniformly dispersed in a ferrite phase in an amount by volume of 15–40%.

4,578,125
PERMANENT MAGNET
Masashi Sahashi, Fujisawa; Koichiro Inomata; Naoyuki Sori, both of Yokohama, and Hideki Yamamiya, Yamato, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
Filed Jun. 28, 1982, Ser. No. 392,593
Claims priority, application Japan, Jul. 3, 1981, 56-103434; Oct. 2, 1981, 56-156203
Int. Cl.⁴ C04B *35/00*
U.S. Cl. 148—31.57 **4 Claims**



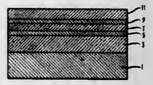
1. A permanent magnet produced by a process comprising the steps of:
(a) sintering a powdered alloy comprising from about 25 to about 29% by weight of samarium from about 0.2 to about 3% by weight of titanium, from about 3 to about 9% by weight of copper, from about 10 to 20% by weight of iron and the balance consisting essentially of cobalt to obtain a sintered body; and
(b) annealing the sintered body at a cooling rate of not more than about 5° C./min from an annealing initiating temperature of from about 600° to 700° C.

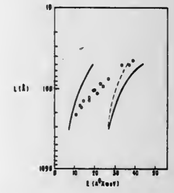
4,578,126
LIQUID PHASE EPITAXIAL GROWTH PROCESS
Edward A. Rezek, Redondo Beach, and Lawrence M. Zinkiewicz, West Hollywood, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.
Filed Jun. 22, 1983, Ser. No. 506,683
Int. Cl.⁴ H01C *21/208*
U.S. Cl. 148—171 **18 Claims**



1. A method for producing a high-resistivity epitaxial layer on a semiconductor substrate comprising steps of:
dissolving a prescribed amount of cobalt as a deep level dopant in an indium solvent, the step of dissolving including a step of baking the dopant and solvent in a prescribed fashion, to produce a purified intermediate solution having an impurity concentration of less than about 1×10^{16} atoms per cubic centimeter;
adding to the purified intermediate solution a semiconductor selected from the group consisting of indium phosphide, gallium arsenide, indium arsenide and mixtures thereof, and baking the resultant solution in a prescribed fashion, to produce a purified final solution having an impurity concentration of less than about 1×10^{16} atoms per cubic centimeter and having prescribed relative proportions of the deep level dopant and the semiconductor material; and
cooling the purified final solution to a temperature below its liquidus temperature, in the presence of a semiconductor substrate, to grow on the substrate an epitaxial layer of the doped semiconductor material, the resulting epitaxial layer having a resistivity substantially higher than that of an undoped epitaxial layer of the same semiconductor material.

4,578,127
METHOD OF MAKING AN IMPROVED GROUP III-V SEMICONDUCTOR DEVICE UTILIZING A GETTER-SMOOTHING LAYER
Arthur C. Gossard, Warren; Robert C. Miller, Summit, and Pierre M. Petroff, Westfield, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Aug. 13, 1982, Ser. No. 408,009
Int. Cl.⁴ H01L *21/203, 21/363*
U.S. Cl. 148—175 **7 Claims**



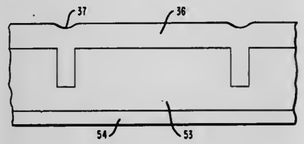


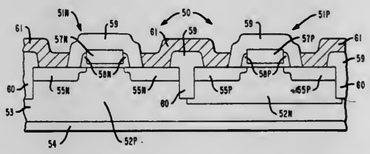
1. A method of fabricating a semiconductor device having at least one Group III-V semicondcutor comprising the steps of:
growing a getter-smoothing layer on a semiconductor surface thereby gettering or desorbing impurities from the semiconductor surface, said getter-smoothing layer comprising a semiconductor and having a thickness between 10 and 100 Angstroms;
growing a cladding layer comprising a semiconductor, said cladding layer having a thickness less than 1500 Angstroms, said cladding layer being contiouous with said getter-smoothing layer;
and growing a single active layer comprising a semiconductor.

4,578,128
PROCESS FOR FORMING RETROGRADE DOPANT DISTRIBUTIONS UTILIZING SIMULTANEOUS OUTDIFFUSION OF DOPANTS
Randall S. Mundt, and Ray E. Wyatt, both of Colorado Springs, Colo., assignors to NCR Corporation, Dayton, Ohio
Filed Dec. 3, 1984, Ser. No. 677,636
Int. Cl.⁴ H01L *21/20, 21/225*
U.S. Cl. 148—191 **8 Claims**

1. A process for forming a vertical retrograde dopant distribution in a semiconductor device, comprising:
providing a substrate of a first conductivity type;

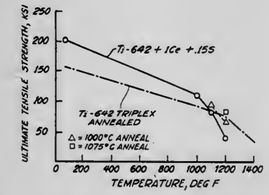
forming on the substrate an epitaxial layer of the second conductivity type and of selected thickness;
forming a mask on the epitaxial layer exposing a first well region and a covered second well region;
doping the surface region of the epitaxial layer in the first well region;





removing the mask to expose both well regions; and
heating the structure for a predetermined time and temperature to form by outdiffusion a retrograde dopant distribution of the first conductivity type in the first well region and to form a retrograde dopant distribution of the second conductivity type in the adjacent second well region.

4,578,129
OXYSULFIDE DISPERSION STRENGTHENED TITANIUM ALLOYS
Raymond G. Rowe, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Feb. 15, 1985, Ser. No. 702,203
Int. Cl.⁴ C22C *14/00, 1/18*
U.S. Cl. 148—407 **7 Claims**

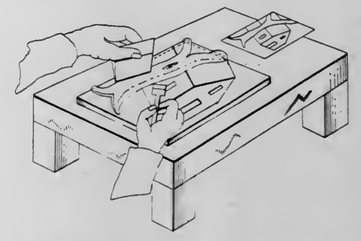


3. A titanium base alloy containing appreciable concentrations by weight percent of aluminum, tin and zirconium,
said alloy having distributed therein a fine dispersoid of a metal compound of high chemical stability,
said compound being formed of at least one metal and at least one nonmetal,
said nonmetal being oxysulfide,
said metal being selected from the group consisting of calcium, cerium, gadolinium, praesodynium, lanthanum, yttrium and strontium.

4,578,130
IRON-NICKEL-CHROMIUM ALLOY HAVING IMPROVED SWELLING RESISTANCE AND LOW NEUTRON ABSORBENCE
Michael K. Korenko, Richland, Wash., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Continuation of Ser. No. 61,228, Jul. 27, 1979, abandoned. This application Aug. 22, 1980, Ser. No. 180,770
Int. Cl.⁴ C22C *30/00*
U.S. Cl. 148—419 **1 Claim**

1. An iron-nickel-chromium age hardenable alloy characterized in having γ' and γ'' phases present and consisting essentially of about 37% nickel, 12% chromium, 2.9% niobium, 0.2% silicon, 0.05% zirconium, 1.75% titanium, 0.3% aluminum, and the remainder essentially all iron.

4,578,131
METHOD OF MAKING A THREE DIMENSIONAL SCULPTURED PAINTING
Floyd A. Hawkins, Jr., Rte. 1, Box 476, Stanardsville, Va. 22973
Filed Nov. 14, 1984, Ser. No. 671,189
Int. Cl.⁴ B44D *5/10*
U.S. Cl. 156—62 **3 Claims**



1. A method of creating a three dimensional sculptured painting comprising the steps of: securing a fabric to a fiberboard sheet; applying a base coat of a first sand and glue mixture to the fabric; scoring the base coat to define a picture; applying a second sand and glue mixture with a higher sand to glue ratio than said first mixture to desired portions of the defined picture to build up areas of the picture and sculpturing said second mixture to create three dimensional detail; and, after drying, painting the picture to complete the details of an object or scene which forms the picture.

4,578,132
PROCESS FOR THE PRODUCTION OF TUFTED CARPET TILES
Adrianus A. Van Uden, Tiel, and Johannes A. H. Claessen, Leusden, both of Netherlands, assignors to Heuge Export AG, Luzern, Switzerland
Filed Sep. 23, 1983, Ser. No. 535,371
Claims priority, application Netherlands, Sep. 23, 1982, 8203691
Int. Cl.⁴ D05C *15/04;* **D06C** *7/00;* **D06P** *5/20*
U.S. Cl. 156—72 **3 Claims**

1. In a process for the production of tufted carpet tiles comprising making a tufted carpet web by tufting one surface of a substrate with a pile yarn, providing the tufted substrate on the other surface with a coating of a rubber latex and with a tile backing selected from the group consisting of bitumenous materials and synthetic resins to provide a raw carpet web, and thereafter dyeing, steaming, washing and drying said raw carpet web and subsequently cutting tiles from said carpet web, the improvement comprising:
A. subsequent to the steps of coating and application of said

tile backing and prior to the step of dyeing thereof, heat treating said raw carpet web by:

(i) freely supporting said web in an untensioned condition upon an auxiliary carrier so as to permit said web to shrink freely and stress relieve,

(ii) exposing said supported web to a temperature of 120°−200° C. for 1 to 8 minutes, and

(iii) cooling said web to a temperature below 50° C.; and

B. between said dyeing and steaming steps, imprinting said carpet web with a pattern.

4,578,133

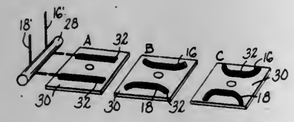
METHOD AND APPARATUS FOR APPLYING DISCRETE STRIPS TO A WEB OF MATERIAL

Daniel J. Oshefsky; Paul A. Gavronski; Robert E. Vogt, and Gregory J. Rajala, all of Winnebago County, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Nov. 19, 1984, Ser. No. 673,064

Int. Cl.⁴ B29H *15/00*; B60C *29/00*; B44C *1/16*; B32B *31/00*

U.S. Cl. 156—164 **19 Claims**



1. A method of applying discrete strips of a first material in a predetermined pattern to a web of a second material comprises:

supplying one or more discrete strips of the first material to one or more transfer members carrying flexible strip supports thereon and adhering the supplied strips to the flexible strip supports;

cutting the strips of first material to form one or more discrete strips thereof adhering to the flexible strip supports of the transfer members;

changing the configuration of the flexible strip supports while the supplied strips of first material are adhered thereto, thereby correspondingly changing the configuration of the supplied strips; and

moving the one or more transfer members and the web of second material into transfer contact with each other and transferring the supplied strips in their changed configuration to the web of the second material.

4,578,134

PROCESS FOR THE PRODUCTION OF SPUNBONDED FABRICS FROM AERODYNAMICALLY DRAWN FILAMENTS

Ludwig Hartmann, Pascalstr. 3, 6750 Kaiserslautern, Fed. Rep. of Germany

Filed Jul. 2, 1984, Ser. No. 627,198

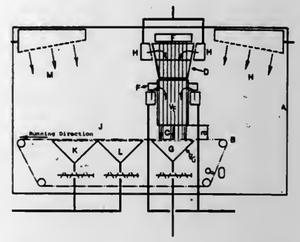
Claims priority, application Fed. Rep. of Germany, Dec. 1, 1984, 3400847

Int. Cl.⁴ D04H *3/16*

U.S. Cl. 156—167 **9 Claims**

1. A process for the production of spunbonded fabrics in a spinning room by aerodynamically drawing filaments or filament rovings with the aid of air currents divided into component currents and supplied to a perforated collecting screen where they are deposited in random texture, are held in this position by air suction and supplied to a bonding aggregate,

wherein the air current is divided into a conditioning current and a drawing current for the conduction and the drawing of the filaments or filament rovings and into a deposition zone current for the fixation of the web, which has been deposited in random texture, in its transportation on the perforated collecting screen, the deposition zone current being sucked off through the collecting screen together with the spinning room air in a plurality of zones and being reintroduced into the spinning room as a holding current, and an additional spinning room current being introduced into the spinning room for balancing out the overall system, the conditioning current as well as the drawing current being introduced in solely added air mode and the depositing current and the holding current being withdrawn and introduced, respectively, in mostly recirculated mode, and



wherein the spinning room current is supplied in mixed recirculated air/added air mode or in solely added air mode and the air velocities, as the filaments are being sucked off the holding zone on the collecting screen, are lowered in the running direction, whereby, by means of the aforementioned air conduction of the component currents, the concentration of suspended particles is reduced in the opposite direction.

4,578,135

FUEL CELL ELECTROLYTE MATRIX AND METHOD FOR MANUFACTURING THE SAME

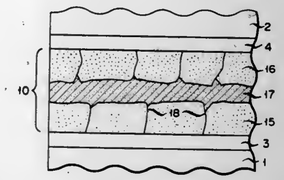
Mitsushi Ueno, Yokohama; Tamotsu Shirogami, Yamato, and Noboru Segawa, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 1, 1984, Ser. No. 576,011

Claims priority, application Japan, Mar. 31, 1983, 58-56002

Int. Cl.⁴ B32B *31/00*; C09J *5/04*

U.S. Cl. 156—182 **6 Claims**



1. A method for manufacturing a fuel cell electrolyte matrix which comprises the steps of:

providing a fuel electrode and oxidizing electrode respectively coated with a catalyst layer on one side;

forming a powder layer prepared from electrolyte-resistive material on the surface of at least one of said catalyst layers;

spreading a paste layer prepared from a mixture of acid electrolyte and powdery electrolyte-resistive material on the powder layer or catalyst layer coated on the fuel electrode and/or the powder layer or catalyst layer coated on the oxidizing electrode;

tightly superposing the fuel electrode and oxidizing electrode with the paste layer and powder layer interposed therebetween, thereby forming an electrolyte matrix between both electrodes.

4,578,136

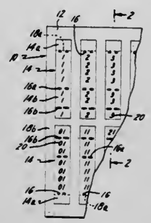
ADHESIVE PRODUCTS

Barry D. Brown, Reno, Nev., assignor to The Datak Corporation, Guttenberg, N.J.

Continuation of Ser. No. 371,339, Apr. 28, 1982, abandoned. This application May 7, 1984, Ser. No. 608,266

Int. Cl.⁴ B32B *31/00*

U.S. Cl. 156—249 **16 Claims**



1. An article of manufacture, including a carrier having a release surface, and a marker including a one-piece, relatively long and narrow strip of material comprising at least three serially related segments including a first-end segment and at least two additional segments divided by graded weakening formations that result in transversely rupturable connections between the segments that are all successively weaker in tension in the order of their distances from the first-end segment, each of said additional segments bearing pressure-sensitive adhesive and being adhered thereby to said release surface, whereby, after the marker has been peeled from the carrier by a user who grasps only said first-end segment, and after the segment remote from said first-end segment has been adhered to a receptor and retained thereon, the unadhered segments of the marker can be torn away from the adhered segment by directly pulling only the grasped first-end segment of the marker.

4,578,137

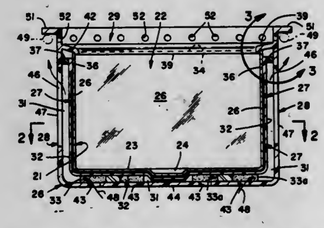
CHEMICAL BATH APPARATUS AND SUPPORT ASSEMBLY

Charles J. Kring, Berkeley, Calif., assignor to Wafab, Inc., San Ramon, Calif.

Filed Jan. 23, 1984, Ser. No. 572,940

Int. Cl.⁴ C23F *3/02*

U.S. Cl. 156—345 **7 Claims**



1. In a chemical bath apparatus including an open topped beaker formed with a continuous bottom wall and a continuous side wall for containment of a chemical substance in said beaker during heating, heater means mounted to the exterior of at least one of said bottom wall and said side wall for heating of said chemical substance therethrough, said heater means terminating in a heater periphery, open topped shell means having a bottom wall and a side wall, said shell means extending around said beaker and said heater means, spacing means between said shell means and said beaker for maintaining said shell means in spaced relation to said side wall of said beaker to provide a space between said side wall of said beaker and said shell means, and a support and seal assembly supporting said beaker with respect to said shell means and substantially sealing and isolating said heater means from corrosive fumes produced upon heating of said chemical substances in said beaker, wherein the improvement in said chemical bath apparatus comprises:

said support and seal assembly including:

(a) sleeve means extending around and enclosing said heater means and being mounted in sealed relation to the exterior of said beaker at locations extending beyond said heater periphery, said sleeve means being imperforate and formed of a material which is highly temperature resistant and corrosion resistant to provide a substantially fume impervious barrier positioned and sealed to said beaker at said locations beyond said heater periphery; and

(b) resilient, corrosion resistant, pad means positioned between said shell means and said beaker over a substantial area of said bottom wall of said beaker to provide resilient vertical support of substantially the entire weight of said beaker with said chemical substance therein through said bottom wall of said beaker and for maintaining said bottom wall of said shell means in spaced relation to said bottom wall of said beaker.

4,578,138

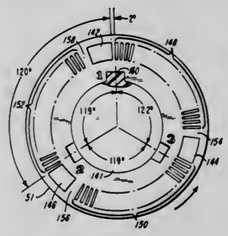
HAND-HELD LABELER HAVING ADJUSTABLE WEB POSITIONING SYSTEM

Paul H. Hamisch, Jr., Franklin; James L. Vanderpool, Kettering, and James M. Bain, Xenia, all of Ohio, assignors to Monarch Marking Systems, Inc., Dayton, Ohio

Filed Apr. 3, 1984, Ser. No. 596,334

Int. Cl.⁴ B65C *9/18*, *11/02*

U.S. Cl. 156—361 **27 Claims**



1. A hand-held labeling machine comprising; a housing having a manually engageable handle, the housing having means for holding a label supply roll of a composite web having labels releaseably adhered to a backing strip, means for printing on a label at a printing position, means for peeling the printed label from the backing strip, label applying means disposed adjacent the peeling means, means for advancing the web to peel a printed label from the backing strip at the peeling means and advance the printed label into label applying relationship with the label applying means and to advance another label into the printing position, means for entering selected data to be printed, the printing means including a thermographic print head having a plurality of individually selectable print elements for printing on a thermographic label at a printing position, means coupled to said data entering means for electrically processing the selected data and energizing the individual print elements in a predetermined sequence determined by the selected data to print data on the label, wherein said advancing means includes indexing means coupled to said processing means for providing signals representative of the position of a label to said processing means, said indexing means including a circular member having three home position

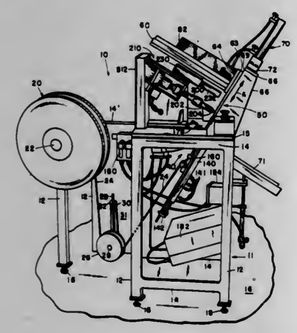
indices and a plurality of position indices interposed between said home position indices, said circular member being adapted to be driven by a shaft, said indexing means including means for fixedly attaching said circular member to said shaft while providing an angular adjustment between said circular member and said shaft, said adjusting means including keying means disposed on said shaft and first, second and third engaging means disposed on said circular member for engaging said keying means, said keying means and said engaging means cooperating to prevent rotation of said circular member relative to said shaft, wherein said first engaging means is disposed $120° + 2N°$ from said second engaging means, said third engaging means being spaced from said second and first engaging means by $120° - N°$ to permit a $\pm N°$ adjustment of said circular member relative to said shaft.

4,578,139

TAG MANUFACTURING APPARATUS

William J. Stehouwer, Lansing, Mich., assignor to A. J. Sparks & Company, Grand Rapids, Mich.

Filed Feb. 2, 1984, Ser. No. 576,438
Int. Cl.⁴ B65C *7/00, 9/10*
U.S. Cl. 156—384 **21 Claims**



A machine for attaching tag ties to the bodies of tabs comprising:

a machine frame;

means at a first position on said machine frame for holding a supply of tag bodies;

first means on said frame for moving individual tag bodies from said holding means at said first position to a second position on said machine frame;

tag tie supplying means and means on said frame for moving tag ties from a third position on said machine frame to said second position and in alignment with a tag body; and

means for securing a tag tie to a tag body at said section position, wherein said first, second and third positions lie substantially in a line and wherein said second position is located between said first and third positions such that tab bodies and tag ties are moved toward each other from opposite directions.

4,578,140

CASSETTE TYPE LABELER AND CASSETTE CASE

Toshio Nakajima, Tokyo, Japan, assignor to Teraoka Seiko Co., Ltd., Tokyo, Japan

Filed Jul. 16, 1982, Ser. No. 398,901
Claims priority, application Japan, Jul. 21, 1981, 56-114078; Jul. 29, 1981, 56-118996; Aug. 5, 1981, 56-122684
Int. Cl.⁴ B32B *35/00*
U.S. Cl. 156—384 **61 Claims**

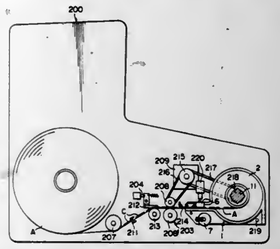
1. A cassette case adapted to be used with a labeler body having a drive roller, wherein said cassette case comprises a case body comprising:

(a) an outlet opening;

(b) a labelled base sheet having at least one label on a base sheet and stored in a roll form in said case body, wherein said labelled base sheet is adapted to be extracted through said outlet;

(c) a peeling member positioned near said opening for curving said labelled base sheet to the rear so as to peel off each said label from the base sheet to provide a peeled-off base sheet;

(d) guide means disposed rearward of said peeling member and a feed roller for feeding the peeled-off base sheet in a



predetermined direction, wherein said guide means comprises a curved base adapted to cooperate with said drive roller on said labeler body for moving said base sheet through said cassette case such that said base sheet is disposed between said feed roller and said guide members; and

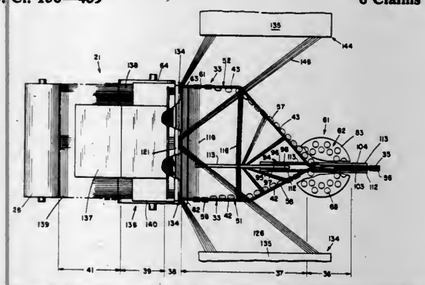
(e) means for elastically pressing said feed roller against said guide means to maintain said backing sheet between said guide means and said feed roller.

4,578,141

WEFT FORMING APPARATUS

Lester Gidge, Nashua, and Ronald P. Murro, Amherst, both of N.H., assignors to Bay Mills Limited, Toronto, Canada

Filed Jan. 13, 1984, Ser. No. 570,385
Int. Cl.⁴ B32B *5/12*; D04H *3/05*
U.S. Cl. 156—439 **6 Claims**



1. A weft forming section of a machine for forming a sheet of yarns, said section comprising:

endless weft strand carrier means including a pair of laterally spaced stretches, mounted to advance longitudinally along a generally horizontal path through said section;

weft supply means including a turret having a plurality of packages thereon and rotatable in a horizontal plane on a vertical axis and;

endless draw-off means including a pair of parallel, spaced apart endless belt stretches, advancing longitudinally in a plane parallel to the plane of said turret along said path and having a plurality of pairs of draw-off pins spaced therealong;

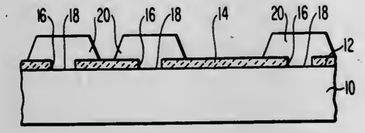
said weft supply mans and said draw-off means being oprably connected to individually and successively draw-off a full width length of weft strand from each package, cut it off and deliver it to said endless weft strand carrier means.

4,578,142

METHOD FOR GROWING MONOCRYSTALLINE SILICON THROUGH MASK LAYER

John F. Corboy, Jr., Ringoes; Lubomir L. Jastrzebski, Plainsboro; Scott C. Blackstone, Hopewell, and Robert H. Pagliaro, Jr., Trenton, all of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed May 10, 1984, Ser. No. 608,544
Int. Cl.⁴ C30B *25/04*
U.S. Cl. 156—612 **16 Claims**



1. A method for forming monocrystalline silicon through a mask layer comprising:

providing a semiconductor substrate having a monocrystalline portion at a surface thereof and having a mask layer on said surface, the mask layer having an aperture to said monocrystalline portion;

depositing silicon for a period substantially equal to a critical time, from a silicon-source gas, so as to form monocrystalline silicon on exposed monocrystalline silicon regions and non-monocrystalline silicon on the mask layer, said critical time being a time at which said non-monocrystalline silicon can be removed from the mask layer by etching in situ while retaining a portion of the deposited monocrystalline silicon; and

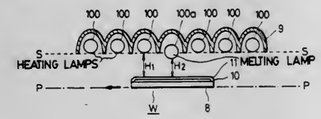
etching in situ directly after said depositing, in a silicon-etching gas, so as to remove the non-monocrystalline silicon from the mask layer while retaining a portion of the deposited monocrystalline silicon and achieve a monocrystalline silicon island extending from the substrate surface at the mask aperture.

4,578,143

METHOD FOR FORMING A SINGLE CRYSTAL SILICON LAYER

Tetsuji Arai, Kobe, Japan, assignor to Ushio Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 25, 1983, Ser. No. 526,453
Claims priority, application Japan, Aug. 26, 1982, 57-146940
Int. Cl.⁴ C30B *1/08*
U.S. Cl. 156—617 R **5 Claims**



1. A process for forming a single crystal silicon layer by heating a wafer, which is made of a single crystal silicon substrate and a starting silicon layer made of amorphous or polycrystalline silicon and provided on the silicon substrate, in accordance with the epitaxial growth technique, which process comprises the following steps:

providing a heat source which comprises a plurality of tubular lamps provided side by side with their longitudinal axes extending substantially in parallel with one another in a second plane lying above and substantially in parallel with a first plane, in which the wafer is placed, and a tubular melting lamp provided at a position between the first and second planes and with its longitudinal axis substantially in parallel with the longitudinal axes of the tubular lamps in the second plane; and

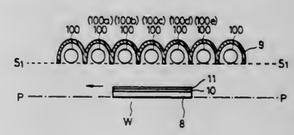
moving the wafer in the first plane and in a direction perpendicular to the longitudinal axes of the tubular lamps, all the tubular lamps of the heat source, including the tubular melting lamp, being lit, to form a narrow molten region on the wafer so as to convert the starting silicon layer into the single crystal silicon layer.

4,578,144

METHOD FOR FORMING A SINGLE CRYSTAL SILICON LAYER

Tatsumi Hiramoto, Machida, Japan, assignor to Ushio Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 25, 1983, Ser. No. 526,456
Int. Cl.⁴ C30B *1/08*
U.S. Cl. 156—617 R **9 Claims**



1. A process for forming a single crystal silicon layer by heating a wafer, which is made of a single crystal silicon substrate and a starting silicon layer made of amorphous or polycrystalline silicon and provided on the silicon substrate, in accordance with the epitaxial growth technique, which process comprises the following steps:

providing a heat source which comprises a plurality of tubular lamps provided side by side with their longitudinal axes extending substantially in parallel with one another in a second plane lying above and substantially in parallel with a first plane in which the wafer is placed;

lighting the tubular lamps of the heat source to radiate their light to the wafer so that the wafer is heated and the temperature of the starting silicon layer is maintained at 1100°–1400° C. for 4 seconds or longer; and then,

radiating light from a specific lamp which is one of the tubular lamps and is lit with an excess input greater than the remaining lamps to a portion of the starting silicon layer of the wafer so as to raise the temperature of the portion of the starting silicon layer to 1410°–1480° C. and to form a narrow molten region, and moving the wafer in the first plane, in a direction perpendicular to the longitudinal axes of the tubular lamps and at a speed of at least 0.1 cm/sec. relative to the tubular lamps so as to form the same narrow molten regions as the former narrow molten region successively one after another in the wafer, thereby converting the starting silicon layer into the single crystal silicon layer.

4,578,145

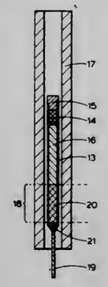
METHOD OF MAKING MONOCRYSTALLINE TERNARY SEMICONDUCTOR COMPOUNDS

Brian E. Bartlett, Hampshire; James E. Harris, Southampton, and John G. Wilkes, Ashurst, all of England, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 164,420, Jun. 30, 1980, abandoned.
This application Sep. 9, 1982, Ser. No. 416,210
Claims priority, application United Kingdom, Jul. 5, 1979, 7923412
Int. Cl.⁴ C30B *11/02*
U.S. Cl. 156—616 R **7 Claims**

1. A method of making a monocrystalline ternary semiconductor compound material comprising the steps of preparing a melt of said semiconductor compound, quenching said melt so as to produce a polycrystalline ingot and then melting a portion of said ingot to thereby allow a crystal nucleus to form and

then propagating a single crystal growth through the remainder of said ingot, characterized in that said single crystal growth in the remainder of said ingot is propagated by passing



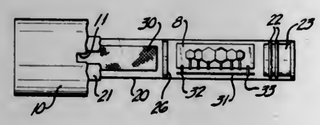
a single molten zone through said ingot at a rate of from 0.1 to 2 mms per hour, said molten zone having a length which is from 25 to 40% of the length of said ingot.

4,578,146

PROCESS FOR GROWING A LARGE SINGLE CRYSTAL FROM MULTIPLE SEED CRYSTALS

Bruce H. Chai, Bridgewater; Ernest Buehler, Chatham; John J. Flynn, Millington, and Robert C. Morris, Ledgewood, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.Y.

Filed Apr. 28, 1983, Ser. No. 489,450
Int. Cl.⁴ C30B *7/10*
U.S. Cl. 156—623 R **10 Claims**



1. In a hydrothermal process for growing a metal orthophosphate selected from the group consisting of alpha-aluminum orthophosphate and alpha-gallium orthophosphate, in which a crystal is grown from a seed crystal in an acid medium at elevated temperatures, an improvement consisting essentially of growing one crystal from a plurality of seed crystals, each seed crystal having at least two substantially planar surfaces and being mounted so that a first planar surface is substantially in contact with a first planar surface of an adjoining seed crystal along their common length and a second planar surface is substantially parallel to a second planar surface of the adjoining seed crystal.

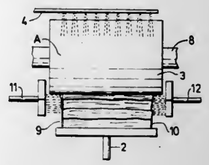
4,578,147

PROCESS FOR MANUFACTURING GROUNDWOOD PULP WHILE MAINTAINING A HIGH AND UNIFORM MOISTURE CONTENT IN THE WOOD IN THE GRINDING ZONE

Jonas A. I. Lindahl, Domsjo, and Gustaf E. Johnsson, Umea, both of Sweden, assignors to Mo och Domsjo Aktiebolag, Ornskoldsvik, Sweden

Continuation of Ser. No. 281,433, Jul. 8, 1981, abandoned. This application Mar. 1, 1983, Ser. No. 470,903
Claims priority, application Sweden, Jul. 9, 1980, 8005035
Int. Cl.⁴ D21C *1/12, 1/16*
U.S. Cl. 162—26 **12 Claims**

1. A process for manufacturing from wood logs groundwood pulp of uniform quality by maintaining a high and uniform moisture content in the wood logs in the grinding zone, which comprises grinding wood logs by thrusting the wood logs contained in at least one wood log pocket against the surface of a rotating grindstone in a pocket grinder while applying shower water both onto the free surfaces of the grindstone at an acute angle and directly into the grinding zone area where the wood logs in each pocket and the grindstone are in surface contact with each other and to the wood log charge located immediately above the surface of the grindstone at at least one end portion of the wood logs and in substantially



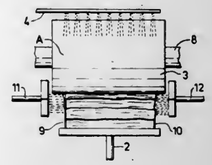
parallel alignment with the longitudinal axis of the wood logs at an angle within the range from about 0° to about 60° while controlling the total flow of shower water so that the total volume of water introduced directly into the grinding zone is within the range from about 50 to about 600 liters/minute, for each ton of pulp produced per hour, in a sufficient amount to prevent drying of the wood logs in the course of the frictional heating resulting from their being thrust against the surface of the grindstone, and thus holding the moisture content of the wood logs at a high and uniform level.

4,578,148

PROCESS FOR MANUFACTURING BRIGHT AND STRONG BLEACHED GROUNDWOOD PULP OF UNIFORM QUALITY

Jonas A. I. Lindahl, Domsjö , Sweden, assignor to Mo och Domsjo Aktiebolag, Ornskoldsvik, Sweden

Continuation of Ser. No. 479,587, Mar. 28, 1983, abandoned, which is a continuation of Ser. No. 281,434, Jul. 8, 1981, abandoned. This application Nov. 1, 1984, Ser. No. 667,314
Claims priority, application Sweden, Jul. 9, 1980, 8005034
Int. Cl.⁴ D21C *1/16*
U.S. Cl. 162—26 **20 Claims**



1. A process for manufacturing from wood logs bleached groundwood pulp of improved and unform quality, which comprises thrusting wood logs contained in at least one wood log pocket of a pocket grinder against the surface of a rotating grindstone while applying shower water onto the free surfaces of the grindstone at an acute angle and applying shower water containing bleaching chemicals directly to the grindstone within the grinding zone where the wood logs in each pocket and the grindstone are in surface contact with each other and to the wood log charge located immediately above the surface of the grindstone at at least one end portion of the wood logs and in substantially parallel alignment with the longitudinal axis of the wood logs at an angle within the range from about 0° to about 60° while controlling the total flow of shower water so that the total volume of water introduced directly into the grinding zone is within the range from about 50 to

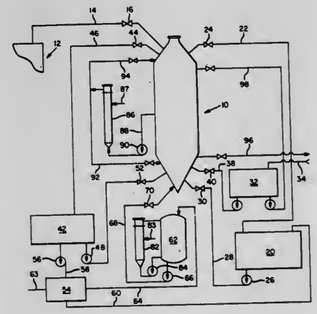
about 600 liters/minute, for each ton of pulp produced per hour, in a sufficient amount to prevent drying of the wood logs in the course of the frictional heating resulting from their being thrust against the surface of the grindstone, and thus holding the moisture content of the wood logs at a high and uniform level, while bringing the wood logs into effective contact with bleaching chemicals at an early stage, resulting in a pulp of high brightness.

4,578,149

PROCESS FOR DIGESTING CELLULOSIC MATERIAL WITH HEAT RECOVERY

Bertil K. E. Fagerlund, Praestvaegen 10, 18402 Osterskaer, Sweden

Continuation-in-part of Ser. No. 240,804, Mar. 5, 1981, abandoned. This application Oct. 18, 1982, Ser. No. 434,758
Int. Cl.⁴ D21C *11/00*
U.S. Cl. 162—39 **10 Claims**



1. In a batch digesting process wherein a digester is charged with a mass of cellulosic material and digesting liquor and the charge is then cooked at an elevated temperature and superatmospheric pressure to obtain within said digester, a column of delignified pulp and hot spent liquor, the improvement comprising:

after digestion of said cellulosic material, and while maintaining said column of delignified pulp substantially intact, quantitatively displacing the hot spent liquor under pressure by pumping into said digester a first volume portion of a lower temperature liquid, the volume thereof being approximately equal to the liquid carrying capacity of said digester, forcing said hot spent liquor out the top of said digester to a high temperature accumulator substantially at said super atmospheric pressure, quantitatively displacing liquor remaining in said digester out of the top of the digester by pumping a second volume portion of said lower temperature liquid into the digester, and

while maintaining said hot spent liquor at said superatmospheric pressure, transferring said hot spent liquor to a second mass of cellulosic material to thereby conserve and utilize the sensible heat of said hot spent liquor under pressure to preheat said second mass of cellulosic material.

4,578,150

FIBROUS MEDIA CONTAINING MILLIMICRON-SIZED PARTICULATES

Kenneth C. Hou, San Antonio, Tex., assignor to AMF Inc., White Plains, N.Y.

Filed Jul. 23, 1982, Ser. No. 401,361
Int. Cl.⁴ D21H *3/60*
U.S. Cl. 162—164.3 **43 Claims**

1. In a process of fabricating a self-supporting fibrous matrix containing immobilized therein particulate material comprising:

(a) forming an aqueous slurry containing inorganic microparticulate material and cellulose fibers having a CSF of +400 to +800 ml; and

(b) vacuum felting said slurry to thereby form said self-supporting fibrous matrix; the improvement wherein

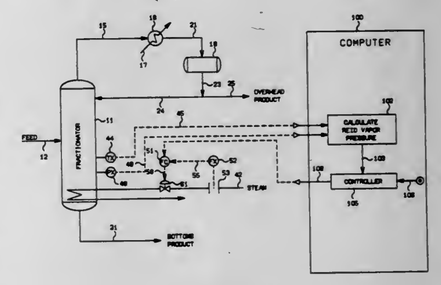
said microparticulate material is at least about 5% by weight of a microparticulate material having an average diameter less than 1 microm, and wherein step (b) is carried out in the presence of flocculating amounts of neutral organic polymeric resin comprising a polyalkylene oxide homopolymer or a block random copolymer thereof having a molecular weight of between about 500 and 1,000,000; said resin being present in an amount insufficient to form an impermeable gel thereby preventing slurry felting.

4,578,151

REID VAPOR PRESSURE DETERMINATION AND CONTROL IN FRACTIONAL DISTILLATION

Edwin D. Soderstrom, III, and Terrence A. Davis, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 23, 1982, Ser. No. 401,424
Int. Cl.⁴ B01D *3/42*
U.S. Cl. 203—1 **6 Claims**



4. A method for controlling the Reid Vapor Pressure of the bottoms product stream withdrawn from a fractional distillation column to which a feed stream consisting essentially of a mixture of hydrocarbons selected from the same series is provided, said method comprising the steps of:

establishing a first signal representative of the temperature of said bottoms product stream;

establishing a second signal representative of the vapor pressure of said bottoms product stream;

establishing a third signal representative of the actual Reid Vapor Pressure of said bottoms product stream in response to said first and second signals, wherein an analysis of said bottoms product stream is not utilized to determine said Reid Vapor Pressure;

establishing a fourth signal representative of the desired Reid Vapor Pressure of said bottoms product stream;

comparing said third signal and said fourth signal and establishing a fifth signal which is responsive to the difference between said fourth signal and said fifth signal; and

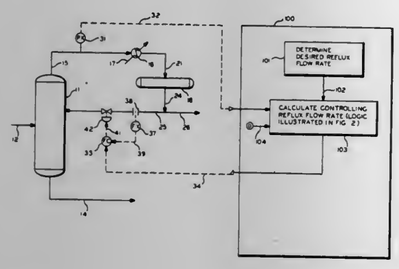
manipulating the rate at which heat is supplied to said fractional distillation column in response to said fifth signal to thereby maintain the actual Reid Vapor Pressure for said bottoms product stream substantially equal to the desired Reid Vapor Pressure represented by said fourth signal.

4,578,152

CONTROL OF A FRACTIONAL DISTILLATION PROCESS

Lloyd R. Albers, Angleton, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 1, 1985, Ser. No. 761,462
Int. Cl.[4] B01D *3/42*
U.S. Cl. 203—1 **4 Claims**



3. A method for preventing the actual pressure in a fractional distillation column from exceeding a high limit for the pressure in said fractional distillation column, wherein said fractional distillation column is utilized to separate first and second components contained in a feed stream flowing to said fractional distillation column, wherein said first component is principally removed from said fractional distillation column as an overhead vapor stream, wherein said overhead vapor stream is at least partially condensed with a first portion of the condensate being returned to an upper portion of said fractional distillation column as an external reflux and a second portion of said condensate being removed from said fractional distillation process as an overhead product, and wherein said second component is principally removed from said fractional distillation column as a bottoms product, said method comprising the steps of:

establishing a first signal representative of the flow rate of said external reflux required to maintain a process variable at a desired value for a said process variable;

establishing a second signal representative of the actual pressure in said fractional distillation column means;

establishing a third signal representative of a high limit for the pressure in said fractional distillation column means;

comparing said second signal and said third signal and establishing a pressure compensating signal which is responsive to the difference between said second signal and said third signal, wherein said pressure compensating signal has a magnitude of zero if the magnitude of said second signal is not greater than the magnitude of said third signal and has a first magnitude with the dimension of flow rate if said second signal is greater than said third signal;

combining said first signal and said pressure compensating signal to establish a control signal; and

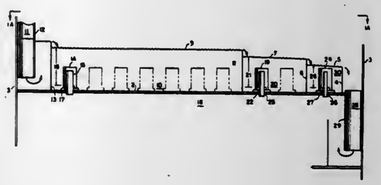
manipulating the flow rate of said external reflux in response to said control signal, wherein the first magnitude of said pressure compensating signal is such that combining said first signal and said pressure compensating signal results in a reduction in the flow rate of the external reflux required by said first signal if the actual pressure in said fractional distillation column means is greater than the high limit represented by said third signal.

4,578,153

SECTIONED BUBBLE TRAY DISTILLATION OVER A WIDE RANGE OF FEED COMPOSITION AND BUBBLE TRAY LOADING

Charles L. Newton, Bethlehem, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation of Ser. No. 215,490, Dec. 11, 1980, abandoned. This application Jun. 7, 1982, Ser. No. 386,166
Int. Cl.[4] B01D *3/20*
U.S. Cl. 203—99 **3 Claims**



1. In a distillation process for the separation of a volatile component from a less volatile component in a liquid multicomponent feed which comprises

charging said multicomponent feed to a distillation column having a plurality of bubble trays, said trays having a plurality of bubble apertures;

passing said multicomponent feed over said bubble trays whereby the feed is converted into a vapor fraction rich in a volatile component and a liquid fraction rich in less volatile component; and

removing said vapor fraction as overhead from the column and said liquid fraction as bottoms from the column;

the improvement for accommodating a liquid multicomponent feed having a variable, wide concentration range of volatile component to said less volatile component and accommodating varying rates of feed to the column without destroying bubble tray efficiency which comprises:

establishing a plurality of distinct separation zones on at least one bubble tray, said separation zones extending across said bubble tray and traversing a liquid path having a liquid gradient formed by the feed flowing from an inlet to an outlet across the tray, said separation zones including a plurality of bubble apertures;

maintaining a liquid head of substantially constant and uniform height, except for the difference associated with the liquid gradient, above said bubble apertures within each separation zone; and

maintaining in at least one of said separation zones a greater liquid head than that in another separation zone on said tray with the differential between the two liquid heads being greater than the liquid gradient across the separation zones.

4,578,154

METHOD AND APPARATUS FOR MEASURING DISSOLVED GAS CONCENTRATIONS

Masao Kitamura, Hitachiota; Norio Nakayama; Ryoei Katsura, both of Hitachi; Hidefumi Ibe, Katsuta, and Shunsuke Uchida, Hitachi, all of Japan, assignors to Hitachi, Ltd. and Hitachi Engineering Co., Ltd., both of Tokyo, Japan

Continuation-in-part of Ser. No. 592,801, Mar. 23, 1985, abandoned. This application Jun. 19, 1985, Ser. No. 746,010
Claims priority, application Japan, Mar. 25, 1983, 58-48646
Int. Cl.[4] G01N *27/54*
U.S. Cl. 204—1 T **20 Claims**

1. An apparatus for measuring dissolved oxygen and hydrogen gas concentrations which comprises:

an electrode;

a counter-electrode;

a vessel filled with electrolyte into which the electrodes are immersed;

an oxygen and hydrogen permeable membrane having a thickness in the range of 70 μm to 350 μm partitioning said electrolyte from sample water containing said dissolved gases outside of said vessel;

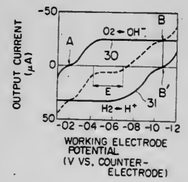
at least one power source applying a potential in the range of −0.4 to −0.75 V and connecting said electrode and said counter electrode;

means measuring current generated between said electrode and said counter electrode; and

wherein the thickness of the membrane determines a potential region for a reduction limiting current plateau and a potential region for an oxidation limiting current plateau between two dissolved gas components to be measured, the combination of both of said regions producing an overlapped potential region.

13. A method for measuring dissolved oxygen and hydrogen gas components comprising:

providing a sample water containing two dissolved gas components to be measured;



providing a membrane having a thickness in the range of 70 μm to 350 μm permeable by said dissolved gas components, the thickness of said membrane determining and a potential region for a reduction limiting current plateau and a potential region for an oxidation limiting current plateau between said two dissolved gases, the combination of both of said regions producing an overlapped potential region, said membrane separating a vessel from said sample water, said vessel being filled with electrolyte and containing an electrode and a counter-electrode immersed in said electrolyte and connected by a power source;

applying a first potential in the range of −0.4 to −0.75 V from said power source to produce said overlapped potential region and measuring a first current between the electrodes;

applying a second potential from said power source which is the oxidation-reduction equilibrium potential for one of the gases to be measured and measuring a second current between the electrodes to determine the concentration of said one of said gases; and

determining the concentration of the remaining one of said two dissolved gases by the difference between said first and second currents.

4,578,155

LASER INDUCED DEPOSITION ON POLYMERIC SUBSTRATES

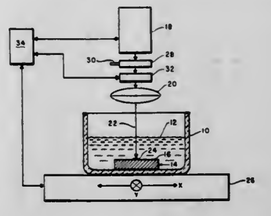
Michael J. Halliwell, 4435 Willow Mist Dr., Dayton, Ohio 45424, and Joseph Zahavi, 9A Avigail St., Haifa, Israel

Filed Mar. 19, 1985, Ser. No. 713,660
Int. Cl.[4] C25D *5/02*
U.S. Cl. 204—15 **9 Claims**

1. A method for selectively plating a metal onto a polymeric material which is normally solid at room temperature without application of an electrical potential source which comprises the steps of:

(a) contacting said polymer with an electroplating solution; and

(b) directing a focused laser beam having an intensity be-



tween about 0.05 joule/cm^2 and 5.0 joule/cm^2 and a focused spot diameter between about 0.25 and 2 mm through said solution onto said polymer to locally achieve plating thereon.

4,578,156

ELECTROLYTES FOR ELECTROCHEMICALLY TREATING METAL PLATES

Stephan J. W. Plazter, Califon, N.J., assignor to American Hoechst Corporation, Somerville, N.J.

Filed Dec. 10, 1984, Ser. No. 680,029
Int. Cl.[4] C25D *5/44*
U.S. Cl. 204—33 **39 Claims**

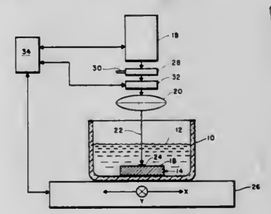
1. A process for preparing an element comprising cleaning a metal article, and then anodizing said metal article using direct current in an aqueous organic electrolytic solution having dissolved therein a water-soluble organic acid or mixture of two or more water-soluble organic acids which, if carboxylic be at least tribasic at a concentration of at least 0.05%, and a sufficient amount of a base to give said solution a pH in the range of from about 3 to about 10; under electrolytic conditions sufficient to form an insoluble metal oxide-organic complex, including said organic acid, bonded to the surface of said metal article.

4,578,157

LASER INDUCED DEPOSITION OF GAAS

Michael J. Halliwell, 4435 Willow Mist Dr., Dayton, Ohio 45424, and Joseph Zahavi, Technion Research & Development Foundation, Ltd., Israel Institute of Metals, Haifa, Technion City, Israel

Filed Oct. 2, 1984, Ser. No. 657,098
Int. Cl.[4] C25D *5/02*
U.S. Cl. 204—15 **10 Claims**



1. A method for selectively plating a metal onto a gallium arsenide substrate without application of an electrical potential source which comprises the steps of:

(a) contacting said gallium arsenide with an electroplating solution; and

(b) directing a focused laser beam having an intensity between about 0.05 joule/cm^2 and 5.0 joule/cm^2 and a fo-

cused spot diameter between about 0.25 and 2 mm through said solution onto said gallium arsenide to locally achieve plating thereon.

4,578,158

PROCESS FOR ELECTROPLATING A METALLIC MATERIAL WITH AN IRON-ZINC ALLOY

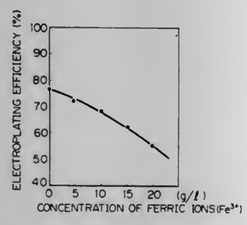
Tatsuya Kanamaru; Motohiro Nakayama; Yutaka Ogawa, and Katutoshi A. Arai, all of Tokai, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Oct. 30, 1984, Ser. No. 666,464

Claims priority, application Japan, Nov. 1, 1983, 58-203720; Jan. 23, 1984, 59-8522

Int. Cl.⁴ C25D *3/56*

U.S. Cl. 204—44.2 **2 Claims**



1. A process for electroplating a metallic material with an iron-zinc alloy, comprising electroplating a metallic material, by using an insoluble anode, in an electroplating sulfate liquid containing iron and zinc ions and 0.01 to 10 g/l of an additive consisting of at least one member selected from the group consisting of oxyalkylene compounds of the formulae (I) to (VIII):

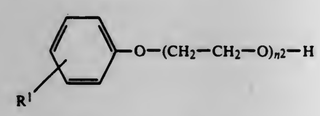
$$H-O-(CH_2-CH_2-O)_n-H \quad (I)$$

wherein n represents an integer of 1 to 2000,

$$R-O-(CH_2-CH_2-O)_{n1}-H \quad (II)$$

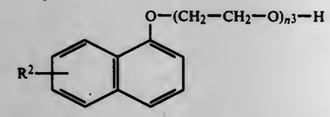
wherein R represents an alkyl radical having 1 to 20 carbon atoms and n^1 represents an integer of 1 to 2000,

(III)



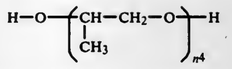
wherein R^1 represents a member selected from the group consisting of a hydrogen atom and alkyl radicals having 1 to 20 carbon atoms and n^2 represents an integer of 6 to 2000,

(IV)



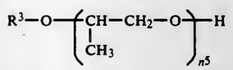
wherein R^2 represents a member selected from the group consisting of a hydrogen atom and alkyl radicals having 1 to 20 carbon atoms and n^3 represents an integer of 4 to 2000,

(V)



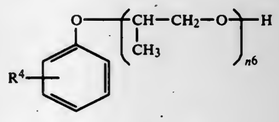
wherein n^4 represents an integer of 3 to 2000,

(VI)



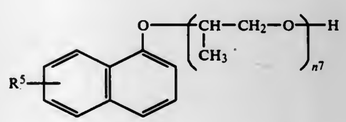
wherein R^3 represents an alkyl radical having 1 to 20 carbon atoms and n^5 represents an integer of 1 to 2000,

(VII)



wherein R^4 represents a member selected from a group consisting of a hydrogen atom and alkyl radicals having 1 to 20 carbon atoms and n^6 represent an integer of 6 to 2000, and

(VIII)



whereim R_5 represents a member selected from the group consisting of a hydrogen atom and alkyl radical having 1 to 20 carbon atoms and n^7 represents an integer of 4 to 2000, and sulfation products of the above-mentioned oxyalkylene compounds.

4,578,159

ELECTROLYSIS OF ALKALI METAL CHLORIDE BRINE IN CATHOLYTELESS MEMBRANE CELLS EMPLOYING AN OXYGEN CONSUMING CATHODE

Ronald C. Miles; David D. Justice, both of Cleveland, Tenn., and Ronald L. Dotson, Cheshire, Conn., assignors to Olin Corporation, Cheshire, Conn.

Filed Apr. 25, 1985, Ser. No. 727,171

Int. Cl.⁴ C25B *1/16*

U.S. Cl. 204—98 **11 Claims**

1. A process for electrolysis of an aqueous solution of an alkali metal halide in an electrolytic cell having an anode compartment containing at least one anode, a cathode compartment containing at least one cathode, and a cation exchange membrane separating said anode compartment from said cathode compartment, said process which comprises:

(a) feeding said aqueous solution of an alkali metal halide to said anode compartment;

(b) feeding an oxygen-containing gas to said cathode compartment;

(c) electrolyzing said alkali metal halide solution at a current density of at least about 2 kiloamperes per square meter to produce a halogen gas and alkali metal ions in said anode compartment;

(d) passing said alkali metal ions and water through said cation exchange membrane into said cathode compartment;

(e) contacting a hydrophilic porous cathode with said alkali metal ions, said water and said oxygen-containing gas to produce a concentrated alkali metal hydroxide solution, said concentrated alkali metal hydroxide solution flowing through said hydrophilic porous cathode at a rate of from about 10 to about 20 milligrams per square meter per minute; and

(f) removing said concentrated alkali metal hydroxide solution from said cathode compartment to prevent a substantial accumulation of said concentrated alkali metal hydroxide solution in said cathode compartment.

4,578,160

METHOD FOR ELECTROLYZING DILUTE CAUSTIC ALKALI AQUEOUS SOLUTION BY PERIODICALLY REVERSING ELECTRODE POLARITIES

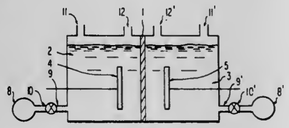
Hiroshi Asano, Kanagawa; Takayuki Shimamune, Tokyo, and Kazuhiro Hirao, Kanagawa, all of Japan, assignors to Permelec Electrode Ltd., Kanagawa, Japan

Filed Mar. 19, 1984, Ser. No. 590,668

Claims priority, application Japan, Mar. 18, 1983, 58-44076; Mar. 18, 1983, 58-44077

Int. Cl.⁴ C25B *1/46*

U.S. Cl. 204—98 **13 Claims**



6. A method for electrolyzing a dilute caustic alkali aqueous solution comprising:

(a) supplying dilute caustic alkali aqueous solution into one electrode compartment of an electrolytic cell partitioned by a cation exchange membrane;

(b) electrolyzing the solution therein; and

(c) recovering a concentrated caustic alkali aqueous solution from the other electrode compartment,

wherein iron, nickel or their base alloys is used as an electrode material, and electrolysis is conducted for a period of time substantially corresponding to the time required to obtain said concentrated caustic alkali aqueous solution, and then the direction of supplying and discharging the electrolyte is reversed and the direction of current flow is reversed after every said time period.

4,578,161

PROCESS FOR PREPARING QUATERNARY AMMONIUM HYDROXIDES BY ELECTROLYSIS

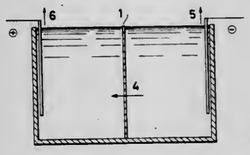
Franco Buonomo, Milan; Giuseppe Bellussi, Piacenza, and Bruno Notari, Milan, all of Italy, assignors to Enichimica S.p.A., Milan, Italy

Filed Mar. 14, 1984, Ser. No. 589,531

Claims priority, application Italy, Mar. 17, 1983, 20115 A/83

Int. Cl.⁴ C25B *1/00*

U.S. Cl. 204—102 **10 Claims**



1. In a process for preparing quaternary ammonium hydroxides by electrolysis in an electrolytic cell comprising an anode compartment, containing an anode, and a cathode compartment, containing a cathode, the improvement comprising providing a quantity of a quaternary ammonium halide to the cathode compartment and subjecting said halide to electrolysis, wherein the two compartments are separated by a semipermeable anion exchange membrane and the discharge of halogen at the anode is prevented by controlling the pH of the liquid in the anode compartment.

4,578,162

METHOD FOR DISSOLVING COPPER IN THE PRESENCE OF IRON

James A. McIntyre; Robert F. Phillips, and Max R. Oswald, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 29, 1984, Ser. No. 614,502

Int. Cl.⁴ C25C *1/12*

U.S. Cl. 204—107 **14 Claims**

1. A method for dissolving copper in the presence of iron comprising:

(a) contacting the copper with an oxidant solution containing a less-than-stoichiometric amount of oxidant necessary to dissolve all the copper;

(b) dissolving a portion of the copper into the solution;

(c) monitoring the copper ion concentration in the solution;

(d) controlling the copper ion concentration in the solution below that required to cause a runaway oxidant decomposition reaction;

(e) removing at least a portion of the dissolved copper from the solution;

(f) adding additional oxidant to the solution;

(g) at least repeating steps (a) and (b).

4,578,163

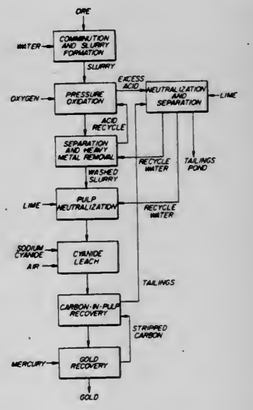
GOLD RECOVERY PROCESS

Richard S. Kunter, Lakewood, and John R. Turney, Arvada, both of Colo., assignors to Homestake Mining Company, San Francisco, Calif.

Filed Dec. 3, 1984, Ser. No. 677,455

Int. Cl.⁴ C25C *1/20*

U.S. Cl. 204—110 **22 Claims**

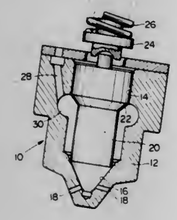


1. A process for recovering gold from an aqueous slurry formed from a refractory ore where said gold is subject to sulfide locking and adsorption on carbonaceous matter, said process comprising:

oxidizing the aqueous slurry in an autoclave under acidic conditions at an elevated temperature and pressure whereby elemental gold is released from the sulfide locking and carbonaceous adsorption and heavy metals present in the ore are solubilized;

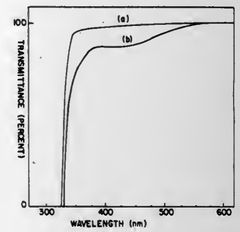
separating the solubilized heavy metals from the oxidized aqueous slurry to form an acid liquid fraction containing the majority of the heavy metals and a solids fraction containing the gold ore;
recycling a portion of the acid liquid fraction to the autoclave to provide a source of acid for the oxidation;
disposing of the remaining portion of the liquid fraction to remove excess heavy metals and acid from the process;
dissolving the elemental gold in the solids fraction by exposure to cyanide to form a soluble gold-cyanide complex; and
recovering elemental gold from the gold-cyanide complex.

4,578,164
METHOD OF ELECTROLYTICALLY FINISHING SPRAY-HOLE OF FUEL INJECTION NOZZLE
Yukio Matsui, Yokosuka, and Mitsuo Uchiyama, Yokohama, both of Japan, assignors to Nissan Motor Co., Ltd., Japan
Filed Aug. 6, 1984, Ser. No. 637,728
Claims priority, application Japan, Aug. 24, 1983, 58-154719; Sep. 14, 1983, 58-141539[U]
Int. Cl.⁴ B23H *9/02*
U.S. Cl. 204—129.55 **4 Claims**



1. A method of finishing at least one spray-hole bored by machining in a body of a fuel injection nozzle for an internal combustion engine by removing burrs that remain after the machining around an inside mouth of each spray-hole, the method having the step of subjecting an inner surface of the nozzle body in an area containing the inside mouth of each spray-hole to an electrolytic polishing treatment, wherein the nozzle body is made the anode, by inserting a tubular electrode having an insulator cover into the nozzle body such that an end portion of the electrode comes close to each spray-hole and supplying a pressurized electrolyte liquid into the interior of the nozzle body through the tubular electrode to flow out through each spray-hole,
characterized in that an portion of said insulator cover is so formed as to completely cover said end portion of said electrode and to have an outer surface which makes close contact with said area of the inner surface of the nozzlbe body, that for each spray-hole said insulator cover is formed with a liquid passage which communicates with the interior of said tubular electrode and has an outlet port in said outer spray-hole and is only slightly larger in diameter than the mouth of the spray-hole, and that during the electrolytic polishing treatment the electrolyte liquid supplied through said tubular electrode flows out of said insulator cover only through said passage formed for each spray-hole.

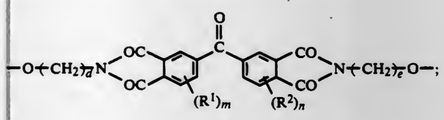
4,578,165
PROCESS FOR SEPARATION OF ZIRCONIUM FROM HAFNIUM
Steven H. Peterson, Murrysville, and John F. Jackovitz, Monroeville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Oct. 21, 1983, Ser. No. 544,160
Int. Cl.⁴ B01J *19/12*
U.S. Cl. 204—157.75 **22 Claims**

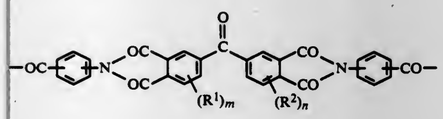


11. A process for the separation of zirconium and hafnium values from a mixture thereof comprising:
forming a solution of complexes of the hafnium and the zirconium, said complexes having a common organic ligand, one of said complexes being excitable by light within the wavelength range of 300–700 nm, while the other of said complexes is stable within said range;
irradiating said solution with light, having a wavelength within said range, in the presence of a scavenger, to excite said one complex and cause reaction thereof with the scavenger, and separation thereof from said solution, while the other complex remains in said solution;
and the excitable complex is said complex of hafnium and the stable complex is said complex of zirconium.

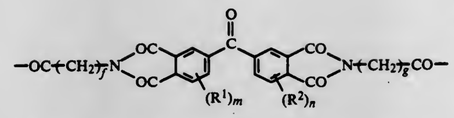
4,578,166
PROCESS OF ACTINIC IRRADIATION OF SHAPED POLYESTER IMIDE CONTAINING BENZOPHENONE TETRACARBOXYLIC DIIMIDE GROUP AND CROSS-LINKED PRODUCT
Keiichi Uno; Hikoichi Nagano, and Tadashi Ikegami, all of Otsu, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan
Continuation of Ser. No. 126,167, Feb. 29, 1980, abandoned. This application Apr. 13, 1983, Ser. No. 484,459
Int. Cl.⁴ C08J *7/10*; B32B *27/16*
U.S. Cl. 8—115.52 **20 Claims**

1. A method for enhancing the physical and chemical properties of a shaped article of a polymeric composition, which comprises melt forming into a shaped article a polymer composition comprising as the essential component a saturated linear polyester comprising structural units from dicarboxylic acids, diols, lactones, oxycarboxylic acids, or functional derivations thereof and a structural unit selected from one of:



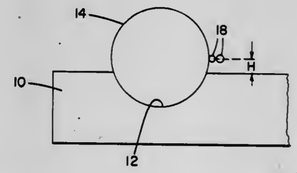


-continued
and



wherein R^1 and R^2 are the same or different and each represents a monovalent organic group, m and n are each an integer of 0 to 3, d and e are each an integer of 2 to 6, and f and g are each an integer of 1 to 6, in an amount of 0.01 to 50 moles per 100 moles of the total ester linkage in the molecule of the polyester and irradiating the shaped article with actinic radiation.

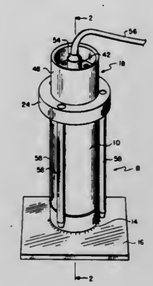
4,578,167
CELL FUSION
Wolfgang Schoner, Hanover, Fed. Rep. of Germany, assignor to Biofusion, Inc., Newton, Mass.
Filed Sep. 28, 1982, Ser. No. 426,114
Int. Cl.⁴ G01N *27/26, 27/28*
U.S. Cl. 204—183.1 **7 Claims**



1. The method of fusing cells, comprising the steps of
suspending the cells in a solution between two elongated electrodes providing an inhomogenous alternating electrical field,
allowing the cells to drift dielectrophoretically toward the electrodes and become attached thereto in strings or lines of two or more cells, and
applying a voltage pulse across the electrodes to cause strings of cells to fuse into single cells,
wherein the osmolarity of the actual sample of solution in which cells are to be suspended is measured and kept above 278 milliosmol/liter.

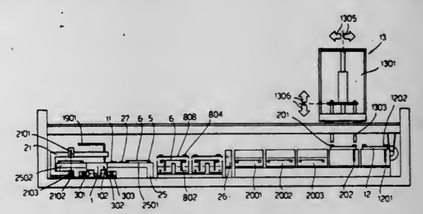
5. Apparatus for fusing cells, comprising
a pair of spaced-apart, elongated electrodes,
said electrodes forming between themselves an elongated fusion chamber for receiving a suspension of cells to be fused,
first electrical means for applying an alternating voltage across said electrodes,
said electrodes having a cross-sectional shape adapted to produce an inhomogenous electric field within said fusion chamber suitable for inducing dielectrophoretic movement of suspended cells towards the electrodes and for maintaining strings or lines of two or more cells in contact with said electrodes along an elongated, narrow attachment zone on each electrode,
second electrical means for applying a voltage pulse across said electrodes after said cells have become attached thereto, the duration and amplitude of said pulse being sufficient to cause said strings of cells to fuse into a single cell, wherein the depth of said fusion chamber below the level of said attachment zones is less than 2 mils whereby it is shallow enough to inhibit collection of cells below said attachment zones, thereby improving fusion efficiency.

4,578,168
APPARATUS FOR FUSING LIVE CELLS WITH ELECTRIC FIELDS
Gunter A. Hofmann, San Diego, Calif., assignor to Biotronics, San Diego, Calif.
Filed Jul. 27, 1984, Ser. No. 635,009
Int. Cl.⁴ G01N *27/28*
U.S. Cl. 204—299 R **13 Claims**



1. An electro cell fusion apparatus comprising:
a metal vessel forming a first electrode and having an elongate cylindrical chamber formed therein and opening at an upper end of the vessel;
an elongate wire having a round cross-section forming a second electrode;
cap means connected to an end of the second electrode and configured to removably mate with the upper end of the vessel for positioning the second electrode so that it extends concentrically within the cylindrical chamber; and
means for sequentially generating and applying predetermined alternating electric currents and unidirectional current pulses to the first and second electrodes so that when a plurality of live cells are supported in a quantity of fluid medium contained in the chamber the cells will undergo dielectrophoresis and dielectric breakdown thereby causing adjacent cells to fuse and produce viable hybrids.

4,578,169
APPARATUS FOR TOTAL AND FRACTIONAL ANALYSES OF PROTEINS
Guido F. Vicario; Cesare Vicario; Ugo de Luca, all of Milan, and Giuseppe Zelioli, Sant'Angelo Lodigiano, all of Italy, assignors to Elvi S.p.A., Milan, Italy
Filed Jun. 12, 1984, Ser. No. 620,083
Int. Cl.⁴ G01N *27/28*
U.S. Cl. 204—299 R **14 Claims**



1. In an automated electrophoresis apparatus for analysis of a protein-containing serum having assay means, at least one electrophoresis chamber, at least one support for electrophoresis, at least one strip of cellulose acetate, means for cutting and separating from said support said at least one strip, a first means for transferring said at least one strip between a storage posi-

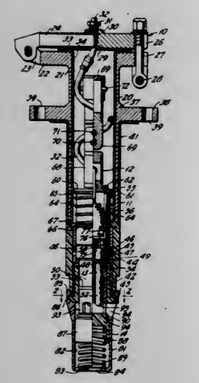
tion and a position in said chamber, and a subsequent cutting position, and serum depositing means for depositing serum in an intermediate position between said assay means and said electrophoresis chamber; the improvement comprising an electrophoresis chamber having at least one electrolytic bath and an electrophoresis support including at least one strip of cellulose acetate, said chamber further comprising two highly spongy fixed plates arranged in the electrolytic bath to emerge therefrom and a planar rigid electrophoresis support for bearing on the two spongy plates, said planar rigid support comprising a strip holder frame on two opposite sides of which said strip of cellulose acetate is secured.

4,578,170

MOUNTING STRUCTURE FOR ELECTRONIC PROBES

Michael Sheridan, Old Bridge, N.J., assignor to Ethylene Corp., Murray Hill, N.J.

Filed Apr. 5, 1985, Ser. No. 720,495
Int. Cl.[4] G01N *27/30*
U.S. Cl. 204—400 **1 Claim**



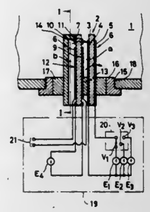
1. Improved mounting structure for positioning an electronic probe within a reactor vessel for determining on a substantially continuous basis quantitative values of a desired characteristic of a reaction, comprising: an elongated dip tube element mountable within an opening in said vessel adjacent an outer end thereof, said dip tube element having a centrally disposed bore terminating in an inner end forming a recess; said recess having engageable means; a removable probe carrying element having an outer configuration corresponding to the configuration of said bore in said dip tube element, and having corresponding engageable means on an outer surface thereof selectively cooperating with said engageable means of said dip tube element; said probe carrying element defining at least one cylindrical recess therein corresponding in configuration to the outer cylindrical configuration of an electronic probe; check valve means carried at an inner end of said dip tube element, operative upon disengagement of said probe carrying element therefrom to close said dip tube element against communication with the interior or said reactor vessel; and a means for maintaining said probe within said recess to position an operative end of said probe in exposed condition with said reactor vessel for contact with the contents thereof; said engageable means on said mounting element and said probe carrying element including interacting bayonet pins and grooves; said probe carrying element including a lower body member defining said recess, a probe retaining member overlying said recess, and threaded means retaining said retainer element in position upon said lower body member; a hollow cover member engaging an upper end of said lower body member, said cover member carrying said engageable means on said probe carrying element; said probe carrying element in engaged condition being disposed entirely within said dip tube element, and having a pivotally mounted tool-engaging extension on an outer end thereof to permit effective shortening of the length of said probe carrying element along the axis thereof during withdrawal; said last-mentioned engageable means including at least one laterally-extending pin, said cover member having an end plate thereon, said plate including a laterally-extending flange on the periphery thereof; and a coil spring positioned between said end plate and said pin, a lower end of which contacts a surface of said dip tube element upon engagement of said probe carrying element with said dip tube element to maintain said bayonet pin in engaged condition.

4,578,171

AIR/FUEL RATIO DETECTOR

Tetsusyo Yamada, and Shintaro Hirate, both of Aichi, Japan, assignors to NGK Spark Plug Co., Ltd. and Mitsubishi Denki Kabushiki Kaisha, both of, Japan

Filed Dec. 13, 1984, Ser. No. 681,338
Claims priority, application Japan, Dec. 15, 1983, 58-237624; Dec. 15, 1983, 58-237625
Int. Cl.[4] G01N *27/58*
U.S. Cl. 204—406 **8 Claims**



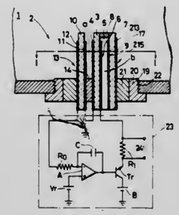
1. An A/F ratio detector comprising: a solid electrolyte oxygen pump element having porous electrodes formed on both sides of an oxygen-ion-conductive solid electrolyte and a solid-electrolyte oxygen-concentration-difference-actuated electrochemical cell sensor element disposed to face said pump element with a small gap therebetween and which has two pairs of porous electrodes formed on an oxygen-ion-conductive solid electrolyte with the electrodes of each pair being disposed on opposite sides of said electrolyte, said small gap communicating with ambient gases, means defining an air compartment open to the atmosphere on that side of at least said electrochemical cell sensor element of said two elements opposite said small gap, means for applying a first current between one of said electrodes of one of said two pairs and said electrodes of said pump element, said first current being of such direction that oxygen is supplied into said small gap, and means for applying a second current between one of said electrodes of said one of said two pairs and said electrodes of said pump element other than said electrodes to which said first current is applied, said second current being of such direction that oxygen is pumped out from said small gap, one of an electromotive force generated by the other pair of electrodes of said electrochemical cell sensor element, said second current and said first current providing an output signal for A/F ratio detection.

4,578,172

AIR/FUEL RATIO DETECTOR

Tetsusyo Yamada, and Shintaro Hirate, both of Aichi, Japan, assignors to NGK Spark Plug Co. and Mitsubishi Denki K.K., both of, Japan

Filed Dec. 13, 1984, Ser. No. 681,337
Claims priority, application Japan, Dec. 15, 1983, 58-237626; Aug. 17, 1984, 59-172114; Aug. 17, 1984, 59-172115
Int. Cl.[4] G01N *27/58*
U.S. Cl. 204—412 **6 Claims**



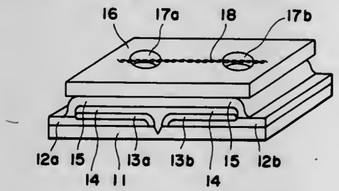
1. An air/fuel ratio detector comprising: a solid-electrolyte oxygen-concentration-difference-actuated electrochemical cell sensor element which has a porous electrode formed on both sides of an oxygen-ion-conductive solid electrolyte, a solid-electrolyte oxygen pump element which also has a porous electrode formed on both sides of an oxygen-ion-conductive solid electrolyte, and an oxygen reference element having a metal oxide semconductor layer formed on one side of a substrate which is made of an air-impermeable member, said electrochemical cell sensor element and said pump element being disposed to face each other with a small gap therebetween, an air compartment which is open to the atmosphere being formed between that side of said pump element which is opposite the side facing said small gap and that of said reference element which is opposite the side having said metal oxide semiconductor layer, the air/fuel ratio being detected both by a change in electrical properties as provided by said oxygen reference element and by an output signal as provided by at least one of the electromotive force of said electrochemical cell sensor element and a pump current flowing through said pump element.

4,578,173

ION SELECTIVE ELECTRODE AND METHOD OF MAKING ION SELECTIVE ELECTRODES

Osamu Seshimoto, and Mitsuharu Nirasawa, both of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 9, 1985, Ser. No. 732,368
Claims priority, application Japan, May 10, 1984, 59-93774; Jun. 20, 1984, 59-128239
Int. Cl.[4] G01N *27/30*
U.S. Cl. 204—416 **10 Claims**



1. An integral ion selective electrode for analysis of a potassium ion comprising in order a support, an electroconductive metal layer, a layer of a water-insoluble salt of said metal, an electrolyte layer which comprises an electrolyte salt of a potassium ion with the same anion as the anion of the water-insoluble salt, said electrolyte layer being substantially free from a binder, and an ion selective layer, which is characterized in that the electrolyte layer comprises crystalline electrolyte having a mean crystal size of not more than 60 μm.

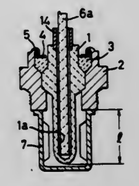
6. A process for the preparation of an integral ion selective electrode for analysis of a potassium ion comprising in order a support, an electroconductive metal layer, a layer of a water-insoluble salt of said metal, an electrolyte layer which comprises an electrolyte salt of a potassium ion with the same anion as the anion of the water-insoluble salt, and electrolyte layer being substantially free from a binder, and an ion selective layer, which is characterized in that the electrolyte layer is formed by coating an aqueous solution of said electrolyte salt on the layer of a water-insoluble salt and drying thus coated layer by bringing it in contact with a stream of gas maintained at a temperature of not lower than 40° C., thereby producing a layer of of crystalline electrolyte having a mean crystal size of not more than 60 μm over the layer of a water-insoluble salt.

4,578,174

OXYGEN SENSOR WITH HEATER

Nobuhide Kato, Ama, and Takao Murase, Konan, both of Japan, assignors to NGK Insulators, Ltd., Japan

Filed Apr. 27, 1984, Ser. No. 604,973
Claims priority, application Japan, May 9, 1983, 58-68661[U]; May 9, 1983, 58-68662[U]; May 9, 1983, 58-68666[U]; May 9, 1983, 58-68667[U]
Int. Cl.[4] G01N *27/58*
U.S. Cl. 204—429 **15 Claims**



15. An oxygen sensor comprising:

a tubular solid electrolyte body having an elongate bore therein, a first end of said elongate bore is closed by one end of said tubular solid electrolyte body and a second end of said elongate bore is open at a second end of said tubular solid electrolyte body, said tubular body having reference and measuring electrodes on inner and outer surfaces thereof, respectively;

a housing body which supports said tubular solid electrolyte body such that said outer surface of said tubular body is exposed at said one end of said tubular body to an exhaust gas, said housing body maintaining said elongate bore in a gas-tight condition with respect to said exhaust gas and said one end of said tubular body extends outwardly from said housing body;

a protective cylindrical member enclosing said ene end of the tubular solid electrolyte body, said protective cylindrical member having at least one opening to permit said exhaust gas to be in contact with said one end of said tubular body; and

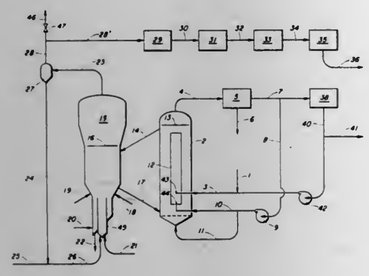
a bar-shaped heater inserted in said elongate bore of said tubular solid electrolyte body, and comprising a resistance heating portion having a positive temperature coefficient of resistance of not less than 0.3%/°C. and a ceramic body carrying said resistance heating portion, the resistance heating portion being located only in said one end of the tubular body and extending only within the protective cylindrical member enclosing said one end of said tubular solid electrolyte body.

4,578,175

COMBINED PROCESS FOR COAL PYROLYSIS AND CHAR GASIFICATION

Everett Gorin, San Rafael, Calif., assignor to Conoco Inc., Wilmington, Del.

Filed Apr. 2, 1984, Ser. No. 595,759
Int. Cl.⁴ C10G *1/00*
U.S. Cl. 208—8 R **4 Claims**



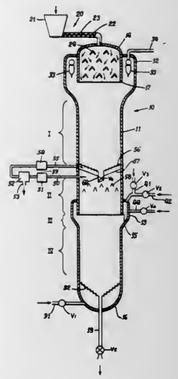
1. The method of converting coal to gaseous and liquid products which consisting essentially of:
(a) admixing finely divided coal into a hydrogencontaining recycle gas stream,
(b) providing a vertically elongated pyrolysis zone,
(c) introducing the coal-containing recycle gas stream of step (a) into a lower region of said pyrolysis zone,
(d) introducing a finely divided particulate heated char into a lower region of said pyrolysis zone,
(e) passing the resulting mixture of heated char, finely divided coal, and recycle gas upwardly through said pyrolysis zone at a temperature between about 500° and about 950° C. and a pressure between about 3 and about 33 atmospheres absolute,
(f) removing from an upper region of said pyrolysis zone a raw vapor stream comprising tar and lighter hydrocarbons,
(g) separating condensible liquid products from said raw vapor stream of step (f) to produce a gas stream,
(h) returning at least a portion of said gas stream from step (g) to comprise said recycle gas of step (a),
(i) removing from an upper region of said pyrolysis zone a stream of finely divided hot solids comprising char and ash,
(j) providing a vertically elongated fluidized bed gasification zone,
(k) passing said stream of hot solids from step (i) to an upper region of said gasification zone,
(l) directing oxygen-containing gas and steam into a lower region of said gasification zone in amount sufficient to maintain the solids therein in a state of fluidization,
(m) withdrawing from a lower region of said gasification zone a stream comprising coal ash,
(n) withdrawing from an intermediate region of said gasification zone a stream comprising heated char,
(o) passing the withdrawn char of step (n) to said step of introducing in step (d), and
(p) withdrawing from an upper region of said gasification zone a synthesis gas product stream comprising carbon monoxide and hydrogen.

4,578,176

FUEL PRODUCTION BY FREE FALL COUNTERCURRENT FLOW

Paul B. Tarman, Elmhurst, Ill., assignor to Institute of Gas Technology, Chicago, Ill.

Continuation-in-part of Ser. No. 386,721, Jun. 9, 1982, Pat. No. 4,431,509. This application May 16, 1983, Ser. No. 493,135
The portion of the term of this patent subsequent to Feb. 14, 2001, has been disclaimed.
Int. Cl.⁴ C10G *1/00, 1/02;* C10B *53/06;* C10J *3/46*
U.S. Cl. 208—8 R **18 Claims**



1. In a process for production of liquid and gaseous fuels the steps comprising:
introducing solid organic carbonaceous particles of sizes about −10 to about +400 U.S. Sieve into the upper portion of a vertical reactor vessel;
introducing gas into the lower portion of said reactor vessel;
passing said carbonaceous particles of sufficiently high density within said particle sizes to free fall in a lean solids stream in countercurrent flow relation to said gas from said upper portion to said lower portion and passing said gas from said lower portion to said upper portion, said carbonaceous particles passing sequentially and said gas passing in reverse sequence through a solids preheat zone, a reaction zone, a heat addition zone, and a gas preheat zone, introducing gas to said reaction zone in an amount of about 5 to about 35 Standard Cubic Feet gas per pound of said carbonaceous particles, said gas moving upwardly at a higher flow rate than said solid particles and about 0.3 to about 15 feet per second providing solids residence time in said reaction zone of about 2 to about 400 seconds at reaction tempertures of about 800° to about 2000° F. forming predominantly said liquid and gaseous fuel products, the amount of heat added in said heat addition zone being sufficient to maintain said reaction temperatures in said reaction zone; and
removing said gas from the upper portion and spent carbonaceous particles from the lower portion of said reactor vessel.

4,578,177

METHOD FOR PRODUCING A PRECURSOR PITCH FOR CARBON FIBER

Kozo Yudate, and Ken Nagasawa, both of Chiba, Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Filed Aug. 28, 1984, Ser. No. 645,175
Int. Cl.⁴ C10C *3/02, 3/08;* D01F *9/14*
U.S. Cl. 208—45 **3 Claims**

1. A method for producing a precursor pitch for general purpose carbon fiber which comprises heating a coal tar pitch at a temperature of 350°–500° C. to form 10–30% by weight of mesophase, extracting the thus heated pitch with an aromatic solvent to separate solvent insoluble matter including the mesophase, removing the solvent from the extract to obtain a pitch containing no free carbon, and extracting this pitch with a tar series light oil to obtain a precursor pitch having a softening point of higher than 200° C., a benzene insoluble portion of 45–60% by weight, a quinoline insoluble portion of less than 0.5% by weight and ash of less than 0.1% by weight.

4,578,178

METHOD FOR CONTROLLING FOULING DEPOSIT FORMATION IN A PETROLEUM HYDROCARBON OR PETROCHEMICAL

David R. Forester, The Woodlands, Tex., assignor to Betz Laboratories, Inc., Trevose, Pa.

Continuation-in-part of Ser. No. 543,576, Oct. 19, 1983, abandoned. This application May 4, 1984, Ser. No. 607,084
Int. Cl.⁴ C10G *9/12, 9/16*
U.S. Cl. 208—48 AA **8 Claims**

1. A method of inhibiting fouling deposit formation in a petroleum hydrocarbon during processing thereof at temperatures between about 600° F. and about 1000° F. wherein, in the absence of antifouling treatment, fouling deposits are normally formed as a separate phase within said petroleum hydrocarbon impeding process throughput and thermal transfer and thus deleteriously affecting the yield of finished product, said method comprising adding to said petroleum hydrocarbon an antifouling amount of an antifouling compound selected from the group consisting of C_1–C_5 alkyl alcohol esters and polyglycol esters of polyisobutenylthiophosphonic acid.

4,578,179

HYDROFINING PROCESS FOR HYDROCARBON CONTAINING FEED STREAMS

Simon G. Kukes; Marvin M. Johnson; Daniel J. Strope, and Robert J. Hogan, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 18, 1983, Ser. No. 553,445
Int. Cl.⁴ C10G *45/04, 45/08, 47/06, 47/12*
U.S. Cl. 208—110 **19 Claims**

1. A process for hydrofining a hydrocarbon-containing feed stream which contains metals comprising the steps of:
introducing a treated, decomposable molybdenum compound into said hydrocarbon-containing feed stream, wherein said treated, decomposable molybdenum compound is prepared by reducing the valence state of a decomposable compound of molybdenum and wherein the molybdenum in said decomposable compound of molybdenum is in a valence state of +1 to +6 prior to reduction; and
contacting said hydrocarbon-containing feed stream containing said treated, decomposable compound of molybdenum under hydrofining conditions with hydrogen and a catalyst composition comprising a support selected from the group consisting of alumina, silica and silica alumina and a promoter comprising at least one metal selected from Group VIB, Group VIIB and Group VIII of the Periodic Table.

4,578,180

HYDROFINING PROCESS FOR HYDROCARBON CONTAINING FEED STREAMS

Simon G. Kukes; Robert J. Hogan; Daniel M. Coombs, and Daniel J. Strope, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 5, 1984, Ser. No. 596,983
Int. Cl.⁴ C10G *45/12, 47/12, 47/16*
U.S. Cl. 208—110 **22 Claims**

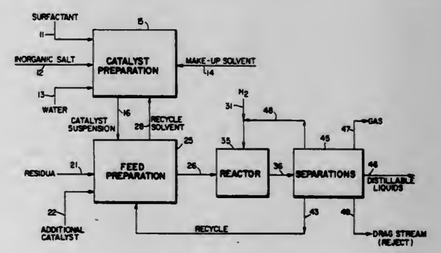
1. A process for hydrofining a hydrocarbon-containing feed stream which contains metals comprising the steps of:
introducing a decomposable compound selected from the group consisting of dimanganese decacarbonyl and chromium hexacarbonyl into sand hydrocarbon-containing feed stream, wherein a sufficient quantity of said decomposable compound is added to said hydrocarbon-containing feed stream to result in a concentration of manganese and/or chromium in said hydrocarbon-containing feed stream in the range of about 1 to about 60 ppm; and
contacting said hydrocarbon-containing feed stream containing said decomposable compound under hydrofining conditions with hydrogen and a catalyst composition comprising a support selected from the group consisting of alumina, silica and silica-alumina and a promoter comprising at least one metal selected from Group VIB, Group VIIB and Group VIII of the Periodic Table.

4,578,181

HYDROTHERMAL CONVERSION OF HEAVY OILS AND RESIDUA WITH HIGHLY DISPERSED CATALYSTS

Eric G. Derouane, Hopewell, N.J., and Philip Varghese, Newtown, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jun. 25, 1984, Ser. No. 624,304
Int. Cl.⁴ C10G *47/06, 47/12, 47/20, 11/06*
U.S. Cl. 208—110 **23 Claims**



1. A process for catalytically converting a heavy hydrocarbon feedstock to lower boiling liquids, comprising:
preparing a colloidal dispersion of a metal catalyst in a mixed water-organic liquid phase by admixing an effective amount of an aqueous salt solution of a metal with an inverse micellar dispersion of said mixed water-organic liquid phase and reducing or precipitating said metal salt to an elemental metal or metal compound; and
contacting said feedstock with said colloidal dispersion in the presence of hydrogen and at a temperature necessary to effect said catalytic conversion.

4,578,182

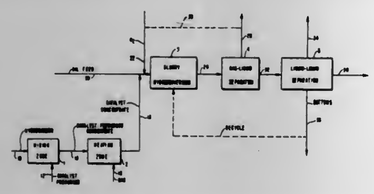
CATALYSTS AND HYDROCONVERSION PROCESSES UTILIZING THE SAME

Roby Bearden, Jr., and Clyde L. Aldridge, both of Baton Rouge, La., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Division of Ser. No. 728,082, Apr. 29, 1985, abandoned. This application Aug. 5, 1985, Ser. No. 762,276
Int. Cl.⁴ C10G *13/06*
U.S. Cl. 208—112 **9 Claims**

1. A process for hydroconverting a carbonaceous charge-stock to produce a hydroconverted, hydrocarbonaceous oil product which comprises: reacting said carbonaceous charge-stock with hydrogen in the presence of a catalyst at hydroconversion conditions, said catalyst having been prepared by the steps which comprise:
(a) forming a mixture of a hydrocarbon material and the reaction product of CrO_3 and tert-butyl alcohol, said reaction product having been obtained by reacting tert-butyl alcohol with CrO_3 at ambient temperature, and
(b) heating the resulting mixture in the presence of a hydrogen sulfide-containing gas at conditions, including a tem-

perature of at least about 500° F. and a total pressure ranging from about 50 to 5000 psig, to produce a slurry



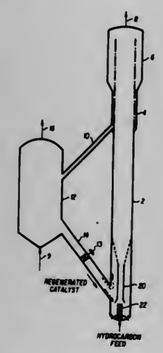
comprising said hydrocarbon material and a solid chromium-containing catalyst.

4,578,183

FEED MIXING TECHNIQUE FOR FLUIDIZED CATALYTIC CRACKING OF HYDROCARBON OIL

Tai-Sheng Chou, and Chang-Kuei Lee, both of Sewell, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 30, 1984, Ser. No. 676,967
Int. Cl.⁴ C10G *35/14*
U.S. Cl. 208—113 **8 Claims**



1. In a fluid catalytic cracking process comprising admixing a hydrocarbon oil feed with hot regenerated catalyst in the bottom section of a reactor riser, passing the mixture of the hydrocarbon oil feed and the catalyst through the riser, thereby at least partially volatilizing the oil feed and effecting cracking thereof at process temperature under endothermic process conditions and deactivating the catalyst by deposition of carbonaceous deposits thereon, separating the deactivated catalyst from the cracked hydrocarbonaceous feed, passing the deactivated catalyst to a regenerator vessel wherein the carbonaceous deposits are removed from the deactivated catalyst under oxidizing conditions by means of a regenerating medium introduced into the regenerator vessel, and passing the regenerated hot catalyst through a regenerated catalyst return conduit substantially above process cracking temperature to the bottom section of the reactor riser; the improvement comprising

injecting oil feed into a primary mixing zone in a draft tube mixer, which comprises a substantially tubular member extending lengthwise in the riser reactor from a point below said regenerating catalyst return conduit to a point above said conduit and terminating in an upper outwardly flared discharge end substantially extending to said reactor riser wall, and said draft tube mixer containing apertures in the portion of said mixer extending above said catalyst return conduit;

continuously passing a first portion of the hot regenerated catalyst into the draft tube mixer sufficient to vaporize a major amount of oil feed without substantial cracking thereof; and

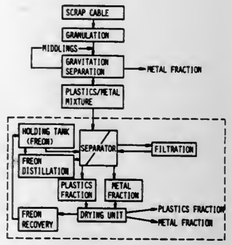
passing a remaining second hot regenerated catalyst portion into the reactor riser through a passage between the draft tube mixer and reactor riser wall and thereafter through said apertures, thereby mixing additional hot catalyst with vaporized oil feed to crack the oil feed in the draft tube mixer and in the remaining portion of the riser.

4,578,184

PROCESS FOR NON-DESTRUCTIVE SEPARATION OF MIXTURES CONTAINING PLASTICS SCRAP

Erik Rasmussen, Klampenborg, Denmark, assignor to Aktieselskabet Nordiske Kabel-OG Traadfabriker, Copenhagen, Denmark

PCT No. PCT/DK82/00114, § 371 Date Aug. 16, 1983, § 102(e) Date Aug. 16, 1983, PCT Pub. No. WO83/02281, PCT Pub. Date Jul. 7, 1983
PCT Filed Dec. 23, 1982, Ser. No. 530,578
Claims priority, application Denmark, Dec. 23, 1981, 5736-81
Int. Cl.⁴ B03B *5/28*
U.S. Cl. 209—3 **11 Claims**



1. A process for non-destructive separation of mixtures containing plastics scrap and scrap metals or glass or mixtures thereof which comprises separation of a mixture of finely divided plastic and metal or glass scrap materials or mixtures thereof in a sedimented and a non-sedimented fraction by means of a liquid separating medium containing a halogenated hydrocarbon by adding the mixture of finely divided scrap material to a liquid halogenated hydrocarbon which is substantially chemically inert towards the components of the mixture and has essentially no swelling or dissolving effect on the plastics components and which has an intermediate density in relation to the densities of the plastics and metal or glass components and separating the resulting non-sedimented plastics and sedimented metal or glass said liquid separating medium requiring no further pre-conditioning and no mercuric chloride.

4,578,185

WASTE DISPOSAL SYSTEM

Joseph H. Wilson, Indianapolis; Jeffrey C. Rapp, Greenwood; Brian K. Southern, Zionsville, and Martin E. Elliott, Indianapolis, all of Ind., assignors to Medical Safetec, Inc., Indianapolis, Ind.

Filed Jul. 24, 1985, Ser. No. 758,439
Int. Cl.⁴ B01D *36/00*
U.S. Cl. 210—85 **37 Claims**

1. A waste disposal system for treating and disposing of infectious waste articles in a substantially controlled closed aseptic environment and for converting said infectious waste articles into a safely disposable noninfectious and nontoxic residue through the thorough disintegration and disinfection of such articles, said system comprising:

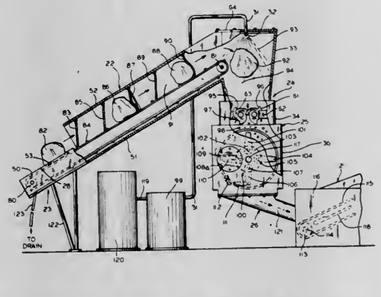
system input means into which accumulated quantities of said waste articles are initially placed for subsequent treatment and disposal of same;

waste delivery means operably connected to said waste input means at a first delivery end for transferring said accumulated quantities of said waste articles to a second delivery end, said second delivery end being positioned substantially opposite said first delivery end;

preliminary waste processing means operably positioned proximate to the second delivery end of said waste delivery means for preliminarily restructuring said waste articles into substantially small waste fragments for further treatment and disposal of same by said waste disposal system;

disinfectant spray means operably positioned adjacent one or more of said second delivery end of said waste delivery means and said preliminary waste processing means for enveloping and impregnating one or more of said waste articles and said waste fragments in a bacteria killing disinfecting liquid solution through the spray emitted by said spray means and the operation of said preliminary waste processing means;

said disinfecting liquid solution and waste fragments being jointly directed from said preliminary waste processing means by fragment-solution channeling means having a first and second end with said first end being operably positioned adjacent said preliminary waste processing means,



rotary hammermill means operably attached to the second end of said fragment-solution channeling means for receiving said waste fragment-disinfectant solution from said fragment solution channeling means, and for violently disintegrating same at a substantially high speed, into a waste particle-disinfectant solution,

said rotary hammermill means being powered by hammermill motor means operably coupled thereto;

hammermill solution transmission means having a first and second end through which said waste particle-disinfectant solution is routed out of said rotary hammermill for further treatment and disposal by said waste disposal system;

liquid-solid particle separation means operably attached to the second end of said hammermill transmission means for separating, on a continuous basis, said disintegrated particles of solid waste from said enveloping and impregnating disinfectant liquid;

said liquid-solid particle separation means including operable connections to liquid evacuation means and solid particle evacuation means for disposal of said disinfectant liquid and said solid waste particles respectively;

system vacuum ventilation means operably associated with said disposal system for effectively precluding the inadvertent release of bacteria and other contamination during the treatment and disposal of said waste articles by said system; and

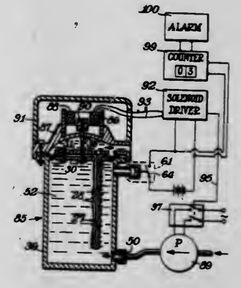
system switching control means operably associated with one or more of said waste input means, waste delivery means, preliminary waste processing means, disinfectant spray means, rotary hammermill means, liquid-solid particle separation means and system vacuum ventilation means for controlling the activation and sequencing of one or more of same relative to one or more of the others.

4,578,186

SWIMMING POOL FILTER SYSTEM

Thomas M. Morin, West Mountain Rd., Adams, Mass. 01220

Filed Sep. 4, 1984, Ser. No. 646,835
Int. Cl.⁴ B01D *35/02, 35/14*
U.S. Cl. 210—90 **5 Claims**



1. A swimming pool filter system comprising:

(a) a water pump;

(b) a water filter of the diatomaceous earth type comprised of a housing, an inlet water chamber having means defining an inlet port and an outlet water chamber enclosed by said housing, and a movable water-permeable wall means separating said inlet and outlet chambers for supporting on the inlet chamber side of said wall a coating of diatomaceous earth and for moving, relative to said housing, in response to being mechanically energized to regenerate said filter;

(c) a first water-conduit means for hydraulically series connecting said pump and said filter in a hydraulic loop with a swimming pool;

(d) an electrically actuable alarm;

(e) a pressure-actuated switch means hydraulically connected to said inlet port of said filter for closing or opening an electrical circuit each time the pressure at said filter inlet port rises to a predetermined value; and

(f) a resettable counter means for counting the number of times said electrical circuit is closed or opened and thus the number of times said filter was regenerated, and for actuating said alarm when the count reaches a predetermined number of filter regenerations.

4,578,187

ION EXCHANGE APPARATUS TO IMPROVE THE QUALITY OF POTABLE WATER

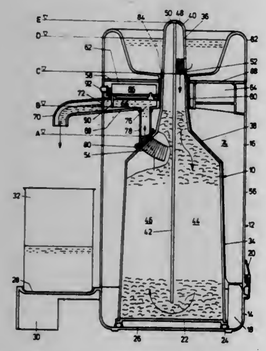
Erich Alhäuser, Am Hözebert 2, 5412 Ransbach-Baumbach, Fed. Rep. of Germany

Filed Jun. 29, 1984, Ser. No. 625,959
Int. Cl.⁴ C02F *1/42*
U.S. Cl. 210—93 **15 Claims**

1. Apparatus for the improvemnt of the quality of potable water, with a housing, in which is received a replaceable cartridge, an ion exchange and a bacteriostatically effective material, characterized by the combination of the following features:

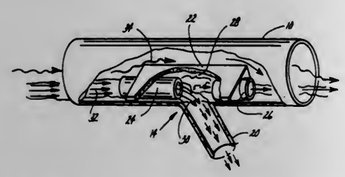
(a) the cartridge (10) is formed as an essentially closed upright container and is divided by a partition wall (42) ending at some distance above the container bottom (22) into a first chamber (44) provided with an inlet from which the flow is downward in the said first chamber (44)

and a second chamber (46) through which the flow is upward and leading to a discharge opening (54),
(b) the inlet opening (52) of the cartridge (10) is substantially higher than discharge opening (54),
(c) the inlet opening (52) and discharge opening (54) of the cartridge (10) are provided with particle filters,
(d) at least the second chamber (46) of the cartridge (10) is extended upward beyond the level of inlet opening (52) outward and upward and is ventilated at the top end through ventilation slots (48,50),



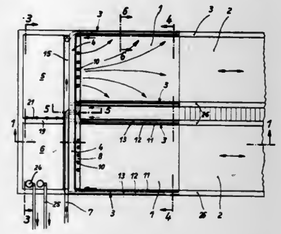
(e) a filling funnel (82) is arranged to be tightly attached at the inlet opening (52) of the cartridge (10), the top edge of said opening being substantially lower than the ventilation slots (48, 50), and
(f) a vertical pipe (78) is arranged on the inside of the housing to be sealingly attached at the discharge opening (54) of the cartridge (10), the said vertical pipe (78) opening with its top end below the inlet opening (52) into a discharge passage (66) configured with inclination to its free end.

4,578,188
SEWERAGE FLOW DIVERTER
Kenneth P. Cousino, 2860 Grant, Ann Arbor, Mich. 48104
Filed Jul. 26, 1985, Ser. No. 759,595
Int. Cl.⁴ E03F *3/04*
U.S. Cl. 210—170 **8 Claims**



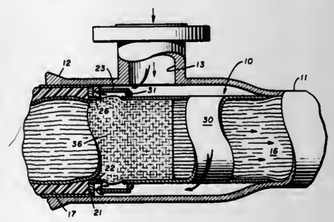
1. A sewage flow diverter comprising a relatively large drain, a weir in the bottom of the drain, an inlet communicating with the drain adjacent the bottom thereof, and upstream of the weir, an outlet communicating with the drain downstream from the weir, the opposite ends of the inelt and outlet being adjacent,
opening means located between the opposite ends of the inlet and outlet, said opening means so located and sized to permit relatively low flows of liquid in the inlet to pass through the opening and relatively high flows to be propelled by the kinetic energy of the flow from the inlet into the outlet, and means to conduct the flow passing through the opening means to a sanitary interceptor.

4,578,189
SLUDGE SETTLING PLANT
Rudolf Riker, Memmingen, Fed. Rép. of Germany, assignor to Stetter GmbH, Memmingen, Fed. Rep. of Germany
Filed Aug. 24, 1984, Ser. No. 644,041
Int. Cl.⁴ C02F *11/00*
U.S. Cl. 210—253 **8 Claims**



1. In a sludge settling plant comprising at least two juxtaposed settling tanks defined by a pair of longitudinal outer walls, at least one longitudinal inner wall, a continuous cross wall and opposite end walls; at least one collecting tank defined by a pair of longitudinal walls, said continuous cross wall and an end wall; flow channels connecting said settling tanks with said collecting tank respectively; overflow weirs arranged in a flow path between each one of the settling tanks and the collecting tank, an inlet duct extending crosswise between said pair of longitudinal outer walls of the settling tanks at one end thereof and connecting said settling tanks in parallel in the flow path, and discharge means connected with said collecting tank; the improvement comprising:
at least one valve to stop the supply of sludge to one of said two settling tanks while maintaining the supply to the other one of the two settling tanks, the inlet duct arranged at said cross wall between said two settling tanks and said collecting tank, the end walls of the settling tanks formed as inclined ramps trafficable by an excavator; said overflow weirs and said flow channels extending longitudinally along at least one of the outer and inner longitudinal walls of the settling tanks respectively; said flow channels being formed as troughs and being inclined downwardly toward the cross wall and passing through said cross wall.

4,578,190
FLUID DISTRIBUTION SYSTEM FOR SEPARATION MODULES
James D. Fowler, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.
Filed Oct. 26, 1984, Ser. No. 665,411
The portion of the term of this patent subsequent to Jan. 21, 2003, has been disclaimed.
Int. Cl.⁴ B01D *13/00*
U.S. Cl. 210—321.1 **6 Claims**



1. A fluid distribution system for a fluid separation module

having a bundle of hollow fiber membranes positioned in a cylindrical shell and extending through a tube sheet positioned in an enlarged end portion of the shell, the enlarged end portion of the shell having therein an inlet opening for the admission of a fluid mixture into the shell, comprising
(a) a first sleeve attached to the tube sheet in a position enclosing the bundle of fibers, said first sleeve having a distal end spaced from the tube sheet,
(b) a second sleeve positioned to enclose the fiber bundle, said second sleeve being spaced from the tube sheet to leave a first annular opening for the passage of the fluid mixture in a radial direction toward the first sleeve, said second sleeve surrounding the distal end of the first sleeve and having a diameter greater than the diameter of the first sleeve to provide a second annular opening for flow of the fluid mixture in an axial direction therebetween,
(c) means securing the first and second sleeves together at spaced points therearound to hold the second sleeve in a position concentric with the first sleeve,
(d) a third sleeve having a diameter substantially equal to the diameter of the first sleeve and being spaced from the first sleeve to provide a third annular opening therebetween,
(e) means for securing the second sleeve to the third sleeve, and
(f) a fourth sleeve in the form of a porous fabric, said sleeve extending from the first sleeve to the third sleeve to cover the third annular opening, said fourth sleeve having a diameter less than the diameter of the second sleeve to hold the hollow fiber membranes out of contact with said second sleeve.

4,578,191
BIO-ARTIFICIAL ULTRAFILTRATION PANCREAS
Michel Jaffrin, Compiegne, and Gerard Reach, Paris, both of France, assignors to Centre National de la Recherche Scientifique, Paris, France
Filed Aug. 1, 1983, Ser. No. 519,315
Claims priority, application France, Aug. 9, 1982, 82 13869
Int. Cl.⁴ B01D *13/00*
U.S. Cl. 210—323.2 **10 Claims**

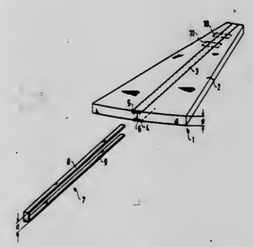


1. A bio-artificial pancreas comprising:
two ultrafiltration membranes having approximately parallel substantially planar confronting surfaces spaced apart a distance such that the space there between defines a volume of small thickness;
islets of Langerhans contained in said compartment;
means defining a blood path whereby blood flowing along said blood path successively sweeps said surfaces of said two membranes opposite said volume occupied by said islets of Langerhans over a length greater by at least one order of magnitude than the distance which separates said membranes;
said membranes being constructed and arranged such that said volume fulfills the condition;

$$V_i \geqq (S)(P_M)(\tau)(\Delta P/8)$$

in which
V_i=said volume,
S=total membrane area,
P_M=hydraulic permeability of membrane,
τ=acceptable time constant, and
ΔP=available drive pressure.

4,578,192
FILTER CLOTH FOR A DISK FILTER
Hans-Rudolf Müller, Ostbühlstr. 49, CH-8038 Zürich, Switzerland
Filed Aug. 10, 1984, Ser. No. 639,404
Claims priority, application Fed. Rep. of Germany, Aug. 11, 1983, 3329117
Int. Cl.⁴ B01D *25/02*
U.S. Cl. 210—486 **11 Claims**



1. A device for use with a disk filter cell, said device comprising:
filter cloth means for use with a sector-shaped disk filter cell; and
reinforcement means directly integrated into said filter cloth means, said reinforcement means being U-shaped clamps made from metal, plastic, or some other rigid material, and a leg spacing of said U-shaped clamps being adapted to the sector-shaped disk filter cell thickness.

4,578,193
CHROMATOGRAPHY COLUMNS
David Shepherd, Cheshire, England, assignor to Imperial Chemical Industries PLC, London, England
Division of Ser. No. 524,073, Aug. 17, 1983. This application Nov. 23, 1984, Ser. No. 673,849
Claims priority, application United Kingdom, Sep. 6, 1982, 8225308
The portion of the term of this patent subsequent to Feb. 5, 2002, has been disclaimed.
Int. Cl.⁴ B01D *15/08*
U.S. Cl. 210—656 **16 Claims**



1. A method for packing a chromatography column having an inlet port at one end and an outlet port at the other end, said method comprising the steps of:
(a) forming particulate material into a bed between porous bed-retaining means located to protect the inlet and outlet

ports by feeding a slurry or smoke of particulate bed material in a carrier fluid into the column;
(b) applying a predetermined pressure to the bed of particulate material while allowing the carrier fluid to escape;
(c) thereafter feeding at least a final portion of the slurry or smoke of particulate material through a filler tube in communication with the space in the column until the space is full;
(d) continuing to feed the at least final portion of the slurry or smoke of particulate material until the particulate material bed extends back into the filler tube;
(e) maintaining the predetermined pressure applied to the bed via the slurry or smoke of particulate material in the filler tube; and
(f) sealing the filler tube against relaxation of the pressure applied to the bed of particulate material.

4,578,194

PROCESS FOR REMOVING POLYCHLORINATED BIPHENYLS FROM TRANSFORMER-INSULATING LIQUIDS

Dieter Reinartz, St. Augustin; Heinrich Bender, Troisdorf, and Günter Laurent, Bad Honnef, all of Fed. Rep. of Germany, assignors to Didier-Werke AG, Wiesbaden, Fed. Rep. of Germany

Filed Jan. 18, 1985, Ser. No. 692,624
Claims priority, application Fed. Rep. of Germany, Jan. 20, 1984, 3401866
Int. Cl.⁴ B01D *15/00*
U.S. Cl. 210—673 **17 Claims**

1. A process for removing polychlorinated biphenyls from a transformer-insulating liquid containing said polychlorinated biphenyls, which comprises:
substantially continuously circulating said liquid through a circuit comprising an adsorption resin which is capable of adsorbing said polychlorinated biphenyls, to adsorb said polychlorinated biphenyls on said resin;
washing said resin having said polychlorinated biphenyls adsorbed thereon with a solvent for said polychlorinated biphenyls to dissolve said polychlorinated biphenyls in said solvent and thus remove said polychlorinated biphenyls from said resin; and
passing a gas through the solvent-treated resin to entrain residual solvent in said gas and thus remove said residual solvent from said resin, thereby regenerating said resin.

4,578,195

PROCESS FOR THE PURIFICATION OF EFFLUENTS AND PURGE STREAMS CONTAINING TRACE ELEMENTS

Sanders H. Moore; Maurice R. Smith, both of Cleveland, and Harvey B. Cochran, Englewood, all of Tenn., assignors to Olin Corporation, Cheshire, Conn.

Continuation-in-part of Ser. No. 426,340, Sep. 29, 1982, abandoned. This application Jul. 26, 1984, Ser. No. 634,837
Int. Cl.⁴ C02F *1/28*
U.S. Cl. 210—679 **23 Claims**

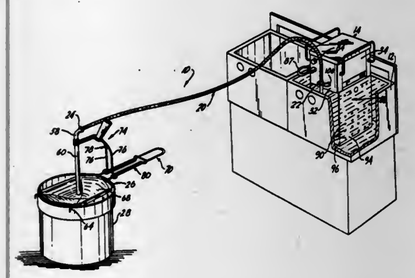
1. A process for purifying an aqueous effluent containing at least one polluting element dissolved therein which comprises:
(a) contacting said aqueous effluent with a poly(dithiocarbamate) chelating resin having a sulfur content of from about 6 to about 7 percent whereby the polluting elements are absorbed to form a contaminated poly(dithiocarbamate) chelating resin;
(b) extracting said contaminated poly(dithiocarbamate) chelating resin with an acidic aqueous solution having a pH of from about 4 to about 6;
(c) recovering said contaminated poly(dithiocarbamate) resin; and
(d) depositing said contaminated poly(dithiocarbamate) chelating resin in an unsecured landfill area.

4,578,196

METHOD AND SYSTEM FOR FILTERING COOKING OIL

Bernard Friedman, Allentown, Pa., assignor to Oil Process Systems, Inc., Allentown, Pa.

Continuation of Ser. No. 304,653, Sep. 23, 1981, Pat. No. 4,462,915. This application Jul. 27, 1984, Ser. No. 635,302
The portion of the term of this patent subsequent to Jul. 31, 2001, has been disclaimed.
Int. Cl.⁴ B01D *29/32*
U.S. Cl. 210—765 **25 Claims**



1. A method of filtering cooking oil in a cooking vessel, comprising the steps of:
providing a collection vessel, a filter member, and a centrifugal pump apparatus, said centrifugal pump apparatus including an impeller, an impeller discharge, a flexible conduit having an inlet end coupled in fluid communication with said impeller discharge and an outlet end, and a housing having a hollow interior in which said impeller is located, and housing being of a size and configuration for supporting said centrifugal pump apparatus in free-standing relationship on a base of a vessel;
supporting said filter member in relation to said collection vessel so as to be in position to receive oil to be filtered and to discharge filtered oil into said collection vessel after it has been filtered by said filter member;
placing said centrifugal pump apparatus directly in said cooking vessel so that said housing is supported on the base of said cooking vessel and so that at least said impeller is in direct contact with said oil to be filtered in said cooking vessel;
arranging said outlet end of said flexible conduit so as to be in position to discharge oil into said filter member; and
operating said centrifugal pump apparatus to rotate said impeller to pump said oil from said cooking vessel through said flexible conduit into said filter member.

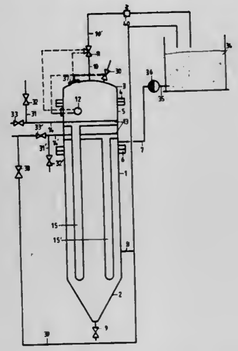
4,578,197

METHOD OF AND FILTER THICKENER FOR THICKENING OF SUSPENSIONS

Hans Müller, Erlenbach, Switzerland, assignor to DrM Dr. Müller AG, Männedorf, Switzerland

Filed Jul. 23, 1982, Ser. No. 401,322
Claims priority, application Switzerland, Aug. 4, 1981, 5015/81; Oct. 5, 1981, 6375/81
The portion of the term of this patent subsequent to Mar. 27, 2001, has been disclaimed.
Int. Cl.⁴ B01D *35/12*
U.S. Cl. 210—772 **32 Claims**

1. A method of continuously thickening of suspensions in a filter thickener having a plurality of candle-like filter elements arranged in a container on individual collecting pipes, comprising the steps of
thickening a suspension by filtering the same through filter elements in a filtration direction and withdrawing a thickened matter;
backwashing the filter elements without individually interrupting the filtration and by applying to the filter elements pressure impulses of gaseous backwash medium in a direction which is opposite to the filtration direction;



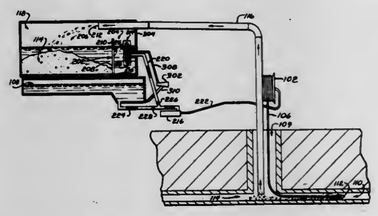
forming over the filter elements by the gaseous backwash medium a gas chamber separated from a suspension fluid and having an adjustable pressure; and
adjusting a gas pressure in the gas chamber so as to maintain a constant level of fluid in the container.

4,578,198

SEWER AND CATCH BASIN CLEANING SYSTEM

Ronald L. Schmidt, and Roland E. Shaddock, both of Streator, Ill., assignors to Peabody Myers Corporation, Streator, Ill.

Filed Dec. 23, 1983, Ser. No. 564,848
Int. Cl.⁴ B01B *33/00*
U.S. Cl. 210—780 **20 Claims**



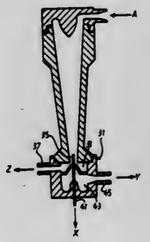
1. A method for using a vehicle for recycling water used to clean piping system associated with sewer laterals and catch basins, the vehicle having a debris-receiving container and a water reservoir for storing water, comprising the steps of:
(a) injecting water from the water reservoir under pressure into the piping system to loosen the debris located therein;
(b) pneumatically conveying the water and loosened debris from the piping system into said debris-receiving container;
(c) drawing the water so conveyed through a fine filtration media located in a portion of said debris-receiving container to remove debris from such reclaimed water, thereby producing filtered reclaimed water; and
(d) injecting said filtered reclaimed water into the piping system by by-passing entirely the water reservoir to continue the cleaning of the piping system.

4,578,199

CYCLONE SEPARATORS

John D. Peel, Cheshire, and Paul A. Knight, Lancashire, both of England, assignors to Beloit Corporation, Beloit, Wis.

Continuation of Ser. No. 520,021, Aug. 3, 1983, abandoned, which is a continuation-in-part of Ser. No. 346,176, Feb. 5, 1982, abandoned. This application Apr. 25, 1985, Ser. No. 726,303
Claims priority, application United Kingdom, Feb. 14, 1981, 8104678
Int. Cl.⁴ B04C *5/04*
U.S. Cl. 210—788 **6 Claims**



1. A method of separating a relatively light, rejects portion of particulate matter from a relatively heavy, accepts portion of particulate matter carried by an aqueous fluid mixture of both portions thereof, comprising the steps:
(1) feeding a stream of the fluid mixture into the upper region of a substantially vertically-disposed cyclone separator tangentially thereof at an angle to the longitudinal axis of the separator;
(2) constraining all of the fluid mixture to move in a substantially unilateral, streamline flow spirally toward the lower region of the cyclone separator;
(3) establishing an air core along the longitudinal axis of the separator;
(4) maintaining the lower end of the separator open;
(5) intercepting and separating the rejects portion in a region near the longitudinal axis of the separator within, and above, the lower end thereof;
(6) guiding the remaining accepts portion between the intercepted rejects portion and the interior wall of the cyclone separator to the periphery of the lower end thereof;
(7) discharging both accepts and rejects portions of the fluid mixture through the lower end of the cyclone separator.

4,578,200

FABRIC SOFTENERS

James C. T. R. Burckett St. Laurent, Overijse, and Alfred Busch, Grimbergen, both of Belgium, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Nov. 29, 1984, Ser. No. 676,036
Claims priority, application United Kingdom, Dec. 20, 1983, 8333815
Int. Cl.⁴ D06M *11/00*
U.S. Cl. 252—8.8 **10 Claims**

1. A method of softening fibres or fabrics which comprises contacting said fibres or fabrics with a C_{8-20} alkyl amide derivative of a maleic anhydride-alkyl vinyl ether copolymer in the presence of water.

4,578,201
N-VINYL LACTAM/UNSATURATED AMIDE COPOLYMERS IN THICKENED ACID COMPOSITIONS

Lyle D. Burns, and G. Allan Stahl, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 5, 1984, Ser. No. 586,504
Int. Cl.[4] E21B *43/27*
U.S. Cl. 252—8.55 C 40 Claims

1. A water soluble thickened acid composition comprising:
(1) water;
(2) an acid; and
(3) a copolymer comprising a N-vinyl lactam monomer and an alpha, beta-unsaturated amide monomer made in the absence of a crosslinking agent during polymerization of said monomers.

4,578,202
CUTTING OIL FOR WORKING NONFERROUS METALS BY CUTTING

Manfred Urban, Weiterstadt, and Dieter Schmitt, Darmstadt, both of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

Filed Dec. 22, 1983, Ser. No. 564,458
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1982, 3247426
Int. Cl.[4] C10M *105/08, 105/22, 105/72*
U.S. Cl. 252—33.4 18 Claims

1. A cutting oil useful for the working of nonferrous metals by cutting, consisting essentially of effective amounts of (a) a fatty acid ester of a monohydric or polyhydric C_{1-3}-alcohol, (b) a solvent which is a C_{2-4}-glycol, or an oligoglycol or a polyglycol thereof, or a monoether or diether thereof with a C_{1-4}-alkyl group, phenyl or benzyl, or a monoester or diester thereof with C_{1-4} alkanoyl or benzoyl, and which is liquid at room temperature, and (c) a surfactant effective to solubilize or disperse the cutting oil in an alkaline degreasing bath.

4,578,203
POLYMER SOLUTION WORKING FLUID FOR FINISHING PROCESSES

Helmut Franz; James H. Hanlon, both of Pittsburgh, and Lloyd G. Shick, Natrona Heights, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Apr. 1, 1983, Ser. No. 481,418
Int. Cl.[4] C10M *149/10, 173/02*
U.S. Cl. 252—49.3 18 Claims

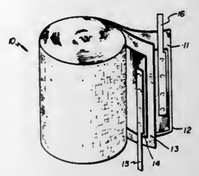
1. In a method of processing a nonmetallic substrate wherein a working fluid is supplied at the interface between the substrate and a working tool, and the substrate is exposed to particulate contaminants, the improvement which comprises supplying a working fluid comprising a solution of a soluble film-forming polymer in an amount which prevents adherence of particulate contaminants on the substrate surface in a solvent selected from the group consisting of water, water-miscible alcohols, water-miscible ketones, and mixtures thereof.

4,578,204
HIGH VOLTAGE ELECTROLITE

Daniel J. Anderson, Indianapolis, Ind., assignor to Emhart Industries, Inc., Indianapolis, Ind.

Filed Apr. 20, 1984, Ser. No. 602,543
Int. Cl.[4] H01G *9/00*
U.S. Cl. 252—62.2 8 Claims

1. An electrolytic capacitor having a sparking voltage of at least 620 volts comprising a pair of electrodes at least one of which is composed essentially of a film-forming metal and has a dielectric oxide film thereof, and an electrolyte consisting essentially of a liquid salt of a tertiary amine and glacial acetic



acid, said liquid salt dissolved in a mono-alkyl ether of diethylene glycol in a weight ratio of about 1:3 to 1:9.

4,578,205
USE OF METHYLENE AZELAIC ACID AS A CORROSION INHIBITOR

Ernest L. Yeakey; George P. Speranza; Carol A. Triebel, and David R. McCoy, all of Austin, Tex., assignors to Texaco, Inc., White Plains, N.Y.

Filed Feb. 1, 1985, Ser. No. 697,193
Int. Cl.[4] C09K *5/00*
U.S. Cl. 252—76 12 Claims

1. A corrosion-protected antifreeze composition comprising
a. a glycol component selected from the group consisting of an alkylene glycol, an alkylene glycol ether and mixtures thereof, and
b. an effective, corrosion-preventing amount of a methylene azelaic acid component selected from the group consisting of methylene azelaic acid alone having the formula $CH_2{=}C{-}[CH_2)_3{-}COOH]_2$ and alkali metal salts thereof said the methylene azelaic acid component present in a proportion ranging from about 1.5 to 4.5% based on the glycol component.

4,578,206
DETERGENT BLEACH COMPOSITIONS

Adrian W. Walker, Irby, Great Britain, assignor to Lever Brothers Company, New York, N.Y.

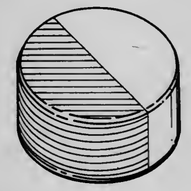
Filed Jun. 13, 1984, Ser. No. 619,975
Claims priority, application United Kingdom, Jun. 20, 1983, 8316761
Int. Cl.[4] C11D *7/54, 3/395;* D06L *3/02*
U.S. Cl. 252—95 5 Claims

1. A carbonate built detergent bleach composition comprising:
(I) from about 2 to 50% by weight of a surface active agent, selected from the group consisting of anionic, nonionic, zwitterionic and cationic detergents, and mixtures thereof;
(II) from 5 to 80% by weight of an alkali metal carbonate builder;
(III) from 5 to 50% by weight of a peroxide compound bleach;
(IV) from 0.1 to 25% by weight of a peracid precursor which reacts with the peroxide compound in solution forming a peracid; and
(V) from 0.005 to 0.1% by weight of manganese (II) ions.

4,578,207
TWO COMPONENT CLEANER AND DISINFECTANT TABLET

Bernd-Dieter Holdt, Düsseldorf; Ronald Menke, Mettmann; Gerd Praus, Krefeld, and Petra Hasselbach, Düsseldorf, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 452,943, Dec. 27, 1982, abandoned. This application Dec. 14, 1983, Ser. No. 561,285
Claims priority, application Fed. Rep. of Germany, Jul. 7, 1982, 3225292
Int. Cl.[4] C11D *17/00*
U.S. Cl. 252—134 1 Claim



1. A two-component cleaning and disinfecting tablet for urinals and toilet flush tanks comprising extruded component A consisting essentially of (a) 25 to 50% by weight of an alkylbenzene sulfonate, (b) 20 to 30% by weight of inorganic alkali metal salts, (c) 5 to 10% by weight of at least one plasticizer, (d) 10 to 20 by a weight of at least one disintegration rate regulator selected from the group consisting of fatty acid ethanolamides, fatty acid diethanolamides and stearic acid, and (e) 5 to 30% by weight of a chlorine releasing compound and extruded component B consisting essentially of (a') 30 to 40% by weight of an alkylbenzene sulfonate, (b') 30 to 45% by weight of inorganic alkali metal salts, (c') 0 to 10% by weight of at least one plasticizer, (d') 10 to 15% by weight of at least one disintegration rate regulator selected from the group consisting of fatty acid ethanolamides, fatty acid diethanolamides and stearic acid, (e') 1 to 10% by weight of perfume and (f') 5 to 15% by weight of dye, the sum of (c') and (e') being not greater than 10% by weight, components A and B being attached together and occupying different portions of the final tablet.

4,578,208
COMPOSITIONS AND PROCESSES FOR CLEANING AND PASSIVATING METALS

Jüergen Geke, Duesseldorf, and Bernd Stedry, Kempen, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

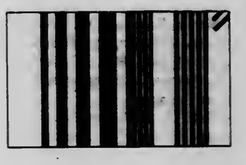
Filed May 4, 1984, Ser. No. 607,347
Claims priority, application Fed. Rep. of Germany, May 7, 1983, 3316724
Int. Cl.[4] C11D *1/34, 17/08*
U.S. Cl. 252—135 19 Claims

1. An aqueous composition for cleaning or passivating metal surfaces constisting essentially of
(a) from about 0.01 to about 1.0 g/l of at least one phosphoric acid ester selected from the following:
(i) mono- or diester of phosphoric acid with C_{10}–C_{20} alkanols,
(ii) mono- or diester of phosphoric acid with C_2–C_3 alkoxylated C_{10}–C_{20} alkanols,
(iii) phosphoric acid ester of poly-C_2–C_3-aklylene glycol ether,
(iv) a water solube salt of any of the foregoing;
(b) from about 0.25 to about 25 g/l of at least one alkanolamine or carboxylic acid salt of said alkanolamine;
(c) from about 0.001 to about 1 g/l of at least one nonionic surfactant.

4,578,209
COMPOSITION FOR CLEANING SURFACE OF SUBSTRATE

Iwao Hisamoto, Suita, and Yukio Omure, Takatsuki, both of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Continuation of Ser. No. 497,724, May 24, 1983, abandoned. This application Feb. 20, 1985, Ser. No. 703,456
Claims priority, application Japan, May 24, 1982, 57-88692
Int. Cl.[4] C11D *3/43, 7/50*
U.S. Cl. 252—143 1 Claim



1. A composition for cleaning a surface of a substrate consisting essentially of: (a) a halogenated hydrocarbon solvent selected from the group consisting of; an aliphatic hydrocarbon substituted by at least one chlorine atom, an aliphatic hydrocarbon substituted by at least one fluorine atom, an aliphatic hydrocarbon substituted by at least one bromine atom, an aromatic hydrocarbon substituted by at least one chlorine atom, an aromatic hydrocarbon substituted by at least one fluorine atom, an aromatic hydrocarbon substituted by at least one bromine atom, and mixtures of the above recited halogenated hydrocarbon compounds, (b) a fluorine-containing alcohol selected from the group consisting of;

$H(CF_2CF_2)_aCH_2OH$,

$H(CF_2CF_2)_bCH_2OH$,

CF_3

$H(CF_2CF_2)_cCHOH$,

CH_3

$H(CF_2CF)_dCHOH$,

CF_3 CH_3

$F(CF_2CF_2)_eCH_2OH$,

$F(CF_2CF_2)_fCH_2OH$,

CF_3

$F(CF_2CF_2)_gCH_2CH_2OH$,

$F(CF_2CF)_hCH_2CH_2OH$,

CF_3

$F(CF_2CF_2)_iCH_2CH_2CH_2OH$,

$F(CF_2CF)_jCH_2CH_2CH_2OH$,

CF_3

$H(CFClCF_2)_kCH_2OH$,
$H(CF_2CF_2)_lC(CH_3)_2OH$,
$H(CF_2CF_2)_mC(C_3H_7)HOH$,
$CF_3CF_2O(CF_2CF_2O)_nCF_2CH_2OH$,
$CF_3CF_2CF_2O[CF(CF_3)CF_2O]_oCF(CF_3)CH_2OH$,
$(CF_3)_2CF(CF_2CF_2)_pCH{=}CHCH_2OH$,
$HOCH_2(CF_2CF_2)_qCH_2OH$,
$HOCH_2CH_2(CF_2CF_2)_rCH_2CH_2OH$,
$HOCH_2CF_2CFH(CF_2CF_2)_sCFHCF_2CH_2OH$,
$HOCH_2CF_2CH_2(CF_2CF_2)_tCH_2CF_2CH_2OH$, and mixtures

-continued

of the above-recited alcohols,

wherein each of a, c, e, g and i is an interger of 1 to 5 and each of b, d, f, h and j to t is an integer of 1 to 3, and (c) an organic acid selected from the group consisting of; an aliphatic sulfonic acid, an aromatic sulfonic acid, and mixtures of the above-recited organic acids in a weight ratio within a range of 20 to 75/5 to 40/5 to 75.

4,578,210

CARBOCYCLIC SIX-MEMBERED RING COMPOUNDS

Klaus Praefcke; Bernd Kohne; Wadi Poules, all of Berlin; Rudolf Eidenschink, Münster, and Bernhard Scheuble, Alsbach-Hähnlein, all of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschränkter Haftung, Darmstadt, Fed. Rep. of Germany

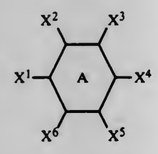
Filed Sep. 13, 1984, Ser. No. 650,015

Claims priority, application Fed. Rep. of Germany, Sep. 13, 1983, 3332955

Int. Cl.⁴ G02F *1/13*; C09K *3/34*

U.S. Cl. 252—299.6 **10 Claims**

1. A discotic, liquid-crystal phase containing at least two liquid-crystal components, wherein at least one of said components is



wherein

A is a benzene or cyclohexane ring,

X^1 to X^6 independently of one another in each case are H, —OR, —COOR, —SR, —SOR, or $—SO_2R$ or, when A is a cyclohexane ring, also —O—COR, and

R is in each case alkyl of up to 15 C atoms or alkyl of up to 15 C-atoms wherein one or two CH_2 groups are replaced by O atoms,

at least three of the substituents X^1 to X^6 being other than H.

4,578,211

PROCESS FOR THE PREPARATION OF RARE EARTH OXYHALIDE PHOSPHOR

Jacob G. Rabatin, Montville, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 483,335, Apr. 8, 1983, abandoned. This application Jan. 14, 1985, Ser. No. 691,323

Int. Cl.⁴ C09K *11/475*

U.S. Cl. 252—301.4 H **2 Claims**

1. A process for the preparation of lanthanum and gadolinium oxyhalide phosphor crystals selected from the group consisting of oxychlorides and oxybromides activated with thulium ion consisting essentially of recrystallized phosphor crystals having an average median particle size in the range extending from approximately 3.0 microns diameter up to approximately 9.0 microns diameter along with a more narrow particle size distribution and polyhedral shape with retarded crystal growth in the fastest crystal growth direction comprising the following steps:

(a) heating mixtures of particles of oxides selected from lanthanum and gadolinium oxides, including mixtures thereof, which further contains thulium ion in activator amounts from about 0.0005 to 0.01 mole per mole of the phosphor and an ammonium halide whose halide ion is that of the selected oxyhalide, along with sufficient lutetium ion to produce a lutetium level in said phosphor from about 0.01 to 0.2 mole per mole of the phosphor for a time and temperature sufficient to form the selected oxyhalide phospor, and

(b) reheating the resultant oxyhalide phosphor mixture with an alkali metal halide flux mixture whose halide ions are that of the selected oxyhalide phosphor to a temperature not exceeding approximately 900° C. for a time sufficient to recrystallize said selected oxyhalide phosphor and produce phosphor crystals with greater thickness said phosphor crystals having a smaller average median particle size than the phosphor crystals prepared as above absent lutetium.

4,578,212

LEAD ACTIVATED LUMINESCENT MATERIAL AND PROCESS FOR ITS PRODUCTION

Akos Kiss, Aschaffenburg; Peter Kleinschmit, Hanau; Werner Völker, Bad Vilbel, and Günter Halbritter, Schöllkrippen, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Apr. 4, 1985, Ser. No. 719,954

Claims priority, application Fed. Rep. of Germany, Apr. 19, 1984, 3414847

Int. Cl.⁴ C09K *11/36*

U.S. Cl. 252—301.4 F **11 Claims**

1. A lead activated luminescent material consisting essentially of:

10 to 89.9 mole % zirconium oxide (ZrO_2)

5 to 85 mole % boron oxide (B_2O_3)

5 to 85 mole % silicon dioxide (SiO_2)

0.1 to 20 mole % lead oxide (PbO)

0 to 15 mole % sodium oxide (Na_2O)

0 to 15 mole % potassium oxide (K_2O) and

0 to 5 mole % aluminum oxide (Al_2O_3),

and exhibiting an emission band at about 480 nm when excited by 366 nm or 254 nm radiation.

4,578,213

HIGH TEMPERATURE PLASTIC SCINTILLATOR

John J. Simonetti, Cranbury, N.J., assignor to Sangamo Weston, Inc., Norcross, Ga.

Filed Apr. 27, 1984, Ser. No. 604,699

Int. Cl.⁴ C09K *11/06*

U.S. Cl. 252—301.17 **4 Claims**

1. As an article of manufacture, a plastic scintillator which will function at high temperatures and retain its optical properties, said scintillator comprising a polymethylpentene host plastic containing an aromatic hydrocarbon fluorescent agent.

4,578,214

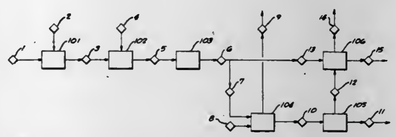
PROCESS FOR AMMONIA SYNGAS MANUFACTURE

Robert R. J. Jungerhans, Pasadena, Calif., assignor to C F Braun & Co., Alhambra, Calif.

Filed Feb. 6, 1984, Ser. No. 577,643

Int. Cl.⁴ C01C *1/04*

U.S. Cl. 252—376 **8 Claims**



8. An improved process for reforming hydrocarbons to obtain a synthesis gas containing an approximately stoichiometric amount of hydrogen and nitrogen from which ammonia may be formed in which a hydrocarbon is reacted with steam and air in a reforming operation to obtain a first effluent comprising hydrogen, nitrogen and carbon monoxide, the carbon monoxide being reacted in a shift conversion stage to produce a second effluent comprising hydrogen, nitrogen, and carbon dioxide, said improved process comprising the additional steps of separating said second effluent into a first stream and a second stream, said first stream being reacted with air in a fuel cell to produce a byproduct stream and a product stream which is passed through a de-oxygenation stage to produce a purified stream, said second stream and said purified stream being passed into a pressure swing adsorption unit in which the synthesis gas and a waste fuel stream are separated.

4,578,215

ELECTRICAL CONDUCTIVITY-ENHANCING AND PROTECTING MATERIAL

Robert F. Bradley, New Buffalo, Mich., assignor to Micro-Circuits Company, New Buffalo, Mich.

Filed Aug. 12, 1983, Ser. No. 522,848

Int. Cl.⁴ H01B *1/02*

U.S. Cl. 252—514 **29 Claims**

1. A material for protecting and enhancing the conductivity of electrical connections, comprising a fluid corrosion retarding, organic carrier medium, including silicones, suspending a solid particulate component therein for distributing and retaining the particulate component on an electrical connection, and an electrically conductive component in particulate form, selected from the group consisting of silver, nickel, copper, tin, lead, tungsten, carbon black, alloys of said group and particles coated with a member of said group, mixed with and suspended in the carrier medium, and being present in the amount of 0.015 to 0.15 volumes of said component per one volume of said carrier medium for facilitating electron transfer by providing multiple, parallel conductive paths for electrical current flow.

4,578,216

SHAMPOO COMPOSITION CONTAINING AMINO ACID-ANIONIC AND AMPHOTERIC SURFACE ACTIVE AGENTS

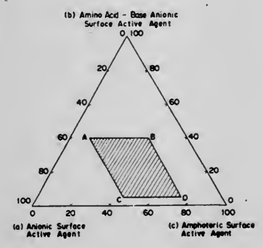
Kozo Fujii, Sakura, and Takeo Okumura, Funabashi, both of Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Nov. 30, 1984, Ser. No. 677,014

Claims priority, application Japan, Dec. 21, 1983, 58-241666

Int. Cl.⁴ C11D *1/10, 1/14*

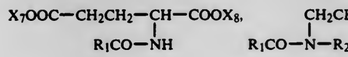
U.S. Cl. 252—542 **4 Claims**



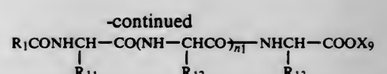
1. A shampoo composition comprising:

(a) an anionic surface active agent excluding amino acid-anionic surface active agents;

(b) an amino acid-anionic surface active agent selected from the group consisting of the compounds represented by one of the following formulae:

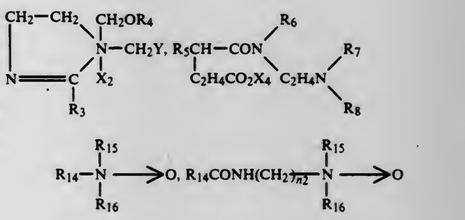


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wherein R_1 is an alkyl or alkenyl group having from 7 to 21 carbon atoms, R_2 represents a hydrogen atom or an alkyl group having from 1 to 3 carbon atoms, and X_1, X_7 and X_8 independently represent a hydrogen atom or a counter ion selected from the group of alkali metal ions, alkaline earth metal ions, ammonium ion, ammonium ions substituted with an alkyl group having from 1 to 3 carbon atoms, alkanolamine bases having a hydroxyalkyl group containing from 1 to 3 carbon atoms, and basic amino acids; and wherein R_{11}, R_{12} and R_{13} independently represent a side chain of an amino acid, n_1 has a value of from 1 to 6, and X_9 represents a hydrogen atom or a counter ion as defined for X_1, X_7 and X_8; and

(c) an amphoteric surface active agent selected from the group consisting of a compound having one of the following formulae:



wherein R_3 represents an aliphatic acid residue having from 10 to 20 carbon atoms, R_4 represents sodium, hydrogen atom or $—CH_2COOX_3$, Y represents $—COOX_3—CH_2COOX_3$ or $—CH(OH)CH_2SO_3X_3$ wherein X_3 represents sodium, a hydrogen atom or an organic base, and X_2 represents a hydroxyl group, an acidic salt or anionic surface active sulfate or sulfated compound; R_5 represents an alkyl or alkenyl group having from 6 to 20 carbon atoms, R_6 represents a hydrogen atom, $—C_2H_4OH$ or $—C_2H_4OC_2H_4COOX_4$, R_7 represents $—C_2H_4OH$, $—C_2H_4OC_2H_4COOX_4$ or $—C_2H_4COOX_4$, R_8 represents a hydrogen atom or $—C_2H_4COOX_4$, and X_4 represents a hydrogen atom, an alkali metal, ammonium or organic ammonium; R_{14} represents an alkyl or alkenyl group having from 10 to 20 carbon atoms, R_{15} and R_{16} are the same or different and represent an alkyl group having from 1 to 3 carbon atoms, n_2 is an integer from 1 to 4; R_{17} and R_{18} independently represent an alkyl group having from 1 to 4 carbon atoms, n_3 is an integer of from 1 to 3, X_{10} represents $—COO^-$ or $—SO_3^-$ group; and wherein the total amount of the three ingredients (a), (b) and (c) ranges from 5 to 30 wt.% of the composition, the mixing ratios of the three ingredients being within a composition range contained by lines plotted between the following points A, B, C and D of the ternary composition triangular diagram as shown in the accompanying figure;

A: (a)=50.0, (b)=40.0, (c)=10.0

B: (a)=20.0, (b)=40.0, (c)=40.0

C: (a)=50.0, (b)=5.0, (c)=45.0

D: (a)=20.0, (b)=5.0, (c)=76.0.

4,578,217

SYNTHETIC ANTIGENIC PEPTIDE DERIVED FROM HEPATITIS B SURFACE ANTIGEN

John Vnek, Bronx; Alfred M. Prince, Pound Ridge, and Hafeez Ikram, Corona, all of N.Y., assignors to New York Blood Center, Inc., New York, N.Y.

Filed May 12, 1983, Ser. No. 493,904
Int. Cl.⁴ C07C *103/52*
U.S. Cl. 260—112.5 R **2 Claims**

1. A synthetic peptide consisting essentially of the following sequence of amino acids

Arg Trp Met Met Leu Arg Arg.

4,578,218

PURIFICATION OF FACTOR VIII WITH INSOLUBLE MATRIX HAVING FREE SULFATE GROUPS COVALENTLY BOUND THERETO

Richard H. Saundry, London, and Geoffrey F. Savidge, Kent, both of England, assignors to The Special Trustees for St. Thomas' Hospital, London, England

Filed Feb. 8, 1985, Ser. No. 699,957
Claims priority, application United Kingdom, Feb. 9, 1984, 8403473
Int. Cl.⁴ C07G *7/00*; A61K *35/16, 35/14*
U.S. Cl. 260—112 B **11 Claims**

1. A process for the purification of Factor VIII complex, or one or more components thereof, comprising treating an impure preparation of Factor VIII complex with an insoluble matrix having free sulfate groups covalently bound thereto, in a medium of sufficiently high pH and sufficiently low ionic strength for a sufficient period of time to cause a substantial proportion of the Factor VIII complex to bind to said matrix, and subsequently selectively eluting the bound Factor VIII complex or the desired Factor VIII component.

4,578,219

ANTIGENIC PEPTIDE COMPOUND

Erwin Goldberg, Evanston, Ill., and Thomas E. Wheat, Chicago, Ill., assignors to Northwestern University, Evanston, Ill.

Filed Oct. 19, 1984, Ser. No. 663,058
Int. Cl.⁴ C07C *103/52*
U.S. Cl. 260—112.5 R **1 Claim**

1. The antigenic peptide compound binding to LDH-C_4 antisera represented by the sequence of N-terminal to C-terminal amino acids, comprising V-N-M-T-A-G-E-E-G-L-L-K-K, wherein G represents glycine, and V, N, M, T, A, E, G, L, and K respectively represent the L-amino acid forms of valine, asparetic acid, methionine, threonine, alanine, glutamic acid, leucine, and lysine.

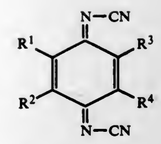
4,578,220

CHARGE TRANSFER COMPLEXES OF TETRATHIO/SELENO-FULVALENE DERIVATIVES AND BISCYANIMINE DERIVATIVES; BISCYANIMINE DERIVATIVES AND METHOD FOR PRODUCING SAME

Siegfried Huenig, Wuerzburg, and Alexander Aumueller, Lichtenfels, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

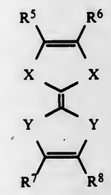
Filed Oct. 18, 1984, Ser. No. 662,049
Claims priority, application Fed. Rep. of Germany, Oct. 19, 1983, 3337887
Int. Cl.⁴ C07C *121/54*; C07D *409/04, 421/04*; C09K *15/58*
U.S. Cl. 260—239 R **13 Claims**

1. A charge transfer complex of a biscyanimine of the formula



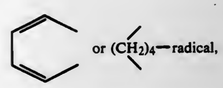
(I)

and a compound of the formula

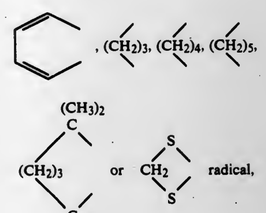


(II)

where R^1, R^2, R^3 and R^4 independently of one another are each hydrogen, methyl, ethyl, methoxy, ethoxy, chlorine or bromine, or one of the radicals R^1 and R^2 or one of the radicals R^3 and R^4 is phenyl or tert.-butyl, or one of the radicals R^1 and R^2 and one of the radicals R^3 and R^4 are each phenyl or tert.-butyl, or R_1 and R_2 taken together, or R_3 and R_4 taken together independently form a

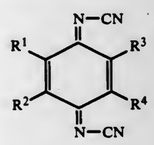


and the fused-on aromatic rings are unsubstituted or monosubstituted or disubstituted by chlorine, bromine or methyl, and R^5, R^6, R^7 and R^8 independently of one another are each hydrogen, methyl, ethyl, phenyl, methylphenyl or methoxyphenyl, or R_5 and R_6 taken together, or R_7 and R_8 taken together, independently form a

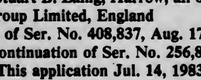


and X and Y independently of one another are each S or Se.

5. A biscyanimine of the formula



where R^1, R^2, R^3 and R^4 independently of one another are each hydrogen, methyl, ethyl, methoxy, ethoxy, chlorine or bromine, or one of the radicals R^1 and R^2 or one of the radicals R^3 and R^4 is phenyl or tert.-butyl, or one of the radicals R^1 and R^2 and one of the radicals R^3 and R^4 are each phenyl or tert.-butyl, or R_1 and R_2 taken together, or R_3 and R_4 taken together, independently form a



wherein the fused-on aromatic rings are unsubstituted or monosubstituted or disubstituted by chlorine, bromine or methyl.

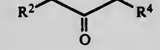
8. A process for the preparation of a biscyanimine of the formula



where R^1, R^2, R^3 and R^4 independently of one another are each hydrogen, methyl, ethyl, methoxy, ethoxy, chlorine or bromine, or one of the radicals R^1 and R^2 or one of the radicals R^3 and R^4 is phenyl or tert.-butyl, or one of the radicals R^1 and R^2 and one of the radicals R^3 and R^4 are each phenyl or tert.-butyl, or R_1 and R_2 taken together, or R_3 and R_4 taken together, independently form a



and the fused-on aromatic rings are unsubstituted or monosubstituted or disubstituted by chlorine, bromine or methyl, wherein a quinone of the formula



where R^1, R^2, R^3 and R^4 have the above meanings, is reacted with bistrimethylsilylcarbodiimide in a molar ratio of 1:2, in the presence of a catalyst and in an inert organic liquid.

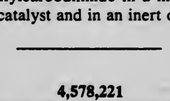
4,578,221

ANDROSTANE CARBOTHIOIC ACIDS

Gordon H. Phillipps, Wembley; Brian M. Bain, Chalfont St. Peter, and Stuart B. Laing, Harrow, all of England, assignors to Glaxo Group Limited, England

Continuation of Ser. No. 408,837, Aug. 17, 1982, abandoned, which is a continuation of Ser. No. 256,845, Apr. 23, 1981, abandoned. This application Jul. 14, 1983, Ser. No. 513,396
Claims priority, application United Kingdom, Apr. 23, 1981, 8013339
Int. Cl.⁴ C07J *3/00*
U.S. Cl. 260—397.1 **8 Claims**

1. A process for the preparation of a compound of the formula:



I

wherein

R^1 represents a hydrogen atom, a hydroxy group in the α-configuration, a methyl group which may be in either the α- or β-configuration or a methylene group;

R^2 represents a hydroxy or protected hydroxy group in either the α-or β-configuration or an oxo group;

R^3 represents a hydrogen, bromine, chlorine or fluorine atom; or R^2 and R^3 together represent a carbon-carbon bond or an epoxy group in the β-configuration;

R^4 represents a hydrogen or fluorine atom; and the symbol ═══ represents a single or double bond; and the salts thereof, in which a compound of the formula:



III

wherein

R^1, R^2, R^3 and R^4 are as defined above and R^5 represents a group of the formula:

in which X, Y and Z, which may be the same or different, each represents CH or N, one or two of X, Y and Z being N, the heterocyclic ring optionally being substituted on at least one carbon atom by a lower alkyl group and/or where the heterocyclic ring contains two adjacent carbon atoms, the said ring optionally carrying a benzene ring fused to the said adjacent carbon atoms;

is reacted with hydrogen sulphide or a sulphide or hydrosulphide salt.

4,578,222

PROCESS FOR PREPARING A PERFLUORINATED OR POLYFLUORINATED ALIPHATIC CARBOXYLIC ACID

Nobuo Ishikawa, Yokohama, and Mitsuru Takahashi, Tokyo, both of Japan, assignors to Daikin Kogyo Co., Ltd., Yamaguchi and Toyo Soda Manufacturing Co., Ltd., Osaka, both of, Japan

Continuation of Ser. No. 566,115, Dec. 27, 1983, abandoned. This application Aug. 5, 1985, Ser. No. 762,228
Claims priority, application Japan, Dec. 31, 1982, 57-233997
Int. Cl.⁴ C07C *51/15*; C07G *13/00*
U.S. Cl. 260—413 **7 Claims**

1. A process for preparing a perfluorinated or polyfluorinated aliphatic carboxylic acid comprising reacting a perfluori-

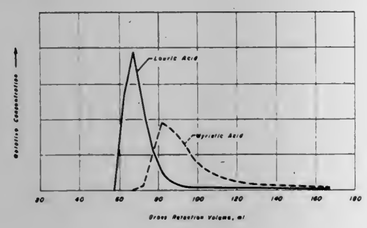
nated or polyfluorinated aliphatic halide of the formula R_fX, where R_f is a perfluorinated or polyfluorinated aliphatic group and X is a halogen atom, with carbon dioxide in the presence of zinc powder under the action of ultrasound and hydrolyzing the obtained product to form a perfluorinated or polyfluorinated aliphatic carboxylic acid of the formula: R_fCOOH where R_f is the same as defined above.

4,578,223

PROCESS FOR SEPARATING SATURATED FATTY ACIDS FROM EACH OTHER

Michael T. Cleary, Elmhurst, Ill., assignor to UOP Inc., Des Plaines, IL

Filed Oct. 9, 1984, Ser. No. 659,104
Int. Cl.⁴ C11C *1/08*; C11B *3/10*
U.S. Cl. 260—419 **10 Claims**



1. A process for separating a first saturated fatty acid from a second saturated fatty acid contained in a feed mixture comprising said acids, the chain length of said first saturated fatty acid being at least two carbon atoms greater than that of said second saturated fatty acid, said process comprising contacting said feed mixture at a temperature in the range of from about 20° to about 200° C. and a pressure sufficient to maintain liquid phase with an adsorbent comprising a crystalline silica having a silica to alumina mole ratio of at least 12, thereby selectively adsorbing said first saturated fatty acid, removing the remainder of the feed mixture from the adsorbent, and recovering said first saturated fatty acid from said adsorbent by desorption a temperature in the range of from about 20° to about 200° C. and a pressure sufficient to maintain liquid phase with a desorbent liquid selected from the group consisting of methyl ethyl ketone, acetone and 3-pentanone.

4,578,224

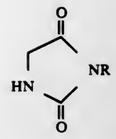
METHOD FOR PREPARATION OF SALTS OF N-PHOSPHONOMETHYLGLYCINE

Arthur C. Bayer, Yorktown Heights, N.Y.; Jeffrey D. Robbins, Berkeley, and Donald J. Bowler, Concord, both of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Continuation of Ser. No. 435,122, Oct. 18, 1982, abandoned.
This application Jun. 20, 1984, Ser. No. 622,427
The portion of the term of this patent subsequent to Aug. 23, 2000, has been disclaimed.
Int. Cl.⁴ C07F *9/38*
U.S. Cl. 260—502.5 F **9 Claims**

1. A method for the preparation of salts of N-phosphonomethylglycine which comprises the steps of:

(a) reacting hydantoin or a 3-substituted hydantoin, compounds of the general formula



wherein R is selected from the group consisting of hydrogen, alkyl having from 1 to 10 carbon atoms, aryl having from 6 to 12 carbon atoms, alkylcarbonyl wherein the alkyl group has from 1 to 10 carbon atoms, and arylcarbonyl wherein the aryl group has from 6 to 12 carbon atoms, with paraformaldehyde in the presence of a low molecular weight carboxylic acid at a temperature and for a sufficient period of time to produce a mixture of intermediate products, including the 1-(hydroxymethyl) derivative of the starting hydantoin

(b) converting said 1(hydroxymethyl) derivative to the 1-phosphonomethyl derivative by thereafter adding to the reaction mixture either

(i) a substituted phosphorus compound selected from the group consisting of phosphorus trichloride, and phosphorus tri-bromide; or

(ii) adding to the reaction mixture phosphorus acid and an anhydride selected from the group consisting acetic anhydride, propionic anhydride, butyric anhydride, or a similar asymmetrical anhydride and

continuing said reaction at a temperature and for a sufficient period of time to cause completion of the reaction to form the 1-phosphonomethyl derivative; and

(c) hydrolyzing the 1-phosphonomethylhydantoin product thus formed with a base selected from the group consisting of alkali metal or alkaline earth hydroxide, to produce a salt of N-phosphonomethylglycine.

4,578,225

MULTI-($OTEF_5$)-SUBSTITUTED FLUOROCARBONS

Carl J. Schack, Chatsworth, and Karl O. Christe, Calabasas, both of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 29, 1984, Ser. No. 617,456
Int. Cl.⁴ C07C *165/00*
U.S. Cl. 260—550 **10 Claims**

1. A compound of the formula

$$C_nF_n(OTeF_5)_mX_p$$

wherein X is F, H or Cl, n is an integer in the range of 2 to 6, m is an even integer in the range of 2 to n and p is (n−m+2).

9. A method for preparing an acyclic compound of the formula

$$C_nF_n(OTeF_5)_mX_p$$

wherein X is F, H or Cl, n is an integer in the range of 2 to 6, m is an even integer in the range of 2 to n and p is (n−m+2), which comprises reacting xenon bis-pentafluorotellurium oxide with a fluorinated olefin having at least one double bond of the formula

$$C_nF_nX_q$$

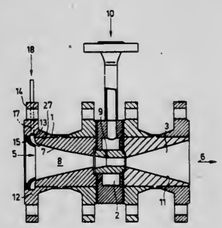
wherein X is F, H or Cl, n is an integer in the range of 2 to 6 and q is an integer in the range of 2 to n, at an elevated pressure at a temperature in the approximate range of 50° to 150° C. above the atmospheric boiling point of said olefin for a time period in the approximate range of 10 to 150 hours.

4,578,226

VENTURI SCRUBBER FOR DUST-LADEN GASES

Wolfgang H. Adlhoch, Swisttal, and Johannes Lambertz, Kerpen, both of Fed. Rep. of Germany, assignors to Rheinische Braunkohlenwerke AG, Fed. Rep. of Germany

PCT No. PCT/DE84/00013, § 371 Date Sep. 19, 1984, § 102(e) Date Sep. 19, 1984, PCT Pub. No. WO84/02856, PCT Pub. Date Aug. 2, 1984
PCT Filed Jan. 19, 1984, Ser. No. 668,367
Claims priority, application Fed. Rep. of Germany, Jan. 22, 1983, 3302148
Int. Cl.⁴ B01F *3/04*
U.S. Cl. 261—71 **8 Claims**



1. A venturi scrubber for dust-laden flowing gases comprising:

an intake portion having a duct through which the gas flows, said duct through said intake portion having a cross-section that progressively decreases in the gas flow direction, said intake portion having a plurality of inlet conduits, said conduits tangentially intersecting the periphery of the largest cross-section of said intake portion;

a central portion having a duct through which the gas flows, said duct through said central portion having a first portion having a cross-section that progressively decreases in the gas flow direction, the largest cross-section of the first portion being adjacent and coaxial to the smallest cross-section of said duct through said intake portion, said duct through said central portion having a second portion having a cross-section that is constant, said second portion being coaxial with said first portion, said central portion having a plurality of radial bores therethrough, said bores intersecting said duct through said central portion at the junction of the first and second portions, whereby a first liquid being introduced into said duct through said central portion by said bores removes the dust in the gas;

a diffuser having a duct through which the gas flows, said duct of the diffuser having a cross-section which progressively increases in the direction of the gas flow, the smallest cross-section of the duct of the diffuser being adjacent to and coaxial with said second portion of said central portion;

a ring being adjacent the largest cross-section of said intake portion, a part of said ring and a part of said intake portion defining an annular duct therebetween, said annular duct extending along the entire periphery of said intake portion, a wall of said ring being parallel to a wall of said duct of said intake portion, whereby a second fluid being introduced into said annular duct from said inlet conduits, and said second fluid being under pressure; and

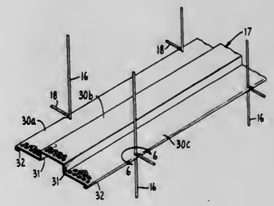
said ring and a wall of said duct of said intake portion defining a flow-through gap, said gap being perpendicular to said inner surface of said duct through said intake portion, whereby said second fluid exiting said annular duct through said gap, said second fluid forming a uniform thin film of the fluid around an inner surface of said duct through said intake portion, said second fluid adapted to remove any deposits of dust from the inner surface of the duct through said intake portion.

4,578,227

SPLASH BAR METHOD AND APPARATUS

John C. Ovard, 3465 Ridgeview Dr., Santa Rosa, Calif. 95404

Filed Mar. 15, 1984, Ser. No. 590,068
Int. Cl.⁴ B01F *3/04*
U.S. Cl. 261—111 **7 Claims**



1. For use with a liquid cooling tower having a hot water distributor for distributing water onto a splash bar assembly structure, a cold water basin and means for inducing movement of air therebetween, a combination therewith of splash bar assembly structure comprising,

a series of elongated generally horizontal splash bar members;

means supporting said splash members in the space between the hot water distributor and said cold water basin in horizontal and vertical spaced relationship;

said splash bar members having their longitudinal axes positioned substantially horizontal;

each of said splash bar members having elongate substantially flat, perforated surfaced elements in parallel and vertically spaced apart relation; vertical strip elements spacing said perforated surface elements apart vertically by a distance less than the width of said splash bar members;

the perforations of said surface elements arranged in staggered rows and including semi-circular holes in alternate rows along the edges of said surface elements with the straight side of said semi-circular holes aligned with, and adjacent to said edges.

2. A method of cooling a liquid in a cross-flow cooling tower including a matrix of longitudinally extending splash bars each having a perforated substantially flat upper horizontal central strip and a pair of elongate perforated horizontal strips along the lateral edges of said central strip, said method comprising the steps of:

flowing air horizontally through said matrix along the longitudinal axes of said splash bars;

splashing warm liquid through said matrix in cross-flow within the said air flow;

directing a first portion of said liquid on said upper central strip;

fragmenting a first subportion of said first portion by splashing on imperforate sections of said central strip;

fragmenting a second subportion of said first portion by shear forces as said second subportion passes through said central strip;

further fragmenting certain of said first fragmented subportion by splashing on imperforate sections of said central strip or said lateral strips before said first fragmented subportion can be carried off by horizontal cross-flowing air;

directing a second portion of said liquid on said lateral strips;

fragmenting a first subportion of said second portion by splashing on imperforate sections of said lateral strips;

fragmenting a second subportion of said second portion by shear forces as said second subportion passes through said lateral strips;

distributing liquid across the imperforate surfaces of said central and said lateral strips;

draining liquid from the imperforate surfaces of said central and said lateral strips; and

repeating said flowing, splashing, directing, fragmenting, distributing and draining steps through said matrix for maximum heat exchange between said liquid and air.

4,578,228

CARBURETOR FOR AN INTERNAL COMBUSTION ENGINE

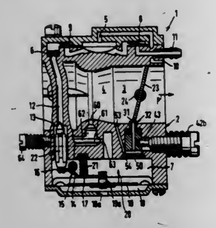
Reinhard Gerhardy, Korb, Fed. Rep. of Germany, assignor to Andreas Stihl, Waiblingen, Fed. Rep. of Germany

Filed Nov. 1, 1984, Ser. No. 667,016

Claims priority, application Fed. Rep. of Germany, Nov. 3, 1983, 3339714

Int. Cl.⁴ F02M *3/08*

U.S. Cl. 261—41 D **17 Claims**



1. Carburetor for an internal combustion engine, comprising:

a carburetor housing defining a carburetor bore communicating with the engine and through which a stream of air is drawn by suction when the engine is operating;

a plurality of fuel jets for delivering fuel into said bore and the stream of air flowing therethrough to form an air-fuel mixture for the engine;

a throttle flap pivotally mounted in said carburetor bore for adjusting the quantity of said mixture in dependence upon the operating condition of the engine;

said throttle flap being pivotable to an idle position whereat said throttle flap and the wall surface of said carburetor bore conjointly define an air gap for passing the air required for the idle operation of the engine;

a control compartment for holding the fuel for said fuel jets, said control compartment including an emulsion chamber;

one of said fuel jets being an idle speed fuel jet having its outlet opening in the region of said air gap, said idle speed fuel jet also communicating with said emulsion chamber;

air passage means for passing air to said emulsion chamber, said passage means having a pass-through opening communicating with said emulsion chamber; and,

an idle speed adjusting member movably mounted in said carburetor housing for movement into said air gap to vary the cross-sectional area thereof while at the same time blocking off more or less of said pass-through opening in dependence upon the position of said adjusting member so as to cause the ratio of fuel to air of the emulsion in said emulsion chamber to be adapted to the air supply required by the engine as said emulsion flows out from said idle speed fuel jet.

4,578,229

METHOD FOR THE MANUFACTURE OF OXIDIC SINTERED NUCLEAR FUEL BODIES

Helmut Assmann, Dormitz; Gerhard Dichtjär, Langenselbold; Wolfgang Dörr; Georg Maier, both of Herzogenaurach; Viktor Mathieu, Neuberg, and Martin Peehs, Bubenreuth, all of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mulheim (Ruhr), Fed. Rep. of Germany

Filed Oct. 25, 1982, Ser. No. 436,303

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1981, 3142447

Int. Cl.⁴ G21C *21/00*

U.S. Cl. 264—0.5 **16 Claims**

1. A method for the manufacture of oxidic nuclear fuel bodies comprising heat treating of blanks obtained from a nuclear fuel starting powder selected from thr group consisting of a UO_2 starting powder and a mixture of UO_2 and PuO_2 starting powder wherein the blanks are first heated in an oxidizing gas atmosphere containing a mixture of gases selected from the group consisting of CO_2 and air, CO_2 and O_2, and CO_2 and an inert gas, in a temperature range of 400° C. to 600° C. for 15 minutes to 2 hours while maintaining the gas atmosphere with oxidizing action to generate a crystallographically demonstrable U_4O_9 or $(U,Pu)_4O_9$ crystal phase in the blanks during the heating, and then are sintered in the same oxidizing atmosphere, in a treatment temperature range of 1000° C. to 1400° C., and finally are heated in a gas atmosphere with reducing action in a temperature range of 1000° C. to 1400° C. to produce an oxidic sintered nuclear fuel body which exhibits a micro-structure with uniformly distributed coarse grain which is stable against growth at the operating temperature in a nuclear reactor.

4,578,230

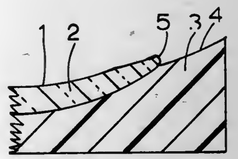
METHOD OF CONTOURING THE EDGE OF CONTACT LENSES

Charles W. Neefe, P.O. Box 429, Big Spring, Tex. 79720

Continuation-in-part of Ser. No. 670,386, Nov. 9, 1984, abandoned, which is a continuation-in-part of Ser. No. 544,468, Oct. 24, 1983, abandoned, which is a continuation-in-part of Ser. No. 417,642, Sep. 13, 1982, Pat. No. 4,416,837. This application Mar. 25, 1985, Ser. No. 715,732

Int. Cl.⁴ B29D *11/00*

U.S. Cl. 264—2.1 **18 Claims**



3. A method of making a spin cast contact lens having a rounded edge by the steps of providing a concave spin casting concave casting mold made by injection molding using a material which is softer than the lens material to be cast in the concave mold, spin casting the lens material in the concave mold, cutting a concave curve on the periphery of the lens said curve intersecting both surfaces of the lens and the concave lens mold, the curve having a longer radius than that of either of the surfaces of the lens, abrading and polishing the longer radius peripheral curve and allowing the softer mold material to be abraded and removed at a faster rate than the harder lens material, exposing the lens edge, abrading and rounding the exposed edge of the lens, removing the lens from the concave spin casting mold.

4,578,231

PROCESS FOR THE PRODUCTION OF POLYOLEFIN FOAMS

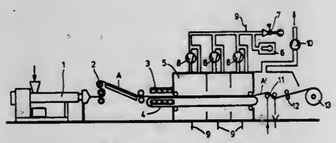
Emanuele Molteni, Inverigo, Italy, assignor to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Fed. Rep. of Germany

Filed Mar. 14, 1984, Ser. No. 589,620

Claims priority, application 03281983, Mar. 28, 1983, 83103046.5

Int. Cl.⁴ B29C *67/22, 47/88;* C08J *3/24*

U.S. Cl. 264—25 **9 Claims**



1. In an improved process for the production of cross-linked polyolefin foams by mixing polyolefins with conventional foaming agents and cross-linking agents known for polyolefin foam production, shaping the mixture into a plate or into a continuous sheet, substantially without cross-linking and foaming, the improvement comprises mixing said mixture with up to 50% by weight of an α,β-unsaturated polyester, with or without heating the plate or sheet by IR radiation, and cross-linking and foaming by dielectric heating at a temperature above the decomposition temperature of the cross-linking and foaming agents.

4,578,232

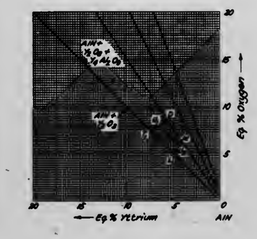
PRESSURELESS SINTERING PROCESS TO PRODUCE HIGH THERMAL CONDUCTIVITY CERAMIC BODY OF ALUMINUM NITRIDE

Irvin C. Huseby, Schenectady, and Carl F. Bobik, Burnt Hills, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 682,468, Dec. 17, 1984, abandoned. This application Apr. 29, 1985, Ser. No. 728,133

Int. Cl.⁴ C04B *35/58;* F27D *7/06*

U.S. Cl. 264—65 **26 Claims**



1. A process for producing a sintered polycrystalline aluminum nitride ceramic body having a composition defined and encompassed by polygon LT1DM but not including lines LM and DM of FIG. 4, a porosity of less than about 10% by volume of said body and a thermal conductivity higher than 1.00 W/cm·K at 25° C. which comprises the steps:

(a) forming a mixture comprised of aluminum nitride powder containing oxygen, yttrium oxide and free carbon, shaping said mixture into a compact, said mixture and said compact having a composition wherein the equivalent % of yttrium and aluminum ranges from points T1 up to point M of FIG. 4, said yttrium ranging from greater than about 4.0 equivalent % to about 7.5 equivalent %, said aluminum ranging from about 92.5 equivalent % to less than about 96 equivalent %, said compact having an equivalent % composition of Y, Al, O and N outside the composition defined and encompassed by polygon LT1DM of FIG. 4,

(b) heating said compact in a nitrogen-containing nonoxidizing atmosphere at a temperature ranging from about 1350° C. to a temperature sufficient to deoxidize the compact but below its pore closing temperature reacting said free carbon with oxygen contained in said aluminum nitride producing a deoxidized compact, said deoxidized compact having a composition wherein the equivalent % of Al, Y, O and N is defined and encompassed by polygon LT1DM but not including lines LM and DM of FIG. 4, said free carbon being in an amount which produces said deoxidized compact, and

(c) sintering said deoxidized compact in a nitrogen-containing nonoxidizing atmosphere at a temperature of at least about 1855° C. producing said polycrystalline body.

4,578,233

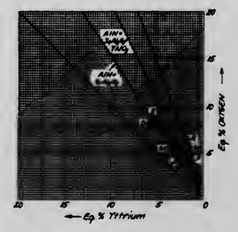
PRESSURELESS SINTERING PROCESS TO PRODUCE HIGH THERMAL CONDUCTIVITY CERAMIC BODY OF ALUMINUM NITRIDE

Irvin C. Huseby, Schenectady, and Carl F. Bobik, Burnt Hills, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 667,516, Nov. 1, 1984, abandoned. This application Apr. 29, 1985, Ser. No. 728,624

Int. Cl.⁴ C04B *35/58;* F27D *7/06*

U.S. Cl. 264—65 **24 Claims**



1. A process for producing a sintered polycrystalline aluminum nitride ceramic body having a composition defined and encompassed by polygon FJDSR but not including line RF of FIG. 4, a porosity of less than about 10% by volume of said body and a thermal conductivity greater than 1.00 W/cm·K at 25° C. which comprises the steps:

(a) forming a mixture comprised of an oxygen-containing aluminum nitride powder, yttrium oxide, and free carbon, shaping said mixture into a compact, said mixture and said compact having a composition wherein the equivalent % of yttrium and aluminum ranges from point D up to point F of FIG. 4, said yttrium in said compact ranging from greater than about 1.6 equivalent % to about 5.5 equivalent %, said aluminum in said compact ranging from about 94.5 equivalent % to less than about 98.4 equivalent said compact having an equivalent % composition of Y, Al, %, O and N outside the composition defined and encompassed by polygon FJDSR of FIG. 4,

(b) heating said compact in a nitrogen-containing nonoxidizing atmosphere at a temperature ranging from about 1350° C. to a temperature sufficient to deoxidize the compact but below its pore closing temperature reacting said free carbon with oxygen contained in said aluminum nitride producing a deoxidized compact, said deoxidized compact having a composition wherein the equivalent % of Al, Y, O and N is defined and encompassed by polygon FJDSR but not including line RF of FIG. 4, said free carbon being in an amount which produces said deoxidized compact, and

(c) sintering said deoxidized compact in a nitrogen-contain-

ing nonoxidizing atmosphere at a temperature of at least about 1840° C. producing said polycrystalline body.

4,578,234

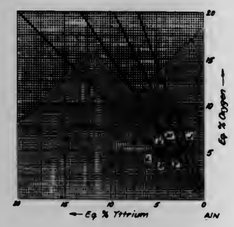
PROCESS OF PRESSURELESS SINTERING TO PRODUCE DENSE HIGH THERMAL CONDUCTIVITY CERAMIC BODY OF DEOXIDIZED ALUMINUM NITRIDE

Irvin C. Huseby, Schenectady, and Carl F. Bobik, Burnt Hills, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 656,636, Oct. 1, 1984, abandoned. This application Apr. 12, 1985, Ser. No. 722,639

Int. Cl.[4] C04B *35/58;* **F27D** *7/06*

U.S. Cl. 264—65 **23 Claims**



1. A process for producing a sintered polycrystalline aluminum nitride ceramic body having a composition defined and encompassed by polygon JKLM but not including line MJ of FIG. 4, a porosity of less than about 10% by volume of said body and a thermal conductivity greater than 1.00 W/cm.K at 25° C. which comprises the steps:

(a) forming a mixture comprised of an oxygen-containing aluminum nitride powder, yttrium oxide, and free carbon, shaping said mixture into a compact, said mixture and said compact having a composition wherein the equivalent % of yttrium and aluminum ranges from point L up to point J of FIG. 4, said yttrium ranging from greater than about 2.5 equivalent % to about 4.9 equivalent %, said aluminum ranging from about 95.1 equivalent % to less than about 97.5 equivalent %, said compact having an equivalent % composition of Y, Al, O and N outside the composition defined and encompassed by polygon JKLM of FIG. 4,

(b) heating said compact in a nitrogen-containing nonoxidizing atmosphere at a temperature ranging from about 1350° C. to a temperature sufficient to deoxidize the compact but below its pore closing temperature thereby reacting said free carbon with oxygen contained in said aluminum nitride producing a deoxidized compact, said deoxidized compact having a composition wherein the equivalent % of Al, Y, O and N is defined and encompassed by polygon JKLM but not including line MJ of FIG. 4, said free carbon being in an amount which produces said deoxidized compact, and

(c) sintering said deoxidized compact in a nitrogen-containing nonoxidizing atmosphere at a temperature of at least about 1860° C. producing said polycrystalline body.

4,578,235

METHOD FOR LINING PIPE

Jon A. Schmidgall, and Hartzell H. Schmidgall, both of Mediapolis, Iowa, assignors to Hawkeye Concrete Products Co., Mediapolis, Iowa

Filed Aug. 1, 1983, Ser. No. 519,350

Int. Cl.[4] B28B *1/08, 21/60, 21/88, 23/12*

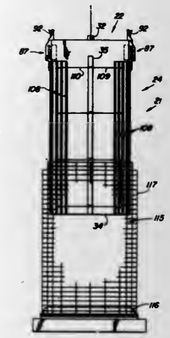
U.S. Cl. 264—71 **3 Claims**

1. A method of providing a liner for concrete pipe, during operation of a pipe-forming machine upon a mold having a core, comprising:

forming the liner around transport means disposed away from the pipe-forming machine;

tightly fitting the liner to the transport means by tightening means while spacing the tightening means away from the transport means;

moving the transport means to the pipe-forming machine and transferring the liner into the mold and over the core;



removing the transport means;

maintaining tension on the tightening means and spacing the tightening means from the mold's core while concrete is poured into the mold; and

relieving tension on the tightening means after the concrete has been poured and before vibrating the concrete has been completed.

4,578,236

TORUS TYPE NUCLEAR FUSION APPARATUS USING DEUTERIUM OR TRITIUM AS FUEL

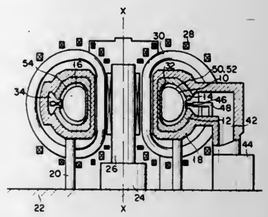
Yoshio Gomei, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed May 11, 1982, Ser. No. 377,015

Claims priority, application Japan, May 21, 1981, 56-75786

Int. Cl.[4] G21B *1/00*

U.S. Cl. 376—136 **1 Claim**



1. A toroidal nuclear fusion apparatus which uses deuterium or tritium as fuel and which generates a toroidally shaped plasma in a space enclosed by a first wall, said apparatus comprising:

(a) a first wall enclosing a toroidally shaped space which is symmetrical about a centrally located principal axis;

(b) means for producing a toroidally shaped plasma from deuterium or tritium in said toroidally shaped space, said toroidally shaped plasma being symmetrical about said principal axis;

(c) a main limiter made of high melting point material and having a large heat capacity, at least substantially the entirety of said main limiter being attached to said first wall on the surface of said first wall adjacent to said centrally located principal axis;

(d) a gas evacuating annular channel provided inside said first wall, said gas evacuating annular channel being symmetrical about said principal axis and being located radially outwardly of said toroidally shaped space with respect to said centrally located principal axis;

(e) an annular slit providing fluid communication between said toroidally shaped space and said gas evacuating annular channel;

(f) an annular sub-limiter which neutralizes helium ions produced during operation of the nuclear fusion apparatus by transforming the helium ions into helium gas, said annular sub-limiter comprising a ring-shaped plate member disposed in said toroidally shaped space in front of said annular slit, the width of said ring-shaped plate exceeding the width of said annular slit and said ring-shaped plate being spaced from said first wall to define a helium ion guiding and flowing path between said annular sub-limiter and said first wall;

(g) a gas evacuating pump;

(h) a conduit defining a flow path between said gas evacuating annular channel and said gas evacuating pump; and

(i) a supporting leg for said annular sublimiter, said supporting leg being mounted on the inside of said conduit, extending through said annular slit, and being attached to the surface of said annular sub-limiter which is radially outward with respect to said centrally located principal axis, said supporting leg having a width which is less than the width of said annular slit, whereby an evacuating path for helium ions is formed between the walls of said annular slit and the adjacent surfaces of said supporting leg, the connecting portion between said supporting leg and said annular sub-limiter being provided with a slope which reflects helium ions which have passed through said helium ion guiding and flowing path between said annular sub-limiter and said first wall outwardly into said gas evacuating annular channel.

4,578,237

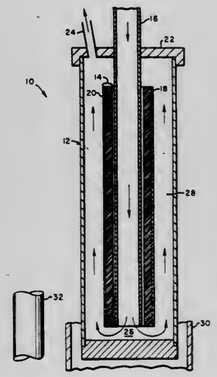
NONDESTRUCTIVE DETERMINATION OF NUCLEAR FUEL BURNUP

Walter J. Mordarski, Wallingford, and Jan Markiewicz, North Haven, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Sep. 9, 1983, Ser. No. 530,458

Int. Cl.[4] G21C *17/00*

U.S. Cl. 376—154 **15 Claims**



11. A method for measuring the burnup of nuclear fuel during refueling of a nuclear reactor, comprising:

removing the fuel from the reactor;

locating the fuel in an area accessible from above;

lowering a measurement capsule into close proximity to the fuel, said capsule including a metal container, a central support member removably supported within the container, a recording member carried by the support member, said recording member including a layer of solid state track recorder material adjacent to the support member and a coating of fissile material on the exterior of the recorder material;

positioning said capsule at a predetermined location for a period of time between approximately one hour and one day;

removing the capsule from the fuel and recording the time interval during which the capsule was positioned in close proximity to the fuel;

removing the support member and recording member from the capsule;

removing the recording member from the support member,

processing the recording member including the steps of removing the fissile coating, etching the solid state track recorder material, and counting the density of the number of tracks per unit area of track recorder material;

relating the neutron flux required to produce the track density counted, to the plutonium content of the fuel, to determine the fuel burnup.

4,578,238

FAST NEUTRON NUCLEAR REACTOR

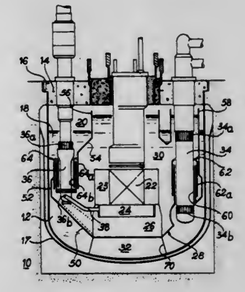
Robert Artaud, Aix-en-Provence; Michel Aubert, Manosque, and Charley Renaux, Jouques, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Feb. 2, 1984, Ser. No. 576,195

Claims priority, application France, Feb. 22, 1983, 83 02859

Int. Cl.[4] G21C *1/02*

U.S. Cl. 376—404 **18 Claims**



1. In a liquid metal-cooled nuclear reactor incorporating a main vessel containing a reactor core resting therein on a supply support member, a slab sealing said main vessel, an inner vessel placed within the main vessel and defining in the latter a hot zone filled with relatively hot liquid metal and a cold zone filled with relatively cold liquid metal, at least one pump for circulating the liquid metal between the cold zone and the hot zone across the core and at least one heat exchanger disposed between the hot zone and the cold zone, said pump and said exchanger being suspended on the slab, wherein the inner vessel comprises an upper and a lower truncated cone-shaped ferrule each having a large base opposedly supported and a small diameter cylindrical ferrule extending the small base of the upper truncated cone-shaped ferrule, the reactor core resting on the small base of the lower truncated cone-shaped ferrule by means of a support structure, the hot zone being formed within the inner vessel, the cold zone being formed between the main vessel and the inner vessel, each

pump sealing traversing the upper truncated cone-shaped ferrule and having sucking orifices opening in the cold zone and discharge orifices communicating with said supply support member through at least one pipe, and each heat exchanger sealingly traversing both the upper and lower truncated cone-shaped ferrules and having inlets opening in the hot zone above the lower truncated cone-shaped ferrule and outlets opening in the cold zone below the lower truncated cone-shaped ferrule.

4,578,239

SPACER FOR FUEL ASSEMBLIES OF WATER-COOLED NUCLEAR REACTORS

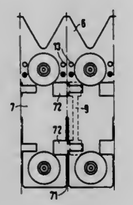
Alexander Steinke, Ebermannstadt, Fed. Rep. of Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Continuation of Ser. No. 190,983, Sep. 26, 1980, abandoned. This application Jun. 25, 1984, Ser. No. 623,631

Claims priority, application Fed. Rep. of Germany, Oct. 11, 1979, 2941320

Int. Cl.⁴ G21C *3/34*

U.S. Cl. 376—441 **5 Claims**



1. In a fuel assembly of a water-cooled nuclear reactor, said fuel assembly having fuel rods and spacer grids along said fuel assembly for centering the fuel rods in said assembly, each of said fuel spacers comprising a grid of first and second sheet metal webs formed of a zirconium alloy and being disposed on edge, rigid bumps formed from at least some of said webs for contacting a fuel rod, said first webs having relatively wide cutouts, relatively narrow lateral slots and enlargements of a portion of said slots coextensive with said cutouts and said slots formed therein, wherein each relatively wide cutout is coextensive with and interconnected to one relatively narrow lateral slot, said cutouts, narrow slots and enlargements being positioned in pairs such that each relatively wide cutout has a second relatively wide cutout directly aligned with it in a direction longitudinal to the axis of said fuel assembly and each relatively narrow slot with its enlargements has a second relatively narrow slot with its enlargements directly aligned with it in a direction longitudinal to the axis of said fuel assembly, and resilient contact elements formed of chrome nickel steel and having a head part, a base part, a resilient band connecting said head and base parts together into one piece and a bent-out point formed on said resilient band for contacting a fuel rod, said head and base parts of said contact elements being insertable respectively into a pair of said cutouts and movable from said pair of cutouts into a locked position in said lateral slots formed in said first webs, said resilient bands of said contact elements being snappable into said enlargements of said pair of slots formed in said webs for locking, and said second webs being free of said cutouts and said slots and being insertable into said first webs having said cutouts and slots for retaining said contact elements in place and forming a complete spacer grid.

4. In a fuel assembly of a water-cooled nuclear reactor, said fuel assembly having fuel rods and spacer grids along said fuel assembly for centering the fuel rods in said assembly, each of said fuel spacers comprising a grid of first and second sheet metal webs formed of a zirconium alloy and being disposed on edge, rigid bumps formed from at least some of said webs for contacting a fuel rod, said first webs having relatively wide cutouts and relatively narrow lateral slots coextensive with said cutouts formed therein, wherein each relatively wide cutout is coextensive with an interconnected to one relatively narrow lateral slot, said cutouts and narrow slots being positioned in pairs such that each relatively wide cutout has a second relatively wide cutout directly aligned with it in a direction longitudinal to the axis of said assembly and each relatively narrow slot has a second relatively narrow slot directly aligned with it in a direction longitudinal to the axis of said assembly, and resilient contact elements formed of chrome nickel steel and having a head part, a base part, a resilient band connecting said head and base parts together into one piece and a bent-out point formed on said resilient band for contacting a fuel rod, said head and base parts of said contact elements being insertable respectively into a pair of said cutouts and movable from said pair of cutouts into a locked position in said lateral slots formed in said first webs, said resilient bands of said contact elements being snappable into said enlargements of said pair of slots formed in said webs for locking, and said second webs being free of said cutouts and said slots and being insertable into said first webs having said cutouts and said slots said first webs and said second webs each having means allowing insertion of said second webs into said first webs, said cutouts and said slots being so positioned in said first webs that said second webs will trap said contact elements in said slots of said first webs when said second webs are inserted into said first webs to form a complete spacer grid.

4,578,240

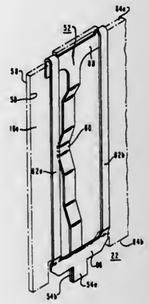
NUCLEAR REACTOR FUEL ASSEMBLY SPACER GRID

Dennis J. Cadwell, Plum Boro, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 3, 1983, Ser. No. 454,927

Int. Cl.⁴ G21C *3/34*

U.S. Cl. 376—441 **6 Claims**



1. A grid for the spacing of fuel rods and control rod guide thimbles in a nuclear reactor fuel assembly, comprising:

(a) a plurality of interleaved grid straps arranged in an egg crate configuration defining standard cells therein for the separate enclosure of each of said fuel rods and defining thimble cells therein for the separate enclosure of each of said control rod guide thimbles; and

(b) a first spring clip having an elongated band with two ends, coextensive first and second segments, and a middle equidistant from said two ends dividing said band into said first and second segments, with said band bent at said middle and disposed to widthwise encircle a first grid strap having two lengthwise edges, with said middle proximate one of said two lengthwise edges, and with said two ends attached together and disposed proximate the other of said two lengthwise edges;

(i) said first segment extending between said middle and one of said two ends and disposed generally within a first said thimble cell having a first said control rod guide thimble, with a first longitudinal axis and an outside diameter, contacting said first grid strap generally along a contact line, said first segment having two generally flat portions disposed proximate said first grid strap, spaced apart on either side of said control rod guide thimble and said contact line, and disposed generally parallel to and having a length at least equal to said contact line;

(ii) said second segment extending between said middle and the other of said two ends and disposed generally within a first said standard cell having a first said fuel rod with a second longitudinal axis, said second segment having a spring portion disposed generally parallel to said second longitudinal axis and projecting generally perpendicularly away from said first grid strap toward said second longitudinal axis with said spring portion compressibly contacting said first fuel rod;

(iii) said second segment also having a second joining member coextensively connecting said two flat portions of said first segment proximate said one of said two lengthwise edges with said spring portion of said second segment; and

(iv) said first segment also having a first joining member which coextensively joins with said two flat portions of said first segment proximate said other of said two lengthwise edges and which extends to said one of said two ends, wherein said first joining member is axially disposed along said first longitudinal axis generally beyond said other of said two lengthwise edges and transversely disposed from said first longitudinal axis at a distance greater than that of said outside diameter of said first control rod guide thimble.

4,578,241

EARTHQUAKE-PROOF FUEL ASSEMBLY

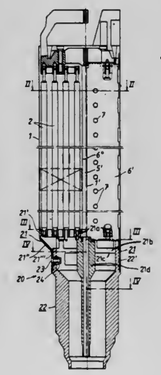
Bo Borrman; Erik Hellman; Nils Lundin, and Bengt Ode, all of Västerås, Sweden, assignors to AB ASEA-ATOM, Sweden

Continuation of Ser. No. 362,411, Mar. 26, 1982, abandoned. This application Aug. 15, 1984, Ser. No. 641,073

Claims priority, application Sweden, May 15, 1981, 8103956

Int. Cl.⁴ G21C *3/32*

U.S. Cl. 376—446 **2 Claims**



1. A fuel assembly for a boiling water reactor, comprising:

an inlet sleeve (**22**) of stainless steel;

an elongated zirconium alloy shroud (**1,21**) having a vertical center line (**1'**) and a rectangular cross-section along most of its length;

bottom grid means (**21*a***) supported by said inlet sleeve;

a plurality of fuel rods (**2**) supported by said bottom grid means;

an elongated internal, cruciform stiffening device for said shroud; said shroud enclosing said fuel rods, said bottom grid means and said stiffening device; said stiffening device extending along the entire length of said fuel rods, the vertical center line (**4'**) of said stiffening device lying in the vicinity of said vertical center line of the shroud, said stiffening device having four wings (**4**) positioned in a vertical plane and arranged at an angular distance of about 90 degrees, each of said wings being mechanically connected to a corresponding wall of the shroud (**1, 21**);

said shroud having an upper, relatively thin-walled zirconium alloy fuel channel portion (**1**) entirely located above the lowest point of said bottom grid means, as well as a lower, relatively thick-walled zirconium alloy transition sleeve portion (**21**), which surrounds and extends below said bottom grid means, said transition sleeve portion being welded directly to said fuel channel portion and having an average thickness constituting at least 130% of the average thickness of said fuel channel portion, said transition sleeve portion enclosing an upper portion of said inlet sleeve (**22**) and being secured to said inlet sleeve by means of a plurality of mechanical fasteners (**23**) inserted horizontally through the wall of said transition sleeve portion into the wall of said inlet sleeve; and each of said wings extending vertically along the whole length of said fuel channel portion (**1**).

4,578,242

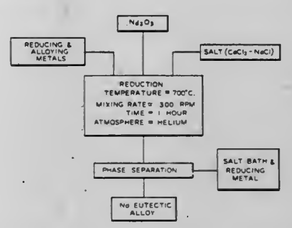
METALLOTHERMIC REDUCTION OF RARE EARTH OXIDES

Ram A. Sharma, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jul. 3, 1984, Ser. No. 627,737

Int. Cl.⁴ C22B *59/00*; C22C *1/00*

U.S. Cl. 420—590 **21 Claims**



1. A non-electrolytic method of reducing rare earth oxide to rare earth metal comprising forming a molten salt bath comprised of calcium chloride; adding a volume of rare earth oxide less than the volume of the molten salt to said bath; adding an amount of sodium to said bath sufficient to form a stoichiometric excess of calcium metal based on the amount of rare earth oxide therein by the reaction

$$CaCl_2 + 2\ Na \rightarrow Ca + 2\ NaCl$$

and maintaining said bath in a molten state and agitating it such that the calcium metal reduces the rare earth oxide to rare earth metal.

4,578,243

INHIBITING CORROSION WITH QUATERNARY AMMONIUM DERIVATIVES OF 1,4-THIAZINE SULFONIC ACIDS

Patrick M. Quinlan, Webster Groves, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

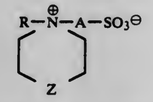
Division of Ser. No. 226,300, Jan. 19, 1981. This application May 28, 1985, Ser. No. 737,959

Int. Cl.⁴ C23F *11/00, 11/04*

U.S. Cl. 422—7 **2 Claims**

1. A process of treating a metallic surface in contact with a

corrosive environment comprising adding to said environment a corrosion inhibiting amount of a composition having the formula



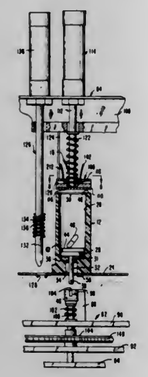
when R is selected from the group consisting of alkyl, cycloalkyl, aralkyl and hydroxyalkyl, A is alkylene, Z is S, SO or SO_2.

4,578,244

SAMPLING APPARATUS FOR OBTAINING A PLURALITY OF FLUID SAMPLES

Robert J. Cosgrove, Jr., Wanaque, N.J., and Victor F. Smolen, West Palm Beach, Fla., assignors to Pharmacontrol Corp., Englewood Cliffs, N.J.

Filed Apr. 23, 1982, Ser. No. 371,248
Int. Cl.⁴ G01N *35/02*
U.S. Cl. 422—65 **25 Claims**



1. Sampling apparatus for obtaining a plurality of fluid samples, comprising:

a plurality of sampling containers each having a chamber therein for receipt of a fluid, each of said sampling containers including openings for communication with fluid conducting means, each of said openings extending in a first direction;

drive means for simultaneously moving said plurality of sampling containers to a sampling station;

first fluid conducting means for each of said sampling containers for conducting a fluid into each of said sampling containers when said sampling containers are positioned at said sampling station;

second fluid conducting means for each of said sampling containers for withdrawing a fluid sample from each of said sampling containers when said sampling containers are positioned at said sampling station; and

coupling means located at said sampling station for coupling said first and second fluid conducting means with said chambers of each of said sampling containers when said sampling containers are positioned at said sampling station, said coupling means including sealing means for individually sealing said chamber of each of said sampling containers when said first and second fluid conducting means are coupled to said sampling containers, said coupling means comprising moving means for moving said first and second fluid conducting means into fluid communication with said openings in said sampling containers, said moving means comprising means for moving said first and second fluid conducting means in said first direction and for applying a force along said first direction with respect to each of said sampling containers to clamp each of said sampling containers and its associated first and second fluid conducting means together to seal said openings.

4,578,245

MULTILAYER ANALYTICAL ELEMENT

Fuminori Arai, Asaka; Yoshio Inagaki, Minami-ashigara, and Masao Kitajima, Asaka, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 20, 1983, Ser. No. 534,085
Claims priority, application Japan, Sep. 22, 1982, 57-165233
Int. Cl.⁴ G01N *21/78, 31/22*; C12Q *1/00*
U.S. Cl. 422—56 **7 Claims**

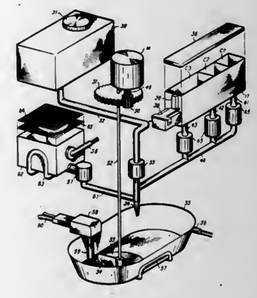
1. In a multilayer analytical element having a water-impermeable, light-transmissive support, a reagent layer containing a color forming reagent composition for detection of hydrogen peroxide including at least a combination of a chromogen and a coupler, and peroxidase, which produces a detectable change in the presence of peroxidase and hydrogen peroxide, and a porous spreading layer, which are superposed in this order, the improvement which comprises said chromogen being a 1,2,3,-tri-substituted compound of 4-amino-3-pyrazolin-5-one having a solubility in water at 25° C. lower than that of 4-amino-2,3-dimethyl-1-phenyl-3-pyrazolin-5-one.

4,578,246

APPARATUS FOR MAKING SOAP

Lonnie H. Pope, 3915 Post Oak Tritt, Marietta, Ga. 30062

Filed Mar. 19, 1984, Ser. No. 591,212
Int. Cl.⁴ B01J *4/02*; B01F *7/20, 15/02*
U.S. Cl. 422—111 **11 Claims**



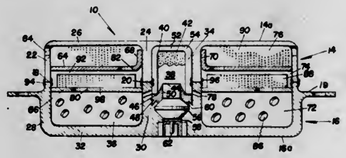
1. Household sized soap making apparatus for making small quantities of liquid soap from household cooking greases and the like comprising a housing comprising a mixing vessel, a grease receptacle for receiving and storing household waste grease, an alkali container for storing a liquid alkali, diluent supply means, conduit means extending from each of said grease receptacle, alkali container and diluent supply means to said mixing vessel for delivering grease, alkali and diluent to said mixing vessel, valve means operatively connected to said conduit means for controlling the delivery of grease, alkali and diluent to said mixing vessel, mixing means including a mixing blade positioned in said mixing vessel and an electric motor in driving relationship with said mixing blade for mixing the grease, alkali and diluent in said mixing vessel, means for sensing motor current drawn by said electric motor, and means for controlling said valve means to control the delivery of diluent in response to changes in levels of motor current sensed by said current sensing means so that when the viscosity of the soap being formed in the mixing vessel increases the motor current also increases and the control means actuates the valve means to deliver diluent to the mixing vessel.

4,578,247

MINIMUM BULK, LIGHT WEIGHT WELDED ALUMINUM INFLATOR

Christopher W. Bolieau, Brigham City, Utah, assignor to Morton Thiokol, Inc., Chicago, Ill.

Filed Oct. 29, 1984, Ser. No. 665,856
Int. Cl.⁴ B01J *7/00*; F42B *3/04*
U.S. Cl. 422—165 **7 Claims**



1. A light weight housing construction of minimum bulk for gas generators using solid fuel for the generation of gas to inflate vehicle passive restraint inflatable crash protection bags comprising,

first, second, third and fourth structural components,

said first structural component forming a first generally cylindrical subassembly and including first and second concentric cylinders, each of which has an end, that extend from a first common substantially flat wall means integral therewith to form structural walls of the generator and at least one of which has exit holes for the passage of gas,

said second structural component forming a second generally cylindrical subassembly and including third and fourth concentric cylinders, each of which has an end, that extend from a second common substantially flat wall means integral therewith to form structural walls of the generator, and at least one of which has exit holes for the passages of gas,

the ends of said first and third and said second and fourth concentric cylinders providing mating surfaces to form therebetween, in cooperation with said first and second common wall means, inner and outer concentric chambers,

said third and fourth structural components being annular and substantially flat in form and positioned in said outer concentric chamber to form therein three separate annular chambers that are concentric with all of said concentric cylinders with a first annular chamber located adjacent said second common wall means, a third annular chamber located adjacent said first common wall means and a second annular chamber located between said first and third annular chambers, with said first and second annular chambers extending between said third and fourth concentric cylinders and said third annular chamber extending between said first and second concentric cylinders, said third and fourth structural components having exit holes for the passages of gas from one to another of said first, second and third annular chambers,

said first annular chamber containing a solid gas generant composition for the generation of gas and said second and third annular chambers each containing an individually associated cooling and filtering means, and

means to join said first and second structural components together at the mating surfaces of said first and third and said second and fourth concentric cylinders,

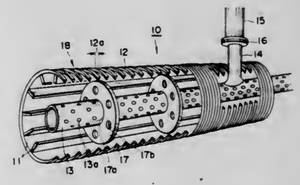
wherein said first and second subassemblies are structured so that for a given height and diameter of said first and second subassemblies there is provided in said first annular chamber a volume that extends out to the full inner diameter thereof, thus providing maximum volume for the containment therein of said solid gas generant composition and thereby enabling a reduction in the bulk and the weight of the gas generator housing construction for a given material from which the housing construction is fabricated.

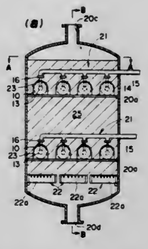
4,578,248

DISTRIBUTOR/COLLECTOR ASSEMBLY

Tadayoshi Nagaoka, Mihara, Japan, assignor to Nagaoka Kanaami Kabushiki Kaisha, Japan

Filed Nov. 3, 1982, Ser. No. 438,933
Claims priority, application Japan, Nov. 6, 1981, 56-117901
Int. Cl.⁴ B01J *8/04*; B05B *1/14*
U.S. Cl. 422—310 **8 Claims**





1. A fluid distributor/collector assembly comprising:

a screen cylinder composed of a plurality of elongated support rods arranged cylindrically spaced apart with a suitable distance between adjacent rods and a wire screen member wound helically on said cylindrically arranged support rods;

at least one tube disposed within said screen cylinder and formed with a multiplicity of apertures for distributing or collecting fluid which flows through said wire screen member of said screen cylinder;

a plurality of support discs, each having an outer periphery, provided within said screen cylinder said support discs being positioned spaced apart along the axis of said screen cylinder in such a manner that said support rods of said screen cylinder are supported on the outer periphery of said support discs, each of said support discs having at least one tube opening in which said at least one tube is positioned thereby supporting said at least one tube within said screen cylinder in such a manner that a space is defined between said tube and said wire screen member of said screen cylinder;

each adjacent pair of support discs setting-off therebetween a portion of said at least one tube and defining space sections within said space between said at least one tube and said screen cylinder;

all of said tube portions having flow apertures therein;

flow communication means in each of said support discs for permitting fluid to flow between adjacent space sections; and pipe means connected to said at least one tube for supplying fluid to be distributed to said at least one tube or for removing fluid that has collected within said at least one tube.

4,578,249

PROCESS FOR RECOVERY OF URANIUM FROM WET PROCESS H_3PO_4

Viswanathan Srinivasan, and Matthew H. Hulbert, both of Terre Haute, Ind., assignors to International Minerals & Chemical Corp., Terre Haute, Ind.

Filed Sep. 2, 1983, Ser. No. 529,175
Int. Cl.[4] C01G *43/00*; C25B *1/00*
U.S. Cl. 423—10 **7 Claims**

1. A process for stripping hexavalent uranium from an organic solution containing it by contacting it with a stripping agent which is provided by phosphoric acid containing sufficient ferrous ion to reduce the uranium to the tetravalent state whereupon it passes into the stripping agent, subsequently oxidizing the tetravalent uranium again to the hexavalent state, extracting it with an organic solution, and recovering the uranium therefrom, comprising the step of passing the stripping agent containing ferric ions through the cathode chamber of an electrolytic cell having a cathode chamber and an anode chamber separated by a permeable membrane wherein the cathode is provided by a porous flow-through carbon electrode of high surface area that substantially excludes significant hydrogen production while applying a current density of 5–30 A/dm^2 to the cathode at a working potential between approximately 0 mV and −1400 mV versus a saturated calomel electrode thereby reducing ferric ion to ferrous state in the cathode chamber.

7. A process for stripping hexavalent uranium from an organic solution containing it by contacting it with a stripping agent which is provided by phosphoric acid containing sufficient ferrous ion to reduce the uranium to the tetravalent state whereupon it passes into the stripping agent, subsequently oxidizing the tetravalent uranium again to the hexavalent state, extracting it with an organic solution, and recovering the uranium therefrom, comprising the step of passing the stripping agent containing ferric ions through the cathode chamber of an electrolytic cell having a cathode chamber and an anode chamber separated by a permeable membrane wherein the cathode is provided by a roughened graphite carbon electrode of high surface area that substantially excludes significant hydrogen production while applying a current density of 5–30 A/dm^2 to the cathode at a working potential between approximately 0 mV and −1400 mV versus a saturated calomel electrode thereby reducing ferric ion to the ferrous state in the cathode chamber.

4,578,250

METHOD FOR THE RECOVERY OF PALLADIUM

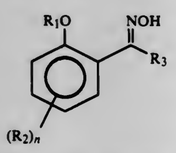
Jeffrey H. Dimmit, Williamsville; Michael Van Der Puy, and David S. Soriano, both of Cheektowaga, all of N.Y., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Jul. 2, 1984, Ser. No. 626,956
Int. Cl.[4] C01G *55/00*
U.S. Cl. 423—22 **27 Claims**

1. A process for the separation and purification of palladium which is present in a platinum group metal-containing aqueous solution, said process comprising the steps of:

(a) adjusting the pH of the solution to 5 or less;

(b) contacting said acidic solution with one or more oxime compounds of the formula:



or a composition comprised of one or more of said compounds dissolved in an organic solvent, wherein:

n is an integer of from 1 to 4;

R_1 is alkyl, cycloalkyl, or aralkyl; and

R_2 is nitro, halogen, hydrogen or substituted or unsubstituted alkyl, alkoxy, aryloxy, cycloalkyl, aryl, aralkyl or alkaryl wherein permissible substituents are those which are inert to the process conditions; and

R_3 is alkyl, aryl, alkaryl, cycloalkyl, or aralkyl either unsubstituted or substituted with one or more of the above referenced permissible substituents; and

(c) removing from contact with said aqueous acidic solution the organic phase containing all or a part of the palladium originally present in said solution and said oxime compound; and

(d) extracting said palladium from the organic solvent with an aqueous ammonia solution.

4,578,251

REMOVAL OF CHROMIUM FROM COBALT

Joseph E. Ritsko, and Howard L. Acla, both of Towanda, Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Apr. 1, 1985, Ser. No. 718,244
Int. Cl.[4] C01G *37/02, 51/00*
U.S. Cl. 423—55 **5 Claims**

1. A process for removing chromium from cobalt, said process comprising:

(a) contacting a chromium containing acidic cobalt chloride solution with an oxidizing agent to oxidize the cobalt contained therein;

(b) adjusting the pH of the resulting solution containing the oxidized cobalt and other metallic elements to a pH of from about 3.2 to about 5.5 with a base to form a first solid containing essentially all of the chromium as chromium hydroxide and a portion of the cobalt and a first liquor containing the balance of the cobalt;

(c) separating said first solid from said first liquor;

(d) heating said first solid at a sufficient temperature to remove essentially all of the water and form a second solid;

(e) contacting said second solid with sufficient water and ammonium hydroxide to form a slurry which is at a pH of greater than about 3.8, said slurry consisting essentially of a second liquor which contains essentially all of the cobalt which was present in said second solid and a third solid which contains essentially all of the chromium which was initially present in said acidic cobalt chloride solution; and

(f) separating said third solid from said third liquor.

4,578,252

METHOD FOR PREPARING ULTRA-PURE ZIRCONIUM AND HAFNIUM TETRAFLUORIDES

Ricardo C. Pastor, Manhattan Beach, and Morton Robinson, Agoura, both of Calif., assignors to Hughes Aircraft Company, El Segundo, Calif.

Filed May 14, 1985, Ser. No. 734,008
Int. Cl.[4] C01G *25/04, 27/04*
U.S. Cl. 423—76 **17 Claims**

1. In a method for separating iron impurities from an impure metal halide in which the impure metal halide is heated to a temperature sufficient to form a metal halide vapor, said vapor being separated from said impure metal halide and condensed to form purified metal halide having a reduced iron content, wherein the improvement comprises:

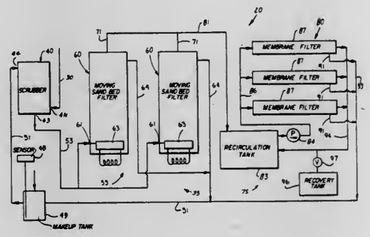
utilizing electromotive series displacement by contacting a melt containig the impure metal halide with a pure metal, said electromotive series displacement causing the plating out of 3d metal impurities.

4,578,253

METHODS OF AND APPARATUS FOR RECOVERING A CONSTITUENT OF A PROCESS EFFLUENT

Roger F. Gill, Dunwoody, and Pundi L. Narasimham, Norcross, both of Ga., assignors to AT&T Technologies, Inc., Berkeley Heights, N.J.

Filed Jan. 31, 1984, Ser. No. 575,600
Int. Cl.[4] C03B *37/075*
U.S. Cl. 423—87 **19 Claims**



1. A method of recovering a constituent of a process effluent such that the concentration of the constituent is at least a predetermined value, said method including the steps of:

contacting the process effluent with a liquid medium to provide a recirculating mixture which includes the liquid medium and particulates with at least the particulates including the constituent to be recovered;

flowing the mixture into a first filter to provide a filtrate and a residue;

flowing the residue from the first filter into a second filter to provide a filtrate and a residue which is recirculated through the second filter;

contacting subsequent process effluent with the filtrates; and

withdrawing a portion of the residue from the second filter when the concentration of the constituent is at least the predetermined value.

12. An apparatus for recovering a material from a process effluent such that a constituent of the material has at least a predetermined concentration, said apparatus comprising:

treating means for contacting the effluent with a liquid medium to provide a recirculating mixture which includes the liquid medium and particulates with at least the particulates including the constituent to be recovered;

first filter means connected to said treating means for removing from the mixture particulates above a first size to provide a filtrate which is substantially free of particulates larger than the first size and a residue;

second filter means connected to said first filter means for removing from the residue from said first filter means particulates above a second size that is smaller than the first size to provide a filtrate which is free of particulates larger than the second size and a residue which is recirculated through said second filter means;

means for directing the filtrates from said first and second filter means to said treating means to contact process effluent which is flowed into said treating means; and

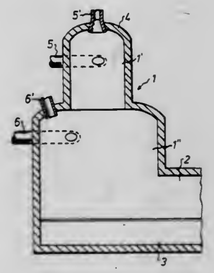
means rendered effective when the concentration of the constituent to be recovered is at a predetermined level for withdrawing a portion of the residue from said second filter means.

4,578,254

PROCESS FOR THE REFINING OF SULFIDIC CONCENTRATES WHICH CONTAIN ARSENIC, ANTIMONY AND BISMUTH

Rolf Malmström, Helsinki, Finland, assignor to RM Metal Consulting Ky, Helsinki, Finland

Filed Oct. 26, 1984, Ser. No. 665,380
Claims priority, application Finland, Oct. 27, 1983, 833940
Int. Cl.[4] C01B *27/00, 29/00*
U.S. Cl. 423—88 **6 Claims**



1. A process for the refining of sulfidic concentrates which contain at least one element selected from the group consisting of arsenic, antimony and bismuth, wherein a suspension of a sulfidic concentrate and at least one gas selected from the group consisting of oxygen and oxygen-enriched air is introduced into the upper part of a reaction zone, in the lower part of which the direction of the gases is deflected sidewards in order to cause molten and solid particles traveling along with the gases to impinge against the surface of the melt below the reaction zone, comprising introducing, in order to form a molten or semi-solid phase, the concentrate, the gas into the reaction zone in such proportions that in the upper part of the reaction zone there is produced an atmosphere containing sulfur and sulfur dioxide and having a temperature above 1200° C. and a maximum oxygen pressure of 10^{-6} atm in order to volatilize arsenic, antimony or bismuth, and that during the same stage at least one gas selected from the group consisting of oxygen and oxygen-enriched air is fed into the lower part of the reaction zone in order to oxidize the concentrate to the desired metal concentration.

4,578,255

PURIFICATION OF BAYER PROCESS LIQUORS

William J. Roe, Aurora, Ill., and John T. Malito, Baton Rouge, La., assignors to Kaiser Aluminum Chemical Corporation, Oakland, Calif. and Nalco Chemical Company, Oak Brook, Ill.

Filed Dec. 27, 1984, Ser. No. 686,803
Int. Cl.[4] C01F *7/02, 7/06*
U.S. Cl. 423—130 **19 Claims**

1. A process of removing humate-type organic impurities from Bayer process liquors and slurries containing dispersed solids therein, said solids generated either by the Bayer process or added thereto, which comprises introducing into the liquor a water-soluble, vinylic cationic polymetric quaternary ammonium salt in an amount sufficient to form at least a partial coating on the dispersed solids, maintaining the coated solids in contact with the liquor for a time sufficient to remove at least a portion of the humate present in the liquor through adhesion of the humate to the coating, removing the coated solids having the adhered humate thereon from the liquor and recovering a liquor having a significantly reduced humate content.

4,578,256

PROCESS FOR REMOVAL OF POISONOUS GASES

Hiroshi Nishino, Suita, and Toshio Aibe, Kashima, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Sep. 21, 1984, Ser. No. 653,093
Claims priority, application Japan, Sep. 27, 1983, 58-179870
Int. Cl.⁴ B01D *53/02*
U.S. Cl. 423—210 **6 Claims**

1. A process of removing one or more hydrides selected from the group consisting of hydrides of As, B, P, Sb and Se from a gas containing oxygen and one or more of said hydrides, which comprises contacting said gas with an adsorbent comprising activated carbon having (1) iodine and/or one or more iodine compounds and/or (2) one or more members selected from the group consisting of sulfates and nitrates of NH_4, Ag, Al, Ti, V, Cr, Mn, Fe, Co, Ni, Cu, Zn, Cd, Pb and Sn supported thereon.

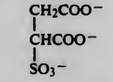
4,578,257

PROCESS FOR REMOVING SULFUR DIOXIDE FROM OFF-GAS

Yoshihiko Kudo, and Eiji Yoshida, both of Fukushima, Japan, assignors to Kureha Chemical Industry Co., Ltd, Japan

Continuation-in-part of Ser. No. 612,612, May 21, 1984, abandoned. This application Apr. 8, 1985, Ser. No. 720,811
Claims priority, application Japan, Dec. 13, 1983, 58-234841
Int. Cl.⁴ C01B *17/00*
U.S. Cl. 423—243 **3 Claims**

1. In the off-gas desulfurization process which comprises contacting a sulfur dioxide-containing off-gas with an absorbing solution containing at least a sulfosuccinate formed between a tribasic acid anion represented by the formula



and a cation selected from Na^+, Mg^{++} and NH_4^+, a sulfate selected from sodium sulfate, magnesium sulfate and ammonium sulfate, and crystalline gypsum to absorb the sulfur dioxide for removal therefrom, and oxidizing the resulting absorbed solution with an oxygen-containing gas, while neutralizing the absorbed solution with limestone in order to fix the sulfur dioxide in the form of gypsum for separation, the improvement comprising adding maleic anhydride and limestone to the absorbed solution in which sulfur dioxide is absorbed during the residence time of the absorbed solution, and oxiding the resulting absorbed solution with an oxygen-containing gas to reproduce an absorbing solution therefrom.

4,578,258

PROCESS FOR THE PREPARATION OF CRYSTALLINE SHEET-TYPE ALKALI METAL SILICATES

Hans-Peter Rieck, Hofheim am Taunus, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 2, 1985, Ser. No. 688,184
Claims priority, application Fed. Rep. of Germany, Jan. 4, 1984, 3400132
Int. Cl.⁴ C01B *33/20*
U.S. Cl. 423—325 **8 Claims**

1. A process for the preparation of a crystalline sheet-type alkali metal silicate in an aqueous medium, wherein an acidic compound is added to an amorphous alkali metal silicate, or an alkali metal silicate dissolved in water, having a molar ratio M_2O/SiO_2, where M represents an alkali metal, of 0.24 to 2.0, in an amount such that a molar ratio M_2O (unneutralized)-$/SiO_2$ of 0.05 to 0.239 is obtained, and the reaction mixture is kept at a reaction temperature of 70° to 250° C. until the sheet-type alkali metal silicate has crystallized out.

4,578,259

PROCESS FOR PREPARING A CRYSTALLINE ALUMINOSILICATE

Nobuyuki Morimoto; Kozo Takatsu, both of Sodegaura, and Michio Sugimoto, Ichihara, all of Japan, assignors to Research Association for Petroleum Alternatives Development, Tokyo, Japan

Filed Feb. 22, 1984, Ser. No. 582,529
Claims priority, application Japan, Mar. 7, 1983, 58-35926; Oct. 14, 1983, 58-190977
Int. Cl.⁴ C01B *33/28*
U.S. Cl. 423—329 **1 Claim**

1. A process for preparing a crystalline aluminosilicate which has a composition represented by the general formula after being calcined in air at 500° C. as follows:

$$pM_{2/n}O.Al_2O_3.qSiO_2$$

wherein M represents at least one element selected from hydrogen, alkali metals, and alkaline earth metals, n represents the valence of M, and p and q each represent a molar ratio and are chosen within the ranges of $0.5 \leqq p \leqq 3.0$ and $5 \leqq q \leqq 500$, and has the X-ray diffraction patern set forth in Table 2 which comprises reacting an aqueous mixture containing (a) a silica source, (b) an alumina source, (c) an alkali metal and/or alkaline earth metal source, (d) at least one pyridine compound selected from the group consisting of pyridine, pyridinium chloride, methylpyridine, dimethylpyridine, ethylpyridine, trimethylpyridine and ethylmethylpyridine, and (e) at least one compound selected from the group consisting of methanol, ethanol, propanol, n-butanol, isopropanol, ethylene glycol, propylene glycol, dimethyl ether, diethyl ether, isopropylamine, morpholine, ethylenediamine, propylenediamine, phenylenediamine, monoethanolamine, monopropanolamine and diethanolamine, in the following ratios:

silica (SiO_2)/alumina (Al_2O_3) $\geqq 5$
pyridine compound/silica = 0.01 to 100
component (e)/silica = 0.01 to 100
hydroxyl ion/silica = 0.001 to 0.5 (excluding hydroxyl ions resulting from organic bases)
water/silica = 5 to 1,000
alkali metal and/or alkaline earth metal/silica = 0.01 to 3

at a temperature ranging between 100° and 300° C. till the crystalline aluminosilicate is formed.

4,578,260

METHOD FOR PURIFYING DIAMOND

Yutaka Kuroyama, Chita, and Masatada Araki, Handa, both of Japan, assignors to Nippon Oil and Fats Company Limited, Japan

Filed Apr. 24, 1985, Ser. No. 726,886
Claims priority, application Japan, May 11, 1984, 59-94197
Int. Cl.⁴ C01B *31/06*
U.S. Cl. 423—446 **1 Claim**

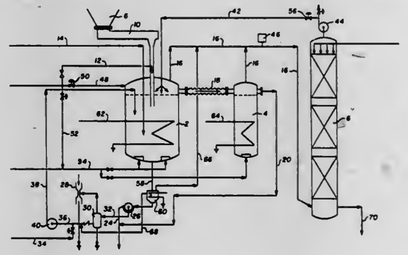
1. A method for purifying diamond, comprising heating a powdery mixture of diamond and graphite together with ammonium nitrate and at least one metal oxide selected from the group consisting of lead monoxide, trilead tetroxide, magnesium oxide and zinc oxide, to oxidize the graphite powder, and removing the oxidized graphite.

4,578,261

METHOD TO REDUCE THE POTENTIAL SALT CAKE CONTENT OF CHLORINE DIOXIDE GENERATOR SPENT ACIDS

Derek G. Lobley, Surrey, Canada, assignor to Multifibre Process Limited, British Columbia, Canada

Continuation-in-part of Ser. No. 510,459, Jul. 1, 1983, Pat. No. 4,486,399. This application Nov. 28, 1984, Ser. No. 675,627
The portion of the term of this patent subsequent to Dec. 4, 2001, has been disclaimed.
Int. Cl.⁴ C01B *11/06*
U.S. Cl. 423—478 **3 Claims**



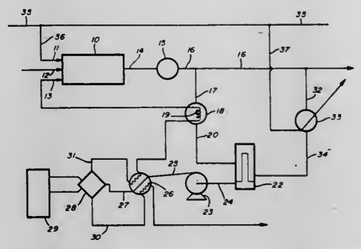
1. In a method of generating chlorine dioxide that comprises forming chloric acid by the action of sulphuric acid on a chlorate in a generator in the liquid phase and reducing the chloric acid to produce chlorine dioxide the improvement that comprises adding dilution water to dry chlorate prior to feeding the chlorate to the generator so that the chlorate is fed as a slurry.

4,578,262

LIQUID SULPHUR DIOXIDE MANUFACTURE

Gordon M. Cameron, North York, Canada, assignor to C-I-L Inc., North York, Canada

Filed Apr. 9, 1984, Ser. No. 598,004
Claims priority, application Canada, Apr. 29, 1983, 427116
Int. Cl.⁴ C01B *17/98, 17/74, 17/54*
U.S. Cl. 423—522 **1 Claim**



1. In an existing sulphuric acid facility in which sulfur and dry air are fed to a sulphur dioxide generating furnace and generated sulphur dioxide-containing gas is fed to a waste heat boiler prior to a converter for the production of sulfur trioxide, an improved process permitting the coproduction of liquid sulphur dioxide, the improvement comprising

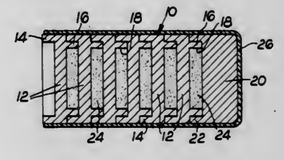
(a) feeding a recylcled depleted sulphur dioxide-gas stream to said sulphur dioxide generating furnace;
(b) taking off a minor portion of said generated sulphur dioxide-containing gas and subjecting said portion to liquefaction means at a temperature in the range −20° C. to −50° C. and at atmospheric pressure, to produce liquid sulphur dioxide and a depleted sulphur dioxide-gas stream;
(c) isolating said liquid sulphur dioxide;
(d) recycling said depleted sulphur dioxide-gas stream to said furnace, wherein said depleted sulphur dioxide-gas stream defines the stream of step (a);
(e) feeding a first dry air stream to said furnace to provide sufficent oxygen for combustion of said sulphur to sulphur dioxide; and
(f) feeding a second dry air stream, which directly bypasses the furnace and boiler, to said converter to provide sufficient oxygen for proper conversion of the remaining portion of said sulphur dioxide-containing gas to sulphur trioxide in said converter.

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PHARMACEUTICAL PELLET

Derek J. Whitehead, Poynton, England, assignor to Castex Products Limited, Macclesfield, England

Filed Oct. 16, 1984, Ser. No. 661,417
Claims priority, application United Kingdom, Oct. 28, 1983, 8328916
Int. Cl.⁴ A61J *3/00;* **A61K** *9/22*
U.S. Cl. 424—15 **14 Claims**



1. A pharmaceutical pellet of the kind intended to be administered to a ruminant to reside in its rumeno-reticular sac and release predetermined quantities of biologically-active substance over an extended period of time characterised in that it comprises an assembly consisting of a plurality of plates, of a magnesium alloy, axially spaced to define cavities therebetween, a biologically-active substance in each said cavity, and a retaining water-impermeable sleeve or sheath protecting the assembly from attack by rumen juices except at one axial end or both axial ends thereof.

4,578,264

RETARD FORM OF PHARMACEUTICALS WITH INSOLUBLE POROUS DIFFUSION COATINGS

Herbert Stricker, Ingelheim; Bernhard Freund, Gau-Algesheim; Heribert Harwalik; Karl L. Rominger, both of Ingelheim; Siegfried Darda; Volkmar Hüselbarth, both of Ingelheim; Dietrich Arndts; Wolf D. Bechtel, both of Appenheim; Gerhard Bozler, Biberach; Rolf Brickl, Biberach, and Peter Gruber, Biberach, all of Fed. Rep. of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

Division of Ser. No. 409,131, Aug. 18, 1982, Pat. No.
Claims priority, application Fed. Rep. of Germany, Jul. 15, 1978, 2831164; Aug. 19, 1978, 2836355; Aug. 19, 1978, 2836356; Aug. 19, 1978, 2836357; Aug. 19, 1978, 2836358; Aug. 19, 1978, 2836387; Aug. 19, 1978, 2836388; Aug. 19, 1978, 2836419; Aug. 19, 1978, 2836477; Feb. 19, 1979, 2905602
Int. Cl.⁴ A61K *9/48, 9/52*
U.S. Cl. 424—37 **13 Claims**

1. A pharmaceutical dosage unit composition consisting essentially of a gelatin capsule containing (1) a disintegrating core comprising clonidine, said disintegrating core having a readily water-soluble coating, and (2) a plurality of non-disintegrating cores comprising clonidine, said non-disintegrating cores having a coating consisting of from 20 to 90 percent by

weight of a water-insoluble film former and from 10 to 80 percent by weight of a water-soluble polymer, the diameter of each of the disintegrating and non-disintegrating cores being at least about 5 mm.

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DI-ENZYMATIC DENTIFRICE

Michael A. Pellico, and Robert E. Montgomery, both of Los Angeles, Calif., assignors to Laclede Professional Products, Inc., Gardena, Calif.

Filed Aug. 13, 1981, Ser. No. 292,633

The portion of the term of this patent subsequent to May 26, 1998, has been disclaimed.

Int. Cl.⁴ A61K *7/28, 37/48*

U.S. Cl. 424—50 **17 Claims**

1. A di-enzymatic dentifrice containing from about 0.015 to about 0.6 millimole of oxidizable substrate and from about 0.5 to about 500 International Units of an oxidoreductase enzyme specific to such substrate for producing hydrogen peroxide upon oral application of said dentrifice and further containing from about 0.0001 to about 0.01 millimole of a thiocyanate salt and from about 0.05 to about 20 International Units of lactoperoxidase for interacting with hydrogen peroxide to produce a hypothiocyanate bacterial inhibitor, wherein each of the aforesaid quantities is based upon one gram of dentifrice; and limiting any water present in the dentifrice to an amount not more than about 10 wt. % based on the dentifrice weight to stabilize the dentifrice against the production of hydrogen peroxide prior to the oral application of the dentifrice.

4,578,266

SILICONE-BASED COSMETIC PRODUCTS CONTAINING PIGMENT

Marlene Tietjen, New York; Ivonne Brown, Roosevelt, and Ralph A. Macchio, Middletown, all of N.Y., assignors to Revlon, Inc., New York, N.Y.

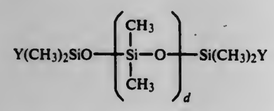
Filed Jul. 29, 1983, Ser. No. 518,498

Int. Cl.⁴ A61K *7/021*

U.S. Cl. 424—63 **14 Claims**

1. An anhydrous homogeneous pigmented cosmetic product comprising

(a) 10 to 70 wt. % of dimethylpolysiloxane having the formula



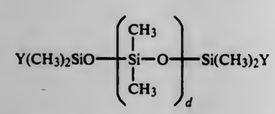
wherein both Y substituents are —CH_3, or both are —OH; and wherein d is sufficient to impart to the dimethylpolysiloxane a viscosity of 0.65 to 10^6 centistokes at 25° C.; and

(b) a coated pigment which consists essentially of finely divided particles of inorganic pigment whose surfaces are chemically bonded to, and physically completely coated by a polysiloxane which coating renders the particles hydrophobic; wherein said pigment is readily dispersible in component (a) without settling or segregating.

4. An anhydrous homogeneous pigmented cosmetic composition comprising

(a) 10 to 70 wt. % of a silicone component comprising

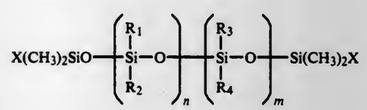
(1) dimethylpolysiloxane having the formula



wherein both Y substituents are —CH_3 or both are —OH, and wherein d is sufficient to impart to the dimethylpolysiloxane a viscosity of 0.65 to 10^6 centistokes at 25° C.; in a one phase mixture with one or more of

(2) organosilane having the formula $RSi(CH_3)_3$ wherein R is alkyl having 1 to 30 carbon atoms, phenyl or styryl;

(3) organopolysiloxane having the formula



wherein

R_1 and R_3 are independently alkyl having 1 to 30 carbon atoms, phenyl or styryl;

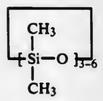
X is alkyl or alkyl-oxy and has 1 to 30 carbon atoms;

R_4 is alkyl having 1 to 30 carbon atoms, phenyl or styryl;

R_2 is alkyl having 2 to 30 carbon atoms, phenyl or styryl, or —$OSi(CH_3)_3$; and

n is 1 to 100, m is 0 to 100, and (n plus m) is 1 to 100; or

(4) cyclomethicone having the formula



provided that said composition contains at least about 10 wt. % of component (1); and

(b) a coated pigment which comprises finely divided particles of inorganic pigment whose surfaces are chemically bonded to and physically coated by a polysiloxane which coating renders the particles hydrophobic; wherein said pigment is readily dispersible in component (a) without settling or segregating.

4,578,267

SKIN CONDITIONING POLYMER CONTAINING ALKOXYLATED NITROGEN SALTS OF SULFONIC ACID

Ann B. Salamone, Marblehead, Mass., assignor to Morton Thiokol, Inc., Chicago, Ill.

Continuation of Ser. No. 405,466, Aug. 5, 1982, abandoned, Continuation-in-part of Ser. No. 302,324, Sep. 15, 1984, Pat. No. 4,401,650. This application Dec. 7, 1984, Ser. No. 679,612

The portion of the term of this patent subsequent to Aug. 30, 2000, has been disclaimed.

Int. Cl.⁴ A61K *31/74, 31/78*

U.S. Cl. 424—78 **16 Claims**

1. In a method of conditioning skin by applying to skin a skin conditioning composition which consists essentially of a member selected from the group consisting of emollients and humectants, the improvement comprising adding to said composition from 0.1 to 10 wt % of a homopolymer made from an ethylenically unsaturated addition polymerizable monomer, said monomer containing an alkoxylated nitrogen salt of sulfonic acid, said salt being derived from an ethoxylated amine having the following structure:

where,

R^1, R^2, =H,

alkyl (C_1–C_{30}), wherein, at least one of R_1 or R_2=alkyl (C_6–C_{30}),

aryl, $(CH_2CH_2O)_xH$, or

R^1–R^2=cycloalkylene,

and

x=1 to 50.

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DIETHYLCARBAMAZINE RESINATE AND STYRYLPYRIDINIUM RESINATE-DIETHYLCARBAMAZINE RESINATE EDIBLE ANTHELMINTIC TABLETS FOR COMPANION ANIMALS

James M. Quinlan, Trenton, N.J., assignor to American Cyanamid Company, Stamford, Conn.

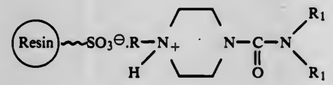
Continuation-in-part of Ser. No. 239,966, Mar. 3, 1983, Pat. No. 4,442,086, which is a continuation-in-part of Ser. No. 60,931, Jul. 26, 1979, abandoned. This application Feb. 16, 1984, Ser. No. 580,577

The portion of the term of this patent subsequent to Apr. 10, 2001, has been disclaimed.

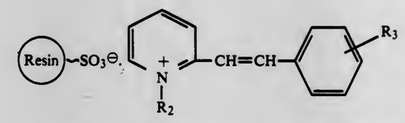
Int. Cl.⁴ A61K *31/74*

U.S. Cl. 424—79 **9 Claims**

1. A palatable anthelmintic resinate composition comprising from greater than 5% to about 11% by weight of a resinated N,N-dialkylpiperazine carboxamide compound having the structural formula:



wherein R is hydrogen or alkyl C_1–C_6 and R_1 is alkyl C_1–C_5 and wherein the resin is a high capacity sulfonic cationic exchange resin of the polystyrene-divinylbenzene type having a particle size of less than 800μ; from greater than 7% to 16% by weight of a resinated styrylpyridinium compound having the structural formula:



wherein R_2 is alkyl C_1–C_4, R_3 is hydrogen or halogen and the resin is a high capacity sulfonic cationic exchange resin of the polystyrene-divinylbenzene type having a particle size of less than 800μ; 18% to 60% by weight of dessiccated liver; 0 to 40% by weight of Brewer's yeast; 23.95% to 31% by weight of microcrystalline cellulose, 0% to 7% by weight of stearic acid; and 0% to 0.05% by weight of sodium aluminum silicate or silicon dioxide.

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IMMUNOGENIC PROTEIN OR PEPTIDE COMPLEX, METHOD OR PRODUCING SAID COMPLEX AND THE USE THEREOF AS AN IMMUNE STIMULANT AND AS A VACCINE

Bror Morein, Krokusvägen 14, S-175 74 Järfälla, Sweden

Filed Oct. 18, 1983, Ser. No. 543,032

Claims priority, application Sweden, Oct. 18, 1982, 8205892

Int. Cl.⁴ C07G *7/00;* **A61K** *39/00*

U.S. Cl. 424—88 **8 Claims**

1. An immunogenic complex containing antigenic proteins or peptides with hydrophobic regions, characterized in that is is obtained by mixing at least one member selected from the group consisting of

(A) enveloped viruses, bacteria, mycoplasmas, parasites or animal cells containing amphiphatic proteins or peptides with hydrophilic and hydrophobic groups or such proteins or peptides produced by hybrid DNA-technique or molecules produced synthentically,

(B) hydrophilic proteins or peptides made amphiphatic by hydrophobic groups being coupled to them, which proteins or peptides derive from viruses, bacteria, mycoplasmas, parasites, animal cells or are synthesized or obtained by hybrid DNA technique, and

(C) amphiphatic proteins or peptides obtained by in accessible hydrophobic parts of hydrophilic proteins made accessible by chemical means, which proteins derive from the microorganisms or cells mentioned above or are obtained by hybrid DNA technique, or are synthesized,

with at least one solubilizing agent, whereby complexes are formed between amphiphatic antigenic proteins or peptides and the solubilizing agent, whereafter the amphiphatic antigenic proteins or peptides are separated from solubilizing agent in the presence of or are separated from the solubilizing agent and directly transferred to a solution containing at least one polar triterpensaponin with hydrophobic and hydrophilic regions in a concentration of at least the critical micellular concentration, by the mixture of viruses, bacteria, mycoplasmas, parasites, animal cells, proteins or peptides with the solubilizing agent(s) by one of the methods of

(a) being layered on top of a gradient containing solubilizing agent, which lies in turn over a gradient containing triterpensaponin and centrifuged, the proteinaceous fraction being isolated,

(b) the mixture of microoragnisms, cells, proteins or peptides, and the solubilizing agent being mixed with triterpensaponin and dialyzed or being layered directly on a gradient and centrifuged, whereafter the protein-containing top fraction is eollected, reacted with triterpensaponin and dialyzed against buffer,

(c) the mixture of microorganisms, animal cells, proteins or peptides and solubilizing agent or the proteinaceous top fraction obtained when the mixture of microoragnisms, animal cells, proteins or peptides and solubilizing agent solution is centrifuged through a gradient, being separated by electrophoresis, or

(d) being separated chromatographically from the solubilizing agent and collected in a solution containing the triterpensaponin, whereafter the protein complex obtained is concentrated, or purified, by lyophilization, vacuum dialysis or ultracentrifuging or is purified further by gradient centrifugation.

4,578,270

PROCESS FOR THE PREPARATION OF LYOPHILIZED, ADSORBED POLYVALENT VACCINES

Zoltan Csizer; Karoly Sikos; Laszlo Bacskai; Istvan Joo; Eleonora Niedermayer; Lajos Rethy, and Jozsef Zeidai, all of Budapest, Hungary, assignors to Human Oltoanyagtermelo Es Kutato Intezet, Budapest, Hungary

Filed Feb. 22, 1984, Ser. No. 582,432

Claims priority, application Hungary, Feb. 22, 1983, 609/83

Int. Cl.⁴ A61K *39/02*

U.S. Cl. 424—92 **10 Claims**

1. A process for the preparation of lyophilized, adsorbed, polyvalent vaccine against tetanus, diphtheria and pertussis, which comprises the steps of:

(a) concentrating tetanus, diphtheria, and pertussis antigens to a value of 5 to 15 doses of vaccine per 3 ml;

(b) concentrating an insoluble adsorbent carrier selected from the group consisting of aluminum hydroxide gel and aluminum phosphate so that 1.75 to 3.5 mg of adsorbent carrier are employed per dose of vaccine;

(c) adsorbing the tetanus, diphtheria, and pertussis antigens concentrated in step (a), separately or together, on the insoluble adsorbent carrier concentrated in step (b), at a pH of 3 to 6, which is not lower than the value of the isoelectric point of any of the antigens and which does not

exceed a pH value at which more than 15% of the antigens adsorbed at the pH value of the isoelectric point are eluated;
(d) adjusting the pH value to 5 to 6: and
(e) lyophilizing the mixture in the presence of a protective material selected from the group consisting of proteins, polypeptides and polysaccharides.

4,578,271

BIOLOGICALLY ACTIVE WS 6049 SUBSTANCES, A PROCESS FOR THE PRODUCTION THEREOF AND THEIR PHARMACEUTICAL COMPOSITIONS

Sumio Kiyoto, Urawa; Motoaki Nishikawa, Toyonaka; Morita Iwami, Takarazuka; Hiroshi Terano, Toyonaka, and Masanobu Kohsaka, Sakai, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed May 3, 1983, Ser. No. 491,170

Claims priority, application United Kingdom, May 24, 1982, 8215123

Int. Cl.[4] A61K *35/00;* **C12P** *13/00, 1/06;* **C12R** *1/03*

U.S. Cl. 424—117 **8 Claims**

1. A WS 6049 substance selected from the group consisting of WS 6049-A substance and WS 6049-B substance, wherein
(i) the WS 6049-A substance has the following properties:
(1) Form and color: Colorless powder
(2) Color reaction:
Positive: in Dragendorff reaction, Ehrlich's reaction and cerium sulfate reaction
Negative: in ninhydrin reaction
(3) Solubility
Soluble: in methanol, acetone, chloroform
Slightly soluble: diethyl ether
Insoluble: in hexane, water
(4) Melting point: 150° C. (dec.)
(5) Specific rotation: $[\alpha]_D^{25} = -208 \uparrow$ (C=1.0, $CHCl_3$)
(6) Ultraviolet absorption spectrum:

$$\lambda_{max}^{CH3OH} = 252 \text{ nm } (E_{1cm}^{1\%} = 560)$$
$$= 280 \text{ nm } (E_{1cm}^{1\%} = 370)$$
$$= 320 \text{ nm } (E_{1cm}^{1\%} = 220)$$

$\lambda_{max}^{CH3OH+HCl}$=252, 280, 320 nm
$\lambda_{max}^{CH3OH+NaOH}$=250, 280, ca310 (sh.)nm
(7) Infrared absorption spectrum:
ν_{max}^{CHCl3}=3450, 3350, 3250, 2960, 2920, 1725, 1675, 1610, 1595, 1520, 1465, 1450, 1405, 1370, 1350, 1310, 1250, 1180, 1155, 1115, 1075, 1020, 985, 955, 905, 805 cm^{-1}
(8) Elementary analysis:
C: 52.03%, H: 5.71%, N: 4.15%, S: 9.86%
(9) Thin layer chromatography:

Developing		
Stationary Phase	Solvent	Rf value
Silica gel sheet	chloroform: methanol (10:1)(v/v)	0.59
	chloroform: acetone (1:1)(v/v)	0.33

(10) Molecular weight:
FD Mass: m/z 1333 (M^++Na)
FABQ MS: m/z 1311 (M^++1)
Gel permeation chromatography: 1100–1200
(11) ^{13}C Nuclear magnetic resonance spectrum ($CDCl_3$):
δ (ppm): 13.9, 14.6, 16.7, 17.6, 19.9, 22.8, 29.1, 34.0, 35.2, 39.6, 42.3, 55.8, 56.1, 56.2, 56.2, 60.3, 61.7, 68.4, 69.0, 69.3, 69.8, 70.5, 72.0, 75.9, 76.1, 77.2, 77.3, 83.2, 86.3, 88.5, 90.7, 97.3, 98.6, 98.9, 99.6, 99.7, 103.9, 107.8, 112.7, 123.2, 125.0, 130.0, 131.1, 136.8, 144.2, 146.6, 154.0, 154.6, 160.9, 166.6, 192.4, as shown in FIG. 1 of the accompanying drawing,
(12) ^1H Nuclear magnetic resonance spectrum ($CDCl_3$):
δ (ppm): 8.57 (1H, s), 7,.48 (1H, s), 6.6 (1H, d.d), 6.2 (1H, d, J=1.6 Hz), 618 (1H, br.s), 5.93 (1H, d, J=9.6 Hz), 5.83 (1H, d.d J=9.6, 1.6 Hz), 5.7 (1H, d, J=2 Hz), 5.5 (1H, m), 5.48 (1H, d, J=2.3 Hz), 5.43 (1H, br.s), 4.97 (1H, d), 4.7 (2H, m), 4.56 (1H, d, J=2.3 Hz), 4.23 (1H, s), 4.2 to 3.6 (10 to 14H), 3.97 (3H, s), 3.88 (3H, s), 3.79 (3H, s), 3.5 (2H, m), 3.43 (3H, s), 2.77 (1H, s), 2.7 (2H, m), 2.52 (3H, s), 2.5 (1H, m), 2.4 to 2.25 (3H, m), 2.17 (1H, s), 2.12 (3H, s), 2.07 (1H, m), 1.77 (2H, s), 1.5 (2H, m), 1.41 (3H, d, J=6 Hz), 1.35 (3H, d, J=6 Hz), 1.32 (3H, d, J=6 Hz), 1.2 (4H, m), as shown in FIG. 2 of the accompanying drawing, and
(ii) the WS 6049-B substance has the following properties:
(1) Form and color: Colorless powder
(2) Color reaction:
Positive: in Dragendorff reaction, Ehrlich's reaction and cerium sulfate reaction
Negative: in ninhydrin reaction
(3) Solubility:
Soluble: in methanol, acetone, chloroform
Slightly soluble: in diethyl ether
Insoluble: in hexane
(4) Melting point: 145° C. (dec.),
(5) Specific rotation: $[\alpha]_D^{25} = -201 \cup$(c=1.0, $CHCl_3$)
(6) Ultraviolet absorption spectrum:

$$\lambda_{max}^{CH3OH} = 253 \text{ nm } (E_{1cm}^{1\%} = 620)$$
$$= 280 \text{ nm } (E_{1cm}^{1\%} = 450)$$
$$= 320 \text{ nm } (E_{1cm}^{1\%} = 250)$$

$\lambda_{max}^{CH3OH+HCl}$=253, 280, 320 nm
$\lambda_{max}^{CH3OH+NaOH}$=250, 282, 310 (sh.) nm
(7) Infrared absorption spectrum:
ν_{max}^{CHCl3}=3450, 3350, 2990, 2920, 1725, 1675, 1610, 1595, 1520, 1465, 1450, 1405, 1370, 1350, 1310, 1250, 1180, 1155, 1115, 1070, 1020, 985, 955, 905, 880, 850 cm^{-1}
(8) Elementary analysis:
C: 51.58%, H: 5.75%, N: 4.27%, S: 9.80%
(9) Thin layer chromatography:

Developing		
Stationary Phase	Solvent	Rf value
Silica gel sheet	chloroform: methanol (10:1)(v/v)	0.53
	chloroform: acetone (1:1)(v/v)	0.18

(10) Molecular weight: 1100 to 1200 by
Gel permeation chromatography [:1100 to 1200]
(11) ^{13}C Nuclear magnetic resonance spectrum ($CDCl_3$):
δ (ppm): 13.8, 16.7, 17.6, 19.8, 22.7, 29.1, 33.9, 34.1, 35.2, 39.5, 52.8, 55.8, 56.1, 56.3, 61.0, 61.5, 64.6, 66.7, 68.4, 69.0, 69.3, 69.8, 70.4, 71.9, 75.9, 76.2, 76.7, 77.2, 77.3, 77.6, 83.2, 86.6, 88.3, 90.7, 97.3, 98.6, 99.0, 99.6, 99.7, 103.9, 107.8, 112.7, 123.2, 124.9, 129.8, 131.0, 136.8, 144.2, 146.3, 154.0, 154.6, 160.9, 166.6, 192.4, as shown in FIG. 3 of the accompanying drawing,
(12) H Nuclear magnetic resonance spectrum ($CDCl_3$):
δ (ppm): 11.75 (1H, s), 8.57 (1H, s), 7.48 (1H, s), 6.6 (1H, d.d.), 6.24 (1H, d, J=1.3 Hz), 6.18 (1H, br.s), 5.93 (1H, d, J=9.2 Hz), 5.83 (1H, d.d, J=9 Hz and 1.3 Hz), 5.70 (1H, br.d), 5.5 (1H, m), 5.47 (1H, d, J=2.3 Hz), 5.42 (1H, br.s), 4.98 (1H, d, J=9 Hz), 4.7 to 4.6 (2H, m), 4.56 (1H, d, J=2.3 Hz), 4.24 (1H, s), 4.15 to 3.4 (12 to 18H), 3.97 (3H, s), 3.88 (3H, s), 3.79 (3H, s), 3.42 (3H, s), 2.52 (3H, s), 2.6 to 2.4 (2H, m), 2.4 to 2.2 (7 to 8H), 2.12 (3H, s), 2.2 to 2.0 (2H, m), 1.5 (2H, m), 1.4 (3H, d, J=6 Hz), 1.35 (3H, d, J=6 Hz), 1.33 (3H, d, J=6 Hz), as shown in FIG. 4 of the accompanying drawing.

4,578,272

PREPARING YEAST BAKERY PRODUCT FLAVORS

Hideo Tomomatsu, Crystal Lake, Ill., assignor to Quaker Oats Company, Chicago, Ill.

Continuation-in-part of Ser. No. 242,883, Mar. 12, 1981, abandoned. This application May 17, 1985, Ser. No. 735,275

Int. Cl.[4] A21D *2/00*

U.S. Cl. 426—18 **13 Claims**

1. A method of preparing a yeast bread flavor composition suitable for indefinite storage, said method including the steps of mixing active breadmaking yeast with an aqueous nutrient solution of not more than about 0.5% sugar and allowing said mixture to react at a temperature of about 35°–40° C. for a period of time sufficient to form a solution of yeast enzymes, removing the yeast cells from the solution, mixing said yeast enzyme solution with a breadmaking flour, and permitting a reaction of said yeast enzyme solution and said flour to take place at about 35°–40° C. for a time sufficient to create reaction products which include a bread flavor solution portion and a spent flour portion, said reaction products being adapted for indefinite storage when dried.

4,578,273

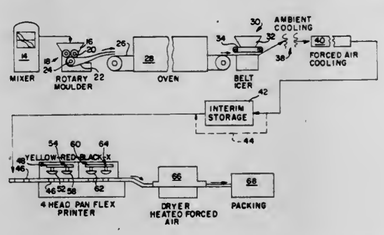
PRINTING OF FOODS

George J. Krubert, Niles, Ill., assignor to Keebler Company, Elmhurst, Ill.

Filed Apr. 7, 1981, Ser. No. 251,869

Int. Cl.[4] A23G *3/00;* **A21D** *13/08;* **A23P** *1/08;* **A23L** *1/275*

U.S. Cl. 426—87 **17 Claims**



1. A method of forming a printed food product comprising the steps of:
forming an icing mixture having a specific gravity of between 1.0 and 2.5,
shaping said icing mixture to have a surface,
drying said icing mixture to form a hard, non-porous icing surface,
transfer printing at least one edible ink to said hard dried surface of said icing, and
drying said ink.
10. A printed food product comprising:
a dried, hard, non-porous icing having a surface dried from an icing mixture having a specific gravity of between 1.0 and 2.5 before drying, and at least one edible ink transfer printed on said surface.

4,578,274

PROCESS FOR PREPARING GRANULAR FOOD PRODUCTS

Ko Sugisawa, Nara; Masaru Shibuki, Kyoto; Imayoshi Imada, Nara; Jun Katada, Nishinomiya; Yozo Yamamoto, Osaka; Setsuo Nakajima, Osaka; Toshio Kishi, Osaka, and Shozo Sugano, Osaka, all of Japan, assignors to House Food Industrial Co., Ltd., Tokyo, Japan

Filed Apr. 4, 1984, Ser. No. 596,774

Claims priority, application Japan, Jan. 10, 1984, 59-1358

Int. Cl.[4] A23L *1/216*

U.S. Cl. 426—96 **12 Claims**

1. A process for preparing a granular food product comprising the steps of:
(a) thorough admixing by continuous agitation one or more food material powders and a binder having a melting point in the range of 30° to 130° C. and selected from the group consisting of (1) the solid fat group consisting of beef tallow, lard, hardened palm oil, corn oil, bean oil, rape seed oil, and salad oil, (2) the wax group consisting of spermaceti, palm wax and beeswax and (3) sugar such as maltose in a mixing ratio in the range of 50–97 to 50–3 by weight percent of said food material powder to said binder at a temperatre below the melting point of the binder:
(b) dry-heating the mixture to a temperature above the melting point of the binder under continuous agitation to render the binder into a molten state to thereby bind the food material powder and binder, and;
(c) cooling said mixture mixture to a temperature below the melting point of the binder under continuous agitation or in a flow condition so as to granulate the mixture while solidifying the bond between the food material powder binder.

4,578,275

DATE PROCESSING

Henry C. Spanier, West Milford, N.J., assignor to Nabisco Brands, Inc., Parsippany, N.J.

Filed Oct. 21, 1983, Ser. No. 544,182

Int. Cl.[4] A23L *1/212*

U.S. Cl. 426—302 **13 Claims**

1. Process for treating light-colored, sucrose-type dates grown domestically to impart thereto the darker appearance, the flavor, the soft-chewy texture and the shelf-stability of imported invert sugar-type dates grown in the Middle East region comprising:
(a) applying to the domestic dates a coating of a liquefied composition containing water and an effective amount of at least one saccharide sugar sweetening agent;
(b) steaming the domestic dates containing the liquefied coating at a temperature and for a period of time which are sufficient to darken the coated domestic dates to substantially the same darkness as that of imported dates; and
(c) drying the steamed, coated domestic dates to provide shelf-stable, non-expanded treated dates, the size and shape of the shelf-stable, treated dates being substantially the same as the size and shape of the starting domestic dates, and said process not including any step or steps wherein there is expansion of the dates being treated from the original size of the untreated dates.

4,578,276

FROZEN WHIPPED CREAM

Robert G. Morley, 948 Cabot Ct., Stone Mountain, Ga. 30083

Filed Feb. 27, 1985, Ser. No. 705,952

Int. Cl.[4] A23C *13/12;* **A23G** *9/04*

U.S. Cl. 426—565 **7 Claims**

1. A process for preparing stabilized frozen whipped cream comprising the steps of:
(a) whipping whipping cream into whipped cream having stiff peaks with an air cell structure;
(b) incorporating a mixture of dry sweeteners, a blocking

agent, and a water binding stabilizing gum into the whipped cream at low speed to avoid overwhipping of the whipped cream;

(c) blending a warm solution at about 100° F. of thermoreversible gelling agent with the whipped cream and mixture of sweeteners, blocking agent, and water binding stabilizing gum to produce a homogeneous mass wherein the blocking agent, the water binding stabilizing gum, and the thermoreversible gelling agent strengthen the air cell structure of the frozen whipped cream so that upon thawing the air cell structure does not break down resulting in loss of aeration and seepage of serum; and

(d) freezing the homogeneous mass at or below 0° F.

4,578,277

1(7)-P-MENTHEN-9-AL AND ITS UTILIZATION AS PERFUMING AND FLAVORING INGREDIENT

Anthony F. Morris, Gingins; Francois Delay, Carouge; Fritz Gautschi, Commugny; Alan F. Thomas, Borex; Wolfgang K. Giersch, Bernex, and André Boschung, Gilly, all of Switzerland, assignors to Firmenich SA, Geneva, Switzerland

Division of Ser. No. 470,436, Feb. 28, 1983, Pat. No. 4,543,429.
This application May 3, 1985, Ser. No. 730,012
Claims priority, application Switzerland, Apr. 15, 1982, 2280/82
Int. Cl.⁴ A23L *1/226;* A61K *7/46*
U.S. Cl. 426—538 **3 Claims**

1. A perfuming or a flavouring composition which comprises having added thereto 1(7)-p-menthen-9-al as active ingredient.

4,578,278

LIGHTER FOODSTUFFS AND METHOD FOR PREPARATION OF SUCH PRODUCTS

Claude Giddey, Geneva, and Georges Dove, Carouge, both of Switzerland, assignors to Battelle Memorial Institute, Geneva, Switzerland

Filed Jul. 30, 1984, Ser. No. 635,594
Claims priority, application Switzerland, Aug. 2, 1983, 4192/83
Int. Cl.⁴ A23L *1/24, 1/32*
U.S. Cl. 426—605 **9 Claims**

1. An aerated mayonnaise type foodstuff comprising a foam of microbubbles of gas or air in an oil-in-water emulsion of oil, water, egg yolk, vinegar, seasoning, a gelifying stabilizer and coagulated whipped egg white.

4,578,279

INSPECTION OF MULTILAYER CERAMIC CIRCUIT MODULES BY ELECTRICAL INSPECTION OF UNFIRED GREEN SHEETS

Arthur R. Zingher, Elmsford, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

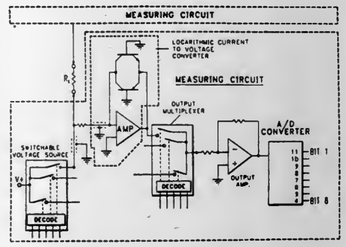
Division of Ser. No. 267,272, May 26, 1981, Pat. No. 4,443,278.
This application Feb. 16, 1984, Ser. No. 580,586
Int. Cl.⁴ G01R *31/02*
U.S. Cl. 427—10 **12 Claims**

1. In a method of manufacture of ceramic electronic substrates comprising,

applying a paste to a number of unfired ceramic sheets,

said paste being applied in a manner adapted to form ultimately electrically conductive patterns after firing,

the improvement comprising electrically inspecting at least one of said ceramic sheets with an electrical input applied



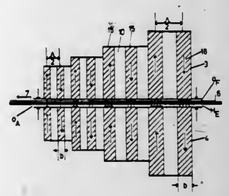
directly to said sheets prior to the step of firing of said sheets.

4,578,280

PROCESS FOR THE PRODUCTION OF A MAGNETIC RECORDING MATERIAL WITH PERPENDICULAR ORIENTATION

Joachim Greiner, Ebenhausen, and Burkhard Nippe, Munich, both of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 27, 1984, Ser. No. 583,727
Claims priority, application Fed. Rep. of Germany, Mar. 8, 1983, 3308052
Int. Cl.⁴ B05D *3/14*
U.S. Cl. 427—47 **13 Claims**



1. A process for the production of a magnetic recording material having at least one layer comprised of magnetically anistropic pigments dispersed in a binder comprising the steps of

casting a magnetic dispersion of pigments in liquid suspension in a layer on a support,

subjecting said magnetic dispersion in liquid suspension to an external magnetic field positioned longitudinally of said cast layer and which acts in a direction substantially perpendicular of the cast layer,

displacing the cast layer and magnetic field longitudinally with respect to each other,

repeatedly alternating the orientation of said field by 180° and reducing the field strength in the direction of casting of the layer

so that the pigments turn with the preferential axis thereof into the perpendicular axis of the layer and form spatially small regions of reduced stray field energy as a result of the demagnetization or obilteration effect and

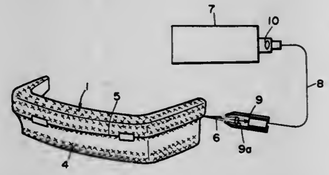
the pigments are subsequently fixed by drying.

4,578,281

METHOD OF PARTIALLY PAINTING AN ARTICLE USING LASER MASKING TECHNIQUE

Hiroo Ebisawa; Iwao Maruyama; Masao Fukuda, and Shigeo Miyamoto, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 25, 1985, Ser. No. 727,403
Claims priority, application Japan, Apr. 27, 1984, 59-85992
Int. Cl.⁴ B05D *3/06, 1/32;* B65B *33/00*
U.S. Cl. 427—53.1 **17 Claims**



1. A method of partially painting a workpiece, comprising the steps of:

coating a surface of the workpiece with strippable paint containing powder of a substantially high light energy absorptivity;

drying the coated strippable paint into a strippable film on the workpiece surface;

applying a laser beam to said strippable film along a prescribed cutting line so as to cut said strippable film;

peeling off a portion of said strippable film corresponding to a first area of the workpiece surface to be painted, while leaving the remaining portion of said strippable film adhering on a second area of the workpiece surface to remain unpainted, thereby masking said workpiece; and

painting said first area with paint to form a final paint coating.

4,578,282

COMPOSITION FOR DIAGNOSTIC REAGENTS

James S. Harrison, 12 Sioux La., Ringwood, N.J. 07456

Division of Ser. No. 345,589, Feb. 4, 1982, Pat. No. 4,493,821.
This application Jan. 4, 1985, Ser. No. 688,975
Int. Cl.⁴ G01N *33/545, 33/552;* C09Q *15/04*
U.S. Cl. 422—57 **18 Claims**

1. A diagnostic composition which comprises

(a) a proteinaceous substance which is reactive in a diagnostic immunological reaction; and

(b) as a principal active preservative component for said proteinaceous substance, a mixture of from about 10 to about 75% by weight of pyrrolid-2-one, from about 10 to about 50% by weight of polyol, from about 1 to about 20% by weight of a urea and from about 1 to about 10% by weight of a zinc salt of a nonoxidizing organic or inorganic acid, the relative percentages of said preservative component ingredients being selected from within the respective ranges so that their sum is 100% of said mixture.

4,578,283

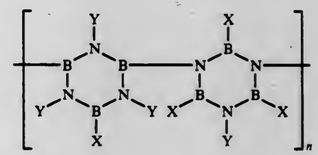
POLYMERIC BORON NITROGEN DOPANT

Stephen W. Kirtley, Sunnyvale, Calif., and George S. Wooster, Hamburg, N.Y., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 421,945, Sep. 23, 1982, abandoned. This application Oct. 9, 1984, Ser. No. 659,119
Int. Cl.⁴ C08G *79/08*
U.S. Cl. 427—85 **4 Claims**

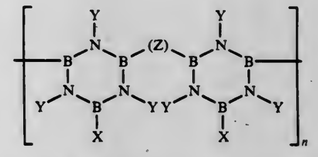
1. A method of applying a polymeric composition to semiconductor substrates comprising dispensing a polymer containing from 1 to 20 percent by weight in a volatile organic solvent of a homogeneous glassy polymer at least a substantial part of the backbone of which is selected from:

(a) polymers with borazine rings linked directly between a boron in one ring and a nitrogen atom in the adjacent ring of the formula



and

(b) polymers with borazine rings linked via other groups Z of the formula



wherein X and Y locate the substituents on the ring boron and nitrogen atoms and Z is selected from the group consisting of —N(R)—, —O—, —N(R)—R¹—N(R)—, and —R—, wherein R and R¹ denote organic radicals of 1 to 10 carbon atoms and X and Y are radicals selected from the group consisting of hydrogen, alkyl radicals of 1–8 carbon atoms, unsubstituted aromatic, alkyl halogen, hydroxy and amino substituted aromatics, heterocyclic aromatics, 1–6 carbon alkyl substituted heterocyclic aromatic, amino, alkoxy and halogen radicals; rotating the wafer at 2,000–10,000 rpm, to produce a thin film, of the order of 100–7000 Å of the polymer on the substrate; heating the treated wafer in a diffusion furnace for 0.5–2.0 hours at 850° C.–1100° C. in a nitrogen ambient; deglazing the heated substrate in HF; and heating the substrate at elevated temperature of 1050° C.–1200° C. for 1–2 hours under an atmosphere selected from oxygen, wet oxygen and nitrogen ambients and combinations thereof.

4,578,284

POLYAMIDE SHEATHED OPTICAL WAVEGUIDE FIBERS

Werner Gruber, Korschenbroich, Fed. Rep. of Germany, assignor to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed Aug. 1, 1985, Ser. No. 761,642
Claims priority, application Fed. Rep. of Germany, Aug. 16, 1984, 3430008
Int. Cl.⁴ B05D *5/06;* C03C *25/02*
U.S. Cl. 427—163 **17 Claims**

1. A method for manufacturing sheathed high tensile strength optical waveguides having drawn glass fiber optical cores comprising:

passing said cores through a molten thermoplastic polyamide to form an adhering coating; and

cooling said coating to form a uniform sheath;

said polyamide sheath being flexible over a temperature range of −40° C. to +80° C.; and said polyamide containing dimeric fatty acid as one of its monomer components, and having a glass transition temperature below −10° C.

4,578,285
INK JET PRINTING SUBSTRATE
Michael S. Viola, Burlington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Continuation-in-part of Ser. No. 475,896, Mar. 16, 1983, abandoned. This application Oct. 15, 1984, Ser. No. 661,119
Int. Cl.[4] B41M *5/00*
U.S. Cl. 427—209 **18 Claims**

1. A transparent ink jet printing substrate which comprises a transparent support carrying an ink receptive layer consisting essentially of at least 70% by weight of polyurethane and 5 to 30% by weight of a polymer selected from the group consisting of polyvinylpyrrolidone, polyvinylpyrrolidine/vinyl acetate compolymer, poly(ethylene oxide), gelatin and polyacrylic acid.

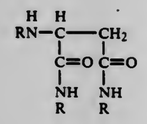
4,578,286
ELECTRICALLY CONDUCTIVE COATING COMPOSITION OF A CHLOROSULFONATED POLYETHYLENE
Joseph A. Vasta, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Continuation-in-part of Ser. No. 578,031, Feb. 2, 1984, Pat. No. 4,513,060. This application Dec. 28, 1984, Ser. No. 687,363
The portion of the term of this patent subsequent to Apr. 23, 2002, has been disclaimed.
Int. Cl.[4] B32B *5/00*; H01B *1/06*
U.S. Cl. 427—327 **24 Claims**

1. A coating composition comprising 10–80% by weight of binder and 20–90% by weight of an organic solvent; wherein the binder consists essentially of about

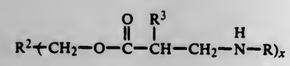
(1) 35–90% by weight, based on the weight of the binder, of a chlorosulfonated polyethylene having a weight average molecular weight of about 75,000 to 300,000 determined by gel permeation chromatography and having a chlorine content of 20 to 50% by weight and a sulfur content of 0.7 to 2.0% by weight;

(2) 7–60% by weight, based on the weight of the binder, of an epoxy resin;

(3) 3–20% by weight, based on the weight of the binder, of a polyamine curing agent selected from the group consisting of



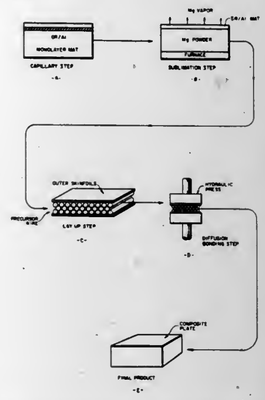
or



where R is R_1NH_2 and R^1 is an aliphatic or cycloaliphatic radical; R^2 is C or a hydrocarbon group, R^3 is H or CH_3, when x is 3 R^2 is a hydrocarbon group and when x is 4 R^2 is C;

wherein the coating composition contains electrically conductive pigments in a pigment to binder weight ratio of about 50/100 to 300/100 and a dry film of the coating composition 25 microns thick has an electrical resistance of about 1–50 ohms.

4,578,287
PROCESS FOR PRODUCING GRAPHITE FIBER/ALUMINUM-MAGNESIUM MATRIX COMPOSITES
Amarnath P. Divecha, Falls Church; Subhash D. Karmarkar, Great Falls, both of Va., and John V. Foltz, Camp Spring, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Oct. 9, 1984, Ser. No. 658,930
Int. Cl.[4] C23C *16/06*
U.S. Cl. 427—250 **7 Claims**



1. A method of preparing a graphite fiber/aluminum-magnesium matrix composite comprising the following steps in order:

(1) exposing a precursor composite mat of graphite fibers which have been ion-plated with aluminum to a liquid organic compound selected from the group consisting of methylene chloride, toluene, benzene, and heptane;

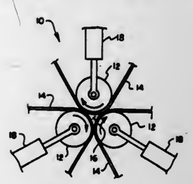
(2) allowing the graphite fibers to absorb the liquid organic compound by capillary action until the graphite fibers expand in volume and become straight;

(3) removing the excess liquid organic compound from the surface of the graphite fibers;

(4) using magnesium vapor to coat the aluminum ion-plated graphite fibers with magnesium; and

(5) densifying the resulting graphite fiber/aluminum-magnesium matrix composite.

4,578,288
WEB COATING METHOD AND APPARATUS
Donald W. Lare, Greenville, and Thanh Van Nguyen, Painesville, both of Ohio, assignors to Avery International Corporation, Pasadena, Calif.
Filed Mar. 11, 1985, Ser. No. 710,330
Int. Cl.[4] B05D *1/18, 3/12*; B05C *3/00, 11/02*
U.S. Cl. 427—365 **18 Claims**



1. A method of coating a passing web with a coating composition, comprising the steps of:

providing an array of at least three parallel rolls;

entraining the passing web partially around a first of the rolls;

constraining the array of rolls so that each respective roll, or any web means entrained thereon, is held against the two adjacent rolls or any web means entrained thereon, to form an elongated chamber surrounded by said array of rolls;

feeding a coating composition to said chamber;

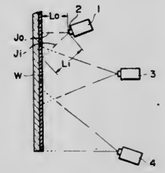
rotating said first roll to move said passing web into said chamber between said first roll and a second roll which is one of the two rolls adjacent the first roll, and to move said passing web out of said chamber between said first roll and a third roll which is also one of the two rolls adjacent the first roll; and

rotating said third roll to move the surface thereof, and any web means entrained thereon, in a countermoving direction relative to said passing web as it exits said chamber, whereby the passing web is bathed in the coating composition while in the chamber and encounters a countermoving roll or web surface as it exits the chamber.

10. Apparatus for coating a passing web with a coating composition comprising an array of at least three parallel rolls, said passing web being entrained partially around a first of the rolls, means constraining the array of rolls so that each respective roll, or any web means entrained thereon, is held against the two adjacent rolls, or any web means entrained thereon, to form an elongated chamber surrounded by said array of rolls, means for feeding a coating composition to said chamber, means for rotating said first roll to move said passing web into said chamber between said first roll and a second roll which is one of the two rolls adjacent the first roll, and to move said passing web out of said chamber between said first roll and a third roll which is also one of the two rolls adjacent the first roll, and means for rotating said third roll to move the surface thereof, and any web means entrained thereon, in a countermoving direction relative to said passing web as it exits said chamber, whereby the passing web is bathed in the coating composition while in the chamber and encounters a countermoving roll or web surface as it exits the chamber.

4,578,289
Patent Not Issued For This Number

4,578,290
METHOD OF AND APPARATUS FOR COATING
Koichi Komon, Suzuka; Siro Ito, Kawasaki, and Shuichi Seino, Hirakata, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 19, 1984, Ser. No. 673,178
Claims priority, application Japan, Mar. 2, 1984, 59-39986
Int. Cl.[4] B05D *1/02*
U.S. Cl. 427—421 **8 Claims**



1. A method of producing a film of spray coating sharply defined in contour, comprising supporting the nozzle of an airless-type spray gun that is disposed for spraying on an outermost end of a surface to be coated in an axially inclined position such that the external ridge-line of the fan-shaped spray discharged from said nozzle is almost perpendicular with or slightly inwardly inclined to the plane of said surface, the distance as measured along said external ridge-line between said nozzle of said spray gun and said surface being minimized to such a range as to prevent formation of stains of paint and gradual reduction of film thickness at one end of a film and as to insure sharpness of the outline at said end of said film.

4,578,291
WIND RESPONSIVE ADJUSTABLE DECORATIVE DEVICE
Jon Miner, Arden Hills, Minn., assignor to Internatural Designs, Inc., Minneapolis, Minn.
Filed Dec. 14, 1984, Ser. No. 681,642
Int. Cl.[3] B44C *3/06*
U.S. Cl. 428—8 **5 Claims**



1. The structure for formation of a decorative wind responsive device including:

a. a longitudinally extending mounting rod;

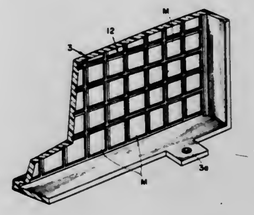
b. stop means on one end of said rod;

c. a plurality of slat members of generally rectangular cross section each having a passage therethrough generally intermediate the ends thereof and extending through the lesser dimension thereof received onto and arranged for rotation about said rod arranged to extend radially outwardly from said rod;

d. means on the other end of said rod and longitudinally moveable therealong to provide a frictional holding force to said slats whereby the slats are moveable with respect to one another and held in selected position thereby; and,

e. universal rotation means arranged adjacent said stop means including mounting means whereby said rod and positioned slats may be suspended in a wind area for free movement in response to wind currents.

4,578,292
RESIN MOLDING DECORATIVE MEMBER
Hiroshi Kanamori, Yokohama City, Japan, assignor to Nissan Motor Co., Ltd., Yokohama City, Japan
Filed Oct. 30, 1984, Ser. No. 666,453
Claims priority, application Japan, Dec. 26, 1983, 58-251469
Int. Cl.[4] B60R *13/00*; B32B *3/00*; B05D *5/06*; B05C *9/06*
U.S. Cl. 428—31 **6 Claims**



1. A resin molding decorative member, comprising a main body of transparent resin which includes:

a back surface comprising a first set of substantially parallel mounting grooves, a second set of substantially parallel

mounting grooves which intersect with said first set of grooves, and a plurality of segments formed between said intersecting grooves, wherein said grooves are designed to engage and fixedly hold a masking jig on said back surface;

a first layer directly applied to a predetermined portion of said back surface comprising a first set of segments selected from said plurality of segments;

a second layer applied to said back surface; and

a design pattern formed by said first and second layers comprising at least said first set of segments selected from said plurality of segments and a second set of segments selected from said plurality of segments.

4,578,293

COMPOSITE STRUCTURES AND A METHOD FOR IMPROVING THE SERVICE LIFE THEREOF

Donald I. Lusk, Mequon, Wis., assignor to A. O. Smith Corporation, Milwaukee, Wis.

Filed Feb. 21, 1984, Ser. No. 582,006

Int. Cl.[4] B27N *5/02*

U.S. Cl. 428—35 **9 Claims**

1. A composite structure, comprising a container formed of a thermoplastic resin and having an inner surface and an outer surface, a fluid under pressure contained within the container and disposed in contact with the inner surface, said thermoplastic resin containing an additive beneficial to the physical properties of said resin, and an outer solid layer disposed on said outer surface of the container and containing a concentration of said additive, exposure of said container to said fluid causing migration of said additive in the container toward said inner surface to thereby set up a concentration gradient causing the additive from said outer layer to migrate across the interface between said outer layer and said container to replace the additive lost through exposure to said fluid.

4,578,294

HEAT-RESISTANT LAMINATES

Isao Ouchi, and Hideo Yusa, both of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 9, 1984, Ser. No. 578,680

Claims priority, application Japan, Feb. 25, 1983, 58-30570; May 27, 1983, 58-93863

Int. Cl.[4] B32B *1/02*

U.S. Cl. 428—35 **40 Claims**

1. A heat-resistant laminate comprising a first layer of a polymer of propylene or a polyamide; a seventh layer of a polyolefin or a polyamide; a fourth layer of a polymer of vinylidene chloride; a second layer and a sixth layer of an acid modified polyolefin or a mixture of not less than 90% of the acid modified polyolefin and not more than 10% by weight of a copolymer of ethylene and an acrylic ester or an acid modified copolymer of ethylene and an acrylic ester, the second layer and sixth layer being respectively directly jointed to the first layer and the seventh layer; a third layer and a fifth layer of a mixture of 10 to 30% by weight of an acid modified polyolefin and 90 to 70% by weight of a copolymer of ethylene and an acrylic ester or an acid modified copolymer of ethylene and an acrylic ester, the third layer and fifth layer being respectively disposed between the second layer and the fourth layer, and between the fourth layer and the sixth layer.

4,578,295

HIGH BARRIER POLYMER BLEND AND ARTICLES PREPARED THEREFROM

Saleh A. Jabarin, Holland, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Jul. 16, 1984, Ser. No. 631,263

Int. Cl.[4] B65D *1/00*; C08F *20/00*

U.S. Cl. 428—35 **15 Claims**

1. A container comprising:

an open top portion;

an enclosed main body portion integral with and downwardly depending from said open top portion;

an enclosed bottom portion integral with and downwardly depending from said enclosed main body portion, said container fabricated from an intimate fusion blend of

(1) a poly(ethylene terephthalate); and

(2) a copolyester formed of the polymeric reaction product of

(A) reactant(s) selected from isophthalic acid, terephalic acid, and their C_1 to C_4 alkyl esters, and any mixture thereof in any proportion,

(B) reactants, 1,3 bis(2-hydroxyethoxy)benzene plus ethylene glycol, and optionally one or more other ester forming dihydroxy organic hydrocarbon reactant(s), and optionally,

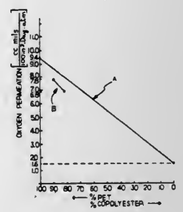
(C) reactant, bis(4-beta-hydroxyethoxyphenyl) sulfone, wherein:

(1) the amount of said 1,3 bis(2-hydroxyethoxy)benzene is 5–90 mole percent of the amount of A reactants,

(2) the combined amount of B and C reactants, is about 110 to 300 mole percent of the amount of A reactants,

(3) the amount of said other ester forming dihydroxy organic hydrocarbon reactant(s) is zero to 20 mole percent of the amount of said A reactants, and

(4) the combined amount of said (C) reactant plus said 1,3 bis(2-hydroxyethoxy)benzene and said other ester



forming dihydroxy organic hydrocarbon reactant(s) is not over 90 mole percent of said A reactants.

7. A composition of matter comprising:

an intimate fusion blend of:

(1) a poly(ethylene terephthalate); and

(2) a copolyester formed of the polymeric reaction product of,

(A) reactant(s) selected from isophthalic acid, terephalic acid, and their C_1 and C_4 alkyl esters, and any mixture thereof in any proportion,

(B) reactants, 1,3 bis(2-hydroxyethoxy)benzene plus ethylene glycol, and optionally one or more other ester forming dihydroxy organic hydrocarbon reactant(s), and, optionally,

(C) reactant, bis(4-beta-hydroxyethoxyphenyl) sulfone, wherein:

(1) the amount of said 1,3 bis(2-hydroxyethoxy)benzene is 5–90 mole percent of the amount of A reactants,

(2) the combined amount of B and C reactant is about 110 to 300 mole percent of the amount of A reactants,

(3) the amount of said other ester forming dihydroxy organic hydrocarbon reactant(s) is zero to 20 mole percent of the amount of said A reactants, and

(4) the combined amount of said (C) reactant plus said 1,3 bis(2-hydroxyethoxy)benzene and said other ester forming dihydroxy organic hydrocarbon reactant(s) is not over 90 mole percent of said A reactants.

4,578,296

THERMOFORMED POLYOLEFIN CUP

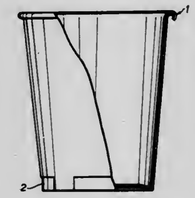
Senji Miyazaki, Sodegaura, and Osamu Touya, Kisarazu, both of Japan, assignors to Idemitsu Petrochemical Co., Ltd., Tokyo, Japan

Filed Jun. 13, 1984, Ser. No. 620,185

Claims priority, application Japan, Jun. 28, 1983, 58-115153; Jun. 28, 1983, 58-115154; Jun. 28, 1983, 58-115155; Feb. 17, 1984, 59-26961; Feb. 17, 1984, 59-26962

Int. Cl.[4] B65D *5/00*

U.S. Cl. 428—35 **20 Claims**



1. A cup produced by thermoforming of a polyolefin resin composition sheet, wherein said polyolefin resin is a mixture of polypropylene resin and high density polyethylene resin in a weight ratio of from 9:1 to 1:9, wherein said polyolefin resin composition comprises from 30 to 80% by weight of a polyolefin resin, from 19 to 69% by weight of talc, and from 1 to 10% by weight of titanium dioxide, wherein the ratio of height to average diameter as average edge length is 1.1:1 to 2.0:1.

4,578,297

POLYMER FILM/POLYMER FOAM LAMINATE AND HEAT-RESISTANT CONTAINER FABRICATED THEREFROM

Gary L. Duncan, Fairport, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jul. 11, 1985, Ser. No. 754,052

Int. Cl.[4] B32B *1/02, 3/26*

U.S. Cl. 428—35 **12 Claims**

1. A laminate structure which comprises:

(a) a thermoplastic polymer matrix core layer having an upper and lower surface and within which is located a strata of voids;

positioned at least substantially within at least a substantial number of voids is at least one spherical void-initiating particle which is phase distinct and incompatible with the matrix material, the void space occupied by said particle being substantially less than the volume of said void, with one generally cross-sectional dimension of said particle at least approximating a corresponding cross-sectional dimension of said void;

(b) a void-free thermoplastic skin layer affixed to the upper surface of core layer (a); and,

(c) a thermoplastic polymer foam layer affixed to the lower surface of core layer (a).

4,578,298

COMPOSITE FILMS FOR PROTECTING DOCUMENTS FROM BEING REPRODUCED

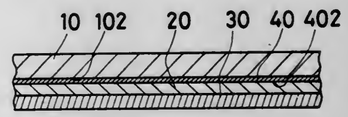
Kazumasa Nagafuchi, Hyogo, Japan, assignor to Kisokaseisangyou Co., Ltd., Osaka, Japan

Filed Jul. 20, 1984, Ser. No. 633,131

Claims priority, application Japan, Jul. 25, 1983, 58-116014 [U]; Oct. 3, 1983, 58-154207[U]; Dec. 10, 1983, 58-190758[U]

Int. Cl.[4] B32B *7/06*

U.S. Cl. 428—40 **2 Claims**



1. A composite film for protecting documents from being reproduced, said composite film being transparent and adapted to be affixed to the surface of a document on which information has been recorded, whereby the information can be read, but cannot be reproduced, comprising an orange, brown or red colored transparent film, a metallic foil capable of being seen through, said metallic foil being formed by vacuum deposition on the back of the transparent film, and a transparent adhesive layer applied to the surface of said metallic foil.

4,578,299

FLEXIBLE MAGNETIC DISK SHEET

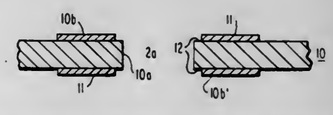
Mikihiko Kato; Tsutomu Okita; Shigeo Komine; Yasutoshi Okuzawa, and Kazuhiko Morita, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 23, 1984, Ser. No. 633,560

Claims priority, application Japan, Jul. 21, 1983, 58-133291

Int. Cl.[4] G11B *5/72*

U.S. Cl. 428—65 **28 Claims**



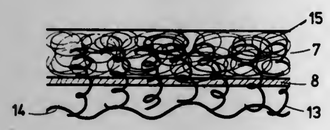
1. A flexible magnetic disk sheet including a central circular hole therein, having a protecting layer formed thereon using a composition consisting essentially of (a) a compound including one or more atomic groups providing lubricity at at least one end of a main chain or a side chain of the molecule of the compound and one or more ester bonds of acrylic acid or methacrylic acid at at least one end of a main chain or a side chain of the molecule of the compound, and (b) an aromatic ketone, wherein said protecting layer is formed only on a surface portion surrounding the edge of the central circular hole of the flexible magnetic disk sheet, wherein the relative amount of the aromatic ketone (b) is from 0.5 to 20 parts by weight per 100 parts by weight of the compound (a), said protecting layer being cured by ultraviolet light.

4,578,300

LAYER FOR FIXING MOQUETTES, CARPETS, RUGS OR THE LIKE

Brigitte I. Merlet, 14, avenue Dubonnet, Courbevoie (Hauts de Seine), France

Continuation-in-part of Ser. No. 622,137, Jun. 19, 1984, abandoned. This application Sep. 3, 1985, Ser. No. 771,480
Claims priority, application France, Jun. 22, 1983, 83 10334
Int. Cl.[4] B32B 5/06
U.S. Cl. 428—91 3 Claims



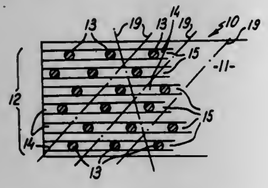
1. Layer for fixing moquette, carpets, rugs or the like, characterised in that it is composed of a lower layer of needled fibres and a separating band transversed by a proportion of the fibres of the lower layer, the lower layer of fibres being equipped with an anti-slip layer, the upper layer, formed by the proportion of fibres which have traversed the separating band, being coated with permanent glue.

4,578,301

FABRIC REINFORCED CEMENT STRUCTURE

Brian Currie, Dunmurry; Thomas Gardiner, Carrickfergus, and Henry M. Green, Knock, all of Northern Ireland, assignors to Lambeg Industrial Research Association and Ulster Polytechnic, both of, United Kingdom

Filed Aug. 21, 1984, Ser. No. 642,782
Claims priority, application United Kingdom, Aug. 23, 1983, 8322645
Int. Cl.[4] B32B 5/12
U.S. Cl. 428—109 13 Claims



1. A composite structure comprising a water-hardened matrix and reinforcement comprising a plurality of layers of open mesh textile fabric, each layer of said textile fabric being composed of a plurality of united sets of textile elements, said elements of each said set lying straight and parallel to each other, the spacing between adjacent elements is greater than the widths of each of said elements, and a plurality of irregular cavities extending transversely of and within said reinforcement and containing plugs of said matrix material.

4,578,302

REINFORCED TAPE LAMINATES

Robert C. Schmidt, Jr., Port Murray, and Paul P. Puletti, Glen Gardner, both of N.J., assignors to National Starch and Chemical Corporation, Bridgewater, N.J.

Filed Jun. 27, 1985, Ser. No. 749,341
Int. Cl.[4] B32B 5/12
U.S. Cl. 428—110 20 Claims

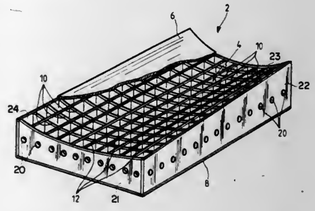
1. A reinforced gummed tape laminate comprising fibers bonded between two substrates using a hot melt pressure sensitive adhesive composition comprising:
(a) 10 to 35% by weight of an A—B—A block or A—B—A—B—A— multi-block copolymer where the A component is styrene and the B component is butadiene or hydrogenated butadiene and wherein the A components comprise at least 28 parts per hundred parts copolymer;
(b) 45 to 70% by weight of a compatible tackifying resin;
(c) 5 to 30% by weight of a plasticizing oil;
(d) 0 to 5% by weight of a petroleum derived wax; and
(e) 0.1 to 2% by weight of a stabilizer.

4,578,303

FIBER COMPOUND STRUCTURAL COMPONENT AND METHOD FOR MAKING SUCH A COMPONENT

Josef Kundinger; Claus Hohmann, and Martin Mühleck, all of Donauwörth, Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

Filed Apr. 9, 1984, Ser. No. 597,931
Claims priority, application Fed. Rep. of Germany, Apr. 27, 1983, 3315246
Int. Cl.[4] B32B 3/12; G02B 5/08
U.S. Cl. 428—116 4 Claims



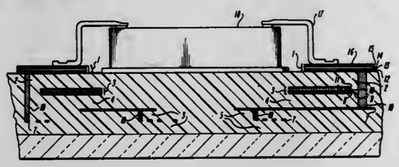
1. A method for manufacturing a structural component of fiber composite material and having at least one surface with a contour curved in space, comprising the following steps:
(a) curing flat fiber composite material to produce cured, flat fiber composite panels,
(b) cutting said cured, flat fiber composite panels into two sets of already cured ribs so that each rib in both sets has a first edge conforming along its length to said contour curved in space and a second opposite edge,
(c) cutting slots into one set of ribs so that said slots extend from said first conforming edge into the respective rib,
(d) cutting slots into the other set of ribs so that said slots extend from said opposite edge into the respective rib,
(e) assembling said first and second sets of already cured ribs by intersecting the ribs of one set with the ribs of the other set with the aid of said slots and interconnecting said ribs to form a rigid, cured core of cured fiber compound material having a honeycomb type configuration with an effective dimensional and form stability as a result of said ribs being already cured,
(f) laminating uncured sheet means of the same fiber composite material as said ribs onto said rigid, cured core to form at least one cover, and
(g) curing said uncured sheet means to thereby bond said cover to said rigid, cured core to form said structural component in which said cover assumes said contour curved in space without any machining operations, whereby said structural component is free of internal stress when said structural component is exposed to changing temperatures.

4,578,304

MULTILAYER WIRING SUBSTRATE

Hiroyuki Hamaguchi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 6, 1984, Ser. No. 678,828
Claims priority, application Japan, Dec. 28, 1983, 58-249488
Int. Cl.[4] B32B 15/00, 3/00; C25D 5/10, 5/28
U.S. Cl. 428—209 7 Claims



1. A multilayer wiring substrate for mounting a plurality of electronic circuit elements thereon, comprising:
a plurality of wiring layers having wirings to be connected with said electronic circuit elements;
a plurality of dielectric layers including an organic material for providing insulation between said wiring layers;
a ceramic layer upon which said wiring layers and dielectric layers are provided;
a plurality of pads formed on the uppermost one of said dielectric layers and connected to wiring members by pressure bonding; and
at least one discontinuous metal laminate including at least two metal layers formed in at least one of said dielectric layers and adjacent to said pads for preventing pressure applied during the bonding of the pads from disturbing said wiring layers.

4,578,305

PHOTOCHROMIC ASSEMBLY COMPRISING PHOTOCHROMIC GLASS BEADS IN POLYMER LATEX

Stephen R. Postle, Brentwood, and Samuel B. Kingston, Doddinghurst, both of England, assignors to Ciba-Geigy AG, Basel, Switzerland

Division of Ser. No. 471,554, Mar. 2, 1983, Pat. No. 4,489,108.
This application May 7, 1984, Ser. No. 607,900
Claims priority, application United Kingdom, Mar. 11, 1982, 8207067
The portion of the term of this patent subsequent to Apr. 24, 2001, has been disclaimed.
Int. Cl.[4] B32B 27/00
U.S. Cl. 428—212 2 Claims

1. A photochromic assembly which comprises coated onto a self-supporting flexible plastic material
(a) a polymer latex layer comprising polymer particles being less than 0.05 um in diameter and from 10% to 40% by weight of the total solids of the latex photochromic glass beads from 0.05 μm to 50 μm in size, the polymer latex having been prepared by emulsion polymerising at a temperature of from 15° C. to 90° C. a monomer or monomer mixture which consists of a monomer which is an alkyl acrylate or an alkyl methacrylate or a monomer mixture comprising both an alkyl acrylate and an alkyl methacrylate or a monomer mixture comprising an alkyl acrylate or an alkyl methacrylate or a mixture thereof together with up to 5% by weight of an ethylenically unsaturated copolymerisable acid or up to 30% by weight of other ethylenically unsaturated comonomers or a mixture thereof in the presence of at least 12% by weight of the monomers present of an anionic surfactant by use of a redox initiator system which is present to the extent of from 0.1 to 3% by weight of the monomers present, and

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4,578,306

WOVEN SHEETING MATERIAL AND METHOD OF MAKING SAME

Gary L. Heiman, Jerusalem, Israel, assignor to Standard Textile Company, Inc., Cincinnati, Ohio

Filed Aug. 17, 1983, Ser. No. 524,187
Int. Cl.[4] D03D 15/00
U.S. Cl. 428—225 20 Claims

1. In a woven sheeting material having warps and wefts and which is free of chemical no-iron surface treatment or finish, the improvement wherein each of said warps is made of a blend of a natural material and a synthetic material and each of said wefts is made substantially entirely of said natual material.

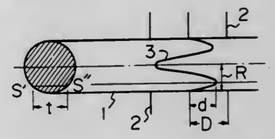
11. In a plainwoven sheeting material for institutional use and having warps and wefts and which is free of chemical no-iron surface treatment or finish, the improvement wherein each of said warps is made of a blend of cotton and polyester and each of said wefts is made entirely of cotton.

4,578,307

NONWOVEN SHEET HAVING IMPROVED HEAT DETERIORATION RESISTANCE AND HIGH ELONGATION

Akira Niki, Osaka, and Hirofumi Iwasaki, Ashiya, both of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Japan

Filed Mar. 15, 1985, Ser. No. 712,243
Claims priority, application Japan, Mar. 17, 1984, 59-50184; Mar. 17, 1984, 59-50185; Mar. 17, 1984, 59-50186
Int. Cl.[4] D04H 3/10, 3/14, 3/16
U.S. Cl. 428—288 21 Claims



1. A nonwoven sheet composed of polyethylene terephthalate filaments, wherein the filaments have an elongation at breakage of at least 100%, a shrinkage in boiling water of at least 15%, the filament section is a circular section having a radius R, and the average refractive index n || 0) of the central portion of the filament section and the average refractive index n || (0.8) of the portion apart by 0.8R from the center satisfy the following requirements:

$$n \parallel (0) \leqq 1.640 \text{ and } [n \parallel (0.8) - n \parallel (0)] \geqq 6 \times 10^{-3}.$$

4,578,308

LAMINATED BOARD LINED WITH THERMALLY AND ELECTRICALLY CONDUCTIVE MATERIAL

Kiyoshi Hani, Sagamihara; Takako Takei, Tokyo; Minekazu Kodama, Takatsuki, and Toshiyuki Sugano, Atsugi, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 6, 1984, Ser. No. 647,638
Claims priority, application Japan, Oct. 14, 1983, 58-192090
Int. Cl.[4] B32B 5/22, 15/12
U.S. Cl. 428—297 10 Claims

1. A laminated board lined with a thermally and electrically conductive material, which comprises:
(a) a prepreg sheet formed of an alumina paper made from a mixture of alumina fibril, as the prinicpal component,

having a fiber diameter of 100 microns or smaller and a fiber length which is ten times or more as long as the fiber diameter, a microfibrillar organic fiber as a binding agent, and a thermosetting resin; and

(b) an electrically conducitve foil bonded to said prepreg sheet.

4,578,309

LAMINATED MATERIAL

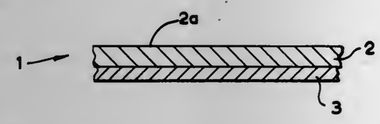
Ernest H. Worth, Edwalton Lodge, Edwalton, Nottingham, United Kingdom

Filed Jul. 30, 1984, Ser. No. 636,009

Claims priority, application United Kingdom, Apr. 5, 1984, 8408756

Int. Cl.⁴ B32B *3/26*; B05D *1/36*; C09J *7/02*

U.S. Cl. 428—315.5 **14 Claims**



1. A laminated material comprising a layer of a microcellular material capable of changing colour in response to the application of heat and pressure, and a layer of adhesive bonded thereto.

4,578,310

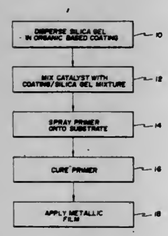
METHOD OF PRODUCING ADHERENT METALLIC FILM

Raymond W. Hatfield, Warren, Mich., assignor to Michael Landey, Grosse Pointe Shores, Mich.

Filed Jul. 22, 1985, Ser. No. 757,345

Int. Cl.⁴ B32B *27/00, 9/04, 15/08*; B05D *1/00*

U.S. Cl. 428—334 **22 Claims**



1. A method of producing an electromagnetic interference shield on a plastic substrate comprising the steps of:

a. priming the surface of the substrate by applying an organic-based coating containing a dispersion of silica gel; and

b. applying a metallic film onto the primed surface.

4,578,311

MAGNETIC RECORDING MEDIUM

Tadashi Ishikuro; Ryuji Shirahata; Takahito Miyoshi, and Masaaki Fujiyama, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 29, 1984, Ser. No. 614,930

Claims priority, application Japan, May 27, 1983, 58-92495

Int. Cl.⁴ G11B *5/72*

U.S. Cl. 428—336 **5 Claims**

1. A magnetic recording medium comprising a nonmagnetic support having provided on opposite surfaces thereof a magnetic recording layer, and a backing layer containing carbon black and a binder, said carbon having an average particle size of 200 to 500 mμ and the weight ratio of carbon black and the binder being 1:3.0 to 1:10.

4,578,312

PHENOXY RESINS AND USE THEREOF IN ELECTRIC INSULATION

Luciano Biorcio, and Carlo Mensi, both of Alessandria, Italy, assignors to The P. D. George Co., St. Louis, Mo. and Industrie Vernici Italiane S.p.A., Milan, Italy

Division of Ser. No. 556,981, Dec. 1, 1983, Pat. No. 4,526,912. This application Mar. 27, 1985, Ser. No. 716,768

Claims priority, application Italy, Feb. 16, 1983, 19614 A/83

Int. Cl.⁴ B32B *0/00*

U.S. Cl. 428—336 **13 Claims**

1. Insulated electric conductor comprising a metallic conductor and a homogeneous layer of insulating material coated on metal, said insulating material comprising a phenoxy resin with a molecular weight higher than 10,000, cured with at least two materials chosen from the group of phenolic resins, melamine resins, and polyisocyanates blocked with phenol, cresol, xylene, caprolactam or benzyl alcohol.

4,578,313

POWDER FOR MAGNETIC RECORDING MEDIA AND PROCESS FOR MANUFACTURING THE SAME

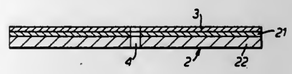
Takeo Ito, Yokohama; Tadashi Ido, Ebina; Hajime Takeuchi; Minoru Hashimoto, both of Yokohama; Tatsumi Maeda, Kawasaki, and Masashi Awa, Yokohama, all of Japan, assignors to Tokyo Shibauru Denki Kabushiki Kaisha, Japan

Filed Sep. 28, 1983, Ser. No. 536,855

Claims priority, application Japan, Oct. 19, 1982, 57-182131

Int. Cl.⁴ B32B *19/02*; G11B *5/712*

U.S. Cl. 428—403 **9 Claims**



1. A powder for a magnetic recording medium comprising:

(a) a plurality of hexagonal ferrite magnetic particles having a mean diameter of about 0.005 to 0.3 microns and a coercive force of about 200 to 2000 Oe, and

(b) a coating covering the surfaces of said magnetic particles, the coating being a carbonaceous residue resulting from the thermal decomposition of an organic material, the amount of said residue coating bring about 0.1 to about 5 wt. percent of the magnetic particles.

6. A method for manufacturing a powder for a magnetic recording medium comprising the steps of:

(a) applying one or more organic materials to the surfaces of a plurality of hexagonal ferrite magnetic particles by dispersing said particles in a solution containing said organic material;

(b) separating the magnetic particles having the organic material as a coating from the solution; and

(c) heating the magnetic particles having the organic coating thereon to a temperature at which the organic material thermally decomposes to form a carbonaceous residue coating of about 0.1 to about 5 wt. % of said magnetic particles;

wherein the mean diameter and the coercive force of the hexagonal ferrite particles are about 0.005 to 0.3 microns and about 200 to 2000 Oe, respectively.

8. A magnetic recording medium comprising:

(a) a base made of a nonmagnetic material; and

(b) a magnetic layer on the base having a plurality of hexagonal ferrite magnetic particles and an organic binder, the magnetic particles being covered with a carbonaceous residue resulting from the thermal decomposition of an organic material, the amount of the residue coating being about 0.1 to about 5 wt. % of the magnetic particles, the means diameter and coercive force of the magnetic particles being about 0.005 to 0.3 microns and about 200 to 2000 Oe, respectively.

4,578,314

MAGNETIC RECORDING MEDIUM AND METHOD FOR MANUFACTURE THEREOF

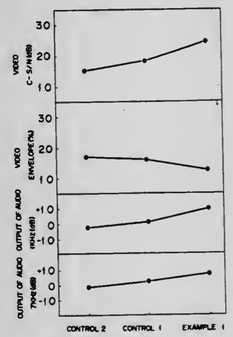
Hiroshi Ohta, Komoro; Shinji Abe, and Kiyoto Fukushima, both of Saku, all of Japan, assignors to TDK Corporation, Japan

Filed Sep. 17, 1984, Ser. No. 651,219

Claims priority, application Japan, Sep. 16, 1983, 58-169290

Int. Cl.⁴ G11B *5/70*

U.S. Cl. 428—403 **14 Claims**



1. A magnetic recording medium having deposited on the surface of a non-magnetic substrate a magnetic layer formed by dispersing a powdered magnetic substance and a powdered abrasive in a binder, which magnetic recording medium is characterized by having abrasive particles activated on the surface thereof by adsorption of from 0.5% to 30% by weight based on said abrasive of a surface active agent by contacting the particles with the vapors of a solution containing the surface active agent in a solvent.

6. A method for the manufacture of a magnetic recording medium having deposited on the surface of a non-magnetic substrate a magnetic layer formed by dispersing a powdered magnetic substance and a powdered abrasive in a binder, which method comprises dissolving a surface active agent in a solvent, vaporizing the resultant solution, bringing the produced gas into contact with said powdered abrasive thereby producing a surface activated abrasive haing adsorbed on its surface from 0.5% to 30% by weight based on said abrasive of the surface active agent, mixing said abrasive with said powdered magnetic substance and said binder and applying the resultant mixture on the surface of said non-magnetic substrate.

4,578,315

PHENOLIC RESINS, CARBOXYLIC RESINS AND THE ELASTOMERS CONTAINING ADHESIVE

Michael Santorelli, Schenectady, N.Y., assignor to Schenectady Chemicals Inc., Schenectady, N.Y.

Division of Ser. No. 701,205, Feb. 13, 1985. This application Aug. 15, 1985, Ser. No. 766,019

Int. Cl.⁴ B32B *27/38*

U.S. Cl. 428—414 **28 Claims**

1. A laminate of copper and a polyimide film bonded by an adhesive composition comprising:

(a) 4–72% by weight phenol-aldehyde resins or a resin of an ethylenically unsaturated phenol;

(b) 4–72% by weight 1,2-epoxy resin;

(c) 10–80% by weight of an ethylene acrylic elastomer; wherein the ratio of phenol aldehyde to 1,2-epoxy resin is from 1:4 to 4:1.

4,578,316

MULTI-LAYER ORIENTED POLYPROPYLENE FILMS WITH LOW COF SKIN(S)

Melvil B. Clauson, Newark, and John R. Wagner, Jr., Rochester, both of N.Y., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 19, 1984, Ser. No. 683,781

Int. Cl.⁴ B32B *27/08*

U.S. Cl. 428—516 **10 Claims**

1. An oriented film structure comprising a polypropylene film having on at least one surface thereof a layer of a blend of (I) a member selected from the group consisting of a medium density polyethylene, a high density polyethylene and mixtures thereof and (II) polypropylene.

4,578,317

JOURNAL

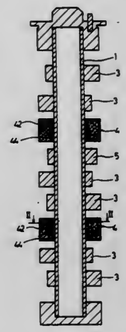
Keiji Nakamura, Misato, Japan, assignor to Nippon Piston Ring Co., Ltd., Tokyo, Japan

Filed Jun. 16, 1983, Ser. No. 504,729

Claims priority, application Japan, Jun. 17, 1982, 57-89574[U]

Int. Cl.⁴ B22F *7/00, 3/00*

U.S. Cl. 428—547 **6 Claims**



1. A composite structure comprising a journal and a rotary shaft, said journal being made of a sintered alloy and assembled to said rotary shaft, said journal comprising an outer portion thereof made of a porous solid phase sintered alloy and used for sliding engagement with a journal bearing and the inner portion thereof made of a liquid phase sintered alloy secured to said rotary shaft, said liquid phase sintered alloy being sinterable at the same temperature as said solid phase sintered alloy to be metallurgically diffusion-bonded to both the solid phase alloy and the rotary shaft.

4,578,318

SHEET METAL ORNAMENTS HAVING A LACY APPEARANCE AND PROCESS FOR MAKING THEM

Donald C. Schoch, Sandy Hook, Conn., and Albert C. Engelmann, Esmond, R.I., assignors to Tamerlane Corporation, Esmond, R.I.

Filed Oct. 17, 1984, Ser. No. 661,725

Int. Cl.⁴ B32B *3/10*; B44C *1/22*; B44F *7/00*

U.S. Cl. 428—615 **15 Claims**

1. A coated apertured sheet metal ornament exhibiting the appearance of lace, comprising:

a metal sheet having a front viewing surface and a rear surface;

said sheet being intricately apertured from surface to

surface, to define a lace-like pattern of unapertured areas;

said sheet being intricately etched in further portions through said front surface to depths only partially through said sheet, to create recessed areas in said sheet;

said intricately etched further portions defining unetched portions having dimensions which approximate the dimensions of lace stitching, to enhance the lace-like appearance of said pattern;



said apertures and intricately etched further portions being generally substantially wider than adjacent solid portions of said ornament, for delicacy of appearance;

the width of any solid area adjacent to a recessed area or an aperture in the metal sheet being at least equal to the depth of the adjacent recess or aperture; and

a thin layer of coating on said sheet to enhance the lacy decorative appearance.

4,578,319

SURFACE TREATED STEEL SHEET HAVING AN EXCELLENT WELDABILITY AND ITS PRODUCTION METHOD

Nobuyoshi Shimizu; Terunori Fujimoto; Tsuneo Inui, and Masatoki Ishida, all of Yamaguchi, Japan, assignors to Toyo Kohan Co., Ltd., Tokyo, Japan

Division of Ser. No. 608,088, May 8, 1985. This application Sep. 30, 1985, Ser. No. 782,262
Int. Cl.⁴ C25D *5/12*
U.S. Cl. 428—632 **2 Claims**

1. A surface treated steel sheet consisting of a steel base having three layers thereon in the following order: a bottom layer of 30 to 300 mg/m^2 of metallic chromium, a middle layer of 10 to 500 mg/m^2 of metallic tin or 10 to 500 mg/m^2 of tin-nickel alloy containing 20 to 60 weight % of nickel and a top layer of hydrated chromium oxide of 2 to 18 mg/m^2 as chromium.

4,578,320

COPPER-NICKEL ALLOYS FOR BRAZED ARTICLES

Deepak Mahulikar, West Haven, and Eugene Shapiro, Hamden, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Mar. 9, 1984, Ser. No. 587,750
Int. Cl.⁴ B32B *15/20*
U.S. Cl. 428—674 **15 Claims**

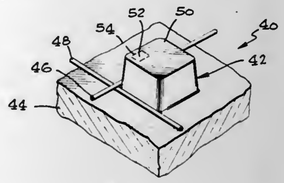
1. A copper alloy having improved ductility at elevated temperatures, said alloy consisting of about 5% to about 45% nickel, about 0.4% to about 1.1% manganese, about 0.003% to about 0.04% phosphorous and the balance essentially copper.

4,578,321

ALTERING THE SWITCHING THRESHOLD OF A MAGNETIC MATERIAL

William E. Ross, Woodland Hills, and Bruce E. MacNeal, Fullerton, both of Calif., assignors to Litton Systems, Inc., Beverly Hills, Calif.

Division of Ser. No. 320,819, Nov. 12, 1981. This application Jun. 13, 1983, Ser. No. 503,404
Int. Cl.⁴ H01F *10/02*
U.S. Cl. 428—693 **3 Claims**



1. A magneto-optic post element formed from a magnetic material that exhibits magnetic domain characteristics and supported by a nonmagnetic material, and coincident current select conductors acting upon the post element to selectively establish a preferred direction of magnetic orientation in the magnetic material, the implemented post element characterized by:

(a) said magnetic material having a high anisotropy characteristic;

(b) a first region in said magnetic material having a low anisotropy characteristic relative to the high anisotropy characteristic of said magnetic material,

(c) an interface developed by the juxtaposition of said first region and said magnetic material so that said first region is exchange coupled with said magnetic material, and

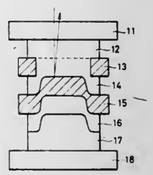
(d) an easy axis of magnetization in said magnetic material and in said first region so that the conductors act upon said implemented post element for the nucleation of a domain wall in said first region and the movement of the domain wall from said low anisotropy material of said first region, through said interface, and into said high anisotropy magnetic material where the propagation of the domain wall can be continued to affect a reversal of magnetic orientation in the magnetic material.

4,578,322

RECORDING MEDIUM

Mitsuharu Sawamura, Yokohama; Susumu Ito, Tokyo; Masaaki Matsushima, Machida; Hiroyoshi Kishi, Tokyo; Eizo Sasamori, Yokohama; Satoshi Yoshihara; Shigeharu Iijima, both of Kawasaki, and Katsuhiko Takano, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 14, 1985, Ser. No. 620,806
Claims priority, application Japan, Jun. 16, 1983, 58-108490
Int. Cl.⁴ G11B *9/00*
U.S. Cl. 428—694 **2 Claims**



1. An optical recording medium, comprising:

(a) a first recording layer;

(b) a second recording layer provided in contiguity to said first recording layer; and

(c) a separation layer for spatially separating said first and second recording layers;

said first recording layer having a sufficient film thickness not to permit the recording to be effected on said second recording layer, while the recording operation is performed on said first recording layer, and said recording operation being effected on said second recording layer at positions corresponding to defective portions in said first recording layer,

said separation layer having an optical film thickness corresponding to an integral multiple of one half of a wavelength λ of the recording light beam,

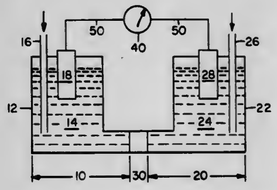
wherein said separation layer has such function that permits the recording to be effected on said second recording layer with the same effeciency as that of the recording on said first recording layer, when said recording operations are effected on said second recording layer in accordance with the defects in said first recording layer.

4,578,323

FUEL CELL USING QUINONES TO OXIDIZE HYDROXYLIC COMPOUNDS

William Hertl, Corning, and Robert G. Schaeffler, Elmira, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Oct. 21, 1983, Ser. No. 544,279
Int. Cl.⁴ H01M *8/20, 8/22*
U.S. Cl. 429—15 **17 Claims**



1. A chemical fuel cell capable of producing electricity from organic compounds and forming oxidation products thereof, having separate oxidation and reduction half cells and a means for separating the half cells while permitting ions to flow between the half cells is characterized by:

(a) an anaerobic oxidation half cell comprising:

(i) an electrically conductive, electron donor fuel solution having an effective amount of an electron-accepting, quinone compound and an electron-donating polyhydroxylic organic compound;

(ii) a cell chamber for containing the fuel solution; and

(iii) an electrode contacting the fuel solution; and

(b) a reduction half cell comprising:

(i) an electrically conductive, ionic solution;

(ii) a cell chamber for containing the ionic solution; and

(iii) an electrode contacting the ionic solution;

whereby the polyhydroxylic compound is oxidized and an electrical potential exists between the electrodes.

4,578,324

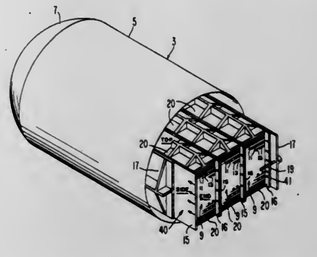
ACTIVE COOLING SYSTEM FOR ELECTROCHEMICAL CELLS

Charles W. Koehler, Fremont; Gerrit van Ommering, San Francisco, both of Calif., and Neil H. Puester, Aurora, Colo., assignors to Ford Aerospace & Communications Corporation, Detroit, Mich.

Filed Oct. 5, 1984, Ser. No. 658,015
Int. Cl.⁴ H01M *8/04*
U.S. Cl. 429—26 **9 Claims**

1. An active cooling system for cooling several substantially planar electrochemical cells arranged in a stack, said cooling system comprising:

means for directing a flow of cooling fluid parallel to the plane of, and adjacent to, each cell; and



means for substantially equalizing the rate of flow of cooling fluid past each cell; wherein

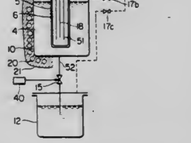
each cell experiences substantially the same cooling environment.

4,578,325

POWER STORAGE SYSTEM USING SODIUM-SULFUR BATTERIES

Tadashi Gotou; Fumio Kawamura; Norihiko Sagawa, and Hideo Yusa, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 17, 1984, Ser. No. 581,270
Claims priority, application Japan, Feb. 18, 1983, 58-24611
Int. Cl.⁴ H01M *10/48*
U.S. Cl. 429—91 **26 Claims**



1. A sodium-sulfur battery which comprises a molten sodium chamber containing molten sodium as an active material for a minus pole and having a minus pole, at least one molten sulfur chamber containing molten sulfur as an active material for a plus pole and having a plus pole, both said chambers being partitioned by a sodium ion-permeating solid electrolyte, a sodium storage tank communicating with the molten sodium chamber, and a draining mechanism for withdrawing the molten sodium from the molten sodium chamber to the sodium storage tank, when desired, wherein said draining mechanism includes means for detecting when said molten sodium directly contacts said molten sulfur through said sodium ion-permeating solid electrolyte, said draining mechanism also including means, co-operating with said means for detecting, for withdrawing the molten sodium from the molten sodium chamber to the sodium storage tank when said means for detecting detects direct contacting between the molten sodium and molten sulfur through the sodium ion-permeating solid electrolyte.

4,578,326

NOVEL MACROMOLECULAR MATERIAL FOR USE IN REALIZING ELECTROLYTES AND/OR ELECTRODES

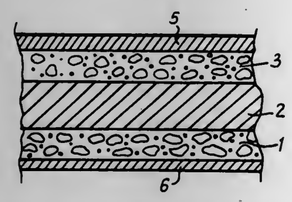
Michel Armand, Echirolles; Daniel Muller, Pau, both of France; Michel Duval, Montreal, and Paul-Etienne Harvey, Longueuil, both of Canada, assignors to Societe Nationale Elf Aquitaine, Courbevoie, France and Hydro-Quebec, Montreal, Canada

Filed Feb. 28, 1984, Ser. No. 584,535

Claims priority, application France, Jun. 15, 1983, 83 09886; Indonesia, Mar. 11, 1983, 9 228

Int. Cl.[4] H01M *6/18, 4/62*

U.S. Cl. 429—192 36 Claims



1. An ionically conductive macromolecular material having improved conductivity at temperatures higher and lower than the melting point of ethylene oxide crystallities which comprises a solid solution of at least one ionic compound dissolved in a macromolecular material, said macromolecular material being a copolymer of ethylene oxide and a cyclic ether oxide, said copolymer having a polyether structure and a proportion of cyclic ether units to ethylene oxide units whereby said macromolecular material is non-crystalline at ambient temperatures.

4,578,327

ELECTRIC CELLS USING FLUORINATED GRAPHITE AS ACTIVE MATERIAL OF POSITIVE ELECTRODE

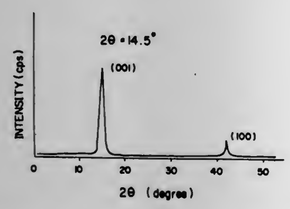
Shigeakira Saito, and Masayuki Fukuoka, both of Shizuoka, Japan, assignors to Asahikasei Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 585,876, Mar. 2, 1984, abandoned. This application Aug. 5, 1985, Ser. No. 763,075

Claims priority, application Japan, Apr. 5, 1983, 58-58644; Jun. 9, 1983, 58-101701

Int. Cl.[4] H01M *6/14*

U.S. Cl. 429—194 31 Claims



1. An electric cell comprising a negative electrode having a light metal as an active material, an electrolyte which is not reduced by current flowing through the cell, and a positive electrode having, as an active material, a treated fluorinated graphite having the formula $(C_xF)_n$ wherein x is a numerical value of about 2.0 to about 5.5 and n refers to an indefinite number of the recurring (C_xF) units and having a crystalline structure exhibiting a peak at about 13.7° to about 15.0° in terms of an angle of 2θ corresponding to the diffraction at the (001) plane in a X-ray diffraction pattern, a peak in the vicinity of 685.3 eV due to the F_{1S} and two peaks in the vicinity of 287.5 eV and 284.3 eV due to the C_{1S} in the spectrum of electron spectroscopy of chemical analysis, two peaks in the vicinity of 1100 cm^{-1} and 1240 cm^{-1} in the IR spectrum, an electric conductivity of at least about $10^{-8}\Omega^{-1}$ cm^{-1} and a thermal stability up to 200° C. in air from the viewpoint of a X-ray diffraction pattern, said graphite treated with an alkali or potassium iodide solution prior to insertion of said graphite into said cell so as to increase the shelf life of the cell and improve the flatness of the cell discharge curve.

4,578,328

PHOTOPATTERNABLE POLYIMIDE COMPOSITIONS AND METHOD FOR MAKING

William D. Kray, San Bernadino, Calif., assignor to General Electric Company, Waterford, N.Y.

Filed Jul. 9, 1984, Ser. No. 628,923

Int. Cl.[4] G03C *5/16, 1/70, 1/76*

U.S. Cl. 430—18 18 Claims

1. A method for patterning an insulative layer on a substrate, comprising:

(A) applying a coating of a solution comprising a polyimide polymer having at least one pendant aromatic group and at least one bis-maleimide to a substrate in the substantial absence of light;

(B) allowing the coated substrate to dry;

(C) masking the coated substrate;

(D) exposing the masked substrate to a source of light for a time sufficient to effect crosslinking of said polymer having at least one pendant aromatic group and said bis-maleimide; and

(E) developing the exposed substrate.

10. An article of manufacture prepared by a method comprising:

(A) applying a coating of a solution comprising polyimide polymer having at least one pendant aromatic group, and at least one bis-maleimide to a substrate in the substantial absence of light;

(B) allowing the coated substrate to dry;

(C) masking the coated substrate;

(D) exposing the masked substrate to a source of light for a time sufficient to effect crosslinking of said polymer having at least one pendant aromatic group and said bis-maleimide; and

(E) developing the exposed substrate.

4,578,329

METHOD OF MARKING AN ARTICLE HAVING AT LEAST A POLYOLEFIN SURFACE AND AN ARTICLE HAVING A POLYOLEFIN SURFACE PROVIDED WITH A BLACK MARK OF DECOMPOSED POLYOLEFIN

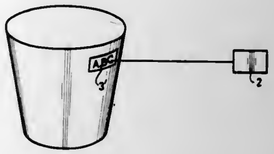
Albert Holsappel, Hardenberg, Netherlands, assignor to Wavin B.V., Netherlands

Filed Nov. 23, 1983, Ser. No. 554,803

Claims priority, application Netherlands, Nov. 26, 1982, 8204604

Int. Cl.[4] B23K *26/18;* B65D *1/00;* B05D *3/06;* G03C *1/72*

U.S. Cl. 430—18 17 Claims



1. An article having at least a polyolefin surface, provided with a mark obtained by exposing said surface to the action of a laser beam, wherein the polyolefin comprises a nondye laser radiation absorbing substance in an amount sufficient for decomposing the poly-olefin by the laser beam energy.

4,578,330

HYDROXYALUMINUMPHTHALOCYANINE HAVING REDUCED GREEN ABSORPTION

Michael T. Regan, Fairport, and Hal E. Wright, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

PCT No. PCT/US84/00922, § 371 Date Nov. 16, 1984, § 102(e) Date Nov. 16, 1984, PCT Pub. No. WO85/00440, PCT Pub. Date Jan. 31, 1985

PCT Filed Jun. 18, 1984, Ser. No. 674,655

Int. Cl.[4] G03G *5/06*

U.S. Cl. 430—37 7 Claims

1. A migraton imaging dispersion comprising the hydroxyaluminumphthalocyanine of as an electrically photosensitive colorant.

4,578,331

COLOR IMAGE FORMING METHOD

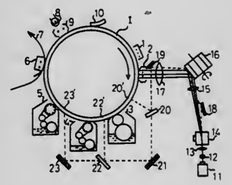
Itsuo Ikeda, Sagamihara; Junji Kurokawa, Yokohama; Mitsuo Hasebe, Tokyo; Seiichi Miyagawa, Nagareyama, and Hajime Hariu, Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Japan

Filed Jul. 10, 1984, Ser. No. 629,354

Claims priority, application Japan, Jul. 11, 1983, 58-124857; Jul. 11, 1983, 58-124859; Jul. 11, 1983, 58-124858; Jul. 12, 1983, 58-125455

Int. Cl.[4] G03G *13/01*

U.S. Cl. 430—42 8 Claims



1. An electrophotographic color image forming process wherein three light beams each representing image information of one of three primary colors or yellow, magenta and cyan of a document in color to be recorded are projected against an electrophotographic photosensitive member to expose same and form electrostatic latent images thereon, each of the electrostatic latent images is developed with a toner of one of the three different colors to form toner images of three different colors, and the toner images of the three different colors thus produced are printed by transfer-printing on a transfer-printing sheet to provide a color image of the document, characterized in that the electrophotographic photosensitive member is composed of at least a conductive substrate, a photoconductive material layer disposed on said substrate and a transparent electrically insulating layer disposed on said photoconductive material layer, and that the process comprises the steps of:

(a) uniformly charging a surface of the photoelectrographic photosensitive member from the transparent insulating material layer side by means of direct-current corona discharge of one polarity;

(b) projecting the three light beams each representing image information of one of the three colors against the surface of the photosensitive member to expose same and successively write a multiplicity of image information of three colors on the surface of the photosensitive member as a repeating series of three stripes of different colors simultaneously as or immediately before the electrophotographic photosensitive member is subjected from the transparent insulating material layer side by a direct-current or alternating-current corona discharge of a polarity opposite the one polarity of the corona discharge performed in step (a);

(c) selectively irradiating portions of the surface of the electrophotographic photosensitive member exposed to one of the three light beams to form electrostatic latent images corresponding to the image information of the one of the three colors and reverse developing the electrostatic latent image with a toner of the color to form toner images of the color, the aforesaid step being repeated for the image inforamtion of all the three different colors; and

(d) printing by transfer-printing on a surface of a transfer-printing sheet the toner images of the three different colors obtianed in step (c).

4,578,332

METHOD OF REMOVING ELECTROSTATIC CHARGE FROM ELECTROPHOTOGRAPHIC PHOTOSENSITIVE DEVICE

Akitoshi Toda, and Yoshiyuki Mimura, both of Hachioji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Nov. 9, 1984, Ser. No. 669,990

Claims priority, application Japan, Nov. 9, 1983, 58-209116; Nov. 9, 1983, 58-209117

Int. Cl.[4] G03G *13/24*

U.S. Cl. 430—55 16 Claims



1. In a process for producing a copy having the steps of forming, in an electrophotographic photosensitive device having a conductive layer overlain by a photoconductive layer which in turn is overlain by a transparent insulating layer, an electrostatic latent image by an image forming process which includes at least an exposure to a light image simultaneously with a D.C. or A.C. charging and, after making a copy from said electrostatic latent image, erasing said electrostatic latent image by removing the residual electrostatic charge, the improvement comprising:

a method of removing electrostatic charge from said photosensitive device comprising: a first step of uniformly charging said photosensitive device by a D.C. charger while subjecting said photosensitive device to an exposure over the whole area thereof; a second step of effecting a charging for adjustment of potential level so as to adjust the potential of said photosensitive device from the level obtained as a result of the charging in the first step to the desired level; and a third step of exposing the whole area of said photosensitive device,

wherein the voltage applied to said D.C. charger in said first step including the D.C. charging and exposure of the whole area is equal to or higher than the absolute value of the D.C. voltage or the effective value of the A.C. voltage applied during the step in which the charging and that imaging exposure are conducted simultaneously for forming the electrostatic latent image and is continued for a

time, at the shortest, until the levels of potential in the regions of said photosensitive device in which the dark and bright portions of such image have been formed are equalized, and

wherein the quantity of light to which said photosensitive device is exposed in said first step is equal to or greater than the quantity of light applied in the step in which the charging and image exposure are conducted simultaneously in the process for forming the electrostatic latent image.

4,578,333

MULTILAYER PHOTOCONDUCTIVE ELEMENTS HAVING AN ACRYLONITRILE COPOLYMER INTERLAYER

William J. Staudenmayer, Pittsford; Tsang J. Chen, Rochester; Paul M. Borsenberger, Hilton, and Hans R. Grashof, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 495,227, May 16, 1983, abandoned. This application Aug. 24, 1984, Ser. No. 643,768

Int. Cl.⁴ G03G *5/14*

U.S. Cl. 430—60 **18 Claims**

1. In a photoconductive element comprising an electrically conductive support, a charge generating layer containing a photoconductive pigment, a charge transport layer, and an interlayer between the conductive support and the charge generating layer, the improvement wherein the interlayer comprises an acrylonitrile copolymer.

4,578,334

MULTI-ACTIVE PHOTOCONDUCTIVE INSULATING ELEMENTS AND METHOD FOR THEIR MANUFACTURE

Paul M. Borsenberger, Hilton; Michael T. Regan, and William J. Staudenmayer, both of Pittsford, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 23, 1984, Ser. No. 674,197

Int. Cl.⁴ G03G *5/06, 5/14*

U.S. Cl. 430—59 **22 Claims**

16. A multi-active photoconductive insulating element exhibiting very high electrophotographic speed, panchromatic sensitivity, and low contrast,

said element having at least two active layers comprising a charge-generation layer in electrical contact with a charge-transport layer;

said charge-generation layer:

(a) containing a crystalline form of N,N'-bis(2-phenethyl)-perylene-3,4:9,10-bis-(dicarboximide) which is capable, upon exposure to activating radiation, of generating and injecting charge carriers into said charge-transport layer,

(b) exhibiting a first spectral absorption peak at approximately 430 nm and a second spectral absorption peak at approximately 620 nm, and

(c) having a prominent line at a 2θ angular position of 23 degrees in the X-ray diffraction pattern obtained with CuK α radiation; and

said charge-transport layer being an organic composition comprising a polymeric binder and, as a charge-transport agent, a polynuclear tertiary aromatic amine which is capable of accepting and transporting injected charge carriers from said charge-generation layer.

4,578,335

INTERLEUKIN 2 RECEPTOR

David L. Urdal; Carl J. March, and Steven K. Dower, all of Seattle, Wash., assignors to Immunex Corporation, Seattle, Wash.

Filed May 21, 1984, Ser. No. 612,559

Int. Cl.⁴ C12P *21/00;* **C07K** *3/02*

U.S. Cl. 435—68 **10 Claims**

1. A process for producing a homogeneous receptor for interleukin 2, comprising:

(a) culturing cells capable of expressing interleukin 2 receptor molecules in culture medium;

(b) harvesting said cells from the culture medium;

(c) extracting the interleukin 2 receptor molecules from said cells; and

(d) purifying said interleukin 2 receptor molecules with a reversed phase, high-performance liquid chromatography column containing methyl groups covalently bonded to silica gel whereby the interleukin 2 receptor molecules are retained by the column.

4,578,336

PRODUCING NUCLEOSIDES

Yasuhiro Sumino, Kobe; Koji Sonoi, Suita, and Muneharu Doi, Takarazuka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Nov. 24, 1982, Ser. No. 444,457

Claims priority, application Japan, Nov. 27, 1981, 56-191033

Int. Cl.⁴ C12P *19/40*

U.S. Cl. 435—88 **1 Claim**

1. A method of producing inosine or guanosine or both inosine and guanosine, comprising cultivating an adenine-requiring microorganism capable of producing inosine or guanosine or both inosine and guanosine, selected from the group consisting of *Bacillus pumilus* No. 148-S-16 (FERM BP-6, IFO 12483), *Bacillus pumilus* No. 158-A-17 (FERM BP-7, IFO 12477), *Bacillus subtilis* ATCC 19221 (IFO 14123) and *Bacillus subtilis* ATCC 13956 (IFO 14124), in a culture medium containing a source of adenine selected from the group consisting of adenine, adenosine, 5'-adenosine monophosphate, 3'-adenosine monophosphate, 5'-adenosine diphosphate, 5'-adenosine triphosphate, ribonucleic acid, deoxyribonucleic acid, adenylosuccinic acid, microbial cells, extracts of microbial cells, beef extract, and fish flesh extract, to cause said microorganism to elaborate and accumulate inosine or guanosine or both inosine and guanosine in a fermentation broth; and recovering the inosine or guanosine or both inosine and guanosine from said broth,

wherein the improvement comprises incorporating said source of adenine in said medium in an excess amount over the amount of adenine that would be conducive to a maximum yield of inosine or guanosine or both inosine and guanosine in an aerobic culture if air were used, the amount of said source of adenine in said medium being 200 to 800 μg/ml as adenine, and cultivating said microorganism while air and oxygen are bubbled into said medium in accordance with the following equations:

$$Q_{AIR} = \frac{100 - C}{79} \times Q_o$$

$$Q_{OXYGEN} = \frac{C - 21}{79} \times Q_o$$

wherein Q_{AIR} and Q_{OXYGEN} are the amounts (VVM) of air and oxygen, respectively, that are supplied to said medium, Q_o is 0.2 to 5 VVM, which is the feed amount of air in a conventional process and C is the oxygen concentration (%) of a gaseous mixture of oxygen and air, which is arbitrarily determined to be not less than the value C_o calculated from the following experimental equation:

$$C_o = Ad \times 10^3$$

wherein C_o represents the minimum oxygen concentration (%) of a gaseous mixture of oxygen and air, which is needed to obtain the maximum accumulation yield of inosine or guanosine or both inosine and guanosine when the adenine equivalent concentration of adenine source in the medium is Ad (weight/volume, %).

4,578,337

DRY PROCESS FOR DEVELOPING ELECTROSTATIC LATENT IMAGES WITH A DEVELOPER COMPRISING TWO KINDS OF MAGNETIC CARRIERS HAVING DIFFERENT PHYSICAL STRUCTURE

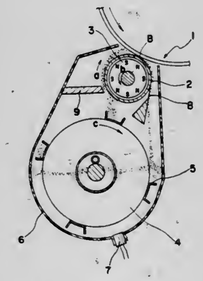
Tateki Oka, Toyohashhi, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Apr. 16, 1984, Ser. No. 600,409

Claims priority, application Japan, Apr. 15, 1983, 58-67488

Int. Cl.⁴ G03G *9/08, 9/10, 9/14*

U.S. Cl. 430—107 **15 Claims**



1. A process for developing electrostatic latent images comprising using a dry magnetic developer comprising an insulating toner and magnetic carriers, said magnetic carriers comprising a ferromagnetic carrier composed of a ferromagnetic material and a binder-type magnetic carrier, said ferromagnetic carrier being composed of resin-coated ferromagnetic material or bare particles of a ferromagnetic material of soft type, said binder-type magnetic carrier being composed of particles of a powdered magnetic material dispersed in a thermoplastic resin binder and having a coercive force greater than that of the ferromagnetic carrier.

4,578,338

DEVELOPMENT PROCESS WITH TONER COMPOSITION CONTAINING LOW MOLECULAR WEIGHT WAXES

Robert J. Gruber, Pittsford; Ronald J. Koch, Webster, and John F. Knapp, Fairport, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 31, 1984, Ser. No. 645,892

Int. Cl.⁴ G03G *13/14*

U.S. Cl. 430—120 **26 Claims**

1. An improved process for the development and fixing of electrostatic latent images consisting essentially of (1) generating an electrostatic latent image on a photoconductive imaging member, (2) developing this image with a toner composition comprised of toner resin particles, pigment particles, and a wax component of a molecular weight of from about 500 to about 20,000, (3) transferring the developed image to a suitable substrate, and subsequently (4) fusing the transferred image with a compliant oil fuser roll, wherein the amount of fuser oil consumed is from about one microliter to about three microliters per page of developed image.

4,578,339

PHOTOSENSITIVE IMAGING SYSTEM EMPLOYING OIL-CONTAINING MICROCAPSULES

David G. Adkins, Chillicothe, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Filed Aug. 23, 1984, Ser. No. 643,565

Int. Cl.⁴ G03C *1/68, 5/54, 7/00;* **B01J** *13/02*

U.S. Cl. 430—138 **16 Claims**

1. A photosensitive transfer imaging system comprising an imaging sheet and a developer sheet;

said imaging sheet including:

a photographic support;

a layer of photosensitive microcapsules on one surface of said support;

said microcapsules having a discrete capsule wall which encapsulates, as a first internal phase, a chromogenic material, and a photosensitive composition which undergoes a change in viscosity upon exposure to actinic radiation;

said developer sheet including:

a support member, and

a layer of a developer composition on one surface of said support member,

said developer composition being capable of reacting with said chromogenic material and generating a color image;

at least one of said imaging sheet and said developer sheet carrying a plurality of oil-containing microcapsules co-deposited on the reactive surface thereof with said photosensitive microcapsules or said developer material, said oil-containing microcapules having a discrete capsule wall which encapsulates a second internal phase, said second internal phase consisting essentially of an oil in which said chromogenic material is soluble, said oil having a viscosity less than the viscosity of said first internal phase;

said imaging system being capable of forming images by image-wise exposing said imaging sheet to actinic radiation, assembling said imaging sheet and said developer sheet with their reactive surfaces in contact, and subjecting said photosensitive microcapsules to a uniform rupturing force, said photosensitive microcapsules thereby image-wise releasing said first internal phase containing said chromogenic material to said developer sheet where said chromogenic material and said developer react to form an image; and said oil-containing microcapsules rupturing and releasing said second internal phase, said second internal phase thereupon mixing with said first internal phase and reducing the viscosity of said first internal phase and thereby enhancing image formation.

4,578,340

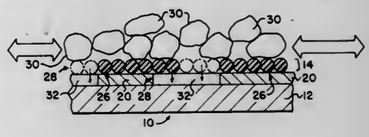
FREE PARTICLE ABRASION DEVELOPMENT OF IMAGING SHEETS EMPLOYING PHOTOSENSITIVE MICROCAPSULES

Edward J. Saccocio, Columbus; T. Kay Kiser, Chillicothe; Richard F. Wright, Chillicothe, and Donald L. Head, Chillicothe, all of Ohio, assignors to The Mead Corporation, Dayton, Ohio

Filed Nov. 13, 1984, Ser. No. 670,447

Int. Cl.⁴ G03C *1/72;* **G03D** *13/00, 13/04;* **B32B** *5/16*

U.S. Cl. 430—138 **11 Claims**



1. A method of rupturing photosensitive microcapsules which form a photosensitive layer on the surface of an imaging sheet comprising the steps of:

forming a body of free particles; and

establishing relative movement between said sheet and said body of free particles such that said free particles move over said microcapsules on the surface of said sheet and thereby rupture said microcapsules.

4,578,341

ACIDIC PHOTOSENSITIVE RELIEF IMAGE-FORMING MATERIALS WITH INDICATOR PIGMENT OR DYE

Peter B. Readings, Chertsey; Nandor Mihalik, Walton-on-Thames, and Robin Taylor, Frimley Green, all of England, assignors to Sensitisers (Research) Ltd., Deepcut, England

Continuation of Ser. No. 358,665, Mar. 16, 1982, abandoned. This application Aug. 3, 1984, Ser. No. 636,810

Claims priority, application United Kingdom, Mar. 24, 1981, 8109098

Int. Cl.⁴ G03C *1/60, 1/71, 1/68, 1/76*

U.S. Cl. 430—155 **14 Claims**

1. A relief-image forming material comprising a substrate having an acidic photosensitive layer thereon, said layer comprising in admixture a photosensitive component, selected from the group consisting of light-hardening components, light-solubilising components and components that upon exposure to actinic light are solubilised to one solvent and rendered insoluble in another solvent, and an indicator, being a substance selected from pigments and dyes capable of existing in two states that differ in actinic opacity relative to light of at least one given wavelength in the range of from 360 to 540 nm depending on pH, said indicator being in a state of lower actinic opacity in the unexposed material and being capable of remaining in substantially such a state during exposure to actinic light and of shifting to a state of higher actinic opacity after exposure to actinic light upon a shift of the pH of the photosensitive layer to a higher pH value, said indicator being present in an amount effective to produce, after the shift to its state of higher actinic opacity and after removal of a portion of said layer, a relief image having an actinic opacity corresponding to a transmission density greater than 2 as measured on a Macbeth densitometer using a filter that transmits light at said given wavelength.

4,578,342

PRESENSITIZED DIAZO LITHOGRAPHIC PLATE WITH ANODIZED AND SILICATED ALUMINUM PLATE SURFACE AND SUBBING LAYER OF POLYMER WITH SULFONIC ACID GROUP

Toshiyuki Sekiya, Shizuoka, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 2, 1983, Ser. No. 557,303

Claims priority, application Japan, Dec. 2, 1982, 57-211942

Int. Cl.⁴ G03C *1/60, 1/94*

U.S. Cl. 430—159 **23 Claims**

1. A presensitized lithographic plate, comprising:
an anodized aluminum support treated with a sodium silicate aqueous solution;
a subbing layer provided on said support, wherein said subbing layer comprises a high molecular weight compound containing sulfonic acid group-containing monomer units as recurring units and has a molecular weight in the range of 1000 to about 1,000,000; and
a light-sensitive layer provided on said subbing layer, wherein said light-sensitive layer comprises, in admixture, a diazo resin condensate of an aromatic diazo compound and an active carbonyl or active ether compound, and an organic high molecular weight binder; wherein the amounts of said condensate and said binder are in the range of 3 to 30 wt % and 97 to 70 wt %, respectively, based on the total weight of the condensate and the binder.

4,578,343

METHOD FOR PRODUCING FIELD EFFECT TYPE SEMICONDUCTOR DEVICE

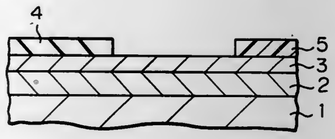
Kinjiro Kosemura, Atsugi; Yoshimi Yamashita, Sagamihara; Noriaki Nakayama, Ebina, and Sumio Yamamoto, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 533,977, Sep. 20, 1983, abandoned. This application Mar. 28, 1985, Ser. No. 717,477

Claims priority, application Japan, Sep. 21, 1982, 57-163063

Int. Cl.⁴ G03C *5/00*

U.S. Cl. 430—296 **9 Claims**



1. A method for producing a field effect type semiconductor device comprising the steps of:
(a) forming a semiconductor active layer on a substrate;
(b) forming source and drain electrodes on the semiconductor active layer;
(c) forming a resist layer on the semiconductor active layer and the source and drain electrodes;
(d) exposing a first portion of the resist layer in accordance with a gate electrode pattern;
(e) carrying out auxiliary exposure of a second portion of the resist layer adjacent the first portion after or before the exposure of the first portion of the resist layer in said step (d);
(f) developing the exposed resist layer to form an upper opening of the resist layer in accordance with the gate electrode pattern and a lower opening of the resist layer in accordance with the exposure of the first and second portions, the cross-section of the opening of the resist layer in the source-drain direction being asymmetrically enlarged by the developing process in the area near the drain electrode;
(g) forming a recess in the semiconductor active layer by etching the exposed semiconductor active layer through the lower opening of the resist layer using the resist layer as a mask, the recess having an asymmetric structure and being enlarged, with respect to the upper opening, in the area near the drain electrode; and
(h) forming a gate electrode on the surface of the recess using the resist layer as a mask, the position of the gate electrode being closer to the source electrode than to the drain electrode and being aligned with the edges of the upper opening.

4. A method according to claim 1, wherein said steps (a) and (e) of exposing the resist layer each comprise the substep of irradiating the resist layer with an electron beam.

4,578,344

PHOTOLITHOGRAPHIC METHOD USING A TWO-LAYER PHOTORESIST AND PHOTOBLEACHABLE FILM

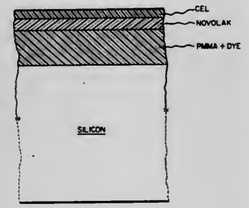
Bruce F. Griffing, Schenectady, and Paul R. West, Clifton Park, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 20, 1984, Ser. No. 684,395

Int. Cl.⁴ G03C *5/00*

U.S. Cl. 430—312 **4 Claims**

1. In a photolithographic method of forming a patterned photoresist relief from a two-layer photoresist which comprises,
(1) depositing a first resist on a substrate to produce a bottom resist layer having a substantially planar top surface, and depositing a second resist as a top resist layer producing a multilayer substrate coating having the bottom resist layer sandwiched between the substrate and the top resist layer and
(2) exposing the top resist layer to light in a range in which the second resist is insensitive, said light having been passed through a mask to expose only selected portions of the top resist layer and
(3) thereafter developing the top layer to produce a portable conformable mask and the layers of the substrate coating other than the top resist layer processed to replicate the pattern of this portable conformable mask to such layers,



whereby an incomplete resolution of the lower photoresist layer is obtained due to variations in the profile and thickness of the upper photoresist pattern, the improvement which comprises, applying a photobleachable film comprising an arylnitrone and an inert organic polymer binder onto the surface of the upper photoresist layer prior to exposing the two-layer photoresist to patterned UV light, whereby reducing the variations and thickness of the resulting portably conformable mask obtained from the development of the exposed upper photoresist layer and thereby improving the resolution of the resulting patterned photoresist relief obtained from the subsequent exposure and development of lower photoresist layer.

4,578,345

METHOD FOR PROCESSING COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Shigeru Ohno; Shinzo Kishimoto; Akihiko Ikegawa, and Morio Yagihara, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

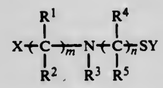
Filed Oct. 24, 1984, Ser. No. 664,176

Claims priority, application Japan, Oct. 31, 1983, 58-204591

Int. Cl.⁴ G03C *7/00*

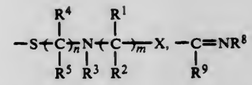
U.S. Cl. 430—393 **24 Claims**

1. A method for processing a color photographic light-sensitive material by subjecting an exposed silver halide color photographic light-sensitive material to color development then to bleaching and fixing or then to bleach-fixing, which method comprises using a ferric ion complex salt or a persulfate as a bleaching agent in the bleaching or bleach-fixing and incorporating at least one compound selected from compounds represented by general formula (I) below and a salt thereof in a bleaching bath, bleach-fixing bath or in a prebath thereof:

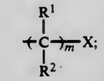


(I)

wherein X represents —COOM, —OH, —SO_3M, —$CONH_2$, —SO_2NH_2, —NH_2, —SH, —CN, —CO_2R^6, —SO_2R^6, —OR^6, —NR^6R^7, —SR^6, —SO_3R^6, —$NHCOR^6$, —$NHSO_2R^6$, —$OCOR^6$ or —OSO_2R^6; Y represents



or a hydrogen atom; m and n each represents an integer from 1 to 10; R^1, R^2, R^4, R^5, R^7 and R^8 each represents a hydrogen atom or a lower alkyl group, R^3 represents a hydrogen atom, a lower alkyl group, an acyl group or



R^6 represents a lower alkyl group; R^9 represents —$NR^{10}R^{11}$, —OR^{12} or —SR^{12}; R^{10} and R^{11} each represents a hydrogen atom or a lower alkyl group; R^{12} represents an atomic group necessary to complete a ring by being connected with R^8; R^{10} or R^{11} may be connected with R^8 to form a ring; and M represents a hydrogen atom or a cation.

4,578,346

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIALS

Toshiyuki Watanabe; Morio Yagihara, and Keiichi Adachi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation-in-part of Ser. No. 571,762, Jan. 18, 1984, abandoned. This application Jan. 30, 1985, Ser. No. 696,545

Claims priority, application Japan, Jan. 19, 1983, 58-7151

Int. Cl.⁴ G03C *7/26*

U.S. Cl. 430—548 **33 Claims**

1. A silver halide color photographic light-sensitive material, comprising:
a support having thereon;
a silver halide emulsion layer containing a non-polymeric, non-diffusion coupler which couples with an oxidation product of a developing agent during development processing to form a dye of such mobility that controlled image smearing occurs; and;
a silver halide emulsion layer containing a polymer coupler latex, the silver halide emulsion layer containing the polymer coupler latex being adjacent to the silver halide emulsion layer containing the non-polymeric, non-diffusion coupler.

4,578,347

SUPERSENSITIZATION OF SILVER HALIDE EMULSIONS

James B. Philip, Jr., St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 29, 1984, Ser. No. 645,344

Int. Cl.⁴ G03C *1/02*

U.S. Cl. 430—572 **25 Claims**

1. A silver halide photographic emulsion in a hydrophilic colloidal binder, said emulsion being spectrally sensitized by a spectral sensitizing dye to at least a portion of the electromagnetic spectrum and having a supersensitizing amount of a water-soluble triaryl compound selected from the group consisting of phosphines, amines, arsines, bismuthines and stibylidynes.

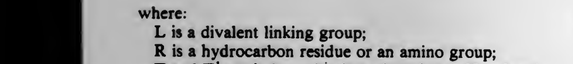
4,578,348

HYDROLYZED AZOLIUM SPEED ENHANCING/FOG-INHIBITING AGENTS FOR SILVER HALIDE PHOTOGRAPHY

John P. Freeman; Fred M. Macon, and John D. Mee, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 18, 1985, Ser. No. 712,495
Int. Cl.⁴ G03C *1/34*
U.S. Cl. 430—607 **18 Claims**

1. A photographic element containing a radiation sensitive silver halide emulsion and a fog inhibiting, speed/fog relationship enhancing amount of a hydrolyzed quaternized chalcogenazolium salt of a middle chalcogen including a quaternizing substituent having the formula:



where:
L is a divalent linking group;
R is a hydrocarbon residue or an amino group;
T and T^1 are independently carbonyl or sulfonyl and
m is an integer of from 1 to 3.

4,578,349

IMMUNOASSAY FOR CARCINOEMBRYONIC ANTIGEN (CEA)

Steven D. Schaffel, Wheeling, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Apr. 8, 1982, Ser. No. 366,492
Int. Cl.⁴ G01N *33/54, 33/56*
U.S. Cl. 435—7 **3 Claims**

1. In an immunoassay for carcinoembryonic antigen in biological fluid, which immunoassay comprises the steps of contacting the biological fluid with antibody to carbinoembryonic antigen and determining the extent of antibody binding to the carcinoembryonic antigen, the improvement comprising liberating carcinoembryonic antigen in the biological fluid by diluting the biological fluid with a diluent comprising a 0.4–0.8 molar salt solution buffered at a pH within the range of from 6 to 8, prior to conducting the immunoassay for carcinoembryonic antigen.

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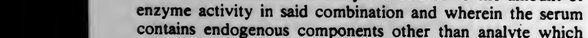
IMMUNOASSAYS EMPLOYING PROTECTED LABELS

Richard D. Armenta, Mountain View, and Ian Gibbons, Menlo Park, both of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Sep. 23, 1983, Ser. No. 535,452
Int. Cl.⁴ G01N *53/00;* C12N *9/96*
U.S. Cl. 435—7 **19 Claims**

1. In a method for the determination of the presence of an analyte in serum wherein the serum is combined with a receptor for a ligand and a conjugate of the ligand and an enzyme label and the amount of analyte is related to the amount of enzyme activity in said combination and wherein the serum contains endogenous components other than analyte which cause a diminution of the enzyme activity, the improvement which comprises binding said enzyme label to a label protectant wherein said label protectant is a compound selected from the group consisting of saccharides and animal derived plasma proteins having a molecular weight of about 20,000–100,000 and having an electronic charge similar to that of the conjugate of the ligand and the enzyme label.

17. A compound of the formula:



wherein:
J″ is a protein having a molecular weight of about 400,000–600,000 daltons;
R is an aliphatic linking group of from 1 to 12 carbon atoms;
W is derived from an activated olefin group, for reaction with a thiol group, having from 4 to 10 atoms comprising carbon, chalocogen of atomic number 8 to 16, and nitrogen;
SY″S is β-galactosidase;
n″ is either 3 or 4;
Z″ is albumin; and
m′ is a number of at least 1 per SY″S.

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PRODUCTION OF CHEMICAL COMPOUNDS WITH IMMOBLIZED PLANT CELLS

Alan Rosevear, and Christopher A. Lambe, both of Wantage, England, assignors to United Kingdom Atomic Energy Authority, England

Continuation of Ser. No. 361,107, Mar. 23, 1982, abandoned. This application Jun. 20, 1984, Ser. No. 622,761
Claims priority, application United Kingdom, Apr. 21, 1981, 8110421
The portion of the term of this patent subsequent to Jun. 5, 2001, has been disclaimed.
Int. Cl.⁴ C12P *1/00, 33/00, 21/00;* C12N *11/04*
U.S. Cl. 435—41 **9 Claims**

9. A composite material suitable for use in the production of intra-cellular secondary metabolites, comprising a support material, a permeable modified polyacrylamide gel retained on the support material and, viable plant cells immobilised in the permeable gel, said modified polyacrylamide gel containing a minor amount of a polymeric material selected from the group consisting of xanthan gum and sodium alginate, said cells being at a point in their growth cycle where secondary metabolism is established such that the intra-cellular secondary metabolites can be produced in the cells and said cells being maintained in sufficiently close proximity by the permeable gel that the cells can excrete the intra-cellular secondary metabolites produced in the cells.

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NOVEL THERMOSTABLE, ACIDURIC ALPHA-AMYLASE AND METHOD FOR ITS PRODUCTION

Dennis M. Katkocin, Danbury, Conn.; Nancy S. Word, Woodridge, and Shiow-Shong Yang, Downers Grove, both of Ill., assignors to CPC International Inc., Englewood Cliffs, N.J.

Filed Jul. 13, 1983, Ser. No. 513,517
Int. Cl.⁴ C12P *19/14;* C12N *9/28;* C12R *1/145*
U.S. Cl. 435—99 **5 Claims**

1. An alpha-amylase enzyme derived from a *Clostridium thermoamylolyticum* microorganism, said enzyme having a molecular weight of about 75,000±3,000 as determined by SDS-polyacrylamide gel electrophoresis, having a half-life of greater than 70 hours at pH 4.2 and 60° C. in the presence of 5 mM Ca^{++}, having a maximum alpha-amylase activity at a pH of about 5.0 and having a maximum alpha-amylase activity at pH 4.5 at about 85° C.

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FERMENTATION OF GLUCOSE WITH RECYCLE OF NON-FERMENTED COMPONENTS

Per G. Assarsson, Toronto, and Joseph H. Nagasuye, Mississauga, both of Canada, assignors to St. Lawrence Reactors Limited, Mississauga, Canada

Continuation-in-part of Ser. No. 399,228, Jul. 19, 1982, Pat. No. 4,497,896. This application Jan. 30, 1985, Ser. No. 697,395
The portion of the term of this patent subsequent to Feb. 5, 2002, has been disclaimed.
Int. Cl.⁴ C12P *7/06, 7/10*
U.S. Cl. 435—161 **9 Claims**

1. A process for producing fermentation products from carbohydrate material which comprises preparing an aqueous slurry feed of carbohydrate material, said slurry containing about 15–30% by weight of carbohydrate solids, continuously moving said slurry feed through a single hydrolysis stage in which the slurry feed is moved through a confined tubular preheat zone and sufficient heat is transferred to the slurry whereby it passes through a gelation stage and forms into a hot free flowing liquid and said hot liquid is immediately forced through a restrictive opening and into a confined tubular reaction zone accompanied by a sudden decrease in pressure at a rate sufficient that the carbohydrate material is made highly reactive, and continuously moving the highly reactive carbohydrate material, together with an acid hydrolyzing agent, through the tubular reaction zone to produce a hydrolyzate in fluid form containing at least 80% glucose, fermenting the glucose-containing fluid to form a fermentation product, distilling the fermentation product to separate the product from a distillation residue containing non-fermented carbohydrate materials, and recycling at least part of the obtained distillation residue containing non-fermented carbohydrate materials to form part of the slurry feed to said single hydrolysis stage whereby a substantial portion of said non-fermented materials is hydrolyzed to form part of said fermentable glucose-containing fluid.

4,578,354

IMMOBILIZATION OF CATALYTICALLY ACTIVE MICROORGANISMS IN AGAR GEL FIBERS

John J. Cannon, Groton, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed May 9, 1983, Ser. No. 492,780
Int. Cl.⁴ C12N *11/10*
U.S. Cl. 435—178 **14 Claims**

1. A process for immobilizing enzyme-containing microbial cells comprising:
(a) contacting enzyme-containing microbial cells with an aqueous agar solution at a temperature of from about 40° to 60° C.; said agar containing from about 1.0 to 8.0% sulfate moiety on a weight/weight basis;
(b) contacting a 0.10 to 5.0 molar solution of inorganic sodium salts at a temperature of from about 0° to 20° C. with a stream of the mixture formed in a) above whereby agar fibers containing cells are formed; and
(c) recovering said cell-containing agar fibers.

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PLASMID CLONING VECTOR PAS1

Martin Rosenberg, Malvern, Pa., assignor to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Jan. 12, 1983, Ser. No. 457,352
Int. Cl.⁴ C12N *1/00, 15/00;* C12P *21/00*
U.S. Cl. 435—317 **4 Claims**



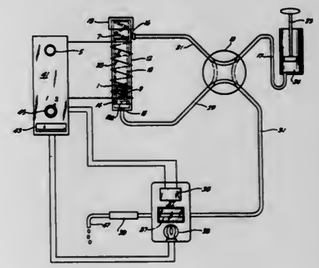
4. A plasmid vector capable of expressing a polypeptide comprising a plasmid containing in sequence a P_L promoter and a Nut L site from pKC30; and downstream from said Nut L site is a Nut R site, a tR1 site, a cII ribosome binding site including a cII translation initiation codon from λ DNA, and a BamHI site.

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FIELD SOURCE ROCK EVALUATION METHOD

Stephen R. Larter, Lake Elsinore, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Division of Ser. No. 494,725, May 16, 1983, Pat. No. 4,485,071. This application Jul. 23, 1984, Ser. No. 614,308
Int. Cl.⁴ G01N *25/14, 33/24*
U.S. Cl. 436—31 **18 Claims**



1. A method for determining the hydrocarbon potential of a source rock comprising hydrocarbons and insoluble organic material capable of generating hydrocarbons upon pyrolysis or further maturation consisting essentially of the steps of,
(a) slurrying a particulate sample of said source rock with a first solvent for the hydrocarbons present in said source rock,
(b) removing a first solution comprising said hydrocarbons dissolved in said first solvent from said particulate sample,
(c) slurrying the particulate sample of step (b) with a second solvent,
(d) heating the slurry of step (c) to a temperature sufficient to pyrolyze the insoluble organic material in said source rock and provide a second solution of hydrocarbons dissolved in said second solvent, and
(e) analyzing said first and second solutions for hydrocarbons as a measure of the hydrocarbon potential of said source rock.

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STABILIZED WATER INDICATING PASTE COMPOSITION

Frank W. Melpolder, Wallingford, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jun. 27, 1983, Ser. No. 507,856
Int. Cl.⁴ C09K *3/00;* G01N *33/18, 5/02*
U.S. Cl. 436—39 **12 Claims**

1. A visual indicating paste composition for producing a detectable color change upon contact with an aqueous solution, said composition exhibiting long shelf life, comprising (i) a water soluble indicator dye capable of changing color in the pH range between about 7 and about 11, (ii) an inorganic base in the form of a caustic powder dispersed in a polyalkylene gylcol liquid carrier selected from the group consisting of an aliphatic polyol, an alkylene glycol, a polyalkylene glycol, and mixtures thereof, and capable of absorbing water but which is not rapidly leached by water or hydrocarbon, (iii) a gelling agent, and (iv) a boron-containing compound which is miscible with or soluble in said carrier and capable of being hydrolyzed

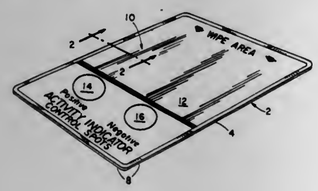
upon contact with water to yield boric acid or a salt thereof, present in a moisture inhibiting amount.

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COLLECTION OF SPECIMENS AND DETECTION OF OCCULT BLOOD THEREIN

Norman H. Oksman, Mount Vernon, N.Y.; Joseph M. Talmage, Landing, N.J., and Henry J. Wells, Beaumont, Tex., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed May 3, 1983, Ser. No. 491,007
Int. Cl.⁴ G01N *1/02, 33/52, 33/72*
U.S. Cl. 436—66 **10 Claims**



1. A process for collecting a specimen of a bodily substance and testing the specimen for occult blood comprising the steps of:

(a) contacting a specimen-collection region of an occult blood indicator wipe with a bodily substance to collect a specimen of the substance on the specimen-collection region of the wipe, the indicator wipe being made of a pliable pad comprising a plurality of sheets of absorbent, porous, soft material disposed one on top of another and joined together around their periphery to form a multilayer structure having sufficiently low wet strength to permit the wipe to be disposed of in a toilet, said pad including a first outermost sheet providing an occult-blood detection-test surface and a second outermost sheet providing a hand-contact surface a first region of said occult-blood detection-test surface being said specimen-collection region, and wherein a peroxidase-activity indicator reagent, in an amount sufficient to react with occult blood in the presence of an oxidizing-agent developing fluid to produce a color, is located between said first and second outermost sheets at or proximate to said specimen-collection region and said first and second outermost sheets are free of said indicator reagent, the pliable pad having a size and form to be manipulated by hand;

(b) subsequently applying an amount of an oxidizing-agent developing fluid to the specimen-collection region of the indicator wipe and observing any change in color after a predetermined period of time to determine if the specimen of bodily substance contains occult blood, providing that the peroxidase-activity indicator reagent, the oxidizing-agent developing fluid and the amount thereof, and the material of construction and number of said sheets of said pad are selected such that the wipe has a sufficiently high resistance to seepage by the oxidizing-agent developing fluid to permit the hand-contact surface of the indicator wipe to remain dry during said predetermined period to time;

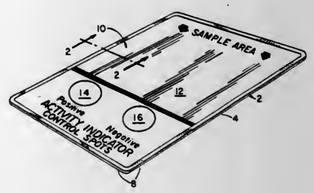
(c) by subsequently placing the entire indicator wipe in a toilet bowl and flushing the toilet to dispose of the specimen of bodily substance and the indicator wipe.

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OCCULT-BLOOD DETECTION

Norman H. Oksman, Mount Vernon, N.Y.; Joseph M. Talmage, Landing, N.J., and Henry J. Wells, Beaumont, Tex., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed May 3, 1983, Ser. No. 491,008
Int. Cl.⁴ G01N *1/02, 33/52, 33/72*
U.S. Cl. 436—66 **11 Claims**



1. A process for testing for occult blood in fecal matter employing an occult blood indicator fluid, the process comprising:

(a) contacting fecal matter or an anal area with a specimen-collection region of a guaiac-free specimen-collection wipe to collect a specimen of fecal matter on the wipe, the wipe being made of a pliable pad comprising a plurality of sheets of absorbant, porous, soft material disposed one on top of another and joined together around their periphery to form a multilayer structure having sufficiently low wet strength to permit the wipe to be disposed of in a toilet, said pad including a first outermost sheet providing an occult-blood detection-test surface and a second outermost sheet providing a hand-contact surface, a first area of said occult-blood detection-test surface being said specimen-collection region and a second area of said occult-blood detection-test surface being an indicator-activity verification region, said indicator-activity verification region having an indicator-activity test reagent therein, and said indicator-activity test reagent being capable of interacting with an occult-blood indicator fluid to provide a color indication when the occult-blood indicator fluid is sufficiently active to provide a color in the presence of occult blood;

(b) applying an amount of an occult-blood indicator fluid to the indicator-activity verification region of the wipe and observing any change in color after a predetermined period of time to verify whether or not the occult-blood indicator fluid is sufficiently active to provide a color in the presence of occult blood;

(c) applying an amount of the occult-blood indicator fluid of step (b) to the specimen of fecal matter on the speciman-collection region of the wipe at about the same time as applying the occult-blood indicator fluid to the indicator-activity verification region and observing any change in color after said predetermined period of time to determine if the fecal matter contains occult blood, providing that the occult-blood indicator fluid and the amounts thereof, and the material of construction and number of said sheets of said pad are selected such that the wipe has a sufficiently high resistance to seepage by the occult-blood indicator fluid applied in steps (b) and (c) to permit the hand-contact surface of the wipe to remain dry during said predetermined period of time; and

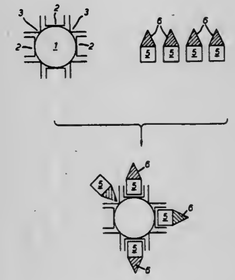
(d) flushing the entire wipe down a toilet to dispose of the wipe.

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SPECIFIC BINDING ASSAY CONJUGATE WITH SPACED-APART RECEPTORS

David S. Smith, London, England, assignor to Technicon Instruments Co. Ltd., England

Division of Ser. No. 230,477, Feb. 2, 1981, Pat. No. 4,401,764.
This application Nov. 29, 1982, Ser. No. 445,344
Claims priority, application United Kingdom, Feb. 7, 1980, 8004090
Int. Cl.⁴ G01N *33/54*
U.S. Cl. 436—518 **10 Claims**



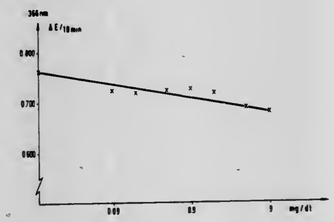
1. A specific binding assay conjugate which comprises at least one analyte-specific receptor linked with a label-specific receptor in spaced relationship through at least one linking group such that a labeled analyte or analyte analog cannot simultaneously bind with the analyte-specific receptor and the label-specific receptor.

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CREATININE ANTIBODY

Joachim Siedel, Bernried; Ulrich Neumann, Peissenberg; Joachim Ziegenhorn, Starnberg; Hans-Georg Batz; Helmut Lenz, both of Tutzing; Brigitte Pautz, Herrsching, and Winfried Albert, Pähl, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Fed. Rep. of Germany

Division of Ser. No. 412,411, Aug. 27, 1982. This application Oct. 2, 1984, Ser. No. 656,957
Claims priority, application Fed. Rep. of Germany, Sep. 2, 1981, 3134787
Int. Cl.⁴ G01N *33/54*; A61K *39/00*; C07G *7/00*
U.S. Cl. 436—547 **16 Claims**



1. A method of immunologically determining creatinine which comprises incubating, with a creatinine containing sample a purified creatinine specific antibody which forms a hapten-antibody complex with creatinine, reacting the thus produced mixture with a conjugate of creatinine, said conjugate comprising a hapten carrier substance, at least one of said antibody and said conjugate being present in dissolved form, the second component being present in either dissolved or solid phase form, under conditions favoring binding of said antibody with said creatinine and inhibition of binding of said antibody with said comjugate, measuring the amount of binding between conjugate and antibody and comparing said amount of binding to a standard obtained by binding antibody and conjugate when creatinine is not present, the difference in said amount of binding indicating the amount of creatinine present in said sample.

11. Reagent for immunological determination of creatinine comprising a purified antibody specific to creatinine, a conjugate of creatinine with hapten carrier substance, and a buffer substance.

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PRECIOUS METAL VAPORIZATION REDUCTION

Gary B. A. Schuster, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Division of Ser. No. 554,503, Nov. 23, 1983, Pat. No. 4,532,184.
This application Apr. 1, 1985, Ser. No. 718,318
Int. Cl.⁴ C03C *8/14, 3/087*
U.S. Cl. 501—17 **2 Claims**

1. A flame-spray composition for forming a dual phase coating used to decrease precious metal vaporization comprising:

(a) a refractory material which is selected from the group consisting of at least one of MgO, ZrO_2, Al_2O_3, TiO_2, Cr_2O_3, aluminides, silicides, borides or a combinations thereof, said refractory material having liquidus temperature greater than the temperature at which the precious metal is to operate, and

(b) a calciumaluminosilicate glass having a liquidus temperature less than the temperature at which the precious metal is to operate, said glass being present in an amount effective to decrease weight loss due to vaporization of said precious metal, said precious metal being selected from the group consisting of platinum, iridium, rhodium and combinations thereof.

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SILICON CARBIDE REFRACTORIES HAVING MODIFIED SILICON NITRIDE BOND

Diego Campos-Loriz, Niagara Falls, N.Y., assignor to Kennecott Corporation, Cleveland, Ohio

Filed Jan. 23, 1984, Ser. No. 573,076
Int. Cl.⁴ C04B *35/56*
U.S. Cl. 501—89 **17 Claims**

1. A bonded silicon carbide article consisting essentially of granular silicon carbide and a bond phase, said article being made by a process consisting essentially of:

(a) forming a uniform mixture consisting essentially of from about 4 to about 8 percent aluminum powder, from about 10 to about 16 percent silicon powder and the remainder being granular silicon carbide and optionally, a temporary binder;

(b) shaping the mixture into a green compact in the form of the article;

(c) firing the green compact in a non-oxidative nitrogeneous atmosphere at a temperature in excess of 1300° C. until substantially all of the silicon and aluminum is combined with nitrogen to complete formation of the article;

wherein the bond phase comprises from about 50 to 80 weight percent Si—Al—O—N, and contains from about 1½ to about 6½ weight percent oxygen based on the total weight of bond phase, and from about 6 to about 20 weight percent aluminum based on the total weight of bond phase.

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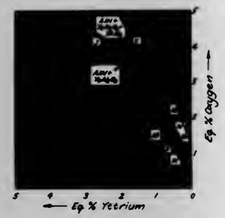
HIGH THERMAL CONDUCTIVITY CERAMIC BODY OF ALUMINUM NITRIDE

Irvin C. Huseby, Schenectady, and Carl F. Bobik, Burnt Hills, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 679,414, Dec. 7, 1984, abandoned. This application Apr. 29, 1985, Ser. No. 728,626

Int. Cl.[4] C04B *35/58;* **F27D** *7/06*

U.S. Cl. 501—98 **37 Claims**



1. A process for producing a sintered polycrystalline aluminum nitride ceramic body having a composition defined and encompassed by polygon P1JFA4 but not including lines JF and A4F of FIG. 4, a porosity of less than about 10% by volume of said body and a thermal conductivity greater than 1.00 W/cm.K at 25° C. which comprises the steps:

(a) forming a mixture comprised of oxygen-containing aluminum nitride powder, yttrium oxide, and free carbon, shaping said mixture into a compact, said mixture and said compact having a composition wherein the equivalent % of yttrium and aluminum ranges between points J and A4 of FIG. 4, said yttrium ranging from greater than about 0.3 equivalent % to less than about 2.5 equivalent %, said aluminum ranging from greater than about 97.5 equivalent % to less than about 99.7 equivalent %, said compact having an equivalent % composition of Y, Al, O and N outside the composition defined and encompassed by polygon P1JFA4 of FIG. 4,

(b) heating said compact in a nitrogen-containing nonoxidizing atmosphere at a temperature ranging from about 1350° C. to a temperature sufficient to deoxidize the compact but below its pore closing temperature reacting said free carbon with oxygen contained in said aluminum nitride producing a deoxidized compact, said deoxidized compact having a composition wherein the equivalent % of Al, Y, O and N is defined and encompassed by polygon P1JFA4 but not including lines JF and A4F of FIG. 4, said free carbon being in an amount which produces said deoxidized compact, and

(c) sintering said deoxidized compact in a nitrogen-containing nonoxidizing atmosphere at a temperature of at least about 1850° C. producing said polycrystalline body.

27. A polycrystalline body having a composition defined and encompassed by polygon P1JFA4 of FIG. 4 but excluding lines JF and A4F which is comprised of from greater than about 0.3 equivalent % yttrium to less than about 2.5 equivalent % yttrium, from greater than about 97.5 equivalent % aluminum to less than about 99.7 equivalent % aluminum, from about 0.85 equivalent % oxygen to less than about 4.1 equivalent % oxygen and from greater than about 95.9 equivalent % nitrogen to about 99.15 equivalent % nitrogen, said polycrystalline body having a porosity of less than about 10% by volume of said body and a thermal conductivity greater than 1.00 W/cm.K at 25° C.

36. A polycrystalline body having a phase composition comprised of AlN, $YAlO_3$ and $Y_4Al_2O_9$ wherein the total amount of $YAlO_3$ and $Y_4Al_2O_9$ phase ranges from greater than about 1.7% by volume to less than about 6.0% by volume of the total volume of said body, said $YAlO_3$ phase ranging from a trace amount to less than about 4.2% by volume of the sintered body, said $Y_4Al_2O_9$ phase ranging from a trace amount to less than about 6.0% by volume of the sintered body, said body having a porosity of less than about 10% by volume of said body and a thermal conductivity greater than 1.00 W/cm.K at 25° C.

37. The polycrystalline body according to claim 36 wherein said body contains carbon in an amount of less than 0.04% by weight of said body and has a porosity of less than about 1% by volume of said body and a thermal conductivity greater than 1.57 W/cm.K at 25° C.

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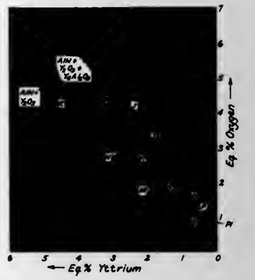
HIGH THERMAL CONDUCTIVITY CERAMIC BODY OF ALUMINUM NITRIDE

Irvin C. Huseby, Schenectady, and Carl F. Bobik, Burnt Hills, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 675,048, Nov. 26, 1984, abandoned. This application Apr. 29, 1985, Ser. No. 728,117

Int. Cl.[4] C04B *35/58;* **F27D** *7/06*

U.S. Cl. 501—98 **46 Claims**



1. A process for producing a sintered polycrystalline aluminum nitride ceramic body having a composition defined and encompassed by polygon P1N1KJ but not including lines KJ and P1J of FIG. 4, a porosity of less than about 10% by volume of said body and a thermal conductivity greater than 1.00 W/cm·K at 25° C. which comprises the steps:

(a) forming a mixture comprised of an oxygen-containing aluminum nitride powder, yttrium oxide, and free carbon, shaping said mixture into a compact, said mixture and said compact having a composition wherein the equivalent % of yttrium and aluminum ranges between points K and P1 of FIG. 4, said yttrium ranging from greater than about 0.35 equivalent % to less than about 4.4 equivalent %, said aluminum ranging from greater than about 95.6 equivalent % to less than about 99.65 equivalent %, said mixture and said compact having an equivalent % composition of Y, Al, O and N outside the composition defined and encompassed by polygon P1N1KJ of FIG. 4,

(b) heating said compact in a nitrogen-containing nonoxidizing atmosphere at a temperature ranging from about 1350° C. to a temperature sufficient to deoxidize the compact but below its pore closing temperature reacting said free carbon with oxygen contained in said aluminum nitride producing a deoxidized compact, said deoxidized compact having a composition wherein the equivalent % of Al, Y, O and N is defined and encompassed by polygon P1N1KJ but not including lines KJ and P1J of FIG. 4, said free carbon being in an amount which produces said deoxidized compact, and

(c) sintering said deoxidized compact in a nitrogen-containing nonoxidizing atmosphere at a temperature of at least about 1860° C. producing said polycrystalline body.

29. A polycrystalline aluminum nitride body having a composition defined and encompassed by polygon PONKJ but not including lines KJ and PJ of FIG. 4, a porosity of less than about 10% by volume of said body and a thermal conductivity greater than 1.00 W/cm·K at 25° C.

30. A polycrystalline aluminum nitride body having a composition defined and encompassed by polygon QTXJ but not including lines QJ and XJ of FIG. 4, a porosity of less than about 10% by volume of said body and a thermal conductivity greater than 1.00 W/cm·K at 25° C.

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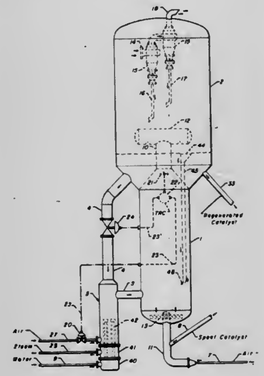
FCC COMBUSTION ZONE CATALYST COOLING PROCESS

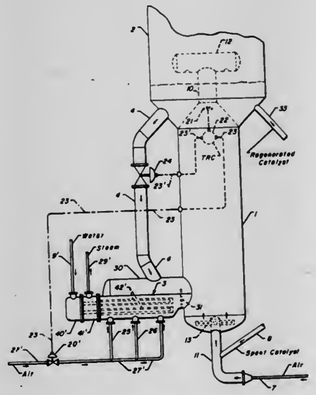
Ismail B. Cetinkaya, Mt. Prospect, and Daniel N. Myers, Arlington Heights, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Dec. 28, 1984, Ser. No. 687,352

Int. Cl.[4] B01J *21/20;* **C10G** *11/18*

U.S. Cl. 502—6 **8 Claims**





1. A process for the combustion of a combustible material present on fluidized catalyst particles employed in a hydrocarbon conversion process which comprises the steps of:

(a) introducing a first stream of oxygen-containing combustion gas and said fluidized catalyst particles into a combustion zone maintained at a temperature sufficient for oxidation of said combustible material and therein oxidizing said combustible material to produce hot fluidized catalyst particles;

(b) passing catalyst particles upward by fluidization from the combustion zone into a second zone located above the combustion zone, and collecting a dense phase bed of hot catalyst particles in a particle collection section located at the bottom of said second zone;

(c) transferring a stream of catalyst particles downward from said particle collection section through a particle flow control means and a vertically orientated first particle transfer conduit into an upper end of a backmixed particle cooling chamber;

(d) admixing said stream of catalyst particles into a backmixed dense phase particle bed located in a lower portion of the particle cooling chamber;

(e) fluidizing said dense phase fluidized particle bed located in the particle cooling chamber in a controlled manner by the upward passage of a controlled flow of a second stream of oxygen-containing combustion gas;

(f) cooling particles present in the backmixed dense phase fluidized particle bed located in the particle cooling chamber through the use of a heat exchanger entirely present in the lower portion of the particle cooling chamber;

(g) discharging the second stream of combustion gas and catalyst particles from the cooling chamber into the combustion zone through a second particle transfer conduit communicating with the cooling chamber at a point above the heat exchanger, and

(h) reducing or terminating the flow of the second stream of combustion gas and the admixture of said stream of particles into the dense phase particle bed located in the lower portion of the cooling chamber to thereby:

(i) reduce or terminate the fluidization of the particle bed located in the lower portion of the cooling chamber and catalyst cooling as desired for operation of the process and thereby substantially covering at least a portion of said heat exchanger with a stagnant bed of catalyst particles while:

(ii) still maintaining the downward flow of said stream of catalyst particles into the upper end of the cooling chamber and through said second particle transfer conduit into the combustion zone.

2. The process of claim 1 further characterized in that the second stream of combustion gas and catalyst particles is discharged substantially horizontally from the cooling chamber to the combustion zone.

3. The process of claim 2 further characterized in that the solid particles are catalyst employed in a fluidized catalytic cracking process.

4,578,367

METHODS FOR REPROCESSING COBALT CATALYSTS USED IN HYDROCARBOXYLATION

Peter Hofmann, Marl, Fed. Rep. of Germany, assignor to Chemische Werke Hüls Aktiengesellschaft, Marl, Fed. Rep. of Germany

Division of Ser. No. 516,435, Jul. 25, 1983, Pat. No. 4,521,526, which is a continuation-in-part of Ser. No. 203,393, Nov. 3, 1980, abandoned. This application Feb. 19, 1985, Ser. No. 702,658

Claims priority, application Fed. Rep. of Germany, Dec. 12, 1979, 2949878; Dec. 12, 1979, 2949939

Int. Cl.[4] B01J *31/40;* **C07C** *67/38;* **C11C** *3/02;* **C09F** *5/08*

U.S. Cl. 502—24 **12 Claims**

1. A method for reprocessing cobalt catalyst from cobalt salts of carboxylic acids having 1 to 4 carbon atoms used in the reaction of olefins having 2 to 40 carbon atoms with carbon monoxide and an alkanol having 1 to 20 carbon atoms, comprising:

(a) reacting said olefins with said carbon monoxide and said alkanol in the presence of said cobalt catalyst to form a reaction output;

(b) oxidizing said reaction output with countercurrent oxygenated gas at a temperature from about 20° to 150° C. to form a pretreated reaction output;
(c) carrying out a stepwise distillation of said pretreated reaction output, separating an ester fraction and leaving a distillation sump product containing a cobalt residue having a cobalt content of about 2 to 30% by weight;
(d) treating said cobalt residue with water and a given carboxylic acid having 1 to 4 carbon atoms in a proportion from about 0.1 to 10 times the amount by weight of said given carboxylic acid at a temperature of about 20°–100° C. to form a first upper organic phase and a first lower aqueous acidic phase;
(e) separating said first upper organic phase from said first lower aqueous acidic phase;
(f) treating said separated first upper organic phase with said water and given carboxylic acid in a proportion from about 0.1 to 10 times the amount by weight of said given carboxylic acid at a temperature of about 20° to 100° C. to form a second upper organic phase and a second lower aqueous acidic phase;
(g) separating said second upper organic phase from said second lower aqueous acidic phase;
(h) recovering cobalt in the form of the carboxylic acid salt corresponding to said given carboxylic acid from said first and second separated lower aqueous acidic phases; and
(i) recirculating said carboxylic acid salt as said cobalt catalyst with a recovery of 98.4 to 99.97% of said cobalt catalyst.

2. The method of claim 1, wherein said temperature of step (b) is 70°–120° C.

4. The method of claim 2, wherein gamma-picoline is added as a promoter to said catalyst and said temperature of step (b) is 80° C. and step (b) is carried out for a period of 15 minutes and said water and carboxylic acid of steps (d) and (f) are equal proportions of acetic acid and water, said residue is 8.43% cobalt and the ratio of said residue to acetic acid is ½.

4,578,368

CATALYST RECOVERY PROCESS

Joseph R. Zoeller, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 6, 1985, Ser. No. 730,604
Int. Cl.⁴ B01J *38/62*
U.S. Cl. 502—28 **4 Claims**

1. Process for the recovery of noble metal from a noble metal containing tar formed in a process in which acetic anhydride is prepared by carbonylating methyl acetate in the presence of a noble metal catalyst, wherein said noble metal containing tar is mixed with about 1 part by weight tar to 1 to 10 parts of a lower fatty acid having 2 to 12 carbon atoms and heated at a temperature of at least 100° C. to precipitate said noble metal catalyst from said tar.

4,578,369

PROCESS FOR THE REGENERATION OF FLUORINATION CATALYSTS

Thomas Müller, Bad Homburg, and Günter Siegemund, Hofheim am Taunus, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 25, 1985, Ser. No. 748,546
Claims priority, application Fed. Rep. of Germany, Jun. 27, 1984, 3423625
Int. Cl.⁴ B01J *27/32, 27/12;* **C07C** *17/20*
U.S. Cl. 502—36 **5 Claims**

1. Process for the regeneration of spent chromium oxyfluoride fluorination catalysts wherein said process comprises mixing the catalyst with magnesium oxide or magnesium hydroxide in the presence of water, converting the mixture into a paste and drying the paste, whereby the dried paste is suitable for further activation with excess hydrofluoric acid.

3. Process as claimed in claim 1, wherein 0.001 to 100 kg magnesium oxide or 0.00145 to 145 kg magnesium hydroxide is used per kg of spent catalyst.

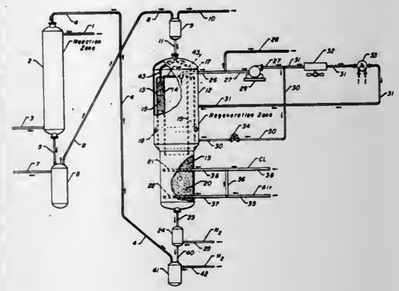
4. Process as claimed in claim 1, wherein the dried paste is treated with excess hydrofluoric acid at temperatures of 20°–500° C.

4,578,370

GAS CIRCULATION METHOD FOR MOVING BED CATALYST REGENERATION ZONES

Arthur R. Greenwood, Niles, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Apr. 25, 1985, Ser. No. 727,151
Int. Cl.⁴ B01J *37/24, 38/26, 23/96;* **C10G** *35/085*
U.S. Cl. 502—37 **17 Claims**



1. A process for regenerating particulate catalyst which comprises the steps of:
(a) passing used catalyst into a regeneration zone and downward through the regeneration zone as a compact bed;
(b) contacting the used catalyst with an oxygen-containing gas stream in a combustion zone located within the regeneration zone at conditions which result in the combustion of carbon present on the used catalyst and thereby producing a combustion gas stream, which is withdrawn from the regeneration zone, and low-carbon catalyst;
(c) passing the low-carbon catalyst downward through a temperature adjustment zone located within the regeneration zone and therein contacting the low-carbon catalyst with a temperature adjusting gas stream;
(d) passing the low-carbon catalyst downward through a drying zone located within the regeneration zone and therein contacting the low carbon catalyst with a drying gas stream;
(e) compressing at least a major portion of the combustion gas stream, and thereby producing a first process gas stream;
(f) passing a first aliquot portion of the first process gas stream into the temperature adjustment zone as the previously referred to temperature adjusting gas stream; and,
(g) cooling a second aliquot portion of the first process gas stream and then passing the second aliquot portion of the first process stream into the combustion zone as the previously referred to oxygen-containing gas stream.

2. The process of claim 1 further characterized in that the drying gas stream comprises oxygen and is passed upward within the regeneration zone into the combustion zone thereby supplying oxygen consumed within the combustion zone.

7. A process for regenerating solid catalyst used in the reaction zone of a moving bed hydrocarbon conversion process which comprises the steps of:
(a) passing used catalyst which has been withdrawn from the reaction zone of a hydrocarbon conversion process into a unitary catalyst regeneration zone and downward through the regeneration zone as a compact bed;
(b) contacting the used catalyst with an oxygen-containing gas stream in a combustion zone at conditions which result in the combustion of carbon present on the used catalyst and the production of a combustion gas stream, which is withdrawn from the regeneration zone, and low-carbon catalyst;
(c) passing the low-carbon catalyst downward into and through a heating zone located within the regeneration zone, and therein contacting the low carbon catalyst with a heating gas stream;
(d) passing the low-carbon downward into and through a chlorination zone located within the regeneration zone, and therein contacting the low carbon catalyst with a chlorination gas stream which comprises a chlorine-containing substance;
(e) withdrawing low carbon catalyst from the regeneration zone;
(f) pressurizing at least a major portion of the combustion gas stream and producing thereby a relatively high pressure first process gas stream;
(g) passing a first aliquot portion of the first process stream into the heating zone as the previously referred to heating gas stream; and,
(h) cooling a second aliquot portion of the first process stream by indirect heat exchange, and then passing the second portion of the first process stream into the combustion zone as the previously referred to oxygen-containing gas stream.

4,578,371

ALUMINOSILICATES HAVING A ZEOLITE STRUCTURE, AND PROCESS FOR THE MANUFACTURE THEREOF

Hans-Peter Rieck, and Hans-Jürgen Kalz, both of Hofheim am Taunus, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 551,268, Nov. 14, 1983, abandoned. This application Jul. 16, 1984, Ser. No. 630,941
Claims priority, application Fed. Rep. of Germany, Nov. 16, 1982, 3242352; Jul. 15, 1983, 3325514
Int. Cl.⁴ C01B *33/28;* **B01J** *29/06, 27/14*
U.S. Cl. 502—71 **2 Claims**

1. Process for the manufacture of a crystalline, phosphorus-containing zeolite having a ZSM-5 type crystal lattice structure by mixing water, a silicon dioxide source, an alkali metal hydroxide and an aluminum compound, and reacting this mixture at a temperature of from 95 to 230° C until the zeolite has crystallized, which comprises adding solid $AlPO_4$ to the mixture of reactants and carrying out the reaction without addition of an organic compound, the reaction mixture having a composition expressed in terms of mole ratio of oxides of $SiO_2:Al_2O_3$ from 15 to 200 $P_2O_5:SiO_2$ from 10^{-3} to 0.2 and $P_2O_5:Al_2O_3$ from 0.1 to 200.

4,578,372

PREPARATION OF ZEOLITE COATED SUBSTRATES

Klaas Hoving, Heenvliet, and Johannes W. M. Walterbos, Hellevoetsluis, both of Netherlands, assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Dec. 19, 1984, Ser. No. 683,366
Claims priority, application United Kingdom, Dec. 30, 1983, 8334626
Int. Cl.⁴ B01J *29/06, 37/00;* **B22F** *5/00*
U.S. Cl. 502—74 **15 Claims**

1. A process for the preparation of a zeolite layer upon a substrate which does not have the same crystalline structure as the zeolite, in which process the substrate is contacted with a reaction mixture for forming a zeolite and the reaction mixture is heated to bring about zeolite formation, in which the substrate is tumbled within the reaction mixture during heating so as to cause zeolite formation preferentially as a layer on the surface of the substrate.

4. A process for the preparation of magnetizable particles comprising zeolite Y for use in a magnetically stabilized bed, in which process magnetizable particles are introduced into a rotatable vessel containing a reaction mixture for forming zeolite Y, the reaction mixture is heated to form zeolite Y, and during the heating the vessel is rotated about an inclined axis so that zeolite Y is formed as a layer on the surface of the magnetizable particles.

8. A process as claimed in claim 4, in which the magnetizable particles are particles of iron, cobalt, steel or magnetite.

4,578,373

POLYMERIZATION CATALYST SYSTEM

Victoria Graves, Crosby, Tex., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Sep. 4, 1984, Ser. No. 647,323
Int. Cl.⁴ C08F *4/64*
U.S. Cl. 502—113 **23 Claims**

1. A catalyst system for polymerizing at least one alpha-olefin under conditions characteristic of Ziegler polymerization comprising:
I. a supported polymerization catalyst or mixture of polymerization catalysts prepared under anhydrous conditions by the sequential steps of:
(a) preparing a slurry of inert particulate porous support material;
(b) adding to said slurry a solution of an organomagnesium compound;
(c) adding to said slurry and reacting a solution of a zirconium halide compound, hafnium compound or mixtures thereof;
(d) adding to said slurry and reacting a halogenator;
(e) adding to said slurry and reacting a tetravalent titanium halide compound; and
(f) recovering solid catalyst component;
II. an organoaluminum compound; and
III. a promoter of chlorinated hydrocarbons having one to 20 carbon atoms.

4,578,374

POLYMERIZATION CATALYST, PRODUCTION AND USE

Steven A. Best, Houston, Tex., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Dec. 12, 1984, Ser. No. 680,880
Int. Cl.⁴ C08F *4/68*
U.S. Cl. 502—115 **26 Claims**

1. A vanadium-containing catalyst component obtained by sequentially treating an inert solid support material in an inert solvent with
(A) a dihydrocarbyl magnesium compound,
(B) optionally an oxygen-containing compound which is an alcohol, ketone and aldehyde,
(C) a vanadium compound, and
(D) a Group IIIa metal halide.

4,578,375

LANTHANUM HYDROXIDE AND A RHODIUM OR RUTHENIUM MOIETY CATALYST FOR HOMOLOGATION OF ALCOHOLS

Donald M. Fenton, Anaheim, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Division of Ser. No. 643,835, Aug. 24, 1984, Pat. No. 4,540,836. This application May 31, 1985, Ser. No. 740,235
Int. Cl.⁴ B01J *27/10, 23/46;* **C07C** *29/00, 31/08*
U.S. Cl. 502—230 **8 Claims**

1. A catalyst for the homologation of alcohols consisting essentially of a rhodium moiety supported on lanthanum hydroxide wherein the atomic ratio of lanthanum to rhodium is in the range between about 0.001 and 50 to 1.

2. The catalyst of claim 1 wherein said rhodium moiety is $RhCl_3$.

4,578,376

PHARMACEUTICAL COMPOSITIONS FOR THE TREATMENT OF OSTEOPATHIAS

Sergio Rosini, Leghorn, Italy, assignor to Istituto Gentili S.p.A., Pisa, Italy

Continuation of Ser. No. 527,373, Aug. 26, 1983, abandoned, which is a continuation of Ser. No. 342,780, Jan. 26, 1982, abandoned. This application Dec. 3, 1984, Ser. No. 677,177
Claims priority, application Italy, Feb. 12, 1981, 19673 A/81
Int. Cl.⁴ A61K *31/66*
U.S. Cl. 514—108 **8 Claims**

1. The method of treatment of a patient affected by metastatic osteolysis or Paget's disease, which consists of administering to said patient a composition containing as the active ingredient 6-amino-1-hydroxyhexane-1, 1-diphosphonic acid or a pharmaceutically acceptable salt thereof, in an amount between 10 mg and 40 mg daily.

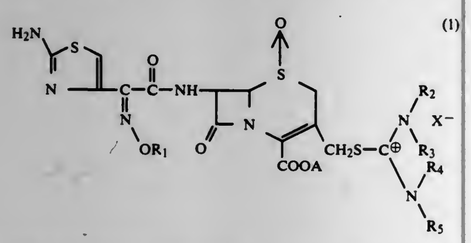
4,578,377

DERIVATIVES OF CEPHALOSPORINS, THEIR PROCESS OF SEPARATION AND ANTIBIOTIC DRUGS CONTAINING THE SAID DERIVATIVES

Bernard Labeeuw, Montpellier, and Ali Salhi, Saint-Gely-Du-Fesc, both of France, assignors to Sanofi, Paris, France

Continuation of Ser. No. 513,008, Jul. 12, 1983, abandoned. This application Apr. 16, 1985, Ser. No. 723,709
Claims priority, application France, Jul. 13, 1982, 82 12317
Int. Cl.⁴ A61K *31/545*; C07D *501/34*
U.S. Cl. 514—206 **8 Claims**

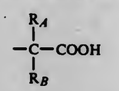
1. Cephalosporin compounds having the formula:



(I)

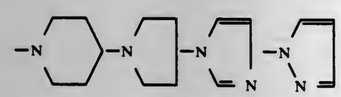
in the form of syn or anti isomers or a mixture of these isomers, and in which the acidic group —COOA is selected from the class consisting of pharmaceutically acceptable acids, salts, and easily hydrolysable esters;

R_1 represents a group:



in which R_A and R_B each independently designates hydrogen or a lower alkyl group, or R_A and R_B, taken together with the carbon atom to which they are bonded, form a cycloalkyl;

R_2 and R_3 each independently designates hydrogen, a lower alkyl group, a lower alkenyl group; or R_4 and R_5, taken together with the nitrogen atom to which they are bonded, form a ring selected from the class consisting of



and X designates the anion of an acid.

4. A pharmaceutical composition for the treatment of bacterial infections comprising a therapeutically effective amount of a compound having the formula (I) of claim 1, in association with a pharmaceutically acceptable carrier.

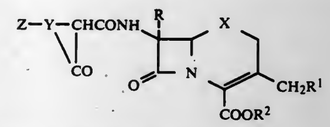
4,578,378

(OXOHETEROCYCLIC CARBONAMIDO)CEPHEM CARBOXYLIC ACID DERIVATIVES

Yoshio Hamashima, Kyoto; Koji Ishikura, Nara; Tadatoshi Kubota, Osaka, and Kyoji Minami, Nara, all of Japan, assignors to Shionogi & Co., Ltd., Dosho, Japan

Filed Jun. 27, 1984, Ser. No. 625,308
Claims priority, application Japan, Jul. 6, 1983, 58-123698
Int. Cl.⁴ A61K *31/535*; C07D *498/04*
U.S. Cl. 514—210 **14 Claims**

1. 7β-(Oxo saturated heterocyclic carbonamino)-3-cephem-4-carboxylic acid compound of the following formula:



(I)

wherein R is hydrogen or methoxy;

R^1 is hydrogen or a nucleophilic group having 1 to 8 carbon atoms excluding any protective group and is 4 to 6C heterocyclicammonio or its anion, 1 to 3C alkanoyloxy, carbamoyloxy optionally N-protected, halo, 4 to 8 C heterocyclic thio or heterocyclic sulfoxido;

R^2 is hydrogen, light metal, or a carboxy protecting group;

X is oxygen;

Y is alkylene containing one or more hetero atom; and

Z is hydrogen or a substituent having up to 8 carbon atoms and being selected from the group consisting alkyl, aralkyl, alkylidene, aryl, alkanoyl, carbamoyl, hydroxy, alkoxy, oxo and sulfoxide, which may be unsubstituted or further substituted by carboxy, carbamoyl, cyano, hydroxy which is protected or unprotected, or halogen.

14. The pharmaceutical composition containing a 7β-(oxo saturated heterocyclic carboxamido)-3-cephem-4-carboxylic acid derivative as claimed in claim 1 as an active ingredient and a conventional carrier.

4,578,379

USE OF PHENOTHIAZINE 5-OXIDE DRUGS AS VAGINAL CONTRACEPTIVES

Milton J. Cormier, Bogart, Ga., assignor to University of Georgia Research Foundation, Inc., Athens, Ga.

Continuation-in-part of Ser. No. 546,379, Oct. 28, 1983, abandoned, Division of Ser. No. 398,848, Jul. 14, 1982, Pat. No. 4,444,789, which is a continuation-in-part of Ser. No. 155,800, May 30, 1980, Pat. No. 4,443,446. This application Nov. 30, 1984, Ser. No. 676,589
Int. Cl.⁴ A61K *31/54*
U.S. Cl. 514—223 **10 Claims**

1. A method of preventing conception in a female which comprises introducing an effective amount of a calmodulin binding phenothiazine 5-oxide drug into the vagina of the female.

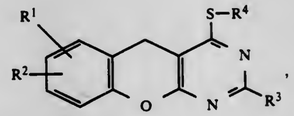
4,578,380

5H-[1]BENZOPYRANO[2,3-D]PYRIMIDINE DERIVATIVES USEFUL FOR CONTROLLING LESIONS OF THE GASTRIC AND DUODENAL MUCOUS MEMBRANES

Gerhard Satzinger, Denzlingen; Hubert Barth, Emmendingen; Johannes Hartenstein, Stegen-Wittental; Manfred Herrmann; Edgar Fritschi, both of St. Peter, and Ilse-Dore Schütt, Glottertal, all of Fed. Rep. of Germany, assignors to Warner-Lambert Company, Morris Plains, N.J.

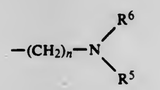
Filed Sep. 24, 1984, Ser. No. 653,175
Claims priority, application Fed. Rep. of Germany, Sep. 30, 1983, 3335472
Int. Cl.⁴ A61K *31/505*; C07D *491/052, 491/153*
U.S. Cl. 514—232 **6 Claims**

1. A 5H-[1]benzopyrano-[2,3-d]pyrimidine derivative of the formula I,



(I)

wherein R^1 and R^2, which may be the same or different, represent a hydrogen or halogen atom, a hydroxyl group or a straight-chain or branched alkoxy group with up to four carbon atoms, or together form an alkylenoxy- or alkylenedioxy group with one to three carbons atoms or, together an unsubstituted benzene ring condensed in 6,7-position, R^3 represents an optionally substituted phenyl radical, R^4 an alkyl group containing one to eight atoms or the radical,



wherein R^5 and R^6, which may be the same or different, represent a hydrogen atom, a straight-chain or branched alkyl group with up to six carbon atoms or together with the nitrogen atom to which they are attached form a pyrrolidino-, piperidino-, morpholino, or piperazino group and n represents the integers two to six, or a pharmacologically acceptable salt with an organic or inorganic acid.

5. A pharmaceutical composition for controlling lesions of the gastric and duodenal mucous membranes comprising an effective amount of a compound according to claim 1, together with pharmaceutically acceptable fillers and excipients.

6. A method of controlling lesions of the gastric and duodenal mucous membranes in a subject suffering from ulcers comprising administering to said subject an effective amount of a pharmaceutical composition according to claim 5.

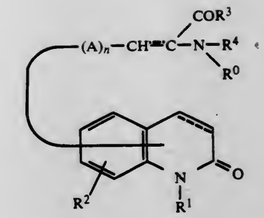
4,578,381

CARBOSTYRIL DERIVATIVES

Minoru Uchida, Komatsujima; Makoto Komastu, and Kazuyuki Nakagawa, both of Tokushima, all of Japan, assignors to Otsuka Pharmaceutical Co., Ltd., Japan

Filed Jul. 1, 1983, Ser. No. 510,241
Claims priority, application Japan, Jul. 5, 1982, 57-117311; Jul. 5, 1982, 57-117312
Int. Cl.⁴ A61K *31/47*; C07D *215/22*
U.S. Cl. 514—233 **47 Claims**

1. (a) A carbostyril derivative or salt thereof represented by the formula



wherein:

R^1 is a hydrogen atom, a lower alkyl group, a lower alkenyl group, a lower alkynyl group or a phenyl-lower alkyl group;

R^2 is a hydrogen atom, a halogen atom, a benxoyloxy group, said benzoyloxy group having a halogen atom substituent, a hydroxyl group, a lower alkyl group or a lower alkoxy group;

R^3 is a hydroxyl group, an amino group, said amino group having a cycloalkyl-lower alkyl group substituent, said amino group having a cycloalkyl-lower alkyl group substituent having a carboxy group or a lower alkoxycarbonyl group substituent on the cycloalkyl ring, a lower alkoxy group, a lower alkoxycarbonyl-lower alkoxy group, a benzoyl-lower alkoxy group or a lower alkanoyloxy-lower alkoxy group;

R^4 is a hydrogen atom, a phenylsulfonyl group, said phenylsulfonyl group having lower alkyl group or halogen atom substituents, a lower alkyl group, a phenyl-lower alkyl group, said phenyl-lower alkyl group having halogen atom substituents on the phenyl ring, or a group of the formula —COR^5 wherein R^5 is a lower alkyl group, said lower alkyl group having amino group or phenyl-lower alkoxycarbonylamino group substituents, a cycloalkyl group, said cycloalkyl group having an amino-lower alkyl group or a phenyl-lower alkoxycarbonylamino-lower alkyl group substituent on the cycloalkyl ring, a phenyl group, said phenyl group having 1 to 3 halogen atom, lower alkyl group, lower alkoxy group, nitro group, amino group or hydroxyl group substituents on the phenyl ring, or a 5- or 6-membered unsaturated heterocyclic ring selected from the group consisting of pyridyl, 2-methylpyridyl, 3-ethylpyridyl, 4-butylpyridyl, thienyl, 2-methylthienyl, 3-propylthienyl, pyrimidyl, 2-pentylpyrimidinyl, pyrrolyl, 3-methyl-pyrrolyl, 1-pyrazinyl, 4-pentyl-1-pyraxinyl, pyrazoylyl, 3-methylpyrazolyl, 4-ethylpyrazolyl, imidazolyl, 2-propylimidazolyl, 4-pentylimidazolyl, pyridazinyl, 4-methylpyridazinyl, pyrazinyl, 2-ethylpyrazinyl, oxazolyl, 4-butyloxazolyl, isoxazolyl, 4H-1,4-oxazinyl, thiazolyl, 4-methylthiazolyl, 2-ethylthiazolyl, 5-propylthiazolyl, isothiazolyl, 3-methylisothiazolyl, furyl, 3-methylfuryl, 2-ethylfuryl, 2-methylthianyl, 4-methylthianyl and 4-methylthianyl groups;

R^0 is a hydrogen atom, a phenylsulfonyl group or said phenylsulfonyl group having lower alkyl group or halogen atom substituents;

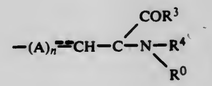
A is a lower alkylene group;

n is 0 or 1;

the carbon-carbon bond of —CH=C< is a single or double carbon-carbon bond;

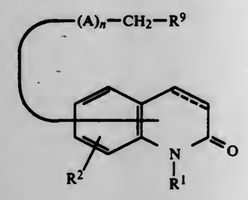
the carbon-carbon bond between the 3- and 4-positions in the carbostyril skeleton is a single or double bond; and

the substitution position of the side-chain of the formula



is any one of the 3-, 4-, 5-, 6-, 7- or 8-positions in the carbostyril skeleton;

(b) a carbostyril derivative represented by the formula

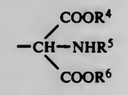


wherein:

R^1 is a hydrogen atom, a lower alkyl group, a lower alkenyl group, a lower alkynyl group or phenyl-lower alkyl group;

R^2 is a hydrogen atom, a hydroxyl group, a lower alkyl group, a lower alkoxy group, a halogen atom, a benzoyloxy group or said benzoyloxy group having halogen atom substituents;

R^9 is a group of the formula



wherein R^4 and R^6 are lower alkyl groups and R^5 is a lower alkanoyl group;

A is a lower alkylene group;

n is 0 or 1;

the carbon-carbon bond between the 3- and 4- positions in the carbostyril skeleton is a single or double bond; and

the substitution position of the side-chain of the formula $-(A)_n-CH_2-R^9$ is any one of the 3-, 4-, 5-, 6-, 7-, or 8-positions in the carbostyril skeleton;

provided that when R^2 is a hydrogen atom and n is 1, and R^9 is a halogen atom, then the substitution position of the side chain of the formula $-(A)_n-CH_2-R^9$ is the 3- or 4-position in the carbostyril skeleton.

43. A pharmaceutical composition for use in an anti-peptic ulcer agent, which contains the carbostyril derivative as claimed in claim 1(a) as the active ingredient.

4,578,382

4-ACYLAMINO-1-AZAADAMANTANES, AND COMPOSITIONS FOR USE THEREOF IN MEDICINE

Francois X. Jarreau, Versailles, and Jean-Jacques Koenig, Vernou la Celle sur Seine, both of France, assignors to Etablissements Nativelle S.A., France

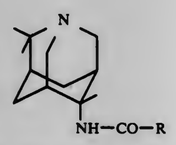
Filed Sep. 29, 1982, Ser. No. 427,343

Claims priority, application France, Oct. 5, 1981, 81 18682

Int. Cl.⁴ A61K *31/435;* **C07D** *471/18*

U.S. Cl. 514—245 **10 Claims**

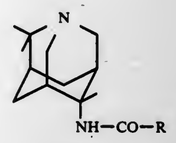
1. A 4-acylamino-1-azaadamantane represented by the general formula (I):



(I)

wherein R is an usubstituted aryl group selected from the group consisting of phenyl, benzyl, phenethyl, phenylpropyl, diphenylethyl and diphenylpropyl or said aryl group is substituted by one or two of a halogen atom, an alkyl of 1 to 4 carbon atoms, hydroxy, methylenedioxy, alkoxy of 1 to 3 carbon atoms, amino, alkylamino having 1 to 3 carbon atoms in the alkyl moiety, dialkylamino having 1 to 3 carbon atoms in the alkyl moiety, nitro, cyano, acetylamino, alkanoyl of 1 to 4 carbon atoms, trifluoromethyl or trichloromethyl group, or a pharmaceutically acceptable acid salt thereof.

7. A 4-acylamino-1-azaadamantane represented by general formula (I):



(I)

wherein R is an unsubstituted aryl group selected from the group consisting of phenyl, benzyl, phenethyl, phenylpropyl, diphenylethyl and diphenylpropyl or said aryl group substituted by one or two of a halogen atom or an alkyl of 1 to 4 carbon atoms, hydroxy, methylenedioxy, alkoxy of 1 to 3 carbon atoms, amino, nitro, cyano, acetylamino or lower alkanoyl of 1 to 4 carbon atoms or a pharmaceutically acceptable acid salt thereof.

8. A pharmaceutical composition for treating cardiac arrhythmias comprising a therapeutically effective amount of a 4-acylamino-1-azaadamantane or a pharmaceutically acceptable acid salt thereof of claim 1, as an active ingredient, and a pharmaceutically acceptable carrier or diluent.

4,578,383

CL 1565 ANTIBIOTIC COMPOUNDS

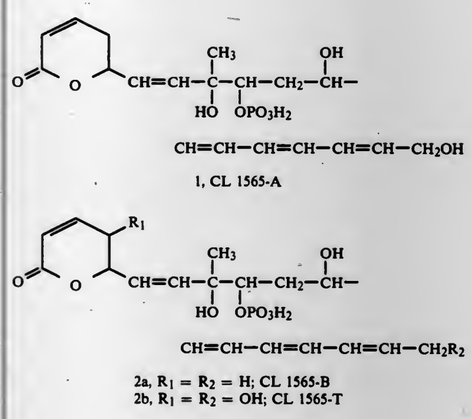
Suresh S. Stampwala, Sterling Heights; James C. French, Ann Arbor; Josefino B. Tunac, Troy; Timothy R. Hurley, and Richard H. Bunge, both of Ann Arbor, all of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 447,544, Dec. 7, 1982, abandoned, which is a continuation-in-part of Ser. No. 439,973, Nov. 8, 1982, abandoned, which is a continuation-in-part of Ser. No. 351,704, Feb. 24, 1982, abandoned. This application Jul. 2, 1984, Ser. No. 627,367

Int. Cl.⁴ C07D *9/09;* **A61K** *31/665, 31/685*

U.S. Cl. 514—7 **10 Claims**

1. A phosphorus containing antibiotic compound selected from pharmaceutically acceptable salts of the compounds designated CL 1565-A, CL 1565-B, and CL 1565-T, having the structural formulas 1, 2a, and 2b, respectively,



1, CL 1565-A

2a, $R_1 = R_2 = H$; CL 1565-B

2b, $R_1 = R_2 = OH$; CL 1565-T

4,578,384

POLYLACTIC-POLYGLYCOLIC ACIDS COMBINED WITH AN ACIDIC PHOSPHOLIPID-LYSOZYME COMPLEX FOR HEALING OSSEOUS TISSUE

Jeffrey O. Hollinger, Glenwood, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 15, 1984, Ser. No. 580,496

Int. Cl.⁴ C07C *37/02*

U.S. Cl. 514—8 **4 Claims**

1. A method for improving and promoting the healing of osseous tissue in an animal which comprises implanting at the site of the broken osseous tissue an effective amount of a biodegradable copolymer-proteolipid material, said material consisting essentially of from 1 to 5 weight percent of the mucopeptide-N-acetylmuramoylhydrolase:phosphatidyl inositol 4,5-diphosphate, incorporated into from 95 to 99 weight percent of the biodegradable copolymer, 50:50 poly(L)(-)lactide co-glycolide.

4,578,385

USE OF PHENOTHIAZINE 5-OXIDE DRUGS IN UTERUS TO PREVENT PREGNANCY

Milton J. Cormier, Bogart, Ga., assignor to University of Georgia Research Foundation, Inc., Athens, Ga.

Continuation-in-part of Ser. No. 398,847, Jul. 14, 1982, abandoned, which is a continuation-in-part of Ser. No. 253,567, Jul. 6, 1981, Pat. No. 4,377,577, which is a continuation-in-part of Ser. No. 155,800, May 30, 1980, Pat. No. 4,443,446. This application Nov. 13, 1984, Ser. No. 670,539

Int. Cl.⁴ A61K *31/54*

U.S. Cl. 514—223 **15 Claims**

1. A method of preventing pregnancy in a female which comprises introducing an effective amount of a calmodulin binding phenothiazine 5-oxide drug directly into the uterus of the female after sexual intercourse.

4,578,386

7,8-DIHYDROIMIDAZO[1,5-A]PYRAZIN-8-ONES

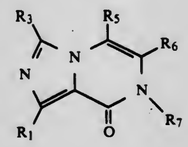
Thomas D. Lee, Scarsdale, N.Y., assignor to USV Pharmaceutical Corp., Tarrytown, N.Y.

Filed Feb. 10, 1984, Ser. No. 578,916

Int. Cl.⁴ C07D *487/04, 519/00;* **A61K** *31/50, 31/53*

U.S. Cl. 514—241 **19 Claims**

1. Compounds of the formula



wherein

R_1, R_3, R_5 and R_6 are independently H; C_1–C_8 alkyl; ar C_1–C_8 alkyl; an aryl substituent which is phenyl or phenyl mono substituted with C_1–C_8 alkyl, halo, amino, trifluoromethyl or cyano; a heteroaryl substituent which is imidazole, pyrazole, pyrrole, triazine, pyridazine, pyrimidine, pyridine, pyrazine, purine, benzimidazole, indole, phthalazine, quinoline or the heteroaryl mono substituted with C_1–C_8 alkyl, halo, amino, trifluoromethyl or cyano; C_2–C_8 alkenyl; C_2–C_8 alkynyl; hydroxy, hydroxy-C_1–C_8 alkyl, C_1–C_8 alkoxy, mercapto, mercapto C_1–C_8 alkyl, C_1–C_8 alkythio, amino, C_1–C_8 alkylamino, amino C_1–C_8 alkyl, formyl, carboxy and salts thereof, C_1–C_8 carb alkoxy, C_1–C_8 alkanoyl, cyano, nitro, halo, trifluoromethyl, C_1–C_8 alkylsulfonyl, aminosulfonyl, carbamoyl or C_3–C_8 cycloalkyl;

R_7 is H, C_1–C_8 alkyl, an aryl substituent which is phenyl or phenyl mono substituted with alkoxy, amino or halo, ar C_1–C_8 alkyl, or C_1–C_8 alkanoyl;

wherein at least one of R_1, R_5 and R_6 is an aryl or heteroaryl, and

pharmaceutically acceptable acid addition salts thereof.

3. A method of treating congestive heart failure in a patient requiring such treatment, wherein the method comprises the administration of a composition containing effective amount of a compound of claim 1.

4,578,387

INOTROPIC AGENTS

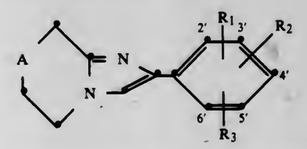
Wayne A. Spitzer, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Mar. 5, 1984, Ser. No. 586,361

Int. Cl.⁴ C07D *471/04, 487/04;* **A61K** *31/495, 31/445*

U.S. Cl. 514—249 **13 Claims**

1. Compounds of the formula



and their pharmaceutically acceptable acid addition salts, wherein:

A is NH;

each of R_1 and R_2 is independently hydrogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, allyloxy, propargyloxy, benzyloxy, (C_1–C_4 alkyl)thio, (C_1–C_4 alkyl)sulfinyl, (C_1–C_4 alkyl)sulfonyl, hydroxy, halo, cyano, nitro, amino, mono- or di-(C_1–C_4 alkyl)amino, trifluoromethyl, or Z-Q-substituted C_1–C_4 alkoxy, wherein Q is oxygen, sulfur, sulfinyl, sulfonyl, or a bond, and Z is C_1–C_4 alkyl, phenyl or phenyl substituted with halo, C_1–C_4 alkyl, C_1–C_4 alkoxy, hydroxy, nitro, amino, (C_1–C_4 alkyl)thio, (C_1–C_4 alkyl)sulfinyl, or (C_1–C_4 alkyl)sulfonyl;

and R_3 is hydrogen, C_1–C_4 alkoxy, C_1–C_4 alkyl, or halo;

with the proviso that R_1, R_2, and R_3 may not all be hydrogen at the same time.

9. A method of producing a positive inotropic effect or causing vasodilation in a mammal, which comprises administering to such mammal an effective amount of a compound of claim 1.

4,578,388

UNSYMMETRICAL GUANIDINO, THIOUREIDO, ISOTHIOUREIDO AND NITROMETHYLENEAMINO DERIVATIVES

Graham J. Durant, and Charon R. Ganellin, both of Welwyn Garden City, England, assignors to SmithKline & French Laboratories Limited, Welwyn Garden City, England

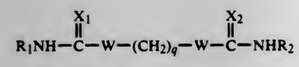
Division of Ser. No. 272,811, Jun. 11, 1981, Pat. No. 4,405,621, which is a division of Ser. No. 70,950, Aug. 30, 1949, Pat. No. 4,301,165, which is a division of Ser. No. 941,836, Sep. 11, 1978, Pat. No. 4,197,305, which is a division of Ser. No. 836,626, Sep. 26, 1977, Pat. No. 4,137,319, which is a division of Ser. No. 678,564, Apr. 20, 1976, Pat. No. 4,070,472, which is a division of Ser. No. 542,971, Jan. 22, 1975, Pat. No. 3,968,227, and Ser. No. 542,971, Jan. 22, 1975, now Re. Re. 29,761. This application Jun. 30, 1983, Ser. No. 509,563

Claims priority, application United Kingdom, Feb. 7, 1974, 5596/74

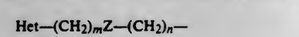
Int. Cl.⁴ A61K *31/38, 31/41, 31/415, 31/42, 31/425, 31/495, 31/50;* **C07D** *403/12, 413/12, 417/12*

U.S. Cl. 514—252 **12 Claims**

1. A compound of the formula:



wherein R_1 and R_2 each represent a grouping of the structure:



wherein Het is a nitrogen containing 5 or 6 membered heterocyclic ring selected from imidazole, thiazole, isothiazole, oxazole, isoxazole, pyrazole, triazole, thiadiazole, pyrimidine, pyrazine or pyridazine which is optionally substituted by lower alkyl, hydroxyl, halogen or amino, except that R_1 and R_2 are not both selected from thiazole, isothiazole, oxazole, isoxazole, pyrazole or triazole containing groups, and are not both thiadiazole or pyrimidine or pyrazine or pyridazine, and when one of R_1 and R_2 is an imidazole containing group, the other is not an imidazole, pyrazole or triazole containing group; Z is sulphur or a methylene group; m is 0, 1 or 2; n is 2 or 3 and the sum of m and n is 3, 4 or when Y is other than hydrogen, methyl, or hydroxyl, 2; X_1 and X_2, which may be the same or different, are each sulphur, $CHNO_2$ or NY wherein Y is hydrogen, hydroxy, lower alkyl, cyano, $CONH_2$ or SO_2R_3; R_3 is lower alkyl, phenyl, tolyl, trifluoromethyl or amino; W is NH, and when X_1 and X_2 are NH, W may also be sulphur, and q is an integer from 2 to 8; or a pharmaceutically acceptable acid addition salt thereof.

12. A method of inhibiting H-2 histamine receptors, said H-2 histamine receptors being those histamine receptors which are not inhibited by mepyramine but are inhibited by burimamide, which comprises administering orally or parenterally to an animal in need thereof in an effective amount to inhibit said receptors a compound of claim 1.

4,578,389

QUINAZOLINE AND MEDICAMENTS CONTAINING THESE COMPOUNDS

Helmut Schickaneder, Eckental; Istvan Szeleny, Schwaig; Peter Mörsdorf, Cadolzburg, and Kurt H. Ahrens, Nuremberg, all of Fed. Rep. of Germany, assignors to Ludwig Heumann & Co. GmbH, Nuremberg, Fed. Rep. of Germany

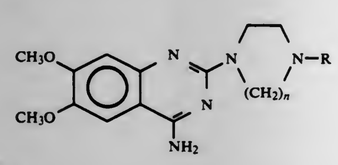
Filed Sep. 10, 1984, Ser. No. 649,099

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1983, 33364095

Int. Cl.[4] A61K *31/505;* **C07D** *403/14*

U.S. Cl. 514—254 **6 Claims**

1. Quinazoline derivatives corresponding to the following formula



(I)

in which:

R represents a triazole ring which is substituted in the 1-position by a methyl group and in the 3-position or the 5-position by an amino group, the triazole ring being attached to the piperazine or homopiperazine ring through a carbon atom, and n has a value of 2 or 3,

and physiologically compatible salts thereof.

4. A medicament containing an antihypertensive effective amount of a compound as claimed in claim 1 together with an inert pharmaceutically compatible carrier or an inert pharmaceutically compatible diluent.

4,578,390

HYDROXYBENZYLAMINO DERIVATIVES AS ANTI-INFLAMMATORY AGENTS

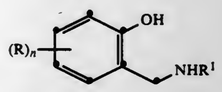
Norman P. Jensen, New Providence, and Michael N. Chang, Westfield, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 330,542, Dec. 14, 1981. This application Apr. 13, 1983, Ser. No. 484,406

Int. Cl.[4] C07D *333/36, 285/10;* **A61K** *31/38, 31/41*

U.S. Cl. 514—255 **10 Claims**

1. A compound of formula (I)



(I)

or a pharmaceutically acceptable salt thereof wherein R is

(a) hydrogen;
(b) halo;
(c) C_{1-6}alkoxy;
(d) C_{1-6}alkylthio or C_{1-6}haloalkylthio;
(e) C_{1-6}alkyl sulfinyl;
(f) C_{1-6}alkyl sulfonyl;
(g) phenyl C_{1-6}alkoxy;
(h) C_{1-6}alkyl;
(i) C_{1-6}alkenyl;
(j) C_{1-6}alkanoyl;
(k) —OCH_2O—;
(l) —COOH;
(m) phenyl;
(n) phenoxy;
(o) cyano;
(p) hydroxy C_{1-6}alkyl; or
(q) C_{1-6}alkanoyloxy;

R^1 is heteroaryl selected from a group consisting of

(1) thienyl
(2) benzothienyl
(3) pyrryl;
(4) thiadiazolyl;
(5) benzothiadiazolyl;
(6) benzimidazolyl;

the heteroaryl groups above can be unsubstituted or substituted with one or more of R^3 when R^3 represents H, CH_3, F, Cl, $COCH_3$, —CN —$COOR^4$ where R^4 represents C_{1-6}alkyl; n is 1 to 4.

4,578,391

OILY COMPOSITIONS OF ANTITUMOR DRUGS

Hiroitsu Kawata, Saitama; Tadayoshi Ohmura, Niiza; Shunji Hasumi, Saitama; Yutaka Konno, Saitama; Masayoshi Aruga, Saitama; Seiki Tashiro, Kumamoto; Toshimitsu Konno, Kumamoto, and Ken Iwai, Kumamoto, all of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

Filed Jan. 13, 1983, Ser. No. 457,636

Claims priority, application Japan, Jan. 20, 1982, 57-7997; Aug. 12, 1982, 57-215049

Int. Cl.[4] A61K *31/505, 31/40*

U.S. Cl. 514—256 **15 Claims**

1. An oily composition of an effective amount of an antitumor drug comprising a sparingly oil-soluble or water-soluble antitumor drug selected from the group consisting of carmofur, 5-fluorouracil, mitomycin C, aclarubicin hydrochloride, ancitabine, and ancitabine hydrochloride, an effective amount of a fat or oil, and an effective amount of a solubilizing adjuvant selected from the group consisting of crown ethers, lecithin, polyethylene glycol, propylene glycol, vitamin E, polyoxyethylene alkylether, and sucrose esters of fatty acids, the proportion of said solubilizing adjuvant being within the range of 0.05 to 1000 parts by weight per part by weight of said antitumor drug.

4,578,392

PYRAZOLO[1,5-A]PYRIDINE DERIVATIVES AND ANTI-ALLERGIC COMPOSITIONS CONTAINING THEM

Tsutomu Irikura, Tokyo; Keigo Nishino, Oomiya; Seigo Suzue, Kuki, and Toshiya Ikeda, Oomiya, all of Japan, assignors to Kyorin Pharmaceutical Co., Ltd., Tokyo, Japan

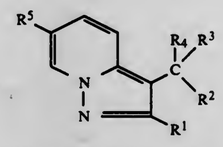
Filed Mar. 7, 1984, Ser. No. 586,928

Claims priority, application Japan, Mar. 14, 1983, 58-41958

Int. Cl.[4] A61K *31/44;* **C07D** *471/04*

U.S. Cl. 514—300 **3 Claims**

1. A pyrazolo[1,5-a]pyridine derivative of the formula [I],



in which R^1 is a straight or branched alkyl radical having 1 to6 carbon atoms, R^2 is a hydrogen or straight, branched or cyclic alkyl radical having 1 to 6 carbon atoms, R^3 is a hydrogen, straight or branched alkyl having 1 to 6 carbon atoms, or allyl radical R^4 is hydrogen, —OR^6 (in which R^6 is a hydrogen, alkyl having 1 to 5 carbon atoms, which alkyl may optionally be substituted by one or two hydroxy radicals, allyl or 2,3-epoxypropyl radical) or, together with R^2 or R^3 forms



(in which R^7 and R^8 are each independently a hydrogen or alkyl having 1 to 5 carbon atoms), and R^5 is a hydrogen, methyl or methoxy radical, provided that R^2, R^3, and R^4 are not simultaneously hydrogen.

3. A method of treatment for allergic diseases comprising administering an anti-allergic effective amount of at least one compound according to claim 1 to a patient requiring such treatment.

4,578,393

DIHYDROISOQUINOLINE DERIVATIVES

Roger E. Markwell, Great Dunmow, and Stephen A. Smith, Bishops Stortford, both of England, assignors to Beecham Group p.l.c., Middlesex, England

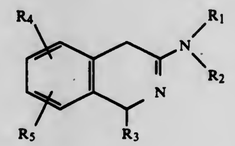
Filed Oct. 22, 1984, Ser. No. 663,232

Claims priority, application United Kingdom, Oct. 20, 1983, 8328052

Int. Cl.[4] A61K *31/47;* **C07D** *217/24, 217/22*

U.S. Cl. 514—310 **12 Claims**

1. A compound of formula (I) or a pharmaceutically acceptable salt or solvate thereof:



(I)

wherein:

R_1 and R_2 are independently hydrogen, C_{1-6} alkyl or together are a group X which is C_{3-6} polymethylene in which one carbon atom in optionally replaced by an oxygen or sulphur atom or by NR_6 is hydrogen or C_{1-6} alkyl;

R_3 is phenyl, optionally substituted by one or more substituents selected from halogen, CF_3, nitro, C_{1-6} alkoxy, C_{1-6} alkylthio, C_{2-7} alkanoyl, carboxyl, C_{1-6} alkoxycarbonyl, cyano, $CONR_7R_8$ wherein R_7 and R_8 are selected from hydrogen or C_{1-6} alkyl or together are a group X; NR_9R_{10} wherein R_9 and R_{10} are selected from hydrogen, C_{1-6} alkyl, C_{2-7} alkanoyl or C_{1-6} alkylsulphonyl or together are a group X; $SO_2NR_{11}R_{12}$ wherein R_{11} and R_{12} are selected from hydrogen or C_{1-6} alkyl or together are a group X, or $S(O)_mR_{13}$ wherein m is 1 or 2 and R_{13} is C_{1-6} alkyl;

R_4 and R_5 are independently selected from hydrogen, C_{1-6} alkyl, cyano, amino, aminocarbonyl or aminocarbamoyl optional substituted by one or two C_{1-6} alkyl groups or together a group X, halogen, CF_3, nitro, C_{1-6} alkoxy, C_{1-6}, alkylthio, C_{2-7} alkanoyloxy, C_{1-6} alkoxy or hydroxy, or together are methylenedioxy or C_{3-5} polymethylene.

12. A method of treating inflammatory and/or painful conditions, including rheumatism, in mammals, which comprises administering to a mammal a pharmaceutically effective amount of a compound according to any one of claims 1 to 9 or a pharmaceutically acceptable salt or solvate thereof.

4,578,394

CHOLINERGIC FUNCTION INCREASING 3-[N-(PYRIDYL) CARBAMOYL]-1,4-DIHYDROPYRIDINES

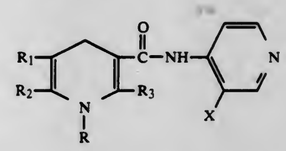
Richard C. Allen, Flemington; Richard C. Effland, and Joseph T. Klein, both of Bridgewater, all of N.J., assignors to Hoechst-Roussel Pharmaceuticals Incorporated, Somerville, N.J.

Filed Dec. 10, 1984, Ser. No. 680,036

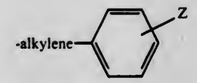
Int. Cl.[4] C07D *401/12;* **A61K** *31/455*

U.S. Cl. 514—332 **13 Claims**

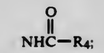
1. A compound having the formula



where R is loweralkyl or Arloweralkyl having a formula of

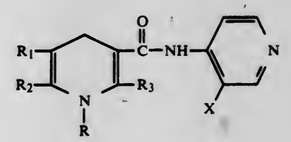


where Z is hydrogen, halogen, loweralkyl, loweralkoxy, CF_3, or NH_2; R_1, R_2 and R_3 may be the same or different and is hydrogen, loweralkyl or halogen; X is hydrogen, NH_2, or

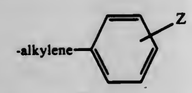


and R_4 is hydrogen or loweralkyl.

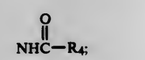
6. A composition for increasing the cholinergic function in a mammal which comprises an effective amount for increasing the cholinergic function in a mammal of a compound having the formula



where R is loweralkyl or Arloweralkyl having a formula of



where Z is hydrogen, halogen, loweralkyl, loweralkoxy, CF_3, or NH_2; R_1, R_2 and R_3 may be the same or different and is hydrogen, loweralkyl or halogen; X is hydrogen, NH_2, or



and R_4 is hydrogen or loweralkyl; and an inert carrier.

4,578,395

CERTAIN ARALKYLAMINOALKYL ESTERS OF 1,4 DIHYDROPYRIDINES AS ANTIHYPERTENSIVE

Hisao Yamaguchi; Hideo Kanno; Yoshiaki Okamiya, all of Hino, and Kiyotaka Sunakawa, Tokyo, all of Japan, assignors to Teijin Limited, Osaka, Japan

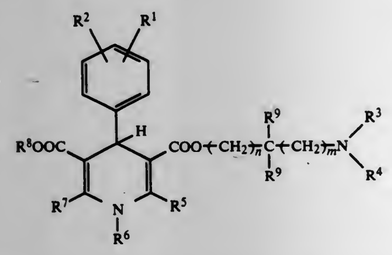
Filed Jun. 1, 1984, Ser. No. 616,515

Claims priority, application Japan, Jun. 2, 1983, 58-96995; Jun. 8, 1983, 58-100857; Nov. 9, 1983, 58-209178

Int. Cl.⁴ C07D *211/90*; A61K *31/455*

U.S. Cl. 514—356 **11 Claims**

1. A 1,4-dihydropyridine derivative represented by the formula (1)



(1)

wherein

R^1 and R^2 are identical or different and each represents a hydrogen atom, a halogen atom or a nitro group, provided that R^1 and R^2 are not hydrogen atoms at the same time; R^3 represents an alkyl group; R^4 represents a benzyl or phenethyl group which may be substituted by a substituent selected from the group consisting of a halogen atom, a C_1–C_6 allyl group, a C_1–C_6 alkoxy group, and a halogenated methyl group; R^5 and R^7 are identical or different and each represents an alkyl group; R^6 represents a hydrogen atom or an alkyl group; R^8 represents an alkyl group; R^9 represents a hydrogen atom or an alkyl group; n and m are identical or different and each represents an integer of 0 to 6; provided that when either one of R^1 and R^2 is a hydrogen atom, R^9 is an alkyl group;

or an acid addition salt thereof.

8. A pharmaceutical for preventing or treating hypertension composition or angina pectoris comprising a pharmaceutically effective amount of the 1,4-dihydropyridine derivative of claim 1 or its pharmaceutically acceptable acid addition salt as an active ingredient and a pharmaceutically acceptable carrier.

4,578,396

FUNGICIDAL HYDROXYALKINYL-AZOLYL DERIVATIVES

Gerhard Jäger, Leverkusen; Klaus Böckmann, Cologne; Karl H. Büchel, Burscheid; Wilhelm Brandes, Leichlingen; Paul-Ernst Frohberger, and Hans Scheinpflug, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 27, 1983, Ser. No. 498,606

Claims priority, application Fed. Rep. of Germany, Jun. 12, 1982, 3222191

Int. Cl.⁴ A01N *43/50, 43/653*; C07D *233/60, 249/08*

U.S. Cl. 514—383 **7 Claims**

1. A hydroxyalkinyl-azolyl derivative of the formula



in which

A is a nitrogen atom or the CH group,

Y^3 is phenoxy or phenylthio, phenylalkoxy having 1 to 4 carbon atoms in the alkyl part or phenylalkylthio having 1 to 4 carbon atoms in the alkyl part, the phenyl substituents in turn being optionally substituted by halogen and/or alkyl having 1 to 4 carbon atoms; alkoxy or alkylthio each having 1 to 2 carbon atoms; halogenoalkyl, halogenoalkoxy or halogenoalkylthio each having 1 to 2 carbon atoms and 1 to 5 identical or different halogen atoms; cyclohexyl, dialkylamino having 1 to 4 carbon atoms is each alkyl part, nitro, cyano, or alkoxycarbonyl having 1 to 4 carbon atoms in the alkyl part; phenyl or halophenyl;

n is 0, 1 or 2;

R^1 and R^2 each independently is hydrogen or methyl, and

X is hydrogen, bromine or iodine,

or an addition product thereof with an acid or metal salt.

4,578,397

INDENO(1,2-B)PYRROLE DERIVATIVES

Tetsuya Tahara, Nakatsu, and Masafumi Arita, Tokyo, both of Japan, assignors to Yoshitomi Pharmaceutical Industries, Ltd., Osaka, Japan

PCT No. PCT/JP83/00287, § 371 Date May 7, 1984, § 102(e) Date May 7, 1984, PCT Pub. No. WO84/00962, PCT Pub. Date Mar. 15, 1984

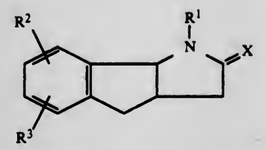
PCT Filed Aug. 30, 1983, Ser. No. 609,355

Claims priority, application Japan, Sep. 8, 1982, 57-156997

Int. Cl.⁴ A61K *31/40*; C07D *209/70*

U.S. Cl. 514—411 **10 Claims**

1. An indeno[1,2-b]pyrrole compound of the formula:



wherein R^1 is hydrogen, lower alkyl or carbamoylmethyl, R^2 is halogen or trifluoromethyl, R^3 is hydrogen or halogen, and X is oxygen or sulfur.

10. A pharmaceutical composition useful for treatment of convulsion, epilepsy and anxiety comprising a pharmaceutically acceptable carrier and a therapeutically effective amount for said treatment, of a compound as defined in claim 1.

4,578,398

SUBSTITUTED 2,3,4,9-TETRAHYDRO-1H-CARBAZOLE-1-ACETIC ACID, COMPOSITIONS AND USE

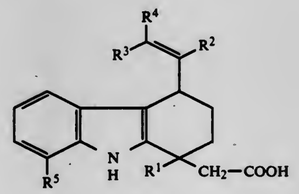
Dominick Mobilio; Christopher A. Demerson, both of Plainsboro, and Leslie G. Humber, North Brunswick, all of N.J., assignors to American Home Products Corporation, New York, N.Y.

Filed May 31, 1985, Ser. No. 740,087

Int. Cl.⁴ A61K *31/40*; C07D *209/86, 209/82*

U.S. Cl. 514—411 **8 Claims**

1. A compound of the formula (I)



(I)

wherein R^1 is lower alkyl, R^2, R^3 and R^4 are hydrogen or lower alkyl or R^2 and R^4 are joined together to give

—CH=CH—CH=CH—

and form a benzene ring, R^5 is hydrogen, lower alkyl or halogen, and the pharmaceutically acceptable salts thereof.

7. A pharmaceutical composition comprising a compound of structure (I), or a pharmaceutically acceptable salt thereof, as defined in claim 1 and a pharmaceutically acceptable carrier.

4,578,399

USE OF THE DITERPENE DERIVATIVE FORSKOLIN FOR IMMUNOSTIMULATION

Hans-Ulrich Schorlemmer, Weimar; Gerhard Dickneite; Hans-Harald Sedlacek, both of Marburg, all of Fed. Rep. of Germany; Noel J. de Souza, and Alihussein N. Dohadwalla, both of Bombay, India, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Apr. 24, 1984, Ser. No. 603,347

Claims priority, application Fed. Rep. of Germany, Apr. 26, 1983, 3314999

Int. Cl.⁴ A61K *31/35*

U.S. Cl. 514—455 **4 Claims**

1. A method of stimulating the immune system of a mammal which comprises parenterally administering to said mammal a therapeutically effective amount of forskolin to provide immunostimulation.

4,578,400

THERAPEUTIC COMPOSITION AND METHOD FOR TREATMENT OF CARDIOVASCULAR DISEASES

Haruo Ohnishi, Funabashi; Kazuo Yamaguchi, Koganei; Yasuo Suzuki, Kawaguchi, and Nobuo Mochida, Suginami, all of Japan, assignors to Mochida Pharmaceutical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 506,216, Jun. 21, 1983, abandoned. This application Dec. 11, 1984, Ser. No. 680,593

Claims priority, application Japan, Jun. 28, 1982, 57-111183

Int. Cl.⁴ A61K *31/35, 31/20*

U.S. Cl. 514—460 **55 Claims**

1. A composition for the treatment of cardiovascular diseases comprising a unit dosage form selected from the group consisting of oral preparation, injection and rectal suppository, said unit dosage containing 5–5000 mg of at least one active compound selected from the group consisting of 5-hydroxydecanoic acid, a salt thereof, and a methyl, ethyl and dihydroxypropyl ester thereof and one or more pharmaceutically acceptable excipients.

4,578,401

MENTAL COMPLEXES HAVING AN ANTINEOPLASTIC ACTION, AND MEDICAMENTS CONTAINING THESE COMPLEXES

Heimo Keller; Bernhard Keppler, both of Heidelberg; Uwe Krüger, and Rudolf Linder, both of Constance, all of Fed. Rep. of Germany, assignors to Byk Gulden Lomberg Chemische Fabrik GmbH, Constance, Fed. Rep. of Germany

PCT No. PCT/EP82/00184, § 371 Date Apr. 29, 1983, § 102(e) Date Apr. 29, 1983, PCT Pub. No. WO83/00868, PCT Pub. Date Mar. 17, 1983

PCT Filed Aug. 28, 1982, Ser. No. 491,337

Claims priority, application Fed. Rep. of Germany, Sep. 2, 1981,

Int. Cl.⁴ A01N *55/04*; C07F *7/00, 7/28*; A61K *31/32*

U.S. Cl. 514—49 **20 Claims**

5. A medicament composition comprising pharmaceutically-acceptable excipient and from 0.1 and 99.5 percent by weight of at least one metal complex of the general formula I,

$$[R^1(CH_2)_mC(O)CR^3C(O)R^2]_2M(OR^4)_{2-n}X_n \quad (I),$$

wherein

M denotes titanium, zirconium or hafnium,

R^1 denotes hydrogen, C_1–C_8-alkyl or phenyl, which is optionally monosubstituted or polysubstituted by fluorine, chlorine, bromine, nitro, C_1–C_4-alkyl, C_1–C_4-alkoxy or trifluoromethyl,

R^2 denotes C_1–C_8-alkyl, or phenyl, which is optionally monosubstituted or polysubstituted by fluorine, chlorine, bromine, nitro, C_1–C_4-alkyl, C_1–C_4-alkoxy or trifluoromethyl,

R^3 denotes hydrogen or phenyl,

R^4 denotes C_1–C_{18}-alkyl, which is optionally substituted by hydroxyl, C_1–C_3-alkylamino or alkali-metal sulfonato, or denotes C_5–C_8-cycloalkyl, which is optionally substituted by C_1–C_5-alkyl, hydroxyl or alkali-metal sulfonato,

X denotes fluorine, chlorine or bromine,

m denotes the number 0 or 1, but does not denote 0 when R^1 denotes hydrogen, and

n denotes the number 0 or 1,

and, when R^4 contains an amino group, a hydrohalide thereof; the medicament composition comprising from 0.1 to 500 milligrams of metal complex per unit dose.

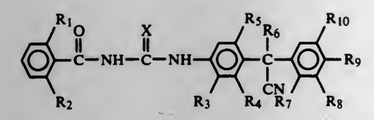
4,578,402

PESTICIDAL ALPHA-CYANOBENZYL PHENYL BENZOYL UREA COMPOUNDS

Themistocles Damasceno J. D'Silva, Chapel Hill, N.C., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Mar. 15, 1985, Ser. No. 712,195
Int. Cl.⁴ A01N *37/34;* **C07C** *121/78*
U.S. Cl. 514—521 **35 Claims**

1. A compound of the formula:



wherein:

R_1 and R_2 are independently hydrogen, halogen, C_{1-6} alkyl, haloalkyl, polyhaloalkyl, alkoxy, haloalkoxy or polyhaloalkoxy, provided that at least one of R_1 and R_2 is other than hydrogen;

R_3, R_4 and R_5 are independently hydrogen, halogen, C_{1-6} alkyl, haloalkyl, polyhaloalkyl, alkoxy, haloalkoxy, polyhaloalkoxy, carboxylic acid, carboxylic acid salt or carboxylic acid ester;

R_6 is hydrogen or C_{1-6} alkyl;

R_7, R_8, R_9 and R_{10} are independently hydrogen, halogen, C_{1-6} alkyl, haloalkyl, polyhaloalkyl, alkoxy, haloalkoxy, polyhaloalkoxy, carboxylic acid, carboxylic acid salt, carboxylic acid ester, cyano or nitro; and

X is oxygen or sulfur.

25. A method of controlling pests which comprises subjecting said pests to a pesticidally effective amount of the compound of claim 1.

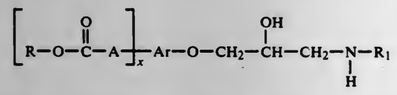
4,578,403

METHOD FOR TREATING GLAUCOMA BY THE TOPICAL ADMINISTRATION OF SELECTIVELY METABOLIZED BETA-BLOCKING AGENTS

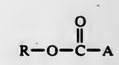
William L. Matier, Libertyville, Ill., assignor to American Hospital Supply Corporation, Evanston, Ill.

Division of Ser. No. 276,658, Jun. 23, 1981, Pat. No. 4,454,154. This application Jun. 11, 1984, Ser. No. 619,184
Int. Cl.⁴ A61K *31/275, 31/235, 31/24*
U.S. Cl. 514—522 **17 Claims**

1. A method for treating glaucoma or for lowering intraocular pressure in a mammal, which comprises topically applying to the eye of such mammal an intraocular pressure-lowering effective amount of a compound represented by the formula:



wherein R represents lower alkyl of straight or branched carbon chains from 1 to about 10 carbon atoms, lower cycloalkyl of from 3 to about 5 carbon atoms, lower alkenyl of from 2 to about 5 carbon atoms, lower alkynyl of from 2 to about 5 carbon atoms, lower alkyl carboxymethyl in which the alkyl portion contains from 1 to about 5 carbon atoms, aryl carboxymethyl in which the aryl portion contains from 6 to about 8 carbon atoms, aryl of from 6 to about 10 carbon atoms or aralkyl wherein the alkyl portion contains from about 1 to about 5 carbon atoms and the aryl portion represents substituted or unsubstituted monocyclic or polycyclic aromatic of from 6 to about 10 carbon atoms; A is a direct bond, lower alkylene or lower alkenylene; x is an integer from 1 to 3, provided that when x is greater than 1, different occurrences of the



group may be the same or different; Ar is phenyl or napthyl substituted with acetamido, amino, nitro, lower alkylamino, hydroxy, lower hydroxyalkyl, or cyano; R_1 is lower alkyl, lower hydroxyalkyl, lower alkenyl, lower alkynyl, or aralkyl; or a pharmaceutically acceptable salt thereof.

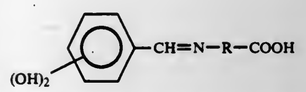
4,578,404

PHARMACEUTICAL COMPOSITION FOR TREATING NEPHRITIS AND METHOD FOR TREATING NEPHRITIS

Hitoshi Takita; Sakuo Noda, both of Tokyo; Yutaka Mukaida, Moroyama, and Hidetoshi Kobayashi, Tokyo, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

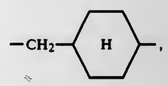
Filed Apr. 6, 1984, Ser. No. 597,601
Claims priority, application Japan, Apr. 15, 1983, 58-66674
The portion of the term of this patent subsequent to Mar. 22, 2000, has been disclaimed.
Int. Cl.⁴ A61K *31/195*
U.S. Cl. 514—567 **8 Claims**

1. A pharmaceutical composition for treating nephritis, comprising 0.01 to 100% by weight of at least one compound selected from the group consisting of the derivatives of N-(dihydroxybenzylidene)amino acid, represented by the formula (I):



(I)

wherein R represents an alkylene group having one to five carbon atoms, a phenylene group or



the pharmaceutically acceptable salts thereof and the pharmaceutically acceptable esters thereof and a pharmaceutically acceptable carrier therefor.

4,578,405

METHODS FOR TREATING INFLAMMATION

Martin M. Rieger, Morris Plains, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed May 29, 1985, Ser. No. 738,920
Int. Cl.⁴ A61K *31/015, 31/12*
U.S. Cl. 514—679 **8 Claims**

1. A method for treatment of inflammation in a mammal comprising administering to the mammal a therapeutically effective amount of an agent selected from the group consisting of 1-phenyl-1-cyclohexene, 4-phenylcyclohexanone, and mixtures thereof.

4,578,406

CONDUCTIVE POLYURETHANE FOAM AND PROCESS OF CONTACTING A POLYURETHANE FOAM WITH A MIXTURE OF SWELLING AGENT AND CHEMICAL ADDITIVE

Robert A. Volz, West Chester, Pa., assignor to Scotfoam Corporation, Eddystone, Pa.

Filed Dec. 20, 1984, Ser. No. 684,012
Int. Cl.⁴ C08G *18/14*
U.S. Cl. 521—52 **22 Claims**

1. A process for modifying the electrical conductivity of a polyurethane foam comprising;

(a) contacting the polyurethane foam with a mixture of a swelling agent for the polyurethane foam and an electrical conductivity increasing chemical additive, which is soluble or miscible in the swelling agent for a time sufficient to swell the foam to at least a ten percent increase in its original volume and interpenetrate the foam with the chemical additive,

(b) shrinking the interpenetrated polyurethane foam by removing the swelling agent under conditions whereby at least 1%, by weight of the foam, of the chemical additive remains trapped in the polymeric structure of the polyurethane foam.

4,578,407

THIXOTROPIC RUST REMOVAL COATING AND PROCESS

Robert N. Amabile, Garfield; Richard E. Judd, Bloomingdale, and Stanley J. Gromelski, Jr., West Caldwell, all of N.J., assignors to GAF Corporation, Wayne, N.J.

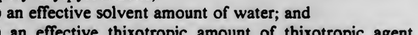
Filed Mar. 31, 1982, Ser. No. 364,117
Int. Cl.⁴ B08B *7/00;* **C11D** *3/37, 7/32;* **C08L** *5/00*
U.S. Cl. 524—55 **14 Claims**

1. A spreadable thixotropic coating composition having a pH between 1.5 and 7.0 said composition being suitable for removing rust from metal surfaces and consisting essentially of:

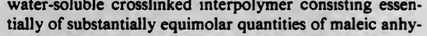
(a) an effective film forming and rust removing amount of polyvinylpyrrolidone;

(b) an effective solvent amount of water; and

(c) an effective thixotropic amount of thixotropic agent selected from the group consisting of xanthan gum and water-soluble crosslinked interpolymer consisting essentially of substantially equimolar quantities of maleic anhydride and monovinyl alkyl ether wherein the alkyl group contains from 1 to 4 carbon atoms and 0.001 to 0.2 mole per mole of the monovinyl alkyl ether of a crosslinking agent having a formula selected from the class consisting of



and



where X_1 represents an alkylene group of two to twelve carbon atoms and X_2 represents an alkylene group of two to four carbon atoms and n represents an integer of 2 to 100.

4,578,408

POLYESTER RESIN COMPOSITION RESISTANT AGAINST DISCOLORATION BY LIGHT

Masatoshi Matsuoka; Yukio Ikenaga, both of Fuji, and Osamu Matsuno, Hyogo, all of Japan, assignors to Polyplastics Co., Ltd., Japan

PCT No. PCT/JP81/00370, § 371 Date Aug. 6, 1982, § 102(e) Date Aug. 6, 1982, PCT Pub. No. WO82/02053, PCT Pub. Date Jun. 24, 1982
PCT Filed Dec. 7, 1981, Ser. No. 414,251
Int. Cl.⁴ C08K *5/34, 5/11, 3/22*
U.S. Cl. 524—91 **18 Claims**

1. A photodiscoloration-resistant polyester resin composition comprising 100 parts by weight of a polyester resin and, incorporated therein, (1) 3 to 50 parts by weight of a brominated cyanuric acid ester compound; and (2) a benzotriazole-type ultraviolet stabilizer in an amount of up to 5 parts by weight per 100 parts by weight of the polyester resin; wherein the composition has a Hunter color difference, ΔE, of less than 10, as performed before and after a treatment wherein a molded article composition is exposed to irradiation for 200 hours by a sunshine weatherometer under conditions of 63° C. for 12 minutes and 60 minutes water spraying; and wherein

$$\Delta E = \sqrt{(L - L_o)^2 + (a - a_o)^2 + (b - b_o)^2}$$

wherein L_o, a_o and b_o are values of the Hunter color before irradiation and L, a and b are values of the Hunter color after irradiation.

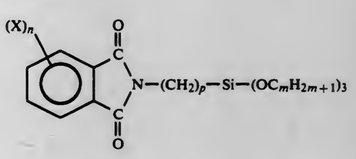
4,578,409

FLAME RETARDING SILANES

Sivaram Krishnan, Pittsburgh, Pa.; Ulrich R. Grigo, Kempen, Fed. Rep. of Germany, and Donald A. Folajtar, Pittsburgh, Pa., assignors to Mobay Chemical Corporation, Pittsburgh, Pa.

Filed Jan. 14, 1985, Ser. No. 691,102
Int. Cl.⁴ C08K *5/34*
U.S. Cl. 524—94 **11 Claims**

1. The compound



wherein X is a halogen atom, n is 1–4, p is 1–9 and m is 1–5.

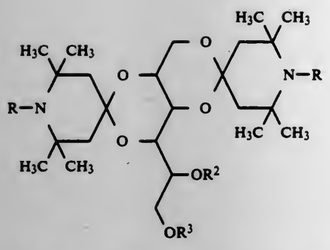
4,578,410

PIPERIDINE DERIVATIVES, THEIR PRODUCTION AND STABILIZED POLYMER COMPOSITIONS CONTAINING SAME

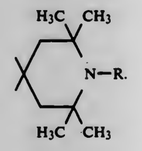
Yukoh Takahashi; Takeo Fujii, both of Toyonaka; Masahisa Shionoya, Izumi; Shinichi Yachigo, Toyonaka, and Tamaki Ishii, Suita, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Aug. 27, 1984, Ser. No. 644,680
Claims priority, application Japan, Sep. 5, 1983, 58-163734; May 10, 1984, 59-94371; May 21, 1984, 59-103362
Int. Cl.⁴ C08K *5/34*
U.S. Cl. 524—102 **20 Claims**

1. A piperidine derivative represented by the formula (I),



wherein R represents a hydrogen atom or a C_1–C_3 alkyl group, and R^2 and R^3 represent a hydrogen atom or taken together, form

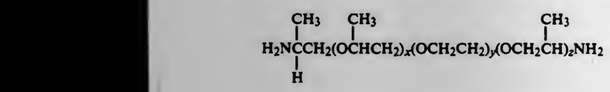


4,578,411
PROCESS FOR MAKING POWDERED RUBBER
William Budd, Cuyahoga Falls, and Paul H. Sandstrom, Tallmadge, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Sep. 10, 1984, Ser. No. 649,233
Int. Cl.[4] C08K *3/04*
U.S. Cl. 524—156 **18 Claims**

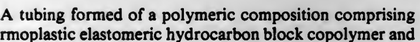
1. A process for the production of tack-free, pourable, filler containing elastomer powder which comprises;
(a) dispersing a carbon black filler in water;
(b) mixing the thus dispersed cabon black filler with an elastomer solution and an anionic surfactant to produce an elastomer emulsion;
(c) coagulating the elastomer emulsion;
(d) partitioning the coagulated elastomer emulsion with a coating resin which is comprised of at least one copolymer containing from 70% to 97% by weight vinyl aromatic monomers and from 3% to 30% by weight diene monomers; and
(e) filtering, washing and drying the resultant powder.

4,578,412
EXTENDED AMINE CURING AGENTS [AND EPOXY RESINS CURED THEREWITH]
Kathy B. Sellstrom, and Harold G. Waddill, both of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.
Division of Ser. No. 510,848, Jul. 5, 1983, Pat. No. 4,552,933. This application Mar. 11, 1985, Ser. No. 710,263
Int. Cl.[4] C08L *75/04*
U.S. Cl. 524—243 **22 Claims**

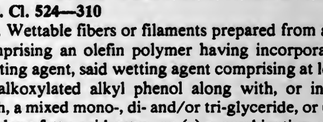
1. A composition for use in the curing of a 1,2-epoxy resin consisting essentially of a solution of a cured elastomeric polyurethane formed by reaction injection molding in a 1,2-epoxy-interactive polyether polyamine or a Mannich condensate of said polyether polyamine with a phenol and formaldehyde, said polyether polyamine having a formula as follows:



wherein x+z=about 2 to 10 and y equals about 1 to 50; or

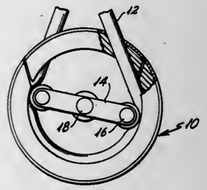


wherein x is a number having a value of about 2 to 40; or



wherein x, y and z represent numbers in the range of about 1 to 15 and the sum of x, y and z is from about 3 to 50.

4,578,413
POLYMERIC TUBINGS COMPRISING POLYSILOXANE-MODIFIED ELASTOMER COMPOSITIONS
Robert E. Sterling, New Port Richey, Fla., assignor to Medical Research Associates, Ltd. #2, Clearwater, Fla.
Filed Dec. 21, 1983, Ser. No. 563,825
The portion of the term of this patent subsequent to Nov. 6, 2001, has been disclaimed.
Int. Cl.[4] C08L *25/10, 9/06;* A01N *1/00*
U.S. Cl. 524—269 **21 Claims**



1. A tubing formed of a polymeric composition comprising a thermoplastic elastomeric hydrocarbon block copolymer and a polysiloxane having a kinematic viscosity of 20 to 10^6 centistokes at room temperature, the polysiloxane constituting from about 0.1 to 12 percent by weight of the composition, the balance being the copolymer.

4,578,414
WETTABLE OLEFIN POLYMER FIBERS
Lawrence H. Sawyer, and George W. Knight, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.
Continuation-in-part of Ser. No. 581,397, Feb. 17, 1984, abandoned. This application Feb. 19, 1985, Ser. No. 703,077
Int. Cl.[4] C08K *5/10, 5/11;* C08L *91/00*
U.S. Cl. 524—310 **49 Claims**

1. Wettable fibers or filaments prepared from a composition comprising an olefin polymer having incorporated therein a wetting agent, said wetting agent comprising at least one of (a) an alkoxylated alkyl phenol along with, or in combination with, a mixed mono-, di- and/or tri-glyceride, or (b) a polyoxyalkylene fatty acid ester, or (c) a combination of (b) and any part of (a).

4,578,415
AQUEOUS AEROSOL COATING COMPOSITION
Eugene L. Learner, Dayton, Ohio, assignor to DAP Inc., Tipp City, Ohio
Filed Jun. 29, 1984, Ser. No. 626,306
Int. Cl.[4] C08K *5/06;* C09D *3/80, 5/02*
U.S. Cl. 524—322 **19 Claims**

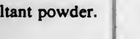
1. An aqueous aerosol coating composition, which comprises a water soluble ammonium or amine salt of a drying oil-modified copolymer of an alkyl acrylate of 3 to 5 carbon atoms in the alkyl moiety and an alkyl methacrylate having 3 to 5 carbon atoms in the alkyl moiety, having an average molecular weight of not more than about 9,000, a water soluble organic solvent, water and dimethyl ether.

4,578,416
FLAME RETARDANT HIGH IMPACT POLY PARAMETHYLSTYRENE COMPOSITIONS
Viren P. Trivedi, Old Bridge, N.J., assignor to Mobil Oil Corporation, New York, N.Y.
Filed Aug. 31, 1982, Ser. No. 413,590
Int. Cl.[4] C08K *5/06*
U.S. Cl. 524—371 **2 Claims**

1. A non-foamed, flame-retarded article comprising:
a. a methyl styrene resin containing at least 20% by weight of polymerized units derived from a mixture of methylstyrene isomers consisting essentially of 0–0.1 percent by weight ortho-methylstyrene, 0–15 percent by weight meta-methylstyrene, and at least 85 percent by weight para-methylstyrene, and 0–80 percent by weight of a different ethylenically unsaturated monomer; and
b. a sufficient amount of flame-retardants comprising an antimony compound and a halide flame-retardant, to achieve at least a V-1 flame-retardancy under UL-94 test wherein the V-1 flame-retardancy is achieved by the addition of antimony oxide and decabromodiphenyl oxide and wherein the amount of flame-retardants is substantially less than that required for polystyrene analogs to achieve the same degree of flame-retardancy.

4,578,417
STABILIZED MOISTURE CURABLE COMPOSITION
Hisao Furukawa, Kobe; Keiko Okada, Osaka; Joe Kawamura, and Yasushi Kato, both of Kobe, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan
Filed Oct. 2, 1984, Ser. No. 657,101
Claims priority, application Japan, Oct. 3, 1983, 58-185693
Int. Cl.[4] C08K *5/06;* C08L *43/04*
U.S. Cl. 524—378 **11 Claims**

7. A composition comprising (A) a silyl group-containing vinyl polymer whose main chain consists essentially of a vinyl polymer and which has on the polymer chain end or a side chain thereof at least one silicon atom to which a hydrolyzable group is linked per one polymer molecule,
(B) an orthoacetic acid ester of the formula;



wherein R^1 is a monovalent hydrocarbon group having 1 to 16 carbon atoms,
(C) a catalyst for curing said silyl group-containing vinyl polymer (A), and
(D) A solvent for the silyl group-containing vinyl polymer (A) and the catalyst (C).

11. The composition of claim 7, wherein said solvent contains an alkyl alcohol.

4,578,418
TWO-PACKAGE URETHANE MAINTENANCE PRIMER
Achim R. Krueger, Cherry Hill, N.J., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Division of Ser. No. 574,250, Jan. 26, 1984, Pat. No. 4,522,879, which is a continuation-in-part of Ser. No. 314,972, Oct. 26, 1981, abandoned. This application Dec. 31, 1984, Ser. No. 688,024
Int. Cl.[4] C08K *3/08, 5/09*
U.S. Cl. 524—400 **4 Claims**

1. A coating composition comprising at least one inert anhydrous organic solvent containing
a binder formed from at least one polymeric polyol having 1–10% by weight of hydroxyl, a number average molecular weight of about 500–10,000 and a solubility of at least 30% by weight in the solvent;
a pigment mixture containing (1) at least 20% by weight of a pigment in the form of platelets (2) about 1–5% by weight of carbon black, and (3) about 1–5% by weight of barium lanolate;
the pigment/binder weight ratio being in the range of 60/100–600/100;
an organic polyisocyanate; and
dispersed therein, a finely divided sacrificial metal selected from the group consisting of zinc, aluminum and magnesium.

4,578,419
IODINE COMPOUND ACTIVATION OF AUTODEPOSITION BATHS
Wilbur S. Hall, Springvale, Me., assignor to Amchem Products, Inc., Ambler, Pa.
Filed Mar. 28, 1985, Ser. No. 717,259
Int. Cl.[4] C08K *3/00, 3/16*
U.S. Cl. 524—401 **24 Claims**

1. An aqueous acidic autodeposition composition for depositing a resinous coating on an iron- and/or zinc-containing metal substrate, comprising a resinous latex, an inorganic acid, and an oxidizer, all present in amounts effective to deposit said coating, wherein: said latex polymer is a copolymer; and said oxidizer is elemental iodine complexed with a water soluble iodide, an iodate salt or free acid, a periodate salt or free acid, or any mixture of the foregoing.

4,578,420
ERASER WITH THERMOPLASTIC BINDER
Werner Handl, Altdorf, Fed. Rep. of Germany, assignor to J. S. Staedtler, Nuremburg, Fed. Rep. of Germany
Filed Feb. 10, 1981, Ser. No. 233,292
Claims priority, application Fed. Rep. of Germany, Feb. 13, 1980, 3005332
Int. Cl.[4] C08K *5/01;* C08L *53/02*
U.S. Cl. 524—490 **3 Claims**

1. In an eraser composed of fillers and a binder of a thermoplastic material of a synthetic rubber, the improvement consisting essentially of said binder being a styrene-butadiene-styrene block polymer with a butadiene portion of 10 to 40% and containing a straight-chain or branched aliphatic hydrocarbon compound having a formula ranging between $C_{18}H_{38}$ to $C_{43}H_{88}$.

4,578,421
MATERIAL INTENDED TO FORM A JOINT BETWEEN TWO BODIES ON THE OUTSIDE OF THEIR INTERFACE, METHODS OF PRODUCING ASSEMBLIES WITH SUCH MATERIAL; ASSEMBLIES THUS OBTAINED
Jean-Louis Tournier, Riom, France, assignor to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France
Filed Jun. 13, 1983, Ser. No. 503,757
Claims priority, application France, Jul. 2, 1982, 82 11800
Int. Cl.[4] C08L *47/00, 61/04, 9/00*
U.S. Cl. 524—511 **14 Claims**

1. A material intended to form a joint between at least two bodies on the outside of their interface, at least one of the bodies being deformable, characterized by the following features:
(a) it is a mixture comprising at least one solvent and at least one elastomer, said mixture having a Brookfield viscosity, measured at 20° C., of from 0.3 Pa.s to 700 Pa.s;
(b) this mixture has a volatile part which can be evaporated at 20° C., 1 bar, to yield a dry extract which is from 20% by weight to 80% by weight, based on the weight of the mixture;

(c) the dry extract of the mixture comprises an elastomer fraction at least 20% by weight of which elastomer fraction is formed of at least one unsaturated elastomer capable of cross-linking either at ambient temperature of by heating for a period of time of less than one minute;
(d) the dry extract comprises from 3 to 9 parts by weight of sulfur per 100 parts by weight of the elastomer fraction;
(e) the dry extract comprises at least two cross-linking accelerators belonging to different families selected from the group consisting of xanthates, amines and carbamates, in the following proportions, per 100 parts by weight of the elastomer fraction;
xanthate or total xanthates: 1 to 4 parts by weight;
amine or total amines: 0.2 to 1 part by weight; carbamate or total carbamates: 2 to 4 parts by weight;
(f) the dry extract comprises at least one cross-linking accelerator metallic oxide selected from among zinc oxide (ZnO), lead oxide (PbO2) and magnesium oxide (MgO), the proportion of the oxide or of the total oxides being from 2 to 10 parts by weight per 100 parts by weight of the elastomer fraction.

4,578,422

ACETAL RESIN COMPOSITION

Masanori Sakurai; Junichi Miyawaki; Toshikaju Umemura; Toshikatsu Kawata, and Shinji Kiboshi, all of Toyonaka, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

PCT No. PCT/JP83/00335, § 371 Date May 23, 1984, § 102(e) Date May 23, 1984, PCT Pub. No. WO84/01579, PCT Pub. Date Apr. 26, 1984
PCT Filed Oct. 8, 1983, Ser. No. 619,145
Claims priority, application Japan, Oct. 8, 1982, 57-177133
The portion of the term of this patent subsequent to Mar. 19, 2002, has been disclaimed.
Int. Cl.⁴ C08K *3/72, 3/34*
U.S. Cl. 524—593 **12 Claims**

1. An acetal resin composition comprising
(A) an acetal resin,
(B) at least one member selected from the group consisting of
(1) a polyfunctional cyanate ester or its prepolymer,
(2) a mixture of a polyfunctional cyanate ester or its prepolymer and a polyfunctional maleimide or its prepolymer, and
(3) a prepolymer of a polyfunctional cyanate ester and a polyfunctional maleimide,
(C) an amino-substituted triazine and/or a cyanoguanidine compound, and
(D) glass fibers and/or granular or powdery glass.

4,578,423

POLYBLENDS OF POLYPHENYLENE OXIDE AND STYRENE-ACRYLONITRILE POLYMERS HAVING BROAD ACRYLONITRILE COMPOSITIONAL DISTRIBUTION

Gary L. Deets, St. Peters, Mo., and Quirino A. Trementozzi, Springfield, Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 12, 1983, Ser. No. 560,287
Int. Cl.⁴ C08L *25/12, 55/02, 71/04*
U.S. Cl. 525—68 **8 Claims**

1. A polyblend comprising:
(a) from about 10 to about 90% by weight of a polyphenylene oxide; and
(b) from about 90 to about 10% by weight of a polymer comprising from 87 to 63% by weight of a vinyl aromatic monomer, from 8 to 17 average % by weight of an unsaturated nitrile monomer and from 0 to 20% by weight of a rubber having a glass transition temperature below 0° C., said polymer having a broad compositional distribution of said unsaturated nitrile monomer in that the standard deviation of the weight % unsaturated nitrile monomer is at least about 3.5%.

4,578,424

HIGH PERFORMANCE TWO-COMPONENT EPOXY STRUCTURAL ADHESIVES WITH CHEMICAL THIXOTROPY

Anil B. Goel, Worthington, Ohio, assignor to Ashland Oil, Inc., Ashland, Ky.

Filed May 3, 1985, Ser. No. 730,142
Int. Cl.⁴ C08G *59/56, 59/58, 59/60*
U.S. Cl. 525—109 **11 Claims**

1. A two component adhesive formulation comprising a mixture of
A. An epoxy component comprising an epoxy resin and an additive selected from the group consisting of (a) a polyisocyanate, (b) a carboxylic anhydride and (c) molecules with unsaturated carbon-carbon bonds capable of undergoing Michael addition reaction with amines, and
B. A hardener component for curing component A comprising a mixture of amido amines, primary and secondary amines having tertiary amine groups or ether groups in their backbone and bisphenol-A.

4,578,425

PHENOLIC RESINS, CARBOXYLIC RESINS AND THE ELASTOMERS CONTAINING ADHESIVE

Michael Santorelli, Schenectady, N.Y., assignor to Schenectady Chemicals, Inc., Schenectady, N.Y.

Filed Feb. 13, 1985, Ser. No. 701,205
Int. Cl.⁴ C08L *63/02*
U.S. Cl. 525—109 **16 Claims**

1. An adhesive composition comprising:
(a) 4–72% by weight phenol-aldehyde resin or a resin of an ethylenically unsaturated phenol;
(b) 4–72% by weight 1,2 epoxy resin;
(c) 10–80% by weight of an ethylene acrylic elastomer; wherein the ratio of phenol-aldehyde to 1,2 epoxy resin is from 1:4 to 4:1.

4,578,426

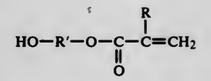
PRODUCTION OF COATINGS

Werner Lenz, Bad Durkheim; Hans Sander, Ludwigshafen, and Dieter Moeller, Ascheberg, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

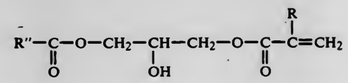
Filed Jun. 25, 1984, Ser. No. 624,293
Claims priority, application Fed. Rep. of Germany, Jun. 24, 1983, 3322830
Int. Cl.⁴ C08F *8/00;* **C08L** *75/00*
U.S. Cl. 525—131 **20 Claims**

1. A process for the production of a coating based on a reaction product of
(A) a mixture of
(A1) a polyhydroxypolyacrylate resin obtained from an ester of acrylic acid or methacrylic acid with a monofunctional aliphatic alcohol, or a mixture of esters of acrylic acid and mehtacrylic acid with monofuctional aliphatic alcohols, a monoester of acrylic acid or methacrylic acid with a polyfunctional aliphatic alcohol, or a mixture of monoesters of acrylic acid and methacrylic acid woth polyfunctional aliphatic alcohols, and other compolymerizable olefinically unsaturated monomers, and
(A2) a polyesterpolyol whcih is soluble in organic solvents with
(B) a polyisocyanate which is unblocked or partially or completely blocked with CH-, NH- or OH-acidic blocking agents, contains isocyanurate groups and may or may not contain biuret groups and has a functionality of from 2.5 to 6,
wherein the polyhydroxypolyacrylate resin (A1) used comprises from 40 to 99% by weight of hydroxyl-containing copolymers consisting of

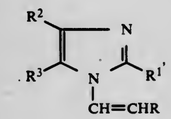
(a) from 6 to 70% by weight of one or more esters of the formula



where R is hydrogen or methyl and R′ is a straight-chain or branched alkylene radical of 2 to 18 carbon atoms or alkylene of 7 to 17 carbon atoms which contains one, two or three cycloaliphatic groups,
(b) from 0 to 50% by weight of one or more hydroxylalkyl esters of acrylic acid or methacrylic acid of the formula



where R is hydrogen or methyl and R″ is the alkyl radical of a branched aliphatic carboxylic acid of 4 to 26 carbon atoms,
(c) from 10 to 50% by weight of one or more alkyl esters of acrylic acid or methacrylic acid, which form homopolymers having a glass transition temperature of from +5° to +120° C.,
(d) from 0 to 10% by weight of a vinylaromatic,
(e) from 10 to 60% by weight of one or more alkyl esters or alkylglycol esters of acrylic acid or methacrylic acid, which form homopolymers which have a glass transition temperature of from −80° to +4.5° C., the alkylglycol esters containing not more than 2 ether oxygen bridges,
(f) from 0 to 10% by weight of an acrylamide or a methacrylamide which may or may not be substituted at the amide nitrogen atom by one or two alkyl radicals of 1 to 8 carbon atoms which may or may not contain a carbonyl group, or by one or two phenyl radicals,
(g) from 1 to 25% by weight of one or more polymerizable olefinically unsaturated heterocyclic compodnds of the formula



(I)

where R^1, R^2 and R^3 are each hydrogen, methyl, ethyl, a straight-chain or branched alkyl radical of 3 or 4 carbon atoms, or phenyl which is unsubstituted or substituted by alkyl of 1 to 4 carbon atoms or by halogen or nitro, or R^2 and R^3 can form an aromatic six-membered ring which is unsubstituted or substituted by alkyl of 1 to 4 carbon atoms or by halogen or nitro, which ring is fused to the heterocyclic ring and
(h) from 0 to 20% by weight of monomers which are not included under (a) to (g) and whose copolymerized radicals are inert to isocyanate groups, with the proviso that the sum of the percentages stated under (a) and (b) is from 6 to 70, the sum of the percentages stated under (c), (d) and (g) is from 11 to 60, and the sum of the percentages of the components stated under (a) to (h) is 100, the polyesterpolyol (A2) used comprises from 1 to 60% by weight of a hydroxyl-containing polyester which has a hydroxyl number of from 30 to 500 and an acid number of from 0 to 30 and is soluble in conventional surface coating solvents or solvent mixtures which are inert to isocyanates and essentially contain one or more aromatic, halogen, ether, ester or keto groups, or several different groups from amongst these, and this polyesterpolyol (A2) can also contain as much as 10% by weight of a polyfunctional alcohol having a molecular 1 weight of from 62 to 300, with the proviso that the sum of the percentages stated under (A1) and (A2) is 100, and the polyisocyanate (B) used, which contains isocyanurate groups, may or may not contain biuret groups and has a functionality of from 2.5 to 6 comprises (B1) from 60 to 100% by weight of an isocyanurate-containing polyisocyanate which possesses predominantly cycloaliphatically bonded isocyanate groups, and (B2) from 0 to 40% by weight of a polyisocyanate which contains biuret or isocyanurate groups or both biuret and isocyanurate groups and possesses predominantly aliphatically bonded isocyanate groups, with the proviso that the sum of the percentages stated under (B1) and (B2) is 100.

4,578,427

COATING RESIN COMPOSITION

Teruo Saito, Shiga; Kuniaki Asai, Osaka, and Kazuo Hieda, Hyogo, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Jan. 24, 1985, Ser. No. 694,366
Claims priority, application Japan, Jan. 24, 1984, 59-11484
Int. Cl.⁴ C08L *27/18, 27/20, 61/00*
U.S. Cl. 525—150 **7 Claims**

1. A coating resin composition comprising from 50 to 99% by weight of a thermoplastic aromatic polyether ketone resin and from 50 to 1% by weight of perfluoroalkoxy resin or a tetrafluoroethylene/hexafluoropropylene compolymer having a hexafluoropropylene content of from 18 to 25% by weight.

4,578,428

MODIFIED OLEFINE POLYMERS AND PROCESS FOR THEIR MANUFACTURE

Luciano Clementini, and Leonardo Spagnoli, both of Terni, Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Dec. 16, 1983, Ser. No. 561,995
Int. Cl.⁴ C08F *255/02, 255/04, 8/06*
U.S. Cl. 525—265 **8 Claims**

1. A process for manufacturing modified polymers consisting of polymers selected from crystalline, prevailingly isotactic polypropylene and crystalline propylene/ethylene copolymers made up, prevailingly, of polymerized propylene units, prepared by means of stereospecific catalysts grafted with unsaturated carboxylic acids, having a high adhesiveness to metals, comprising a preliminary step of peroxidizing the starting polymer or copolymer by means of a treatment at 70°–120° C. with organic peroxide having an average life >30 minutes at 100° C., the successive mixing with the unsaturated carboxylic acid and the grafting reaction of the latter being accomplished in the absence of solvents, at a temperature of 180°–220° C. in the presence of a different organic peroxide having an average life ≦30 seconds at 200° C.

4,578,429

SELECTIVELY HYDROGENATED BLOCK COPOLYMERS MODIFIED WITH ACID COMPOUNDS OR DERIVATIVES

William P. Gergen, Houston; Robert G. Lutz, Spring, and Richard Gelles, Houston, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Aug. 31, 1984, Ser. No. 646,391
Int. Cl.⁴ C08L *53/02;* **C08F** *279/04*
U.S. Cl. 525—291 **30 Claims**

1. A functionalized selectively hydrogenated block copolymer of the formula ABA to which has been grafted an acid compound or its derivative wherein,
(1) each A is predominantly a polymerized monoalkenyl aromatic hydrocarbon block having an average molecular weight of about 2,000 to 115,000;
(2) each B prior to hydrogenation is predominantly a polymerized conjugated diene hydrocarbon block having an average molecular weight of about 20,000 to 450,000;
(3) the blocks A constituting 5–95 weight percent of the copolymer;

(4) the unsaturation of the block B is less than 10% of the original unsaturation;
(5) the unsaturation of the A blocks is above 50% of the original unsaturation;
(6) and substantially all of the acid compounds or their derivatives are grafted to the block copolymer at secondary or tertiary carbon positions in the B blocks;
(7) and wherein said acid compounds and their derivatives are not easily polymerizable.

4,578,430

CONTROLLED DEGRADATION OR CRACKING OF ALPHA-OLEFIN POLYMERS

Sol Davison, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Dec. 19, 1984, Ser. No. 683,748
Int. Cl.⁴ C08J 7/12
U.S. Cl. 525—387 **7 Claims**

1. In the process for the degradation modification of a propylene homopolymer or copolymer having a melt flow of about 0.2 to about 20, which process comprises adding about 0.0001 to about 1.0 parts by weight of a peroxide to 100 parts by weight of said homopolymer or copolymer and heating the resulting mixture in a melt extruder at a temperature of from about 150° C. to about 300° C., the improvement wherein the rate of addition of said peroxide is cyclically varied at a frequency with a period longer than the decomposition time of said peroxide, but shorter than the passage time of said mixture through said extruder, so as to achieve the desired melt flow and molecular weight distribution for said homopolymer or copolymer, wherein
(a) said peroxide decomposition time is the half-life of the peroxide at the temperature in said extruder;
(b) said peroxide has a half-life at about 1 second to about 30 seconds at the temperature in said extruder;
(c) said passage time in said extruder is between about 0.5 and about 5 minutes; and
(d) said peroxide is cyclically varied by a method selected from the group consisting of:
(i) pulsed square addition having a relatively short period of high peroxide addition alternating with a relatively long period of no peroxide addition;
(ii) pulsed square addition having a relatively long period of high peroxide addition alternating with a relatively short period of no peroxide addition;
(iii) pulsed square addition having alternating periods of high addition of peroxide and low addition of peroxide; and
(iv) continuously changing rate of addition of peroxide according to a sinusoidal wave pattern.

4,578,431

PROCESS FOR IMPROVING MELT STRENGTH OF ETHYLENE POLYMERS BY TREATMENT WITH ORGANIC PEROXIDE

Richard G. Shaw, Bradley Beach, and Peter J. Canterino, Towaco, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 31, 1983, Ser. No. 528,197
Int. Cl.⁴ C08F 8/08
U.S. Cl. 525—387 **9 Claims**

1. A process treating a film-forming copolymer of ethylene and an olefin having 4 to 8 carbons atoms, or of a high density ethylene homopolymer, comprising:
heating said ethylene copolymer in melt form at a temperature of from about 230° C. to 340° C. in the presence of an effective amount of from 100 ppm to 2000 ppm of an organic peroxide for a period of time equal to at least three times the half-life of the organic peroxide at the heating temperature to increase the melt strength of said copolymer so that the copolymer is suitable for extrusion into a film by blown film extrusion.

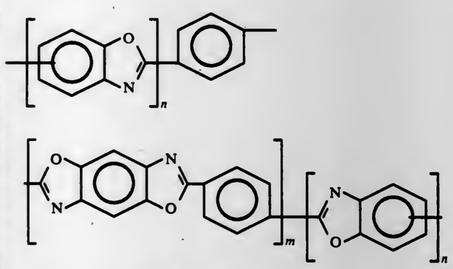
4,578,432

METHOD FOR MAKING HETEROCYCLIC BLOCK COPOLYMER

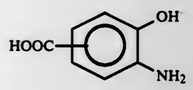
Tsu-Tzu Tsai, Dayton, and Fred E. Arnold, Centerville, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Division of Ser. No. 610,912, May 16, 1984, Pat. No. 4,544,713.
This application Apr. 11, 1985, Ser. No. 721,835
Int. Cl.⁴ C08G 73/22
U.S. Cl. 525—432 **12 Claims**

1. A method for preparing a thermally stable aromatic heterocyclic block copolymer of the general formula



wherein m is an integer equal to the number of repeating units of the rigid rod segment and n is an integer equal to the number of repeating units of the flexible end segments, which comprises the steps of
(a) reacting 2,4-dihydroxy-p-phenylenediamine with terephthalic acid in polyphosphoric acid (PPA) under reaction conditions to form carboxy-terminated rigid rod segments;
(b) adding an amino monomer of the general formula



to the reaction mixture of PPA and rigid rod segments, and polymerizing said amino monomer to form flexible segments grafted onto said rigid rod segments; and
(c) recovering the resulting block copolymer.

4,578,433

LONG-TERM STABILITY OF THE ELECTRICAL CONDUCTIVITY OF PYRROLE POLYMERS

Helmut Muenstedt, Wachenheim, and Herbert Naarmann, Wattenheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 20, 1984, Ser. No. 684,035
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1983, 3346935
Int. Cl.⁴ C25C 1/00
U.S. Cl. 525—417 **6 Claims**

1. A process for improving the long-term stability of the electrical conductivity of a pyrrole polymer, wherein the polymer is subsequently treated with an aqueous acid as a separate step.

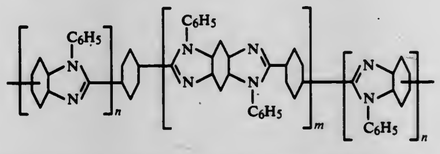
4,578,434

METHOD FOR MAKING HETEROCYCLIC BLOCK COPOLYMER

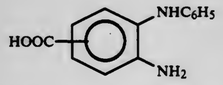
Tsu-Tzu Tsai, Dayton, and Fred E. Arnold, Centerville, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Division of Ser. No. 610,912, May 16, 1984, Pat. No. 4,544,713.
This application Apr. 11, 1985, Ser. No. 722,028
Int. Cl.⁴ C08G 73/06
U.S. Cl. 525—432 **12 Claims**

1. A method for preparing a thermally stable aromatic heterocyclic block copolymer of the general formula



wherein m is an integer equal to the number of repeating units of the rigid rod segment and n is an integer equal to the number of repeating units of the flexible end segments, which comprises the steps of
(a) reacting 1,4-diamino-2,5-dianilinobenzene with terephthalic acid in polyphosphoric acid (PPA) under reaction conditions to form carboxy-terminated rigid rod segments;
(b) adding an amino monomer of the general formula



to the reaction mixture of PPA and rigid rod segments, and polymerizing said amino monomer to form flexible segments grafted onto said rigid rod segments; and
(c) recovering the resulting block copolymer.

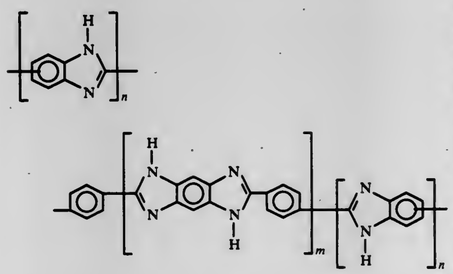
4,578,435

METHOD FOR MAKING HETEROCYCLIC BLOCK COPOLYMER

Tsu-Tzu Tsai, Dayton, and Fred E. Arnold, Centerville, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Division of Ser. No. 610,912, May 16, 1984, Pat. No. 4,544,713.
This application Apr. 11, 1985, Ser. No. 721,973
Int. Cl.⁴ C08G 73/06
U.S. Cl. 525—432 **6 Claims**

1. A method for preparing a thermally stable aromatic heterocyclic block copolymer of the general formula



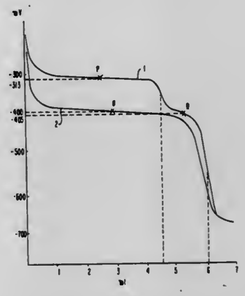
wherein m is an integer equal to the number of repeating units of the rigid rod segment and n is an integer equal to the number of repeating units of the flexible end segments, which comprises the steps of
(a) reacting 1,2,4,5-tetraaminobenzene with terephthalic acid in polyphosphoric acid (PPA) under reaction conditions to form carboxy-terminated rigid rod segments;
(b) adding 2,3-diaminobenzoic acid to the reaction mixture of PPA and rigid rod segments, and polymerizing said 2,3-diaminobenzoic acid to form flexible segments grafted onto said rigid rod segments; and
(c) recovering the resulting block copolymer.

4,578,436

COATING RESINOUS COMPOSITION CONTAINING SATURATED ALICYCLIC ACID MODIFIED AMPHOTERIC POLYESTER RESIN

Hirotoshi Umemoto, Uji; Hisaki Tanabe, Yawata; Akihiro Kanakura, Hirakata, and Shinji Nakano, Takatsuki, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

PCT No. PCT/JP83/00293, § 371 Date May 2, 1984, § 102(e) Date May 2, 1984, PCT Pub. No. WO84/00971, PCT Pub. Date Mar. 15, 1984
PCT Filed Sep. 2, 1983, Ser. No. 608,698
Claims priority, application Japan, Sep. 3, 1982, 57-154210
Int. Cl.⁴ C08F 20/00
U.S. Cl. 525—443 **7 Claims**



1. A coating use resinous composition comprising 60～90% by weight of amphoteric polyester resin obtained by the reaction of polyester resin (A) comprising alcohol and acid components, 10～80 mole % of the acid components being a saturated alicyclic polycarboxylic acid and 10～100 mole % of the carboxyl groups capable of developing a resinous acid value, said carboxyl groups being derived from a polycarboxylic acid showing a titration midpoint potential in a non-aqueous potentiometric titration, under a state capable of developing a resinous acid value, of more than −350 mV, and (B) a member selected from the group consisting of a basic resin and a basic compound or mixtures thereof, and 40～10% by weight of an amino-formaldehyde resin etherified with monohydric alcohol having 1 to 4 carbon atoms, said basic resin and basic compound both containing in its molecule at least one function group capable of reacting with the ester and at least one functional group with a nitrogen atom having a lone pair of electrons.

4,578,437

COPOLYESTER/POLYESTER BLENDS HAVING REDUCED CARBON DIOXIDE PERMEABILITY

Ronald R. Light, and Robert W. Seymour, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 519,475, Aug. 1, 1983, abandoned. This application Oct. 19, 1984, Ser. No. 662,643
Int. Cl.[4] C08L *67/02*
U.S. Cl. 525—444 **6 Claims**

1. A polyester blend, particularly useful in film or sheet form having greatly reduced carbon dioxide permeability, said blend being formed by admixing under essentially non-transesterification conditions and in the absence of any transesterification catalyst (a) from about 40 to about 95% by weight of one or a mixture of copolyesters having an I.V. of from about 0.4 to about 1.0 prepared from (1) an acid component comprising from about 70 to 100 mole % terephthalic acid and up to about 30 mole % of one or a mixture of isophthalic acid, 2,6-naphthalenedicarboxylic acid, and 1,4-cyclohexanedicarboxylic acid, and (2) a glycol component comprising from about 50 to about 80 mole % ethylene glycol, from about 20 to about 50 mole % 1,4-cyclohexanedimethanol, up to about 5 mole % diethylene glycol, and up to about 15 mole % of one or a mixture of modifying diols, and (b) from about 5 to about 60% by weight of poly(ethylene isophthalate) having an I.V. of from about 0.4 to about 1.0.

4,578,438

PREPARATION OF RESINOUS PRODUCTS

Christopher G. Demmer, and Roderick D. Hathaway, both of Cambridge, England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Mar. 11, 1985, Ser. No. 710,641
Int. Cl.[4] C08L *63/10*; C08G *59/14, 59/16, 59/18*
U.S. Cl. 525—481 **20 Claims**

1. A water-dilutable resinous product prepared by reacting together

(A) a resin having at least one phenolic hydroxyl group and a free position ortho and/or para to a phenolic hydroxyl group, and containing a residue formed by polymerization of a vinyl monomer in the resin or in a precursor thereof,

(B) an aldehyde, and

(C) sulfurous acid or an organic acid containing a primary or secondary amino group or a mercaptan group and a carboxylic, sulfonic or phosphonic acid group, or a water-soluble salt thereof.

5. A resinous product according to claim 1, in which (A) is a resin obtained by reacting en epoxide resin with a polyhydric phenol having a free position ortho and/or para to a phenolic hydroxyl group to produce a phenol-terminated resin and polymerizing a vinyl monomer in the phenol-terminated resin.

4,578,439

STYRYL PYRIDINE CYANATES, STYRYL PYRAZINE CYANATES AND POLYMERS THEREOF

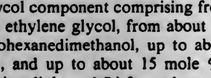
Robert E. Hefner, Jr., Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Aug. 9, 1984, Ser. No. 639,036
Int. Cl.[4] C08L *61/020*; C08G *8/28*
U.S. Cl. 525—509 **33 Claims**

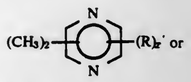
1. A styryl pyridine cyanate or styryl pyrazine cyanate composition resulting from cyanating a product resulting from reacting

(A) at least one of

(1) one or more pyridine compounds represented by the formula

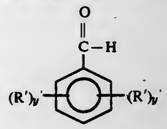


(2) one or more pyrazine compounds represented by the formula



(3) a mixture of 1 and 2; with

(B) a substituted aromatic aldehyde represented by the formula



wherein each R is independently hydrogen, hydroxyl, methyl or ethyl; each R′ is independently a hydroxyl or a



each R″ is independently hydrogen, methyl or ethyl; x has a value of 3; x′ has a value of 2; y has a value of 1 or 2; y′ has a value of 3 or 4; the sum of y and y′ has a value of 5; and with the proviso that at least one of R or R′ is a hydroxyl group and wherein

(i) components (A) and (B) are employed in quantities which provide the resultant reaction product with a reacted molar ratio of (B) to (A) of from about 0.33:1 to about 4:1 and

(ii) at least about 1 percent of the rings in the resultant reaction product of (A) and (B) contain at least one hydroxyl group which is susceptible to being cyanated.

4,578,440

POLYMERIZATION CATALYST AND METHOD

Thomas J. Pullukat, Hoffman Estates, and Raymond E. Hoff, Palatine, both of Ill., assignors to Norchem, Inc., Rolling Meadows, Ill.

Division of Ser. No. 112,560, Jan. 16, 1980, Pat. No. 4,530,913. This application Aug. 21, 1980, Ser. No. 180,481
Int. Cl.[4] C08F *4/42*
U.S. Cl. 526—128 **34 Claims**

1. The method of making polymers from polymerizable 1-olefins which comprises polymerizing at least one of said olefins under polymerizing conditions with a catalyst system comprising an alkyl or aryl aluminum compound cocatalyst and a catalyst prepared by: (1) reacting a halogen free monofunctional organic silicon compound with silica or alumina having surface hydroxyl groups or a mixture thereof, said silicon compound being reactive with said surface hydroxyl groups, followed by stripping the product of this reaction of any excess organosilicon compound and reaction by-products; (2) reacting the product of (1) with a Group IIA organometallic compound or complex of magnesium or calcium; and (3) reacting the product of (2) with a halide or alkoxide of a Group IVB of VB metal of titanium, vanadium, zirconium or mixtures of these in an amount of from 0.1–20.0 wt. % of said metal based on the weight of the catalyst; or (2′) reacting the product of (1) with an alkyl aluminum halide and a Group IIA organometallic compound or complex of magnesium or calcium prior to (3); or (1′) reacting the product of (1) with the halide or alkoxide of (3) prior to (2), the ratio by weight of said Group IIA metal to said Group IVB or VB varying from 0.1–100, and the molar ratio of cocatalyst to Group IVB or VB compounds being from 0.1:1 to 100:1.

4,578,441

EMULSION POLYMERIZATION PROCESS FOR PRODUCTION OF α-METHYLSTYRENE COPOLYMER

Osamu Murai, Osaka, and Noboru Moriyama, Wakayama, both of Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Aug. 14, 1985, Ser. No. 765,906
Claims priority, application Japan, Aug. 22, 1984, 59-174441
Int. Cl.[4] C08F *2/24*
U.S. Cl. 526—216 **5 Claims**

1. A process for producing an α-methylstyrene copolymer, which comprises the step of effecting the emulsion polymerization of α-methylstyrene and another co-monomer in the presence of a succinic acid derivative having at least one alkenyl group or a salt thereof, which has been obtained by reacting an α,β-unsaturated dicarboxylic acid having 4 to 12 carbon atoms or an anhydride thereof with an alkene having 8 to 40 carbon atoms.

4,578,442

PIEZOELECTRIC POLYMERIC MATERIAL, A PROCESS FOR PRODUCING THE SAME AND AN ULTRASONIC TRANSDUCER UTILIZING THE SAME

Hiroji Ohigashi, Zushi; Keiko Koga, Sagamihara, and Toshiharu Nakanishi, Kamakura, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Continuation of Ser. No. 232,963, Feb. 9, 1981, abandoned. This application Jul. 5, 1983, Ser. No. 510,687
Claims priority, application Japan, Feb. 7, 1980, 55-13839; Feb. 12, 1980, 55-15860
Int. Cl.[4] C04B *35/00*; C08F *214/22*
U.S. Cl. 526—255 **11 Claims**

1. A piezoelectric, polymeric material consisting essentially of a copolymer consisting essentially of 65 to 82 mole percent of vinylidene fluoride and 38 to 18 mole percent of ethylene trifluoride, and having a thickness extensional electromechanical coupling factor (K_t) of between about 0.05 and about 0.31.

5. A process for producing a piezoelectric polymeric material which consists essentially of a copolymer consisting essentially of vinylidene fluoride and ethylene trifluoride, said process comprising heat-treating a polymeric material consisting essentially of a copolymer consisting essentially of 65 to 82 mole percent of vinylidene fluoride and 35 to 18 mole percent of ethylene trifluoride at a heat-treating temperature T(°C.) being in the range of from the temperature of 5(°C.) below the crystal phase transition temperature T′m(°C.) to the melting point temperature Tm(°C.) and then poling the heat-treated polymeric material to achieve a thickness extensional electromechanical coupling factor (K_t) of between about 0.05 and about 0.31.

4,578,443

POLYACETYLENE PRODUCTION

David C. Bott, Woking; John H. Edwards, Eaglescliffe, and William J. Feast, High Shincliffe, all of England, assignors to The British Petroleum Company P.L.C., London, England

Continuation of Ser. No. 553,850, Nov. 21, 1983, abandoned, which is a division of Ser. No. 442,147, Nov. 16, 1982, abandoned. This application May 2, 1985, Ser. No. 729,886
Claims priority, application United Kingdom, Nov. 20, 1981, 8134975
Int. Cl.[4] C08F *38/02*
U.S. Cl. 526—285 **13 Claims**

1. A process for producing a coherent poly(acetylene) (III) film comprising solvent casting a solution of a polymer of the general formula (V) derived from a precursor (IV) an transforming the pre-cast, polymer (V) into poly(acetylene) at a temperature between 20° and 120° C. and under reduced pressure over a duration of between 1 and 100 hours in an atmosphere inert to the precursor polymer (V) and to the poly(acetylene) (III) film and a by-product (VI), wherein in the general formulae IV, V and VI represented above in the accompanying specification each of the groups R_1 and R_2
either

(a) represent a radical selected from H, CX_3, C_mH_{2m+1} and $COOR_5$ wherein X is a halogen atom, m has a value between 1 and 4 and R_5 is an alkyl group with 1–4 carbon atoms,

or

(b) form together with the respective carbon atoms to which they are attached a benzene nucleus,

and

each of R_3 and R_4

either

(c) represent H atoms,

or

(d) form together with the respective carbon atoms to which they are attached a benzene nucleus.

4,578,444

ANAEROBIC ADHESIVES CONTAINING POLYMERIZABLE ACTIVATORS

Robert D. Rossi, Levittown, Pa., and Dilip K. Ray-Chaudhuri, Bridgewater, N.J., assignors to National Starch and Chemical Corporation, Bridgewater, N.J.

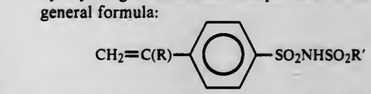
Continuation of Ser. No. 489,433, Apr. 28, 1983, abandoned. This application Oct. 1, 1984, Ser. No. 656,573
Int. Cl.[4] C08F *228/02*
U.S. Cl. 526—288 **8 Claims**

1. An anaerobic curing adhesive composition consisting essentially of:

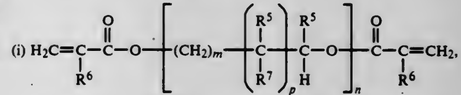
(a) at least one polymerizable acrylate or methacrylate monomer;

(b) a free radical initiator in sufficient concentration to initiate cure upon the exclusion of oxygen; and

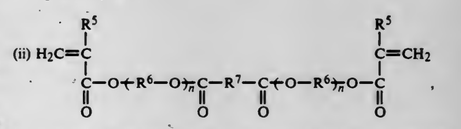
(c) a polymerizable activator therefor comprising a monomeric disulfonimide present in an amount of 0.01 to 12% by dry weight of the total composition selected from the general formula:



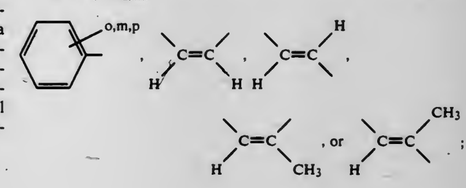
wherein R is hydrogen or methyl, and R′ is alkyl, aryl, toluene or mesitylene; and wherein the acrylate or methacrylate monomer of component (a) is a member of the compounds corresponding to:



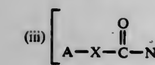
where R^5 is H, CH_3, C_2H_5, CH_2OH, or $CH_2—O—C(=O)—C(R^6)=CH_2$; R^6 is H, Cl, CH_3 or C_2H_5; R^7 is H, OH, or $O—C(=O)—C(R^6)=CH_2$; m is 1–8; n is 1–20; and p is 0–1; or



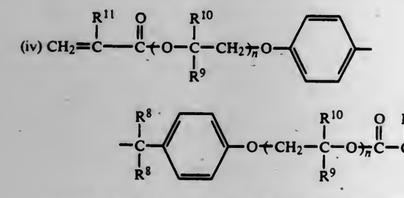
where R^5 is H, Cl, CH_3, or C_2H_5; R^6 is a C_2–C_6 alkylene; R^7 is $(CH_2)_m$,



n is 1–4; and m is 0–8; or

(iii) 

where X is O or N(R^5); R^5 is H or a C_1–C_7 alkyl; A represents the organic residue of an active-hydrogen-containing acrylate ester wherein the active hydrogen has been removed, the ester being hydroxy- or amino substituted on the alkyl portion thereof and the methyl, ethyl, and chlorine homologs thereof; B is a mono- or polyvalent organic radical selected from the group consisting of alkyl, alkylene, alkenyl, alkenylene, cycloalkyl, cycloalkylene, aryl, arylene, aralkyl, aralkylene, alkaryl, alkarylene, poly(oxyalkylene), poly(carboalkoxyalkylene), and heterocyclic radicals both substituted and unsubstituted; and n is 1–6; or

(iv) 

where R^8 is CH_3, C_2H_5, COOH, or H; R^9 is H, CH_3, or C_2H_5, R^{10} is H, CH_3, or OH; R^{11} is H, Cl, CH_3, or C_2H_5, and n is 0–8; and

monofunctional acrylate and methacrylate esters or the hydroxy, amido, cyano, chloro, or silane substituted derivatives thereof.

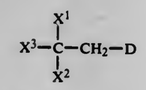
4,578,445

HALOGEN-CONTAINING LENS MATERIAL

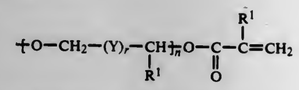
Teruo Sakagami; Yasufumi Fujii, and Naohiro Murayama, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Chuo, Japan

Filed Mar. 27, 1985, Ser. No. 716,460
Claims priority, application Japan, Mar. 27, 1984, 59-58876
Int. Cl.⁴ C08F *220/22*
U.S. Cl. 526—292.3 **5 Claims**

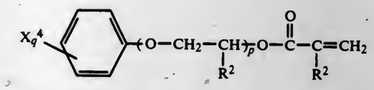
1. A lens having a refractive index n_D^{20} of at least 1.57 and an Abbé's number ν of at least 30 or more, which lens is made of a copolymer comprising: a copolymer comprising 10 to 85% by weight of a halogen-containing monomer (I) represented by the formula (1) set forth below, 15 to 90% by weight of a halogen-containing monomer (II) represented by the formula (2) set forth below, and 0 to 20% by weight of a monomer (III) copolymerizable with the above-mentioned monomers, the composition of the copolymer being based on the total quantity of the monomers (I), (II), and (III):


(1)

wherein D represents



in which: n represents an integer selected from the group consisting of 0, 1, and 2; each R^1 represents hydrogen or a methyl group; Y represents CHOH; and r represents 0 or 1; each of X^1 and X^2 represents, independently from each other, a methyl group in which one through three of the hydrogen atoms are substituted by a number selected from the group consisting of bromine, iodine and a hydroxyl group (OH group), with the proviso that the number of substitution of the OH group is only one; X^3 represents a methyl group in which one through three of the hydrogen atoms are substituted by a member selected from the group consisting of bromine, iodine and D, with the proviso that the number of substitution of D is only one; wherein at least one of X^1, X^2, and X^3 contains at least one bromine or iodine atom;


(2)

wherein each R^2 represents hydrogen or a methyl group; p represents an integer selected from the group consisting of 0, 1, 2, and 3; X^4 represents bromine or iodine; and q represents an integer selected from the group consisting of 1, 2, 3, 4, and 5.

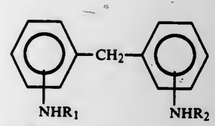
4,578,446

SECONDARY AROMATIC DIAMINES AS CURING AGENTS IN POLYURETHANE MANUFACTURING

David W. House, Arlington Heights, and Ray V. Scott, Jr., Addison, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Mar. 25, 1985, Ser. No. 715,719
Int. Cl.⁴ C08G *18/32, 18/16*
U.S. Cl. 528—64 **20 Claims**

1. A polyurethane resulting from the reaction of an isocyanate terminated urethane prepolymer, said prepolymer being the adduct of from about 1.5 to about 4.0 equivalents of a polyisocyanate with one equivalent of a polyol, with from about 0.80 to about 1.2 equivalent of a secondary aromatic diamine of the structure,



where each alkyl group, R_1 and R_2, contains from 4 to about 20 carbon atoms.

4,578,447

RIM NYLON-BASED URETHANE BLOCK POLYMER COMPOSITION

William M. Humphrey, Dover, N.H., assignor to Ex-Cell-O Corporation, Troy, Mich.

Filed Dec. 28, 1983, Ser. No. 566,147
Int. Cl.⁴ C08G *65/32, 18/77*
U.S. Cl. 528—73 **11 Claims**

1. A nylon-based urethane block prepolymer suitable for reaction injection molding when reacted with an anionic catalyst comprising a monovalent metal caprolactam salt, said prepolymer comprising the reaction mixture of:

	Mole Ratios
Ring Lactam	600 to 1000
Polyoxyalkyl triamine	1 to 5
Polyether diol	1 to 3
Diisocyanate	6 to 14

said isocyanate being added to the liquid admixture of the other three components.

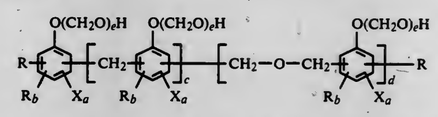
4,578,448

HIGH-ORTHO PHENOL-FORMALDEHYDE RESOLES CONTAINING HEMIFORMAL GROUPS

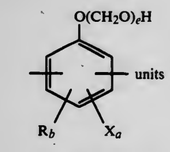
George L. Brode, and Sui-Wu Chow, both of Bridgewater Twp., Sommerset Co., N.J., assignors to Union Carbide Corporation, Danbury, Conn.

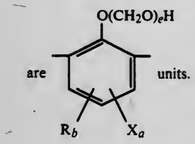
Continuation of Ser. No. 340,853, Jan. 20, 1982, abandoned. This application Dec. 14, 1983, Ser. No. 561,144
Int. Cl.⁴ C08G *8/10*
U.S. Cl. 528—139 **13 Claims**

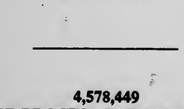
1. A phenol formaldehyde resin for use in a liquid injection molding process having a viscosity at 25° C. of from about 1000 centipoise to about 10,000 centipoise and containing less than about 5 weight percent unbound water and volatile organic compounds, said phenol formaldehyde resin having the general formula:



wherein a is from 0 to 3, b is 0 to 1, the sum of a and b does not exceed 3, the sum of c and d is from 2 to about 20, the mole fraction d/(c+d) is 0.4 to 0.9, e is 0 to about 5, R is $—CH_2O(CH_2O)_eH$, X is a monovalent radical, wherein for at least one of the R or $—O(CH_2O)_eH$ group e is at least 1, and wherein at least 50 mole percent of the


units


are units.



4,578,449

TWO-STAGE PROCESS FOR PREPARATION OF POLYPHENYLENE OXIDES

David P. Mobley, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 659,045, Oct. 9, 1984, abandoned, which is a continuation-in-part of Ser. No. 479,066, Mar. 25, 1983, Pat. No. 4,477,649, and Ser. No. 609,075, May 10, 1984, abandoned. This application Feb. 26, 1985, Ser. No. 705,812
The portion of the term of this patent subsequent to Oct. 16, 2001, has been disclaimed.
Int. Cl.⁴ C08G *65/44*
U.S. Cl. 528—212 **24 Claims**

1. In a process for preparing polyphenylene oxides by the catalytic reaction of oxygen with at least one monohydroxyaromatic compound in solution in a solvent in which said polyphenylene oxide is also soluble, the improvement which comprises carrying out said reaction in two stages, the first stage being conducted continuously in at least one back-mixed reactor and the second stage in at least one batch reactor or continuously in a reaction system with limited back-mixing.

4,578,450

ACCELERATOR-MODIFIED ADHESION PROMOTERS FOR RUBBER TO WIRE ADHESION

William W. Schloman, Jr., Stow, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

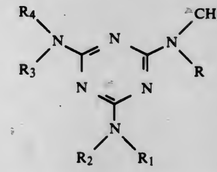
Filed Sep. 4, 1984, Ser. No. 646,342
Int. Cl.⁴ C08G *12/30*
U.S. Cl. 528—254 **6 Claims**

1. A reaction product of:

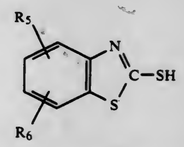
(a) an N-(substituted oxymethyl)melamine and

(b) a substituted 2-mercaptoarylthiazole accelerator

wherein the N-(substituted oxymethyl)melamine has the following structural formula:


I

where X is selected from the group consisting of hydrogen and alkyl radicals having 1 to 8 carbon atoms, R, R_1, R_2, R_3, and R_4 are selected from the group consisting of hydrogen, alkyl radicals having 1 to 8 carbon atoms, and $—CH_2OX$ where X is as defined above; and wherein the 2-mercaptoarylthiazole has the following structural formula:


II

where R_5 and R_6 are selected from the group consisting of: hydrogen; alkyl radical having from 1 to 8 carbon atoms; alkoxy radicals having from 1 to 4 carbon atoms; phenyl radicals either substituted or unsubstituted; amino radical; nitro radical; hydroxy radical; and halo-radicals.

4,578,451

SURGICAL FILAMENTS FROM BLOCK COPOLYETHERAMIDES

Gregory A. Weaver, Neshanic Station; Lester F. Price, Matawan; Crawford R. Britt, Plainfield, and W. Shalaby Shalaby, Lebanon, all of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Filed Jul. 15, 1983, Ser. No. 514,371
Int. Cl.⁴ C08G *69/40;* A61L *17/00*
U.S. Cl. 528—292 **15 Claims**

1. In a surgical filament comprising a drawn and oriented polymer, the improvement which comprises using as the polymer a block copolyetheramide consisting essentially of (a) polyamide blocks derived from C_6 to C_{12} aliphatic omega-amino-acids of lactams or the reaction product of a C_6 to C_{12} aliphatic diacid with a C_6 to C_{12} aliphatic diamine, and (b) polyether blocks consisting essentially of polyalkylene ethers wherein the individual alkylene groups are C_2 to C_6 polymethylene, wherein said surgical filament has a straight tensile strength of at least 50,000 psi and a Young's modulus below 250,000 psi.

4,578,452

METHOD FOR MANUFACTURING EPOXY RESIN MOLDED MATERIALS

Wolfgang Kleeberg, Erlangen; Klaus-Robert Hauschildt; Heinz Hacker, both of Nuremberg, and Klaus Kretzschmar, Erlangen, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jul. 20, 1984, Ser. No. 633,005

Claims priority, application Fed. Rep. of Germany, Jul. 22, 1983, 3326532

Int. Cl.⁴ C08G *59/24, 59/42*

U.S. Cl. 528—297 **14 Claims**

1. A method for the preparation of a leakage current-proof epoxy resin molded material comprising the steps of:

combining a di- or polycarboxylic acid glycidyl ester, 3,4-epoxycyclohexylmethyl-3′,4′-epoxycyclohexane carboxylate, a dicarboxylic acid anhydride, and a reaction accelerator to form an epoxy resin molding material, wherein due to the ratio of glycidyl ester cycloaliphatic olefin epoxide present in said olefinic combination there is a synergistic increase in the rate of cross-linking of the epoxy resin composition relative to the rate at which said cycloaliphatic olefinic epoxide cross-links in the absence of said glycidyl ester; and adding to said composition an amount of a diol or polyol effective to lower the rate of cross-linking of the epoxy resin composition such that the time necessary to reach a maximum temperature during the cross-linking of the epoxy resin composition will be at least as long as the time necessary to reach the maximum temperature during the cross-linking of said glycidyl ester dicarboxylic acid anhydride components of said composition under quasi-adiabatic conditions, and placing said composition in a suitable mold and then heating said composition.

4,578,453

HIGH MOLECULAR WEIGHT POLYESTERS

Winston J. Jackson, Jr., and Joseph J. Watkins, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 23, 1984, Ser. No. 674,117

Int. Cl.⁴ C08G *63/16, 63/18, 63/68*

U.S. Cl. 528—302 **10 Claims**

1. A high molecular weight polyester suitable for use in forming shaped articles, said polyester having an inherent viscosity of greater than 0.4 and containing repeating units from a glycol component consisting essentially of 1,3-cyclohexanedimethanol, 1,4-cyclohexanedimethanol or mixtures thereof, and an acid component comprising at least 50 mole % of an alicyclic or aromatic dicarboxylic anhydride or corresponding acid having 6 to 30 carbon atoms.

4,578,454

POLYAMINOAMIDES CONTAINING POLYALKYLPIPERIDINE RADICALS

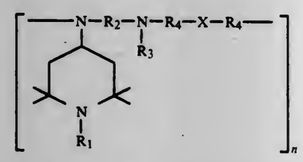
Giuseppe Cantatore, Bitonto, Italy, assignor to Ciba-Geigy S.p.A., Origgio, Italy

Filed May 8, 1984, Ser. No. 608,081

Int. Cl.⁴ C08G *69/14*

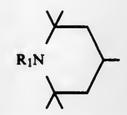
U.S. Cl. 528—327 **3 Claims**

1. A compound of the general formula



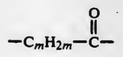
(I)

in which R_1 is hydrogen, O., CH_2CN, C_1–C_{12}-alkyl, C_3–C_{12}-alkenyl or -alkynyl, substituted or unsubstituted C_7–C_{12}-aralkyl or C_1–C_{12}-acyl, R_2 is C_2–C_{18}-alkylene, C_5–C_{18}-cycloalkylene, C_6–C_{18}-arylene or C_7–C_{18}-aralkylene, R_3 is hydrogen, C_1–C_{18}-alkyl, C_5–C_{18}-cycloalkyl, substituted or unsubstituted C_6–C_{18}-aryl, substituted or unsubstituted C_7–C_{18}-aralkyl or a radical of the formula (II)

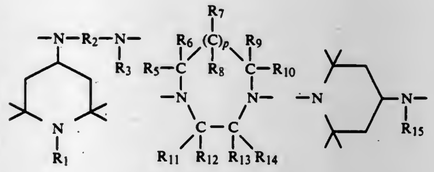


(II)

in which R_1 is as defined above, the R_4's are



radicals wherein both carbonyl groups are attached either to X or to N and in which m is an integer from 1 to 12, X is a divalent radical containing 1 or more heterocyclic radicals of the formula (III), (IV) or (V)



(III) (IV) (V)

in which R_1, R_2 and R_3 are as defined above, p is zero or 1, R_5, R_6, R_7, R_8, R_9, R_{10}, R_{11}, R_{12}, R_{13} and R_{14} are hydrogen or methyl, R_{15} is hydrogen, C_1–C_{18}-alkyl, C_5–C_{18}-cycloalkyl, substituted or unsubstituted C_6–C_{18}-aryl, substituted or unsubstituted C_7–C_{18}-aralkyl or a radical of the formula (II), and N is an interger from 2to 100.

4,578,455

PROCESS AND APPARATUS FOR REMOVING VOLATILE CONSTITUENTS FROM POLYMER MELTS OR PASTES

Gunter Pipper, Bad Durkheim; Siegfried Riegger, Mannheim, and Josef G. Floss, Neustadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Continuation of Ser. No. 591,596, Mar. 20, 1984, abandoned. This application Apr. 18, 1985, Ser. No. 724,500

Claims priority, application Fed. Rep. of Germany, Mar. 24, 1983, 3310676

Int. Cl.⁴ C08F *6/28*

U.S. Cl. 528—501 **1 Claim**

1. A process for removing volatile constituents from a polymer melt in a vented extruder, which comprises

(a) passing the polymer melt containing the volatile constituents through one or more zones, with continuous formation of fresh surfaces,

(b) evaporating volatile constituents from this polymer melt in one or more such zones, and

(c) removing the vapors of volatile constituents, thus produced, from the zone or zones via a porous plate having a porosity of from 25 to 60% and a pore diameter of from 5 to 200 μm.

4,578,456

ETHOXYLATED LIGNITE COMPOSITION AND METHOD OF PREPARING

Kenneth W. Pober, Houston, Tex., assignor to NL Industries, Inc., New York, N.Y.

Filed Apr. 12, 1984, Ser. No. 599,449

Int. Cl.⁴ C07G *1/00;* **C10C** *1/20*

U.S. Cl. 530—502 **12 Claims**

1. A method of ethoxylating lignite comprising:

reacting lignite containing less than about 3.5% by weight water, in a substantially oxygen-free atmosphere, with ethylene oxide in the presence of an alkali metal alkylate catalyst and an inert reaction solvent, said ethylene oxide and said lignite being present in a weight ratio of ethylene oxide to lignite of from about 2:1 to about 100:1, said catalyst being present in an amount of from about 1 to about 75% by weight based on the weight of said lignite, said lignite and said ethylene oxide being present in a combined amount of from about 11.5 to about 39% by weight of the total weight of said lignite, said ethylene oxide and said solvent, said reacting being carried out at a temperature of about 130° C. or greater.

4,578,457

REACTIVE MONO-AZO DYES AND THE PREPARATION AND USE THEREOF

Herbert Seiler, Riehen, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

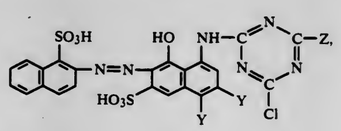
Continuation of Ser. No. 407,962, Aug. 13, 1982, abandoned. This application Aug. 29, 1984, Ser. No. 645,878

Claims priority, application Switzerland, Aug. 26, 1981, 5512/81

Int. Cl.⁴ C09B *62/08*

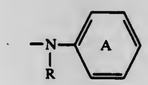
U.S. Cl. 534—632 **5 Claims**

1. A reactive dye of the formula



(1)

wherein Z is a radical of the formula



(2)

wherein R is C_2–C_4alkyl and the phenyl ring A is further unsubstituted or substituted by methyl, chlorine or sulfo; and one Y is hydrogen and the other Y is sulfo.

4,578,458

MUCOID EXOPOLYSACCHARIDE VACCINE AGAINST *PSEUDOMONAS AERUGINOSA*

Gerald B. Pier, Brookline, Mass., assignor to Brigham and Women's Hospital, Boston, Mass.

Filed Mar. 23, 1983, Ser. No. 477,958

Int. Cl.⁴ C08B *37/00;* **A61K** *39/104;* **C12P** *19/04*

U.S. Cl. 536—123 **3 Claims**

1. A bacterial antigen comprising isolated mucoid exopolysaccharide comprising a polymer uronic acid formed principally from mannuronic and guluronic acids having the antigenic characteristics of *Pseudomonas aeruginosa* 2192.

4,578,459

HETEROCYCLIC ALKYLAMINOHETEROCYCLES

Graham J. Durant, Welwyn Garden City; John C. Emmett, Codicote, and Charon R. Ganellin, Welwyn Garden City, all of England, assignors to SmithKline & French Laboratories Limited, Welwyn Garden City, England

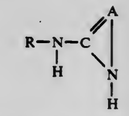
Division of Ser. No. 422,806, Sep. 24, 1982, Pat. No. 4,467,087, which is a division of Ser. No. 206,819, Nov. 14, 1980, Pat. No. 4,374,251, which is a division of Ser. No. 7,755, Jan. 30, 1979, Pat. No. 4,260,744, which is a division of Ser. No. 778,812, Mar. 17, 1977, Pat. No. 4,153,793, which is a division of Ser. No. 619,724, Oct. 6, 1975, Pat. No. 4,035,374, which is a division of Ser. No. 463,647, Apr. 24, 1974, Pat. No. 3,932,644. This application Jun. 8, 1984, Ser. No. 618,869

Claims priority, application United Kingdom, May 3, 1973, 21063/73; Jul. 26, 1973, 35551/73

Int. Cl.⁴ C07D *285/16, 239/02*

U.S. Cl. 544—8 **5 Claims**

1. A compound of the formula:



wherein A taken together with the nitrogen and carbon atoms shown forms a quinazoline, thiazoline, or quinoline ring or when Het is other than imidazole, A taken together with the nitrogen and carbon atoms shown may form a pyrimidine, imidazoline, pyridine, benzothiadiazine or 1,2,4-thiadiazine ring, said ring having a keto, thione or sulfone group and optionally substituted by one or two lower alkyl, phenyl or benzyl groups; R is a grouping of the formula:

$$Het—CH_2Z(CH_2)_n—$$

wherein Het is a nitrogen containing heterocyclic ring selected from imidazole, pyridine, thiazole, isothiazole or thiadiazole, said ring being optionally substituted by lower alkyl, amino, hydroxy or halogen; Z is sulphur or a methylene group and n is 2 or 3 or a pharmaceutically acceptable acid addition salt thereof.

4,578,460

N-6-AMINOPURINYL-4-HYDROXY-2-METHYL-2H-1,2-BENXOTHIAZINE-3-CARBOXAMIDE 1,1-DIOXIDE COMPOUND

Giorgio A. Francia, Milan, Italy, assignor to Francia Farmaceutici s.r.l., Italy

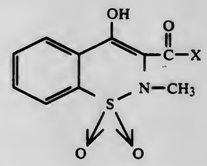
Filed Oct. 4, 1983, Ser. No. 539,073

Claims priority, application Italy, Oct. 22, 1982, 23888 A/82

Int. Cl.⁴ C07D *279/02*

U.S. Cl. 544—49 **1 Claim**

1. A derivative of 4-hydroxy-2-methyl-2H-1,2-benzothiazine-3-carboxamide 1,1-dioxide of the formula:



(I)

in which X represents a radical of 6-aminopurine, aminoimidazole, glutamic acid, aspartic acid, histidine, or lysine.

4,578,461

TRIPHENDIOXAZINE DYESTUFFS

Horst Jäger, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

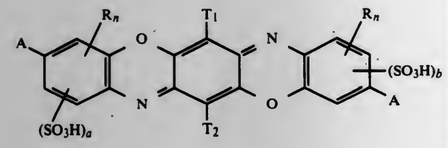
Filed Nov. 20, 1984, Ser. No. 673,259

Claims priority, application Fed. Rep. of Germany, Dec. 7, 1983, 3344254

Int. Cl.[4] C07D *498/04;* C09B *19/00*

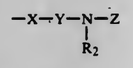
U.S. Cl. 544—76 **2 Claims**

1. Dyestuffs of the formula



wherein

A=



X=—O—, —S— or —NR_1—,

R_1=H, C_1-C_4-alkyl or, together with R_2, =alkylene,

Y=C_2-C_6-alkylene which can be interrupted by N, O, S or CO and can be substituted by OH, sulpho or carboxyl,

R_2=H, C_1-C_4-alkyl, aralkyl or aryl,

Z=a non-fibre-reactive radical of the formula —SO_2B or —CONHB wherein

B=alkyl, cycloalkyl, aralkyl or aryl,

T_1 and T_2=H, halogen, C_1-C_4-alkyl, C_1-C_4-alkoxy or aryl,

R=halogen, carboxyl, C_1-C_4-alkyl or C_1-C_4-alkoxy,

n=0 or 1,

a and b=0 or 1 such that a+b=1 or 2 and each of the sulpho groups is in the o-position relative to A.

4,578,462

PROCESS FOR THE MANUFACTURE OF OPTICALLY ACTIVE COMPOUNDS

Hans-Jürgen Hansen, Riehen; Rudolf Schmid, Basel, and Max Schmid, Brugg, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

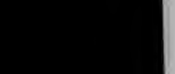
Filed Aug. 22, 1983, Ser. No. 525,529

Claims priority, application Switzerland, Aug. 27, 1982, 5110/82; Jul. 1, 1983, 3642/83

Int. Cl.[4] C07C *93/10;* C07D *295/08*

U.S. Cl. 544—177 **10 Claims**

1. An optically active bifunctional compound of the formula



I

wherein R is a protected hydroxymethyl; and R^1 is



(Ia)

in which R^2 and R^3 individually are lower alkyl or cycloalkyl or R^2 and R^3 taken together with the nitrogen atom of Ia are a heterocyclic ring.

4,578,463

PRODUCTION OF S-SUBSTITUTED ISOTHIOUREAS

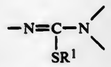
Dennis E. Jackman, Prarie Village, and Dietmar B. Westphal, Lenexa, both of Kans., assignors to Mobay Chemical Corporation, Pittsburgh, Pa.

Filed Jul. 18, 1984, Ser. No. 632,136

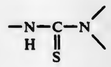
Int. Cl.[4] C07D *253/00, 239/02;* C07C *119/18*

U.S. Cl. 544—182 **12 Claims**

1. In the production of an S-substituted isothiourea including the functional group



in which R^1 is an alkyl, alkenyl, aryl or aralkyl radical, wherein a thiourea including the functional group

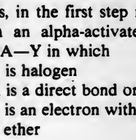


is reacted with an etherifying agent to replace H by R^1, the improvement which comprises effecting the reaction in two steps, in the first step reacting the thiourea starting material with an alpha-activated etherifying agent of the formula X—A—Y in which

X is halogen

A is a direct bond or CH_2, and

Y is an electron withdrawing group thereby to produce the ether



and in the second step reacting the ether with a compound of the formula R^1SH.

4,578,464

6-HYDROXYALKYLAMINO-8-METHYL-1,2,4-TRIAZOLO-[4,3-B]PYRIDAZINE AND RELATED COMPOUNDS

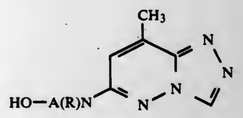
Robert J. Cregge, Zionsville, Ind., and John E. Coutant, Loveland, Ohio, assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Filed Nov. 22, 1983, Ser. No. 554,475

Int. Cl.[4] C07D *487/04;* A61K *31/41*

U.S. Cl. 544—236 **7 Claims**

1. A compound of the formula



wherein A and R are selected so that A represents a straight-chain alkylene of 2-5 carbon atoms and R represents hydrogen; or the two groups are combined so that HO-A(R)N- represents hydroxy-1-piperdinyl.

4,578,465

PHENYLIPERAZINE DERIVATIVES

Hiroyuki Nagano; Mitiro Takagi; Noboru Kubodera, all of Saitama; Isao Matsunaga; Hiroyuki Nabata, both of Tokyo; Yasuhiro Ohba, Kanagawa; Kazushige Sakai, Tokyo; Shunichi Hata, Kanagawa, and Yasumi Uchida, Chiba, all of Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

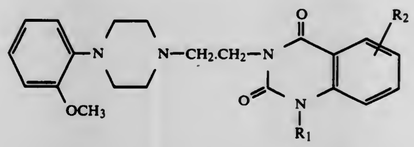
Continuation-in-part of Ser. No. 473,317, Mar. 8, 1983, abandoned. This application Apr. 30, 1984, Ser. No. 604,415

Claims priority, application Japan, Mar. 17, 1982, 57-40904

Int. Cl.[4] C07D *403/06;* A61K *31/505*

U.S. Cl. 544—285 **5 Claims**

1. A phenylpiperazine derivative of the formula:



(I)

wherein R_1 is a hydrogen atom or a straight- or branched-chain saturated or unsaturated alkyl group having 1 to 8 carbon atoms which may be substituted at any position by a hydroxyl group, a carboxyl group, a lower alkoxycarbonyl group or an oxo group; and R_2 is a hydrogen atom, a halogen atom, a lower alkyl group or a sulfamoyl group.

4,578,466

PROCESSES FOR THE PREPARATION OF 6-ARYLURACILS

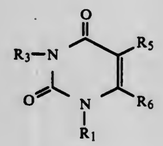
Harvey I. Skulnick; Herman W. Smith; Robert J. Smith, and Wendell Wierenga, all of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 512,497, Jul. 11, 1983, Pat. No. 4,495,349. This application Sep. 17, 1984, Ser. No. 651,495

Int. Cl.[4] C07D *239/10, 265/06*

U.S. Cl. 544—309 **4 Claims**

1. A process for the preparation of a compound having the formula



I_1

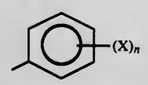
wherein R_1 is

(a) hydrogen,

(b) alkyl of from 1 to 4 carbon atoms, inclusive, or

(c) benzyl with the proviso that if R_1 is alkyl it is only a straight chain;

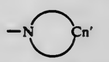
wherein R_3 is hydrogen; R_5 is hydrogen; and R_6 is



III_6

wherein n is a number of from 0 to 3, inclusive; and

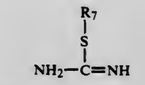
X is hydroxy, alkyl of from 1 to 8 carbon atoms, inclusive; alkoxy of from 1 to 5 carbon atoms, inclusive; alkylthio of from 1 to 5 carbon atoms, inclusive; halogen; —NX_1X_2; aminoalkyl of from 1 to 3 carbon atoms, inclusive; nitro; benzyl; phenyl; furyl; pyridyl; or thiophene; and wherein X_1 and X_2 are the same or different and are alkyl of from 1 to 8 carbon atoms, inclusive; or taken together with —N are a saturated cycloalkylamino group



wherein n' is 3, 4, 5 or 6 or dialkyl substituted cycloalkylamino, wherein each alkyl is from 1 to 3 carbon atoms, inclusive;

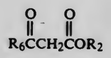
which comprises

step (1) contacting an acid salt of alkylthiopseudourea of the formula



VI

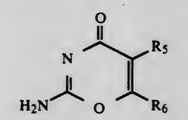
wherein R_7 is alkyl of from 1 to 3 carbon atoms, inclusive; with a compound having the formula



V

wherein R_6 is as defined above, and R_2 is alkyl of from 1 to 8 carbon atoms, inclusive;

in the presence of a strong base to prepare a compound having the formula



III

wherein R_5 and R_6 are as defined above; and

step (2) isolating the compound prepared in step (1) and converting it to the compound of formula I_1.

4,578,467

PROCESS FOR THE PREPARATION OF 1-PYRIDYL-ALKYL-4-ARYL PIPERAZINES WHICH ARE USEFUL AS ANTIHYPERTENSIVE COMPOUNDS, THEIR SEPARATION INTO THE RESPECTIVE OPTICAL ANTIPODES, AND THE STEREOISOMERIC COMPOUNDS SO OBTAINED

Graziano Bonacchi; Mauro Fedi, and Mario Giannini, all of Florence, Italy, assignors to Malesci S.p.A. Instituto Farmacobiologico, Florence, Italy

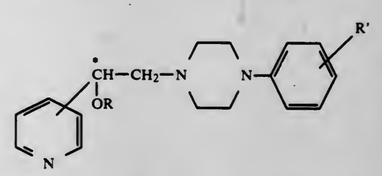
Filed Jul. 3, 1984, Ser. No. 627,583

Claims priority, application Italy, Jul. 11, 1983, 48664 A/83

Int. Cl.[4] C07D *401/06, 401/12;* A61K *31/495*

U.S. Cl. 544—360 **8 Claims**

1. A process for the preparation of compounds of the general formula



(I)

wherein:

the pyridine ring is alpha-, beta- or gamma-substituted;

R=H; C_nH_{2n+1}, n being in the range from 1 to 4;

R'=H, halogen, CH_3, OCH_3;

which process is characterized in that:

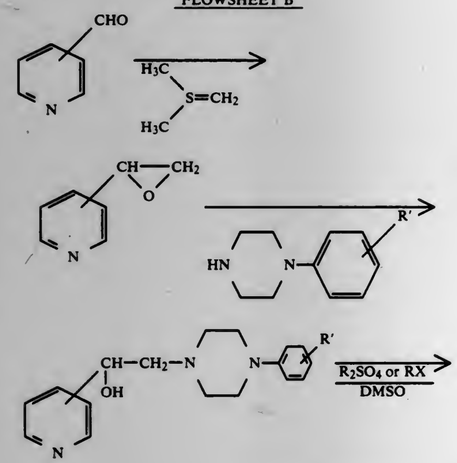
(a) pyridine aldehyde is reacted at a temperature from −5° to 0° C. with $(CH_3)_2S{=}CH_2$;

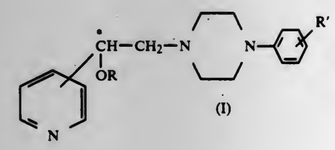
(b) the oxirane so obtained is treated with an aryl piperazine;

(c) the hydroxyl derivative obtained in step (b), after salification with alkaline hydrides or hydrates in a solvent medium, is treated with alkylating agents,

according to the following flowsheet:

FLOWSHEET B





4,578,468

ANTIBIOTIC LL-D42067β

Guy T. Carter; Donald B. Borders, both of Suffern; Joseph J. Goodman, Spring Valley, all of N.Y., and David P. Labeda, Peoria, Ill., assignors to American Cyanamid Company, Stamford, Conn.

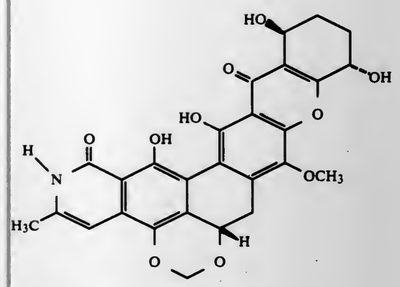
Filed Mar. 26, 1984, Ser. No. 593,159

Int. Cl.⁴ C07D *498/12*

U.S. Cl. 546—35 **1 Claim**

1. The compound designated as LL-D42067β wherein the compound has:

(a) the relative stereochemistry and structure:



(b) a molecular weight of 521 (FAB-MS);

(c) a molecular formula: $C_{27}H_{23}NO_{10}$;

(d) a specific optical rotation: $[\alpha]_D^{26} = +770 \pm 10°$ (C 0.165, DMF);

(e) characteristic ultraviolet absorption spectra as shown in FIG. I of the attached drawings;

(f) a characteristic infrared absorption spectrum as shown in FIG. II of the attached drawings;

(g) a characteristic proton nuclear magnetic resonance spectrum as shown in FIG. III of the attached drawings; and

(h) a characteristic carbon-13 nuclear magnetic resonance spectrum as shown in FIG. IV of the attached drawings with significant peaks at: 19.1; 25.9; 26.9; 29.7; 62.0; 62.2; 65.0; 72.8; 91.1; 100.1; 110.5; 110.6; 111.7; 114.7; 119.2; 127.2; 128.8; 136.1; 136.3; 137.0; 138.1; 148.9; 151.9; 153.0; 165.3; 167.2; 183.6.

4,578,469

BENZO[DE]PYRANO[3,2-G]ISOQUINOLINE DERIVATIVES USEFUL AS DYESTUFFS

Hans-Matthias Deger, Hofheim am Taunus; Rüdiger Erckel, Eppstein, and Horst Frühbeis, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

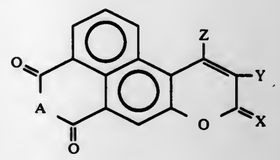
Continuation of Ser. No. 380,350, May 20, 1982, abandoned. This application Sep. 26, 1984, Ser. No. 655,307

Claims priority, application Fed. Rep. of Germany, May 22, 1981, 3120402

Int. Cl.⁴ C07D *471/04*

U.S. Cl. 546—66 **8 Claims**

1. A coumarin of the formula



in which

A is >N—R wherein R is

hydrogen, alkyl of from 1 to 18 carbon atoms, or alkyl of from 1 to 18 carbon atoms mono-, di- or trisubstituted by fluorine, chlorine or bromine, or mono- or disubstituted by alkoxy of from 1 to 4 carbon atoms, dialkylamino of from 2 to 8 carbon atoms, sulfodialkylamide of from 2 to 8 carbon atoms or cyano, the di- or tri-substituents being the same or not all the same; or is a moiety selected from the group consisting of cyclopentyl, cyclohexyl, cycloheptyl, phenyl, naphthyl, pyridyl, pyrimidyl, benzoxazolyl, benzothiozolyl and benzimidazolyl, or said moiety mono-, di- or trisubstituted at one or more nuclear carbon atoms by fluorine, chlorine or bromine, or mono- or disubstituted at one or more nuclear carbon atoms by alkyl of from 1 to 4 carbon atoms, alkoxy of from 1 to 4 carbon atoms, hydroxyl, cyano, sulfonamide or sulfodialkylamide of from 2 to 8 carbon atoms, the di- or tri-substituents being the same or not all the same;

X is oxygen or >N—R′ wherein R′ is

a moiety selected from the group consisting of hydrogen, alkylcarbonyl of from 2 to 19 carbon atoms, alkoxycarbonyl of from 2 to 5 carbon atoms, alkylcarbamoyl of from 2 to 5 carbon atoms and alkylsulfonyl of from 1 to 4 carbon atoms, or said moiety mono-, di- or trisubstituted in the alkyl or alkoxy group by fluorine, chlorine or bromine, or mono- or disubstituted in the alkyl or alkoxy group by alkoxy of from 1 to 4 carbon atoms or cyano, the di- or tri-substituents being the same or not at all the same; or is phenyl, phenylcarbonyl, phenycarbamoyl or phenysulfonyl, or phenyl, phenylcarbonyl, phenylcarbanoyl or phenylsulfonyl mono-, di- or trisubstituted in the phenyl moiety by fluorine, chlorine, bromine, alkyl of from 1 to 4 carbon atoms, alkoxy of from 1 to 4 carbon atoms, nitro, or cyano, the di- or tri-substituents being the same or not all the same;

Y is

hydrogen, cyano, or alkyl carboxylate of from 2 to 5 carbon atoms, phenyl, phenylsulfonyl or phenylcarboxylate, or phenyl, phenylsulfonyl or phenylcarboxylate mono-, di- or trisubstituted in the phenyl group by fluorine, chlorine or bromine, alkyl of from 1 to 4 carbon atoms or alkoxy of from 1 to 4 carbon atoms, or mono- or disubstituted in the phenyl group by nitro, amino, monoalkyl or dialkylamino wherein said alkyl is of from 1 to 4 carbon atoms, or monosubstituted in the phenyl group by methylenedioxy or benzoxazolyl, the di- or tri-substituents being the same or not at all the same, or is a moiety selected from the group consisting of thienyl, benzothienyl, furyl, benzofuryl, triazolyl, imidazolyl, benzimidazolyl, thiazolyl, benzothiazolyl, oxazolyl, benzoxazolyl, thiadiazolyl, oxadiazolyl or pyridyl, or said moiety mono-, di- or trisubstituted at one or more nuclear carbon atoms by fluorine, chlorine, bromine, alkyl of from 1 to 4 carbon atoms or alkoxy of from 1 to 4 carbon atoms, or mono- or disubstituted at one or more nuclear carbon atoms by nitro, phenyl, alkylphenyl wherein said alkyl is of from 1 to 4 carbon atoms, alkoxyphenyl wherein said

alkoxy is of from 1 to 4 carbon atoms, or cyano, or monosubstituted at a nuclear carbon atom by methylenedioxy or alkylcarboxylate of from 2 to 5 carbon atoms, the di- or trisubstituents being the same or not all the same; and Z is hydrogen, cyano or alkylcarboxylate of from 2 to 5 carbon atoms.

4,578,470

BIS-IMIDES CONTAINING HETEROCYCLIC AROMATIC RINGS

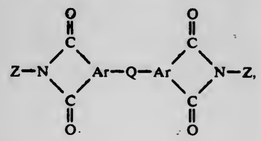
Jimmy L. Webb, Ballston Lake, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jun. 20, 1983, Ser. No. 505,636

Int. Cl.⁴ C07D *401/14*

U.S. Cl. 546—256 **9 Claims**

1. A bisimide having the formula



wherein:

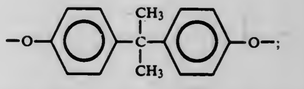
Ar is a trivalent benzene or naphthalene radical having

adjacent positions substituted by the carbonyl groups of the imide moiety;

Q is a single bond, $-CH_2-$, $-C_2H_4-$, $-C(CH_3)_2-$, $-O-$,



$-S_x-$, $-SO_2-$ or



Z is a highly electron-deficient heterocyclic group having a 5- or 6-membered ring and aromatic unsaturation and containing 1–3 hetero atoms of which at least one is nitrogen and the others, if present, are nitrogen or sulfur; and x is 1 or 2.

4,578,471

SUBSTITUTED AMINO ALKYL PYRIDYL ETHANEDIIMIDAMIDES

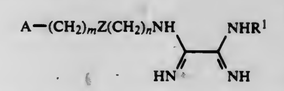
Ronnie R. Crenshaw, Dewitt, and Aldo A. Algieri, Fayetteville, both of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Division of Ser. No. 600,864, Apr. 16, 1984, Pat. No. 4,517,366, which is a division of Ser. No. 473,791, Mar. 16, 1983, Pat. No. 4,528,377, which is a continuation-in-part of Ser. No. 363,207, Mar. 29, 1982, abandoned. This application Dec. 3, 1984, Ser. No. 677,624

Int. Cl.⁴ C07D *401/06*

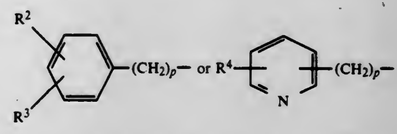
U.S. Cl. 546—193 **5 Claims**

1. A compound of the formula



II

wherein R^1 is hydrogen, (lower)alkyl, 2-fluoroethyl, 2,2,2-trifluoroethyl, allyl, propargyl,



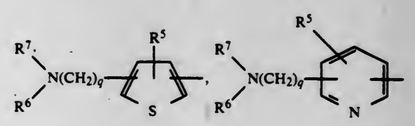
in which p is 1 or 2, R^2 and R^3 each are independently hydrogen, (lower)alkyl, (lower)alkoxy or halogen, and, when R^2 is hydrogen, R^3 also may be trifluoromethyl, or R^2 and R^3, taken together, may be methylenedioxy, and R^4 is hydrogen, (lower-)alkyl or (lower)alkoxy;

m is an integer of from 0 to 2 inclusive;

n is an integer of from 2 to 5 inclusive;

Z is oxygen, sulfur or methylene; and

A is



in which R^5 is hydrogen, (lower)alkyl or (lower)alkoxy, q is an integer of from 1 to 4 inclusive and R^6 and R^7 each are independently (lower)alkyl, (lower)alkoxy(lower)alkyl in which the (lower)alkoxy moiety is at least two carbon atoms removed from the nitrogen atom, or phenyl(lower)alkyl, and, when R^6 is hydrogen, R^7 also may be cyclo(lower)alkyl, or R^6 and R^7, taken together with the nitrogen atom to which they are attached, may be pyrrolidino, methylpyrrolidino, dimethylpyrrolidino, morpholino, thiomorpholino, piperidino, methylpiperidino, dimethylpiperidino, N-methylpiperazino, 1,2,3,6-tetrahydropyridyl, homopiperidino, heptamethyleneimino, octamethyleneimino, 3-azabicyclo[3.2.2]non-3-yl or 3-pyrrolino; or a salt, hydrate or solvate thereof.

4,578,472

2,2,6,6-TETRAMETHYLPIPERIDINE AND ITS PRODUCTION

Masakatsu Yoshimura, Sakai; Takeo Fujii; Shinichi Yachigo, both of Toyonaka, and Tamaki Ishii, Suita, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

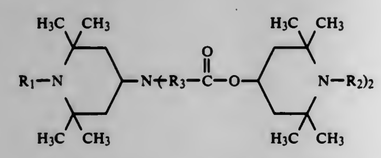
Filed May 15, 1984, Ser. No. 610,818

Claims priority, application Japan, May 27, 1983, 58-94467; Aug. 1, 1983, 58-141737

Int. Cl.⁴ C07D *211/36*

U.S. Cl. 546—188 **18 Claims**

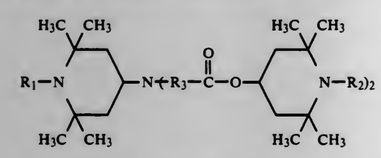
1. A 2,2,6,6-tetramethylpiperidine derivative represented by the formula (I),



(I)

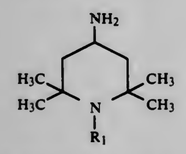
wherein R_1 and R_2 independently represent a hydrogen atom or methyl group, and R_3 represents an alkylene group having one to four carbon atoms.

7. A method for producing a 2,2,6,6-tetramethylpiperidine derivative represented by the formula (I),



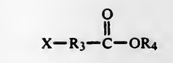
(I)

wherein R_1 and R_2 independently represent a hydrogen atom or methyl group, and R_3 represents an alkylene group having one to four carbon atoms, wherein a 4-amino-2,2,6,6-tetramethylpiperidine compound represented by the formula (II),



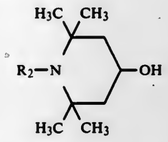
(II)

wherein R_1 has the same meaning as above, is reacted with a halogenated carboxylic acid or ester represented by the formula (III),



(III)

wherein X represents a halogen atom, R_3 has the same meaning as above, and R_4 represents a hydrogen atom or lower alkyl group, and then the resulting reaction product is reacted with a 4-hydroxy-2,2,6,6-tetramethylpiperidine compound represented by the formula (IV),



(IV)

wherein R_2 has the same meaning as above, in the presence of a basic catalyst, wherein the molar ratio of the compound of formula (II) to the acid of formula (III) is 1 to 2.5 and wherein the molar ratio of the compound of formula (IV) is 2 to 2.5 times amount of the compound of formula (II).

4,578,473

PROCESS FOR QUINOLINE-3-CARBOXYLIC ACID ANTIBACTERIAL AGENTS

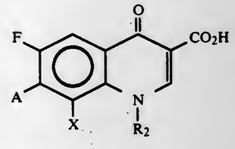
John M. Domagala, Canton, and Mel C. Schroeder, Ann Arbor, both of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Apr. 15, 1985, Ser. No. 723,019

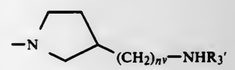
Int. Cl.⁴ C07D *215/22*

U.S. Cl. 546—156 **21 Claims**

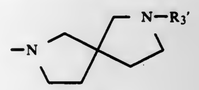
1. A process for the preparation of a compound of the formula



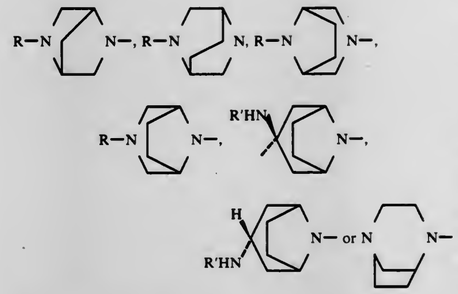
and pharmaceutically acceptable acid addition or base salts thereof, wherein A is, piperazino, N-methylpiperazino or a pyrrolidino group of the formula:



in which n^v is zero or one and R_3' is hydrogen, methyl, ethyl, 1- or 2-propyl, a spiroamino group of the formula

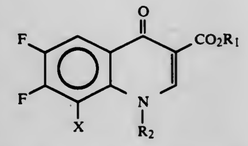


in which R_3' is hydrogen, methyl, ethyl or 1- or 2-propyl; or a bicyclic amino group of the formula



in which R is hydrogen, methyl, ethyl, 1- or 2-propyl, hydroxyethyl, benzyl, or p-aminobenzyl, and R′ is hydrogen or acetyl, X is hydrogen or fluorine, and R_2 is alkyl of one to three carbon atoms or cycloalkyl of three to six carbon atoms, which comprises:

(a) reacting 1.0–3.0 equivalent of an iodotrialkylsilane in an inert solvent with a compound of the formula



wherein R_2 and X are as defined above and R_1 is alkyl of one to three carbon atoms, and heating the reaction mixture until the reaction is complete at 30°–100° C. to form a trialkylsilyl ester thereof;

(b) adding at least one equivalent of the appropriate amine to the trialkylsilyl ester in an aprotic solvent or an aprotic co-solvent and heating the reaction mixture between 60° and 120° C. until the reaction is complete and, if desired, converting by known means the resulting compound of Formula I to a pharmaceutically acceptable acid addition salt thereof.

4,578,474

IMIDO, AMIDO AND AMINO DERIVATIVES OF MERCAPTOACYL PROLINES AND PIPECOLIC ACIDS

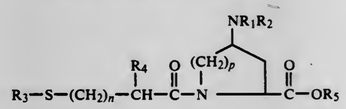
John Krapcho, Somerset, and Peter C. Wade, Pennington, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 454,936, Jan. 3, 1983, Pat. No. 4,497,953, which is a division of Ser. No. 268,921, Jun. 1, 1981, Pat. No. 4,390,695, which is a division of Ser. No. 162,341, Jun. 23, 1980, Pat. No. 4,310,461. This application Nov. 19, 1984, Ser. No. 672,977

Int. Cl.⁴ C07D *401/04, 403/04*

U.S. Cl. 546—188 **12 Claims**

1. A compound having the formula



wherein

R_1 and R_2 together with the nitrogen atom to which they are attached are 1-imidazolyl, 1-pyrrolidinyl-2,5-dione, 3-alkyl-1-pyrrolidinyl-2,5-dione, 3-aryl-1-pyrrolidinyl-2,5-dione, 1-piperidinyl-2,6-dione, 3-alkyl-1-piperidinyl-2,6-dione, 3-aryl-1-piperidinyl-2,6-dione, or 2,5-dihydro-2,5-dioxo-1H-pyrrol-1-yl;

R_3 is hydrogen, alkyl, aryl, arylalkyl, alkanoyl or arylcarbonyl;

R_4 is hydrogen, alkyl, alkylthio, or trifluoromethyl;

R_5 is hydrogen, alkyl or arylalkyl;

n is 0, 1 or 2; and

p is 1 or 2;

or a non-toxic, physiologically acceptable salt thereof, or symmetrical dimer thereof; wherein the term "aryl" refers to phenyl, 1-naphthyl, 2-naphthyl, or phenyl substituted with halogen, alkyl, alkoxy, alkylthio, hydroxy, alkanoyl, nitro, amino, dialkylamino, phenyl or trifluoromethyl groups; the term "alkanoyl" refers to groups having up to 9 carbon atoms; and the terms "alkyl" and "alkoxy" refer to groups having 1 to 8 carbon atoms.

4,578,475

NOVEL D-HOMOSTEROIDS

Andor Fürst, Basel; Marcel Müller, Frenkendorf, both of Switzerland; Ulrich Kerb, and Rudolf Wiechert, both of Berlin, Fed. Rep. of Germany, assignors to Hoffman-La Roche Inc., Nutley, N.J.

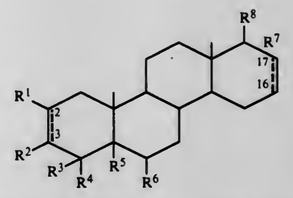
Filed Jan. 26, 1984, Ser. No. 573,983

Claims priority, application Switzerland, Feb. 11, 1983, 788/83

Int. Cl.⁴ C07D *211/70, 307/94*

U.S. Cl. 548—126 **8 Claims**

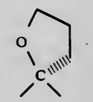
1. D-Homosteroids of the formula



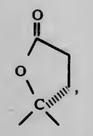
I

wherein R^1 represents a —CN, =NOH or =CH—NHOH group; R^2 represents oxo or, where R^1 represents a —CN group, R^2 represents oxo or a —OAc group; or R^1 and R^2 together with carbon atoms 2 and 3 of the steroid skeleton represent a [2,3-d]-fused isoxazole ring, a [3,2-c]-fused pyrazole ring, a [3,2-c]-fused N-acylated pyrazole ring or a [2,3-c]-fused furazan ring; Ac represents an acyl group: R^3 and R^4 represent methyl and R^5 and R^6 together represent an additional bond between carbon atoms 5 and 6 of the steroid skeleton; or R^4 and R^5 together represent —O—, R^3 represents hydrogen or methyl, and R^6 represents hydrogen; R^7 represents hydrogen, lower-alkyl or ethynyl; R^8 represents hydroxy or acyloxy; or R^7 and R^8 together represent a spiroether group of the formula

17a



or a spirolactone group of the formula



17a

the dotted 16,17-bond is an optional additional carbon-carbon bond; and the dotted 2,3-bond is an additional carbon-carbon bond when R^1 and R^2 together with carbon atoms 2 and 3 form the isoxazole or pyrazole ring or when R^2 represents a —OAc group.

4,578,476
PROCESS FOR THE PRODUCTION OF 2-ARYL-4-ACYL-1.3.4-OXDIAZOLONES-(5)

Manfred Schmidt, and Karl-Heinrich Meyer, both of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 18, 1984, Ser. No. 621,934
Claims priority, application Fed. Rep. of Germany, Jun. 28, 1983, 3323283
Int. Cl.⁴ C07D *271/10; C08J 9/10*
U.S. Cl. 548—144 **3 Claims**

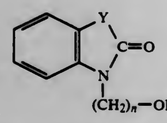
1. A process for the production of 2-aryl-4-acyl-1.3.4 oxdiazolones-(5) which comprises reacting an aromatic carboxylic acid hydrazide at a pH value of from 1.8 to 3.0 with phosgene in a mixture consisting of water and acetone as a solvent at a temperature of from 0° C. to 50° C., subsequently increasing the pH value to a range of 9.5 to 11.0 and adding about 100 mol % of a carboxylic acid chloride or about 50 mol % of a dicarboxylic acid chloride (based on 100 mol % of carboxylic acid hydrazide) and allowing the reaction to proceed to completion at from 0° C. to 50° C.

4,578,477
N-SUBSTITUTED BENZOTHIAZOLINE AND N-SUBSTITUTED BENZOXAZOLINE DERIVATIVES

John J. D'Amico, Olivette, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Dec. 31, 1979, Ser. No. 108,915
Int. Cl.⁴ C07D *263/58, 277/68*
U.S. Cl. 548—165 **2 Claims**

1. A compound of the formula



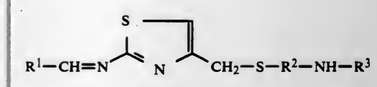
wherein Y is oxygen or sulfur; n is an integer of from 1 to 3; wherein R_1 is phenyl or phenyl substituted with from one to four substituents independently selected from the class consisting of lower alkyl, trifluoromethyl and halogen.

4,578,478
THIAZOLE DERIVATIVES AND PROCEDURE OF SYNTHESIS THEREOF

Tsuyoshi Tomiyama, Sakaki, Japan, assignor to Kotobuki Seiyaku Company Limited, Nagano, Japan

Filed Nov. 18, 1983, Ser. No. 553,183
Claims priority, application Japan, Dec. 3, 1982, 57-211290
Int. Cl.⁴ C07D *277/42*
U.S. Cl. 548—193 **11 Claims**

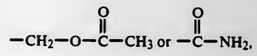
1. A compound of the formula



wherein
R^1 is a di-lower alkylamino group,
R^2 is a lower alkylene group,
R^3 is



wherein
A represents =N—CN or =O and
B represents —NH—D,



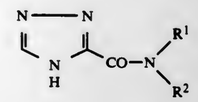
wherein D is a lower alkyl or cyclohexyl group, and pharmaceutically acceptable acid addition salts thereof.

4,578,479
PROCESS FOR PREPARING 1,2,4-TRIAZOLE-3-CARBOXAMIDES

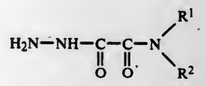
Kiyoshi Fukui; Noboru Kakeya, and Mitsushi Taguchi, all of Ichihara, Japan, assignors to Ube Industries, Ltd., Ube, Japan

Filed Apr. 13, 1984, Ser. No. 600,307
Claims priority, application Japan, Apr. 26, 1983, 58-72066
Int. Cl.⁴ C07D *249/14, 401/06, 403/06, 413/06*
U.S. Cl. 548—269 **15 Claims**

1. A process for preparing a 1,2,4-triazole-3-carboxamide represented by the formula:



wherein, R^1 and R^2 represent independently a hydrogen atom, an alkyl group having 1 to 10 carbon atoms, a cycloalkyl group having 5 to 7 carbon atoms or an aryl group having 6 to 10 carbon atoms or both R^1 and R^2 represent an alkylene group having 2 to 6 carbon atoms linked with each other directly or through an oxygen atom or a nitrogen atom to form a ring together with the nitrogen atom to which they are attached,
which comprises subjecting an oxamohydrazide represented by the formula:



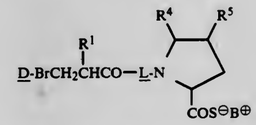
wherein R^1 and R^2 have the same meanings as defined above, to reaction with a water soluble salt of formamidine.

4,578,480
PROCESS FOR PREPARING 1-(3-BROMO-2-ALKYLPROPANOYL)-L-PROLINE DERIVATIVES

Roger Crossley, Reading, England, assignor to John Wyeth & Brother Limited, Maidenhead, England

Division of Ser. No. 236,350, Feb. 20, 1981, Pat. No. 4,349,480. This application May 10, 1982, Ser. No. 376,354
Claims priority, application United Kingdom, Feb. 26, 1980, 8006414
Int. Cl.⁴ C07D *207/12, 209/12*
U.S. Cl. 548—533 **4 Claims**

1. A compound of formula XIII



(XIII)

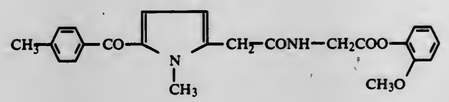
substantially free of the L,L isomer, wherein R^1 is lower alkyl, R^4 and R^5 are either both hydrogen or together with the carbon atoms to which they are attached represent a fused benzene ring optionally substituted by a group selected from hydroxy, lower alkyl, lower alkoxy and halogen and $B^{\oplus}$ is an alkali metal cation or a quaternary ammonium ion.

4,578,481
PYRROLACETIC AMIDES HAVING ANTIINFLAMMATORY ACTIVITY

Alessandro Baglioni, Rome, Italy, assignor to Sigma-Tau Industrie Farmaceutiche Riunite S.p.A., Rome and Medosan Industrie Biochimie Riunite S.p.A., Albano Laziale, both of, Italy

Division of Ser. No. 700,059, Feb. 11, 1985, which is a division of Ser. No. 467,308, Feb. 17, 1983, abandoned. This application Apr. 30, 1985, Ser. No. 728,758
Claims priority, application Italy, Feb. 26, 1982, 47881 A/82
Int. Cl.⁴ C07D *207/323*
U.S. Cl. 548—539 **1 Claim**

1. A compound having the formula

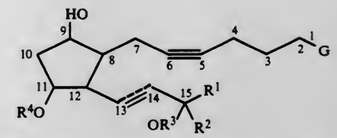


4,578,482
PROCESS FOR PREPARING PROSTACYCLINS

Ryoji Noyori; Masaaki Suzuki; Akira Yanagisawa, all of Aichi, and Seizi Kurozumi, Tokyc, all of Japan, assignors to Teijin Limited, Osaka, Japan

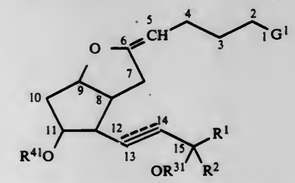
Filed Dec. 21, 1983, Ser. No. 563,835
Claims priority, application Japan, Dec. 23, 1982, 57-224878; Dec. 28, 1982, 57-227332
Int. Cl.⁴ C07D *307/935*
U.S. Cl. 549—214 **13 Claims**

1. A process for the preparation of a prostacyclin comprising the reaction of a 5,6-dehydroprostaglandin F_2 expressed by the following formula (I)



(I)

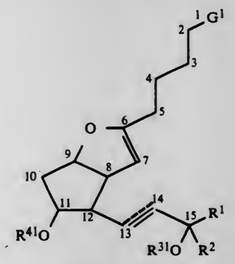
wherein the symbol ==== between the 13- and 14-positions indicates that a double or triple bond exists between the 13- and 14-positions; G represents —$COOR^5$ or —$CONR^6R^7$ in which R^5 represents a C_1–C_{10} alkyl group, a substituted or unsubstituted phenyl group, a substituted or unsubstituted alicyclic group, a substituted or unsubstituted phenyl (C_1–C_2) alkyl group or a tri(C_1–C_7)hydrocarbonsilyl group, R^6 and R^7 are identical or different and each represents a C_1–C_{10} alkyl group, taken together with a nitrogen atom to which they are bonded may form a substituted or unsubstituted 5- or 6-membered ring which may include a hetero atom; R^1 represents a hydrogen atom, a methyl group, or a protected ethynyl group; R^2 represents an unsubstituted C_5–C_8 alkyl group, a C_1–C_5 alkyl group substituted by a substituent selected from phenyl, phenoxy, C_1–C_6 alkoxy and C_5–C_6 cycloalkyl, which substituent may be substituted, or a substituted or unsubstituted alicyclic group; R^3 and R^4 are identical or different and each represents a C_2–C_7 acyl group, a tri(C_1–C_7)hydrocarbon-silyl group or a group forming an acetal linkage together with the oxygen atom of the hydroxyl group,
with a mercury (II) compound in an inert organic solvent in the presence of tri(C_1–C_6)alkylamine, the treatment of the reaction product with a boron hydride compound, and, if necessary, deprotecting reaction, hydrolysis reaction, or salt-forming reaction, to prepare a prostacyclin expressed by the following formula (II)



(II)

wherein the symbol ==== between the 13- and 14-positions, R^1 and R^2 are as defined above; G^1 is as same as G or represents a carboxyl group or its salt; R^{31} and R^{41} are respectively as same as R^3, R^4 or represent a hydrogen atom.

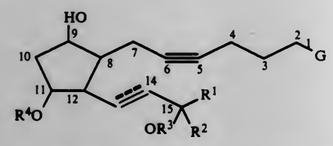
13. A process for the preparation of Δ^6-prostaglandins I_1 expressed by the following formula (IV)



(IV)

wherein the symbol ===, G^1, R^1, R^2, R^{31} and

R^{41} are as defined in claim 1,
comprising allowing a 5,6-dehydroprostaglandin F_2 expressed by the following formula (I)



(I)

wherein the symbol ═══, G, R^1, R^2, R^3 and R^4 are as defined in claim 1,
to react with a mercury (II) compound in an inert organic solvent in the absence of tri(C_1-C_6)alkylamine, treating with the reaction product with a boron hydride compound, and, if necessary, further subjecting the reaction product to the deprotecting reaction, hydrolysis reaction, or salt-forming reaction.

4,578,483

GIBBERELLIN AMINE SALTS

Richard P. Mabelis, Cheshire, England, assignor to Imperial Chemical Industries Plc, London, England

Filed Nov. 7, 1983, Ser. No. 549,444

Claims priority, application United Kingdom, Dec. 1, 1982, 8234274

Int. Cl.⁴ C07D *307/00*

U.S. Cl. 549—297 **4 Claims**

1. A mixture of salts of gibberellin A_4 (GA_4) and of gibberellin A_7 (GA_7) with an amine of the formula $R^1CH_2NHR^2$, wherein R^1 is a phenyl, thienyl or pyridyl radical unsubstituted or substituted with chlorine or C_1-C_4 alkyl, and R^2 is a straight chain alkyl or alkynyl radical of up to 3 carbon atoms.

4,578,484

PROCESS FOR THE PREPARATION OF LINEATIN

Lars Skatteböl, and Yngve Stenström, both of Oslo, Norway, assignors to Borregaard Industries Limited, Norway

PCT No. PCT/NO84/00013, § 371 Date Nov. 15, 1984, § 102(e) Date Nov. 15, 1984, PCT Pub. No. WO84/03703, PCT Pub. Date Sep. 27, 1984

PCT Filed Feb. 27, 1984, Ser. No. 674,629

Claims priority, application Norway, Mar. 15, 1983, 830902

Int. Cl.⁴ C07D *319/04, 323/04*

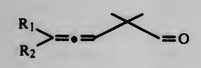
U.S. Cl. 549—360 **4 Claims**

1. Process for the preparation of lineatin (3,3,7-trimethyl-2,9-dioxatricyclo[3,3,1,$0^{4,7}$]nonane) of the formula



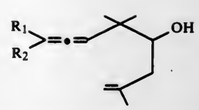
7

characterized in that
(i) a 2,2-dimethyl-3,4-pentadienal of the formula



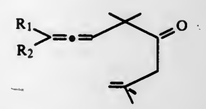
1

in which R_1 and R_2 each is hydrogen or lower alkyl, is reacted with β-methylallyl magnesiumhalide,
(ii) the formed 2,5,5-trimethylocta-1,6,7-trien-4-ol derivative of the formula



2

is subjected to oxidation which does not attack the double bonds,
(iii) the formed 2,5,5-trimethylocta-1,6,7-trien-4-one derivative of the formula



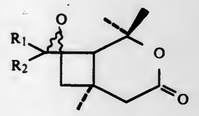
3

is subjected to pyrolysis,
(iv) the formed 1,4,4-trimethyl-6-methylene-bicyclo[3,2,0]-heptan-3-one derivative of the formula



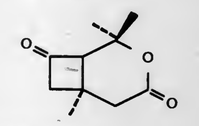
4

is subjected to oxidation with an organic peracid,
(v) the resulting 5,5,9-trimethyl-2,6-dioxa-7-oxobicyclo[4,2,-0]octylspiro[2,7]decane derivative of the formula



5

is subjected to oxidation with a periodate in acidic medium,
(vi) the resulting 1,5,5-trimethyl-4-oxabicyclo[4,2,0]-octan-3,7-dione of the formula



6

is reduced to lineatin.

4,578,485

SYNTHESIS OF SPECTINOMYCIN ANALOGS BY AN IMPROVED GRIGNARD PROCESS

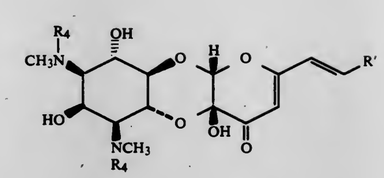
David R. White, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Feb. 8, 1984, Ser. No. 577,641

Int. Cl.⁴ C07D *323/04*

U.S. Cl. 549—361 **12 Claims**

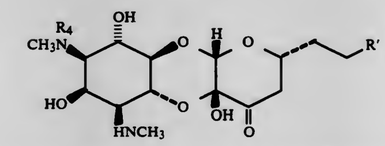
1. A compound having the formula



IIb

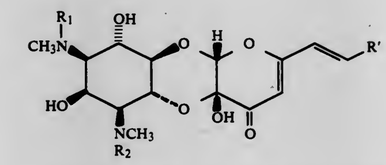
wherein R_4 is hydrogen or a blocking group; and
R′ is alkyl of from 1 to 18 carbon atoms, inclusive, with the proviso that when R_4 is hydrogen, R′ is alkyl of from 7 to 18 carbon atoms, inclusive.

3. A process for preparing a compound having the formula



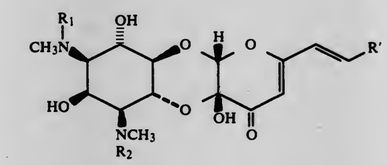
III

wherein R′ is alkyl of from 1 to 18 carbon atoms, inclusive; and R_4 is hydrogen or a blocking group; which comprises
(1) hydrogenating in the presence of a palladium catalyst a compound having the formula



II

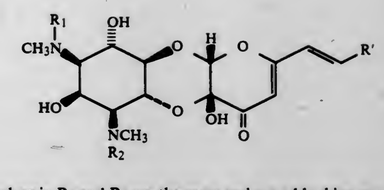
wherein R_1 and R_2 are blocking groups; and R′ is as defined above to obtain the compound III with the proviso that R_4 is hydrogen if the blocking groups, R_1 and R_2 are removed by the hydrogenation and R_4 is a blocking group if the blocking groups R_1 and R_2 are not removed by the hydrogenation; or which comprises
(2) hydrogenating in the presence of a palladium catalyst a compound having the formula



II

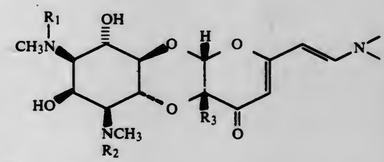
wherein R_1, R_2 and R′ are as defined above with the proviso that R_1 and R_2 are blocking groups that are not removed by the hydrogenation and removing the blocking groups to obtain the compound III wherein R_4 is hydrogen.

6. A process for preparing a compound having the formula



II

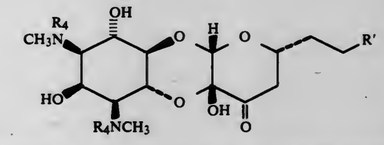
wherein R_1 and R_2 are the same and are a blocking group; and R′ is alkyl of from 1 to 18 carbon atoms, inclusive; which comprises
(a) stirring an enamine having the formula



I

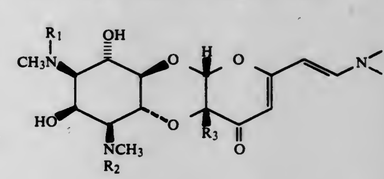
wherein R_1 and R_2 are as defined above; and
R_3 is acyl;
with a silylating reagent;
(b) treating the product of step (a) with a compound having the formula R′ MgHal wherein Hal is bromo, chloro and iodo and R′ is as defined above; and
(c) adding a compound to remove the silicon containing protective group of the product of step (a) to obtain the compound II.

10. A process for preparing a compound having the formula



III

wherein R′ is alkyl of from 1 to 18 carbon atoms, inclusive; and R_4 is hydrogen or a blocking group which comprises
(a) stirring an enamine having the formula



I

wherein R_1 and R_2 are the same and are a blocking group; and
R_3 is acyl;
with a silylating agent;
(b) treating the product of step (a) with a compound having the formula R′ MgHal wherein R′ is as defined above;
(c) adding a compound to remove the silicon containing protective group of the product of step (a); and
(1) hydrogenating the compound of step (c) to obtain the compound III with the proviso that R_4 is hydrogen if the blocking groups R_1 and R_2 are removed by the hydrogenation and R_4 is a blocking group if the

blocking groups R_1 and R_2 are not removed by the hydrogenation; or

(2) hydrogenating the compound of step (c) to obtain the compound III with the proviso that R_1 and R_2 blocking groups that are not removed by the hydrogenation and removing the blocking groups to obtain the compound III wherein R_4 is hydrogen.

4,578,486

SMOKING COMPOSITIONS CONTAINING A DICARBONATE ESTER FLAVORANT-RELEASE ADDITIVE

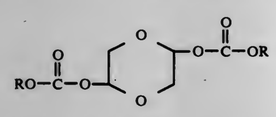
Kenneth F. Podraza, Richmond, Va., assignor to Philip Morris Incorporated, New York, N.Y.

Division of Ser. No. 603,035, Apr. 23, 1984, Pat. No. 4,532,944. This application Jun. 24, 1985, Ser. No. 748,371

Int. Cl.⁴ C07D *23/06*

U.S. Cl. 549—379 **4 Claims**

1. A dioxane compound corresponding to the formula:



where R is a substituent selected from aliphatic, alicyclic and aromatic radicals.

4,578,487

BINDING AGENTS CONTAINING TITANIC ACID ESTERS FOR THE PREPARATION OF COATING COMPOSITIONS AND REFRACTORY BODIES, AND A METHOD FOR THE PREPARATION OF THESE BINDING AGENTS

Dieter Barfurth, Troisdorf, and Heinz Nestler, Troisdorf-Eschmar, both of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Jan. 26, 1983, Ser. No. 461,072

Claims priority, application Fed. Rep. of Germany, Feb. 3, 1982, 3203546

Int. Cl.⁴ C07F *7/28*

U.S. Cl. 556—40 **14 Claims**

1. An improved binding agent based on titanium compounds for slips of refractory material, wherein the improvement comprising the titanium compound being in the form of an hydrous liquid chelated polymeric titanic acid ester, said ester being chelated with 0.2 to 1 gram molecule of chelating agent per gram atom of titanium.

4,578,488

BISALKYL BIS(TRIALKANOL AMINE)ZIRCONATES AND USE OF SAME AS THICKENING AGENTS FOR AQUEOUS POLYSACCHARIDE SOLUTIONS

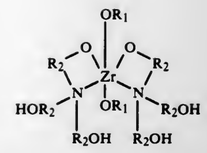
Gregory J. Rummo, Bronxville, and Robert Startup, Bloomingburg, both of N.Y., assignors to Kay-Fries, Inc., Stony Point, N.Y.

Continuation of Ser. No. 371,022, Apr. 22, 1982, abandoned. This application Jan. 10, 1985, Ser. No. 690,384

Int. Cl.⁴ C07F *7/00, 7/28*

U.S. Cl. 556—56 **10 Claims**

1. A method for the preparation of a reaction product comprising a compound having the formula



where R_1 and R^2 are individually selected from the group consisting of alkyl having from 1 to 8 carbon atoms, said method comprising the steps of admixing at least one tetraalkyl zirconate, of the form $Zr(OR_1)_4$, and at least one trialkanol amine, of the form $N(R_2OH)_3$, allowing the resultant reaction to proceed in the absence of applied heat and adding water to said reaction product in order to stabilize said reaction product in liquid form.

4,578,489

AMMONIUM STANNATES-(IV)

Wolfgang Wehner, Zwingenberg, and Reinhardt Grade, Benshelm, both of Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Sep. 26, 1983, Ser. No. 535,487

Claims priority, application Switzerland, Jun. 10, 1982, 5876/82

Int. Cl.⁴ C07F *7/22*

U.S. Cl. 556—100 **6 Claims**

1. A compound of formula Ia

$$[(R^1)_a(R^2)_bN(R^3)_c(R^4)_d]_n^{\oplus}[(R^7)_3SnX_rY_t]^{n\ominus} \quad \text{(Ia)}$$

in which R^1 and R^2 are methyl, R^3 is benzyl, R^4 is C_8–C_{16}-alkyl, R^7 is C_3–C_5-alkyl, X and Y independently of one another are fluorine, chlorine or bromine, and a, b, c and d are l, n is l, r and t are an interger from 0 to 2, the total (r+t) having the value (n+l).

4,578,490

IONIC BIS(DICARBOXYLATO)PALLADATE(II) ANTI-TUMOR AGENTS

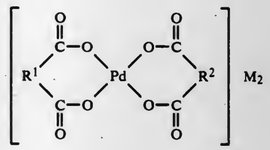
Alan R. Amundsen, Somerville, and Eric W. Stern, Mountainside, both of N.J., assignors to Engelhard Corporation, Iselin, N.J.

Continuation of Ser. No. 392,817, Jun. 28, 1982, abandoned. This application Aug. 17, 1984, Ser. No. 642,235

Int. Cl.⁴ C07F *15/00*

U.S. Cl. 556—136 **3 Claims**

1. A palladium(II) compound of the formula:

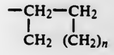


wherein

R^1 and R^2 are the same or different and represent the following:

(a) methylene or ethylene with the proviso that R^1 and R^2 cannot both represent methylene at the same time;

(b) cycloalkylene of the formula:

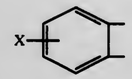


wherein n is an integer having a value of 2–3;

(c) alklidene of 2–4 carbon atoms;

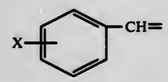
(d) cycloalkylidene containing 4–6 nuclear carbon atoms;

(e) o-phenylene of the formula:



wherein X is selected from the group consisting of hydrogen, halogen and C_{1-6} alkyl;

(f) aralkylidene of the formula:



(g) substituted methylidene of the formula: $=CR^3R^4$ wherein R^3 and R^4 are selected from the group consisting of hydrogen, halogen and hydroxy, with the proviso that R^3 and R^4 cannot both represent hydrogen at the same time; or

(h) keto; and

M is an alkali metal or M_2 is an alkaline earth metal.

4,578,491

BIS(THIOCYANATO)PALLADIUM(II) COMPLEXES

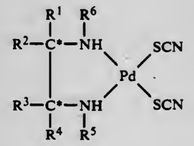
Alan R. Amundsen, Somerville, and Eric W. Stern, Mountainside, both of N.J., assignors to Engelhard Corporation, Iselin, N.J.

Continuation of Ser. No. 392,816, Jun. 28, 1982, abandoned. This application Aug. 20, 1984, Ser. No. 642,315

Int. Cl.⁴ C07F *15/00*

U.S. Cl. 556—137 **8 Claims**

1. A compound of the formula:

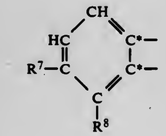


wherein

R^1 and R^4 are selected from the group consisting of hydrogen and C_{1-6} alkyl;

R^2 and R^3 are selected from the group consisting of hydrogen, C_{1-6} alkyl, hydroxymethyl or, taken together, R^2 and R^3 represent C_{2-6} alkylene;

R^1–R^4, taken together with the carbon atoms to which they are attached, represent naphtylene or a phenylene of the formula:



wherein

R^7 and R^8 represent hydrogen, C_{1-6} alkyl, hydroxy or carboxy; and

R^5 and R^6 are selected from the group consisting of hydrogen, C_{1-6} alkyl, hydroxymethyl or carboxymethyl.

4,578,492

NON-CORROSIVE SILICONE RTV COMPOSITIONS

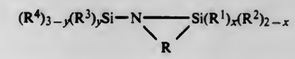
Sandra L. Pratt, Clifton Park; Gary M. Lucas, Scotia, both of N.Y., and Michio Zembayashi, Ohta, Japan, assignors to General Electric Company, Waterford, N.Y.

Division of Ser. No. 542,222, Oct. 14, 1983, Pat. No. 4,499,234. This application Aug. 10, 1984, Ser. No. 640,073

Int. Cl.⁴ C07F *7/10*

U.S. Cl. 556—407 **14 Claims**

1. A novel compound of the formula



where R is a substituted or unsubstituted organo group having at least two carbon atoms, R^1 is a hydrolyzable leaving group selected from the group consisting of alkoxy, amido, amino, carbamato, enoxy, imidato, isocyanato, oximato, thioisocyanato and ureido, R^2 and R^3 are independently selected C_{1-13} monovalent substituted or unsubstituted hydrocarbon radicals, R^4 is a hydrolyzable leaving group selected from the group consisting of alkoxy, amido, amino, carbamato, enoxy, imidato, isocyanato, oximato, thioisocyanato and ureido; x is equal to 1 or 2 and y is equal to 0 to 2 inclusive.

4,578,493

VINYL-HYDRO POLYSILOXANE COPOLYMERS RELEASE COMPOSITIONS

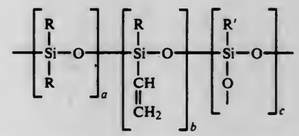
Mike S. H. Chang, Danbury, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Feb. 11, 1983, Ser. No. 465,731

Int. Cl.⁴ C07F *7/08;* C08F *2/46, 2/50, 30/08*

U.S. Cl. 556—451 **11 Claims**

1. Liquid vinyl-hydro polysiloxane copolymer having the moiety structure:



wherein a, b and c are numbers larger than 0: the molar ratio of a to b is selected from a range of about 1 to 99 to 99 to 1, the percent by mole of c to a is selected from a range of about 0.01% to about 10%, R's are the same or different monovalent hydrocarbon radicals selected from the group of C_1 to C_4 alkyl, cyclohexyl and phenyl groups and R' is an R group or an oxygen radical.

4,578,494

PREPARATION OF POLYSILOXANES FROM HALOSILANES

Ollie W. Marko; Robert D. Steinmeyer, both of Carrollton, Ky., and Stefan Rentsch, Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Jun. 14, 1985, Ser. No. 744,708

Int. Cl.⁴ C07F *7/08, 7/18*

U.S. Cl. 556—452 **30 Claims**

1. A method for producing polysiloxanes, said method comprising (1) reacting a halosilane or mixture of halosilanes in the presence of a metal oxide or mixture of metal oxides and sulfolane wherein polysiloxanes are formed from said halosilane or mixture of halosilanes and wherein said metal oxide or mixture of metal oxides forms a metal halogen complex or mixed metal halogen complex with said sulfolane and (2) thereafter separating the polysiloxanes.

4,578,495

PREPARATION OF ORGANOSILANES/ORGANOPOLYSILANES FROM DISILANES

Gerard Soula, Meyzieu, and Christian Simonnet, Venissieux, both of France, assignors to Rhone-Poulenc Specialties Chimiques, Courbevoie, France

Filed May 30, 1985, Ser. No. 739,109
Claims priority, application France, May 30, 1984, 8408511
Int. Cl.⁴ C07F 7/08
U.S. Cl. 556—468 **20 Claims**

1. A process for the preparation of organosilane/polysilane, comprising comprising contacting, in an inert atmosphere, (1) at least one disilane having the general formula:

$$(R)_3\text{—Si—Si—R})_3 \quad (I)$$

wherein the radicals R, which may be identical or different, are each C_1–C_6 alkyl, hydrogen, 3,3,3-trifluoropropyl, trimethylsiloxy, fluorine, chlorine, bromine or iodine, with (2) a catalytically effective amount of a catalyst system comprising (a) at least one ionic inorganic salt having the formula:

$$M^+A^-$$

wherein M^+ is lithium, sodium, potassium, rubidium or cesium, and A^- is fluoride, chloride, bromide or iodide, and (b) at least one compound which complexes the cation M^+ of said salt (a).

4,578,496

POLYMERIC METAL-AMINE COMPLEX COMPOUNDS, PROCESSES FOR THEIR PREPARATION AND USE

Peter Panster, Rodenbach, and Peter Kleinschmit, Hanau, both of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Division of Ser. No. 404,115, Aug. 2, 1982, Pat. No. 4,424,332. This application Oct. 20, 1983, Ser. No. 543,720
Claims priority, application Fed. Rep. of Germany, Aug. 13, 1981, 3131954
Int. Cl.⁴ C07F 7/08; C07C 69/02, 45/00, 5/02
U.S. Cl. 556—479 **11 Claims**

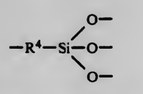
1. A process for a catalytic reaction to achieve hydroformylation, hydrogenation or, hydrosilylation, which comprises carrying out said reaction in the presence of a catalyst which is a polymeric complex organosiloxane·amine of a member selected from the group consisting of molybdenum, tungsten, manganese, rhenium and a metal of the sub-groups VIII and I of the Periodic Table, wherein at least one amine of the formula:



(1)

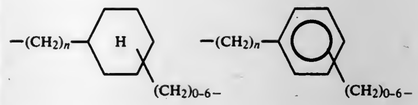
is bonded coordinately to each central metal atom, the metal:-nitrogen atomic ratio is from 1:1 to 1:10^6, any coordination points at the metal atom which are still free are occupied by other electron pair donors, and the required charge compensation is effected by means of an inorganic or organic anion,

and in the formula (1) R^1 and R^2 represent a group of the formula



(2)

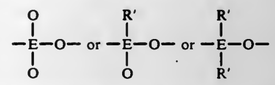
R^4 denotes a linear or branched alkylene group having 1 to 10 C atoms or a cycloalkylene group having 5 to 8 C atoms, or represents the units:



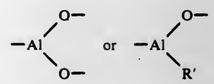
wherein n is 1 to 6 methylene groups linked to a nitrogen atom,

R^1 and R^2 can be identical or different,

and the free valences of the oxygen atoms are saturated either by silicon atoms of further groups of the formula (2) and/or by crosslinking bridge members of the formula:



wherein E represents silicon, titanium or zirconium, or by the units:



wherein R′ is a methyl or ethyl group and the ratio of the silicon atoms in (2) to the bridge atoms silicon, titanium, zirconium and aluminum can be from 1:0 to 1:10,

R^3 has the same meaning as R^1 and R^2, or represents hydrogen, a linear or branched alkyl group having 1 to 10 C atoms or a cycloalkyl group having 5 to 8 C atoms or the benzyl group.

4,578,497

TETRAALKYLSILANE SYNTHETIC FLUIDS

Anatoli Onopchenko, Monroeville, and Edward T. Sabourin, Allison Park, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Nov. 30, 1984, Ser. No. 677,047
Int. Cl.⁴ C07F 7/08
U.S. Cl. 556—479 **28 Claims**

1. A process for the production of tetraalkylsilane compounds which comprises contacting an admixture comprising

(A) at leaast one alkylsilane selected from the group consisting of

(i) a monoalkylsilane having the formula

$$R\text{—}Si\text{—}H_3,$$

(ii) a dialkylsilane having the formula

$$R\text{—}SiH_2\text{—}R_1,$$

(iii) a trialkylsilane having the formula

$$R\text{—}SiH\text{—}(R_1)_2,$$

and mixtures thereof, wherein R and R_1 each represent an alkyl radical of from one to 20 carbon atoms per molecule, and

(B) at least one alpha olefin containing from two to about 20 carbon atoms per molecule, under an inert atmosphere with an oxygenated, platinum-containing catalyst selected from the group consisting of (i) a platinum catalyst having a basicity substantially equal to or less than that provided by a platinum-containing catalyst having a triphenylphosphine ligand, or (ii) a heterogeneous platinum-containing catalyst, under hydrosilylation conditions, said platinum-containing catalyst having been contacted with an oxygen-containing gas to render it active for the hydrosilylation process.

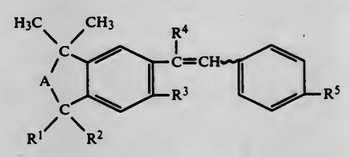
4,578,498

PHENYLETHYLENE DERIVATIVES AND THEIR USE AS DRUGS

Fritz-Frieder Frickel, Deidesheim, and Axel Nuerrenbach, Gruenstadt, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 457,182, Jan. 11, 1983, abandoned. This application Jul. 20, 1983, Ser. No. 515,465
Claims priority, application Fed. Rep. of Germany, Jan. 23, 1982, 3202100
Int. Cl.⁴ C07C 69/76
U.S. Cl. 560—8 **11 Claims**

1. A phenylethylene derivative of the formula



I

where A is C_1–C_2-alkylene which is unsubstituted or substituted by methyl, R^1 is hydrogen or methyl, R^2 is hydrogen or methyl, R^3 is C_1–C_8-alkyl, R^4 is hydrogen or C_1–C_4-alkyl and R^5 is carboxyl or C_2–C_4-carbalkoxy, and, where relevant, its salts with physiologically tolerated bases.

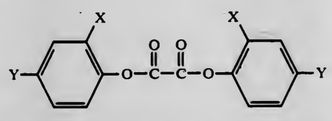
4,578,499

OXALIC ACID ESTER DERIVATIVES

Kazuhiro Imai; Hiroshi Ogata; Motoaki Tanaka, all of Tokyo; Hiroyoshi Nawa, and Masami Ishihara, both of Saitama, all of Japan, assignors to Wako Pure Chemical Industries Ltd., Osaka, Japan

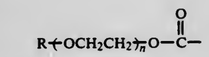
Filed Jun. 27, 1985, Ser. No. 749,428
Claims priority, application Japan, Jun. 30, 1984, 59-136060
Int. Cl.⁴ C07C 79/46
U.S. Cl. 560—21 **11 Claims**

1. Oxalic acid ester derivatives represented by the general formula:



(I)

wherein either one of X and Y represents a nitro group, and the other represents



in which R represents a lower alkyl group, and n represents a figure of 1–50.

4,578,500

POLYAMINES AND A PROCESS FOR THEIR PRODUCTION

Werner Rasshofer, Cologne, and Gerhard Ballé , Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 21, 1983, Ser. No. 553,722
Claims priority, application Fed. Rep. of Germany, Dec. 4, 1982, 3244912
Int. Cl.⁴ C07C 87/50, 125/06, 85/20
U.S. Cl. 560—25 **12 Claims**

1. A process for the production of compounds containing aromatic amino groups by

(a) hydrolyzing

(i) a compound containing at least two aromatically bound isocyanate groups and having an isocyanate content of from 0.5 to 40 wt % mixed with

(ii) water in at least a stoichiometric amount and

(iii) a solvent or solvent mixture containing

(A) 50–100 wt. % solvent containing only carbon-carbon, carbon-hydrogen, ether and/or thioether bonds and

(B) 0–50 wt. % solvent which is at least partly water-soluble

at −20° to +185° C. in the absence of an acidic or basic catalyst and

(b) isolating the product amine.

4,578,501

PREPARATION OF TEREPHTHALIC ACID FROM A CRUDE DIMETHYL TEREPHTHALATE

Anton Schoengen, Witten; Georg Schreiber, Cologne, and Heinz Schroeder, Dortmund-Syburg, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 79,253, Sep. 27, 1979, Pat. No. 4,302,595. This application Apr. 18, 1980, Ser. No. 141,572
Claims priority, application Fed. Rep. of Germany, Apr. 21, 1979, 2916197; Mar. 27, 1980, 3011858
Int. Cl.⁴ C07C 67/39, 51/09; B01D 3/14, 9/02
U.S. Cl. 560—77 **4 Claims**

1. A process for the production of fiber grade terephthalic acid from dimethyl terephthalate as the intermediate product by oxidation of p-xylene and/or methyl p-toluate with oxygen-containing gases in the presence of heavy-metal-containing oxidation catalysts at elevated temperature and elevated pressure, by esterification of the oxidation mixture with methanol at elevated temperature and elevated pressure, and by distillatory separation of the crude ester into a methyl p-toluate-rich fraction recycled into the oxidation and a residual fraction, as well as into a crude dimethyl terephthalate having a limited content of oxidation intermediates and other by-products, by continuous hydrolysis of the crude dimethyl terephthalate with water at a mass ratio of crude dimethyl terephthalate to water of between 3:1 and 0.1:1 and at temperatures of between 350° C. and 140° C. and at the pressure required to maintain the liquid phase to produce a reaction mixture containing crystalline fiber grade terephthalic acid, by recrystallization of the terephthalic acid at temperatures of between 300° C. and 150° C., replacement of the mother liquor by demineralized water, and obtaining the terephthalic acid from the reaction mixture, two-stage conductance of the hydrolysis being effected by:

(a) separation of the reaction mixture after the first hydrolysis stage into a thickened suspension of solid terephthalic acid and mother liquor and a liquid phase containing the residual mother liquor,

(b) continuous dilution and quantitative replacement of the mother liquor in the suspension by demineralized water conducted counter-currently to the crystallized terephthalic acid in the second hydrolysis state,

(c) single- or multi-stage expansion of the thus-obtained suspension of demineralized water and terephthalic acid

and obtaining of the terephthalic acid by means of a solid-liquid separating operation,

(d) cooling of the combined mother liquors according to stages (a) and (b) to such an extent that still dissolved terephthalic acid, as well as by-products, are precipitated separately or together thereby separating as solid substances; the distillatory separation of the crude ester being effected by vacuum distillation at elevated temperature in a three-column series-arranged distillation system wherein the crude ester is separated into a methyl p-toluate-rich fraction as head product of a methyl p-toluate first column, into a fraction rich in methyl ester of terephthalaldehydic acid as head product of the second column for distilling the terephthalaldehydic acid ester as well as a purified crude dimethyl terephthalate fraction with a methyl ester of terephthalaldehydic acid content of 0.01–0.1% by weight as head product and a residual fraction as the sump product of a crude dimethyl terephthalate third column.

4,578,502

POLYETHYLENE TEREPHTHALATE SAPONIFICATION PROCESS

Warner J. G. Cudmore, 25847 Ashwood Dr., Sun Lakes, Ariz. 85224

Filed Jan. 22, 1985, Ser. No. 693,248
Int. Cl.⁴ C07C *67/60, 51/487*
U.S. Cl. 560—79 **22 Claims**

1. A process for recovering monomeric phthalic polycarboxylic acids or dimethyl ester thereof and low molecular weight polyols from solid scrap high molecular weight polyalkylene phthalate polyester resins comprising:

granulating said scrap resin into resin particles sufficiently minute to be readily slurried;

slurrying said granulated scrap resin particles with sufficient solvent to prepare a readily pumpable slurry, said solvent selected from the class consisting of water and methanol in which a low molecular weight polyol is soluble;

depolymerizing said slurried resin at a temperature, pressure and for a time sufficient to convert substantially all of said resin into its monomeric components in liquid form in a hydrolized or methanolized mixture; and

crystallizing substantially all of the monomeric polycarboxylic acid monomer present in said hydrolized or methanolized mixture by flash crystallizing said mixture.

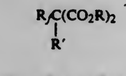
4,578,503

ALKYLATED OR ALKENYLATED MALONIC ACID OR ITS DERIVATIVES HAVING A FLUORINE

Nobuo Ishikawa; Takeshi Nakai, both of Yokohama, and Yoshio Inouye, Machida, all of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Filed Aug. 31, 1983, Ser. No. 528,134
Claims priority, application Japan, Aug. 31, 1982, 57-151007; Aug. 31, 1982, 57-151008
Int. Cl.⁴ C07C *67/317, 69/612, 57/36*
U.S. Cl. 560—82 **9 Claims**

1. An alkylated or alkenlated malonic acid or its acid salts and esters having a fluorine containing aliphatic substitutent, as expressed by the following formula:



where R_f is a fluorine containing aliphatic group, R is an aliphatic group, or hydrogen or alkali metal atom, and R′ is an aryl substituted aliphatic group.

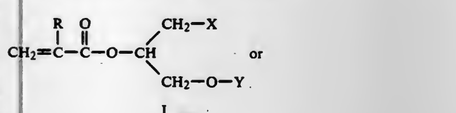
4,578,504

ACRYLATE AND METHACRYLATE MONOMERS AND POLYMERS

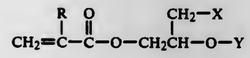
W. James Hammar, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 3, 1983, Ser. No. 500,782
Int. Cl.⁴ C07C *69/78, 69/653, 143/68;* C07F *7/08*
U.S. Cl. 560—112 **12 Claims**

1. A monomer having the formulae:



I



II

wherein

R is hydrogen or methyl;

X is fluoro, chloro, bromo, iodo, perfluoroalkylsulfonoxy of one to three carbon atoms, perfluoroacyloxy of one to three carbon atoms, benzoyloxy, or trichloroacetoxy;

Y is trichloroacetyl, perfluoroacyl of the formula



or trialkylsilyl of the formula $[CH_3(CH_2)_m]_3Si$— wherein n is zero to six; and m is zero to three.

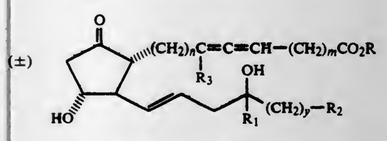
4,578,505

ALLENIC PROSTANOIC ACID DERIVATIVES

Paul W. Collins, Deerfield, and Richard M. Weier, Lake Bluff, both of Ill., assignors to G. D. Searle & Co., Skokie, Ill.

Filed Sep. 4, 1984, Ser. No. 647,090
Int. Cl.⁴ C07C *177/00*
U.S. Cl. 560—118 **12 Claims**

1. A compound of the formula



XIV

wherein R is hydrogen; or straight or branched chain alkyl of 1 to 6 carbon atoms, inclusive

wherein R_1 is hydrogen; or straight or branched chain alkyl of 1 to 6 carbon atoms, inclusive; or vinyl (—CH=CH_2)

wherein R_2 is straight or branched chain alkyl of 1 to 6 carbon atoms; or cycloalkyl group containing 3 to 6 carbon atoms; or phenyl; or phenoxy

wherein R_3 is hydrogen; or straight chain alkyl of 1 to 3 carbon atoms

wherein m is an integer of from 1 to 4, inclusive;

wherein n is an integer of from 1 to 3, inclusive with the proviso that the sum of m and n does not exceed 5;

wherein y is an integer of from 1 to 3;

±refers to the compound shown, its mirror image and the mixture of racemates.

4,578,506

PROCESS FOR THE PREPARATION OF TRIS(N-CARBALKOXYLAMINOMETHYL)PHOSPHINE OXIDES AND SULFIDES

Arlen W. Frank, Slidell, La., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Continuation-in-part of Ser. No. 156,292, Jun. 4, 1980, abandoned, which is a continuation-in-part of Ser. No. 964,852, Nov. 29, 1978, Pat. No. 4,249,017. This application Mar. 8, 1982, Ser. No. 355,953
The portion of the term of this patent subsequent to May 20, 1997, has been disclaimed.
Int. Cl.⁴ C07F *9/53, 9/52*
U.S. Cl. 560—148 **3 Claims**

1. A process for preparing tris(N-carbalkoxylaminomethyl)-phosphine oxides and sulfides which comprises:

(a) reacting a tetrakis(N-carbalkoxylaminomethyl)phosphonium salt having the formula $(RO_2CNHCH_2)_4P^+X^-$, where R is an alkyl radical having from 1 to 6 carbon atoms and X is an inorganic radical, with a base selected from the group consisting of ammonia, primary amines, and secondary amines, at a molar ratio of said phosphonium salt to base of at least 1:2 and a temperature of about 0° C. to 150° C.,

(b) treating the reaction mixture at a temperature of about 0° C. to 100° C. with an agent selected from the group of oxidizing agents consisting of: air, oxygen, oxides of nitrogen, sulfur dioxide, hydrogen peroxide, mercuric oxide, potassium permanganate, chromic acid, and organic peroxides and epoxides or the group of sulfurizing agents consisting of: elemental sulfur, sodium polysulfide, ammonium sulfide, mercuric sulfide, thiocyanogen, and organic compounds selected from the group consisting of mercaptans, episulfides, thionocarbonates and dialkyl disulfides, and

(c) recovering the product from the resulting mixture of products and by-products.

4,578,507

PROCESS FOR THE PRODUCTION OF CINNAMIC ACID ESTERS

Keisuke Wada, Yokohama; Yoshimitsu Kobayashi, Tokyo, and Yukio Kasori, Yokohama, all of Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan

Filed Jan. 24, 1985, Ser. No. 694,211
Claims priority, application Japan, Feb. 10, 1984, 59-23837
Int. Cl.⁴ C07C *69/76*
U.S. Cl. 560—104 **1 Claim**

1. A process for the production of cinnamic acid esters which is characterized by reacting a styrene with an aliphatic alcohol of 1–4 carbon atoms, carbon monoxide and oxygen in the presence of a catalyst comprising (a) a palladium metal or a compound thereof, (b) a salt of copper or iron, (c) a salt of an alkali metal or an alkaline earth metal, (d) an organic acid and (e) a halogen compound.

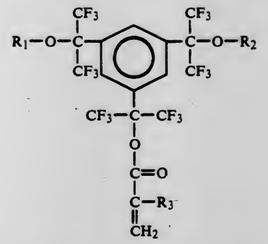
4,578,508

FLUOROACRYLATE ESTER, POLYMER THEREOF, AND PROCESS OF MAKING THE SAME

James R. Griffith, Riverdale Heights, and Jacques G. O'Rear, Temple Hills, both of Md., assignors to Geo-Centers, Inc., St. Newton Upper Falls, Mass.

Filed Feb. 26, 1985, Ser. No. 705,880
Int. Cl.⁴ C07C *69/52*
U.S. Cl. 560—221 **8 Claims**

1. A compound comprising a fluoroacrylate ester of the formula:



(IV)

wherein R_1 and R_2 are independently selected from the group consisting of saturated aliphatic hydrocarbons having from 1 to about 3 carbon atoms and R_3 is selected from the group consisting of hydrogen and methyl.

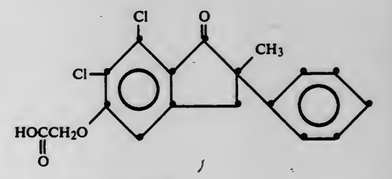
4,578,509

PROCESS FOR PREPARING A MANIPULATED ENANTIOMER MIXTURE BY ASYMMETRIC CHIRAL PHASE TRANSFER CATALYSIS

Ulf H. Dolling, Westfield; Seemon H. Pines, Murray Hill, and Edward J. J. Grabowski, Westfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 481,200, Apr. 1, 1983, abandoned. This application Feb. 17, 1984, Ser. No. 579,341
Int. Cl.⁴ C07C *45/61, 59/90*
U.S. Cl. 562—462 **26 Claims**

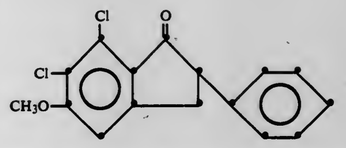
1. A direct process for producing a compound containing desired ratios of pure (+) and (−) enantiomers of [(6,7-dichloro-2,3-dihydro-2-methyl-1-oxo-2-phenyl-1H-inden-5-yl)-oxy]acetic acid having the formula:



I

which process comprises:

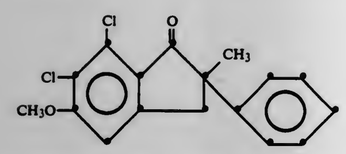
(a) reacting a racemic 2-phenylindanone compound having the formula:



VI

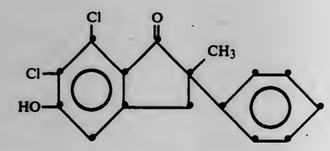
with a methylating agent and an aqueous base in an aprotic, aromatic hydrocarbon, chlorinated hydrocarbon, or simple hydrocarbon solvent and in the presence of an N-alkyl cinchona alkaloid catalyst or the mirror image thereof, said catalyst being a member of the group consisting of N-benzylcinchoninium halide, N-benzylcinchonidinium halide, N-benzylquininium halide, or N-benzylquinidinium halide and the dihydro analogs thereof and the o-, m-, and/or p-substituted benzyl analogs thereof wherein said substituents can be —NO_2, —CN, —F, —Cl, —Br, —I, —OCH_3, —OCH_2CH_3, —CF_3, or —CH_3, at a temperature of about −10° to 50° C. to obtain the 2-

methyl (+) and (−) enantiomeric intermediate having the formula:



VII

(b) demethylating said Formula VII compound in the presence of a catalyst to obtain the optically active (+) and (−) enantiomeric indanone intermediate compound having the formula



VIII

and,

(c) alkylating, hydrolyzing and acidifying said Formula VIII compound to obtain said Formula I compound containing said desired ratios of pure (+) and (−) enantiomers.

4,578,510

PROCESS FOR MINIMIZING FORMATION OF LOW MOLECULAR WEIGHT OLIGOMERS DURING HYDROLYTIC DEPOLYMERIZATION OF CONDENSATION POLYMERS

Marvin L. Doerr, Charlotte, N.C., assignor to Celanese Corporation, New York, N.Y.

Filed Dec. 11, 1984, Ser. No. 680,441
Int. Cl.⁴ C07C *51/487*
U.S. Cl. 562—483 **9 Claims**

1. A process for the depolymerization of a condensation polymer selected from the group consisting of polyesters, polyamides and polycarbonates which comprises subjecting said polymer to neutral aqueous hydrolysis while controlling the conditions such that the following two conditions are met:

(1) the amount of water and the polymer addition level are such that the least soluble depolymerization product does not exceed its solubility limits, assuming all of the polymer is converted to depolymerization products; and

(2) temperature conditions and aqueous concentrations of final depolymerization products are controlled so that at equilibrium the amount of low molecular weight oligomers is no greater than 7% of the theoretical, base on the amount of polymer used,

and recovering the depolymerization products from the hydrolysis zone.

4,578,511

METHOD OF PREPARING PURE BENZOIC ACID

Pietro P. Rossi, Garlasco; Paolo Senni, Colleferro, and Sergio Ferruzzi, Trieste, all of Italy, assignors to Chimica del Friuli S.p.A., Torviscosa and Snia BPD S.p.A., Milan, both of, Italy

Filed Mar. 9, 1984, Ser. No. 587,896
Claims priority, application Italy, Mar. 11, 1983, 20042 A/83
Int. Cl.⁴ C07C *51/42*
U.S. Cl. 562—494 **2 Claims**

1. A method of purifying benzoic acid, as obtained by catalytic oxidation of toluene and purification by rectification wherein the secondary streams are cycled back into the oxidation reactor, characterized in that the secondary streams leaving the stripping column are caused to undergo the following sequential steps:

(a) at least one distillation and at least one crystallization in an organic solvent;

(b) scrubbing of the crystals from (a) using the same solvent as in (a);

(c) cycling of the mother liquors from the crystallization as in (a) plus the mother liquors from (b) back into the dissolver;

(d) further scrubbing of the crystals from (b) using the same solvent as in (a), the scrubbing liquors being cycled back; and optionally

(d1) further scrubbing of the crystals as scrubbed in (d) with water.

4,578,512

PROCESS TO PRODUCE NOVEL FLUOROCARBON VINYL ETHERS AND RESULTING POLYMERS

Bobby R. Ezzell, Lake Jackson; William P. Carl, Angleton, and William A. Mod, Lake Jackson, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 158,532, Jun. 11, 1980, abandoned.
This application Feb. 4, 1982, Ser. No. 345,894
Int. Cl.⁴ C07C *69/65, 69/52*
U.S. Cl. 562—586 **9 Claims**

1. As a composition of matter, compounds represented by the formula

$$Y(CF_2)_a(CFR_f)_bCFR_f'-O-\left(\begin{array}{l}CF-CF_2-O\\ |\\ CF_2X\end{array}\right)_n-CF=CF_2$$

where

n=1 to 6;

X=Cl, Br or mixtures thereof when n>1

Y=an acid group or an acid derivative easily convertible to an acid group;

R_f and R_f' are independently selected from the group consisting of F, Cl, a perfluoroalkyl radical and a chlorofluoroalkyl radical;

a=0 or an integer greater than 0;

b=0 or an integer greater than 0.

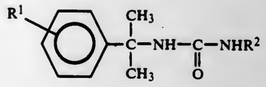
4,578,513

PROCESS FOR PREPARING PHENYLISOPROPYLUREA COMPOUNDS

Balwant Singh, Stamford, and Paul S. Waterman, Shelton, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Nov. 16, 1984, Ser. No. 672,038
Int. Cl.⁴ C07C *127/17*
U.S. Cl. 564—56 **10 Claims**

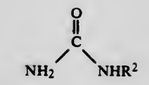
1. A process for preparing phenylisopropyl urea derivatives of the formula:



wherein R^1 is selected from hydrogen, alkyl, alkenyl, halogen, haloalkyl or R^2 and R^2 is selected from phenyl or alkyl-, alkoxy- or haloalkyl-substituted phenyl, said process comprising:

(a) providing a reaction mixture comprising:

(i) a substituted urea of the formula

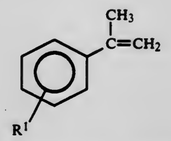


wherein R^2 is the same as defined above;

(ii) a highly polar aprotic solvent; and

(iii) an effective amount of an acid catalyst;

(b) thereafter, adding an alkenyl aromatic compound of the formula:



wherein R^1 is the same as described above; and

(c) stirring the reaction mixture of step (b) at a temperature of from about 20° to about 80° C. until formation of the phenylisopropylurea derivative is substantially complete.

4,578,514

SYNTHESIS OF SULFILIMINES

Daniel P. Getman, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Nov. 1, 1984, Ser. No. 667,180
Int. Cl.⁴ C07C *145/02*
U.S. Cl. 564—102 **24 Claims**

1. The process of preparing N-phenyl sulfilimines which comprises reacting a phenyl isocyanate with a dihydrocarbyl sulfoxide in the presence of strong acid effective to cause reaction of isocyanate with sulfoxide, and producing such sulfilimines.

4,578,515

PREPARING N-VINYLFORMAMIDE

Daniel J. Dawson, Los Altos, and Kenneth M. Otteson, Redwood City, both of Calif., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Division of Ser. No. 318,615, Nov. 5, 1981, Pat. No. 4,490,557.
This application Jun. 7, 1984, Ser. No. 618,420
Int. Cl.⁴ C07C *103/127*
U.S. Cl. 564—215 **3 Claims**

1. A process for preparing N-vinylformamide which comprises contacting a liquid admixture comprising formamide, acetaldehyde, and an ammonia scavenger with a catalytic amount of an acidic catalyst at a temperature greater than 50° C. and under conditions sufficient to thereby form an ethylidene bisformamide reaction product, separating said reaction product from the catalyst and recovering from it ethylidene bisformamide using a low residence time-high surface area evaporator, heating the recovered ethylidene bisformamide at a temperature of from 150° to 750° C. in the presence of an inorganic nonacidic surface catalyst for a period of time sufficient to pyrolyze the bisformamide and form a pyrolysis reaction product, and separating N-vinylformamide from the pyrolysis reaction product.

3. A process for preparing N-vinylformamide which comprises contacting a substantially water-free liquid admixture comprising formamide, acetaldehyde and acetic anhydride with a catalytic amount of a solid cation exchange resin catalyst for a period of 0.50 hours to 24 hours inclusive at a temperature of from 50° C. to 120° C. thereby forming an ethylidene bisformamide—containing reaction product, separating said reaction product from said catalyst, and recovering the ethylidene bisformamide by using a wiped film evaporator, heating the recovered ethylidene bisformamide at a temperature of 300° to 425° C. and the presence of marble chips for a period sufficient to pyrolyze the ethylidene bisformamide and form an N-vinylformamide-containing reaction product and recovering the N-vinylformamide from said reaction product.

4,578,516

PROCESS FOR PRODUCING DIMETHYLAMINE IN PREFERENCE TO MONO- OR TRIMETHYLAMINE BY VAPOR-PHASE CATALYTIC REACTION OF METHANOL AND AMMONIA

Yoshiro Ashina, Zushi; Takeyuki Fujita, Yokosuka; Michio Fukatsu, and Junsuke Yagi, both of Yokohama, all of Japan, assignors to Nitto Kagaku Kogyu Kabushiki Kaisha, Tokyo, Japan

Filed May 7, 1984, Ser. No. 607,679
Claims priority, application Japan, May 13, 1983, 58-82768
Int. Cl.⁴ C07C *85/06*
U.S. Cl. 564—479 **7 Claims**

1. In a process for producing dimethylamine through a reaction (a) between methanol and ammonia, (b) between methanol, a mixture of methylamines and ammonia, or (c) between a mixture of methylamines and ammonia in gas phase over a solid catalyst, the improvement wherein the solid catalyst is a mordenite type zeolite having an Na content of 0.2 to 2.1 g per 100 g of the catalyst and a total content of 0.01 to 0.20 mole of an alkali metal selected from the group of Na, K and Li per 100 g of the catalyst, and wherein the reaction is carried out at a temperature of 270° to 350° C. and at a methanol conversion of about 80 to 97.9%, thereby to produce dimethylamine in substantial preference to mono- or trimethylamine.

4,578,517

POLYALKYLENE POLYAMINES FROM ALKANOLAMINE AND AMMONIA OR AMINES USING GROUP IIIB METAL ACID PHOSPHATE CATALYSTS

Thomas A. Johnson, Orefield, and Michael E. Ford, Center Valley, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Sep. 16, 1983, Ser. No. 533,319
Int. Cl.⁴ C07C *85/06*
U.S. Cl. 564—479 **42 Claims**

1. A process for preparing a polyalkylene polyamine, which comprises:

contacting ammonia or a primary or secondary amine with an alkanolamine compound having an amino group and a primary or secondary hydroxy group in the presence of a catalytically effective amount of a Group IIIB metal acid phosphate at a temperature sufficient to effect reaction between the ammonia or amine and the alkanolamine compound under a pressure sufficient to maintain a substantial amount of the ammonia or amine in the reaction zone.

4,578,518

CATALYTIC (CALCINED CATALYST AND) PREPARATION OF LINEAR POLYETHYLENEPOLYAMINES (THEREWITH)

Steven H. Vanderpool, New Braunfels, and Lewis W. Watts, Jr., Austin, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Division of Ser. No. 455,158, Jan. 3, 1983. This application Dec. 22, 1983, Ser. No. 564,152
The portion of the term of this patent subsequent to Mar. 25, 2003, has been disclaimed.
Int. Cl.⁴ C07C *85/06*
U.S. Cl. 564—479 **6 Claims**

1. In a method wherein monoethanolamine is reacted with ethylenediamine in the presence of a phosphorus containing catalyst to provide an essentially noncyclic product comprising polyethylenepolyamines, the improvement for conducting said process on a continuous basis which comprises:

a. using, as a catalyst, thermally activated calcined pelleted

titania containing titanium triphosphate and having thermally chemically bonded to at least the surface thereof about 0.5 to about 10 wt.% of phosphorus, said catalyst having been prepared by treating titania pellets with phosphoric acid for a period of time ranging from about 0.5 to about 5 hours, thereafter water washing, recovering and drying the thus-treated pellets and then calcining the pellets at about 200° C. to about 800° C. for about 1 to about 24 hours,

b. continuously contacting a mixture of ethylene diamine and monoethanolamine in a molar ratio of about 1 to 5 moles of ethylenediamine per mole of monoethanolamine with said pelleted catalyst at a temperature of about 250° to about 400° C. and a pressure of about 500 to about 3000 psig. to obtain an essentially noncyclic reaction product.

4,578,519

CATALYTIC SYNTHESIS OF LINEAR POLYETHYLENEPOLYAMINES (POLYETHYLENEPOLYAMINE PREPARATION AND CATALYST)

John M. Larken, Austin, and Steven H. Vanderpool, New Braunfels, both of Tex., assignors to Texaco Inc. (Parent), White Plains, N.Y.

Division of Ser. No. 455,159, Jan. 3, 1983. This application Dec. 22, 1983, Ser. No. 564,587

Int. Cl.⁴ C07C *85/06*

U.S. Cl. 564—479 **6 Claims**

1. In a method wherein monoethanolamine is reacted with ethylenediamine in the presence of a phosphorus containing catalyst to provide an essentially noncyclic product comprising polyethylenepolyamines, the improvement for conducting said process on a continuous basis which comprises:

a. using, as a catalyst, thermally activated calcined pelleted titania having thermally chemically bonded to at least the surface thereof about 0.5 to about 10 wt. % of phosphorus, said catalyst having been prepared by treating titania pellets with polyphosphoric acid for a period of time ranging from about 0.5 to about 5 hours, and thereafter water washing, recovering and drying the thus-treated pellets,

b. continuously contacting a mixture of ethylene diamine and monoethanolamine in a molar ratio of about 1 to 5 moles of ethylenediamine per mole of monoethanolamine with said pelleted catalyst at a temperature of about 250° to about 400° C. and a pressure of about 500 to about 3000 psig. to obtain an essentially noncyclic reaction product.

4,578,520

PHLOROPHENONE DERIVATIVES, PROCESSES FOR PREPARING SUCH COMPOUNDS, USES AND PHARMACEUTICAL COMPOSITIONS OF PHLOROPHENONE COMPOUNDS

Theunis G. Fourie; Theodor G. Dekker; Friedrich O. Snyckers, and Cornelis J. van der Schyf, all of Pretoria, South Africa, assignors to Noristan Limited, Pretoria, South Africa

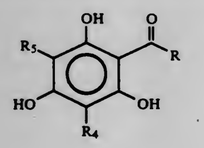
Division of Ser. No. 390,415, Jun. 21, 1982, Pat. No. 4,503,256. This application Dec. 7, 1984, Ser. No. 679,272

Claims priority, application South Africa, Jul. 2, 1981, 81/4480

Int. Cl.⁴ C07C *45/68*

U.S. Cl. 568—315 **18 Claims**

1. A process for preparing compounds of formula A



(A)

wherein

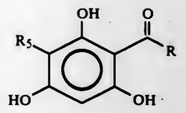
R is a branched or unbranched alkyl, cycloalkyl or aralkyl group, which group is optionally substituted by a halogen, hydroxy or alkoxy group;

R_4 is an alkyl, alkenyl or aralkyl group, which group optionally contains as a substituent an alkyl, aryl, aralkyl, halogen, hydroxy, or alkoxy group; and

R_5 is hydrogen, halogen, an alkyl, aralkyl, alkanoyl or aryl group, which group optionally contains as a substituent an alkyl, aryl, aralkyl, halogen, hydroxy or alkoxy group;

and pharmaceutically acceptable salts thereof;

which process comprises reacting a compound of formula B



(B)

wherein R and R_1 are as defined above, with an appropriate organic halide being R_4-halide wherein R_4 is as defined above in the presence of a cuprous chloride catalyst and a base being a carbonate base or a like base having a similar pH range.

4,578,521

SHAPE-SELECTIVE CATALYTIC OXIDATION OF PHENOL

Clarence D. Chang, Princeton, and Stuart D. Hellring, Plainsboro, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Feb. 4, 1985, Ser. No. 697,804

Int. Cl.⁴ C07C *39/08, 37/60*

U.S. Cl. 568—771 **14 Claims**

1. A process for shape-selective oxidation of phenol which comprises reacting phenol with hydrogen peroxide at a temperature between about 0°–150° C. in the presence of a zeolite catalyst having a Constraint Index between about 2–10 and an Alpha value greater than about 20, and producing hydroquinone product.

4,578,522

BIARYL ALDEHYDE

John F. Eaddy, III, Rte. 12, Box 127-A, Chapel Hill, N.C. 27514

Division of Ser. No. 529,767, Aug. 31, 1983, abandoned, which is a continuation of Ser. No. 371,581, Apr. 26, 1982, abandoned. This application Sep. 14, 1984, Ser. No. 650,981

Int. Cl.⁴ C07C *47/55*

U.S. Cl. 568—425 **1 Claim**

1. 4'-Trifluoromethyl-2-biphenylcarbaldehyde.

4,578,523

PROCESS FOR THE PREPARATION OF ALDEHYDES

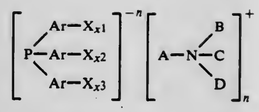
Helmut Bahrmann, Hamminkeln; Boy Cornils, Dinslaken; Werner Konkol, and Wolfgang Lipps, both of Oberhausen, all of Fed. Rep. of Germany, assignors to Ruhrchemie Aktiengesellschaft, Oberhausen, Fed. Rep. of Germany

Filed May 29, 1985, Ser. No. 738,822

Int. Cl.⁴ C07C *45/50*

U.S. Cl. 568—454 **5 Claims**

1. In a process for the preparation of aldehydes by reacting olefins with carbon monoxide and hydrogen in the liquid phase in the presence of water and rhodium in metallic form or as a compound as well as a water-soluble arylphosphine at temperatures of 20° to 150° C. and 1 to 200 bar (100 to 2×10^4 kPa), the improvement comprising that the water-soluble phosphine has the formula



where Ar is aryl and X is a sulfonic acid x^1, x^2 and x^3 are 0 or 1 with the proviso that at least one of x^1, x^2 or x^3 is 1, A is selected from the group consisting of an alkyl of 1 to 18 carbon atoms and aralkyl of 7 to 18 carbon atoms and B,C,D are alkyl of 1 to 4 carbon atoms and n is a whole number between 1 and 3.

4,578,524

CARBON DIOXIDE-ENHANCED MONOALKYLENE GLYCOL PRODUCTION

Brian T. Keen, Charleston, W. Va., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Mar. 28, 1984, Ser. No. 594,265

Int. Cl.⁴ C07C *31/20, 33/26, 35/14, 33/035*

U.S. Cl. 568—867 **15 Claims**

1. A process for the production of monoalkylene glycol comprising reacting a vicinal alkylene oxide with water in the presence of (a) a vanadate-containing adjuvant to enhance the selectivity of the reaction to monoethylene glycol, said vanadate-containing adjuvant comprising at least one dissociatable metavanadate, hydrogen pyrovanadate, pyrovanadate and orthovanadate anion such that when the vanadate anions present are characterized as a mole ratio of metavanadate to orthovanadate, the mole ratio is less than 2.2:1, and (b) carbon dioxide in the amount of between about (i) 0.5-M/O to (ii) 2.2-M/O moles of carbon dioxide per mole of vanadium atoms, wherein M/O is the calculated mole ratio of metavanadate to orthovanadate characterizing the vanadate anions, provided that at least 0.01 mole of carbon dioxide is provided per mole of vanadium atoms.

4,578,525

PROCESS FOR EXTRACTING POLAR ORGANIC COMPOUNDS, IN PARTICULAR LOWER ALIPHATIC ALCOHOLS, FROM THEIR AQUEOUS SOLUTIONS, AND FLUIDS PARTICULARLY SUITABLE FOR THIS PURPOSE

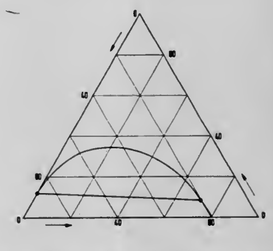
Harald Brückner, Berlin, Fed. Rep. of Germany, assignor to Krupp Industrietechnik Werk Buckau-Wolf, Grevenbroich; Starcosa GmbH, Brunswick and Versuchs- und Lehranstalt für Spiritusfabrikation und Fermentationstechnologie in Berlin, Berlin, all of, Fed. Rep. of Germany

Filed Sep. 26, 1983, Ser. No. 535,879

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1982, 32364962

Int. Cl.⁴ C07C *29/86, 31/08, 45/80*

U.S. Cl. 568—918 **17 Claims**



1. A process for separating polar organic compounds, in particular lower aliphatic alcohols, from their aqueous solutions by extracting the aqueous solution with a liquid extractant and separating the polar organic compound from the extract, wherein the aqueous solution is extracted with at least one liquid polyoxaalkanol, polyoxaalkanediol and/or polyoxaalkanepolyol which has a low solubility in water at 30° C., namely of less than 1% by mass, and a parameter, K_Z, which has a numerical value of at least 100 and is defined by the following equation:

$$K_Z = \frac{M}{\sqrt{2\,o + oh}}$$

in which "M" denotes the molar mass which is greater than 250 g/mol, "o" denotes the number of ether groups and "oh" denotes the number of hydroxyl groups, and in which compounds the numerical ratio of —CH(A)— groups to ether groups is within the range from about 2.3:1 to 10:1, where A represents hydrogen, CH_3 and/or OH.

4,578,526

SOLAR MODULE

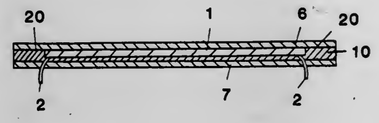
Akihiko Nakano, Itami; Hitoshi Matsumoto, Osaka; Hiroshi Uda, Ikoma; Yasumasa Komatsu, Sakai; Kiyoshi Kuribayashi, Hirakata, and Seiji Ikegami, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 31, 1984, Ser. No. 636,245

Claims priority, application Japan, Aug. 1, 1983, 58-141333

Int. Cl.⁴ H01L *27/14*

U.S. Cl. 136—251 **4 Claims**



1. A solar module comprising:
a glass superstrate;
a solar cell array comprised of a plurality of Group II-IV compound semiconductor solar cells, formed on said glass superstrate while leaving a margin along the periphery of said glass superstrate; and
a resin layer coated on said solar cell array and said peripheral margin of said glass superstrate, wherein said resin layer is made of a fluoropolymer derived from a compound containing a perfluoroalkylene group and active hydrogen atoms.

4,578,527

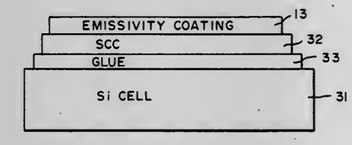
ARTICLES HAVING IMPROVED REFLECTANCE SUPPRESSION

James D. Rancourt, and William T. Beauchamp, both of Santa Rosa, Calif., assignors to Optical Coating Laboratory, Inc., Santa Rosa, Calif.

Filed Nov. 16, 1983, Ser. No. 552,294

Int. Cl.⁴ G02B *1/10*; H01L *31/04*; B64G *1/00*

U.S. Cl. 136—256 **19 Claims**



15. In a solar cell assembly, a solar cell, a solar cell cover covering the solar cell, the solar cell cover being formed of fused silica and an emissivity enhancement coating carried by the solar cell cover, the emissivity enhancement coating being formed of a spacer layer and an absorber layer, the spacer layer being characterized in that it is formed of a material having a low index of refraction and has an optical thickness ranging from approximately one-quarter of a wavelength and less, said absorber layer being characterized in that it is formed of a material which has a complex index of refraction which as a function of wavelength is relatively close to that of fused silica.

4,578,528

ELECTRICAL OUTLET BOX AND METHOD OF MANUFACTURING SAME

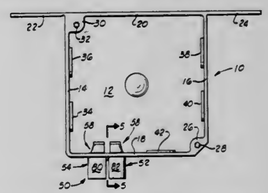
Richard J. Borsh, Chagrin Falls; Robert W. Ripley, Brecksville, and Harold T. Pate, Solon, all of Ohio, assignors to Thyssen-Bornemisza, Inc., (TBG Inc.), New York, N.Y.

Filed Jul. 29, 1983, Ser. No. 518,737

Int. Cl.⁴ H02G *3/08*

U.S. Cl. 174—65 G **2 Claims**

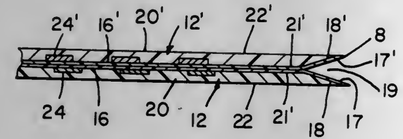
1. In combination, a hollow, synthetic resin electrical box, and a connector fitting for joining a tubular conduit to the box, comprising:
a back wall;
at least one side wall extending substantially normal to the back wall and forming with the back wall, a hollow, open sided enclosure;
a round hole in one of said side walls, said hole having a cylindrical, smooth-walled boundary, with said one side wall adjacent and surrounding said hole having a thickness of from about 0.05inch to about 0.25 inch;
a smooth-walled, cylindrical indentation in one of said side walls;
a cylindrical plug closing the bottom of said indentation, said plug projecting from the plane of the lastmentioned side wall into the interior of the box; and
a connector fitting extending into and through the hole and engaging the side wall of the box, said connector fitting including a pair of semi-cylindrical halves, each of said semi-cylindrical halves including:
a semi-cylindrical body portion located outside said box and having a larger diametric dimension than said hole, and having an axial length facilitating gripping said pair of body portions with the fingers and thumb extended around the outer side thereof whereby the connector fitting may be utilized to manually force a knockout plug out of said side wall to leave said round hole as said connector fitting is extended into and through the hole and attached to said side wall; and
at least two wedge-shaped end portions connected to each of said semi-cylindrical body portions, each of said wedge-shaped end portions being formed on a sector of



a cylinder, and each of said wedge-shaped end portions being located inside said box and including
a beveled radially outer surface which slopes axially toward the inside of said box, and also slopes radially inwardly; and
a semi-cylindrical lip at the axial end of said beveled radially outer surface farthest inside said box, said semi-cylindrical lip having an outer, semi-cylindrical surface formed on a uniform diameter, and said semi-cylindrical lip having a radiused inner side at its free, axially inner end farthest inside said box, whereby a conductor bearing against and contacting said radiused inner side at the free, axially inner end of said cylindrical lip will not be cut or unduly chafed by said contact with said inner side, and whereby said wedge-shaped end portions collectively form a generally cylindrical punch member by which a substantial axial force imposed upon said connector fitting and acting through said semi-cylindrical halves in the direction of said wedge-shaped end portions can be brought to bear on the semi-cylindrical lips at the axially inner end of the beveled radially outer surface of said wedge-shaped end portions to thereby facilitate forcing a plug out of said round hole at the time said connector fitting is extended into and through the hole for attachment to said side wall;
said connector fitting further having an annular external groove therearound at the intersection of said body portions with said wedge-shaped end portions, said groove receiving said cylindrical, smooth-walled boundary of said hole therein after said connector fitting has been used to press one of said plugs out of said hole; and

a flexible loop interconnecting said semi-cylindrical body portions to hold said semi-cylindrical body portions in a symmetrical, complementary relationship to each other prior to insertion thereof into said round hole.

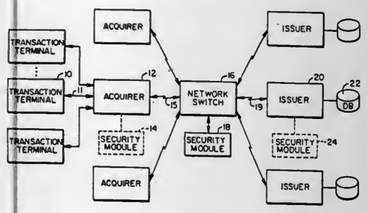
4,578,529
FLAT PEELABLE CABLE
Raymond J. Look, Largo, Fla., assignor to AMP Incorporated, Harrisburg, Pa.
Continuation of Ser. No. 508,701, Jun. 28, 1983, which is a division of Ser. No. 332,271, Dec. 18, 1981, abandoned. This application Aug. 2, 1984, Ser. No. 637,248
Int. Cl.[4] H01B 7/08
U.S. Cl. 174—117 FF **4 Claims**



4. A flat multiconductor cable of the type having two adjacent cable members separated by dielectric internal laminas,
a plurality of flat parallel linear conductors of each said cable member being disposed against respective sides of each said internal lamina and having a precise spacing between adjacent conductors in each cable member, said conductors having been adhered to each said internal lamina while being drawn through aligning means with said internal laminas;
two said dielectric internal laminas with continuous bonding therebetween separating said cable members, each said internal lamina has a first surface and a second surface, said first surfaces being juxtaposed, said second surfaces being disposed against respective cable members, said internal laminas having continuous bonding between said first surfaces thereof and continuous bonding between the second surfaces thereof in adjacent cable members, said continuous bonding between said second surfaces of said internal laminas and said cable members providing greater adhesion than the bonding between the first surfaces of said internal laminas, whereby the cable members may be separated by peeling apart the first surfaces of said internal laminas without disturbing the bonding between the internal laminas and the adjacent cable members; and
a dielectric external layer disposed against each said internal lamina to overlie and enclosed said conductors, said external layers having been extruded against said conductors and said internal laminas.

4,578,530
END-TO-END ENCRYPTION SYSTEM AND METHOD OF OPERATION
Howard M. Zeidler, Palo Alto, Calif., assignor to VISA U.S.A., Inc., San Mateo, Calif.
Continuation-in-part of Ser. No. 278,001, Jun. 24, 1981, Pat. No. 4,423,287. This application Dec. 7, 1983, Ser. No. 558,916
The portion of the term of this patent subsequent to Dec. 27, 2000, has been disclaimed.
Int. Cl.[4] H04L 9/00
U.S. Cl. 178—22.09 **12 Claims**

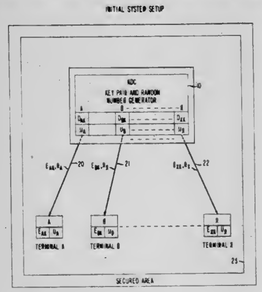
7. Improved network/interchange transaction execution apparatus of the type comprising a plurality of issuer stations, each having a host data processor which stores account information for a plurality of accounts, a plurality of transaction terminals, a plurality of acquirer stations, each being connected to at least one, separate transaction terminal, and a network switch station communicatively interconnected between the acquirer stations and the issuer stations, and further comprising:
(a) means at each transaction terminal for receiving the transaction data and a personal identification number, PINc, from a user, for encrypting the PINc with a first session key, KS_n, and for transmitting to the acquirer station connected to said transaction terminal, a network/interchange request message comprised of the encrypted PINc and the transaction data;
(b) means at said acquirer station for receiving the network/interchange request message from said transaction terminal and for retransmitting the network/interchange request message, including the session key encrypted in a second master key, $e[KM_2](KS_n)$, to the network switch;
(c) means at the network switch for retransmitting the network/interchange request message to a particular issuer station as specified in transaction data of the network/interchange request and for reencrypting the session key from second master key encryption to encryption in a third master key, $e[KM_3](KS_n)$;
(d) means at said issuer station for receiving the network/interchange request message, including the encrypted session key, $e[KM_3](KS_n)$, for decrypting the session key, for encrypting the encrypted PINc, for accessing the data base for the account specified in the transaction data, for comparing and verifying the PINc with the corresponding PIN stored in the data base for that account for specifying the authorization code in response to the transaction data, and for transmitting the authorization code to the network switch for relay to said acquirer station;



(e) means at said acquirer station for generating, encrypting and storing a plurality of encrypted pairs of session keys for each terminal, each key being encrypted once in a first master key and once in a second master key and, in addition, computing a session key authentication code SKAC unique to each encrypted pair of session keys, and means at said acquirer station for appending a new first master key encrypted session key $e[KM_1](KS_{n+1})$ along with the corresponding $SKAC_{n+1}$ to the authorization code and relaying the authorization code to the transaction terminal; and
(f) means at said transaction terminal for recomputing and verifying the $SKAC_{n+1}$ and acting on the authorization code to respond to the transaction terminal user.

4,578,531
ENCRYPTION SYSTEM KEY DISTRIBUTION METHOD AND APPARATUS
Joseph R. Everhart, Holmdel, and Jeffrey G. Osborn, Old Bridge, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Jun. 9, 1982, Ser. No. 386,805
Int. Cl.[4] H04K 1/02
U.S. Cl. 178—22.08 **18 Claims**

1. A key distribution method for communicating cipher keys between two terminals via a key distribution center, KDC, said method comprising
establishing between any one terminal and said key distribution center a terminal-unique cipher key for controlling the generating of session keys,
cooperating by transmitting information using said established terminal-unique cipher key between said KDC and said one terminal on a subsequent connection between said KDC and said one terminal to establish a session key for

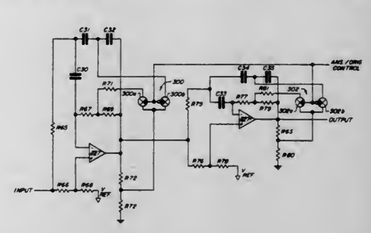


use by said one terminal in a subsequent secure transmission between said one terminal and a second terminal, and changing said priorly established terminal-unique cipher key in response to use of said priorly established terminal-unique cipher key on said subsequent connection between said one terminal and said KDC.

4,578,532
METHOD AND APPARATUS FOR CODE TRANSMISSION
Wernhard Markwitz, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany
Filed Jun. 2, 1982, Ser. No. 384,235
Claims priority, application Fed. Rep. of Germany, Jun. 11, 1981, 3123168
Int. Cl.[4] H04L 9/04
U.S. Cl. 178—22.13 **6 Claims**

1. A method for establishing a transmission code simultaneously at a transmitting and a receiving station for the encoded subsequent transmission of messages, each of said stations having cipher machines for producing a station code individual to said station, comprising the steps of:
encoding the transmission code at the transmitting station with the transmitting station code and a first password and a fourth password known to both stations;
transmitting the encoded result from the transmitting station to the receiving station;
decoding the result at the receiving station using said first password, and encoding the result of such decoding with the station code of said receiving station and a second password;
transmitting the new encoded result back to the transmitting station;
decoding the transmission at the transmitting station using said second password and the said station code of the transmitting station;
encoding the decoded result with a third password and trasmitting the newly encoded result to the receiving station; and
decoding the trasmission at the receiving station with said third passwod and said forth password and the station code of said receiving station in order to derive the transmission code.

4,578,533
SWITCHABLE LINE POWERED MODEM
O. Leon Pierce, Huntsville, Ala., assignor to Universal Data Systems, Inc., Huntsville, Ala.
Continuation of Ser. No. 203,111, Nov. 3, 1980, abandoned. This application Feb. 17, 1984, Ser. No. 580,279
Int. Cl.[4] H04M 11/00
U.S. Cl. 179—2 DP **18 Claims**



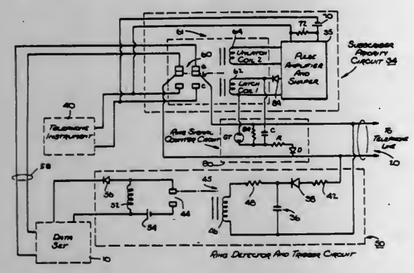
18. For use in a telephone line powered modem which includes a receiver operative to provide data signals derived from signals received on a telephone line, and a transmitter operative in response to data from a source to provide modulated data signals for transmission on the telephone line, a switchable filter operative wholly in response to telephone line power and comprising:
at least one active filter comprising a feedback network which includes solid state low power switch means;
in a first switch mode the filter exhibits a band-pass characteristic in one band of frequencies and a band-reject characteristic in another band of frequencies;
in a second switch mode the filter exhibits the band-pass characteristic in the other band of frequencies and the band-reject characteristic in the one band of frequencies;
wherein the band-reject characteristic exhibits a notch.

4,578,534
TIME INDEPENDENT DATA TRANSMISSION SYSTEM
Edwin F. Shelley, 339 Oxford Rd., New Rochelle, N.Y. 10804
Filed Aug. 23, 1984, Ser. No. 643,450
Int. Cl.[4] H04M 11/08
U.S. Cl. 179—2 C **11 Claims**

1. An apparatus coupling a telephone data set and a telephone instrument to a telephone transmission line so as to enable the communication of data between the data set and a remote location without interfering with normal use of the telephone instrument, comprising:
first means, coupled to said telephone transmission line, said telephone instrument and said data set and normally connecting said data set to said telephone transmission line, for disconnectingg said data set from said telephone transmission line and connecting said telephone instrument to said telephone transmission line in response to any of selected ones of a plurality of first electrical signals trans-

mitted on said telephone transmission line, said first signals each being indicative of a call from a caller on said telephone transmission line, said first means preventing disconnection of said data set in response to a selected one of said first signals;

second means, coupled to said telephone transmission line and said data set, for detecting any of said first electrical signals transmitted on said telephone transmission line



without answering the call and for generating a second electrical signal when any of the first electrical signals on said telephone transmission line has terminated, indicating that the caller has hung up;

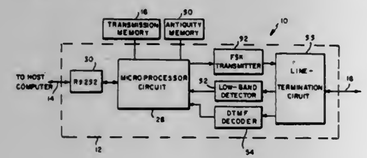
said data set being adapted to communicate data via said first means in response to the generation of said second electrical signal after said selected one of said first electrical signals has terminated.

4,578,535

VIDEOTEX SYSTEM

Richard M. Simmons, Cambridge, Mass., assignor to Telelogic, Inc., Cambridge, Mass.

Filed May 8, 1984, Ser. No. 608,115
Int. Cl.[4] H04M *11/00*
U.S. Cl. 179—2 DP **7 Claims**



4. A communications module for sending digital signals representing display characters and display-screen positions at which they are to be displayed, the communications module comprising:

A. a transmission memory including transmission-memory locations, associated with display positions in an intended display, for containing display codes representing display characters to be displayed at the display positions, the transmission memory being operable to have display codes written into the transmission-memory locations and to have display codes read therefrom;

B. an antiquity memory including antiquity-memory locations, each antiquity-memory location being associated with a transmission-memory location;

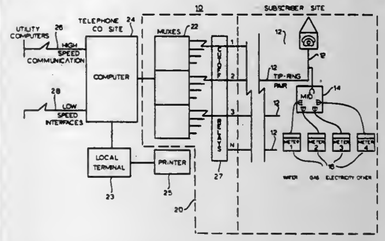
C. a control circuit, connected to write information into and read information from the antiquity and transmission memories and adapted to receive information from a data source, for writing information from the data source into transmission-memory locations, for, upon writing information into a transmission-memory location, resetting the contents of the antiquity-memory location associated therewith to indicate that the number of transmissions since the last writing is zero, for repeatedly transmitting the contents of the transmission memory, and for, upon transmission of the contents of a transmission-memory location, modifying the contents of the antiquity-memory location associated therewith to increment the number of transmissions indicated thereby, the control circuit preferentially transmitting the contents of the transmission-memory locations associated with antiquity-memory locations whose contents indicate the lowest number of transmissions since data were last written into those transmission-memory locations.

4,578,536

CENTERPOINT AUTOMATIC METER READING SYSTEM

Stewart W. Oliver, Venice, and John Cosgrove, Playa del Rey, both of Calif., assignors to International Teldata Corp, Las Vegas, Nev.

Filed Oct. 19, 1983, Ser. No. 543,372
Int. Cl.[4] H04M *11/00*
U.S. Cl. 179—2 AM **5 Claims**



1. A utility meter reading system for sending utility usage information over a plurality of telephone lines to a telephone central office comprising:

a plurality of interface means, connected to serve a plurality of utility meter locations, at least one interface means coupled to each of the telephone lines and each interface means coupled to at least one utility usage monitor for receiving usage information therefrom and for sending alternating current representations of the usage information over its discrete telephone line to a telephone central office responsive to receiving at least one distinct alternating current interrogation signal from its discrete telephone line;

means establishing a continuous ON-HOOK direct current connection between said central office and said plurality of interface means via said telephone lines;

a plurality of multiplexer means at said central office continuously connected to a preselected group of said telephone lines for multiplexing signals communicated between said preselected group of telephone lines and said central office;

means at said telephone central office for sending at least one distinct alternating current interrogation signal via said multiplexer means to a plurality of said interface means over each of the plurality of telephone lines;

computer means for selecting each of a plurality of said multiplexer means;

said computer means selecting one of a plurality of telephone lines for receipt of said interrogation signal;

means at said central office for passing ON-HOOK direct current between said central office and said telephone lines whereby said system establishes continuous direct current and alternating current coupling to said telephone lines during ON-HOOK conditions;

means at said telephone central office for receiving the plurality of alternating current representations of utility usage information from said plurality of interface means;

means at said telephone central office for converting the alternating current representations into a plurality of digital representations, each digital representation being a digital representation of utility usage information from a single utility usage meter location; and,

means for communicating the plurality of digital representations to a utility usage information device;

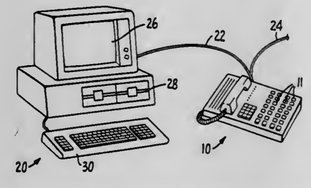
whereby said system allows the monitoring of any of a plurality of remote utility meters selectively under the control of a computer of any ON-HOOK telephone line without the necessity of dialing up any line.

4,578,537

TELECOMMUNICATION APPARATUS SERVING AS AN INTERFACE BETWEEN A DIGITAL COMPUTER AND AN ANALOG COMMUNICATION MEDIUM

Federico Faggin, Los Altos Hills; Jerry A. Klein, Los Altos; Lauren F. Yazolino, Oakland; Robert Korody; Eric P. L. Ha, both of Cupertino, all of Calif., and Stephan Kerman, Southbury, Conn., assignors to International Remote Imaging Systems, Inc., Chatsworth, Calif.

Filed Aug. 5, 1983, Ser. No. 520,738
The portion of the term of this patent subsequent to Jun. 18, 2002, has been disclaimed.
Int. Cl.[4] H04M *11/00*
U.S. Cl. 179—2 DP **2 Claims**
MICROFICHE APPENDIX INCLUDED
(9 Microfiche, 550 Pages)



1. An interface apparatus between a digital computer and an analog communication medium, said interface apparatus comprising:

telephony means for transmitting and receiving voice signals to and from said medium;

modem means for for communication with said computer and said medium for transmitting and receiving data signals to and from said medium for said computer;

switch means interposed between said communication medium said telephony means, and said modem means; said switch means are adapted to connect said medium and said telephony means and said modem means in a first position and in a second position, wherein in said first position said telephony means are connected to transmit and to receive voice signals to and from said medium and said modem means are connected to receive data carrier signals from said medium; and wherein in said second position, said telephony means are disconnected from said medium and said modem means are connected to transmit and to receive digital data signals to and from said medium;

control means for controlling said switch means between said first position and said second position; said control means for automatically switching said switch means from said first position to said second position when said apparatus transmits data signals to said medium or when said modem means detects said data carrier signals; and said control means for automatically switching said switch means from said second position to said first position when said apparatus terminates the transmission of digital data signal to said medium or when said modem means ceases to receive data signals from said medium; and

interrupt means for interrupting the operation of said computer for causing said computer to be in communication with said modem, when said control means causes said switch means to be in the second position;

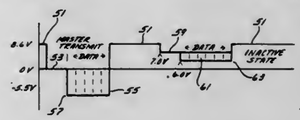
whereby said computer being in communication with said apparatus.

4,578,538

METHOD AND APPARATUS FOR COMMUNICATING DIGITAL SIGNALS OVER TELEPHONE LINES

Gregory A. Pascucci, Waukesha, and Paul G. Kucharski, Franklin, both of Wis., assignors to Johnson Service Company, Milwaukee, Wis.

Filed May 16, 1984, Ser. No. 610,963
Int. Cl.[4] H04M *11/00*; H04Q *1/38*
U.S. Cl. 179—2 DP **12 Claims**



1. A method for effecting the communication of digital signals over telephone lines and including the steps of:

generating a voltage at a first level for providing an inactive state signal directed to a plurality of slave transceiver units;

generating a voltage at a second level for providing a first carrier detect signal directed to said slave units;

generating a digitally-encoded first data signal directed to said slave units and having a peak amplitude at a third voltage level;

generating a voltage at a fourth level for providing a second carrier detect signal to a master transceiver unit, and;

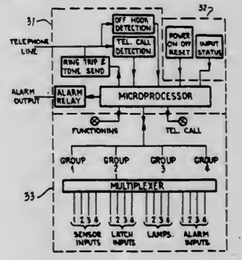
generating a digitally-encoded second data signal having a peak amplitude at a fifth voltage level and directed to said master transceiver unit.

4,578,539

INTERROGATION DEVICE

Leslie C. Townsing, Victoria, Australia, assignor to Remote Interrogations Pty. Ltd., Victoria, Australia

Filed Aug. 10, 1983, Ser. No. 521,667
Int. Cl.[4] H04M *11/04*
U.S. Cl. 179—2 A **10 Claims**



1. An interrogation unit for connecting into an installation via sensing elements connected to sense required information in the installation, said interrogation unit having signal supplying means for supplying signals indicative of the condition of each of various sensors in the installation, and trigger circuit means activatable upon recipt of a request signal to transmit said signals for each of the sensors in turn, said signal supplying means including tone generating means which generates two different tones and being connected to either transmit said tones or not to transmit said tones, whereby to indicate that

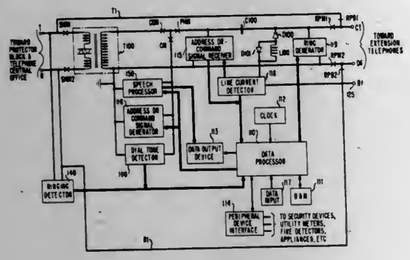
any particular sensor has changed from its initial condition or not, a first of said tones being used for identifying a group of sensors whilst the second of said tones being used for identifying particular sensors in that group.

4,578,540

TELECOMMUNICATIONS SYSTEMS

Kevin E. Borg, Indianapolis; William P. Halas, Carmel; Hans G. Mattes, Indianapolis; Paul M. McLear, Carmel, and Lester L. White, Indianapolis, all of Ind., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 20, 1982, Ser. No. 451,235
Int. Cl.[4] H04M *11/00, 1/00*
U.S. Cl. 179—2 A **17 Claims**



1. A telecommunications system for connection to a telephone network

CHARACTERIZED BY

means for intercepting telephone calls to and from the telephone network, the intercepting means connected between the telephone network and a single pair of conductors to which one or more telephone station sets are connected in parallel, the station sets having signal generating means, said intercepting means comprising

means for receiving address and command signals from the telephone station sets over the single pair of conductors,

data processing means responsive to the address of command signals receiving means,

means responsive to said data processing means for controlling the connection of the telephone station sets to the telephone network, and

means for powering the telephone station sets.

4,578,541

TELEPHONE LINE INTERFACE CIRCUIT

David E. Dodds, Saskatoon, Canada, assignor to Danby Systems Ltd., Saskatoon, Canada

Filed Oct. 24, 1983, Ser. No. 544,952
Claims priority, application Canada, Aug. 26, 1983, 435476
Int. Cl.[4] H04M *3/02, 19/02*
U.S. Cl. 179—18 FA **27 Claims**

1. An interface circuit for providing power and signal voltages to a transmission line, said interface circuit comprising:

first and second terminal means respectively for connecting the circuit to the TIP and RING wires of a transmission line;

capacitance means connected with said terminal means;

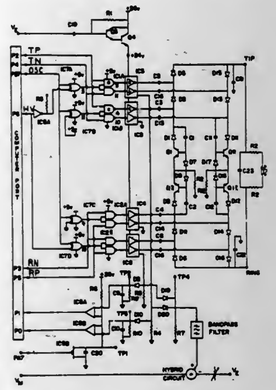
charge pump means for charging said capacitance means, said charge pump means including:

a first diode means; a second diode means having first and second leads;

and first and second isolating capacitor means each including an input side lead and a line side lead, said line side lead of said first isolating capacitor means being connected with said first lead of said second diode means and said line side lead of said second isolating capacitor means being connected with said second lead of said second diode means;

said first diode means being connected in series with said first lead of said second diode means, said first and second diode means being connected in series between said first and second terminal means for permitting passage of current in one direction between said first and second terminal means;

driving voltage means for alternately applying positive and negative voltage differences between said input side lead



of said first isolating capacitor means and said input side lead of said second isolating capacitor means; and

a controlling means for controlling said driving voltage means, said controlling means comprising:

mode control means for starting and stopping application of said alternating positive and negative voltage differences and

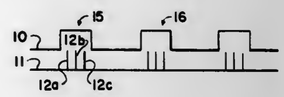
modulating means for modulating said alternating positive and negative voltage differences in response to an input signal.

4,578,542

LINE POWERED FLASHER CIRCUIT FOR RINGING SIGNAL

Robert J. Alderman, 3406 G-7 Ranch Rd., Ruskin, Fla. 33570

Filed May 7, 1984, Ser. No. 607,784
Int. Cl.[4] H04M *11/02*
U.S. Cl. 179—84 L **11 Claims**



1. A telephone line powered flasher circuit responsive to a ringing signal on said telephone line comprising in combination:

coupling and rectification means having a characteristic first time constant connected to said telephone line, including means capacitively coupling a diode rectifier to said telephone lines for charging a storage capacitor in response to the provision of said ringing signal on said telephone line;

a gas-filled light-emitting tube connected to said storage capacitor;

triggering means connected to said gas-filled light-emitting tube and said storage capacitor for causing said tube to conduct in response to said charging of said storage capacitor, said triggering means including a pulse transformer having a secondary winding connected to said tube and a primary winding connected to a switching device, said switching device being triggered by the presence of a predetermined voltage at a first point; and

a resistance-capacitance circuit, characterized by a second time constant, connected to said first point and to said storage capacitor for controlling the rate of change of voltage at said first point, said second time constant being at least five times greater than said first time constant;

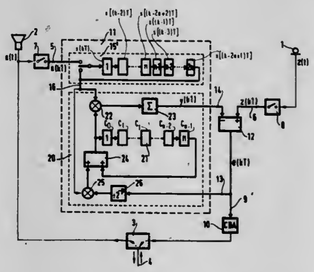
whereby said tube is caused to flash in response to said provision of said ringing signal on said telephone line.

4,578,543

DIGITAL ECHO CANCELLER

Jean Le Bourlot, Saint-Cheron, and Michel Lévy, Gometz-la-Ville, both of France, assignors to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Filed Dec. 20, 1982, Ser. No. 451,227
Claims priority, application France, Dec. 23, 1981, 81 24077
Int. Cl.[4] H04B *3/20*
U.S. Cl. 179—170.2 **3 Claims**



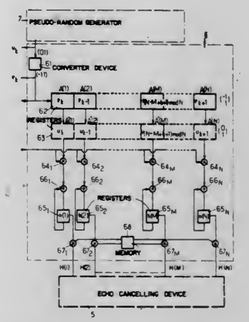
1. A digital echo canceller for use in telephone equipment having first and second channels such that an originating telephone signal x(t) on the first channel is capable of giving rise to a real echo telephone signal z(t) on the second channel, the telephone signals being base band telephone signals, the canceller comprising an adaptive filter for generating a synthetic echo signal y(t) from the originating signal x(t), and means for combining the real echo signal z(t) and the synthetic echo signal y(t) to substantially cancel the real echo signal, thereby leaving a residual echo signal e(t), said adaptive filter adapting itself in such a manner as to minimize the correlation between the originating signal x(t) and the residual echo signal e(t) and comprising processor means and a non-recursive time domain transversal filter constituted by a delay line with intermediate tapping points, said adaptive filter receiving successive signal samples derived by sampling the originating signal x(t) at a sampling rate of 1/T, and being arranged during each sampling period T to weight samples available at said tapping points using a set of weighting coefficients, to sum the weighted samples to produce a sample of the synthetic echo signal y(t), and to update the weighting coefficients; wherein said tapping points along the delay line are separated by a unit time interval which is equal to twice the sampling period T.

4,578,544

INITIALIZATION DEVICE FOR ECHO CANCELLING DEVICE AND APPLICATION THEREOF TO REMOTE ECHOS

Jean-Marc M. Colin de Verdiere, Paris, and Patrice R. Langlois, Saint Maur, both of France, assignors to Societe Anonyme de Telecommunications, Paris, France

Filed Dec. 6, 1982, Ser. No. 447,242
Claims priority, application France, Dec. 9, 1981, 81 22984
Int. Cl.[4] H04B *3/20*
U.S. Cl. 179—170.2 **2 Claims**



1. Initialization device for adaptative echo cancelling device, said adaptative echo cancelling device comprising a transversal filter with N coefficients and means for constantly updating said N coefficients after said initialization device has provided initial values of said N coefficients, said echo cancelling device being connected in shunt with an echo path between an emission line and a reception line, said initialization device having a first output connected to said emission line, N outputs connected to said echo cancelling device, a first input connected to said reception line and a second input connected to a pseudo random generator providing a sequence of N binary samples $u_1 \ldots u_k, \ldots u_n$, said initialization device comprising:

first converting means connected between said second input and said first output for deriving a sample e_k from every binary sample u_k by the relation:

$$e_k = 2u_k - 1$$

a shift register, connected to the output of said first converting means, and comprising N cells

$$A(1), \ldots A(M), \ldots A(N)$$

to store

$$e_k, \ldots, e_{(N-M+k+1) \text{ modulo } N}, \ldots, e_{k+1}$$

every cell being provided with one output,

a set of N second converting means connected to said outputs of said cells, for deriving a sample $u_{(N-M+k+1) \text{ modulo } N}$ from every sample $e_{(N-M+k+1) \text{ modulo } N}$ stored in every said cell A(M), by the relation:

$$u_{(N-M+k+1) \text{ modulo } N} = (e_{(N-M+k+1) \text{ modulo } N+1})/2$$

a set of N multipliers, ever multiplier having one input connected to said reception line, and another input connected to an output of one of said N second converting means,

a set of N addition circuits, every addition circuit having a first input connected to an output of one of said N multipliers,

a set of N registers, every register having an input connected

an output of one of said N addition circuits, and an output connected to another input of said one of said N addition circuits, and to one of said N outputs of said initialization device.

4,578,545

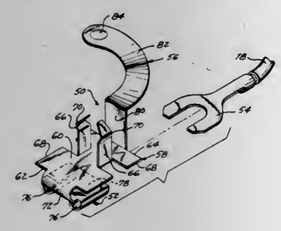
CONTACT AND TERMINAL FOR TELEPHONE TRANSMITTER

Walter M. Phillipson, Woodside, N.Y., assignor to Stewart Stamping Corp., Yonkers, N.Y.

Filed May 3, 1984, Ser. No. 606,899

Int. Cl.⁴ H01R *4/00, 9/00*

U.S. Cl. 179—178 **18 Claims**



1. An electrical contact and terminal device adapted to be affixed to a transmitter cup of a telephone handset for effecting electrical coupling between a transmitter contact and a conductor terminal, the transmitter cup including a base wall in which at least one opening is formed and a peripheral side wall, comprising:

a fastening portion including a substantially planar base portion having opposed first and second edges and a pair of ears integrally extending from said planar base portion and forming substantially right angles therewith;

a contact portion integrally extending from said first edge of said planar base portion, said contact portion including a first straight portion integrally extending from said first edge of said planar base portion and forming a substantially right angle therewith and a second portion integrally extending from said first straight portion and forming an angle with a plane parallel to said planar base portion;

a connector portion integrally extending from said second edge of said planar base portion including means for electrically engaging the contact terminal of the conductor; and wherein

said device is formed of a single piece of conductive sheet metal.

4,578,546

ELECTRIC TRACTION CURRENT-COLLECTOR

Ian C. Ferguson, Swansea, Wales, assignor to Morganite Electrical Carbon Limited, Swansea, Wales

PCT No. PCT/GB82/00300, § 371 Date Jun. 20, 1983, § 102(e) Date Jun. 20, 1983, PCT Pub. No. WO83/01419, PCT Pub. Date Apr. 28, 1983

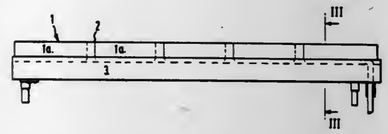
PCT Filed Oct. 21, 1982, Ser. No. 514,803

Claims priority, application United Kingdom, Oct. 22, 1981, 8131912

Int. Cl.⁴ B60L *5/20, 5/32, 5/14*

U.S. Cl. 191—87 **3 Claims**

1. In a carbon current-collector block being a component of means for contacting and collecting electric power from a railway power conductor, said block comprising means housing a tubular contrainer for fluid, means for fluid connection of said container to carrier means for said block, said carrier means being operable by fluid pressure to maintain said block in contact with the conductor or to effect retraction of the block from the conductor on occurrence of change of fluid condition within the container due to rupture thereof; the improvement comprising the provision of a tubular container which is distensible to bursting under a given pressure of fluid supplied through said fluid connection means, said fluid connection means being substantially non-distensible at said given fluid pressure and being connected to said container within said housing means so that no distensible part of said container extends outside said housing, and said housing means forming a complete support and enclosure of said container, limiting



distention of said container within said housing means and preventing bursting of said container only if and so long as said support thereof is complete, such that a construction or assembly fault, a crack or other incipient failure or other defect in complete support results in bursting of the container and retraction of the block from the conductor without requiring rupture of the container directly by the conductor or some other agency.

4,578,547

ELECTRIC SWITCH

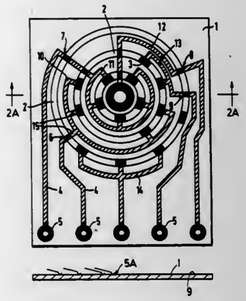
Horst H. Günther, Ansbach, and Hermann F. Oesterle, Lauf, both of Fed. Rep. of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Oct. 1, 1984, Ser. No. 656,700

Claims priority, application Fed. Rep. of Germany, Oct. 5, 1983, 3336130

Int. Cl.⁴ H01H *19/54, 9/00*

U.S. Cl. 200—11 DA **5 Claims**



1. A printed circuit board for an electric switch and comprising:

conductors printed on said board and being coated with a layer of a noble material so as to form fixed contacts coacting with associated switch moving contacts;

said fixed contacts being intermittently disposed along predetermined contact paths on said circuit board;

said fixed contacts being linked and intersected by connecting conductors spaced apart from and linearly following substantial positions of said contact paths.

5. A printed circuit board for an electric switch and comprising:

conductors printed on said board and being coated with a layer of noble material as to form fixed contacts coacting with associated switch moving contacts;

said fixed contacts being intermittently disposed along predetermined contact paths on said circuit board;

said fixed contacts linked by connecting conductors spaced apart from said contact paths;

the fixed contacts connected to said corresponding connecting conductors by link webs radially extending and intersecting said contact paths, and forming fixed contacts at intersections with said paths;

said fixed contacts and said connecting conductors located along substantially concentrical paths;

said connecting conductors covered by a layer of said noble metal at intersections with said contact paths.

4,578,548

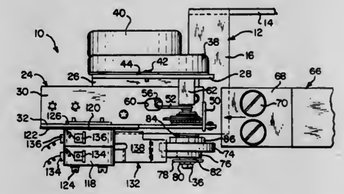
SWITCHING DEVICE FOR A COIN CONTROLLED MACHINE

Harry Greenwald, Whitestone, and Pierre Lier, Wantagh, both of N.Y., assignors to Kidde, Inc., Clifton, N.J.

Filed Oct. 31, 1984, Ser. No. 666,687

Int. Cl.⁴ H01H *7/00*

U.S. Cl. 200—38 F **23 Claims**



1. A switching device for a coin controlled machine in which the switching device is actuated in response to completion of a predetermined number of cycles of an operator means, the switching device comprising:

a machine activating switch having an operative state and an inoperative state;

a homing switch having an operative state and an inoperative state, said homing switch when in its operative state serving to return said machine activating switch to its inoperative state;

a shaft rotatably mounted and disposed for rotation a first predetermined angular increment each time the operator means cycles;

a first switch actuating mechanism operatively coupled to said shaft for actuating said machine activating switch, said first mechanism advancing a second predetermined increment upon each angular incremental rotation of said shaft, said first mechanism advancing from an initial inoperative position to an actuation position, the number of second predetermined increments between said initial inoperative position and said actuation position being selectable;

a second switch actuating mechanism operatively coupled to said shaft for actuating said homing switch, said second mechanism advancing from an initial inoperative position to an actuation position upon rotation of said shaft;

the initial inoperative position of one of said first and second switch actuating mechanisms being adjustable relative to the initial inoperative position of the other one of said switch actuating mechanisms;

whereby the selection of the number of second predetermined increments will determine the number of first predetermined increments required to advance said first switch actuating mechanism to its actuation position thereby requiring a corresponding number of cycles of the operator means to effect activation of the coin controlled machine.

4,578,549

SNAP ACTION ELECTRICAL SWITCH

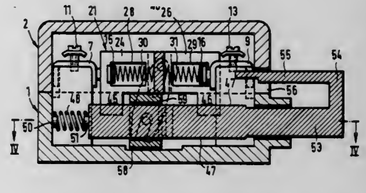
Heinz Grunst, and Heinz Kleine, both of Marienheide, Fed. Rep. of Germany, assignors to Square D Starkstrom GmbH, Marienheide, Fed. Rep. of Germany

Filed Aug. 29, 1984, Ser. No. 645,845

Claims priority, application European Pat. Off., Sep. 8, 1983, 83 108849.7

Int. Cl.⁴ H01H *15/18*

U.S. Cl. 200—76 **21 Claims**



1. A snap-action switch, particularly for end switches or limiting keys, comprising a housing; a support; two contact bridges carrying contacts and being movably guided in said support; stationary contacts; means for displacing said support and said contact bridges; said displacing means, said support, said contact bridges and said stationary contacts being accommodated in said housing; an actuating push rod; and spring-elastic means interconnected between said push rod and said displacing means, said push rod being connected to said spring-elastic means and actuated and displaced from outside of said housing in two opposite directions so as to displace said contact bridges by said spring-elastic means, said displacing means and said support toward and away from said stationary contacts, said displacing means displacing said contact bridges during the switching such that the direction of the displacement of said contact bridges corresponds to the direction of the displacement of said push rod; said displacing means including two double-armed levers positioned in said housing and cooperating with said support for reversing the direction of displacement of said contact bridges.

4,578,550

ELECTRICAL, MEDIUM VOLTAGE, SWITCHING MECHANISM

Arnold Efinger, Trossingen, Fed. Rep. of Germany, assignor to Wickmann-Werke Böblingen GmbH, Böblingen, Fed. Rep. of Germany

Filed Nov. 29, 1984, Ser. No. 676,070

Claims priority, application Fed. Rep. of Germany, Nov. 29, 1983, 3343099

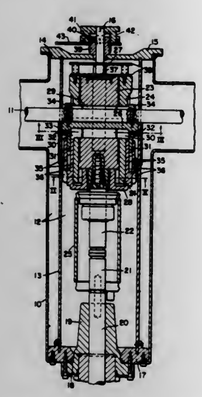
Int. Cl.⁴ H01H *33/66*

U.S. Cl. 200—144 B **9 Claims**

1. An electrical, medium voltage, switching mechanism, which includes a casing having a gaseous or liquid insulating material filling; in said casing, between a cable connection and a bus bar, a change-over switch, which can alternately switch between a phase contact and a ground contact, follows a load disconnector, which is in the form of a vacuum switching tube, and has a fixed contact piece and an axially movable cooperating contact piece;

the improvement comprising a common actuating element for both said load disconnector and said change-over

switch, said actuating element being in the form of an axially displaceable shaft which is displaceable relative to



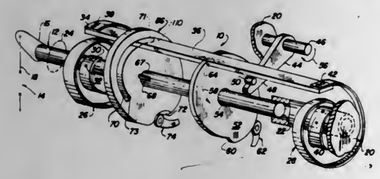
said load disconnector and is rotatable relative to said change-over switch.

4,578,551

OPERATING MECHANISM FOR ELECTRICAL SWITCHES

Chester H. Lin, Skokie, Ill., assignor to S&C Electric Company, Chicago, Ill.

Filed Apr. 10, 1985, Ser. No. 721,613
Int. Cl.[4] H01H *3/00*
U.S. Cl. 200—153 SC **2 Claims**



1. An operating mechanism for an electrical switch, the operating mechanism being capable of immediately reopening the switch after its closure, the operating mechanism comprising:

a frame;

a carriage movable between first and second positions;

a switch operating member to effect opening and closing of a switch and being movable between respective first and second positions;

switch-closing energy storage means acting between said switch operating member and said carriage for storing switch-closing energy;

switch-opening energy storage means acting between said carriage and said frame for storing switch-opening energy;

first selectively releasable latch means for selectively preventing switch-closing movement of said switch operating member whenever the switch is open;

second selectively releasable latch means for selectively preventing movement of said carriage from said second position to said first position, said carriage being moved from said first position to said second position to store energy in said switch-closing energy storage means and said switch-opening energy storage means while said switch operating member is latched by said first selectively releasable means in said first position corresponding to the switch-open position, said carriage being latched by said second selectively releasable latch means when said carriage reaches said second position, subsequent release of said switch operating member by said first selectively releasable latch means causing said switch operating member to move from said first position to said second position corresponding to the switch-closed position, subsequent release of said carriage by said second selectively releasable latch means causing said carriage to move from said second position to said first position; and

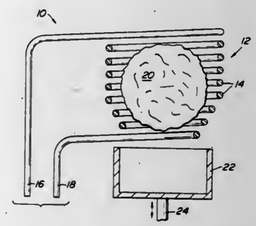
means for moving said switch operating member from said second position to said first position in response to movement of said carriage from said second position to said first position.

4,578,552

LEVITATION HEATING USING SINGLE VARIABLE FREQUENCY POWER SUPPLY

John H. Mortimer, Medford, N.J., assignor to Inductotherm Corporation, Rancocas, N.J.

Filed Aug. 1, 1985, Ser. No. 761,271
Int. Cl.[4] H05B *6/32*
U.S. Cl. 219—10.41 **6 Claims**



1. A system for magnetically levitating and inductively heating a workpiece, comprising

(a) a single coil for simultaneously levitating and heating the workpiece,

(b) a single variable frequency alternating-current power supply in circuit with the coil to supply power for both levitation and heating to the coil,

(c) means for varying the frequency of the power supply output to vary the heating effect on the workpiece,

(d) means in series with the coil for varying the apparent impedance of the coil as the frequency of the power supply output is varied to provide a constant current amplitude in the coil independent of said frequency to maintain a constant levitation force on the workpiece, and

(e) feedback and control means for maintaining the amplitude of the power supplied to the coil at a constant value.

4,578,553

MULTI-UNIT INDUCTION HEAT COOKING APPARATUS HAVING A COMMON NOISE REJECTION FILTER

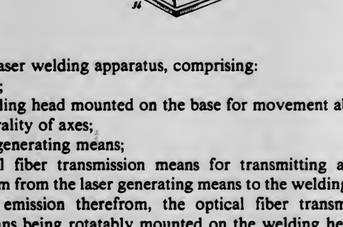
Hidekazu Yamashita, Osaka, and Hideyuki Kominami, Takatsuki, both of Japan, assignors to Matsushita Electric Industrial Company, Limited, Japan

Filed Apr. 27, 1983, Ser. No. 488,523
Claims priority, application Japan, Apr. 28, 1982, 57-72120
Int. Cl.[4] H05B *1/02, 6/06, 6/64*
U.S. Cl. 219—10.77 **5 Claims**

1. An induction heat cooking apparatus comprising:

a plurality of converters for generating high frequency energy, each of said converters having first and second input terminals, said first input terminals being coupled respectively through first circuits to a first terminal of a low frequency power source, said second input terminals being coupled together to a common circuit node which is connected through a second circuit to a second terminal of said power source;

a like plurality of manually operated switches respectively connected in said first circuits;



a like plurality of first high frequency noise rejection filters connected respectively in said first circuits; and

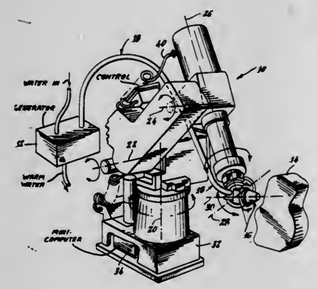
a second high frequency noise rejection filter connected in said second circuit.

4,578,554

LASER WELDING APPARATUS

Leland E. Coulter, New Canaan, Conn., assignor to Teledyne, Inc., New Canaan, Conn.

Filed Apr. 30, 1984, Ser. No. 605,279
Int. Cl.[4] B23K *26/00*
U.S. Cl. 219—121 LC **18 Claims**



1. A laser welding apparatus, comprising:

a base;

a welding head mounted on the base for movement about a plurality of axes;

laser generating means;

optical fiber transmission means for transmitting a laser beam from the laser generating means to the welding head for emission therefrom, the optical fiber transmission means being rotatably mounted on the welding head for free rotation about the axis of the emitted laser beam so as to reduce torsion of the optical fiber transmission means when the welding head is moved; and

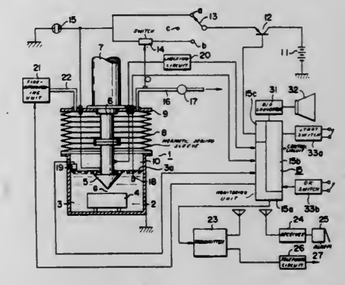
focusing means on the welding head for focusing the laser beam to a focal point.

4,578,555

FAIL-SAFE MACHINE TOOL OPERATIONAL SETTING SYSTEM WITH PRERECORDED VERBAL INSTRUCTIONS

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Inc., Kanagawaken, Japan

Filed Nov. 1, 1982, Ser. No. 438,286
Claims priority, application Japan, Oct. 30, 1981, 56-172833
Int. Cl.[4] B23P *1/08*; G05B *9/02*; G06F *3/16*; G08B *21/00*
U.S. Cl. 219—695 **4 Claims**



1. A machine tool operable automatically to machine a workpiece, comprising:

(a) a plurality of complementary functional machine components which the operator prior to initiation of a given machining operation is required to set into their respective prescribed operating positions through at least a like plurality of different, predetermined manual setting procedures, to enable said machine tool to establish a predetermined operating mode and to properly operate in said mode automatically for machining the workpiece during said given machining operation; and

(b) a fail-safe mechanism for aiding the operator in finishing said different, predetermined manual setting procedures properly and without fail, the mechanism (b) comprising:

(b') an audio system associated with said machine tool and including a loudspeaker for emitting in a preselected sequence different, prescribed verbal signals corresponding at least one by one to said different, predetermined manual setting procedures and audible to the operator, thereby alerting the operator to said different, predetermined manual setting procedures one by one in said sequence;

(c) manual switch means actuatable by the operator upon his listening to one of said verbal signals and thereafter upon his checking and verification of a corresponding one of said setting procedures as done in said prescribed sequence to produce a verification signal therefor; and

(d) circuit means for supplying into said audio system said verification signal to allow said loudspeaker to emit a next one of said verbal signals in said preselected sequence and thereby to permit the operator to be alerted as to a corresponding next one of said setting procedures in said preselected sequence.

4,578,556

EDM METHOD AND APPARATUS UTILIZING WATER VAPOR

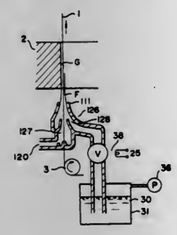
Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohamashi, Japan

Continuation of Ser. No. 405,076, Aug. 4, 1982. This application Jul. 30, 1984, Ser. No. 636,062
Int. Cl.[4] B23P *1/08, 1/16*
U.S. Cl. 219—69 M **2 Claims**

1. A method of machining a conductive workpiece which comprises the steps of:

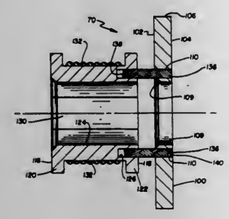
(a) spacedly juxtaposing a traveling tool electrode with an

electrically conductive workpiece to define a machining gap therebetween;
(b) passing said tool electrode in succession coaxially through an inner nozzle and an outer nozzle into which said inner nozzle opens before said traveling electrode is juxtaposed with said workpiece to define said gap, said outer nozzle being axially trained on said gap;
(c) generating water vapor by heating a body of liquid water;
(d) introducing said water vapor into said inner nozzle whereby said water vapor contacts said electrode before said electrode enters said outer nozzle;



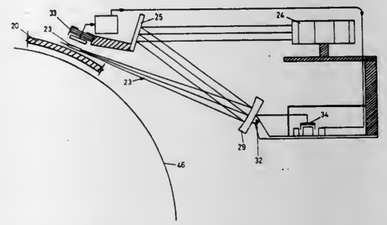
(e) injecting water vapor from said inner nozzle into said outer nozzle to induce suction in said outer nozzle and entrain liquid water from a source other than said water vapor into said outer nozzle for admixture with said water vapor in said outer nozzle and discharging of the resulting mixture of said water vapor and liquid water into said gap as a machining liquid;
(f) passing a succession of electrical pulses across said gap between said electrode and said workpiece to electroerosively remove stock from said workpiece; and
(g) relatively displacing said tool electrode and said workpiece in a direction generally transverse to a direction of travel of said tool electrode to advance the electroerosive stock removal of said workpiece.

4,578,557
LIQUID STABILIZED PLASMA BURNER HAVING FLEXIBLE CATHODE HOLDER
Trueman D. Turner, Rockwood, Mich., assignor to Plasmafusion, Inc., Wyandotte, Mich.
Filed Jan. 4, 1985, Ser. No. 688,957
Int. Cl.⁴ B23K *9/00*
U.S. Cl. 219—121 PP **20 Claims**



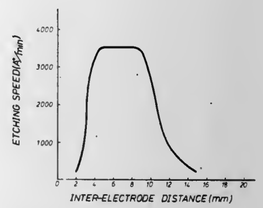
1. A cathode holder for facilitating the flexible guidance and support of a cathode element of a liquid plasma stabilized plasma burner comprising:
an electrically conductive plate containing a centrally disposed aperture adapted to permit passage of the cathode therethrough;
a plurality of electrically conductive segments flexibly connected together to form a cylinder easily receivable and flexibly supportive of the cathode element, said cylinder including a bore adapted to permit passage of the cathode therethrough; and
a mounting means for flexibly mounting said cylinder to said plate.

4,578,558
LASER MEANS AND METHOD
John E. Clegg, 26 Sheoak Rd., Crafers, South Australia, Australia
Filed Jan. 23, 1984, Ser. No. 573,068
Int. Cl.⁴ B23K *27/00*
U.S. Cl. 219—121 LG **15 Claims**



1. Means for severing fibre from the skin of a fell, comprising:
a conveyor means arranged to convey the fell in a longitudinal direction,
a laser,
focusing means spaced from the laser and so arranged with respect to the laser and the conveyor means as to focus the laser beam on to the fibre adjacent the skin when the fell is on the conveyor means, and
scanning means associated with the laser and its focusing means and operable to scan the focused laser beam in a traversing movement along a cutting line.

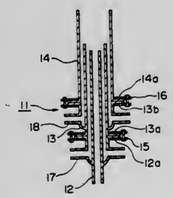
4,578,559
PLASMA ETCHING METHOD
Isamu Hijikata, Tokyo; Akira Uehara, and Hisashi Nakane, both of Kanagawa, all of Japan, assignors to Tokyo Ohka Kogyo Co., Ltd., Kanagawa, Japan
Continuation of Ser. No. 424,289, Sep. 27, 1982, abandoned. This application Sep. 10, 1984, Ser. No. 649,164
Claims priority, application Japan, Mar. 10, 1982, 57-38807
Int. Cl.⁴ B23K *9/00*; H01L *21/306*
U.S. Cl. 219—121 PE **10 Claims**



1. A plasma anisotropic etching method employing a parallel-plate type plasma etching device which comprises a reaction chamber, a substantially plate-like ground electrode and a substantially plate-like counter electrode both disposed in parallel with each other within said reaction chamber, the method comprising the steps of:
placing a material to be etched on said ground electrode;

carrying out an electric discharge with a spacing (s) between both said electrodes such that the spacing (s) is greater than 3 mm and no greater than 10 mm (i. e., 3 mm ≦S<10 mm); and
the plasma anisotropic etching is carried out with the same treating gases, pressure and radio-frequency power as in a plasma isotropic etching.

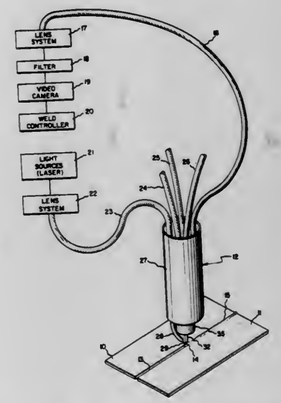
4,578,560
HIGH FREQUENCY INDUCTION COUPLED PLASMA TORCH WITH CONCENTRIC PIPES HAVING FLANGES THEREON
Gotaro Tanaka; Kunio Fujiwara, and Tetsuo Miyajiri, all of Kanagawa, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan
Filed Sep. 16, 1983, Ser. No. 532,937
Claims priority, application Japan, Sep. 17, 1982, 57-139953[U]
Int. Cl.⁴ B23K *9/00*
U.S. Cl. 219—121 PR **18 Claims**



1. A high frequency induction coupled plasma torch employing a concentric pipe assembly passing plasma gas therethrough and generating a plasma flame at one end of said pipe assembly, said pipe assembly comprising,
at least first and second cylindrical pipes;
said first pipe comprising an elongated cylindrical portion and an outer portion extending from said elongated cylindrical poriton near a base of said first cylindrical pipe, said outer portion terminating in a flanged opening having a flange surrounding but not in contact with said first cylindrical pipe;
said second pipe comprising an elongated cylindrical portion terminating in an outward bottom flange at the end opposite the end at which a flame is generated;
the elongated cylindrical portion of said first pipe being inside and coaxial with the elongated cylindrical portion of said second pipe, and said flange of said first pipe mating and being fastened to said outward bottom flange of said second pipe; and
clamping means for fastening together said flange of said first pipe and said outward bottom flange of said second pipe, said clamping means permitting adjustment of the relative positions of said first and second pipes.

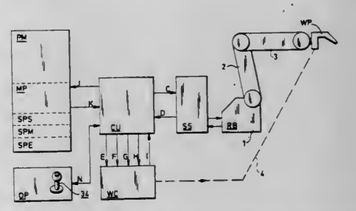
4,578,561
METHOD OF ENHANCING WELD POOL BOUNDARY DEFINITION
Nelson R. Corby, Jr., Scotia, and Stanley J. Godwin, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.
Filed Aug. 16, 1984, Ser. No. 641,541
Int. Cl.⁴ B23K *9/12*
U.S. Cl. 219—124.34 **3 Claims**

1. In a robotic arc weding operation wherein a convex-surfaced molten weld pool is created in a workpiece by the heat of an electric arc and is viewed by an optical vision system on a welding torch to guide the torch and control the welding process, the method of improving the solid/liquid boundary definition in an image for computer analysis comprising:
imaging light from a narrowband light source onto the entrance of a coherent optical fiber bundle whose exit end and an output lens system are mounted on said welding torch and which reimages light exiting said bundle to floodlight and iluminate only the surface of said weld pool and adjacent workpiece surface, incident light being introduced at an angle thereto;
said weld pool having a specular surface and reflecting almost all of the incident light away from said optical vision system, the workpiece having a rough surface and diffusely reflecting light, an appreciable fraction of which is collected by said optical vision system; and



producing said image in which said weld pool is dark and the floodlighted workpiece surface is bright and the continuous pool boundary is clearly defined;
said narrowband light source comprising two low power lasers generating narrow light beams that are imaged by an input lens system as dots on the entrance of said optical fiber bundle and reimage by said output lens system as magnified oval-shaped spots onto the side edges of said weld pool and adjaccent workpiece surfaces.

4,578,562
METHOD AND CONTROL SYSTEM FOR CONTROLLING AN INDUSTRIAL ROBOT
Lars Lindström, Västerås, and Kent Nilsson, Laxå, both of Sweden, assignors to ASEA AB, Västerås, Sweden
Filed Apr. 4, 1984, Ser. No. 596,605
Claims priority, application Sweden, Apr. 8, 1983, 8301964
Int. Cl.⁴ B23K *9/12*
U.S. Cl. 219—125.1 **12 Claims**



1. A method of controlling a work process carried out on an object with the aid of an industrial robot during relative movement between the object and the robot, robot instructions being stored both with regard to positioning by means of the robot of process equipment relative to the object, and with

regard to the process to be carried out, the work process being carried out by the robot executing the stored instructions, comprising the steps of:

storing process instructions in the form of process stage instructions including

(a) a process start stage, during which the process is initiated and relative movement between the object and the robot can be started,

(b) a process main stage, during which the work process is carried out, and

(c) a process terminal stage, during which the process is terminated and relative movement between object and robot can be stopped;

storing for the respective process stages permanent instructions relating to the implementation of the process stage in the form of parameters which are to be brought into action and in which order the activation is to take place, and also storing for the respective process stages instructions or sets relating to specific data of at least some of said process parameters; and

modifying at least one instruction or set relating to specific data or levels of at least some of the process parameters, said modifying step utilizing an analog multifunction operating means having motion in at least two dimensions, wherein each dimension is assigned a particular one of said process parameters, the value of the stored instruction being modified for the associated process parameter in response to operation of said operating means.

2. The method of claim 1, wherein the work process is arc welding, and wherein the specific process parameters include at least two of welding voltage, welding current, and welding speed.

4,578,563

STEAM GENERATOR

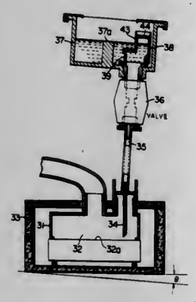
Kenzo Eguchi, and Jiro Kobayashi, both of Tokyo, Japan, assignors to Taishin Electric Ind. Co., Ltd. and Toshiba Medical Supply Co., Ltd., both of Tokyo, Japan

Filed Oct. 12, 1984, Ser. No. 660,509

Claims priority, application Japan, Oct. 25, 1983, 58-163956[U]; Oct. 25, 1983, 58-163957[U]; Oct. 25, 1983, 58-163958[U]; Oct. 25, 1983, 58-163959[U]

Int. Cl.⁴ F22B *27/00*

U.S. Cl. 219—273 **6 Claims**



1. A steam generator comprising:

water supply means for continuously supplying a small amount of water;

a vapor assembly having an inlet port for receiving water from said water supply means, a heat-conductive vapor chamber for sequentially heating and vaporizing water from said water supply means, and a drain port for discharging steam;

a heater for heating said vapor assembly, and a heat-insulating cover for surrounding said vapor assembly and said heater; and

said water supply means including a dust remover, arranged in a tank support for mounting a cartridge type water tank, for filtering water supplied to said vapor chamber, said dust remover being provided with a filtering material for filtering water at a side surface thereof immersed in water in said tank support, and a projection opening to remove a bubble reversely flowing from said vapor chamber.

4,578,564

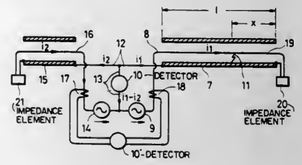
SERIES-CONNECTED, SKIN-CURRENT HEATING PIPE INCLUDING CURRENT TROUBLE DETECTOR

Masao Ando, Yokohama, Japan, assignor to Chisso Corporation, Tokyo, Japan

Filed Sep. 5, 1984, Ser. No. 647,474

Int. Cl.⁴ H05B *1/02, 3/00;* F16L *53/00*

U.S. Cl. 219—301 **16 Claims**



1. A series-connected, skin-current heating pipe circuit comprising:

(a) a first ferromagnetic pipe;

(b) a first insulated wire extending along and inside said first ferromagnetic pipe;

(c) a first a.c. source connected to one end of each of said first ferromagnetic pipe and said first insulated wire;

(d) a first impedance element connected between the other end of each of said first ferromagnetic pipe and said first insulated wire; and

(e) a current trouble detecting means provided in either line connecting said first a.c. source to said respective first ends of said first ferromagnetic pipe and said first insulated line to detect a current trouble due to an insulating trouble at any point of said first insulated wire.

4,578,565

COMBINED ELECTRIC HEATING AND WATER INLET/OUTLET ASSEMBLY FOR WATER HEATING TANKS

Shmuel Dawidowitch, 304 Hayarkon St., Tel Aviv, Israel

Filed Dec. 5, 1984, Ser. No. 678,460

Claims priority, application Israel, Dec. 7, 1983, 70402

Int. Cl.⁴ H05B *1/02, 3/82*

U.S. Cl. 219—314 **9 Claims**

1. A combined heating and water inlet/outlet assembly for domestic electric water heater tanks having a circular bottom opening surrounded by a series of gudgeon bolts for fastening thereto an electric element mounting flange, comprising

(a) a first, integrally formed unit having a circular flange adapted to cover the tank opening and provided with circumferentially spaced openings adapted to receive the tank gudgeons;

(b) an open-top cylindrical sleeve having its bottom closed by and extending upwardly from a central section of the flange, which sleeve is adapted to be inserted through the tank opening into the interior of the tank;

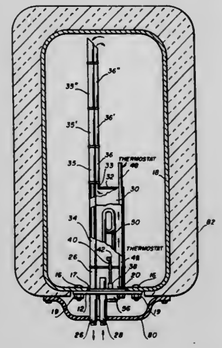
(c) a tapped opening in said central portion threadably receiving a plug member carrying an electric immersion-type heating element extending upwardly into said sleeve with its terminals projecting downwards;

(d) a pair of tubular conduits, adapted to form the water inlet and outlet of the tank, extending upwardly from the said flange each along an outer generatrix of the said sleeve,

and downwards of the flange, for connecting thereto cold and heated water conduits;

(e) a second, integrally formed unit comprising a closed top cylindrical member seated on top of the said sleeve to form an extension thereof;

(f) a tubular section extending along an outer generatrix of the cylindrical member thus forming an extension of said outlet conduit;



(g) an upwardly extending riser tube section at the closed top of the cylindrical member, forming an outlet for water heated by said heating element;

(h) a series of integrally formed pairs of parallel tube lengths fitting one on top of the other and on top of said tubular outlet and said riser tube section, to form extensions thereof up to the top wall of the tank; and

(i) an opening at the wall of the cylindrical member for introducing water thereinto from the interior of the tank.

4,578,566

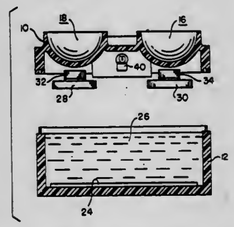
SOFT CONTACT LENS DISINFECTING UNIT

John G. Bowen, 1144 The Strand, Manhattan Beach, Calif. 90266

Filed May 28, 1985, Ser. No. 738,279

Int. Cl.⁴ H05B *3/06;* A61L *2/04*

U.S. Cl. 219—521 **2 Claims**



1. An electrically energized heating unit for disinfecting soft contact lenses, and the like, which are normally cleaned by detergents, comprising: a housing of a plastic material immune from surfactant contamination and resulting leakage regardless of the type of detergent used to clean the lenses disinfected by the unit, and said housing having at least one compartment for receiving the soft contact lenses to be disinfected; electrically energized heating means mounted in the housing adjacent to the compartment; and electric circuitry mounted in the housing for connecting the heater means to an energizing source.

4,578,567

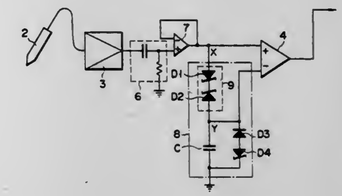
METHOD AND APPARATUS FOR GAINING ACCESS TO A SYSTEM HAVING CONTROLLED ACCESS THERETO

Robert H. Granzow, Miamisburg, Ohio; Desh B. Gupta, Elm Grove, Wis., and Kimbrough I. Myers, Kettering, Ohio, assignors to NCR Corporation, Dayton, Ohio

Filed Aug. 25, 1983, Ser. No. 526,574

Int. Cl.⁴ G06K *5/00*

U.S. Cl. 235—380 **16 Claims**



1. A system having controlled access thereto, comprising:

means for entering first and second identifiers associated with a user of said system;

control means for receiving said first and second identifiers and for issuing a third identifier to said user via said entering means upon a satisfactory evaluation of said first and second identifiers; and

said system having a plurality of entities and also having means for coupling said entities with said control means;

each said entity having means for entering said second and third identifiers associated with said user;

said control means having means for evaluating said second and third identifiers and for issuing a control signal to the associated said entity to enable that said user to gain access to the associated said entity upon a satisfactory evaluation of said second and third identifiers.

4,578,568

DATA READER

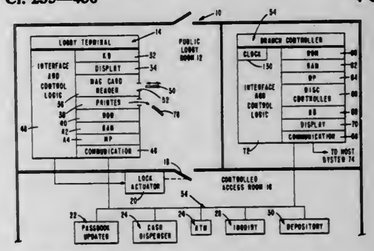
Hanzou Tsuzuki, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Oct. 24, 1983, Ser. No. 544,771

Claims priority, application Japan, Oct. 28, 1982, 57-188174

Int. Cl.⁴ G06K *7/00*

U.S. Cl. 235—436 **4 Claims**



1. A data reader comprising:

data reading means for reading recorded data from an external recording medium and for producing an analog signal;

a switching circuit having first and second terminals, said first terminal being connected to an output terminal of said data reading means, said switching circuit being turned off when a potential difference between said first terminal and said second terminal falls within a predetermined range and said

switching means being turned on when the potential difference falls outside the predetermined range;

a hold circuit for holding a potential applied thereto, said hold circuit comprising a diode the cathode of whidh is connected to the second terminal of said switching circuit, a Zener diode the anode of which is connected to the anode of said diode and a capacitor parallel-connected between the cathode of said diode and the cathode of said Zener diode; and

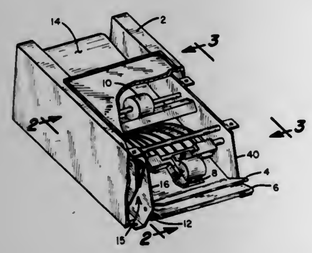
a comparator having a first input terminal connected to a node between said data reading means and said first terminal of said switching circuit and a second input terminal connected to a node between said second terminal of said switching circuit and said hold circuit, said comparator comparing a potential of the analog signal supplied to said first input terminal with a potential held by said hold circuit and supplied to the second input terminal, thereby producing a digital signal.

4,578,569

MULTI-WIDTH CARD READER WITH CANCELLATION FEATURE

Bradley W. Arp, Mound; Ronald O. J. Lindberg, Minneapolis, and Wayne A. Mueller, Mound, all of Minn., assignors to HEI, Inc., Victoria, Minn.

Filed Jun. 20, 1983, Ser. No. 505,903
Int. Cl.⁴ G06K *7/10*
U.S. Cl. 235—454 **5 Claims**



1. Improved apparatus for reading data containing media including driven means for frictionally grasping and conveying the medium past a reading station whereat the data contained thereon are detected, the improvement comprising:

(a) means including a perforator wheel operatively coupled to said driven means for embossing said data containing medium during the reading thereof and whereby the medium is visually and tactilely cancelled, said perforator wheel having a plurality of raised projections extending outwardly from the circumferential surface thereof and mounted adjacent to a relatively hard surface such that as the medium passes between said projections and said hard surface, at least one surface of the data containing medium is embossed.

4,578,570

BAR CODE PROCESSING APPARATUS

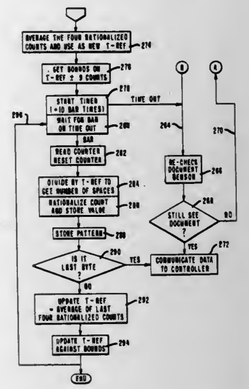
Ali T. Mazumder, Waterloo, and Armand M. Dumas, Kitchener, both of Canada, assignors to NCR CANADA LTD.-NCR CANADA LTEE, Mississauga, Canada

Filed Aug. 14, 1984, Ser. No. 640,895
Int. Cl.⁴ G06K *7/10*
U.S. Cl. 235—463 **10 Claims**

1. A method for processing a plurality of control signals each representing the sensing of a bar on a coded bar label by a sensing device in which a series of bars and spaces represent a data word comprising the steps of:

generating a first time interval representing the average time of occurrence between a predetermined number of succeeding control signals;

upon the generation of each succeeding control signal, generating a second time interval representing the time of occurrence between the generation of the last control signal and the succeeding control signal;



dividing the second time interval by the first time interval to produce a quotient;

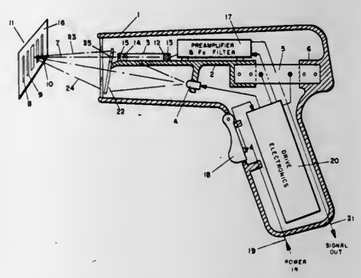
and storing data signals representing the succeeding control signal as a bar when the quotient is a one.

4,578,571

PORTABLE BAR CODE SCANNING DEVICE AND METHOD

Richard E. Williams, Lake Mary, Fla., assignor to Numa Corporation, Lake Mary, Fla.

Filed Nov. 14, 1983, Ser. No. 551,672
Int. Cl.⁴ G06K *7/10*
U.S. Cl. 235—472 **12 Claims**



1. A device for measuring at a variable throw distance the reflectance of a zone in a bar code symbol, comprising:

a housing normally supportable by a user at said variable throw distance from said symbol;

an optical assembly attached to said housing by coupling means;

a light-emitting diode affixed to said assembly for providing a radiant light beam of constant average energy;

optical condensing means affixed to said assembly for directing said radiant light beam to intersect said zone;

telescope means affixed to said assembly and having a field-of-view falling within the intersection of said radiant beam and said zone: and

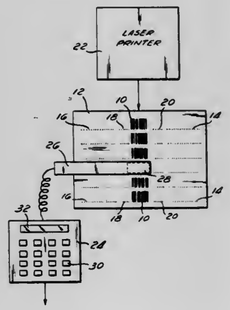
sensor means affixed to said telescope means for detecting the intensity of reflected light within said field-of-view and for generating an electrical signal indicative of said intensity, whereby said signal characterizes said measurement.

4,578,572

MODULAR MICROPROCESSOR-BASED SYSTEM FOR PRINTING AND READING A PERSONAL IDENTIFIER CODE ON A FORM

John R. Hice, Santa Paula, Calif., assignor to Data Information Management Systems, Inc., Ventura, Calif.

Filed Jun. 17, 1983, Ser. No. 505,234
Int. Cl.⁴ G06K *7/10*
U.S. Cl. 235—472 **10 Claims**



1. A modular microprocessor-based apparatus for printing a unique personal identifier code on a sheet of paper, which sheet of paper comprises a form adapted for use in the elections process, which code is adapted to enable the person's file to be addressible directly without correlation to a control file, and for enabling the code to be read from the sheet of paper, to generate data associated with the person identified by the code relating to the elections process, for processing thereof for use in the elections process, comprising:

(a) means for printing the unique directly-addressible personal identifier code, assigned to the person upon registration on the elections rolls, on the sheet of elections process form paper, microprocessor-based, including means for directing a laser beam therein, adapted to be operable responsive to control by a laser control program for printing the unique directly-addressible personal identifier code on the elections process form; and

(b) portable compact means for reading the unique directly-addressible personal identifier code from the elections process form, microprocessor-based, adapted to be operable responsive to control by the operator, and control by a reading control program, to generate data associated with the person identified by the code relating to the elections process, for processing thereof for use in the elections process.

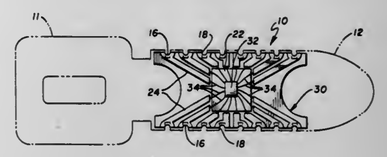
4,578,573

PORTABLE ELECTRONIC INFORMATION DEVICES AND METHOD OF MANUFACTURE

William P. Flies, Burnsville, and William H. Wehrmacher, Prior Lake, both of Minn., assignors to Datakey, Inc., Burnsville, Minn.

Filed Mar. 23, 1983, Ser. No. 477,905
Int. Cl.⁴ G06K *19/06*
U.S. Cl. 235—492 **18 Claims**

1. As an article of manufacture, a portable electronic device constructed and arranged for insertion into a mating receptacle, comprising a device body and a printed circuit substrate board carried by the device body, the board including electronic circuit means and a plurality of spaced indentations provided by exposed portions of plated through-holes on the board, the indentations being arranged along the length of the board on at least one edge thereof, each indentation extending across the edge of the board from one surface thereof to the other and being provided with a plated conductive area originating from a portion of a plated through-hole as aforesaid which portion is exposed exteriorly of the device body whereby each indentation serves as an electrical contact surface for mating with contacts in the receptacle, and discrete conductive pathways extending between each of the conductive areas and the electronic circuit means on the printed circuit board.

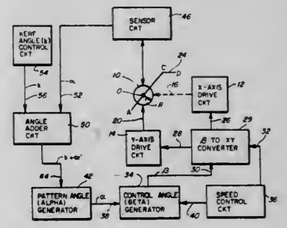


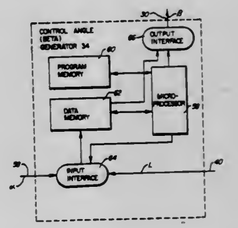
4,578,574

PATTERN TRACER WITH VARIABLE EFFECTIVE FORWARD OFFSET AND METHOD

John W. Grant, River Forest, and Francis E. Ferrari, LaGrange Park, both of Ill., assignors to Stewart-Warner Corporation, Chicago, Ill.

Filed Sep. 30, 1982, Ser. No. 428,577
Int. Cl.⁴ G05B *1/00*
U.S. Cl. 250—202 **52 Claims**





1. A pattern tracer for tracing a pattern at a selected speed with a tracing element, comprising:

a sensor for detecting a pattern;

means for storing pattern information from said sensor; and

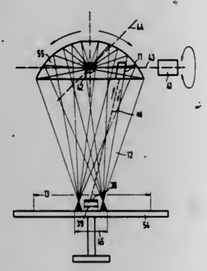
means for controlling the movement of the tracing element along the pattern in accordance with portions of said stored information selected on the basis of the selected speed.

4,578,575

OPERATING THEATRE LAMP

Eberhard Roos, Tuttlingen, Fed. Rep. of Germany, assignor to Delma, electro- und medizinische Appatebau Gesellschaft mbH, Tuttlingen, Fed. Rep. of Germany

Filed Nov. 17, 1983, Ser. No. 552,647
Claims priority, application Fed. Rep. of Germany, Nov. 25, 1982, 3243710
Int. Cl.⁴ G01J *1/20*
U.S. Cl. 250—203 R **9 Claims**



1. An operating theatre lamp which transmits a directed beam of light, which is pivotally arranged about two axes which are substantially perpendicular to one another and to the light beam above the site of an operation and which generates a restricted field of light within the site of the operation,-wherein said restricted field of light can be substantially horizontally displaced through pivotal movement of the lamp, characterised in that the operating theatre lamp has a light beam selector (11) which is movable with the lamp, which comprises light sources (14, 16, 18, 20) and light receivers (15, 17, 19, 21), and which concentrates a beam of electromagnetic radiation (46) narrower than said light beam (12) and in a different frequency range into a control field (39) within the field of light (45);in that a control reflector (38) is provided which is displaceable in a horizontal plane within the site of the operation, which is matched to the size of the control field (39) and is likewise smaller than the field of light (45) and which reflects the electromagnetic radiation (46) back on itself, at least in part, to the photoreceivers (15, 17, 19, 21); and in that the light sources (14, 16, 18, 20) and the photoreceivers (15, 17, 19, 21) are so arranged in the light beam selector (11) that, when the control reflector (38) leaves the control field (39), the photoreceivers (15, 17, 19, 21) transmit signals to an electronic control circuit (40) through which positioning motors (41, 42) connected to the control circuit (40) are actuated to pivot the lamp about the two axes in the sense of a follow-up adjustment of the control field (39).

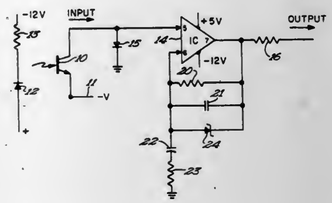
4,578,576

BAR CODE READER WITH DIODE FEEDBACK IN AMPLIFIER

Jay A. Wheeler, Encinitas, Calif., and James A. Willmore, Eden Prairie, Minn., assignors to Opto Systems, Inc., San Diego, Calif.

Filed Mar. 30, 1983, Ser. No. 480,384
Int. Cl.⁴ H01J *40/14;* **H03F** *1/36*
U.S. Cl. 250—214 A **3 Claims**

1. In a circuit for controlling the point of saturation of an operational amplifier, said circuit comprising:
(a) an operational amplifier having positive and negative input terminals, an output terminal and connections for receiving a positive and negative operating voltage;
(b) a diode connected to ground and said positive terminal of said operational amplifier said diode conducting current to ground;
(c) a feedback circuit connected between the output of said operational amplifier and said negative input terminal;
(d) a time constant circuit connected between ground and said negative input terminal;
(e) a power source having a positive and negative voltage connection connected to said operational amplifier;
(f) a zener diode connected in parallel with said feedback circuit to control the saturation of said operational amplifier, said zener establishing the saturation point below normal saturation point of said operational amplifier;
(g) a phototransistor reading indica passing thereby connected to the positive input of said operational amplifier;
(h) and a light source flooding said indica to be read by said phototransistor.

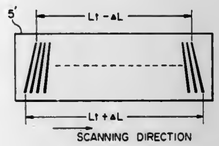


4,578,577

LIGHT BEAM SCANNING DEVICE

Masaru Noguchi, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 25, 1983, Ser. No. 497,935
Claims priority, application Japan, May 31, 1982, 57-92787
Int. Cl.⁴ H01J *3/14*
U.S. Cl. 250—235 **6 Claims**



1. A light beam scanning reticle comprising:
a grid pattern having alternate transparent and opaque portions arranged side by side in a row, said row being in a light beam deflection direction, said grid pattern having a plurality of spaced apart portions, wherein said spacing varies in a direction perpendicular to said deflection direction; wherein, a light spot, generated by said light beam, is moved across both a scanning plane and said grid pattern, wherein said light beam passes through said grid pattern to an optical detector which generates a photo-electric signal, wherein any irregularity in the speed of the light spot on the scanning plane is corrected in response to said photo-electric signal.

4,578,578

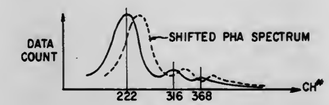
METHOD FOR CORRECTING SPECTRUM SHIFT

Chew-Chen Lin, Houston, and Frank L. Lankford, Jr., Bellaire, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Dec. 5, 1983, Ser. No. 557,804
Int. Cl.⁴ G01B *18/00*
U.S. Cl. 250—252.1 **16 Claims**

1. A method for evaluating at least one subject element comprising the steps of:
detecting radiation from a plurality of elements including the subject element;

providing data pulses representative of the detected radiation;
deriving a spectrum from the data pulses;
determining a shift of the spectrum; and



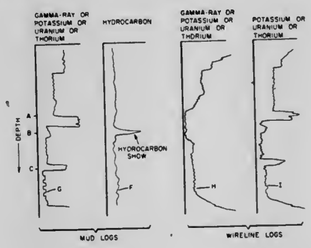
evaluating the subject element as functionally related to an energy level of data pulses occurring in a region of interest associated with the subject element in accordance with the spectrum and the determined shift of the spectrum.

4,578,579

METHOD FOR DEPTH REFERENCING HYDROCARBON GAS SHOWS ON MUD LOGS

Eric P. Dion, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Sep. 1, 1983, Ser. No. 528,503
Int. Cl.⁴ G01V *11/00, 5/06*
U.S. Cl. 250—256 **7 Claims**



1. A method for identifying hydrocarbon formations surrounding a borehole, comprising the steps of:
a. measuring hydrocarbon gas in the entrained formation cuttings obtained during drilling operations in which a drilling mud is continually circulated past a drill bit to carry said cuttings to the earth's surface,
b. simultaneously measuring natural gamma radiation in said cuttings,
c. identifying the depths at which said cuttings were obtained within the borehole,
d. measuring natural gamma radiation within the borehole following completion of said drilling operations,
e. correlating said natural gamma radiation measurements in steps (b) and (d), and
f. identifying the depths within the borehole from which the entrained cuttings containing hydrocarbon gas were obtained during drilling operations when there is correlation between said natural gamma radiation measurements in steps (b) and (d).

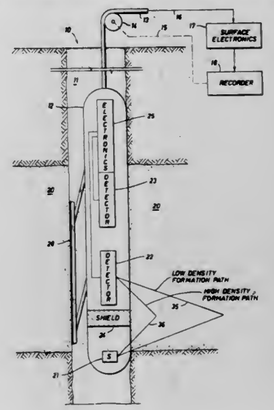
4,578,580

GAMMA SPECTRUM POROSITY MEASUREMENT

Harry D. Smith, Jr., Houston, Tex., assignor to Halliburton Company, Duncan, Okla.

Filed Jan. 27, 1984, Ser. No. 574,761
Int. Cl.⁴ G01V *5/00*
U.S. Cl. 250—269 **9 Claims**

1. A density logging method for measuring the density of downhole earth formations penetrated by a borehole, comprising:
(a) emitting gamma rays from the borehole into the formation to be measured, the energy spectrum of the gamma rays including energies above the threshold below which photoelectric absorption from formation and/or borehole elements becomes significant,
(b) obtaining with a gamma ray detection system a measure



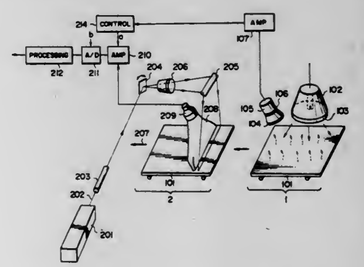
of the shape of the energy spectrum of the attenuated gamma rays which are Compton scattered back to the borehole, and
(c) deriving from the spectrum shape measurement a measure of the density of the formation.

4,578,581

RADIATION IMAGE READ-OUT METHOD AND APPARATUS

Hiroshi Tanaka, and Hisatoyo Kato, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 26, 1983, Ser. No. 517,305
Claims priority, application Japan, Jul. 27, 1982, 57-130939
Int. Cl.⁴ G03C *5/16*
U.S. Cl. 250—327.2 **10 Claims**



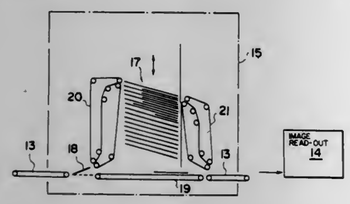
1. A radiation image read-out method in which a stimulable phosphor sheet carrying a radiation image stored therein is exposed to stimulating rays which cause the stimulable phosphor sheet to emit light in the pattern of the stored image, and the emitted light is photoelectrically read out, wherein, prior to final read-out for obtaining a visible image for viewing purposes, conducting preliminary read-out for detecting said radiation image by uniformly exposing the whole surface of said stimulable phosphor sheet to stimulating rays and detecting the amount of light emitted from the whole surface of said stimulable phosphor sheet.

4,578,582

RADIATION IMAGE RECORDING AND REPRODUCING SYSTEM WITH PREFERENTIAL PROCESSING FUNCTION

Masao Takano, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 19, 1982, Ser. No. 435,203
Claims priority, application Japan, Oct. 27, 1981, 56-171767
Int. Cl.⁴ G01T *1/105*
U.S. Cl. 250—327.2 **14 Claims**



1. A radiation image recording and reproducing system comprising; at least one radiation image input section for recording a radiation image of an object on a stimulable phosphor sheet capable of storing radiation energy thereon by exposure thereof to a radiation passing through the object, an image read-out section for exposing said stimulable phosphor sheet carrying the radiation image stored thereon to a stimulating ray and photoelectrically reading out light emitted from said stimulable phosphor sheet upon stimulation thereof by said stimulating ray to obtain an image signal, an image processing section for processing said image signal sent form said read-out section, an image reproducing section for reproducing the radiation image by use of a reproducing signal sent from said image processing section, at least one sheet supplying means for supplying said stimulable phosphor sheet carrying the radiation image recorded thereon at said radiation image input section to a sheet feeding line connected to said image read-out section, a stack zone positioned on said sheet feeding line for sequentially storing said stimulable phosphor sheets supplied from said sheet supplying means and sending said phosphor sheets one by one to said image read-out section,

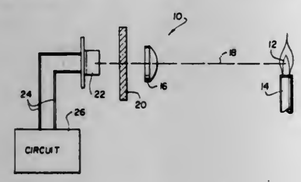
a radiation image recording and reproducing system provided with a preferential processing function, comprising a by-pass feeding line positioned on said sheet feeding line for by-passing said stack zone, and a feeding line switching mechanism for making said sheet feeding line communicate with said by-pass feeding line in response to a preferential processing signal.

4,578,583

SOLID STATE ULTRAVIOLET FLAME DETECTOR

Richard C. Ciammaichella, Chardon, and Barry J. Youmans, Rittman, both of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Apr. 3, 1984, Ser. No. 596,483
Int. Cl.⁴ G01J *1/42*
U.S. Cl. 250—339 **4 Claims**



1. A flame detector comprising:

light collection means for collecting electromagnetic radiation from a flame source and having an optical axis;

filter means lying on said optical axis for receiving electromagnetic radiation collected by said light collection means, and for passing only that portion of the electromagnetic radiation which changes dependent upon whether a flame is present at the flame source;

a solid state photocell lying on said optical axis and positioned for receiving said portion of the electromagnetic radiation passed by said filter means, said photocell being is made of GaAsP semiconductor material sensitive to said portion of electromagnetic radiation to generate a sensed light signal indicative of one of the flame on and the flame off condition for the flame source; and

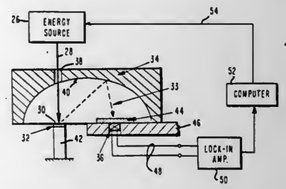
circuit means connected to said photocell for producing one of a flame on and a flame off signal when said photocell generates said sensed light signal.

4,578,584

THERMAL WAVE MICROSCOPY USING AREAL INFRARED DETECTION

Thomas Baumann, Stuttgart, Fed. Rep. of Germany; Frank H. Dacol, White Plains, and Robert L. Melcher, Mount Kisco, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 23, 1984, Ser. No. 573,075
Int. Cl.⁴ G01J *1/00*
U.S. Cl. 250—341 **24 Claims**



1. A non-contact method for detection of surface, on the surface, and sub-surface structure in a sample, comprising the steps of:

irradiating a selected area of said sample with radiation in order to create a thermal wave therein which interacts with the structure of said sample to produce a temperature pattern on the surface of said sample in the vicinity of said selected area,

imaging substantially all of the infrared radiation emitted from said sample onto a two-dimensional infrared detector having an area comparable in size to the area of said sample and being out of physical contact with said sample, to create a two-dimensional infrared image, said infrared image being characteristic of the structure of said sample in the area of said sample heated by said radiation,

changing said selected area of said sample after each said imaging step by moving only said radiation to irradiate a different area of said sample in order to scan said sample, the position of said infrared detector being fixed during said scanning.

4,578,585

DETECTOR HEAD MOUNTING MECHANISM

Anatoly I. Gosis, Palatine, and Frank J. Bartos, Elmhurst, both of Ill., assignors to Siemens Gammasonics, Inc., Des Plaines, Ill.

Filed Nov. 25, 1983, Ser. No. 555,100
Int. Cl.⁴ G01T *1/166;* **G21K** *1/02*
U.S. Cl. 250—363 S **17 Claims**

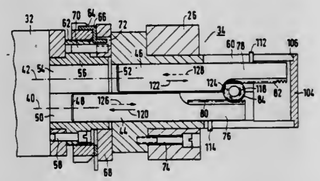
1. A mechanism for pivotally mounting a detector head including a collimator onto supporting structure of a radiation detector, comprising:

(a) means for mounting the head onto the supporting structure for rotation about a selected one of a first axis and a second axis; and

(b) means for selecting the axis about which the detector head can rotate whereby the head will be rotatable about the axis which passes nearest to the center of gravity of the head;

wherein the head mounting means includes

(a1) a first pinhole and an associated first pin mounted between the supporting structure and the detector head concentric with the first axis and shiftable relatively to each other along the first axis between a first shift position wherein the first pin intrudes into the first pinhole and a second shift position wherein the first pin is located outside the first pinhole; and



(a2) a second pinhole and an associated second pin mounted between the supporting structure and the detector head concentric with the second axis and shiftable relatively to each other along the second axis between a first shift position wherein the second pin intrudes into the second pinhole and a second shift position wherein the second pin is located outside the second pinhole;

and wherein the axis selecting means includes

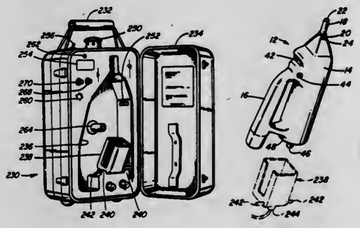
means for shifting the pinholes and associated pins relatively to each other in opposite directions such that when one pinhole and the associated pin are in the first shift position, the other pinhole and associated pin are in the second shift position.

4,578,586

CHEMICAL AGENT MONITOR AND ALARM DEVICE

Jonathan M. Preston, Ottawa, Canada, assignor to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence of Her Majesty's Canadian Government, Ottawa, Canada

Filed Jan. 27, 1984, Ser. No. 574,538
Claims priority, application United Kingdom, Mar. 30, 1983, 8308783; Sep. 30, 1983, 8326205
Int. Cl.⁴ G01T *1/18;* **G01D** *11/24;* **G08B** *23/00*
U.S. Cl. 250—382 **18 Claims**



1. Apparatus for use with a hand-portable chemical agent detector for continuously monitoring an atmosphere for the presence of predetermined chemical agents, said detector having means for ionizing air samples and providing at an output terminal electrical signals representative of the mobility spectrum of ionized chemical vapours produced by said ionizing means, said apparatus comprising:

means defining a chamber in said apparatus for supporting and removably enclosing said detector;

means for communicating ambient atmosphere to said chamber;

electrical circuit means in said apparatus, said circuit means being adapted to be detachably connected to said detector output terminal when said detector is positioned in said chamber and being responsive to said electrical signals for producing an alarm signal when said signals detect a chemical agent concentration in said atmosphere exceeding a predetermined concentration level; and

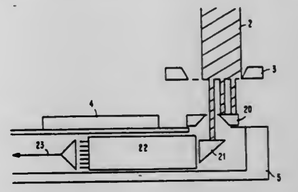
alarm means responsive to said alarm signal.

4,578,587

ERROR-CORRECTED CORPUSCULAR BEAM LITHOGRAPHY

Uwe Behringer; Harald Bohlen, both of Ammerbuch; Peter Nehmiz, Stuttgart, and Werner Zapka, Gaertringen-Rohrau, all of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 25, 1985, Ser. No. 694,888
Claims priority, application Fed. Rep. of Germany, Mar. 24, 1984, 34108885
Int. Cl.⁴ H01J *37/304, 37/317*
U.S. Cl. 250—492.2 **10 Claims**



1. An Apparatus for detecting errors in exposure masks for corpuscular beam lithography, comprising an image mask,

a pinhole diaphragm, located beneath said image mask, having a pinhole with submicron dimensions therein,

means for forming a corpuscular beam,

means for forming a projection image of selected mask regions of an exposure mask under review,

means for tilting the corpuscular beam and guiding the beam, in at least one plane through said mask and across said pinhole in said diaphragm, and

a corpuscular beam detection means positioned below said diaphragm for detecting the beam passing through said pinhole in said diaphragm in order to detect errors in said mask.

4,578,588

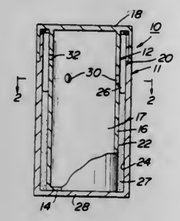
VOLUME REDUCTION IN LIQUID SCINTILLATION COUNTING

Benjamin M. Galkin, 35 Ivy La., Cherry Hill, N.J. 08002

Filed Aug. 12, 1983, Ser. No. 522,943
Int. Cl.⁴ G01N *21/11, 21/03*
U.S. Cl. 250—432 R **21 Claims**

1. A volume reducer usable with a scintillation vial, said vial having inner peripheral bottom and side surfaces defining an interior compartment adapted to receive scintillation fluid therein, characterized in that said reducer includes an elongate member having outer peripheral bottom and side surfaces adapted to displace scintillation fluid in the vial when inserted into the interior compartment of said vial, said outer peripheral side surface of the elongate member, when positioned in the vial, being spaced inwardly from the inner peripheral side surface of said vial to define an annular chamber for accommo-

dating the scintillation fluid therein, whereby small amounts of scintillation fluid can be spread over a large surface in said annular chamber for use in a scintillation counting operation,

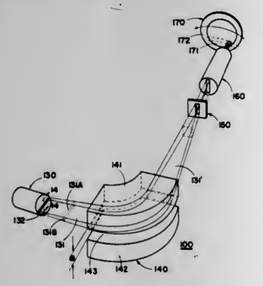


said elongate member including keying means therein adapted to cooperate with keying means on said vial for locating the elongate member in a predetermined orientation relative to said vial.

4,578,589
APPARATUS AND METHODS FOR ION IMPLANTATION

Derek Aitken, East Molesey, England, assignor to Applied Materials, Inc., Santa Clara, Calif.

Continuation-in-part of Ser. No. 523,463, Aug. 15, 1983, abandoned. This application Aug. 15, 1984, Ser. No. 641,027
Int. Cl.⁴ H01J *37/317, 37/04*
U.S. Cl. 250—492.2 **48 Claims**

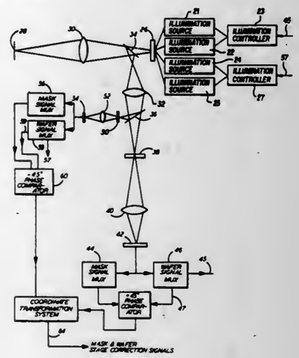


1. In a system for implanting ions of a preselected chemical species into a target element in the form of an ion beam having a preselected beam current level at least about several milliamperes, source means for producing an ion beam including ions of said preselected chemical species at or above said preselected beam current level; beam analyzing means for receiving said ion beam and selectively separating various ion species in said beam on the basis of mass to produce an analyzed beam exiting said analyzing means, and beam resolving means disposed in the path of said analyzed beam for permitting ions of said preselected chemical species to pass to said target element; said analyzing means having an ion dispersion plane associated therewith; said source means having an associated ion emitting envelope including an area of substantial extension in a plane parallel to said ion dispersion plane and producing an ion beam characterized by a beam envelope which retains an area of substantial extension in a plane parallel to said ion dispersion plane throughout the region between said source and said analyzing means and by ions entering said analyzing means travelling substantially either toward or from a common apparent line object perpendicular to said ion dispersion plane.

4,578,590
CONTINUOUS ALIGNMENT TARGET PATTERN AND SIGNAL PROCESSING

Frederick Y. Wu, Cos Cob, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed May 2, 1983, Ser. No. 490,614
Int. Cl.⁴ G01N *21/86*
U.S. Cl. 250—548 **7 Claims**



1. In an alignment system for a scanning mask aligner employing continuous alignment patterns on a mask and continuous alignment patterns on a wafer in the scribe lines that run in the direction of scan, the combination comprising a viewing system having optical grid means, means for moving the patterns across said optical grid means in the viewing system, said mask patterns and said wafer patterns each having front edge portions and rear edge portions respectively, said front edge portions being displaced with respect to said rear edge portions in the direction of scanning so that only light corresponding to a plurality of said front edge portions is transmitted through said grid means during one period of time and only light corresponding to a plurality of said rear edge portions is transmitted through said grid means during a second later period in time, said grid means corresponding to the directions and spacings of the patterns so that light transmitted through the grid means is strongly modulated, and means responsive to said transmitted light operative to output alignment error signals.

4,578,591
CONTROL CIRCUIT FOR AUTOMOTIVE ACCESSORY SYSTEM

William M. Floyd, Livonia, and David L. Juzswik, Dearborn Heights, both of Mich., assignors to United Technologies Automotive, Inc., Dearborn, Mich.

Filed Oct. 25, 1984, Ser. No. 664,804
Int. Cl.⁴ H02J *1/00*
U.S. Cl. 307—10 R **16 Claims**

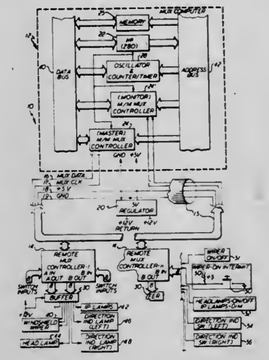
1. A control circuit for selectively determining multiple modes of operation for one or more electrical loads in an automotive accessory system, the circuit comprising:

for a said load, a respective momentary action switch operatively associated with a signal potential and being responsive to an actuating force to provide a signal indicative of switch actuation only while said actuating force persists;

microcomputer control means;

means for extending said signal indicative of switch actuation to said microcomputer control means; and

wherein said microcomputer control means repetitively, at brief intervals, determines the presence or absence of said actuation signal of a respective said switch and the duration of a said switch actuation signal, while present, relative to a predetermined time threshold and is operative following a determination that said switch actuation signal was present only for a momentary interval less than said predetermined threshold to effect control of a said load in

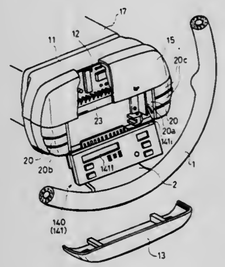


a primary mode and is operative following a determination that said switch actuation signal was present for a dwell interval longer than said predetermined threshold to effect control of a said load in a secondary mode.

4,578,592
STEERING WHEEL ASSEMBLY WITH CENTRALIZED CONTROL SYSTEM

Takaaki Nakazawa, Toyota; Kenichi Kazaoka, Nagoya; Nobuo Okazaki, Konan, and Kunihiko Nakashima, Green, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya and Toyoda Gosei Co., Ltd., Nishikasugai, both of, Japan

Filed May 31, 1984, Ser. No. 615,587
Claims priority, application Japan, Jun. 4, 1983, 58-100072
Int. Cl.⁴ H01H *9/00, 25/00*
U.S. Cl. 307—10 R **9 Claims**



9. A steering wheel assembly with a control system, comprising:

a steering wheel;

a center pad;

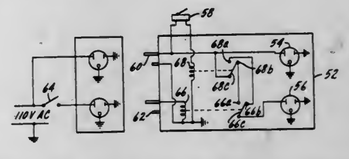
a spoke connecting said steering wheel and said center pad; and

a connecting plug positioned in said center pad wherein said center pad further comprises means formed therein selectively and interchangeably receiving one end of a plurality of terminal components for connection with said connecting plug, said terminal component comprising a plurality of output means corresponding to a plurality of electrical appliances and used in controlling said electrical appliances.

4,578,593
TWO-WAY ELECTRICAL CONTROL MODULE FOR A LAMP OUTLET

Mircho A. Davidov, 10337 Rue Finisterre, San Diego, Calif. 92131

Filed Nov. 5, 1984, Ser. No. 668,210
Int. Cl.⁴ H01H *47/00*
U.S. Cl. 307—113 **5 Claims**

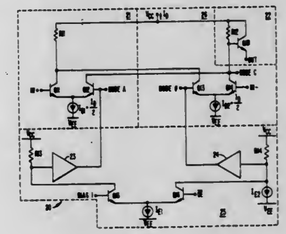


1. An electrical control module adapted to be connected to a wall-type receptacle to provide remote on/off switching of an electrical device such as a lamp or the like, and in which a wall-type on/off switch for the device is separately connected to the wall receptacle, said module including a housing, at least one receptacle outlet in the housing and adapted to receive a plug from the electrical device, a plug connection extending from the housing and adapted for insertion in the wall-type receptacle and connection to the wall-type on/off switch, means for providing a power line input to the housing, a remote on/off switch connected to the housing, and relay means positioned within the housing and connected between the plug connection, the power line input, the receptacle outlet and the remote on/off switch, said relay means including a first relay and a second relay, with each relay including a coil, with power to the first relay coil being controlled by the wall-type on/off switch and with power to the second relay coil being controlled by the remote on/off switch, whereby power is supplied to or removed from said receptacle outlet by independently operating either said remote on/off switch or the wall-type on/off switch.

4,578,594
CIRCUIT AND METHOD FOR SPLIT BIAS ENABLE/INHIBIT MEMORY OPERATION

Joe Santos, Lafayette, Calif., assignor to Fairchild Camera & Instrument Corporation, Palo Alto, Calif.

Filed Jan. 25, 1984, Ser. No. 573,532
Int. Cl.⁴ H03K *17/56, 5/22*
U.S. Cl. 307—241 **11 Claims**



1. A circuit for steering a current supplied by a current source to produce a predetermined circuit output signal in response to a selected circuit differential input signal, comprising:

a first differential amplifier, coupled to receive said current, for steering said current along a first current path in response to said selected circuit differential input signal;

a second differential amplifier, coupled to receive said current, for alternatively steering said current along a second

current path in response to said selected circuit differential input signal;

output means, coupled to receive said current, for producing said predetermined circuit output signal according to which of said first and second current paths said current is steered; and

means, coupled to said first and second differential amplifiers, for producing a balanced control signal to selectively enable each of said first and second differential amplifiers, whereby said current is steered along a selected one of said first and second current paths in response to said selected circuit differential input signal to produce said predetermined circuit output signal; and for alternatively producing a split control signal to selectively inhibit each of said first and second differential amplifiers, whereby said current is steered along a predetermined one of said first and second current paths to continually produce a corresponding circuit output signal without regard to said selected circuit differential input signal.

4,578,595

CIRCUIT ARRANGEMENT FOR DRIVE OF A THYRISTOR WITH LIGHT

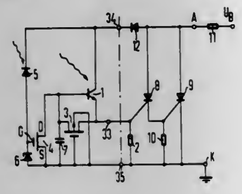
Jenö Tihanyi; Christine Fellinger, and Ludwig Leipold, all of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Oct. 24, 1984, Ser. No. 664,485

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1983, 3344476

Int. Cl.⁴ H03K *17/60, 3/45, 17/687*

U.S. Cl. 307—252 R **8 Claims**



1. A circuit arrangement for drive of at least one thyristor connected to an alternating voltage, comprising:

(a) a phototransistor, thyristor, and auxiliary transistor circuit means for enabling an ignition of the thyristor only in a proximity of a zero point of the alternating voltage;

(b) a collector-emitter path of the phototransistor being connected between a first of two alternating voltage terminals and a gate terminal of the thyristor; and

(c) said auxiliary transistor circuit means being formed of

(i) an enhancement type IGFET whose source-drain path is connected between a base terminal of the phototransistor and a second alternating voltage terminal;

(ii) a photodiode between a gate terminal of the IGFET and the first alternating voltage terminal;

(iii) the photodiode being poled such that it is biased in a reverse direction when voltage is present at the thyristor in a conducting direction; and

(iv) the IGFET having a higher threshold voltage and a lower input capacitance than the phototransistor.

4,578,596

CIRCUIT ARRANGEMENT FOR DRIVING A THYRISTOR WITH A PHOTOTRANSISTOR

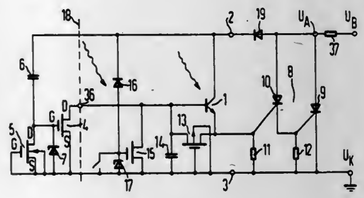
Jenoë Tihanyi; Christine Fellinger, and Ludwig Leipold, all of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Oct. 24, 1984, Ser. No. 664,380

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1983, 3344435

Int. Cl.⁴ H03K *17/60, 3/45, 17/687*

U.S. Cl. 307—252 R **6 Claims**



1. A circuit arrangement for driving at least one thyristor connected to an alternating voltage from a phototransistor, comprising:

(a) a phototransistor connected to drive the thyristor connected to an alternating voltage;

(b) an emitter-collector path of said phototransistor connected between a first of two alternating voltage terminals and a gate terminal of said thyristor;

(c) a drain-source path of an enhancement type IGFET connected between a base terminal of said phototransistor and a second of said two alternating voltage terminals;

(d) a drain-source path of a depletion type IGFET connected between a gate terminal and a source terminal of said enhancement type IGFET;

(e) a gate terminal of said depletion type IGFET and a source terminal thereof being electrically connected to said second alternating voltage terminal; and

(f) a capacitor connected between the drain terminal of said depletion type IGFET and said first alternating voltage terminal.

4,578,597

LARGE AMPLITUDE PULSE GENERATING CIRCUITS

Mitsuo Soneda, Zama; Manami Fukuzawa, Aiko, and Takaji Ohtsu, Hatano, all of Japan, assignors to Sony Corporation, Tokyo, Japan

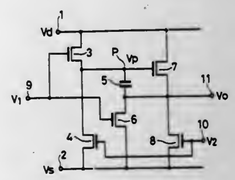
PCT No. PCT/JP83/00068, § 371 Date Nov. 2, 1983, § 102(e) Date Nov. 2, 1983, PCT Pub. No. WO83/03174, PCT Pub. Date Sep. 15, 1983

PCT Filed Mar. 5, 1983, Ser. No. 552,036

Claims priority, application Japan, Mar. 5, 1982, 57-34765

Int. Cl.⁴ H03K *3/017, 5/04*

U.S. Cl. 307—265 **4 Claims**



1. A pulse generating circuit comprising a series connection of a first switching element (3:13) and a second switching element (4), between first and second power supply terminals,

a series connection of a capacitive element (5) and a third switching element (6) coupled between a connecting point between the first and second switching elements and one of said power supply terminals, an amplifying (7) having input and output terminals connected to both ends of the capacitive element (5), respectively, and a fourth switching element (8) connected between the output end of the amplifying element (7) and said one power supply terminal, means for supplying a first input signal to the control terminals of the first and third switching elements and for supplying a second input signal to the control terminals of the second and fourth switching elements, whereby a pulse having a width corresponding to the time interval from a variation in the level of the first input signal to a variation in the level of the second input signal is obtained at the output end of the amplifying element (7).

4,578,598

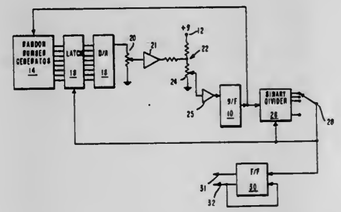
RANDOM PULSE GENERATOR CIRCUIT

Mark E. Faulhaber, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 17, 1984, Ser. No. 631,650

Int. Cl.⁴ H03L *29/00, 7/00;* **G06F** *1/02*

U.S. Cl. 307—271 **4 Claims**



1. A circuit for generating a sequence of electrical pulses wherein the pulse duration, the pulse interval, the pulse repetition frequency, the degree of randomness of the pulse repetition frequency and the pulse interval are selectable said circuit comprising:

(a) a voltage-to-frequency converter for generating binary-valued pulses, said converter having an output terminal to supply said binary-valued pulses and an input terminal to receive an input voltage comprising the sum of a fixed voltage which defines average pulse rate, and a random voltage, which defines a degree of variation of the pulse rate;

(b) a first voltage source for supplying said random voltage;

(c) a second voltage source for said fixed voltage;

(d) circuit means for connecting said random voltage and said fixed voltage to said input terminal of the voltage-to-frequency converter; and

(e) circuit means to divide the output pulses of said voltage-to-frequency converter and vary the average voltage applied to the input terminal of the voltage-to-frequency converter for providing pulse rate adjustment.

4,578,599

FLIP-FLOP HAVING IMPROVED SYNCHRONOUS RESET

William A. Birch, Tempe, and Lillie M. Woodard, Chandler, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 2, 1983, Ser. No. 500,594

Int. Cl.⁴ H03K *3/289*

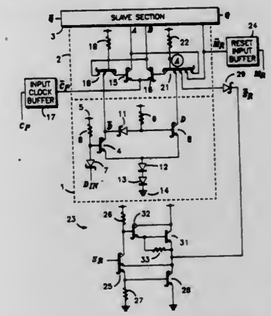
U.S. Cl. 307—272 A **7 Claims**

1. A flip-flop comprising:

data gate circuit means for receiving input data and for generating therefrom first and second complementary internal data signals representative of said input data;

master circuit means coupled for receiving a plurality of clock pulses in series and coupled to said data gate circuit means for latching said first and second complementary internal data signals during a predetermined portion of one of said clock pulses;

slave circuit means coupled to said master circuit means for storing said latched first and second complementary internal data signals; and



reset means coupled to said master circuit means for resetting said latched first and second complementary internal data signals on the occurrence of the next of one of said clock pulses, said reset means including a reset signal having a voltage level greater than said clock pulse, but less than said input data.

4,578,600

CMOS BUFFER CIRCUIT

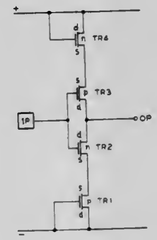
Terence E. Magee, Fulbourn, England, assignor to ITT Industries, Inc., New York, N.Y.

Filed Jan. 25, 1983, Ser. No. 460,953

Claims priority, application United Kingdom, Jan. 26, 1982, 8202151

Int. Cl.⁴ H03K *19/094, 17/687*

U.S. Cl. 307—451 **1 Claim**



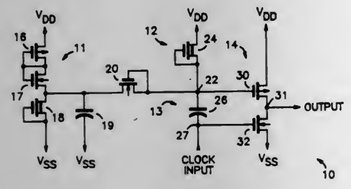
1. A complementary metal-oxide-silicon (CMOS) logic input circuit, including first and second complementary pairs of n-channel and p-channel transistors series coupled between the positive and negative supply terminals of the circuit, wherein the gate and drain of the n-channel transistor of the first pair and the p-channel transistor of the second pair are coupled respectively to the positive and negative terminals, wherein the circuit input is coupled to the gates of the other n-channel and p-channel transistors and the circuit output is coupled to the drains of the other n-channel and p-channel transistors, and wherein the arrangement is such that, in use, the other transistors are so biased for the positive and negative supply terminals that their input threshold switching level is substantially independent of CMOS device characteristic tolerances.

4,578,601

HIGH SPEED TTL CLOCK INPUT BUFFER CIRCUIT WHICH MINIMIZES POWER AND PROVIDES CMOS LEVEL TRANSLATION

Doyle V. McAlister, Pflugerville, Tex., and Richard D. Crisp, Beaverton, Oreg., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 7, 1983, Ser. No. 559,070
Int. Cl.⁴ H03K *19/096*
U.S. Cl. 307—475 **9 Claims**



1. A clock input buffer circuit for buffering an input clock signal having TTL voltage levels to provide an output clock signal having MOS voltage levels, comprising:

inverter means having first and second transistors of opposite conductivity type coupled between first and second power supply voltage terminals, the first transistor having a control electrode connected to a first node coupled to the input clock signal and having a predetermined threshold voltage, the second transistor having a control electrode connected to an input node also coupled to the input clock signal;

reference voltage means for providing a predetermined bias voltage to the first node, said predetermined bias voltage differing from the first supply voltage by substantially the predetermined threshold voltage;

means connected to the first node for coupling the first power supply voltage terminal to the first node, thereby limiting voltage at said first node to substantially within the first transistor threshold voltage of the first transistor of the inverter means; and

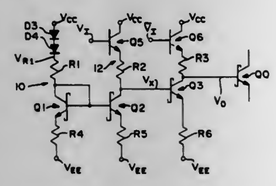
voltage translation means coupled between the first node and the input node, for translating the input clock signal received at the input terminal to a proportional signal at the first node.

4,578,602

VOLTAGE SIGNAL TRANSLATOR

Jeffery A. West, Pleasant Grove, Utah, and Thomas D. Fletcher, Wijchen, Netherlands, assignors to Signetics Corporation, Sunnyvale, Calif.

Filed Jul. 11, 1983, Ser. No. 512,269
Int. Cl.⁴ H03K *15/092, 3/01*
U.S. Cl. 307—475 **11 Claims**



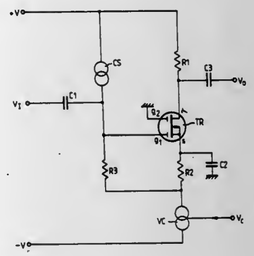
1. A signal translator for converting an input voltage signal into an output voltage signal at a different voltage level wherein: a first bipolar transistor has a collector coupled to one end of a first impedance element, a base connected directly to the collector, and an emitter coupled to a first voltage supply; a like-polarity second bipolar transistor has a collector coupled to one end of a second impedance element, a base connected to the other base, and an emitter coupled to the first supply; a like-polarity output bipolar transistor has a collector which provides the output signal and is coupled to one end of an output impedance element whose other end is coupled to a second voltage supply, a base coupled to the collector of the second transistor, and an emitter coupled to the first supply; a like-polarity input bipolar transistor has a collector coupled to the second supply, a base which receives the input signal, and an emitter coupled to the other end of one of the first and second impedance elements; and device means provides a selected voltage to the other end of the other of the first and second impedance elements; characterized by: an impedance element coupled between the first supply and the emitter of the first transistor; and an impedance element coupled between the first supply and the emitter of the second transistor.

4,578,603

TEMPERATURE-INDEPENDENT GAIN CONTROL CIRCUIT

Hugh McPherson, Tweeddale, Scotland, assignor to Ferranti plc, Cheshire, England

Filed Mar. 23, 1983, Ser. No. 478,098
Claims priority, application United Kingdom, Mar. 31, 1982, 8209473
Int. Cl.⁴ H03K *3/353*
U.S. Cl. 307—493 **2 Claims**



1. A temperature-independent gain control circuit comprising:

a dual-gate MOSFET having a pair of gates, a source and a drain;

a signal input connection to one of said MOSFET gates;

a source resistance having two terminals, one of said source resistance terminals being connected to said MOSFET source such that during operation a voltage drop proportional to drain current is developed across said source resistance; and

control means responsive to a control voltage for varying MOSFET drain current in proportion to the control voltage by controlling the biasing voltage between said other of said MOSFET gates and said other of said source resistance terminals, while establishing a biasing voltage between the other of said MOSFET gates and the other of said source resistance terminals, said control means including a differential amplifier having:

an output referenced to said other of said source resistance terminals and connected to said other of said MOSFET gates,

an input connected to one of said source resistance terminals and responsive during operation to the voltage drop across said source resistance, and

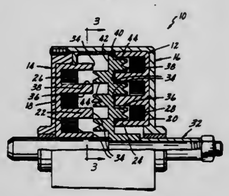
another input having the control voltage applied thereto.

4,578,604

SOLENOID ACTUATORS

John L. Eilertsen, Birmingham, Mich., assignor to Dante Giardini, Dearborn Heights, Mich., a part interest

Continuation-in-part of Ser. No. 323,239, Nov. 20, 1981. This application Mar. 15, 1984, Ser. No. 590,040
Int. Cl.⁴ H02K *33/00*
U.S. Cl. 310—30 **8 Claims**



1. A solenoid actuator comprising a generally flat armature, means mounting said armature for movement through a defined stroke path having a path component perpendicular to said armature, and a stator mounted to said path-defining means and oriented with respect to said armature to be electromagnetically coupled to said armature for drawing said armature in the direction of said path component,

said stator comprising a plurality of spaced poles extending toward said armature, each of said poles having a pole end face perpendicular to said one path component and oppositely oriented pole side faces parallel to said path component,

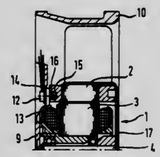
said armature being an integral one-piece structure and comprising a generally flat body having a plurality of ribs integrally projecting from said body, one said rib between each pair of said spaced stator poles, each of said ribs having oppositely oriented side faces parallel to said path component and to said pole side faces, said body between said ribs having a flat face parallel and opposed to said pole end faces.

4,578,605

ELECTRIC MOTOR WITH A SYSTEM FOR MONITORING SPEED

Wilhelm Reinhardt, Schrozberg/Gütbach, and Ulrich Rüdele, Weissbach, both of Fed. Rep. of Germany, assignors to ebm Elektrobau Mulfingen GmbH & Co., Fed. Rep. of Germany

Filed Oct. 20, 1983, Ser. No. 543,935
Claims priority, application Fed. Rep. of Germany, Nov. 8, 1982, 3241152
Int. Cl.⁴ H02L *37/00*
U.S. Cl. 310—67 R **9 Claims**



1. Electric motor for a system for speed monitoring, especially for compressors, fans, ventilators and blowers, where the rotational speed is monitored with the help of a speed-proportional signal, the motor having a stator and a rotor which can rotate in the stator, wherein the system for speed monitoring comprises:

a single permanent magnet mounted in the front end of the rotor facing the stator;

said permanent magnet being rod or disk shaped with a rectangular or round cross section of about 4 mm^2 to 28 mm^2 and a length of about 1 mm to 5 mm; and

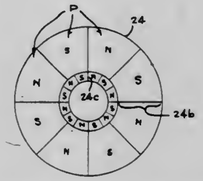
a digital Hall-IC detector which is triggered by the magnetic field of the permanent magnet and which is located on the stator on a circle whose midpoint lies in the axis of rotation of the rotor and whose radius corresponds to the radius of the circular path of the permanent magnet, so that the nonrotating condition of the motor is indicated by either a continuous logic "0" or "1" output from the detector.

4,578,606

BRUSHLESS DC ELECTRIC MOTOR AND TACHOGENERATOR ASSEMBLY

Raymond E. Welterlin, Cary, N.C., assignor to Buehler Products, Inc., Raleigh, N.C.

Filed Dec. 13, 1984, Ser. No. 681,271
Int. Cl.⁴ H02K *11/00*
U.S. Cl. 310—68 R **15 Claims**



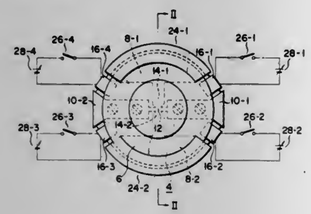
1. A brushless, self-commutating DC motor for driving computer discs, electronic equipment disc records and the like and including a tachogenerator for producing speed control signals of low frequency and of low jitter, comprising a disc-like motor including a rotor having a generally cup-shaped housing, an output drive shaft fixed to said housing, and a cylindrical annular permanent rotor magnet carried by said housing concentric with a center axis of rotation of the housing providing a center hole concentric with said axis, a stator assembly including a stator support member and a plurality of rotor drive coils and a speed signal generating coil assembly supported thereby, means journalling said output drive shaft and rotor including said drive coils on said stator support member, the annular rotor magnet having two tracks of multipolarization formed of an outer annular circular track over the major radial extent thereof having a plurality of driving magnetic poles segmented circumferentially of the rotor magnet of alternating polarity and an inner annular circular track of tachogenerator magnetic poles of a greater number than the driving poles segmented circumferentially of the rotor and located immediately adjacent the inner cylindrical boundary of the annular rotor magnet, and the signal generating coil assembly including stator coil means and yoke means of soft magnetic material coupled magnetically with the flux lines produced by said tachogenerator magnetic poles for producing tachogenerator signals of low frequency having a low jitter content to be processed by digital control circuitry for controlling the speed of the motor.

4,578,607

PIEZOELECTRIC PRECISE ROTATION MECHANISM FOR SLIGHTLY ROTATING AN OBJECT

Toru Tojo, Ninomiya, and Kazuyoshi Sugihara, Kawasaki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 26, 1984, Ser. No. 664,964
Claims priority, application Japan, Nov. 30, 1983, 58-225701
Int. Cl.[4] H01L *41/08*
U.S. Cl. 310—328 **10 Claims**



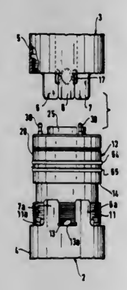
1. A precise rotation mechanism comprising:
a base member;
first and second movable sections;
a first fixed section arranged between the first and second movable sections and fixed to the base member;
first and second driving members capable of elongation and contraction, said first and second movable sections being coupled to said first fixed section through said first and second driving members, respectively;
a rotatable member having a rotation center and a surface facing the first and second movable sections;
means for defining an axis of rotation of said rotatable member;
first and second energizable fixing members being movable upon energization thereof for fixing said rotatable member to said first and second movable sections; and
energizing means for energizing said first and second fixing members and said first and second driving members, to rotate said rotatable member.

4,578,608

COUPLING FOR ELECTRIC MOTORS

Christian Mech, and Daniel Gironde, both of L'Isle Adam, France, assignors to Alsthom-Atlantique, Paris, France

Filed Mar. 22, 1985, Ser. No. 714,763
Claims priority, application France, Apr. 2, 1984, 84 05164
Int. Cl.[4] F04D *13/08*; F16D *1/04*
U.S. Cl. 310—112 **5 Claims**



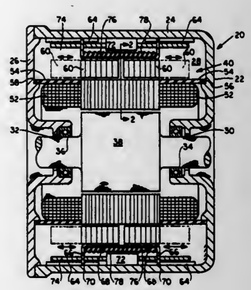
1. A coupling for electric motors, each of said motors comprising a rotor and a stator mounted in a tubular shell, the coupling including the improvement whereby the ends of the tubular shells to be assembled are shaped to be suitable for end-to-end inter-fitting in a manner which determines a relative angular position of the shells, said shape being identical on both shells to be assembled, the coupling further including an internal coupling module constituting a subassembly which is independent of the motors per se, said module comprising a coupling sleeve for coupling the rotor shafts, electrical connection means for interconnecting the stators, and support means acting both as radial bearings and as axial stops for the motors to be assembled, the end of at least one of the said rotor shafts to be coupled in rotation having a coupling section defined by the surface inside a closed, non-circular line having polar co-ordinates such that the polar radius is periodic over an angle equal to $2\pi/n$, where n is a positive integer greater than one, said sleeve having at least one end with a corresponding bore, the said end of the sleeve and of the shaft further including respective conjugate inlet shapes enabling the shaft to penetrate into the sleeve regardless of their relative angular positions by virtue of a force which is solely axial causing at least one of said two parts to rotate until both parts are correctly oriented relative to each other, the coupling further including link means between the internal coupling module and the shells.

4,578,609

PERMANENT MAGNET DYNAMOELECTRIC MACHINE

Frederick B. McCarty, San Pedro, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Sep. 29, 1982, Ser. No. 429,639
Int. Cl.[4] H02K *21/12*
U.S. Cl. 310—156 **63 Claims**



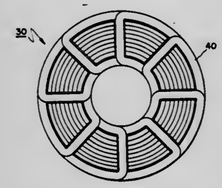
1. Electrical dynamo apparatus comprising:
an electrical conductor connectable to complete an electrical circuit, a permanent magnet movable relative to said electrical conductor, said permanent magnet providing a pair of magnetic poles of opposite polarity and a magnetic flux flowing between said pair of magnetic poles, first means defining a first magnetic circuit for communicating said magnetic flux between said pair of magnetic poles, said first magnetic circuit having a first magnetic reluctance and transecting said electrical conductor to induce an electromotive force therein in response to the combination of movement of said electrical conductor relative to said permanent magnet and flow of said magnetic flux in said first magnetic circuit, second means defining a second alternative magnetic circuit for communicating said magnetic flux between said pair of magnetic poles, said second magnetic circuit having a second magnetic reluctance and being exclusive of said electrical conductor, one of said first and said second means further including a portion which is movable relative to the remainder thereof between a first and a second relative position for varying one of said first and said second magnetic reluctance, in said first relative position of said movable portion said first magnetic circuit predominating to communicate substantially all of said magnetic flux flow across said electrical conductor, said movable portion shifting to said second relative position to communicate a substantial portion of said magnetic flux flow via said second magnetic circuit to reduce magnetic flux flow in said first magnetic circuit and thereby to adjust said electromotive force, wherein said first means comprises a rotatable member and a nonrotatable member, said rotatable member carrying said permanent magnet, said nonrotatable member circumscribing said rotatable member and supporting said electrical conductor, said nonrotatable member having said relatively movable portion, said relatively movable portion being shiftable axially between said first position wherein said relatively movable portion is radially congruent with said permanent magnet and said second position wherein said relatively movable portion is substantially out of radial congruence with said permanent magnet.

4,578,610

SYNCHRONOUS DISK MOTOR WITH AMORPHOUS METAL STATOR AND PERMANENT MAGNET ROTOR AND FLYWHEEL

Gerald B. Kliman, Schenectady, and Allan B. Plunkett, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 914,191, Jun. 12, 1978, abandoned.
This application Jun. 25, 1984, Ser. No. 624,328
Int. Cl.[4] H02K *21/12*
U.S. Cl. 310—156 **9 Claims**



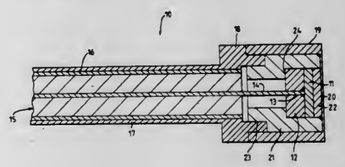
1. An electrical machine comprising, in combination:
a first ferromagnetic stator body;
a rotor body disposed adjacent said stator body and being rotatable with respect thereto, said rotor body and stator body being separated from one another by an air gap and being magnetically coupled to one another through said air gap;
said stator body comprising a coil of concentric turns of a thin elongated amorphous metal tape wound in the form of an annulus with a central opening;
said stator body annulus having first and second end surfaces, and a plurality of symmetrically distributed slots extending axially across at least a portion of the radial thickness of said first end surface and in a direction perpendicular to the layers of said tape and extending into said annulus for a predetermined depth; and
stator winding means wound in said slots;
said rotor body including a plurality of permanent magnets symmetrically located and circumferentially spaced relative to one another, around the axis of rotation of said rotor body; each of said permanent magnets being magnetized in a direction parallel to said axis of rotation and generally confronting a separate pole, respectively, defined at least in part by said stator winding means wound in said slots.

4,578,611

PIEZOELECTRIC STRESS WAVE TRANSDUCER WITH BORON NITRIDE PIEZO SUPPORT

Michael Sadler, Burton-on-Trent, England, assignor to Rolls-Royce Limited, London, England

Filed Jan. 22, 1985, Ser. No. 692,981
Claims priority, application United Kingdom, Mar. 14, 1984, 8406699
Int. Cl.[4] H01L *41/08*
U.S. Cl. 310—338 **7 Claims**



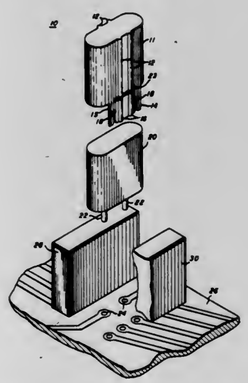
1. A transducer for detecting stress waves comprising a piezo-electric member, an electrically conductive backing member upon which said piezo-electric member is mounted and which is in electrical contact therewith and a boron nitride support member which carries both said piezo-electric member and said backing member, said piezo-electric member being so disposed as to be operationally exposed to stress waves whereby any such stress waves cause said piezo-electric to deform and thereby generate an electrical output, the magnitude of which is indicative of the magnitude of said stress waves.

4,578,612

SHOCK ABSORBER AND SPACER FOR QUARTZ CRYSTALS

Charles W. Mooney, Lake Worth, Fla., assignor to Motorola, Inc., Del.

Filed Sep. 14, 1984, Ser. No. 650,484
Int. Cl.[4] H01L *41/08*
U.S. Cl. 310—348 **9 Claims**



1. A shock isolator having an integral spacer for use in conjunction with quartz crystal enclosures or the like having electrical leads, said shock isolator comprising:
a body portion having a shape suitable for substantially covering portions of said crystal enclosure;
springing means, coupled to said body portion, for providing isolation to said crystal enclosure against the shock of impact with nearby structures;

spacing means for spacing said crystal enclosure away from a circuit board by a predetermined distance; and

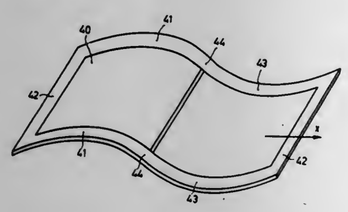
hinging means for attaching said spacing means to said body portion in a manner which allows said spacing means to be pivoted to a first position to facilitate easy attachment of said crystal enclosure to said body portion and pivoted into an operative position for spacing said crystal enclosure from said circuit board.

4,578,613

DIAPHRAGM COMPRISING AT LEAST ONE FOIL OF A PIEZOELECTRIC POLYMER MATERIAL

Abe Posthuma de Boer, and Jan W. Vegt, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 888,847, Mar. 22, 1978, abandoned.
This application Jan. 24, 1980, Ser. No. 114,858
Claims priority, application Netherlands, Apr. 7, 1977, 7703836
Int. Cl.⁴ H01L *41/08*
U.S. Cl. 310—800 **11 Claims**



1. An electro-acoustic device comprising a diaphragm which includes at least one foil of a piezoelectric polymer material, at least one pair of electrodes located on opposite sides of said foil so that electric signals on said electrodes are converted into acoustic vibrations and vice versa, the diaphragm being maintained in a curved position under mechanical prestress in the rest conditon such that for every point on the diaphragm surface a first and a second tangential direction can be found, in which the curvatures of the surface are opposite to one another, the curved shape of the diaphragm and the location of the electrodes being arranged so that changes in surface shape in response to said electric signals and the corresponding non-linear conversion into acoustic vibrations of given portions of the diaphragm is combined with similar changes in surface shape of other portions of the diaphragm so that the conversion into acoustic vibrations of the given and other portions for the fundamental wave of the signals augment one another but said given and other portions of the diaphragm provide a compensating effect for the even harmonics of the signals.

4,578,614

ULTRA-FAST FIELD EMITTER ARRAY VACUUM INTEGRATED CIRCUIT SWITCHING DEVICE

Henry F. Gray, Alexandria, Va., and Richard F. Greene, Bethesda, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 23, 1982, Ser. No. 401,277
Int. Cl.⁴ H01J *1/02*
U.S. Cl. 313—309 **7 Claims**

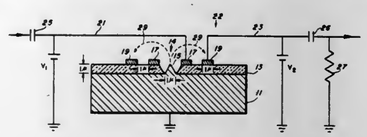
1. An ultra-fast microminiature planar switching device comprising:

an electron-emissive substrate;

an insulating layer formed over a surface of the substrate;

a field-emission cathode comprised by an opening formed in the insulating layer exposing a part of the underlying substrate, with the central region of the exposed underlying material forming a raised emitting tip integral with the underlying substrate;

a gate electrode for control of electron extraction from the field-emission cathode comprised by a first metallization located on the insulating layer and adjacent to the opening;



a collector electrode for collection of substantially all electron emission from the field-emission cathode comprised by a second metallization located on the insulating layer and separated from the first metallization; and

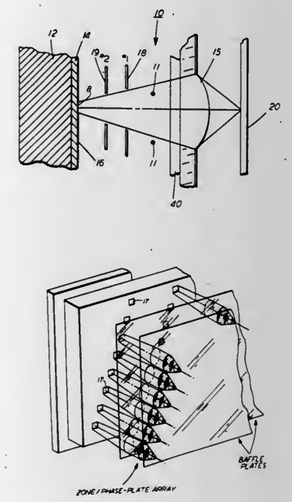
means for supplying an input signal to the gate to cause emission and travel of electrons from the field emission cathode to the collector and for extracting an output signal from the collector.

4,578,615

VACUUM FLUORESCENT PRINTING DEVICE EMPLOYING A FLY'S-EYE LIGHT COUPLING METHOD

Frank C. Genovese, Fairport, and James W. Lannom, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 1, 1984, Ser. No. 605,731
Int. Cl.⁴ H01J *1/62, 63/06*
U.S. Cl. 313—497 **12 Claims**



1. A vacuum fluorescent printing device adapted for use in conjunction with a moving light sensitive recording media in order to create images from electronically generated data, comprising in combination:

a plurality of cathode filaments;

at least one control grid;

a skewed matrix of addressable phosphor areas arranged on an anode substrate such that as said phosphor sections are excited by said cathode filaments through said control grid a high resolution array of precisely defined light is directed toward said light sensitive recording media; and

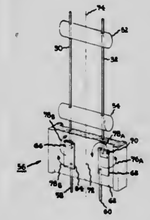
a single curved surfaced fly's-eye lens array adapted to transmit the light from said phosphor areas to said light sensitive recording media, said fly's-eye lens array having lenses that are offset in relation to a vertical plane such that they match said skewed matrix of addressable phosphor areas in order that all points on the surface of said light sensitive recording media can be addressed.

4,578,616

TUNGSTEN HALOGEN INCANDESCENT LAMP HAVING AN IMPROVED MOUNTING STRUCTURE

John G. Cardwell, Jr., Milan, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Jun. 7, 1984, Ser. No. 618,179
Int. Cl.⁴ H01K *1/22, 1/40*
U.S. Cl. 313—579 **1 Claim**



1. A tungsten-halogen incandescent lamp comprising a tungsten wire planar multi-filament having coiled-like sections joined together by uncoiled sections and further having coiled leg sections, said lamp further comprising a light-transmitting envelope of vitreous material having a pinch seal end and a pair of rigid outer lead-in wires each having one end extending into said envelope, said envelope containing an inert gas along with a halogen additive for providing a halogen atmosphere in the lamp during the operation thereof, said lamp further comprising;

(a) a mounting assembly holding the planar multi-filament in a predetermined central position within the envelope and comprising;

(a_i) A pair of substantially straight support rods extending alongside opposite sides of the planar filament and connected to said coiled leg portions;

(a_{ii}) a pair of insulating bridge cane-like members transversely located between opposite ends of said support members and providing a structure that surrounds the planar filament;

(a_{iii}) coil support members anchored in said bridge cane-like members and engaging said uncoiled segments of said planar filament;

(a_{iv}) means rigidly lodged in said pinch seal end for coupling said rigid outer lead-in wires to said support rod members comprising:

a first foil member and a first tab member, and a second foil member and a second tab member for respectively connecting said one end of each outer lead-in wires extending through said envelope to one end of each support rod members, and

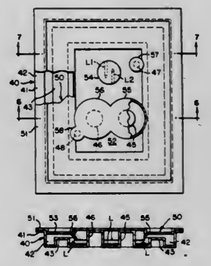
said one end of said outer lead-in-wires being respectively connected to opposite surfaces at one end of said foil members, said respective support members being connected to the same surface of said foil members as their respective outer lead-in wires and at the opposite end of the said foil members by affixing respective support rods to the tab member of the respective foil members.

4,578,617

ELECTROLUMINESCENT PANELS

Charles Kerr, III, and Mark Forell, both of E. Aurora, N.Y., assignors to Astronics Corporation, Orchard Park, N.Y.

Filed Nov. 7, 1983, Ser. No. 548,972
Int. Cl.⁴ H01J *33/02*; G09F *13/22*; G01D *11/28*
U.S. Cl. 313—512 **10 Claims**



1. An EL instrument panel, comprising a light transmissive shell having a recess in the back thereof,

an EL lamp element mounted in said recess and having therethrough an opening,

a backing member having thereon a projection extending into said recess in closely spaced confronting relation to said EL element, and

potting material interposed between and permanently fixing together said member and said shell, said potting material extending into and filling the space between said projection and said EL element thereby to form an assembly with said EL element being embedded in said potting material,

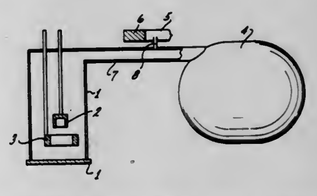
said assembly having therethrough an instrument opening which registers with said opening in said EL element, and which is adapted to have an instrument mounted therein so as to be surrounded by said EL element.

4,578,618

LOW-PRESSURE, HOLLOW CATHODE LAMP

Michael Zöchbauer, Oberursel, Fed. Rep. of Germany, assignor to Hartmann & Braun AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 20, 1980, Ser. No. 161,332
Claims priority, application Fed. Rep. of Germany, Jun. 23, 1979, 2925410
Int. Cl.⁴ H01J *61/28, 61/09*
U.S. Cl. 313—563 **3 Claims**



1. A low-pressure, hollow cathode lamp, containing in its interior nitrogen and oxygen for emitting nitrogen oxide molecule resonance radiation, the improvement comprising a quantity of manganese dioxide provided for exposure to the interior of the lamp, for replenishing consumed oxygen by gradually releasing oxygen as bonded in the dioxide.

4,578,619

GLASS COMPOSITION AND GAS-FILLED DISPLAY PANEL INCORPORATING THE GLASS

Ruvim Braude, Elizabeth, N.J., assignor to Burroughs Corporation, Detroit, Mich.

Filed Jun. 22, 1983, Ser. No. 506,841
Int. Cl.⁴ H01J *17/49*
U.S. Cl. 313—586 **3 Claims**

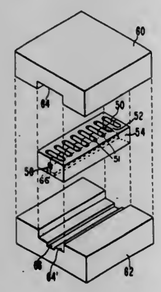
1. A glass composition suitable for joining components of apparatus consisting essentially of about 20% by weight of SiO_2, about 20% by weight of B_2O_3, about 3% by weight of CaO, about 40% by weight of ZnO, about 5% by weight of Al_2O_3, about 7% by weight of Na_2O, about 4% by weight of K_2O, and about 1% by weight of Li_2O.

4,578,620

SLOW WAVE CIRCUIT FOR A TRAVELING WAVE TUBE

Bertram G. James, Redwood City; Frank C. Dinapoli, Saratoga, and Lloyd P. Hayes, San Jose, all of Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

Continuation of Ser. No. 371,368, Apr. 23, 1982, abandoned. This application Jun. 29, 1984, Ser. No. 626,467
Int. Cl.⁴ H01J *25/36*
U.S. Cl. 315—3.5 **5 Claims**



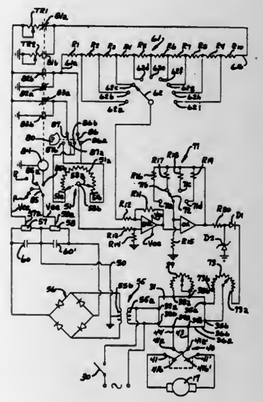
1. A coupled-cavity slow-wave circuit comprising:
a first one-piece metallic comb having a first pair of opposed limiting surfaces lying on a pair or parallel side planes, an axis aligned midway between said side planes, said comb further including a generally rectangular elongated backing member extending along the direction of said axis and perpendicular to said side planes, an array of identical vanes of generally rectangular shape, each said vane extending at right angles from said backing member and evenly spaced along said axis, said vanes being of equal length and each terminating in an end forming a rectangular tip, each said rectangular tip of said vanes lying in a symmetry plane containing said axis and perpendicular to said side planes, a groove being formed on each said rectangular tip of said vanes and centered along said axis, said vanes, backing member and opposed limiting surfaces defining therebetween an array of slots;
a second one-pice metallic comb having vanes, a backing member, a groove, slots, and a pair of opposed limiting surfaces which are the mirror image of said vanes, backing member, groove, slots and opposed limiting surfaces of said first comb as mirrored in said symmetry plane;
said first and second combs being aligned on said symmetry plane such that said vane grooves align to form an enclosed electron beam passageway, said a pair of opposed limiting surfaces of said second comb lying on said pair of parallel side planes of said first comb, and said slots align to form an array of openings extending through said pair of opposed limiting surfaces;
a pair of metallic cover members, each having a flat surface, said flat surface of each cover member covering and in electrical contact with a respective one of the pair of opposed limiting surfaces of said combs;
at least one of said cover members having a uniform axial channel disposed in said flat surface;
said cover members being bonded to said combs in electrical contact therewith to partially cover and short circuit said openings to form an array of coupled cavities and to form part of a vacuum envelope foe said circuit.

4,578,621

STOCK ADVANCING APPARATUS WITH DANCER OPERATED POTENTIOMETER SPEED CONTROL

Richard D. Nordlof, 3312 Crest Rd., Rockford, Ill. 61107

Filed Dec. 13, 1984, Ser. No. 681,240
Int. Cl.⁴ H02P *7/00*; G05B *1/06*
U.S. Cl. 318—6 **17 Claims**



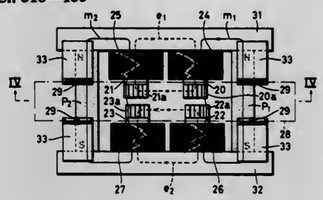
1. A stock advancing apparatus comprising, a support, rotary stock advancing means on the support, an electric drive motor for driving the rotary stock advancing means, motor control means having an output circuit connected to the drive motor and an input circuit, said motor control means being operative to energize and drive the drive motor at a speed correlative with the amplitude of an input voltage applied to its input circuit, a stock loop control arm mounted for swinging movement about an axis through a range of control arm positions, a control voltage divider having a movable contact, means for applying a DC voltage to the control voltage divider, means operatively connecting the movable contact of the control voltage divider to the control arm for movement therewith to produce a control arm voltage at its movable contact correlative in amplitude with the angular position of the loop control arm, reference voltage means for producing a DC reference voltage, and means responsive to said control arm voltage and said reference voltage for applying an input voltage to the input circuit of the motor control means correlative in amplitude with the amount by which the control arm voltage exceeds the reference voltage, and selectively adjustable means for changing the amplitude of the reference voltage to change the angular position of the control arm at which the motor is energized to drive the stock reel.

4,578,622

LINEAR PULSE MOTOR

Hiroshi Nakagawa, and Zenichiro Miwa, both of Mie, Japan, assignors to Shinko Electric Co., Ltd., Tokyo, Japan

Filed Oct. 20, 1983, Ser. No. 543,927
Claims priority, application Japan, Oct. 26, 1982, 57-188843; Nov. 11, 1982, 57-198658
Int. Cl.⁴ H02K *41/00*
U.S. Cl. 318—135 **29 Claims**



1. A linear pulse motor comprising:
(A) a primary body including first magnetic circuit forming means provided with a coil or coils;
(B) a secondary body including second magnetic circuit forming means, one of said primary body and said secondary body being movable relative to the other in one axis of direction;
(C) said primary body and said secondary body being flat in parallel planes to each other;
(D) said first magnetic circuit forming means including plural pole surface portions in one surface in each of which first plural teeth are formed at constant pitch, the groups of the first plural teeth of said plural pole surface portions being shifted from one another in a predetermined order by the pitch length x the reciprocal of the number of said pole surface portions (p/n, where p and n represent the pitch length of the first plural teeth and the number of said pole surface portions, respectively);
(E) said second magnetic circuit forming means including second plural teeth of the same pitch as said first plural teeth of the plural pole surface portions; and
(F) guide means for guiding said one of the primary body and the secondary body movably in said one axis of direction, arranged between said primary body and said secondary body for maintaining the constant air gap between said first plural teeth and second plural teeth;
(G) the axis of said coil or coils around which said coil or coils are wound, being substantially perpendicular to said constant air gap;
wherein at least one closed magnetic circuit is formed by said first and second magnetic circuit forming means, and said air gap, when said coil or coils are energized in such a mode or order that magnetic attraction occurs between the selected one or ones of the groups of said first plural teeth in said predetermined order, and said second plural teeth of the secondary body for moving said one of the primary body and secondary body by P/n in said one direction, magnetic flux flows through said one closed magnetic circuit and is substantially perpendicular to said air gap in said first magnetic circuit forming means.

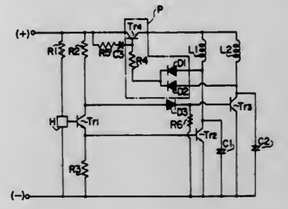
4,578,623

BURN-OUT PREVENTIVE CIRCUIT FOR COMMUTATORLESS MOTOR

Seiichi Tsukutani, Sakaiminato, and Naoki Nakada, Tottori, both of Japan, assignors to Matsishita Electric Industrial Co., Osaka, Japan

Filed May 21, 1984, Ser. No. 612,643
Claims priority, application Japan, May 26, 1983, 58-92720
Int. Cl.⁴ H02P *6/02*
U.S. Cl. 318—254 **10 Claims**

1. A burn-out preventive circuit for a commutatorless motor comprising half-wave driven drive windings of two phases, driving power transistors connected in series with said drive windings respectively, position detecting means connected at its output terminal to the bases of said driving power transistors directly or indirectly for alternately turning on said driving power transistors depending on the angular position of rotation of a permanent magnet rotor, a power transistor constituting part of protective means connected in series with said drive windings, and diodes connected at their anodes to the negative power supply terminal side of said drive windings and at their cathodes to the base of said power transistor through a resistor, said power transistor being turned off when the counter-electromotive force induced in the non-energized one of said drive windings while the other is being energized is lower than the predetermined level or zero, thereby interrupting energization of said latter drive winding.

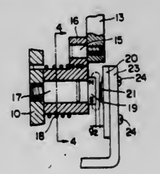


4,578,624

SPEED SETTING ARRANGEMENT FOR SEWING MACHINES

Shigeo Neki, Osaka; Nozomu Shinozaki, and Takashi Dohi, both of Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 601,096, Apr. 17, 1984, abandoned, which is a continuation of Ser. No. 328,635, Dec. 8, 1981, abandoned. This application Jan. 31, 1985, Ser. No. 696,885
Claims priority, application Japan, Dec. 9, 1980, 55-174019
Int. Cl.⁴ H02K *1/22*
U.S. Cl. 318—305 **6 Claims**



1. A speed setting arrangement for a sewing machine, comprising a manually operated pedal, an elongated rotating magnet for generating a magnetic field having magnetic poles located at diametrically opposite positions of a rotary plane defined by said rotating magnet, said magnet being rotatably coupled with said pedal so that the magnet has in said rotary plane a vector component which is oriented in accordance with the angle of rotation of said pedal, and a sensor having a plurality of magnetoresistance elements arranged on a stationary plane parallel with and axially spaced from said rotary plane and lying on and coaxial to the axis of rotation of said magnet, said magnetoresistance elements being arranged in a circuit for generating a signal exclusively in response to the orientation of said magnetic vector component by being in close axial proximity to said magnet such that the resistance of the magnetoresistance elements magnetically saturates, allowing the signal output voltage to exclusively represent the angu-

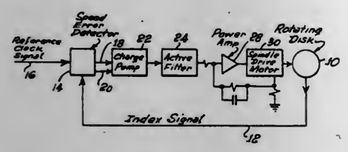
lar orientation of the magnet and thereby the angle of rotation of the pedal despite deviations in axial separation between the magnets and magnetoresistance elements occurring as a result of mechanical wear.

4,578,625

SPINDLE DRIVE CONTROL SYSTEM

Ara W. Nazarian, Hollywood, and Donald G. Stupeck, Canoga Park, both of Calif., assignors to Computer Memories, Inc., Chatsworth, Calif.

Filed Dec. 21, 1983, Ser. No. 563,958
Int. Cl.[4] H02P 5/00
U.S. Cl. 318—318 **8 Claims**



1. A rotational speed error detection cicuit responsive to externally provided index pulses of frequency representative of rotational speed of a rotating member, comprising:

toggling means for receiving said index pulses and providing alternate index pulses as first toggled index pulses and second toggled index pulses respectively;

first reference time means coupled to said toggling means for providing a first reference time signal a specified reference time after receipt of each first toggled index pulse;

second reference time means coupled to said toggling means for providing a second reference time signal said specified reference time after receipt of each second toggled index pulse;

logic means responsive to said first and second toggled index pulses and said first and second reference time signals for providing a speed up command signal when the time between successive toggled index pulses exceeds said reference time and a slow down command signal when the time between successive toggled index pulses is less than said reference time, the duration of said command signal being proportional to the magnitude of the difference between the time between said successive toggled index pulses and said reference time.

4,578,626

ELECTRICAL CONTROL ARRANGEMENT FOR A ROLLING MILL DRIVE MOTOR OF A ROLLING MILL

Walter Richter, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

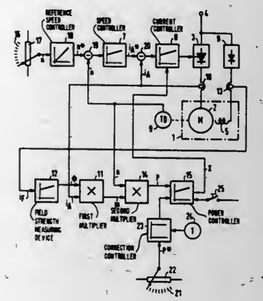
Continuation of Ser. No. 572,825, Jan. 23, 1984, abandoned. This application Mar. 21, 1985, Ser. No. 714,344
Claims priority, application Fed. Rep. of Germany, Jan. 24, 1983, 3302222
Int. Cl.[4] H02P 5/16, 7/00
U.S. Cl. 318—338 **5 Claims**

1. In an electrical control arrangement for controlling the speed of a rolling mill driving motor having an armature winding and a field winding supplied with electrical current from a supply network, the driving motor being coupled to and driving rolls of a rolling mill for manufacturing hollow blocks, the control arrangement including a speed controller for controlling the speed of the motor, a current controller for contr"-- the armature winding current coupled to the speed contro. means coupled to said driving motor for determining the actual speed of the motor and means coupled to said armature winding for determining the armature winding current of the motor, said speed controller being coupled to means for generating a reference speed value and said means for determining the actual speed of the motor whereby said speed controller generates a signal proportional to a desired value of the armature winding current, said signal being supplied to said current controller, the improvement comprising:

first means coupled to the field winding for determining the field strength generated by said field winding of the motor;

second means for generating a reference motor power value;

control means comprising first multiplier means coupled to said means for determining the armature winding current and to said first means, for generating, at an output thereof, a signal proportional to the torque developed by said driving motor, second multiplier means coupled to said means for determining the actual speed of the motor



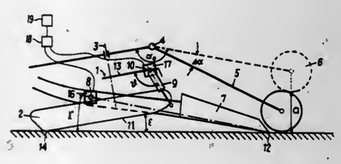
and to the output of said first multiplier means, for developing, at an output thereof, a signal proportional to the actual power developed by said motor, and third means coupled to said second means and to the output of said second multiplier means for comparing the actual value of the motor power with said reference power value to form a control signal, said control signal coupled as a control input to said current controller whereby said current controller maintains the power of said motor substantially constant, and means for selectively deactivating said control means whereby said control arrangement maintains the speed of the driving motor substantially constant, instead of maintaining the power of said motor substantially constant.

4,578,627

DEVICE FOR CORRECTING THE CONTROL OR THE DISPLAY OF THE POSITION OF A CUTTING TOOL OF A CUTTING MACHINE

Bernhard Dröscher, and Alfred Zitz, both of Zeltweg, Austria, assignors to Voest-Alpine Aktiengesellschaft, Muldenstrasse, Austria

Filed Jun. 19, 1984, Ser. No. 622,248
Claims priority, application Austria, Jul. 15, 1983, 2606/83
Int. Cl.[4] E21C 47/00
U.S. Cl. 318—632 **9 Claims**



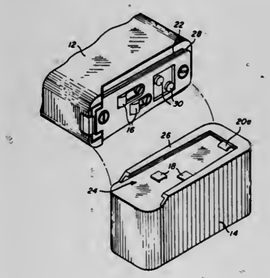
1. A device for controlling the angular position of a cutting tool mounted on a cutting machine, the cutting machine being self-propelled and including a loading means for removing cut debris having a front end and a rear end and pivotally mounted about a horizontal axis on a frame of the cutting machine spaced from the front end of the loading means, the loading means capable of engaging the ground to stablilize the cutting machine such that the front end of said cutting machine is lifted from the ground, the cutting tool being mounted on an arm pivotally mounted about a horizontal axis on the cutting machine, the cutting tool being capable of engaging the ground, an angular position transmitter means capable of detecting and transmitting a signal indicating the angular position of the loading means relative to the frame, an evaluating circuit means capable of receiving said signal and adjusting the angular position of the cutting tool to maintain a predetermined position.

4,578,628

PORTABLE BATTERY POWERED ELECTRICAL APPARATUS WITH IMPROVED BATTERY PACK PROTECTED AGAINST INADVERTENT SHORT CIRCUIT OF THE BATTERY TERMINALS

Kazimierz Siwiak, Sunrise, Fla., assignor to Motorola Inc., Schaumburg, Ill.

Filed Jan. 4, 1985, Ser. No. 688,950
Int. Cl.[4] H02J 7/00; H01M 2/10; H04B 1/38
U.S. Cl. 320—2 **6 Claims**



1. An improved portable battery operated electrical apparatus, including in combination:

a first housing portion having electrically energized circuitry and components therein supplied operating power through a first set of included supply terminals;

a second housing portion having a battery power source and a second set of normally inactivated battery terminals and switch means for selectively activating said second set of battery terminals;

said first and second housing portions having means for detachably interconnecting the same whereby said second set of battery terminals connected to said battery power source are activated by said switch means only upon interconnection of said housing portions; and

means for preventing the use of battery power sources having battery terminals activated prior to mating with said first housing portion.

2. In a portable battery powered electrical apparatus having a first housing portion for accommodating electrically energized circuitry and components therein through a first set of included supply terminals, said first housing portion further including a second set of fuse terminals connected to an included fuse device, the improvement comprising:

a second housing portion having a battery power source and a third set of normally inactivated battery terminals and switch means for selectively actuating said last named terminals; and

means for detachably interconnecting said second housing portion to said first portion and actuating said switch means to activate said third set of battery terminals only upon said interconnection being fully effected,

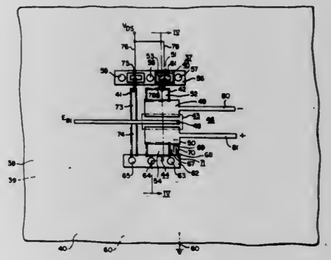
said third set of battery terminals first contacting said second set of fuse terminals to which said fuse device is connected prior to contacting said first set of supply terminals.

4,578,629

MONOLITHIC MICROWAVE "SPLIT LOAD" PHASE INVERTER FOR PUSH-PULL MONOLITHIC FET AMPLIFIER CIRCUITS

James E. Degenford, Ellicott City, and Daniel C. Boire, Ferndale, both of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 9, 1983, Ser. No. 530,809
Int. Cl.[4] H03F 3/26
U.S. Cl. 323—217 **9 Claims**



1. A phase inverter for generating first and second signals 180 degrees out-of-phase from an input signal, comprising:

a semiconductor substrate,

a field effect transistor in said substrate having a drain and source electrode and a gate electrode therebetween,

a first resistor implanted within sid substrate coupled between said drain electrode and a voltage terminal,

a second resistor implanted within said substrate coupled between said source electrode and a ground terminal,

a compensation capacitor implanted within or layered upon said substrate having interdigitated fingers of a predetermined reactance positioned between said source electrode and said ground terminal,

means for coupling said input signal to said gate electrode,

means for coupling a bias voltage to said gate electrode, and

means for coupling said first and said second signals from said drain and said source electrodes respectively.

4,578,630

BUCK BOOST SWITCHING REGULATOR WITH DUTY CYCLE LIMITING

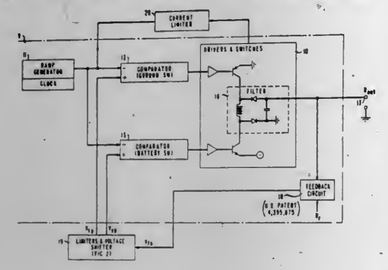
James T. Grosch, Budd Lake, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Nov. 23, 1984, Ser. No. 674,162
Int. Cl.[4] G05F 1/46
U.S. Cl. 323—271 **9 Claims**

1. A duty-cycle limited, buck-boost, switching regulator including first and second switches for connecting, with adjustable duty cycle, opposite terminals of an inductance to different ones of terminals for receiving operating voltage and said regulator comprising

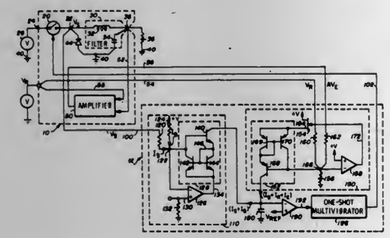
first and second means, responsive to a regulator output signal, for developing first and second duty cycle control signals for adjusting duty cycles of said first and second switches, and

means for limiting a voltage difference between said control signals to a maximum value substantially less than a value



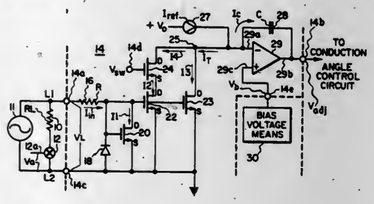
corresponding to a maximum range of duty cycle adjustment of one of said switches.

4,578,631
HIGH-SPEED FEEDBACK CIRCUIT
Steve Smith, 5100 Channel Ave., Richmond, Calif. 94804
Filed Jan. 18, 1984, Ser. No. 571,740
Int. Cl.[4] H02M *1/15*
U.S. Cl. 323—282 **15 Claims**



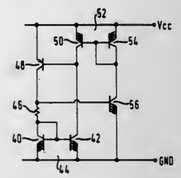
1. A circuit for use with a capacitor and a regulator, the regulator being of the type which includes a switch for developing a switched voltage the level of which varies as a train of pulses, the circuit for stabilizing the average level of the switched voltage at a level designated by the level of a reference voltage, the circuit comprising in combination:
first current developing means for connection to receive the switched voltage, said first current developing means for developing a first current at least a portion of the instantaneous level of which is equal to a predetermined constant times the instantaneous level of said switched voltage;
second current developing means for developing a second current at least a portion of the level of which is equal to a predetermined constant times the reference voltage level, said first and said second current developing means for connection to the capacitor so that said capacitor develops a voltage the magnitude of the level of which is equal to the integral of the level of a current the level of which is equal to the difference between said first and said second currents;
comparator means for connection to said capacitor, said comparator means for developing a voltage the level of which designates when the level of said capacitor developed voltage is at a predetermined voltage level; and
switch driving means for connection to the switch and connected to said comparator means, said switch driving means being responsive to said comparator means developed voltage and operative to drive said switch so as to stabilize the average level of said switched voltage at the level designated by the level of said reference voltage.

4,578,632
INTERGRATABLE LOAD VOLTAGE SAMPLING CIRCUIT FOR R.M.S. LOAD AVERAGE VOLTAGE CONTROL APPARATUS
William J. Laughton, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed May 7, 1984, Ser. No. 608,043
Int. Cl.[4] G05F *1/56*
U.S. Cl. 323—315 **20 Claims**



1. An integratable sampling circuit for providing to a control circuit an output signal responsive to the magnitude of the R.M.S. average voltage across a load, which load is connected across an AC source during a portion of the periodic waveform of said source, by conduction of a power switching means responsive to a signal from said control circuit, said sampling circuit comprising:
means for receiving from said control circuit a switching signal having a first level only when said power switching means conducts;
means for converting the instantaneous load voltage magnitude to an input current magnitude;
first current-mirror means for providing a first current at a first fixed multiple of said input current, only during the presence of said first level of said switching signal at said receiving means;
second current-mirror means for providing a second current at a second fixed multiple of said input current;
means for providing a substantially-constant reference current; and
means for integrating, with respect to time, the difference between said reference current and the total of said first and second currents, to provide said output signal.

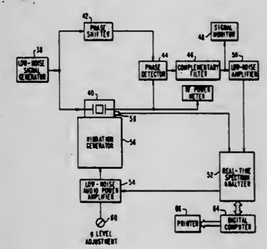
4,578,633
CONSTANT CURRENT SOURCE CIRCUIT
Hidehiko Aoki, Fujisawa, Japan, assignor to Kabushiki Kaisha Toshiba, Japan
Filed Aug. 31, 1984, Ser. No. 646,105
Claims priority, application Japan, Aug. 31, 1983, 58-159264; Aug. 31, 1983, 58-159301
Int. Cl.[4] G05F *3/26*
U.S. Cl. 323—315 **12 Claims**



1. A constant current source circuit adapted to be connected to a voltage source comprising:
first and second transistor devices of a first conductivity type, each having an emitter, base, and collector; said respective emitters being coupled to each other, said respective bases being connected to each other, and said

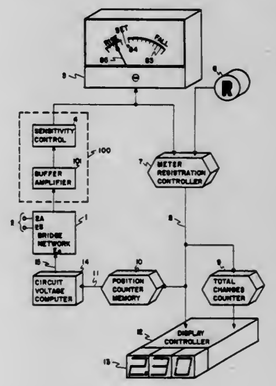
collector of said first transistor device being connected to said respective bases;
third and fourth transistor devices of a second conductivity type, each having an emitter, base, and collector; said respective emitters being coupled to each other, said respective bases being connected to each other, and said collector of said fourth transistor device being connected to said respective bases, the collectors of said second and third transistor devices being connected;
current supplying means connected in series with said first transistor;
resistance means connected between said current supplying means and said first transistor; and
means for detecting the voltage potential at the connection point between said current supplying means and said resistor and for controlling the current through said first transistor at a constant level by a feedback loop through said fourth and third transistors and said current supplying means.

4,578,634
APPARATUS FOR DETERMINING FREQUENCY VERSUS ACCELERATION CHARACTERISTICS FOR CRYSTALS
Daniel J. Healey, III, Baltimore, and Hyo K. Hahn, Columbia, both of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Continuation of Ser. No. 499,632, May 31, 1983, abandoned. This application Aug. 29, 1985, Ser. No. 771,151
Int. Cl.[4] G01R *29/22*
U.S. Cl. 324—56 **2 Claims**



1. A system for determining the acceleration induced changes in the electrical characteristics of a crystal, comprising in combination:
(a) circuit means for producing first and second electrical signals each having a fixed frequency and a predetermined phase relationship therebetween;
(b) adjustable phase shift circuit means for coupling said first electrical signal to a first input terminal of a phase detector;
(c) circuit means for coupling said second electrical signal to a second input terminal of said phase detector through said crystal;
(d) means for subjecting said crystal to predetermined mechanically generated acceleration forces having a random frequency within a predetermined bandwidth;
(e) sensor means coupled to said crystal for producing a signal having a predetermined relationship to said mechanically generated acceleration forces;
(f) means for analyzing the output signal of said phase detector and said sensor means to determine the acceleration induced changes in the electrical characteristic of said crystal.

4,578,635
DEVICE FOR MEASURING AND INDICATING CHANGES IN THE RESISTANCE OF A LIVING BODY
John L. Mee, 800 E. Missouri, Apartment #401, Phoenix, Ariz. 85014, and Robert F. Parente, 624 Mulberry St., Plantsville, Conn. 06479
Continuation-in-part of Ser. No. 224,901, Jan. 14, 1981, abandoned. This application Jan. 16, 1984, Ser. No. 570,740
Int. Cl.[4] G01R *27/02*; A61B *5/05*
U.S. Cl. 324—62 **10 Claims**



1. An electrical resistance measuring device for measuring and displaying the resistance of a body and changes in resistance thereof, said device comprising in combination:
(a) a bridge network including:
i. a voltage control node;
ii. a first resistance arm having first and second ends, the first end thereof being coupled to a source of ground voltage;
iii. a second resistance arm having first and second ends, the first end of said second resistance arm being coupled to the second end of said first resistance arm at a junction, and the second end of said second resistance arm being coupled to said voltage control node; and
iv. first and second terminals for coupling said body across one of said first and second resistance arms;
(b) amplifier means having an input coupled to one of said first and second terminals for sensing a bridge output voltage thereat, said amplifier means including an output terminal for providing a first output voltage related to said bridge output voltage;
(c) a meter coupled to said output terminal of said amplifier means and responsive to said first output voltage for indicating changes in the resistance of said body, said meter being adapted to display a range of values extending between maximum and minimum predetermined values;
(d) a meter registration controller having an input coupled to said output terminal of said amplifier means for receiving said first output voltage, said meter registration controller including detection means for detecting whether said first output voltage is above a first magnitude corresponding to the maximum value displayed by said meter or below a second magnitude corresponding to the minimum value displayed by said meter and generating increment and decrement signals, respectively, in response thereto, said meter registration controller including an oscillator for providing clock signals;
(e) counter means for storing a digital signal representative of the relative magnitude of the resistance of said body, said counter means being coupled to said detection means and to said oscillator and being responsive to said increment and decrement signals and said clock signals for

incrementing or decrementing said digital signal in response thereto, said counter means including a plurality of output terminals for providing said digital signal; and

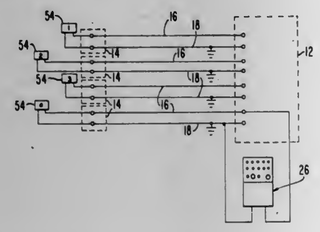
(f) non-linear conversion means having a plurality of input terminals coupled to said plurality of output terminals of said counter means for receiving said digital signal, said conversion means producing an analog output voltage as a non-linear function of said digital signal, said non-linear conversion means including an output terminal coupled to said voltage control node of said bridge network for supplying said analog voltage thereto.

4,578,636

APPARATUS FOR IDENTIFYING WIRES OF MULTIPLE WIRE ELECTRICAL SYSTEM

John S. Bakke, and David C. Bakke, both of 1247 Lorelei Ct., Campbell, Calif. 95008

Filed Nov. 28, 1983, Ser. No. 555,802
Int. Cl.⁴ G01R *19/00*
U.S. Cl. 324—66 **4 Claims**



1. Apparatus for identifying a plurality of pairs of wires of a multiple wire electrical system as the wires extend between a central station and respective remote stations with each wire having a pair of opposed ends comprising:

a resistance network adjacent to first ends of said wires, said network including a resistance for each pair wires, respectively, with the resistance being removably connectable to the first ends of the wires of each pair, respectively, and with the resistances being different from each other; and

a control device having a pair of leads for removable connection with the opposite ends of the wires of each wire pair, respectively, said device including an actuatable electrical circuit unit having a plurality of comparators, each comparator having a pair of signal inputs, a signal output or a voltage divider having means for applying first input voltages to first signal inputs of the comparator, there being a voltage input coupled to the second signal inputs of the comparators for sequentially applying voltages thereto representing the signals passing through the resistances of said wire pairs, said circuit further including an observable indicator for each wire pair, respectively, each comparator having a signal output, each observable indicator being coupled to a respective resistance when said voltage input is connected with the opposite end of a wire of respective wire pairs, and means for actuating said circuit.

4,578,637

CONTINUITY/LEAKAGE TESTER FOR ELECTRONIC CIRCUITS

Richard J. Allen, Sunnyvale, and Richard W. Youden, Cupertino, both of Calif., assignors to Signetics Corporation, Sunnyvale, Calif.

Filed Apr. 6, 1984, Ser. No. 597,772
Int. Cl.⁴ G01R *15/12*
U.S. Cl. 324—73 PC **11 Claims**

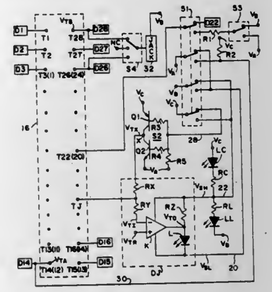
1. A device for testing an electronic circuit having a set of electrical leads of which a first and a second are supply voltage leads, the device comprising:

contact means having test terminals for contacting the leads on a one-to-one basis, a first and a second of the test terminals respectively contactable with the first and second leads;

a supply point;

at least one detection circuit corresponding on a one-to-one basis to at least part of the test terminals, each detection circuit comprising:

a resistor coupled between the supply point and the corresponding test terminal; and



comparing means having a first input terminal coupled to the corresponding test terminal for receiving an input voltage, a second input terminal at a reference voltage V_{TR}, and an output terminal for providing an output signal at one of a pair of opposite states depending on whether the input and reference voltages are in a specified relationship; and

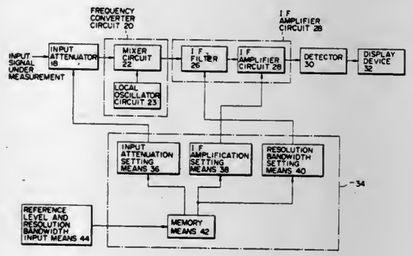
supply switching means for providing the first test terminal with a first test supply voltage V_{TA}, for providing the supply point with a detection supply voltage V_{TX}, and for switching the supply voltages between values suitable for testing continuity at the leads and values suitable for testing current leakage from at least one selected one of the leads to the first lead.

4,578,638

SPECTRUM ANALYZER

Mitsuyoshi Takano, Tokyo, and Mamoru Ando, Hiratsuka, both of Japan, assignors to Anritsu Electric Co. Ltd., Tokyo, Japan

Filed Feb. 23, 1984, Ser. No. 583,020
Claims priority, application Japan, Feb. 27, 1983, 58-31156
Int. Cl.⁴ G01R *23/16*
U.S. Cl. 324—77 B **2 Claims**



1. A spectrum analyzer, comprising:

frequency converter circuit means comprising a local oscillator and a mixer coupled to receive an output signal from said local oscillator circuit and an input signal whose spectrum is to be displayed, for converting said input signal to an intermediate frequency signal;

attenuator means for varying the level of said input signal at input to said mixer circuit;

band-pass filter means coupled to receive said intermediate frequency signal;

intermediate frequency amplifier circuit means for amplifying said intermediate frequency signal after output from said band-pass filter means;

detector circuit means coupled to receive said intermediate frequency signal from said intermediate frequency amplifier circuit means, for producing a detection signal;

display means for displaying said detection signal;

control circuit means comprising memory means for storing a reference level value and a resolution bandwidth value, input attenuation setting means for generating control signals which are applied to said input attenuator means to set the degree of attenuation provided by said input attenuator means such as to establish an optimum level of said input signal under measurement at input to said mixer circuit based upon said stored values of resolution bandwidth and reference level, intermediate frequency amplification setting means for producing control signals which are applied to said intermediate frequency amplifier circuit means for setting the degree of amplification provided thereby such as to correspond, in conjunction with said input attenuation, to said stored reference level value, and resolution bandwidth setting means for producing control signals which are applied to said band-pass filter means for setting the bandwidth thereof to correspond to said stored value of resolution bandwidth; and

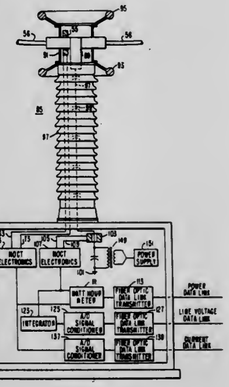
input means for inputting said resolution bandwidth and reference level values to said control circuit means to be stored in said memory means.

4,578,639

METERING SYSTEM FOR MEASURING PARAMETERS OF HIGH AC ELECTRIC ENERGY FLOWING IN AN ELECTRIC CONDUCTOR

Robert C. Miller, Penn Hills Township, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 2, 1984, Ser. No. 585,483
Int. Cl.⁴ G01R *21/06, 15/06, 15/07*
U.S. Cl. 324—96 **8 Claims**



1. A metering system for measuring the parameters of high voltage AC electric energy flowing in an electric conductor, comprising:

(a) a magneto-optical material disposed to enclose a current-carrying conductor;

(b) polarizing means for inputting polarized light into the magneto-optical material;

(c) analyzer means for converting the light from the polarizing means to an optical signal of varying intensity in response to the rotation produced in said material;

(d) means including fiber optic and detector means with associated electronic circuitry for providing a first electrical voltage output that is proportional to the current flowing in the conductor;

(e) circuit means including series-connected capacitors extending from the electric conductor to ground and means for providing electrical voltage output which is proportional to electrical current flowing to and from the capacitors generating a second voltage output which is proportional to the rate of change of line voltage with respect to time;

(f) electronic means for receiving input signals including the first voltage output and the second voltage output which signals are converted to produce an output pulse representative of a quantitized amount of electric energy carried by the conductor;

(g) means for receiving the second voltage output from the circuit means and converting it into third voltage outputs;

(h) a first signal conditioner responsive to the third voltage outputs for converting them into conditioned voltage signals; and

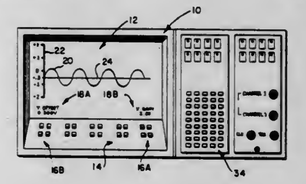
(i) a second signal conditioner responsive to the first voltage output for converting it into conditioned current signals.

4,578,640

OSCILLOSCOPE CONTROL

Arthur W. Crooke, Concord; Colin Gyles, Boxford, and Edwin E. Stebbins, Boston, all of Mass., assignors to Analogic Corporation, Peabody, Mass.

Filed Sep. 14, 1982, Ser. No. 418,187
Int. Cl.⁴ G01R *13/20*
U.S. Cl. 324—115 **13 Claims**



1. An oscilloscope receiving a signal to be displayed including:

parameter control and processing means for receiving said signal to selectively adjust a parameter of said signal, said parameter control and processing means including up/down value slewing means and corresponding up/down value slewing switch means coupled thereto having no value criteria immediately thereat, and parameter select means connected to said parameter control means to select at least one parameter from a plurality of signal parameter adjustments, said parameter select means including at least one parameter selection switch means coupled to said parameter select means such that a parameter may be selected by said parameter selection switch means and such that its value may be altered by said up/down slewing switch means;

display means receiving the output of said parameter control and processing means to provide a visual representation thereof; and,

a control panel connected to said parameter control and processing means, said control panel located adjacent to said display means and including said value slewing and parameter selection switch means mounted thereon;

said parameter select means being controllable from said

control panel by said parameter selection switch means, whereby the signal and processing parameter magnitudes are adjusted by said up/down value slewing switch means on said control panel, with the magnitude of the selected parameter being correspondingly indicated on said display means;

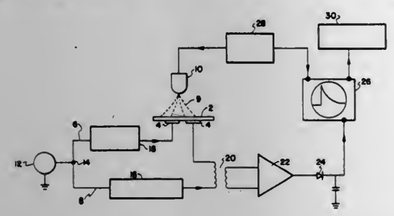
said parameter control and processing means also providing parameter identification signals to said display means so as to generate a corresponding parameter identification image adjacent the displayed magnitude, such that the result of the action taken by said up/down slewing switch means is ascertainable despite the lack of value indication at the up/down slewing switch means.

4,578,641

SYSTEM FOR MEASURING CARRIER LIFETIME OF SEMICONDUCTOR WAFERS

J. Thomas Tiedje, Garwood, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Sep. 24, 1982, Ser. No. 422,669
Int. Cl.⁴ G01R *1/04*
U.S. Cl. 324—158 D **11 Claims**



1. A system for measuring the carrier lifetime in semiconductor wafers comprising:

(a) a bridge circuit including a quick disconnect mechanical contact system for capacitively coupling said silicon wafer to said bridge circuit, wherein said wafer is held in position with a vacuum holddown, wherein said bridge consists of two branches, one branch consisting of said capacitively coupled wafer in series with a phase shifter, the other branch consisting of a variable attenuator, the output of said two branches being combined in a transformer,

(b) an A-C signal generator coupled to said bridge through a T connection,

(c) a means for illuminating said wafers with radiation,

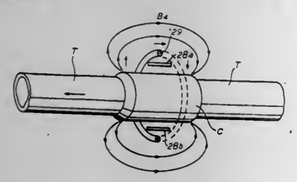
(d) a means for monitoring the output from said bridge circuit.

4,578,642

METHOD AND APPARATUS FOR MEASURING VELOCITY OF FERROMAGNETIC TUBING

Gordon L. Moake, and Marvin Milewits, both of Houston, Tex., assignors to PA Incorporated, Houston, Tex.

Filed Apr. 11, 1984, Ser. No. 599,227
Int. Cl.⁴ E21B *47/00*; G01N *27/72*; G01D *3/42*
U.S. Cl. 324—160 **22 Claims**



6. In a method of measuring and locating defects in a tubular element during axial movement, the steps of magnetically saturating a portion of the tubular element to measure the thickness thereof; detecting magnetic flux leakage changes to measure localized defects; applying an additional magnetic field to detect longitudinal defects in the element, the improvement comprising the steps of:

measuring the axial velocity of the element by detecting a first signal dependent upon the axial velocity of the element and upon a moving magnetic field which is variable due to actual displacement of the element and comparing the first signal to a second signal dependent upon the moving magnetic field alone;

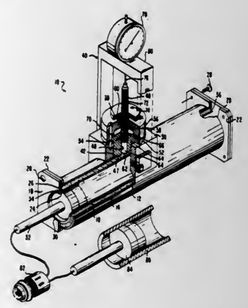
processing said axial velocity to locate said defects.

4,578,643

SIMULATION APPARATUS FOR EDDY CURRENT INSPECTION TECHNIQUES

Warren R. Junker, Monroeville; Bruce J. Taszarek, Mt. Lebanon, and David A. Chizmar, Export, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 18, 1983, Ser. No. 553,346
Int. Cl.⁴ G01R *35/00*; G01N *27/82*
U.S. Cl. 324—202 **26 Claims**



1. A simulation apparatus for simulating and analyzing discontinuities in a tube using eddy current inspection techniques, said simulation apparatus comprising:

an inner tubular member and an outer tubular member arranged to define an annular chamber having a predetermined tubular configuration, said outer tubular member having a wall and an opening through the wall, and said inner tubular member including an axially extending hollow interior extending along the axis of said inner tubular member;

a supply of electrically conductive liquid material in said annular chamber, the quantity of said liquid material being such as to substantially completely fill said annular chamber in the vicinity of said opening through the wall of said outer tubular member;

a defect simulation member supported in said opening in said outer tubular member for movement along a predetermined direction extending transverse to said axis of said inner tubular member, said defect simulator member including a simulator portion placed in said electrically conductive liquid material in said annular chamber, said simulator portion having a predetermined configuration corresponding to a predetermined type of discontinuity in a tube and being made at least partially of a material having an electrical conductivity different from the electrical conductivity of said liquid material;

adjustment means for adjusting the position of said simulator portion within said annular chamber along said predetermined direction; and

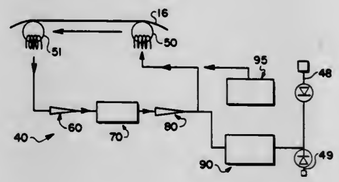
an eddy current test probe positioned in said hollow interior of said inner tubular member adjacent to the position of said defect simulation member for generating eddy current responses which are representative of eddy current responses for a tube having a configuration corresponding to said predetermined tubular configuration and having a discontinuity in the wall thereof corresponding to said predetermined type of discontinuity.

4,578,644

METHOD AND APPARATUS FOR TESTING THE PRESENCE OF MAGNETIC STORAGE MEDIUM ON A GIVEN SIDE OF A TAPE

Robert I. Farrow, Burlington, N.C., assignor to American Multimedia, Inc., Burlington, N.C.

Filed Oct. 7, 1983, Ser. No. 540,074
Int. Cl.⁴ G01R *33/12*
U.S. Cl. 324—212 **4 Claims**



4. An apparatus for testing tape for the presence of magnetic storage medium on a given side thereof, comprising:

(a) scanning means for scanning a moving tape for the presence of a minimum amount of magnetic noise naturally present on any recording tape resulting from inherent irregularities in magnetic storage medium characteristics to produce a noise signal;

(b) feedback loop means coupled to said scanning means, said feedback loop means including amplifying means for amplifying the noise signal and recording means for recording the amplified noise signal upstream of said scanning means, for repeatedly amplifying said noise signal and recording said noise signal on the tape for a predetermined period of time or until a predetermined signal level is produced on the tape while said tape is scanned by said scanning means;

(c) means coupled to said amplifying means for detecting the amplified noise signal from said amplifying means; and

(d) means coupled to said detection means for indicating the detection of said predetermined signal level within said predetermined period of time to provide a indication of the presence of a magnetic storage medium on the side of said tape contacted by said scanning means, and, for indicating lack of detection of said predetermined signal level within said predetermined period of time to provide an indication of the absence of said magnetic storage medium on the side of said tape contacted by said scanning means.

4,578,645

BOREHOLE LOGGING TOOL UTILIZING ELECTROMAGNETIC ENERGY IN THE DETERMINATION OF DIP OF SUBSURFACE FORMATIONS SURROUNDING A BOREHOLE

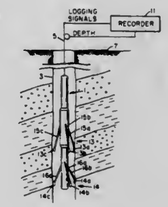
Gustave L. Hoehn, Jr., Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Feb. 1, 1984, Ser. No. 576,084
Int. Cl.⁴ G01V *3/30*
U.S. Cl. 324—338 **3 Claims**

1. An electromagnetic logging tool for use in the determination of the dip of subsurface earth formations surrounding a borehole, comprising:

a. a borehole tool adapted for movement through said borehole and having at least two antenna arrays positioned at spaced-apart locations along the longitudinal axis of said tool, each of said antenna arrays having at least three antenna sub arrays spaced approximately equally around the longitudinal axis of said tool for transmitting and receiving electromagnetic energy, the three sub arrays of a first of said two antenna arrays being respectively located at approximately the same circumferential positions around the longitudinal axis of said tool as the three sub arrays of the second of said two antenna arrays;

b. means for simultaneously supplying electromagnetic energy to each of said sub arrays of said two antenna arrays for transmitting electromagnetic energy into said earth formations;



c. means coupled to said each of said sub arrays of said two antenna arrays for detecting the amplitudes of the electromagnetic signals returning to each said sub array from said earth formations;

d. means for determining the amplitude differences between the electromagnetic signals received by each of said sub arrays in each of said two antenna arrays to provide at least three amplitude differences for each antenna array; and

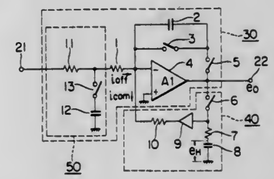
e. means for determining the phase of each of the amplitude differences of said first antenna array with respect to the corresponding amplitude difference of said second antenna array.

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INTEGRAL-TYPE SMALL SIGNAL INPUT CIRCUIT

Kenji Maio, Tokyo, and Atsushi Moritani, Kokubunji, both of Japan, assignors to Hitachi, Ltd and Hitachi Medical Corporation, both of Tokyo, Japan

Filed Feb. 8, 1984, Ser. No. 577,972
Int. Cl.⁴ H03K *5/01*
U.S. Cl. 328—128 **6 Claims**



1. An integral-type small signal input circuit comprising:

a Miller integrator having an input resistor with its one terminal receiving an input signal, an amplifier connected to another terminal of said input resistor, and an integration capacitor forming a feedback loop of said amplifier during a period of integration; and

an input offset current compensation circuit having voltage hold means and a compensation amplifier and adapted to form a feedback loop of said integration amplifier during a period of compensation between consecutive integration periods and supply a compensation current corresponding to a voltage held in said hold means to the input of said

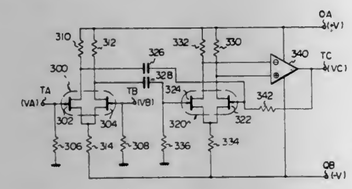
integration amplifier during said integration period, said input resistor being provided at said one terminal with a low-pass filter which operates during said compensation period, but is released from operation in at least part of said integration period.

4,578,647

AMPLIFIER CIRCUIT

Kouhei Sasamura, Sagamihara, Japan, assignor to Victor Company of Japan, Limited, Kanagawa, Japan

Continuation of Ser. No. 477,808, Mar. 22, 1983, abandoned.
This application Aug. 20, 1985, Ser. No. 767,252
Claims priority, application Japan, Mar. 25, 1982, 57-42267[U]
Int. Cl.⁴ H03F *3/16*
U.S. Cl. 330—253 **8 Claims**



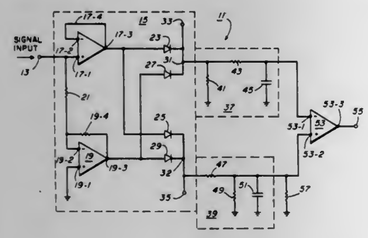
5. An amplifier circuit comprising:
a first differential amplifier having a pair of first and second transistors, the gates of which are connected to first and second input terminals respectively, each of the first and second input terminals being supplied with an input signal;
a second differential amplifier having a pair of third and fourth transistors, the gates of which are connected to the drains of the second and first transistors respectively;
an operational amplifier having inverting and non-inverting input terminals which are connected to the drains of the third and fourth transistors respectively; and
a feedback resistor for negatively feeding back an output signal of said operational amplifier to the gate of the fourth transistor of the second differential amplifier such that the output signal of said operational amplifier is inverted by the fourth transistor and the inverted signal is fed to the non-inverting input terminal of said operational amplifier.

4,578,648

DYNAMIC VERIFICATION GATE CIRCUIT

Donn R. Werrbach, 930 Kaheka St., Honolulu, Hi. 96814

Filed Apr. 16, 1984, Ser. No. 600,723
Int. Cl.⁴ H03G *3/10*
U.S. Cl. 330—281 **7 Claims**



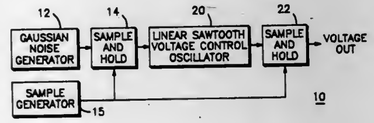
1. A dynamic verification gate circuit for use in controlling the operation of a variable gain control circuit in a system for processing an audio signal, said dynamic verification gate circuit comprising:
a. input means for receiving said audio signal,
b. first means coupled to said input means for generating a pair of equal, absolute value signals representing the "full-wave" rectified versions of said audio signal,
c. second means for generating from one of said absolute value signals a first signal representing the average signal amplitude of said absolute value signal,
d. third means for generating from the other of said absolute value signals a second signal representing the average peak value of said other absolute value signal,
e. comparator means for comparing the first signal and the second signal and generating a third signal corresponding to the comparison of said first and second signals, and
f. output means coupled to the output of said comparator means for outputting said output signal from said comparator.

4,578,649

RANDOM VOLTAGE SOURCE WITH SUBSTANTIALLY UNIFORM DISTRIBUTION

Chester D. Shupe, Mesa, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 4, 1985, Ser. No. 697,991
Int. Cl.⁴ H03B *29/00*; G06F *7/00*
U.S. Cl. 331—78 **14 Claims**



1. A random voltage source with substantially uniform distribution comprising:
a Gaussian noise generator providing an output;
a first sample and hold circuit connected to receive the output from said Gaussian noise generator and provide random voltage samples at an output thereof;
a voltage controlled oscillator having a control input and an output and providing a substantially sawtooth shaped signal at the output with a frequency dependent upon the voltage applied to the control input, the control input being connected to receive the random voltage samples from said first sample and hold circuit; and
a second sample and hold circuit connected to the output of said voltage controlled oscillator and providing a random voltage output.

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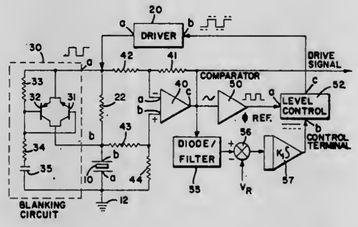
RESONANCE DRIVE OSCILLATOR CIRCUIT

William S. Watson, Eau Claire, Wis., assignor to Watson Industries, Inc., Eau Claire, Wis.

Filed Jun. 15, 1983, Ser. No. 504,572
Int. Cl.⁴ H03B *5/32*
U.S. Cl. 331—160 **12 Claims**

1. Drive circuit apparatus for energizing an actuator mass at its natural resonance, comprising:
(a) drive circuit means arranged and configured for operative connection to an actuator mass, for energizing said actuator mass for movement according to a square-wave drive signal moving between first and second energy levels; said actuator mass producing a periodic actuator output signal when so energized;
(b) sense means operatively connected with said actuator means for sensing said actuator output signal and for providing a sensed signal in response thereto; and

(c) blanking circuit means operatively connected with said sense means for actively blanking said sensed signal at



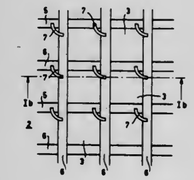
those transition times when said drive signal moves between said first and said second energy levels.

4,578,651

MAGNETOOPTICAL MODULATOR

Heinrich Heitmann, Rellingen; Wolfgang Tolksdorf, Tornesch; Fritz Welz, Rosengarten, and Klaus Witter, Hamburg, all of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 29, 1982, Ser. No. 427,058
Claims priority, application Fed. Rep. of Germany, Oct. 3, 1981, 3139487
Int. Cl.⁴ H01S *3/00*; G11C *13/06*; G02F *1/09*
U.S. Cl. 332—7.51 **12 Claims**



1. A magnetooptical modulator comprising:
a substrate; and
a substantially planar layer of a magnetic material on the substrate, said magnetic material having an easy axis of magnetization perpendicular to the plane of the layer;
characterized in that:
the layer of magnetic material has a number of magnetic domain areas separated from each other by intermediate areas; and
at least a part of at least one intermediate area is electrically conductive.

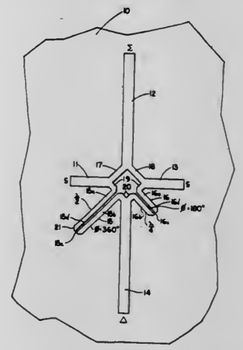
4,578,652

BROADBAND FOUR-PORT TEM MODE 180° PRINTED CIRCUIT MICROWAVE HYBRID

William G. Sterns, Canoga Park, Calif., assignor to ITT Corporation, New York, N.Y.

Filed May 14, 1984, Ser. No. 609,614
Int. Cl.⁴ H01P *5/19*
U.S. Cl. 333—117 **22 Claims**

22. A four-port TEM mode 180° hybrid for microwave implementation in a pattern of printed circuit form on a dielectric substrate, comprising:
four conductive traces radiating outward from a central portion of said pattern, said traces corresponding to difference, sum, and first and second side ports;



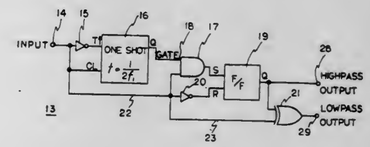
at least two coupled-strip all-pass filter sections each in the form of printed, parallel, closely-spaced conductive traces shorted at their outward ends and associated with said central portion of said pattern in such a way that, for excitation of said difference port, said first and second side ports divide the excitation and maintain a 180° phase relationship over a broad band of frequencies.

4,578,653

FREQUENCY SELECTIVE FILTER CIRCUIT

Edward K. Howell, Simsbury, Conn., assignor to General Electric Company, Portsmouth, Va.

Filed Jun. 25, 1984, Ser. No. 624,154
Int. Cl.⁴ H03D *3/06, 3/18*; H03H *11/04*
U.S. Cl. 333—166 **11 Claims**



1. A time domain filter for receiving a symmetrical square wave input signal, said time domain filter comprising in combination:
an input terminal;
a high pass output terminal;
an inverter having an input connected to said input terminal, said inverter having an output;
monostable multivibrator means having a trigger input connected to the output of said inverter, said monostable multivibrator means having an on time which is equal to the half period of a desired low frequency filter cut-off frequency, and said monostable multivibrator means having an output;
an AND gate having one input connected to the output of said multivibrator means and a second input connected to said input terminal, said AND gate having an output, wherein an output from said AND gate is produced when the half wave period of said input signal is less than the on time of said monostable multivibrator means; and
bistable multivibrator means having a set input connected to the output of said AND gate, said bistable multivibrator

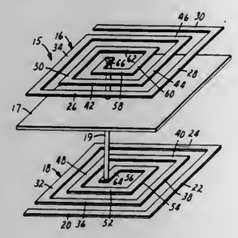
means having an output connected to said high-pass output terminal.

4,578,654

DISTRIBUTED CAPACITANCE LC RESONANT CIRCUIT

William C. Tait, Oak Park Heights, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 16, 1983, Ser. No. 552,305
Int. Cl.⁴ H03H *7/01*
U.S. Cl. 333—175 **10 Claims**



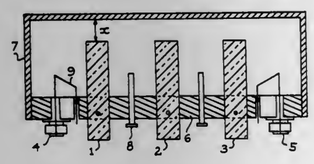
1. A marker for use in an electronic article surveillance system which includes means for detecting a plurality of distinct frequencies, said marker comprising a tuned resonant circuit including a dielectric sheet having on each surface thereof a conductive multi-turn spiral which is substantially identical to the spiral on the opposite surface, each turn of said spirals forming a substantially closed loop positioned in substantial registry with an opposing turn of the spiral on the opposite surface, each of said multi-turn spirals being oppositely wound with respect to the other when both are viewed from the same side of the sheet, and having one predetermined portion in direct electrical contact with an opposing portion of the opposite spiral, said circuit resulting in a series of closed loops having both inductive and distributed capacitive components which in combination resonate at said plurality of distinct frequencies at which eddy currents are minimized and Q-factor is high.

4,578,655

TUNEABLE ULTRA-HIGH FREQUENCY FILTER WITH MODE TM010 DIELECTRIC RESONATORS

Jean-Luc Etienne, Sevres, and Jean-Claude Cruchon, Bouffemont, both of France, assignors to Thomson-CSF, Paris, France

Filed Jan. 10, 1984, Ser. No. 569,712
Claims priority, application France, Jan. 19, 1983, 83 00755
Int. Cl.⁴ H01P *1/20*
U.S. Cl. 333—202 **7 Claims**



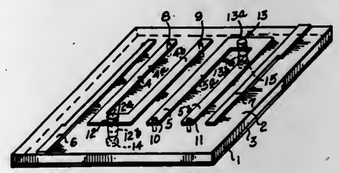
1. A tuneable ulta-high frequency filter operating in the TM010 mode, comprising:
a rectangular metal case having a base, a lid and a longitudinal axis parallel to said base, said case being and dimensioned to form a below cut-off ultra-high frequency waveguide;
input means, connected to said case, adapted for receiving an ultra-high frequency signal;
output means, connected to said case, for providing an output signal;
a succession of cylindrical, dielectric resonators disposed inside said case in a line parallel to said longitudinal axis, each said resonator having a resonant portion touching said base and an end which is at an adjustable distance from said lid; and
means for adjusting said adjustable distance whereby frequency tuning of said filter may be accomplished and an electromagnetic field in the vicinity of said resonators resonates in the TM010 mode.

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MICROWAVE MICROSTRIP FILTER WITH U-SHAPED LINEAR RESONATORS HAVING CENTRALLY LOCATED CAPACITORS COUPLED TO GROUND

Clément-Francois Lacour, Paris, and Patrick Janer, Neuilly sur Seine, both of France, assignors to Thomson-CSF, Paris, France

Filed Jan. 5, 1984, Ser. No. 568,432
Claims priority, application France, Jan. 31, 1983, 83 01454
Int. Cl.⁴ H01P *1/203*
U.S. Cl. 333—204 **9 Claims**



1. A microwave filter, comprising:
a dielectric substance having first and second faces;
a ground plane metallized on said second face; and
at least one linear resonator resonant at a resonance frequency F_o having a corresponding resonance wavelength, each said linear resonator including:
a conductor of length L formed on said first face, said conductor having first and second extremities and a center region substantially equidistant between said extremities, said length L being less than one half of said resonance wavelength, said first and second extremities being coupled to said ground plane, said conductor adapted to receive an input microwave signal between said first extremity and said center region, and to provide a filtered microwave signal output between said second extremity and said center region; and
at least one capacitor means, each one of said at least one capacitor means having electrodes which are respectively coupled to said ground plane and to said conductor center region, for tuning said linear resonator to its resonance frequency F_o.

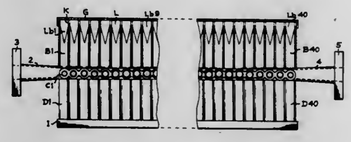
4,578,657

FILTER OF THE TYPE CONSISTING OF A PRIMARY WAVEGUIDE HAVING LATERAL SECONDARY GUIDES

Jean-Claude Cruchon, Bouffemont, and Jean-Denis Schubert, Verneuil sur Seine, both of France, assignors to Alcatel Thomson Faisceaux Hertziens, Levallois Perret, France

Filed May 30, 1985, Ser. No. 739,588
Claims priority, application France, May 30, 1984, 84 08496
Int. Cl.⁴ H01P *1/212, 1/22, 1/162, 5/02*
U.S. Cl. 333—211 **4 Claims**

1. A filter comprising a rectangular primary waveguide, n secondary guides, n being a whole number at least equal to 1, said n secondary guides being coupled by one of their ends to the primary guide via apertures through the wall of said primary guide, and two impedance matchers of the rectangular-guide-to-rectangular-guide coupling type, respectively coupled to the two ends of the primary guides, wherein said n



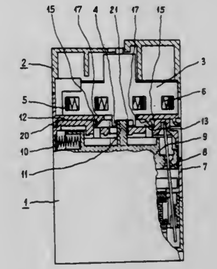
secondary guides are cylindrical guides and the impedance transformers are provided with rectangular internal cross sections at their extremities having both the height and width whereof smaller on the side coupled to said primary guide than on the side opposite the primary guide.

4,578,659

COUPLING SYSTEM BETWEEN AN ELECTROMAGNETIC SWITCH APPARATUS AND AN AUXILIARY CONTACT BLOCK RELEASABLY MOUNTED THEREUPON

Heinz Suter, Aarau, and Alex Blum, Unterentfelden, both of Switzerland, assignors to Sprecher & Schuh AG, Aarau, Switzerland

Filed Nov. 15, 1984, Ser. No. 672,110
Claims priority, application Switzerland, Nov. 28, 1983, 6338/83
Int. Cl.⁴ H01H *51/06*
U.S. Cl. 335—131 **5 Claims**



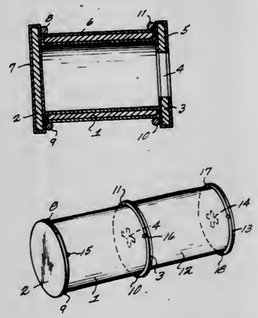
1. A coupling system with a first part which is connected to an electromagnetic switch apparatus and with a second part which is connected to an auxiliary contact block releasably mounted on said switch apparatus in order to connect the casing (7) of the switch apparatus (1) with the auxiliary contact block (2) and in order to actuate an auxiliary contact carrier slidingly supported in the auxiliary contact block and which has a coupling member projecting out of said contact block, wherein this actuation is performed through a catch which projects out of the casing of the switch apparatus and which, upon actuation of the switch apparatus is displaced parallel to the bearing surface of the auxiliary contact block (2) on said casing, wherein said catch is located in a rectangular through (13) of the casing (7) of the switch apparatus (1), and wherein a coupling member (4) which is operatively connected to the catch projects into said trough, and wherein the two edges of the trough which extend transversally relative to the direction of movement of the catch are provided with a plurality of tooth-shaped projections projecting into the trough opening in order to connect the casing with the auxiliary contact block (2), wherein the distances between the teeth are larger than the width of the teeth, wherein dogs are integrally formed at the bottom of the auxiliary contact block, these dogs (17, 18) having at least approximately the same width and mutual distances as the projections (15, 16) in order to fit under these projections when the coupling system is locked, and in order to release the casing (1) from the auxiliary contact block (2) when said coupling system is unlocked by a shift of the casing relative to the auxiliary contact block in a direction transversal to the movement of the catch.

4,578,658

PROCESS FOR THE PRODUCTION OF AN ULTRA-HIGH FREQUENCY CAVITY RESONATOR AND CAVITY RESONATOR OBTAINED BY THIS PROCESS

Jacques Urien, Maurepas; Elie Bressan, L'Union; Jacques Danguy, Sartrouville, and Marcel Narzul, Bazemont, all of France, assignors to Thomson-CSF, Paris, France

Filed Feb. 21, 1984, Ser. No. 582,230
Claims priority, application France, Feb. 25, 1983, 83 03126
Int. Cl.⁴ H01P *7/06, 11/00*
U.S. Cl. 333—227 **3 Claims**



1. A method of manufacturing an ultra-high frequency cavity resonator comprising a plurality of parts including a hollowed out section, a bottom plate and a cover plate, said method comprising the steps of:
separately manufacturing said plurality of parts out of metal having a low expansion coefficient;
depositing on each of said plurality of parts at least one layer of a metal having good electricity conducting characteristics;
positioning said plurality of parts so as to define a cavity resonator assembly, and maintaining said assembly by positioning means;
submitting this assembly to a temperature elevation sufficiently high to produce melting of said layers of metal; and
slowly cooling said assembly.

4,578,660

HOUSING FOR AN ELECTROMAGNETIC RELAY

Koji Hanada; Yuji Kinoshita, and Masaru Tamura, all of Suzaka, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

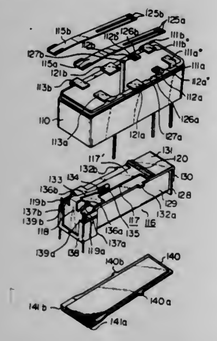
PCT No. PCT/JP81/00210, § 371 Date Apr. 21, 1982, § 102(e) Date Apr. 21, 1982, PCT Pub. No. WO82/00918, PCT Pub. Date Mar. 18, 1982

PCT Filed Sep. 1, 1981, Ser. No. 375,030

Claims priority, application Japan, Sep. 1, 1980, 55-124078; Sep. 26, 1980, 55-136839; Oct. 29, 1980, 55-154365; Feb. 25, 1981, 56-26536

Int. Cl.⁴ H01H *63/02*

U.S. Cl. 335—133 **19 Claims**



1. In an electromagnetic relay in which an electromagnet assembly, having at least a core, a coil bobbin on which a coil is wound and an armature, is accommodated in a box-shaped insulated housing which has surrounding walls to hold fixed contact spring terminals and moving contact spring terminals, the improvement comprising:

said insulated housing has upper and lower surfaces which are open;

said coil bobbin has a flange;

said electromagnet assembly is incorporated into said insulated housing through the lower surface opening and includes accommodation means, having a portion that is molded on the outer surface of the flange of said coil bobbin as a unitary structure, for rotatably holding said armature, with said armature and said core being supported by said coil bobbin; and

said electromagnetic relay further comprises a bottom plate that is fitted to the lower surface opening of said insulated housing and covers said electromagnet assembly.

4,578,661

METHOD OF MANUFACTURING A CATHODE RAY TUBE AND DEVICE FOR CARRYING OUT THIS METHOD

Lambertus J. J. van Rijsewijk; Mario L. Thomas; Henricus J. J. C. Meijer, and Ronald van der Wilk, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

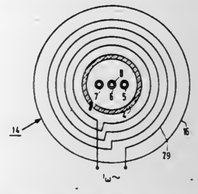
Filed Jan. 7, 1985, Ser. No. 689,541

Claims priority, application Netherlands, Oct. 12, 1984, 8403112

Int. Cl.⁴ H01F *7/00*

U.S. Cl. 335—212 **5 Claims**

1. A method of manufacturing a cathode ray tube in which at least one electron beam is generated by means of an electron gun system in the neck of the envelope and magnetic poles are provided around the said electron beam and generate a permanent multipole magnetic field, said poles being formed by magnetizing a configuration of magnetizable material provided around the electron beam, said configuration being magnetized by energizing, by means of a combination of currents, a multipole coil unit with which a static multipole magnetic field is generated and the magnetization is produced by means of a decaying alternating magnetic field which initially drives the magnetizable material on both sides of the hysteresis curve into



magnetization, characterized in that the decaying alternating magnetic field is an axial magnetic field which is substantially parallel to the electron beam or beams.

4,578,662

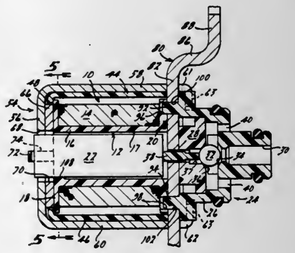
SOLENOID ASSEMBLY

Michael Slavin, Troy, and Ellsworth S. Miller, Mt. Clemens, both of Mich., assignors to Lectron Products, Inc., Rochester, Mich.

Filed Oct. 11, 1984, Ser. No. 659,898

Int. Cl.⁴ H01F *7/08*

U.S. Cl. 335—262 **30 Claims**



1. In a solenoid of the type having an electrical coil including a bobbin formed with a central bore, and a longitudinally movable armature mounted in said bore with circumferential sliding clearance therebetween, the improvement comprising

flux collector means defining a flow path for magnetic flux around said coil,

said flux collector means having laterally spaced longitudinal members at opposite sides of said coil and transverse members at opposite ends of said coil,

at least one of said transverse members overlying said central bore at one end of said bobbin,

said one transverse member being formed with an opening having the same cross-sectional configuration as said armature through which the latter is projectable by energization of said coil,

said opening being slightly larger than said armature to provide annular clearance around the latter in the projected position and to define an air gap between said one transverse member and said armature which is essentially narrow to minimize resistance to flow of magnetic flux between the armature and said one transverse member;

first positioning means interconnecting said bobbin and said transverse members holding said central bore and said opening disposed essentially concentrically with respect to each other; and

second positioning means interacting between said bobbin and said armature supporting the latter at circumferentially spaced points to compensate for out-of-roundness of said bore and for maintaining said air gap of relatively uniform width throughout its circumference.

4,578,663

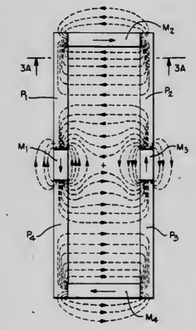
MAGNETIC ASSEMBLY

Thomas C. Sanders, Palo Alto, Calif., and Wynne Calvert, Iowa City, Iowa, assignors to Lockheed Missiles & Space Company, Inc., Sunnyvale, Calif.

Filed Nov. 29, 1984, Ser. No. 676,503

Int. Cl.⁴ H01F *7/02*

U.S. Cl. 335—306 **8 Claims**



1. A magnetic assembly comprising four magnets and four flux-carrying polepieces arranged to define a working volume of magnetic flux, said magnets being in series-opposed disposition with respect to each other, each polepiece providing a flux path into said working volume for magnetic flux from like poles of two of said magnets, magnetic flux being distributed substantially uniformly in a major portion of said working volume.

4,578,664

RADIO INTERFERENCE SUPPRESSION CHOKE WITH A LOW LEAKAGE FIELD

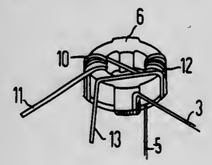
Hans Kinzler, and Jürgen Kaiser, both of Regensburg, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Continuation of Ser. No. 498,882, May 27, 1983, abandoned. This application Jul. 29, 1985, Ser. No. 761,295

Claims priority, application Fed. Rep. of Germany, Jun. 2, 1982, 3220737

Int. Cl.⁴ H01F *27/30*

U.S. Cl. 336—90 **1 Claim**



1. Radio interference suppression choke with a low leakage field, comprising;

an electrically insulated ferrite ring core;

a first winding having first and second series-connected winding sections wound directly on said core diametrically opposite each other;

an annular one-piece insulating cup disposed on said core and on said first winding; and

a second winding having first and second series-connected winding sections wound on said cup diametrically opposite each other;

said first and second windings being offset relative to each other by substantially 90°, forming a double choke and said cup having segments of enlarged cross section and width disposed on and spanning said winding sections of said first winding and segments of reduced cross section supporting said winding sections of said second winding.

4,578,665

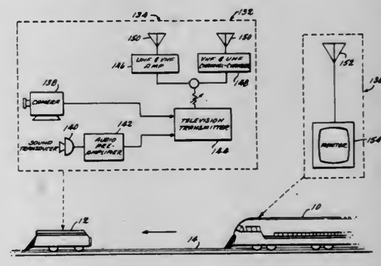
REMOTE CONTROLLED SURVEILLANCE TRAIN CAR

Tai-Her Yang, Post Office Box 84-85, Taipei, Taiwan

Continuation-in-part of Ser. No. 372,830, Apr. 28, 1982, abandoned. This application May 31, 1984, Ser. No. 615,576

Int. Cl.⁴ B61L *15/00*

U.S. Cl. 340—48 **14 Claims**



1. A system for surveying railway tracks disposed a distance away from a train adapted for travelling rectilinearly along said tracks, said system including:

a satellite car also adapted for travelling rectilinearly along said tracks, said satellite car including:

drive means for propelling said satellite car along said tracks;

control means, adapted to receive control signals transmitted by said train and operatively connected to said drive means, for maintaining said satellite car a predetermined distance from said train;

audio detecting means for detecting the level of sound energy produced by the travel of said satellite car over said tracks; and

first transmitting means for transmitting information to said train, said information comprising at least said detected sound energy level to said train;

second transmitting means, disposed on said train, for transmitting said control signals to said control means;

receiving means disposed on said train for receiving said information transmitted by said first transmitting means; and

display means disposed on said train for displaying said received information.

4,578,666

METHOD OF COMPARING DATA WITH ASYNCHRONOUS TIMEBASES

Russell Y. Anderson, Hillsboro, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Mar. 23, 1983, Ser. No. 478,115

Int. Cl.⁴ G06F *7/02*; G05B *1/00*

U.S. Cl. 340—146.2 **4 Claims**

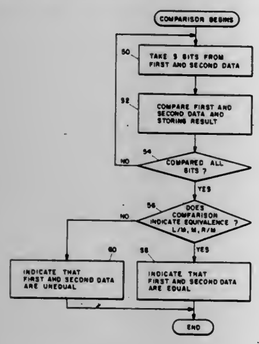
1. A method of comparing first and second data signals each comprising a sequence of digital bits acquired asynchronously, comprising the steps of:

(a) storing said first data signal in a first memory and said second data signal in a second memory;

(b) taking a predetermined number of bits of said first data signal from said first memory and a same number, not less

than two, of corresponding bits of said second data signal from said second memory;

(c) obtaining a relationship of the bits taken from said first and second memories by comparing said bits of said first data signal directly with said corresponding bits of said second data signal, by shifting said bits of said first data signal to the left with respect to said corresponding bits of said second data signal and performing a comparison therebetween, and by shifting said bits of said first data signal to the right with respect to said corresponding bits of said second data signal and performing a comparison therebetween;



(d) repeating steps (b) and (c) by successively shifting one bit at a time over said sequence of bits of said first and second data signals; and

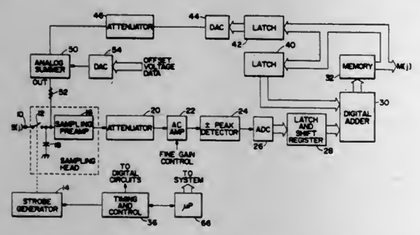
(e) determining the equivalence of said first data and said second data in accordance with obtained relationships of said bits.

4,578,667

DIGITAL ACQUISITION SYSTEM INCLUDING A HIGH-SPEED SAMPLING GATE

Allen L. Hollister, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Mar. 23, 1984, Ser. No. 593,010
Int. Cl.[4] H03M *13/00*
U.S. Cl. 340—347 SH **19 Claims**



1. A method of generating a representation of a waveform, comprising the steps of:

producing analog samples proportional to the magnitude of an input waveform at preselected time points therealong;

converting said samples to digital representations thereof;

storing said digital representations in storage locations associated with said preselected time points of said samples; and

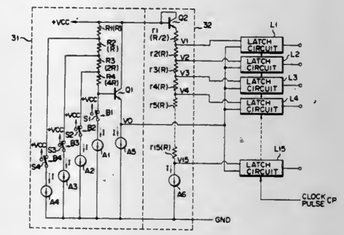
selectively retrieving said digital representations from a storage location associated with the next time point to be sampled and converting said stored digital representations to analog values to provide magnitude estimators for use in producing said samples.

4,578,668

DECODER FOR A D/A CONVERTER

Yasuhiro Sugimoto, Yokohama, Japan, assignor to Shibaura Denki Kabushiki Kaisha Horikawa Cho Sai Wia Kawasaki, Japan

Filed Mar. 30, 1984, Ser. No. 595,439
Claims priority, application Japan, Mar. 31, 1983, 58-55963
Int. Cl.[4] H03M *1/76*
U.S. Cl. 340—347 DA **7 Claims**



1. A decoder for a D/A converter which is responsive to digital input signals comprising:

a first resistor circuit for D/A conversion connected between a first power source and a second power source, said first resistor circuit including a first series resistor path constituting a plurality of first resistors connected in series, a first end of said first series resistor path being connected to said first power source and a second end of said first series resistor path forming a first voltage output terminal;

a first constant current source circuit containing a plurality of constant current sources which are each associated with a different one of said first resistors in said first resistor circuit and coupled to said associated resistor and said second power source;

a plurality of switches each connected between a different one of said first resistors in said first resistor circuit and said associated constant current sources in said first constant current source circuit, said switches each receiving a different one of said digital input signals to selectively connect said first resistors to said associated first constant current sources according to the logic state of the corresponding digital input signal;

a first transistor circuit including a first transistor having a base connected to said first voltage output terminal of said resistor path and having an output path which is connected at one end to said first power source;

a second constant current source circuit including a second constant current source connected between the other end of said output path of said first transistor and said second power source;

a second transistor circuit including a second transistor having a base connected to said first power source and to one end of an output path;

a second resistor circuit for reference voltage generation provided between the other end of said output path of said second transistor in said second transistor circuit and said second power source, said second resistor circuit including a second series resistor path including a plurality of second resistors connected in series between said other end of said second transistor output path and said second power source; and

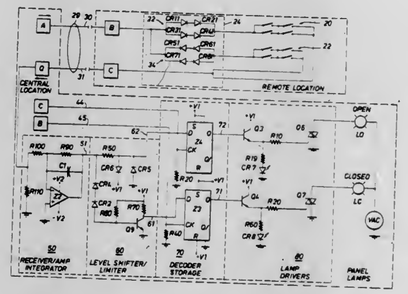
a third constant current source circuit including a third constant current source connected between said second series resistor path of said second resistor circuit and said second power source.

4,578,669

REMOTE SWITCH POSITION INDICATOR

Allan O. Woods, Houston, Tex., assignor to Hydril Company, Los Angeles, Calif.

Filed Sep. 12, 1983, Ser. No. 530,962
Int. Cl.[4] G08B *26/00*
U.S. Cl. 340—518 **22 Claims**



1. An indicator system for remotely sensing and indicating first and second status conditions of a two state element comprising:

a first switch means responsive to the two state element for closing when the element is in a first state and for opening when the element is in a second state,

a second switch means responsive to the element for opening when the element is in a first state and for closing when the element is in a second state,

a first diode means connected in series with the first switch means for conducting only current of a first direction through the closed first switch means,

a second diode means connected in series with the second switch means for conducting only current of a second direction through the closed second switch means,

the first diode-first switch series connection connected in parallel with the second diode-second switch series connection forming a parallel connection,

a first conductor connected to one end of the parallel connection and a second conductor connected to the other end of the parallel connection, the first and second conductors extending from the location of the remotely disposed element to a central location,

circuit means disposed at the central location for applying a driving oscillating signal that is substantially symmetrical about a reference level to the first conductor,

circuit means disposed at the central location responsive to half cycles of a first direction on the second conductor for generating a first continuous output signal indicative that the element is in the first state, and

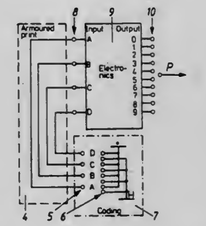
circuit means disposed at the central location responsive to half cycles of a second direction on the second conductor for generating a second continuous output signal indicative that the element is in the second state.

4,578,670

ALARM SYSTEM FOR SAFEGUARDING AGAINST THE BREAK-THROUGH OF A SURFACE

Poul R. Joergensen, Strandvej 14, 4573 Hoejby Sjaelland, Denmark

PCT No. PCT/DK82/00063, § 371 Date Mar. 4, 1983, § 102(e) Date Mar. 4, 1983, PCT Pub. No. WO83/00246, PCT Pub. Date Jan. 20, 1983
PCT Filed Jul. 6, 1982, Ser. No. 485,126
Int. Cl.[4] G08B *13/08*
U.S. Cl. 340—550 **11 Claims**



1. An alarm system for safeguarding against the break-through of a wall comprising:

a network of electrically conducting wires distributed over the wall and arranged to lie in at least two layers which are spaced a small distance from each other; said wires comprised of a group consisting of a predetermined number of wires running uninterrupted through the layers; each wire having an input terminal and a corresponding output terminal; the input terminals provided with respective set input voltages or signals; the respective set input voltages or signals producing corresponding set output voltages or signals on corresponding output terminals when the alarm system is set and unactivated; at least one of the input terminals being provided with a set input voltage or signal which is different from the set input voltage or signal of at least one of the other input terminals; and electronic means connected to the output terminals for activating an alarm when the output voltage or signal on at least one of the output terminals does not correspond to the set output voltage for that terminal.

4,578,671

REMOTE INDICATING LOW BATTERY VOLTAGE ENUNCIATOR METHOD AND APPARATUS

Dale R. Flowers, Raleigh, N.C., assignor to International Business Machines Corp., Armonk, N.Y.

Filed Dec. 5, 1984, Ser. No. 678,434
Int. Cl.[4] G08B *21/00*
U.S. Cl. 340—636 **5 Claims**

1. Low power supply voltage warning apparatus for a remote, self-contained power supply keyboard data input device, comprising:

voltage monitor means connected to the self-contained power supply voltage;

an internal reference voltage circuit driven by said power supply;

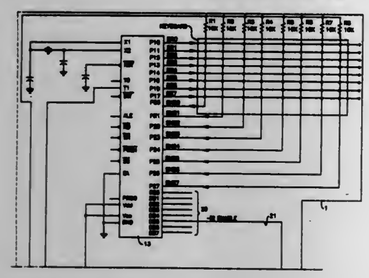
code generator means connected to said voltage monitor means for generating a low voltage indication code;

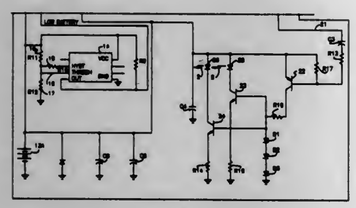
transmitter means connected to said code generator means for transmitting said low voltage indication code; and

transmitter means connected to said code generator means for transmitting said low voltage indication code; and

means connected to said code generator and to said transmitter for controlling issuance of said low voltage indication code to occur during times when said data input keyboard is in use for data input;

receiver means for receiving said low voltage indication code; and





decoding and display means connected to said receiver means for displaying a low voltage warning when said indication code is received.

4,578,672

COLOR LIQUID CRYSTAL DISPLAY DEVICE

Makoto Oota; Masamichi Nekozuka, both of Kanagawa, and Kikuji Yagishita, Tokyo, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

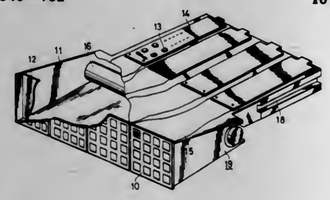
PCT No. PCT/JP82/00394, § 371 Date May 31, 1983, § 102(e) Date May 31, 1983, PCT Pub. No. WO83/01332, PCT Pub. Date Apr. 14, 1983

PCT Filed Sep. 29, 1982, Ser. No. 499,768

Claims priority, application Japan, Sep. 30, 1981, 56-155967

Int. Cl.⁴ G09G *3/36*

U.S. Cl. 340—702 **10 Claims**



1. A large screen color liquid crystal display device, which comprises a number of modules which are connected to one another to form said large screen liquid crystal display device, each said module comprising:

a housing;

a plurality of adjacent liquid crystal panels which are arranged on the front surface of said housing, each liquid crystal panel comprising a plurality of liquid crystal picture elements, each said picture element including at least two electrodes which are different in electrode area from each other and are electrically independent, a plurality of color filters arranged in correspondence to said electrodes, a common electrode confronting said independent electrodes, and liquid crystal interposed between said common electrode and said independent electrodes, and polarizing plates,

printed circuit boards including drive circuits for driving said liquid crystal panels, respectively, said printed circuit boards being arranged longitudinally of said housing, and

a fluorescent lamp arranged inside said housing and in parallel with said adjacent liquid crystal panels.

4,578,673

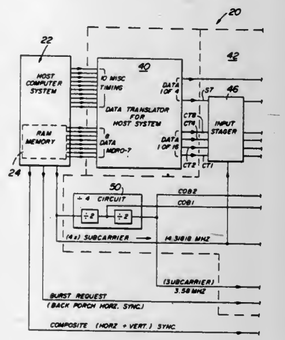
VIDEO COLOR GENERATOR CIRCUIT FOR COMPUTER

Peter N. Yianilos, Fort Lauderdale, Fla., and Michael L. Wajda, Philadelphia, Pa., assignors to Franklin Computer Corporation, Cherry Hill, N.J.

Filed Jul. 8, 1983, Ser. No. 512,284

Int. Cl.⁴ G09G *1/28*

U.S. Cl. 340—703 **5 Claims**



1. Color video generation means for use with a digital computer and a color video display, said color video display comprising a receiver having a phase demodulator operating at a color subcarrier frequency, said computer producing first digital data signals, each of which is composed of plural bits and representing a respective predetermined color out of a pallet of plural colors, said color video generation means producing one of said plural colors in a predetermined area of said display in response to receipt of a predetermined one of said first data signals, said video generation means operating on a color subcarrier signal composed of three primary color signals and comprising translator means, video phase modulator means, and output means, said translator means comprising first addressable memory means and being responsive to said first data signals for producing second, plural bit digital signals, said video phase modulator means comprising second addressable memory means and timing means, said timing means providing digital timing signals to respective first portions of plural predetermined addresses of said second addressable memory means to establish consecutive portions of one complete cycle of said color subcarrier signal, said second digital signals being provided to respective second portions of said plural predetermined addresses, said second addressable memory means having saturation data stored therein at memory locations corresponding to said plural predetermined addresses, said saturation data defining at least three predetermined different amounts of the primary color signals present in each of said consecutive portions of the cycle of the color subcarrier signal, said second addressable memory means operating in synchronism with said phase demodulator to provide respective output signals during said consecutive portions of said one complete cycle of said color subcarrier signal, each of said output signals consisting of said saturation data stored within the memory location addressed, said output signals

being converted by said output means into analog signals, each of which represents the level of saturation of the three color signals making up the color subcarrier signal during each of said consecutive portions of said color subcarrier, said output signals being arranged for combination with video synchronization signals and a color burst signal to provide a composite video signal suitable for use by said phase demodulator.

4,578,674

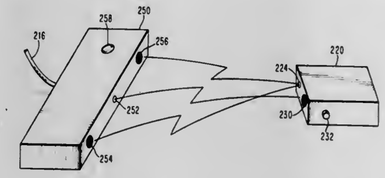
METHOD AND APPARATUS FOR WIRELESS CURSOR POSITION CONTROL

David C. Baker, Austin, Tex.; David F. Bantz, Chappaqua, N.Y., and Gregory A. Flurry, Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 20, 1983, Ser. No. 486,630

Int. Cl.⁴ G09G *1/00*

U.S. Cl. 340—710 **8 Claims**



1. Apparatus for controlling the motion of a cursor on a screen comprising:

a wireless cursor position control device with an infrared detector for detecting a first signal transmittal from a control base and an ultrasonic emitter for transmitting a second signal generated in response to said detected first signal,

a control base with one or more infrared emitters for transmitting signals to said first detector in said cursor position control device and a plurality of ultrasonic detectors for receiving signals from said ultrasonic emitters in said cursor position control device, and

means to calculate the relative motion of a cursor from said directions and velocity of said cursor position control device.

4,578,675

APPARATUS AND METHOD FOR LOGGING WELLS WHILE DRILLING

Norman C. MacLeod, San Jose, Calif., assignor to MacLeod Laboratories, Inc., San Jose, Calif.

Filed Sep. 30, 1982, Ser. No. 429,823

Int. Cl.⁴ G01V *1/00, 3/10;* E21B *29/02*

U.S. Cl. 340—855 **18 Claims**

1. Information while drilling apparatus for detecting electrical data reflective of geological conditions generally ahead of a drill bit in a well and communicating such data to ground surface via an electrically conductive drill string comprising:

excitation source means for inducing alternating electrical excitation currents to flow through earth strata surrounding the drill bit;

an elongated, electrically conductive, cylindrical module forming a drill collar means connected in the drill string proximate said drill bit at the lower end of said drill string having,

a passive current sensing means disposed at the lower end of said module for detecting excitation currents flowing to and from earth strata generally adjacent to and ahead of the drill bit through said drill bit and for developing corresponding logging signals,

a first detecting means responsive to said logging signals and

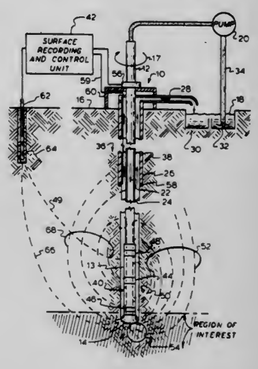
operative to develop corresponding first data signals, and

a first signal coupling means for coupling said first data signals into said drill string; and

communication means coupled to said drill string for receiving said first data signals;

a bi-directional remote coupler means including, an electrically conductive cylindrical coupler housing forming a part of said conductive drill string above the module;

a remote relay toroidal transformer means encircling a cross-sectional area coaxially within said coupler housing and having one lead of its toroidal winding electrically connected to said coupler housing;



an insulated conductor of predetermined length electrically connected between the other lead of the toroidial winding and a wiper contactor contacting said module at a point below said first signal coupling means, said first signal coupling means inducing said data signals in said insulated conductor, said conductor communicating the data signals to said remote relay toroidal transformer means which in turn couples said data signals into said drill string.

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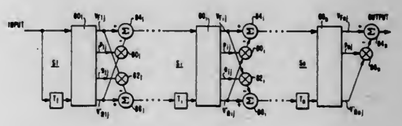
DELAY LATTICE FILTER FOR RADAR DOPPLER PROCESSING

Earnest R. Harrison, Jr., Severna Park, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 26, 1984, Ser. No. 604,331

Int. Cl.⁴ G015 *7/28, 13/52, 13/00*

U.S. Cl. 343—17.1 R **7 Claims**



1. In a pulse doppler radar signal processor which processes successive echo interpulse period (IPP) signalling in accordance with range cell samples, an adaptive filter for enhancing the discrimination of targets from clutter and noise, said filter having a delay lattice configuration including a plurality of cascadedly coupled lattice stages, each adapted to operate on the range cell samples of first and second complex signal inputs, a lattice stage comprising:

means for delaying said second complex signal input over a time interval to render the delayed range cell samples thereof, corresponding to a previous IPP, coherent with the range cell samples of said first complex signal input corresponding to a current IPP;

means for computing independently a first coefficient signal and a second coefficient signal for each range cell sample of said current IPP based on respective separate functions of a common multiplicity of coherent range cell samples of said first and delayed second complex signal inputs, said common multiplicity of coherent range cell samples being grouped about said range cell sample for which said first and second coefficient signals are being computed;

first means for weighting each range cell sample of said first complex signal input with the second coefficient signal correspondingly computed therefor;

second means for weighting each range cell sample of said delayed second complex signal input with the first coefficient signal correspondingly computed therefor;

first means for combining each range cell sample of said first complex signal input corresponding to a current IPP with said coherent weighted range cell sample of said delayed second complex signal input to form a first complex signal output of the lattice stage; and

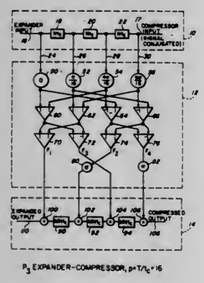
second means for combining each range cell sample of said delayed second complex signal input corresponding to a current IPP with said coherent weighted range cell sample of said first complex signal input to form a second complex signal output of the lattice stage.

4,578,677

RANGE DOPPLER COUPLING MAGNIFIER

Bernard L. Lewis, Ft. Washington, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 23, 1983, Ser. No. 535,085
Int. Cl.[4] G01S *13/28*
U.S. Cl. 343—17.2 PC **11 Claims**



P_3 EXPANDER-COMPRESSOR, $p=T/t_c=16$

1. A pulse expander-compressor comprising:

an input signal expansion circuit responsive to an applied pulse for successively generating M replicas y(m) of the pulse with the time spacing between the end of one pulse replica and the beginning of the next pulse replica equal to a constant $(n-1)t_c$, where n is an integer $n=2, 3, 4 \ldots N$, and t_c is the Nyquist sampling period for the bandwidth of the applied pulse;

a matched filter weighting circuit for receiving said M pulse replicas from said input-signal expansion circuit and weighting said pulse replicas y(m) with predetermined weights to effect the phase weights for a doppler tolerant polyphase code and providing M weighted output pulses; and

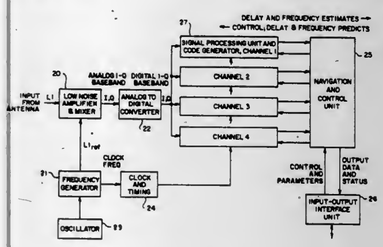
a time dispersion circuit including a plurality of adder means and first delay stages connected in series, said adder means alternating with said first delay stages, each of said adder means being connected to receive a different one of said M weighted output pulses from said weighting circuit, each of said first delay stages providing a delay which is Mnt_c; wherein said expander-compressor is clocked at the Nyquist rate for the bandwidth of said applied pulse.

4,578,678

HIGH DYNAMIC GLOBAL POSITIONING SYSTEM RECEIVER

William J. Hurd, La Canada, Calif., assignor to The United States of America as represented by the United States National Aeronautics and Space Administration, Washington, D.C.

Filed Nov. 14, 1983, Ser. No. 551,536
Int. Cl.[4] G01S *5/02*; H04B *7/185*
U.S. Cl. 343—357 **5 Claims**



1. In a receiver for a navigation system using a number of satellites which synchronously transmit pseudorange codes that are code division multiplexed on a carrier frequency, said receiver having means for amplifying the aggregate of the signals from said satellites, and converting said aggregate to baseband, means for demodulating said baseband to inphase and quadrature signals, means for converting said inphase and quadrature signals from analog to digital form, a separate signal processing channel for each satellite signal received, and navigation means responsive to pseudorange and frequency estimates from all of said channels for computing smoothed estimates of receiver position, velocity, clock offset and clock rate offset, a method for navigation tracking with said channels in parallel comprising the steps of

computing in each channel the maximum likelihood estimation of pseudorange, $\hat{r}$, to a satellite, and the frequency, $\hat{\omega}$, of the satellite at baseband during a measurement time,

computing smoothed estimates of receiver position, velocity, clock offset and clock rate offset from the maximum likelihood estimates $\hat{r}$ and $\hat{\omega}$, and data from said navigation means to predict pseudorange $\bar{r}$ and frequency $\bar{\omega}$ for the next measurement time for each satellite,

adjusting the digital baseband inphase and quadrature signals to a predicted frequency for the next measurement time in response to said smoothed estimate $\bar{\omega}$ of frequency, and

adjusting the phase of a code generator for generating a replica of the satellite pseudorange code with a predicted delay for the computation of the maximum likelihood estimate of pseudorange, $\hat{r}$, in the next measurement time in response to said smoothed estimate $\bar{r}$ of pseudorange.

4,578,679

METHOD AND APPARATUS FOR OBTAINING ANTENNA TRACKING SIGNALS

Günter Mörz, Ludwigsburg, Fed. Rep. of Germany, assignor to Ant Nachrichtentechnik GmbH, Backnang, Fed. Rep. of Germany

Filed May 5, 1983, Ser. No. 491,939
Claims priority, application Fed. Rep. of Germany, May 5, 1982, 3216708
Int. Cl.[4] G01S *5/02*
U.S. Cl. 343—427 **3 Claims**

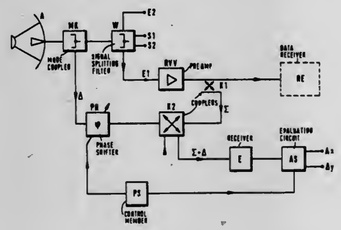
1. Apparatus for deriving control signals for positioning an antenna to track a signal source, said antenna having a boresight axis and sum and difference radiation patterns arranged about said axis, said sum and difference patterns having maximum and minimum amplitudes, respectively on said axis, comprising

first means for deriving at its output a sum signal corresponding to the sum radiation pattern of said antenna;

second means for deriving a single difference signal corresponding to the difference radiation pattern of said antenna;

controllable phase shifting means connected to said second means for receiving said difference signal and for selectively shifting the phase difference between said sum and difference signals by alternatively between one of 0° and 90°, a phase-shifted signal being produced at the output of said phase shifting means;

a 3-dB directional coupler having a first input port connected to the output of said first means, a second input port connected to the output of said phase shifting means,



a first output port providing a signal corresponding to the sum of the signals at said first and second input ports and a second output port providing a signal corresponding to the difference between the signals at said first and second input ports;

an evaluation current connected to the first and second outputs of said directional coupler and generating from the sum and difference signals thereof said antenna positioning control signals; and

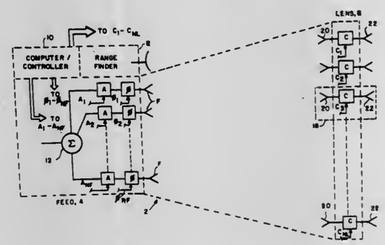
control means connected to said phase shifting means and between said coupler outputs and said evaluation circuit for alternatively connecting each output port of said coupler in turn to said evaluation current while causing said phase shifting means to shift the phase of the difference signal alternatively by 0° and 90°.

4,578,680

FEED DISPLACEMENT CORRECTION IN A SPACE FED LENS ANTENNA

Randy L. Haupt, Stow, Mass., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 2, 1984, Ser. No. 606,325
Int. Cl.[4] H01Q *3/36*
U.S. Cl. 343—703 **7 Claims**



1. Apparatus for electronically correcting the far field pattern of a mechanically misaligned space fed lens antenna comprising:

a space fed lens antenna having a phased array feed and a phased array lens;

said phased array feed having a plurality of serially-connected phase shifters and feed elements;

said phased array lens having a plurality of serially-connected phase shifters and lens elements;

range finder means for determining the actual physical displacement of said phased array feed elements from said phased array lens elements and for providing range signals indicative thereof;

controller means for receiving said range signals and for providing first and second phase correction signals functionally related to said actual displacement and desired displacement of said feed elements from said lens elements;

means for applying said first phase correction signals to said phase shifters of said feed elements; and

means for applying said second phase correction signals to the phase shifters of said lens elements;

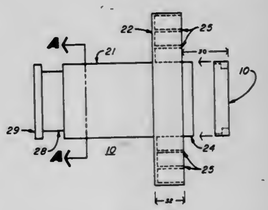
whereby the far field pattern of said space fed lens antenna is optimized.

4,578,681

METHOD AND APPARATUS FOR OPTIMIZING FEEDHORN PERFORMANCE

H. Taylor Howard, San Andreas, Calif., assignor to Chaparral Communications, Inc., San Jose, Calif.

Filed Jun. 21, 1983, Ser. No. 506,494
Int. Cl.[4] H01Q *13/02, 13/06*
U.S. Cl. 343—786 **16 Claims**



1. Apparatus for optimizing performance of a feedhorn with a parabolic reflector in an antenna system, said feedhorn including a circular waveguide for receiving polarized signals at an aperture end, impedance matching means coupled to the other end and a corrugated plate disposed around the outside of the circular waveguide near the aperture end, said apparatus comprising an annular iris having an outside diameter approximately equal to the inside diameter of the circular waveguide for interference fit therewith, having an inside diameter determined by the desired beamwidth of the signal to be emitted therefrom, and having a longitudinal dimension selected to protrude beyond the corrugated plate of the feedhorn to approximately equalize the E and H plane beamwidths and selectively shape the signal patterns thereof.

4,578,682

ANTENNA DISH

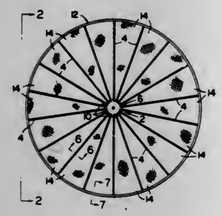
Robert L. Hooper, and Lawrence W. Yonge, III, both of Ocala, Fla., assignors to Raydx Satellite Systems, Ltd., Ocala, Fla.

Filed Mar. 20, 1984, Ser. No. 591,421
Int. Cl.[4] H01Q *15/16*
U.S. Cl. 343—916 **11 Claims**

1. An antenna dish, such as may be used for reflecting and focusing electromagnetic signals such as television signals transmitted from satellites for reception and use, comprising

centrally disposed supporting means for supporting the components of the dish;

a plurality of elongated forming ribs, each comprising a tubular member that is bent prior to assembly of said dish to form a portion of generally parabolic curve, each said tubular rib having formed integrally therewith mesh receiving portions comprising at least one recess extending inwardly of said tubular member and generally parallel to said parabolic surface thereof for receiving a portion of metallic mesh therewithin, each said rib being attached at one end thereof to said centrally disposed supporting means and extending generally radially outwardly therefrom;



a plurality of foraminous metallic mesh members each formed of a mesh material reflective of said signal and extending between a pair of adjacent said forming ribs and received within said mesh receiving portions thereof and each extending radially outwardly continuously from a position adjacent said centrally disposed supporting means to a position adjacent the end of said ribs distal said supporting means; and

rim means connected to the end of said forming rib distal said supporting means, whereby the mesh members and ribs extending continuously outwardly from the centrally disposed supporting means form a generally parabolic dish structure for reflecting and focusing such signals.

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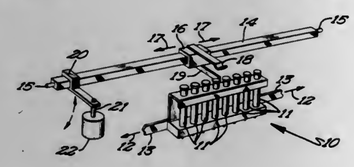
GRAPHIC RECORDING SYSTEM

James F. Gordon, Saratoga, Calif., assignor to Nicolet Instrument Corporation, Madison, Wis.

Continuation of Ser. No. 514,625, Jul. 18, 1983, abandoned. This application Oct. 28, 1985, Ser. No. 792,176

Int. Cl.[4] G01D *9/28, 15/24*

U.S. Cl. 346—49 **10 Claims**



1. In a graphic recording system of the type wherein a plurality of recording elements are carried by a carriage, the carriage being movable along a path relative to a recording medium, and having means for selectively actuating said recording elements, by mechanical engagement, for recording on said medium, the improvement wherein said actuating means comprises:

rod means having a longitudinal axis supported for rotation about said axis;

actuator means carried by said rod means independently of said carriage for rotation with said rod means into and out of engagement with said recording elements while being movable along said rod means; and

detent means selectively interlocking said actuator means and said carriage in predetermined relative positions for common movement of the actuator means and carriage only when the actuator means and carriage are interlocked.

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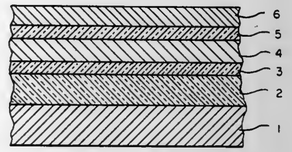
OPTICAL RECORDING AND INFORMATION ELEMENTS

Mool C. Gupta, W. Webster, and Douglas G. Stinson, Fairport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 28, 1985, Ser. No. 706,985

Int. Cl.[4] G01D *15/34;* **B32B** *27/00;* **G03C** *1/00*

U.S. Cl. 346—135.1 **8 Claims**



1. An optical recording element comprising a support bearing a metal reflective layer having thereover a heat-deformable recording layer characterized in that (a) a transparent ceramic layer is present between the support and the reflective layer and (b) a transparent ceramic layer having a thickness up to 0.05 μm is present between the reflective layer and the recording layer.

4,578,685

PEN CHANGEOVER MECHANISM FOR PEN RECORDER

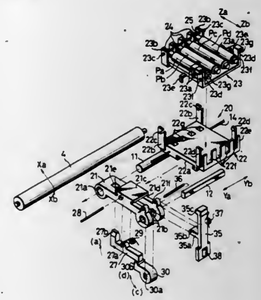
Hideto Tanaka, Tamayama, and Kyuichi Fujisawa, Tonan, both of Japan, assignors to Alps Electric Co., Ltd., Japan

Filed Apr. 27, 1984, Ser. No. 604,723

Claims priority, application Japan, Apr. 27, 1983, 58-74756

Int. Cl.[4] G01D *15/16, 9/28*

U.S. Cl. 346—139 R **11 Claims**



1. A pen recorder comprising:

two bases adapted to be movable together in longitudinal directions parallel to a platen, one of said bases being driven by a driving means in said movement along said platen;

a plurality of pens mounted in parallel on one of said bases;

a hammer mounted on the other of said bases for pressing a selected pen toward said platen in a recording operation, said hammer mounting base being selectively movable linearly relative to the pen mounting base so as to locate the hammer in a position corresponding to the selected pen;

pen changeover means including a lock mechanism interposed between said bases for locking said bases together when the hammer is located at the position corresponding to the selected pen for the recording operation; and

changeover driving means mounted to a frame of the pen recorder at a position remote from said bases, said locking mechanism being actuated by a driving cam slidably mounted on a driving shaft extending parallel to said platen and connected to said remote changeover driving means.

4,578,686

INK PRINTHEAD

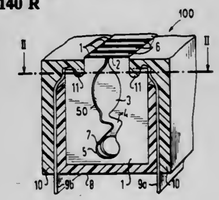
Emmeran Vollert, Grosshoehenrain, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jan. 29, 1985, Ser. No. 696,206

Claims priority, application Fed. Rep. of Germany, Feb. 2, 1984, 3403615

Int. Cl.[4] G01D *15/18*

U.S. Cl. 346—140 R **16 Claims**



1. In a writing head for an ink-printing device comprising piezo-electric drive elements which have a shape which changes due to suitable polarized drive pulses and under whose influence ink is sucked out of an ink reservoir through a common ink feed channel during an expansion phase and a small volume of ink is ejected in the form of a ink droplet during a following contraction phase, the improvements comprising each of the piezo-electric drive elements including at least one piezo-electric lamina with appropriate electrical connections, each of the laminae having a cut edge forming a recess with another edge to form an ink discharge opening in an upper region of the lamina, an ink chamber in a central expanded region, a choke channel in a constricted region separating an ink feeding opening in the lower region from the ink chamber; spacer elements having an opening therein, said spacer elements and laminae being arranged in a stack with a spacer element on each side of each laminae and the openings of the spacer elements being aligned with the ink feeding openings of the laminae to form an ink feed channel; and a common block receiving the stack of alternate laminae and spacer elements.

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INK JET PRINTHEAD HAVING HYDRAULICALLY SEPARATED ORIFICES

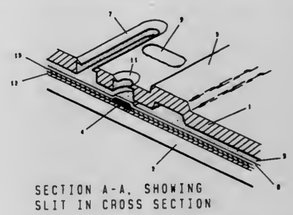
Frank L. Cloutier, Corvallis; Paul H. McClelland, Monmouth; William R. Boucher, Corvallis, and Gary L. Siewell, Albany, all of Oreg., assignors to Hewlett Packard Company, Palo Alto, Calif.

Filed Mar. 9, 1984, Ser. No. 588,016

Int. Cl.[4] G01D *15/18*

U.S. Cl. 346—140 R **6 Claims**

1. An improved ink jet printhead comprising an orifice plate affixed to a substrate member so as to permit the flow of a fluid between said orifice plate and said substrate member for selective ejection of said fluid from orifices in said orifice plate, said orifice plate containing a plurality of orifices and a plurality of elongated isolator slots adjacent thereto, said orifices and said isolator slots communicating with said fluid between said



orifice plate and said substrate member, said isolator slots having an active area six to ten times the area of said orifices.

4,578,688

LIGHT BEAM PRINTER

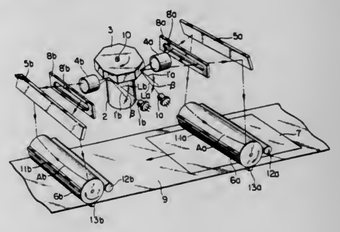
Takuo Okuno, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 9, 1984, Ser. No. 598,269

Claims priority, application Japan, Apr. 12, 1983, 58-63029

Int. Cl.[4] G01D *15/121*

U.S. Cl. 346—157 **6 Claims**



1. A light beam printer including:

means for forming a first light beam modulated corresponding to a frist image informatin signal;

means for forming a second light beam modulated corresponding to a second image information signal;

a first movable photosensitive medium exposed to said first light beam to form a first color image;

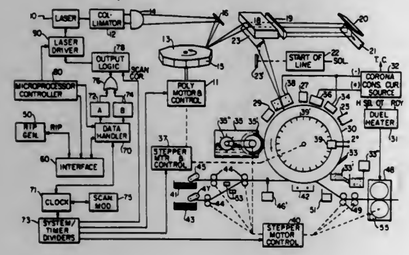
a second movable photosensitive medium exposed to said second light beam to form a second color image;

a first rotatable polygonal mirror for scanning said first light beam, said first polygonal mirror being rotated about an axis inclined with respect to said first light beam entering said first polygonal mirror so that said first light beam depicts a first curved movement locus on said first photosensitive medium;

a second rotatable polygonal mirror for scanning said second light beam, said second polygonal mirror being rotated about an axis inclined with respect to said second light beam entering said second polygonal mirror by such an angle that said second light beam depicts on said first photosensitive medium a second movement locus curved in the same direction and by the substantially same amount as the first movement locus; and

means for transferring said first color image and said second color image onto the same transfer medium in superposed relationship with each other.

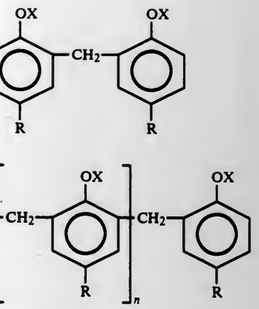
4,578,689
DUAL MODE LASER PRINTER
David R. Spencer, Melville, and Amnon Goldstein, Pelham, both of N.Y., assignors to Data Recording Systems, Inc., Melville, N.Y.
Filed Nov. 26, 1984, Ser. No. 674,620
Int. Cl.[4] G01D *15/14*
U.S. Cl. 346—160 **5 Claims**



1. A laser printer system having at least two operating modes, said modes differing from each other in terms of resolution and speed such that the higher the resolution the lower the speed, comprising:
a photosensitive medium;
means for generating a modulated beam of laser light focused onto said medium;
at least one moving mirror surface located in the path of said focused light beam before said medium for reflecting the beam such that it sweeps across the medium;
detector means for detecting the start of sweep of the beam across the medium and producing a start of line signal;
clock means for producing a plurality of related clock signals;
photosensitive medium motor means for moving said photosensitive medium at a rate determined by a first one of said plurality of clock signals; and
control means for controlling the modulation of said laser beam according to a second one of said plurality of clock signals and the start of line signal, said control means causing the printer to operate in at least (1) a high resolution mode wherein the light beam is modulated at a high rate determined by the second clock signal during fewer than every scan by the moving mirror surface and the first clock signal causes the medium to move at a slow speed, and (2) a low resolution mode wherein the light beam is modulated at a lower rate by the second clock signal during a greater number of scans by the moving mirror surface than the higher resolution mode and the first clock signal causes the medium to move at a faster speed.

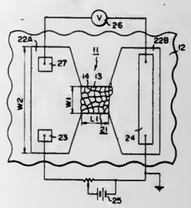
4,578,690
CARBONLESS DEVELOPER SHEET
Norman T. Veillette, Hollis, and Robert J. Malik, Hudson, both of N.H., assignors to Nashua Corporation, Nashua, N.H.
Filed Aug. 13, 1984, Ser. No. 639,739
Int. Cl.[4] B41M *5/16, 5/22*
U.S. Cl. 346—212 **5 Claims**

1. A sheet of record material sensitized with a CF coating to produce a color on contact with oil-soluble, basic chromogenic, acid colorable dyes, said coating characterized in that it includes:
A. a phenolic resin material consisting of one or a mixture of



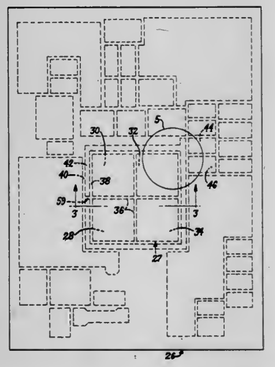
where X is independently hydrogen or zinc, R is independently an alkyl group having 1–8 carbon atoms, an aryl group, or a hydrogen atom, and n equals 1–8;
B. Benzoic acid; and
C. an inorganic magnesium compound which is Mg(OH) 2, MgO, or a mixture thereof,
wherein components A, B, and C are present in about the following ratio in parts by weight:
A. 50
B. 0.5–4.0
C. 4–40.

4,578,691
PHOTODETECTING DEVICE
Toshiaki Murakami; Yoichi Enomoto, both of Mito, and Minoru Suzuki, Katsuta, all of Japan, assignors to Nippon Telephone & Telegraph Public Corporation, Tokyo, Japan
Filed Sep. 14, 1984, Ser. No. 651,069
Claims priority, application Japan, Sep. 20, 1983, 58-173668
Int. Cl.[4] H01L *39/22*
U.S. Cl. 357—5 **5 Claims**



1. A photodetecting device having Josephson junctions, comprising:
an insulating substrate;
a polycrystalline superconductor film of $BaPb_{1-x}Bi_xO_3$ (where $0.05 \leqq x < 0.32$) having an I-V characteristic of weak link type under temperature condition less than transition temperature of said $BaPb_{1-x}Bi_xO_3$, formed on said insulating substrate such that Josephson junctions are formed at grain boundaries, said superconductor film having a first region subjected to light illumination, and second and third regions formed contiguously at both sides of said first region such that a width of each of said second and third regions is wider than that of said first region;
means for supplying a predetermined bias current between said second and third regions; and
means for detecting a change in voltage between said second and third regions, one terminal of said means for supplying and one terminal of said means for detecting being commonly grounded.

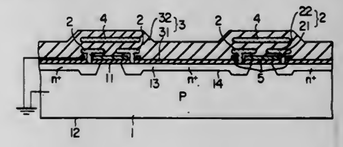
4,578,692
INTEGRATED CIRCUIT WITH STRESS ISOLATED HALL ELEMENT
Jacob K. Higgs, Concord, N.H., and John Humenick, Shrewsbury, Mass., assignors to Sprague Electric Company, North Adams, Mass.
Filed Apr. 16, 1984, Ser. No. 600,875
Int. Cl.[4] H01L *27/22, 27/04*
U.S. Cl. 357—27 **10 Claims**



1. A silicon integrated circuit chip comprising a semiconductor substrate of one conductivity type, an epitaxial layer of the opposite conductivity type on one face of said substrate, a Hall element disposed in a central portion of the outer surface of said epitaxial layer, an amplifier circuit including a plurality of bipolar transistor, another portion of said epitaxial layer surrounding said Hall element containing a network of opposite-conductivity-type isolation walls forming a plurality of PN junction isolated pockets of one conductivity type, said transistors occupying at least some of said pockets, said Hall element being separated from the adjacent of said pockets by a moat surrounding said Hall element, said moat being comprised of two concentric spaced apart heavily doped isolation walls of said one conductivity type, said concentric isolation walls each having at least one downward diffused portion from said surface, the span of said moat at said surface being greater than three times the thickness of said epitaxial layer to isolate said Hall element from built-in stresses in said surrounding epitaxial layer portion adjacent to said Hall element.

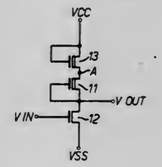
4,578,693
SEMICONDUCTIVE PHOTODETECTOR DEVICE
Yoshiaki Yazawa, Hitachi; Nobuaki Miyakawa, Ibaraki; Toji Mukai, Hitachi; Takahide Ikeda, Tokorozawa, and Tatsuya Kamei, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Jun. 17, 1983, Ser. No. 505,447
Claims priority, application Japan, Jun. 18, 1982, 57-104009
Int. Cl.[4] H01L *27/14, 31/00*
U.S. Cl. 357—30 **25 Claims**

1. A semiconductive photodetector device comprising:
a semiconductor substrate of one conductivity type having a pair of major surfaces;
a plurality of semiconductor regions of the other conductivity type which are juxtaposed and contiguous to one major surface of said semiconductor substrate, said one major surface serving as a light receiving surface, said semiconductor substrate and semiconductor regions forming pn junctions therebetween having edges terminated at said one major surface;
an insulating film overlying said one major surface of said semiconductor substrate;
a plurality of electrodes disposed inside said insulating film and having each a leg portion which extends in a direction perpendicular to said one major surface and which has one end in ohmic contact to an associated semiconductor region and a flat portion which is contiguous to the other end of said leg portion and which extends in a direction substantially parallel to said one major surface so as to optically shield an edge of the pn junction of the associated semiconductor region



and which extends above a portion of said semiconductor substrate lying between edges of adjacent pn junctions; and
a polysilicon film interposed between said flat portion of said electrode inside the insulating film and said one major surface of said semiconductor substrate, extending above said edge of the pn junction and a peripheral portion of said associated semiconductor region, and electrically connected to said semiconductor substrate, said polysilicon film optically shielding edges of adjacent pn junctions and the portion of said semiconductor substrate lying between edges of adjacent pn junctions and forming a capacitance with said associated semiconductor region.

4,578,694
INVERTER CIRCUIT PROVIDED WITH GATE PROTECTION
Shoji Ariizumi, and Makoto Segawa, both of Tokyo, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
Filed Sep. 30, 1982, Ser. No. 429,183
Claims priority, application Japan, Oct. 20, 1981, 56-167556
Int. Cl.[4] H01L *27/04, 29/78*; H03K *17/08, 17/687*
U.S. Cl. 357—41 **2 Claims**



1. An integrated circuit comprising:
a first enhancement type MOSFET having a gate coupled to an input signal;
a second depletion type MOSFET having a gate and a source connected to a drain of the first MOSFET; and
a third depletion type MOSFET having a gate and a drain connected directly to a power supply and a source connected to a drain of the second MOSFET;
said third MOSFET acting as a voltage divider in conjunction with said second MOSFET to decrease noise applied from said power supply through said third MOSFET to said second MOSFET;
wherein an output signal corresponding to the input signal is derived from the drain of the first MOSFET.

4,578,695

MONOLITHIC AUTOBIASED RESISTOR STRUCTURE AND APPLICATION THEREOF TO INTERFACE CIRCUITS

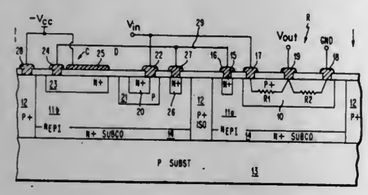
François-Xavier Delaporte, Cagnes; Gerard M. Lebesnerais, Perthes, and Jean-Pierre Pantani, Nice, all of France, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 21, 1983, Ser. No. 554,025

Claims priority, application European Pat. Off., Nov. 26, 1982, 82430037.0

Int. Cl.⁴ H01L *27/04;* **H02H** *9/04;* **H03K** *3/01, 5/153*

U.S. Cl. 357—48 **4 Claims**



1. In an integrated circuit an autobiased resistor structure (FIG. 1) fabricated on a P type semiconductor substrate (13) comprising:

an N type epitaxial layer (11*a*, 11*b*) on said substrate;

a P type isolation wall (12) extending through said epitaxial layer to said substrate, said isolation wall forming first and second isolated N type epitaxial pockets (11*a*, 11*b*) on said substrate;

first and second spaced apart N+ type regions (23, 26) contained in said first N type epitaxial pocket;

a first P type region (21) contained in said first N type epitaxial pocket, said first P type region positioned between and spaced from said first and second N+ type regions contained in said first N type epitaxial pocket;

a N+ type pocket (20) contained in said first P type region contained in said first N type epitaxial pocket;

a third N+ type region (15) contained in said second N type epitaxial pocket;

a first P+ type region (10) contained in second N type epitaxial pocket;

an electrode (25), said electrode spaced from and coextensive with at least a portion of said first N+ type region contained in said first N type epitaxial pocket;

a first connection means (28) electrically connecting said P+ type isolation wall (12), said P substrate (13) and said electrode (25) to a source of potential V_{CC};

second connection means (29) electrically connecting in common said first and second spaced apart N+ type regions (23, 26) contained in said first N type epitaxial pocket and said third N+ type region (15) in said second N type epitaxial pocket;

first, second and third spaced apart contacts (17, 18, 19), said first, second and third spaced apart contacts, in the order recited, electrically contacting said first P+ region (10) contained in said N type epitaxial pocket;

third connection means electrically connecting in common said N+ type pocket (20) contained in said first P type region (21), said first P type region (21) contained in said first N type epitaxial pocket, said first contact (17) and a source of potential V_{in};

fourth connection means connecting said third contact (18) to a source of potential V_{GND};

fifth connection means connecting said second contact (19) to an output terminal V_{out} for providing an output voltage V_{out}; and,

said first P+ region is a voltage divider resistor (R1 + R2) having first, second and third taps provided by said first, second and third contacts (17, 18, 19), and said resistor is electrically isolated from said substrate by diode/capacitor circuit means.

4,578,696

THIN FILM SEMICONDUCTOR DEVICE

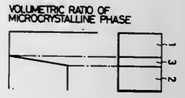
Masakazu Ueno, and Takeshige Ichimura, both of Kanagawa, Japan, assignors to Director-General of Agency of Industrial Science and Technology, Tokyo, Japan

Filed Nov. 23, 1983, Ser. No. 554,656

Claims priority, application Japan, Nov. 25, 1982, 57-205536

Int. Cl.⁴ H01L *29/04, 31/06*

U.S. Cl. 357—59 **3 Claims**



1. A thin film semiconductor device comprising:

an amorphous semiconductor layer having a microcrystalline phase;

an amorphous semiconductor layer having no microcrystalline phase; and

at least one junction region between said above two layers, said junction region comprising a layer in which the microcrystalline phase content gradually increases in the thickness direction of said amorphous semiconductor layer having said microcrystalline phase.

4,578,697

SEMICONDUCTOR DEVICE ENCAPSULATING A MULTI-CHIP ARRAY

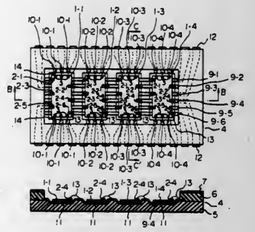
Yoshihiro Takemae, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 15, 1982, Ser. No. 388,616

Claims priority, application Japan, Jun. 15, 1981, 56-091799

Int. Cl.⁴ H01L *23/16*

U.S. Cl. 357—75 **9 Claims**



1. A semiconductor device comprising:

(a) a plurality of semiconductor chips, each chip having perpendicular X- and Y-axes, circuit elements, common connection pads arranged along the peripheral portions of the X-axis, and individual connection pads arranged along the peripheral portions of the Y-axis;

(b) a package having perpendicular X- and Y-axes, said plurality of semiconductor chips being arranged in series along the Y-axis of the package; and

(c) a conductive layer formed on said package, said conductive layer having

(i) common conductive strips commonly used for said plurality of semiconductive chips and extending along said Y-axis of said package to said plurality of semiconductor chips, and

(ii) individual conductive strips corresponding to each of said semiconductor chips and arranged laterally of said common conductive strips,

wherein each of said common connection pads is electrically connected to one of said common conductive strips and each of said individual connection pads is electrically connected to one of said individual conductive strips.

4,578,698

MULTIPLE DISPLAY CONTROL APPARATUS FOR A TELEVISION RECEIVER

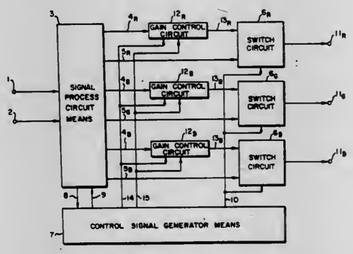
Yutaka Miki, Hirakata; Toshiro Nozoe, Yamatokoriyama, and Kiyoshi Uchimura, Uji, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jun. 16, 1983, Ser. No. 504,783

Claims priority, application Japan, Jun. 18, 1982, 57-105905; Jun. 18, 1982, 57-105907; Jun. 18, 1982, 57-105908

Int. Cl.⁴ H04N *5/268*

U.S. Cl. 358—22 **8 Claims**



1. A multiple display control apparatus for a television receiver, comprising:

a signal process circuit having a first television signal input terminal and a second television signal input terminal;

a control signal generator means connected to said signal process circuit; and

a gain control circuit and a switching circuit, said gain control circuit being connected with a first signal output of said signal process circuit and second and third control signal outputs of said control signal generator means, said switching circuits being connected with said gain control circuit, a second signal output of said signal process circuit, and a switch signal output of said control signal generator means, and said signal process circuit being connected with a first control signal output of said control signal generator means, so that the gain control characteristics of said control circuit depends on an output impedance of said signal process circuit and resistances, and control starting voltage of said gain control circuit is made equal to or higher than the pedestal level of the television signal, wherein said apparatus is arranged so that the level of said first signal output of said signal process circuit is lowered in response to said second and third control signal output of said control signal generator means.

4,578,699

COLOR CAMERA WITH STRIPE FILTER USING CONTROLLED BIAS LIGHT FOR DARK SCENE NOISE IMPROVEMENT

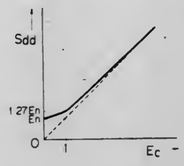
Itsuo Takanashi, Yokohama; Shintaro Nakagaki, Fujisawa; Kenichi Miyazaki, Yokohama, and Takashi Kuriyama, Tokyo, all of Japan, assignors to Victor Company of Japan, Limited, Kanagawa, Japan

Filed Nov. 28, 1983, Ser. No. 555,863

Claims priority, application Japan, Nov. 26, 1982, 57-207265

Int. Cl.⁴ H04N *9/07, 9/04*

U.S. Cl. 358—44 **7 Claims**



1. A color television imaging apparatus with improved color reproducibility in a dark area of a scene deteriorated due to noise, said imaging apparatus comprising:

a color television imaging device for generating a composite color television video signal, said device including a photoelectric transducer section and a color separation stripe filter;

at least two demodulators for individually producing color signal components by demodulating carrier color signals each of which is derived from an output signal of the imaging device;

bias light supply means for applying bias light to the photoelectric transducer section of the imaging device through the color separation stripe filter; and

bias light control means for maintaining the carrier color signals to be demodulated at a value which is greater than the peak-to-peak value of noise which is contained in the color signals by controlling said bias light supply means.

4,578,700

APPARATUS FOR STORING DATA RELATING TO TELEVISION VIEWING

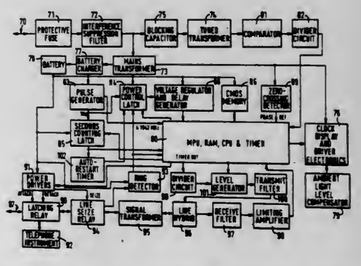
Lyn M. Roberts; Robert L. Shrier, both of London, and Raymond Laxton, Maidenhead, all of United Kingdom, assignors to AGB Research PLC, London, England

Filed May 24, 1984, Ser. No. 614,322

Claims priority, application United Kingdom, May 25, 1983, 8314468

Int. Cl.⁴ H04H *9/00*

U.S. Cl. 358—84 **6 Claims**



1. An arrangement for storing data received from a TV monitoring system and for transmitting the data to a remote

computer by means of a telephone line, the arrangement comprising:

a memory for storing the data;

means for measuring successive periods of time;

means for defining a plurality of data access time slots in each of the successive periods of time;

a telephone instrument coupled to the telephone line;

a first switch for selectively isolating the telephone instrument from the telephone line during the data access slots;

means for detecting an incoming call during a data access slot and for seizing the line;

a second switch for selectively isolating the detection means from the telephone line outside of the data access slots;

means for ascertaining whether the incoming call is from the remote computer;

means responsive to the ascertaining means for causing the data to be transmitted from the memory to the remote computer when the incoming call is ascertained as being from the remote computer;

means for dropping the line and then actuating the first switch to reconnect the telephone instrument to the telephone line for the remainder of the current data access slot, when the ascertaining means ascertains that the incoming call is not from the remote computer;

means for actuating the second switch to connect the detecting means to the telephone line for the next available data access slot; and

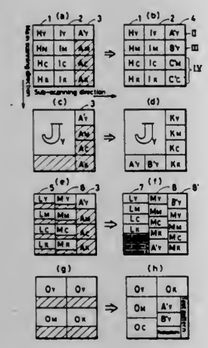
means for controlling the second switch actuating means to inhibit connection of the detection means to the telephone line during the data access slots of a period which follows successful transmission of the data to the remote computer in an access slot of the period.

4,578,701

METHOD OF RECORDING AN OPTIONAL NUMBER OF COLOR SEPARATION IMAGES IN AN OPTIONAL ORDER AND IN OPTIONAL POSITIONS ON A RECORDING MEDIUM

Etsuo Nakaji, Shiga, Japan, assignor to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan

Filed Aug. 1, 1983, Ser. No. 518,837
Claims priority, application Japan, Nov. 1, 1982, 57-192897
Int. Cl.⁴ H04N *1/46*
U.S. Cl. 358—78 **21 Claims**



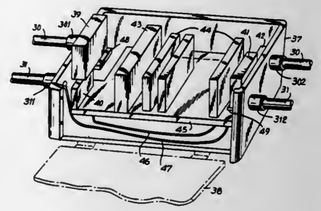
1. A method of recording color separation images in an image reproducing system which records a plurality of color separation images from scanning of a color original picture comprising the step of recording each of an optional number of color separation images on a film in an optional order and in optional positions during one scanning cycle of recording according to section pulses which divide one scanning cycle into a plurality of time sections.

4,578,702

CATV TAP-OFF UNIT WITH DETACHABLE DIRECTIONAL COUPLER

Wallace S. Campbell, III, Littleton, Colo., assignor to American Television & Communications Corporation, Englewood, Calif.

Filed May 31, 1984, Ser. No. 615,814
Int. Cl.⁴ H04N *7/10*; H03H *7/48*
U.S. Cl. 358—86 **3 Claims**



1. A signal transmission device for use in a cable television system, said device connected in series between a first CATV feeder cable portion and a second CATV feeder cable portion, said device comprising:

a main housing having an input terminal for attachment to the CATV feeder cable portion and an output terminal for attachment to the second CATV feeder cable portion;

a connecting cable attached to the output terminal of said main housing for supplying signals received at the input terminal of said main housing to the output terminal of said main housing;

a chassis detachably mounted in said housing, said chassis having electronic circuitry mounted thereon; and

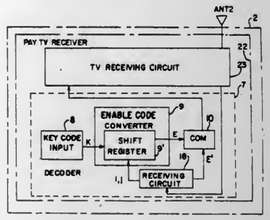
an at least partially detachable directional signal coupler for directionally electrically connecting said electronic circuitry, said input terminal, and said connecting cable when said chassis is mounted in said main housing, and for electrically connecting said input terminal and said connecting cable when said chassis is removed from said main housing.

4,578,703

SUBSCRIPTION TELEVISION SYSTEM

Tsutomu Kanai, Saitama, Japan, assignor to Clarion Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 290,384, Aug. 5, 1981. This application Dec. 12, 1983, Ser. No. 560,908
Int. Cl.⁴ H04N *7/173*
U.S. Cl. 358—117 **1 Claim**



1. A subscription television system including a transmitting system for transmitting ciphered video signals, enable codes each having a plurality of bits, and control signals, said system further including a receiving system having a plurality of subscription television receivers each having a decoder, wherein said decoder comprises:

a receiving means for receiving the enable code and the control signals from said transmitting system;

a key code input means for setting a key code having a plurality of key code bits, said key code input means having a plurality of digital switches to input said key code by means of said digital switches;

a converting means for converting said key code from said key code input means into enable codes in response to control signals from said receiving means;

a comparator means for comparing an enable code from said converting means with the enable code from said receiving means, so as to determine if both codes are consistent or not, and for producing a signal to render said television receiver operative to receive said ciphered video signals when said both codes are consistent, said key code input means comprising:

a first multiplexer circuit for receiving bit signals sent by said digital switches;

an identification code generating circuit;

a second multiplexer circuit for receiving identification codes from said identification code generating circuit;

a scanner actuating said first and second multiplexer circuits to sequential sensings of said bit signals from said digital switches and said identification codes from said identification code generating circuit, so as to provide at the output of each of said multiplexer circuits a converted serial signal representation of the individual bit codes provided to said multiplexers;

a half adding circuit for adding the serial data read out from said first and second multiplexer circuit; and

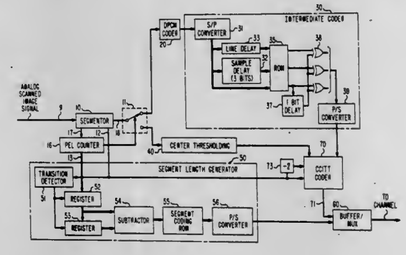
converting means including a shift register for obtaining said enable code from said key code by circulating the key code bits with the key code bit corresponding to the control signal and progressively picking up each bit therein.

4,578,704

IMAGE CODING TECHNIQUE

Hamid Gharavi, Middletown, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 20, 1983, Ser. No. 505,885
Int. Cl.⁴ H04N *7/12, 1/40, 1/417, 1/419*
U.S. Cl. 358—135 **28 Claims**



1. Apparatus comprising,

means for receiving a stream of values associated with respective pels of an image,

means for generating a stream of codewords in response to said stream of values, said means for generating including means for generating a codeword for each pel as a function of the frequency with which the value associated with that pel is expected to occur, given the values associated with predetermined ones of its neighbors,

the codeword generated for at least ones of the pels whose associated value is the most frequently expected to occur, given the values associated with its said neighbors, being a first binary word all of whose bits have a first predetermined value, and

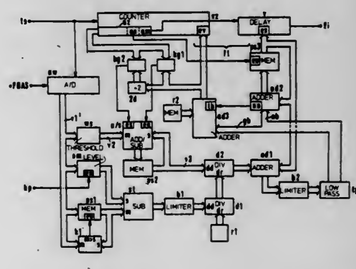
the codeword generated for at least ones of the pels whose associated value is the second most frequently expected to occur, given the values associated with its said neighbors, being a second binary word a selected one of whose first and last bits has a second predetermined value and the others of whose bits have said first value.

4,578,705

DIGITAL CIRCUIT FOR SYNCHRONIZING A PULSE TRAIN

Herbert Elmis, Denzlingen, and Reiner Backes, Freiburg, both of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Mar. 23, 1984, Ser. No. 592,920
Claims priority, application European Pat. Off., Mar. 26, 1983, 83710013.0; Aug. 9, 1983, 83201165.4
Int. Cl.⁴ H04N *5/04, 5/12*; H03L *7/00*
U.S. Cl. 358—148 **16 Claims**



1. A digital circuit for generating a pulse train and synchronizing said pulse train with horizontal synchronizing pulses contained in a demodulated composite color signal, comprising:

a source of clock signals having a frequency at least one order of magnitude higher than the frequency of said pulse train;

a presettable counter, having a preset input, a count input coupled to said source of clock signals, a predetermined count output, and a count output for a count occurring before said predetermined count output;

an analog-to-digital converter clocked by said clock signals for converting said demodulated composite color signal to digital signals;

a threshold stage coupled to the output of said analog-to-digital converter and having a threshold value equal to a predetermined black level;

a black level measuring stage coupled to the output of said analog-to-digital converter and having an enable input for receiving a keying pulse in each line during a color burst;

a comparator having a first input coupled to the output of said analog-to-digital converter, a second input and an output for indicating when said first input is greater than said second input;

a first buffer memory having an input coupled to the output of said analog-to-digital converter, an output coupled to said comparator second input, and an enable input coupled to said comparator output;

a subtracter having a minuend input coupled to said first buffer memory output, and a subtrahend input coupled to the output of said black level measuring stage, and an output;

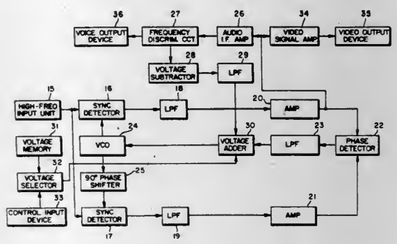
a first limiter having an input coupled to said subtracter output, and an output, said limiter limiting its output to a positive numerical value near zero;

a first divider having a dividend input coupled to said first limiter output, a divisor input and an output;

a second buffer memory having an input and an output;
an adder/subtracter having a first input coupled to the output of said threshold stage, a second input coupled to said second buffer memory output, an output coupled to said second buffer memory input and add and subtract control inputs;
a second divider having a dividend input coupled to said second buffer memory output, a divisor input coupled to said first divider output, and an output;
a first adder having a first input coupled to said second divider output, a second input and an output;
a second limiter coupled to said first adder output, and having an output, said second limiter limiting its output to a numerical value of a phase error required for a predetermined capture range of synchronization;
a low pass filter coupled to said second limiter output and having an output comprising p lower order bits and m-p higher order bits;
a second adder having a first input coupled to said p lower order bits of the output of said low pass filter, a second input, an overflow output and an output;
a third buffer memory having an input coupled to said second adder output, an output coupled to said second adder second input and said first adder second input, and an enable input coupled to said presettable counter count output;
a digitally settable delay circuit comprising 2^p stages, each stage providing an equal delay time said delay circuit providing a delay between input and output terminals which is adjustable in equal size steps, each step being equal to said equal delay time and to the period of said clock signals divided by 2^p, said delay circuit input being coupled to said predetermined count output of said presettable counter, said delay circuit output providing said synchronized pulse train said delay circuit having control inputs for determining said delay, said control inputs being coupled to said third buffer memory output;
a third adder having a first input coupled to said second adder overflow output, a second input coupled to said low pass filter m-p higher order bits, a third input receiving the integral part of a predetermined divisor value and
an output coupled to said presettable counter preset input;
circuit means having first inputs coupled to outputs of said presettable counter and second inputs coupled to said third adder output for deriving switching signals at a first output coupled to said adder/subtracter add control input and at a second output coupled to said adder/subtracter control input; and wherein
said first divider divisor input receives the numerical value 2^p.

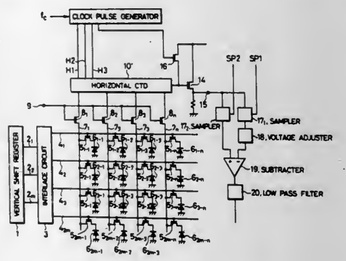
4,578,706
TELEVISION SYNCHRONOUS RECEIVER
Yoichi Sakamoto, Takatsuki, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Nov. 9, 1983, Ser. No. 550,217
Claims priority, application Japan, Nov. 12, 1982, 57-199185; Dec. 1, 1982, 57-211717
Int. Cl.⁴ H04N *5/50*; H04B *11/32*
U.S. Cl. 358—195.1 **4 Claims**

1. A television synchronous receiver comprising:
a voltage-controlled oscillator; a 90° phase shifter which shifts by 90° the phase of an output of said voltage-controlled oscillator; first and second synchronous detectors which detect an in-phase component and quadrature component of a video carrier signal which is output from an input unit of said receiver by two synchronous carriers comprising an output of said voltage-controlled oscillator and an output of said 90° phase shifter; a phase detector which is operatively connected to said first and second synchronous detectors and which detects a phase difference between the said video carrier signal and the output of said voltage-controlled oscillator; a first low-pass filter for low-pass filtering the output of said phase detector; a frequency discriminator which discriminates the frequency of an audio intermediate frequency signal generated by said first synchronous detector; and a second low-pass filter which low-pass filters an output of said



frequency discriminator, wherein the output of said second low-pass filter together with the output of said first low-pass filter which low-pass filters the output of said phase detector are adapted to be fed back to said voltage-controlled oscillator.

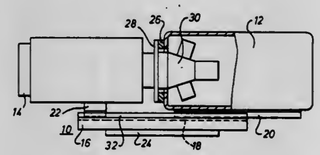
4,578,707
METHOD OF REDUCING VERTICAL SMEARS OF A SOLID STATE IMAGE SENSOR
Naoki Ozawa, Kokubunji; Toshiyuki Akiyama, Kodaira; Shunsaku Nagahara, Hachiouji; Shinya Ohba, Tukui; Haruhisa Ando, Nishitama, and Toshifumi Ozaki, Hachiouji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Oct. 18, 1984, Ser. No. 662,133
Claims priority, application Japan, Oct. 18, 1983, 58-194685; Oct. 18, 1983, 58-194686
Int. Cl.⁴ H04N *3/12*
U.S. Cl. 358—212 **18 Claims**



1. A method of reducing the vertical smears generated in a solid state image sensor which comprises:
a plurality of photoelectric conversion elements arrayed regularly in horizontal and vertical directions;
a plurality of vertical signal lines for transferring charges in a vertical direction;
horizontal transfer means including at least one charge transfer device, for transferring charges in a horizontal direction;
a first group of switches for respectively transferring the signal charges, which are generated in the respective ones of said photoelectric conversion elements in response to an incident ray, to predetermined ones of said vertical signal lines; and
a second group of switches for transferring said signal charges from said vertical signal lines to said horizontal transfer means,
wherein for a horizontal blanking period, the signal charges

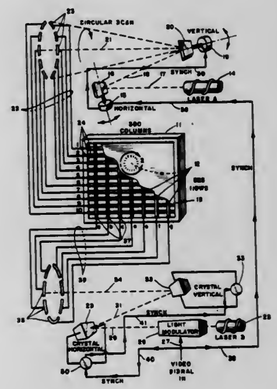
of said photoelectric conversion elements existing on one horizontal line are transferred through said first group of switches, said vertical signal lines and said second group of switches to said horizontal transfer means; and, for a tracing period succeeding said horizontal blanking period, said signal charges are transferred by said horizontal transfer means to the output terminal thereof to obtain a signal corresponding to one horizontal scanning line,
said method comprising the steps of:
transferring the smear charges stored on said vertical signal lines to said horizontal transfer means;
transferring said signal charges from said photoelectric conversion elements to said vertical signal lines and further from said vertical signal lines to said horizontal transfer means;
transferring said smear charges and said signal charges separately of each other to the output terminal of said horizontal transfer means by said horizontal transfer means;
obtaining a smear voltage corresponding to said smear charges and a signal voltage corresponding to said signal charges at the output terminal of said horizontal transfer means;
adjusting the magnitude of said smear voltage at a predetermined ratio in accordance with the ratio of the storage period of the smear charge component mixed in said signal charges to the storage period of said smear charges; and
subtracting said adjusted smear voltage from said signal voltage to reduce the smear component contained in said signal voltage.

4,578,708
CAMERA SUPPORT ASSEMBLY
Derek Munnion, Andover, England, assignor to Link Electronics Limited, England
Filed Sep. 9, 1983, Ser. No. 531,210
Claims priority, application United Kingdom, Sep. 9, 1982, 8225700
Int. Cl.⁴ H04N *5/225*
U.S. Cl. 358—229 **5 Claims**



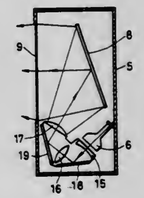
1. A camera support assembly for supporting a camera and a lens for said camera, said assembly comprising:
a base providing an elongate slide bed, a first slide carriage for attachment to said camera and a second slide carriage for attachment to said lens, said first and second slide carriages being slidable longitudinally along said slide bed to provide ready adjustment of the center of gravity of said camera and said lens with respect to said base and to mitigate bending loads between said camera and said lens;
an optical unit, said optical unit being connected to said lens; and
suspension means for suspending said camera and said lens to maintain said camera in operative engagement with said lens, said suspension means comprising a resilient suspension unit for resiliently suspending said camera in operative engagement with said lens to provide for small displacements of said lens relative to said camera.

4,578,709
FLAT OPTICAL TV SCREEN
Paul W. Lang, and Franklin C. Gribshaw, both of Long Beach, Calif., assignors to Allen Jensen and Goldstake, a part interest to each
Filed Aug. 3, 1984, Ser. No. 637,273
Int. Cl.⁴ H04N *3/08*
U.S. Cl. 358—230 **10 Claims**



4. A flat TV screen for optically displaying images defined by a TV signal, including:
(a) overlapping rows and columns of mediums, each emitting light laterally from its path when energized such that a cross-over point will emit more light than radiates from the side of a single medium when both of the crossing mediums are energized:
(b) means for sequentially passing light of a constant brightness into each of said rows;
(c) means responsive to said TV signal to modulate light in brightness in accord with the video portion of said TV signal; and
(d) means for successively passing the modulated light into all of said columns during the time period that each row is energized to thereby provide an optical reproduction of the TV signal from a dot matrix of light defined at the crossover points of the rows and columns.

4,578,710
LENS SYSTEM FOR PROJECTION TELEVISION
Shinichi Hasegawa, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan
Filed May 7, 1984, Ser. No. 607,915
Claims priority, application Japan, May 9, 1983, 58-67846[U]
Int. Cl.⁴ H04N *5/74, 9/31*; G02B *17/00*
U.S. Cl. 358—231 **6 Claims**



1. In a projection television receiver including a cabinet, a

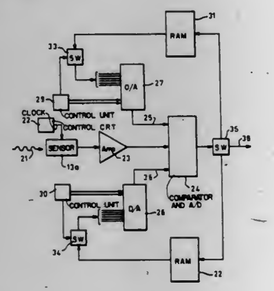
projecting cathode-ray tube, a display screen and a projecting lens system for projecting an image formed on a face of said cathode-ray tube onto said screen, the improvement wherein said lens system comprises a plano-convex lens and a plano-concave lens having optical axes forming an angle within a range of 170° to 180°, first and second mirrors for reflecting light rays passing through said plano-concave lens along a path parallel to said optical axis of said plano-convex lens, and a convex lens disposed in an optical path between said plano-concave lens and said plano-convex lens.

4,578,711

VIDEO DATA SIGNAL DIGITIZATION AND CORRECTION SYSTEM

James M. White, Charlotte; Ronald W. May, Matthews, both of N.C., and Michael D. Gulliver, Rockford, Mich., assignors to International Business Machines (IBM), Armonk, N.Y.

Filed Dec. 28, 1983, Ser. No. 566,365
Int. Cl.⁴ H04N *1/40, 1/04, 1/10*
U.S. Cl. 358—282 **5 Claims**



1. An analog video data signal digitization and correction system comprising

scanning means including a plurality of sensing devices for scanning a medium to produce video data signals representative of images printed on said medium,

reference quantity generating means for generating for each sensing device two reference quantities representative respectively of the reference signals produced by said sensing device when scanning two reference types of image and for utilizing said reference quantities to establish for said video data signals a range of possible values between maximum and minimum values defined by said reference quantities,

and means for comparing said video data signals with said range of possible values to generate for each analog video data signal a corrected digital value based on the position of said video data signal in said range,

said reference quantity generating means including means for generating two analog reference signals, means for generating for each analog reference signal a digital reference signal having N bits representative of the position of said analog signal in a range of possible values, the accuracy of said digital reference signal being dependent upon the value of N and the length of the range selected, and means for storing said digital signals and for converting said digital signals into analog reference quantities,

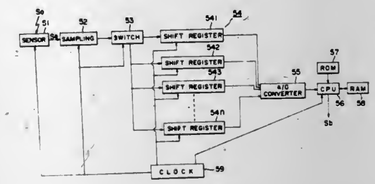
characterized in that said digital reference signal generating means includes means for selecting and utilizing only a portion of the possible range of values in order to establish a relatively high accuracy for the digital reference signal with a relatively low value of N, and in that said means for converting said digital reference signal into said analog reference quantity includes means for combining and converting extra high order bits into said N bit signal so that the accuracy of said analog reference quantity is substantially equal to the accuracy of said digital reference signal.

4,578,712

PICTURE IMAGE DISCRIMINATING APPARATUS

Masahiko Matsunawa, Hachioji, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Dec. 13, 1982, Ser. No. 449,385
Claims priority, application Japan, Dec. 19, 1981, 205520; Dec. 25, 1981, 56-212471; Dec. 25, 1981, 56-212472; Dec. 25, 1981, 56-212473; Dec. 28, 1981, 56-213828; Dec. 28, 1981, 56-213830
Int. Cl.⁴ H04N *1/40*
U.S. Cl. 358—282 **12 Claims**



1. A picture image discriminating apparatus comprising means for scanning a picture image of a document, means for converting photoelectrically a light signal corresponding to a density of the picture image obtained by the scanning means into a picture image signal, means for reading the picture image signal at every unit and reading sizes of 0.01 square mm or over, and means for discriminating the picture image by using the picture image signal read, wherein the density signal of the picture image of the document is processed to obtain an effective density histogram, and a cumulative value of the density signals over or below a specific density threshold is obtained in said histogram, thereby discriminating the picture image.

4,578,713

MULTIPLE MODE BINARY IMAGE PROCESSING

Sherman H. Tsao, Plano, and Wayne P. Sharum, Austin, both of Tex., assignors to The Mead Corporation, Dayton, Ohio

Filed Jul. 20, 1984, Ser. No. 633,120
Int. Cl.⁴ H04N *1/40*
U.S. Cl. 358—283 **9 Claims**
MICROFICHE APPENDIX INCLUDED
(2 Microfiche, 45 Pages)

1. A method of processing image data comprising gray scale values individually representative of small picture elements of a document to be printed or displayed on a bilevel printer or display device, said method comprising the steps of:

(a) partitioning said image data into data blocks each comprising an x by y matrix of contiguous image data;

(b) determining the average input density of each of said data blocks;

(c) assigning a number corresponding to how many of the total picture elements of each of said data blocks are to be printed based on the average density of each data block;

(d) distributing the number of picture elements to be printed within each data block by applying the following substeps:

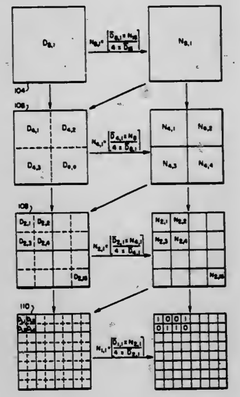
(1) subpartitioning each data block into subblocks each comprising a fractional portion of the image data of the subpartitioned block;

(2) dividing the number of picture elements to be printed for each subpartitioned block among the subblocks based on the ratios of the average densities of the subblocks to the average density of the subpartitioned block;

(3) subpartitioning each subblock into new subblocks each comprising a fractional portion of the image data of the subpartitioned subblock;

(4) dividing the number of picture elements to be printed for each subpartitioned subblock among the newly formed subblocks based on the ratios of the average densities of the newly formed subblocks to the average density of the subpartitioned subblock; and

(5) repeatedly performing substeps (3) and (4) for all subblocks until each picture element to be printed has been assigned to a specific picture element of said document.

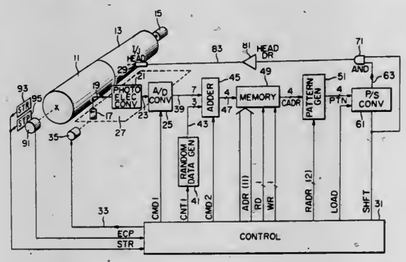


4,578,714

HALFTONE IMAGE RECORDING APPARATUS

Susumu Sugiura, Yamato, and Takashi Sugino, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 360,685, Mar. 22, 1984, abandoned. This application Dec. 10, 1984, Ser. No. 680,229
Claims priority, application Japan, Mar. 30, 1981, 56-45589
Int. Cl.⁴ H04N *1/40*
U.S. Cl. 358—283 **21 Claims**



1. A halftone image recording apparatus comprising:

signal generating means for generating an m-bit density signal representing a density of an image;

level signal generating means for generating a level signal;

converting means for forming a resultant signal using said m-bit density signal and said level signal and for converting the resultant signal into an n-bit density signal, where n is less than m; and

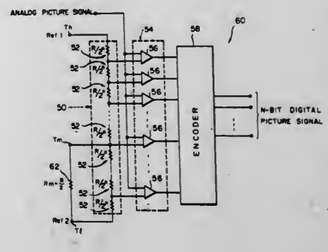
recording means for recording an image to be reproduced in response to said n-bit density signal, said recording means including image pattern selecting means for selecting an image pattern in correspondence with said n-bit signal.

4,578,715

PICTURE SIGNAL QUANTIZING CIRCUIT

Shingo Yamaguchi, Atsugi, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Feb. 13, 1984, Ser. No. 579,329
Claims priority, application Japan, Feb. 14, 1983, 58-22574; Feb. 14, 1983, 58-22575
Int. Cl.⁴ H04N *1/40*
U.S. Cl. 358—283 **8 Claims**



5. A picture signal quantizing circuit for quantizing with respect to multiple levels an analog picture signal representative of a picture which is read from a document, comprising:

a background level detector for detecting and holding a peak value of the analog picture signal to generate a background level voltage indicative of a background level of the document;

a reference voltage generator for dividing the detected and held background level voltage to determine a highest level and a lowest level for quantization to generate a first reference voltage and a second reference voltage corresponding to the highest level and the lowest level respectively;

a reference voltage divider comprising a series circuit having 2^n ladder resistors connected serially to generate different output voltages from junctions between said resistors, a first tap led out from one end of said series circuit, a second tap led out from the other end of the series circuit, and a third tap led out from a predetermined position between said first and second taps;

halftone reproducibility accentuating means for, when quantizing an analog picture signal by comparing the signal with a reference voltage, non-linearly dividing the reference voltage so that a halftone portion of the analog picture signal, and thereby a halftone of a reproduced picture are accentuated;

a comparator circuit comprising (2^n-1) comparators for respectively comparing the output voltages from the junctions between the resistors of the series connection with the analog picture signal; and

an encoder for generating a digital signal in response to outputs of said comparators, said digital signal being an n-bit binary code;

the halftone reproducibility accentuating means comprising a first resistor having a predetermined resistance and connected between the second and third taps;

the halftone reproducibility accentuating means further comprising a first switch connected in series to the first resistor, a second resistor connected to the first tap, a second switch connected in parallel to the second resistor, a third resistor connected between the second tap and ground, and a third switch connected in parallel to the third resistor.

4,578,716

METHOD OF AND APPARATUS FOR MAKING A TEST STRIP AND A TEST STRIP MADE BY SUCH METHOD

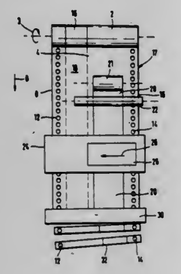
Rainer van Rijckevorsel; Joachim Kasielke, both of Brühl; Heinz Macho, Mannheim; Peter Schäfer, Ludwigshafen, and Klaus Nenninger, Mannheim, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Filed Jul. 16, 1984, Ser. No. 630,899

Claims priority, application Fed. Rep. of Germany, Jul. 23, 1983, 3326689

Int. Cl.[4] G11B *5/00*

U.S. Cl. 360—1 **32 Claims**



1. A method of making a test strip with a longitudinally extending carrier and a test field, comprising:

disposing a band of test field material on a broader band of carrier material substantially parallel to two longitudinal edges thereof;

providing said band of said carrier material with a first row of substantially equidistant recesses in the region of one of said two longitudinal edges and with a second row of substantially equidistant recesses in the region of the other of said two longitudinal edges;

applying onto said band of said carrier material a layer of magnetizable material;

recording by means of a recording head an amount of data for the storage of information in said layer of magnetizable material transversely to the production direction, said carrier band being positioned and aligned by means of said first and second recesses during that recording step; and

dividing up said band of said carrier material transversely to said production direction into a plurality of longitudinally extending test strips in such a manner that said recesses are close to the ends of each strip.

4,578,717

MAGNETIC RECORD CARD TRANSDUCING APPARATUS AND METHOD

Jerome H. Lemelson, 48 Parkside Dr., Princeton, N.J. 08540

Continuation-in-part of Ser. No. 379,517, May 18, 1982, which is a continuation-in-part of Ser. No. 158,286, Jun. 10, 1980. This application Aug. 6, 1982, Ser. No. 405,996

Int. Cl.[4] G11B *5/004, 5/80*

U.S. Cl. 360—2 **20 Claims**

1. Magnetic transducing apparatus for transducing information with respect to flexible magnetic record cards comprising in combination:

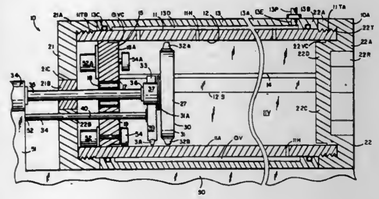
first means for supporting a flexible magnetic record card in an arcuate formation defining a portion of a cylinder with the inside surface of the arcuately formed card containing magnetic recording material,

transducing means operable for magnetically transducing information with respect to selected of a plurality of parallel record tracks provided in the magnetic recording material of a flexible record card supported by said first means while said flexible record card is deformed into the shape of a partial cylinder and the parallel record tracks thereof form respective parallel interrupted circular track formations extending around the inside of said arcuate formation of said flexible record card,

a support for supporting said transducing means within said arcuate formation of said record card and adjacent to but out of operable relation with respect to said record card supported by said first means,

second means for effecting controlled powered rotary movement between said transducing means and said first means,

third means for effecting powered lineal movement between said transducing means and said first means to bring said transducing means and a selected circularly extending track of an arcuately deformed card supported by said first means into scanning alignment so as to permit said transducing means to transduce information with respect to a selected track of said card,



fourth means for effecting controlled relative movement in a radial direction between said transducing means and a cylindrically configured record card supported by said first means to cause said transducing means to be projected outwardly into operable relation with said selected track of said record card so as to permit said transducing means to transduce information with respect to said selected track of said card,

fifth means for energizing said transducing means when operatively located with respect to said selected track of said card as said second means effects said controlled powered rotary movement between said transducing means and said first means, and

sixth means for effecting controlled relative radial movement between said transducing means and said first means to cause said transducing means to be inwardly retracted from its operable relation with respect to said card when a transducing operation has been completed.

4,578,718

CONTROL ARRANGEMENT AND METHOD FOR VIDEO TAPE RECORDER

Robert R. Parker, Wheeling, and Dev R. Rattan, Chicago, both of Ill., assignors to Bell & Howell Company, Skokie, Ill.

Filed Jun. 16, 1983, Ser. No. 504,914

Int. Cl.[4] H04N *5/782*

U.S. Cl. 360—10.3 **9 Claims**

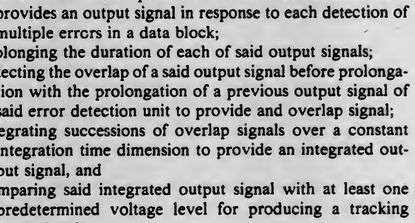
1. Control apparatus for controlling the operation of a video or cassette recorder in response to control signals from a microcomputer, the video recorder having first and second audio channel signals on two respective audio signal paths and a video signal on a video signal path, the control apparatus comprising:

means for generating digital control signals responsive to the control signals from the microcomputer;

control signal means responsive to digital control signals for generating audio and video selection signals;

audio switching means responsive to said audio selection signals for selectively providing an audio monitor output of one of the first audio channel signal, the second audio channel signal and no audio in accordance with said digital control signals; and

video switching means responsive to said video selection signals for selectively providing a video monitor output of one of the video recorder video signal and a computer



generated video signal on a second video path in accordance with said digital control signals independently of said audio switching means and said audio signal selection, said digital control signals including at least data representations defining three audio selection states and two video selection states independent of said audio selection states.

4,578,719

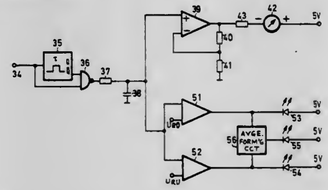
TRACKING ERROR RECOGNITION IN REPRODUCED DIGITAL SIGNALS

Jürgen Heitmann, Alsbach-Hähnlein; Rolf Loos, Eppertshausen, both of Fed. Rep. of Germany, and Peter Wagner, Newark, N.J., assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 6, 1984, Ser. No. 679,035

Int. Cl.[4] G11B *27/36, 21/10*

U.S. Cl. 360—31 **3 Claims**



1. Method of recognizing tracking error in reproduction of digitally coded television signals recorded on a magnetic tape, comprising:

detecting the presence of multiple errors in any data block of said reproduced television signals supplied block by block to a check-word-operated error detection unit which provides an output signal in response to each detection of multiple errors in a data block;

prolonging the duration of each of said output signals;

detecting the overlap of a said output signal before prolongation with the prolongation of a previous output signal of said error detection unit to provide and overlap signal;

integrating successions of overlap signals over a constant integration time dimension to provide an integrated output signal, and

comparing said integrated output signal with at least one predetermined voltage level for producing a tracking error signal.

4,578,720

SELF-CLOCKING CODE DEMODULATOR WITH ERROR DETECTING CAPABILITY

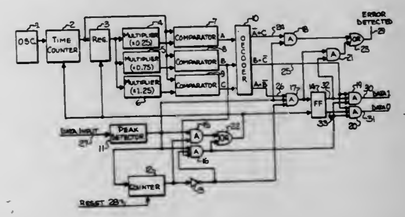
Takeshi Matsumoto, Kanagawa, Japan, assignor to International Business Machines Corp. (IBM), Armonk, N.Y.

Filed Aug. 1, 1983, Ser. No. 518,897

Claims priority, application Japan, Aug. 6, 1982, 57-136400

Int. Cl.[4] G11B *5/02*

U.S. Cl. 360—51 **5 Claims**



1. A demodulator for extracting data from a stream of binary signals that may be of varying frequency, said stream of binary signals comprising clock signals and data signals between said clock signals and including means for receiving said stream of signals, means for detecting individual one of said signals and means for generating output data signals in response to the data signal content of said stream of signals, and wherein the improvement comprises:

means for individually measuring the time duration between each set of successive clock signals, the time duration between each set of clock signals dynamically changing as a function of the frequency of the stream of binary signals,

means responsive to each of said measured time durations for dynamically establishing a predetermined time interval during which succeeding valid data or clock signals can be anticipated, the time duration of each of the predetermined time intervals changing as a function of the time duration between each pair of successive clock signals,

means responsive to the detection of a signal during a time other than said predetermined established time interval for generating an error output signal, and

means responsive to the detection of more than one signal within said predetermined established time interval during which a single valid data signal can be anticipated for generating an error output signal.

4,578,721

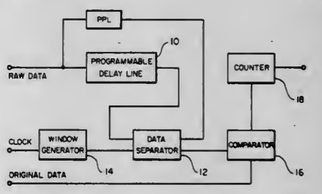
STRESS TEST FOR MAGNETIC DISC RECORDING APPARATUS

William L. Brannan, Jr., Felton, Calif., assignor to Seagate Technology, Scotts Valley, Calif.

Filed Sep. 10, 1984, Ser. No. 648,470

Int. Cl.[4] G11B *5/09*

U.S. Cl. 360—51 **5 Claims**



1. Apparatus for evaluating recording systems including means coupled to said head for reading data from one of said tracks, means for generating a succession of data windows having leading and trailing edges, a data separator connected

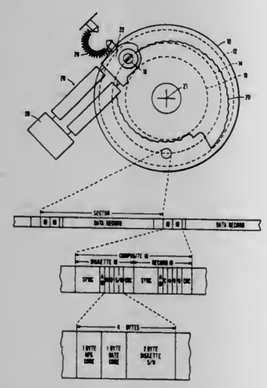
to receive said data windows and the read data and serving to separate out data which falls outside the windows, and means for delaying said data from each track on the disc relative to at least one edge of said data windows to provide a more limited effective size window at said separator for testing the effective separation of the data, said delaying means including means for delaying the data until errors are encountered to define a failure point, and for reducing the data delay to a time just less than the failure point.

4,578,722

METHOD FOR CHECKING DISK IDENTITY IN A FLEXIBLE DISK RECORDER

Jeffrey L. Lovgren, Rochester, Minn., and William B. Plummer, Boulder, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 23, 1982, Ser. No. 452,548
Int. Cl.[4] G11B *5/02, 5/09*
U.S. Cl. 360—60 **7 Claims**



1. Method for checking the identity of a recording disk which may be interchangeably loaded with other recording disks into a disk recording device, said method comprising the steps of:

reading a disk identifier from any data sector on the recording disk;

storing the disk identifier read from the recording disk;

accessing a track on the recording disk in preparation for performing an operation on the recording disk at the accessed track;

reading a disk identifier from the accessed track;

comparing the identifier read from the accessed track to the identifier previously stored;

proceeding with the operation on the recording disk if the identifier just read is the same as the stored identifier;

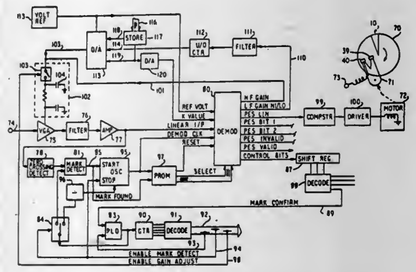
aborting the operation on the recording disk if the identifier just read is not the same as the stored identifier.

4,578,723

HEAD POSITIONING SYSTEM WITH AUTOMATIC GAIN CONTROL

Alan J. Betts, Romsey, and Peter J. Elliott, Alresford, both of United Kingdom, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 15, 1983, Ser. No. 504,552
Claims priority, application European Pat. Off., Jun. 18, 1982, 82303179.4
Int. Cl.[4] G11B *21/10, 5/02*
U.S. Cl. 360—77 **10 Claims**



1. A head positioning system with automatic gain control, for use with disk surfaces, comprising:

a head positioning actuator for moving at least one transducing head transversely of concentric information storage tracks on one of the disk surfaces;

position reference information on one of the disk surfaces for defining the radial position of the information storage tracks, the position reference information having a circumferentially extending and radially repeated pattern including at least two radially offset subsets of servo elements, the servo elements in each subset being circumferentially and radially aligned and arranged such that certain of the boundaries between radially adjacent circumferential rows of elements are aligned with the information storage track centres;

a transducing head, movable by the actuator, for detecting the position reference information and for producing, for each of the subsets of servo elements passing beneath the head, a corresponding servo signal whose peaks are generally representative of the radial position of the head;

a variable gain amplifier for amplifying the servo signals from the transducing head;

means responsive to the amplified servo signals from the variable gain amplifier for generating, for each amplified servo signal corresponding to a respective subset of servo elements, a position error signal which is a linear function of radial position of the head over a portion of the radial width of a row of servo elements, the different position error signals corresponding to the respective subsets of servo elements being phase related;

means for generating, from the different phase position error signals, a composite position error signal, the composite position error signal being comprised of selected linear portions of each of the different phase position error signals;

feedback means for feeding back the composite position error signal to control the head positioning actuator;

means for generating a gain function for the variable gain amplifier, the gain function generating means including means for selecting from the different phase position error signals certain of those phase position error signals which are generally within their linear range and for combining said selected phase position error signals to form a portion of the gain function; and

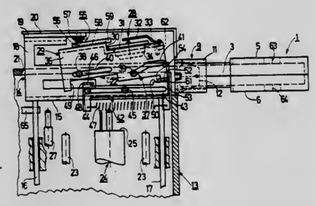
and a gain control feedback for controlling the gain of the variable gain amplifier in dependence on the gain function.

4,578,724

TAPE CASSETTE HOLDER WITH RELEASABLE REEL HOLD-DOWN

Franz Beitler, Vienna, Austria, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 22, 1982, Ser. No. 443,511
Claims priority, application Austria, Jun. 11, 1982, 2281/82
Int. Cl.[4] G11B *15/66, 23/04*
U.S. Cl. 360—85 **18 Claims**



1. A tape cassette recording and/or reproducing apparatus for use with a cassette having two mutually parallel major cassette walls, at least one rotatable reel hub disposed within the cassette and axially accessible through openings in each of said walls, and a length of tape arranged within the cassette for winding on said reel hub, said apparatus comprising

a cassette holder movable between a loading position which defines a cassette insertion path, arranged such that a cassette having its major walls aligned parallel to the path can be inserted into the holder along said path, and an operating position in which an inserted cassette occupies an operating position,

a rotatable winding mandrel arranged to engage said reel hub of a cassette, which has been inserted and is in the operating position, through one of the major walls of said cassette, the other of said major walls being remote from the winding mandrel,

a carrying member disposed on the cassette holder and having a portion extending substantially parallel to the major walls of an inserted cassette, and

reel-hub hold-down means arranged on said carrying member adjacent said other major wall for cooperating with said reel hub through said other major wall to hold the reel hub in a predetermined position relative to the winding mandrel when the cassette is in the operating position,

characterized in that said carrying member and portion are arranged on the cassette holder to be movable, at least transversely of the major walls of an inserted cassette, between a rest position in which said means is disposed outside the insertion path, and an operating position in which said means engages the reel hub,

the cassette holder comprises at least one actuating member movably mounted thereon and projecting into the insertion path, and means for movably mounting the actuating member to the cassette holder arranged such that, during movement of a cassette being inserted along the insertion path, the cassette engages and moves the actuating member in an insertion direction,

the apparatus comprises means for moving the carrying member from its rest position to its operating position in response to movement of said actuating member in said insertion direction,

the apparatus further comprises a return spring having an end, and means for connecting said end to said actuating member for exerting a biasing force against said actuating member opposing movement in said insertion direction, and

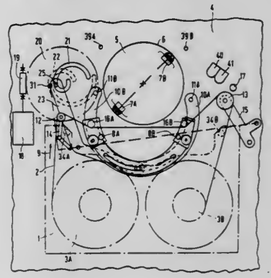
said reel-hub hold-down means is arranged on the carrying member so as to be adjacent said reel hub of a cassette being inserted when the cassette engages the actuating member.

4,578,725

VCR WITH IMPROVED FAST WINDING STATIC ELECTRICITY DRAIN

Johannes C. A. Muller, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 4, 1983, Ser. No. 481,707
Claims priority, application Netherlands, Apr. 15, 1982, 8201573
Int. Cl.[4] G11B *15/66*
U.S. Cl. 360—85 **12 Claims**



1. A magnetic-tape deck for cassettes containing a magnetic tape wound on and transported between two reels, comprising:

a chassis,

a circular cylindrical drum having a circumferential surface defining a drum axis,

at least one magnetic head mounted to said drum and movable in a circular path about said axis,

a playing-loop device for withdrawing a length of magnetic tape from a cassette placed on the deck, to form a playing loop when the deck is in a "play" mode of operation, said playing loop having a central part and two ends, said ends being at the respective reels within the cassette, the central part of the loop wrapped around a part of said drum for cooperation with said at least one magnetic head; said playing-loop device comprising first and second playing-loop-guide supports having respective first and second playing-looped guides mounted thereon; and said supports being movable between an inoperative position in which the respective guides are disposed in the cassette, and an operative position in which the playing-loop guides are in guide positions respectively upstream and downstream of the drum for guiding the playing loop,

fast-winding means for winding said magnetic tape between the reels in the cassette during a "fast forward" or "fast reverse" mode of operation, said means comprising a fast-winding-loop device for withdrawing a length of magnetic tape from the cassette and subsequently guiding it to form a fast-winding loop outside the cassette; said fast-winding-loop device comprising a fast-winding-loop guide support to which a fast-winding-loop guide is fixed, said fast-winding-loop guide support being movable with respect to said chassis between an inward position, in which the fast-winding-loop guide is disposed inside the cassette behind the magnetic tape, and a fast-winding position, in which the fast-winding-loop guide is disposed outside the cassette; and said fast-winding means further comprising means for moving the fast-winding-loop guide support between said inward and fast-winding positions, and

at least one draining element formed of an electrically conductive material, so arranged that during a fast-winding

mode of operation said at least one draining element contacts that surface of the length of magnetic tape which contacts the drum during operation in the play mode, for draining static electricity from said surface of the magnetic tape,

characterized in that said draining element is arranged on one of said playing-loop-guide supports such that the magnetic tape passes between said playing-loop-guide and said draining element, when the playing-loop-guide support is in the inoperative position said draining element and the respective playing-loop-guide being substantially opposite each other with respect to the magnetic tape.

4,578,726

HEAD ARM MOUNTING DEVICE FOR ONE OR MORE SCANNING HEADS IN RECORDING PLAYBACK APPARATUS FOR DISK RECORDS

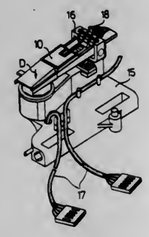
Udo Boehm; Ernst-Juergen Grittmann, both of Ludwigshafen, and Klaus Schulze-Berge, Mutterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Feb. 11, 1983, Ser. No. 465,761

Claims priority, application Fed. Rep. of Germany, Feb. 19, 1982, 3205947; Oct. 11, 1982, 8228522[U]

Int. Cl.⁴ G11B *5/016, 5/55, 21/08*

U.S. Cl. 360—99 **11 Claims**



1. In an apparatus for recording on, and/or playing back from, recording media, especially a flexible recording disks, of the type having a carriage, a head arm which carries a magnetic scanning head, and a suspension system for pivotally mounting said head arm on said carriage including a loading spring for pivotally biasing said head arm, said suspension system comprising

a U-shaped mount formed on said carriage, said U-shaped mount having upstanding legs which straddle said head arm and which terminate at respective free ends

a pivot shaft about which said head arm is mounted for pivoting movement, said shaft having respective ends supported by said legs at intermediate points on said legs, and

tension spring means integrally formed with the U-shaped mount to span between the free ends of said legs for resiliently urging said legs toward the ends of said shaft so as to eliminate axial plat of said shaft in the operation of said apparatus.

4,578,727

DEVICE FOR STABILIZING THE MOVEMENT OF A FLOPPY DISK OVER A MAGNETIC HEAD

Robert G. C. Hills, Spencerport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 27, 1984, Ser. No. 583,558

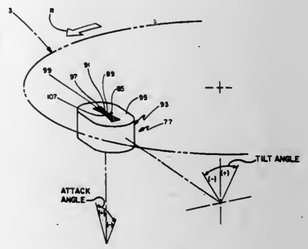
Int. Cl.⁴ G11B *17/32, 5/016*

U.S. Cl. 360—102 **8 Claims**

1. A contacting type head-to-disk stabilizing unit for use in disk drive apparatus that rotates a flexible storage disk, said unit comprising:

a record and/or playback head having transducer means for coacting with a rotated disk to record or playback information on the disk; and

a stabilizer block including (i) means defining a cavity containing said head and (ii) a flat air bearing surface which is long in proportion to width generally in a direction tangential to the direction of rotation of the disk, though is substantially smaller than the disk and disposed completely about said transducer means in substantially coplanar relation with said transducer means to permit said flat surface to penetrate with said transducer means into the nominal plane of the disk for stabilizing successive portions of the disk before each portion is located to coact with said transducer means;



said defining means (i) forming an opening to said cavity at said air bearing surface which is long in proportion to width generally in the same direction said surface is long in proportion to width and (ii) extending completely about the sides of said head in suitably spaced relation to effect a negative pressure chamber in said cavity for inducing pull down of successive portions of the disk into contact with said transducer means as each portion is located over said opening.

4,578,728

MAGNETIC HEAD

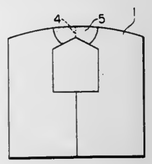
Hiroshi Sakakima; Mitsuo Satomi; Yukihiro Yanagiuchi, all of Osaka, and Harufumi Senno, Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 30, 1982, Ser. No. 445,721

Claims priority, application Japan, Dec. 9, 1981, 56-196909; Dec. 29, 1981, 56-212873

Int. Cl.⁴ G11B *5/127*

U.S. Cl. 360—125 **8 Claims**



1. A magnetic head which slideably contacts a magnetic recording medium, said head comprising a core including a substrate having high resistance to wear, a thin amorphous alloy film formed on a major surface of the substrate and forming at least part of a magnetic path, and a magnetic gap provided at a portion of said thin amorphous alloy film which is adjacent to the magnetic recording medium, wherein the thin amorphous alloy film has a composition of $Co_aM_bT_c$ wherein $70 \leqq a \leqq 95$, $0 \leqq b \leqq 20$, $5 \leqq c \leqq 20$ and $a+b+c=100$, where M is at least one metal selected from the group consisting of Fe, Ni, Cr, Mo, W and Mn, and T is at least one metal selected from the group consisting of Ti, Zr, Hf, Nb and Ta.

4,578,729

MAGNETIC RECORDING MEDIUM

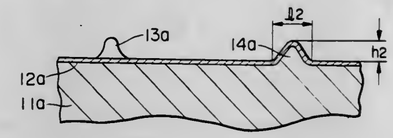
Takashi Suzuki, Osaka; Hiroshi Fujimori, Nara, and Masaru Odagiri, Hyogo, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 15, 1982, Ser. No. 434,600

Claims priority, application Japan, Oct. 15, 1981, 56-16519; Dec. 9, 1981, 56-199282

Int. Cl.⁴ G11B *5/70*

U.S. Cl. 360—134 **4 Claims**



1. A magnetic recording medium comprising

a thin ferromagnetic metal film formed as a magnetic layer; and strip protrusions having a height between 100 and 2,000 A distributed over the surface of said magnetic layer at an average density ranging from 10^4 to 10^6 protrusions per mm^2, and the ratio between the length and the height of said protrusions is less than 10:1.

4,578,730

HIGH-VOLTAGE DC CIRCUIT BREAKER APPARATUS

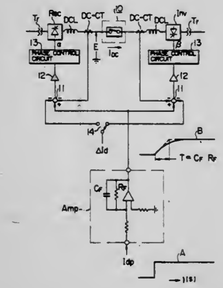
Shunji Tokuyama, Hitachi; Kooji Suzuki, Takahagi; Kunio Hirasawa, Hitachi; Yoshio Yoshioka, Hitachi, and Keiji Arimatsu, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 12, 1983, Ser. No. 541,245

Claims priority, application Japan, Oct. 13, 1982, 57-178351

Int. Cl.⁴ H02H *3/00*

U.S. Cl. 361—4 **4 Claims**



1. A high-voltage DC circuit breaker apparatus with reverse current insertion system by line voltage charge comprising a commutation switch, a series circuit of a capacitor, a reactor and a switch connected in parallel with said commutation switch, a resistor for charging said capacitor, the charging time constant of said capacitor determined by the capacity of said capacitor and said resistor being used as a reference in a manner so that the rise time constant of the line voltage is smaller than the charging time constant of said capacitor, and the rise time constant of the line current is larger than the charging time constant of said capacitor, a first DC current transformer connected to one side of said commutation switch, a first DC reactor connected to said forst DC current transformer, a rectifier connected to said first DC reactor, a second DC current transformer connected to another side of said commutation switch, a second DC reactor connected to said second DC current transformer, an inverter connected to said second DC reactor, an operational amplifier for receiving a predetermined current and for outputting the predetermined current with a time lag, a current margin change-over switch for providing a current margin, a first comparator for comparing an output of said operatonal amplifier with said current margin and an output of said first DC current transformer, a first amplifier for amplifying an output of said first comparator, a first phase control circuit connected between said first amplifier and said rectifier, a second comparator for comparing the output of said operational amplifier with the current margin and output of said second DC current transformer, a second amplifier for amplifying an output of said second comparator, and a second phase control circuit connected between said second amplifier and said inverter.

4,578,731

DEVICE FOR SUPPLYING AN ELECTRIC RECEIVER WHOSE POSITION ON A SURFACE IS VARIABLE

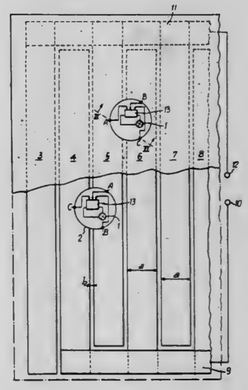
Johannes Andriessen, Verrey-sous-Salmaise, and Daniel Gaillard, Mirebeau-sur-Beze, both of France, assignors to Assistance Maintenance Construction Electrique, Verry-sous-Salmaise, France

Filed Mar. 20, 1984, Ser. No. 591,495

Claims priority, application European Pat. Off., Feb. 3, 1984, 84400243.6

Int. Cl.⁴ H02H *3/16*

U.S. Cl. 361—42 **19 Claims**



1. A device for supplying electric current to an electric receiver comprising:

(a) a network of electric conducting strips covered with insulating material, including:

(1) a first assembly of strips adapted to be operatively connected to one pole of a source of electrical current; and

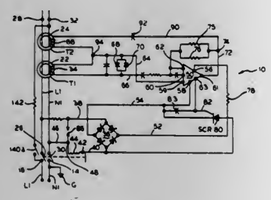
(2) a second assembly of strips adapted to be operatively connected to another pole of said source of electrical current;

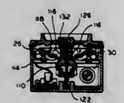
(b) a movable current pick-up having at least three current sensors capable of coming into electrical contact with said strips; and

(c) a circuit, having a plurality of inputs operatively connected respectively to said at least three sensors and an output operatively connected to the receiver, for supplying the receiver when at least one of said at least three sensors comes into contact with one conducting strip in

said first and second assemblies and at least another of said at least three sensors comes into contact with a second conducting strip in the other of said first and second assemblies, said at least three sensors being of substantially equal length and being adapted to pass through said insulating material.

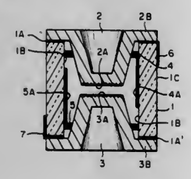
4,578,732
GROUND FAULT CIRCUIT INTERRUPTER INCLUDING SNAP-ACTING CONTACTS
Charles W. Draper, Palm Harbor, Fla., and Terry E. Franks, Leicester, N.C., assignors to Square D Company, Palatine, Ill.
Filed Dec. 14, 1983, Ser. No. 561,608
Int. Cl.[4] H02H *3/28;* H01H *83/02*
U.S. Cl. 361—45 **13 Claims**





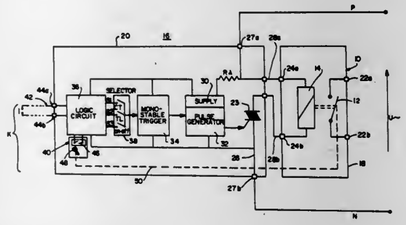
1. A protective device adapted to be connected in a power distribution system with the system having a neutral conductor and at least one line conductor carrying current between an A.C. source and a load comprising:
ground fault sensing means coupled to the conductors for monitoring current in the conductors and producing an output signal when the total current in the line conductors is not equal to the current in the neutral conductor;
an over center toggle for interrupting circuits including the conductors; and,
means responsive to said output signal for operating said over center toggle so as to interrupt said circuits.

4,578,733
SURGE VOLTAGE ARRESTER
Daizo Shigemori, Sagamihara; Haruo Kunil, Isehara, and Masaaki Endo, Sagamihara, all of Japan, assignors to Kabushiki Kaisha Sankosha, Tokyo, Japan
Filed May 2, 1984, Ser. No. 606,123
Claims priority, application Japan, Jun. 25, 1983, 58-98099[U]
Int. Cl.[4] H02H *9/06*
U.S. Cl. 361—120 **12 Claims**



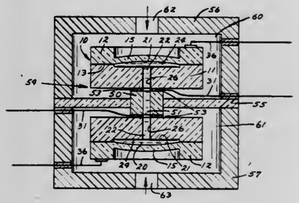
1. A surge voltage arrester comprising:
a hollow cylindrical body prepared from insulating material;
a pair of main electrodes which are fitted in a gastight fashion to both open ends of said hollow cylilndrical body to jointly define a closed chamber in such a manner that the discharge planes of said paired main electrodes are set opposite to each other at a prescribed interval in said hollow cylindrical body;
at least one electrically conductive member which extends along the inner wall of said hollow cylindrical body in its circumferential direction in such a manner that said electrically conductive member faces one of said main electrodes at a prescribed interval;
at least one electrically conductive strip which is electrically connected to said electrically conductive member and which extends along the inner wall of said hollow cylindrical body in its axial direction in such a manner that said electrically conductive strip faces the other main electrode at a prescribed interval; and
at least one external electrically conductive member which is electrically connected to said one main electrode and extends along the outer wall of said hollow cylindrical body in such a manner that said external electrically conductive member is capacitively coupled to said one electrically conductive member.

4,578,734
ELECTRONIC CIRCUIT CONTROLLING A MULTIPLE OPERATION APPARATUS FITTED WITH AN ELECTROMAGNETIC MECHANISM
André Delbosse, Brussels, Belgium, assignor to Merlin Gerin, Grenoble, France
Filed Nov. 15, 1983, Ser. No. 551,935
Claims priority, application France, Nov. 29, 1982, 82 20111
Int. Cl.[4] H01H *47/32*
U.S. Cl. 361—152 **6 Claims**



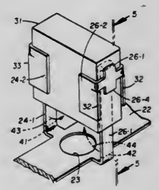
1. Control device of an electrical apparatus having a movable contact and an electromagnetic driving mechanism with an electromagnetic coil inducing a change in condition of the movable contact at each time the electromagnetic coil is energized, said control device comprising a power supply circuit to said electromagnetic coil and a control unit inserted in said supply circuit to energize or de-energize the coil, said control unit including a controlable static switch and an electronic control circuit capable of delivering control pulses for the triggering of said static switch for a predetermined time-length T, so as to limit the current supply passing through said electromagnetic coil, said electronic control circuit including:
a synchronous pulse generating circuit to trigger said static switch when the voltage of said power supply circuit drops close to zero;
a monostable trigger circuit for supplying the pulse generating circuit with a single pulse of time-length T, and;
a logic control unit having an output connected to the input of said trigger circuit;
said logic control unit comprising a plurality of outputs delivering distinct output signals according to the condition of input signals applied to the input of the logic control unit; and
a selector connected between said logic control unit and said monostable trigger circuit to choose the operating mode of said apparatus, the number of positions of said selector being identical to the number of logic control unit outputs.

4,578,735
PRESSURE SENSING CELL USING BRITTLE DIAPHRAGM
Thomas A. Knecht, 12309 Woodbine Rd., Minnetonka, Minn. 55343; Roger L. Frick, 125 Choctaw Cir., Chanhassen, Minn. 55317, and John P. Schulte, 923-11th Ave. South, Apartment 1, Hopkins, Minn. 55343
Filed Oct. 12, 1984, Ser. No. 660,394
Int. Cl.[4] H01G *7/00;* G01L *9/12*
U.S. Cl. 361—283 **31 Claims**



1. A differential pressure sensor assembly having first and second sensor portions;
said first and second sensor portions each comprising a pair of plates, a first of which is a brittle semiconductor material, and a second of which is a rigid insulating material, said plates initially being substantially contiguous to each other along first surfaces of said plates and sealed together along an encompassing line with portions of said first surfaces being unconnected to permit movement of said first semiconductor plate of each sensor portion relative to the other plate of the same sensor portion to form first and second chambers, respectively, in each of the first and second sensor portions;
each of said second plates having capacitive electrode means on the first surfaces thereof facing said semiconductor plates of the respective sensor portion to permit measuring differences in spacing of said facing surfaces by measurement of capacitance between the semiconductor plate and the capacitive electrode;
fluid conduit means for connecting said first and second chambers, respectively;
a quantity of substantially incompressible fluid filling said first and second chambers and to said fluid conduit means to space the semiconductor plates from the second plates;
housing means to permit subjecting at least one of the plates of each sensor portion to a pressure tending to move the plates forming each sensor portion together, the pressure acting on the respective sensor portion being at least at times different from the pressure acting on the other sensor portion, whereby the incompressible fluid will be forced into one chamber from the other chamber and cause increase in bending stress of the plates in one of said sensor portions and a decrease in bending stress of the plates of the other sensor portion; and
said other sensor portion reaching a condition wherein the first and second surfaces of the plates forming the other chamber are substantially contiguous before either of the plates forming the one sensor portion reach an excessive stress level.

4,578,736
SURFACE MOUNTED ELECTRICAL COMPONENTS AND METHOD OF FABRICATION
Donald R. Brown, Downers Grove, Ill., assignor to AT&T Technologies, Inc., Berkeley Heights, N.J.
Filed Aug. 28, 1984, Ser. No. 645,194
Int. Cl.[4] H01G *1/14, 7/00*
U.S. Cl. 361—306 **11 Claims**



1. An electrical component assembly which comprises:
an electrical device having electrodes on opposite ends;
a housing encasing said electrical device and having a bottom wall, two end walls, and two opposed side walls; and
a pair of T-shaped terminals, each of which includes a stem section bonded to a separate one of said electrodes and extending through one of said end walls to a cross member which extends across said one of said end walls with end sections exposed on the opposite side walls of said housing so that the electrical component assembly exhibits a multi-surface plurality of pairs of electrical terminations adapted for the surface mounting thereof in a plurality of different orientations, whereby said plurality of pairs of electrical terminations include end portions of the stem sections proximate to the bottom wall, the exposed end sections of the cross members on one of the side walls of the housing, and the exposed end sections of the cross members on the other side wall of the housing.

4,578,737
SYNTHETIC RESIN FILM WOUND CAPACITOR
Wolfgang Westermann, Schellingstr. 7, D-6800 Mannheim 1, Fed. Rep. of Germany
Filed Jun. 4, 1984, Ser. No. 617,014
Claims priority, application Fed. Rep. of Germany, Jun. 3, 1983, 3320257
Int. Cl.[4] H01G *1/13, 4/08, 7/00*
U.S. Cl. 361—308 **20 Claims**



1. A capacitor formed in a chip configuration, which has predetermined electrical properties and shape, comprising:
a capacitor body comprised of a wound body of synthetic resin film;
a moisture-proof casing surrounding the capacitor body, comprising a material which retains its shape under the application of heat; and
a plurality of connecting elements fastened to the frontal sides of the capacitor body and projecting through the casing, each of said connecting elements comprising thin sheet metal having relatively poor thermal conductivity, said connecting elements being formed such that a first part of the sheet metal is disposed substantially parallel to and adjacent the frontal side of the capacitor body and a second part of the sheet metal projects through the casing

at an angle with respect to the frontal side of the capacitor body,
said capacitor retaining said predetermined shape and electrical properties when exposed to temperatures characteristic of liquid solder metal.

4,578,738

ANODE STRUCTURE FOR ELECTROLYTIC FIBRE CAPACITORS AND METHOD FOR MANUFACTURING THE SAME

Leszlauer Zoltán, Batthyány tér 13, 9022 Győr, Hungary

Filed Nov. 9, 1984, Ser. No. 670,405
Claims priority, application Hungary, Nov. 11, 1983, 38060/83
Int. Cl.[4] H01G *4/16, 1/13, 7/00*
U.S. Cl. 361—324 **14 Claims**



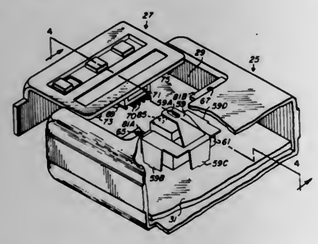
1. Anode structure for use in an electrolytic capacitor, comprising a plurality of fibres extending substantially in parallel to each other, said fibres having at least their outer portion made of a valve metal, an oxide layer on an active section of said fibres, an electrically insulating resin hermetically sealing and mechanically interconnecting a section of each fibre adjacent to and leaving free said active section, an electrically conductive resin surrounding the oxide free end sections of said fibres to provide electrical interconnections between said fibres, said conductive resin constituting an electrical outlet for said structure and being spaced by said insulating resin from said active section.

4,578,739

QUICK DISCONNECT AND FUNCTION CHANGE RADIO ASSEMBLY

John M. McKee, and John F. MacDonald, both of Coral Springs, Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 310,697, Oct. 13, 1981, abandoned.
This application Apr. 19, 1983, Ser. No. 486,474
Int. Cl.[4] H05K *1/18, 11/00*
U.S. Cl. 361—395 **12 Claims**



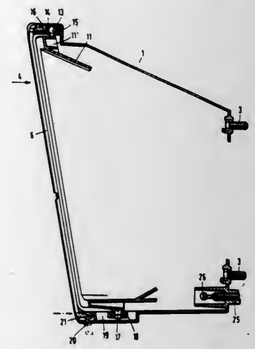
1. An assembly for devices having a generic circuit portion and a unique circuit portion, said assembly comprising,
a main housing for said generic circuit portion having at least one inside wall and at least one outside wall,
a subassembly housing for said unique circuit portion, having an inside and outside wall,
a circuit board within said main housing for the components of said generic circuit portion, said circuit board having a first and second end, and slideable within said main housing between a first and second position,
a tongue-like projection having a first end attached to said circuit board and having a second end with a central slot,
a wedge integral with said inside wall of said main housing and engagng said tongue-like projection central slot so as to limit the amount said circuit board can slide in a first direction, to said first position,
a receiving cavity in said subassembly housing for receiving and engaging said tongue-like projection,
a first signal conducting connector mounted on said subassembly housing,
a second signal conducting connector mounted on said circuit board for engagement with said first signal conducting connector when said circuit board slides in a second direction, to said second position,
a flange mounted on said subassembly housing to receive and engage said circuit board first end when said circuit board slides to said second position, and
whereby said flange engagement of said circuit board first end and said tongue-like projection engagement of said receiving cavity provides a mechanical coupling which locks said main housing and said subassembly housing together.

4,578,740

HEADLAMP WITH ADJUSTABLE REFLECTOR FOR MOTOR VEHICLES

Jacky Krizmanic, Sens, France, assignor to Societe de Signalisations Automobiles S.E.I.M.A., Sens, France

PCT No. PCT/EP83/00179, § 371 Date Mar. 9, 1984, § 102(e) Date Mar. 9, 1984, PCT Pub. No. WO84/00332, PCT Pub. Date Feb. 2, 1984
PCT Filed Jul. 8, 1983, Ser. No. 596,467
Claims priority, application France, Jul. 16, 1982, 82 12512
Int. Cl.[4] B60Q *1/06*
U.S. Cl. 362—66 **6 Claims**



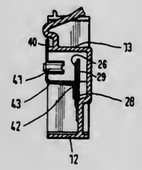
1. In a headlamp with an adjustable reflector for a motor vehicle, comprising a housing mounted on the body of the vehicle and a cover disc which is attached to the housing by means of a groove-rib connection, and a reflector arranged in the housing, which is horizontally and vertically adjustable, the improvement wherein the reflector carries on its circumference a joint ball which rotates in a bearing connected to the housing on the cover disc, and the reflector also has on its circumference an axle which is located substantially in the same horizontal plane as the joint ball and is rotatable in a shoe which is secured in the housing with substantially horizontal sliding mobility, said bearing and shoe being accommodated in spaces which are located in alignment behind at least one groove-rib connection of the cover disc on the housing, a front closure of the spaces and continuity of the shape of the connecting edge zone being achieved simultaneously by a packing of the bearing with an end profile of the groove and rib type and by a bent edge of at least one cover, for a partial section of the groove-rib connection which closes at least the accommodating space the shoe, the rear surface of the reflector carrying an actuating rod, which is located in said horizontal plane, and a second actuating rod which is arranged in another horizontal plane.

4,578,741

VEHICLE LIGHT WITH SEVERAL INCANDESCENT LAMPS HAVING IMPROVED CONTACT MEANS

Hans Prohaska, Bietigheim-Bissingen, Fed. Rep. of Germany, and Daniele Sosthene, Draney, France, assignors to ITT Industries, Inc., New York, N.Y.

Filed Jul. 21, 1982, Ser. No. 400,453
Claims priority, application Fed. Rep. of Germany, Aug. 5, 1981, 3131018
Int. Cl.[4] B60Q *1/26;* **F21V** *21/00*
U.S. Cl. 362—249 **8 Claims**



1. A vehicle light assembly for retaining at least one incandescent lamp, each lamp having a base with a cap connection and at least one center contact, comprising: a lamp holder having at least one cup formed therein and associated with each lamp for receiving said base; at least one metal conductor associated with each lamp and secured to the lamp holder, each metal conductor being insulated from one another; an end portion integral with each metal conductor and extending into each cup for electrical connection with the center contact of each lamp; a spring located within each cup in contact with the end portion, a portion of said spring urging said end portion upwardly in connection with the center contact of the lamp; and a portion of the spring opposite from the center contact located in a recess formed in the lamp holder, so that each spring is securely affixed to the lamp holder, and maintains the end portions of each metal conductor in constant contact with the lamps upon their insertion into the lamp holder wherein the spring includes a first shank in contact with the end portion of at least one metal conductor, a web perpendicular to the first shank, and a second shank perpendicular to the web and affixed to the lamp holder, whereby the shanks and web extend in a plane parallel to a plane including at least one metal conductor.

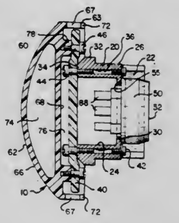
4,578,742

REMOVABLE LAMPHOLDER

Roy S. Klein, Erie; Joel C. Gehly, McKean, and Joseph T. Sestak, Erie, all of Pa., assignors to American Sterilizer Company, Erie, Pa.

Filed Oct. 24, 1984, Ser. No. 664,356
Int. Cl.[4] F21V *25/02*
U.S. Cl. 362—294 **14 Claims**

1. A lampholder for insertion into an electrically powered lighting unit comprising:
a socket for receiving the lamp;
means for communicating electrical power from the unit to the lamp;
a member having a bore therethrough for receiving said socket;
a cap structured to prevent cracking superposing said socket and being made of a material selected from the group consisting essentially of polysulfone, polyether sulfone, polyether imide, polyamide-imide, polyether ether ketone, polyphenylene sulfide or an epoxy or a phenolic, said cap having an upper surface, a lower surface so disposed relative to said upper surface that a first airspace is defined therebetween, a heat insulation layer disposed between said member and said lower surface, said heat insulation layer being made from said material and being so connected to said lower surface that a second airspace is



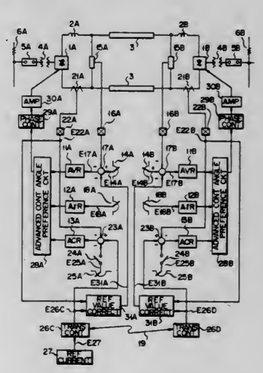
defined therebetween, an annular skirt and a plurality of windows formed in said skirt of sufficient size to vent so much of the heat emitted from the lamp when electrical power is communicated thereto, that said upper surface, due to the combination of said material, said first and second airspaces and said sufficiently sized windows, will not exceed a predetermined temperature during normal use;
a handle molded on said upper surface; and
means for releasably engaging the unit.

4,578,743

CONVERTER CONTROL SYSTEM HAVING STABLE POWER TRANSFER IN THE PRESENCE OF DECREASED INPUT AC VOLTAGE

Haruhisa Inokuchi, and Takami Sakai, both of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 21, 1984, Ser. No. 622,877
Claims priority, application Japan, Jun. 21, 1983, 58-111383
Int. Cl.[4] H01J *3/36*
U.S. Cl. 363—35 **8 Claims**



1. A converter control system comprising:
first converter means for converting AC electric energy from a first AC power line into converted DC electric energy, said first converter means being located at a first given place;

DC power transmission means for transmitting the converted DC electric energy from said first converter means to a second given place which is different from said first place, and providing transmitted DC electric energy at said second given place;

second converter means located at said second given place, for converting the transmitted DC electric energy from said DC power transmission means into converted AC electric energy, and supplying the converted AC electric energy to a second AC power line;

current regulator means for actuating said first converter means to determine the amount of a DC rated current flowing through said first converter means;

voltage controller means for actuating said second converter means to determine the voltage of said transmitted DC electric energy; and

voltage correction means for actuating said voltage controller means to provide a voltage change portion in the voltage of said transmitted DC electric energy, so that the voltage of said transmitted DC electric energy is decreased by said voltage change portion when a DC current flowing through said second converter means is decreased.

4,578,744

A. C. POWER CONVERTER

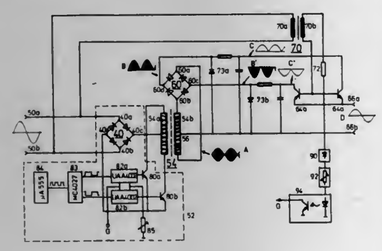
Jovan Antula, 19 Trappentreustrasse, Munich, Fed. Rep. of Germany

Filed Jun. 29, 1983, Ser. No. 509,163

Claims priority, application Fed. Rep. of Germany, Jul. 1, 1982, 3224636

Int. Cl.⁴ H02M *5/45*

U.S. Cl. 363—37 **20 Claims**



1. An a.c. power converter circuit for converting input alternating power of predetermined waveform, predetermined frequency and predetermined first amplitude into an output alternating power having the said predetermined waveform and frequency and a predetermined second effective voltage, said circuit having

first and second input terminals for receiving said input alternating power;

means (**52**) for periodically interrupting or chopping said input power, said means operating with a chopping frequency which is substantially higher than said predetermined frequency;

a transformer (**54**) dimensioned for said chopping frequency and having primary (**54*a***) and secondary (**54*b***) windings, said primary winding (**54*a***) being coupled in series with said interrupting or chopping means (**52**) across said input terminals and said secondary winding having a center tap (**56**),

said converter circuit comprising

a full wave rectifier circuit (**60**) coupled to said secondary winding (**54*b***) of said transformer (**54**), receiving the output (A) therefrom, and having two outputs (**56**, **58*a***; **56**, **58*b***) for providing first and second unipolar voltages (B, B') of opposite polarities with respect to the center tap (**56**), said center tap forming a common terminal of the rectifier circuit;

two electronic switches (**64*a***, **64*b***), one each being coupled between a respective rectifier output (**58*a***, **58*b***) and a first converter output terminal (**66*a***);

a second converter output terminal (**66*b***) coupled to the common terminal (**56**) of said rectifier circuit (**60**); and

a control circuit (**70**) coupled to and responsive to said input alternating power in synchronism with and at said predetermined frequency and connected to said electronic switches (**64*a***, **64*b***), said control circuit controlling said electronic switches to become alternately conductive in synchronism with said predetermined frequency during half cycles of the input power corresponding to respective portions of said unipolar voltages (B, B') which correspond to alternating successive half-waves of said input power to thereby reconstitute said predetermined wave form and frequency.

4,578,745

SEMICONDUCTOR VALVE

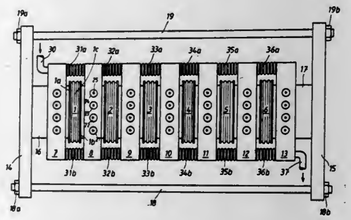
Karl-Erik Olsson, Ludvika, Sweden, assignor to ASEA AB, Vasteras, Sweden

Filed Oct. 2, 1984, Ser. No. 656,847

Claims priority, application Sweden, Oct. 6, 1983, 8305503

Int. Cl.⁴ H02M *1/00*; H01L *1/00*

U.S. Cl. 363—68 **10 Claims**



1. A semiconductor valve including

a plurality of electrically series-connected semiconductor elements and a plurality of liquid-cooled cooling bodies,

the semiconductor elements and the cooling bodies being arranged alternately one after the other in a stack having a longitudinal direction so that a semiconductor element is disposed between two cooling bodies,

clamping means generating a compressive force acting in the longitudinal direction of the stack to press said elements and cooling bodies together, and

voltage divider sections connected in parallel with each semiconductor element, each said voltage divider section including at least one resistor,

characterized in that,

at least one resistor of at least one voltage divider section has a main portion of elongated substantially cylindrical shape, which main portion is located inside one of said cooling bodies with its elongate direction substantially perpendicular to the longitudinal direction of the stack.

4,578,746

INTERLACED PULSE-WIDTH MODULATED UNRESTRICTED FREQUENCY CHANGER SYSTEM

Laszlo Gyugyi, Penn Hills; Theodore M. Heinrich, Murrysville, both of Pa., and Gyu-Hyeong Cho, Seoul, Rep. of Korea, assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 3, 1984, Ser. No. 596,329

Int. Cl.⁴ H02M *5/257*

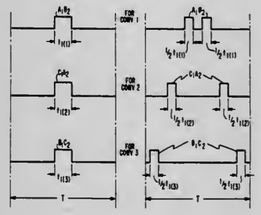
U.S. Cl. 363—161 **5 Claims**

1. In a frequency conversion apparatus having a plurality of phase-related static converters each coupled between a polyphase AC power source of frequency f_{IN} and a polyphase AC output of frequency f_0 including:

for each of said converters a plurality of controllable bilateral switching units controlled for conduction in succession during a time period (TP) characterizing said frequency f_0, each switching unit having a controllable conduction time interval (t) within a common time frame (T) defined by a controllable repetition rate, and occurring through said succession at said repetition rate to derive energy from said AC power source through the associated converter during successive segments of voltage, on a phase basis, and to apply the derived voltage segments of said succession to said output so as to form with associated like pluralities of converter switching units an AC polyphase output system;

the frequency f_0 of said AC output being a function of the difference between the frequency f_{IN} of said AC power source and said repetition rate; the combination of:

means synchronized with said repetition rate and operative on said controllable conduction time interval (t) for establishing with said succession of switching units n elementary conduction time intervals (t*) distributed throughout the time frame (T) of operation of each switching unit in



said succession and occurring at a rate which is n time said repetition rate, the sum of said elementary conduction time intervals (t*) within such time frame (T) being equal to said controllable conduction time interval (t), n being an integer in relation to the output frequency of said AC output; and

means for controlling the switching units of said succession each one n times before controlling another, thereby to improve the quality of the current in the AC output and in the input AC power source with said n time intervals establishing means comprising:

means for repeatedly generating for each phase converter a timing wave of duration T;

means for applying a reference voltage in relation to said AC output;

means for comparing each of said timing waves with said reference voltage to derive a duration signal of said t duration, said timing waves being such that n comparisons are effected per timing wave within said time frame T, a subsignal of elementary conduction time interval (t*) being derived upon each such comparison; and

said timing waves being displaced by the same amount in relation to one another, thereby to effect interlacing between said subsignals from one converter to another.

4,578,747

SELECTIVE PARAMETRIC SELF-CALIBRATING CONTROL SYSTEM

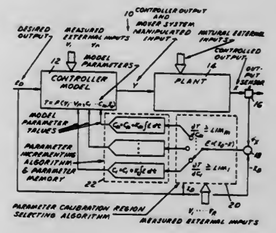
Laszlo Hideg, Dearborn Heights, and Paul L. Koller, Wyandotte, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

PCT No. PCT/US83/01606, § 371 Date Oct. 14, 1983, § 102(e) Date Oct. 14, 1983, PCT Pub. No. WO85/01807, PCT Pub. Date Apr. 25, 1985

PCT Filed Oct. 14, 1983, Ser. No. 553,323

Int. Cl.⁴ G05B *13/04*

U.S. Cl. 364—151 **1 Claim**



1. In a controlled system having a control means supplying a manipulated input to a plant, said control means having a first plurality of external inputs designated V, measurable by sensing means, and a second plurality of input control model parameters designated C, alterable in said controlled system by calibration means, said control means including a predetermined mathematical model to compute a desired controlled system output X_D into a manipulated input Y as a function of V and C, a method for operating the controlled system to meet specified system output requirements comprising the steps of:

establishing an initial value for input control parameters, C;

measuring external inputs, V;

generating an initial model for generating a manipulated input, Y, from a desired controlled system output, X_D, as a function of V and C; and

correcting the input control model parameters C as a function of the difference between the desired controlled system output X_D and the actual controlled system output, X, and as a function of measured external inputs, V, by including the steps of comparing the actual controlled system output to the desired controlled system output and generating an output error; measuring external inputs V; and updating sequentially the values of the input control parameters as a function of output error and measured external inputs, V;

said step of updating sequentially including:

selecting the input control parameter having the largest contribution to the output error, by taking the partial derivative of the manipulated input, Y, with respect to each of the input control parameters; determining whether each of the partial derivatives is within predetermined boundaries; selecting to adjust the value of that input control parameter associated with the largest partial derivative; and

adjusting the value of the selected input control parameter to reduce the output error, by incrementing the previous value of the control parameter by an amount proportional to the integral of the output error during a predetermined period of time, so that $C(1)=C(0)+K\int \epsilon dt$

wherein C(1) is the updated parameter

C(0) is the previous parameter

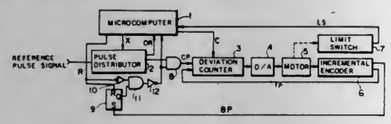
K is a constant

ϵ is the output error defined by the difference between the actual and the desired controlled system output.

4,578,748
POSITIONING CONTROL SYSTEM

Riichi Abe; Katsuji Tsuruta, both of Hiratsuka, and Seiji Tsujikado, Sagamihara, all of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Sep. 29, 1982, Ser. No. 427,926
Claims priority, application Japan, Oct. 26, 1981, 56-171063; Dec. 23, 1981, 56-208850
Int. Cl.⁴ G05B *11/18*
U.S. Cl. 364—167 **5 Claims**



5. In a position control system having a motor for driving an object to be transferred and an incremental encoder mounted to a rotary shaft of said motor, said incremental encoder detecting relative position of the object with respect to an origin position, wherein the rotational speed of said motor is determined based on difference in the number of pulses between a command pulse signal, wherein the number of pulses per unit time period corresponds to a transfer rate of said object and a feedback pulse signal supplied from said incremental encoder, wherein the number of pulses per unit time period corresponds to the actual rotational rate of said motor, the frequency of said command pulse signal being controlled by programs to determine said transfer rate of said object, and wherein the stop position of said object is determined based on an origin pulse signal supplied from said incremental encoder, the improvement comprising:

means for generating an origin detection signal when said object nears a certain transfer destination position,

a logic circuit for causing said frequency of the command pulse signal to be reduced when said origin pulse signal next is supplied after generation of said origin detection signal; and

rotation reversing means, cooperating with said logic circuit, for driving said motor in the reverse rotation direction with said command pulse signal of reduced frequency,

and wherein said logic circuit thereafter causes said command pulse signal to terminate when the origin pulse signal is again generated, said system further comprising;

means for comparing a value corresponding to the amount of rotation that said motor is expected to be rotated during a period from said initially supplied origin pulse signal to the stop of said motor with a value showing the amount of rotation that said motor has rotated during a period from the instant that the motor rotation is reversed to the time when said origin pulse signal again is generated, whereby an appropriate error compensation measure is taken when said two total numbers of rotation do not coincide with each other.

4,578,749
METHOD FOR MEASURING DRIVING AMOUNT OF MOTOR AND APPARATUS THEREFOR

Toshitaka Kuno, Nagoya, and Atsushi Kamiya, Kariya, both of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi, Japan

Filed Jun. 20, 1983, Ser. No. 506,125
Claims priority, application Japan, Jun. 23, 1982, 57-108146; Jun. 23, 1982, 57-108147
Int. Cl.⁴ G05B *19/00*
U.S. Cl. 364—167 **18 Claims**

5. An apparatus for measuring a driving amount of a motor, comprising:

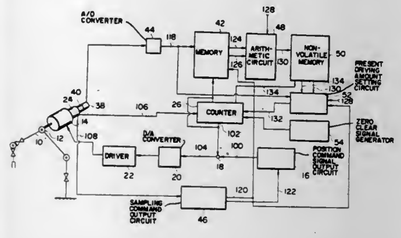
an encoder of an increment type mounted on a driving shaft of the motor and putting out driving amount pulses of the number corresponding to a driving amount of the motor;

a counter counting the number of the driving amount pulses on the basis of an origin of the motor to detect a relative driving amount of the motor;

an absolute driving amount detector detecting an absolute driving amount of the motor;

a sampling command output circuit putting out a driving amount sampling command signal at each predetermined interval of the driving amount pulses;

a coefficient and constant calculating circuit for sampling the relative driving amounts and the absolute driving amounts in response to the respective driving amount sampling command signals and obtaining coefficient and constant of at least one linear approximate equation representing the relation between the relative driving amount and the absolute driving amount from the respective sampled relative and absolute driving amounts;



a non-volatile memory for the coefficient and constant of the linear approximate equation obtained in the coefficient and constant calculating circuit therein; and

a present driving amount setting circuit for obtaining a relative driving amount of the motor at a starting time of the motor in a sampling position from the coefficient and constant read out of the non-volatile memory and an absolute driving amount sampled in response to the driving amount sampling command signal when the motor is driven from a present rotational position of the motor up to the sampling position near the present rotational position, and setting the relative driving amount of the motor at the starting time in the counter.

4,578,750
CODE DETERMINATION USING HALF-ADDER BASED OPERAND COMPARATOR

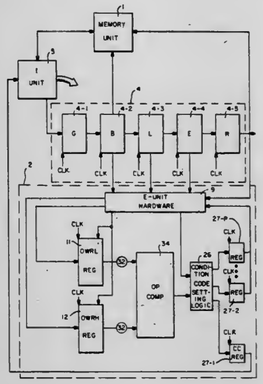
Gene M. Amdahl, Atherton; Hsiao-Peng S. Lee; Stephen J. Rawlinson, both of Sunnyvale, and Stephen F. Stuart, Mountain View, all of Calif., assignors to Amdahl Corporation, Sunnyvale, Calif.

Filed Aug. 24, 1983, Ser. No. 526,047
Int. Cl.⁴ G06F *9/00, 7/00*
U.S. Cl. 364—200 **24 Claims**

1. A data processing system operating in response to instructions, where the instructions specify the operations to be executed and the operands to be utilized in executing the instructions, said instructions including a branch instruction specifying a branch instruction stream to be taken in accordance with a condition code identified by said branch instruction, and including a condition code-setting instruction specifying an operation to be executed and first and second operands to be utilized in executing the condition code-setting instruction, comprising:

instruction means for processing instructions, including said condition code-setting instruction, and for selecting said branch instruction stream as a function of the setting of said condition code;

comparator means for comparing said first and second operands specified by said condition code-setting instruction to form a comparison result, said comparator means including one or more half-adders receiving said first and second operands and operative to form said comparison result for predicting codes,

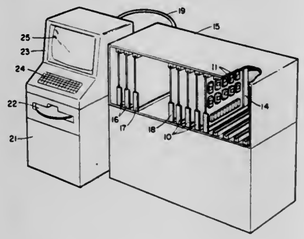


means responsive to said comparison result in said comparator means for setting said condition code without the necessity of waiting for the execution of the operation specified by said code-setting instruction.

4,578,751
SYSTEM FOR SIMULTANEOUSLY PROGRAMMING A NUMBER OF EPROMS

Edward A. Erwin, Mesquite, Tex., assignor to AT&T Technologies, Inc., Berkeley Heights, N.J.

Filed Jun. 25, 1982, Ser. No. 392,053
Int. Cl.⁴ G06F *9/00, 13/00*
U.S. Cl. 364—200 **1 Claim**



1. A system for simultaneously programming a plurality of erasable programmable read only memory devices (EPROMs), each having a number of memory sites that are each initially set in all-ones condition, which comprises:

a central processing unit;

means for rotating a program comprising a plurality of successive bytes from a master memory device and storing said program in said central processing unit;

a cabinet rack for receiving multiple circuit boards each having several EPROMs, each having all of its memory sites set in the "all-ones" condition;

an interface circuit interposed between said cabinet rack and said central processing unit for transmitting successive bytes comprising bits of ones and zeros to set each memory site accordingly and for subsequently reading the setting of each memory site back into said central processing unit;

means within the central processing unit for transferring each byte of the program to said interface circuit for impression at successive memory sites;

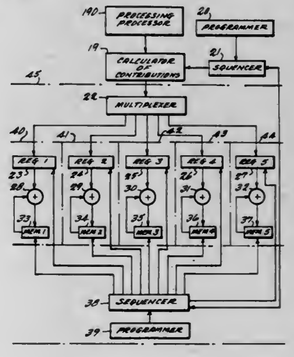
means within the central processing unit for recognizing bytes of all ones and blocking the impression of said "all-ones" bytes-bits to said interface; and

means within the central processing unit for receiving through said interface circuit the byte setting of each programmed memory site and for verifying said setting with respect to the byte impressed through the interface circuit to the memory site, and for verifying the "all-ones" setting of those memory sites associated with the blocked "all-ones" byte recognized in the central processing unit.

4,578,752
TOMODENSITOMETER FOR IMAGE DISPLAY IN THE DYNAMIC MODE

Rémy Klausz, Paris, France, assignor to Thomson CSF, Paris, France

Filed Dec. 21, 1982, Ser. No. 451,797
Claims priority, application France, Dec. 31, 1981, 81 24573
Int. Cl.⁴ G06F *15/42*
U.S. Cl. 364—414 **6 Claims**



1. A method for producing in real time a plurality of tomodensitometric images of a planar section of a body being examined by a tomodensitometer having a radiation source, a radiation detector, and a plurality of accumulator memories, each tomodensitometric image having a plurality of picture elements, comprising the steps of:

allocating one accumulator memory to each tomodensitometric image it is desired to observe;

defining an area in each accumulator memory for each picture element of the corresponding tomodensitometric image;

radiating said body with said radiation source a plurality M of times, said radiation source being angularly displaced with respect to said body for successive radiations;

acquiring M projections of radiations passing through said body with said radiation detector, M being greater than a number N minimum projections required to form a tomodensitometric image of said planar section, M and N being positive integers;

calculating, independently for each acquired projection, a contribution each acquired projection makes to each of said plurality of tomodensitometric images, each contribution being allocated to a picture element within each tomodensitometric image to which said contribution is assigned;

entering each calculated contribution into accumulator memory areas corresponding to picture elements to which said contribution is allocated; and

producing real time consecutive tomodensitometric images from said plurality of accumulator memories, each accu-

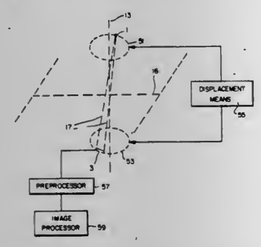
mulator memory corresponding to one tomodensitometric image.

4,578,753

SYSTEMS AND METHODS FOR MINIMIZING NONCOPLANARITY ARTIFACTS

Carl R. Crawford, Milwaukee, Wis.; Yair Shimoni, Jerusalem, Israel; A. Robert Sohval, and Daniel I. Barnea, both of Brookline, Mass., assignors to Elscint Ltd., Haifa, Israel

Filed Aug. 29, 1983, Ser. No. 527,472
Int. Cl.[4] G06F *15/42*
U.S. Cl. 364—414 **20 Claims**



10. A correction method for minimizing artifacts caused by noncoplanarity between source means and detector means in computerized tomography, wherein said source means produces a beam of penetrating radiation which is rotatable about an axis and is incident on said detector means, whereby said noncoplanarity is defined by the collection of the positions of said source means which defines a first plane, and by the collection of the positions of said detector means which defines a second plane, said first and second planes being separated by a third plane that includes a portion of the object being scanned, said method including the steps of:

(a) energizing said source means to provide radiation that passes from said source means to said detector means through an object when the latter is located between said source means and said detector means whereby output signals from the detector means are obtained;

(b) processing said output signals to provide radiation intensity attenuation data of the object through 360 degrees; and

(c) forming two images from the data, one image from the data related to one side of said third plane, and the second image from the data related to the other side of said third plane.

4,578,754

VEHICLE BRAKE CONTROL APPARATUS AND METHOD

Arum P. Sahasrabudhe, Park Dune, India; Habib Dadpey, Upper St. Clair, Pa.; Fernando A. Cirillo, R. Joao De Sousa Dias; Antonia C. Merlo, Sao Paulo, both of Brazil, and Pierre A. M. Zuber, Baldwin Borough, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 5, 1984, Ser. No. 596,877
Int. Cl.[4] B61L *11/02*
U.S. Cl. 364—426 **12 Claims**

1. In brake control apparatus for a vehicle operative with a roadway having a known system design first deceleration and having a command speed to establish the vehicle actual speed in relation to that roadway, the combination of

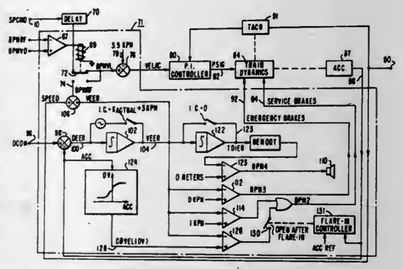
means including an accelerometer coupled with the vehicle for sensing a second deceleration of the vehicle,

means comparing the first deceleration and the second deceleration for determining a deceleration error of the vehicle,

means responsive to a change of said command speed from a higher value to a lower value for determining a safe brake velocity for the vehicle in accordance with the actual speed and a velocity error established in relation to said deceleration error, and

speed control means responsive to the safe brake velocity for controlling the actual speed of the vehicle until there is a predetermined relationship between the velocity error and a critical velocity established in relation to said second deceleration when the speed control means provides a deceleration of said vehicle in accordance with said velocity error.

6. In the method of decelerating a vehicle operative with a roadway having a known safe deceleration rate and having a command speed to determine the vehicle travel speed along that roadway, the steps of



sensing the actual acceleration of the vehicle,

sensing a decrease in the command speed for providing a safe brake speed relationship in accordance with the vehicle travel speed and a velocity error established in relation to the safe deceleration rate and the vehicle acceleration;

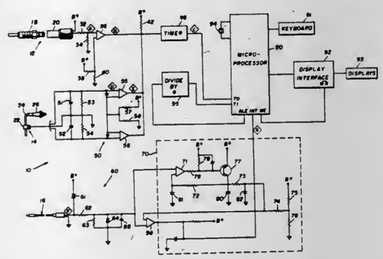
providing a first operation of the vehicle in response to the safe brake speed relationship until a predetermined velocity error is established in relation to the known safe deceleration rate and said actual acceleration and providing a second operation of the vehicle after said predetermined velocity error is established and in accordance with a desired deceleration rate.

4,578,755

MICROPROCESSOR CONTROLLED TIMING/TACHOMETER APPARATUS

Robert O. Quinn, Kenosha, Wis.; Craig F. Govekar, Gurnee, Ill., and James R. Piehl, Kenosha, Wis., assignors to Snap-on Tools Corporation, Kenosha, Wis.

Filed Nov. 12, 1982, Ser. No. 441,078
Int. Cl.[4] G01M *15/00;* **G01P** *21/02*
U.S. Cl. 364—431.01 **15 Claims**



9. Timing/tachometer apparatus for an internal combustion engine having a rotating part with mark means that passes a fixed point a predetermined offset angle after top dead center

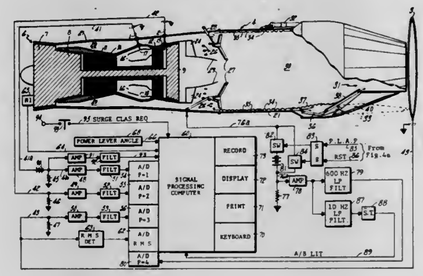
of a selected cylinder, said apparatus comprising a first sensor adapted to be coupled with respect to the selected cylinder for producing recurring first electrical signals in response to recurring combustion in the selected cylinder; first circuit means for converting the first electrical signals into a train of first pulses; a second sensor adapted to be mounted adjacent to the fixed point for producing recurring second electrical signals in response to recurring rotation of the rotating part; second circuit means for converting the second electrical signals into a train of second pulses; processor means coupled to said first and second circuit means and operating under stored program for: (a) determining the time between the pulses in one of the trains and converting such time into engine speed in rpm and if such one train is not present, then (b) determining the time between the pulses in the other one of the trains and converting the last-mentioned time into engine speed in rpm; and means for digitally displaying the engine speed.

4,578,756

ADAPTIVE ELECTROSTATIC ENGINE DIAGNOSTICS

David M. Rosenbush, Granby; Philip E. Zwicke, South Glastonbury, both of Conn., and Robert P. Couch, Palm Beach Gardens, Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 28, 1982, Ser. No. 454,125
Int. Cl.[4] G01M *15/00*
U.S. Cl. 364—431.02 **25 Claims**



1. Adaptive electrostatic diagnostic apparatus, operable in a plurality of modes, for power plants having a gas turbine engine including gas tubine engines with afterburners, operable in response to commands provided thereto, and providing first electrical signals indicative of such commands and of the oporation of such engine, comprising:

electrostatic signal means, including a probe to be disposed in the gas stream of an engine, for providing, when said probe is disposed in the gas stream of an operating engine, second electrical signals having amplitude variations therein in response to ionic phenomena in the gas stream of the engine in the vicinity of said probe; and

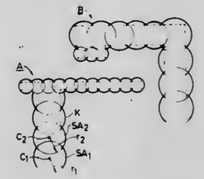
signal processing means connected for response to said first and second electrical signals, operative in a first diagnostic mode for providing a signal indicative of the occurrence of an operational event in said engine in response to a particular one of said second electrical signals provided thereto by said probe having characteristics indicative of said operational event, and for operating in another diagnostic mode different from said first mode in response to a selected one of said first and second electrical signals.

4,578,757

METHOD FOR PREVENTING COLLISION OF TWO MUTUALLY MOVABLE BODIES AND AN APPARATUS INCLUDING AN ARRANGEMENT FOR PREVENTING COLLISION

Johan S. H. Stark, Stockholm, Sweden, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 24, 1983, Ser. No. 469,364
Claims priority, application Sweden, Feb. 24, 1982, 8201149
Int. Cl.[4] B25J *9/00*
U.S. Cl. 364—461 **5 Claims**



1. An improved method to determine the risk of collision for two mutually movable bodies, whose movements are sensed by transducers for continuous monitoring of the position of the bodies during a motion, said method including the steps of:

determining repeatedly the position for the centrum of a number of virtual spherical subvolumes, whose outer circumferences together approximate the outer contour of each body during the motion; and

calculating the distance between the outer circumferences of those subvolumes which represent the outer contour of one of the bodies and the outer circumferences of those subvolumes which represent the outer contour of a second body by determining the centrum positions and the known diameters of the subvolumes; and

comparing each calculated distance with a safety distance; wherein the improvement comprises

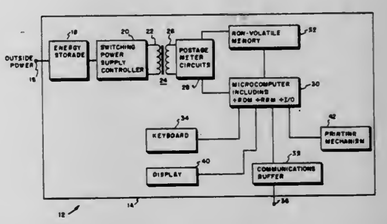
representing the spheres by cubes in the first calculation step thereby taking into account only the projections of the spheres on the axes in an orthogonal coordinate system at the distance determination between the spheres.

4,578,758

ELECTRONIC POSTAGE METER HAVING A REGULATED POWER SUPPLY SYSTEM RESPONSIVE TO A VOLTAGE DEVELOPED IN A TRANSFORMER PRIMARY WINDING CIRCUIT

Arno Muller, Westport, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Jun. 23, 1983, Ser. No. 506,957
Int. Cl.[4] G06F *15/20*
U.S. Cl. 364—466 **10 Claims**



1. In an electronic postage meter having means for printing postage and microcomputer means for monitoring the printing of postage by said printing means and said microcomputer,

means for supplying a source of operating potential external to said secure housing means, a system for energizing said microcomputer means, comprising:

transformer means having a primary winding and a secondary winding, said transformer means mounted within said secure housing means, said secondary winding operatively connected to said microcomputer means;

controlling means coupled to said primary winding and to said external source of operating potential for controlling the voltage applied to said primary winding, said controlling means operable to switch the voltage applied to said primary winding between a first condition wherein said primary winding is energized and a second condition wherein said primary winding is not energized, said controlling means including period varying means operable to vary the period of time said primary winding is energized and the period of time said primary winding is deenergized; said controlling means also including a terminal that is energized by a predetermined source of operating voltage and energizing means coupled to said controlling means for energizing said terminal at a voltage which is greater than said predetermined voltage to allow for proper operation of the controlling means; and

means coupled between said primary winding and said varying means of said controlling means for operating said varying means to vary the period of time said primary winding is energized and the period of time said primary winding is de-energized in response to a voltage established in said primary winding of said transformer during said period of time said transformer is de-energized.

4,578,759

SHEET DISTRIBUTING APPARATUS

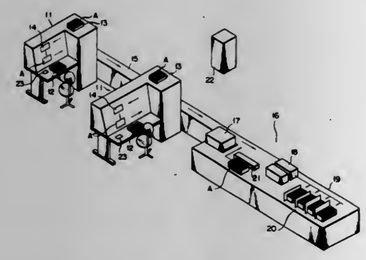
Tetsuo Horii, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation of Ser. No. 422,175, Sep. 23, 1982, abandoned. This application Mar. 29, 1985, Ser. No. 717,482

Claims priority, application Japan, Sep. 29, 1981, 56-154232

Int. Cl.⁴ G06F *15/20;* **G06K** *5/00;* **B07C** *3/18*

U.S. Cl. 364—478 **3 Claims**



1. A method of sorting sheet mail comprising the steps of:

(1) inputting information corresponding to the name of the addressee of a piece of sheet mail;

(2) determining whether said name information identifies only one of a plurality of categories into which said sheet mail is to be sorted;

(3) inputting information corresponding to the street number of said addressee in response to a determination in said determining step (2) that said name identifies more than one of said plurality of categories;

(4) if a street number has been inputted in said inputting step (3), determining whether the combination of the name and street number information identifies only one of said plurality of categories;

(5) inputting information corresponding to a street name in response to a determination in said determining step (4) that the combination of said name and street number information identifies more than one of said plurality of categories;

(6) encoding the address of said addressee in response to said inputted information; and

(7) routing said sheet mail into one of said plurality of categories in response to said encoded address,

wherein said determining steps (2) and (4) and said encoding step (6) each include the step of searching an look-up table for entries corresponding to the inputted information, and wherein:

said look-up table comprises a plurality of respective entries, each of said plurality of entries comprising at least a name field, a name flag, a number address field, a number flag, a block field and a code field, the name flag of any entry being set only when the name field of that entry is the same as the name field of at least another one of said entries, the number address flag of an entry being set only when the name field and the number address field of that entry are the same as the name field and number address field, respectively, of at least another of said entries;

said determining step (2) includes the steps of:

searching said look-up table to locate an entry having a name field corresponding to said inputted name information, and

determining whether the name flag of said located entry is set;

said determining step (4) includes the steps of:

searching said look-up table to locate an entry having a name field and number address field which respectively correspond to said inputted name information and said inputted street number information, and

determining whether said number address flag of said located entry is set; and

said encoding step (6) includes the steps of:

searching said look-up table to locate an entry having a name field, number address field and block field corresponding to the inputted ones of said name information, street number information and street name information of said inputted information, and

extracting the contents of said code field from said located entry.

4,578,760

ARRANGEMENT FOR CONTROLLING AN ELECTRONIC TAXIMETER

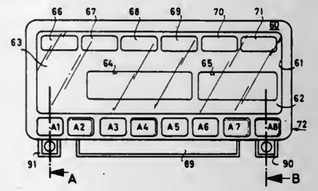
Jürgen Adams, and Hans-Peter Scholl, both of Villingen-Schwenningen, Fed. Rep. of Germany, assignors to Kienzle Apparate GmbH, Villingen-Schwenningen, Fed. Rep. of Germany

Filed Jan. 20, 1983, Ser. No. 459,671

Claims priority, application Fed. Rep. of Germany, Jan. 21, 1982, 82100393

Int. Cl.⁴ G07B *13/04;* **G06F** *15/20*

U.S. Cl. 364—467 **11 Claims**



1. In a system for controlling an electronic taximeter with respect to different switched states by means of keys which provide coded signals to an input circuit by way of a coder matrix, said taximeter having a housing, the improvement comprising:

a key strip provided on said housing, said strip for holding a predetermined number of keys, up to a maximum number of keys;

a number of switches corresponding to the maximum number of keys being provided in said housing;

tariff memory means for storing tariff information;

system memory means for storing system program information; and

key information being stored in the tariff memory means for triggering different key interrogation cycles in the system program by means of which a plurality of functions are assignable to a key when a quantity of keys less than a predetermined number are available and for assigning only one function to a key when the available keys exceed said predetermined number.

4,578,761

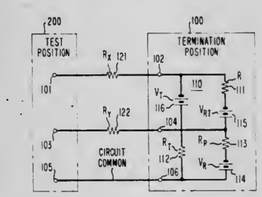
SEPARATING AN EQUIVALENT CIRCUIT INTO COMPONENTS TO DETECT TERMINATING NETWORKS

Michael A. Gray, Parsippany, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 25, 1983, Ser. No. 478,877

Int. Cl.⁴ G06F *11/00*

U.S. Cl. 364—481 **3 Claims**



1. A method for decomposing a derived three-mode equivalent circuit into first and second components, wherein said second component is a delta network from a class of terminations, said method comprising the steps of

apportioning said equivalent circuit into a segment representative of said first component and a delta circuit corresponding to said second component according to a partitioning algorithm, and

comparing each delta network in said class to said delta circuit until either a match occurs within preselected bounds or for a predetermined number of times returning to said step of partitioning.

4,578,762

SELF-CALIBRATING CARBON DIOXIDE ANALYZER

Jacob Y. Wong, Santa Barbara, Calif., assignor to Tri-Med Inc., Bellevue, Wash.

Filed Jul. 1, 1983, Ser. No. 509,920

Int. Cl.⁴ G06F *15/46;* **G01N** *21/26*

U.S. Cl. 364—497 **10 Claims**

1. Optical-mechanical apparatus for a gas analyzer for generating electrical signals for continuously and automatically self-calibrating the electrical output comprising:

(a) a first chopper wheel containing openings occupied by two items of (1) vacuum cell, (2) reference cell, (3) open hole, (4) standard cell;

(b) a second chopper wheel containing openings occupied by the other two items of element "a" above;

(c) means for aligning the openings of the two wheels to define a path;

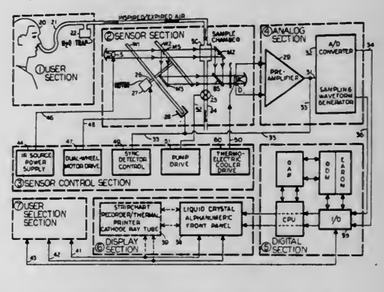
(d) means for rotating the two wheels in synchronism to align selected openings in the two wheels along said path;

(e) a source of radiant energy disposed at one end of said path;

(f) a sample chamber disposed along said path downstream from said wheels;

(g) an electrical transducer detector of radiant energy disposed at the other end of said path to create changes in electrical quantities,

whereby the detector creates values V_S, V_R, V_S', V_R', V_S'', V_R'', V_S^o, and V_R^o, for use in rendering the gas analyzer self-calibrating, and wherein these values are:



V_S: vacuum cell and open hole and sample cell,

V_R: reference cell and open hole and sample cell,

V_S': vacuum cell and standard cell,

V_R': reference cell and standard cell,

V_S'': vacuum cell and open hole,

V_R'': reference cell and open hole,

V_S^o: vacuum cell and standard cell and sample cell,

V_R^o: reference cell and standard cell and sample cell.

4,578,763

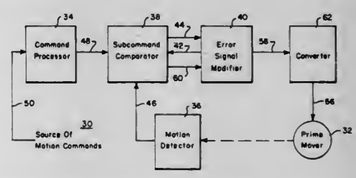
SAMPLED DATA SERVO CONTROL SYSTEM WITH DEADBAND COMPENSATION

Donald H. Jones, Pittsburgh; Spencer W. Allen, Murrysville, and Philip R. Chimes, Pittsburgh, all of Pa., assignors to International Cybernetics Corp., Pittsburgh, Pa.

Filed Aug. 15, 1983, Ser. No. 523,063

Int. Cl.⁴ G05B *19/25*

U.S. Cl. 364—513 **21 Claims**



1. A sampled data system for controlling the motion of an object, said system including means for generating a command representative of the motion desired of said object, comprising;

means for processing said command by generating at least one series of subcommands, each subcommand representing a segment of said desired motion over a time period;

means for detecting at least one motion characteristic of the actual motion of said object and providing a signal representative thereof;

means for comparing at least one of said subcommands to at least one of said signals representative of said actual motion characteristic of the object and generating at least one error signal representative of the variation of a characteristic of the actual motion of the object from the corresponding characteristic of the motion represented by said subcommands;

means for so modifying said error signal that said system exhibits a set of desired performance characteristics, said

modifying means including means for reducing the effect that said error signals have on a motion characteristic of the motion of the object by performing on said error signals a function that includes a division of said error signals by a predetermined number accomplished in integer fashion, said reducing means so increasing the values of some of said error signals that the average value of said divided error signals approximates the value each said divided error signal would have had if said division had been performed in floating point fashion; and

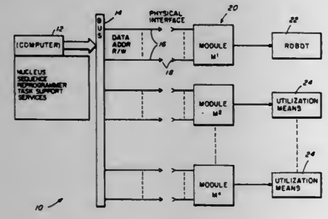
means for converting a said modified error signal to a signal suitable for application to a prime mover which causes said object to exhibit said desired motion.

4,578,764

SELF-CONFIGURING ROBOTIC SYSTEM AND METHOD

Burleigh M. Hutchins, Hopkinton; William J. Buote, Natick, and Lawrence J. Finn, Westborough, all of Mass., assignors to Zymark Corporation, Hopkinton, Mass.

Filed Mar. 7, 1983, Ser. No. 472,642
Int. Cl.⁴ G06F *9/00*
U.S. Cl. 364—513 **10 Claims**



1. A robotic system comprising:

a robotic device means;

a first module means for providing all of the intelligence for said robotic device means, said module means being electrically connected to said robotic device means;

computer means;

a first physical interface means for providing a plurality of separable electrical connections between said computer means and said first module means so that all of the intelligence for the robotic device means is located on the robotic device means side of the physical interface means;

means for performing a defined task;

a second, different, module means for providing all of the intelligence for said defined task performing means, said module means being electrically connected to said defined task performing means; and,

a second physical interface means for providing a plurality of separable electrical connections between said computer means and said second module means so that all of the intelligence for the defined task performing means is located on the defined task performing means side of the physical interface means.

4,578,765

IMAGE COMPARISON SYSTEMS

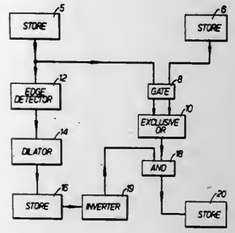
John C. Barker, Oakington, England, assignor to Cambridge Instruments Limited, Cambridge, England

Filed Oct. 18, 1983, Ser. No. 543,037
Claims priority, application United Kingdom, Nov. 2, 1982, 8231267
Int. Cl.⁴ G06K *9/00*
U.S. Cl. 364—514 **7 Claims**

1. An image comparison system for carrying out a comparison between a first electrical signal set and a second electrical signal set which represent respective and nominally identical images, comprising

means responsive to the first signal set for producing therefrom a third signal set representing the peripheral edge region of the image corresponding to the first signal set,

signal processing means responsive to the third signal set for producing therefrom a modified third signal set representing a dilated version of the said peripheral edge region,



first signal comparison means for comparing the first and second signal sets whereby to produce a difference signal set representing the signal differences therebetween, and

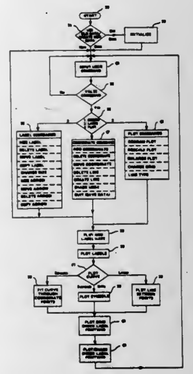
second signal comparison means for comparing the difference signal set with te modified third signal set whereby to tend to remove from the difference signal set any difference signals corresponding to image differences lying within the said dilated peripheral edge region.

4,578,766

COMPUTER-AIDED PROCESS FOR GENERATING CAMERA-READY GRAPHICAL ARTWORK

Michael J. Caddy, Doylestown, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 1, 1983, Ser. No. 528,710
Int. Cl.⁴ G06F *15/06*; H04N *7/00*
U.S. Cl. 364—521 **5 Claims**



1. A process for generating a camera-ready hardcopy of a graphical plot of certain physical quantities or existing plots using a general purpose digital computer, a graphics display terminal having an alpha-numeric keyboard and a cursor control, and an associated printer, comprising in sequence the steps of:

storing in the computer an interactive graphics code and coordinate data in tabular form associated with the physical quantities or existing plots, said code being identified by interactive command repetition and feedback for deletion, addition and transition of lines, points and labels while processing the stored coordinate data;

plotting on the screen the stored coordinate data in a format according to said code;

generating on the screen lines between the plotted coordinate data according to said code;

revising the coordinate data and the lines plotted on the screen by manipulating the cursor and keyboard in accordance with said code, said revising step further including

adding coordinate data to create new lines,

deleting coordinate data to remove lines, and

moving coordinate data to change the position of existing lines; and

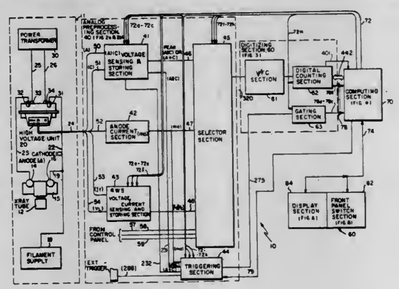
printing a hardcopy of the revised plot on the printer.

4,578,767

X-RAY SYSTEM TESTER

Jonathan S. Shapiro, Cos Cob, Conn., assignor to Raytheon Company, Lexington, Mass.

Filed Oct. 2, 1981, Ser. No. 307,811
Int. Cl.⁴ G06F *15/20*; H05G *1/26*
U.S. Cl. 364—550 **14 Claims**



1. Apparatus for measuring a plurality of operating voltages and currents of an X-ray system comprising:

means for providing a first plurality of output analog signals, each one being representative of a corresponding one of the plurality of operating voltages and currents of the X-ray system;

means for producing a second plurality of output analog signals, each one corresponding to an operator selected signal;

means responsive to a control signal for coupling one of the first plurality of output analog signals and the second plurality of output analog signals to an output thereof selectively in accordance with the control signal;

a voltage to frequency converter coupled to the output of the selector means to convert the selected one of the input analog signals into a train of pulses having a frequency proportional to the value of the selected parameter; and

means, fed by the train of pulses for calculating the value of the selected one of the operating parameters and operator selected processing signals in response to the frequency of the pulse train.

4,578,768

COMPUTER AIDED COORDINATE DIGITIZING SYSTEM

Marsh V. Racine, 4069 Alameda Dr., San Diego, Calif. 92103

Filed Apr. 6, 1984, Ser. No. 597,132
Int. Cl.⁴ G01B *17/00*; G06F *15/20*
U.S. Cl. 364—560 **8 Claims**

8. A method of generating an estimate of the cost of construction of a building represented by a plan comprising a series of construction drawings, comprising the steps of:

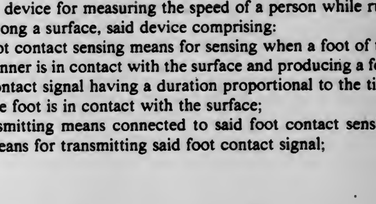
associating a series of pre-selected areas of a flat surface with a series of control functions for operating a computer;

placing a control device having a series of control areas each corresponding to a respective one of the control functions on the flat surface such that each control area coincides with the pre-selected area of the flat surface associated with that control function;

placing a series of construction drawings representing a building plan sequentially on the flat surface;

positioning a pointer device at a series of selected positions on each drawing and at selected positions on said control device;

monitoring the pointer device with a sensing device linked to a computer;



controlling the sensor device to generate a series of X-Y co-ordinate signals corresponding to the positioning of the pointer device on the drawing and to generate control signals in response to the positioning of the pointer device on selected control areas of the control device;

providing the generated series of X-Y co-ordinate signals as data input to the computer; and

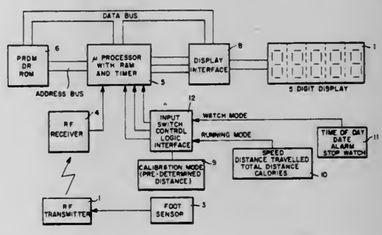
controlling the computer in response to program instructions stored in the memory of the computer and control signals received from the control device to utilize the data input from the sensor device to calculate a series of desired parameters and to generate from the calculated parameters an estimate of the cost of construction of a building represented by the construction drawings.

4,578,769

DEVICE FOR DETERMINING THE SPEED, DISTANCE TRAVERSED, ELAPSED TIME AND CALORIES EXPENDED BY A PERSON WHILE RUNNING

Edward C. Frederick, Kingston, N.H., assignor to Nike, Inc., Beaverton, Oreg.

Filed Feb. 9, 1983, Ser. No. 465,274
Int. Cl.⁴ G01C *22/00*
U.S. Cl. 364—565 **25 Claims**



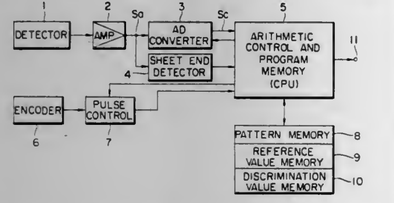
1. A device for measuring the speed of a person while running along a surface, said device comprising:

a foot contact sensing means for sensing when a foot of the runner is in contact with the surface and producing a foot contact signal having a duration proportional to the time the foot is in contact with the surface;

transmitting means connected to said foot contact sensing means for transmitting said foot contact signal;

receiving means for receiving said foot contact signal transmitted by said transmitting means;
processing means connected to said receiving means for calculating, solely from said foot contact signal, an output signal representing the speed of the runner; and
display means connected to the output of said processing means for displaying the speed of the runner in accordance with said output speed signal.

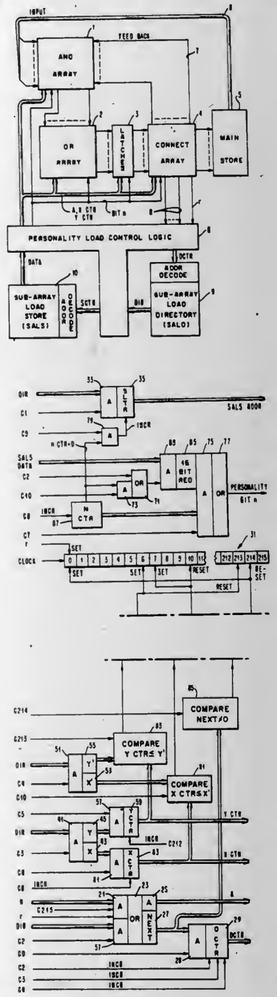
4,578,770
METHOD OF DISCRIMINATING SHEET
Tsuneyoshi Mitani, Kawasaki, Japan, assignor to Musashi Engineering Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 10, 1983, Ser. No. 502,525
Claims priority, application Japan, Aug. 30, 1983, 58-149212
Int. Cl.⁴ G01C *25/00;* **G01N** *21/88*
U.S. Cl. 364—571 **3 Claims**



1. In a method of dicriminating a sheet comprising passing one-by-one a plurality of sheets of the same type before at least one photodetector, said photodetector producing printing pattern signals or respective sheets thus passed before the photodetector, and determining the defect of the sheet by comparing said printing pattern signals with stored printing pattern signal, wherein the improvement comprises:
generating pulses while each sheet is passing before said photodetector and counting the number of pulses for determining the length of each sheet;
calculating and storing, in a first, reference storage means, a first comparison and discrimination value based on counted pulses and the printing pattern signals produced by said photodetector for one of said sheets;
calculating and storing, in a second storage means, a second comparison and discrimination value based on counted pulses and the printing pattern signals produced by said photodetector for the next succeeding sheet which passes before said photodetector;
comparing said second comparison and discrimination value with said first comparison and discrimination value; and
when the second comparison and discrimination value is normal as determined by comparing said second comparison and discrimination value with said first comparison and discrimination value, erasing the first comparison and discrimination value from said first, reference storage means and transferring said second comparison and discrimination value from said second storage means to said first, reference storage means;
whereby the comparison and discrimination value of a preceding sheet in said first, reference storage means is replaced by the comparison and discrimination value for the next succeeding normal sheet and each succeeding sheet passing before the photodetector is measured for normalcy by the comparison and discrimination value of said preceding sheet.

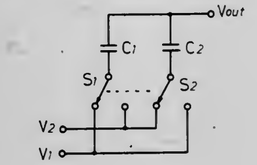
4,578,771
DYNAMICALLY REPROGRAMMABLE ARRAY LOGIC SYSTEM
Almerin C. O'Hara, Jr., Kingston, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 29, 1980, Ser. No. 221,149
Int. Cl.⁴ G11C *11/40*
U.S. Cl. 364—716 **7 Claims**

1. In a system including a reprogrammable logic array of the type having an AND array and an OR array for performing a sequence of complex logical functions the improvement comprising;
a load store for storing the logic personalities respectively representative of a plurality of functions to be executed by said reprogrammable logic array;
accessing means responsive to a load command for accessing the logic personality of a function stored in said load store;
addressing means for addressing said reprogrammable logic array; and



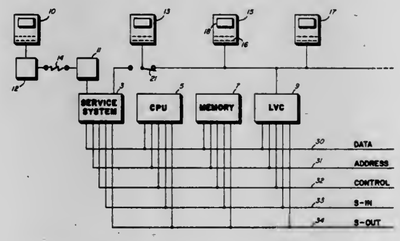
transfer means connected to said load store and connected to said reprogrammable logic array for reading said accessed logic personality in said load store and writing said accessed logic personality into said reprogrammable logic array;
whereby a reprogrammable logic array which has a first personality for executing a first function is dynamically repersonalized with a second personality for executing a second function so as to enable the reprogrammable logic array to perform a transaction requiring both functions without requiring that the reprogrammable logic array be large enough to store the personality for all of the functions that it may have to execute.

4,578,772
VOLTAGE DIVIDING CIRCUIT
Shigeru Fujii, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan
Filed Sep. 14, 1982, Ser. No. 418,008
Claims priority, application Japan, Sep. 18, 1981, 56-147292; Dec. 29, 1981, 56-213402
Int. Cl.⁴ H02M *3/06*
U.S. Cl. 364—850 **11 Claims**



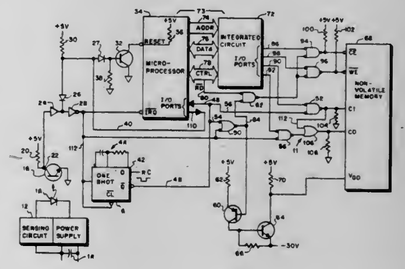
1. A voltage dividing circuit, comprising:
first power source means for providing a first voltage;
second power source means for providing a second voltage;
an output terminal;
a plurality of capacitance elements of substantially the same capacitance each operatively and continuously connected to the output terminal; and
switching means, operatively connected to each of said capacitance elements, individually, and to said first and second power source means, for alternately connecting said capacitance elements to said first power source means and said second power source means using simultaneous connection changes, whereby an output voltage, generated by dividing the first and second voltages into fractions by means of the capacitance elements, is generated at the output terminal as an average of periods during which each of said capacitance elements is connected to one of said first power source means and said second power source means.

4,578,773
CIRCUIT BOARD STATUS DETECTION SYSTEM
Anil I. Desai, Saratoga, and Eric C. Westerfeld, Milpitas, both of Calif., assignors to Four-Phase Systems, Inc., Cupertino, Calif.
Filed Sep. 27, 1983, Ser. No. 536,914
Int. Cl.⁴ G06F *11/26, 11/32*
U.S. Cl. 364—900 **1 Claim**



1. An electronic system comprising:
bus means comprising means for conveying information, including address, data, and control information;
at least one circuit board coupled to said bus means, said circuit board comprising:
electronic circuitry for performing a predetermined function;
means for uniquely identifying said circuit board, said identifying means comprising first and second programmable digital switch means for encoding first and second digital numbers, respectively, said first digital number uniquely identifying the function of said circuitry, and said second digital number uniquely identifying a manufacturing history for said circuit borad;
status signal generating means responsive to said circuitry for generating a status signal in response to the occurrence of at least one predetermined type of condition existing in said circuitry;
status signal storage means responsive to said status signal generating means for storing said status signal; and
reset means coupled to said circuitry for initiating a reset operation of said circuitry; and
a processing unit coupled to said bus means, said processing unit comprising:
means for polling said circuit board, said polling means comprising means for reading said first and second digital numbers and means for determining whether said status signal is stored in said status signal storage means; and
means for generating a command to said reset means, causing a reset operation of said circuitry to be initiated.

4,578,774
SYSTEM FOR LIMITING ACCESS TO NON-VOLATILE MEMORY IN ELECTRONIC POSTAGE METERS
Arno Muller, Westport, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.
Filed Jul. 18, 1983, Ser. No. 514,726
Int. Cl.⁴ G06F *12/14, 13/12*
U.S. Cl. 364—900 **21 Claims**



21. A system for limiting access to a non-volatile memory (NVM) of an electronic postage meter for an erasing and a writing data therein to predetermined periods of time after a power up cycle and during a power down cycle of the meter the NVM having data therein after the power up cycle and during the power down cycle, the NVM having an enable terminal and a plurality of remaining terminals, comprising:
signal means for providing an output signal in response to a power up voltage condition;
pulse supplying means electrically connected to said signal means for providing an output pulse having a predetermined width in accordance with presence of an output signal from said signal means, said pusle supplying means including a one-shot multivibrator and circuit means electrically coupled to thereto establish the pulse width of the output pulse;
a microcomputer means electrically connected to said pulse

supplying means and said signal means for receiving signals therefrom;

gate means interposed between said microcomputer means and the non-volatile memory for enabling the non-volatile memory upon power up of the electronic postage meter when the output pulse is provided from said pulse supplying means to allow desired data to be erased from the non-volatile memory by said microcomputer and for enabling the non-volatile memory during power down of the electronic postage meter when an output signal is removed from said signal means to allow desired data to be written into the non-volatile memory for a predetermined period of time in accordance with the output signal being provided from said microcomputer;

switching means responding to the output pulse for applying a bias voltage to the NVM for enabling the erasing of the desired data therefrom during the width of the output pulse;

additional gate means interposed between said pulse supplying means and said gate means for activating said gate means in response to the output pulse;

means for biasing the remaining terminals of the NVM during the normal postage meter operation to preclude the writing and erasing of data therein;

interrupt means electrically coupled to said signal means and said micromputer for supplying an interrupt signal to said microcomputer in response to the power up output signal being removed from said signal means; and

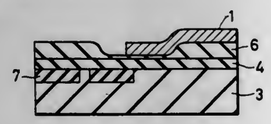
means coupled to said signal means for supplying a signal to activate said additional gate means when the power up output signal is removed from said signal means indicating a beginning of the power down cycle.

4,578,775

MAGNETIC BUBBLE MEMORY DEVICE

Ryo Suzuki, Kodaira; Yutaka Sugita, Tokorozawa; Teruaki Takeuchi, Kokubunji; Naoki Kodama; Masatoshi Takeshita, both of Hachioji, and Hiroshi Umezaki, Koganei, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 16, 1983, Ser. No. 505,379
Claims priority, application Japan, Jun. 16, 1982, 57-102060
Int. Cl.⁴ G11C *19/08*
U.S. Cl. 365—36 **16 Claims**



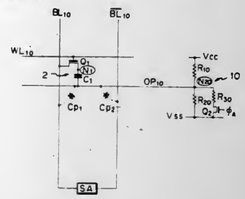
1. A magnetic bubble memory device characterized in that said device is equipped with a major line or major loop, and with a minor loop of a magnetic bubble propagation track formed by ion implantation over a desired region of a magnetic film capable of retaining magnetic bubbles, at least part of the junction between said major line or said major loop and said minor loop consisting of a soft magnetic material film, and the thickness of an insulating film at said junction is smaller than that of said insulating film at the rest of the device, whereby a drop in the propagation margin at the junction can be prevented.

4,578,776

DYNAMIC SEMICONDUCTOR MEMORY DEVICE

Yoshihiro Takemae, Tokyo; Tomio Nakano, Kawasaki, and Kimiaki Sato, Tokyo, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 28, 1983, Ser. No. 555,891
Claims priority, application Japan, Dec. 1, 1982, 57-211146
Int. Cl.⁴ G11C *11/24*
U.S. Cl. 365—149 **16 Claims**



1. A dynamic semiconductor memory device, operatively connectable to a power supply potential, comprising:

a word line;

a bit line;

a one-transistor one-capacitor type dynamic memory cell, comprising:

a single transistor having a gate electrode operatively connected to said word line, a first electrode operatively connected to said bit line and a second electrode; and

a capacitor having a first electrode operatively connected to the second electrode of said transistor and a second electrode; and

a voltage dividing circuit, operatively connectable to the power supply potential, comprising:

a potential providing terminal, operatively connected to the second electrode of said capacitor, for providing an intermediate potential between the power supply potential and ground; and

a potential switching circuit, operatively connected to said potential providing terminal, for changing the intermediate potential in synchronism with the operation of said dynamic semiconductor memory device.

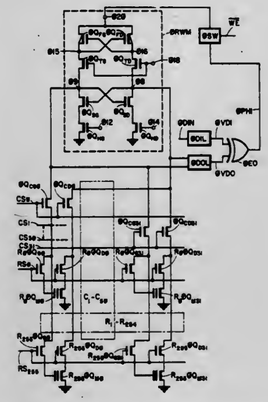
4,578,777

ONE STEP WRITE CIRCUIT ARRANGEMENT FOR EEPROMS

Sheng Fang, E. Palo Alto, and Kameswara K. Rao, Santa Clara, both of Calif., assignors to Signetics Corporation, Sunnyvale, Calif.

Filed Jul. 11, 1983, Ser. No. 512,858
Int. Cl.⁴ G11C *11/34*
U.S. Cl. 365—184 **28 Claims**

1. In a memory system of the EEPROM type which includes a plurality of memory cells arranged in rows and columns, each memory cell capable of storing one bit of a data word and selecting means for simultaneously selecting more than one cell to enable information applied to said system to be written into said selected cells during a writing cycle and to be read from said cells during a reading cycle, said information being stored in said cells in either a first state or a second state, the improvement comprising writing means operating in response to the existence of a difference between the information stored in each selected cell and the information to be stored therein during a writing cycle and simultaneously writing information into only those selected cells for which a difference exists, said writing being executed regardless of whether such difference indicates a change from said first state to said second state or vice versa, said data words comprising bytes memory, each byte being associated with a separate plurality of memory cells and said writing means including a separate writing circuit associated with each cell of a byte, each writing circuit including a flip-flop circuit which is in a first state at the start of a writing operation to conduct current in a first direction and write information in said first state into an associated cell and



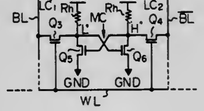
in a second state at the start of a writing operation to conduct current in a second direction and write information in said second state into an associated cell.

4,578,778

SEMICONDUCTOR MEMORY WITH LOAD CONTROLLING FEEDBACK MEANS TO REDUCE POWER CONSUMPTION

Keizo Aoyama, Yamato, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 1, 1982, Ser. No. 413,752
Claims priority, application Japan, Sep. 1, 1981, 56-136066; Sep. 1, 1981, 56-136067; Sep. 1, 1981, 56-136068
Int. Cl.⁴ G11C *7/00, 11/40*
U.S. Cl. 365—190 **16 Claims**



1. A semiconductor memory circuit comprising:

first and second bit lines each having a high or low level logic state;

a memory cell including a flip-flop circuit, said flip-flop circuit having first and second pull down transistors operatively connected to said first and second bit lines, respectively;

first and second load transistors, operatively connected between a power source and said first and second bit lines, respectively, said first and second load transistors each having a control gate and each having a large g_m state and a small g_m state;

a word line, operatively connected to said memory cell, for accessing said memory cell; and

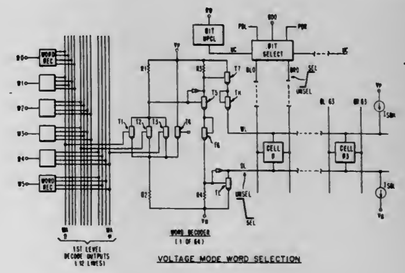
first and second feedback means, operatively connected between said first and second bit lines and said control gates of said first and second load transistors, respectively, for controlling one of said load transistors connected to said bit line having the lower level, to have the small g_m state, and for controlling the other one of said load transistors connected to said bit line having the higher level, to have the large g_m state.

4,578,779

VOLTAGE MODE OPERATION SCHEME FOR BIPOLAR ARRAYS

Yuen H. Chan, and James R. Struk, both of Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 25, 1984, Ser. No. 624,486
Int. Cl.⁴ G11C *7/00*
U.S. Cl. 365—190 **23 Claims**



2. An improved circuit for high-speed word addressing of an m×n array of memory cells, where m and n are positive integers, said array including:

m pairs of bit lines, each pair of bit lines being connected to n discrete ones of said m×n memory cells;

n pairs of word lines each pair of word lines having an upper word line and a lower word line, each pair of word lines being connected to m discrete ones of said m×n memory cells; and,

the improvement comprising n push-pull transistor pairs, each of said n push-pull transistor pairs including an emitter follower transistor whose emitter is coupled to the upper word line, and an open collector transistor whose collector is coupled to the lower word line of a discrete one of said n word line pairs.

4,578,780

DUAL PORT TYPE SEMICONDUCTOR MEMORY

Fumio Baba, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 27, 1983, Ser. No. 536,321
Claims priority, application Japan, Sep. 30, 1982, 57-169551
Int. Cl.⁴ G11C *7/00*
U.S. Cl. 365—190 **9 Claims**

7. A dual port type semiconductor memory including a dynamic random access memory, comprising:

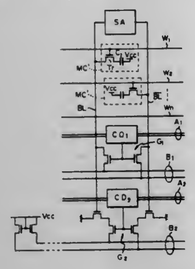
word lines;

pairs of bit lines intersecting said word lines;

dynamic memory cells respectively, operatively connected at the intersections of said word lines and one of the bit lines of each of said pairs of bit lines;

first and second column decoders, respectively, operatively connected to said pairs of bit lines;

a writing-reading out bus operatively connected to said first column decoders; and



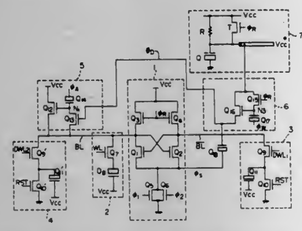
a reading out bus operatively connected to said second column decoders.

4,578,781

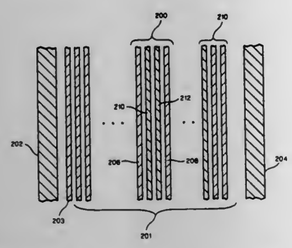
MIS TRANSISTOR CIRCUIT

Junji Ogawa, Yokohama; Tomio Nakano; Masao Nakano, both of Kawasaki; Norihisa Tsuge, Kamakura, and Takashi Horii, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 31, 1982, Ser. No. 413,405
Claims priority, application Japan, Aug. 31, 1981, 56-135585
Int. Cl.⁴ G11C *7/00*
U.S. Cl. 365—203 **15 Claims**



calibration means for generating said offset signal as a function of the distance between two spaced-apart calibration



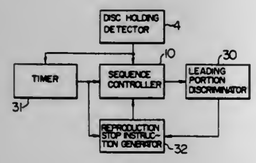
data tracks that have been previously written on the surface of said record carrier.

4,578,787

RECORD DISC REPRODUCING APPARATUS

Keizo Shimizu; Shimpei Otsu, both of Yokohama; Toshio Fujimura; Yoshisada Taniguchi, both of Fujisawa, and Hayashi Nagami, Yamato, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 5, 1982, Ser. No. 432,803
Claims priority, application Japan, Oct. 5, 1981, 56-157501
Int. Cl.⁴ G11B *19/10, 17/04, 1/00, 25/04*
U.S. Cl. 369—77.2 **5 Claims**



1. An apparatus for reproducing information from a record disc, the apparatus having an operational state in which the disc is held without rotation when the disc has been inserted into or has been prepared for withdrawal from the apparatus as well as a reproduction state in which signals recorded on the disc are picked up from the disc when the disc is on a rotating turntable of the apparatus, the apparatus comprising means for measuring the time of the operational state in which the disc is held without rotation, means for comparing the measured time with a predetermined time value, means for producing a first control signal for setting the disc on the turntable when the measured time becomes equal to the predetermined time value, and means for producing a second control signal for rotation of the turntable, thereby suppressing deformation of the disc.

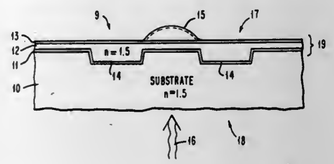
4,578,788

HIGH PERFORMANCE OPTICAL STORAGE MEDIUM WITH SEPARATE MECHANICAL SERVO TRACKS EMBEDDED WITHIN THE MEDIUM

Kie Y. Ahn, Chappaqua; Thomas H. DiStefano, Bronxville, and Victor B. Jipson, Mahopac, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 2, 1983, Ser. No. 500,513
Int. Cl.⁴ G11B *7/24*
U.S. Cl. 369—275 **14 Claims**

1. An optical storage medium comprising
an optically transparent substrate carrying a thin film structure comprising a data storage material adapted to form deformations representing data formed in said thin film structure of data storage material,
said medium including a servo track formed at an interface between said substrate and said structure,
said servo track comprising internal mechanical undulations of the surface of said interface,
said surface of said interface being coated with a first thin film having a high optical index of refraction and having a thickness on the order of less than or equal to 30 nm,



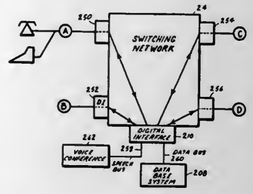
said mechanical undulations being substantially absent from said surface of said thin film structure in which said deformations are formed,
whereby said servo data can be read through said substrate without said servo data substantially affecting the optical image of said deformations on the upper surface of said thin film structure.

4,578,789

SIMULTANEOUS VOICE AND DATA COMMUNICATION AND DATA BASE ACCESS IN A SWITCHING SYSTEM USING A TONE BUS OR BROADCAST MODE

Francisco A. Middleton, Sandy Hook; Nicholas J. R. Carter, and Santanu Das, both of Shelton, all of Conn., assignors to ITT Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 445,625, Nov. 30, 1982, abandoned, Ser. No. 445,626, Nov. 30, 1982, Pat. No. 4,488,287, and Ser. No. 433,335, Oct. 17, 1982, abandoned. This application Mar. 30, 1984, Ser. No. 595,093
Int. Cl.⁴ H04Q *11/04;* H04J *3/12*
U.S. Cl. 370—58 **10 Claims**



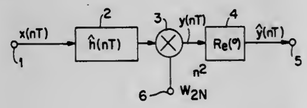
1. In a combined telecommunications and data communication system for combining and splitting speech and data for transmission through a digital switching network between two or more ports, said system including, digital interface means coupled to said ports for combining digitally encoded speech and data words from speech and data buses respectively for delivery to said ports in the same channel for bidirectional transmission between said ports, and for splitting speech and data received in the same channel at a port for transmission on speech and data buses, a digital switching network coupled to said digital interface means for switching and transmitting digitally encoded speech and data simultaneously in the same channels between said ports, and a tone bus coupled to said digital interface means for providing data to any port, in combination therewith apparatus for receiving and transmitting data to said ports, comprising:
data base means, coupled to a predetermined port of said switching network to allow transmitted data emanating from any connected port to be received by said data base and for providing at an output a data stream for other ports, said data stream from said data base means coupled to said tone bus for transmission of said data stream to said other ports, whereby data received by said data base and data contained in said data base may be broadcast to the other ports.

4,578,790

SYSTEM AND EQUIPMENT FOR SINGLE SIDE BAND MULTIPLEXING THROUGH DIGITAL PROCESSING

Francesco Molo, Milan; Silvio Cucchi, Gaggiano, and Gianfranco Cariolaro, Feriole Di Teolo, all of Italy, assignors to Telettra-Telefonia Elettronica e Radio S.p.A. Corso Buenos Aires, Milan, Italy

Filed Jun. 9, 1983, Ser. No. 502,710
Int. Cl.⁴ H04J *4/00*
U.S. Cl. 370—50 **9 Claims**



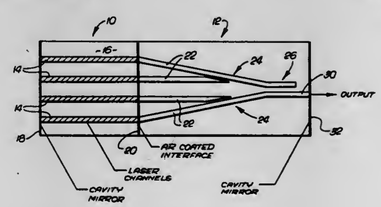
1. A system for single sideband frequency muliplexing several input signals which are in the form of a single time multiplexed signal, said system comprising:
a complex time invariant filter for filtering said time multiplexed signal to provide a filtered signal, said filter having an impulse response given by $h(nT)=h(nT)W_{2N}^{-n2}$ wherein W_{2N} is equal to $\exp(j2\pi/2N)$, j being the imaginary unit, N an even integer equal to the number of signals to be frequency multiplexed, T the time interval between samples of the time multiplexed signal, n takes all integer values representing discrete time instants and h(nT) is the impulse response of a complex filter with a passband starting from zero frequency and equal to the band assigned to each input signal in the frequency multiplexed signal;
a modulator for modulating said filtered signal with a complex periodic carrier having time samples given by W_{2N}^{n2}, to provide a modulated signal having real and imaginary components, said real component being the desired frequency multiplexed signal.

4,578,791

HIGH-POWER INJECTION LASER DIODE STRUCTURE

Bor-Uei Chen, Los Angeles, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Dec. 20, 1982, Ser. No. 450,831
Int. Cl.⁴ H01S *3/05*
U.S. Cl. 372—50 **3 Claims**



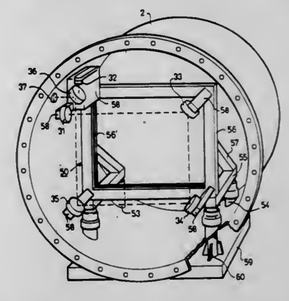
1. A semiconductor device comprising:
a semiconductor substrate;
a plurality of semiconductor junction laser diodes having laser cavities formed in a spaced relationship on said substrate;
an optical star coupler having a single output and a plurality of inputs coupled to receive the respective outputs of said laser diodes, said star coupler including a plurality of input waveguides that converge in pairs in a non-parallel fashion at coupling regions, a plurality of intermediate waveguides extending from coupling regions, and at least one additional coupling region to combine the intermediate waveguides into a single output waveguide;
wherein said optical star coupler serves both to combine the outputs of said laser diodes and to couple said laser cavities together for improved coherence and divergence properties, providing a single output with a near-circular cross section and a practically planar wavefront;
and wherein
said laser cavities are mirrored at one end only and said star coupler is mirrored at its output end to provide an integrated laser chamber including said laser cavities and said star coupler, and
the path lengths measured from the mirrored end of each laser cavity to the mirrored end of the star coupler output, are approximately the same.

4,578,792

HIGH-POWER LASERS

Ethan D. Hoag, East Boston, Mass., assignor to Metalworking Lasers International Ltd., Neve Sharett, Israel

Filed Sep. 30, 1982, Ser. No. 431,014
Int. Cl.⁴ H01S *3/22*
U.S. Cl. 372—58 **20 Claims**



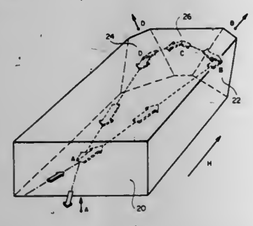
1. A high-power flowing-gas laser comprising: an outer housing having a sealed wall capable of withstanding an internal pressure different from atmosphere; a housing mounting for mounting the housing to a support; an optical system including a laser channel within said housing; an impeller within said housing for producing a flow of gas through said laser channel; and a motor drive for driving said impeller; characterized in that said laser further includes an independent mounting for mounting said optical system to said support independently of said housing mounting such as to isolate the optical system from the vibrational disturbances of said impeller and said motor drive; said independent mounting for the optical system including a plurality of legs each including a sealed lead-through leading the respective leg through the housing wall; said sealed lead-through for each leg comprising an elastomeric boot between the respective leg and said housing wall, the outer face of each boot being disposed within the interior of said housing and the latter being subject to a sub-atmospheric pressure, the inner face of each boot being disposed exteriorly of said housing and being subject to atmospheric pressure thereby preventing the boot from buckling.

4,578,793

SOLID-STATE NON-PLANAR INTERNALLY REFLECTING RING LASER

Thomas J. Kane, Redwood City, and Robert L. Byer, Stanford, both of Calif., assignors to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Filed Jul. 13, 1984, Ser. No. 630,772
Int. Cl.[4] H01S *3/083*
U.S. Cl. 372—94 **28 Claims**



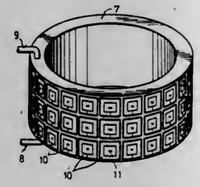
1. A non-planar laser resonator, comprising a single piece of solid-state laser material, reflecting means internal to said laser materials for defining a non-planar ray path in said resonator, at least two reflections taking place at internal surfaces of said piece of solid-state laser material said surfaces being oriented to change the plane of incidence of the propagating ray to produce said non-planar ray path.

4,578,794

METALLURGICAL VESSEL

Walter Cadek, Graz, Austria, assignor to Vereinigte Edestahlwerke Aktiengesellschaft (VEW), Vienna, Austria

Filed May 14, 1984, Ser. No. 610,120
Claims priority, application Austria, Jun. 1, 1983, 2004/83
Int. Cl.[4] H05B *3/60*; F27D *3/00, 9/00*
U.S. Cl. 373—42 **34 Claims**



1. A metallurgical vessel for high-melting alloys, expecially alloys formed on the basis of nickel, steel or the like, comprising:

a continuous wall;

a bottom plate cooperating with said continuous wall;

means for supplying electric current to the vessel formed by said continuous wall and said bottom plate;

said continuous wall and said bottom plate holding molten metal for at least partial solidification under the action of said electric current;

a plurality of solenoids for generating a predetermined electromagnetic field to cause movement of the molten material during solidifcation thereof and to compensate for magnetic fields which extend transverse to the longitudinal axis of the metallurgical vessel and arranged about the vessel formed by said continuous wall and said bottom plate;

an electric power supply operatively associated with said plurality of solenoids in order to supply electric power to each one thereof independently of the others;

a plurality of magnetic measuring sensors arranged about the vessel formed by said continuous wall and said bottom plate; and

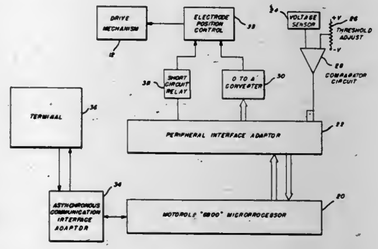
said magnetic measuring sensors controlling said electric power supply in order to generate said predetermined electromagnetic field by means of said plurality of solenoids.

4,578,795

DROP SHORT CONTROL OF ELECTRODE GAP

Robert W. Fisher; James P. Maroone; Donald W. Tipping, all of Albuquerque, and Frank J. Zanner, Sandia Park, all of N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Dec. 28, 1982, Ser. No. 453,977
Int. Cl.[4] H05B *7/148*
U.S. Cl. 373—70 **8 Claims**



1. A process of controlling the position of a consumable electrode in a consumable electrode furnace having an arc struck between said consumable electrode and a molten pool of material, said process comprising:

monitoring the voltage across said arc to produce a monitored voltage signal;

detecting the occurrence of drop shorts by comparing said monitored voltage signal to a drop short detection threshold signal and producing a drop short signal;

determining the average period between drop shorts from said drop short signal;

determining the actual electrode gap by non-invasive means using said average period and a drop short period electrode gap model slope and intercept;

comparing said actual electrode gap with a desired electrode gap value and controlling the position of said consumable electrode based upon said comparison.

4,578,796

PROGRAMMABLE MULTIPLE TYPE DATA SET

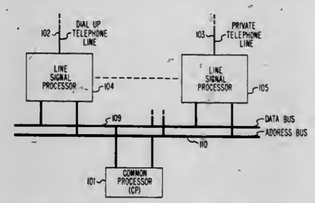
Salomi T. Charalambous; Mark P. Horvath, both of Lincroft, N.J.; Cathy P. House, Alden, N.Y.; Jeffrey A. Iapicco, Lincroft, N.J.; Paul D. Lue, Freehold, N.J., and Shiv P. Verma, Cedar Knoll, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill and AT&T Information Systems Inc., Holmdel, both of, N.J.

Filed Nov. 3, 1983, Ser. No. 548,340
Int. Cl.[4] H04B *1/38*; H04L *5/16, 27/10, 27/18*
U.S. Cl. 375—8 **9 Claims**

1. A data modem comprising:

signal processing means responsive to selected ones of a plurality of sets of instructions and to signals applied to said signal processing means for executing corresponding ones of a plurality of signal converting algorithms appropriate for alternative ones of data modem types to process said applied signals, digital processing means responsive to an external signal source designating individual ones of the data modem types for executing various ones of a plurality of communication line control algorithms, and

means responsive to the execution of the communication line control algorithms for selecting the instruction sets corresponding to the signal converting algorithms appropriate for the designated data modem types.

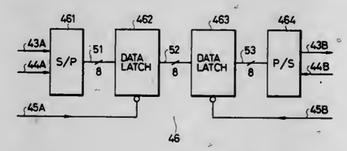


4,578,797

ASYNCHRONOUS CONNECTING DEVICE

Takane Satoh, and Yoichi Tan, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jul. 14, 1983, Ser. No. 513,584
Claims priority, application Japan, Jul. 14, 1982, 57-121228
Int. Cl.[4] H04B *14/04*
U.S. Cl. 375—25 **8 Claims**



1. In a communications system of the type wherein a digital signal is transmitted along a first path with a first clock rate and along a second path with a second clock rate asynchronous with said first clock rate, an asynchronous connecting device for coupling said digital signal between said first and second paths, said connecting device comprising:

first sampling means for receiving said digital signal from said first path and sampling said digital signal at a first sampling rate synchronized with said first clock rate; wherein said first sampling means comprises a serial-to-parallel converter for receiving said digital signal from said first path and converting said digital signal into word units, and a first latch circuit for receiving and latching said word units in response to a clock signal at said first sampling rate; and

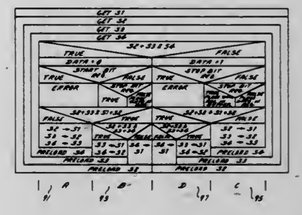
second sampling means for receiving the output of said first sampling means and sampling said output at a second sampling rate synchronized with said second clock rate; wherein said second sampling means comprises a second latch circuit for receiving and latching the output of said first latch circuit in response to a second sampling signal at said second sampling rate, and a parallel-to-serial converter for converting the output of said second latch circuit into a serial digital signal having said second clock rate.

4,578,798

METHOD FOR COMMUNICATING BINARY DATA USING MODIFIED FREQUENCY SHIFT KEYING TECHNIQUES

August A. Divjak, Jr., Waukesha, and Thomas C. Holdorf, Milwaukee, both of Wis., assignors to Johnson Service Company, Milwaukee, Wis.

Filed Mar. 15, 1984, Ser. No. 589,764
Int. Cl.[4] H04L *27/10*; H03C *3/00*
U.S. Cl. 375—45 **2 Claims**



1. A method for communicating binary data using modified frequency shift keying techniques and including the steps of:

selecting a first bit count representative of a first untranslated frequency denoting a data signal at a first logic state;

selecting a second bit count representative of a second untranslated frequency denoting a data signal at a second logic state;

computing a means bit count intermediate said first bit count and said second bit count;

detecting a signal having a first component at a first translated frequency and a second component at a second translated frequency and defining a first interval of time having boundaries identifiable as **T0** and **T1**, a second interval of time having boundaries identifiable as **T1** and **T2**, a third interval of time having boundaries identifable as **T2** and **T3** and a fourth interval of time having boundaries identifiable as **T3** and **T4**;

generating a base bit count representative of the sum of said second and third time intervals;

decoding said first component as a data signal at said first logic state if said base bit count is equal to or greater than said mean bit count;

decoding said first component as a data signal at said second logic state if said base bit count is less than said mean bit count;

generating a fore bit count representative of the sum of said first and second time intervals;

generating an aft bit count representative of the sum of said third and fourth time intervals;

comparing said base bit count with said fore bit count;

selecting a bit clock initiation time as that time identifiable as **T1** if said base bit count is equal to or less than said fore bit count;

comparing said base bit count with said aft bit count if said base bit count is greater than said fore bit count, and;

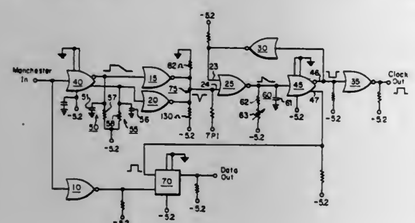
selecting said bit clock initiation time as that time identifiable as **T2** if said base bit count is equal to or greater than said aft bit count.

4,578,799

METHOD AND APPARATUS FOR RECOVERING DATA AND CLOCK INFORMATION FROM A SELF-CLOCKING DATA STREAM

Frederick W. Scholl, Riverdale, and Michael H. Coden, New York, both of N.Y., assignors to Codenoll Technology Corporation, Yonkers, N.Y.

Filed Oct. 5, 1983, Ser. No. 539,128
Int. Cl.[4] H03D 3/22; H04L 27/22, 7/02; G11B 5/09
U.S. Cl. 375—87 **22 Claims**



1. In a data transmission system using self-clocking bi-phase coded bit streams, said bit streams having a predetermined bit period and two voltage levels with negative-going and positive-going voltage level transitions occurring in the stream to indicate clock information and data information, at least a first such voltage level transition and possibly a second voltage level transition occurring in each bit period, apparatus for recovering said information comprising:

means for generating from each voltage level transition in the coded bit stream, a pulse having a first polarity,

a non-retriggerable one-shot to which is applied the pulse of first polarity, said one-shot producing an output pulse having a duration that is approximately the time interval between said first and second voltage transitions and being non-retriggerable after said pulse terminates for a period of time less than the difference between the duration of a bit period and the duration of said output pulse, said output pulse providing clock information derived from the coded bit stream, and

bistable storage means having a clock input to which clock information from an output of the one-shot is applied and a data input to which the coded bit stream is applied, said clock information being delayed by less than said time interval relative to any delay experienced by the coded bit stream, said bistable storage means providing at an output thereof data information decoded from the coded bit stream.

4,578,800

SYNCHRONIZATION CIRCUIT FOR A VITERBI DECODER

Yutaka Yasuda, 7-50-40, Higashi-ohizumi, Nerima-ku, Tokyo; Yasuo Hirata, 13-39, Mure 5-chome, Mitaka-shi, Tokyo; Shuji Murakami, c/o NEC Corporation, 33-1, Shiba 5-chome, Minato-ku, Tokyo; Katsuhiro Nakamura, c/o NEC Corporation, 33-1, Shiba 5-chome, Minato-ku, Tokyo, and Yukitsuna Furuya, c/o NEC Corporation, 33-1, Shiba 5-chome, Minato-ku, Tokyo, all of Japan

Filed Jul. 6, 1983, Ser. No. 511,503
Claims priority, application Japan, Jul. 12, 1982, 57-120941; Jul. 12, 1982, 57-120942
Int. Cl.[4] H04L 7/04
U.S. Cl. 375—106 **7 Claims**

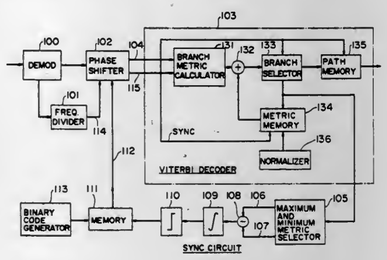
1. A synchronization circuit for a Viterbi decoder adapted to receive bit stream of code words and having means for deriving a word synchronization signal from said bit stream, said Viterbi decoder having a trellis diagram representing a series of a plurality of metric branches, said circuit comprising:

a phase shifter responsive to the receipt of said bit stream and said word synchronization signal for introducing a delay time to one of said bit stream and said word synchronization signal in response to a control signal applied thereto;

first detecting means for detecting a maximum metric value and a minimum metric value of said Viterbi decoder which have occurred in said trellis diagram over a series of said metric branches;

second detecting means for detecting the difference between said detected maximum and minimum metric values;

integrating means for integrating said detected difference;



third detecting means for detecting when the output signal of said integrating means reaches a value indicative of one of word-in-sync and word-out-of-sync conditions of said Viterbi decoder; and

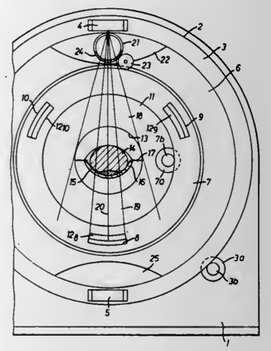
means for generating a phase shift signal in response to an output signal from said third detecting means and for applying said phase shift signal to said phase shifter as said control signal.

4,578,801

RADIOGRAPHY

Colin C. Oliver, Slough, England, assignor to EMI Limited, Hayes, England

Filed Sep. 12, 1977, Ser. No. 832,378
Claims priority, application United Kingdom, Sep. 23, 1976, 39461/76
Int. Cl.[4] A61B 6/00
U.S. Cl. 378—19 **12 Claims**



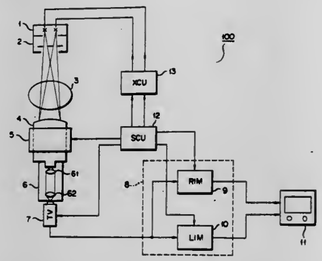
1. A method of scanning an area of interest within a transverse body plane comprising the steps of: continuously rotating a source of penetrating radiation and a radiation detector array in opposing directions about said area of interest to provide a series of parallel radiation beam paths from said source to said detector array over a plurality of angular positions through said area.

4,578,802

X-RAY DIAGNOSTIC APPARATUS FOR ALLOWING STEREOSCOPIC VISUALIZATION ON X-RAY IMAGES OF AN OBJECT UNDER EXAMINATION

Katsutoshi Itoh, Tochigi, Japan, assignor to Kabushiki Kaisha Toshiba, Japan

Filed Jun. 22, 1984, Ser. No. 623,506
Claims priority, application Japan, Jun. 27, 1983, 58-115388
Int. Cl.[4] A61B 6/02
U.S. Cl. 378—41 **11 Claims**



1. An X-ray diagnostic apparatus for allowing stereoscopic visualization on X-ray images of an object under examination, comprising:

means for irradiating and projecting intermittently X-rays toward the object at two different projection angles in relation to the object, thereby intermittently producing at least first snd second X-ray transmission images;

first conversion means for converting the first and second X-ray transmission images into first and second electron images and finally into first and second visual images in synchronism with the X-ray projections, and for deviating center positions of the first and second visual images at its output focal plane by deflecting the first and second electron images;

second conversion means having at least first and second conversion regions and converting the first and second visual images intermittently incident upon the first and second conversion regions respectively into first and second video signals; and,

means for controlling the X-ray irradiating and projecting means, the first conversion means and the second conversion means in such a manner that the first and second X-ray transmission images are alternately produced, converted and deviated at the output focal plane, and when the first visual image is incident upon the first conversion region, electrical scanning of the first conversion region is blanked out for an optical storage of the first visual image therein, and also electrical scanning of the second conversion region, upon which the second visual image has been previously incident, is performed.

4,578,803

ENERGY-SELECTIVE X-RAY RECORDING AND READOUT SYSTEM

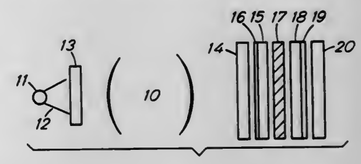
Albert Macovski, 2505 Alpine Rd., Menlo Park, Calif. 94025

Continuation of Ser. No. 327,770, Dec. 7, 1981, abandoned. This application Mar. 16, 1984, Ser. No. 590,533
Int. Cl.[4] A61B 6/00; G01N 23/04
U.S. Cl. 378—62 **4 Claims**

1. In a method for acquiring x-ray image data at two energy spectra the steps of:

exciting a first scintillating screen directly with an x-ray beam having an energy less than 150 kev that has been projected through a body and coupling the light scintillations to a first photographic emulsion;

filtering the x-ray beam after passing through the first scintillating screen to selectively attenuate a first region of the x-ray spectrum and to permit transmission of a second region of the x-ray spectrum; and



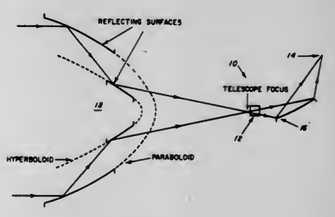
exciting a second scintillating screen directly with the filtered x-ray beam and coupling the light scintillations to a second photographic emulsion.

4,578,804

POLYNOMIAL GRATING

John F. Meekins, Springfield, and Herbert Gursky, McLean, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 30, 1984, Ser. No. 615,504
Int. Cl.[4] G21K 1/06
U.S. Cl. 378—84 **4 Claims**



4. A spectrometer comprising;

an entrance means for allowing radiation to be analyzed to pass therethrough a diffracting grating means that is fixed relative to the entrance means and which resolves at a power greater than 10^3 all the wavelengths in the wavelength range between λ_1 and λ_2, where λ_1 is 40 A and λ_2 is 340 A, and are the lowest and highest wavelengths in the range to be analyzed, and a detector array means for detecting the component wavelengths of the defracted radiation, the diffracting grating located so that radiation passing through the entrance means is diffracted by the diffraction grating onto the detector array means.

4,578,805

TRANSMISSION LINE TRANSMITTING ENERGY TO LOAD IN VACUUM CHAMBER

Jay S. Pearlman, San Diego, and John P. Shannon, Escondido, both of Calif., assignors to Maxwell Laboratories, Inc., San Diego, Calif.

Filed Oct. 10, 1984, Ser. No. 659,355
Int. Cl.[4] H01J 7/24
U.S. Cl. 378—119 **15 Claims**

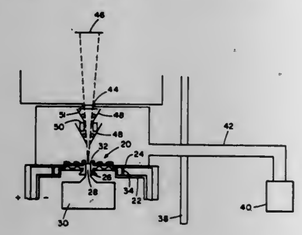
1. A transmission line connecting a power supply, for supplying power pulses, to a load disposed inside of a vacuum chamber, electrically conductive debris in both gaseous and non-gaseous forms being generated in response to application of a power pulse to said load, said transmission line comprising:

a first conductor electrically connecting one side of said load and one side of said power supply;

a second conductor disposed adjacent to, but spaced from, said first conductor and electrically connecting the other side of the load and the other side of said power supply;

an insulator extending between said conductors and partially defining said vacuum chamber;

means disposed between said load and said insulator for receiving debris in non-gaseous form; and



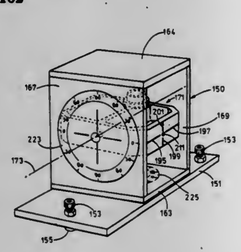
means disposed between said load and said insulator for ejecting debris in gaseous form from between said conductors whereby substantial debris is prevented from accumulating on said insulator which could result in the flashover thereof.

4,578,806

DEVICE FOR ALIGNING COOPERATING X-RAY SYSTEMS

Joseph J. Grass, Brookfield; Marvin P. Glyzewski, and Emanuel V. Polizzi, both of Waukesha, all of Wis., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 15, 1983, Ser. No. 561,941
Int. Cl.[4] A61B *6/08*
U.S. Cl. 378—162 **20 Claims**



1. A device for determining the location of the isocenter of an X-ray system comprising an X-ray source and an X-ray image receptor toward which the X-ray beam from the source is directed, and means supporting said source and receptor for making X-ray views at various angular aspects of a body supported on an X-ray transmissive table, the isocenter being defined as the point of intersection of the rotational axes of the supporting means and the central ray of the X-ray beam, said device comprising:

a base plate,

an X-ray permeable target mounted on said base plate and having side walls arranged in parallelism with each other, and crosshairs comprising a vertical X-ray impermeable line and an intersecting horizontal X-ray impermeable line inscribed on each side wall, the vertical lines lying in common vertical plane and the horizontal lines lying in a common horizontal plane, and

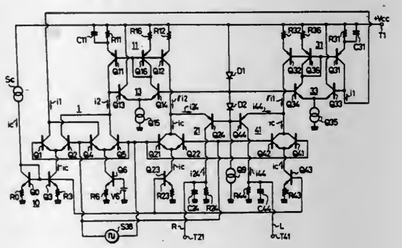
a small X-ray impermeable ball secured in said target on a line extending between the nominal intersections of the crosshairs on each side wall.

4,578,807

FM STEREO MULTIPLEX DEMODULATOR

Taiwa Okanobu, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jun. 7, 1984, Ser. No. 618,218
Claims priority, application Japan, Jun. 8, 1983, 58-102344
Int. Cl.[4] H04H *5/00*
U.S. Cl. 381—7 **18 Claims**



1. Apparatus for demodulating an FM stereo multiplex signal, comprising:

a signal generator producing a switching signal having a frequency related to a carrier frequency of said FM stereo multiplex signals;

a double-balanced switching circuit connected to receive said switching signal from said signal generator;

a first current mirror circuit receiving said FM stereo multiplex signal for providing therefrom an output current signal fed to said switching circuit, whereby said switching circuit produces first and second corresponding output current signals;

second and third current mirror circuits connected respectively to receive said first and second output current signals from said switching circuit and each producing a respective output current signal therefrom;

first signal combining circuit for producing a current output signal corresponding to a difference between said output current signal from said second current mirror circuit and said output current signal from said first current mirror circuit; and

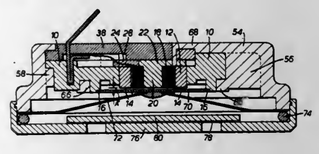
second signal combining circuit for producing a current output signal corresponding to a difference between said output current signal from said third current mirror circuit and said output current signal from said first current mirror circuit.

4,578,808

ELECTRO-ACOUSTIC TRANSDUCERS

Leslie L. West, Stapleford, England, assignor to Plessey Overseas Limited, Ilford, England

Filed Jan. 12, 1983, Ser. No. 457,358
Int. Cl.[4] H04R *11/00*
U.S. Cl. 381—88 **7 Claims**



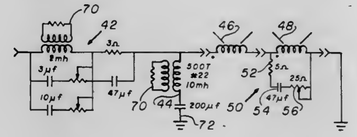
1. An electro-acoustic transducer comprising a first moulded plastics housing, an annular magnet, said annular magnet being moulded in said first housing, said first housing including locating means for an annular coil, a stemmed pole piece as a core, an armature and transducer terminals, said coil having electrical connections to said transducer terminals, a plastics cover member abutting said first housing for holding said core and said coil in position and for covering said electrical connections between said coil and said terminals, and a second moulded plastics housing moulded around said first housing, said second housing moulded to and bonding said cover member, said core and said coil in position in said first housing, said second housing partially surrounding said first housing and forming the outer walls of said transducer.

4,578,809

DIHEDRAL LOUDSPEAKERS WITH VARIABLE DISPERSION CIRCUITS

Steven J. Eberbach, 950 Fountain, Ann Arbor, Mich. 48104

Filed Jan. 10, 1983, Ser. No. 457,035
Int. Cl.[4] H03G *5/00*
U.S. Cl. 381—99 **7 Claims**



1. A loudspeaker comprising two coaxial driver combinations, each including a high frequency driver and a lower frequency driver, the two coaxial driver combinations located at a dihedral angle relative to each other to direct sound energy away from each other, and the two coaxial driver combinations being substantially the interaural distance apart,

a first crossover circuit connected to the pair of high frequency drivers and a second crossover circuit connected to the pair of lower frequency drivers, means to control the amplitude of one high frequency driver relative to the other high frequency driver and means to control the amplitude of one lower frequency driver relative to the other lower frequency driver,

wherein the lower frequency drivers are in series with each other and with the lower frequency crossover circut, said means to control the amplitude of one lower frequency driver comprising a capacitive shunt and variable resistance means in the shunt, said shunt across said one lower frequency driver,

and wherein the high frequency drivers are electrically in parallel with each other, the means to control the amplitude of one high frequency driver comprising variable resistance means in series with said one high frequency driver.

4,578,810

SYSTEM FOR PRINTED CIRCUIT BOARD DEFECT DETECTION

James W. MacFarlane, Chelmsford, and Bruce E. Smyth, Waltham, both of Mass., assignors to Itek Corporation, Lexington, Mass.

Filed Aug. 8, 1983, Ser. No. 521,423
Int. Cl.[4] G06K *9/00*
U.S. Cl. 382—8 **24 Claims**

1. Apparatus for determining defects in patterned images of lines and spaces of predetermined line width and spacing sizes comprising:

(a) an array of detectors for forming pixels consisting of a plurality of electronic bit signals corresponding to the image viewed by said detectors;

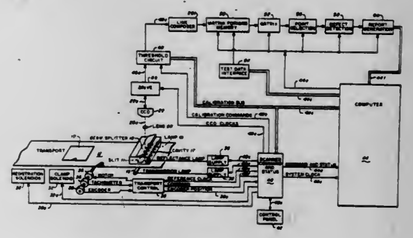
(b) memory apparatus for receiving said pixels sequentially by pixel and by line of said array and forming said pixels in a bit matrix of points in proper image orientation, all of such points being available for sampling;

(c) point selection means for sampling certain of the points of said bit matrix to form a set of defect detection points which set of points depends upon which defect is being detected;

(d) logic means for applying logical conditions to said defect detection points based on localized predetermined pattern rules to determine if defects in said patterned images are present;

(e) size selection means for selecting different sizes for the set of defect detection points for sampling depending on the predetermined line width or spacing sizes of the patterned image;

(f) indicating means for indicating the presence of such defects;



(g) said selection means including means for

(i) sampling "M" number of points of said bit matrix to form a first ring shaped pattern, the diameter D of which corresponds to the size of the minimum line width;

(ii) and sampling "L" number of bit matrix points to form a second ring shaped pattern concentric to said first ring shaped pattern;

(h) enable means for determining the number of said points on said inner ring in a first logic state indicating viewing of a line; and

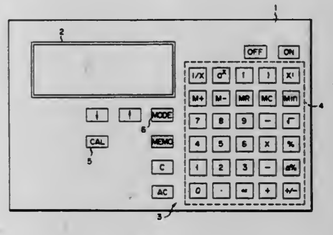
(i) defect detection means for determining the number of consecutive points on said outer ring that are in an opposite logic state to said first logic state.

4,578,811

KEY-IN DEVICE

Naoki Inagaki, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Sep. 14, 1983, Ser. No. 532,501
Claims priority, application Japan, Sep. 21, 1982, 57-164259
Int. Cl.[4] G06K *9/00*
U.S. Cl. 382—11 **14 Claims**



1. A key-in device, comprising:

a key-in section including a matrix array of operation keys;

input pattern memory means, coupled to said key-in section, for storing an input pattern corresponding to at least one character by receiving coordinate data corresponding to individual operation keys of said key-in section, when the one character is input by a manual stroking operation on said key-in section, and for sequentially storing the coordinate data in such a manner as to divide the input character into its respective strokes;

standard pattern memory means for storing, as a standard pattern, character data of a character to be recognized, first feature data associated with the direction of each stroke of the respective character and second feature data relating to positions of the starting and ending points of each stroke of the respective character;

means coupled to said input pattern memory means, which forms the first feature data associated with the direction of each stroke of the input character and the second feature data relating to positions of the starting and ending points of each stroke of said input character on the basis of the input pattern which is stored in said input pattern memory means; and

means, coupled to said standard pattern memory means and said means for forming the first and second feature data, for recognizing the keyed-in character by detecting the first and second feature data in said standard pattern memory which coincides with the first and second feature data formed by said first and second feature data forming means, and for selecting the corresponding character data stored in said standard pattern memory means.

4,578,812

DIGITAL IMAGE PROCESSING BY HARDWARE USING CUBIC CONVOLUTION INTERPOLATION

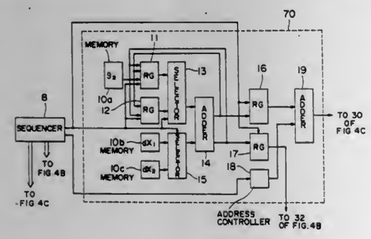
Yoshio Yui, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Nov. 30, 1983, Ser. No. 556,707

Claims priority, application Japan, Dec. 1, 1982, 57-210967; Dec. 1, 1982, 57-210968; Dec. 1, 1982, 57-210969; Dec. 1, 1982, 57-210970

Int. Cl.⁴ G06K *9/00*

U.S. Cl. 382—41 **10 Claims**



1. A digital image processing apparatus comprising:

a first memory for containing original pixel data;

a controller for controlling the data read out from said first memory;

a first address controller;

a second address conroller;

first, second, third and fourth line memories operatively connected to said first memory for receiving adjacent lines of image pixel data at a first rate under the control of said first address controller and for reading out said image pixel data at a second rate under the control of said second address controller, said second rate being lower than said first rate;

first, second, third and fourth registers operatively connected with said first, second, third and fourth line memories respectively for receiving the data read out from said line memories;

a weight factor memory which is operatively connected to said second address controller;

first, second, third and fourth groups of multipliers operatively connected to said first, second, third and fourth registers respectively, said first, second, third and fourth groups of multipliers being individually connected with said weight factor memory for receiving weight factors therefrom under the control of said second address controller;

an adder which receives and sums the outputs of said multipliers; and

a third memory for receiving and storing the data derived by said adder.

4,578,813

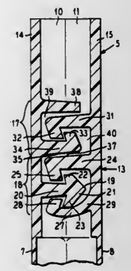
BAG AND RECLOSABLE SEPARABLE FASTENER ASSEMBLY PROVIDING BOTH CLOSING ALIGNMENT FACILITY AND DIFFERENTIAL SEPARATION RESISTANCE

Steven Ausnit, New York, N.Y., assignor to Minigrip Incorporated, Orangeburg, N.Y.

Filed Jun. 11, 1984, Ser. No. 619,187

Int. Cl.⁴ B65D *33/16*

U.S. Cl. 383—65 **16 Claims**



1. For a reclosable bag having a pouch body including opposite wall panels with inside surfaces facing toward each other and extending between a bottom edge, opposite sides and an openable top, a reclosably separable fastener assembly adapted to be attached to said surface at the upper portions of said wall panels and associated with upwardly extending pull flanges for separating said fastener assembly to gain downward access to the inside of the bag, said fastener assembly comprising two complementary interengaging sets of spaced parallel, rib-like resiliently flexible extruded plastic separable fastener profile elements providing with interlockable hooks arranged to extend across said wall panels at said inside surfaces and between said side edges, and with a first set on one of said wall panels and a second set on the other wall panel; each of said sets of fastener profile elements having a plurality of said rib like profile elements and a plurality of complementary intervening grooves for receiving the rib like profile elements of the other set in separably interlocking relation, and said profile elements of each set being especially cooperatively related to the other set for mutually facilitating alignment and interlocking closure interengagement by closing pressure applied from outside of the bag wall panels toward said fastener assembly; lower cooperative portions of said sets of fastener profile elements having means for strong resistance to opening from the inside of the bag and upper cooperative portions of said sets of fastener profile elements being arranged for relatively easier opening from the top of the bag by separating manipulation of pull flanges extending thereabove; said first set of fastener profile elements including a first monohook profile element having thereon an interlockable hook directed generally upwardly and having a back surface facing downwardly, said second set of fastener profile elements including a second monohook profile element having thereon an interlockable look directed generally downwardly and having a back surface facing upwardly and located in back-to-back facing relation to said back surface of said first monohook element, said first set of profile elements including a male profile element of generally arrow shape cross-section located in downwardly spaced relation from said first monohook profile element and having an upwardly directed hook on an upper side and a downwardly directed hook on a lower side, said second monohook profile element adapted for interhooking engagement of the hook thereon with said upwardly directed hook of said male profile element, said second set of profile elements including a monohook profile element below said male profile element and having a hook directed generally upwardly and interlockingly engageable with said downwardly directed hook of said male profile element, and said second set of profile elements having another monohook profile element above said second monohook profile element and with a downwardly directed hook interlockingly engageable with said hook of said first monohook profile element.

said side flaps being arranged to overlap each other when folded over said side opening;

and additional fastening means to secure said side flaps to each other when folded over said side opening in overlapping relationship to each other;

each of said side flaps having fastening means upon an inner surface thereof which is adapted to cooperate with, and positioned to engage, said fastening means upon said outer surface of said top flap;

and each of said side flaps having further fastening means upon an outer surface of a distal portion thereof, and further fastening means upon an inner surface of said distal portion thereof which is adapted to cooperate with, and positioned to engage, said further fastening means upon said outer surface of said distal portion of the other side flap.

4,578,814

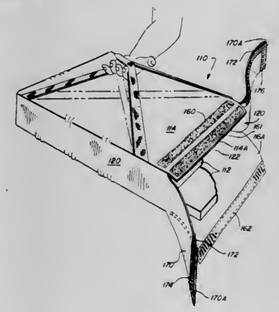
THERMALLY INSULATED FOOD BAG

Ingrid Skamser, Hoffman Estates, Ill., assignor to Thermal Bags by Ingrid, Inc., Hoffman Estates, Ill.

Filed Feb. 1, 1984, Ser. No. 575,808

Int. Cl.⁴ B65D *33/02, 33/14, 33/24, 81/38*

U.S. Cl. 383—99 **5 Claims**



1. A thermally insulated carrier adapted for use in a horizontal attitude, comprising:

panel means formed of thermally insulating flexible sheet material arranged to form a bag having at least a top panel and a bottom panel, and defining a side opening to facilitate horizontal insertion of containers of warm material into said bag;

a main flap formed of thermally insulating flexible sheet material, a proximal portion of which is hingedly connected to said bottom panel along a bottom edge of said side opening;

first fastening means upon a distal portion of said main flap and second fastening means near the top edge of said side opening for cooperating with said first fastening means to secure said main flap in place over said side opening;

two side flaps formed of said thermally insulating flexible sheet material, proximal portions of which are hingedly connected to said panel means along respective side edges of said side opening for folding over said side opening;

a top flap hingedly connected to said top panel at the top of said side opening and adapted to be folded over said side opening;

fastening means on an outer surface of said top flap for securing said top flap to said side flaps when said side flaps are folded over said top flap;

4,578,815

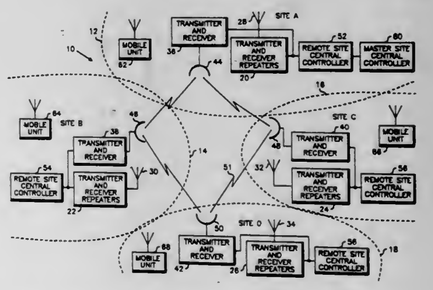
WIDE AREA COVERAGE RADIO COMMUNICATION SYSTEM AND METHOD

Gary W. Persinotti, Dallas, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 7, 1983, Ser. No. 559,122

Int. Cl.⁴ H04B *7/155, 7/26*

U.S. Cl. 455—15 **26 Claims**



1. In a two-way communication system of the type adapted to relay a message substantially simultaneously between a plurality of fixed location sites having corresponding radio coverage areas, the improvement comprising:

radio frequency transmission means at each of said sites arranged for transmitting on a respective different plurality of frequencies than the transmission frequencies of any other of said sites;

means coupled to each said radio frequency transmission means for selecting among the pluralities of different frequencies at said sites to provide corresponding channels at each of said sites whereby said message may be relayed between said sites; and

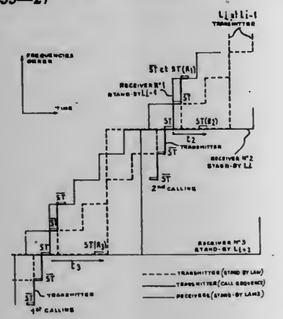
control means for selecting one of said channels and causing at least two of said transmission means to transmit said message substantially simultaneously on respective selected different frequencies.

4,578,816

METHOD OF SYNCHRONIZATION OF TRANSMITTER-RECEIVER STATIONS OF A FREQUENCY-JUMPING NETWORK AND A STATION FOR THE PRACTICAL APPLICATION OF SAID METHOD

Jacques Rabain, and Joseph Swaenepoel, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Dec. 13, 1982, Ser. No. 449,214
Claims priority, application France, Dec. 15, 1981, 81 23440
Int. Cl.⁴ H04K *1/00*
U.S. Cl. 455—27 **6 Claims**



1. A method of synchronization of transmitter-receiver stations of a frequency-jumping network, comprising the steps of:

generating by identical means associated with local clocks in each of the stations carrier frequencies which are constant during time intervals of predetermined duration T wherein said frequencies are varied in jumps from one interval to the next in accordance with the output of a psuedo-random generator means;

generating, during silent periods of the network, on each of said stations reception frequencies which are constant during time intervals of duration K_iT which vary in jumps from one interval to the next in accordance with a series of successive time signals $L_1, \ldots, L_i \ldots L_n$, which are derived from said output of said generator means such that the duration K_iT corresponding to time signal L_i is a multiple of T and increased from one time signal L_{i-1} to the next L_i in a ratio $K_i/K_{i-1}=Q_i$ wherein the time signal of each station is changed from one particular time signal to the next as the duration of said silent periods increases; and

transmitting from a station in the calling position a call sequence which sequence includes at least one group of synchronization words ST, each word having a duration T and being emitted on carrier frequencies which correspond to the time signal L_i in progress in said station in the calling position wherein said synchronization words ST are transmitted within a time interval T which is centered with respect to the timed-duration K_iT of the time interval of the time signal in progress.

4,578,817

METHOD FOR ESTABLISHING COMMUNICATIONS IN A NETWORK OF FREQUENCY-JUMPING TRANSMITTER-RECEIVER STATIONS AND A STATION FOR THE UTILIZATION OF SAID METHOD

Jacques Rabain, and Serge Adrian, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Dec. 13, 1982, Ser. No. 449,215
Claims priority, application France, Dec. 15, 1981, 81 23441
Int. Cl.⁴ H04K *1/00*
U.S. Cl. 455—27 **6 Claims**

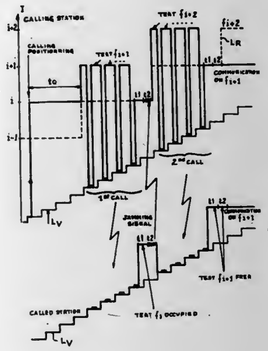
1. A method for establishing communications in a conference network of transmitter-receiver stations designed for communication by alternate simplex transmission, comprising the steps of:

generating in each of said stations a first frequency signal which is constant during each of a series of first time intervals of predetermined duration and which varies in steps in accordance with a first output of a generating circuit wherein said first output is a first series of pseudo-random values L_V at a first predetermined rate corresponding to said first time intervals;

generating in each of said stations a second frequency signal which is constant during each of a series of second time intervals of predetermined duration and which varies in steps in accordance with a second output of said generating circuit wherein said second output is second series of pseudo-random values L_R at a second predetermined rate corresponding to said second time intervals;

placing at least one of said stations in a standby position whereby said stations receive in accordance with said first frequency signal and wherein said stations communicate in a traffic frequency which is constant during each alternate transmission and is determined for each alternate transmission;

beginning an alternate transmission by designating a calling station which transmits a sequence of call messages in successive frequencies in accordance with said first frequency signal;



receiving in said designated calling station a possible traffic frequency which is determined by the instant in which the calling station transmits the call messages and by said second frequency signal wherein the duration of said second time intervals are a multiple of said first time intervals of said first frequency signal and wherein said second frequency signal is synchronized with said first freuquency signal;

receiving in said at least one station in standby position said possible traffic frequency at the end of the sequence of called messages whereby said possible traffic frequency at the end of said sequence of called messages determines the freedom of said possible traffic frequency from a signal during a time interval t_1;

transmitting a jamming signal at the same frequency and during a second time interval from a station which detected a signal in said possible traffic frequency during said first time interval t_1, in order to indicate occupation of said frequency and simultaneously providing for a receiving mode for receiving during said second time interval t_2 for any station having not detected any signal during first time interval t_1I.;

having said calling station retransmit said sequence of called messages after the end of said time interval t_2 when said possible traffic frequency is not free and subsequently receiving in another possible traffic frequency determined in accordance with said second frequency signal until said calling station locates a possible traffic frequency which is free; and

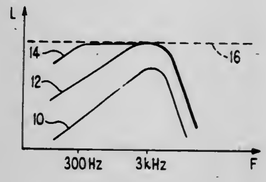
having said calling station continue transmitting and the remainder of said stations receiving in said traffic frequency when said possible traffic frequency is free, in order to complete the establishment of communication.

4,578,818

SYSTEM FOR PROCESSING AUDIO FREQUENCY INFORMATION FOR FREQUENCY MODULATION

Martin Claydon, Cambridge, England, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 471,623, Mar. 3, 1983, abandoned. This application Apr. 30, 1985, Ser. No. 728,154
Claims priority, application United Kingdom, Mar. 17, 1982, 8207713
Int. Cl.⁴ H04B *1/04*
U.S. Cl. 455—110 **7 Claims**



1. A processing system for a pre-emphasized audio signal for modulation on an FM transmitter, the system comprising:

a limiter amplifier including a first operational amplifier having a non-inverting input and having an output;

an amplifier filter including a second operational amplifier having an input, the input of the second operational amplifier being connected to the output of the first operational amplifier, the second operational amplifier being connected to a voltage supply rail, the limiter amplifier and the amplifier filter having responses such that when a pre-emphasized audio signal applied to the limiter amplifier is below a certain peak amplitude the pre-emphasized audio signal passes substantially undistorted through both the limiter amplifier and the amplifier filter and such that when the pre-emphasized audio signal exceeds the peak amplitude the pre-emphasized audio signal is clipped in the limiter amplifier and filtered in the amplifier filter;

means for providing a bias voltage to the non-inverting input of the first operational amplifier, the bias voltage being such that the pre-emphasized audio signal is symmetrically clipped in the limiter amplifier, and

an attenuator connected to an output of the second operational amplifier and to the non-inverting input of the first operational amplifier.

4,578,819

SPACE DIVERSITY RECEIVER

Yoshio Shimizu, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jul. 24, 1984, Ser. No. 634,033
Claims priority, application Japan, Jul. 25, 1983, 58-135583; Aug. 12, 1983, 58-147720
Int. Cl.⁴ H04B *1/16, 7/02*
U.S. Cl. 455—135 **10 Claims**

1. A space diversity receiver for receiving broadcast signals comprising:

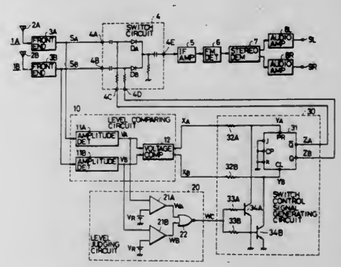
first and second antenna means;

first and second receiving means coupled to said first and second antenna means, respectively, for supplying first and second output signals in response to said broadcast signals;

switching means receiving said first and second output signals for selecting and supplying one of said output signals to an output means in response to control signals supplied thereto;

detecting means for identifying which one of said first and second output signals has a relatively better signal to noise ratio;

judging means for generating a stop signal when said signal to noise ratios of both of said first and second output signals are less than a predetermined value;



switch control means connected to said detecting means and judging means for generating said control signals so as to cause said switching means to select and supply the one of said first and second output signals identified at any time by said detecting means in the absence of said stop signal, and to cause said switching means to continuously supply one of said first and second output signals in response to the presence of said stop signal; and

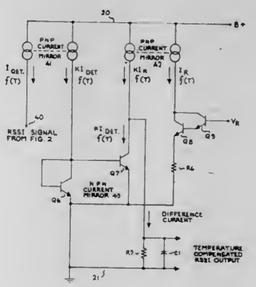
said output means producing an audio output signal in response to the output signal selected by said switching means.

4,578,820

RECEIVED SIGNAL STRENGTH INDICATOR

Frederick J. Highton, Lynchburg, Va., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 5, 1984, Ser. No. 586,546
Int. Cl.⁴ H04B *11/16*; H03F *3/04*
U.S. Cl. 455—154 **7 Claims**



1. An improved signal strength indicator for a radio receiver comprising:

a. a temperature sensitive input circuit coupled to said receiver for producing a first signal that has a magnitude indicative of the signal strength received by said receiver;

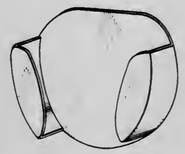
b. a first current mirror circuit coupled to said input circuit for producing a first mirror current whose magnitude is proportional to said first signal;

c. a temperature sensitive reference circuit for producing a reference signal;
d. a second current mirror circuit coupled to said reference circuit for producing a second mirror current whose magnitude is proportional to said reference signal;
e. and a third current mirror circuit comprising a pair of transistors wherein said transistors have common bases, one transistor has a collector coupled to said bases and said first current mirror circuit, and said other transistor has a collector coupled to said second mirror circuit, for producing an output signal derived from the collector of said other transistor and having a magnitude proportional to the difference between said first mirror current and said second mirror current.

DESIGNS

MARCH 25, 1986

283,076
CHEWING TOBACCO CAN HOLDER
Thomas J. States, Jr., 40624 Gibbel Rd., Hemet, Calif. 92343
Filed Apr. 4, 1983, Ser. No. 481,837
Term of patent 14 years
U.S. Cl. D2—400

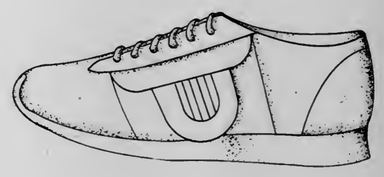


283,077
RACQUET SPORTS SHORTS
Melvin Crandall, 4207 W. Howard St., Skokie, Ill. 60076
Filed Nov. 17, 1983, Ser. No. 553,741
Term of patent 14 years
U.S. Cl. D2—42

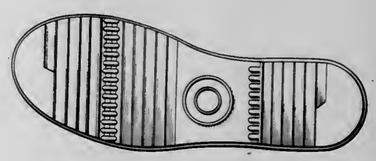




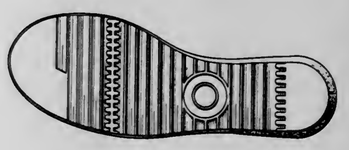
283,078
ATHLETIC SHOE WITH POCKET COVER FLAP
Robert J. Gamm, St. Louis County, Mo., assignor to Kangaroos U.S.A, Inc., St. Louis, Mo.
Continuation-in-part of Ser. No. 107,093, Dec. 12, 1979, Pat. No. Des. 261,823. This application Aug. 28, 1981, Ser. No. 297,336
Term of patent 14 years
U.S. Cl. D2—309



283,079
SHOE SOLES
Martin Michaeli, Sarrebourg-Hoff, France, assignor to Chaussures Mephisto S.A., France
Filed Feb. 4, 1983, Ser. No. 463,930
Term of patent 14 years
U.S. Cl. D2—320

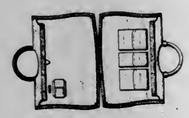


283,080
SHOE SOLE
Martin Michaeli, Sarrebourg-Hoff, France, assignor to Chaussures Mephisto S.A., France
Division of Ser. No. 463,960, Feb. 4, 1983. This application Jun. 4, 1985, Ser. No. 740,971
Term of patent 14 years
U.S. Cl. D2—322



283,081
PURSE
Bernadette G. Hansen, 20048 Italy Ave. West, Lakeville, Minn. 55044
Filed Oct. 14, 1983, Ser. No. 542,155
Term of patent 14 years
U.S. Cl. D3—53



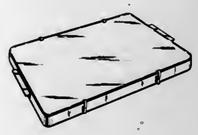


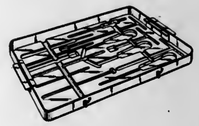
283,082
CLUTCH BAG
Bernadette G. Hansen, 20048 Italy Ave. West, Lakeville, Minn. 55044
Filed Oct. 14, 1983, Ser. No. 542,156
Term of patent 14 years
U.S. Cl. D3—53



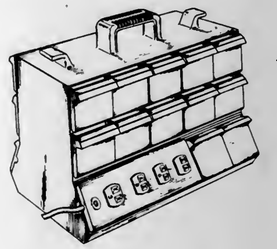


283,083
ORTHOPEDIC TOOL BOX
Denis P. Stednitz, Redondo Beach, Calif., assignor to Ace Orthopedic Company Inc., Los Angeles, Calif.
Filed Jun. 20, 1983, Ser. No. 505,947
Term of patent 14 years
U.S. Cl. D3—74





283,084
COMBINED DRAWER UNIT AND ELECTRIC POWERBOARD
Francis R. Bannigan, 64 Duerdin St., North Clayton, Victoria, Australia (3168)
Filed Feb. 6, 1985, Ser. No. 698,579
Term of patent 14 years
U.S. Cl. D3—74

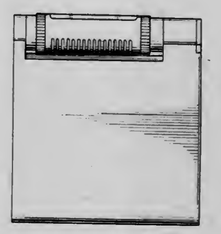


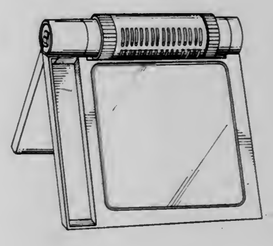
283,085
PICTURE FRAME
Robert E. Johnson, 117 Merrill St., Castlewood, S. Dak. 57223
Filed Jan. 27, 1983, Ser. No. 461,591
Term of patent 14 years
U.S. Cl. D6—303



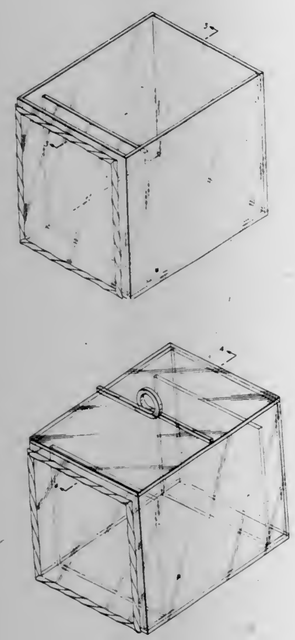


283,086
LIGHTED MIRROR
Ronald Weinhart, Encino, Calif., assignor to Hartman Products, Hawthorne, Calif.
Filed Jan. 30, 1984, Ser. No. 575,031
Term of patent 14 years
U.S. Cl. D6—308

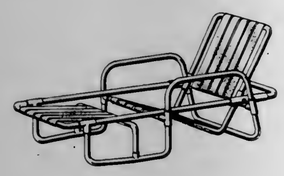




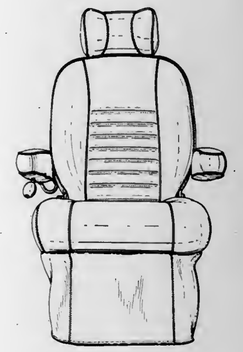
283,087
COMBINED PICTURE FRAME AND STORAGE BOX
Christina Lutz, 14547 Kellywood, Houston, Tex. 77079
Filed Nov. 15, 1982, Ser. No. 441,426
Term of patent 14 years
U.S. Cl. D6—314



283,088
LOUNGE CHAIR
Stewart K. McKay, P.O. Box 5022, Gold Coast Mail Centre, Queensland, 4217, Australia
Filed Dec. 20, 1982, Ser. No. 451,266
Term of patent 14 years
U.S. Cl. D6—361



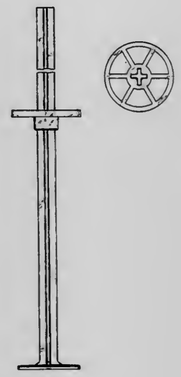
283,089
SEAT
Peter A. McArdle, Belfast, Ireland, assignor to Trimtech Limited, Belfast, Ireland
Filed Aug. 24, 1983, Ser. No. 525,875
Claims priority, application United Kingdom, Feb. 26, 1983, 1011679
Term of patent 14 years
U.S. Cl. D6—367



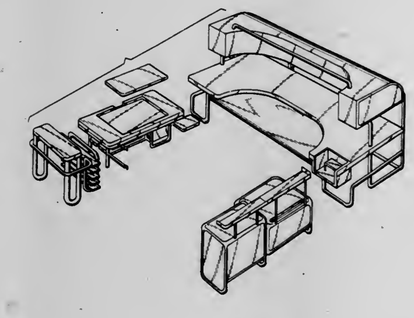
283,090
CHAIR
George C. Mulhauser, Paramus, N.J., assignor to Design Institute America, Inc., Montpelier, Ohio
Filed Aug. 29, 1983, Ser. No. 527,856
Term of patent 14 years
U.S. Cl. D6—372



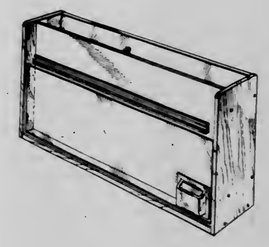
283,091
FLORAL STAND
Gene Meyer, Centerport, N.Y.
Filed Sep. 27, 1983, Ser. No. 536,438
Term of patent 14 years
U.S. Cl. D6—403



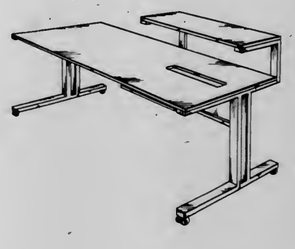
283,092
COMPUTER WORK STATION
Joan O. Johnston, 2000 E. 12th Ave., Denver, Colo. 80206
Filed Oct. 3, 1983, Ser. No. 538,477
Term of patent 14 years
U.S. Cl. D6—423



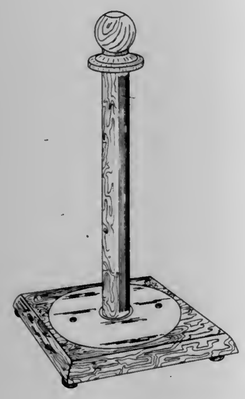
283,093
DISPLAY CASE FOR CUTLERY MERCHANDISE OR THE LIKE
John R. Tolentino, Muskego, Wis., assignor to Chicago Cutlery Consumer Products, Inc., Minneapolis, Minn.
Filed Feb. 18, 1983, Ser. No. 467,370
Term of patent 14 years
U.S. Cl. D6—470



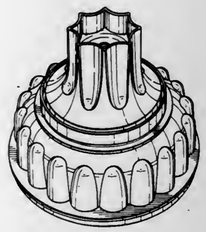
283,094
COMPUTER DESK
David R. Strand, Greenbrier, Ark., and C. Douglas Turnbull, Chicago, Ill., assignors to Strand Inc., Conway, Ark.
Filed Nov. 19, 1982, Ser. No. 443,043
Term of patent 14 years
U.S. Cl. D6—478



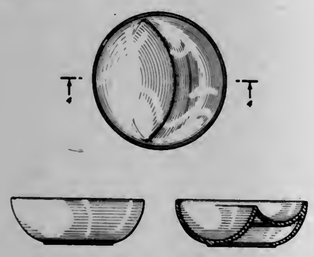
283,095
PAPER TOWEL HOLDER
Fred A. Compton, 513 McGee St., Graham, N.C. 27253
Filed Apr. 1, 1983, Ser. No. 481,336
Term of patent 14 years
U.S. Cl. D6—521



283,097
GELATIN MOLD OR THE LIKE
Robert H. C. M. Daenen, Hekelgem, and Pieter K. J. DeCoster, Aalst, both of Belgium, assignors to Dart Industries Inc., Northbrook, Ill.
Filed Aug. 9, 1983, Ser. No. 521,782
Term of patent 14 years
U.S. Cl. D7—43

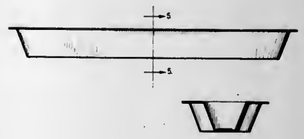


283,096
CEREAL BOWL OR THE LIKE
Gary J. Uhrik, 8764 Whitworth Dr., #6, Los Angeles, Calif. 90035
Filed Aug. 26, 1983, Ser. No. 526,673
Term of patent 14 years
U.S. Cl. D7—27



283,098
TACO TRAY
Brian K. Murdick, 3250 Oberlin Pl., Columbus, Ohio 43221, and William H. Haase, 8866 Cruden Bay Ct., Dublin, Ohio 43017
Filed Aug. 23, 1983, Ser. No. 525,757
Term of patent 14 years
U.S. Cl. D7—76





283,099
CONDIMENT CONTAINER CLOSURE
Lyle F. Shabram, Sr., P.O. Box 5537, Carmel, Calif. 93921, and Lyle F. Shabram, Jr., 1215 Surf Ave., Pacific Grove, Calif. 93950
Filed Jul. 5, 1983, Ser. No. 510,594
Term of patent 14 years
U.S. Cl. D7—392



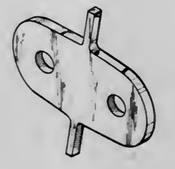
283,100
TOOL HOLDER
Robert H. Porter, 7811 76th Ave. S.W., Tacoma, Wash. 98498
Filed Oct. 18, 1982, Ser. No. 434,756
Term of patent 14 years
U.S. Cl. D8—71



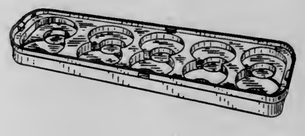
283,101
WRENCH SUPPORT
Kenneth G. Lymburner, Osage, Minn. 56570
Filed Aug. 15, 1983, Ser. No. 523,571
Term of patent 14 years
U.S. Cl. D8—71



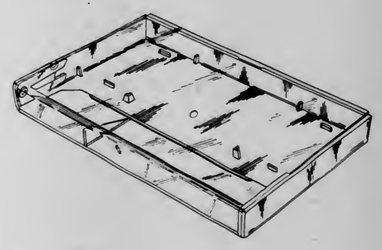
283,102
SPRING BRACKET
Eli J. Petro, Howard County, and Paul E. Pemberton, Madison County, both of Ind., assignors to Kokomo Spring Company, Kokomo, Ind.
Filed May 20, 1983, Ser. No. 496,426
Term of patent 14 years
U.S. Cl. D8—349



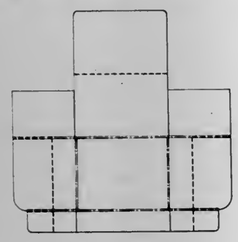
283,103
COMBINED PACKAGING AND SHIPPING CONTAINER
John J. Cushing, Chicago, Ill., and John S. Driscoll, 221 LaFox, Algonquin, Ill. 60102, assignors to John S. Driscoll, Huntley, Ill.
Filed Nov. 14, 1983, Ser. No. 551,305
Term of patent 14 years
U.S. Cl. D9—345



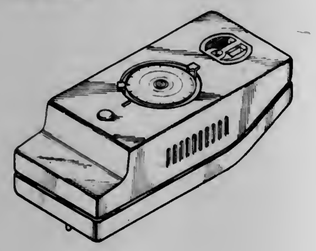
283,104
PACKAGING CONTAINER FOR COMPUTER SOFTWARE
Donald E. Bigando, Delray Beach, Fla., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Sep. 7, 1983, Ser. No. 529,905
Term of patent 14 years
U.S. Cl. D9—418



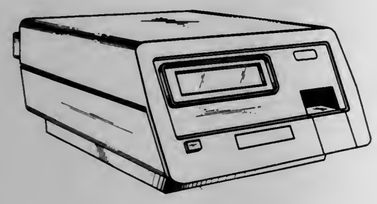
283,105
CARTON BLANK
Arthur H. Dornbusch, and Barbara A. Haintl, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Sep. 14, 1983, Ser. No. 531,887
Term of patent 14 years
U.S. Cl. D9—433



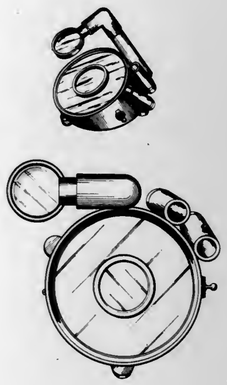
283,106
TIMER
Tai-Her Yang, 5-1 Tay Pyng Street, Shi Hwu Jenn, Jang Huah Shiann, Taiwan
Filed Aug. 4, 1983, Ser. No. 520,321
Term of patent 14 years
U.S. Cl. D10—40



283,107
REFLECTANCE PHOTOMETER
Kenneth D. Collister, Elkhart, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.
Filed Jul. 29, 1983, Ser. No. 518,655
Term of patent 14 years
U.S. Cl. D10—46



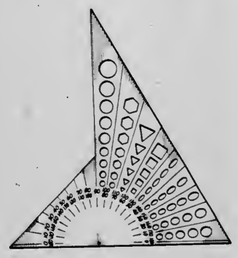
283,108
STANDARD PROJECTOR MARKER FOR MARKING OPTICAL LENSES
Luis E. Saumell, 6318 SW. 23 St., Miami, Fla. 33155
Filed Nov. 12, 1982, Ser. No. 440,830
Term of patent 14 years
U.S. Cl. D10—46



283,109
CRACK-INDICATION ELEMENT
Kennert Röshoff, 40 Stormvägen, S-951 49 Luleå , Sweden
Filed Aug. 24, 1983, Ser. No. 525,922
Claims priority, application Sweden, Feb. 24, 1983, 83-0524; Aug. 22, 1983, 83-2138
Term of patent 14 years
U.S. Cl. D10—46



283,110
MECHANICAL DRAWING IMPLEMENT
Walter H. Hudson, 4201 Folker St., #C102, Anchorage, Ak. 99508
Filed Feb. 7, 1983, Ser. No. 464,792
Term of patent 14 years
U.S. Cl. D10—62

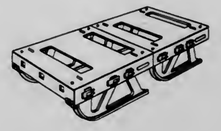


283,111
TROPHY
Gilbert F. Meekins, Alexandria, Va., assignor to United Way of America, Alexandria, Va.
Filed Jan. 12, 1984, Ser. No. 570,924
Term of patent 14 years
U.S. Cl. D11—161

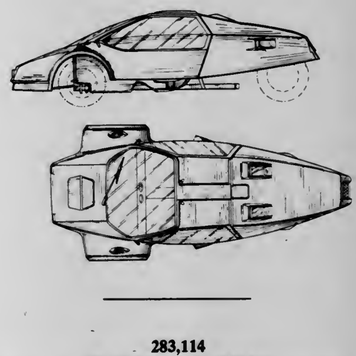




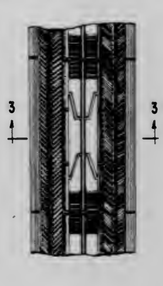
283,112
ARTICULATED, COLLAPSIBLE SLED
Samuel J. McFrisby, Ecorse, Mich., assignor to Joseph A. Ulicne, Grosse Ile, Mich., a part interest
Filed May 19, 1983, Ser. No. 496,268
Term of patent 14 years
U.S. Cl. D12—10



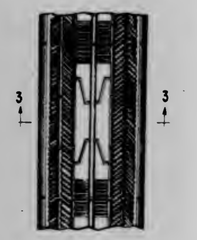
283,113
BODY FOR THREE-WHEELED MOTOR VEHICLE
David J. Stollery, Laguna Beach, Calif., assignor to Fire Arrow, Inc., Laguna Beach, Calif.
Filed Jul. 22, 1983, Ser. No. 516,045
Term of patent 14 years
U.S. Cl. D12—85



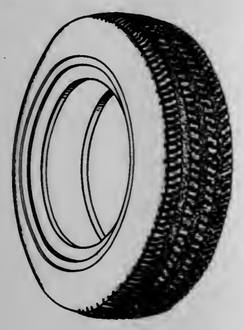
283,114
BICYCLE TIRE TREAD
Eiji Fukuchi, Kagawa, Japan, assignor to Mitsuboshi Belting Ltd., Kobe, Japan
Filed Dec. 6, 1982, Ser. No. 447,393
Claims priority, application Japan, Sep. 18, 1982, 57-42652
The portion of the term of this patent subsequent to Mar. 25, 2000, has been disclaimed.
Term of patent 14 years
U.S. Cl. D12—136



283,115
BICYCLE TIRE TREAD
Eiji Fukuchi, Kagawa, Japan, assignor to Mitsuboshi Belting Ltd., Nagata, Japan
Filed Dec. 6, 1982, Ser. No. 447,394
Claims priority, application Japan, Sep. 18, 1982, 57-42651
The portion of the term of this patent subsequent to Mar. 25, 2000, has been disclaimed.
Term of patent 14 years
U.S. Cl. D12—136



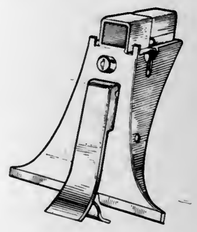
283,116
VEHICLE TIRE
Akihiro Nakatani, Kakogawa, Japan, assignor to Sumitomo Rubber Industries Ltd., Hyogo, Japan
Filed Oct. 20, 1983, Ser. No. 543,966
Claims priority, application Japan, Jun. 10, 1983, 58-25139
Term of patent 14 years
U.S. Cl. D12—147



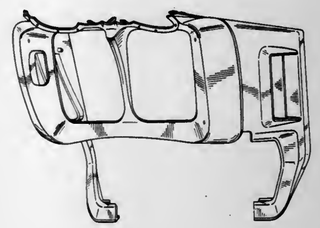
283,117
VEHICLE LUGGAGE RACK STANCHION
John A. Bott, 931 Lakeshore Dr., Grosse Pointe Shores, Mich. 48236
Filed May 24, 1983, Ser. No. 497,498
Term of patent 14 years
U.S. Cl. D12—157



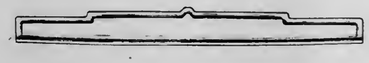
283,118
LOAD CARRIER ATTACHMENT FOR CARS AND SIMILAR VEHICLES
Tore Eklund, Larstorpsvägen 13, S-591 70 Motala, Sweden
Filed Jan. 31, 1983, Ser. No. 462,686
Claims priority, application Sweden, Aug. 2, 1982, 82-1923
Term of patent 14 years
U.S. Cl. D12—157



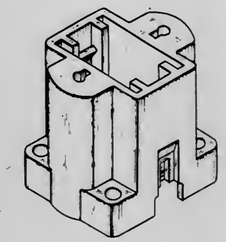
283,119
LOWER FAIRING FOR MOTORCYCLES
Karl H. Abe, Steinebach/Woerthsee, and Klaus V. Gevert, Munich, both of Fed. Rep. of Germany, assignors to Bayerische Motoren Werke AG, Fed. Rep. of Germany
Filed Nov. 9, 1983, Ser. No. 550,116
Claims priority, application Fed. Rep. of Germany, May 9, 1983, MR 13415
Term of patent 14 years
U.S. Cl. D12—182



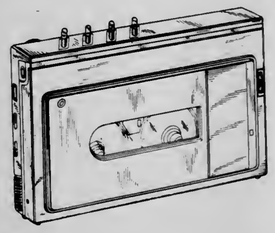
283,120
TRIM PIECE FOR AN AUTOMOBILE HOOD
Ulric W. Trombley, Chisago City, and Richard J. Nozel, West St. Paul, both of Minn., assignors to Double D Specialties, Inc., St. Paul, Minn.
Filed Sep. 29, 1983, Ser. No. 537,033
Term of patent 14 years
U.S. Cl. D12—190



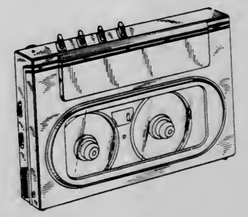
283,121
FLUORESCENT LAMP HOLDER
Klaus Oesterheld, Woodside; Michael Franovic, Forest Hills, and Carlos Martinez, Brooklyn, all of N.Y., assignors to North American Philips Corporation, New York, N.Y.
Continuation of Ser. No. 425,218, Sep. 28, 1982, abandoned. This application Dec. 17, 1984, Ser. No. 682,489
Term of patent 14 years
U.S. Cl. D13—25



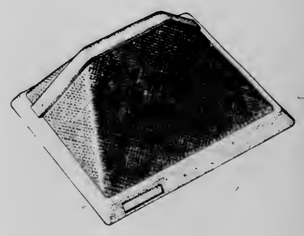
283,122
COMBINED TAPE PLAYER AND RADIO
Kaoru Sumita, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Dec. 2, 1983, Ser. No. 557,464
Claims priority, application Japan, Jun. 3, 1983, 58-23857
Term of patent 14 years
U.S. Cl. D14—5



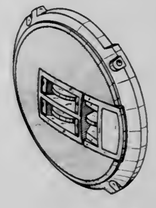
283,123
TAPE PLAYER
Kaoru Sumita, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Dec. 2, 1983, Ser. No. 557,465
Claims priority, application Japan, Jun. 3, 1983, 58-23855
Term of patent 14 years
U.S. Cl. D14—6



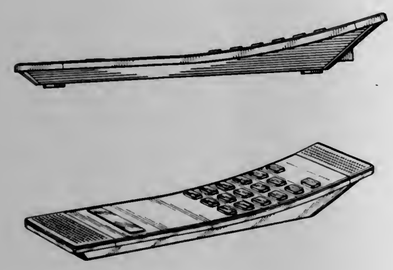
283,124
MICROPHONE
Ronald M. Kolb, Skokie, Ill., assignor to Shure Brothers, Inc., Evanston, Ill.
Filed Nov. 23, 1983, Ser. No. 554,315
Term of patent 14 years
U.S. Cl. D14—12



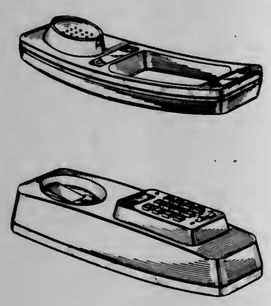
283,125
LOUDSPEAKER PANEL
Grant M. N. Davidson, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Dec. 15, 1983, Ser. No. 561,761
Claims priority, application United Kingdom, Jun. 29, 1983, 1.013.833
Term of patent 14 years
U.S. Cl. D14—39



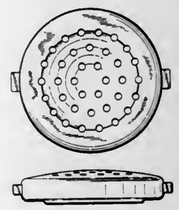
283,126
TELEPHONE
Eric J. Marshall, 5 Carlton Gardens, London SW1, United Kingdom
Filed Jun. 17, 1983, Ser. No. 505,555
Claims priority, application United Kingdom, Dec. 21, 1982, 1010428
Term of patent 14 years
U.S. Cl. D14—53



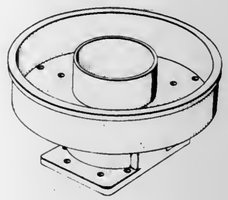
283,127
TELEPHONE RECEIVER AND BASE SET
Chan Hai-Ping, Hong Kong, Hong Kong, assignor to National Telecommunication System, Ltd., Hong Kong, Hong Kong
Filed May 10, 1983, Ser. No. 493,360
Term of patent 14 years
U.S. Cl. D14—53

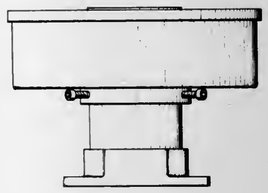


283,128
GERMICIDAL DISC CONTAINER FOR STERILIZING A TELEPHONE MOUTHPIECE
Peter Bate, Don Mills, Canada, assignor to Dominion Odor Control Ltd., Don Mills, Canada
Filed Aug. 30, 1983, Ser. No. 527,837
Term of patent 14 years
U.S. Cl. D14—59

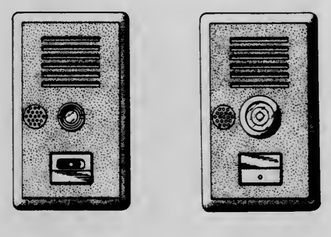


283,129
MICROWAVE FEED HORN
Frederic Fourcher, Corona del Mar; Daniel A. Bathker, La Crescenta, both of Calif., and Thomas W. Cole, Arlington, Va., assignors to Miralite International, Inc., Santa Ana, Calif.
Filed Jun. 30, 1983, Ser. No. 509,645
Term of patent 14 years
U.S. Cl. D14—90

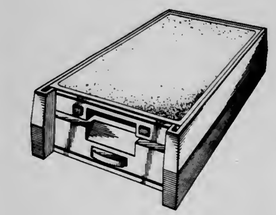




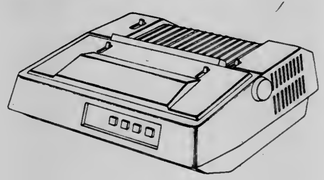
283,130
COMBINED DOOR VIEWER AND TWO-WAY INTERCOM UNIT
Charles B. Boenning, Cincinnati, Ohio, assignor to Claiborne Electronics, Inc., Cincinnati, Ohio
Filed Nov. 30, 1983, Ser. No. 556,283
Term of patent 14 years
U.S. Cl. D14—92



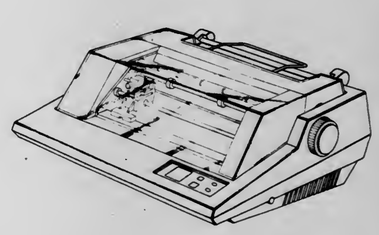
283,131
MICROFLOPPY DISK DRIVE
Daniel A. Baker, Dallas, Tex., assignor to Percom Data Corporation, Dallas, Tex.
Filed Feb. 3, 1984, Ser. No. 576,749
Term of patent 14 years
U.S. Cl. D14—109



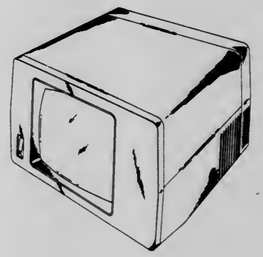
283,132
PRINTER FOR ELECTRONIC COMPUTER
Nobuki Matsumoto, Miura, Japan, assignor to Ricoh Company, Ltd., Japan
Filed Aug. 16, 1983, Ser. No. 523,721
Claims priority, application Japan, Feb. 23, 1983, 58-7154
Term of patent 14 years
U.S. Cl. D14—111



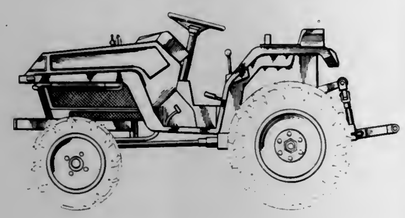
283,133
PRINTER FOR ELECTRONIC COMPUTER
Kenichi Nakade, Kanagawa, and Masami Toyoshima, Tokyo, both of Japan, assignors to Ricoh Company, Ltd., Japan
Filed Sep. 29, 1983, Ser. No. 537,359
Claims priority, application Japan, Mar. 31, 1983, 58-013455
Term of patent 14 years
U.S. Cl. D14—111

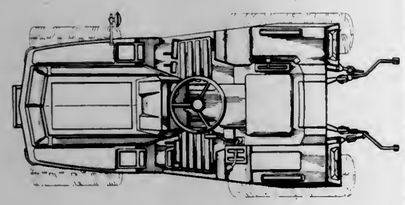


283,134
DISPLAY FOR DATA-PROCESSING WORKSTATION
Peter J. Mendel, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Mar. 22, 1982, Ser. No. 360,136
Term of patent 14 years
U.S. Cl. D14—113

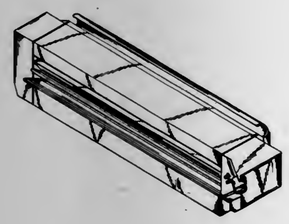


283,135
AGRICULTURAL TRACTOR
Genichi Funabashi; Akira Teraoka, both of Sennan, and Tadashi Nakamura, Kawachinagano, all of Japan, assignors to Kubota Ltd., Osaka, Japan
Filed Sep. 29, 1983, Ser. No. 536,976
Term of patent 14 years
U.S. Cl. D15—23

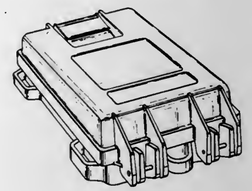


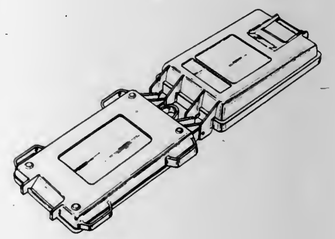


283,136
COPYING MACHINE
Andrew T. Serbinski, New York, N.Y., assignor to Ozalid Corporation, Mahwah, N.J.
Filed Dec. 22, 1983, Ser. No. 564,310
Term of patent 14 years
U.S. Cl. D16—27

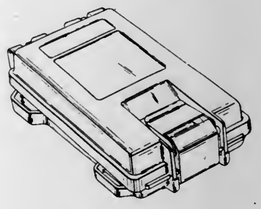


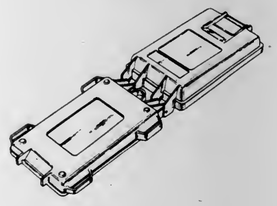
283,137
COMBINED CALCULATOR AND PROTECTIVE CASE
Christopher J. Hamar, Leeds, England, assignor to Zengrange Limited, Leeds, England
Filed Jul. 25, 1983, Ser. No. 516,896
Claims priority, application United Kingdom, Jan. 25, 1983, 1011046
Term of patent 14 years
U.S. Cl. D18—2



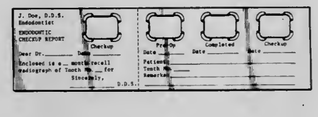


283,138
PROTECTIVE CASE FOR A CALCULATOR OR THE LIKE
Christopher J. Hamar, Leeds, England, assignor to Zengrange Limited, Leeds, England
Filed Jul. 25, 1983, Ser. No. 516,877
Claims priority, application United Kingdom, Jan. 25, 1983, 1 011 045
Term of patent 14 years
U.S. Cl. D18—11





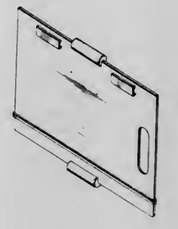
283,139
COMBINED ENDODONTIC X-RAY MOUNTS AND POSTAL CARD CORRESPONDENCE FORM
Milton G. Deemer, 3155 Dear Meadow Dr., Danville, Calif. 94526
Filed May 10, 1982, Ser. No. 376,273
Term of patent 14 years
U.S. Cl. D19—2



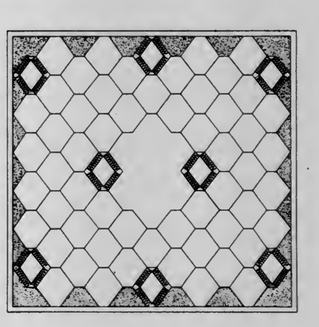
283,140
WRITING INSTRUMENT
Richard J. Petrillo, Norwell, Mass., assignor to The Gillette Company, Boston, Mass.
Filed Dec. 28, 1983, Ser. No. 566,232
Term of patent 14 years
U.S. Cl. D19—49



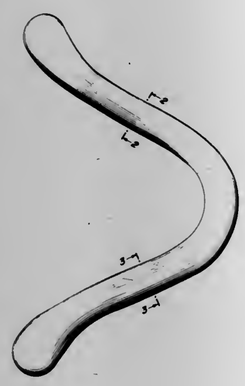
283,141
CLIPBOARD
Thomas Koves, 645 N. Cherokee Ave., Los Angeles, Calif. 90004
Filed Sep. 16, 1983, Ser. No. 532,750
Term of patent 14 years
U.S. Cl. D19—88



283,142
GAME BOARD
Milton Lewis, 1721 Eager St., Baltimore, Md. 21205
Filed Dec. 27, 1982, Ser. No. 437,203
Term of patent 14 years
U.S. Cl. D21—34



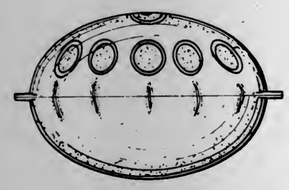
283,143
BOOMERANG
Peter R. Ruhf, R.D. #1, Barto, Pa. 19504, and Frank S. Smirne, 1240 Washington St., Whitehall, Pa. 18052
Filed Dec. 5, 1983, Ser. No. 558,053
Term of patent 14 years
U.S. Cl. D21—82



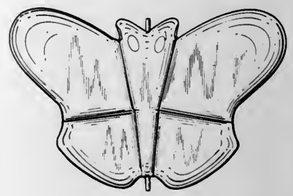
283,144
SPACESHIP TOY BALLOON
Fritz Jensen, Nordbovej 20 C, DK-9800 Hjorring, Denmark
Filed Feb. 13, 1984, Ser. No. 579,518
Term of patent 14 years
U.S. Cl. D21—84



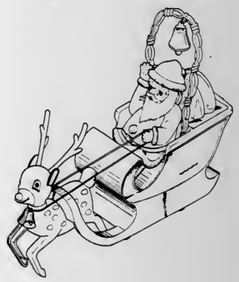
283,145
SIMULATIVE TOY BALLOON
Fritz Jensen, Nordbovej 20 C, DK-9800 Hjorring, Denmark
Filed Feb. 13, 1984, Ser. No. 579,520
Term of patent 14 years
U.S. Cl. D21—84



283,146
BUTTERFLY TOY BALLOON
Fritz Jensen, Nordbovej 20 C, DK-9800 Hjorring, Denmark
Filed Feb. 13, 1984, Ser. No. 579,551
Term of patent 14 years
U.S. Cl. D21—84



283,147
SLEDGE TOY
Yeong F. Yang, 3 Fl., No. 16-4, Guan In St., An Ping District, Tainan, Taiwan
Filed Dec. 27, 1983, Ser. No. 565,971
Term of patent 14 years
U.S. Cl. D21—149



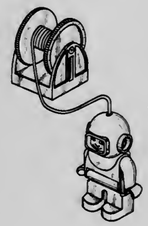
283,148
TOY MANNEQUIN
Patrick J. Coyne, Cleveland Heights, Ohio, assignor to Meritus Industries, Inc., Florham Park, N.J.
Filed May 19, 1983, Ser. No. 496,290
Term of patent 14 years
U.S. Cl. D21—154



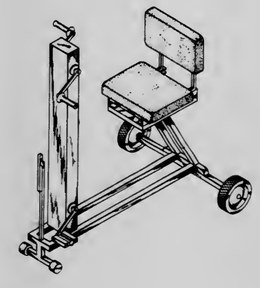
283,149
TOY WALRUS FIGURE
Jacob Nielsen, Copenhagen, Denmark, assignor to Interlego AG, Baar, Switzerland
Filed Dec. 15, 1983, Ser. No. 561,665
Term of patent 14 years
U.S. Cl. D21—157



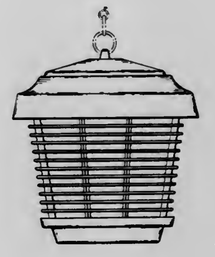
283,150
TOY DIVER FIGURE WITH HOIST
Carlo A. Jensen, Helsingor, Denmark, assignor to Interlego AG, Baar, Switzerland
Filed Dec. 15, 1983, Ser. No. 561,663
Term of patent 14 years
U.S. Cl. D21—177



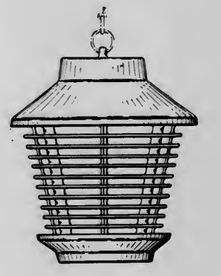
283,151
THERAPEUTIC EXERCISING MACHINE
Fred E. Knief, P.O. Box 836, San Andreas, Calif. 95249
Filed Jun. 15, 1984, Ser. No. 621,277
Term of patent 14 years
U.S. Cl. D21—194



283,152
HOUSING FOR ELECTRONIC INSECT KILLER
Joseph M. Cunning, Cohasset, Mass., assignor to Armatron International, Inc., Melrose, Mass.
Filed Feb. 27, 1984, Ser. No. 583,638
Term of patent 14 years
U.S. Cl. D22—19



283,153
HOUSING FOR ELECTRONIC INSECT KILLER
Sal DeYoreo, Andover, Mass., assignor to Armatron International, Inc., Melrose, Mass.
Filed Feb. 27, 1984, Ser. No. 583,641
Term of patent 14 years
U.S. Cl. D22—19



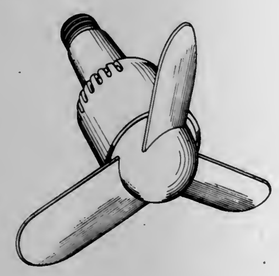
283,154
AIR MANIFOLD UNIT
Eugene T. McKinnon, Pacific Palisades, Calif., assignor to Gem Products, Inc., Garden Grove, Calif.
Filed Jul. 25, 1983, Ser. No. 516,747
Term of patent 14 years
U.S. Cl. D23—40



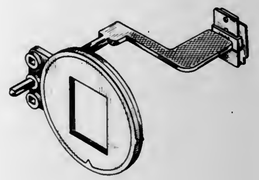
283,155
PEDESTAL SINK
John P. Ronvik, Palos Heights, Ill., assignor to Sears, Roebuck & Co., Chicago, Ill.
Filed Dec. 2, 1983, Ser. No. 557,717
Term of patent 14 years
U.S. Cl. D23—61



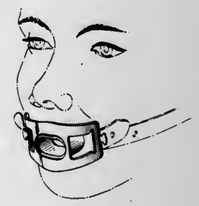
283,156
ELECTRIC FAN
Piergiorgio Mandelli, Via Salvagnoli, 5, 20125 Milan, and Franco Mandelli, Viale Jenner, 20, 20100 Milan, both of Italy
Filed Nov. 20, 1984, Ser. No. 673,322
Term of patent 14 years
U.S. Cl. D23—158



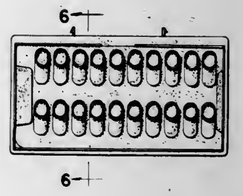
283,157
DEVICE FOR POSITIONING DENTAL X-RAY FILM
Robert Maldonado, Santa Clara, and Clark E. Loughry, San Jose, both of Calif., assignors to The S. S. White Company, Holmdel, N.J.
Filed Mar. 16, 1983, Ser. No. 475,823
Term of patent 14 years
U.S. Cl. D24—2



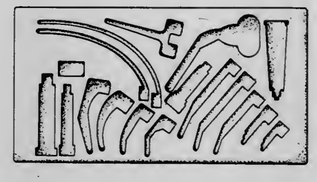
283,158
ENDOSCOPIC BITE BLOCK
Frank W. Jackson, Twillingate R.D. 3, Mechanicsburg, Pa. 17055, assignor to Frank W. Jackson, Mechanicsburg, Pa.
Filed Apr. 8, 1983, Ser. No. 483,397
Term of patent 14 years
U.S. Cl. D24—29



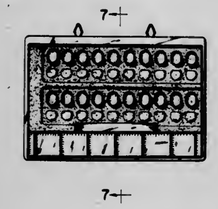
283,159
COMBINED MICROBIOLOGICAL TEST TRAY AND HOLDER
James H. Godsey, Huntington Station, N.Y., assignor to American Home Products Corporation (Del.), New York, N.Y.
Filed Mar. 4, 1983, Ser. No. 472,378
Term of patent 14 years
U.S. Cl. D24—31



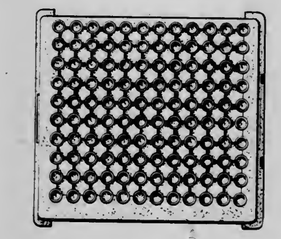
283,160
EQUIPMENT STORAGE TRAY OR THE LIKE
Mark E. Steinman, 6831 Uppingham Dr., Fayetteville, N.C. 28306
Filed Jun. 16, 1983, Ser. No. 504,743
Term of patent 14 years
U.S. Cl. D24—31



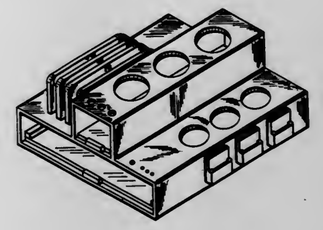
283,161
COMBINED MICROBIOLOGICAL TEST TRAY AND HOLDER
James H. Godsey, Huntington Station, N.Y., assignor to American Home Products Corporation (Del.), New York, N.Y.
Filed Jun. 16, 1983, Ser. No. 504,997
Term of patent 14 years
U.S. Cl. D24—31



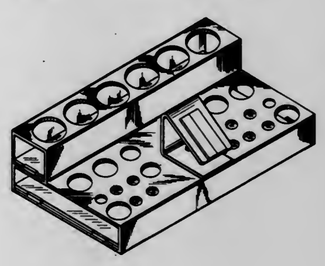
283,162
MICROBIOLOGICAL TEST TRAY
James H. Godsey, Huntington Station, N.Y., assignor to American Home Products Corporation (Del.), New York, N.Y.
Filed Mar. 4, 1983, Ser. No. 472,377
Term of patent 14 years
U.S. Cl. D24—31



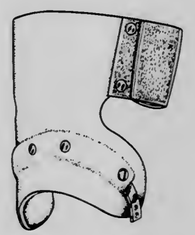
283,163
ORGANIZER FOR HOLDING DRUG DETECTION KIT ARTICLES OR THE LIKE
Mahendra K. Pandya, 8018 Daytona Ave., NW., Massillon, Ohio 44646
Filed Nov. 18, 1983, Ser. No. 553,165
Term of patent 14 years
U.S. Cl. D24—31



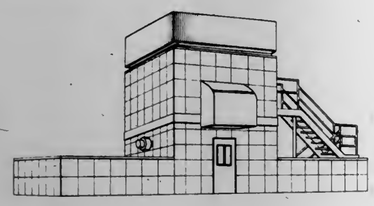
283,164
ORGANIZER FOR HOLDING DRUG DETECTION KIT ARTICLES OR THE LIKE
Mahendra K. Pandya, 8018 Daytona Ave., NW., Massillon, Ohio 44646
Filed Nov. 18, 1983, Ser. No. 553,167
Term of patent 14 years
U.S. Cl. D24—31



283,165
THIGH COMPONENT FOR A KNEE BRACE
Darryl L. Womack, Lakewood, Colo., assignor to Scott Orthopedics, Inc., Denver, Colo.
Filed Jun. 1, 1983, Ser. No. 500,165
Term of patent 14 years
U.S. Cl. D24—64



283,166
FOOD SERVICE BUILDING
Glen A. Gardner, Castro Valley; Richard J. Kung, and Claude E. Salzberger, both of San Francisco, all of Calif., assignors to The Krystal Company, Chattanooga, Tenn.
Filed Jul. 14, 1983, Ser. No. 513,760
Term of patent 14 years
U.S. Cl. D25—1



283,167
STATIONARY REFRESHMENT STAND
George Perry, 108 Mitchell Pl., Daytona Beach, Fla. 32108
Filed Apr. 13, 1983, Ser. No. 484,530
Term of patent 14 years
U.S. Cl. D25—10



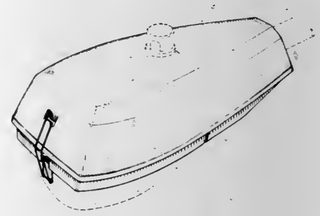
283,168
POOL ACCESS STAIR FOR THE DISABLED
Lewis J. Daly, 5890 Pierson Rd., Fayetteville, N.Y. 13066
Filed Aug. 16, 1983, Ser. No. 523,576
Term of patent 14 years
U.S. Cl. D25—62



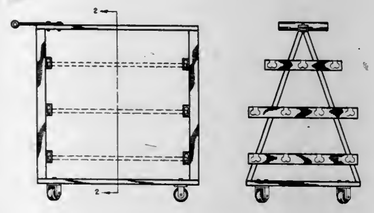
283,169
FLUORESCENT LAMP OR THE LIKE
Julian J. Wierzbicki, Peabody; Harold L. Hough, Beverly, and Andre C. Bouchard, Peabody, all of Mass., assignors to GTE Products Corporation, Stamford, Conn.
Filed Jun. 22, 1984, Ser. No. 623,607
Term of patent 14 years
U.S. Cl. D26—3



283,170
ROADWAY LUMINAIRE
Jon M. Newgard, and Walter C. Pitts, both of Louisville, Ky., assignors to General Electric Company, Hendersonville, N.C.
Filed Oct. 11, 1983, Ser. No. 540,939
Term of patent 14 years
U.S. Cl. D26—71



283,171
CART FOR HOLDING ROLLS OF WIRE
Gary E. Smith, 21620 Prospect Ct., Hayward, Calif. 94541, and Edward D. Parks, 7755 Fairoaks Dr., Pleasanton, Calif. 94566
Filed Feb. 21, 1980, Ser. No. 123,409
Term of patent 14 years
U.S. Cl. D34—21



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 25TH DAY OF MARCH, 1986

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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Allen, J. Dewayne; and Randolph, Edward F., to Allen Engineering Corporation. Power trowel with cam-actuated blade pitch adjustment mechanism. 4,577,993, Cl. 404-112.000.
Allen, Richard C.; Effland, Richard C.; and Klein, Joseph T., to Hoechst-Roussel Pharmaceuticals Incorporated. Cholinergic function increasing 3-[N-(pyridyl) carbamoyl]-1,4-dihydropyridines. 4,578,394, Cl. 514-332.000.
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Atalla, Martin M., to Atalla Corporation. Currency-dispensing method and apparatus. 4,577,779, Cl. 221-1.000.

Atlantic Richfield Company: *See—*
Melpolder, Frank W., 4,578,357, Cl. 436-39.000.

Aubert, Michel: *See—*
Artaud, Robert; Aubert, Michel; and Renaux, Charley, 4,578,238, Cl. 376-404.000.

Auer, William F. Gathering and storing device for electric cable. 4,577,809, Cl. 242-96.000.

Auergesellschaft GmbH: *See—*
Hoffmann, Wilfried, 4,577,348, Cl. 2-84.000.

Aumann, James T., to Norton Christensen, Inc. Bearing system for a downhole motor. 4,577,704, Cl. 175-107.000.

Aumueller, Alexander: *See—*
Huenig, Siegfried; and Aumueller, Alexander, 4,578,220, Cl. 260-239.00R.

Ausnit, Steven, to Minigrip Incorporated. Bag and reclosable separable fastener assembly providing both closing alignment facility and differential separation resistance. 4,578,813, Cl. 383-65.000.

Autoflug GmbH: *See—*
Harenberg, Holger, 4,577,378, Cl. 24-635.000.

Automotive Engine Associates: *See—*
Showalter, Merle R., 4,577,602, Cl. 123-306.000.

Automotive Products plc: *See—*
Frank, Charles A.; and Compton, David J., 4,577,549, Cl. 92-169.000.

Autosystems Limited: *See—*
Brook, Richard M., 4,577,708, Cl. 177-145.000.

Avery International Corporation: *See—*
Lare, Donald W.; and Van Nguyen, Thanh, 4,578,288, Cl. 427-365.000.

AVG Productions, Inc.: *See—*
Franke, John M., Sr., 4,577,792, Cl. 226-162.000.

Aviram, Ari; Dove, Derek B.; and Lane, Ramon, to International Business Machines Corporation. Color-on-demand ribbon printing. 4,577,983, Cl. 400-120.000.

Awa, Masashi: *See—*
Ito, Takeo; Ido, Tadashi; Takeuchi, Hajime; Hashimoto, Minoru; Maeda, Tatsumi; and Awa, Masashi, 4,578,313, Cl. 428-403.000.

B. F. Goodrich Company, The: *See—*
Kramer, James H., 4,577,379, Cl. 29-149.50S.

Baba, Fumio, to Fujitsu Limited. Dual port type semiconductor memory. 4,578,780, Cl. 365-190.000.

Baba, Hidetoshi: *See—*
Tanaka, Hiroshi; and Baba, Hidetoshi, 4,578,087, Cl. 51-295.000.

Baba, Kiyokazu, to Kabushiki Kaisha Komatsu Seisakusho. Retracting mechanism and jaw assembly for a power press. 4,577,486, Cl. 72-421.000.

Baba, Tadashi: *See—*
Shibata, Yuichi; and Baba, Tadashi, 4,578,034, Cl. 433-29.000.

Babcock & Wilcox Company, The: *See—*
Ciammaichella, Richard C.; and Youmans, Barry J., 4,578,583, Cl. 250-339.000.

Bachmann, Bernd; Kuss, Peter; Schuhmann, Frank; and Wollner, Jurgen, to VEB Kombinat Textima. Method and apparatus for the positioning of textile surface configurations. 4,577,854, Cl. 271-227.000.

Backes, Reiner: *See—*
Elmis, Herbert; and Backes, Reiner, 4,578,705, Cl. 358-148.000.

Bacskai, Laszlo: *See—*
Csizer, Zoltan; Sikos, Karoly; Bacskai, Laszlo; Joo, Istvan; Niedermayer, Eleonora; Rethy, Lajos; and Zsidai, Jozsef, 4,578,270, Cl. 424-92.000.

Badiali, Roberto: *See—*
Speranzin, Claudio; Badiali, Roberto; and Bertoli, Luciano, 4,577,459, Cl. 57-22.000.

Baglioni, Alessandro, to Sigma-Tau Industrie Farmaceutiche Riunite S.p.A.; and Medosan Industrie Biochimie Riunite S.p.A. Pyrrolacetic amides having antiinflammatory activity. 4,578,481, Cl. 548-539.000.

Bahrmann, Helmut; Cornils, Boy; Konkol, Werner; and Lipps, Wolfgang, to Ruhrchemie Aktiengesellschaft. Process for the preparation of aldehydes. 4,578,523, Cl. 568-454.000.

Bailer, Norbert: *See—*
Lenard, Peter; Pokorny, Erich; and Bailer, Norbert, 4,577,533, Cl. 76-41.000.

Bain, Brian M.: *See—*
Phillipps, Gordon H.; Bain, Brian M.; and Laing, Stuart B., 4,578,221, Cl. 260-397.100.

Bain, James M.: *See—*
Hamisch, Paul H., Jr.; Vanderpool, James L.; and Bain, James M., 4,578,138, Cl. 156-361.000.

Bake, Earl A.; and Hartle, Clair W., Jr., to Rockwell International Corporation. Valve stem seal with multiple ring means. 4,577,872, Cl. 277-12.000.

Baker, David C.; Bantz, David F.; and Flurry, Gregory A., to International Business Machines Corporation. Method and apparatus for wireless cursor position control. 4,578,674, Cl. 340-710.000.

Baker Oil Tools, Inc.: *See—*
Brakhage, William L., Jr., 4,577,694, Cl. 166-382.000.

Bakke, David C.: *See—*
Bakke, John S.; and Bakke, David C., 4,578,636, Cl. 324-66.000.

Bakke, John S.; and Bakke, David C. Apparatus for identifying wires of multiple wire electrical system. 4,578,636, Cl. 324-66.000.

Baldarelli Bros., Inc.: *See—*
Baldarelli, Wallace E.; and Grenier, Wilfred J., 4,578,015, Cl. 414-513.000.

Baldarelli, Wallace E.; and Grenier, Wilfred J., to Baldarelli Bros., Inc. Truck body with pull-off door. 4,578,015, Cl. 414-513.000.

Ball Corporation: *See—*
Nguyen, Tuan A., 4,577,774, Cl. 220-66.000.

Balle , Gerhard: *See—*
Rasshofer, Werner; and Balle , Gerhard, 4,578,500, Cl. 560-25.000.

Bamer, Franz, to Robert Bosch GmbH. Apparatus for shielding and protecting an air flow rate meter disposed in the intake tube of an internal combustion engine from air column fluctuations. 4,577,495, Cl. 73-118.000.

Bangerter, Blauer L.; and Streeter, James M., to Brigham Young University. Exercise machine for limb extremity digits. 4,577,861, Cl. 272-96.000.

Banike, Ronald, to R. R. Donnelley & Sons Company. Gapless lock-up for offset printing cylinders. 4,577,560, Cl. 101-415.100.

Bansemir, Horst: *See—*
Bongers, Bernd; and Bansemir, Horst, 4,577,736, Cl. 188-371.000.

Bantz, David F.: *See—*
Baker, David C.; Bantz, David F.; and Flurry, Gregory A., 4,578,674, Cl. 340-710.000.

Bardin, Roland; Bernard, Jean; Peyre, Henri; and Viodet, Patrice, to Ste Look. Safety ski binding. 4,577,887, Cl. 280-628.000.

Barfurth, Dieter; and Nestler, Heinz, to Dynamit Nobel Aktiengesellschaft. Binding agents containing titanic acid esters for the preparation of coating compositions and refractory bodies, and a method for the preparation of these binding agents. 4,578,487, Cl. 556-40.000.

Barillec, Christian; Janvier, Dominique; and Bonneton, Marc, to Societe Anonyme Redoute Catalogue. Device for picking up loose articles. 4,578,013, Cl. 414-323.000.

Barker, John C., to Cambridge Instruments Limited. Image comparison systems. 4,578,765, Cl. 364-514.000.

Barnea, Daniel I.: *See—*
Crawford, Carl R.; Shimoni, Yair; Sohval, A. Robert; and Barnea, Daniel I., 4,578,753, Cl. 364-414.000.

Barr, John D., to NL Petroleum Products Limited. Rotary drill bits. 4,577,706, Cl. 175-329.000.

Barth, Hubert: *See—*
Satzinger, Gerhard; Barth, Hubert; Hartenstein, Johannes; Herrmann, Manfred; Fritschi, Edgar; and Schutt, Ilse-Dore, 4,578,380, Cl. 514-232.000.

Bartlett, Brian E.; Harris, James E.; and Wilkes, John G., to U.S. Philips Corporation. Method of making monocrystalline ternary semiconductor compounds. 4,578,145, Cl. 156-616.00R.

Bartos, Frank J.: *See—*
Gosis, Anatoly I.; and Bartos, Frank J., 4,578,585, Cl. 250-363.00S.

Bartos, Josef. Hydraulic motor. 4,578,020, Cl. 418-196.000.

phase catalytic reaction of methanol and ammonia. 4,578,516, Cl. 564-479.000.

Ashland Oil, Inc.: *See—*
Goel, Anil B., 4,578,424, Cl. 525-109.000.

Aso, Shigeru: *See—*
Hayashi, Masanori; Sakurai, Akira; and Aso, Shigeru, 4,577,976, Cl. 374-29.000.

Assaf, Gad, to Solmat Systems Ltd. Method of and apparatus for dynamically stabilizing the wind-mixed layer of a solar-water pond. 4,577,618, Cl. 126-415.000.

Assarsson, Per G.; and Nagasuye, Joseph H., to St. Lawrence Reactors Limited. Fermentation of glucose with recycle of non-fermented components. 4,578,353, Cl. 435-161.000.

Assistance Maintenance Construction Electrique: *See—*
Andriessen, Johannes; and Gaillard, Daniel, 4,578,731, Cl. 361-42.000.

Assmann, Helmut; Dichtjar, Gerhard; Dorr, Wolfgang; Maier, Georg; Mathieu, Viktor; and Peehs, Martin, to Kraftwerk Union Aktiengesellschaft. Method for the manufacture of oxidic sintered nuclear fuel bodies. 4,578,229, Cl. 264-0.500.

Astley, Vivian C.; Milan, Rudolph R.; and Taravella, Jody J., to Freeport Minerals Company. Wet grinding phosphate rock in an acidic slurry. 4,577,804, Cl. 241-16.000.

Astronics Corporation: *See—*
Kerr, Charles, III; and Forell, Mark, 4,578,617, Cl. 313-512.000.

AT&T Bell Laboratories: *See—*
Borg, Kevin E.; Halas, William P.; Mattes, Hans G.; McLear, Paul M.; and White, Lester L., 4,578,540, Cl. 179-2.00A.
Everhart, Joseph R.; and Osborn, Jeffrey G., 4,578,531, Cl. 178-22.080.
Gharavi, Hamid, 4,578,704, Cl. 358-135.000.
Gossard, Arthur C.; Miller, Robert C.; and Petroff, Pierre M., 4,578,127, Cl. 148-175.000.
Gray, Michael A., 4,578,761, Cl. 364-481.000.
Grosch, James T., 4,578,630, Cl. 323-271.000.

AT&T Information Systems Inc.: *See—*
Charalambous, Salomi T.; Horvath, Mark P.; House, Cathy P.; Iapicco, Jeffrey A.; Lue, Paul D.; and Verma, Shiv P., 4,578,796, Cl. 375-8.000.

AT&T Technologies, Inc.: *See—*
Brown, Donald R., 4,578,736, Cl. 361-306.000.
Clark, Harold R.; and Nicol, David A., 4,578,101, Cl. 65-109.000.
Erwin, Edward A., 4,578,751, Cl. 364-200.000.
Gill, Roger F.; and Narasimham, Pundi L., 4,578,253, Cl. 423-87.000.
Paek, Un C.; and Schroeder, Charles M., 4,578,098, Cl. 65-13.000.

Atalla Corporation: *See—*
Atalla, Martin M., 4,577,779, Cl. 221-1.000.

Atalla, Martin M., to Atalla Corporation. Currency-dispensing method and apparatus. 4,577,779, Cl. 221-1.000.

Atlantic Richfield Company: *See—*
Melpolder, Frank W., 4,578,357, Cl. 436-39.000.

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Artaud, Robert; Aubert, Michel; and Renaux, Charley, 4,578,238, Cl. 376-404.000.

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Hoffmann, Wilfried, 4,577,348, Cl. 2-84.000.

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Huenig, Siegfried; and Aumueller, Alexander, 4,578,220, Cl. 260-239.00R.

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Autoflug GmbH: *See—*
Harenberg, Holger, 4,577,378, Cl. 24-635.000.

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Lare, Donald W.; and Van Nguyen, Thanh, 4,578,288, Cl. 427-365.000.

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Franke, John M., Sr., 4,577,792, Cl. 226-162.000.

Aviram, Ari; Dove, Derek B.; and Lane, Ramon, to International Business Machines Corporation. Color-on-demand ribbon printing. 4,577,983, Cl. 400-120.000.

Awa, Masashi: *See—*
Ito, Takeo; Ido, Tadashi; Takeuchi, Hajime; Hashimoto, Minoru; Maeda, Tatsumi; and Awa, Masashi, 4,578,313, Cl. 428-403.000.

B. F. Goodrich Company, The: *See—*
Kramer, James H., 4,577,379, Cl. 29-149.50S.

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Tanaka, Hiroshi; and Baba, Hidetoshi, 4,578,087, Cl. 51-295.000.

Baba, Kiyokazu, to Kabushiki Kaisha Komatsu Seisakusho. Retracting mechanism and jaw assembly for a power press. 4,577,486, Cl. 72-421.000.

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Shibata, Yuichi; and Baba, Tadashi, 4,578,034, Cl. 433-29.000.

Babcock & Wilcox Company, The: *See—*
Ciammaichella, Richard C.; and Youmans, Barry J., 4,578,583, Cl. 250-339.000.

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Backes, Reiner: *See—*
Elmis, Herbert; and Backes, Reiner, 4,578,705, Cl. 358-148.000.

Bacskai, Laszlo: *See—*
Csizer, Zoltan; Sikos, Karoly; Bacskai, Laszlo; Joo, Istvan; Niedermayer, Eleonora; Rethy, Lajos; and Zsidai, Jozsef, 4,578,270, Cl. 424-92.000.

Badiali, Roberto: *See—*
Speranzin, Claudio; Badiali, Roberto; and Bertoli, Luciano, 4,577,459, Cl. 57-22.000.

Baglioni, Alessandro, to Sigma-Tau Industrie Farmaceutiche Riunite S.p.A.; and Medosan Industrie Biochimie Riunite S.p.A. Pyrrolacetic amides having antiinflammatory activity. 4,578,481, Cl. 548-539.000.

Bahrmann, Helmut; Cornils, Boy; Konkol, Werner; and Lipps, Wolfgang, to Ruhrchemie Aktiengesellschaft. Process for the preparation of aldehydes. 4,578,523, Cl. 568-454.000.

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Lenard, Peter; Pokorny, Erich; and Bailer, Norbert, 4,577,533, Cl. 76-41.000.

Bain, Brian M.: *See—*
Phillipps, Gordon H.; Bain, Brian M.; and Laing, Stuart B., 4,578,221, Cl. 260-397.100.

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Hamisch, Paul H., Jr.; Vanderpool, James L.; and Bain, James M., 4,578,138, Cl. 156-361.000.

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Baker, David C.; Bantz, David F.; and Flurry, Gregory A., to International Business Machines Corporation. Method and apparatus for wireless cursor position control. 4,578,674, Cl. 340-710.000.

Baker Oil Tools, Inc.: *See—*
Brakhage, William L., Jr., 4,577,694, Cl. 166-382.000.

Bakke, David C.: *See—*
Bakke, John S.; and Bakke, David C., 4,578,636, Cl. 324-66.000.

Bakke, John S.; and Bakke, David C. Apparatus for identifying wires of multiple wire electrical system. 4,578,636, Cl. 324-66.000.

Baldarelli Bros., Inc.: *See—*
Baldarelli, Wallace E.; and Grenier, Wilfred J., 4,578,015, Cl. 414-513.000.

Baldarelli, Wallace E.; and Grenier, Wilfred J., to Baldarelli Bros., Inc. Truck body with pull-off door. 4,578,015, Cl. 414-513.000.

Ball Corporation: *See—*
Nguyen, Tuan A., 4,577,774, Cl. 220-66.000.

Balle , Gerhard: *See—*
Rasshofer, Werner; and Balle , Gerhard, 4,578,500, Cl. 560-25.000.

Bamer, Franz, to Robert Bosch GmbH. Apparatus for shielding and protecting an air flow rate meter disposed in the intake tube of an internal combustion engine from air column fluctuations. 4,577,495, Cl. 73-118.000.

Bangerter, Blauer L.; and Streeter, James M., to Brigham Young University. Exercise machine for limb extremity digits. 4,577,861, Cl. 272-96.000.

Banike, Ronald, to R. R. Donnelley & Sons Company. Gapless lock-up for offset printing cylinders. 4,577,560, Cl. 101-415.100.

Bansemir, Horst: *See—*
Bongers, Bernd; and Bansemir, Horst, 4,577,736, Cl. 188-371.000.

Bantz, David F.: *See—*
Baker, David C.; Bantz, David F.; and Flurry, Gregory A., 4,578,674, Cl. 340-710.000.

Bardin, Roland; Bernard, Jean; Peyre, Henri; and Viodet, Patrice, to Ste Look. Safety ski binding. 4,577,887, Cl. 280-628.000.

Barfurth, Dieter; and Nestler, Heinz, to Dynamit Nobel Aktiengesellschaft. Binding agents containing titanic acid esters for the preparation of coating compositions and refractory bodies, and a method for the preparation of these binding agents. 4,578,487, Cl. 556-40.000.

Barillec, Christian; Janvier, Dominique; and Bonneton, Marc, to Societe Anonyme Redoute Catalogue. Device for picking up loose articles. 4,578,013, Cl. 414-323.000.

Barker, John C., to Cambridge Instruments Limited. Image comparison systems. 4,578,765, Cl. 364-514.000.

Barnea, Daniel I.: *See—*
Crawford, Carl R.; Shimoni, Yair; Sohval, A. Robert; and Barnea, Daniel I., 4,578,753, Cl. 364-414.000.

Barr, John D., to NL Petroleum Products Limited. Rotary drill bits. 4,577,706, Cl. 175-329.000.

Barth, Hubert: *See—*
Satzinger, Gerhard; Barth, Hubert; Hartenstein, Johannes; Herrmann, Manfred; Fritschi, Edgar; and Schutt, Ilse-Dore, 4,578,380, Cl. 514-232.000.

Bartlett, Brian E.; Harris, James E.; and Wilkes, John G., to U.S. Philips Corporation. Method of making monocrystalline ternary semiconductor compounds. 4,578,145, Cl. 156-616.00R.

Bartos, Frank J.: *See—*
Gosis, Anatoly I.; and Bartos, Frank J., 4,578,585, Cl. 250-363.00S.

Bartos, Josef. Hydraulic motor. 4,578,020, Cl. 418-196.000.

BASF Aktiengesellschaft: *See—*
Boehm, Udo; Grittmann, Ernst-Juergen; and Schulze-Berge, Klaus, 4,578,726, Cl. 360-99.000.
Frickel, Fritz-Frieder; and Nuerrenbach, Axel, 4,578,498, Cl. 560-8.000.
Huenig, Siegfried; and Aumueller, Alexander, 4,578,220, Cl. 260-239.00R.
Lenz, Werner; Sander, Hans; and Moeller, Dieter, 4,578,426, Cl. 525-131.000.
Muenstedt, Helmut; and Naarmann, Herbert, 4,578,433, Cl. 525-417.000.
Pipper, Gunter; Riegger, Siegfried; and Floss, Josef G., 4,578,455, Cl. 528-501.000.

Battelle Memorial Institute: *See—*
Giddey, Claude; and Dove, Georges, 4,578,278, Cl. 426-605.000.

Batz, Hans-Georg: *See—*
Siedel, Joachim; Neumann, Ulrich; Ziegenhorn, Joachim; Batz, Hans-Georg; Lenz, Helmut; Pautz, Brigitte; and Albert, Winfried, 4,578,361, Cl. 436-547.000.

Bauch, Ernst, to Neumuenstersche Maschinen- und Apparatebau Gesellschaft mbH (NEUMAG). Staple fiber cutting machine. 4,577,537, Cl. 83-343.000.

Baumann, Hans D. Dual valve stem packing arrangement. 4,577,873, Cl. 277-110.000.

Baumann, Thomas; Dacol, Frank H.; and Melcher, Robert L., to International Business Machines Corporation. Thermal wave microscopy using areal infrared detection. 4,578,584, Cl. 250-341.000.

Bay Mills Limited: *See—*
Gidge, Lester; and Murro, Ronald P., 4,578,141, Cl. 156-439.000.

Bayer Aktiengesellschaft: *See—*
Jager, Gerhard; Bockmann, Klaus; Buchel, Karl H.; Brandes, Wilhelm; Frohberger, Paul-Ernst; and Scheinpflug, Hans, 4,578,396, Cl. 514-383.000.
Jager, Horst, 4,578,461, Cl. 544-76.000.
Molteni, Emanuele, 4,578,231, Cl. 264-25.000.
Rasshofer, Werner; and Balle , Gerhard, 4,578,500, Cl. 560-25.000.
Schmidt, Manfred; and Meyer, Karl-Heinrich, 4,578,476, Cl. 548-144.000.

Bayer, Arthur C.; Robbins, Jeffrey D.; and Bowler, Donald J., to Stauffer Chemical Company. Method for preparation of salts of N-phosphonomethylglycine. 4,578,224, Cl. 260-502.50F.

Bayerl, Eugen: *See—*
Grosser, Siegfried; Ludwig, Christian; Wallner, Kurt; Herzog, Karl; and Bayerl, Eugen, 4,577,944, Cl. 352-35.000.

Bayle-Laboure, Gerard J. P.; Bouiller, Jean G.; Buisson, Marc F. B.; and Soligny, Marcel R., to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "S.N.E.C.M.A.". Variable section nozzle for a turbo-jet engine and an aircraft comprising such equipment. 4,577,814, Cl. 244-12.500.

Bearden, Roby, Jr.; and Aldridge, Clyde L., to Exxon Research and Engineering Co. Catalysts and hydroconversion processes utilizing the same. 4,578,182, Cl. 208-112.000.

Beattie Systems, Inc.: *See—*
Fox, Anthony G.; Smith, Harry L. O.; and Sadre-Marandi, Ehsan, 4,577,947, Cl. 354-275.000.

Beauchamp, William T.: *See—*
Rancourt, James D.; and Beauchamp, William T., 4,578,527, Cl. 136-256.000.

Beaussant, Raymond, to Intertechnique. Quick attachment device for harness of a piece of equipment. 4,577,375, Cl. 24-580.000.

Bechtel, Wolf D.: *See—*
Stricker, Herbert; Freund, Bernhard; Harwalik, Heribert; Rominger, Karl L.; Darda, Siegfried; Haselbarth, Volkmar; Arndts, Dietrich; Bechtel, Wolf D.; Bozler, Gerhard; Brickl, Rolf; and Gruber, Peter, 4,578,264, Cl. 424-37.000.

Becton, Dickinson and Co.: *See—*
Nitzsche, Raymond P.; and Geiger, Kenneth E., 4,577,630, Cl. 128-314.000.

Beecham Group p.l.c.: *See—*
Markwell, Roger E.; and Smith, Stephen A., 4,578,393, Cl. 514-310.000.

Beesley, Robert S.; and Feichko, Joe. Welding jig. 4,577,383, Cl. 29-281.100.

Behrens, Klaus: *See—*
Harder, Hans E.; Behrens, Klaus; and Kotz, Rainer, 4,578,081, Cl. 623-22.000.

Behringer, Uwe; Bohlen, Harald; Nehmiz, Peter; and Zapka, Werner, to International Business Machines Corporation. Error-corrected corpuscular beam lithography. 4,578,587, Cl. 250-492.200.

BEI Electronics, Inc.: *See—*
Perry, John W., 4,577,561, Cl. 102-215.000.

Beitler, Franz, to U.S. Philips Corporation. Tape cassette holder with releasable reel hold-down. 4,578,724, Cl. 360-85.000.

Belcher, John R.: *See—*
Mayer, John F.; Langdon, Nick H.; Cook, Stuart A.; Nicholson, L. Todd; and Belcher, John R., 4,578,045, Cl. 446-330.000.

Bell & Howell Company: *See—*
Hams, Kenneth A., 4,577,848, Cl. 270-55.000.
Parker, Robert R.; and Rattan, Dev R., 4,578,718, Cl. 360-10.300.

Bell Telephone Laboratories, Incorporated: *See—*
Charalambous, Salomi T.; Horvath, Mark P.; House, Cathy P.; Iapicco, Jeffrey A.; Lue, Paul D.; and Verma, Shiv P., 4,578,796, Cl. 375-8.000.

Bellanca, Guido. Fettuccine cooking apparatus. 4,577,551, Cl. 99-348.000.

Bellussi, Giuseppe: *See—*
Buonomo, Franco; Bellussi, Giuseppe; and Notari, Bruno, 4,578,161, Cl. 204-102.000.

Beloit Corporation: *See—*
Peel, John D.; and Knight, Paul A., 4,578,199, Cl. 210-788.000.

Belouet, Christian: *See—*
Mautref, Michel; and Belouet, Christian, 4,577,588, Cl. 118-665.000.

Beltran, Jose M. F. Valve. 4,577,656, Cl. 137-375.000.

Bender, Heinrich: *See—*
Reinartz, Dieter; Bender, Heinrich; and Laurent, Gunter, 4,578,194, Cl. 210-673.000.

Benge, Herman: *See—*
Bradley, Charles A.; Benge, Herman; Parl, Fritz F.; and Seebaugh, William R., 4,577,514, Cl. 73-863.010.

Bennardo, Gilbert, to S.A.M. Microtechnic. Impregnable locking system. 4,577,750, Cl. 206-1.500.

Bennett, Richard C. Self-balancing boom apparatus. 4,577,819, Cl. 248-123.100.

Beranek, William J., to Cordis Corporation. Movable multi-contact electromechanical connection. 4,577,643, Cl. 128-785.000.

Berfield, Robert C.: *See—*
Miller, Jonathan; Berfield, Robert C.; and Crevling, Robert L., Jr., 4,577,366, Cl. 15-388.000.

Berg, Marvin; and Grachek, Bruce. Locking mechanism for extendible telescoping tubular members. 4,577,837, Cl. 254-212.000.

Bergles, Eduard, to Fichtel & Sachs AG. Multi-ratio drive hub for bicycles with at least three different drive torque paths. 4,577,531, Cl. 74-781.00B.

Bergstrom, Tommy; Boman, Goran; and Englund, Leif, to ASEA Aktiebolag. Stand structure for supporting electric high voltage equipment. 4,577,826, Cl. 248-638.000.

Bergwerksverband GmbH: *See—*
Richter, Ekkehard; Korbacher, Werner; Knoblauch, Karl; Giessler, Klaus; and Harder, Klaus-Burkhard, 4,578,089, Cl. 55-26.000.

Berkey, George E., to Corning Glass Works. Method of forming a polarization preserving optical waveguide. 4,578,097, Cl. 65-3.110.

Berkovits, Barouh V.; Waxman, Menashe B.; and Combs, William J., to Medtronic, Inc. Rate scanning demand pacemaker and method for treatment of tachycardia. 4,577,633, Cl. 128-419.0PG.

Berman, James. Teller machine enclosure. 4,577,562, Cl. 109-24.100.

Bernard, Jean: *See—*
Bardin, Roland; Bernard, Jean; Peyre, Henri; and Viodet, Patrice, 4,577,887, Cl. 280-628.000.

Bertoli, Luciano: *See—*
Speranzin, Claudio; Badiali, Roberto; and Bertoli, Luciano, 4,577,459, Cl. 57-22.000.

Best, Steven A., to Exxon Research & Engineering Co. Polymerization catalyst, production and use. 4,578,374, Cl. 502-115.000.

Beth Israel Hospital Association, The: *See—*
Spears, J. Richard, 4,577,636, Cl. 128-654.000.

Betts, Alan J.; and Elliott, Peter J., to International Business Machines Corporation. Head positioning system with automatic gain control. 4,578,723, Cl. 360-77.000.

Betz Laboratories, Inc.: *See—*
Forester, David R., 4,578,178, Cl. 208-48.0AA.
Merrell, Gene A., 4,577,566, Cl. 110-343.000.

Beyer, Lewis R. Ring binder. 4,577,985, Cl. 402-22.000.

Bianco, Eric L. Theft prevention apparatus for shopping carts. 4,577,880, Cl. 280-33.99C.

Bigliardi, Juan B. Collapsible containers. 4,577,772, Cl. 220-1.500.

Bingaman, Barrett P.; Krum, Richard G.; and Williams, James R., to Cetec Corporation. Tape loop bin control system. 4,577,790, Cl. 226-118.000.

Biofusion, Inc.: *See—*
Schoner, Wolfgang, 4,578,167, Cl. 204-183.100.

Biomedical Concepts, Inc.: *See—*
Graham, John R., 4,577,638, Cl. 128-671.000.

Biorcio, Luciano; and Mensi, Carlo, to P. D. George Co., The; and Industrie Vernici Italiane S.p.A. Phenoxy resins and use thereof in electric insulation. 4,578,312, Cl. 428-336.000.

Biotronics: *See—*
Hofmann, Gunter A., 4,578,168, Cl. 204-299.00R.

Birch, William A.; and Woodard, Lillie M., to Motorola, Inc. Flip-flop having improved synchronous reset. 4,578,599, Cl. 307-272.00A.

Birkenbach, Alfred: *See—*
Burgdorf, Jochen; Birkenbach, Alfred; and Klimt, Ulrich, 4,577,731, Cl. 188-73.330.

Bitel, Vincent J., to Rogers Manufacturing Co., The. Utility box. 4,577,773, Cl. 220-22.300.

BL Technology Limited: *See—*
Bray, David J.; Johnson, Peter E.; Marshall, Peter E. G.; Piper, Francis R.; and Murdoch, Iain H., 4,577,490, Cl. 73-40.700.
Marshall, Peter E. G.; Piper, Francis R.; and Wilson, John F., 4,577,489, Cl. 73-40.700.

Blackaby, Dale W. Theatrical risers. 4,577,856, Cl. 272-25.000.

Blackstone, Scott C.: *See—*
Corboy, John F., Jr.; Jastrzebski, Lubomir L.; Blackstone, Scott C.; and Pagliaro, Robert H., Jr., 4,578,142, Cl. 156-612.000.

Blatner, John R., to Hydraulic Servocontrols Corporation. Nozzle and impingement plate valve. 4,577,652, Cl. 137-82.000.

Blum, Alex: *See—*
Suter, Heinz; and Blum, Alex, 4,578,659, Cl. 335-131.000.

Bobik, Carl F.: *See—*
Huseby, Irvin C.; and Bobik, Carl F., 4,578,232, Cl. 264-65.000.
Huseby, Irvin C.; and Bobik, Carl F., 4,578,233, Cl. 264-65.000.

Huseby, Irvin C.; and Bobik, Carl F., 4,578,234, Cl. 264-65.000.
Huseby, Irvin C.; and Bobik, Carl F., 4,578,364, Cl. 501-98.000.
Huseby, Irvin C.; and Bobik, Carl F., 4,578,365, Cl. 501-98.000.

BOC Group, plc, The: *See—*
Moore, Colin; and Jenkins, David P., 4,577,567, Cl. 110-347.000.

Bockmann, Klaus: *See—*
Jager, Gerhard; Bockmann, Klaus; Buchel, Karl H.; Brandes, Wilhelm; Frohberger, Paul-Ernst; and Scheinpflug, Hans, 4,578,396, Cl. 514-383.000.

Boegner, Gregory J.; Walters, Harry J.; and Marshner, Robert L., to M. S. Willett, Inc. Press mounted transfer apparatus. 4,577,748, Cl. 198-621.000.

Boehm, Udo; Grittmann, Ernst-Juergen; and Schulze-Berge, Klaus, to BASF Aktiengesellschaft. Head arm mounting device for one or more scanning heads in recording playback apparatus for disk records. 4,578,726, Cl. 360-99.000.

Boehringer Ingelheim GmbH: *See—*
Stricker, Herbert; Freund, Bernhard; Harwalik, Heribert; Rominger, Karl L.; Darda, Siegfried; Haselbarth, Volkmar; Arndts, Dietrich; Bechtel, Wolf D.; Bozler, Gerhard; Brickl, Rolf; and Gruber, Peter, 4,578,264, Cl. 424-37.000.

Boehringer Mannheim GmbH: *See—*
Siedel, Joachim; Neumann, Ulrich; Ziegenhorn, Joachim; Batz, Hans-Georg; Lenz, Helmut; Pautz, Brigitte; and Albert, Winfried, 4,578,361, Cl. 436-547.000.
van Rijckevorsel, Rainer; Kasielke, Joachim; Macho, Heinz; Schafer, Peter; and Nenninger, Klaus, 4,578,716, Cl. 360-1.000.

Boeing Company, The: *See—*
Armstrong, Thomas E.; Boob, Douglas L.; Burrous, Homer R.; Fryc, Oldrich; and Wagner, David L., 4,577,794, Cl. 227-119.000.
Large, David T., 4,577,450, Cl. 52-787.000.
Pinson, George T., 4,577,825, Cl. 248-550.000.
Russnak, Clarence J., 4,577,965, Cl. 356-138.000.
Williams, John W., 4,577,579, Cl. 114-274.000.

Boge GmbH: *See—*
Meller, Theo; Knecht, Heinz; and Kuchheuser, Werner, 4,577,840, Cl. 267-64.170.
Moser, Bernd, 4,577,509, Cl. 73-658.000.

Bogese, Stephen B., II, to Virginia Patent Development Corp. Modular connector with improved housing and contact structure. 4,577,921, Cl. 339-176.00M.

Bohlen, Harald: *See—*
Behringer, Uwe; Bohlen, Harald; Nehmiz, Peter; and Zapka, Werner, 4,578,587, Cl. 250-492.200.

Bohringer, Wilfried; Eheim, Franz, deceased (by Eheim, Helga, legal representative); Fehlmann, Wolfgang; Laufer, Helmut; and Zibold, Karl, to Robert Bosch GmbH. Pressure valve assembly for fuel injection pumps. 4,577,606, Cl. 123-506.000.

Boire, Daniel C.: *See—*
Degenford, James E.; and Boire, Daniel C., 4,578,629, Cl. 323-217.000.

Boileau, Christopher W., to Morton Thiokol, Inc. Minimum bulk, light weight welded aluminum inflator. 4,578,247, Cl. 422-165.000.

Bom, Cornelis J. G.: *See—*
van der Lely, Ary; and Bom, Cornelis J. G., 4,577,456, Cl. 56-13.600.

Boman, Goran: *See—*
Bergstrom, Tommy; Boman, Goran; and Englund, Leif, 4,577,826, Cl. 248-638.000.

Bonacchi, Graziano; Fedi, Mauro; and Giannini, Mario, to Malesci S.p.A. Instituto Farmacobiologico. Process for the preparation of 1-pyridyl-alkyl-4-aryl piperazines which are useful as antihypertensive compounds, their separation into the respective optical antipodes, and the stereoisomeric compounds so obtained. 4,578,467, Cl. 544-360.000.

Bonacci, Carlo, to Societa Italiana Vetro SIV S.p.A. Apparatus for cutting sheets of plate glass according to a programmed profile. 4,577,539, Cl. 83-886.000.

Bongers, Bernd; and Bansemir, Horst, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung. Tubular member, especially for a safety steering column for motor vehicles. 4,577,736, Cl. 188-371.000.

Bonino, Pierre; Ducret, Christian; and Mazzoleni, Cyrille, to Compagnie Parisienne d'Outillage a Air Comprime. Connecting clamp for pneumatic apparatus. 4,577,893, Cl. 285-158.000.

Bonneton, Marc: *See—*
Barillec, Christian; Janvier, Dominique; and Bonneton, Marc, 4,578,013, Cl. 414-323.000.

Boob, Douglas L.: *See—*
Armstrong, Thomas E.; Boob, Douglas L.; Burrous, Homer R.; Fryc, Oldrich; and Wagner, David L., 4,577,794, Cl. 227-119.000.

Borders, Donald B.: *See—*
Carter, Guy T.; Borders, Donald B.; Goodman, Joseph J.; and Labeda, David P., 4,578,468, Cl. 546-35.000.

Borg, Kevin E.; Halas, William P.; Mattes, Hans G.; McLear, Paul M.; and White, Lester L., to AT&T Bell Laboratories. Telecommunications systems. 4,578,540, Cl. 179-2.00A.

Borg-Warner Corporation: *See—*
Gray, Stanley J., 4,578,006, Cl. 409-303.000.

Borja, Antonio B. Multi-chambered air cleaner. 4,578,091, Cl. 55-90.000.

Bormioli, Giorgio. Hose fitting with automatic separation under strong tensile stress. 4,577,833, Cl. 251-149.100.

Borregaard Industries Limited: *See—*
Skattebol, Lars; and Stenstrom, Yngve, 4,578,484, Cl. 549-360.000.

Borrman, Bo; Hellman, Erik; Lundin, Nils; and Ode, Bengt, to AB ASEA-ATOM. Earthquake-proof fuel assembly. 4,578,241, Cl. 376-446.000.

Borsenberger, Paul M.; Regan, Michael T.; and Staudenmayer, William J., to Eastman Kodak Company. Multi-active photoconductive insulating elements and method for their manufacture. 4,578,334, Cl. 430-59.000.

Borsenberger, Paul M.: *See—*
Staudenmayer, William J.; Chen, Tsang J.; Borsenberger, Paul M.; and Grashof, Hans R., 4,578,333, Cl. 430-60.000.

Borsh, Richard J.; Ripley, Robert W.; and Pate, Harold T., to Thyssen-Bornemisza, Inc., (TBG Inc.). Electrical outlet box and method of manufacturing same. 4,578,528, Cl. 174-65.00G.

Bosch, Henery G. K.; and Pouliot, Thomas W. Self adjusting camshaft gear for internal combustion engines. 4,577,592, Cl. 123-90.150.

Boschung, Andre : *See—*
Morris, Anthony F.; Delay, Francois; Gautschi, Fritz; Thomas, Alan F.; Giersch, Wolfgang K.; and Boschung, Andre , 4,578,277, Cl. 426-538.000.

Bosteels, Michel; and Oliva, Ambro. Calibrated fluid flow control device. 4,577,658, Cl. 137-599.000.

Boston, William G.: *See—*
Dellinger, Thomas B.; Boston, William G.; Sexton, James H.; and Strong, Robert T., 4,577,700, Cl. 175-40.000.

Bott, David C.; Edwards, John H.; and Feast, William J., to British Petroleum Company P.L.C., The. Polyacetylene production. 4,578,443, Cl. 526-285.000.

Boucher, William R.: *See—*
Cloutier, Frank L.; McClelland, Paul H.; Boucher, William R.; and Siewell, Gary L., 4,578,687, Cl. 346-140.00R.

Bouiller, Jean G.: *See—*
Bayle-Laboure, Gerard J. P.; Bouiller, Jean G.; Buisson, Marc F. B.; and Soligny, Marcel R., 4,577,814, Cl. 244-12.500.

Bowen, John G. Soft contact lens disinfecting unit. 4,578,566, Cl. 219-521.000.

Bowler, Donald J.: *See—*
Bayer, Arthur C.; Robbins, Jeffrey D.; and Bowler, Donald J., 4,578,224, Cl. 260-502.50F.

Bowman, Edward E.: *See—*
Ibrahim, Fayez F.; and Bowman, Edward E., 4,577,467, Cl. 62-82.000.

Boyett, Gladys D. Removable book marker strip. 4,577,890, Cl. 281-29.000.

Bozler, Gerhard: *See—*
Stricker, Herbert; Freund, Bernhard; Harwalik, Heribert; Rominger, Karl L.; Darda, Siegfried; Haselbarth, Volkmar; Arndts, Dietrich; Bechtel, Wolf D.; Bozler, Gerhard; Brickl, Rolf; and Gruber, Peter, 4,578,264, Cl. 424-37.000.

Brackett, John E.; and Dahlberg, Larry J., to Fishing Designs, Inc. Fishing rod handle. 4,577,432, Cl. 43-23.000.

Bradley, Charles A.; Benge, Herman; Parl, Fritz F.; and Seebaugh, William R., to Vanderbilt University. Method and apparatus for sampling liquid phase components from a liquid-semisolid fluid. 4,577,514, Cl. 73-863.010.

Bradley, Robert F., to Micro-Circuits Company. Electrical conductivity-enhancing and protecting material. 4,578,215, Cl. 252-514.000.

Brakhage, William L., Jr., to Baker Oil Tools, Inc. Permanent lock open tool. 4,577,694, Cl. 166-382.000.

Brandes, Wilhelm: *See—*
Jager, Gerhard; Bockmann, Klaus; Buchel, Karl H.; Brandes, Wilhelm; Frohberger, Paul-Ernst; and Scheinpflug, Hans, 4,578,396, Cl. 514-383.000.

Brannan, William L., Jr., to Seagate Technology. Stress test for magnetic disc recording apparatus. 4,578,721, Cl. 360-51.000.

Braud, Yves; and Fromentin, Jean, to Stein Heurtey Ste Anonyme. Device for charging steel products in a reheating or treatment furnace. 4,578,011, Cl. 414-152.000.

Braude, Ruvim, to Burroughs Corporation. Glass composition and gas-filled display panel incorporating the glass. 4,578,619, Cl. 313-586.000.

Braun, Otto P. Apparatus for controlling the regulator of a device for spreading salt or the like on roads. 4,577,781, Cl. 222-54.000.

Braun, Ralph V.: *See—*
Whitehead, Howard A.; and Braun, Ralph V., 4,578,069, Cl. 604-370.000.

Bray, David J.; Johnson, Peter E.; Marshall, Peter E. G.; Piper, Francis R.; and Murdoch, Iain H., to BL Technology Limited. Detecting leaks. 4,577,490, Cl. 73-40.700.

Bray, Stuart W.; Hughes, Timothy C.; and Ariniello, Susan E., to Storage Technology Corporation. Tape reel position sensor. 4,577,811, Cl. 242-195.000.

Breininger, J. Shannon, to PPG Industries, Inc. Method of making non-glare coated glass. 4,578,100, Cl. 65-60.800.

Brenner, Peter, to Georg Fischer Aktiengesellschaft. Multiple-station centrifugal blasting apparatus. 4,577,441, Cl. 51-419.000.

Bressan, Elie: *See—*
Urien, Jacques; Bressan, Elie; Danguy, Jacques; and Narzul, Marcel, 4,578,658, Cl. 333-227.000.

Breu, Johann, to Rockinger Spezialfabrik fur Anhangerkupplungen GmbH & Co. Trailer coupling. 4,577,885, Cl. 280-508.000.

Brickl, Rolf: *See—*
Stricker, Herbert; Freund, Bernhard; Harwalik, Heribert; Rominger, Karl L.; Darda, Siegfried; Haselbarth, Volkmar; Arndts, Dietrich; Bechtel, Wolf D.; Bozler, Gerhard; Brickl, Rolf; and Gruber, Peter, 4,578,264, Cl. 424-37.000.

Bricmont, Francis H. Method for joining together heated workpieces for processing in a rolling mill. 4,577,384, Cl. 29-460.000.
Brigham and Women's Hospital: *See—*
Pier, Gerald B., 4,578,458, Cl. 536-123.000.
Brigham Young University: *See—*
Bangerter, Blauer L.; and Streeter, James M., 4,577,861, Cl. 272-96.000.
Brinkman, Winford L. Promotional game. 4,577,869, Cl. 273-269.000.
Bristol-Myers Company: *See—*
Crenshaw, Ronnie R.; and Algieri, Aldo A., 4,578,471, Cl. 546-193.000.
British-American Tobacco Company Limited: *See—*
Luke, John A., 4,578,053, Cl. 493-45.000.
British Petroleum Company P.L.C., The: *See—*
Bott, David C.; Edwards, John H.; and Feast, William J., 4,578,443, Cl. 526-285.000.
Callaghan, Ian C.; and Gould, Clive M., 4,577,491, Cl. 73-60.100.
British Picker Company, Ltd., The: *See—*
Howorth, David, 4,577,448, Cl. 52-584.000.
Britt, Crawford R.: *See—*
Weaver, Gregory A.; Price, Lester F.; Britt, Crawford R.; and Shalaby, W. Shalaby, 4,578,451, Cl. 528-292.000.
Broadus, Ronnie J.; and Slade, Randall. Apparatus and method for inspecting welds. 4,577,488, Cl. 73-40.000.
Brochman, Wilfred R., to Minnesota Mining and Manufacturing Company. Tape closure for a can end. 4,577,777, Cl. 220-359.000.
Brode, George L.; and Chow, Sui-Wu, to Union Carbide Corporation. High-ortho phenol-formaldehyde resoles containing hemiformal groups. 4,578,448, Cl. 528-139.000.
Brook, Richard M., to Autosystems Limited. Weighing apparatus. 4,577,708, Cl. 177-145.000.
Brother Industries, Ltd.: *See—*
Sasaki, Ryoichi, 4,577,982, Cl. 400-17.000.
Brother Kogyo Kabushiki Kaisha: *See—*
Yamamoto, Takemi; Kuzuya, Susumu; Kagami, Isao; and Takenaka, Yuuichi, 4,577,984, Cl. 400-625.000.
Brouse, S. Bernard, to United States Steel Corporation. Knotting apparatus for wire strapping machine. 4,577,554, Cl. 100-26.000.
Brown, Alfred: *See—*
Gassmann, Zean Z.; Hawkins, Jeffrey T.; and Brown, Alfred, 4,577,688, Cl. 166-245.000.
Brown, Barry D., to Datak Corporation, The. Adhesive products. 4,578,136, Cl. 156-249.000.
Brown, Donald R., to AT&T Technologies, Inc. Surface mounted electrical components and method of fabrication. 4,578,736, Cl. 361-306.000.
Brown, Eugene C., to Data Vu Company. CRT magnifying lens attachment and glare reduction system. 4,577,928, Cl. 350-276.00R.
Brown, Ivonne: *See—*
Tietjen, Marlene; Brown, Ivonne; and Macchio, Ralph A., 4,578,266, Cl. 424-63.000.
Browne, John, to Nei Canada Limited. Display. 4,577,427, Cl. 40-449.000.
Browning, James E., to International Telephone and Telegraph Corporation. Wheel cover center retention system. 4,577,909, Cl. 301-37.0TP.
Bruckner, Harald, to Krupp Industrietechnik Werk Buckau-Wolf; Starcosa GmbH; and Versuchs- und Lehranstalt fur Spiritusfabrikation und Fermentationstechnologie in Berlin. Process for extracting polar organic compounds, in particular lower aliphatic alcohols, from their aqueous solutions, and fluids particularly suitable for this purpose. 4,578,525, Cl. 568-918.000.
Brunet, Michel, to Etablissements Valois. Valve for dispensing a measured volume of fluid from a container containing a fluid substance under pressure. 4,577,784, Cl. 222-402.200.
Brunswick Corporation: *See—*
Chmielewski, Cary J., 4,577,599, Cl. 123-179.00B.
Buchel, Karl H.: *See—*
Jager, Gerhard; Bockmann, Klaus; Buchel, Karl H.; Brandes, Wilhelm; Frohberger, Paul-Ernst; and Scheinpflug, Hans, 4,578,396, Cl. 514-383.000.
Buchler, Rene . Device for mounting an object. 4,577,846, Cl. 269-82.000.
Budd, William; and Sandstrom, Paul H., to Goodyear Tire & Rubber Company, The. Process for making powdered rubber. 4,578,411, Cl. 524-156.000.
Buehler, Ernest: *See—*
Chai, Bruce H.; Buehler, Ernest; Flynn, John J.; and Morris, Robert C., 4,578,146, Cl. 156-623.00R.
Buehler Products, Inc.: *See—*
Welterlin, Raymond E., 4,578,606, Cl. 310-68.00R.
Buell, Kenneth B., to Procter & Gamble Company, The. Disposable absorbent article having an improved liquid migration resistant perimeter construction. 4,578,071, Cl. 604-379.000.
Buhl, Reihard; and Westphal, Paul, to Lemforder Metallwaren AG. Ball and socket joint. 4,577,987, Cl. 403-133.000.
Buisson, Marc F. B.: *See—*
Bayle-Laboure, Gerard J. P.; Bouiller, Jean G.; Buisson, Marc F. B.; and Soligny, Marcel R., 4,577,814, Cl. 244-12.500.
Bunge, Richard H.: *See—*
Stampwala, Suresh S.; French, James C.; Tunac, Josefino B.; Hurley, Timothy R.; and Bunge, Richard H., 4,578,383, Cl. 514-7.000.
Buonomo, Franco; Bellussi, Giuseppe; and Notari, Bruno, to Enichimica S.p.A. Process for preparing quaternary ammonium hydroxides by electrolysis. 4,578,161, Cl. 204-102.000.
Buote, William J.: *See—*
Hutchins, Burleigh M.; Buote, William J.; and Finn, Lawrence J., 4,578,764, Cl. 364-513.000.
Bur, Anthony J.; and Roth, Steven C., to United States of America, Air Force. Dynamic polymer pressure transducer with temperature compensation. 4,577,510, Cl. 73-708.000.
Burcham, George R. Blending rubber for retreading. 4,577,971, Cl. 366-76.000.
Burckett St. Laurent, James C. T. R.; and Busch, Alfred, to Procter & Gamble Company, The. Fabric softeners. 4,578,200, Cl. 252-8.800.
Burgdorf, Jochen; Birkenbach, Alfred; and Klimt, Ulrich, to ITT Industries, Inc. Floating caliper spot type disc brake. 4,577,731, Cl. 188-73.330.
Burger, Rainer, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Rotary web printing machine. 4,577,559, Cl. 101-221.000.
Burns, Lyle D.; and Stahl, G. Allan, to Phillips Petroleum Company. N-vinyl lactam/unsaturated amide copolymers in thickened acid compositions. 4,578,201, Cl. 252-8.55C.
Burroughs Corporation: *See—*
Braude, Ruvim, 4,578,619, Cl. 313-586.000.
Burrous, Homer R.: *See—*
Armstrong, Thomas E.; Boob, Douglas L.; Burrous, Homer R.; Fryc, Oldrich; and Wagner, David L., 4,577,794, Cl. 227-119.000.
Burt, Roy J.: *See—*
Sliwa, John W.; Burt, Roy J.; Lee, Chune; MacKay, John; and Johnson, Cindy A., 4,577,398, Cl. 29-590.000.
Busch, Alfred: *See—*
Burckett St. Laurent, James C. T. R.; and Busch, Alfred, 4,578,200, Cl. 252-8.800.
Bush, E. Dan, to Handy Button Machine Company. Button collet. 4,577,373, Cl. 24-90.00B.
Butler, Claude O. Tandem wheel flexible drive suspension. 4,577,711, Cl. 180-24.100.
Butler, John D., to Mechtrix Corporation. Compound-angle blade for stripping insulated electrical conductors. 4,577,405, Cl. 30-90.100.
Byer, Robert L.: *See—*
Kane, Thomas J.; and Byer, Robert L., 4,578,793, Cl. 372-94.000.
Byk Gulden Lomberg Chemische Fabrik GmbH: *See—*
Keller, Heimo; Keppler, Bernhard; Kruger, Uwe; and Linder, Rudolf, 4,578,401, Cl. 514-49.000.
C F Braun & Co.: *See—*
Jungerhans, Robert R. J., 4,578,214, Cl. 252-376.000.
C-I-L Inc.: *See—*
Cameron, Gordon M., 4,578,262, Cl. 423-522.000.
C. Van Der Lely N.V.: *See—*
van der Lely, Ary; and Bom, Cornelis J. G., 4,577,456, Cl. 56-13.600.
Caddy, Michael J., to United States of America, Navy. Computer-aided process for generating camera-ready graphical artwork. 4,578,766, Cl. 364-521.000.
Cadek, Walter, to Vereinigte Edestahlwerke Aktiengesellschaft (VEW). Metallurgical vessel. 4,578,794, Cl. 373-42.000.
Cadwell, Dennis J., to Westinghouse Electric Corp. Nuclear reactor fuel assembly spacer grid. 4,578,240, Cl. 376-441.000.
Calkins, Edward H. Reduced moisture smokers pipe. 4,577,645, Cl. 131-196.000.
Calkins, George B.: *See—*
Sarnoff, Stanley J.; Calkins, George B.; and Tarello, William R., 4,578,064, Cl. 604-191.000.
Callaghan, Ian C.; and Gould, Clive M., to British Petroleum Company, p.l.c., The. Method for determining the stability of foam. 4,577,491, Cl. 73-60.100.
Callaway, Ernest F. Ridge row clamp. 4,577,442, Cl. 52-57.000.
Calvert, Rodney K.; and Fishback, Alton J., to Mead Corporation, The. Apparatus for arranging articles in groups. 4,577,745, Cl. 198-420.000.
Calvert, Wynne: *See—*
Sanders, Thomas C.; and Calvert, Wynne, 4,578,663, Cl. 335-306.000.
Cambridge Instruments Limited: *See—*
Barker, John C., 4,578,765, Cl. 364-514.000.
Camco, Incorporated: *See—*
Eatwell, William D., 4,577,685, Cl. 166-115.000.
Pringle, Ronald E., 4,577,654, Cl. 137-219.000.
Cameron, Gordon M., to C-I-L Inc. Liquid sulphur dioxide manufacture. 4,578,262, Cl. 423-522.000.
Camp Dresser & McKee, Inc.: *See—*
Meckler, Gershon, 4,577,471, Cl. 62-271.000.
Campbell, Wallace S., III, to American Television & Communications Corporation. CATV tap-off unit with detachable directional coupler. 4,578,702, Cl. 358-86.000.
Campos-Loriz, Diego, to Kennecott Corporation. Silicon carbide refractories having modified silicon nitride bond. 4,578,363, Cl. 501-89.000.
Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence of Her Majesty's Canadian Government: *See—*
Preston, Jonathan M., 4,578,586, Cl. 250-382.000.
Canada, The Government of: *See—*
Fong, Wing C.; Fournier, Albert J.; and Gil, Bernard B., 4,577,518, Cl. 73-864.910.
Cann, Gordon L. Spacecraft optimized arc rocket. 4,577,461, Cl. 60-203.100.
Cannon, John J., to Pfizer Inc. Immobilization of catalytically active microorganisms in agar gel fibers. 4,578,354, Cl. 435-178.000.

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Shaw, Richard G.; and Canterino, Peter J., 4,578,431, Cl. 525-387.000.
Cardwell, John G., Jr., to General Electric Company. Tungsten halogen incandescent lamp having an improved mounting structure. 4,578,616, Cl. 313-579.000.
Cariolaro, Gianfranco: *See—*
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Carl, William P.: *See—*
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Salicini, Sandro, 4,577,451, Cl. 53-58.000.
Carlson, Richard K., to MPC Products Corporation. Coaxial coupling and locking mechanism. 4,577,990, Cl. 403-342.000.
Carlson, Robert A.; and Smith, Nicholas H., to Reptech, Inc. Refractory insulator blanket and cover. 4,577,839, Cl. 266-272.000.
Carmillet, Roger F. L., to VALEO. Clutch cover assembly. 4,577,740, Cl. 192-70.180.
Carosella, David P. E., Jr.: *See—*
Yampolsky, Jack S.; and Carosella, David P. E., Jr., 4,577,682, Cl. 165-160.000.
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Carroll, James M. Apparatus for insulating water faucets. 4,577,655, Cl. 137-375.000.
Carson, Charles F. Apparatus for finishing waistband end portions. 4,577,571, Cl. 112-121.150.
Carter, Guy T.; Borders, Donald B.; Goodman, Joseph J.; and Labeda, David P., to American Cyanamid Company. Antibiotic LL-D42067β. 4,578,468, Cl. 546-35.000.
Carter, Nicholas J. R.: *See—*
Middleton, Francisco A.; Carter, Nicholas J. R.; and Das, Santanu, 4,578,789, Cl. 370-58.000.
Casio Computer Co., Ltd.: *See—*
Inagaki, Naoki, 4,578,811, Cl. 382-11.000.
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Yamana, Kozi, 4,577,540, Cl. 84-1.270.
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Castille, Alan J., to Hub City Iron Works, Inc. Pipe joint having pressure activated sealing means. 4,577,895, Cl. 285-334.000.
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Cavalli, Walter, to O.M.C. s.n.c. di Walter & Dante Cavalli. Automatic device for advancement of revolving mechanical organs. 4,577,532, Cl. 74-841.000.
Celanese Corporation: *See—*
Doerr, Marvin L., 4,578,510, Cl. 562-483.000.
Kalnin, Ilmar L.; Goldberg, Harris A.; and Williams, Clyde C., 4,577,979, Cl. 374-178.000.
Celli, Aldo. Prefabricated structural connector for steel-frame buildings. 4,577,449, Cl. 52-721.000.
Centre National de la Recherche Scientifique: *See—*
Jaffrin, Michel; and Reach, Gerard, 4,578,191, Cl. 210-323.200.
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Cetinkaya, Ismail B.; and Myers, Daniel N., to UOP Inc. FCC combustion zone catalyst cooling process. 4,578,366, Cl. 502-6.000.
Chai, Bruce H.; Buehler, Ernest; Flynn, John J.; and Morris, Robert C., to Allied Corporation. Process for growing a large single crystal from multiple seed crystals. 4,578,146, Cl. 156-623.00R.
Chan, Yuen H.; and Struk, James R., to International Business Machines Corporation. Voltage mode operation scheme for bipolar arrays. 4,578,779, Cl. 365-190.000.
Chang, Clarence D.; and Hellring, Stuart D., to Mobil Oil Corporation. Shape-selective catalytic oxidation of phenol. 4,578,521, Cl. 568-771.000.
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Chang, Mike S. H., to Pitney Bowes Inc. Vinyl-hydro polysiloxane copolymers release compositions. 4,578,493, Cl. 556-451.000.
Chang, Paul: *See—*
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Chaplin, Russell, to International Business Machines Corporation. Optical vibration analyzer. 4,577,508, Cl. 73-655.000.
Charalambous, Salomi T.; Horvath, Mark P.; House, Cathy P.; Iapicco, Jeffrey A.; Lue, Paul D.; and Verma, Shiv P., to Bell Telephone Laboratories, Incorporated; and AT&T Information Systems Inc. Programmable multiple type data set. 4,578,796, Cl. 375-8.000.
Chasen, Lee R., to Coats & Clark, Inc. Self adjusting tongs. 4,577,900, Cl. 294-118.000.
Chassaing, Jacques, to ADIDAS Fabrique de Chaussures de Sport. High-top shoe. 4,577,419, Cl. 36-89.000.
Chemische Werke Huls Aktiengesellschaft: *See—*
Hofmann, Peter, 4,578,367, Cl. 502-24.000.
Chen, Bor-Uei, to TRW Inc. High-power injection laser diode structure. 4,578,791, Cl. 372-50.000.
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Staudenmayer, William J.; Chen, Tsang J.; Borsenberger, Paul M.; and Grashof, Hans R., 4,578,333, Cl. 430-60.000.
Cheng, Chen-Yen; and Cheng, Sing-Wang. Wet and dry distillative freezing process for separating mixtures and apparatuses for use therein. 4,578,093, Cl. 62-12.000.
Cheng, Sing-Wang: *See—*
Cheng, Chen-Yen; and Cheng, Sing-Wang, 4,578,093, Cl. 62-12.000.
Chernega, John O. Adjustable flex ski. 4,577,886, Cl. 280-602.000.
Chiarella, Michele A. Bicycle chain cleaning device and method. 4,578,120, Cl. 134-9.000.
Chiba, Masae: *See—*
Taneda, Kozo; Chiba, Masae; Naka, Junichi; and Watanabe, Shunichi, 4,578,002, Cl. 406-28.000.
Chien, Sze-Foo: *See—*
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Chmielewski, Cary J., to Brunswick Corporation. Remote starter for internal combustion engine. 4,577,599, Cl. 123-179.00B.
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Gyugyi, Laszlo; Heinrich, Theodore M.; and Cho, Gyu-Hyeong, 4,578,746, Cl. 363-161.000.
Chou, Tai-Sheng; and Lee, Chang-Kuei, to Mobil Oil Corporation. Feed mixing technique for fluidized catalytic cracking of hydrocarbon oil. 4,578,183, Cl. 208-113.000.
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Brode, George L.; and Chow, Sui-Wu, 4,578,448, Cl. 528-139.000.
Christe, Karl O.: *See—*
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Ciammaichella, Richard C.; and Youmans, Barry J., to Babcock & Wilcox Company, The. Solid state ultraviolet flame detector. 4,578,583, Cl. 250-339.000.
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Postle, Stephen R.; and Kingston, Samuel B., 4,578,305, Cl. 428-212.000.
Seiler, Herbert, 4,578,457, Cl. 534-632.000.
Ciba-Geigy Corporation: *See—*
Demmer, Christopher G.; and Hathaway, Roderick D., 4,578,438, Cl. 525-481.000.
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Claessen, Johannes A. H.: *See—*
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Kanai, Tsutomu, 4,578,703, Cl. 358-117.000.
Clarisse, Eddy J., to U.S. Philips Corporation. Apparatus adapted to be mounted in a mounting wall. 4,577,818, Cl. 248-27.300.

Clark, Emmett T. Device to automatically lower a lifted toilet seat. 4,577,350, Cl. 4-251.000.
Clark, Harold R.; and Nicol, David A., to AT&T Technologies, Inc. Method for stretching a glass rod. 4,578,101, Cl. 65-109.000.
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Clauson, Melvil B.; and Wagner, John R., Jr., to Mobil Oil Corporation. Multi-layer oriented polypropylene films with low COF skin(s). 4,578,316, Cl. 428-516.000.
Claydon, Martin, to U.S. Philips Corporation. System for processing audio frequency information for frequency modulation. 4,578,818, Cl. 455-110.000.
Cleary, Michael T., to UOP Inc. Process for separating saturated fatty acids from each other. 4,578,223, Cl. 260-419.000.
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Morel, Michel; and Pillac, Bernard, 4,577,484, Cl. 72-245.000.
Clegg, John E. Sink outlet valve. 4,577,349, Cl. 4-203.000.
Clegg, John E. Hemispheric solar panel. 4,577,620, Cl. 126-440.000.
Clegg, John E. Conical beam concentrator. 4,577,936, Cl. 350-432.000.
Clegg, John E. Conical beam concentrator. 4,577,937, Cl. 350-432.000.
Clegg, John E. Conical beam concentrator. 4,577,938, Cl. 350-432.000.
Clegg, John E. Monochromatic beam concentrator. 4,577,939, Cl. 350-443.000.
Clegg, John E. Laser means and method. 4,578,558, Cl. 219-121.0LG.
Clem, Jack L.; and Scott, Oscar T., IV, to J. M. Huber Corporation. Air recuperator cleaner. 4,577,680, Cl. 165-95.000.
Clementini, Luciano; and Spagnoli, Leonardo, to Montedison S.p.A. Modified olefine polymers and process for their manufacture. 4,578,428, Cl. 525-265.000.
Clendinen, Charles D. Snap fastener. 4,577,376, Cl. 24-624.000.
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Ortwein, Hermann, 4,577,801, Cl. 238-283.000.
Cloutier, Frank L.; McClelland, Paul H.; Boucher, William R.; and Siewell, Gary L., to Hewlett Packard Company. Ink jet printhead having hydraulically separated orifices. 4,578,687, Cl. 346-140.00R.
Coats & Clark, Inc.: *See—*
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Codenoll Technology Corporation: *See—*
Scholl, Frederick W.; and Coden, Michael H., 4,578,799, Cl. 375-87.000.
Cohen, Joel S.: *See—*
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Coin Acceptors, Inc.: *See—*
Holland, Charlie R.; and DelPercio, Michael J., 4,577,780, Cl. 221-125.000.
Coldren, Daniel R.; and Pritulsky, James, to AMP Incorporated. Electrical assembly with cable guiding member. 4,577,920, Cl. 339-143.00R.
Cole, George S., to Energaire Corporation. Sole-and-heel structure having premolded bulges. 4,577,417, Cl. 36-29.000.
Colet, Ralph. Automobile tray trailer. 4,578,014, Cl. 414-483.000.
Colin de Verdiere, Jean-Marc M.; and Langlois, Patrice R., to Societe Anonyme de Telecommunications. Initialization device for echo cancelling device and application thereof to remote echos. 4,578,544, Cl. 179-170.200.
Colla, Joseph. Mechanical propulsion system. 4,577,520, Cl. 74-84.00R.
Collins, Paul W.; and Weier, Richard M., to G. D. Searle & Co. Allenic prostanoic acid derivatives. 4,578,505, Cl. 560-118.000.
Colmon, Daniel; and Letemps, Bernard, to Saint-Gobain Recherche. Quenching or tempering by means of a two-phase jet. 4,578,102, Cl. 65-114.000.
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Teigen, Bard C., 4,577,593, Cl. 122-235.00D.
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Garnsworthy, Russell K., 4,577,458, Cl. 57-22.000.
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Computer Memories, Inc.: *See—*
Nazarian, Ara W.; and Stupeck, Donald G., 4,578,625, Cl. 318-318.000.
Connon, Thomas R., to United States of America, Air Force. Direct view helmet mounted telescope. 4,577,347, Cl. 2-6.000.
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Gorin, Everett, 4,578,175, Cl. 208-8.00R.
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Everman, Wayne F., 4,578,051, Cl. 493-8.000.
Continental Conveyor & Equipment Co., Inc.: *See—*
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Cook, Stuart A.: *See—*
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Coombs, Daniel M.: *See—*
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CooperVision, Inc.: *See—*
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Corboy, John F., Jr.; Jastrzebski, Lubomir L.; Blackstone, Scott C.; and Pagliaro, Robert H., Jr., to RCA Corporation. Method for growing monocrystalline silicon through mask layer. 4,578,142, Cl. 156-612.000.
Corby, Nelson R., Jr.; and Godwin, Stanley J., to General Electric Company. Method of enhancing weld pool boundary definition. 4,578,561, Cl. 219-124.340.
Cordis Corporation: *See—*
Beranek, William J., 4,577,643, Cl. 128-785.000.
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Corley, Daniel M.: *See—*
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Cormier, Milton J., to University of Georgia Research Foundation, Inc. Use of phenothiazine 5-oxide drugs as vaginal contraceptives. 4,578,379, Cl. 514-223.000.
Cormier, Milton J., to University of Georgia Research Foundation, Inc. Use of phenothiazine 5-oxide drugs in uterus to prevent pregnancy. 4,578,385, Cl. 514-223.000.
Cornelius Company, The: *See—*
Fessler, Herman S., 4,577,782, Cl. 222-129.100.
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Bahrmann, Helmut; Cornils, Boy; Konkol, Werner; and Lipps, Wolfgang, 4,578,523, Cl. 568-454.000.
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Cosgrove, John: *See—*
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Cosgrove, Robert J., Jr.; and Smolen, Victor F., to Pharmacontrol Corp. Sampling apparatus for obtaining a plurality of fluid samples. 4,578,244, Cl. 422-65.000.
Cotter, Christopher G.: *See—*
Simon, Mark I.; Cotter, Christopher G.; and Stein-Gelinas, Carolyn, 4,577,639, Cl. 128-709.000.
Couch, Robert P.: *See—*
Rosenbush, David M.; Zwicke, Philip E.; and Couch, Robert P., 4,578,756, Cl. 364-431.020.
Coulter, Leland E., to Teledyne, Inc. Laser welding apparatus. 4,578,554, Cl. 219-121.0LC.
Cousino, Kenneth P. Sewerage flow diverter. 4,578,188, Cl. 210-170.000.
Coutant, John E.: *See—*
Cregge, Robert J.; and Coutant, John E., 4,578,464, Cl. 544-236.000.
Cox, James D., Jr. Torsional thrust tool. 4,577,522, Cl. 74-127.000.
CPC International Inc.: *See—*
Katkocin, Dennis M.; Word, Nancy S.; and Yang, Shiow-Shong, 4,578,352, Cl. 435-99.000.
CPG Products Corp.: *See—*
Mayer, John F.; Langdon, Nick H.; Cook, Stuart A.; Nicholson, L. Todd; and Belcher, John R., 4,578,045, Cl. 446-330.000.
Crawford, Carl R.; Shimoni, Yair; Sohval, A. Robert; and Barnea, Daniel I., to Elscint Ltd. Systems and methods for minimizing noncoplanarity artifacts. 4,578,753, Cl. 364-414.000.
Cregge, Robert J.; and Coutant, John E., to Merrell Dow Pharmaceuticals Inc. 6-Hydroxyalkylamino-8-methyl-1,2,4-triazolo-[4,3-b]pyridazine and related compounds. 4,578,464, Cl. 544-236.000.
Crenshaw, Ronnie R.; and Algieri, Aldo A., to Bristol-Myers Company. Substituted amino alkyl pyridyl ethanediimidamides. 4,578,471, Cl. 546-193.000.
Creo Electronics Corporation: *See—*
Gelbart, Daniel, 4,577,932, Cl. 350-358.000.
Crepinsek, Alois. Strike plate and security chain latch. 4,577,896, Cl. 292-264.000.
Crevling, Robert L., Jr.: *See—*
Miller, Jonathan; Berfield, Robert C.; and Crevling, Robert L., Jr., 4,577,366, Cl. 15-388.000.
Crisp, Richard D.: *See—*
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Crook, Michael J.: *See—*
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Crooke, Arthur W.; Gyles, Colin; and Stebbins, Edwin E., to Analogic Corporation. Oscilloscope control. 4,578,640, Cl. 324-115.000.
Crosby, Terry R. Wine rack. 4,577,765, Cl. 211-75.000.
Cross, Donald G., to Smith International, Inc. Bellows lubricant pressurizer for sealed bearing rock bits. 4,577,705, Cl. 175-228.000.
Crossley, Roger, to John Wyeth & Brother Limited. Process for preparing 1-(3-bromo-2-alkylpropanoyl)-L-proline derivatives. 4,578,480, Cl. 548-533.000.
Crotty, David E., to OMI International Corporation. Non-peroxide trivalent chromium passivate composition and process. 4,578,122, Cl. 148-6.200.
Cruchon, Jean-Claude; and Schubert, Jean-Denis, to Alcatel Thomson Faisceaux Hertziens. Filter of the type consisting of a primary waveguide having lateral secondary guides. 4,578,657, Cl. 333-211.000.
Cruchon, Jean-Claude: *See—*
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Crum, Michael A., to Leggett & Platt, Incorporated. Rocker recliner and away-from-the-wall recliner chairs. 4,577,902, Cl. 297-85.000.
Cruz, Mamerto M., Jr., to Alcon (Puerto Rico) Inc. Hemostatic-adhesive, collagen dressing for severed biological surfaces. 4,578,067, Cl. 604-368.000.
Csizer, Zoltan; Sikos, Karoly; Bacskai, Laszlo; Joo, Istvan; Niedermayer, Eleonora; Rethy, Lajos; and Zsidai, Jozsef, to Human Oltoanyagtermelo Es Kutato Intezet. Process for the preparation of lyophilized, adsorbed polyvalent vaccines. 4,578,270, Cl. 424-92.000.
Cucchi, Silvio: *See—*
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Cudmore, Warner J. G. Polyethylene terephthalate saponification process. 4,578,502, Cl. 560-79.000.
Cunningham, Jock B., to Mount Isa Mines Limited. Conveyor belt monitor. 4,577,502, Cl. 73-600.000.
Cunningham, Larry L. By-products chiller and method for using same. 4,577,466, Cl. 62-63.000.
Currie, Brian; Gardiner, Thomas; and Green, Henry M., to Lambeg Industrial Research Association; and Ulster Polytechnic. Fabric reinforced cement structure. 4,578,301, Cl. 428-109.000.
Cyclomatic Industries, Inc.: *See—*
Silke, Gerald W.; and Weber, Frank D., 4,577,499, Cl. 73-432.00R.
Cyphelly, Ivan J., to Glyco-antriebstechnik GmbH. Hydrostatic clutch. 4,577,739, Cl. 192-61.000.
Cyriacy, Frieda; Albers, Horst; and Havemann, Ingeborg. Apparatus for making boreholes in the lateral walls of narrow underground mine workings. 4,577,703, Cl. 175-79.000.
Dacol, Frank H.: *See—*
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Dadpey, Habib: *See—*
Sahasrabudhe, Arum P.; Dadpey, Habib; Cirillo, Fernando A.; Merlo, Antonia C.; and Zuber, Pierre A. M., 4,578,754, Cl. 364-426.000.
Dahlberg, Larry J.: *See—*
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Daikin Kogyo Co., Ltd.: *See—*
Hisamoto, Iwao; and Omure, Yukio, 4,578,209, Cl. 252-143.000.
Ishikawa, Nobuo; and Takahashi, Mitsuru, 4,578,222, Cl. 260-413.000.
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Daimler-Benz Aktiengesellschaft: *See—*
Klak, Roland, 4,577,601, Cl. 123-298.000.
Dainippon Screen Mfg. Co., Ltd.: *See—*
Nakaji, Etsuo, 4,578,701, Cl. 358-78.000.
Dalle, Yves H. Device for opening out and folding back one or more thermal screens inside a hothouse. 4,577,436, Cl. 47-17.000.
D'Amico, John J., to Monsanto Company. N-substituted benzothiazoline and N-substituted benzoxaline derivatives. 4,578,477, Cl. 548-165.000.
Dana Corporation: *See—*
Hickey, John L., 4,577,530, Cl. 74-713.000.
Danby Systems Ltd.: *See—*
Dodds, David E., 4,578,541, Cl. 179-18.0FA.
Danguy, Jacques: *See—*
Urien, Jacques; Bressan, Elie; Danguy, Jacques; and Narzul, Marcel, 4,578,658, Cl. 333-227.000.
Daniele, Joseph J.: *See—*
Yip, Kwok-leung; and Daniele, Joseph J., 4,577,933, Cl. 350-358.000.
DAP Inc.: *See—*
Learner, Eugene L., 4,578,415, Cl. 524-322.000.
Darda, Siegfried: *See—*
Stricker, Herbert; Freund, Bernhard; Harwalik, Heribert; Rominger, Karl L.; Darda, Siegfried; Haselbarth, Volkmar; Arndts, Dietrich; Bechtel, Wolf D.; Bozler, Gerhard; Brickl, Rolf; and Gruber, Peter, 4,578,264, Cl. 424-37.000.
Das, Santanu: *See—*
Middleton, Francisco A.; Carter, Nicholas J. R.; and Das, Santanu, 4,578,789, Cl. 370-58.000.
Data Information Management Systems, Inc.: *See—*
Hice, John R., 4,578,572, Cl. 235-472.000.
Data Recording Systems, Inc.: *See—*
Spencer, David R.; and Goldstein, Amnon, 4,578,689, Cl. 346-160.000.
Data Vu Company: *See—*
Brown, Eugene C., 4,577,928, Cl. 350-276.00R.
Datak Corporation, The: *See—*
Brown, Barry D., 4,578,136, Cl. 156-249.000.
Datakey, Inc.: *See—*
Flies, William P.; and Wehrmacher, William H., 4,578,573, Cl. 235-492.000.
Daulton, Richard H.: *See—*
Granzow, Robert H.; Daulton, Richard H.; Placke, Dale L.; Adelberger, Donald L.; Gross, Jack R.; and Nagy, Charles S., 4,578,009, Cl. 414-43.000.
Davidov, Mircho A. Two-way electrical control module for a lamp outlet. 4,578,593, Cl. 307-113.000.
Davis, Mitchell F. Flypaper trap. 4,577,434, Cl. 43-115.000.
Davis, Terrence A.: *See—*
Soderstrom, Edwin D., III; and Davis, Terrence A., 4,578,151, Cl. 203-1.000.
Davison, Sol, to Shell Oil Company. Controlled degradation or cracking of alpha-olefin polymers. 4,578,430, Cl. 525-387.000.
Dawidowitch, Shmuel. Combined electric heating and water inlet/outlet assembly for water heating tanks. 4,578,565, Cl. 219-314.000.
Dawson, Daniel J.; and Otteson, Kenneth M., to Air Products and Chemicals, Inc. Preparing N-vinylformamide. 4,578,515, Cl. 564-215.000.
Deere & Company: *See—*
Smith, Joseph J.; and Erickson, Paul K., 4,577,717, Cl. 180-9.100.
Deets, Gary L.; and Trementozzi, Quirino A., to Monsanto Company. Polyblends of polyphenylene oxide and styrene-acrylonitrile polymers having broad acrylonitrile compositional distribution. 4,578,423, Cl. 525-68.000.
Degenford, James E.; and Boire, Daniel C., to Westinghouse Electric Corp. Monolithic microwave "split load" phase inverter for push-pull monolithic FET amplifier circuits. 4,578,629, Cl. 323-217.000.
Deger, Hans-Matthias; Erckel, Rudiger; and Fruhbeis, Horst, to Hoechst Aktiengesellschaft. Benzo[de]pyrano[3,2-g]isoquinoline derivatives useful as dyestuffs. 4,578,469, Cl. 546-66.000.
de Guillenschmidt, Pierre; Hubert, Jacques; Goujon, Michel; and Saunier, Christian, to Giravions Dorand. Method and equipment for the control of aiming and firing at a real target. 4,577,962, Cl. 356-5.000.
Degussa Aktiengesellschaft: *See—*
Kiss, Akos; Kleinschmit, Peter; Volker, Werner; and Halbritter, Gunter, 4,578,212, Cl. 252-301.40F.
Panster, Peter; and Kleinschmit, Peter, 4,578,496, Cl. 556-479.000.
Dekker, Theodor G.: *See—*
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Delaporte, Francois-Xavier; Lebesnerais, Gerard M.; and Pantani, Jean-Pierre, to International Business Machines Corporation. Monolithic autobiased resistor structure and application thereof to interface circuits. 4,578,695, Cl. 357-48.000.
Delay, Francois: *See—*
Morris, Anthony F.; Delay, Francois; Gautschi, Fritz; Thomas, Alan F.; Giersch, Wolfgang K.; and Boschung, Andre , 4,578,277, Cl. 426-538.000.
Delbosse, Andre , to Merlin Gerin. Electronic circuit controlling a multiple operation apparatus fitted with an electromagnetic mechanism. 4,578,734, Cl. 361-152.000.
Delia, Anthony, to Drackett Company, The. Child resistant container. 4,577,769, Cl. 215-211.000.
Dellinger, Thomas B.; Boston, William G.; Sexton, James H.; and Strong, Robert T., to Mobil Oil Corporation. Method and system for displacing drilling fluid from a drill string in a well drilling system. 4,577,700, Cl. 175-40.000.
Dellinger, Thomas B.; and Gravley, Wilton, to Mobil Oil Corporation. System of drilling deviated wellbores. 4,577,701, Cl. 175-61.000.
Delma, electro- und medizinische Appatebau Gesellschaft mbH: *See—*
Roos, Eberhard, 4,578,575, Cl. 250-203.00R.
DelPercio, Michael J.: *See—*
Holland, Charlie R.; and DelPercio, Michael J., 4,577,780, Cl. 221-125.000.
de Luca, Ugo: *See—*
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Demerson, Christopher A.: *See—*
Mobilio, Dominick; Demerson, Christopher A.; and Humber, Leslie G., 4,578,398, Cl. 514-411.000.
Demetriades, Peter G. Floor cleaning machine. 4,577,364, Cl. 15-320.000.
Demmer, Christopher G.; and Hathaway, Roderick D., to Ciba-Geigy Corporation. Preparation of resinous products. 4,578,438, Cl. 525-481.000.
de Rojas, Edward: *See—*
Frieder, Philip M.; and de Rojas, Edward, 4,577,942, Cl. 351-159.000.
Derouane, Eric G.; and Varghese, Philip, to Mobil Oil Corporation. Hydrothermal conversion of heavy oils and residua with highly dispersed catalysts. 4,578,181, Cl. 208-110.000.
Desai, Anil I.; and Westerfeld, Eric C., to Four-Phase Systems, Inc. Circuit board status detection system. 4,578,773, Cl. 364-900.000.
de Souza, Noel J.: *See—*
Schorlemmer, Hans-Ulrich; Dickneite, Gerhard; Sedlacek, Hans-Harald; de Souza, Noel J.; and Dohadwalla, Alihussein N., 4,578,399, Cl. 514-455.000.

Deutsche Gesellschaft fur Wiederaufarbeitung von Kernbrennstoffen mbH: *See—*
Gembus, Hans-Dieter; and Wolf, Rainer, 4,577,659, Cl. 137-614.060.
Deutschmann, Herbert; and Schier, Karl, to MTU Motoren-und Turbinen-Union Friedrichshafen, GmbH. Piston for a reciprocating piston internal combustion engine. 4,577,595, Cl. 123-41.350.
Dewey, Anthony G.; and Marinelli, Charles P., to International Business Machines Corporation. Fiber optic writing head. 4,577,926, Cl. 350-96.250.
DiBartolo, Ernest A., to Sun Hydraulics Corporation. Calibrated hand-knob assembly. 4,577,831, Cl. 251-93.000.
Dichtjar, Gerhard: *See—*
Assmann, Helmut; Dichtjar, Gerhard; Dorr, Wolfgang; Maier, Georg; Mathieu, Viktor; and Peehs, Martin, 4,578,229, Cl. 264-0.500.
Dickneite, Gerhard: *See—*
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Dickson, Thomas: *See—*
Macangus, Alexander; and Dickson, Thomas, 4,578,037, Cl. 434-258.000.
Didde Graphic Systems Corporation: *See—*
Shackelford, Michael L., 4,577,527, Cl. 74-640.000.
Didier-Werke AG: *See—*
Reinartz, Dieter; Bender, Heinrich; and Laurent, Gunter, 4,578,194, Cl. 210-673.000.
Diekhoff, Hans H., to Aluminum Company of America. Reforming necked-in portions of can bodies. 4,578,007, Cl. 413-6.000.
Diesel Kiki Co., Ltd.: *See—*
Okura, Eiji, 4,577,469, Cl. 62-126.000.
Ueno, Masahito, 4,577,718, Cl. 180-179.000.
Diesner, Willi, to Petig Corporation. Narrow-fabric needle loom weaving system. 4,577,665, Cl. 139-431.000.
Diffely, Robert J., Sr. Trolling attachment for boats. 4,577,580, Cl. 114-285.000.
Di Maio, Anthony E.: *See—*
Racca, Richard F.; Swier, Willem; and Di Maio, Anthony E., 4,577,783, Cl. 222-386.500.
Dimmit, Jeffrey H.; Van Der Puy, Michael; and Soriano, David S., to Allied Corporation. Method for the recovery of palladium. 4,578,250, Cl. 423-22.000.
Dinapoli, Frank C.: *See—*
James, Bertram G.; Dinapoli, Frank C.; and Hayes, Lloyd P., 4,578,620, Cl. 315-3.500.
Dinerstein, Frances; and Dinerstein, Lia. Fingernail shielding device. 4,577,648, Cl. 132-73.000.
Dinerstein, Lia: *See—*
Dinerstein, Frances; and Dinerstein, Lia, 4,577,648, Cl. 132-73.000.
Dion, Eric P., to Mobil Oil Corporation. Method for depth referencing hydrocarbon gas shows on mud logs. 4,578,579, Cl. 250-256.000.
Dion, Exsior. Simplified apparatus for use in arm wrestling or wrist pulling contests. 4,577,857, Cl. 272-67.000.
Director-General of Agency of Industrial Science and Technology: *See—*
Ueno, Masakazu; and Ichimura, Takeshige, 4,578,696, Cl. 357-59.000.
Dirksing, William P.; Leman, Marvin G.; and Van Coney, Robert H., to Procter & Gamble Company, The. Expandable core pin for blow-molding a container having a neck-portion with internal attachment means. 4,578,028, Cl. 425-525.000.
DiStefano, Thomas H.: *See—*
Ahn, Kie Y.; DiStefano, Thomas H.; and Jipson, Victor B., 4,578,788, Cl. 369-275.000.
Divecha, Amarnath P.; Karmarkar, Subhash D.; and Foltz, John V., to United States of America, Navy. Process for producing graphite fiber/aluminum-magnesium matrix composites. 4,578,287, Cl. 427-250.000.
Divjak, August A., Jr.; and Holdorf, Thomas C., to Johnson Service Company. Method for communicating binary data using modified frequency shift keying techniques. 4,578,798, Cl. 375-45.000.
Dr. Ing. h.c.F. Porsche AG: *See—*
Schibisch, Horst, 4,577,722, Cl. 180-315.000.
Dodds, David E., to Danby Systems Ltd. Telephone line interface circuit. 4,578,541, Cl. 179-18.0FA.
Doe, Susanne B.: *See—*
Holba, Albert G.; Doe, Susanne B.; and Hughes, William B., 4,577,492, Cl. 73-61.10C.
Doerr, Marvin L., to Celanese Corporation. Process for minimizing formation of low molecular weight oligomers during hydrolytic depolymerization of condensation polymers. 4,578,510, Cl. 562-483.000.
Dohadwalla, Alihussein N.: *See—*
Schorlemmer, Hans-Ulrich; Dickneite, Gerhard; Sedlacek, Hans-Harald; de Souza, Noel J.; and Dohadwalla, Alihussein N., 4,578,399, Cl. 514-455.000.
Dohi, Takashi: *See—*
Neki, Shigeo; Shinozaki, Nozomu; and Dohi, Takashi, 4,578,624, Cl. 318-305.000.
Dohi, Toshihide: *See—*
Yamakawa, Kazuo; and Dohi, Toshihide, 4,577,935, Cl. 350-432.000.
Doi, Muneharu: *See—*
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Dolling, Ulf H.; Pines, Seemon H.; and Grabowski, Edward J. J., to Merck & Co., Inc. Process for preparing a manipulated enantiomer mixture by asymmetric chiral phase transfer catalysis. 4,578,509, Cl. 562-462.000.
Domagala, John M.; and Schroeder, Mel C., to Warner-Lambert Company. Process for quinoline-3-carboxylic acid antibacterial agents. 4,578,473, Cl. 546-156.000.
Dompas, John M.: *See—*
Verhoeven, Constant T.; Tobback, Hubert J.; and Dompas, John M., 4,577,401, Cl. 29-825.000.
Donohue, James A., to Outboard Marine Corporation. CD ignition system with spark retard in neutral. 4,577,609, Cl. 123-602.000.
Dooley, John G. Pressure vessel testing. 4,577,487, Cl. 73-37.000.
Doran, William E. Construction block. 4,577,447, Cl. 52-571.000.
Doremus, Bernard, to Schlumberger Technology Corporation. Plug valve equipped with pressure equalization means. 4,577,662, Cl. 137-630.140.
Dorr, Wolfgang: *See—*
Assmann, Helmut; Dichtjar, Gerhard; Dorr, Wolfgang; Maier, Georg; Mathieu, Viktor; and Peehs, Martin, 4,578,229, Cl. 264-0.500.
Dorrn, Clive, to Imperial Chemical Industries, PLC. Production of PVC irrigation pipe and the pipe so produced. 4,577,998, Cl. 405-45.000.
Dotson, Charles E., to Completion Tool Company. Method for determining true fracture pressure. 4,577,689, Cl. 166-250.000.
Dotson, Ronald L.: *See—*
Miles, Ronald C.; Justice, David D.; and Dotson, Ronald L., 4,578,159, Cl. 204-98.000.
Doucet, Joel. Multicoin discriminator. 4,577,744, Cl. 194-318.000.
Douglas & Lomason Company: *See—*
Wright, Paul R.; and Hill, Dale A., 4,577,454, Cl. 53-492.000.
Dove, Derek B.: *See—*
Aviram, Ari; Dove, Derek B.; and Lane, Ramon, 4,577,983, Cl. 400-120.000.
Dove, Georges: *See—*
Giddey, Claude; and Dove, Georges, 4,578,278, Cl. 426-605.000.
Dow Chemical Company, The: *See—*
Ezzell, Bobby R.; Carl, William P.; and Mod, William A., 4,578,512, Cl. 562-586.000.
Hefner, Robert E., Jr., 4,578,439, Cl. 525-509.000.
McIntyre, James A.; Phillips, Robert F.; and Oswald, Max R., 4,578,162, Cl. 204-107.000.
Sawyer, Lawrence H.; and Knight, George W., 4,578,414, Cl. 524-310.000.
Dow Corning Corporation: *See—*
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Groenhof, Eugene D., 4,577,523, Cl. 74-200.000.
Marko, Ollie W.; Steinmeyer, Robert D.; and Rentsch, Stefan, 4,578,494, Cl. 556-452.000.
Dower, Steven K.: *See—*
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Dowrick, David C.; Hine, Edward K., Jr.; and Hine, Gregory S., to Hine-Snowbridge, Inc. Pannier bag having a clamping device with locking member. 4,577,786, Cl. 224-32.00A.
Drackett Company, The: *See—*
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Draper, Charles W.; and Franks, Terry E., to Square D Company. Ground fault circuit interrupter including snap-acting contacts. 4,578,732, Cl. 361-45.000.
DrM Dr. Muller AG: *See—*
Muller, Hans, 4,578,197, Cl. 210-772.000.
Droscher, Bernhard; and Zitz, Alfred, to Voest-Alpine Aktiengesellschaft. Device for correcting the control or the display of the position of a cutting tool of a cutting machine. 4,578,627, Cl. 318-632.000.
Drucker, Alan S.; and Kwok, King H., to Carrier Corporation. Fan coil base pad assembly. 4,577,828, Cl. 248-678.000.
Druffel, James B.; and Cohen, Joel S., to Prescolite, Inc. Fastening device for fixing a body to a structural member. 4,577,824, Cl. 248-544.000.
D'Silva, Themistocles Damasceno J., to Union Carbide Corporation. Pesticidal alpha-cyanobenzyl phenyl benzoyl urea compounds. 4,578,402, Cl. 514-521.000.
DuBois, Chester G.; and Flaig, John ..., to Outboard Marine Corporation. Carburetion system including an adjustable throttle linkage. 4,577,608, Cl. 123-583.000.
Dubois, Jean: *See—*
Roy, Jehan; and Dubois, Jean, 4,577,878, Cl. 280-242.0WC.
Ducret, Christian: *See—*
Bonino, Pierre; Ducret, Christian; and Mazzoleni, Cyrille, 4,577,893, Cl. 285-158.000.
Duke, B. Michael, to Harris Graphics Corporation. Stacking apparatus. 4,577,853, Cl. 271-217.000.
Duke, Steven R.: *See—*
Siemers, Paul A.; Kopp, Robert W.; Jackson, Melvin R.; Duke, Steven R.; Perrin, David P.; and Liu, Ying H., 4,577,431, Cl. 42-76.00A.
Dumas, Armand M.: *See—*
Mazumder, Ali T.; and Dumas, Armand M., 4,578,570, Cl. 235-463.000.
Duncan, Gary L., to Mobil Oil Corporation. Polymer film/polymer foam laminate and heat-resistant container fabricated therefrom. 4,578,297, Cl. 428-35.000.
Duncan, Lee H. Vehicle tow bar. 4,577,883, Cl. 280-491.00D.

Du Pont de Nemours, E. I., and Company: *See—*
Faulhaber, Mark E., 4,578,598, Cl. 307-271.000.
Hay, James V.; and Sauers, Richard F., 4,578,108, Cl. 71-93.000.
Krueger, Achim R., 4,578,418, Cl. 524-400.000.
Vasta, Joseph A., 4,578,286, Cl. 427-327.000.
Durand, Philippe, to Verrerie Cristallerie d'Arques J. G. Durand & Cie. Detachable handle including a spring-biased pivoting locking member. 4,577,367, Cl. 16-114.00A.
Durant, Graham J.; and Ganellin, Charon R., to SmithKline & French Laboratories Limited. Unsymmetrical guanidino, thioureido, isothioureido and nitromethyleneamino derivatives. 4,578,388, Cl. 514-252.000.
Durant, Graham J.; Emmett, John C.; and Ganellin, Charon R., to SmithKline & French Laboratories Limited. Heterocyclic alkylaminoheterocycles. 4,578,459, Cl. 544-8.000.
Duval, Michel: *See—*
Armand, Michel; Muller, Daniel; Duval, Michel; and Harvey, Paul-Etienne, 4,578,326, Cl. 429-192.000.
Dynamit Nobel Aktiengesellschaft: *See—*
Barfurth, Dieter; and Nestler, Heinz, 4,578,487, Cl. 556-40.000.
Schoengen, Anton; Schreiber, Georg; and Schroeder, Heinz, 4,578,501, Cl. 560-77.000.
Dysart, John K.; and Joffe, Frederick M., to Procter & Gamble Company, The. Composite waste-containment garment having disposable elasticized insert. 4,578,073, Cl. 604-397.000.
E. R. Squibb & Sons, Inc.: *See—*
Krapcho, John; and Wade, Peter C., 4,578,474, Cl. 546-188.000.
Eacobacci, Michael J.: *See—*
Olsen, Donald A.; and Eacobacci, Michael J., 4,577,465, Cl. 62-55.500.
Eaddy, John F., III. Biaryl aldehyde. 4,578,522, Cl. 568-425.000.
Eagle Industry Company Limited: *See—*
Ichimura, Masatoshi, 4,577,570, Cl. 112-121.120.
Eastman Kodak Company: *See—*
Borsenberger, Paul M.; Regan, Michael T.; and Staudenmayer, William J., 4,578,334, Cl. 430-59.000.
Freeman, John P.; Macon, Fred M.; and Mee, John D., 4,578,348, Cl. 430-607.000.
Gupta, Mool C.; and Stinson, Douglas G., 4,578,684, Cl. 346-135.100.
Hills, Robert G. C., 4,578,727, Cl. 360-102.000.
Jackson, Winston J., Jr.; and Watkins, Joseph J., 4,578,453, Cl. 528-302.000.
Light, Ronald R.; and Seymour, Robert W., 4,578,437, Cl. 525-444.000.
Meredith, Thomas D., Jr., 4,577,752, Cl. 206-83.500.
Regan, Michael T.; and Wright, Hal E., 4,578,330, Cl. 430-37.000.
Staudenmayer, William J.; Chen, Tsang J.; Borsenberger, Paul M.; and Grashof, Hans R., 4,578,333, Cl. 430-60.000.
Zoeller, Joseph R., 4,578,368, Cl. 502-28.000.
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Phillips, Edward H., 4,577,957, Cl. 355-43.000.
Phillips, Edward H., 4,577,958, Cl. 355-43.000.
Eatwell, William D., to Camco, Incorporated. Nipple protector sleeve for use in a well conduit. 4,577,685, Cl. 166-115.000.
Eberbach, Steven J. Dihedral loudspeakers with variable dispersion circuits. 4,578,809, Cl. 381-99.000.
Ebisawa, Hiroo; Maruyama, Iwao; Fukuda, Masao; and Miyamoto, Shigeo, to Honda Giken Kogyo Kabushiki Kaisha. Method of partially painting an article using laser masking technique. 4,578,281, Cl. 427-53.100.
ebm Elektrobau Mulfingen GmbH & Co.: *See—*
Reinhardt, Wilhelm; and Rudele, Ulrich, 4,578,605, Cl. 310-67.00R.
Eckle, Otto, to Komet Stahlhalter-und Werkzeugfabrik Robert Breuning GmbH. Arrangement for supplying coolant to rotating cutting tools for metal machining, in particular boring tools, provided with coolant ducts. 4,578,003, Cl. 408-56.000.
Ecometal Limited: *See—*
Price, William F., 4,577,445, Cl. 52-403.000.
Economopoulos, Dennis O.; and Economopoulos, Othon. Locking filler tube cover apparatus for underground fuel tanks. 4,577,478, Cl. 70-168.000.
Economopoulos, Othon: *See—*
Economopoulos, Dennis O.; and Economopoulos, Othon, 4,577,478, Cl. 70-168.000.
Edge, Neil R. Musical drum. 4,577,541, Cl. 84-411.00R.
Edmo, Torbjorn; and Sehlstedt, Per-Olof, to Torbjorn Edmo AB. Lifting table. 4,577,821, Cl. 248-421.000.
Edwards, John H.: *See—*
Bott, David C.; Edwards, John H.; and Feast, William J., 4,578,443, Cl. 526-285.000.
Effland, Richard C.: *See—*
Allen, Richard C.; Effland, Richard C.; and Klein, Joseph T., 4,578,394, Cl. 514-332.000.
Efinger, Arnold, to Wickmann-Werke Boblingen GmbH. Electrical, medium voltage, switching mechanism. 4,578,550, Cl. 200-144.00B.
Eguchi, Kenzo; and Kobayashi, Jiro, to Taishin Electric Ind. Co., Ltd.; and Toshiba Medical Supply Co., Ltd. Steam generator. 4,578,563, Cl. 219-273.000.
Eheim, Franz, deceased: *See—*
Bohringer, Wilfried; Eheim, Franz, deceased; Fehlmann, Wolfgang; Laufer, Helmut; and Zibold, Karl, 4,577,606, Cl. 123-506.000.
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Bohringer, Wilfried; Eheim, Franz, deceased; Fehlmann, Wolfgang; Laufer, Helmut; and Zibold, Karl, 4,577,606, Cl. 123-506.000.
Eibofner, Eugen: *See—*
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Eidenschink, Rudolf: *See—*
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Eilertsen, John L., to Giardini, Dante, a part interest. Solenoid actuators. 4,578,604, Cl. 310-30.000.
Eisai Co., Ltd.: *See—*
Tagaya, Ryosaku, 4,577,969, Cl. 356-394.000.
Elhaus, Friedrich W. Method of and a plant for preheating and, possibly, heat-treating and subsequently dividing rod-shaped material into slugs. 4,578,030, Cl. 432-18.000.
Eli Lilly and Company: *See—*
Spitzer, Wayne A., 4,578,387, Cl. 514-249.000.
Elias, Michael G.; and Pullman, George D., to Dow Corning Corporation. Method of controlling aquatic plant growth and silicone rubber benthic barriers. 4,577,996, Cl. 405-17.000.
Eliscu, Joshua, to Lois G. Langley. Camera holder apparatus. 4,577,827, Cl. 248-656.000.
Elkem A/S: *See—*
Sandvik, Johannes, 4,577,810, Cl. 242-157.100.
Elliott, Martin E.: *See—*
Wilson, Joseph H.; Rapp, Jeffrey C.; Southern, Brian K.; and Elliott, Martin E., 4,578,185, Cl. 210-85.000.
Elliott, Peter J.: *See—*
Betts, Alan J.; and Elliott, Peter J., 4,578,723, Cl. 360-77.000.
Elliott Turbomachinery Co., Inc.: *See—*
Idzik, Joseph J.; and Kouse, Charles H., 4,577,406, Cl. 30-103.000.
Elmis, Herbert; and Backes, Reiner, to ITT Industries, Inc. Digital circuit for synchronizing a pulse train. 4,578,705, Cl. 358-148.000.
Elrod, Harry F.: *See—*
Kraft, Douglas R.; and Elrod, Harry F., 4,578,782, Cl. 365-222.000.
Elscint Ltd.: *See—*
Crawford, Carl R.; Shimoni, Yair; Sohval, A. Robert; and Barnea, Daniel I., 4,578,753, Cl. 364-414.000.
Elvi S.p.A.: *See—*
Vicario, Guido F.; Vicario, Cesare; de Luca, Ugo; and Zelioli, Giuseppe, 4,578,169, Cl. 204-299.00R.
Emhart Industries, Inc.: *See—*
Anderson, Daniel J., 4,578,204, Cl. 252-62.200.
Jones, Stanley P., 4,578,104, Cl. 65-267.000.
EMI Limited: *See—*
Harwood, Alan R.; and Ward, Julie A., 4,577,513, Cl. 73-862.040.
Oliver, Colin C., 4,578,801, Cl. 378-19.000.
Emmett, John C.: *See—*
Durant, Graham J.; Emmett, John C.; and Ganellin, Charon R., 4,578,459, Cl. 544-8.000.
Endo, Masaaki: *See—*
Shigemori, Daizo; Kunii, Haruo; and Endo, Masaaki, 4,578,733, Cl. 361-120.000.
Energaire Corporation: *See—*
Cole, George S., 4,577,417, Cl. 36-29.000.
Engel, Andreas; Schumann, Frank; Stiefel, Werner; and Freistedt, Reinhold, to VEB Kombinat Polygraph "Werner Lamberz" Leipzig. Method and apparatus to determine folding deviations. 4,578,052, Cl. 493-11.000.
Engelhard Corporation: *See—*
Amundsen, Alan R.; and Stern, Eric W., 4,578,490, Cl. 556-136.000.
Amundsen, Alan R.; and Stern, Eric W., 4,578,491, Cl. 556-137.000.
Huege, Fred R.; Slepetys, Richard A.; and Catone, David L., 4,578,118, Cl. 106-288.00B.
Engelmann, Albert C.: *See—*
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Englund, Leif: *See—*
Bergstrom, Tommy; Boman, Goran; and Englund, Leif, 4,577,826, Cl. 248-638.000.
Enichimica S.p.A.: *See—*
Buonomo, Franco; Bellussi, Giuseppe; and Notari, Bruno, 4,578,161, Cl. 204-102.000.
Enomoto, Yoichi: *See—*
Murakami, Toshiaki; Enomoto, Yoichi; and Suzuki, Minoru, 4,578,691, Cl. 357-5.000.
Epson Corporation: *See—*
Kiyonaga, Bunzo, 4,577,931, Cl. 350-350.00R.
Equipment Company of America: *See—*
Kedem, Tuval, 4,577,463, Cl. 60-426.000.
Erckel, Rudiger: *See—*
Deger, Hans-Matthias; Erckel, Rudiger; and Fruhbeis, Horst, 4,578,469, Cl. 546-66.000.
Erickson, Donald C. Low energy high purity oxygen plus argon. 4,578,095, Cl. 62-22.000.
Erickson, Paul K.: *See—*
Smith, Joseph J.; and Erickson, Paul K., 4,577,717, Cl. 180-9.100.
Eriksson, Runar, to Oy Wartsila AB. Sliding door arrangement. 4,577,577, Cl. 114-120.000.
Erwin, Edward A., to AT&T Technologies, Inc. System for simultaneously programming a number of EPROMs. 4,578,751, Cl. 364-200.000.
ESCO Corporation: *See—*
Hahn, Frederick C., 4,577,423, Cl. 37-142.00R.

Etablissements Nativelle S.A.: *See—*
Jarreau, Francois X.; and Koenig, Jean-Jacques, 4,578,382, Cl. 514-245.000.
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Brunet, Michel, 4,577,784, Cl. 222-402.200.
Ethicon, Inc.: *See—*
Weaver, Gregory A.; Price, Lester F.; Britt, Crawford R.; and Shalaby, W. Shalaby, 4,578,451, Cl. 528-292.000.
Ethylene Corp.: *See—*
Sheridan, Michael, 4,578,170, Cl. 204-400.000.
Etienne, Jean-Luc; and Cruchon, Jean-Claude, to Thomson-CSF. Tuneable ultra-high frequency filter with mode TM010 dielectric resonators. 4,578,655, Cl. 333-202.000.
Everbrite Electric Signs, Inc.: *See—*
Trame, Charles E., 4,577,428, Cl. 40-518.000.
Everhart, Joseph R.; and Osborn, Jeffrey G., to AT&T Bell Laboratories. Encryption system key distribution method and apparatus. 4,578,531, Cl. 178-22.080.
Everman, Wayne F., to Container Corporation of America. Film tube gusset forming machine. 4,578,051, Cl. 493-8.000.
Evert, Karla R., to Stearns Manufacturing Company. Safety harness personal flotation device. 4,578,042, Cl. 441-117.000.
Ex-Cell-O Corporation: *See—*
Humphrey, William M., 4,578,447, Cl. 528-73.000.
Jackson, Theodore A., 4,577,546, Cl. 89-41.190.
Moore, James I., 4,577,670, Cl. 164-155.000.
Exacta S.p.A.: *See—*
Peloggio, Alessandro, 4,577,573, Cl. 112-318.000.
Extracorporeal Medical Specialties, Inc.: *See—*
King, Martin J.; and Troutner, Vernon H., 4,578,056, Cl. 604-6.000.
Exxon Production Research Co.: *See—*
Mifsud, Joseph F., 4,578,784, Cl. 367-143.000.
Exxon Research and Engineering Co.: *See—*
Bearden, Roby, Jr.; and Aldridge, Clyde L., 4,578,182, Cl. 208-112.000.
Best, Steven A., 4,578,374, Cl. 502-115.000.
Graves, Victoria, 4,578,373, Cl. 502-113.000.
Hoving, Klaas; and Walterbos, Johannes W. M., 4,578,372, Cl. 502-74.000.
Tiedje, J. Thomas, 4,578,641, Cl. 324-158.00D.
Ezzell, Bobby R.; Carl, William P.; and Mod, William A., to Dow Chemical Company, The. Process to produce novel fluorocarbon vinyl ethers and resulting polymers. 4,578,512, Cl. 562-586.000.
Ezzell, Robert C., to Phillips Petroleum Company. Method for cleaning heat exchangers. 4,577,677, Cl. 165-1.000.
F. F. Seeley Nominees Pty Ltd: *See—*
Kearney, Anthony D., 4,577,470, Cl. 62-259.400.
Fabricant, Robert N.; and Gangemi, Ronald J. Extra-capsular cataract surgery system. 4,578,059, Cl. 604-43.000.
Facal Garcia, Antonio. Anterior traction myotatic chin strap for the treatment of mandibular retrognathism. 4,577,627, Cl. 128-76.00R.
Fackelman, Lee E., to Glasstech, Inc. Glass sheet processing system including topside transfer apparatus. 4,578,103, Cl. 65-182.200.
Fagerlund, Bertil K. E. Process for digesting cellulosic material with heat recovery. 4,578,149, Cl. 162-39.000.
Faggin, Federico; Klein, Jerry A.; Yazolino, Lauren F.; Korody, Robert; Ha, Eric P. L.; and Kerman, Stephan, to International Remote Imaging Systems, Inc. Telecommunication apparatus serving as an interface between a digital computer and an analog communication medium. 4,578,537, Cl. 179-2.0DP.
Fairchild Camera & Instrument Corporation: *See—*
Santos, Joe, 4,578,594, Cl. 307-241.000.
Fairchild, James L.: *See—*
Puri, Avinash D.; Fairchild, James L.; and Rodosevich, James B., 4,578,086, Cl. 23-300.000.
Fang, Sheng; and Rao, Kameswara K., to Signetics Corporation. One step write circuit arrangement for EEPROMS. 4,578,777, Cl. 365-184.000.
Farrow, Robert I., to American Multimedia, Inc. Method and apparatus for testing the presence of magnetic storage medium on a given side of a tape. 4,578,644, Cl. 324-212.000.
Faudou, Jean-Yves; and Pelloux-Gervais, Pierre, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude. Method for manufacturing a sleeve, in particular for a container for storing a cryogenic fluid. 4,577,386, Cl. 29-455.00R.
Faulhaber, Mark E., to Du Pont de Nemours, E. I., and Company. Random pulse generator circuit. 4,578,598, Cl. 307-271.000.
Faulkner, Ben V., to Faulkner Oil Field Services, Inc. Method of preventing drill string overflow. 4,577,702, Cl. 175-65.000.
Faulkner Oil Field Services, Inc.: *See—*
Faulkner, Ben V., 4,577,702, Cl. 175-65.000.
Feast, William J.: *See—*
Bott, David C.; Edwards, John H.; and Feast, William J., 4,578,443, Cl. 526-285.000.
Fedi, Mauro: *See—*
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Fehlmann, Wolfgang: *See—*
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Tihanyi, Jenoe ; Fellinger, Christine; and Leipold, Ludwig, 4,578,596, Cl. 307-252.00R.
Fenster, Larry A.; and Hostettler, Fritz, to Mercury Foam Corporation. Hair curler device. 4,577,647, Cl. 132-39.000.
Fenton, Donald M., to Union Oil Company of California. Lanthanum hydroxide and a rhodium or ruthenium moiety catalyst for homologation of alcohols. 4,578,375, Cl. 502-230.000.
Feramatic AG: *See—*
Reist, Walter, 4,577,855, Cl. 271-281.000.
Ferguson, Ian C., to Morganite Electrical Carbon Limited. Electric traction current-collector. 4,578,546, Cl. 191-87.000.
Ferrali, Luigi, to S.I.A.T.A. Societa Italiana Apparecchiature Trattamento Acqua S.p.A. Double multiple change-over valve, for controlling the operation of a water treatment plant. 4,577,498, Cl. 73-198.000.
Ferranti plc: *See—*
McPherson, Hugh, 4,578,603, Cl. 307-493.000.
Ferrari, Francis E.: *See—*
Grant, John W.; and Ferrari, Francis E., 4,578,574, Cl. 250-202.000.
Ferruzzi, Sergio: *See—*
Rossi, Pietro P.; Senni, Paolo; and Ferruzzi, Sergio, 4,578,511, Cl. 562-494.000.
Fessler, Herman S., to Cornelius Company, The. Beverage dispensing station. 4,577,782, Cl. 222-129.100.
Fichtel & Sachs AG: *See—*
Bergles, Eduard, 4,577,531, Cl. 74-781.00B.
Raab, Harald; and Gobel, Hilmar, 4,577,743, Cl. 192-106.200.
Fielding, Lawrence E., to United States of America, Air Force. Torque limiting collar. 4,577,891, Cl. 285-62.000.
Filliman, Mark D.: *See—*
Placke, Dale L.; Filliman, Mark D.; Granzow, Robert H.; Gross, Jack R.; and Nagy, Charles S., 4,577,763, Cl. 209-534.000.
Finn, Lawrence J.: *See—*
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Firestone Tire & Rubber Company, The: *See—*
Sicka, Richard W.; and Tompkins, Dale A., 4,578,024, Cl. 425-114.000.
Firmenich SA: *See—*
Morris, Anthony F.; Delay, Francois; Gautschi, Fritz; Thomas, Alan F.; Giersch, Wolfgang K.; and Boschung, Andre , 4,578,277, Cl. 426-538.000.
Fischer, Dan E. Controlled diffusion medicament applicator. 4,578,055, Cl. 604-2.000.
Fischer, Hermann, to M.A.N. Roland Druckmaschinen Aktiengesellschaft. Damping fluid application and metering apparatus for a printing machine. 4,577,556, Cl. 101-148.000.
Fischer, Hermann, to M.A.N. Roland Druckmaschinen Aktiengesellschaft. Ink application and metering apparatus for a printing machine. 4,577,557, Cl. 101-217.000.
Fischer, Hermann, to M.A.N. Roland Druckmaschinen Aktiengesellschaft. Ink metering apparatus for a printing machine. 4,577,558, Cl. 101-365.000.
Fishback, Alton J.: *See—*
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Fisher, Robert W.; Maroone, James P.; Tipping, Donald W.; and Zanner, Frank J., to United States of America, Energy. Drop short control of electrode gap. 4,578,795, Cl. 373-70.000.
Fishing Designs, Inc.: *See—*
Brackett, John E.; and Dahlberg, Larry J., 4,577,432, Cl. 43-23.000.
Flaig, John D.: *See—*
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Fletcher, Thomas D.: *See—*
West, Jeffery A.; and Fletcher, Thomas D., 4,578,602, Cl. 307-475.000.
Flies, William P.; and Wehrmacher, William H., to Datakey, Inc. Portable electronic information devices and method of manufacture. 4,578,573, Cl. 235-492.000.
Floss, Josef G.: *See—*
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Flowers, Dale R., to International Business Machines Corp. Remote indicating low battery voltage enunciator method and apparatus. 4,578,671, Cl. 340-636.000.
Floyd, William M.; and Juzswik, David L., to United Technologies Automotive, Inc. Control circuit for automotive accessory system. 4,578,591, Cl. 307-10.00R.
Flurry, Gregory A.: *See—*
Baker, David C.; Bantz, David F.; and Flurry, Gregory A., 4,578,674, Cl. 340-710.000.
Flynn, John J.: *See—*
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FMC Corporation: *See—*
Linscheid, Denver D., 4,578,088, Cl. 55-2.000.
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Fong, Wing C.; Fournier, Albert J.; and Gil, Bernard B., to Canada, The Government of. Gas sampling device. 4,577,518, Cl. 73-864.910.

Foote, Douglas C.; and Grinde, James E., to Yamaha Hatsudoki Kabushiki Kaisha. Off-the road vehicle for recreational and work applications. 4,577,712, Cl. 180-53.400.
Force Control Industries, Inc.: *See—*
Yater, Jerry L., 4,577,738, Cl. 192-18.00A.
Ford Aerospace & Communications Corporation: *See—*
Koehler, Charles W.; vanOmmering, Gerrit; and Puester, Neil H., 4,578,324, Cl. 429-26.000.
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Laszlo, Hideg; and Koller, Paul L., 4,578,747, Cl. 364-151.000.
Ma, Thomas T., 4,577,598, Cl. 123-90.180.
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Forester, David R., to Betz Laboratories, Inc. Method for controlling fouling deposit formation in a petroleum hydrocarbon or petrochemical. 4,578,178, Cl. 208-48.0AA.
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Forner, Siegfried; Langhammer, Karl-Heinz; Pellkofer, Dieter; and Nahr, Wolfgang, to Kraftwerk Union Aktiengesellschaft. Device for overlay-welding pipes bends. 4,577,795, Cl. 228-29.000.
Foster, Diane: *See—*
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Foster, Dwight R.; and Foster, Diane, to Life Key Corporation. Information storage apparatus. 4,577,425, Cl. 40-19.000.
Foster, Gordon T., to Gulf & Western Manufacturing Company. Vacuum-packed survival equipment. 4,577,816, Cl. 244-148.000.
Four-Phase Systems, Inc.: *See—*
Desai, Anil I.; and Westerfeld, Eric C., 4,578,773, Cl. 364-900.000.
Fourie, Theunis G.; Dekker, Theodor G.; Snyckers, Friedrich O.; and van der Schyf, Cornelis J., to Noristan Limited. Phlorophenone derivatives, processes for preparing such compounds, uses and pharmaceutical compositions of phlorophenone compounds. 4,578,520, Cl. 568-315.000.
Fournier, Albert J.: *See—*
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Fowler, James D., to Monsanto Company. Fluid distribution system for separation modules. 4,578,190, Cl. 210-321.100.
Fox, Anthony G.; Smith, Harry L. O.; and Sadre-Marandi, Ehsan, to Beattie Systems, Inc. Film magazine. 4,577,947, Cl. 354-275.000.
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Francia, Giorgio A., to Francia Farmaceutici s.r.l. N-6-aminopurinyl-4-hydroxy-2-methyl-2H-1,2-benxothiazine-3-carboxamide 1,1-dioxide compound. 4,578,460, Cl. 544-49.000.
Frank, Arlen W., to United States of America, Agriculture. Process for the preparation of tris(N-carbalkoxylaminomethyl)phosphine oxides and sulfides. 4,578,506, Cl. 560-148.000.
Frank, Charles A.; and Compton, David J., to Automotive Products plc. Hydraulic cylinder provided with low friction plated internal surface. 4,577,549, Cl. 92-169.000.
Franke, John M., Sr., to Singer Company, The; and AVG Productions, Inc. Robotic work fabric manipulator. 4,577,792, Cl. 226-162.000.
Franklin Computer Corporation: *See—*
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Franks, Terry E.: *See—*
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Franz, Helmut; Hanlon, James H.; and Shick, Lloyd G., to PPG Industries, Inc. Polymer solution working fluid for finishing processes. 4,578,203, Cl. 252-49.300.
Franz Viegener II, Firma: *See—*
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Franz, Wiesner, to Traub GmbH. Tracing sensor. 4,577,416, Cl. 33-561.000.
Frauenfeld, Martin; and von Wedel, Rudiger, to Kraftanlagen AG. Storage material for heat transfer. 4,577,678, Cl. 165-10.000.
Frederick, Edward C., to Nike, Inc. Device for determining the speed, distance traversed, elapsed time and calories expended by a person while running. 4,578,769, Cl. 364-565.000.
Fredericksen, Arnold E.; and Richtmeyer, Robert D., to Torrington Company, The. Oscillating bearing. 4,577,911, Cl. 308-2.00R.
Freeman, John P.; Macon, Fred M.; and Mee, John D., to Eastman Kodak Company. Hydrolyzed azolium speed enhancing/fog-inhibiting agents for silver halide photography. 4,578,348, Cl. 430-607.000.
Freeport Minerals Company: *See—*
Astley, Vivian C.; Milan, Rudolph R.; and Taravella, Jody J., 4,577,804, Cl. 241-16.000.
Frei, Peter, to Patenver AG. Scaffold for the construction of round buildings of concrete or the like. 4,577,727, Cl. 182-128.000.
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Frickel, Fritz-Frieder; and Nuerrenbach, Axel, to BASF Aktiengesellschaft. Phenylethylene derivatives and their use as drugs. 4,578,498, Cl. 560-8.000.
Frieder, Philip M.; and de Rojas, Edward, to Optical Systems International, Inc. Laminated high correction eyeglass lens. 4,577,942, Cl. 351-159.000.
Friedman, Bernard, to Oil Process Systems, Inc. Method and system for filtering cooking oil. 4,578,196, Cl. 210-765.000.
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Kato, Mikihiko; Okita, Tsutomu; Komine, Shigeo; Okuzawa, Yasutoshi; and Morita, Kazuhiko, 4,578,299, Cl. 428-65.000.
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Takahashi, Yutaka; and Matsuoka, Hiroshi, 4,577,951, Cl. 354-331.000.
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Tanaka, Hiroshi; and Kato, Hisatoyo, 4,578,581, Cl. 250-327.200.
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Fujii, Kozo; and Okumura, Takeo, to Kao Corporation. Shampoo composition containing amino acid-anionic and amphoteric surface active agents. 4,578,216, Cl. 252-542.000.
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Fujisawa Pharmaceutical Co., Ltd.: *See—*
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Fujisawa, Tetsuo, to Kabushiki Kaisha Kobe Seiko Sho. Method for driving a rotary kiln for roasting cement raw meals. 4,578,029, Cl. 432-14.000.
Fujita, Hiroo, to Citizen Watch Co., Ltd. Surface shape measurement apparatus. 4,577,967, Cl. 356-349.000.
Fujita, Takeyuki: *See—*
Ashina, Yoshiro; Fujita, Takeyuki; Fukatsu, Michio; and Yagi, Junsuke, 4,578,516, Cl. 564-479.000.
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Aoyama, Keizo, 4,578,778, Cl. 365-190.000.
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Hanada, Koji; Kinoshita, Yuji; and Tamura, Masaru, 4,578,660, Cl. 335-133.000.
Kosemura, Kinjiro; Yamashita, Yoshimi; Nakayama, Noriaki; and Yamamoto, Sumio, 4,578,343, Cl. 430-296.000.
Ogawa, Junji; Nakano, Tomio; Nakano, Masao; Tsuge, Norihisa; and Horii, Takashi, 4,578,781, Cl. 365-203.000.
Takemae, Yoshihiro, 4,578,697, Cl. 357-75.000.
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Tanaka, Gotaro; Fujiwara, Kunio; and Miyajiri, Tetsuo, 4,578,560, Cl. 219-121.0PR.
Fujiyama, Masaaki: *See—*
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Fukasawa, Yoshiro, to Japan Spectroscopic Co., Ltd. Spectrophotometer. 4,577,966, Cl. 356-325.000.
Fukatsu, Michio: *See—*
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Fukuda, Masao, to Kabushiki Kaisha Ishida Koki Seisakusho. Method of and apparatus for combinatorial computation. 4,577,707, Cl. 177-25.000.
Fukuda, Masao: *See—*
Ebisawa, Hiroo; Maruyama, Iwao; Fukuda, Masao; and Miyamoto, Shigeo, 4,578,281, Cl. 427-53.100.
Fukui, Kiyoshi; Kakeya, Noboru; and Taguchi, Mitsushi, to Ube Industries, Ltd. Process for preparing 1,2,4-triazole-3-carboxamides. 4,578,479, Cl. 548-269.000.
Fukuoka, Masayuki: *See—*
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Fukushima, Kiyoto: *See—*
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Furst, Andor; Muller, Marcel; Kerb, Ulrich; and Wiechert, Rudolf, to Hoffman-La Roche Inc. Novel D-homosteroids. 4,578,475, Cl. 548-126.000.
Furukawa, Hisao; Okada, Keiko; Kawamura, Joe; and Kato, Yasushi, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Stabilized moisture curable composition. 4,578,417, Cl. 524-378.000.
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Yasuda, Yutaka; Hirata, Yasuo; Murakami, Shuji; Nakamura, Katsuhiro; and Furuya, Yukitsuna, 4,578,800, Cl. 375-106.000.
Fusco, Frank. Vestibule for any stove. 4,577,617, Cl. 126-279.000.
Fuse, Genzo; Abe, Kaoru; and Matsumoto, Isao, to Honda Giken Kogyo Kabushiki Kaisha. Machining reforming apparatus for electrode of resistance welding machine. 4,578,005, Cl. 409-140.000.
G. D. Searle & Co.: *See—*
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GA Technologies Inc.: *See—*
Yampolsky, Jack S.; and Carosella, David P. E., Jr., 4,577,682, Cl. 165-160.000.
GAF Corporation: *See—*
Amabile, Robert N.; Judd, Richard E.; and Gromelski, Stanley J., Jr., 4,578,407, Cl. 524-55.000.
Gaillard, Daniel: *See—*
Andriessen, Johannes; and Gaillard, Daniel, 4,578,731, Cl. 361-42.000.
Galkin, Benjamin M. Volume reduction in liquid scintillation counting. 4,578,588, Cl. 250-432.00R.
Ganellin, Charon R.: *See—*
Durant, Graham J.; and Ganellin, Charon R., 4,578,388, Cl. 514-252.000.
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Gangemi, Ronald J.: *See—*
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Gardiner, Thomas: *See—*
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Garner, John N., to Northern Telecom Limited. Manufacture of telecommunications cable core units. 4,577,403, Cl. 29-872.000.
Garnsworthy, Russell K., to Commonwealth Scientific and Industrial Research Organization. Joining of yarns by pneumatic splicing. 4,577,458, Cl. 57-22.000.
Garrett Corporation, The: *See—*
McCarty, Frederick B., 4,578,609, Cl. 310-156.000.
Safarik, William F., 4,578,019, Cl. 416-1.000.
Garrett, Steven L.: *See—*
Migliori, Albert; Swift, Gregory W.; and Garrett, Steven L., 4,577,414, Cl. 33-363.00K.
Gassmann, Zean Z.; Hawkins, Jeffrey T.; and Brown, Alfred, to Texaco Inc. Injection of steam foaming agents into producing wells. 4,577,688, Cl. 166-245.000.
Gaube, Franz: *See—*
Schultz, Ludwig; and Gaube, Franz, 4,578,123, Cl. 148-11.50Q.
Gautheron, Lucien. Extruded section for swimming pool rollable cover. 4,577,352, Cl. 4-499.000.
Gautier, Jean P., to Societe Anonyme D.B.A. Servomotor for braking assistance. 4,577,548, Cl. 91-369.00A.
Gautschi, Fritz: *See—*
Morris, Anthony F.; Delay, Francois; Gautschi, Fritz; Thomas, Alan F.; Giersch, Wolfgang K.; and Boschung, Andre , 4,578,277, Cl. 426-538.000.
Gavronski, Paul A.: *See—*
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Geiger, Kenneth E.: *See—*
Nitzsche, Raymond P.; and Geiger, Kenneth E., 4,577,630, Cl. 128-314.000.
Geke, Juergen; and Stedry, Bernd, to Henkel Kommanditgesellschaft auf Aktien. Compositions and processes for cleaning and passivating metals. 4,578,208, Cl. 252-135.000.
Gelbart, Daniel, to Creo Electronics Corporation. Multi-spot modulator using a laser diode. 4,577,932, Cl. 350-358.000.
Gelfand, Valery A., to Western Geophysical Company of America. Two-component acoustic borehole tool. 4,578,785, Cl. 367-35.000.
Gelles, Richard: *See—*
Gergen, William P.; Lutz, Robert G.; and Gelles, Richard, 4,578,429, Cl. 525-291.000.
Gembus, Hans-Dieter; and Wolf, Rainer, to Deutsche Gesellschaft fur Wiederaufarbeitung von Kernbrennstoffen mbH. Coupling arrangement for pipe conduits conducting a medium containing radioactive substances. 4,577,659, Cl. 137-614.060.
General Dynamics Electronics Division: *See—*
Mathis, Ronald F., 4,577,924, Cl. 350-96.150.
General Electric Company: *See—*
Cardwell, John G., Jr., 4,578,616, Cl. 313-579.000.
Corby, Nelson R., Jr.; and Godwin, Stanley J., 4,578,561, Cl. 219-124.340.
Grass, Joseph J.; Glyzewski, Marvin P.; and Polizzi, Emanuel V., 4,578,806, Cl. 378-162.000.
Griffing, Bruce F.; and West, Paul R., 4,578,344, Cl. 430-312.000.
Highton, Frederick J., 4,578,820, Cl. 455-154.000.
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Huseby, Irvin C.; and Bobik, Carl F., 4,578,232, Cl. 264-65.000.
Huseby, Irvin C.; and Bobik, Carl F., 4,578,233, Cl. 264-65.000.
Huseby, Irvin C.; and Bobik, Carl F., 4,578,234, Cl. 264-65.000.
Huseby, Irvin C.; and Bobik, Carl F., 4,578,364, Cl. 501-98.000.
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Kray, William D., 4,578,328, Cl. 430-18.000.
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Mobley, David P., 4,578,449, Cl. 528-212.000.
Pope, Adam N., 4,578,018, Cl. 415-14.000.
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Siemers, Paul A.; Kopp, Robert W.; Jackson, Melvin R.; Duke, Steven R.; Perrin, David P.; and Liu, Ying H., 4,577,431, Cl. 42-76.00A.
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General Motors Corporation: *See—*
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Genovese, Frank C.; and Lannom, James W., to Xerox Corporation. Vacuum fluorescent printing device employing a fly's-eye light coupling method. 4,578,615, Cl. 313-497.000.
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Georg Fischer Aktiengesellschaft: *See—*
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Georg Rost und Soehne Armaturenfabrik GmbH und Co. KG.: *See—*
Strangfeld, Reiner, 4,577,829, Cl. 251-15.000.
Gerber, Jerome J. Implement hitch assembly. 4,577,881, Cl. 280-412.000.
Gergen, William P.; Lutz, Robert G.; and Gelles, Richard, to Shell Oil Company. Selectively hydrogenated block copolymers modified with acid compounds or derivatives. 4,578,429, Cl. 525-291.000.

Gerhardy, Reinhard, to Andreas Stihl. Carburetor for an internal combustion engine. 4,578,228, Cl. 261-41.00D.
Gerretz, Josef: *See—*
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Geschwender, Robert C., to New Products I, Inc. Knockdown rack. 4,577,767, Cl. 211-190.000.
Gessman, Lawrence J. Method and apparatus for alleviating paroxysmal atrail tachycardia. 4,577,634, Cl. 128-419.0PG.
Getman, Daniel P., to Monsanto Company. Synthesis of sulfilimines. 4,578,514, Cl. 564-102.000.
Geyken, Erwin; Heckl, Franz; Kastl, Alfons; Lehnert, Klaus; and Loistl, Rudolf, to Agfa-Gevaert AG. Developing device for a horizontally, transported photographic layer carrier. 4,577,949, Cl. 354-319.000.
Gharavi, Hamid, to AT&T Bell Laboratories. Image coding technique. 4,578,704, Cl. 358-135.000.
Giannini, Mario: *See—*
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Giardini, Dante: *See—*
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Giddey, Claude; and Dove, Georges, to Battelle Memorial Institute. Lighter foodstuffs and method for preparation of such products. 4,578,278, Cl. 426-605.000.
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Giersch, Wolfgang K.: *See—*
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Gilda, Patricia; Mann, William F.; and Allen, Winthrop D., III. Ashtray. 4,577,758, Cl. 206-496.000.
Gill, Roger F.; and Narasimham, Pundi L., to AT&T Technologies, Inc. Methods of and apparatus for recovering a constituent of a process effluent. 4,578,253, Cl. 423-87.000.
Gillespie, John R.; and Corley, Daniel M., to Gillespie & Powers, Inc. Furnace and process for providing a source of molten metal. 4,578,111, Cl. 75-65.00R.
Gillespie & Powers, Inc.: *See—*
Gillespie, John R.; and Corley, Daniel M., 4,578,111, Cl. 75-65.00R.
Gionet, Daniel C.; and Nguyen, Harry V., to Lanson Electronics, Inc. Automatic door object sensing system. 4,577,437, Cl. 49-25.000.
Giravions Dorand: *See—*
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Gironde, Daniel: *See—*
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Gizeh-Werk GmbH: *See—*
Kresin, Hermann, 4,577,775, Cl. 220-66.000.
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Glass, Ted A. Bean bag body support. 4,577,358, Cl. 5-455.000.
Glasstech, Inc.: *See—*
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Giaxo Group Limited: *See—*
Phillipps, Gordon H.; Bain, Brian M.; and Laing, Stuart B., 4,578,221, Cl. 260-397.100.
Gleason, Harold T. Hay bale loader. 4,578,008, Cl. 414-24.500.
Glyco-antriebstechnik GmbH: *See—*
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Go, Santos W., deceased (by Yager, John W., administrator); and Jabarin, Saleh A., to Owens-Illinois, Inc. Ethylene polymer blend and containers prepared therefrom. 4,577,768, Cl. 215-1.00C.
Gobel, Hilmar: *See—*
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Goel, Anil B., to Ashland Oil, Inc. High performance two-component epoxy structural adhesives with chemical thixotropy. 4,578,424, Cl. 525-109.000.
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Goldstake: *See—*
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Goldstein, Amnon: *See—*
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Gollub, Erwin; and Muller, Reinhardt, to TRW Ehrenreich GmbH & Co., KG. Ball joint. 4,577,988, Cl. 403-140.000.
Gomei, Yoshio, to Tokyo Shibaura Denki Kabushiki Kaisha. Torus type nuclear fusion apparatus using deuterium or tritium as fuel. 4,578,236, Cl. 376-136.000.
Goodman, Joseph J.: *See—*
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McKinney, Robert L., 4,577,412, Cl. 33-172.00R.
Schloman, William W., Jr., 4,578,450, Cl. 528-254.000.
Gordon, James F., to Nicolet Instrument Corporation. Graphic recording system. 4,578,683, Cl. 346-49.000.
Gorin, Everett, to Conoco Inc. Combined process for coal pyrolysis and char gasification. 4,578,175, Cl. 208-8.00R.
Gosis, Anatoly I.; and Bartos, Frank J., to Siemens Gammasonics, Inc. Detector head mounting mechanism. 4,578,585, Cl. 250-363.00S.
Gossard, Arthur C.; Miller, Robert C.; and Petroff, Pierre M., to AT&T Bell Laboratories. Method of making an improved group III-V semiconductor device utilizing a getter-smoothing layer. 4,578,127, Cl. 148-175.000.
Gossett, Burnham N. In-place swimming apparatus. 4,577,859, Cl. 272-71.000.
Gotou, Tadashi; Kawamura, Fumio; Sagawa, Norihiko; and Yusa, Hideo, to Hitachi, Ltd. Power storage system using sodium-sulfur batteries. 4,578,325, Cl. 429-91.000.
Gottling, Helmut, to WABCO Westinghouse Steuerungstechnik GmbH. Brake apparatus to retard relative movement between two members. 4,577,732, Cl. 188-67.000.
Goujon, Michel: *See—*
de Guillenschmidt, Pierre; Hubert, Jacques; Goujon, Michel; and Saunier, Christian, 4,577,962, Cl. 356-5.000.
Gould, Clive M.: *See—*
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Govekar, Craig F.: *See—*
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Grabowski, Edward J. J.: *See—*
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Grachek, Bruce: *See—*
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Grade, Reinhardt: *See—*
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Graham, John R., to Biomedical Concepts, Inc. Esophageal stethoscope. 4,577,638, Cl. 128-671.000.
Gramss, Rainer: *See—*
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Grandon, Stanley C. Intraocular catheter apparatus and method of use. 4,578,058, Cl. 604-27.000.
Grant, John W.; and Ferrari, Francis E., to Stewart-Warner Corporation. Pattern tracer with variable effective forward offset and method. 4,578,574, Cl. 250-202.000.
Grant, Robert J. Vehicle armrest. 4,577,905, Cl. 297-411.000.
Grant, Spencer H. Tree trimming apparatus. 4,577,457, Cl. 56-235.000.
Granzow, Robert H.; Daulton, Richard H.; Placke, Dale L.; Adelberger, Donald L.; Gross, Jack R.; and Nagy, Charles S., to NCR Corporation. Collector and carriage mechanism for use in a sheet dispenser. 4,578,009, Cl. 414-43.000.
Granzow, Robert H.; Gupta, Desh B.; and Myers, Kimbrough I., to NCR Corporation. Method and apparatus for gaining access to a system having controlled access thereto. 4,578,567, Cl. 235-380.000.
Granzow, Robert H.: *See—*
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Grashof, Hans R.: *See—*
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Grass, Joseph J.; Glyzewski, Marvin P.; and Polizzi, Emanuel V., to General Electric Company. Device for aligning cooperating X-ray systems. 4,578,806, Cl. 378-162.000.
Grasset, Joseph. Article for infants, forming pacifier and teething ring simultaneously. 4,577,632, Cl. 128-360.000.
Graves, Victoria, to Exxon Research & Engineering Co. Polymerization catalyst system. 4,578,373, Cl. 502-113.000.
Gravley, Wilton: *See—*
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Gray, Henry F.; and Greene, Richard F., to United States of America, Navy. Ultra-fast field emitter array vacuum integrated circuit switching device. 4,578,614, Cl. 313-309.000.
Gray, Kevin; and Johnson, Frederic A., to Johnson, Frederic A. Log splitting device. 4,577,667, Cl. 144-193.00C.
Gray, Michael A., to AT&T Bell Laboratories. Separating an equivalent circuit into components to detect terminating networks. 4,578,761, Cl. 364-481.000.
Gray, Stanley J., to Borg-Warner Corporation. Impeller under file machine. 4,578,006, Cl. 409-303.000.

Green, Henry M.: *See—*
Currie, Brian; Gardiner, Thomas; and Green, Henry M., 4,578,301, Cl. 428-109.000.
Green, John G., II. Small gliding underwater craft. 4,577,583, Cl. 114-332.000.
Greenberger, Joseph I., to Wean United, Inc. Method and apparatus for treating work rolls in a rolling mill. 4,577,482, Cl. 72-201.000.
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Greenwald, Harry; and Lier, Pierre, to Kidde, Inc. Switching device for a coin controlled machine. 4,578,548, Cl. 200-38.00F.
Greenwood, Arthur R., to UOP Inc. Gas circulation method for moving bed catalyst regeneration zones. 4,578,370, Cl. 502-37.000.
Greiner, Joachim; and Nippe, Burkhard, to Agfa-Gevaert Aktiengesellschaft. Process for the production of a magnetic recording material with perpendicular orientation. 4,578,280, Cl. 427-47.000.
Grenier, Wilfred J.: *See—*
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Gribshaw, Franklin C.: *See—*
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Grieben, Karl-Heinz, to Hauni-Werke Korber & Co. KG. Apparatus for tip turning filter cigarettes or the like. 4,577,644, Cl. 131-94.000.
Griesbach, Ray H.: *See—*
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Griffing, Bruce F.; and West, Paul R., to General Electric Company. Photolithographic method using a two-layer photoresist and photobleachable film. 4,578,344, Cl. 430-312.000.
Griffith, James R.; and O'Rear, Jacques G., to Geo-Centers, Inc. Fluoroacrylate ester, polymer thereof, and process of making the same. 4,578,508, Cl. 560-221.000.
Grigo, Ulrich R.: *See—*
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Grinde, James E.: *See—*
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Grittmann, Ernst-Juergen: *See—*
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Groenhof, Eugene D., to Dow Corning Corporation. Silicone traction fluids. 4,577,523, Cl. 74-200.000.
Gromelski, Stanley J., Jr.: *See—*
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Grosch, James T., to AT&T Bell Laboratories. Buck boost switching regulator with duty cycle limiting. 4,578,630, Cl. 323-271.000.
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Placke, Dale L.; Filliman, Mark D.; Granzow, Robert H.; Gross, Jack R.; and Nagy, Charles S., 4,577,763, Cl. 209-534.000.
Grosser, Siegfried; Ludwig, Christian; Wallner, Kurt; Herzog, Karl; and Bayerl, Eugen, to Carl-Zeiss-Stiftung. Lens mount with noise reducing means. 4,577,944, Cl. 352-35.000.
Grossman, Leonard N.: *See—*
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Grover, Donald D.; and Kaufman, Glenn A., to Snap-on Tools Corporation. Transducer and holder therefor for ultrasonic acoustic tachometer. 4,577,496, Cl. 73-119.00A.
Gruber, Peter: *See—*
Stricker, Herbert; Freund, Bernhard; Harwalik, Heribert; Rominger, Karl L.; Darda, Siegfried; Haselbarth, Volkmar; Arndts, Dietrich; Bechtel, Wolf D.; Bozler, Gerhard; Brickl, Rolf; and Gruber, Peter, 4,578,264, Cl. 424-37.000.
Gruber, Robert J.; Koch, Ronald J.; and Knapp, John F., to Xerox Corporation. Development process with toner composition containing low molecular weight waxes. 4,578,338, Cl. 430-120.000.
Gruber, Werner, to Henkel Kommanditgesellschaft auf Aktien. Polyamide sheathed optical waveguide fibers. 4,578,284, Cl. 427-163.000.
Gruett, Donald G., to Oil Rite Corporation. Lubricant metering valve. 4,577,728, Cl. 184-7.400.
Grunder, Roland, to Grapha-Holding AG. Apparatus for counting the sheets in a stream of partly overlapping sheets. 4,577,852, Cl. 271-188.000.
Grunst, Heinz; and Kleine, Heinz, to Square D Starkstrom GmbH. Snap action electrical switch. 4,578,549, Cl. 200-76.000.
GTE Products Corporation: *See—*
Ritsko, Joseph E.; and Acla, Howard L., 4,578,251, Cl. 423-55.000.
Guery S.A.: *See—*
Petit, Raymond, 4,578,012, Cl. 414-310.000.
Guillemin, Jean, to VALEO. Flap for a heater or air conditioner installation for a motor vehicle cabin. 4,577,836, Cl. 251-356.000.
Guillen, Richard H. Anti-glare device for side mounted rear vision mirrors. 4,577,929, Cl. 350-283.000.
Gulf Research & Development Company: *See—*
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Gulf & Western Manufacturing Company: *See—*
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Gunther, Horst H.; and Oesterle, Hermann F., to International Standard Electric Corporation. Electric switch. 4,578,547, Cl. 200-11.0DA.
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Granzow, Robert H.; Gupta, Desh B.; and Myers, Kimbrough I., 4,578,567, Cl. 235-380.000.
Gupta, Mool C.; and Stinson, Douglas G., to Eastman Kodak Company. Optical recording and information elements. 4,578,684, Cl. 346-135.100.
Gursky, Herbert: *See—*
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Gyles, Colin: *See—*
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Gyugyi, Laszlo; Heinrich, Theodore M.; and Cho, Gyu-Hyeong, to Westinghouse Electric Corp. Interlaced pulse-width modulated unrestricted frequency changer system. 4,578,746, Cl. 363-161.000.
H.F. & Ph.F Reemtsma GmbH & Co.: *See—*
Ziehn, Klaus-Dieter, 4,577,646, Cl. 131-296.000.
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Habib, Wagdi W., to Hollister Incorporated. Protective sealing composition in molded form. 4,578,065, Cl. 604-336.000.
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Hafner, Hans W., to Pfister GmbH. Gyroscope load cell. 4,577,519, Cl. 74-5.00F.
Haga, Kyosuke; and Tanaka, Tsuneo, to Toyoda Koki Kabushiki Kaisha. Rotary servovalve. 4,577,660, Cl. 137-625.240.
Hagemeister, Klaus, to MTU Motoren- und Turbinen-Union Munchen GmbH. Profiled-tube heat exchanger. 4,577,684, Cl. 165-172.000.
Hagemeister, Robert C., to Webster Spring Co. Inc. Bent wire spring unit. 4,577,841, Cl. 267-103.000.
Hagino, Shigeo. Reciprocating internal-combustion engine of low-temperature catalytic-combustion type. 4,577,611, Cl. 123-669.000.
Hahn, A. David, to Jarvis Products Corporation. Dehorner. 4,577,407, Cl. 30-180.000.
Hahn, Frederick C., to ESCO Corporation. Excavating tooth system. 4,577,423, Cl. 37-142.00R.
Hahn, Hyo K.: *See—*
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Haken, Roger A., to Texas Instruments Incorporated. Fabrication of polysilicon to polysilicon capacitors with a composite dielectric layer. 4,577,390, Cl. 29-570.000.
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Hall, Bradley G. Athletic padded garment. 4,577,346, Cl. 2-2.000.
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Hall, Charles P.; and Philipson, Joseph, to Monterey Manufacturing Co. Self-sealing waterbed mattress. 4,577,357, Cl. 5-451.000.
Hall, Charles P.: *See—*
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Hall, Herbert G.: *See—*
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Hall, Wilbur S., to Amchem Products, Inc. Iodine compound activation of autodeposition baths. 4,578,419, Cl. 524-401.000.
Halliburton Company: *See—*
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Halliwell, Michael J.; and Zahavi, Joseph. Laser induced deposition on polymeric substrates. 4,578,155, Cl. 204-15.000.
Halliwell, Michael J.; and Zahavi, Joseph. Laser induced deposition of GaAs. 4,578,157, Cl. 204-15.000.
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Hamaguchi, Hiroyuki, to NEC Corporation. Multilayer wiring substrate. 4,578,304, Cl. 428-209.000.
Hamane, Masumi; and Kimoto, Masahiko, to Honda Giken Kogyo Kabushiki Kaisha. Motorcycle engine cooling system. 4,577,720, Cl. 180-229.000.
Hamashima, Yoshio; Ishikura, Koji; Kubota, Tadatoshi; and Minami, Kyoji, to Shionogi & Co., Ltd. (Oxoheterocyclic carbonamido)-cephem carboxylic acid derivatives. 4,578,378, Cl. 514-210.000.
Hamisch, Paul H., Jr.; Vanderpool, James L.; and Bain, James M., to Monarch Marking Systems, Inc. Hand-held labeler having adjustable web positioning system. 4,578,138, Cl. 156-361.000.
Hamlin, Robert N.: *See—*
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Hammar, W. James, to Minnesota Mining and Manufacturing Company. Acrylate and methacrylate monomers and polymers. 4,578,504, Cl. 560-112.000.

Hams, Kenneth A., to Bell & Howell Company. Method and apparatus for controlling the actuation of gripper arms. 4,577,848, Cl. 270-55.000.
Hanada, Koji; Kinoshita, Yuji; and Tamura, Masaru, to Fujitsu Limited. Housing for an electromagnetic relay. 4,578,660, Cl. 335-133.000.
Handl, Werner, to Staedtler, J. S. Eraser with thermoplastic binder. 4,578,420, Cl. 524-490.000.
Handy Button Machine Company: *See—*
Bush, E. Dan, 4,577,373, Cl. 24-90.00B.
Hani, Kiyoshi; Takei, Takako; Kodama, Minekazu; and Sugano, Toshiyuki, to Mitsubishi Denki Kabushiki Kaisha. Laminated board lined with thermally and electrically conductive material. 4,578,308, Cl. 428-297.000.
Hankwitz, Edward H.: *See—*
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Hansen, William P., Jr., to Ortho Diagnostics, Inc. Apparatus and method for detecting platelets in whole blood. 4,577,964, Cl. 356-39.000.
Hanyu, Susumu; and Kato, Kenji, to Janome Sewing Machine Co., Ltd. Stitching adjustment device of a sewing machine. 4,577,576, Cl. 112-456.000.
Hanzawa, Tuneo, to K. K. Hanzawa Corporation. Driving/turnaround device for a remote controlled toy vehicle. 4,577,528, Cl. 74-665.0GA.
Hara, Yoichi; and Seimiya, Yasuo, to Nissan Motor Company, Limited. Control system for fuel pump for internal combustion engine. 4,577,604, Cl. 123-397.000.
Harada, Hiroshi: *See—*
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Harada, Shinichi; Ishihara, Yoshinobu; and Matsushita, Shigeru, to Kabushiki Kaisha Kobe Seiko Sho. Guide roll. 4,577,673, Cl. 164-448.000.
Harada, Shinichi; Toyoda, Hiroshi; Honma, Katsuhiko; and Matsushita, Shigeru, to Kabushiki Kaisha Kobe Seiko Sho. Guide roll. 4,577,674, Cl. 164-448.000.
Harada, Shinichi: *See—*
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Harder, Hans E.; Behrens, Klaus; and Kotz, Rainer, to Howmedica International, Inc. Bone prosthesis. 4,578,081, Cl. 623-22.000.
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Harding, George W., to Poly-John Enterprises Corp. Portable toilet cabana. 4,577,351, Cl. 4-460.000.
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Harigane, Kotaro; Ihara, Keiichi; Ito, Tetsuro; and Shudo, Hirokazu, to TDK Corporation. Electronic component selection and supply apparatus in automatic electronic component inserting machine. 4,578,010, Cl. 414-126.000.
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Harris, Joe L. Trailer hitch. 4,577,884, Cl. 280-507.000.
Harris, Walter L. Ski attachment for vehicle wheels. 4,577,876, Cl. 280-13.000.
Harrison, Earnest R., Jr., to Westinghouse Electric Corp. Delay lattice filter for radar doppler processing. 4,578,676, Cl. 343-17.10R.
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Stricker, Herbert; Freund, Bernhard; Harwalik, Heribert; Rominger, Karl L.; Darda, Siegfried; Haselbarth, Volkmar; Arndts, Dietrich; Bechtel, Wolf D.; Bozler, Gerhard; Brickl, Rolf; and Gruber, Peter, 4,578,264, Cl. 424-37.000.
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Hatfield, Raymond W., to Landey, Michael. Method of producing adherent metallic film. 4,578,310, Cl. 428-334.000.
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Hawkeye Chemical Company: *See—*
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Hawkins, Floyd A., Jr. Method of making a three dimensional sculptured painting. 4,578,131, Cl. 156-62.000.
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Hay, James V.; and Sauers, Richard F., to Du Pont de Nemours, E. I., and Company. Herbicidal benzenesulfonamides. 4,578,108, Cl. 71-93.000.
Hayashi, Masanori; Sakurai, Akira; and Aso, Shigeru, to Kyushu University. Multi-layered thin film heat transfer gauge. 4,577,976, Cl. 374-29.000.
Hayashi, Yoshimasa; Kubozuka, Takao; and Hirano, Yoshinori, to Nissan Motor Co., Ltd. Cooling system for automotive engine. 4,577,594, Cl. 123-41.080.
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Healey, Daniel J., III; and Hahn, Hyo K., to Westinghouse Electric Corp. Apparatus for determining frequency versus acceleration characteristics for crystals. 4,578,634, Cl. 324-56.000.
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Hedden, Roger L. Anchor with pivoting arms. 4,577,582, Cl. 114-298.000.
Hefner, Robert E., Jr., to Dow Chemical Company, The. Styryl pyridine cyanates, styryl pyrazine cyanates and polymers thereof. 4,578,439, Cl. 525-509.000.
Hehl, Karl. Safety cover arrangement for injection molding machine with die exchange mechanism. 4,578,026, Cl. 425-151.000.
HEI, Inc.: *See—*
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Heitkamp, Lawrence F., III; and Heitkamp, John J., Jr., to Trip-Saver Inc. Water actuated inflatable float device. 4,578,041, Cl. 441-30.000.
Heitmann, Heinrich; Tolksdorf, Wolfgang; Welz, Fritz; and Witter, Klaus, to U.S. Philips Corporation. Magnetooptical modulator. 4,578,651, Cl. 332-7.510.
Heitmann, Jurgen; Loos, Rolf; and Wagner, Peter, to Robert Bosch GmbH. Tracking error recognition in reproduced digital signals. 4,578,719, Cl. 360-31.000.
Helal, Basil H. Joint prostheses. 4,578,080, Cl. 623-13.000.
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Heller, Donald F.: *See—*
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Hennessy, Michael P.; and Prueher, Andrew B. Protective canister for computer discs. 4,577,756, Cl. 206-444.000.
Hernandez, Santiago, to Gulf & Western Manufacturing Company. Three-dimensional vacuum envelope. 4,577,817, Cl. 244-148.000.
Herrera, Samuel R. Portable cooler. 4,577,475, Cl. 62-457.000.
Herrin, Robert M. Carton erection and sealing apparatus. 4,578,054, Cl. 493-126.000.
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Hertl, William; and Schaeffler, Robert G., to Corning Glass Works. Fuel cell using quinones to oxidize hydroxylic compounds. 4,578,323, Cl. 429-15.000.
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Hibshman, Henry J. Storage systems for heat or cold including aquifers. 4,577,679, Cl. 165-45.000.
Hice, John R., to Data Information Management Systems, Inc. Modular microprocessor-based system for printing and reading a personal identifier code on a form. 4,578,572, Cl. 235-472.000.
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Hijikata, Isamu; Uehara, Akira; and Nakane, Hisashi, to Tokyo Ohka Kogyo Co., Ltd. Plasma etching method. 4,578,559, Cl. 219-121.0PE.
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Hine, Gregory S.: *See—*
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Hirata, Tadashi; and Amano, Tadashi, to Amada Company Limited. Backgauge device. 4,577,538, Cl. 83-467.00R.
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Yasuda, Yutaka; Hirata, Yasuo; Murakami, Shuji; Nakamura, Katsuhiro; and Furuya, Yukitsuna, 4,578,800, Cl. 375-106.000.
Hirate, Shintaro: *See—*
Yamada, Tetsusyo; and Hirate, Shintaro, 4,578,171, Cl. 204-406.000.
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Hirose Manufacturing Company Limited: *See—*
Hirose, Tokuzo, 4,577,572, Cl. 112-231.000.
Hirose, Tokuzo, to Hirose Manufacturing Company Limited. Fully rotating hook for a lock stitch sewing machine. 4,577,572, Cl. 112-231.000.
Hisaka Works, Ltd.: *See—*
Ishimaru, Osamu, 4,578,085, Cl. 8-152.000.
Hisamoto, Iwao; and Omure, Yukio, to Daikin Kogyo Co., Ltd. Composition for cleaning surface of substrate. 4,578,209, Cl. 252-143.000.
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Kitamura, Masao; Nakayama, Norio; Katsura, Ryoei; Ibe, Hidefumi; and Uchida, Shunsuke, 4,578,154, Cl. 204-1.00T.
Hitachi, Ltd.: *See—*
Gotou, Tadashi; Kawamura, Fumio; Sagawa, Norihiko; and Yusa, Hideo, 4,578,325, Cl. 429-91.000.
Kanda, Hiroshi; and Ishikawa, Isao, 4,577,504, Cl. 73-606.000.
Kitamura, Masao; Nakayama, Norio; Katsura, Ryoei; Ibe, Hidefumi; and Uchida, Shunsuke, 4,578,154, Cl. 204-1.00T.
Mori, Toshikatsu; Takeuchi, Seizi; Matsuda, Shimpei; Kumagi, Teruo; Kato, Akira; Yamashita, Hisao; and Takeuchi, Masato, 4,578,112, Cl. 75-108.000.
Ozawa, Naoki; Akiyama, Toshiyuki; Nagahara, Shuusaku; Ohba, Shinya; Ando, Haruhisa; and Ozaki, Toshifumi, 4,578,707, Cl. 358-212.000.
Sakamoto, Masami; Nagumo, Ryoichi; and Ishihara, Tamio, 4,577,409, Cl. 33-18.100.
Shimizu, Keizo; Otsu, Shimpei; Fujimura, Toshio; Taniguchi, Yoshisada; and Nagami, Hayashi, 4,578,787, Cl. 369-77.200.
Suzuki, Ryo; Sugita, Yutaka; Takeuchi, Teruaki; Kodama, Naoki; Takeshita, Masatoshi; and Umezaki, Hiroshi, 4,578,775, Cl. 365-36.000.
Tokuyama, Shunji; Suzuki, Kooji; Hirasawa, Kunio; Yoshioka, Yoshio; and Arimatsu, Keiji, 4,578,730, Cl. 361-4.000.
Yamamoto, Naoki; and Sakudo, Noriyuki, 4,577,396, Cl. 29-576.00B.
Yazawa, Yoshiaki; Miyakawa, Nobuaki; Mukai, Toji; Ikeda, Takahide; and Kamei, Tatsuya, 4,578,693, Cl. 357-30.000.
Hitachi, Ltd: *See—*
Maio, Kenji; and Moritani, Atsushi, 4,578,646, Cl. 328-128.000.
Hitachi Medical Corporation: *See—*
Maio, Kenji; and Moritani, Atsushi, 4,578,646, Cl. 328-128.000.
Hitachi Zosen Corporation: *See—*
Tomita, Yukio; Nabeshima, Kenjiro; and Shibamoto, Nobuji, 4,577,564, Cl. 110-110.000.
Hoag, Ethan D., to Metalworking Lasers International Ltd. High-power lasers. 4,578,792, Cl. 372-58.000.
Hochmair, Erwin S.: *See—*
Hochmair, Ingeborg J.; and Hochmair, Erwin S., 4,577,641, Cl. 128-746.000.
Hochmair, Ingeborg J.; and Hochmair, Erwin S. Method of fitting hearing prosthesis to a patient having impaired hearing. 4,577,641, Cl. 128-746.000.
Hoechst Aktiengesellschaft: *See—*
Deger, Hans-Matthias; Erckel, Rudiger; and Fruhbeis, Horst, 4,578,469, Cl. 546-66.000.
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Schorlemmer, Hans-Ulrich; Dickneite, Gerhard; Sedlacek, Hans-Harald; de Souza, Noel J.; and Dohadwalla, Alihussein N., 4,578,399, Cl. 514-455.000.

Hoechst-Roussel Pharmaceuticals Incorporated: *See—*
Allen, Richard C.; Effland, Richard C.; and Klein, Joseph T., 4,578,394, Cl. 514-332.000.
Hoehn, Gustave L., Jr., to Mobil Oil Corporation. Borehole logging tool utilizing electromagnetic energy in the determination of dip of subsurface formations surrounding a borehole. 4,578,645, Cl. 324-338.000.
Hofeler, Henry H., to Procter & Gamble Company, The. Method of and apparatus for forming and cartoning multi-stack arrays of compressible articles. 4,577,453, Cl. 53-438.000.
Hoff, Raymond E.: *See—*
Pullukat, Thomas J.; and Hoff, Raymond E., 4,578,440, Cl. 526-128.000.
Hoffman-La Roche Inc.: *See—*
Furst, Andor; Muller, Marcel; Kerb, Ulrich; and Wiechert, Rudolf, 4,578,475, Cl. 548-126.000.
Hoffmann-La Roche Inc.: *See—*
Hansen, Hans-Jurgen; Schmid, Rudolf; and Schmid, Max, 4,578,462, Cl. 544-177.000.
Hoffmann, Wilfried, to Auergesellschaft GmbH. Gas-tight protective garment with hood. 4,577,348, Cl. 2-84.000.
Hofmann, Gunter A., to Biotronics. Apparatus for fusing live cells with electric fields. 4,578,168, Cl. 204-299.00R.
Hofmann, Horst; and Reckert, Jurgen, to Systemform Datenbelege GmbH. Device for severing sets of endless forms or the like. 4,577,789, Cl. 225-100.000.
Hofmann, Peter, to Chemische Werke Huls Aktiengesellschaft. Methods for reprocessing cobalt catalysts used in hydrocarboxylation. 4,578,367, Cl. 502-24.000.
Hofmeister, John F. Method and apparatus for direct in vivo monitoring of uterine electrical activity. 4,577,640, Cl. 128-738.000.
Hogan, Robert J.: *See—*
Kukes, Simon G.; Johnson, Marvin M.; Strope, Daniel J.; and Hogan, Robert J., 4,578,179, Cl. 208-110.000.
Kukes, Simon G.; Hogan, Robert J.; Coombs, Daniel M.; and Strope, Daniel J., 4,578,180, Cl. 208-110.000.
Hohmann, Claus: *See—*
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Holba, Albert G.; Doe, Susanne B.; and Hughes, William B., to Phillips Petroleum Company. Analytical method and apparatus. 4,577,492, Cl. 73-61.10C.
Holdorf, Thomas C.: *See—*
Divjak, August A., Jr.; and Holdorf, Thomas C., 4,578,798, Cl. 375-45.000.
Holdt, Bernd-Dieter; Menke, Ronald; Praus, Gerd; and Hasselbach, Petra, to Henkel Kommanditgesellschaft auf Aktien. Two component cleaner and disinfectant tablet. 4,578,207, Cl. 252-134.000.
Holland, Charlie R.; and DelPercio, Michael J., to Coin Acceptors, Inc. Article-dispensing assembly for a vending machine. 4,577,780, Cl. 221-125.000.
Hollinger, Jeffrey O., to United States of America, Army. Polylactic-polyglycolic acids combined with an acidic phospholipid-lysozyme complex for healing osseous tissue. 4,578,384, Cl. 514-8.000.
Hollister, Allen L., to Tektronix, Inc. Digital acquisition system including a high-speed sampling gate. 4,578,667, Cl. 340-347.0SH.
Hollister Incorporated: *See—*
Habib, Wagdi W., 4,578,065, Cl. 604-336.000.
Holsappel, Albert, to Wavin B.V. Method of marking an article having at least a polyolefin surface and an article having a polyolefin surface provided with a black mark of decomposed polyolefin. 4,578,329, Cl. 430-18.000.
Holtman, Dennis C., to Personal Products Company. Absorbent structure containing corrugated web layers. 4,578,070, Cl. 604-378.000.
Holycross, Frank R., Jr., to Masco Corporation of Indiana. Insert for a faucet valve for increasing flow rate. 4,577,835, Cl. 251-310.000.
Homestake Mining Company: *See—*
Kunter, Richard S.; and Turney, John R., 4,578,163, Cl. 204-110.000.
Honda Giken Kogyo Kabushiki Kaisha: *See—*
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Ashikawa, Noboru, 4,577,721, Cl. 180-248.000.
Ebisawa, Hiroo; Maruyama, Iwao; Fukuda, Masao; and Miyamoto, Shigeo, 4,578,281, Cl. 427-53.100.
Fuse, Genzo; Abe, Kaoru; and Matsumoto, Isao, 4,578,005, Cl. 409-140.000.
Hamane, Masumi; and Kimoto, Masahiko, 4,577,720, Cl. 180-229.000.
Hirai, Seiichi; Nishizawa, Akira; and Otsuka, Nobuyuki, 4,578,048, Cl. 464-111.000.
Komon, Koichi; Ito, Siro; and Seino, Shuichi, 4,578,290, Cl. 427-421.000.
Nashimoto, Ryo; and Motodate, Shoji, 4,577,917, Cl. 339-150.00T.
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Tomita, Takao, 4,577,597, Cl. 123-73.00A.
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Morgan, Thomas A., 4,577,400, Cl. 29-739.000.
Honma, Katsuhiko: *See—*
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Hooper, Robert L.; and Yonge, Lawrence W., III, to Raydx Satellite Systems, Ltd. Antenna dish. 4,578,682, Cl. 343-916.000.
Horbelt, Michael: *See—*
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Horii, Takashi: *See—*
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Horii, Tetsuo, to Tokyo Shibaura Denki Kabushiki Kaisha. Sheet distributing apparatus. 4,578,759, Cl. 364-478.000.
Horikawa, Rikizo: *See—*
Someya, Noboru; and Horikawa, Rikizo, 4,577,515, Cl. 73-863.730.
Hornak, Leonard P., to Westinghouse Electric Corp. Brush tool. 4,577,361, Cl. 15-21.00R.
Horton, Robert L.: *See—*
McKee, Joseph M.; and Horton, Robert L., 4,577,908, Cl. 299-2.000.
Horvath, Mark P.: *See—*
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Hosel, Peter; and Schindlbeck, Gunther, to Agfa-Gevaert AG. Apparatus for loading and unloading a film cassette, in particular an X-ray film cassette. 4,577,452, Cl. 53-266.00R.
Hoshizaki Electric Co., Ltd.: *See—*
Ishiguro, Fumio, 4,577,473, Cl. 62-347.000.
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House, Cathy P.: *See—*
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House, David W.; and Scott, Ray V., Jr., to UOP Inc. Secondary aromatic diamines as curing agents in polyurethane manufacturing. 4,578,446, Cl. 528-64.000.
House Food Industrial Co., Ltd.: *See—*
Sugisawa, Ko; Shibuki, Masaru; Imada, Imayoshi; Katada, Jun; Yamamoto, Yozo; Nakajima, Setsuo; Kishi, Toshio; and Sugano, Shozo, 4,578,274, Cl. 426-96.000.
Hoving, Klaas; and Walterbos, Johannes W. M., to Exxon Research & Engineering Co. Preparation of zeolite coated substrates. 4,578,372, Cl. 502-74.000.
Howard, H. Taylor, to Chaparral Communications, Inc. Method and apparatus for optimizing feedhorn performance. 4,578,681, Cl. 343-786.000.
Howe, William C., Jr. Energy efficient window and skylight assemblies. 4,577,619, Cl. 126-431.000.
Howell, Edward K., to General Electric Company. Frequency selective filter circuit. 4,578,653, Cl. 333-166.000.
Howmedica, Inc.: *See—*
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Howmedica International, Inc.: *See—*
Harder, Hans E.; Behrens, Klaus; and Kotz, Rainer, 4,578,081, Cl. 623-22.000.
Howorth, David, to British Picker Company, Ltd., The. Floors. 4,577,448, Cl. 52-584.000.
Hsia, Steve; and Chang, Paul, to Monolithic Memories, Inc. Method of manufacturing CMOS devices. 4,577,391, Cl. 29-571.000.
Hsiung, Shu-Jen. Armchair with knocked down front legs. 4,577,906, Cl. 297-440.000.
Huang, Pao-Ter: *See—*
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Huang, Wann-Sheng; and Chien, Sze-Foo, to Texaco Inc. Method and apparatus for producing viscous hydrocarbons from a subterranean formation. 4,577,691, Cl. 166-263.000.
Hub City Iron Works, Inc.: *See—*
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Hubert, Jacques: *See—*
de Guillenschmidt, Pierre; Hubert, Jacques; Goujon, Michel; and Saunier, Christian, 4,577,962, Cl. 356-5.000.
Hubner, Jochen; Knoth, Werner-Dieter; and Hullen, Helmut, to Veba-Glas AG. Applying a liquid to a glassware-making preform mold. 4,578,099, Cl. 65-26.000.
Huck, Charles M.; and Larrabee, Edward W., to Howmedica, Inc. Wound drainage device. 4,578,060, Cl. 604-133.000.
Huege, Fred R.; Slepetys, Richard A.; and Catone, David L., to Engelhard Corporation. Kaolin clay-based pigment. 4,578,118, Cl. 106-288.00B.
Huenig, Siegfried; and Aumueller, Alexander, to BASF Aktiengesellschaft. Charge transfer complexes of tetrathio/seleno-fulvalene derivatives and biscyanimine derivatives; biscyanimine derivatives and method for producing same. 4,578,220, Cl. 260-239.00R.
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Hughes, Dennis R., to A. O. Smith Corporation. Heat exchanger having a turbulator construction. 4,577,681, Cl. 165-109.100.
Hughes, Timothy C.: *See—*
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Hughes Tool Company: *See—*
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Hughes, William B.: *See—*
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Hulbert, Matthew H.: *See—*
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Csizer, Zoltan; Sikos, Karoly; Bacskai, Laszlo; Joo, Istvan; Niedermayer, Eleonora; Rethy, Lajos; and Zsidai, Jozsef, 4,578,270, Cl. 424-92.000.
Humber, Leslie G.: *See—*
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Humenick, John: *See—*
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Humphrey, William M., to Ex-Cell-O Corporation. Rim nylon-based urethane block polymer composition. 4,578,447, Cl. 528-73.000.
Hunter, Danny P. Vehicle mounted fire escape chute. 4,577,725, Cl. 182-48.000.
Hurd, William J., to United States of America, National Aeronautics and Space Administration. High dynamic global positioning system receiver. 4,578,678, Cl. 343-357.000.
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Huseby, Irvin C.; and Bobik, Carl F., to General Electric Company. Pressureless sintering process to produce high thermal conductivity ceramic body of aluminum nitride. 4,578,232, Cl. 264-65.000.
Huseby, Irvin C.; and Bobik, Carl F., to General Electric Company. Pressureless sintering process to produce high thermal conductivity ceramic body of aluminum nitride. 4,578,233, Cl. 264-65.000.
Huseby, Irvin C.; and Bobik, Carl F., to General Electric Company. Process of pressureless sintering to produce dense high thermal conductivity ceramic body of deoxidized aluminum nitride. 4,578,234, Cl. 264-65.000.
Huseby, Irvin C.; and Bobik, Carl F., to General Electric Company. High thermal conductivity ceramic body of aluminum nitride. 4,578,364, Cl. 501-98.000.
Huseby, Irvin C.; and Bobik, Carl F., to General Electric Company. High thermal conductivity ceramic body of aluminum nitride. 4,578,365, Cl. 501-98.000.
Hustad, Gerald O.; Griesbach, Ray H.; and Anderson, James, to Oscar Mayer Foods Corporation. Grooved base package. 4,577,757, Cl. 206-461.000.
Hutchins, Burleigh M.; Buote, William J.; and Finn, Lawrence J., to Zymark Corporation. Self-configuring robotic system and method. 4,578,764, Cl. 364-513.000.
Hydraulic Servocontrols Corporation: *See—*
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Ibrahim, Fayez F.; and Bowman, Edward E., to Tyler Refrigeration Corporation. Frost diffusion system for refrigeration apparatus. 4,577,467, Cl. 62-82.000.
Ichimura, Masatoshi, to Eagle Industry Company Limited. Automatic apparatus for pick-up sewing of curved edges of a fabric piece on clothing. 4,577,570, Cl. 112-121.120.
Ichimura, Takeshige: *See—*
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ICI Americas Inc.: *See—*
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Idemitsu Petrochemical Co., Ltd.: *See—*
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Ido, Tadashi: *See—*
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Idzik, Joseph J.; and Kouse, Charles H., to Elliott Turbomachinery Co., Inc. Retracting internal tube cutter. 4,577,406, Cl. 30-103.000.
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Iijima, Shigeharu: *See—*
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Ikeda, Itsuo; Kurokawa, Junji; Hasebe, Mitsuo; Miyagawa, Seiichi; and Hariu, Hajime, to Ricoh Company, Ltd. Color image forming method. 4,578,331, Cl. 430-42.000.
Ikeda, Takahide: *See—*
Yazawa, Yoshiaki; Miyakawa, Nobuaki; Mukai, Toji; Ikeda, Takahide; and Kamei, Tatsuya, 4,578,693, Cl. 357-30.000.
Ikeda, Toshiya: *See—*
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Ikemizu, Hiroshi, to NEC Corporation. Microwave integrated circuit and mounting device therefor. 4,577,923, Cl. 339-275.00B.
Ikemoto, Kazuhito; Terakura, Yukio; and Miyake, Takashi, to Toyota Jidosha Kabushiki Kaisha. Gear assembly for automobile transmission. 4,577,525, Cl. 74-440.000.
Ikenaga, Yukio: *See—*
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Illinois Tool Works Inc.: *See—*
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Sugisawa, Ko; Shibuki, Masaru; Imada, Imayoshi; Katada, Jun; Yamamoto, Yozo; Nakajima, Setsuo; Kishi, Toshio; and Sugano, Shozo, 4,578,274, Cl. 426-96.000.
Imai, Kazuhiro; Ogata, Hiroshi; Tanaka, Motoaki; Nawa, Hiroyoshi; and Ishihara, Masami, to Wako Pure Chemical Industries Ltd. Oxalic acid ester derivatives. 4,578,499, Cl. 560-21.000.
Imai, Tetsuya, to Otsuka Kagaku Kabushiki Kaisha. Herbicidal imidazolidine-2-one derivatives. 4,578,107, Cl. 71-92.000.
Imaino, Wayne I.; and Tam, Andrew C., to International Business Machines Corporation. Method and device for detecting a specific acoustic spectral feature. 4,577,503, Cl. 73-602.000.
Immunex Corporation: *See—*
Urdal, David L.; March, Carl J.; and Dower, Steven K., 4,578,335, Cl. 435-68.000.
Imperial Chemical Industries, PLC: *See—*
Dorrn, Clive, 4,577,998, Cl. 405-45.000.
Mabelis, Richard P., 4,578,483, Cl. 549-297.000.
Owen, David J., 4,577,803, Cl. 239-690.000.
Shepherd, David, 4,578,193, Cl. 210-656.000.
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Shtarkman, Emile M., 4,577,842, Cl. 267-140.100.
Inagaki, Naoki, to Casio Computer Co., Ltd. Key-in device. 4,578,811, Cl. 382-11.000.
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Industrie Vernici Italiane S.p.A.: *See—*
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Ingersoll-Rand Company: *See—*
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Inman, Charles M.; and Stone, Donald J., to W. L. Gore & Assoc., Inc. Central venous catheter. 4,578,063, Cl. 604-175.000.
Inokuchi, Haruhisa; and Sakai, Takami, to Kabushiki Kaisha Toshiba. Converter control system having stable power transfer in the presence of decreased input AC voltage. 4,578,743, Cl. 363-35.000.
Inomata, Koichiro: *See—*
Sahashi, Masashi; Inomata, Koichiro; Sori, Naoyuki; and Yamamiya, Hideki, 4,578,125, Cl. 148-31.570.
Inoue, Hiroshi: *See—*
Komatsu, Shigeru; Inoue, Hiroshi; and Nakamura, Michio, 4,577,397, Cl. 29-576.00B.
Inoue-Japax Research Inc.: *See—*
Inoue, Kiyoshi, 4,578,555, Cl. 219-695.000.
Inoue, Kiyoshi, 4,578,556, Cl. 219-69.00M.
Inoue, Kiyoshi, to Inoue-Japax Research Inc. Fail-safe machine tool operational setting system with prerecorded verbal instructions. 4,578,555, Cl. 219-695.000.
Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. EDM method and apparatus utilizing water vapor. 4,578,556, Cl. 219-69.00M.
Inouye, Yoshio: *See—*
Ishikawa, Nobuo; Nakai, Takeshi; and Inouye, Yoshio, 4,578,503, Cl. 560-82.000.

Insituform Intl Inc: *See—*
Wood, Eric, 4,577,388, Cl. 29-558.000.
Institute of Gas Technology: *See—*
Tarman, Paul B., 4,578,176, Cl. 208-8.00R.
International Business Machines Corporation: *See—*
Ahn, Kie Y.; DiStefano, Thomas H.; and Jipson, Victor B., 4,578,788, Cl. 369-275.000.
Aviram, Ari; Dove, Derek B.; and Lane, Ramon, 4,577,983, Cl. 400-120.000.
Baker, David C.; Bantz, David F.; and Flurry, Gregory A., 4,578,674, Cl. 340-710.000.
Baumann, Thomas; Dacol, Frank H.; and Melcher, Robert L., 4,578,584, Cl. 250-341.000.
Behringer, Uwe; Bohlen, Harald; Nehmiz, Peter; and Zapka, Werner, 4,578,587, Cl. 250-492.200.
Betts, Alan J.; and Elliott, Peter J., 4,578,723, Cl. 360-77.000.
Chan, Yuen H.; and Struk, James R., 4,578,779, Cl. 365-190.000.
Chaplin, Russell, 4,577,508, Cl. 73-655.000.
Delaporte, Francois-Xavier; Lebesnerais, Gerard M.; and Pantani, Jean-Pierre, 4,578,695, Cl. 357-48.000.
Dewey, Anthony G.; and Marinelli, Charles P., 4,577,926, Cl. 350-96.250.
Flowers, Dale R., 4,578,671, Cl. 340-636.000.
Imaino, Wayne I.; and Tam, Andrew C., 4,577,503, Cl. 73-602.000.
Kasdagly, Dino G., 4,577,918, Cl. 339-17.00M.
Lovgren, Jeffrey L.; and Plummer, William B., 4,578,722, Cl. 360-60.000.
Makosch, Gunter, 4,577,968, Cl. 356-356.000.
O'Hara, Almerin C., Jr., 4,578,771, Cl. 364-716.000.
Yang, Kei-Hsiung, 4,577,930, Cl. 350-332.000.
Zingher, Arthur R., 4,578,279, Cl. 427-10.000.
International Business Machines Corp. (IBM): *See—*
Matsumoto, Takeshi, 4,578,720, Cl. 360-51.000.
International Business Machines (IBM): *See—*
White, James M.; May, Ronald W.; and Gulliver, Michael D., 4,578,711, Cl. 358-282.000.
International Cybernetics Corp.: *See—*
Jones, Donald H.; Allen, Spencer W.; and Chimes, Philip R., 4,578,763, Cl. 364-513.000.
International Minerals & Chemical Corp.: *See—*
Srinivasan, Viswanathan; and Hulbert, Matthew H., 4,578,249, Cl. 423-10.000.
International Paper Company: *See—*
Nadaskay, Richard J., 4,577,761, Cl. 206-604.000.
International Remote Imaging Systems, Inc.: *See—*
Faggin, Federico; Klein, Jerry A.; Yazolino, Lauren F.; Korody, Robert; Ha, Eric P. L.; and Kerman, Stephan, 4,578,537, Cl. 179-2.0DP.
International Standard Electric Corporation: *See—*
Gunther, Horst H.; and Oesterle, Hermann F., 4,578,547, Cl. 200-11.0DA.
International Teldata Corp: *See—*
Oliver, Stewart W.; and Cosgrove, John, 4,578,536, Cl. 179-2.0AM.
International Telephone and Telegraph Corporation: *See—*
Browning, James E., 4,577,909, Cl. 301-37.0TP.
Internatural Designs, Inc.: *See—*
Miner, Jon, 4,578,291, Cl. 428-8.000.
Intertechnique: *See—*
Beaussant, Raymond, 4,577,375, Cl. 24-580.000.
Intichar, Lutz: *See—*
Weghaupt, Erich; Intichar, Lutz; and Schnapper, Christoph, 4,577,871, Cl. 277-8.000.
Inui, Tsuneo: *See—*
Shimizu, Nobuyoshi; Fujimoto, Terunori; Inui, Tsuneo; and Ishida, Masatoki, 4,578,319, Cl. 428-632.000.
Irie, Nobuhiko, to Mitsubishi Jukogyo Kabushiki Kaisha. Apparatus for loading green tires. 4,578,023, Cl. 425-38.000.
Irikura, Tsutomu; Nishino, Keigo; Suzue, Seigo; and Ikeda, Toshiya, to Kyorin Pharmaceutical Co., Ltd. Pyrazolo[1,5-a]pyridine derivatives and anti-allergic compositions containing them. 4,578,392, Cl. 514-300.000.
Ishida, Masatoki: *See—*
Shimizu, Nobuyoshi; Fujimoto, Terunori; Inui, Tsuneo; and Ishida, Masatoki, 4,578,319, Cl. 428-632.000.
Ishiguro, Fumio, to Hoshizaki Electric Co., Ltd. Ice product making machine. 4,577,473, Cl. 62-347.000.
Ishihara, Masami: *See—*
Imai, Kazuhiro; Ogata, Hiroshi; Tanaka, Motoaki; Nawa, Hiroyoshi; and Ishihara, Masami, 4,578,499, Cl. 560-21.000.
Ishihara, Tamio: *See—*
Sakamoto, Masami; Nagumo, Ryoichi; and Ishihara, Tamio, 4,577,409, Cl. 33-18.100.
Ishihara, Yoshinobu; and Harada, Shinichi, to Kabushiki Kaisha Kobe Seiko Sho. Ceramic guide rolls for use in continuous casting. 4,577,675, Cl. 164-448.000.
Ishihara, Yoshinobu: *See—*
Harada, Shinichi; Ishihara, Yoshinobu; and Matsushita, Shigeru, 4,577,673, Cl. 164-448.000.
Ishii, Hajime: *See—*
Kizaki, Kanji; Ishii, Hajime; Taguchi, Noboru; and Kuwamoto, Hiroshi, 4,577,480, Cl. 72-8.000.
Ishii, Koji; and Maehara, Kenso, to Ryobi Ltd. Numbering device for offset press. 4,577,555, Cl. 101-76.000.
Ishii, Tamaki: *See—*
Takahashi, Yukoh; Fujii, Takeo; Shionoya, Masahisa; Yachigo, Shinichi; and Ishii, Tamaki, 4,578,410, Cl. 524-102.000.
Yoshimura, Masakatsu; Fujii, Takeo; Yachigo, Shinichi; and Ishii, Tamaki, 4,578,472, Cl. 546-188.000.
Ishikawa, Isao: *See—*
Kanda, Hiroshi; and Ishikawa, Isao, 4,577,504, Cl. 73-606.000.
Ishikawa, Kunio: *See—*
Omae, Yoshihiro; Ishikawa, Kunio; Fukao, Takahisa; and Yoshida, Katsushige, 4,577,385, Cl. 29-402.180.
Ishikawa, Nobuo; and Takahashi, Mitsuru, to Daikin Kogyo Co., Ltd.; and Toyo Soda Manufacturing Co., Ltd. Process for preparing a perfluorinated or polyfluorinated aliphatic carboxylic acid. 4,578,222, Cl. 260-413.000.
Ishikawa, Nobuo; Nakai, Takeshi; and Inouye, Yoshio, to Daikin Kogyo Co., Ltd. Alkylated or alkenylated malonic acid or its derivatives having a fluorine. 4,578,503, Cl. 560-82.000.
Ishikawajima-Harima Jukogyo Kabushiki Kaisha: *See—*
Kizaki, Kanji; Ishii, Hajime; Taguchi, Noboru; and Kuwamoto, Hiroshi, 4,577,480, Cl. 72-8.000.
Ishikura, Koji: *See—*
Hamashima, Yoshio; Ishikura, Koji; Kubota, Tadatoshi; and Minami, Kyoji, 4,578,378, Cl. 514-210.000.
Ishikuro, Tadashi; Shirahata, Ryuji; Miyoshi, Takahito; and Fujiyama, Masaaki, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 4,578,311, Cl. 428-336.000.
Ishimaru, Osamu, to Hisaka Works, Ltd. Apparatus for liquid flow treatment of fabrics. 4,578,085, Cl. 8-152.000.
Isozaki, Akio: *See—*
Sato, Yoshiyuki; Isozaki, Akio; Higo, Tomio; and Uchida, Tetsuo, 4,577,381, Cl. 29-157.400.
Istituto Gentili S.p.A.: *See—*
Rosini, Sergio, 4,578,376, Cl. 514-108.000.
Itek Corporation: *See—*
MacFarlane, James W.; and Smyth, Bruce E., 4,578,810, Cl. 382-8.000.
Ito, Eiichi, to TRW Ehrenreich GmbH & Co. KG. Ball joint. 4,577,989, Cl. 403-140.000.
Ito, Sho; Tatsumi, Kenji; Kasahara, Kumio; Nakaguchi, Tomoyuki; Takei, Toshio; and Nakahara, Shojiro, to Mitsubishi Denki Kabushiki Kaisha. Swing measuring device. 4,577,863, Cl. 273-26.00R.
Ito, Siro: *See—*
Komon, Koichi; Ito, Siro; and Seino, Shuichi, 4,578,290, Cl. 427-421.000.
Ito, Susumu: *See—*
Sawamura, Mitsuharu; Ito, Susumu; Matsushima, Masaaki; Kishi, Hiroyoshi; Sasamori, Eizo; Yoshihara, Satoshi; Iijima, Shigeharu; and Takano, Katsuhiko, 4,578,322, Cl. 428-694.000.
Ito, Takeo; Ido, Tadashi; Takeuchi, Hajime; Hashimoto, Minoru; Maeda, Tatsumi; and Awa, Masashi, to Tokyo Shibauru Denki Kabushiki Kaisha. Powder for magnetic recording media and process for manufacturing the same. 4,578,313, Cl. 428-403.000.
Ito, Tetsuro: *See—*
Harigane, Kotaro; Ihara, Keiichi; Ito, Tetsuro; and Shudo, Hirokazu, 4,578,010, Cl. 414-126.000.
Itoh, Katsutoshi, to Kabushiki Kaisha Toshiba. X-ray diagnostic apparatus for allowing stereoscopic visualization on X-ray images of an object under examination. 4,578,802, Cl. 378-41.000.
ITT Corporation: *See—*
Middleton, Francisco A.; Carter, Nicholas J. R.; and Das, Santanu, 4,578,789, Cl. 370-58.000.
Sterns, William G., 4,578,652, Cl. 333-117.000.
ITT Industries, Inc.: *See—*
Burgdorf, Jochen; Birkenbach, Alfred; and Klimt, Ulrich, 4,577,731, Cl. 188-73.330.
Elmis, Herbert; and Backes, Reiner, 4,578,705, Cl. 358-148.000.
Magee, Terence E., 4,578,600, Cl. 307-451.000.
Prohaska, Hans; and Sosthene, Daniele, 4,578,741, Cl. 362-249.000.
ITW Ateco GmbH: *See—*
Wiese, Heiner; and Gramss, Rainer, 4,577,904, Cl. 297-410.000.
Iwai, Ken: *See—*
Kawata, Hiroitsu; Ohmura, Tadayoshi; Hasumi, Shunji; Konno, Yutaka; Aruga, Masayoshi; Tashiro, Seiki; Konno, Toshimitsu; and Iwai, Ken, 4,578,391, Cl. 514-256.000.
Iwami, Morita: *See—*
Kiyoto, Sumio; Nishikawa, Motoaki; Iwami, Morita; Terano, Hiroshi; and Kohsaka, Masanobu, 4,578,271, Cl. 424-117.000.
Iwasaki, Hirofumi: *See—*
Niki, Akira; and Iwasaki, Hirofumi, 4,578,307, Cl. 428-288.000.
Iwata, Hiroshi; and Makino, Hiroshi, to West Electric Co., Ltd. Ultrasonic distance measuring apparatus. 4,578,783, Cl. 367-99.000.
J. D. Tools, Inc.: *See—*
Michaud, Jeffrey J., 4,577,820, Cl. 248-211.000.
J. M. Huber Corporation: *See—*
Clem, Jack L.; and Scott, Oscar T., IV, 4,577,680, Cl. 165-95.000.
Jabarin, Saleh A., to Owens-Illinois, Inc. High barrier polymer blend and articles prepared therefrom. 4,578,295, Cl. 428-35.000.
Jabarin, Saleh A.: *See—*
Go, Santos W., deceased; and Jabarin, Saleh A., 4,577,768, Cl. 215-1.00C.
Jackman, Dennis E.; and Westphal, Dietmar B., to Mobay Chemical Corporation. Production of S-substituted isothioureas. 4,578,463, Cl. 544-182.000.
Jackovitz, John F.: *See—*
Peterson, Steven H.; and Jackovitz, John F., 4,578,165, Cl. 204-157.750.
Jackson Jordan, Inc.: *See—*
Jaeggi, Hans P., 4,577,494, Cl. 73-105.000.

Jackson, Melvin R.: *See—*
Siemers, Paul A.; Kopp, Robert W.; Jackson, Melvin R.; Duke, Steven R.; Perrin, David P.; and Liu, Ying H., 4,577,431, Cl. 42-76.00A.
Jackson, Theodore A., to Ex-Cell-O Corporation. Gun sight range extender. 4,577,546, Cl. 89-41.190.
Jackson, Winston J., Jr.; and Watkins, Joseph J., to Eastman Kodak Company. High molecular weight polyesters. 4,578,453, Cl. 528-302.000.
Jaeggi, Hans P., to Jackson Jordan, Inc. Apparatus and method for measuring the wear of railroad rail. 4,577,494, Cl. 73-105.000.
Jaffrin, Michel; and Reach, Gerard, to Centre National de la Recherche Scientifique. Bio-artificial ultrafiltration pancreas. 4,578,191, Cl. 210-323.200.
Jager, Gerhard; Bockmann, Klaus; Buchel, Karl H.; Brandes, Wilhelm; Frohberger, Paul-Ernst; and Scheinpflug, Hans, to Bayer Aktiengesellschaft. Fungicidal hydroxyalkinyl-azolyl derivatives. 4,578,396, Cl. 514-383.000.
Jager, Horst, to Bayer Aktiengesellschaft. Triphendioxazine dyestuffs. 4,578,461, Cl. 544-76.000.
Jahn-Held, Wilhelm: *See—*
Lindorfer, Walter; Jahn-Held, Wilhelm; Gerschler, Lutz J.; Jandel, Berthold; and Wartenpfuhl, Friedel, 4,577,999, Cl. 405-53.000.
James, Bertram G.; Dinapoli, Frank C.; and Hayes, Lloyd P., to Varian Associates, Inc. Slow wave circuit for a traveling wave tube. 4,578,620, Cl. 315-3.500.
James River Corporation of Virginia: *See—*
Kuchenbecker, Morris W., 4,577,762, Cl. 206-612.000.
Jandel, Berthold: *See—*
Lindorfer, Walter; Jahn-Held, Wilhelm; Gerschler, Lutz J.; Jandel, Berthold; and Wartenpfuhl, Friedel, 4,577,999, Cl. 405-53.000.
Janer, Patrick: *See—*
Lacour, Clement-Francois; and Janer, Patrick, 4,578,656, Cl. 333-204.000.
Janome Sewing Machine Co., Ltd.: *See—*
Hanyu, Susumu; and Kato, Kenji, 4,577,576, Cl. 112-456.000.
Takahashi, Yoshitaka, 4,577,574, Cl. 112-445.000.
Janvier, Dominique: *See—*
Barillec, Christian; Janvier, Dominique; and Bonneton, Marc, 4,578,013, Cl. 414-323.000.
Japan Spectroscopic Co., Ltd.: *See—*
Fukasawa, Yoshiro, 4,577,966, Cl. 356-325.000.
Jarreau, Francois X.; and Koenig, Jean-Jacques, to Etablissements Nativelle S.A. 4-acylamino-1-azaadamantanes, and compositions for use thereof in medicine. 4,578,382, Cl. 514-245.000.
Jarvis Products Corporation: *See—*
Hahn, A. David, 4,577,407, Cl. 30-180.000.
Jastrzebski, Lubomir L.: *See—*
Corboy, John F., Jr.; Jastrzebski, Lubomir L.; Blackstone, Scott C.; and Pagliaro, Robert H., Jr., 4,578,142, Cl. 156-612.000.
Jaworski, Bill L. Impact tool. 4,577,547, Cl. 91-39.000.
Jefferies, George S. Snowplowable road marker apparatus. 4,577,992, Cl. 404-16.000.
Jenkins, David P.: *See—*
Moore, Colin; and Jenkins, David P., 4,577,567, Cl. 110-347.000.
Jenkins, William A., to Monarch Marking Systems, Inc. Composite label web. 4,577,426, Cl. 40-21.00R.
Jennings, Thomas J. Anti-shock treatment method and garment. 4,577,622, Cl. 128-24.00R.
Jensen, Allen: *See—*
Lang, Paul W.; and Gribshaw, Franklin C., 4,578,709, Cl. 358-230.000.
Jensen, Norman P.; and Chang, Michael N., to Merck & Co., Inc. Hydroxybenzylamino derivatives as anti-inflammatory agents. 4,578,390, Cl. 514-255.000.
Jestrich, Hans-Achim; and Friedrich, Paul, to Kraftwerk Union Aktiengesellschaft. Special angle beam probe for ultrasonic testing. 4,577,505, Cl. 73-629.000.
Jestrich, Hans-Achim; and Werntgen, Ewald, to Kraftwerk Union Aktiengesellschaft. Method for the ultrasonic testing of discs shrink-fitted onto shafts in vicinity of shrink-fitted seats, and apparatus for carrying out the method. 4,577,507, Cl. 73-640.000.
Jipson, Victor B.: *See—*
Ahn, Kie Y.; DiStefano, Thomas H.; and Jipson, Victor B., 4,578,788, Cl. 369-275.000.
Jochum, Peter, to Hilti Aktiengesellschaft. Powder charge operated fastening element setting device. 4,577,793, Cl. 227-10.000.
Joergensen, Poul R. Alarm system for safeguarding against the break-through of a surface. 4,578,670, Cl. 340-550.000.
Joffe, Frederick M.: *See—*
Dysart, John K.; and Joffe, Frederick M., 4,578,073, Cl. 604-397.000.
Joh, Yasushi, to Nippon Zeon Co., Ltd. Blood pump applicable to an artifical heart. 4,578,077, Cl. 623-3.000.
Johenning, John B.; and Hall, Charles P., to Monterey Manufacturing Co. Waterbed mattress with baffle chambers. 4,577,356, Cl. 5-450.000.
John Manufacturing Limited: *See—*
Yuen, John S., 4,577,365, Cl. 15-339.000.
John Wyeth & Brother Limited: *See—*
Crossley, Roger, 4,578,480, Cl. 548-533.000.
Johnson, Cindy A.: *See—*
Sliwa, John W.; Burt, Roy J.; Lee, Chune; MacKay, John; and Johnson, Cindy A., 4,577,398, Cl. 29-590.000.
Johnson, Frederic A.: *See—*
Gray, Kevin; and Johnson, Frederic A., 4,577,667, Cl. 144-193.00C.
Johnson, Keith A.; and Kamlani, Vijay M., to Midland-Ross Corporation. Dimensionally stable movable furnace hearth. 4,578,031, Cl. 432-138.000.
Johnson, Marvin M.: *See—*
Kukes, Simon G.; Johnson, Marvin M.; Strope, Daniel J.; and Hogan, Robert J., 4,578,179, Cl. 208-110.000.
Johnson, Peter E.: *See—*
Bray, David J.; Johnson, Peter E.; Marshall, Peter E. G.; Piper, Francis R.; and Murdoch, Iain H., 4,577,490, Cl. 73-40.700.
Johnson Service Company: *See—*
Divjak, August A., Jr.; and Holdorf, Thomas C., 4,578,798, Cl. 375-45.000.
Pascucci, Gregory A.; and Kucharski, Paul G., 4,578,538, Cl. 179-2.0DP.
Johnson, Thomas A.; and Ford, Michael E., to Air Products and Chemicals, Inc. Polyalkylene polyamines from alkanolamine and ammonia or amines using group IIIB metal acid phosphate catalysts. 4,578,517, Cl. 564-479.000.
Johnsson, Gustaf E.: *See—*
Lindahl, Jonas A. I.; and Johnsson, Gustaf E., 4,578,147, Cl. 162-26.000.
Jones, Donald H.; Allen, Spencer W.; and Chimes, Philip R., to International Cybernetics Corp. Sampled data servo control system with deadband compensation. 4,578,763, Cl. 364-513.000.
Jones, Earl C. Snelled hook, fly, and lure holder. 4,577,433, Cl. 43-57.200.
Jones, Joyce D. Nail clippings receptacle. 4,577,754, Cl. 206-349.000.
Jones, Stanley P., to Emhart Industries, Inc. Manufacture of moulded articles of glassware. 4,578,104, Cl. 65-267.000.
Joo, Istvan: *See—*
Csizer, Zoltan; Sikos, Karoly; Bacskai, Laszlo; Joo, Istvan; Niedermayer, Eleonora; Rethy, Lajos; and Zsidai, Jozsef, 4,578,270, Cl. 424-92.000.
Judd, Richard E.: *See—*
Amabile, Robert N.; Judd, Richard E.; and Gromelski, Stanley J., Jr., 4,578,407, Cl. 524-55.000.
Jungerhans, Robert R. J., to C F Braun & Co. Process for ammonia syngas manufacture. 4,578,214, Cl. 252-376.000.
Junker, Erwin. Clamping device for a grinding ring. 4,577,440, Cl. 51-168.000.
Junker, Warren R.; Taszarek, Bruce J.; and Chizmar, David A., to Westinghouse Electric Corp. Simulation apparatus for eddy current inspection techniques. 4,578,643, Cl. 324-202.000.
Justice, David D.: *See—*
Miles, Ronald C.; Justice, David D.; and Dotson, Ronald L., 4,578,159, Cl. 204-98.000.
Juurmaa, Kimmo: *See—*
Lindqvist, Gustav; and Juurmaa, Kimmo, 4,578,000, Cl. 405-211.000.
Juzswik, David L.: *See—*
Floyd, William M.; and Juzswik, David L., 4,578,591, Cl. 307-10.00R.
K. K. Hanzawa Corporation: *See—*
Hanzawa, Tuneo, 4,577,528, Cl. 74-665.0GA.
Kabushiki Kaisha Ishida Koki Seisakusho: *See—*
Fukuda, Masao, 4,577,707, Cl. 177-25.000.
Kabushiki Kaisha Kobe Seiko Sho: *See—*
Fujisawa, Tetsuo, 4,578,029, Cl. 432-14.000.
Harada, Shinichi; Ishihara, Yoshinobu; and Matsushita, Shigeru, 4,577,673, Cl. 164-448.000.
Harada, Shinichi; Toyoda, Hiroshi; Honma, Katsuhiko; and Matsushita, Shigeru, 4,577,674, Cl. 164-448.000.
Ishihara, Yoshinobu; and Harada, Shinichi, 4,577,675, Cl. 164-448.000.
Sato, Yoshiyuki; Isozaki, Akio; Higo, Tomio; and Uchida, Tetsuo, 4,577,381, Cl. 29-157.400.
Yutori, Toshiaki; Sudo, Masatoshi; Kato, Takehiko; and Hosogi, Yasuhiro, 4,578,124, Cl. 148-12.00F.
Kabushiki Kaisha Komatsu Seisakusho: *See—*
Abe, Riichi; Tsuruta, Katsuji; and Tsujikado, Seiji, 4,578,748, Cl. 364-167.000.
Baba, Kiyokazu, 4,577,486, Cl. 72-421.000.
Tokunaga, Noriyasu, 4,577,714, Cl. 180-70.100.
Kabushiki Kaisha Sankosha: *See—*
Shigemori, Daizo; Kunii, Haruo; and Endo, Masaaki, 4,578,733, Cl. 361-120.000.
Kabushiki Kaisha Toshiba: *See—*
Aoki, Hidehiko, 4,578,633, Cl. 323-315.000.
Inokuchi, Haruhisa; and Sakai, Takami, 4,578,743, Cl. 363-35.000.
Itoh, Katsutoshi, 4,578,802, Cl. 378-41.000.
Nakamura, Taizo; and Kawahara, Katsuyuki, 4,578,017, Cl. 415-1.000.
Shibata, Tadashi, 4,577,395, Cl. 29-576.00C.
Tojo, Toru; and Sugihara, Kazuyoshi, 4,578,607, Cl. 310-328.000.
Kabushiki Kaisha Toyota Chuo Kenkyusho: *See—*
Kuno, Toshitaka; and Kamiya, Atsushi, 4,578,749, Cl. 364-167.000.
Kafri, Oded: *See—*
Krasinski, Jerzy S.; Heller, Donald F.; and Kafri, Oded, 4,577,940, Cl. 350-502.000.
Kagami, Isao: *See—*
Yamamoto, Takemi; Kuzuya, Susumu; Kagami, Isao; and Takenaka, Yuuichi, 4,577,984, Cl. 400-625.000.
Kaiser Aluminum Chemical Corporation: *See—*
Roe, William J.; and Malito, John T., 4,578,255, Cl. 423-130.000.
Kaiser, Jurgen: *See—*
Kinzler, Hans; and Kaiser, Jurgen, 4,578,664, Cl. 336-90.000.

Kaiser Steel Corporation: *See—*
Powers, Joseph E.; and Williamson, Calvin C., 4,577,796, Cl. 228-102.000.
Kajiwara, Norio, to Ricoh Company, Ltd. Two-color copying apparatus. 4,577,954, Cl. 355-4.000.
Kakeya, Noboru: *See—*
Fukui, Kiyoshi; Kakeya, Noboru; and Taguchi, Mitsushi, 4,578,479, Cl. 548-269.000.
Kakinoki, Hideo; and Ona, Isao, to Toray Silicone Co., Ltd. Fiber-treating method and composition therefor comprising epoxy-silicone and acrylamide resin. 4,578,084, Cl. 8-115.610.
Kalnin, Ilmar L.; Goldberg, Harris A.; and Williams, Clyde C., to Celanese Corporation. Electrical temperature pyrolyzed polymer material detector and associated circuitry. 4,577,979, Cl. 374-178.000.
Kaltenbach & Voight GmbH & Co.: *See—*
Mossle, Walter; and Eibofner, Eugen, 4,578,033, Cl. 433-29.000.
Kalz, Hans-Jurgen: *See—*
Rieck, Hans-Peter; and Kalz, Hans-Jurgen, 4,578,371, Cl. 502-71.000.
Kamei, Tatsuya: *See—*
Yazawa, Yoshiaki; Miyakawa, Nobuaki; Mukai, Toji; Ikeda, Takahide; and Kamei, Tatsuya, 4,578,693, Cl. 357-30.000.
Kamezaki, Yasushi, to Mita Industrial Co., Ltd. Developing apparatus. 4,577,587, Cl. 118-658.000.
Kamiya, Atsushi: *See—*
Kuno, Toshitaka; and Kamiya, Atsushi, 4,578,749, Cl. 364-167.000.
Kamlani, Vijay M.: *See—*
Johnson, Keith A.; and Kamlani, Vijay M., 4,578,031, Cl. 432-138.000.
Kamyr, Inc.: *See—*
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Kanai, Tsutomu, to Clarion Co., Ltd. Subscription television system. 4,578,703, Cl. 358-117.000.
Kanakura, Akihiro: *See—*
Umemoto, Hirotoshi; Tanabe, Hisaki; Kanakura, Akihiro; and Nakano, Shinji, 4,578,436, Cl. 525-443.000.
Kanamaru, Tatsuya; Nakayama, Motohiro; Ogawa, Yutaka; and Arai, Katutoshi A., to Nippon Steel Corporation. Process for electroplating a metallic material with an iron-zinc alloy. 4,578,158, Cl. 204-44.200.
Kanamori, Hiroshi, to Nissan Motor Co., Ltd. Resin molding decorative member. 4,578,292, Cl. 428-31.000.
Kanda, Hiroshi; and Ishikawa, Isao, to Hitachi, Ltd. Acoustic microscope. 4,577,504, Cl. 73-606.000.
Kane, Thomas J.; and Byer, Robert L., to Leland Stanford Junior University, The Board of Trustees of the. Solid-state non-planar internally reflecting ring laser. 4,578,793, Cl. 372-94.000.
Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See—*
Furukawa, Hisao; Okada, Keiko; Kawamura, Joe; and Kato, Yasushi, 4,578,417, Cl. 524-378.000.
Kanno, Hideo: *See—*
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Kao Corporation: *See—*
Fujii, Kozo; and Okumura, Takeo, 4,578,216, Cl. 252-542.000.
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Karmarkar, Subhash D.: *See—*
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Karol, Herman S., to Westinghouse Electric Corp. Guide rail clamping assembly. 4,577,729, Cl. 187-95.000.
Kasahara, Kumio: *See—*
Ito, Sho; Tatsumi, Kenji; Kasahara, Kumio; Nakaguchi, Tomoyuki; Takei, Toshio; and Nakahara, Shojiro, 4,577,863, Cl. 273-26.00R.
Kasai, Kazumi, to Nippon Notion Kogyo Co., Ltd. Buckle for straps. 4,577,377, Cl. 24-625.000.
Kasdagly, Dino G., to International Business Machines Corporation. Copper and dual durometer rubber multiple connector. 4,577,918, Cl. 339-17.00M.
Kasielke, Joachim: *See—*
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Kasori, Yukio: *See—*
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Kassai Kabushikikaisha: *See—*
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Kassai, Kenzou, to Kassai Kabushikikaisha. Frame structure for baby carriage bed. 4,577,355, Cl. 5-93.00R.
Kassai, Kenzou, to Kassai Kabushikikaisha. Pushcart handle height adjusting mechanism. 4,577,877, Cl. 280-47.37R.
Kastl, Alfons: *See—*
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Katada, Jun: *See—*
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Kathriner, Josef, to Sulzer Brothers Limited. Weft yarn tensioning device. 4,577,666, Cl. 139-450.000.
Katkocin, Dennis M.; Word, Nancy S.; and Yang, Shiow-Shong, to CPC International Inc. Novel thermostable, aciduric alpha-amylase and method for its production. 4,578,352, Cl. 435-99.000.
Kato, Akira: *See—*
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Kato, Hisatoyo: *See—*
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Kato, Kenji: *See—*
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Kato, Mikihiko; Okita, Tsutomu; Komine, Shigeo; Okuzawa, Yasutoshi; and Morita, Kazuhiko, to Fuji Photo Film Co., Ltd. Flexible magnetic disk sheet. 4,578,299, Cl. 428-65.000.
Kato, Nobuhide; and Murase, Takao, to NGK Insulators, Ltd. Oxygen sensor with heater. 4,578,174, Cl. 204-429.000.
Kato, Takehiko: *See—*
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Kato, Yasushi: *See—*
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Kawabe, Yuzo, to Shimano Industrial Company Limited. Spinning reel brake. 4,577,808, Cl. 242-84.50R.
Kawahara, Katsuyuki: *See—*
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Kawamura, Fumio: *See—*
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Kawata, Hiroitsu; Ohmura, Tadayoshi; Hasumi, Shunji; Konno, Yutaka; Aruga, Masayoshi; Tashiro, Seiki; Konno, Toshimitsu; and Iwai, Ken, to Yamanouchi Pharmaceutical Co., Ltd. Oily compositions of antitumor drugs. 4,578,391, Cl. 514-256.000.
Kawata, Toshikatsu: *See—*
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Kazaoka, Kenichi: *See—*
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Kazuta, Hisashi: *See—*
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Kearney, Anthony D., to F. F. Seeley Nominees Pty Ltd. Air cooler adaptor. 4,577,470, Cl. 62-259.400.
Keating, Esmond J.: *See—*
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Kedem, Tuval, to Equipment Company of America. Pallet truck with hydraulic lift. 4,577,463, Cl. 60-426.000.
Keebler Company: *See—*
Krubert, George J., 4,578,273, Cl. 426-87.000.
Keen, Brian T., to Union Carbide Corporation. Carbon dioxide-enhanced monoalkylene glycol production. 4,578,524, Cl. 568-867.000.
Kelch, Heinz, to Kienzle Apparate GmbH. Heat exchanger with separate helical ducts. 4,577,683, Cl. 165-164.000.
Keller, Heimo; Keppler, Bernhard; Kruger, Uwe; and Linder, Rudolf, to Byk Gulden Lomberg Chemische Fabrik GmbH. Mental complexes having an antineoplastic action, and medicaments containing these complexes. 4,578,401, Cl. 514-49.000.
Keller, Jack; and Stringham, Glen E., to Utah State University Foundation. Method and system for furrow irrigation. 4,577,802, Cl. 239-11.000.
Kemeny, George A., to Westinghouse Electric Corp. Parallel rail electromagnetic launcher with multiple current path armature. 4,577,545, Cl. 89-8.000.
Kennecott Corporation: *See—*
Campos-Loriz, Diego, 4,578,363, Cl. 501-89.000.
Kenney, George B. Apparatus for in-process multi-element analysis of molten metal and other liquid materials. 4,578,022, Cl. 425-7.000.
Keppler, Bernhard: *See—*
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Kerman, Stephan: *See—*
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Kerr, Charles, III; and Forell, Mark, to Astronics Corporation. Electroluminescent panels. 4,578,617, Cl. 313-512.000.
Kerr-McGee Chemical Corporation: *See—*
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Rado, Theodore A., 4,578,090, Cl. 55-48.000.
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Kidde, Inc.: *See—*
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Kim, Myong H., to Woo Kyong Industrial Co., Ltd. Refuse receptacle. 4,577,778, Cl. 220-404.000.
Kimberly-Clark Corporation: *See—*
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Oshefsky, Daniel J.; Gavronski, Paul A.; Vogt, Robert E.; and Rajala, Gregory J., 4,578,133, Cl. 156-164.000.
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Kimura, Hiroshi: *See—*
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Kimura, Quanbee, to Yoshizuka Seiki Co., Ltd. Spindle device. 4,577,981, Cl. 384-495.000.
Kimura, Seiji: *See—*
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Kimura, Sosaku; and Hatsuse, Toshikazu, to Citizen Watch Co., Ltd. Hydrostatic pressure XY table. 4,577,845, Cl. 269-73.000.
King, Martin J.; and Troutner, Vernon H., to Extracorporeal Medical Specialties, Inc. Patient photopheresis treatment apparatus and method. 4,578,056, Cl. 604-6.000.
Kingston, Samuel B.: *See—*
Postle, Stephen R.; and Kingston, Samuel B., 4,578,305, Cl. 428-212.000.
Kinoshita, Yuji: *See—*
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Kinzler, Hans; and Kaiser, Jurgen, to Siemens Aktiengesellschaft. Radio interference suppression choke with a low leakage field. 4,578,664, Cl. 336-90.000.
Kirtley, Stephen W.; and Wooster, George S., to Allied Corporation. Polymeric boron nitrogen dopant. 4,578,283, Cl. 427-85.000.
Kiser, T. Kay: *See—*
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Kishi, Hiroyoshi: *See—*
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Kisokaseisangyou Co., Ltd.: *See—*
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Kiss, Akos; Kleinschmit, Peter; Volker, Werner; and Halbritter, Gunter, to Degussa Aktiengesellschaft. Lead activated luminescent material and process for its production. 4,578,212, Cl. 252-301.40F.
Kitajima, Masao: *See—*
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Kitamura, Masao; Nakayama, Norio; Katsura, Ryoei; Ibe, Hidefumi; and Uchida, Shunsuke, to Hitachi, Ltd.; and Hitachi Engineering Co., Ltd. Method and apparatus for measuring dissolved gas concentrations. 4,578,154, Cl. 204-1.00T.
Kitta, Toshiyuki; Abe, Wataru; and Takase, Tadaaki, to Oiles Industry Co., Ltd. Metallic sheath for posttensioning method. 4,577,443, Cl. 52-230.000.
Kiyonaga, Bunzo, to Epson Corporation. Liquid crystal composition. 4,577,931, Cl. 350-350.00R.
Kiyonaga, Norio. Golf swing training device with visual and audible alerts. 4,577,868, Cl. 273-183.00A.
Kiyoto, Sumio; Nishikawa, Motoaki; Iwami, Morita; Terano, Hiroshi; and Kohsaka, Masanobu, to Fujisawa Pharmaceutical Co., Ltd. Biologically active WS 6049 substances, a process for the production thereof and their pharmaceutical compositions. 4,578,271, Cl. 424-117.000.
Kizaki, Kanji; Ishii, Hajime; Taguchi, Noboru; and Kuwamoto, Hiroshi, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha; and Nippon Kokan Kabushiki Kaisha. Method and apparatus for controlling rolling correction in rolling mill. 4,577,480, Cl. 72-8.000.
Klabunde, Steven E.; Hankwitz, Edward H.; and Maastricht, Charles, to AMCA International Corporation. Contouring machine with radial slide head. 4,577,535, Cl. 82-2.00E.
Klak, Roland, to Daimler-Benz Aktiengesellschaft. Glow plug arrangement. 4,577,601, Cl. 123-298.000.
Klausz, Remy, to Thomson CSF. Tomodensitometer for image display in the dynamic mode. 4,578,752, Cl. 364-414.000.
Kleeberg, Wolfgang; Hauschildt, Klaus-Robert; Hacker, Heinz; and Kretzschmar, Klaus, to Siemens Aktiengesellschaft. Method for manufacturing epoxy resin molded materials. 4,578,452, Cl. 528-297.000.
Klein, Jerry A.: *See—*
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Klein, Roy S.; Gehly, Joel C.; and Sestak, Joseph T., to American Sterilizer Company. Removable lampholder. 4,578,742, Cl. 362-294.000.
Kleine, Heinz: *See—*
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Kleinschmit, Peter: *See—*
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Kliman, Gerald B.; and Plunkett, Allan B., to General Electric Company. Synchronous disk motor with amorphous metal stator and permanent magnet rotor and flywheel. 4,578,610, Cl. 310-156.000.
Klimczak, William J., to Wehr Corporation. Method and apparatus for improving the operation of a dust collector. 4,578,092, Cl. 55-302.000.
Klimt, Ulrich: *See—*
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Knapp, John F.: *See—*
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Knecht, Heinz: *See—*
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Knecht, Thomas A.; Frick, Roger L.; and Schulte, John P. Pressure sensing cell using brittle diaphragm. 4,578,735, Cl. 361-283.000.
Knight, George W.: *See—*
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Knight, Paul A.: *See—*
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Knight, Trevor V., to Labtest Equipment Co. (S.E. Asia) Pty. Ltd. Nebulizer. 4,577,517, Cl. 73-864.810.
Knoblauch, Karl: *See—*
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Kobayashi, Akio: *See—*
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Kober, Kurt; Wohrle, Rudolf; and Kohler, Robert, to Alois Kober KG. Tractor trailer combination with a coupling connection. 4,577,882, Cl. 280-446.00R.
Koch, Ronald J.: *See—*
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Kock, Ronald W.: *See—*
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Koehler, Charles W.; vanOmmering, Gerrit; and Puester, Neil H., to Ford Aerospace & Communications Corporation. Active cooling system for electrochemical cells. 4,578,324, Cl. 429-26.000.
Koenig, Jean-Jacques: *See—*
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Kohsaka, Masanobu: *See—*
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Koller, Paul L.: *See—*
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Kollross, Gunter. Method and apparatus for opening axially shirring and dividing off thin-walled, cord-shaped tubular casing material, especially casings made of synthetic material, for the sausage manufacture. 4,577,370, Cl. 17-49.000.
Komastu, Makoto: *See—*
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Komatsu, Shigeru; Inoue, Hiroshi; and Nakamura, Michio, to Tokyo Shibaura Denki Kabushiki Kaisha. Method for manufacturing a semiconductor device having vertical and lateral transistors. 4,577,397, Cl. 29-576.00B.
Komatsu, Yasumasa: *See—*
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Komine, Shigeo: *See—*
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Komon, Koichi; Ito, Siro; and Seino, Shuichi, to Honda Giken Kogyo Kabushiki Kaisha. Method of and apparatus for coating. 4,578,290, Cl. 427-421.000.
Komoto, Akira: *See—*
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Konkol, Werner: *See—*
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Konno, Toshimitsu: *See—*
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Koppa, Daniel A.; and Schaeder, Walter, to Nabisco Brands, Inc. Die having air passages. 4,578,027, Cl. 425-298.000.
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Korenko, Michael K., to United States of America, Energy. Iron-nickel-chromium alloy having improved swelling resistance and low neutron absorbence. 4,578,130, Cl. 148-419.000.
Korody, Robert: *See—*
Faggin, Federico; Klein, Jerry A.; Yazolino, Lauren F.; Korody, Robert; Ha, Eric P. L.; and Kerman, Stephan, 4,578,537, Cl. 179-2.0DP.
Kosemura, Kinjiro; Yamashita, Yoshimi; Nakayama, Noriaki; and Yamamoto, Sumio, to Fujitsu Limited. Method for producing field effect type semiconductor device. 4,578,343, Cl. 430-296.000.
Kotobuki Seiyaku Company Limited: *See—*
Tomiyama, Tsuyoshi, 4,578,478, Cl. 548-193.000.
Kotz, Rainer: *See—*
Harder, Hans E.; Behrens, Klaus; and Kotz, Rainer, 4,578,081, Cl. 623-22.000.
Kouse, Charles H.: *See—*
Idzik, Joseph J.; and Kouse, Charles H., 4,577,406, Cl. 30-103.000.
Kraft, Douglas R.; and Elrod, Harry F., to Motorola, Inc. Asynchronous memory refresh arbitration circuit. 4,578,782, Cl. 365-222.000.
Kraftanlagen AG: *See—*
Frauenfeld, Martin; and von Wedel, Rudiger, 4,577,678, Cl. 165-10.000.
Kraftwerk Union Aktiengesellschaft: *See—*
Assmann, Helmut; Dichtjar, Gerhard; Dorr, Wolfgang; Maier, Georg; Mathieu, Viktor; and Peehs, Martin, 4,578,229, Cl. 264-0.500.
Forner, Siegfried; Langhammer, Karl-Heinz; Pellkofer, Dieter; and Nahr, Wolfgang, 4,577,795, Cl. 228-29.000.
Jestrich, Hans-Achim; and Friedrich, Paul, 4,577,505, Cl. 73-629.000.
Jestrich, Hans-Achim; and Werntgen, Ewald, 4,577,507, Cl. 73-640.000.
Steinke, Alexander, 4,578,239, Cl. 376-441.000.
Weghaupt, Erich; Intichar, Lutz; and Schnapper, Christoph, 4,577,871, Cl. 277-8.000.
Kramer, James H., to B. F. Goodrich Company, The. Bearing assembly and method for assembling a bearing. 4,577,379, Cl. 29-149.50S.
Kramer, Timothy A.; Young, Gerald A.; and Kock, Ronald W., to Procter & Gamble Company, The. Absorbent laminate structure. 4,578,068, Cl. 604-368.000.
Krapcho, John; and Wade, Peter C., to E. R. Squibb & Sons, Inc. Imido, amido and amino derivatives of mercaptoacyl prolines and pipecolic acids. 4,578,474, Cl. 546-188.000.
Krasinski, Jerzy S.; Heller, Donald F.; and Kafri, Oded, to Allied Corporation. Moire microscope. 4,577,940, Cl. 350-502.000.
Kray, William D., to General Electric Company. Photopatternable polyimide compositions and method for making. 4,578,328, Cl. 430-18.000.
Kreamer, Jeffry W. Aneurysm repair apparatus and method. 4,577,631, Cl. 128-334.00R.
Kreeger, Elsmer W., to Pinckney Molded Plastics, Inc. Three-level stacking container. 4,577,759, Cl. 206-505.000.
Kresin, Hermann, to Gizeh-Werk GmbH. Cup-shaped container. 4,577,775, Cl. 220-66.000.
Kretzschmar, Klaus: *See—*
Kleeberg, Wolfgang; Hauschildt, Klaus-Robert; Hacker, Heinz; and Kretzschmar, Klaus, 4,578,452, Cl. 528-297.000.
Kring, Charles J., to Wafab, Inc. Chemical bath apparatus and support assembly. 4,578,137, Cl. 156-345.000.
Krishnan, Sivaram; Grigo, Ulrich R.; and Folajtar, Donald A., to Mobay Chemical Corporation. Flame retarding silanes. 4,578,409, Cl. 524-94.000.
Krizmanic, Jacky, to Societe de Signalisations Automobiles S.E.I.M.A. Headlamp with adjustable reflector for motor vehicles. 4,578,740, Cl. 362-66.000.
Krubert, George J., to Keebler Company. Printing of foods. 4,578,273, Cl. 426-87.000.
Krueger, Achim R., to Du Pont de Nemours, E. I., and Company. Two-package urethane maintenance primer. 4,578,418, Cl. 524-400.000.
Kruger, Uwe: *See—*
Keller, Heimo; Keppler, Bernhard; Kruger, Uwe; and Linder, Rudolf, 4,578,401, Cl. 514-49.000.
Krum, Richard G.: *See—*
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Krupp Industrietechnik Werk Buckau-Wolf: *See—*
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Kubodera, Noboru: *See—*
Nagano, Hiroyuki; Takagi, Mitiro; Kubodera, Noboru; Matsunaga, Isao; Nabata, Hiroyuki; Ohba, Yasuhiro; Sakai, Kazushige; Hata, Shun-ichi; and Uchida, Yasumi, 4,578,465, Cl. 544-285.000.
Kubota, Shigeo, to Sony Corporation. Optical apparatus. 4,577,941, Cl. 350-582.000.
Kubota, Tadatoshi: *See—*
Hamashima, Yoshio; Ishikura, Koji; Kubota, Tadatoshi; and Minami, Kyoji, 4,578,378, Cl. 514-210.000.
Kubozuka, Takao: *See—*
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Kucharski, Paul G.: *See—*
Pascucci, Gregory A.; and Kucharski, Paul G., 4,578,538, Cl. 179-2.0DP.
Kuchenbecker, Morris W., to James River Corporation of Virginia. Reclosable package and carton blank and process for making the same. 4,577,762, Cl. 206-612.000.
Kuchheuser, Werner: *See—*
Meller, Theo; Knecht, Heinz; and Kuchheuser, Werner, 4,577,840, Cl. 267-64.170.
Kudo, Yoshihiko; and Yoshida, Eiji, to Kureha Chemical Industry Co., Ltd. Process for removing sulfur dioxide from off-gas. 4,578,257, Cl. 423-243.000.
Kukes, Simon G.; Johnson, Marvin M.; Strope, Daniel J.; and Hogan, Robert J., to Phillips Petroleum Company. Hydrofining process for hydrocarbon containing feed streams. 4,578,179, Cl. 208-110.000.
Kukes, Simon G.; Hogan, Robert J.; Coombs, Daniel M.; and Strope, Daniel J., to Phillips Petroleum Company. Hydrofining process for hydrocarbon containing feed streams. 4,578,180, Cl. 208-110.000.
Kumagi, Teruo: *See—*
Mori, Toshikatsu; Takeuchi, Seizi; Matsuda, Shimpei; Kumagi, Teruo; Kato, Akira; Yamashita, Hisao; and Takeuchi, Masato, 4,578,112, Cl. 75-108.000.
Kundinger, Josef; Hohmann, Claus; and Muhleck, Martin, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung.

Fiber compound structural component and method for making such a component. 4,578,303, Cl. 428-116.000.

Kunii, Haruo: *See—*
Shigemori, Daizo; Kunii, Haruo; and Endo, Masaaki, 4,578,733, Cl. 361-120.000.

Kuno, Toshitaka; and Kamiya, Atsushi, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Method for measuring driving amount of motor and apparatus therefor. 4,578,749, Cl. 364-167.000.

Kunter, Richard S.; and Turney, John R., to Homestake Mining Company. Gold recovery process. 4,578,163, Cl. 204-110.000.

Kureha Chemical Industry Co., Ltd: *See—*
Kudo, Yoshihiko; and Yoshida, Eiji, 4,578,257, Cl. 423-243.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
Ouchi, Isao; and Yusa, Hideo, 4,578,294, Cl. 428-35.000.
Sakagami, Teruo; Fujii, Yasufumi; and Murayama, Naohiro, 4,578,445, Cl. 526-292.300.
Takita, Hitoshi; Noda, Sakuo; Mukaida, Yutaka; and Kobayashi, Hidetoshi, 4,578,404, Cl. 514-567.000.

Kuribayashi, Kiyoshi: *See—*
Nakano, Akihiko; Matsumoto, Hitoshi; Uda, Hiroshi; Komatsu, Yasumasa; Kuribayashi, Kiyoshi; and Ikegami, Seiji, 4,578,526, Cl. 136-251.000.

Kuriyama, Takashi: *See—*
Takanashi, Itsuo; Nakagaki, Shintaro; Miyazaki, Kenichi; and Kuriyama, Takashi, 4,578,699, Cl. 358-44.000.

Kurokawa, Junji: *See—*
Ikeda, Itsuo; Kurokawa, Junji; Hasebe, Mitsuo; Miyagawa, Seiichi; and Hariu, Hajime, 4,578,331, Cl. 430-42.000.

Kuroyama, Yutaka; and Araki, Masatada, to Nippon Oil and Fats Company Limited. Method for purifying diamond. 4,578,260, Cl. 423-446.000.

Kurozumi, Seizi: *See—*
Noyori, Ryoji; Suzuki, Masaaki; Yanagisawa, Akira; and Kurozumi, Seizi, 4,578,482, Cl. 549-214.000.

Kuss, Peter: *See—*
Bachmann, Bernd; Kuss, Peter; Schuhmann, Frank; and Wollner, Jurgen, 4,577,854, Cl. 271-227.000.

Kuwamoto, Hiroshi: *See—*
Kizaki, Kanji; Ishii, Hajime; Taguchi, Noboru; and Kuwamoto, Hiroshi, 4,577,480, Cl. 72-8.000.

Kuznicki, William J.: *See—*
Mooney, Charles W.; Phipps, Robert E.; and Kuznicki, William J., 4,577,735, Cl. 188-268.000.

Kuzuya, Susumu: *See—*
Yamamoto, Takemi; Kuzuya, Susumu; Kagami, Isao; and Takenaka, Yuuichi, 4,577,984, Cl. 400-625.000.

Kwok, King H.: *See—*
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Kyorin Pharmaceutical Co., Ltd.: *See—*
Irikura, Tsutomu; Nishino, Keigo; Suzue, Seigo; and Ikeda, Toshiya, 4,578,392, Cl. 514-300.000.

Kyushu University: *See—*
Hayashi, Masanori; Sakurai, Akira; and Aso, Shigeru, 4,577,976, Cl. 374-29.000.

L. P. Weidemann & Sonner: *See—*
Weidemann, Jorn U., 4,577,553, Cl. 100-4.000.

La Jolla Cancer Research Foundation: *See—*
Ruoslahti, Erkki; and Pierschbacher, Michael, 4,578,079, Cl. 623-11.000.

Labeda, David P.: *See—*
Carter, Guy T.; Borders, Donald B.; Goodman, Joseph J.; and Labeda, David P., 4,578,468, Cl. 546-35.000.

Labeeuw, Bernard; and Salhi, Ali, to Sanofi. Derivatives of cephalosporins, their process of separation and antibiotic drugs containing the said derivatives. 4,578,377, Cl. 514-206.000.

Labtest Equipment Co. (S.E. Asia) Pty. Ltd.: *See—*
Knight, Trevor V., 4,577,517, Cl. 73-864.810.

Laclede Professional Products, Inc.: *See—*
Pellico, Michael A.; and Montgomery, Robert E., 4,578,265, Cl. 424-50.000.

Lacoste, SA: *See—*
Roy, Jehan; and Dubois, Jean, 4,577,878, Cl. 280-242.0WC.

Lacour, Clement-Francois; and Janer, Patrick, to Thomson-CSF. Microwave microstrip filter with U-shaped linear resonators having centrally located capacitors coupled to ground. 4,578,656, Cl. 333-204.000.

Laing, Stuart B.: *See—*
Phillipps, Gordon H.; Bain, Brian M.; and Laing, Stuart B., 4,578,221, Cl. 260-397.100.

L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude: *See—*
Faudou, Jean-Yves; and Pelloux-Gervais, Pierre, 4,577,386, Cl. 29-455.00R.

Lambe, Christopher A.: *See—*
Rosevear, Alan; and Lambe, Christopher A., 4,578,351, Cl. 435-41.000.

Lambeg Industrial Research Association: *See—*
Currie, Brian; Gardiner, Thomas; and Green, Henry M., 4,578,301, Cl. 428-109.000.

Lambert, Allan H.; Keating, Esmond J.; and Verburg, Gerald B., to United States of America, Agriculture. Low wet pickup fabric finishing apparatus. 4,577,476, Cl. 68-5.00D.

Lambertz, Johannes: *See—*
Adlhoch, Wolfgang H.; and Lambertz, Johannes, 4,578,226, Cl. 261-71.000.

Lancaster, Eugene P., to Weyerhaeuser Company. Leak resistant diaper or incontinent garment. 4,578,072, Cl. 604-385.00A.

Landey, Michael: *See—*
Hatfield, Raymond W., 4,578,310, Cl. 428-334.000.

Lane, Ramon: *See—*
Aviram, Ari; Dove, Derek B.; and Lane, Ramon, 4,577,983, Cl. 400-120.000.

Lang, Paul W.; and Gribshaw, Franklin C., to Jensen, Allen; and Goldstake, a part interest to each. Flat optical TV screen. 4,578,709, Cl. 358-230.000.

Langdon, Nick H.: *See—*
Mayer, John F.; Langdon, Nick H.; Cook, Stuart A.; Nicholson, L. Todd; and Belcher, John R., 4,578,045, Cl. 446-330.000.

Langen, Christianus P.; and Langen, Johannes C., to Langen Research B.V. De-boning machine. 4,577,369, Cl. 17-46.000.

Langen, Johannes C.: *See—*
Langen, Christianus P.; and Langen, Johannes C., 4,577,369, Cl. 17-46.000.

Langen Research B.V.: *See—*
Langen, Christianus P.; and Langen, Johannes C., 4,577,369, Cl. 17-46.000.

Langhammer, Karl-Heinz: *See—*
Forner, Siegfried; Langhammer, Karl-Heinz; Pellkofer, Dieter; and Nahr, Wolfgang, 4,577,795, Cl. 228-29.000.

Langlois, Patrice R.: *See—*
Colin de Verdiere, Jean-Marc M.; and Langlois, Patrice R., 4,578,544, Cl. 179-170.200.

Lankford, Frank L., Jr.: *See—*
Lin, Chew-Chen; and Lankford, Frank L., Jr., 4,578,578, Cl. 250-252.100.

Lanmon, C. P., II, to Hydrolex, Inc. Cable head catcher mechanism. 4,577,687, Cl. 166-243.000.

Lannom, James W.: *See—*
Genovese, Frank C.; and Lannom, James W., 4,578,615, Cl. 313-497.000.

Lanson Electronics, Inc.: *See—*
Gionet, Daniel C.; and Nguyen, Harry V., 4,577,437, Cl. 49-25.000.

Lare, Donald W.; and Van Nguyen, Thanh, to Avery International Corporation. Web coating method and apparatus. 4,578,288, Cl. 427-365.000.

Large, David T., to Boeing Company, The. Waterproof floor panel fastening system, accessible from above. 4,577,450, Cl. 52-787.000.

Larken, John M.; and Vanderpool, Steven H., to Texaco Inc. (Parent). Catalytic synthesis of linear polyethylenepolyamines (polyethylenepolyamine preparation and catalyst). 4,578,519, Cl. 564-479.000.

Larrabee, Edward W.: *See—*
Huck, Charles M.; and Larrabee, Edward W., 4,578,060, Cl. 604-133.000.

Larson, Lawrence L.: *See—*
Ruger, William B.; and Larson, Lawrence L., 4,577,430, Cl. 42-69.00R.

Larter, Stephen R., to Union Oil Company of California. Field source rock evaluation method. 4,578,356, Cl. 436-31.000.

Laszlo, Hideg; and Koller, Paul L., to Ford Motor Company. Selective parametric self-calibrating control system. 4,578,747, Cl. 364-151.000.

Laufer, Helmut: *See—*
Bohringer, Wilfried; Eheim, Franz, deceased; Fehlmann, Wolfgang; Laufer, Helmut; and Zibold, Karl, 4,577,606, Cl. 123-506.000.

Laughton, William J., to General Electric Company. Intergratable load voltage sampling circuit for R.M.S. load average voltage control apparatus. 4,578,632, Cl. 323-315.000.

Laurent, Gunter: *See—*
Reinartz, Dieter; Bender, Heinrich; and Laurent, Gunter, 4,578,194, Cl. 210-673.000.

Lawson, Leslie E.; and Ingham, Michael, to Vickers PLC. Method and apparatus for controlling the processing of radiation sensitive plates with a liquid by monitoring the electrical conductivity of the liquid. 4,577,948, Cl. 354-299.000.

Laxton, Raymond: *See—*
Roberts, Lyn M.; Shrier, Robert L.; and Laxton, Raymond, 4,578,700, Cl. 358-84.000.

Learner, Eugene L., to DAP Inc. Aqueous aerosol coating composition. 4,578,415, Cl. 524-322.000.

Lebesnerais, Gerard M.: *See—*
Delaporte, Francois-Xavier; Lebesnerais, Gerard M.; and Pantani, Jean-Pierre, 4,578,695, Cl. 357-48.000.

Le Bourlot, Jean; and Levy, Michel, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Digital echo canceller. 4,578,543, Cl. 179-170.200.

Lechot, Andre ; and Louis, Alexandre, to LNS, S.A. Feed apparatus for automatic lathes. 4,577,536, Cl. 82-2.700.

Lectron Products, Inc.: *See—*
Slavin, Michael; and Miller, Ellsworth S., 4,578,662, Cl. 335-262.000.

Lee, Chang-Kuei: *See—*
Chou, Tai-Sheng; and Lee, Chang-Kuei, 4,578,183, Cl. 208-113.000.

Lee, Chune: *See—*
Sliwa, John W.; Burt, Roy J.; Lee, Chune; MacKay, John; and Johnson, Cindy A., 4,577,398, Cl. 29-590.000.

Lee, Hsiao-Peng S.: *See—*
Amdahl, Gene M.; Lee, Hsiao-Peng S.; Rawlinson, Stephen J.; and Stuart, Stephen F., 4,578,750, Cl. 364-200.000.

Lee, John T. M., to ICI Americas Inc. Ultrafast thermal actuator. 4,577,544, Cl. 89-1.140.

Lee, Thomas D., to USV Pharmaceutical Corp. 7,8-Dihydroimidazo[1,5-a]pyrazin-8-ones. 4,578,386, Cl. 514-241.000.

Leggett & Platt, Incorporated: *See—*
Crum, Michael A., 4,577,902, Cl. 297-85.000.

Lehnert, Klaus: *See—*
Geyken, Erwin; Heckl, Franz; Kastl, Alfons; Lehnert, Klaus; and Loistl, Rudolf, 4,577,949, Cl. 354-319.000.

Lehto, Eino; Moller, Goran; and Sjovall, Lasse. Irrigation pipe. 4,577,997, Cl. 405-43.000.

Leighton, Estelle. Method of instructions for knitting and crocheting. 4,578,036, Cl. 434-95.000.

Leinhaas, Werner. Gripper feed advance mechanism for a press or the like. 4,577,791, Cl. 226-142.000.

Leipold, Ludwig: *See—*
Tihanyi, Jeno ; Fellinger, Christine; and Leipold, Ludwig, 4,578,595, Cl. 307-252.00R.
Tihanyi, Jenoe ; Fellinger, Christine; and Leipold, Ludwig, 4,578,596, Cl. 307-252.00R.

Leland Stanford Junior University, The Board of Trustees of the: *See—*
Kane, Thomas J.; and Byer, Robert L., 4,578,793, Cl. 372-94.000.

Leman, Marvin G.: *See—*
Dirksing, William P.; Leman, Marvin G.; and Van Coney, Robert H., 4,578,028, Cl. 425-525.000.

Lemelson, Jerome H. Injection catheter and method. 4,578,061, Cl. 604-164.000.

Lemelson, Jerome H. Magnetic record card transducing apparatus and method. 4,578,717, Cl. 360-2.000.

Lemforder Metallwaren AG: *See—*
Buhl, Reihard; and Westphal, Paul, 4,577,987, Cl. 403-133.000.

Lenard, Peter; Pokorny, Erich; and Bailer, Norbert, to Vollmer Werke Maschinenfabrik GmbH. Adjusting mechanism for a grinding wheel on a sharpening machine for saws. 4,577,533, Cl. 76-41.000.

Lenhart, John W., to Lenkin Ltd. Short flight golf ball and game. 4,577,867, Cl. 273-176.0AB.

Lenkin Ltd.: *See—*
Lenhart, John W., 4,577,867, Cl. 273-176.0AB.

Lenten, Hendrik. Elongated propelling means for manually moving a sailing craft over the water surface. 4,578,038, Cl. 440-19.000.

Lenz, Helmut: *See—*
Siedel, Joachim; Neumann, Ulrich; Ziegenhorn, Joachim; Batz, Hans-Georg; Lenz, Helmut; Pautz, Brigitte; and Albert, Winfried, 4,578,361, Cl. 436-547.000.

Lenz, Werner; Sander, Hans; and Moeller, Dieter, to BASF Aktiengesellschaft. Production of coatings. 4,578,426, Cl. 525-131.000.

Leone-Bay, Andrea; and Timony, Peter E., to Stauffer Chemical Company. Herbicidal esters of 2-bromo-4-methylimidazole-5-carboxylic acid. 4,578,106, Cl. 71-92.000.

Letemps, Bernard: *See—*
Colmon, Daniel; and Letemps, Bernard, 4,578,102, Cl. 65-114.000.

Lever Brothers Company: *See—*
Walker, Adrian W., 4,578,206, Cl. 252-95.000.

Levy, Michel: *See—*
Le Bourlot, Jean; and Levy, Michel, 4,578,543, Cl. 179-170.200.

Lewis, Bernard L., to United States of America, Navy. Range doppler coupling magnifier. 4,578,677, Cl. 343-17.2PC.

Lier, Pierre: *See—*
Greenwald, Harry; and Lier, Pierre, 4,578,548, Cl. 200-38.00F.

Life Key Corporation: *See—*
Foster, Dwight R.; and Foster, Diane, 4,577,425, Cl. 40-19.000.

Light, Ronald R.; and Seymour, Robert W., to Eastman Kodak Company. Copolyester/polyester blends having reduced carbon dioxide permeability. 4,578,437, Cl. 525-444.000.

Lii, Huei J. Snap hook and buckle. 4,577,374, Cl. 24-165.000.

Lillo, Arnold D. Wood burning furnace. 4,577,616, Cl. 126-110.00R.

Lin, Chester H., to S&C Electric Company. Operating mechanism for electrical switches. 4,578,551, Cl. 200-153.0SC.

Lin, Chew-Chen; and Lankford, Frank L., Jr., to Texaco Inc. Method for correcting spectrum shift. 4,578,578, Cl. 250-252.100.

Lindahl, Jonas A. I.; and Johnsson, Gustaf E., to Mo och Domsjo Aktiebolag. Process for manufacturing groundwood pulp while maintaining a high and uniform moisture content in the wood in the grinding zone. 4,578,147, Cl. 162-26.000.

Lindahl, Jonas A. I., to Mo och Domsjo Aktiebolag. Process for manufacturing bright and strong bleached groundwood pulp of uniform quality. 4,578,148, Cl. 162-26.000.

Lindberg, Ronald O. J.: *See—*
Arp, Bradley W.; Lindberg, Ronald O. J.; and Mueller, Wayne A., 4,578,569, Cl. 235-454.000.

Linder, Rudolf: *See—*
Keller, Heimo; Keppler, Bernhard; Kruger, Uwe; and Linder, Rudolf, 4,578,401, Cl. 514-49.000.

Lindorfer, Walter; Jahn-Held, Wilhelm; Gerschler, Lutz J.; Jandel, Berthold; and Wartenpfuhl, Friedel, to Wintershall AG. Process for storing liquid waste in salt cavities. 4,577,999, Cl. 405-53.000.

Lindqvist, Gustav; and Juurmaa, Kimmo, to Oy Wartsila Ab. Method of protection. 4,578,000, Cl. 405-211.000.

Lindstrom, Lars; and Nilsson, Kent, to ASEA AB. Method and control system for controlling an industrial robot. 4,578,562, Cl. 219-125.100.

Link Electronics Limited: *See—*
Munnion, Derek, 4,578,708, Cl. 358-229.000.

Linscheid, Denver D., to FMC Corporation. Electrical insulating and sealing apparatus and process for using same. 4,578,088, Cl. 55-2.000.

Lipps, Wolfgang: *See—*
Bahrmann, Helmut; Cornils, Boy; Konkol, Werner; and Lipps, Wolfgang, 4,578,523, Cl. 568-454.000.

Litton Systems, Inc.: *See—*
Ross, William E.; and MacNeal, Bruce E., 4,578,321, Cl. 428-693.000.

Liu, Ying H.: *See—*
Siemers, Paul A.; Kopp, Robert W.; Jackson, Melvin R.; Duke, Steven R.; Perrin, David P.; and Liu, Ying H., 4,577,431, Cl. 42-76.00A.

Liu, Yung-Ho. Electrical safety iron. 4,577,424, Cl. 38-88.000.

Liukkonen, Ahti M. K.: *See—*
Luukkainen, Tapani; and Liukkonen, Ahti M. K., 4,578,076, Cl. 604-892.000.

LNS, S.A.: *See—*
Lechot, Andre ; and Louis, Alexandre, 4,577,536, Cl. 82-2.700.

Lobley, Derek G., to Multifibre Process Limited. Method to reduce the potential salt cake content of chlorine dioxide generator spent acids. 4,578,261, Cl. 423-478.000.

Lochte, Glen E.: *See—*
Milberger, Lionel J.; Lochte, Glen E.; and Masciopinto, Anthony J., 4,577,686, Cl. 166-208.000.

Lockheed Missiles & Space Company, Inc.: *See—*
Sanders, Thomas C.; and Calvert, Wynne, 4,578,663, Cl. 335-306.000.

Lohati, Aladar; and Lohati, Gizella. Rotating ball massager. 4,577,625, Cl. 128-57.000.

Lohati, Gizella: *See—*
Lohati, Aladar; and Lohati, Gizella, 4,577,625, Cl. 128-57.000.

Lois G. Langley: *See—*
Eliscu, Joshua, 4,577,827, Cl. 248-656.000.

Loistl, Rudolf: *See—*
Geyken, Erwin; Heckl, Franz; Kastl, Alfons; Lehnert, Klaus; and Loistl, Rudolf, 4,577,949, Cl. 354-319.000.

Look, Raymond J., to AMP Incorporated. Flat peelable cable. 4,578,529, Cl. 174-117.0FF.

Loos, Rolf: *See—*
Heitmann, Jurgen; Loos, Rolf; and Wagner, Peter, 4,578,719, Cl. 360-31.000.

Lordi, Peter F.: *See—*
Marcus, David L.; and Lordi, Peter F., 4,578,119, Cl. 134-4.000.

Louis, Alexandre: *See—*
Lechot, Andre ; and Louis, Alexandre, 4,577,536, Cl. 82-2.700.

Lovgren, Jeffrey L.; and Plummer, William B., to International Business Machines Corporation. Method for checking disk identity in a flexible disk recorder. 4,578,722, Cl. 360-60.000.

Lowenheck, Konrad, to N. Zivy & Cie, S.A. Thread-tension meter. 4,577,512, Cl. 73-862.450.

Lucas, Gary M.: *See—*
Pratt, Sandra L.; Lucas, Gary M.; and Zembayashi, Michio, 4,578,492, Cl. 556-407.000.

Ludwig, Christian: *See—*
Grosser, Siegfried; Ludwig, Christian; Wallner, Kurt; Herzog, Karl; and Bayerl, Eugen, 4,577,944, Cl. 352-35.000.

Ludwig Neumann & Co. GmbH: *See—*
Schickaneder, Helmut; Szeleny, Istvan; Morsdorf, Peter; and Ahrens, Kurt H., 4,578,389, Cl. 514-254.000.

Lue, Paul D.: *See—*
Charalambous, Salomi T.; Horvath, Mark P.; House, Cathy P.; Iapicco, Jeffrey A.; Lue, Paul D.; and Verma, Shiv P., 4,578,796, Cl. 375-8.000.

Luk Lamellen und Kupplungsbau GmbH: *See—*
Schmid, Christoph, 4,577,741, Cl. 192-85.00V.

Luke, John A., to British-American Tobacco Company Limited. Tobacco-smoke filters. 4,578,053, Cl. 493-45.000.

Lundin, Nils: *See—*
Borrman, Bo; Hellman, Erik; Lundin, Nils; and Ode, Bengt, 4,578,241, Cl. 376-446.000.

Lusk, Donald I., to A. O. Smith Corporation. Composite structures and a method for improving the service life thereof. 4,578,293, Cl. 428-35.000.

Lutz, Robert G.: *See—*
Gergen, William P.; Lutz, Robert G.; and Gelles, Richard, 4,578,429, Cl. 525-291.000.

Luukkainen, Tapani; and Liukkonen, Ahti M. K., to Population Council, Inc., The. Medicated intracervical and intrauterine devices. 4,578,076, Cl. 604-892.000.

M.A.N.-Roland Druckmaschinen Aktiengesellschaft: *See—*
Burger, Rainer, 4,577,559, Cl. 101-221.000.
Fischer, Hermann, 4,577,556, Cl. 101-148.000.
Fischer, Hermann, 4,577,557, Cl. 101-217.000.
Fischer, Hermann, 4,577,558, Cl. 101-365.000.

M. S. Willett, Inc.: *See—*
Boegner, Gregory J.; Walters, Harry J.; and Marshner, Robert L., 4,577,748, Cl. 198-621.000.

Ma, Thomas T., to Ford Motor Company. Internal combustion engine and cam drive mechanism therefor. 4,577,598, Cl. 123-90.180.

Maastricht, Charles: *See—*
Klabunde, Steven E.; Hankwitz, Edward H.; and Maastricht, Charles, 4,577,535, Cl. 82-2.00E.

Mabboux, Michel: *See—*
Petrini, Roland; Pradier, Serge; and Mabboux, Michel, 4,577,420, Cl. 36-117.000.

Mabelis, Richard P., to Imperial Chemical Industries Plc. Gibberellin amine salts. 4,578,483, Cl. 549-297.000.

Macangus, Alexander; and Dickson, Thomas. Skydiving simulator. 4,578,037, Cl. 434-258.000.

Macchio, Ralph A.: *See—*
Tietjen, Marlene; Brown, Ivonne; and Macchio, Ralph A., 4,578,266, Cl. 424-63.000.

MacDonald, John F.: *See—*
McKee, John M.; and MacDonald, John F., 4,578,739, Cl. 361-395.000.

MacFarlane, James W.; and Smyth, Bruce E., to Itek Corporation. System for printed circuit board defect detection. 4,578,810, Cl. 382-8.000.

Macho, Heinz: *See—*
van Rijckevorsel, Rainer; Kasielke, Joachim; Macho, Heinz; Schafer, Peter; and Nenninger, Klaus, 4,578,716, Cl. 360-1.000.

MacKay, John: *See—*
Sliwa, John W.; Burt, Roy J.; Lee, Chune; MacKay, John; and Johnson, Cindy A., 4,577,398, Cl. 29-590.000.

Mackson, Richard G. Computer controlled replenishing system for automatic film processor. 4,577,950, Cl. 354-324.000.

MacLeod Laboratories, Inc.: *See—*
MacLeod, Norman C., 4,578,675, Cl. 340-855.000.

MacLeod, Norman C., to MacLeod Laboratories, Inc. Apparatus and method for logging wells while drilling. 4,578,675, Cl. 340-855.000.

MacNeal, Bruce E.: *See—*
Ross, William E.; and MacNeal, Bruce E., 4,578,321, Cl. 428-693.000.

Macon, Fred M.: *See—*
Freeman, John P.; Macon, Fred M.; and Mee, John D., 4,578,348, Cl. 430-607.000.

Macovski, Albert. Energy-selective x-ray recording and readout system. 4,578,803, Cl. 378-62.000.

Maeda, Tatsumi: *See—*
Ito, Takeo; Ido, Tadashi; Takeuchi, Hajime; Hashimoto, Minoru; Maeda, Tatsumi; and Awa, Masashi, 4,578,313, Cl. 428-403.000.

Maehara, Kenso: *See—*
Ishii, Koji; and Maehara, Kenso, 4,577,555, Cl. 101-76.000.

Magee, Terence E., to ITT Industries, Inc. CMOS buffer circuit. 4,578,600, Cl. 307-451.000.

Mahulikar, Deepak; and Shapiro, Eugene, to Olin Corporation. Copper-nickel alloys for brazed articles. 4,578,320, Cl. 428-674.000.

Maier, Georg: *See—*
Assmann, Helmut; Dichtjar, Gerhard; Dorr, Wolfgang; Maier, Georg; Mathieu, Viktor; and Peehs, Martin, 4,578,229, Cl. 264-0.500.

Maier, Wilfried: *See—*
Wrulich, Herwig; Schoffmann, Franz; and Maier, Wilfried, 4,577,892, Cl. 285-136.000.

Maio, Kenji; and Moritani, Atsushi, to Hitachi, Ltd; and Hitachi Medical Corporation. Integral-type small signal input circuit. 4,578,646, Cl. 328-128.000.

Makino, Hiroshi: *See—*
Iwata, Hiroshi; and Makino, Hiroshi, 4,578,783, Cl. 367-99.000.

Makosch, Gunter, to International Business Machines Corporation. Method and arrangement for optical distance measurement. 4,577,968, Cl. 356-356.000.

Malesci S.p.A. Instituto Farmacobiologico: *See—*
Bonacchi, Graziano; Fedi, Mauro; and Giannini, Mario, 4,578,467, Cl. 544-360.000.

Malik, Robert J.: *See—*
Veillette, Norman T.; and Malik, Robert J., 4,578,690, Cl. 346-212.000.

Malito, John T.: *See—*
Roe, William J.; and Malito, John T., 4,578,255, Cl. 423-130.000.

Malmstrom, Rolf, to RM Metal Consulting Ky. Process for the refining of sulfidic concentrates which contain arsenic, antimony and bismuth. 4,578,254, Cl. 423-88.000.

Mann, William F.: *See—*
Gilda, Patricia; Mann, William F.; and Allen, Winthrop D., III, 4,577,758, Cl. 206-496.000.

Mannesmann Demag Wean: *See—*
Rehag, Klaus; and Gerretz, Josef, 4,577,483, Cl. 72-214.000.

Manzoni, Stephane. Device for remotely controlling a rearview mirror. 4,577,823, Cl. 248-487.000.

March, Carl J.: *See—*
Urdal, David L.; March, Carl J.; and Dower, Steven K., 4,578,335, Cl. 435-68.000.

Marcus, David L.; and Lordi, Peter F. Method for clean-up of blood spills. 4,578,119, Cl. 134-4.000.

Marhal, Joseph. Sealed message carrier. 4,577,753, Cl. 206-232.000.

Marinelli, Charles P.: *See—*
Dewey, Anthony G.; and Marinelli, Charles P., 4,577,926, Cl. 350-96.250.

Markiewicz, Jan: *See—*
Mordarski, Walter J.; and Markiewicz, Jan, 4,578,237, Cl. 376-154.000.

Marko, Ollie W.; Steinmeyer, Robert D.; and Rentsch, Stefan, to Dow Corning Corporation. Preparation of polysiloxanes from halosilanes. 4,578,494, Cl. 556-452.000.

Markwell, Roger E.; and Smith, Stephen A., to Beecham Group p.l.c. Dihydroisoquinoline derivatives. 4,578,393, Cl. 514-310.000.

Markwitz, Wernhard, to Siemens Aktiengesellschaft. Method and apparatus for code transmission. 4,578,532, Cl. 178-22.130.

Maroone, James P.: *See—*
Fisher, Robert W.; Maroone, James P.; Tipping, Donald W.; and Zanner, Frank J., 4,578,795, Cl. 373-70.000.

Maroti, Steven; and Formosa, Daniel, to Hickory Industries, Inc. Toaster. 4,577,550, Cl. 99-329.0RT.

Marshall, Peter E. G.; Piper, Francis R.; and Wilson, John F., to BL Technology Limited. Detecting leaks. 4,577,489, Cl. 73-40.700.

Marshall, Peter E. G.: *See—*
Bray, David J.; Johnson, Peter E.; Marshall, Peter E. G.; Piper, Francis R.; and Murdoch, Iain H., 4,577,490, Cl. 73-40.700.

Marshner, Robert L.: *See—*
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Marson Corporation: *See—*
Racca, Richard F.; Swier, Willem; and Di Maio, Anthony E., 4,577,783, Cl. 222-386.500.

Martin, Donald E., to Rexnord Inc. Conveyor roller and bearing assembly. 4,577,747, Cl. 198-500.000.

Martin, Merrill D. Wheel for measuring horizontal traveling strip. 4,577,411, Cl. 33-141.00E.

Martinez, Francisco P. Tearable bottle caps. 4,577,771, Cl. 215-256.000.

Martinez, Miguel, to CooperVision, Inc. Surgical cutting instrument for ophthalmic surgery. 4,577,629, Cl. 128-305.000.

Marty, Garry R., to Masco Corporation. Anti-siphon and anti-knock diverter valve. 4,577,653, Cl. 137-119.000.

Marukawa, Toshio; Nakao, Haruki; and Mikiya, Toshio, to Nikki Co., Ltd. Massager. 4,577,626, Cl. 128-64.000.

Maruyama, Iwao: *See—*
Ebisawa, Hiroo; Maruyama, Iwao; Fukuda, Masao; and Miyamoto, Shigeo, 4,578,281, Cl. 427-53.100.

Masciopinto, Anthony J.: *See—*
Milberger, Lionel J.; Lochte, Glen E.; and Masciopinto, Anthony J., 4,577,686, Cl. 166-208.000.

Masco Corporation: *See—*
Marty, Garry R., 4,577,653, Cl. 137-119.000.

Masco Corporation of Indiana: *See—*
Holycross, Frank R., Jr., 4,577,835, Cl. 251-310.000.

Mason, James H. Automotive wheel alignment gauge apparatus. 4,577,413, Cl. 33-203.180.

Masters Wilkerson Manufacturing Co. Ltd.: *See—*
Wilkerson, David T., 4,577,822, Cl. 248-463.000.

Masudaya Corporation Limited: *See—*
Saitoh, Shigeru, 4,578,044, Cl. 446-134.000.

Mathews, Harlan P.: *See—*
McIntosh, Robert; Mathews, Harlan P.; Rickert, David W.; Romano, Paul; and Walker, Jerry, 4,578,786, Cl. 369-44.000.

Mathiesen, Mait M., to Plasma Holdings, N.V. Treatment of pelletized iron ores. 4,577,838, Cl. 266-171.000.

Mathieu, Viktor: *See—*
Assmann, Helmut; Dichtjar, Gerhard; Dorr, Wolfgang; Maier, Georg; Mathieu, Viktor; and Peehs, Martin, 4,578,229, Cl. 264-0.500.

Mathis, Ronald F., to General Dynamics Electronics Division. Optical recursive filter. 4,577,924, Cl. 350-96.150.

Matias, Rene . Adjustable exercycle for providing simulated running exercises. 4,577,860, Cl. 272-73.000.

Matier, William L., to American Hospital Supply Corporation. Method for treating glaucoma by the topical administration of selectively metabolized beta-blocking agents. 4,578,403, Cl. 514-522.000.

Matsishita Electric Industrial Co.: *See—*
Tsukutani, Seiichi; and Nakada, Naoki, 4,578,623, Cl. 318-254.000.

Matsuda, Shimpei: *See—*
Mori, Toshikatsu; Takeuchi, Seizi; Matsuda, Shimpei; Kumagi, Teruo; Kato, Akira; Yamashita, Hisao; and Takeuchi, Masato, 4,578,112, Cl. 75-108.000.

Matsui, Yukio; and Uchiyama, Mitsuo, to Nissan Motor Co., Ltd. Method of electrolytically finishing spray-hole of fuel injection nozzle. 4,578,164, Cl. 204-129.550.

Matsumoto, Hitoshi: *See—*
Nakano, Akihiko; Matsumoto, Hitoshi; Uda, Hiroshi; Komatsu, Yasumasa; Kuribayashi, Kiyoshi; and Ikegami, Seiji, 4,578,526, Cl. 136-251.000.

Matsumoto, Isao: *See—*
Fuse, Genzo; Abe, Kaoru; and Matsumoto, Isao, 4,578,005, Cl. 409-140.000.

Matsumoto, Takeshi, to International Business Machines Corp. (IBM). Self-clocking code demodulator with error detecting capability. 4,578,720, Cl. 360-51.000.

Matsunaga, Isao: *See—*
Nagano, Hiroyuki; Takagi, Mitiro; Kubodera, Noboru; Matsunaga, Isao; Nabata, Hiroyuki; Ohba, Yasuhiro; Sakai, Kazushige; Hata, Shun-ichi; and Uchida, Yasumi, 4,578,465, Cl. 544-285.000.

Matsunawa, Masahiko, to Konishiroku Photo Industry Co., Ltd. Picture image discriminating apparatus. 4,578,712, Cl. 358-282.000.

Matsuno, Osamu: *See—*
Matsuoka, Masatoshi; Ikenaga, Yukio; and Matsuno, Osamu, 4,578,408, Cl. 524-91.000.

Matsuo, Yoshiaki: *See—*
Ando, Kazuo; and Matsuo, Yoshiaki, 4,578,025, Cl. 425-133.100.

Matsuoka, Hiroshi: *See—*
Takahashi, Yutaka; and Matsuoka, Hiroshi, 4,577,951, Cl. 354-331.000.

Matsuoka, Masatoshi; Ikenaga, Yukio; and Matsuno, Osamu, to Polyplastics Co., Ltd. Polyester resin composition resistant against discoloration by light. 4,578,408, Cl. 524-91.000.

Matsushima, Masaaki: *See—*
Sawamura, Mitsuharu; Ito, Susumu; Matsushima, Masaaki; Kishi, Hiroyoshi; Sasamori, Eizo; Yoshihara, Satoshi; Iijima, Shigeharu; and Takano, Katsuhiko, 4,578,322, Cl. 428-694.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
Miki, Yutaka; Nozoe, Toshiro; and Uchimura, Kiyoshi, 4,578,698, Cl. 358-22.000.
Nakano, Akihiko; Matsumoto, Hitoshi; Uda, Hiroshi; Komatsu, Yasumasa; Kuribayashi, Kiyoshi; and Ikegami, Seiji, 4,578,526, Cl. 136-251.000.
Neki, Shigeo; Shinozaki, Nozomu; and Dohi, Takashi, 4,578,624, Cl. 318-305.000.
Sakakima, Hiroshi; Satomi, Mitsuo; Yanagiuchi, Yukihiro; and Senno, Harufumi, 4,578,728, Cl. 360-125.000.
Suzuki, Takashi; Fujimori, Hiroshi; and Odagiri, Masaru, 4,578,729, Cl. 360-134.000.
Yamashita, Hidekazu; and Kominami, Hideyuki, 4,578,553, Cl. 219-10.770.
Yoichi, Sakamoto, 4,578,706, Cl. 358-195.100.

Matsushita, Shigeru: *See—*
Harada, Shinichi; Ishihara, Yoshinobu; and Matsushita, Shigeru, 4,577,673, Cl. 164-448.000.
Harada, Shinichi; Toyoda, Hiroshi; Honma, Katsuhiko; and Matsushita, Shigeru, 4,577,674, Cl. 164-448.000.

Mattes, Hans G.: *See—*
Borg, Kevin E.; Halas, William P.; Mattes, Hans G.; McLear, Paul M.; and White, Lester L., 4,578,540, Cl. 179-2.00A.

Mautref, Michel; and Belouet, Christian, to Compagnie Generale d'Electricite; and Societe Nationale Elf Aquitaine. Device for process-type deposition of polycrystalline silicon on carbon film. 4,577,588, Cl. 118-665.000.

Maxwell Laboratories, Inc.: *See—*
Pearlman, Jay S.; and Shannon, John P., 4,578,805, Cl. 378-119.000.

May, Ronald W.: *See—*
White, James M.; May, Ronald W.; and Gulliver, Michael D., 4,578,711, Cl. 358-282.000.

Mayer, Edward F.; and Pfeuffer, Donald F., to Ricoh Company, Ltd. Electrophotographic copying apparatus including a guillotine cleaner blade arrangement and method of operation. 4,577,955, Cl. 355-15.000.

Mayer, John F.; Langdon, Nick H.; Cook, Stuart A.; Nicholson, L. Todd; and Belcher, John R., to CPG Products Corp. Action figure with leg movement derived from arm movement. 4,578,045, Cl. 446-330.000.

Mazac, Joe O. Lifting tool. 4,577,897, Cl. 294-15.000.

Mazda Motor Corporation: *See—*
Morita, Tetuya; Wakasa, Akinori; Ogawa, Yutaka; and Ogasawara, Takayuki, 4,577,600, Cl. 123-270.000.

Mazumder, Ali T.; and Dumas, Armand M., to NCR CANADA LTD.-NCR CANADA LTEE. Bar code processing apparatus. 4,578,570, Cl. 235-463.000.

Mazzoleni, Cyrille: *See—*
Bonino, Pierre; Ducret, Christian; and Mazzoleni, Cyrille, 4,577,893, Cl. 285-158.000.

McAlister, Doyle V.; and Crisp, Richard D., to Motorola, Inc. High speed TTL clock input buffer circuit which minimizes power and provides CMOS level translation. 4,578,601, Cl. 307-475.000.

McCarty, Frederick B., to Garrett Corporation, The. Permanent magnet dynamoelectric machine. 4,578,609, Cl. 310-156.000.

McClelland, Paul H.: *See—*
Cloutier, Frank L.; McClelland, Paul H.; Boucher, William R.; and Siewell, Gary L., 4,578,687, Cl. 346-140.00R.

McConnell, Christopher F. Vessel and system for treating wafers with fluids. 4,577,650, Cl. 134-59.000.

McCoy, David R.: *See—*
Yeakey, Ernest L.; Speranza, George P.; Triebel, Carol A.; and McCoy, David R., 4,578,205, Cl. 252-76.000.

McCrory, Carl E.; and Hall, Herbert G., to Carl McCrory Enterprises, Inc. Mixing and blending apparatus. 4,577,975, Cl. 366-314.000.

McIntire, Harold K.: *See—*
Weglage, David E., 4,577,382, Cl. 29-229.000.

McIntosh, Bruce D.: *See—*
Nusbaumer, Kay T.; and McIntosh, Bruce D., 4,577,898, Cl. 294-88.000.

McIntosh, Robert; Mathews, Harlan P.; Rickert, David W.; Romano, Paul; and Walker, Jerry, to Storage Technology Partners II. Track pitch calibration system for use in optical storage devices. 4,578,786, Cl. 369-44.000.

McIntyre, James A.; Phillips, Robert F.; and Oswald, Max R., to Dow Chemical Company, The. Method for dissolving copper in the presence of iron. 4,578,162, Cl. 204-107.000.

McKee, John M.; and MacDonald, John F., to Motorola, Inc. Quick disconnect and function change radio assembly. 4,578,739, Cl. 361-395.000.

McKee, Joseph M.; and Horton, Robert L., to Phillips Petroleum Company. Method for in situ shale oil recovery. 4,577,908, Cl. 299-2.000.

McKinney, Robert L., to Goodyear Tire & Rubber Company, The. Rheometer rotor height gauge. 4,577,412, Cl. 33-172.00R.

McLear, Paul M.: *See—*
Borg, Kevin E.; Halas, William P.; Mattes, Hans G.; McLear, Paul M.; and White, Lester L., 4,578,540, Cl. 179-2.00A.

McPherson, Hugh, to Ferranti plc. Temperature-independent gain control circuit. 4,578,603, Cl. 307-493.000.

Mead Corporation, The: *See—*
Adkins, David G., 4,578,339, Cl. 430-138.000.
Calvert, Rodney K.; and Fishback, Alton J., 4,577,745, Cl. 198-420.000.
Oliff, James R., 4,577,799, Cl. 229-40.000.
Saccocio, Edward J.; Kiser, T. Kay; Wright, Richard F.; and Head, Donald L., 4,578,340, Cl. 430-138.000.
Tsao, Sherman H.; and Sharum, Wayne P., 4,578,713, Cl. 358-283.000.

Mech, Christian; and Gironde, Daniel, to Alsthom-Atlantique. Coupling for electric motors. 4,578,608, Cl. 310-112.000.

Mechtrix Corporation: *See—*
Butler, John D., 4,577,405, Cl. 30-90.100.

Meckler, Gershon, to Camp Dresser & McKee, Inc. Air conditioning apparatus. 4,577,471, Cl. 62-271.000.

Medical Research Associates, Ltd. #2: *See—*
Sterling, Robert E., 4,578,413, Cl. 524-269.000.

Medical Safetec, Inc.: *See—*
Wilson, Joseph H.; Rapp, Jeffrey C.; Southern, Brian K.; and Elliott, Martin E., 4,578,185, Cl. 210-85.000.

Medistad Holland V.V.: *See—*
van Leerdam, Hans M. L., 4,578,074, Cl. 604-408.000.

Medlin, William L., to Mobil Oil Corporation. Method of using seismic data to monitor firefloods. 4,577,690, Cl. 166-251.000.

Medosan Industrie Biochimie Riunite S.p.A.: *See—*
Baglioni, Alessandro, 4,578,481, Cl. 548-539.000.

Medtronic, Inc.: *See—*
Berkovits, Barouh V.; Waxman, Menashe B.; and Combs, William J., 4,577,633, Cl. 128-419.0PG.
Stokes, Kenneth B., 4,577,642, Cl. 128-784.000.

Mee, John D.: *See—*
Freeman, John P.; Macon, Fred M.; and Mee, John D., 4,578,348, Cl. 430-607.000.

Mee, John L.; and Parente, Robert F. Device for measuring and indicating changes in the resistance of a living body. 4,578,635, Cl. 324-62.000.

Meekins, John F.; and Gursky, Herbert, to United States of America, Navy. Polynomial grating. 4,578,804, Cl. 378-84.000.

Mehra, Yuv R. Hydrocarbon separation with a physical solvent. 4,578,094, Cl. 62-17.000.

Meijer, Henricus J. J. C.: *See—*
van Rijsewijk, Lambertus J. J.; Thomas, Mario L.; Meijer, Henricus J. J. C.; and van der Wilk, Ronald, 4,578,661, Cl. 335-212.000.

Melcher, Robert L.: *See—*
Baumann, Thomas; Dacol, Frank H.; and Melcher, Robert L., 4,578,584, Cl. 250-341.000.

Meller, Theo; Knecht, Heinz; and Kuchheuser, Werner, to Boge GmbH. Self-pumping hydropneumatic spring leg or strut with internal level control for motor vehicles. 4,577,840, Cl. 267-64.170.

Melpolder, Frank W., to Atlantic Richfield Company. Stabilized water indicating paste composition. 4,578,357, Cl. 436-39.000.

Melrose, David R.; and Russo, Mario A., to Ingersoll-Rand Company. High speed-high flow spool valve. 4,577,661, Cl. 137-625.330.

Menke, Ronald: *See—*
Holdt, Bernd-Dieter; Menke, Ronald; Praus, Gerd; and Hasselbach, Petra, 4,578,207, Cl. 252-134.000.

Mensi, Carlo: *See—*
Biorcio, Luciano; and Mensi, Carlo, 4,578,312, Cl. 428-336.000.

Merck & Co., Inc.: *See—*
Dolling, Ulf H.; Pines, Seemon H.; and Grabowski, Edward J. J., 4,578,509, Cl. 562-462.000.
Jensen, Norman P.; and Chang, Michael N., 4,578,390, Cl. 514-255.000.

Merck Patent Gesellschaft mit beschrankter Haftung: *See—*
Praefcke, Klaus; Kohne, Bernd; Poules, Wadi; Eidenschink, Rudolf; and Scheuble, Bernhard, 4,578,210, Cl. 252-299.600.
Urban, Manfred; and Schmitt, Dieter, 4,578,202, Cl. 252-33.400.

Mercury Foam Corporation: *See—*
Fenster, Larry A.; and Hostettler, Fritz, 4,577,647, Cl. 132-39.000.

Meredith, Hadyn G., to Rocket of London Limited. Medical instrument. 4,577,635, Cl. 128-642.000.

Meredith, Thomas D., Jr., to Eastman Kodak Company. High density tow bale and method for forming it. 4,577,752, Cl. 206-83.500.

Merlet, Brigitte I. Layer for fixing moquettes, carpets, rugs or the like. 4,578,300, Cl. 428-91.000.

Merlin Gerin: *See—*
Delbosse, Andre , 4,578,734, Cl. 361-152.000.

Merlo, Antonia C.: *See—*
Sahasrabudhe, Arum P.; Dadpey, Habib; Cirillo, Fernando A.; Merlo, Antonia C.; and Zuber, Pierre A. M., 4,578,754, Cl. 364-426.000.

Merrell Dow Pharmaceuticals Inc.: *See—*
Cregge, Robert J.; and Coutant, John E., 4,578,464, Cl. 544-236.000.

Merrell, Gene A., to Betz Laboratories, Inc. Method of conditioning fireside fouling deposits using large particle size amorphous silica. 4,577,566, Cl. 110-343.000.

Meserol, Peter M., to Personal Diagnostics, Inc. Cuvette with integral optical elements. 4,577,970, Cl. 356-440.000.

Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung: *See—*
Bongers, Bernd; and Bansemir, Horst, 4,577,736, Cl. 188-371.000.
Kundinger, Josef; Hohmann, Claus; and Muhleck, Martin, 4,578,303, Cl. 428-116.000.

Metal Box Plc: *See—*
Rayner, Adrien P.; and Clark, Kenneth R., 4,577,776, Cl. 220-307.000.

Metal Forms Corporation: *See—*
Miller, Thomas E., 4,577,994, Cl. 404-114.000.

Metallurgie Hoboken-Overpelt: *See—*
Verhoeven, Constant T.; Tobback, Hubert J.; and Dompas, John M., 4,577,401, Cl. 29-825.000.
Metalworking Lasers International Ltd.: *See—*
Hoag, Ethan D., 4,578,792, Cl. 372-58.000.
Metco Inc.: *See—*
Harrington, John H.; and Rangaswamy, Subramaniam, 4,578,115, Cl. 75-255.000.
Rangaswamy, Subramaniam; and Harrington, John H., 4,578,114, Cl. 75-252.000.
Metelski, Andrezej, to Hydrel AG. Wraparound support for a linearly guided slide. 4,577,913, Cl. 308-6.00R.
Meyer, Hans, to Ruhrgas LNG Flussigerdgas Service GmbH. Method for transporting goods by freighter from an arctic port to an ice-free port, and freighter for that purpose. 4,577,578, Cl. 114-248.000.
Meyer, Karl-Heinrich: *See—*
Schmidt, Manfred; and Meyer, Karl-Heinrich, 4,578,476, Cl. 548-144.000.
Michaud, Jeffrey J., to J. D. Tools, Inc. Paint pail holder and wooden ladder adaptor for same. 4,577,820, Cl. 248-211.000.
Micro-Circuits Company: *See—*
Bradley, Robert F., 4,578,215, Cl. 252-514.000.
Microdot Incorporated: *See—*
Zitting, Gordon T., 4,577,874, Cl. 277-165.000.
Middleton, Francisco A.; Carter, Nicholas J. R.; and Das, Santanu, to ITT Corporation. Simultaneous voice and data communication and data base access in a switching system using a tone bus or broadcast mode. 4,578,789, Cl. 370-58.000.
Midland-Ross Corporation: *See—*
Johnson, Keith A.; and Kamlani, Vijay M., 4,578,031, Cl. 432-138.000.
Mifsud, Joseph F., to Exxon Production Research Co. Tunable marine seismic source. 4,578,784, Cl. 367-143.000.
Migliori, Albert; Swift, Gregory W.; and Garrett, Steven L., to United States of America, Energy. Remotely readable fiber optic compass. 4,577,414, Cl. 33-363.00K.
Mihalik, Nandor: *See—*
Readings, Peter B.; Mihalik, Nandor; and Taylor, Robin, 4,578,341, Cl. 430-155.000.
Miki, Yutaka; Nozoe, Toshiro; and Uchimura, Kiyoshi, to Matsushita Electric Industrial Co., Ltd. Multiple display control apparatus for a television receiver. 4,578,698, Cl. 358-22.000.
Mikiya, Toshio: *See—*
Marukawa, Toshio; Nakao, Haruki; and Mikiya, Toshio, 4,577,626, Cl. 128-64.000.
Milan, Rudolph R.: *See—*
Astley, Vivian C.; Milan, Rudolph R.; and Taravella, Jody J., 4,577,804, Cl. 241-16.000.
Milberger, Lionel J.; Lochte, Glen E.; and Masciopinto, Anthony J., to Vetco Offshore, Inc. Mudline support hanger assembly. 4,577,686, Cl. 166-208.000.
Miles, Ronald C.; Justice, David D.; and Dotson, Ronald L., to Olin Corporation. Electrolysis of alkali metal chloride brine in catholyte-less membrane cells employing an oxygen consuming cathode. 4,578,159, Cl. 204-98.000.
Milewits, Marvin: *See—*
Moake, Gordon L.; and Milewits, Marvin, 4,578,642, Cl. 324-160.000.
Miller, C. Fredrick. Workpiece heater. 4,578,032, Cl. 432-230.000.
Miller, Charles R. Coat hanger support. 4,577,766, Cl. 211-123.000.
Miller, Ellsworth S.: *See—*
Slavin, Michael; and Miller, Ellsworth S., 4,578,662, Cl. 335-262.000.
Miller, Jonathan; Berfield, Robert C.; and Crevling, Robert L., Jr., to Shop-Vac Corporation. Vacuum cleaner nozzle having rotating brush. 4,577,366, Cl. 15-388.000.
Miller, Robert C., to Westinghouse Electric Corp. Metering system for measuring parameters of high AC electric energy flowing in an electric conductor. 4,578,639, Cl. 324-96.000.
Miller, Robert C.: *See—*
Gossard, Arthur C.; Miller, Robert C.; and Petroff, Pierre M., 4,578,127, Cl. 148-175.000.
Miller, Thomas E., to Metal Forms Corporation. Vibratory concrete screed. 4,577,994, Cl. 404-114.000.
Milwain, Donald R. Vehicle door support. 4,577,843, Cl. 269-51.000.
Mimura, Yoshiyuki: *See—*
Toda, Akitoshi; and Mimura, Yoshiyuki, 4,578,332, Cl. 430-55.000.
Minami, Kyoji: *See—*
Hamashima, Yoshio; Ishikura, Koji; Kubota, Tadatoshi; and Minami, Kyoji, 4,578,378, Cl. 514-210.000.
Miner, Jon, to Internatural Designs, Inc. Wind responsive adjustable decorative device. 4,578,291, Cl. 428-8.000.
Minigrip Incorporated: *See—*
Ausnit, Steven, 4,578,813, Cl. 383-65.000.
Minnesota Mining and Manufacturing Company: *See—*
Arkell, James J.; and Hamlin, Robert N., 4,578,078, Cl. 623-6.000.
Brochman, Wilfred R., 4,577,777, Cl. 220-359.000.
Hammar, W. James, 4,578,504, Cl. 560-112.000.
Philip, James B., Jr., 4,578,347, Cl. 430-572.000.
Seidel, Udo, 4,578,121, Cl. 134-25.400.
Tait, William C., 4,578,654, Cl. 333-175.000.
Minolta Camera Kabushika Kaisha: *See—*
Yamakawa, Kazuo; and Dohi, Toshihide, 4,577,935, Cl. 350-432.000.
Minolta Camera Kabushiki Kaisha: *See—*
Oka, Tateki, 4,578,337, Cl. 430-107.000.
Mishiro, Shoji, to Taga Electric Co., Ltd. Driving control method of ultrasonic transducer. 4,577,500, Cl. 73-579.000.
Mita Industrial Co., Ltd.: *See—*
Kamezaki, Yasushi, 4,577,587, Cl. 118-658.000.
Mitani, Tsuneyoshi, to Musashi Engineering Kabushiki Kaisha. Method of discriminating sheet. 4,578,770, Cl. 364-571.000.
Mitsubishi Chemical Industries, Ltd.: *See—*
Omae, Yoshihiro; Ishikawa, Kunio; Fukao, Takahisa; and Yoshida, Katsushige, 4,577,385, Cl. 29-402.180.
Wada, Keisuke; Kobayashi, Yoshimitsu; and Kasori, Yukio, 4,578,507, Cl. 560-104.000.
Mitsubishi Denki K.K.: *See—*
Yamada, Tetsusyo; and Hirate, Shintaro, 4,578,172, Cl. 204-412.000.
Mitsubishi Denki Kabushiki Kaisha: *See—*
Hani, Kiyoshi; Takei, Takako; Kodama, Minekazu; and Sugano, Toshiyuki, 4,578,308, Cl. 428-297.000.
Ito, Sho; Tatsumi, Kenji; Kasahara, Kumio; Nakaguchi, Tomoyuki; Takei, Toshio; and Nakahara, Shojiro, 4,577,863, Cl. 273-26.00R.
Murakami, Masanobu; and Miyazaki, Masaaki, 4,577,603, Cl. 123-339.000.
Oota, Makoto; Nekozuka, Masamichi; and Yagishita, Kikuji, 4,578,672, Cl. 340-702.000.
Takahashi, Ichiro; Okamoto, Goro; and Okahashi, Kazuo, 4,577,664, Cl. 138-149.000.
Yamada, Tetsusyo; and Hirate, Shintaro, 4,578,171, Cl. 204-406.000.
Yuchi, Kazuhide, 4,577,800, Cl. 237-2.00A.
Mitsubishi Gas Chemical Company, Inc.: *See—*
Sakurai, Masanori; Miyawaki, Junichi; Umemura, Toshikaju; Kawata, Toshikatsu; and Kiboshi, Shinji, 4,578,422, Cl. 524-593.000.
Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
Irie, Nobuhiko, 4,578,023, Cl. 425-38.000.
Mitsuboshi Belting Ltd.: *See—*
Takano, Hiroshi, 4,578,050, Cl. 474-17.000.
Mitsui Mining & Smelting Co., Ltd.: *See—*
Miyazaki, Kazuhide; Uemura, Toyohide; and Nakaso, Katsuzo, 4,578,109, Cl. 75-0.50C.
Miwa, Zenichiro: *See—*
Nakagawa, Hiroshi; and Miwa, Zenichiro, 4,578,622, Cl. 318-135.000.
Miyagawa, Seiichi: *See—*
Ikeda, Itsuo; Kurokawa, Junji; Hasebe, Mitsuo; Miyagawa, Seiichi; and Hariu, Hajime, 4,578,331, Cl. 430-42.000.
Miyajiri, Tetsuo: *See—*
Tanaka, Gotaro; Fujiwara, Kunio; and Miyajiri, Tetsuo, 4,578,560, Cl. 219-121.0PR.
Miyakawa, Eiji, to Miyakawa Industry Co., Ltd. Exchange chuck for a tool. 4,577,875, Cl. 279-75.000.
Miyakawa Industry Co., Ltd.: *See—*
Miyakawa, Eiji, 4,577,875, Cl. 279-75.000.
Miyakawa, Nobuaki: *See—*
Yazawa, Yoshiaki; Miyakawa, Nobuaki; Mukai, Toji; Ikeda, Takahide; and Kamei, Tatsuya, 4,578,693, Cl. 357-30.000.
Miyake, Takashi: *See—*
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Miyamoto, Shigeo: *See—*
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Miyawaki, Junichi: *See—*
Sakurai, Masanori; Miyawaki, Junichi; Umemura, Toshikaju; Kawata, Toshikatsu; and Kiboshi, Shinji, 4,578,422, Cl. 524-593.000.
Miyazaki, Kazuhide; Uemura, Toyohide; and Nakaso, Katsuzo, to Mitsui Mining & Smelting Co., Ltd. Process for the production of anode active materials for use in cells. 4,578,109, Cl. 75-0.50C.
Miyazaki, Kenichi: *See—*
Takanashi, Itsuo; Nakagaki, Shintaro; Miyazaki, Kenichi; and Kuriyama, Takashi, 4,578,699, Cl. 358-44.000.
Miyazaki, Masaaki: *See—*
Murakami, Masanobu; and Miyazaki, Masaaki, 4,577,602, Cl. 123-339.000.
Miyazaki, Senji; and Touya, Osamu, to Idemitsu Petrochemical Co., Ltd. Thermoformed polyolefin cup. 4,578,296, Cl. 428-35.000.
Miyoshi, Takahito: *See—*
Ishikuro, Tadashi; Shirahata, Ryuji; Miyoshi, Takahito; and Fujiyama, Masaaki, 4,578,311, Cl. 428-336.000.
Mo och Domsjo Aktiebolag: *See—*
Lindahl, Jonas A. I.; and Johnsson, Gustaf E., 4,578,147, Cl. 162-26.000.
Lindahl, Jonas A. I., 4,578,148, Cl. 162-26.000.
Moak, Ross D. Sod cutting apparatus. 4,577,697, Cl. 172-21.000.
Moake, Gordon L.; and Milewits, Marvin, to PA Incorporated. Method and apparatus for measuring velocity of ferromagnetic tubing. 4,578,642, Cl. 324-160.000.
Mobay Chemical Corporation: *See—*
Jackman, Dennis E.; and Westphal, Dietmar B., 4,578,463, Cl. 544-182.000.
Krishnan, Sivaram; Grigo, Ulrich R.; and Folajtar, Donald A., 4,578,409, Cl. 524-94.000.
Mobil Oil Corporation: *See—*
Chang, Clarence D.; and Hellring, Stuart D., 4,578,521, Cl. 568-771.000.
Chou, Tai-Sheng; and Lee, Chang-Kuei, 4,578,183, Cl. 208-113.000.
Clauson, Melvil B.; and Wagner, John R., Jr., 4,578,316, Cl. 428-516.000.

Dellinger, Thomas B.; Boston, William G.; Sexton, James H.; and Strong, Robert T., 4,577,700, Cl. 175-40.000.
Dellinger, Thomas B.; and Gravley, Wilton, 4,577,701, Cl. 175-61.000.
Derouane, Eric G.; and Varghese, Philip, 4,578,181, Cl. 208-110.000.
Dion, Eric P., 4,578,579, Cl. 250-256.000.
Duncan, Gary L., 4,578,297, Cl. 428-35.000.
Hoehn, Gustave L., Jr., 4,578,645, Cl. 324-338.000.
Medlin, William L., 4,577,690, Cl. 166-251.000.
Shaw, Richard G.; and Canterino, Peter J., 4,578,431, Cl. 525-387.000.
Trivedi, Viren P., 4,578,416, Cl. 524-371.000.
Mobilio, Dominick; Demerson, Christopher A.; and Humber, Leslie G., to American Home Products Corporation. Substituted 2,3,4,9-tetrahydro-1H-carbazole-1-acetic acid, compositions and use. 4,578,398, Cl. 514-411.000.
Mobley, David P., to General Electric Company. Two-stage process for preparation of polyphenylene oxides. 4,578,449, Cl. 528-212.000.
Mochida, Nobuo: *See—*
Ohnishi, Haruo; Yamaguchi, Kazuo; Suzuki, Yasuo; and Mochida, Nobuo, 4,578,400, Cl. 514-460.000.
Mochida Pharmaceutical Co., Ltd.: *See—*
Ohnishi, Haruo; Yamaguchi, Kazuo; Suzuki, Yasuo; and Mochida, Nobuo, 4,578,400, Cl. 514-460.000.
Mod, William A.: *See—*
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Moeller, Dieter: *See—*
Lenz, Werner; Sander, Hans; and Moeller, Dieter, 4,578,426, Cl. 525-131.000.
Molex Incorporated: *See—*
Pellegrino, Thomas P., 4,577,404, Cl. 29-874.000.
Stipanuk, John M.; Walse, Alan S.; and Regnier, Kent E., 4,577,922, Cl. 339-176.0MP.
Moll, Manfred: *See—*
Romer, Rudolf; and Moll, Manfred, 4,577,813, Cl. 244-3.230.
Moller, Goran: *See—*
Lehto, Eino; Moller, Goran; and Sjovall, Lasse, 4,577,997, Cl. 405-43.000.
Molo, Francesco; Cucchi, Silvio; and Cariolaro, Gianfranco, to Teletra-Telefonia Elettronica e Radio S.p.A. Corso Buenos Aires. System and equipment for single side band multiplexing through digital processing. 4,578,790, Cl. 370-50.000.
Molten Corporation: *See—*
Shishido, Hideomi, 4,577,865, Cl. 273-58.00G.
Molteni, Emanuele, to Bayer Aktiengesellschaft. Process for the production of polyolefin foams. 4,578,231, Cl. 264-25.000.
Monarch Marking Systems, Inc.: *See—*
Hamisch, Paul H., Jr.; Vanderpool, James L.; and Bain, James M., 4,578,138, Cl. 156-361.000.
Jenkins, William A., 4,577,426, Cl. 40-21.00R.
Monolithic Memories, Inc.: *See—*
Hsia, Steve; and Chang, Paul, 4,577,391, Cl. 29-571.000.
Monsanto Company: *See—*
D'Amico, John J., 4,578,477, Cl. 548-165.000.
Deets, Gary L.; and Trementozzi, Quirino A., 4,578,423, Cl. 525-68.000.
Fowler, James D., 4,578,190, Cl. 210-321.100.
Getman, Daniel P., 4,578,514, Cl. 564-102.000.
Montedison S.p.A.: *See—*
Clementini, Luciano; and Spagnoli, Leonardo, 4,578,428, Cl. 525-265.000.
Monterey Manufacturing Co.: *See—*
Hall, Charles P.; and Philipson, Joseph, 4,577,357, Cl. 5-451.000.
Johenning, John B.; and Hall, Charles P., 4,577,356, Cl. 5-450.000.
Montgomery, Robert E.: *See—*
Pellico, Michael A.; and Montgomery, Robert E., 4,578,265, Cl. 424-50.000.
Moon, Donald A. Automotive engine oil drip pan. 4,577,713, Cl. 180-69.100.
Mooney, Charles W.; Phipps, Robert E.; and Kuznicki, William J., to Motorola, Inc. Shock absorber for quartz crystal enclosures using multiple contact points to distribute stress. 4,577,735, Cl. 188-268.000.
Mooney, Charles W., to Motorola, Inc. Shock absorber and spacer for quartz crystals. 4,578,612, Cl. 310-348.000.
Moore, Colin; and Jenkins, David P., to BOC Group, plc, The. Method of combustion and burners. 4,577,567, Cl. 110-347.000.
Moore, James I., to Ex-Cell-O Corporation. Vacuum control system for casting machine dies. 4,577,670, Cl. 164-155.000.
Moore, Sanders H.; Smith, Maurice R.; and Cochran, Harvey B., to Olin Corporation. Process for the purification of effluents and purge streams containing trace elements. 4,578,195, Cl. 210-679.000.
Moore, William P., to Hawkeye Chemical Company. Stable ureaform dispersion fertilizers. 4,578,105, Cl. 71-28.000.
Mordarski, Walter J.; and Markiewicz, Jan, to Combustion Engineering, Inc. Nondestructive determination of nuclear fuel burnup. 4,578,237, Cl. 376-154.000.
Morein, Bror. Immunogenic protein or peptide complex, method or producing said complex and the use thereof as an immune stimulant and as a vaccine. 4,578,269, Cl. 424-88.000.
Moreiras, Luis, to Parker-Hannifin Corporation. Split back die segment. 4,577,485, Cl. 72-402.000.
Morel, Michel; and Pillac, Bernard, to CLECIM. Hydraulic safety device for a mechanism for closing up the rolls of a rolling mill. 4,577,484, Cl. 72-245.000.
Morgan, Thomas A., to Honeywell Information Systems Inc. Pin insertion tool. 4,577,400, Cl. 29-739.000.
Morganite Electrical Carbon Limited: *See—*
Ferguson, Ian C., 4,578,546, Cl. 191-87.000.
Mori, Toshikatsu; Takeuchi, Seizi; Matsuda, Shimpei; Kumagi, Teruo; Kato, Akira; Yamashita, Hisao; and Takeuchi, Masato, to Hitachi, Ltd. Catalytic reaction process. 4,578,112, Cl. 75-108.000.
Mori, Yasuharu: *See—*
Tokuno, Masateru; Sawada, Tetsuya; and Mori, Yasuharu, 4,577,746, Cl. 198-462.000.
Morimoto, Nobuyuki; Takatsu, Kozo; and Sugimoto, Michio, to Research Association for Petroleum Alternatives Development. Process for preparing a crystalline aluminosilicate. 4,578,259, Cl. 423-329.000.
Morimoto, Yoshiro: *See—*
Niikura, Yasuhiro; Morimoto, Yoshiro; Hamada, Hideo; Suga, Masaaki; and Murasugi, Takashi, 4,577,737, Cl. 192-0.032.
Morin, Thomas M. Swimming pool filter system. 4,578,186, Cl. 210-90.000.
Morisawa, Tahei, to Asahi Kogaku Kogyo K.K. Electromagnetic release device for single-lens reflex camera. 4,577,946, Cl. 354-152.000.
Morita, Kazuhiko: *See—*
Kato, Mikihiko; Okita, Tsutomu; Komine, Shigeo; Okuzawa, Yasutoshi; and Morita, Kazuhiko, 4,578,299, Cl. 428-65.000.
Morita, Tetuya; Wakasa, Akinori; Ogawa, Yutaka; and Ogasawara, Takayuki, to Mazda Motor Corporation; and NGK Insulators, Ltd. Structure of divided combustion chamber for diesel engine. 4,577,600, Cl. 123-270.000.
Moritani, Atsushi: *See—*
Maio, Kenji; and Moritani, Atsushi, 4,578,646, Cl. 328-128.000.
Moriyama, Noboru: *See—*
Murai, Osamu; and Moriyama, Noboru, 4,578,441, Cl. 526-216.000.
Morley, Robert G. Frozen whipped cream. 4,578,276, Cl. 426-565.000.
Morris, Alvan M.: *See—*
Morris, Fredric H.; and Morris, Alvan M., 4,577,586, Cl. 118-63.000.
Morris, Anthony F.; Delay, Francois; Gautschi, Fritz; Thomas, Alan F.; Giersch, Wolfgang K.; and Boschung, Andre , to Firmenich SA. 1(7)-p-Menthen-9-al and its utilization as perfuming and flavoring ingredient. 4,578,277, Cl. 426-538.000.
Morris, Fredric H.; and Morris, Alvan M. Automatic ski waxing machine. 4,577,586, Cl. 118-63.000.
Morris, Robert C.: *See—*
Chai, Bruce H.; Buehler, Ernest; Flynn, John J.; and Morris, Robert C., 4,578,146, Cl. 156-623.00R.
Morsdorf, Peter: *See—*
Schickaneder, Helmut; Szeleny, Istvan; Morsdorf, Peter; and Ahrens, Kurt H., 4,578,389, Cl. 514-254.000.
Mortimer, John H., to Inductotherm Corporation. Levitation heating using single variable frequency power supply. 4,578,552, Cl. 219-10.410.
Morton Metalcraft Company: *See—*
Stratton, David M., 4,577,354, Cl. 4-585.000.
Morton Thiokol, Inc.: *See—*
Bolieau, Christopher W., 4,578,247, Cl. 422-165.000.
Salamone, Ann B., 4,578,267, Cl. 424-78.000.
Morz, Gunter, to Ant Nachrichtentechnik GmbH. Method and apparatus for obtaining antenna tracking signals. 4,578,679, Cl. 343-427.000.
Moser, Bernd, to Boge GmbH. Arrangement for determining the travel of a piston. 4,577,509, Cl. 73-658.000.
Mossle, Walter; and Eibofner, Eugen, to Kaltenbach & Voight GmbH & Co. Tartar-removing dental handpiece. 4,578,033, Cl. 433-29.000.
Motodate, Shoji: *See—*
Nashimoto, Ryo; and Motodate, Shoji, 4,577,917, Cl. 339-150.00T.
Motorola, Inc.: *See—*
Birch, William A.; and Woodard, Lillie M., 4,578,599, Cl. 307-272.00A.
Kraft, Douglas R.; and Elrod, Harry F., 4,578,782, Cl. 365-222.000.
McAlister, Doyle V.; and Crisp, Richard D., 4,578,601, Cl. 307-475.000.
McKee, John M.; and MacDonald, John F., 4,578,739, Cl. 361-395.000.
Mooney, Charles W.; Phipps, Robert E.; and Kuznicki, William J., 4,577,735, Cl. 188-268.000.
Mooney, Charles W., 4,578,612, Cl. 310-348.000.
Persinotti, Gary W., 4,578,815, Cl. 455-15.000.
Shupe, Chester D., 4,578,649, Cl. 331-78.000.
Siwiak, Kazimierz, 4,578,628, Cl. 320-2.000.
Mount Isa Mines Limited: *See—*
Cunningham, Jock B., 4,577,502, Cl. 73-600.000.
MPC Products Corporation: *See—*
Carlson, Richard K., 4,577,990, Cl. 403-342.000.
MTU Motoren-und Turbinen-Union Friedrichshafen, GmbH: *See—*
Deutschmann, Herbert; and Schier, Karl, 4,577,595, Cl. 123-41.350.
MTU Motoren- und Turbinen-Union Munchen GmbH: *See—*
Hagemeister, Klaus, 4,577,684, Cl. 165-172.000.
Mueller, Richard L., Jr., to Argon Medical Corp. Flexible metal radiopaque indicator and plugs for catheters. 4,577,637, Cl. 128-658.000.
Mueller, Wayne A.: *See—*
Arp, Bradley W.; Lindberg, Ronald O. J.; and Mueller, Wayne A., 4,578,569, Cl. 235-454.000.
Muenstedt, Helmut; and Naarmann, Herbert, to BASF Aktiengesellschaft. Long-term stability of the electrical conductivity of pyrrole polymers. 4,578,433, Cl. 525-417.000.

Muhleck, Martin: *See—*
Kundinger, Josef; Hohmann, Claus; and Muhleck, Martin, 4,578,303, Cl. 428-116.000.

Mukai, Toji: *See—*
Yazawa, Yoshiaki; Miyakawa, Nobuaki; Mukai, Toji; Ikeda, Takahide; and Kamei, Tatsuya, 4,578,693, Cl. 357-30.000.

Mukaida, Yutaka: *See—*
Takita, Hitoshi; Noda, Sakuo; Mukaida, Yutaka; and Kobayashi, Hidetoshi, 4,578,404, Cl. 514-567.000.

Muller, Arno, to Pitney Bowes Inc. Electronic postage meter having a regulated power supply system responsive to a voltage developed in a transformer primary winding circuit. 4,578,758, Cl. 364-466.000.

Muller, Arno, to Pitney Bowes Inc. System for limiting access to non-volatile memory in electronic postage meters. 4,578,774, Cl. 364-900.000.

Muller, Daniel: *See—*
Armand, Michel; Muller, Daniel; Duval, Michel; and Harvey, Paul-Etienne, 4,578,326, Cl. 429-192.000.

Muller, Hans, to DrM Dr. Muller AG. Method of and filter thickener for thickening of suspensions. 4,578,197, Cl. 210-772.000.

Muller, Hans-Rudolf. Filter cloth for a disk filter. 4,578,192, Cl. 210-486.000.

Muller, Johannes C. A., to U.S. Philips Corporation. VCR with improved fast winding static electricity drain. 4,578,725, Cl. 360-85.000.

Muller, Marcel: *See—*
Furst, Andor; Muller, Marcel; Kerb, Ulrich; and Wiechert, Rudolf, 4,578,475, Cl. 548-126.000.

Muller, Reinhardt: *See—*
Gollub, Erwin; and Muller, Reinhardt, 4,577,988, Cl. 403-140.000.

Muller, Thomas; and Siegemund, Gunter, to Hoechst Aktiengesellschaft. Process for the regeneration of fluorination catalysts. 4,578,369, Cl. 502-36.000.

Muller, Wilhelm, to Postalia GmbH. Device for singling out stacked sheets. 4,577,851, Cl. 271-33.000.

Multifibre Process Limited: *See—*
Lobley, Derek G., 4,578,261, Cl. 423-478.000.

Mundt, Randall S.; and Wyatt, Ray E., to NCR Corporation. Process for forming retrograde dopant distributions utilizing simultaneous outdiffusion of dopants. 4,578,128, Cl. 148-191.000.

Munnion, Derek, to Link Electronics Limited. Camera support assembly. 4,578,708, Cl. 358-229.000.

Murai, Osamu; and Moriyama, Noboru, to Kao Corporation. Emulsion polymerization process for production of α-methylstyrene copolymer. 4,578,441, Cl. 526-216.000.

Murakami, Masanobu; and Miyazaki, Masaaki, to Mitsubishi Denki Kabushiki Kaisha. Device for controlling engine RPM. 4,577,603, Cl. 123-339.000.

Murakami, Shuji: *See—*
Yasuda, Yutaka; Hirata, Yasuo; Murakami, Shuji; Nakamura, Katsuhiro; and Furuya, Yukitsuna, 4,578,800, Cl. 375-106.000.

Murakami, Toshiaki; Enomoto, Yoichi; and Suzuki, Minoru, to Nippon Telephone & Telegraph Public Corporation. Photodetecting device. 4,578,691, Cl. 357-5.000.

Murase, Takao: *See—*
Kato, Nobuhide; and Murase, Takao, 4,578,174, Cl. 204-429.000.

Murasugi, Takashi: *See—*
Niikura, Yasuhiro; Morimoto, Yoshiro; Hamada, Hideo; Suga, Masaaki; and Murasugi, Takashi, 4,577,737, Cl. 192-0.032.

Murayama, Naohiro: *See—*
Sakagami, Teruo; Fujii, Yasufumi; and Murayama, Naohiro, 4,578,445, Cl. 526-292.300.

Murdoch, Iain H.: *See—*
Bray, David J.; Johnson, Peter E.; Marshall, Peter E. G.; Piper, Francis R.; and Murdoch, Iain H., 4,577,490, Cl. 73-40.700.

Murro, Ronald P.: *See—*
Gidge, Lester; and Murro, Ronald P., 4,578,141, Cl. 156-439.000.

Murtz, Robert. Device for cleaning containers. 4,577,651, Cl. 134-111.000.

Musashi Engineering Kabushiki Kaisha: *See—*
Mitani, Tsuneyoshi, 4,578,770, Cl. 364-571.000.

Myers, Daniel N.: *See—*
Cetinkaya, Ismail B.; and Myers, Daniel N., 4,578,366, Cl. 502-6.000.

Myers, Kimbrough I.: *See—*
Granzow, Robert H.; Gupta, Desh B.; and Myers, Kimbrough I., 4,578,567, Cl. 235-380.000.

Myrens Verksted A/S: *See—*
Andersen, Per B.; and Richter, Ole J., 4,577,663, Cl. 138-31.000.

N. Zivy & Cie, S.A.: *See—*
Lowenheck, Konrad, 4,577,512, Cl. 73-862.450.

Naarmann, Herbert: *See—*
Muenstedt, Helmut; and Naarmann, Herbert, 4,578,433, Cl. 525-417.000.

Nabata, Hiroyuki: *See—*
Nagano, Hiroyuki; Takagi, Mitiro; Kubodera, Noboru; Matsunaga, Isao; Nabata, Hiroyuki; Ohba, Yasuhiro; Sakai, Kazushige; Hata, Shun-ichi; and Uchida, Yasumi, 4,578,465, Cl. 544-285.000.

Nabeshima, Kenjiro: *See—*
Tomita, Yukio; Nabeshima, Kenjiro; and Shibamoto, Nobuji, 4,577,564, Cl. 110-110.000.

Nabisco Brands, Inc.: *See—*
Koppa, Daniel A.; and Schaeder, Walter, 4,578,027, Cl. 425-298.000.
Spanier, Henry C., 4,578,275, Cl. 426-302.000.

Nadaskay, Richard J., to International Paper Company. Easy-open pinch closure bag. 4,577,761, Cl. 206-604.000.

Nagafuchi, Kazumasa, to Kisokaseisangyou Co., Ltd. Composite films for protecting documents from being reproduced. 4,578,298, Cl. 428-40.000.

Nagahara, Shuusaku: *See—*
Ozawa, Naoki; Akiyama, Toshiyuki; Nagahara, Shuusaku; Ohba, Shinya; Ando, Haruhisa; and Ozaki, Toshifumi, 4,578,707, Cl. 358-212.000.

Nagami, Hayashi: *See—*
Shimizu, Keizo; Otsu, Shimpei; Fujimura, Toshio; Taniguchi, Yoshisada; and Nagami, Hayashi, 4,578,787, Cl. 369-77.200.

Nagano, Hikoichi: *See—*
Uno, Keiichi; Nagano, Hikoichi; and Ikegami, Tadashi, 4,578,166, Cl. 8-115.520.

Nagano, Hiroyuki; Takagi, Mitiro; Kubodera, Noboru; Matsunaga, Isao; Nabata, Hiroyuki; Ohba, Yasuhiro; Sakai, Kazushige; Hata, Shun-ichi; and Uchida, Yasumi, to Chugai Seiyaku Kabushiki Kaisha. Phenyliperazine derivatives. 4,578,465, Cl. 544-285.000.

Nagaoka Kanaami Kabushiki Kaisha: *See—*
Nagaoka, Tadayoshi, 4,578,248, Cl. 422-310.000.

Nagaoka, Tadayoshi, to Nagaoka Kanaami Kabushiki Kaisha. Distributor/collector assembly. 4,578,248, Cl. 422-310.000.

Nagasawa, Ken: *See—*
Yudate, Kozo; and Nagasawa, Ken, 4,578,177, Cl. 208-45.000.

Nagasuye, Joseph H.: *See—*
Assarsson, Per G.; and Nagasuye, Joseph H., 4,578,353, Cl. 435-161.000.

Nagumo, Ryoichi: *See—*
Sakamoto, Masami; Nagumo, Ryoichi; and Ishihara, Tamio, 4,577,409, Cl. 33-18.100.

Nagy, Charles E. Shoe protector. 4,577,418, Cl. 36-72.00B.

Nagy, Charles S.: *See—*
Granzow, Robert H.; Daulton, Richard H.; Placke, Dale L.; Adelberger, Donald L.; Gross, Jack R.; and Nagy, Charles S., 4,578,009, Cl. 414-43.000.
Placke, Dale L.; Filliman, Mark D.; Granzow, Robert H.; Gross, Jack R.; and Nagy, Charles S., 4,577,763, Cl. 209-534.000.

Nahr, Wolfgang: *See—*
Forner, Siegfried; Langhammer, Karl-Heinz; Pellkofer, Dieter; and Nahr, Wolfgang, 4,577,795, Cl. 228-29.000.

Naka, Junichi: *See—*
Taneda, Kozo; Chiba, Masae; Naka, Junichi; and Watanabe, Shunichi, 4,578,002, Cl. 406-28.000.

Nakada, Naoki: *See—*
Tsukutani, Seiichi; and Nakada, Naoki, 4,578,623, Cl. 318-254.000.

Nakagaki, Shintaro: *See—*
Takanashi, Itsuo; Nakagaki, Shintaro; Miyazaki, Kenichi; and Kuriyama, Takashi, 4,578,699, Cl. 358-44.000.

Nakagawa, Hiroshi; and Miwa, Zenichiro, to Shinko Electric Co., Ltd. Linear pulse motor. 4,578,622, Cl. 318-135.000.

Nakagawa, Kazuyuki: *See—*
Uchida, Minoru; Komastu, Makoto; and Nakagawa, Kazuyuki, 4,578,381, Cl. 514-233.000.

Nakaguchi, Tomoyuki: *See—*
Ito, Sho; Tatsumi, Kenji; Kasahara, Kumio; Nakaguchi, Tomoyuki; Takei, Toshio; and Nakahara, Shojiro, 4,577,863, Cl. 273-26.00R.

Nakahara, Shojiro: *See—*
Ito, Sho; Tatsumi, Kenji; Kasahara, Kumio; Nakaguchi, Tomoyuki; Takei, Toshio; and Nakahara, Shojiro, 4,577,863, Cl. 273-26.00R.

Nakai, Takeshi: *See—*
Ishikawa, Nobuo; Nakai, Takeshi; and Inouye, Yoshio, 4,578,503, Cl. 560-82.000.

Nakaji, Etsuo, to Dainippon Screen Mfg. Co., Ltd. Method of recording an optional number of color separation images in an optional order and in optional positions on a recording medium. 4,578,701, Cl. 358-78.000.

Nakajima, Setsuo: *See—*
Sugisawa, Ko; Shibuki, Masaru; Imada, Imayoshi; Katada, Jun; Yamamoto, Yozo; Nakajima, Setsuo; Kishi, Toshio; and Sugano, Shozo, 4,578,274, Cl. 426-96.000.

Nakajima, Toshio, to Teraoka Seiko Co., Ltd. Cassette type labeler and cassette case. 4,578,140, Cl. 156-384.000.

Nakamura, Katsuhiro: *See—*
Yasuda, Yutaka; Hirata, Yasuo; Murakami, Shuji; Nakamura, Katsuhiro; and Furuya, Yukitsuna, 4,578,800, Cl. 375-106.000.

Nakamura, Keiji, to Nippon Piston Ring Co., Ltd. Journal. 4,578,317, Cl. 428-547.000.

Nakamura, Michio: *See—*
Komatsu, Shigeru; Inoue, Hiroshi; and Nakamura, Michio, 4,577,397, Cl. 29-576.00B.

Nakamura, Taizo; and Kawahara, Katsuyuki, to Kabushiki Kaisha Toshiba. Method for stopping a multi-stage hydraulic machine. 4,578,017, Cl. 415-1.000.

Nakane, Hisashi: *See—*
Hijikata, Isamu; Uehara, Akira; and Nakane, Hisashi, 4,578,559, Cl. 219-121.0PE.

Nakanishi Dental Mfg. Co., Ltd.: *See—*
Shibata, Yuichi; and Baba, Tadashi, 4,578,034, Cl. 433-29.000.

Nakanishi, Mikihiko, to Sakura Color Products Corp. Erasable ink composition. 4,578,117, Cl. 106-20.000.

Nakanishi, Toshiharu: *See—*
Ohigashi, Hiroji; Koga, Keiko; and Nakanishi, Toshiharu, 4,578,442, Cl. 526-255.000.

Nakano, Akihiko; Matsumoto, Hitoshi; Uda, Hiroshi; Komatsu, Yasumasa; Kuribayashi, Kiyoshi; and Ikegami, Seiji, to Matsushita Electric Industrial Co., Ltd. Solar module. 4,578,526, Cl. 136-251.000.

Nakano, Masao: *See—*
Ogawa, Junji; Nakano, Tomio; Nakano, Masao; Tsuge, Norihisa; and Horii, Takashi, 4,578,781, Cl. 365-203.000.

Nakano, Shinji: *See—*
Umemoto, Hirotoshi; Tanabe, Hisaki; Kanakura, Akihiro; and Nakano, Shinji, 4,578,436, Cl. 525-443.000.

Nakano, Tomio: *See—*
Ogawa, Junji; Nakano, Tomio; Nakano, Masao; Tsuge, Norihisa; and Horii, Takashi, 4,578,781, Cl. 365-203.000.
Takemae, Yoshihiro; Nakano, Tomio; and Sato, Kimiaki, 4,578,776, Cl. 365-149.000.

Nakao, Haruki: *See—*
Marukawa, Toshio; Nakao, Haruki; and Mikiya, Toshio, 4,577,626, Cl. 128-64.000.

Nakashima, Kunihiko: *See—*
Nakazawa, Takaaki; Kazaoka, Kenichi; Okazaki, Nobuo; and Nakashima, Kunihiko, 4,578,592, Cl. 307-10.00R.

Nakaso, Katsuzo: *See—*
Miyazaki, Kazuhide; Uemura, Toyohide; and Nakaso, Katsuzo, 4,578,109, Cl. 75-0.50C.

Nakayama, Motohiro: *See—*
Kanamaru, Tatsuya; Nakayama, Motohiro; Ogawa, Yutaka; and Arai, Katutoshi A., 4,578,158, Cl. 204-44.200.

Nakayama, Noriaki: *See—*
Kosemura, Kinjiro; Yamashita, Yoshimi; Nakayama, Noriaki; and Yamamoto, Sumio, 4,578,343, Cl. 430-296.000.

Nakayama, Norio: *See—*
Kitamura, Masao; Nakayama, Norio; Katsura, Ryoei; Ibe, Hidefumi; and Uchida, Shunsuke, 4,578,154, Cl. 204-1.00T.

Nakazawa, Takaaki; Kazaoka, Kenichi; Okazaki, Nobuo; and Nakashima, Kunihiko, to Aisin Seiki Kabushiki Kaisha; and Toyoda Gosei Co., Ltd. Steering wheel assembly with centralized control system. 4,578,592, Cl. 307-10.00R.

Nalco Chemical Company: *See—*
Roe, William J.; and Malito, John T., 4,578,255, Cl. 423-130.000.

Narasimham, Pundi L.: *See—*
Gill, Roger F.; and Narasimham, Pundi L., 4,578,253, Cl. 423-87.000.

Narukawa, Atsushi, to Sharp Kabushiki Kaisha. Apparatus for detecting normal/abnormal mounting of belt-like photosensitive member in copying machine. 4,577,953, Cl. 355-3.0BE.

Narzul, Marcel: *See—*
Urien, Jacques; Bressan, Elie; Danguy, Jacques; and Narzul, Marcel, 4,578,658, Cl. 333-227.000.

Nashimoto, Ryo; and Motodate, Shoji, to Honda Giken Kogyo Kabushiki Kaisha. Coupler connecting device. 4,577,917, Cl. 339-150.00T.

Nashua Corporation: *See—*
Veillette, Norman T.; and Malik, Robert J., 4,578,690, Cl. 346-212.000.

National Semiconductor Corporation: *See—*
Peel, John L., 4,577,394, Cl. 29-576.00W.

National Starch and Chemical Corporation: *See—*
Rossi, Robert D.; and Ray-Chaudhuri, Dilip K., 4,578,444, Cl. 526-288.000.
Schmidt, Robert C., Jr.; and Puletti, Paul P., 4,578,302, Cl. 428-110.000.

Nawa, Hiroyoshi: *See—*
Imai, Kazuhiro; Ogata, Hiroshi; Tanaka, Motoaki; Nawa, Hiroyoshi; and Ishihara, Masami, 4,578,499, Cl. 560-21.000.

Nazarian, Ara W.; and Stupeck, Donald G., to Computer Memories, Inc. Spindle drive control system. 4,578,625, Cl. 318-318.000.

NCR CANADA LTD.-NCR CANADA LTEE: *See—*
Mazumder, Ali T.; and Dumas, Armand M., 4,578,570, Cl. 235-463.000.

NCR Corporation: *See—*
Granzow, Robert H.; Daulton, Richard H.; Placke, Dale L.; Adelberger, Donald L.; Gross, Jack R.; and Nagy, Charles S., 4,578,009, Cl. 414-43.000.
Granzow, Robert H.; Gupta, Desh B.; and Myers, Kimbrough I., 4,578,567, Cl. 235-380.000.
Mundt, Randall S.; and Wyatt, Ray E., 4,578,128, Cl. 148-191.000.
Placke, Dale L.; Filliman, Mark D.; Granzow, Robert H.; Gross, Jack R.; and Nagy, Charles S., 4,577,763, Cl. 209-534.000.

NEC Corporation: *See—*
Hamaguchi, Hiroyuki, 4,578,304, Cl. 428-209.000.
Ikemizu, Hiroshi, 4,577,923, Cl. 339-275.00B.
Yui, Yoshio, 4,578,812, Cl. 382-41.000.

Neefe, Charles W. Method of contouring the edge of contact lenses. 4,578,230, Cl. 264-2.100.

Nehmiz, Peter: *See—*
Behringer, Uwe; Bohlen, Harald; Nehmiz, Peter; and Zapka, Werner, 4,578,587, Cl. 250-492.200.

Nei Canada Limited: *See—*
Browne, John, 4,577,427, Cl. 40-449.000.

Neki, Shigeo; Shinozaki, Nozomu; and Dohi, Takashi, to Matsushita Electric Industrial Co., Ltd. Speed setting arrangement for sewing machines. 4,578,624, Cl. 318-305.000.

Nekozuka, Masamichi: *See—*
Oota, Makoto; Nekozuka, Masamichi; and Yagishita, Kikuji, 4,578,672, Cl. 340-702.000.

Nenninger, Klaus: *See—*
van Rijckevorsel, Rainer; Kasielke, Joachim; Macho, Heinz; Schafer, Peter; and Nenninger, Klaus, 4,578,716, Cl. 360-1.000.

Nestler, Heinz: *See—*
Barfurth, Dieter; and Nestler, Heinz, 4,578,487, Cl. 556-40.000.

Netsch, Miles. Bracket and tooth assembly for planter. 4,577,568, Cl. 111-7.000.

Neumann, Ulrich: *See—*
Siedel, Joachim; Neumann, Ulrich; Ziegenhorn, Joachim; Batz, Hans-Georg; Lenz, Helmut; Pautz, Brigitte; and Albert, Winfried, 4,578,361, Cl. 436-547.000.

Neumuenstersche Maschinen- und Apparatebau Gesellschaft mbH (NEUMAG): *See—*
Bauch, Ernst, 4,577,537, Cl. 83-343.000.

New Products I, Inc.: *See—*
Geschwender, Robert C., 4,577,767, Cl. 211-190.000.

New York Blood Center, Inc.: *See—*
Vnek, John; Prince, Alfred M.; and Ikram, Hafeez, 4,578,217, Cl. 260-112.50R.

Newton, Charles L., to Air Products and Chemicals, Inc. Sectioned bubble tray distillation over a wide range of feed composition and bubble tray loading. 4,578,153, Cl. 203-99.000.

NGK Insulators, Ltd.: *See—*
Kato, Nobuhide; and Murase, Takao, 4,578,174, Cl. 204-429.000.
Morita, Tetuya; Wakasa, Akinori; Ogawa, Yutaka; and Ogasawara, Takayuki, 4,577,600, Cl. 123-270.000.

NGK Spark Plug Co.: *See—*
Yamada, Tetsusyo; and Hirate, Shintaro, 4,578,172, Cl. 204-412.000.

NGK Spark Plug Co., Ltd.: *See—*
Tanaka, Hiroshi; and Baba, Hidetoshi, 4,578,087, Cl. 51-295.000.
Yamada, Tetsusyo; and Hirate, Shintaro, 4,578,171, Cl. 204-406.000.

Nguyen, Harry V.: *See—*
Gionet, Daniel C.; and Nguyen, Harry V., 4,577,437, Cl. 49-25.000.

Nguyen, Tuan A., to Ball Corporation. Buckle resistance for metal container closures. 4,577,774, Cl. 220-66.000.

Nicholson, L. Todd: *See—*
Mayer, John F.; Langdon, Nick H.; Cook, Stuart A.; Nicholson, L. Todd; and Belcher, John R., 4,578,045, Cl. 446-330.000.

Nicol, David A.: *See—*
Clark, Harold R.; and Nicol, David A., 4,578,101, Cl. 65-109.000.

Nicolet Instrument Corporation: *See—*
Gordon, James F., 4,578,683, Cl. 346-49.000.

Niedermayer, Eleonora: *See—*
Csizer, Zoltan; Sikos, Karoly; Bacskai, Laszlo; Joo, Istvan; Niedermayer, Eleonora; Rethy, Lajos; and Zsidai, Jozsef, 4,578,270, Cl. 424-92.000.

Niikura, Yasuhiro; Morimoto, Yoshiro; Hamada, Hideo; Suga, Masaaki; and Murasugi, Takashi, to Nissan Motor Co., Ltd. Lock-up torque converter and method for controlling clutch slip in lock-up torque converter. 4,577,737, Cl. 192-0.032.

Nike, Inc.: *See—*
Frederick, Edward C., 4,578,769, Cl. 364-565.000.

Niki, Akira; and Iwasaki, Hirofumi, to Asahi Kasei Kogyo Kabushiki Kaisha. Nonwoven sheet having improved heat deterioration resistance and high elongation. 4,578,307, Cl. 428-288.000.

Niki, Hazime: *See—*
Oguro, Tadayuki; Yoshimoto, Teturo; and Niki, Hazime, 4,577,733, Cl. 188-217.000.

Nikki Co., Ltd.: *See—*
Marukawa, Toshio; Nakao, Haruki; and Mikiya, Toshio, 4,577,626, Cl. 128-64.000.

Nilsson, Kent: *See—*
Lindstrom, Lars; and Nilsson, Kent, 4,578,562, Cl. 219-125.100.

Nippe, Burkhard: *See—*
Greiner, Joachim; and Nippe, Burkhard, 4,578,280, Cl. 427-47.000.

Nippon Kokan Kabushiki Kaisha: *See—*
Kizaki, Kanji; Ishii, Hajime; Taguchi, Noboru; and Kuwamoto, Hiroshi, 4,577,480, Cl. 72-8.000.
Wakabayashi, Senzo, 4,577,785, Cl. 222-598.000.

Nippon Notion Kogyo Co., Ltd.: *See—*
Kasai, Kazumi, 4,577,377, Cl. 24-625.000.

Nippon Oil and Fats Company Limited: *See—*
Kuroyama, Yutaka; and Araki, Masatada, 4,578,260, Cl. 423-446.000.

Nippon Paint Co., Ltd.: *See—*
Umemoto, Hirotoshi; Tanabe, Hisaki; Kanakura, Akihiro; and Nakano, Shinji, 4,578,436, Cl. 525-443.000.

Nippon Piston Ring Co., Ltd.: *See—*
Nakamura, Keiji, 4,578,317, Cl. 428-547.000.

Nippon Rotary Nozzle Co., Ltd.: *See—*
Wakabayashi, Senzo, 4,577,785, Cl. 222-598.000.

Nippon Seiko Kabushiki Kaisha: *See—*
Saito, Naoki, 4,577,715, Cl. 180-79.100.

Nippon Steel Corporation: *See—*
Kanamaru, Tatsuya; Nakayama, Motohiro; Ogawa, Yutaka; and Arai, Katutoshi A., 4,578,158, Cl. 204-44.200.

Nippon Telephone & Telegraph Public Corporation: *See—*
Murakami, Toshiaki; Enomoto, Yoichi; and Suzuki, Minoru, 4,578,691, Cl. 357-5.000.

Nippon Zeon Co., Ltd.: *See—*
Joh, Yasushi, 4,578,077, Cl. 623-3.000.

Nippondenso Co., Ltd.: *See—*
Sogabe, Ichita, 4,577,832, Cl. 251-129.110.

Nirasawa, Mitsuharu: *See—*
Seshimoto, Osamu; and Nirasawa, Mitsuharu, 4,578,173, Cl. 204-416.000.

Nishida, Susumu; Kimura, Seiji; Kobayashi, Akio; and Fuchigami, Tadashi, to Sanyo Electric Co., Ltd. Refrigerator cabinet. 4,577,915, Cl. 312-214.000.

Nishikawa, Motoaki: *See—*
Kiyoto, Sumio; Nishikawa, Motoaki; Iwami, Morita; Terano, Hiroshi; and Kohsaka, Masanobu, 4,578,271, Cl. 424-117.000.
Nishino, Hiroshi; and Aibe, Toshio, to Takeda Chemical Industries, Ltd. Process for removal of poisonous gases. 4,578,256, Cl. 423-210.000.
Nishino, Keigo: *See—*
Irikura, Tsutomu; Nishino, Keigo; Suzue, Seigo; and Ikeda, Toshiya, 4,578,392, Cl. 514-300.000.
Nishio, Shigeru, to Aisin Seiki Kabushiki Kaisha. Control valve device. 4,577,607, Cl. 123-516.000.
Nishizawa, Akira: *See—*
Hirai, Seiichi; Nishizawa, Akira; and Otsuka, Nobuyuki, 4,578,048, Cl. 464-111.000.
Nissan Motor Company, Limited: *See—*
Hara, Yoichi; and Seimiya, Yasuo, 4,577,604, Cl. 123-397.000.
Hayashi, Yoshimasa; Kubozuka, Takao; and Hirano, Yoshinori, 4,577,594, Cl. 123-41.080.
Kanamori, Hiroshi, 4,578,292, Cl. 428-31.000.
Matsui, Yukio; and Uchiyama, Mitsuo, 4,578,164, Cl. 204-129.550.
Niikura, Yasuhiro; Morimoto, Yoshiro; Hamada, Hideo; Suga, Masaaki; and Murasugi, Takashi, 4,577,737, Cl. 192-0.032.
Seki, Shojiro, 4,577,439, Cl. 49-352.000.
Nisshin Spinning Co., Ltd.: *See—*
Oguro, Tadayuki; Yoshimoto, Teturo; and Niki, Hazime, 4,577,733, Cl. 188-217.000.
Nitto Kagaku Kogyu Kabushiki Kaisha: *See—*
Ashina, Yoshiro; Fujita, Takeyuki; Fukatsu, Michio; and Yagi, Junsuke, 4,578,516, Cl. 564-479.000.
Nitzsche, Raymond P.; and Geiger, Kenneth E., to Becton, Dickinson and Co. Reusable breach loading target pressure activated lancet firing device. 4,577,630, Cl. 128-314.000.
NL Industries, Inc.: *See—*
Pober, Kenneth W., 4,578,456, Cl. 530-502.000.
NL Petroleum Products Limited: *See—*
Barr, John D., 4,577,706, Cl. 175-329.000.
Noda, Sakuo: *See—*
Takita, Hitoshi; Noda, Sakuo; Mukaida, Yutaka; and Kobayashi, Hidetoshi, 4,578,404, Cl. 514-567.000.
Noda, Shinji: *See—*
Tanaka, Yasunori; and Noda, Shinji, 4,577,362, Cl. 15-256.500.
Noguchi, Masaru, to Fuji Photo Film Co., Ltd. Light beam scanning device. 4,578,577, Cl. 250-235.000.
Nomura, Kazuhiko; Kazuta, Hisashi; and Kimura, Hiroshi, to Yamaha Hatsudoki Kabushiki Kaisha. Motorcycle fuel system with flow from a main tank through a lower auxiliary tank to its engine. 4,577,719, Cl. 180-219.000.
Norchem, Inc.: *See—*
Pullukat, Thomas J.; and Hoff, Raymond E., 4,578,440, Cl. 526-128.000.
Nordica S.p.A.: *See—*
Sartor, Mariano, 4,577,421, Cl. 36-119.000.
Nordlof, Richard D. Stock advancing apparatus with dancer operated potentiometer speed control. 4,578,621, Cl. 318-6.000.
Noristan Limited: *See—*
Fourie, Theunis G.; Dekker, Theodor G.; Snyckers, Friedrich O.; and van der Schyf, Cornelis J., 4,578,520, Cl. 568-315.000.
Northern Telecom Limited: *See—*
Garner, John N., 4,577,403, Cl. 29-872.000.
Northwestern University: *See—*
Goldberg, Erwin; and Wheat, Thomas E., 4,578,219, Cl. 260-112.50R.
Norton Christensen, Inc.: *See—*
Aumann, James T., 4,577,704, Cl. 175-107.000.
Norton, Peter. Servo steering system. 4,577,716, Cl. 180-79.100.
Notari, Bruno: *See—*
Buonomo, Franco; Bellussi, Giuseppe; and Notari, Bruno, 4,578,161, Cl. 204-102.000.
Noyori, Ryoji; Suzuki, Masaaki; Yanagisawa, Akira; and Kurozumi, Seizi, to Teijin Limited. Process for preparing prostacyclins. 4,578,482, Cl. 549-214.000.
Nozoe, Toshiro: *See—*
Miki, Yutaka; Nozoe, Toshiro; and Uchimura, Kiyoshi, 4,578,698, Cl. 358-22.000.
Nuerrenbach, Axel: *See—*
Frickel, Fritz-Frieder; and Nuerrenbach, Axel, 4,578,498, Cl. 560-8.000.
Numa Corporation: *See—*
Williams, Richard E., 4,578,571, Cl. 235-472.000.
Nunn, John O., Jr.; and Nunn, John O., Sr. Refrigeration system with refrigerant pre-cooler. 4,577,468, Cl. 62-113.000.
Nunn, John O., Sr.: *See—*
Nunn, John O., Jr.; and Nunn, John O., Sr., 4,577,468, Cl. 62-113.000.
Nusbaumer, Kay T.; and McIntosh, Bruce D., to PHD, Inc. Gripper apparatus. 4,577,898, Cl. 294-88.000.
O.M.C. s.n.c. di Walter & Dante Cavalli: *See—*
Cavalli, Walter, 4,577,532, Cl. 74-841.000.
Occelli, Luciano. Method and device for mixing under vacuum mixtures used in dental, goldsmith fields or the like. 4,577,973, Cl. 366-139.000.
Ochs, Charles S.; and Siler, Harold L., to Anchor Hocking Corporation. Air conveying hopper. 4,578,001, Cl. 406-10.000.
O'Connor, James J., to Kimberly-Clark Corporation. Incontinent garment, catamenial device or wound dressing. 4,578,066, Cl. 604-366.000.
Odagiri, Masaru: *See—*
Suzuki, Takashi; Fujimori, Hiroshi; and Odagiri, Masaru, 4,578,729, Cl. 360-134.000.
Ode, Bengt: *See—*
Borrman, Bo; Hellman, Erik; Lundin, Nils; and Ode, Bengt, 4,578,241, Cl. 376-446.000.
O'Driscoll, Peter F., to United States of America, Air Force. Dome restraint assembly for rocket motors. 4,577,542, Cl. 86-20.00D.
Oesterle, Hermann F.: *See—*
Gunther, Horst H.; and Oesterle, Hermann F., 4,578,547, Cl. 200-11.0DA.
Oesterle, Kurt M. Device for performing micromechanical measurements of the surface of test objects. 4,577,493, Cl. 73-81.000.
Officine Savio S.p.A.: *See—*
Speranzin, Claudio; Badiali, Roberto; and Bertoli, Luciano, 4,577,459, Cl. 57-22.000.
Ogasawara, Takayuki: *See—*
Morita, Tetuya; Wakasa, Akinori; Ogawa, Yutaka; and Ogasawara, Takayuki, 4,577,600, Cl. 123-270.000.
Ogata, Hiroshi: *See—*
Imai, Kazuhiro; Ogata, Hiroshi; Tanaka, Motoaki; Nawa, Hiroyoshi; and Ishihara, Masami, 4,578,499, Cl. 560-21.000.
Ogawa, Junji; Nakano, Tomio; Nakano, Masao; Tsuge, Norihisa; and Horii, Takashi, to Fujitsu Limited. MIS transistor circuit. 4,578,781, Cl. 365-203.000.
Ogawa, Yutaka: *See—*
Kanamaru, Tatsuya; Nakayama, Motohiro; Ogawa, Yutaka; and Arai, Katutoshi A., 4,578,158, Cl. 204-44.200.
Morita, Tetuya; Wakasa, Akinori; Ogawa, Yutaka; and Ogasawara, Takayuki, 4,577,600, Cl. 123-270.000.
Oguro, Tadayuki; Yoshimoto, Teturo; and Niki, Hazime, to Nisshin Spinning Co., Ltd.; and Sumitomo Heavy Industries Ltd. Drum brake or clutch. 4,577,733, Cl. 188-217.000.
O'Hara, Almerin C., Jr., to International Business Machines Corporation. Dynamically reprogrammable array logic system. 4,578,771, Cl. 364-716.000.
Ohba, Shinya: *See—*
Ozawa, Naoki; Akiyama, Toshiyuki; Nagahara, Shuusaku; Ohba, Shinya; Ando, Haruhisa; and Ozaki, Toshifumi, 4,578,707, Cl. 358-212.000.
Ohba, Yasuhiro: *See—*
Nagano, Hiroyuki; Takagi, Mitiro; Kubodera, Noboru; Matsunaga, Isao; Nabata, Hiroyuki; Ohba, Yasuhiro; Sakai, Kazushige; Hata, Shun-ichi; and Uchida, Yasumi, 4,578,465, Cl. 544-285.000.
Ohigashi, Hiroji; Koga, Keiko; and Nakanishi, Toshiharu, to Toray Industries, Inc. Piezoelectric polymeric material, a process for producing the same and an ultrasonic transducer utilizing the same. 4,578,442, Cl. 526-255.000.
Ohmura, Tadayoshi: *See—*
Kawata, Hiroitsu; Ohmura, Tadayoshi; Hasumi, Shunji; Konno, Yutaka; Aruga, Masayoshi; Tashiro, Seiki; Konno, Toshimitsu; and Iwai, Ken, 4,578,391, Cl. 514-256.000.
Ohnishi, Haruo; Yamaguchi, Kazuo; Suzuki, Yasuo; and Mochida, Nobuo, to Mochida Pharmaceutical Co., Ltd. Therapeutic composition and method for treatment of cardiovascular diseases. 4,578,400, Cl. 514-460.000.
Ohno, Kouzin, to Takara Co., Ltd. Reversibly transformable toy block assembly. 4,578,046, Cl. 446-376.000.
Ohno, Shigeru; Kishimoto, Shinzo; Ikegawa, Akihiko; and Yagihara, Morio, to Fuji Photo Film Co., Ltd. Method for processing color photographic light-sensitive material. 4,578,345, Cl. 430-393.000.
Ohta, Hiroshi; Abe, Shinji; and Fukushima, Kiyoto, to TDK Corporation. Magnetic recording medium and method for manufacture thereof. 4,578,314, Cl. 428-403.000.
Ohtsu, Takaji: *See—*
Soneda, Mitsuo; Fukuzawa, Manami; and Ohtsu, Takaji, 4,578,597, Cl. 307-265.000.
Oil Process Systems, Inc.: *See—*
Friedman, Bernard, 4,578,196, Cl. 210-765.000.
Oil Rite Corporation: *See—*
Gruett, Donald G., 4,577,728, Cl. 184-7.400.
Oiles Industry Co., Ltd.: *See—*
Kitta, Toshiyuki; Abe, Wataru; and Takase, Tadaaki, 4,577,443, Cl. 52-230.000.
Oka, Tateki, to Minolta Camera Kabushiki Kaisha. Dry process for developing electrostatic latent images with a developer comprising two kinds of magnetic carriers having different physical structure. 4,578,337, Cl. 430-107.000.
Okada, Keiko: *See—*
Furukawa, Hisao; Okada, Keiko; Kawamura, Joe; and Kato, Yasushi, 4,578,417, Cl. 524-378.000.
Okahashi, Kazuo: *See—*
Takahashi, Ichiro; Okamoto, Goro; and Okahashi, Kazuo, 4,577,664, Cl. 138-149.000.
Okamiya, Yoshiaki: *See—*
Yamaguchi, Hisao; Kanno, Hideo; Okamiya, Yoshiaki; and Sunakawa, Kiyotaka, 4,578,395, Cl. 514-356.000.
Okamoto, Goro: *See—*
Takahashi, Ichiro; Okamoto, Goro; and Okahashi, Kazuo, 4,577,664, Cl. 138-149.000.
Okanobu, Taiwa, to Sony Corporation. FM stereo multiplex demodulator. 4,578,807, Cl. 381-7.000.
Okazaki, Nobuo: *See—*
Nakazawa, Takaaki; Kazaoka, Kenichi; Okazaki, Nobuo; and Nakashima, Kunihiko, 4,578,592, Cl. 307-10.00R.

Okita, Tsutomu: *See—*
Kato, Mikihiko; Okita, Tsutomu; Komine, Shigeo; Okuzawa, Yasutoshi; and Morita, Kazuhiko, 4,578,299, Cl. 428-65.000.
Oksman, Norman H.; Talmage, Joseph M.; and Wells, Henry J., to Warner-Lambert Company. Collection of specimens and detection of occult blood therein. 4,578,358, Cl. 436-66.000.
Oksman, Norman H.; Talmage, Joseph M.; and Wells, Henry J., to Warner-Lambert Company. Occult-blood detection. 4,578,359, Cl. 436-66.000.
Okugawa, Yoshio, to Hiraoka Kogyo Kabushiki Kaisha. Apparatus for holding unoperating needle bar of braiding machine. 4,577,569, Cl. 112-83.000.
Okumura, Takeo: *See—*
Fujii, Kozo; and Okumura, Takeo, 4,578,216, Cl. 252-542.000.
Okuno, Takuo, to Canon Kabushiki Kaisha. Light beam printer. 4,578,688, Cl. 346-157.000.
Okura, Eiji, to Diesel Kiki Co., Ltd. Device for detecting overcharge of refrigerant in air conditioner for automobiles. 4,577,469, Cl. 62-126.000.
Okura, Zenichi: *See—*
Urano, Fumio; Okura, Zenichi; and Kawasaki, Masahiro, 4,577,952, Cl. 354-455.000.
Okuzawa, Yasutoshi: *See—*
Kato, Mikihiko; Okita, Tsutomu; Komine, Shigeo; Okuzawa, Yasutoshi; and Morita, Kazuhiko, 4,578,299, Cl. 428-65.000.
Oliff, James R., to Mead Corporation, The. Panel interlocking means. 4,577,799, Cl. 229-40.000.
Olin Corporation: *See—*
Mahulikar, Deepak; and Shapiro, Eugene, 4,578,320, Cl. 428-674.000.
Miles, Ronald C.; Justice, David D.; and Dotson, Ronald L., 4,578,159, Cl. 204-98.000.
Moore, Sanders H.; Smith, Maurice R.; and Cochran, Harvey B., 4,578,195, Cl. 210-679.000.
Watson, William G., 4,577,676, Cl. 164-468.000.
Winter, Joseph; and Pryor, Michael J., 4,577,925, Cl. 350-96.230.
Oliva, Ambro: *See—*
Bosteels, Michel; and Oliva, Ambro, 4,577,658, Cl. 137-599.000.
Oliver, Colin C., to EMI Limited. Radiography. 4,578,801, Cl. 378-19.000.
Oliver, John P. Downstream sealing device. 4,577,834, Cl. 251-175.000.
Oliver, Stewart W.; and Cosgrove, John, to International Teldata Corp. Centerpoint automatic meter reading system. 4,578,536, Cl. 179-2.0AM.
Olsen, Donald A.; and Eacobacci, Michael J., to Helix Technology Corporation. Oil free vacuum system. 4,577,465, Cl. 62-55.500.
Olshausen, Michael C. Accessory lock and article storage device for bicycles and the like. 4,577,477, Cl. 70-58.000.
Olsson, Karl-Erik, to ASEA AB. Semiconductor valve. 4,578,745, Cl. 363-68.000.
Olympus Optical Co., Ltd.: *See—*
Toda, Akitoshi; and Mimura, Yoshiyuki, 4,578,332, Cl. 430-55.000.
Omae, Yoshihiro; Ishikawa, Kunio; Fukao, Takahisa; and Yoshida, Katsushige, to Mitsubishi Chemical Industries, Ltd. Method and apparatus for repairing a wall of coke oven. 4,577,385, Cl. 29-402.180.
OMI International Corporation: *See—*
Crotty, David E., 4,578,122, Cl. 148-6.200.
Omure, Yukio: *See—*
Hisamoto, Iwao; and Omure, Yukio, 4,578,209, Cl. 252-143.000.
Ona, Isao: *See—*
Kakinoki, Hideo; and Ona, Isao, 4,578,084, Cl. 8-115.610.
Onopchenko, Anatoli; and Sabourin, Edward T., to Gulf Research & Development Company. Tetraalkylsilane synthetic fluids. 4,578,497, Cl. 556-479.000.
Oota, Makoto; Nekozuka, Masamichi; and Yagishita, Kikuji, to Mitsubishi Denki Kabushiki Kaisha. Color liquid crystal display device. 4,578,672, Cl. 340-702.000.
Optical Coating Laboratory, Inc.: *See—*
Rancourt, James D.; and Beauchamp, William T., 4,578,527, Cl. 136-256.000.
Optical Systems International, Inc.: *See—*
Frieder, Philip M.; and de Rojas, Edward, 4,577,942, Cl. 351-159.000.
Opto Systems, Inc.: *See—*
Wheeler, Jay A.; and Willmore, James A., 4,578,576, Cl. 250-214.00A.
Orazi, Paul. Wing assemblies for aircraft. 4,577,815, Cl. 244-39.000.
ORC Manufacturing Co., Ltd.: *See—*
Yazaki, Yoshio, 4,577,959, Cl. 355-67.000.
O'Rear, Jacques G.: *See—*
Griffith, James R.; and O'Rear, Jacques G., 4,578,508, Cl. 560-221.000.
Ortho Diagnostics, Inc.: *See—*
Hansen, William P., Jr., 4,577,964, Cl. 356-39.000.
Ortwein, Hermann, to Clouth Summiwerke Aktiengesellschaft. Elastomeric mounting for railway rail with differently angled flanks. 4,577,801, Cl. 238-283.000.
Osborn, Jeffrey G.: *See—*
Everhart, Joseph R.; and Osborn, Jeffrey G., 4,578,531, Cl. 178-22.080.
Oscar Mayer Foods Corporation: *See—*
Hustad, Gerald O.; Griesbach, Ray H.; and Anderson, James, 4,577,757, Cl. 206-461.000.
Oshefsky, Daniel J.; Gavronski, Paul A.; Vogt, Robert E.; and Rajala, Gregory J., to Kimberly-Clark Corporation. Method and apparatus for applying discrete strips to a web of material. 4,578,133, Cl. 156-164.000.
Oswald, Max R.: *See—*
McIntyre, James A.; Phillips, Robert F.; and Oswald, Max R., 4,578,162, Cl. 204-107.000.
Otsu, Shimpei: *See—*
Shimizu, Keizo; Otsu, Shimpei; Fujimura, Toshio; Taniguchi, Yoshisada; and Nagami, Hayashi, 4,578,787, Cl. 369-77.200.
Otsuka Kagaku Kabushiki Kaisha: *See—*
Imai, Tetsuya, 4,578,107, Cl. 71-92.000.
Otsuka, Nobuyuki: *See—*
Hirai, Seiichi; Nishizawa, Akira; and Otsuka, Nobuyuki, 4,578,048, Cl. 464-111.000.
Otsuka Pharmaceutical Co., Ltd.: *See—*
Uchida, Minoru; Komastu, Makoto; and Nakagawa, Kazuyuki, 4,578,381, Cl. 514-233.000.
Ott-A-Matic, Inc.: *See—*
Ott, Kenneth A., 4,577,399, Cl. 29-733.000.
Ott, Kenneth A., to Ott-A-Matic, Inc. Commutator placing machine. 4,577,399, Cl. 29-733.000.
Otteson, Kenneth M.: *See—*
Dawson, Daniel J.; and Otteson, Kenneth M., 4,578,515, Cl. 564-215.000.
Ouchi, Isao; and Yusa, Hideo, to Kureha Kagaku Kogyo Kabushiki Kaisha. Heat-resistant laminates. 4,578,294, Cl. 428-35.000.
Outboard Marine Corporation: *See—*
Donohue, James A., 4,577,609, Cl. 123-602.000.
DuBois, Chester G.; and Flaig, John D., 4,577,608, Cl. 123-583.000.
Hall, Charles B., 4,578,039, Cl. 440-61.000.
Ovard, John C. Splash bar method and apparatus. 4,578,227, Cl. 261-111.000.
Owen, David J., to Imperial Chemical Industries PLC. Containers. 4,577,803, Cl. 239-690.000.
Owens-Corning Fiberglas Corporation: *See—*
Schuster, Gary B. A., 4,578,362, Cl. 501-17.000.
Owens-Illinois, Inc.: *See—*
Go, Santos W., deceased; and Jabarin, Saleh A., 4,577,768, Cl. 215-1.00C.
Jabarin, Saleh A., 4,578,295, Cl. 428-35.000.
Oy Wartsila AB: *See—*
Eriksson, Runar, 4,577,577, Cl. 114-120.000.
Lindqvist, Gustav; and Juurmaa, Kimmo, 4,578,000, Cl. 405-211.000.
Ozaki, Toshifumi: *See—*
Ozawa, Naoki; Akiyama, Toshiyuki; Nagahara, Shuusaku; Ohba, Shinya; Ando, Haruhisa; and Ozaki, Toshifumi, 4,578,707, Cl. 358-212.000.
Ozawa, Naoki; Akiyama, Toshiyuki; Nagahara, Shuusaku; Ohba, Shinya; Ando, Haruhisa; and Ozaki, Toshifumi, to Hitachi, Ltd. Method of reducing vertical smears of a solid state image sensor. 4,578,707, Cl. 358-212.000.
P. D. George Co., The: *See—*
Biorcio, Luciano; and Mensi, Carlo, 4,578,312, Cl. 428-336.000.
P. L. Porter Company: *See—*
Porter, Clyde R., 4,577,730, Cl. 188-67.000.
PA Incorporated: *See—*
Moake, Gordon L.; and Milewits, Marvin, 4,578,642, Cl. 324-160.000.
Paek, Un C.; and Schroeder, Charles M., to AT&T Technologies, Inc. Apparatus for controlling lightguide fiber tension during drawing. 4,578,098, Cl. 65-13.000.
Pagliaro, Robert H., Jr.: *See—*
Corboy, John F., Jr.; Jastrzebski, Lubomir L.; Blackstone, Scott C.; and Pagliaro, Robert H., Jr., 4,578,142, Cl. 156-612.000.
Paillart, Philippe: *See—*
Seigneur, Emile; and Paillart, Philippe, 4,577,916, Cl. 312-257.00R.
Pandeya, Prakash N.; and Chu, Tsuwei, to Carrier Corporation. Reversible rotating vane rotary compressor having a movable supplemental suction port. 4,577,472, Cl. 62-324.600.
Panster, Peter; and Kleinschmit, Peter, to Degussa Aktiengesellschaft. Polymeric metal-amine complex compounds, processes for their preparation and use. 4,578,496, Cl. 556-479.000.
Pantani, Jean-Pierre: *See—*
Delaporte, Francois-Xavier; Lebesnerais, Gerard M.; and Pantani, Jean-Pierre, 4,578,695, Cl. 357-48.000.
Parente, Robert F.: *See—*
Mee, John L.; and Parente, Robert F., 4,578,635, Cl. 324-62.000.
Parker-Hannifin Corporation: *See—*
Moreiras, Luis, 4,577,485, Cl. 72-402.000.
Parker, Robert R.; and Rattan, Dev R., to Bell & Howell Company. Control arrangement and method for video tape recorder. 4,578,718, Cl. 360-10.300.
Parl, Fritz F.: *See—*
Bradley, Charles A.; Benge, Herman; Parl, Fritz F.; and Seebaugh, William R., 4,577,514, Cl. 73-863.010.
Pascucci, Gregory A.; and Kucharski, Paul G., to Johnson Service Company. Method and apparatus for communicating digital signals over telephone lines. 4,578,538, Cl. 179-2.0DP.
Pastor, Ricardo C.; and Robinson, Morton, to Hughes Aircraft Company. Method for preparing ultra-pure zirconium and hafnium tetrafluorides. 4,578,252, Cl. 423-76.000.
Pate, Harold T.: *See—*
Borsh, Richard J.; Ripley, Robert W.; and Pate, Harold T., 4,578,528, Cl. 174-65.00G.
Patel, Jayendrakumar I. Endoscope having novel proximate and distal portions. 4,577,621, Cl. 128-4.000.

Patenver AG: *See—*
Frei, Peter, 4,577,727, Cl. 182-128.000.
Patton, Larry. Hydromassage and whirlpool bath. 4,577,624, Cl. 128-40.000.
Pautz, Brigitte: *See—*
Siedel, Joachim; Neumann, Ulrich; Ziegenhorn, Joachim; Batz, Hans-Georg; Lenz, Helmut; Pautz, Brigitte; and Albert, Winfried, 4,578,361, Cl. 436-547.000.
Peabody Myers Corporation: *See—*
Schmidt, Ronald L.; and Shaddock, Roland E., 4,578,198, Cl. 210-780.000.
Pearlman, Jay S.; and Shannon, John P., to Maxwell Laboratories, Inc. Transmission line transmitting energy to load in vacuum chamber. 4,578,805, Cl. 378-119.000.
Pecheux, Jean C., to Compagnie Generale de Materiel Orthopedique. Splint mobilizing an upper limb. 4,577,623, Cl. 128-25.00R.
Peehs, Martin: *See—*
Assmann, Helmut; Dichtjar, Gerhard; Dorr, Wolfgang; Maier, Georg; Mathieu, Viktor; and Peehs, Martin, 4,578,229, Cl. 264-0.500.
Peel, John D.; and Knight, Paul A., to Beloit Corporation. Cyclone separators. 4,578,199, Cl. 210-788.000.
Peel, John L., to National Semiconductor Corporation. Reduction of field oxide encroachment in MOS fabrication. 4,577,394, Cl. 29-576.00W.
Pejsa, Jane H., to Honeywell Inc. Energy submetering system. 4,577,977, Cl. 374-39.000.
Pellegrino, Thomas P., to Molex Incorporated. Connector polarization method. 4,577,404, Cl. 29-874.000.
Pellico, Michael A.; and Montgomery, Robert E., to Laclede Professional Products, Inc. Di-enzymatic dentifrice. 4,578,265, Cl. 424-50.000.
Pellkofer, Dieter: *See—*
Forner, Siegfried; Langhammer, Karl-Heinz; Pellkofer, Dieter; and Nahr, Wolfgang, 4,577,795, Cl. 228-29.000.
Pelloux-Gervais, Pierre: *See—*
Faudou, Jean-Yves; and Pelloux-Gervais, Pierre, 4,577,386, Cl. 29-455.00R.
Peloggio, Alessandro, to Exacta S.p.A. Precision-stitch sewing machine. 4,577,573, Cl. 112-318.000.
Penn Engineering & Manufacturing Corp.: *See—*
Swanstrom, Kenneth A., 4,577,402, Cl. 29-840.000.
Pentith, Gerald R. O., to Continental Conveyor & Equipment Co., Inc. Frictional drive means and method for driving frictional rollers. 4,577,749, Cl. 198-805.000.
Perkin-Elmer Corporation, The: *See—*
Wu, Frederick Y., 4,578,590, Cl. 250-548.000.
Permelec Electrode Ltd.: *See—*
Asano, Hiroshi; Shimamune, Takayuki; and Hirao, Kazuhiro, 4,578,160, Cl. 204-98.000.
Perrin, David P.: *See—*
Siemers, Paul A.; Kopp, Robert W.; Jackson, Melvin R.; Duke, Steven R.; Perrin, David P.; and Liu, Ying H., 4,577,431, Cl. 42-76.00A.
Perry, John W., to BEI Electronics, Inc. Digital time fuze method and apparatus. 4,577,561, Cl. 102-215.000.
Persinotti, Gary W., to Motorola, Inc. Wide area coverage radio communication system and method. 4,578,815, Cl. 455-15.000.
Personal Diagnostics, Inc.: *See—*
Meserol, Peter M., 4,577,970, Cl. 356-440.000.
Personal Products Company: *See—*
Holtman, Dennis C., 4,578,070, Cl. 604-378.000.
Peterson, David R., to Advanced Micro Devices, Inc. Fabrication technique for integrated circuits. 4,577,392, Cl. 29-571.000.
Peterson, Steven H.; and Jackovitz, John F., to Westinghouse Electric Corp. Process for separation of zirconium from hafnium. 4,578,165, Cl. 204-157.750.
Peterson, Walter E. Thermally insulated holder for a single beverage can. 4,577,474, Cl. 62-457.000.
Petig Corporation: *See—*
Diesner, Willi, 4,577,665, Cl. 139-431.000.
Petit, Raymond, to Guery S.A. Device for discharging pulverulent products contained in a silo. 4,578,012, Cl. 414-310.000.
Petrini, Roland; Pradier, Serge; and Mabboux, Michel, to Salomon S.A. Ski boot. 4,577,420, Cl. 36-117.000.
Petroff, Pierre M.: *See—*
Gossard, Arthur C.; Miller, Robert C.; and Petroff, Pierre M., 4,578,127, Cl. 148-175.000.
Petrolite Corporation: *See—*
Quinlan, Patrick M., 4,578,243, Cl. 422-7.000.
Peyre, Henri: *See—*
Bardin, Roland; Bernard, Jean; Peyre, Henri; and Viodet, Patrice, 4,577,887, Cl. 280-628.000.
Pfeuffer, Donald F.: *See—*
Mayer, Edward F.; and Pfeuffer, Donald F., 4,577,955, Cl. 355-15.000.
Pfister GmbH: *See—*
Hafner, Hans W., 4,577,519, Cl. 74-5.00F.
Pfizer Inc.: *See—*
Cannon, John J., 4,578,354, Cl. 435-178.000.
Pharmacontrol Corp.: *See—*
Cosgrove, Robert J., Jr.; and Smolen, Victor F., 4,578,244, Cl. 422-65.000.
PHD, Inc.: *See—*
Nusbaumer, Kay T.; and McIntosh, Bruce D., 4,577,898, Cl. 294-88.000.
Philip, James B., Jr., to Minnesota Mining and Manufacturing Company. Supersensitization of silver halide emulsions. 4,578,347, Cl. 430-572.000.
Philip Morris Incorporated: *See—*
Podraza, Kenneth F., 4,578,486, Cl. 549-379.000.
Philipson, Joseph: *See—*
Hall, Charles P.; and Philipson, Joseph, 4,577,357, Cl. 5-451.000.
Phillipps, Gordon H.; Bain, Brian M.; and Laing, Stuart B., to Glaxo Group Limited. Androstane carbothioic acids. 4,578,221, Cl. 260-397.100.
Phillips, Edward H., to Eaton-Optimetrix, Inc. Bore-sighted step-and-repeat projection alignment and exposure system. 4,577,957, Cl. 355-43.000.
Phillips, Edward H., to Eaton Optimetrix, Inc. Bore-sighted step-and-repeat projection alignment and exposure system. 4,577,958, Cl. 355-43.000.
Phillips, Mark R. Convertible utility chair. 4,577,901, Cl. 297-17.000.
Phillips Petroleum Company: *See—*
Albers, Lloyd R., 4,578,152, Cl. 203-1.000.
Burns, Lyle D.; and Stahl, G. Allan, 4,578,201, Cl. 252-8.55C.
Ezzell, Robert C., 4,577,677, Cl. 165-1.000.
Holba, Albert G.; Doe, Susanne B.; and Hughes, William B., 4,577,492, Cl. 73-61.10C.
Kukes, Simon G.; Johnson, Marvin M.; Strope, Daniel J.; and Hogan, Robert J., 4,578,179, Cl. 208-110.000.
Kukes, Simon G.; Hogan, Robert J.; Coombs, Daniel M.; and Strope, Daniel J., 4,578,180, Cl. 208-110.000.
McKee, Joseph M.; and Horton, Robert L., 4,577,908, Cl. 299-2.000.
Soderstrom, Edwin D., III; and Davis, Terrence A., 4,578,151, Cl. 203-1.000.
Phillips, Robert F.: *See—*
McIntyre, James A.; Phillips, Robert F.; and Oswald, Max R., 4,578,162, Cl. 204-107.000.
Phillipson, Walter M., to Stewart Stamping Corp. Contact and terminal for telephone transmitter. 4,578,545, Cl. 179-178.000.
Phipps, Robert E.: *See—*
Mooney, Charles W.; Phipps, Robert E.; and Kuznicki, William J., 4,577,735, Cl. 188-268.000.
Piehl, James R.: *See—*
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Pieper, Henner: *See—*
Seitz, Hans; Pieper, Henner; Frerichs, Udo; and Rach, Heinz-Dieter, 4,577,668, Cl. 152-520.000.
Pier, Gerald B., to Brigham and Women's Hospital. Mucoid exopolysaccharide vaccine against *Pseudomonas aeruginosa*. 4,578,458, Cl. 536-123.000.
Pierce, O. Leon, to Universal Data Systems, Inc. Switchable line powered modem. 4,578,533, Cl. 179-2.0DP.
Pierschbacher, Michael: *See—*
Ruoslahti, Erkki; and Pierschbacher, Michael, 4,578,079, Cl. 623-11.000.
Pillac, Bernard: *See—*
Morel, Michel; and Pillac, Bernard, 4,577,484, Cl. 72-245.000.
Pinckney Molded Plastics, Inc.: *See—*
Kreeger, Elsmer W., 4,577,759, Cl. 206-505.000.
Pines, Seemon H.: *See—*
Dolling, Ulf H.; Pines, Seemon H.; and Grabowski, Edward J. J., 4,578,509, Cl. 562-462.000.
Pinson, George T., to Boeing Company, The. Ocular pointing and tracking device. 4,577,825, Cl. 248-550.000.
Pioneer Electronic Corporation: *See—*
Hasegawa, Shinichi, 4,578,710, Cl. 358-231.000.
Piper, Francis R.: *See—*
Bray, David J.; Johnson, Peter E.; Marshall, Peter E. G.; Piper, Francis R.; and Murdoch, Iain H., 4,577,490, Cl. 73-40.700.
Marshall, Peter E. G.; Piper, Francis R.; and Wilson, John F., 4,577,489, Cl. 73-40.700.
Pipper, Gunter; Riegger, Siegfried; and Floss, Josef G., to BASF Aktiengesellschaft. Process and apparatus for removing volatile constituents from polymer melts or pastes. 4,578,455, Cl. 528-501.000.
Pissot, Guy, to Thomson-Brandt. Station-selecting device for a radio receiver. 4,578,047, Cl. 464-30.000.
Pitney Bowes Inc.: *See—*
Chang, Mike S. H., 4,578,493, Cl. 556-451.000.
Muller, Arno, 4,578,758, Cl. 364-466.000.
Muller, Arno, 4,578,774, Cl. 364-900.000.
Placke, Dale L.; Filliman, Mark D.; Granzow, Robert H.; Gross, Jack R.; and Nagy, Charles S., to NCR Corporation. Cash dispensing system. 4,577,763, Cl. 209-534.000.
Placke, Dale L.: *See—*
Granzow, Robert H.; Daulton, Richard H.; Placke, Dale L.; Adelberger, Donald L.; Gross, Jack R.; and Nagy, Charles S., 4,578,009, Cl. 414-43.000.
Plasma Holdings, N.V.: *See—*
Mathiesen, Mait M., 4,577,838, Cl. 266-171.000.
Plasmafusion, Inc.: *See—*
Turner, Trueman D., 4,578,557, Cl. 219-121.0PP.
Platus, Daniel H., to United States of America, Air Force. Centrifugally operated moving-mass roll control system. 4,577,812, Cl. 244-3.210.
Plazter, Stephan J. W., to American Hoechst Corporation. Electrolytes for electrochemically treating metal plates. 4,578,156, Cl. 204-33.000.
Plessey Overseas Limited: *See—*
West, Leslie L., 4,578,808, Cl. 381-88.000.

Plummer, William B.: *See—*
Lovgren, Jeffrey L.; and Plummer, William B., 4,578,722, Cl. 360-60.000.
Plunkett, Allan B.: *See—*
Kliman, Gerald B.; and Plunkett, Allan B., 4,578,610, Cl. 310-156.000.
Pober, Kenneth W., to NL Industries, Inc. Ethoxylated lignite composition and method of preparing. 4,578,456, Cl. 530-502.000.
Podraza, Kenneth F., to Philip Morris Incorporated. Smoking compositions containing a dicarbonate ester flavorant-release additive. 4,578,486, Cl. 549-379.000.
Pokorny, Erich: *See—*
Lenard, Peter; Pokorny, Erich; and Bailer, Norbert, 4,577,533, Cl. 76-41.000.
Polaroid Corporation: *See—*
Viola, Michael S., 4,578,285, Cl. 427-209.000.
Polizzi, Emanuel V.: *See—*
Grass, Joseph J.; Glyzewski, Marvin P.; and Polizzi, Emanuel V., 4,578,806, Cl. 378-162.000.
Poly-John Enterprises Corp.: *See—*
Harding, George W., 4,577,351, Cl. 4-460.000.
Polyplastics Co., Ltd.: *See—*
Matsuoka, Masatoshi; Ikenaga, Yukio; and Matsuno, Osamu, 4,578,408, Cl. 524-91.000.
Poole, Michael J.; and Crook, Michael J., to United Kingdom Atomic Energy Authority. Ultrasonic scanning probe. 4,577,506, Cl. 73-633.000.
Pope, Adam N., to General Electric Company. Rotor thrust balancing. 4,578,018, Cl. 415-14.000.
Pope, Lonnie H. Apparatus for making soap. 4,578,246, Cl. 422-111.000.
Population Council, Inc., The: *See—*
Luukkainen, Tapani; and Liukkonen, Ahti M. K., 4,578,076, Cl. 604-892.000.
Porsfeld, Friedhelm. Pavement and masonry stone cutter. 4,577,613, Cl. 125-23.00C.
Porter, Clyde R., to P. L. Porter Company. Mechanical lock. 4,577,730, Cl. 188-67.000.
Postalia GmbH: *See—*
Muller, Wilhelm, 4,577,851, Cl. 271-33.000.
Posthuma de Boer, Abe; and Vegt, Jan W., to U.S. Philips Corporation. Diaphragm comprising at least one foil of a piezoelectric polymer material. 4,578,613, Cl. 310-800.000.
Postle, Stephen R.; and Kingston, Samuel B., to Ciba-Geigy AG. Photochromic assembly comprising photochromic glass beads in polymer latex. 4,578,305, Cl. 428-212.000.
Poules, Wadi: *See—*
Praefcke, Klaus; Kohne, Bernd; Poules, Wadi; Eidenschink, Rudolf; and Scheuble, Bernhard, 4,578,210, Cl. 252-299.600.
Pouliot, Thomas W.: *See—*
Bosch, Henery G. K.; and Pouliot, Thomas W., 4,577,592, Cl. 123-90.150.
Pountain, Melvin D.: *See—*
Swenson, Robert D., 4,577,360, Cl. 12-115.600.
Powers, Joseph E.; and Williamson, Calvin C., to Kaiser Steel Corporation. Method and apparatus for tracking seam welds on pipes and the like. 4,577,796, Cl. 228-102.000.
PPG Industries, Inc.: *See—*
Breininger, J. Shannon, 4,578,100, Cl. 65-60.800.
Franz, Helmut; Hanlon, James H.; and Shick, Lloyd G., 4,578,203, Cl. 252-49.300.
Pradier, Serge: *See—*
Petrini, Roland; Pradier, Serge; and Mabboux, Michel, 4,577,420, Cl. 36-117.000.
Praefcke, Klaus; Kohne, Bernd; Poules, Wadi; Eidenschink, Rudolf; and Scheuble, Bernhard, to Merck Patent Gesellschaft mit beschrankter Haftung. Carbocyclic six-membered ring compounds. 4,578,210, Cl. 252-299.600.
Pratt, Sandra L.; Lucas, Gary M.; and Zembayashi, Michio, to General Electric Company. Non-corrosive silicone RTV compositions. 4,578,492, Cl. 556-407.000.
Praus, Gerd: *See—*
Holdt, Bernd-Dieter; Menke, Ronald; Praus, Gerd; and Hasselbach, Petra, 4,578,207, Cl. 252-134.000.
Prescolite, Inc.: *See—*
Druffel, James B.; and Cohen, Joel S., 4,577,824, Cl. 248-544.000.
Preston, Jonathan M., to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence of Her Majesty's Canadian Government. Chemical agent monitor and alarm device. 4,578,586, Cl. 250-382.000.
Price-Falcon, Juan F.; and Viramontes-Brown, Ricardo, to Hylsa, S.A. Method of reducing iron oxides. 4,578,110, Cl. 75-34.000.
Price, Lester F.: *See—*
Weaver, Gregory A.; Price, Lester F.; Britt, Crawford R.; and Shalaby, W. Shalaby, 4,578,451, Cl. 528-292.000.
Price, William F., to Ecometal Limited. Insulation panel assembly for use in the roofing and/or the cladding of walls of buildings. 4,577,445, Cl. 52-403.000.
Prince, Alfred M.: *See—*
Vnek, John; Prince, Alfred M.; and Ikram, Hafeez, 4,578,217, Cl. 260-112.50R.
Pringle, Ronald E., to Camco, Incorporated. Fluid actuated pipeline valve. 4,577,654, Cl. 137-219.000.
Pritulsky, James: *See—*
Coldren, Daniel R.; and Pritulsky, James, 4,577,920, Cl. 339-143.00R.
Procter & Gamble Company, The: *See—*
Buell, Kenneth B., 4,578,071, Cl. 604-379.000.
Burckett St. Laurent, James C. T. R.; and Busch, Alfred, 4,578,200, Cl. 252-8.800.
Dirksing, William P.; Leman, Marvin G.; and Van Coney, Robert H., 4,578,028, Cl. 425-525.000.
Dysart, John K.; and Joffe, Frederick M., 4,578,073, Cl. 604-397.000.
Hofeler, Henry H., 4,577,453, Cl. 53-438.000.
Kramer, Timothy A.; Young, Gerald A.; and Kock, Ronald W., 4,578,068, Cl. 604-368.000.
Prohaska, Hans; and Sosthene, Daniele, to ITT Industries, Inc. Vehicle light with several incandescent lamps having improved contact means. 4,578,741, Cl. 362-249.000.
Prough, J. Robert; and Torregrossa, Louis O., to Kamyr, Inc. Medium consistency mixer rotor and stator construction. 4,577,974, Cl. 366-307.000.
Prueher, Andrew B.: *See—*
Hennessy, Michael P.; and Prueher, Andrew B., 4,577,756, Cl. 206-444.000.
Pruitt, Darrell K. Dental wedge. 4,578,035, Cl. 433-149.000.
Pryor, Michael J.: *See—*
Winter, Joseph; and Pryor, Michael J., 4,577,925, Cl. 350-96.230.
Puech, Alain, to Societe Nouvelle Construction Metalliques de Provence. Anchoring device. 4,577,581, Cl. 114-294.000.
Puester, Neil H.: *See—*
Koehler, Charles W.; vanOmmering, Gerrit; and Puester, Neil H., 4,578,324, Cl. 429-26.000.
Puletti, Paul P.: *See—*
Schmidt, Robert C., Jr.; and Puletti, Paul P., 4,578,302, Cl. 428-110.000.
Pullen, Gene A.: *See—*
Schneider, Julian R.; and Pullen, Gene A., 4,577,978, Cl. 374-45.000.
Pullman, George D.: *See—*
Elias, Michael G.; and Pullman, George D., 4,577,996, Cl. 405-17.000.
Pullukat, Thomas J.; and Hoff, Raymond E., to Norchem, Inc. Polymerization catalyst and method. 4,578,440, Cl. 526-128.000.
Puri, Avinash D.; Fairchild, James L.; and Rodosevich, James B., to Kerr-McGee Chemical Corporation. Method for controlling boric acid particle size distribution. 4,578,086, Cl. 23-300.000.
Quaker Oats Company: *See—*
Tomomatsu, Hideo, 4,578,272, Cl. 426-18.000.
Quinlan, James M., to American Cyanamid Company. Diethylcarbamazine resinate and styrylpyridinium resinate-diethylcarbamazine resinate edible anthelmintic tablets for companion animals. 4,578,268, Cl. 424-79.000.
Quinlan, Patrick M., to Petrolite Corporation. Inhibiting corrosion with quaternary ammonium derivatives of 1,4-thiazine sulfonic acids. 4,578,243, Cl. 422-7.000.
Quinn, Robert O.; Govekar, Craig F.; and Piehl, James R., to Snap-on Tools Corporation. Microprocessor controlled timing/tachometer apparatus. 4,578,755, Cl. 364-431.010.
R. R. Donnelley & Sons Company: *See—*
Banike, Ronald, 4,577,560, Cl. 101-415.100.
Raab, Harald; and Gobel, Hilmar, to Fichtel & Sachs AG. Clutch disc for a motor vehicle friction clutch. 4,577,743, Cl. 192-106.200.
Rabain, Jacques; and Swaenepoel, Joseph, to Thomson-CSF. Method of synchronization of transmitter-receiver stations of a frequency-jumping network and a station for the practical application of said method. 4,578,816, Cl. 455-27.000.
Rabain, Jacques; and Adrian, Serge, to Thomson-CSF. Method for establishing communications in a network of frequency-jumping transmitter-receiver stations and a station for the utilization of said method. 4,578,817, Cl. 455-27.000.
Rabatin, Jacob G., to General Electric Company. Process for the preparation of rare earth oxyhalide phosphor. 4,578,211, Cl. 252-301.40H.
Racca, Richard F.; Swier, Willem; and Di Maio, Anthony E., to Marson Corporation. Dispenser. 4,577,783, Cl. 222-386.500.
Rach, Heinz-Dieter: *See—*
Seitz, Hans; Pieper, Henner; Frerichs, Udo; and Rach, Heinz-Dieter, 4,577,668, Cl. 152-520.000.
Racine, Marsh V. Computer aided coordinate digitizing system. 4,578,768, Cl. 364-560.000.
Rado, Theodore A., to Kerr-McGee Chemical Corporation. Method for processing gaseous effluent streams recovered from the vapor phase oxidation of metal halides. 4,578,090, Cl. 55-48.000.
Rainin Instrument Company, Inc.: *See—*
Rainin, Kenneth; and Ruskewicz, Stephen, 4,577,760, Cl. 206-508.000.
Rainin, Kenneth; and Ruskewicz, Stephen, to Rainin Instrument Company, Inc. Apparatus for supporting pipette tips. 4,577,760, Cl. 206-508.000.
Rainville, Gilles, to Rockwell International Corporation. Method of fabricating expanded sandwich panels having an enclosed core. 4,577,798, Cl. 228-157.000.
Rajala, Gregory J.: *See—*
Oshefsky, Daniel J.; Gavronski, Paul A.; Vogt, Robert E.; and Rajala, Gregory J., 4,578,133, Cl. 156-164.000.
Ramsay, Mitchell. Surgical instrument tray. 4,577,755, Cl. 206-370.000.
Rana, Mahendrasinh D.; and Selines, Ronald J., to Union Carbide Corporation. High strength steel. 4,578,113, Cl. 75-124.000.

Rancourt, James D.; and Beauchamp, William T., to Optical Coating Laboratory, Inc. Articles having improved reflectance suppression. 4,578,527, Cl. 136-256.000.
Randolph, Edward F.: *See—*
Allen, J. Dewayne; and Randolph, Edward F., 4,577,993, Cl. 404-112.000.
Raney, Gerard E. Portable unitary battery powered hand-held magnifying apparatus. 4,577,927, Cl. 350-235.000.
Rangaswamy, Subramaniam; and Harrington, John H., to METCO Inc. Aluminum and yttrium oxide coated thermal spray powder. 4,578,114, Cl. 75-252.000.
Rangaswamy, Subramaniam: *See—*
Harrington, John H.; and Rangaswamy, Subramaniam, 4,578,115, Cl. 75-255.000.
Rao, Kameswara K.: *See—*
Fang, Sheng; and Rao, Kameswara K., 4,578,777, Cl. 365-184.000.
Rapp, Jeffrey C.: *See—*
Wilson, Joseph H.; Rapp, Jeffrey C.; Southern, Brian K.; and Elliott, Martin E., 4,578,185, Cl. 210-85.000.
Rasmussen, Erik, to Aktieselskabet Nordiske Kabel-OG Traadfabriker. Process for non-destructive separation of mixtures containing plastics scrap. 4,578,184, Cl. 209-3.000.
Rasshofer, Werner; and Balle , Gerhard, to Bayer Aktiengesellschaft. Polyamines and a process for their production. 4,578,500, Cl. 560-25.000.
Rattan, Dev R.: *See—*
Parker, Robert R.; and Rattan, Dev R., 4,578,718, Cl. 360-10.300.
Rawlinson, Stephen J.: *See—*
Amdahl, Gene M.; Lee, Hsiao-Peng S.; Rawlinson, Stephen J.; and Stuart, Stephen F., 4,578,750, Cl. 364-200.000.
Ray-Chaudhuri, Dilip K.: *See—*
Rossi, Robert D.; and Ray-Chaudhuri, Dilip K., 4,578,444, Cl. 526-288.000.
Ray, Colin J.; and Smith, Geoffrey, to Vickers Public Limited Company. Dynamometers. 4,577,497, Cl. 73-126.000.
Raydx Satellite Systems, Ltd.: *See—*
Hooper, Robert L.; and Yonge, Lawrence W., III, 4,578,682, Cl. 343-916.000.
Raymond Engineering Inc.: *See—*
Snyder, Robert F., 4,577,912, Cl. 308-2.00R.
Raymond, Roger S., to Rockwell International Corporation. Apparatus and method for making laminate structures. 4,577,797, Cl. 228-118.000.
Rayne, Joseph, to Chrysler Corporation. Front suspension alignment tool. 4,577,534, Cl. 81-484.000.
Rayner, Adrien P.; and Clark, Kenneth R., to Metal Box Plc. Containers and lever ring. 4,577,776, Cl. 220-307.000.
Raytheon Company: *See—*
Shapiro, Jonathan S., 4,578,767, Cl. 364-550.000.
RCA Corporation: *See—*
Corboy, John F., Jr.; Jastrzebski, Lubomir L.; Blackstone, Scott C.; and Pagliaro, Robert H., Jr., 4,578,142, Cl. 156-612.000.
Reach, Gerard: *See—*
Jaffrin, Michel; and Reach, Gerard, 4,578,191, Cl. 210-323.200.
Readings, Peter B.; Mihalik, Nandor; and Taylor, Robin, to Sensitisers (Research) Ltd. Acidic photosensitive relief image-forming materials with indicator pigment or dye. 4,578,341, Cl. 430-155.000.
Reardon, Daniel R., to Hughes Tool Company. Pressure operated test valve. 4,577,692, Cl. 166-321.000.
Reckert, Jurgen: *See—*
Hofmann, Horst; and Reckert, Jurgen, 4,577,789, Cl. 225-100.000.
Recycloplast AG: *See—*
Weichenrieder, Erich, 4,577,980, Cl. 384-488.000.
Regan, Michael T.; and Wright, Hal E., to Eastman Kodak Company. Hydroxyaluminumphthalocyanine having reduced green absorption. 4,578,330, Cl. 430-37.000.
Regan, Michael T.: *See—*
Borsenberger, Paul M.; Regan, Michael T.; and Staudenmayer, William J., 4,578,334, Cl. 430-59.000.
Regnier, Kent E.: *See—*
Stipanuk, John M.; Walse, Alan S.; and Regnier, Kent E., 4,577,922, Cl. 339-176.0MP.
Rehag, Klaus; and Gerretz, Josef, to Mannesmann Demag Wean. System for the continuous operation of a cold pilger rolling mill. 4,577,483, Cl. 72-214.000.
Reil, Wilhelm, to Tetra Pak Developpement S.A. Apparatus for punching a hole in a paper web. 4,578,004, Cl. 408-87.000.
Reinartz, Dieter; Bender, Heinrich; and Laurent, Gunter, to Didier-Werke AG. Process for removing polychlorinated biphenyls from transformer-insulating liquids. 4,578,194, Cl. 210-673.000.
Reinhardt, Wilhelm; and Rudele, Ulrich, to ebm Elektrobau Mulfingen GmbH & Co. Electric motor with a system for monitoring speed. 4,578,605, Cl. 310-67.00R.
Reist, Walter, to Feramatic AG. Apparatus and method for removing and conveying away a sample copy from an orderly flow of printed products. 4,577,855, Cl. 271-281.000.
Remote Interrogations Pty. Ltd.: *See—*
Townsing, Leslie C., 4,578,539, Cl. 179-2.00A.
Renaux, Charley: *See—*
Artaud, Robert; Aubert, Michel; and Renaux, Charley, 4,578,238, Cl. 376-404.000.
Rengo Co., Ltd.: *See—*
Tokuno, Masateru; Sawada, Tetsuya; and Mori, Yasuharu, 4,577,746, Cl. 198-462.000.
Rentsch, Stefan: *See—*
Marko, Ollie W.; Steinmeyer, Robert D.; and Rentsch, Stefan, 4,578,494, Cl. 556-452.000.
Reptech, Inc.: *See—*
Carlson, Robert A.; and Smith, Nicholas H., 4,577,839, Cl. 266-272.000.
Research Association for Petroleum Alternatives Development: *See—*
Morimoto, Nobuyuki; Takatsu, Kozo; and Sugimoto, Michio, 4,578,259, Cl. 423-329.000.
Rethy, Lajos: *See—*
Csizer, Zoltan; Sikos, Karoly; Bacskai, Laszlo; Joo, Istvan; Niedermayer, Eleonora; Rethy, Lajos; and Zsidai, Jozsef, 4,578,270, Cl. 424-92.000.
Revlon, Inc.: *See—*
Tietjen, Marlene; Brown, Ivonne; and Macchio, Ralph A., 4,578,266, Cl. 424-63.000.
Rexnord Inc.: *See—*
Martin, Donald E., 4,577,747, Cl. 198-500.000.
Rezek, Edward A.; and Zinkiewicz, Lawrence M., to TRW Inc. Liquid phase epitaxial growth process. 4,578,126, Cl. 148-171.000.
Rheinische Braunkohlenwerke AG: *See—*
Adlhoch, Wolfgang H.; and Lambertz, Johannes, 4,578,226, Cl. 261-71.000.
Rheinmetall GmbH: *See—*
Romer, Rudolf; and Moll, Manfred, 4,577,813, Cl. 244-3.230.
Rhone-Poulenc Specialties Chimiques: *See—*
Soula, Gerard; and Simonnet, Christian, 4,578,495, Cl. 556-468.000.
Richards, David L.; and Windish, Willis E., to Caterpillar Tractor Co. Vehicle transfer gear and drive line brake mechanism. 4,577,524, Cl. 74-411.500.
Richardson, Jennings R. Portable multipurpose desk container. 4,577,788, Cl. 224-273.000.
Richardson, John H. Shingle loading ladder. 4,578,016, Cl. 414-680.000.
Richter, Ekkehard; Korbacher, Werner; Knoblauch, Karl; Giessler, Klaus; and Harder, Klaus-Burkhard, to Bergwerksverband GmbH. Method of separating highly adsorbable components in a gas stream in a pressure-sensing adsorber system. 4,578,089, Cl. 55-26.000.
Richter, Ole J.: *See—*
Andersen, Per B.; and Richter, Ole J., 4,577,663, Cl. 138-31.000.
Richter, Walter, to Siemens Aktiengesellschaft. Electrical control arrangement for a rolling mill drive motor of a rolling mill. 4,578,626, Cl. 318-338.000.
Richtmeyer, Robert D.: *See—*
Fredericksen, Arnold E.; and Richtmeyer, Robert D., 4,577,911, Cl. 308-2.00R.
Rickert, David W.: *See—*
McIntosh, Robert; Mathews, Harlan P.; Rickert, David W.; Romano, Paul; and Walker, Jerry, 4,578,786, Cl. 369-44.000.
Ricoh Company, Ltd.: *See—*
Ikeda, Itsuo; Kurokawa, Junji; Hasebe, Mitsuo; Miyagawa, Seiichi; and Hariu, Hajime, 4,578,331, Cl. 430-42.000.
Kajiwara, Norio, 4,577,954, Cl. 355-4.000.
Mayer, Edward F.; and Pfeuffer, Donald F., 4,577,955, Cl. 355-15.000.
Yamaguchi, Shingo, 4,578,715, Cl. 358-283.000.
Rieck, Hans-Peter, to Hoechst Aktiengesellschaft. Process for the preparation of crystalline sheet-type alkali metal silicates. 4,578,258, Cl. 423-325.000.
Rieck, Hans-Peter; and Kalz, Hans-Jurgen, to Hoechst Aktiengesellschaft. Aluminosilicates having a zeolite structure, and process for the manufacture thereof. 4,578,371, Cl. 502-71.000.
Rieger, Martin M., to Warner-Lambert Company. Methods for treating inflammation. 4,578,405, Cl. 514-679.000.
Riegger, Siegfried: *See—*
Pipper, Gunter; Riegger, Siegfried; and Floss, Josef G., 4,578,455, Cl. 528-501.000.
Rieter Machine Works, Ltd.: *See—*
Roder, Kurt, 4,577,372, Cl. 19-159.00A.
Riker, Rudolf, to Stetter GmbH. Sludge settling plant. 4,578,189, Cl. 210-253.000.
Ripley, Robert W.: *See—*
Borsh, Richard J.; Ripley, Robert W.; and Pate, Harold T., 4,578,528, Cl. 174-65.00G.
Ritsko, Joseph E.; and Acla, Howard L., to GTE Products Corporation. Removal of chromium from cobalt. 4,578,251, Cl. 423-55.000.
Ritter, Thomas E., to Halliburton Company. Method and apparatus for providing accurate wireline depth measurements. 4,577,410, Cl. 33-129.000.
RM Metal Consulting Ky: *See—*
Malmstrom, Rolf, 4,578,254, Cl. 423-88.000.
Robbins, Jeffrey D.: *See—*
Bayer, Arthur C.; Robbins, Jeffrey D.; and Bowler, Donald J., 4,578,224, Cl. 260-502.50F.
Robert Bosch GmbH: *See—*
Arnold, Herbert; Horbelt, Michael; Seibel, Berthold; Strobele, Hans-Peter; and Werner, Peter, 4,577,605, Cl. 123-479.000.
Bamer, Franz, 4,577,495, Cl. 73-118.000.
Bohringer, Wilfried; Eheim, Franz, deceased; Fehlmann, Wolfgang; Laufer, Helmut; and Zibold, Karl, 4,577,606, Cl. 123-506.000.
Heitmann, Jurgen; Loos, Rolf; and Wagner, Peter, 4,578,719, Cl. 360-31.000.
Schmatz, Jurgen, 4,577,610, Cl. 123-633.000.
Stabler, Manfred, 4,577,526, Cl. 74-609.000.

Roberts, Lyn M.; Shrier, Robert L.; and Laxton, Raymond, to AGB Research PLC. Apparatus for storing data relating to television viewing. 4,578,700, Cl. 358-84.000.
Robertson, John M., to Rolls-Royce Limited. Exhaust mixing in turbofan aeroengines. 4,577,462, Cl. 60-262.000.
Robinson, Morton: *See—*
Pastor, Ricardo C.; and Robinson, Morton, 4,578,252, Cl. 423-76.000.
Rocket of London Limited: *See—*
Meredith, Hadyn G., 4,577,635, Cl. 128-642.000.
Rockinger Spezialfabrik fur Anhangerkupplungen GmbH & Co.: *See—*
Breu, Johann, 4,577,885, Cl. 280-508.000.
Rockwell International Corporation: *See—*
Bake, Earl A.; and Hartle, Clair W., Jr., 4,577,872, Cl. 277-12.000.
Rainville, Gilles, 4,577,798, Cl. 228-157.000.
Raymond, Roger S., 4,577,797, Cl. 228-118.000.
Williams, Richard J., 4,577,734, Cl. 188-218.00R.
Roder, Kurt, to Rieter Machine Works, Ltd. Drawing frame. 4,577,372, Cl. 19-159.00A.
Rodosevich, James B.: *See—*
Puri, Avinash D.; Fairchild, James L.; and Rodosevich, James B., 4,578,086, Cl. 23-300.000.
Roe, William J.; and Malito, John T., to Kaiser Aluminum Chemical Corporation; and Nalco Chemical Company. Purification of Bayer process liquors. 4,578,255, Cl. 423-130.000.
Rogers Manufacturing Co., The: *See—*
Bitel, Vincent J., 4,577,773, Cl. 220-22.300.
Rolls-Royce Limited: *See—*
Robertson, John M., 4,577,462, Cl. 60-262.000.
Sadler, Michael, 4,578,611, Cl. 310-338.000.
Rolow, Willard J. Deployable vehicular barricade. 4,577,991, Cl. 404-6.000.
Romano, Paul: *See—*
McIntosh, Robert; Mathews, Harlan P.; Rickert, David W.; Romano, Paul; and Walker, Jerry, 4,578,786, Cl. 369-44.000.
Romer, Rudolf; and Moll, Manfred, to Rheinmetall GmbH. Discus-shaped projectile. 4,577,813, Cl. 244-3.230.
Romi, Romeu. Gear transmission assembly. 4,577,529, Cl. 74-665.0GA.
Rominger, Karl L.: *See—*
Stricker, Herbert; Freund, Bernhard; Harwalik, Heribert; Rominger, Karl L.; Darda, Siegfried; Haselbarth, Volkmar; Arndts, Dietrich; Bechtel, Wolf D.; Bozler, Gerhard; Brickl, Rolf; and Gruber, Peter, 4,578,264, Cl. 424-37.000.
Roos, Eberhard, to Delma, electro- und medizinische Appatebau Gesellschaft mbH. Operating theatre lamp. 4,578,575, Cl. 250-203.00R.
Rosenberg, Martin, to United States of America, Health and Human Services. Plasmid cloning vector pAS1. 4,578,355, Cl. 435-317.000.
Rosenbush, David M.; Zwicke, Philip E.; and Couch, Robert P., to United Technologies Corporation. Adaptive electrostatic engine diagnostics. 4,578,756, Cl. 364-431.020.
Rosevear, Alan; and Lambe, Christopher A., to United Kingdom Atomic Energy Authority. Production of chemical compounds with immoblized plant cells. 4,578,351, Cl. 435-41.000.
Rosini, Sergio, to Istituto Gentili S.p.A. Pharmaceutical compositions for the treatment of osteopathias. 4,578,376, Cl. 514-108.000.
Ross, William E.; and MacNeal, Bruce E., to Litton Systems, Inc. Altering the switching threshold of a magnetic material. 4,578,321, Cl. 428-693.000.
Rossi, Pietro P.; Senni, Paolo; and Ferruzzi, Sergio, to Chimica del Friuli S.p.A.; and Snia BPD S.p.A. Method of preparing pure benzoic acid. 4,578,511, Cl. 562-494.000.
Rossi, Robert D.; and Ray-Chaudhuri, Dilip K., to National Starch and Chemical Corporation. Anaerobic adhesives containing polymerizable activators. 4,578,444, Cl. 526-288.000.
Roth, Steven C.: *See—*
Bur, Anthony J.; and Roth, Steven C., 4,577,510, Cl. 73-708.000.
Rott, Hans; Koerner, Gotz; and Schmidt, Gunter, to Th. Goldschmidt AG. Organosilicon compounds and textile fiber finishes containing these. 4,578,116, Cl. 106-18.120.
Rottinghaus, Robert B. Cushion mounted disc with interconnecting spool assembly. 4,577,699, Cl. 172-570.000.
Rowe, Raymond G., to General Electric Company. Oxysulfide dispersion strengthened titanium alloys. 4,578,129, Cl. 148-407.000.
Roy, Jehan; and Dubois, Jean, to Lacoste, SA. Folding wheelchair. 4,577,878, Cl. 280-242.0WC.
Rudele, Ulrich: *See—*
Reinhardt, Wilhelm; and Rudele, Ulrich, 4,578,605, Cl. 310-67.00R.
Ruger, William B.; and Larson, Lawrence L., to Sturm, Ruger & Company, Inc. Trigger and spring mount mechanism. 4,577,430, Cl. 42-69.00R.
Ruhrchemie Aktiengesellschaft: *See—*
Bahrmann, Helmut; Cornils, Boy; Konkol, Werner; and Lipps, Wolfgang, 4,578,523, Cl. 568-454.000.
Ruhrgas LNG Flussigerdgas Service GmbH: *See—*
Meyer, Hans, 4,577,578, Cl. 114-248.000.
Rummo, Gregory J.; and Startup, Robert, to Kay-Fries, Inc. Bisalkyl bis(trialkanol amine)zirconates and use of same as thickening agents for aqueous polysaccharide solutions. 4,578,488, Cl. 556-56.000.
Ruoslahti, Erkki; and Pierschbacher, Michael, to La Jolla Cancer Research Foundation. Tetrapeptide. 4,578,079, Cl. 623-11.000.
Ruskewicz, Stephen: *See—*
Rainin, Kenneth; and Ruskewicz, Stephen, 4,577,760, Cl. 206-508.000.
Russnak, Clarence J., to Boeing Company, The. Weapon system transporter. 4,577,965, Cl. 356-138.000.
Russo, Mario A.: *See—*
Melrose, David R.; and Russo, Mario A., 4,577,661, Cl. 137-625.330.
Ruzumna, Edward. Apparatus for promoting good health. 4,577,710, Cl. 177-245.000.
Ryobi Ltd.: *See—*
Ishii, Koji; and Maehara, Kenso, 4,577,555, Cl. 101-76.000.
S.A.M. Microtechnic: *See—*
Bennardo, Gilbert, 4,577,750, Cl. 206-1.500.
S&C Electric Company: *See—*
Lin, Chester H., 4,578,551, Cl. 200-153.0SC.
S.I.A.T.A. Societa Italiana Apparecchiature Trattamento Acqua S.p.A.: *See—*
Ferrali, Luigi, 4,577,498, Cl. 73-198.000.
Sabourin, Edward T.: *See—*
Onopchenko, Anatoli; and Sabourin, Edward T., 4,578,497, Cl. 556-479.000.
Saccocio, Edward J.; Kiser, T. Kay; Wright, Richard F.; and Head, Donald L., to Mead Corporation, The. Free particle abrasion development of imaging sheets employing photosensitive microcapsules. 4,578,340, Cl. 430-138.000.
Sadahiro, Hisanori, to Sakai Heavy Industries Ltd. Mechanism for generating vibrations for a ground compacting machine. 4,577,995, Cl. 404-117.000.
Sadler, Michael, to Rolls-Royce Limited. Piezoelectric stress wave transducer with boron nitride piezo support. 4,578,611, Cl. 310-338.000.
Sadre-Marandi, Ehsan: *See—*
Fox, Anthony G.; Smith, Harry L. O.; and Sadre-Marandi, Ehsan, 4,577,947, Cl. 354-275.000.
Safarik, William F., to Garrett Corporation, The. Ram air turbine. 4,578,019, Cl. 416-1.000.
Sagawa, Norihiko: *See—*
Gotou, Tadashi; Kawamura, Fumio; Sagawa, Norihiko; and Yusa, Hideo, 4,578,325, Cl. 429-91.000.
Sagedahl, Steven M. Isokinetic exercise apparatus and method. 4,577,862, Cl. 272-125.000.
Sahashi, Masashi; Inomata, Koichiro; Sori, Naoyuki; and Yamamiya, Hideki, to Tokyo Shibaura Denki Kabushiki Kaisha. Permanent magnet. 4,578,125, Cl. 148-31.570.
Sahasrabudhe, Arum P.; Dadpey, Habib; Cirillo, Fernando A.; Merlo, Antonia C.; and Zuber, Pierre A. M., to Westinghouse Electric Corp. Vehicle brake control apparatus and method. 4,578,754, Cl. 364-426.000.
Saida, Chiaki, to Aisin Seiki Kabushiki Kaisha. Clutch disc. 4,577,742, Cl. 192-106.200.
Saint-Gobain Recherche: *See—*
Colmon, Daniel; and Letemps, Bernard, 4,578,102, Cl. 65-114.000.
St-Jacques, Jean. Retainer for soap dish. 4,577,751, Cl. 206-77.100.
St. Lawrence Reactors Limited: *See—*
Assarsson, Per G.; and Nagasuye, Joseph H., 4,578,353, Cl. 435-161.000.
Saito, Naoki, to Nippon Seiko Kabushiki Kaisha. Power assist steering gear assembly. 4,577,715, Cl. 180-79.100.
Saito, Shigeakira; and Fukuoka, Masayuki, to Asahikasei Kabushiki Kaisha. Electric cells using fluorinated graphite as active material of positive electrode. 4,578,327, Cl. 429-194.000.
Saito, Teruo; Asai, Kuniaki; and Hieda, Kazuo, to Sumitomo Chemical Company, Limited. Coating resin composition. 4,578,427, Cl. 525-150.000.
Saitoh, Shigeru, to Masudaya Corporation Limited. Magnetically movable model toy. 4,578,044, Cl. 446-134.000.
Sakagami, Teruo; Fujii, Yasufumi; and Murayama, Naohiro, to Kureha Kagaku Kogyo Kabushiki Kaisha. Halogen-containing lens material. 4,578,445, Cl. 526-292.300.
Sakai Heavy Industries Ltd.: *See—*
Sadahiro, Hisanori, 4,577,995, Cl. 404-117.000.
Sakai, Kazushige: *See—*
Nagano, Hiroyuki; Takagi, Mitiro; Kubodera, Noboru; Matsunaga, Isao; Nabata, Hiroyuki; Ohba, Yasuhiro; Sakai, Kazushige; Hata, Shun-ichi; and Uchida, Yasumi, 4,578,465, Cl. 544-285.000.
Sakai Manufacturing Co., Ltd.: *See—*
Sakai, Yoshitaka, 4,578,049, Cl. 474-8.000.
Sakai, Takami: *See—*
Inokuchi, Haruhisa; and Sakai, Takami, 4,578,743, Cl. 363-35.000.
Sakai, Yoshitaka, to Sakai Manufacturing Co., Ltd. Pulley device. 4,578,049, Cl. 474-8.000.
Sakakima, Hiroshi; Satomi, Mitsuo; Yanagiuchi, Yukihiro; and Senno, Harufumi, to Matsushita Electric Industrial Co., Ltd. Magnetic head. 4,578,728, Cl. 360-125.000.
Sakamoto, Masami; Nagumo, Ryoichi; and Ishihara, Tamio, to Hitachi, Ltd. Pen changing apparatus for plotter. 4,577,409, Cl. 33-18.100.
Sakudo, Noriyuki: *See—*
Yamamoto, Naoki; and Sakudo, Noriyuki, 4,577,396, Cl. 29-576.00B.
Sakura Color Products Corp.: *See—*
Nakanishi, Mikihiko, 4,578,117, Cl. 106-20.000.
Sakurai, Akira: *See—*
Hayashi, Masanori; Sakurai, Akira; and Aso, Shigeru, 4,577,976, Cl. 374-29.000.
Sakurai, Masanori; Miyawaki, Junichi; Umemura, Toshikaju; Kawata, Toshikatsu; and Kiboshi, Shinji, to Mitsubishi Gas Chemical Company, Inc. Acetal resin composition. 4,578,422, Cl. 524-593.000.
Salamone, Ann B., to Morton Thiokol, Inc. Skin conditioning polymer containing alkoxylated nitrogen salts of sulfonic acid. 4,578,267, Cl. 424-78.000.

Salhi, Ali: *See—*
Labeeuw, Bernard; and Salhi, Ali, 4,578,377, Cl. 514-206.000.

Salia-Munoz, Miguel. Method and apparatus for self-examination of the ocular globe. 4,577,943, Cl. 351-205.000.

Salicini, Sandro, to Carle & Montanari S.p.A. Device for detecting the presence of an article in the recesses of the feeding disc of a wrapping machine. 4,577,451, Cl. 53-58.000.

Salomon S.A.: *See—*
Petrini, Roland; Pradier, Serge; and Mabboux, Michel, 4,577,420, Cl. 36-117.000.

Sander, Hans: *See—*
Lenz, Werner; Sander, Hans; and Moeller, Dieter, 4,578,426, Cl. 525-131.000.

Sanders, Thomas C.; and Calvert, Wynne, to Lockheed Missiles & Space Company, Inc. Magnetic assembly. 4,578,663, Cl. 335-306.000.

Sanderson, Dewey S. C. Changeable wall panel structure. 4,577,444, Cl. 52-311.000.

Sandstrom, Paul H.: *See—*
Budd, William; and Sandstrom, Paul H., 4,578,411, Cl. 524-156.000.

Sandvik, Johannes, to Elkem A/S. Feed device for guiding a rope onto a winding drum. 4,577,810, Cl. 242-157.100.

Sangamo Weston, Inc.: *See—*
Simonetti, John J., 4,578,213, Cl. 252-301.170.

Sanofi: *See—*
Labeeuw, Bernard; and Salhi, Ali, 4,578,377, Cl. 514-206.000.

Sanshin Kogyo Kabushiki Kaisha: *See—*
Sumino, Yoshitsugu; and Harada, Hiroshi, 4,578,040, Cl. 440-73.000.

Santiago, Antonio O. Security window. 4,577,438, Cl. 49-57.000.

Santorelli, Michael, to Schenectady Chemicals Inc. Phenolic resins, carboxylic resins and the elastomers containing adhesive. 4,578,315, Cl. 428-414.000.

Santorelli, Michael, to Schenectady Chemicals, Inc. Phenolic resins, carboxylic resins and the elastomers containing adhesive. 4,578,425, Cl. 525-109.000.

Santos, Joe, to Fairchild Camera & Instrument Corporation. Circuit and method for split bias enable/inhibit memory operation. 4,578,594, Cl. 307-241.000.

Santrade Ltd.: *See—*
Schermutzki, Konrad, 4,578,021, Cl. 425-6.000.

Sanyo Electric Co., Ltd.: *See—*
Nishida, Susumu; Kimura, Seiji; Kobayashi, Akio; and Fuchigami, Tadashi, 4,577,915, Cl. 312-214.000.

Sarnoff, Stanley J.; Calkins, George B.; and Tarello, William R., to Survival Technology Inc. Plural dosage automatic injector with improved safety. 4,578,064, Cl. 604-191.000.

Sartor, Mariano, to Nordica S.p.A. Foot locking device particularly for front entrance ski boots. 4,577,421, Cl. 36-119.000.

Sasaki, Kazuhiko: *See—*
Amano, Akira; and Sasaki, Kazuhiko, 4,577,455, Cl. 56-17.100.

Sasaki, Ryoichi, to Brother Industries, Ltd. Recording apparatus. 4,577,982, Cl. 400-17.000.

Sasamori, Eizo: *See—*
Sawamura, Mitsuharu; Ito, Susumu; Matsushima, Masaaki; Kishi, Hiroyoshi; Sasamori, Eizo; Yoshihara, Satoshi; Iijima, Shigeharu; and Takano, Katsuhiko, 4,578,322, Cl. 428-694.000.

Sasamura, Kouhei, to Victor Company of Japan, Limited. Amplifier circuit. 4,578,647, Cl. 330-253.000.

Sato, Kimiaki: *See—*
Takemae, Yoshihiro; Nakano, Tomio; and Sato, Kimiaki, 4,578,776, Cl. 365-149.000.

Sato, Yoshiyuki; Isozaki, Akio; Higo, Tomio; and Uchida, Tetsuo, to Kabushiki Kaisha Kobe Seiko Sho. Boiling heat transfer pipes. 4,577,381, Cl. 29-157.400.

Satoh, Takane; and Tan, Yoichi, to Fuji Xerox Co., Ltd. Asynchronous connecting device. 4,578,797, Cl. 375-25.000.

Satomi, Mitsuo: *See—*
Sakakima, Hiroshi; Satomi, Mitsuo; Yanagiuchi, Yukihiro; and Senno, Harufumi, 4,578,728, Cl. 360-125.000.

Satzinger, Gerhard; Barth, Hubert; Hartenstein, Johannes; Herrmann, Manfred; Fritschi, Edgar; and Schutt, Ilse-Dore, to Warner-Lambert Company. 5H-[1]benzopyrano[2,3-d]pyrimidine derivatives useful for controlling lesions of the gastric and duodenal mucous membranes. 4,578,380, Cl. 514-232.000.

Sauers, Richard F.: *See—*
Hay, James V.; and Sauers, Richard F., 4,578,108, Cl. 71-93.000.

Saundry, Richard H.; and Savidge, Geoffrey F., to Special Trustees for St. Thomas' Hospital, The. Purification of factor VIII with insoluble matrix having free sulfate groups covalently bound thereto. 4,578,218, Cl. 260-112.00B.

Saunier, Christian: *See—*
de Guillenschmidt, Pierre; Hubert, Jacques; Goujon, Michel; and Saunier, Christian, 4,577,962, Cl. 356-5.000.

Savidge, Geoffrey F.: *See—*
Saundry, Richard H.; and Savidge, Geoffrey F., 4,578,218, Cl. 260-112.00B.

Savit, Carl H., to Western Geophysical Company of America. Method for improving the efficiency of air guns. 4,577,723, Cl. 181-120.000.

Sawada, Tetsuya: *See—*
Tokuno, Masateru; Sawada, Tetsuya; and Mori, Yasuharu, 4,577,746, Cl. 198-462.000.

Sawamura, Mitsuharu; Ito, Susumu; Matsushima, Masaaki; Kishi, Hiroyoshi; Sasamori, Eizo; Yoshihara, Satoshi; Iijima, Shigeharu; and Takano, Katsuhiko, to Canon Kabushiki Kaisha. Recording medium. 4,578,322, Cl. 428-694.000.

Sawyer, Lawrence H.; and Knight, George W., to Dow Chemical Company, The. Wettable olefin polymer fibers. 4,578,414, Cl. 524-310.000.

Schack, Carl J.; and Christe, Karl O., to United States of America, Air Force. Multi-($OTeF_5$)-substituted fluorocarbons. 4,578,225, Cl. 260-550.000.

Schaeder, Walter: *See—*
Koppa, Daniel A.; and Schaeder, Walter, 4,578,027, Cl. 425-298.000.

Schaeffler, Robert G.: *See—*
Hertl, William; and Schaeffler, Robert G., 4,578,323, Cl. 429-15.000.

Schafer, Peter: *See—*
van Rijckevorsel, Rainer; Kasielke, Joachim; Macho, Heinz; Schafer, Peter; and Nenninger, Klaus, 4,578,716, Cl. 360-1.000.

Schaffel, Steven D., to Abbott Laboratories. Immunoassay for carcinoembryonic antigen (CEA). 4,578,349, Cl. 435-7.000.

Schedwin, Sven-Erik. Clamping device. 4,577,847, Cl. 269-309.000.

Scheinpflug, Hans: *See—*
Jager, Gerhard; Bockmann, Klaus; Buchel, Karl H.; Brandes, Wilhelm; Frohberger, Paul-Ernst; and Scheinpflug, Hans, 4,578,396, Cl. 514-383.000.

Schenectady Chemicals Inc.: *See—*
Santorelli, Michael, 4,578,315, Cl. 428-414.000.
Santorelli, Michael, 4,578,425, Cl. 525-109.000.

Schermutzki, Konrad, to Santrade Ltd. Apparatus for the production of granules from two-phase mixtures. 4,578,021, Cl. 425-6.000.

Scheuble, Bernhard: *See—*
Praefcke, Klaus; Kohne, Bernd; Poules, Wadi; Eidenschink, Rudolf; and Scheuble, Bernhard, 4,578,210, Cl. 252-299.600.

Schibisch, Horst, to Dr. Ing. h.c.F. Porsche AG. Commercial vehicle, especially forklifter. 4,577,722, Cl. 180-315.000.

Schickaneder, Helmut; Szeleny, Istvan; Morsdorf, Peter; and Ahrens, Kurt H., to Ludwig Neumann & Co. GmbH. Quinazoline and medicaments containing these compounds. 4,578,389, Cl. 514-254.000.

Schier, Karl: *See—*
Deutschmann, Herbert; and Schier, Karl, 4,577,595, Cl. 123-41.350.

Schiller, Saul. Windowed indexed calibrated T-square and precision-lined drafting board having linear edges. 4,577,415, Cl. 33-430.000.

Schindlbeck, Gunther: *See—*
Hosel, Peter; and Schindlbeck, Gunther, 4,577,452, Cl. 53-266.00R.

Schlegel GmbH: *See—*
Schlegel, Wolfgang; Wilke, Arthur; and Stein, Roland, 4,577,844, Cl. 269-71.000.

Schlegel, Wolfgang; Wilke, Arthur; and Stein, Roland, to Schlegel GmbH. Vertically adjustable device. 4,577,844, Cl. 269-71.000.

Schloman, William W., Jr., to Goodyear Tire & Rubber Company, The. Accelerator-modified adhesion promoters for rubber to wire adhesion. 4,578,450, Cl. 528-254.000.

Schlumberger Technology Corporation: *See—*
Doremus, Bernard, 4,577,662, Cl. 137-630.140.

Schmatz, Jurgen, to Robert Bosch GmbH. Ignition distributor system for an internal combustion engine. 4,577,610, Cl. 123-633.000.

Schmid, Christoph, to Luk Lamellen und Kupplungsbau GmbH. Fluid-operated servomotor for actuation of clutches or the like. 4,577,741, Cl. 192-85.00V.

Schmid, Max: *See—*
Hansen, Hans-Jurgen; Schmid, Rudolf; and Schmid, Max, 4,578,462, Cl. 544-177.000.

Schmid, Rudolf: *See—*
Hansen, Hans-Jurgen; Schmid, Rudolf; and Schmid, Max, 4,578,462, Cl. 544-177.000.

Schmidgall, Hartzell H.: *See—*
Schmidgall, Jon A.; and Schmidgall, Hartzell H., 4,578,235, Cl. 264-71.000.

Schmidgall, Jon A.; and Schmidgall, Hartzell H., to Hawkeye Concrete Products Co. Method for lining pipe. 4,578,235, Cl. 264-71.000.

Schmidt, Glenn H.; and Schmidt, Howard F., to Schmidt, Glenn H. Fabrication of golf club heads. 4,577,669, Cl. 164-45.000.

Schmidt, Gunter: *See—*
Rott, Hans; Koerner, Gotz; and Schmidt, Gunter, 4,578,116, Cl. 106-18.120.

Schmidt, Howard F.: *See—*
Schmidt, Glenn H.; and Schmidt, Howard F., 4,577,669, Cl. 164-45.000.

Schmidt, Manfred; and Meyer, Karl-Heinrich, to Bayer Aktiengesellschaft. Process for the production of 2-aryl-4-acyl-1.3.4-oxdiazolones-(5). 4,578,476, Cl. 548-144.000.

Schmidt, Robert C., Jr.; and Puletti, Paul P., to National Starch and Chemical Corporation. Reinforced tape laminates. 4,578,302, Cl. 428-110.000.

Schmidt, Ronald L.; and Shaddock, Roland E., to Peabody Myers Corporation. Sewer and catch basin cleaning system. 4,578,198, Cl. 210-780.000.

Schmidt, Wilfried, to Telefunken electronic GmbH. Process for the production of a solar cell. 4,577,393, Cl. 29-572.000.

Schmitt, Dieter: *See—*
Urban, Manfred; and Schmitt, Dieter, 4,578,202, Cl. 252-33.400.

Schnapper, Christoph: *See—*
Weghaupt, Erich; Intichar, Lutz; and Schnapper, Christoph, 4,577,871, Cl. 277-8.000.

Schneider, Julian R.; and Pullen, Gene A., to Shell Oil Company. Field test for determining water in oil. 4,577,978, Cl. 374-45.000.

Schneider, Paul E. Intravenous catheter holder. 4,578,062, Cl. 604-174.000.

Schoch, Donald C.; and Engelmann, Albert C., to Tamerlane Corporation. Sheet metal ornaments having a lacy appearance and process for making them. 4,578,318, Cl. 428-615.000.

Schoeffler, William N. Advanced quick ball release sub. 4,577,614, Cl. 125-25.000.

Schoengen, Anton; Schreiber, Georg; and Schroeder, Heinz, to Dynamit Nobel Aktiengesellschaft. Preparation of terephthalic acid from a crude dimethyl terephthalate. 4,578,501, Cl. 560-77.000.

Schoenig, Frederick C., Jr.; and Grossman, Leonard N., to General Electric Company. Detection of radioactive accumulations within an incinerator. 4,577,565, Cl. 110-237.000.

Schoffmann, Franz: *See—*
Wrulich, Herwig; Schoffmann, Franz; and Maier, Wilfried, 4,577,892, Cl. 285-136.000.

Scholl, Frederick W.; and Coden, Michael H., to Codenoll Technology Corporation. Method and apparatus for recovering data and clock information from a self-clocking data stream. 4,578,799, Cl. 375-87.000.

Scholl, Hans-Peter: *See—*
Adams, Jurgen; and Scholl, Hans-Peter, 4,578,760, Cl. 364-467.000.

Schoner, Wolfgang, to Biofusion, Inc. Cell fusion. 4,578,167, Cl. 204-183.100.

Schorlemmer, Hans-Ulrich; Dickneite, Gerhard; Sedlacek, Hans-Harald; de Souza, Noel J.; and Dohadwalla, Alihussein N., to Hoechst Aktiengesellschaft. Use of the diterpene derivative forskolin for immunostimulation. 4,578,399, Cl. 514-455.000.

Schreiber, Georg: *See—*
Schoengen, Anton; Schreiber, Georg; and Schroeder, Heinz, 4,578,501, Cl. 560-77.000.

Schroeder, Charles M.: *See—*
Paek, Un C.; and Schroeder, Charles M., 4,578,098, Cl. 65-13.000.

Schroeder, Heinz: *See—*
Schoengen, Anton; Schreiber, Georg; and Schroeder, Heinz, 4,578,501, Cl. 560-77.000.

Schroeder, Mel C.: *See—*
Domagala, John M.; and Schroeder, Mel C., 4,578,473, Cl. 546-156.000.

Schubert, Jean-Denis: *See—*
Cruchon, Jean-Claude; and Schubert, Jean-Denis, 4,578,657, Cl. 333-211.000.

Schuhmann, Frank: *See—*
Bachmann, Bernd; Kuss, Peter; Schuhmann, Frank; and Wollner, Jurgen, 4,577,854, Cl. 271-227.000.

Schulte, John P.: *See—*
Knecht, Thomas A.; Frick, Roger L.; and Schulte, John P., 4,578,735, Cl. 361-283.000.

Schultz, Ludwig; and Gaube, Franz, to Siemens Aktiengesellschaft. Method for manufacturing a metallic body using an amorphous alloy. 4,578,123, Cl. 148-11.50Q.

Schulz, Judith D. Bag book. 4,577,889, Cl. 281-15.00R.

Schulze-Berge, Klaus: *See—*
Boehm, Udo; Grittmann, Ernst-Juergen; and Schulze-Berge, Klaus, 4,578,726, Cl. 360-99.000.

Schumann, Frank: *See—*
Engel, Andreas; Schumann, Frank; Stiefel, Werner; and Freistedt, Reinhold, 4,578,052, Cl. 493-11.000.

Schuster, Gary B. A., to Owens-Corning Fiberglas Corporation. Precious metal vaporization reduction. 4,578,362, Cl. 501-17.000.

Schutt, Ilse-Dore: *See—*
Satzinger, Gerhard; Barth, Hubert; Hartenstein, Johannes; Herrmann, Manfred; Fritschi, Edgar; and Schutt, Ilse-Dore, 4,578,380, Cl. 514-232.000.

Scotfoam Corporation: *See—*
Volz, Robert A., 4,578,406, Cl. 521-52.000.

Scott, Daniel G.; and Hill, Theodore B., to American Standard Inc. O-ring seal in channel with fluid pressure equalization means. 4,577,870, Cl. 277-1.000.

Scott, Oscar T., IV: *See—*
Clem, Jack L.; and Scott, Oscar T., IV, 4,577,680, Cl. 165-95.000.

Scott, Ray V., Jr.: *See—*
House, David W.; and Scott, Ray V., Jr., 4,578,446, Cl. 528-64.000.

Seagate Technology: *See—*
Brannan, William L., Jr., 4,578,721, Cl. 360-51.000.

Sedlacek, Hans-Harald: *See—*
Schorlemmer, Hans-Ulrich; Dickneite, Gerhard; Sedlacek, Hans-Harald; de Souza, Noel J.; and Dohadwalla, Alihussein N., 4,578,399, Cl. 514-455.000.

Seebaugh, William R.: *See—*
Bradley, Charles A.; Benge, Herman; Parl, Fritz F.; and Seebaugh, William R., 4,577,514, Cl. 73-863.010.

Segawa, Makoto: *See—*
Ariizumi, Shoji; and Segawa, Makoto, 4,578,694, Cl. 357-41.000.

Segawa, Noboru: *See—*
Ueno, Mitsushi; Shirogami, Tamotsu; and Segawa, Noboru, 4,578,135, Cl. 156-182.000.

Sehgal, Tyag R., to General Electric Company. Probe coil snubber. 4,577,501, Cl. 73-577.000.

Sehlstedt, Per-Olof: *See—*
Edmo, Torbjorn; and Sehlstedt, Per-Olof, 4,577,821, Cl. 248-421.000.

Seibel, Berthold: *See—*
Arnold, Herbert; Horbelt, Michael; Seibel, Berthold; Strobele, Hans-Peter; and Werner, Peter, 4,577,605, Cl. 123-479.000.

Seidel, Udo, to Minnesota Mining and Manufacturing Company. Method for the cleaning of cable ends. 4,578,121, Cl. 134-25.400.

Seigneur, Emile; and Paillart, Philippe. Furniture fastener assembly. 4,577,916, Cl. 312-257.00R.

Seiler, Herbert, to Ciba-Geigy AG. Reactive mono-azo dyes and the preparation and use thereof. 4,578,457, Cl. 534-632.000.

Seimiya, Yasuo: *See—*
Hara, Yoichi; and Seimiya, Yasuo, 4,577,604, Cl. 123-397.000.

Seino, Shuichi: *See—*
Komon, Koichi; Ito, Siro; and Seino, Shuichi, 4,578,290, Cl. 427-421.000.

Seitz, Hans; Pieper, Henner; Frerichs, Udo; and Rach, Heinz-Dieter, to Continental Gummi-Werke Aktiengesellschaft. Vehicle wheel. 4,577,668, Cl. 152-520.000.

Seki, Shojiro, to Nissan Motor Company, Limited. Window regulator mechanism. 4,577,439, Cl. 49-352.000.

Sekiya, Toshiyuki, to Fuji Photo Film Co., Ltd. Presensitized diazo lithographic plate with anodized and silicated aluminum plate surface and subbing layer of polymer with sulfonic acid group. 4,578,342, Cl. 430-159.000.

Selines, Ronald J.: *See—*
Rana, Mahendrasinh D.; and Selines, Ronald J., 4,578,113, Cl. 75-124.000.

Sellstrom, Kathy B.; and Waddill, Harold G., to Texaco Inc. Extended amine curing agents [and epoxy resins cured therewith]. 4,578,412, Cl. 524-243.000.

Sen-Jung, Chen. Fluid cushioning apparatus acting as a pivoting medium of two objects having a pivoting feature. 4,578,082, Cl. 623-26.000.

Senga, Akihisa, to Honda Giken Kogyo Kabushiki Kaisha. Intake manifold structure for a V-type internal combustion engine. 4,577,596, Cl. 123-52.0MV.

Senni, Paolo: *See—*
Rossi, Pietro P.; Senni, Paolo; and Ferruzzi, Sergio, 4,578,511, Cl. 562-494.000.

Senno, Harufumi: *See—*
Sakakima, Hiroshi; Satomi, Mitsuo; Yanagiuchi, Yukihiro; and Senno, Harufumi, 4,578,728, Cl. 360-125.000.

Sensitisers (Research) Ltd.: *See—*.
Readings, Peter B.; Mihalik, Nandor; and Taylor, Robin, 4,578,341, Cl. 430-155.000.

Seshimoto, Osamu; and Nirasawa, Mitsuharu, to Fuji Photo Film Co., Ltd. Ion selective electrode and method of making ion selective electrodes. 4,578,173, Cl. 204-416.000.

Sestak, Joseph T.: *See—*
Klein, Roy S.; Gehly, Joel C.; and Sestak, Joseph T., 4,578,742, Cl. 362-294.000.

Sexton, James H.: *See—*
Dellinger, Thomas B.; Boston, William G.; Sexton, James H.; and Strong, Robert T., 4,577,700, Cl. 175-40.000.

Seymour, Robert W.: *See—*
Light, Ronald R.; and Seymour, Robert W., 4,578,437, Cl. 525-444.000.

Seymour, Shaun A., to Sperry Corporation. Agricultural mixing and grinding machine. 4,577,805, Cl. 241-101.00B.

Shackelford, Michael L., to Didde Graphic Systems Corporation. Differential drive mechanism. 4,577,527, Cl. 74-640.000.

Shaddock, Roland E.: *See—*
Schmidt, Ronald L.; and Shaddock, Roland E., 4,578,198, Cl. 210-780.000.

Shalaby, W. Shalaby: *See—*
Weaver, Gregory A.; Price, Lester F.; Britt, Crawford R.; and Shalaby, W. Shalaby, 4,578,451, Cl. 528-292.000.

Shannon, John P.: *See—*
Pearlman, Jay S.; and Shannon, John P., 4,578,805, Cl. 378-119.000.

Shapiro, Eugene: *See—*
Mahulikar, Deepak; and Shapiro, Eugene, 4,578,320, Cl. 428-674.000.

Shapiro, Jonathan S., to Raytheon Company. X-ray system tester. 4,578,767, Cl. 364-550.000.

Sharma, Ram A., to General Motors Corporation. Metallothermic reduction of rare earth oxides. 4,578,242, Cl. 420-590.000.

Sharp Kabushiki Kaisha: *See—*
Narukawa, Atsushi, 4,577,953, Cl. 355-3.0BE.

Sharum, Wayne P.: *See—*
Tsao, Sherman H.; and Sharum, Wayne P., 4,578,713, Cl. 358-283.000.

Shaw, Richard G.; and Canterino, Peter J., to Mobil Oil Corporation. Process for improving melt strength of ethylene polymers by treatment with organic peroxide. 4,578,431, Cl. 525-387.000.

Shelburne Incorporated: *See—*
Vizard, David, 4,577,724, Cl. 181-265.000.

Shell Oil Company: *See—*
Davison, Sol, 4,578,430, Cl. 525-387.000.
Gergen, William P.; Lutz, Robert G.; and Gelles, Richard, 4,578,429, Cl. 525-291.000.
Schneider, Julian R.; and Pullen, Gene A., 4,577,978, Cl. 374-45.000.

Shelley, Edwin F. Time independent data transmission system. 4,578,534, Cl. 179-2.00C.

Shepherd, David, to Imperial Chemical Industries PLC. Chromatography columns. 4,578,193, Cl. 210-656.000.

Sheridan, Michael, to Ethylene Corp. Mounting structure for electronic probes. 4,578,170, Cl. 204-400.000.

Shibahara, Yoshihumi; and Komoto, Akira, to Shimadzu Corporation. Weighing scale with a load cell. 4,577,709, Cl. 177-211.000.

Shibamoto, Nobuji: *See—*
Tomita, Yukio; Nabeshima, Kenjiro; and Shibamoto, Nobuji, 4,577,564, Cl. 110-110.000.

Shibata, Tadashi, to Kabushiki Kaisha Toshiba. Method of manufacturing semiconductor memory device having trench memory capacitor. 4,577,395, Cl. 29-576.00C.

Shibata, Yuichi; and Baba, Tadashi, to Nakanishi Dental Mfg. Co., Ltd. Dental handpiece having an optical fiberscope. 4,578,034, Cl. 433-29.000.

Shibaura Denki Kabushiki Kaisha Horikawa Cho Sai Wia Kawasaki: *See—*
Sugimoto, Yasuhiro, 4,578,668, Cl. 340-347.0DA.

Shibuki, Masaru: *See—*
Sugisawa, Ko; Shibuki, Masaru; Imada, Imayoshi; Katada, Jun; Yamamoto, Yozo; Nakajima, Setsuo; Kishi, Toshio; and Sugano, Shozo, 4,578,274, Cl. 426-96.000.

Shick, Lloyd G.: *See—*
Franz, Helmut; Hanlon, James H.; and Shick, Lloyd G., 4,578,203, Cl. 252-49.300.

Shigemori, Daizo; Kunii, Haruo; and Endo, Masaaki, to Kabushiki Kaisha Sankosha. Surge voltage arrester. 4,578,733, Cl. 361-120.000.

Shih, Nan C. Bell lock (II). 4,577,584, Cl. 116-10.000.

Shima, Toshiyuki: *See—*
Teshima, Toru; Aizawa, Masanobu; Yoshida, Mitsunari; Shima, Toshiyuki; and Takeda, Masakazu, 4,578,043, Cl. 445-40.000.

Shimadzu Corporation: *See—*
Shibahara, Yoshihumi; and Komoto, Akira, 4,577,709, Cl. 177-211.000.

Shimamune, Takayuki: *See—*
Asano, Hiroshi; Shimamune, Takayuki; and Hirao, Kazuhiro, 4,578,160, Cl. 204-98.000.

Shimano Industrial Company Limited: *See—*
Kawabe, Yuzo, 4,577,808, Cl. 242-84.50R.

Shimazaki, Kuniya, to Tokyo Shibaura Denki Kabushiki Kaisha. Pattern transfer device and method. 4,577,945, Cl. 353-101.000.

Shimenkov, Marat. Toothpick. 4,577,649, Cl. 132-93.000.

Shimizu, Keizo; Otsu, Shimpei; Fujimura, Toshio; Taniguchi, Yoshisada; and Nagami, Hayashi, to Hitachi, Ltd. Record disc reproducing apparatus. 4,578,787, Cl. 369-77.200.

Shimizu, Nobuyoshi; Fujimoto, Terunori; Inui, Tsuneo; and Ishida, Masatoki, to Toyo Kohan Co., Ltd. Surface treated steel sheet having an excellent weldability and its production method. 4,578,319, Cl. 428-632.000.

Shimizu, Yoshio, to Sony Corporation. Space diversity receiver. 4,578,819, Cl. 455-135.000.

Shimoni, Yair: *See—*
Crawford, Carl R.; Shimoni, Yair; Sohval, A. Robert; and Barnea, Daniel I., 4,578,753, Cl. 364-414.000.

Shinko Electric Co., Ltd.: *See—*
Nakagawa, Hiroshi; and Miwa, Zenichiro, 4,578,622, Cl. 318-135.000.

Shinozaki, Nozomu: *See—*
Neki, Shigeo; Shinozaki, Nozomu; and Dohi, Takashi, 4,578,624, Cl. 318-305.000.

Shionogi & Co., Ltd.: *See—*
Hamashima, Yoshio; Ishikura, Koji; Kubota, Tadatoshi; and Minami, Kyoji, 4,578,378, Cl. 514-210.000.

Shionoya, Masahisa: *See—*
Takahashi, Yukoh; Fujii, Takeo; Shionoya, Masahisa; Yachigo, Shinichi; and Ishii, Tamaki, 4,578,410, Cl. 524-102.000.

Shirahata, Ryuji: *See—*
Ishikuro, Tadashi; Shirahata, Ryuji; Miyoshi, Takahito; and Fujiyama, Masaaki, 4,578,311, Cl. 428-336.000.

Shirogami, Tamotsu: *See—*
Ueno, Mitsushi; Shirogami, Tamotsu; and Segawa, Noboru, 4,578,135, Cl. 156-182.000.

Shishido, Hideomi, to Molten Corporation. Athletic ball. 4,577,865, Cl. 273-58.00G.

Shop-Vac Corporation: *See—*
Miller, Jonathan; Berfield, Robert C.; and Crevling, Robert L., Jr., 4,577,366, Cl. 15-388.000.

Showalter, Merle R., to Automotive Engine Associates. High swirl very low pollution piston engine employing optimizable vorticity metering. 4,577,602, Cl. 123-306.000.

Shrier, Robert L.: *See—*
Roberts, Lyn M.; Shrier, Robert L.; and Laxton, Raymond, 4,578,700, Cl. 358-84.000.

Shtarkman, Emile M., to Imperial Clevite Inc. Self-stabilizing dry viscous spring damper. 4,577,842, Cl. 267-140.100.

Shuck, David L.; and Knudsen, Irving E., to Westinghouse Electric Corp. Spouted bed blender apparatus. 4,577,972, Cl. 366-101.000.

Shudo, Hirokazu: *See—*
Harigane, Kotaro; Ihara, Keiichi; Ito, Tetsuro; and Shudo, Hirokazu, 4,578,010, Cl. 414-126.000.

Shultz, Walter, to Textron, Inc. Automatic tool changer. 4,577,389, Cl. 29-568.000.

Shupe, Chester D., to Motorola, Inc. Random voltage source with substantially uniform distribution. 4,578,649, Cl. 331-78.000.

Sicka, Richard W.; and Tompkins, Dale A., to Firestone Tire & Rubber Company, The. Coextrusion apparatus. 4,578,024, Cl. 425-114.000.

Sidler, Karl. Safekeeping box assembly. 4,577,563, Cl. 109-52.000.

Siedel, Joachim; Neumann, Ulrich; Ziegenhorn, Joachim; Batz, Hans-Georg; Lenz, Helmut; Pautz, Brigitte; and Albert, Winfried, to Boehringer Mannheim GmbH. Creatinine antibody. 4,578,361, Cl. 436-547.000.

Siegemund, Gunter: *See—*
Muller, Thomas; and Siegemund, Gunter, 4,578,369, Cl. 502-36.000.

Siegmund, Walter P., to Warner-Lambert Technologies, Inc. Gradient index optical components. 4,578,096, Cl. 65-3.110.

Siemens Aktiengesellschaft: *See—*
Kinzler, Hans; and Kaiser, Jurgen, 4,578,664, Cl. 336-90.000.
Kleeberg, Wolfgang; Hauschildt, Klaus-Robert; Hacker, Heinz; and Kretzschmar, Klaus, 4,578,452, Cl. 528-297.000.
Markwitz, Wernhard, 4,578,532, Cl. 178-22.130.
Richter, Walter, 4,578,626, Cl. 318-338.000.
Schultz, Ludwig; and Gaube, Franz, 4,578,123, Cl. 148-11.50Q.
Tihanyi, Jeno ; Fellinger, Christine; and Leipold, Ludwig, 4,578,595, Cl. 307-252.00R.
Tihanyi, Jenoe ; Fellinger, Christine; and Leipold, Ludwig, 4,578,596, Cl. 307-252.00R.
Vollert, Emmeran, 4,578,686, Cl. 346-140.00R.

Siemens Gammasonics, Inc.: *See—*
Gosis, Anatoly I.; and Bartos, Frank J., 4,578,585, Cl. 250-363.00S.

Siemers, Paul A.; Kopp, Robert W.; Jackson, Melvin R.; Duke, Steven R.; Perrin, David P.; and Liu, Ying H., to General Electric Company. Wear resistant gun barrel and method of forming. 4,577,431, Cl. 42-76.00A.

Siewell, Gary L.: *See—*
Cloutier, Frank L.; McClelland, Paul H.; Boucher, William R.; and Siewell, Gary L., 4,578,687, Cl. 346-140.00R.

Sigma-Tau Industrie Farmaceutiche Riunite S.p.A.: *See—*
Baglioni, Alessandro, 4,578,481, Cl. 548-539.000.

Signetics Corporation: *See—*
Allen, Richard J.; and Youden, Richard W., 4,578,637, Cl. 324-73.0PC.
Fang, Sheng; and Rao, Kameswara K., 4,578,777, Cl. 365-184.000.
West, Jeffery A.; and Fletcher, Thomas D., 4,578,602, Cl. 307-475.000.

Sikos, Karoly: *See—*
Csizer, Zoltan; Sikos, Karoly; Bacskai, Laszlo; Joo, Istvan; Niedermayer, Eleonora; Rethy, Lajos; and Zsidai, Jozsef, 4,578,270, Cl. 424-92.000.

Siler, Harold L.: *See—*
Ochs, Charles S.; and Siler, Harold L., 4,578,001, Cl. 406-10.000.

Silka, John L.; and Yeaney, Gerald L., to American Sterilizer Company. Wire rack for processing hard container systems in washing-sterilizers. 4,577,764, Cl. 211-41.000.

Silke, Gerald W.; and Weber, Frank D., to Cyclomatic Industries, Inc. Slope-speed sensor for seam welding apparatus. 4,577,499, Cl. 73-432.00R.

Simmons, Richard M., to Telelogic, Inc. Videotex system. 4,578,535, Cl. 179-2.0DP.

Simon, Gilbert. Machine for peeling, skimming, skinning and/or slicing joints of meat, fishes and the like. 4,577,371, Cl. 17-62.000.

Simon, Mark I.; Cotter, Christopher G.; and Stein-Gelinas, Carolyn, to Spacelabs, Inc. Apparatus and method for automatic lead selection in electrocardiography. 4,577,639, Cl. 128-709.000.

Simonetti, John J., to Sangamo Weston, Inc. High temperature plastic scintillator. 4,578,213, Cl. 252-301.170.

Simonnet; Christian: *See—*
Soula, Gerard; and Simonnet, Christian, 4,578,495, Cl. 556-468.000.

Singer Company, The: *See—*
Franke, John M., Sr., 4,577,792, Cl. 226-162.000.
Stevens, Victor G.; and Huang, Pao-Ter, 4,577,575, Cl. 112-449.000.

Singh, Balwant; and Waterman, Paul S., to American Cyanamid Company. Process for preparing phenylisopropylurea compounds. 4,578,513, Cl. 564-56.000.

Siwiak, Kazimierz, to Motorola Inc. Portable battery powered electrical apparatus with improved battery pack protected against inadvertent short circuit of the battery terminals. 4,578,628, Cl. 320-2.000.

Sjovall, Lasse: *See—*
Lehto, Eino; Moller, Goran; and Sjovall, Lasse, 4,577,997, Cl. 405-43.000.

Skamser, Ingrid, to Thermal Bags by Ingrid, Inc. Thermally insulated food bag. 4,578,814, Cl. 383-99.000.

Skattebol, Lars; and Stenstrom, Yngve, to Borregaard Industries Limited. Process for the preparation of lineatin. 4,578,484, Cl. 549-360.000.

Skroch, David D. Wild mouse cat scratch pole. 4,577,590, Cl. 119-29.000.

Skulnick, Harvey I.; Smith, Herman W.; Smith, Robert J.; and Wierenga, Wendell, to Upjohn Company, The. Processes for the preparation of 6-aryluracils. 4,578,466, Cl. 544-309.000.

Slade, Randall: *See—*
Broadus, Ronnie J.; and Slade, Randall, 4,577,488, Cl. 73-40.000.

Slavin, Michael; and Miller, Ellsworth S., to Lectron Products, Inc. Solenoid assembly. 4,578,662, Cl. 335-262.000.

Slepetys, Richard A.: *See—*
Huege, Fred R.; Slepetys, Richard A.; and Catone, David L., 4,578,118, Cl. 106-288.00B.

Sliwa, John W.; Burt, Roy J.; Lee, Chune; MacKay, John; and Johnson, Cindy A., to Trilogy Computer Development Partners, Ltd. Method for mounting a semiconductor chip. 4,577,398, Cl. 29-590.000.

Smith, David S., to Technicon Instruments Co. Ltd. Specific binding assay conjugate with spaced-apart receptors. 4,578,360, Cl. 436-518.000.

Smith, Geoffrey: *See—*
Ray, Colin J.; and Smith, Geoffrey, 4,577,497, Cl. 73-126.000.

Smith, Harry D., Jr., to Halliburton Company. Gamma spectrum porosity measurement. 4,578,580, Cl. 250-269.000.

Smith, Harry L. O.: *See—*
Fox, Anthony G.; Smith, Harry L. O.; and Sadre-Marandi, Ehsan, 4,577,947, Cl. 354-275.000.

Smith, Herman W.: *See—*
Skulnick, Harvey I.; Smith, Herman W.; Smith, Robert J.; and Wierenga, Wendell, 4,578,466, Cl. 544-309.000.

Smith International, Inc.: *See—*
Cross, Donald G., 4,577,705, Cl. 175-228.000.

Smith, Joseph J.; and Erickson, Paul K., to Deere & Company. Track unit extension for wide track crawler vehicles. 4,577,717, Cl. 180-9.100.

Smith, Maurice R.: *See—*
Moore, Sanders H.; Smith, Maurice R.; and Cochran, Harvey B., 4,578,195, Cl. 210-679.000.

Smith, Nicholas H.: *See—*
Carlson, Robert A.; and Smith, Nicholas H., 4,577,839, Cl. 266-272.000.

Smith, Robert J.: *See—*
Skulnick, Harvey I.; Smith, Herman W.; Smith, Robert J.; and Wierenga, Wendell, 4,578,466, Cl. 544-309.000.

Smith, Ronald D.: *See—*
Springer, Edward A.; and Smith, Ronald D., 4,577,435, Cl. 47-2.000.

Smith, Stephen A.: *See—*
Markwell, Roger E.; and Smith, Stephen A., 4,578,393, Cl. 514-310.000.

Smith, Steve. High-speed feedback circuit. 4,578,631, Cl. 323-282.000.

SmithKline & French Laboratories Limited: *See—*
Durant, Graham J.; and Ganellin, Charon R., 4,578,388, Cl. 514-252.000.
Durant, Graham J.; Emmett, John C.; and Ganellin, Charon R., 4,578,459, Cl. 544-8.000.

Smolen, Victor F.: *See—*
Cosgrove, Robert J., Jr.; and Smolen, Victor F., 4,578,244, Cl. 422-65.000.

Smyth, Bruce E.: *See—*
MacFarlane, James W.; and Smyth, Bruce E., 4,578,810, Cl. 382-8.000.

Snap-on Tools Corporation: *See—*
Grover, Donald D.; and Kaufman, Glenn A., 4,577,496, Cl. 73-119.00A.
Quinn, Robert O.; Govekar, Craig F.; and Piehl, James R., 4,578,755, Cl. 364-431.010.

Snia BPD S.p.A.: *See—*
Rossi, Pietro P.; Senni, Paolo; and Ferruzzi, Sergio, 4,578,511, Cl. 562-494.000.

Snow Brand Milk Products Co., Ltd.: *See—*
Taneda, Kozo; Chiba, Masae; Naka, Junichi; and Watanabe, Shunichi, 4,578,002, Cl. 406-28.000.

Snyckers, Friedrich O.: *See—*
Fourie, Theunis G.; Dekker, Theodor G.; Snyckers, Friedrich O.; and van der Schyf, Cornelis J., 4,578,520, Cl. 568-315.000.

Snyder, Robert F., to Raymond Engineering Inc. Self-aligning load transmission post. 4,577,912, Cl. 308-2.00R.

Societa Italiana Vetro SIV S.p.A.: *See—*
Bonacci, Carlo, 4,577,539, Cl. 83-886.000.

Societe Anonyme D.B.A.: *See—*
Gautier, Jean P., 4,577,548, Cl. 91-369.00A.

Societe Anonyme de Telecommunications: *See—*
Colin de Verdiere, Jean-Marc M.; and Langlois, Patrice R., 4,578,544, Cl. 179-170.200.

Societe Anonyme Redoute Catalogue: *See—*
Barillec, Christian; Janvier, Dominique; and Bonneton, Marc, 4,578,013, Cl. 414-323.000.

Societe de Signalisations Automobiles S.E.I.M.A.: *See—*
Krizmanic, Jacky, 4,578,740, Cl. 362-66.000.

Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "S.N.E.C.M.A.": *See—*
Bayle-Laboure, Gerard J. P.; Bouiller, Jean G.; Buisson, Marc F. B.; and Soligny, Marcel R., 4,577,814, Cl. 244-12.500.

Societe Nationale Elf Aquitaine: *See—*
Armand, Michel; Muller, Daniel; Duval, Michel; and Harvey, Paul-Etienne, 4,578,326, Cl. 429-192.000.
Mautref, Michel; and Belouet, Christian, 4,577,588, Cl. 118-665.000.

Societe Nouvelle Construction Metalliques de Provence: *See—*
Puech, Alain, 4,577,581, Cl. 114-294.000.

Soderstrom, Edwin D., III; and Davis, Terrence A., to Phillips Petroleum Company. Reid Vapor Pressure determination and control in fractional distillation. 4,578,151, Cl. 203-1.000.

Sogabe, Ichita, to Nippondenso Co., Ltd.; and Toyota Jidosha Kabushiki Kaisha. Rotary driving apparatus. 4,577,832, Cl. 251-129.110.

Sohval, A. Robert: *See—*
Crawford, Carl R.; Shimoni, Yair; Sohval, A. Robert; and Barnea, Daniel I., 4,578,753, Cl. 364-414.000.

Soligny, Marcel R.: *See—*
Bayle-Laboure, Gerard J. P.; Bouiller, Jean G.; Buisson, Marc F. B.; and Soligny, Marcel R., 4,577,814, Cl. 244-12.500.

Solmat Systems Ltd.: *See—*
Assaf, Gad, 4,577,618, Cl. 126-415.000.

Someya, Noboru; and Horikawa, Rikizo, to Tokyo Rika Kikai Co., Ltd. Sampling valve for use in high-speed liquid chromatography. 4,577,515, Cl. 73-863.730.

Soneda, Mitsuo; Fukuzawa, Manami; and Ohtsu, Takaji, to Sony Corporation. Large amplitude pulse generating circuits. 4,578,597, Cl. 307-265.000.

Sonoi, Koji: *See—*
Sumino, Yasuhiro; Sonoi, Koji; and Doi, Muneharu, 4,578,336, Cl. 435-88.000.

Sony Corporation: *See—*
Kubota, Shigeo, 4,577,941, Cl. 350-582.000.
Okanobu, Taiwa, 4,578,807, Cl. 381-7.000.
Shimizu, Yoshio, 4,578,819, Cl. 455-135.000.
Soneda, Mitsuo; Fukuzawa, Manami; and Ohtsu, Takaji, 4,578,597, Cl. 307-265.000.

Sori, Naoyuki: *See—*
Sahashi, Masashi; Inomata, Koichiro; Sori, Naoyuki; and Yamamiya, Hideki, 4,578,125, Cl. 148-31.570.

Soriano, David S.: *See—*
Dimmit, Jeffrey H.; Van Der Puy, Michael; and Soriano, David S., 4,578,250, Cl. 423-22.000.

Sosthene, Daniele: *See—*
Prohaska, Hans; and Sosthene, Daniele, 4,578,741, Cl. 362-249.000.

Soula, Gerard; and Simonnet, Christian, to Rhone-Poulenc Specialties Chimiques. Preparation of organosilanes/organopolysilanes from disilanes. 4,578,495, Cl. 556-468.000.

Southern, Brian K.: *See—*
Wilson, Joseph H.; Rapp, Jeffrey C.; Southern, Brian K.; and Elliott, Martin E., 4,578,185, Cl. 210-85.000.

Spacelabs, Inc.: *See—*
Simon, Mark I.; Cotter, Christopher G.; and Stein-Gelinas, Carolyn, 4,577,639, Cl. 128-709.000.

Spagnoli, Leonardo: *See—*
Clementini, Luciano; and Spagnoli, Leonardo, 4,578,428, Cl. 525-265.000.

Spanier, Henry C., to Nabisco Brands, Inc. Date processing. 4,578,275, Cl. 426-302.000.

Spears, J. Richard, to Beth Israel Hospital Association, The. Method for diagnosis of atherosclerosis. 4,577,636, Cl. 128-654.000.

Special Trustees for St. Thomas' Hospital, The: *See—*
Saundry, Richard H.; and Savidge, Geoffrey F., 4,578,218, Cl. 260-112.00B.

Spencer, David R.; and Goldstein, Amnon, to Data Recording Systems, Inc. Dual mode laser printer. 4,578,689, Cl. 346-160.000.

Speranza, George P.: *See—*
Yeakey, Ernest L.; Speranza, George P.; Triebel, Carol A.; and McCoy, David R., 4,578,205, Cl. 252-76.000.

Speranzin, Claudio; Badiali, Roberto; and Bertoli, Luciano, to Officine Savio S.p.A. Process and apparatus for mechanically splicing yarns. 4,577,459, Cl. 57-22.000.

Sperry Corporation: *See—*
Seymour, Shaun A., 4,577,805, Cl. 241-101.00B.

Spitzer, Wayne A., to Eli Lilly and Company. Inotropic agents. 4,578,387, Cl. 514-249.000.

Sprague Electric Company: *See—*
Higgs, Jacob K.; and Humenick, John, 4,578,692, Cl. 357-27.000.

Sprecher & Schuh AG: *See—*
Suter, Heinz; and Blum, Alex, 4,578,659, Cl. 335-131.000.

Springer, Edward A.; and Smith, Ronald D. Micro-climate temperature control apparatus. 4,577,435, Cl. 47-2.000.

Square D Company: *See—*
Draper, Charles W.; and Franks, Terry E., 4,578,732, Cl. 361-45.000.

Square D Starkstrom GmbH: *See—*
Grunst, Heinz; and Kleine, Heinz, 4,578,549, Cl. 200-76.000.

Srinivasan, Viswanathan; and Hulbert, Matthew H., to International Minerals & Chemical Corp. Process for recovery of uranium from wet process H_3PO_4. 4,578,249, Cl. 423-10.000.

Staat, Karlhans, to Kocks Technik GmbH & Co. Process for production of seamless tube and apparatus for processing seamless tube. 4,577,481, Cl. 72-68.000.

Stabler, Manfred, to Robert Bosch GmbH. Protective element for hand-held power tool. 4,577,526, Cl. 74-609.000.

Staedtler, J. S.: *See—*
Handl, Werner, 4,578,420, Cl. 524-490.000.

Stahl, G. Allan: *See—*
Burns, Lyle D.; and Stahl, G. Allan, 4,578,201, Cl. 252-8.55C.

Stampwala, Suresh S.; French, James C.; Tunac, Josefino B.; Hurley, Timothy R.; and Bunge, Richard H., to Warner-Lambert Company. CL 1565 antibiotic compounds. 4,578,383, Cl. 514-7.000.

Standard Textile Company, Inc.: *See—*
Heiman, Gary L., 4,578,306, Cl. 428-225.000.

Stanley Electric Co., Ltd.: *See—*
Teshima, Toru; Aizawa, Masanobu; Yoshida, Mitsunari; Shima, Toshiyuki; and Takeda, Masakazu, 4,578,043, Cl. 445-40.000.

Starcosa GmbH: *See—*
Bruckner, Harald, 4,578,525, Cl. 568-918.000.

Stark, Johan S. H., to U.S. Philips Corporation. Method for preventing collision of two mutually movable bodies and an apparatus including an arrangement for preventing collision. 4,578,757, Cl. 364-461.000.

Startup, Robert: *See—*
Rummo, Gregory J.; and Startup, Robert, 4,578,488, Cl. 556-56.000.

Staudenmayer, William J.; Chen, Tsang J.; Borsenberger, Paul M.; and Grashof, Hans R., to Eastman Kodak Company. Multilayer photoconductive elements having an acrylonitrile copolymer interlayer. 4,578,333, Cl. 430-60.000.

Staudenmayer, William J.: *See—*
Borsenberger, Paul M.; Regan, Michael T.; and Staudenmayer, William J., 4,578,334, Cl. 430-59.000.

Stauffer Chemical Company: *See—*
Bayer, Arthur C.; Robbins, Jeffrey D.; and Bowler, Donald J., 4,578,224, Cl. 260-502.50F.
Leone-Bay, Andrea; and Timony, Peter E., 4,578,106, Cl. 71-92.000.

Ste Look: *See—*
Bardin, Roland; Bernard, Jean; Peyre, Henri; and Viodet, Patrice, 4,577,887, Cl. 280-628.000.

Stearns Manufacturing Company: *See—*
Evert, Karla R., 4,578,042, Cl. 441-117.000.

Stebbins, Edwin E.: *See—*
Crooke, Arthur W.; Gyles, Colin; and Stebbins, Edwin E., 4,578,640, Cl. 324-115.000.

Stedry, Bernd: *See—*
Geke, Juergen; and Stedry, Bernd, 4,578,208, Cl. 252-135.000.

Stefan, Alexander. Machine wall. 4,577,446, Cl. 52-425.000.

Stehouwer, William J., to A. J. Sparks & Company. Tag manufacturing apparatus. 4,578,139, Cl. 156-384.000.

Stein-Gelinas, Carolyn: *See—*
Simon, Mark I.; Cotter, Christopher G.; and Stein-Gelinas, Carolyn, 4,577,639, Cl. 128-709.000.

Stein Heurtey Ste Anonyme: *See—*
Braud, Yves; and Fromentin, Jean, 4,578,011, Cl. 414-152.000.

Stein, Roland: *See—*
Schlegel, Wolfgang; Wilke, Arthur; and Stein, Roland, 4,577,844, Cl. 269-71.000.

Steinke, Alexander, to Kraftwerk Union Aktiengesellschaft. Spacer for fuel assemblies of water-cooled nuclear reactors. 4,578,239, Cl. 376-441.000.

Steinmeyer, Robert D.: *See—*
Marko, Ollie W.; Steinmeyer, Robert D.; and Rentsch, Stefan, 4,578,494, Cl. 556-452.000.

Stenstrom, Yngve: *See—*
Skattebol, Lars; and Stenstrom, Yngve, 4,578,484, Cl. 549-360.000.

Stephan, Mark C. Casting decoring device. 4,577,671, Cl. 164-401.000.

Sterling, Robert E., to Medical Research Associates, Ltd. #2. Polymeric tubings comprising polysiloxane-modified elastomer compositions. 4,578,413, Cl. 524-269.000.

Stern, Eric W.: *See—*
Amundsen, Alan R.; and Stern, Eric W., 4,578,490, Cl. 556-136.000.
Amundsen, Alan R.; and Stern, Eric W., 4,578,491, Cl. 556-137.000.

Sterns, William G., to ITT Corporation. Broadband four-port TEM mode 180° printed circuit microwave hybrid. 4,578,652, Cl. 333-117.000.

Stetter GmbH: *See—*
Riker, Rudolf, 4,578,189, Cl. 210-253.000.

Stevens, Victor G.; and Huang, Pao-Ter, to Singer Company, The. Four-step buttonhole mechanism for sewing machines. 4,577,575, Cl. 112-449.000.

Stewart Stamping Corp.: *See—*
Phillipson, Walter M., 4,578,545, Cl. 179-178.000.

Stewart-Warner Corporation: *See—*
Grant, John W.; and Ferrari, Francis E., 4,578,574, Cl. 250-202.000.

Stiefel, Werner: *See—*
Engel, Andreas; Schumann, Frank; Stiefel, Werner; and Freistedt, Reinhold, 4,578,052, Cl. 493-11.000.

Stinson, Douglas G.: *See—*
Gupta, Mool C.; and Stinson, Douglas G., 4,578,684, Cl. 346-135.100.

Stipanuk, John M.; Walse, Alan S.; and Regnier, Kent E., to Molex Incorporated. Laminated electrical connector arrangement. 4,577,922, Cl. 339-176.0MP.

Stokes, Kenneth B., to Medtronic, Inc. Drug dispensing body implantable lead employing molecular sieves and methods of fabrication. 4,577,642, Cl. 128-784.000.

Stone, Donald J.: *See—*
Inman, Charles M.; and Stone, Donald J., 4,578,063, Cl. 604-175.000.

Storage Technology Corporation: *See—*
Bray, Stuart W.; Hughes, Timothy C.; and Ariniello, Susan E., 4,577,811, Cl. 242-195.000.

Storage Technology Partners II: *See—*
McIntosh, Robert; Mathews, Harlan P.; Rickert, David W.; Romano, Paul; and Walker, Jerry, 4,578,786, Cl. 369-44.000.

Stork Brabant B.V.: *See—*
Wyser, Johann, 4,577,516, Cl. 73-864.410.

Strangfeld, Reiner, to Georg Rost und Soehne Armaturenfabrik GmbH und Co. KG. Self closing valve. 4,577,829, Cl. 251-15.000.

Stratton, David M., to Morton Metalcraft Company. Portable bathing apparatus. 4,577,354, Cl. 4-585.000.

Stravitz, David M. Assembly of slidably interfitting storage units. 4,577,914, Cl. 312-10.000.

Streeter, James M.: *See—*
Bangerter, Blauer L.; and Streeter, James M., 4,577,861, Cl. 272-96.000.

Stricker, Herbert; Freund, Bernhard; Harwalik, Heribert; Rominger, Karl L.; Darda, Siegfried; Haselbarth, Volkmar; Arndts, Dietrich; Bechtel, Wolf D.; Bozler, Gerhard; Brickl, Rolf; and Gruber, Peter, to Boehringer Ingelheim GmbH. Retard form of pharmaceuticals with insoluble porous diffusion coatings. 4,578,264, Cl. 424-37.000.

Stringham, Glen E.: *See—*
Keller, Jack; and Stringham, Glen E., 4,577,802, Cl. 239-11.000.

Strobele, Hans-Peter: *See—*
Arnold, Herbert; Horbelt, Michael; Seibel, Berthold; Strobele, Hans-Peter; and Werner, Peter, 4,577,605, Cl. 123-479.000.

Strong, Robert T.: *See—*
Dellinger, Thomas B.; Boston, William G.; Sexton, James H.; and Strong, Robert T., 4,577,700, Cl. 175-40.000.

Strope, Daniel J.: *See—*
Kukes, Simon G.; Johnson, Marvin M.; Strope, Daniel J.; and Hogan, Robert J., 4,578,179, Cl. 208-110.000.
Kukes, Simon G.; Hogan, Robert J.; Coombs, Daniel M.; and Strope, Daniel J., 4,578,180, Cl. 208-110.000.

Struk, James R.: *See—*
Chan, Yuen H.; and Struk, James R., 4,578,779, Cl. 365-190.000.

Stuart, Stephen F.: *See—*
Amdahl, Gene M.; Lee, Hsiao-Peng S.; Rawlinson, Stephen J.; and Stuart, Stephen F., 4,578,750, Cl. 364-200.000.

Stupeck, Donald G.: *See—*
Nazarian, Ara W.; and Stupeck, Donald G., 4,578,625, Cl. 318-318.000.

Sturm, Ruger & Company, Inc.: *See—*
Ruger, William B.; and Larson, Lawrence L., 4,577,430, Cl. 42-69.00R.

Sudo, Masatoshi: *See—*
Yatori, Toshiaki; Sudo, Masatoshi; Kato, Takehiko; and Hosogi, Yasuhiro, 4,578,124, Cl. 148-12.00F.

Suga, Masaaki: *See—*
Niikura, Yasuhiro; Morimoto, Yoshiro; Hamada, Hideo; Suga, Masaaki; and Murasugi, Takashi, 4,577,737, Cl. 192-0.032.

Sugano, Shozo: *See—*
Sugisawa, Ko; Shibuki, Masaru; Imada, Imayoshi; Katada, Jun; Yamamoto, Yozo; Nakajima, Setsuo; Kishi, Toshio; and Sugano, Shozo, 4,578,274, Cl. 426-96.000.

Sugano, Toshiyuki: *See—*
Hani, Kiyoshi; Takei, Takako; Kodama, Minekazu; and Sugano, Toshiyuki, 4,578,308, Cl. 428-297.000.

Sugawara, Kiyoshi: *See—*
Takeyama, Kokichi; Sugawara, Kiyoshi; and Fukagawa, Yasuyuki, 4,577,850, Cl. 271-22.000.

Sugihara, Kazuyoshi: *See—*
Tojo, Toru; and Sugihara, Kazuyoshi, 4,578,607, Cl. 310-328.000.

Sugimoto, Michio: *See—*
Morimoto, Nobuyuki; Takatsu, Kozo; and Sugimoto, Michio, 4,578,259, Cl. 423-329.000.

Sugimoto, Yasuhiro, to Shibaura Denki Kabushiki Kaisha Horikawa Cho Sai Wia Kawasaki. Decoder for a D/A converter. 4,578,668, Cl. 340-347.0DA.

Sugino, Takashi: *See—*
Sugiura, Susumu; and Sugino, Takashi, 4,578,714, Cl. 358-283.000.

Sugisawa, Ko; Shibuki, Masaru; Imada, Imayoshi; Katada, Jun; Yamamoto, Yozo; Nakajima, Setsuo; Kishi, Toshio; and Sugano, Shozo, to House Food Industrial Co., Ltd. Process for preparing granular food products. 4,578,274, Cl. 426-96.000.

Sugita, Yutaka: *See—*
Suzuki, Ryo; Sugita, Yutaka; Takeuchi, Teruaki; Kodama, Naoki; Takeshita, Masatoshi; and Umezaki, Hiroshi, 4,578,775, Cl. 365-36.000.

Sugiura, Susumu; and Sugino, Takashi, to Canon Kabushiki Kaisha. Halftone image recording apparatus. 4,578,714, Cl. 358-283.000.

Sulzer Brothers Limited: *See—*
Kathriner, Josef, 4,577,666, Cl. 139-450.000.

Suman, George O., to Completion Tool Company. Sequential inflatable packer. 4,577,696, Cl. 166-387.000.

Sumino, Yasuhiro; Sonoi, Koji; and Doi, Muneharu, to Takeda Chemical Industries, Ltd. Producing nucleosides. 4,578,336, Cl. 435-88.000.

Sumino, Yoshitsugu; and Harada, Hiroshi, to Sanshin Kogyo Kabushiki Kaisha. Fish line entering prevention device for marine propeller. 4,578,040, Cl. 440-73.000.

Sumitomo Chemical Company, Limited: *See—*
Saito, Teruo; Asai, Kuniaki; and Hieda, Kazuo, 4,578,427, Cl. 525-150.000.
Takahashi, Yukoh; Fujii, Takeo; Shionoya, Masahisa; Yachigo, Shinichi; and Ishii, Tamaki, 4,578,410, Cl. 524-102.000.
Yoshimura, Masakatsu; Fujii, Takeo; Yachigo, Shinichi; and Ishii, Tamaki, 4,578,472, Cl. 546-188.000.

Sumitomo Electric Industries, Ltd.: *See—*
Tanaka, Gotaro; Fujiwara, Kunio; and Miyajiri, Tetsuo, 4,578,560, Cl. 219-121.0PR.

Sumitomo Heavy Industries Ltd.: *See—*
Oguro, Tadayuki; Yoshimoto, Teturo; and Niki, Hazime, 4,577,733, Cl. 188-217.000.

Sun Hydraulics Corporation: *See—*
DiBartolo, Ernest A., 4,577,831, Cl. 251-93.000.

Sunakawa, Kiyotaka: *See—*
Yamaguchi, Hisao; Kanno, Hideo; Okamiya, Yoshiaki; and Sunakawa, Kiyotaka, 4,578,395, Cl. 514-356.000.

Sunbeam Plastics Corporation: *See—*
Wright, David M., 4,577,770, Cl. 215-252.000.

Survival Technology Inc.: *See—*
Sarnoff, Stanley J.; Calkins, George B.; and Tarello, William R., 4,578,064, Cl. 604-191.000.

Sussman, Marvin L., to Cordis Corporation. Ventricular right angle connector and system. 4,578,057, Cl. 604-9.000.

Suter, Heinz; and Blum, Alex, to Sprecher & Schuh AG. Coupling system between an electromagnetic switch apparatus and an auxiliary contact block releasably mounted thereupon. 4,578,659, Cl. 335-131.000.

Suzue, Seigo: *See—*
Irikura, Tsutomu; Nishino, Keigo; Suzue, Seigo; and Ikeda, Toshiya, 4,578,392, Cl. 514-300.000.

Suzuki, Kooji: *See—*
Tokuyama, Shunji; Suzuki, Kooji; Hirasawa, Kunio; Yoshioka, Yoshio; and Arimatsu, Keiji, 4,578,730, Cl. 361-4.000.

Suzuki, Masaaki: *See—*
Noyori, Ryoji; Suzuki, Masaaki; Yanagisawa, Akira; and Kurozumi, Seizi, 4,578,482, Cl. 549-214.000.

Suzuki, Minoru: *See—*
Murakami, Toshiaki; Enomoto, Yoichi; and Suzuki, Minoru, 4,578,691, Cl. 357-5.000.

Suzuki, Ryo; Sugita, Yutaka; Takeuchi, Teruaki; Kodama, Naoki; Takeshita, Masatoshi; and Umezaki, Hiroshi, to Hitachi, Ltd. Magnetic bubble memory device. 4,578,775, Cl. 365-36.000.

Suzuki, Takashi; Fujimori, Hiroshi; and Odagiri, Masaru, to Matsushita Electric Industrial Co., Ltd. Magnetic recording medium. 4,578,729, Cl. 360-134.000.

Suzuki, Yasuo: *See—*
Ohnishi, Haruo; Yamaguchi, Kazuo; Suzuki, Yasuo; and Mochida, Nobuo, 4,578,400, Cl. 514-460.000.

Swaenepoel, Joseph: *See—*
Rabain, Jacques; and Swaenepoel, Joseph, 4,578,816, Cl. 455-27.000.

Swanstrom, Kenneth A., to Penn Engineering & Manufacturing Corp. Stud for mounting and method of mounting heat sinks on printed circuit boards. 4,577,402, Cl. 29-840.000.

Swenson, Robert D., to Pountain, Melvin D. Shoe tree. 4,577,360, Cl. 12-115.600.

Swier, Willem: *See—*
Racca, Richard F.; Swier, Willem; and Di Maio, Anthony E., 4,577,783, Cl. 222-386.500.

Swift, Gregory W.: *See—*
Migliori, Albert; Swift, Gregory W.; and Garrett, Steven L., 4,577,414, Cl. 33-363.00K.

Swiss Aluminium Ltd.: *See—*
Frischknecht, Bruno; and Wurgler, Rolf, 4,577,672, Cl. 164-428.000.

Sygnator, Henry A., to Illinois Tool Works Inc. Method of manufacturing a drill screw. 4,577,359, Cl. 10-10.00R.

Syntex (U.S.A.) Inc.: *See—*
Armenta, Richard D.; and Gibbons, Ian, 4,578,350, Cl. 435-7.000.

Systemform Datenbelege GmbH: *See—*
Hofmann, Horst; and Reckert, Jurgen, 4,577,789, Cl. 225-100.000.

Szeleny, Istvan: *See—*
Schickaneder, Helmut; Szeleny, Istvan; Morsdorf, Peter; and Ahrens, Kurt H., 4,578,389, Cl. 514-254.000.

Taga Electric Co., Ltd.: *See—*
Mishiro, Shoji, 4,577,500, Cl. 73-579.000.

Tagaya, Ryosaku, to Eisai Co., Ltd. Testing method for subjects to be tested and a device for said method. 4,577,969, Cl. 356-394.000.

Taguchi, Mitsushi: *See—*
Fukui, Kiyoshi; Kakeya, Noboru; and Taguchi, Mitsushi, 4,578,479, Cl. 548-269.000.

Taguchi, Noboru: *See—*
Kizaki, Kanji; Ishii, Hajime; Taguchi, Noboru; and Kuwamoto, Hiroshi, 4,577,480, Cl. 72-8.000.

Tahara, Tetsuya; and Arita, Masafumi, to Yoshitomi Pharmaceutical Industries, Ltd. Indeno(1,2-b)pyrrole derivatives. 4,578,397, Cl. 514-411.000.

Taishin Electric Ind. Co., Ltd.: *See—*
Eguchi, Kenzo; and Kobayashi, Jiro, 4,578,563, Cl. 219-273.000.

Tait, William C., to Minnesota Mining and Manufacturing Company. Distributed capacitance lc resonant circuit. 4,578,654, Cl. 333-175.000.

Takada, Juichiro. Seat belt anchor assembly. 4,577,888, Cl. 280-808.000.

Takagi, Mitiro: *See—*
Nagano, Hiroyuki; Takagi, Mitiro; Kubodera, Noboru; Matsunaga, Isao; Nabata, Hiroyuki; Ohba, Yasuhiro; Sakai, Kazushige; Hata, Shun-ichi; and Uchida, Yasumi, 4,578,465, Cl. 544-285.000.

Takahashi, Ichiro; Okamoto, Goro; and Okahashi, Kazuo, to Mitsubishi Denki Kabushiki Kaisha. Conduit tube of an electrode device for electrically heating underground hydrocarbon resources. 4,577,664, Cl. 138-149.000.

Takahashi, Mitsuru: *See—*
Ishikawa, Nobuo; and Takahashi, Mitsuru, 4,578,222, Cl. 260-413.000.

Takahashi, Yoshitaka, to Janome Sewing Machine Co., Ltd. Electronic sewing machine with a pattern display. 4,577,574, Cl. 112-445.000.

Takahashi, Yukoh; Fujii, Takeo; Shionoya, Masahisa; Yachigo, Shinichi; and Ishii, Tamaki, to Sumitomo Chemical Company, Limited. Piperidine derivatives, their production and stabilized polymer compositions containing same. 4,578,410, Cl. 524-102.000.

Takahashi, Yutaka; and Matsuoka, Hiroshi, to Fuji Photo Film Co., Ltd. Processing solution tank with hinged sections. 4,577,951, Cl. 354-331.000.

Takanashi, Itsuo; Nakagaki, Shintaro; Miyazaki, Kenichi; and Kuriyama, Takashi, to Victor Company of Japan, Limited. Color camera with stripe filter using controlled bias light for dark scene noise improvement. 4,578,699, Cl. 358-44.000.

Takano, Hiroshi, to Mitsuboshi Belting Ltd. Belt-type torque control system. 4,578,050, Cl. 474-17.000.

Takano, Katsuhiko: *See—*
Sawamura, Mitsuharu; Ito, Susumu; Matsushima, Masaaki; Kishi, Hiroyoshi; Sasamori, Eizo; Yoshihara, Satoshi; Iijima, Shigeharu; and Takano, Katsuhiko, 4,578,322, Cl. 428-694.000.

Takano, Masao, to Fuji Photo Film Co., Ltd. Radiation image recording and reproducing system with preferential processing function. 4,578,582, Cl. 250-327.200.

Takano, Mitsuyoshi; and Ando, Mamoru, to Anritsu Electric Co. Ltd. Spectrum analyzer. 4,578,638, Cl. 324-77.00B.

Takara Co., Ltd.: *See—*
Ohno, Kouzin, 4,578,046, Cl. 446-376.000.

Takase, Tadaaki: *See—*
Kitta, Toshiyuki; Abe, Wataru; and Takase, Tadaaki, 4,577,443, Cl. 52-230.000.

Takatsu, Kozo: *See—*
Morimoto, Nobuyuki; Takatsu, Kozo; and Sugimoto, Michio, 4,578,259, Cl. 423-329.000.

Takeda Chemical Industries, Ltd.: *See—*
Nishino, Hiroshi; and Aibe, Toshio, 4,578,256, Cl. 423-210.000.
Sumino, Yasuhiro; Sonoi, Koji; and Doi, Muneharu, 4,578,336, Cl. 435-88.000.

Takeda, Masakazu: *See—*
Teshima, Toru; Aizawa, Masanobu; Yoshida, Mitsunari; Shima, Toshiyuki; and Takeda, Masakazu, 4,578,043, Cl. 445-40.000.

Takei, Takako: *See—*
Hani, Kiyoshi; Takei, Takako; Kodama, Minekazu; and Sugano, Toshiyuki, 4,578,308, Cl. 428-297.000.

Takei, Toshio: *See—*
Ito, Sho; Tatsumi, Kenji; Kasahara, Kumio; Nakaguchi, Tomoyuki; Takei, Toshio; and Nakahara, Shojiro, 4,577,863, Cl. 273-26.00R.

Takemae, Yoshihiro, to Fujitsu Limited. Semiconductor device encapsulating a multi-chip array. 4,578,697, Cl. 357-75.000.

Takemae, Yoshihiro; Nakano, Tomio; and Sato, Kimiaki, to Fujitsu Limited. Dynamic semiconductor memory device. 4,578,776, Cl. 365-149.000.

Takenaka, Yuuichi: *See—*
Yamamoto, Takemi; Kuzuya, Susumu; Kagami, Isao; and Takenaka, Yuuichi, 4,577,984, Cl. 400-625.000.

Takeshita, Masatoshi: *See—*
Suzuki, Ryo; Sugita, Yutaka; Takeuchi, Teruaki; Kodama, Naoki; Takeshita, Masatoshi; and Umezaki, Hiroshi, 4,578,775, Cl. 365-36.000.

Takeuchi, Hajime: *See—*
Ito, Takeo; Ido, Tadashi; Takeuchi, Hajime; Hashimoto, Minoru; Maeda, Tatsumi; and Awa, Masashi, 4,578,313, Cl. 428-403.000.

Takeuchi, Masato: *See—*
Mori, Toshikatsu; Takeuchi, Seizi; Matsuda, Shimpei; Kumagi, Teruo; Kato, Akira; Yamashita, Hisao; and Takeuchi, Masato, 4,578,112, Cl. 75-108.000.

Takeuchi, Seizi: *See—*
Mori, Toshikatsu; Takeuchi, Seizi; Matsuda, Shimpei; Kumagi, Teruo; Kato, Akira; Yamashita, Hisao; and Takeuchi, Masato, 4,578,112, Cl. 75-108.000.

Takeuchi, Teruaki: *See—*
Suzuki, Ryo; Sugita, Yutaka; Takeuchi, Teruaki; Kodama, Naoki; Takeshita, Masatoshi; and Umezaki, Hiroshi, 4,578,775, Cl. 365-36.000.

Takeyama, Kokichi; Sugawara, Kiyoshi; and Fukagawa, Yasuyuki, to Fuji Xerox Co., Ltd. Automatic paper feeder for reproducing machine. 4,577,850, Cl. 271-22.000.

Takikawa, Makito, to Alps Electric Co., Ltd. Carriage drive unit. 4,577,521, Cl. 74-89.200.

Takita, Hitoshi; Noda, Sakuo; Mukaida, Yutaka; and Kobayashi, Hidetoshi, to Kureha Kagaku Kogyo Kabushiki Kaisha. Pharmaceutical composition for treating nephritis and method for treating nephritis. 4,578,404, Cl. 514-567.000.

Talmage, Joseph M.: *See—*
Oksman, Norman H.; Talmage, Joseph M.; and Wells, Henry J., 4,578,358, Cl. 436-66.000.
Oksman, Norman H.; Talmage, Joseph M.; and Wells, Henry J., 4,578,359, Cl. 436-66.000.

Talmon, David K.: *See—*
Talmon, Floyd H.; and Talmon, David K., 4,577,907, Cl. 297-452.000.

Talmon, Floyd H.; and Talmon, David K., to Air-Lock Plastics, Inc. Seat assembly. 4,577,907, Cl. 297-452.000.

Tam, Andrew C.: *See—*
Imaino, Wayne I.; and Tam, Andrew C., 4,577,503, Cl. 73-602.000.

Tamerlane Corporation: *See—*
Schoch, Donald C.; and Engelmann, Albert C., 4,578,318, Cl. 428-615.000.

Tamura, Masaru: *See—*
Hanada, Koji; Kinoshita, Yuji; and Tamura, Masaru, 4,578,660, Cl. 335-133.000.

Tan, Yoichi: *See—*
Satoh, Takane; and Tan, Yoichi, 4,578,797, Cl. 375-25.000.

Tanabe, Hisaki: *See—*
Umemoto, Hirotoshi; Tanabe, Hisaki; Kanakura, Akihiro; and Nakano, Shinji, 4,578,436, Cl. 525-443.000.

Tanaka, Gotaro; Fujiwara, Kunio; and Miyajiri, Tetsuo, to Sumitomo Electric Industries, Ltd. High frequency induction coupled plasma torch with concentric pipes having flanges thereon. 4,578,560, Cl. 219-121.0PR.

Tanaka, Hideto; and Fujisawa, Kyuichi, to Alps Electric Co., Ltd. Pen changeover mechanism for pen recorder. 4,578,685, Cl. 346-139.00R.

Tanaka, Hiroshi; and Baba, Hidetoshi, to NGK Spark Plug Co., Ltd. Nitride based cutting tool and method for producing the same. 4,578,087, Cl. 51-295.000.

Tanaka, Hiroshi; and Kato, Hisatoyo, to Fuji Photo Film Co., Ltd. Radiation image read-out method and apparatus. 4,578,581, Cl. 250-327.200.

Tanaka, Motoaki: *See—*
Imai, Kazuhiro; Ogata, Hiroshi; Tanaka, Motoaki; Nawa, Hiroyoshi; and Ishihara, Masami, 4,578,499, Cl. 560-21.000.

Tanaka, Tsuneo: *See—*
Haga, Kyosuke; and Tanaka, Tsuneo, 4,577,660, Cl. 137-625.240.

Tanaka, Yasunori; and Noda, Shinji, to Fuji Photo Film Co., Ltd. Apparatus for removing foreign matter from flexible support. 4,577,362, Cl. 15-256.500.

Taneda, Kozo; Chiba, Masae; Naka, Junichi; and Watanabe, Shunichi, to Snow Brand Milk Products Co., Ltd. Transport apparatus for flat articles. 4,578,002, Cl. 406-28.000.

Tanel, Michael L. Athletic shoe with improved pivot cleating. 4,577,422, Cl. 36-126.000.

Taniguchi, Yoshisada: *See—*
Shimizu, Keizo; Otsu, Shimpei; Fujimura, Toshio; Taniguchi, Yoshisada; and Nagami, Hayashi, 4,578,787, Cl. 369-77.200.

Taravella, Jody J.: *See—*
Astley, Vivian C.; Milan, Rudolph R.; and Taravella, Jody J., 4,577,804, Cl. 241-16.000.

Tarello, William R.: *See—*
Sarnoff, Stanley J.; Calkins, George B.; and Tarello, William R., 4,578,064, Cl. 604-191.000.

Tarman, Paul B., to Institute of Gas Technology. Fuel production by free fall countercurrent flow. 4,578,176, Cl. 208-8.00R.

Tashiro, Seiki: *See—*
Kawata, Hiroitsu; Ohmura, Tadayoshi; Hasumi, Shunji; Konno, Yutaka; Aruga, Masayoshi; Tashiro, Seiki; Konno, Toshimitsu; and Iwai, Ken, 4,578,391, Cl. 514-256.000.

Taszarek, Bruce J.: *See—*
Junker, Warren R.; Taszarek, Bruce J.; and Chizmar, David A., 4,578,643, Cl. 324-202.000.

Tatsumi, Kenji: *See—*
Ito, Sho; Tatsumi, Kenji; Kasahara, Kumio; Nakaguchi, Tomoyuki; Takei, Toshio; and Nakahara, Shojiro, 4,577,863, Cl. 273-26.00R.

Taylor, Robin: *See—*
Readings, Peter B.; Mihalik, Nandor; and Taylor, Robin, 4,578,341, Cl. 430-155.000.

TDK Corporation: *See—*
Harigane, Kotaro; Ihara, Keiichi; Ito, Tetsuro; and Shudo, Hirokazu, 4,578,010, Cl. 414-126.000.
Ohta, Hiroshi; Abe, Shinji; and Fukushima, Kiyoto, 4,578,314, Cl. 428-403.000.

Technicon Instruments Co. Ltd.: *See—*
Smith, David S., 4,578,360, Cl. 436-518.000.

Teigen, Bard C., to Combustion Engineering, Inc. Waterwall tube orifice mounting assembly. 4,577,593, Cl. 122-235.00D.

Teijin Limited: *See—*
Noyori, Ryoji; Suzuki, Masaaki; Yanagisawa, Akira; and Kurozumi, Seizi, 4,578,482, Cl. 549-214.000.
Yamaguchi, Hisao; Kanno, Hideo; Okamiya, Yoshiaki; and Sunakawa, Kiyotaka, 4,578,395, Cl. 514-356.000.

Tektronix, Inc.: *See—*
Anderson, Russell Y., 4,578,666, Cl. 340-146.200.
Hollister, Allen L., 4,578,667, Cl. 340-347.0SH.

Teledyne, Inc.: *See—*
Coulter, Leland E., 4,578,554, Cl. 219-121.0LC.

Telefunken electronic GmbH: *See—*
Schmidt, Wilfried, 4,577,393, Cl. 29-572.000.

Telelogic, Inc.: *See—*
Simmons, Richard M., 4,578,535, Cl. 179-2.0DP.

Telettra-Telefonia Elettronica e Radio S.p.A. Corso Buenos Aires: *See—*
Molo, Francesco; Cucchi, Silvio; and Cariolaro, Gianfranco, 4,578,790, Cl. 370-50.000.

Terakura, Yukio: *See—*
Ikemoto, Kazuhito; Terakura, Yukio; and Miyake, Takashi, 4,577,525, Cl. 74-440.000.

Terano, Hiroshi: *See—*
Kiyoto, Sumio; Nishikawa, Motoaki; Iwami, Morita; Terano, Hiroshi; and Kohsaka, Masanobu, 4,578,271, Cl. 424-117.000.

Teraoka Seiko Co., Ltd.: *See—*
Nakajima, Toshio, 4,578,140, Cl. 156-384.000.

Terashita, Takaaki, to Fuji Photo Film Co., Ltd. Photometric condition correcting method for photographic film. 4,577,961, Cl. 355-77.000.

Terrenzio, Gabriel M., to Acrowood Corporation. Impeller assembly for an impact crusher. 4,577,806, Cl. 241-275.000.

Teshima, Toru; Aizawa, Masanobu; Yoshida, Mitsunari; Shima, Toshiyuki; and Takeda, Masakazu, to Stanley Electric Co., Ltd. Method and apparatus for manufacturing light bulb with bead sealing gas. 4,578,043, Cl. 445-40.000.

Tetra Pak Developpement S.A.: *See—*
Reil, Wilhelm, 4,578,004, Cl. 408-87.000.

Texaco Inc.: *See—*
Gassmann, Zean Z.; Hawkins, Jeffrey T.; and Brown, Alfred, 4,577,688, Cl. 166-245.000.
Huang, Wann-Sheng; and Chien, Sze-Foo, 4,577,691, Cl. 166-263.000.
Lin, Chew-Chen; and Lankford, Frank L., Jr., 4,578,578, Cl. 250-252.100.
Sellstrom, Kathy B.; and Waddill, Harold G., 4,578,412, Cl. 524-243.000.
Vanderpool, Steven H.; and Watts, Lewis W., Jr., 4,578,518, Cl. 564-479.000.
Yeakey, Ernest L.; Speranza, George P.; Triebel, Carol A.; and McCoy, David R., 4,578,205, Cl. 252-76.000.

Texaco Inc. (Parent): *See—*
Larken, John M.; and Vanderpool, Steven H., 4,578,519, Cl. 564-479.000.

Texas Instruments Incorporated: *See—*
Haken, Roger A., 4,577,390, Cl. 29-570.000.

Textron, Inc.: *See—*
Shultz, Walter, 4,577,389, Cl. 29-568.000.

Th. Goldschmidt AG: *See—*
Rott, Hans; Koerner, Gotz; and Schmidt, Gunter, 4,578,116, Cl. 106-18.120.

Theeuwes, Felix: *See—*
Urquhart, John; and Theeuwes, Felix, 4,578,075, Cl. 604-892.000.

Thermal Bags by Ingrid, Inc.: *See—*
Skamser, Ingrid, 4,578,814, Cl. 383-99.000.

Thevenot, Gilles: *See—*
Voss, Josef; and Thevenot, Gilles, 4,577,589, Cl. 119-17.000.

Thomas, Alan F.: *See—*
Morris, Anthony F.; Delay, Francois; Gautschi, Fritz; Thomas, Alan F.; Giersch, Wolfgang K.; and Boschung, Andre , 4,578,277, Cl. 426-538.000.

Thomas, Mario L.: *See—*
van Rijsewijk, Lambertus J. J.; Thomas, Mario L.; Meijer, Henricus J. J. C.; and van der Wilk, Ronald, 4,578,661, Cl. 335-212.000.

Thomson-Brandt: *See—*
Pissot, Guy, 4,578,047, Cl. 464-30.000.

Thomson-CSF: *See—*
Etienne, Jean-Luc; and Cruchon, Jean-Claude, 4,578,655, Cl. 333-202.000.
Klausz, Remy, 4,578,752, Cl. 364-414.000.
Lacour, Clement-Francois; and Janer, Patrick, 4,578,656, Cl. 333-204.000.
Rabain, Jacques; and Swaenepoel, Joseph, 4,578,816, Cl. 455-27.000.
Rabain, Jacques; and Adrian, Serge, 4,578,817, Cl. 455-27.000.
Urien, Jacques; Bressan, Elie; Danguy, Jacques; and Narzul, Marcel, 4,578,658, Cl. 333-227.000.

Thyssen-Bornemisza, Inc., (TBG Inc.): *See—*
Borsh, Richard J.; Ripley, Robert W.; and Pate, Harold T., 4,578,528, Cl. 174-65.00G.

Tiedje, J. Thomas, to Exxon Research and Engineering Co. System for measuring carrier lifetime of semiconductor wafers. 4,578,641, Cl. 324-158.00D.

Tietjen, Marlene; Brown, Ivonne; and Macchio, Ralph A., to Revlon, Inc. Silicone-based cosmetic products containing pigment. 4,578,266, Cl. 424-63.000.

Tietjens, Eduard W., to U.S. Philips Corporation. Hair-cutting device. 4,577,408, Cl. 30-222.000.

Tihanyi, Jeno ; Fellinger, Christine; and Leipold, Ludwig, to Siemens Aktiengesellschaft. Circuit arrangement for drive of a thyristor with light. 4,578,595, Cl. 307-252.00R.

Tihanyi, Jenoe ; Fellinger, Christine; and Leipold, Ludwig, to Siemens Aktiengesellschaft. Circuit arrangement for driving a thyristor with a phototransistor. 4,578,596, Cl. 307-252.00R.

Timony, Peter E.: *See—*
Leone-Bay, Andrea; and Timony, Peter E., 4,578,106, Cl. 71-92.000.

Tipping, Donald W.: *See—*
Fisher, Robert W.; Maroone, James P.; Tipping, Donald W.; and Zanner, Frank J., 4,578,795, Cl. 373-70.000.

Tobback, Hubert J.: *See—*
Verhoeven, Constant T.; Tobback, Hubert J.; and Dompas, John M., 4,577,401, Cl. 29-825.000.

Toda, Akitoshi; and Mimura, Yoshiyuki, to Olympus Optical Co., Ltd. Method of removing electrostatic charge from electrophotographic photosensitive device. 4,578,332, Cl. 430-55.000.

Tojo, Toru; and Sugihara, Kazuyoshi, to Kabushiki Kaisha Toshiba. Piezoelectric precise rotation mechanism for slightly rotating an object. 4,578,607, Cl. 310-328.000.

Tokunaga, Noriyasu, to Kabushiki Kaisha Komatsu Seisakusho. Power transmission arrangement for a hydrostatically driven vehicle. 4,577,714, Cl. 180-70.100.

Tokuno, Masateru; Sawada, Tetsuya; and Mori, Yasuharu, to Rengo Co., Ltd. Control system for blank presser. 4,577,746, Cl. 198-462.000.

Tokuyama, Shunji; Suzuki, Kooji; Hirasawa, Kunio; Yoshioka, Yoshio; and Arimatsu, Keiji, to Hitachi, Ltd. High-voltage DC circuit breaker apparatus. 4,578,730, Cl. 361-4.000.

Tokyo Ohka Kogyo Co., Ltd.: *See—*
Hijikata, Isamu; Uehara, Akira; and Nakane, Hisashi, 4,578,559, Cl. 219-121.0PE.

Tokyo Rika Kikai Co., Ltd.: *See—*
Someya, Noboru; and Horikawa, Rikizo, 4,577,515, Cl. 73-863.730.

Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Ariizumi, Shoji; and Segawa, Makoto, 4,578,694, Cl. 357-41.000.
Gomei, Yoshio, 4,578,236, Cl. 376-136.000.
Horii, Tetsuo, 4,578,759, Cl. 364-478.000.
Komatsu, Shigeru; Inoue, Hiroshi; and Nakamura, Michio, 4,577,397, Cl. 29-576.00B.
Sahashi, Masashi; Inomata, Koichiro; Sori, Naoyuki; and Yamamiya, Hideki, 4,578,125, Cl. 148-31.570.
Shimazaki, Kuniya, 4,577,945, Cl. 353-101.000.
Ueno, Mitsushi; Shirogami, Tamotsu; and Segawa, Noboru, 4,578,135, Cl. 156-182.000.
Watanabe, Junji, 4,577,849, Cl. 271-9.000.

Tokyo Shibauru Denki Kabushiki Kaisha: *See—*
Ito, Takeo; Ido, Tadashi; Takeuchi, Hajime; Hashimoto, Minoru; Maeda, Tatsumi; and Awa, Masashi, 4,578,313, Cl. 428-403.000.

Tokyo Yogyo Kabushiki Kaisha: *See—*
Wakabayashi, Senzo, 4,577,785, Cl. 222-598.000.

Tolksdorf, Wolfgang: *See—*
Heitmann, Heinrich; Tolksdorf, Wolfgang; Welz, Fritz; and Witter, Klaus, 4,578,651, Cl. 332-7.510.

Tomita, Takao, to Honda Giken Kogyo Kabushiki Kaisha. Method and apparatus for supplying fuel to internal combustion engine. 4,577,597, Cl. 123-73.00A.

Tomita, Yukio; Nabeshima, Kenjiro; and Shibamoto, Nobuji, to Hitachi Zosen Corporation. Apparatus for feeding waste tire chips. 4,577,564, Cl. 110-110.000.

Tomiyama, Tsuyoshi, to Kotobuki Seiyaku Company Limited. Thiazole derivatives and procedure of synthesis thereof. 4,578,478, Cl. 548-193.000.

Tomlinson, Ronald S., to Heil-Quaker Corporation. Heat pipe central furnace. 4,577,615, Cl. 126-99.00A.

Tomomatsu, Hideo, to Quaker Oats Company. Preparing yeast bakery product flavors. 4,578,272, Cl. 426-18.000.

Tompkins, Dale A.: *See—*
Sicka, Richard W.; and Tompkins, Dale A., 4,578,024, Cl. 425-114.000.

Toray Industries, Inc.: *See—*
Ohigashi, Hiroji; Koga, Keiko; and Nakanishi, Toshiharu, 4,578,442, Cl. 526-255.000.

Toray Silicone Co., Ltd.: *See—*
Kakinoki, Hideo; and Ona, Isao, 4,578,084, Cl. 8-115.610.

Torbjorn Edmo AB: *See—*
Edmo, Torbjorn; and Sehlstedt, Per-Olof, 4,577,821, Cl. 248-421.000.

Torregrossa, Louis O.: *See—*
Prough, J. Robert; and Torregrossa, Louis O., 4,577,974, Cl. 366-307.000.

Torrington Company, The: *See—*
Fredericksen, Arnold E.; and Richtmeyer, Robert D., 4,577,911, Cl. 308-2.00R.

Toshiba Medical Supply Co., Ltd.: *See—*
Eguchi, Kenzo; and Kobayashi, Jiro, 4,578,563, Cl. 219-273.000.

Tournier, Jean-Louis, to Compagnie Generale des Etablissements Michelin. Material intended to form a joint between two bodies on the outside of their interface, methods of producing assemblies with such material; assemblies thus obtained. 4,578,421, Cl. 524-511.000.

Touya, Osamu: *See—*
Miyazaki, Senji; and Touya, Osamu, 4,578,296, Cl. 428-35.000.

Townsing, Leslie C., to Remote Interrogations Pty. Ltd. Interrogation device. 4,578,539, Cl. 179-2.00A.

Toyo Boseki Kabushiki Kaisha: *See—*
Uno, Keiichi; Nagano, Hikoichi; and Ikegami, Tadashi, 4,578,166, Cl. 8-115.520.

Toyo Kohan Co., Ltd.: *See—*
Shimizu, Nobuyoshi; Fujimoto, Terunori; Inui, Tsuneo; and Ishida, Masatoki, 4,578,319, Cl. 428-632.000.

Toyo Soda Manufacturing Co., Ltd.: *See—*
Ishikawa, Nobuo; and Takahashi, Mitsuru, 4,578,222, Cl. 260-413.000.

Toyoda Gosei Co., Ltd.: *See—*
Nakazawa, Takaaki; Kazaoka, Kenichi; Okazaki, Nobuo; and Nakashima, Kunihiko, 4,578,592, Cl. 307-10.00R.

Toyoda, Hiroshi: *See—*
Harada, Shinichi; Toyoda, Hiroshi; Honma, Katsuhiko; and Matsushita, Shigeru, 4,577,674, Cl. 164-448.000.

Toyoda Koki Kabushiki Kaisha: *See—*
Haga, Kyosuke; and Tanaka, Tsuneo, 4,577,660, Cl. 137-625.240.

Toyota Jidosha Kabushiki Kaisha: *See—*
Ikemoto, Kazuhito; Terakura, Yukio; and Miyake, Takashi, 4,577,525, Cl. 74-440.000.
Sogabe, Ichita, 4,577,832, Cl. 251-129.110.

Traina, Vincenzo. Apparatus to evaluate objectively the concentration and motility of particles suspended in a sample of liquid with data processor and display of the results. 4,577,963, Cl. 356-28.500.

Trame, Charles E., to Everbrite Electric Signs, Inc. Display device with movable tape assemblies. 4,577,428, Cl. 40-518.000.

Traub GmbH: *See—*
Franz, Wiesner, 4,577,416, Cl. 33-561:000.

Trementozzi, Quirino A.: *See—*
Deets, Gary L.; and Trementozzi, Quirino A., 4,578,423, Cl. 525-68.000.

Tri-Med Inc.: *See—*
Wong, Jacob Y., 4,578,762, Cl. 364-497.000.

Triebel, Carol A.: *See—*
Yeakey, Ernest L.; Speranza, George P.; Triebel, Carol A.; and McCoy, David R., 4,578,205, Cl. 252-76.000.

Trilogy Computer Development Partners, Ltd.: *See—*
Sliwa, John W.; Burt, Roy J.; Lee, Chune; MacKay, John; and Johnson, Cindy A., 4,577,398, Cl. 29-590.000.

Trip-Saver Inc.: *See—*
Heitkamp, Lawrence F., III; and Heitkamp, John J., Jr., 4,578,041, Cl. 441-30.000.

Trivedi, Viren P., to Mobil Oil Corporation. Flame retardant high impact poly paramethylstyrene compositions. 4,578,416, Cl. 524-371.000.

Troutner, Vernon H.: *See—*
King, Martin J.; and Troutner, Vernon H., 4,578,056, Cl. 604-6.000.

TRW Ehrenreich GmbH & Co., KG: *See—*
Gollub, Erwin; and Muller, Reinhardt, 4,577,988, Cl. 403-140.000.
Ito, Eiichi, 4,577,989, Cl. 403-140.000.

TRW Inc.: *See—*
Chen, Bor-Uei, 4,578,791, Cl. 372-50.000.
Rezek, Edward A.; and Zinkiewicz, Lawrence M., 4,578,126, Cl. 148-171.000.

Tsai, Tsu-Tzu; and Arnold, Fred E., to United States of America, Air Force. Method for making heterocyclic block copolymer. 4,578,432, Cl. 525-432.000.

Tsai, Tsu-Tzu; and Arnold, Fred E., to United States of America, Air Force. Method for making heterocyclic block copolymer. 4,578,434, Cl. 525-432.000.

Tsai, Tsu-Tzu; and Arnold, Fred E., to United States of America, Air Force. Method for making heterocyclic block copolymer. 4,578,435, Cl. 525-432.000.

Tsao, Sherman H.; and Sharum, Wayne P., to Mead Corporation, The. Multiple mode binary image processing. 4,578,713, Cl. 358-283.000.

Tsuge, Norihisa: *See—*
Ogawa, Junji; Nakano, Tomio; Nakano, Masao; Tsuge, Norihisa; and Horii, Takashi, 4,578,781, Cl. 365-203.000.

Tsujikado, Seiji: *See—*
Abe, Riichi; Tsuruta, Katsuji; and Tsujikado, Seiji, 4,578,748, Cl. 364-167.000.

Tsukutani, Seiichi; and Nakada, Naoki, to Matsishita Electric Industrial Co. Burn-out preventive circuit for commutatorless motor. 4,578,623, Cl. 318-254.000.

Tsuruta, Katsuji: *See—*
Abe, Riichi; Tsuruta, Katsuji; and Tsujikado, Seiji, 4,578,748, Cl. 364-167.000.

Tsuzuki, Hanzou, to Casio Computer Co., Ltd. Data reader. 4,578,568, Cl. 235-436.000.

Tunac, Josefino B.: *See—*
Stampwala, Suresh S.; French, James C.; Tunac, Josefino B.; Hurley, Timothy R.; and Bunge, Richard H., 4,578,383, Cl. 514-7.000.

Turner, Trueman D., to Plasmafusion, Inc. Liquid stabilized plasma burner having flexible cathode holder. 4,578,557, Cl. 219-121.0PP.

Turney, John R.: *See—*
Kunter, Richard S.; and Turney, John R., 4,578,163, Cl. 204-110.000.

Tyler Refrigeration Corporation: *See—*
Ibrahim, Fayez F.; and Bowman, Edward E., 4,577,467, Cl. 62-82.000.

Ube Industries, Ltd.: *See—*
Fukui, Kiyoshi; Kakeya, Noboru; and Taguchi, Mitsushi, 4,578,479, Cl. 548-269.000.

Uchida, Minoru; Komastu, Makoto; and Nakagawa, Kazuyuki, to Otsuka Pharmaceutical Co., Ltd. Carbostyril derivatives. 4,578,381, Cl. 514-233.000.

Uchida, Shunsuke: *See—*
Kitamura, Masao; Nakayama, Norio; Katsura, Ryoei; Ibe, Hidefumi; and Uchida, Shunsuke, 4,578,154, Cl. 204-1.00T.

Uchida, Tetsuo: *See—*
Sato, Yoshiyuki; Isozaki, Akio; Higo, Tomio; and Uchida, Tetsuo, 4,577,381, Cl. 29-157.400.

Uchida, Yasumi: *See—*
Nagano, Hiroyuki; Takagi, Mitiro; Kubodera, Noboru; Matsunaga, Isao; Nabata, Hiroyuki; Ohba, Yasuhiro; Sakai, Kazushige; Hata, Shun-ichi; and Uchida, Yasumi, 4,578,465, Cl. 544-285.000.

Uchimura, Kiyoshi: *See—*
Miki, Yutaka; Nozoe, Toshiro; and Uchimura, Kiyoshi, 4,578,698, Cl. 358-22.000.

Uchiyama, Mitsuo: *See—*
Matsui, Yukio; and Uchiyama, Mitsuo, 4,578,164, Cl. 204-129.550.

Uda, Hiroshi: *See—*
Nakano, Akihiko; Matsumoto, Hitoshi; Uda, Hiroshi; Komatsu, Yasumasa; Kuribayashi, Kiyoshi; and Ikegami, Seiji, 4,578,526, Cl. 136-251.000.

Uehara, Akira: *See—*
Hijikata, Isamu; Uehara, Akira; and Nakane, Hisashi, 4,578,559, Cl. 219-121.0PE.

Uemura, Toyohide: *See—*
Miyazaki, Kazuhide; Uemura, Toyohide; and Nakaso, Katsuzo, 4,578,109, Cl. 75-0.50C.

Ueno, Masahito, to Diesel Kiki Co., Ltd. Apparatus for controlling the speed of a vehicle with internal combustion engine. 4,577,718, Cl. 180-179.000.

Ueno, Masakazu; and Ichimura, Takeshige, to Director-General of Agency of Industrial Science and Technology. Thin film semiconductor device. 4,578,696, Cl. 357-59.000.

Ueno, Mitsushi; Shirogami, Tamotsu; and Segawa, Noboru, to Tokyo Shibaura Denki Kabushiki Kaisha. Fuel cell electrolyte matrix and method for manufacturing the same. 4,578,135, Cl. 156-182.000.

Ulster Polytechnic: *See—*
Currie, Brian; Gardiner, Thomas; and Green, Henry M., 4,578,301, Cl. 428-109.000.

Umemoto, Hirotoshi; Tanabe, Hisaki; Kanakura, Akihiro; and Nakano, Shinji, to Nippon Paint Co., Ltd. Coating resinous composition containing saturated alicyclic acid modified amphoteric polyester resin. 4,578,436, Cl. 525-443.000.

Umemura, Toshikaju: *See—*
Sakurai, Masanori; Miyawaki, Junichi; Umemura, Toshikaju; Kawata, Toshikatsu; and Kiboshi, Shinji, 4,578,422, Cl. 524-593.000.

Umezaki, Hiroshi: *See—*
Suzuki, Ryo; Sugita, Yutaka; Takeuchi, Teruaki; Kodama, Naoki; Takeshita, Masatoshi; and Umezaki, Hiroshi, 4,578,775, Cl. 365-36.000.

Union Carbide Corporation: *See—*
Brode, George L.; and Chow, Sui-Wu, 4,578,448, Cl. 528-139.000.
D'Silva, Themistocles Damasceno J., 4,578,402, Cl. 514-521.000.
Keen, Brian T., 4,578,524, Cl. 568-867.000.
Rana, Mahendrasinh D.; and Selines, Ronald J., 4,578,113, Cl. 75-124.000.

Union Oil Company of California: *See—*
Fenton, Donald M., 4,578,375, Cl. 502-230.000.
Larter, Stephen R., 4,578,356, Cl. 436-31.000.

United Kingdom Atomic Energy Authority: *See—*
Poole, Michael J.; and Crook, Michael J., 4,577,506, Cl. 73-633.000.
Rosevear, Alan; and Lambe, Christopher A., 4,578,351, Cl. 435-41.000.

United States of America
Agriculture: *See—*
Frank, Arlen W., 4,578,506, Cl. 560-148.000.
Lambert, Allan H.; Keating, Esmond J.; and Verburg, Gerald B., 4,577,476, Cl. 68-5.00D.
Air Force: *See—*
Bur, Anthony J.; and Roth, Steven C., 4,577,510, Cl. 73-708.000.
Connon, Thomas R., 4,577,347, Cl. 2-6.000.
Fielding, Lawrence E., 4,577,891, Cl. 285-62.000.
Haupt, Randy L., 4,578,680, Cl. 343-703.000.
O'Driscoll, Peter F., 4,577,542, Cl. 86-20.00D.
Platus, Daniel H., 4,577,812, Cl. 244-3.210.
Schack, Carl J.; and Christe, Karl O., 4,578,225, Cl. 260-550.000.
Tsai, Tsu-Tzu; and Arnold, Fred E., 4,578,432, Cl. 525-432.000.
Tsai, Tsu-Tzu; and Arnold, Fred E., 4,578,434, Cl. 525-432.000.
Tsai, Tsu-Tzu; and Arnold, Fred E., 4,578,435, Cl. 525-432.000.
Army: *See—*
Hollinger, Jeffrey O., 4,578,384, Cl. 514-8.000.
Energy: *See—*
Fisher, Robert W.; Maroone, James P.; Tipping, Donald W.; and Zanner, Frank J., 4,578,795, Cl. 373-70.000.
Korenko, Michael K., 4,578,130, Cl. 148-419.000.
Migliori, Albert; Swift, Gregory W.; and Garrett, Steven L., 4,577,414, Cl. 33-363.00K.
Health and Human Services: *See—*
Rosenberg, Martin, 4,578,355, Cl. 435-317.000.
National Aeronautics and Space Administration: *See—*
Hurd, William J., 4,578,678, Cl. 343-357.000.
Navy: *See—*
Caddy, Michael J., 4,578,766, Cl. 364-521.000.
Divecha, Amarnath P.; Karmarkar, Subhash D.; and Foltz, John V., 4,578,287, Cl. 427-250.000.
Gray, Henry F.; and Greene, Richard F., 4,578,614, Cl. 313-309.000.
Lewis, Bernard L., 4,578,677, Cl. 343-17.2PC.
Meekins, John F.; and Gursky, Herbert, 4,578,804, Cl. 378-84.000.

U.S. Philips Corporation: *See—*
Bartlett, Brian E.; Harris, James E.; and Wilkes, John G., 4,578,145, Cl. 156-616.00R.
Beitler, Franz, 4,578,724, Cl. 360-85.000.
Clarisse, Eddy J., 4,577,818, Cl. 248-27.300.
Claydon, Martin, 4,578,818, Cl. 455-110.000.
Heitmann, Heinrich; Tolksdorf, Wolfgang; Welz, Fritz; and Witter, Klaus, 4,578,651, Cl. 332-7.510.
Muller, Johannes C. A., 4,578,725, Cl. 360-85.000.
Posthuma de Boer, Abe; and Vegt, Jan W., 4,578,613, Cl. 310-800.000.
Stark, Johan S. H., 4,578,757, Cl. 364-461.000.
Tietjens, Eduard W., 4,577,408, Cl. 30-222.000.
van Rijsewijk, Lambertus J. J.; Thomas, Mario L.; Meijer, Henricus J. J. C.; and van der Wilk, Ronald, 4,578,661, Cl. 335-212.000.

United States Steel Corporation: *See—*
Brouse, S. Bernard, 4,577,554, Cl. 100-26.000.

United Technologies Automotive, Inc.: *See—*
Floyd, William M.; and Juzswik, David L., 4,578,591, Cl. 307-10.00R.

United Technologies Corporation: *See—*
Rosenbush, David M.; Zwicke, Philip E.; and Couch, Robert P., 4,578,756, Cl. 364-431.020.

Universal Data Systems, Inc.: *See—*
Pierce, O. Leon, 4,578,533, Cl. 179-2.0DP.

University of Georgia Research Foundation, Inc.: *See—*
Cormier, Milton J., 4,578,379, Cl. 514-223.000.
Cormier, Milton J., 4,578,385, Cl. 514-223.000.

Uno, Keiichi; Nagano, Hikoichi; and Ikegami, Tadashi, to Toyo Boseki Kabushiki Kaisha. Process of actinic irradiation of shaped polyester imide containing benzophenone tetracarboxylic diimide group and cross-linked product. 4,578,166, Cl. 8-115.520.

UOP Inc.: *See—*
Cetinkaya, Ismail B.; and Myers, Daniel N., 4,578,366, Cl. 502-6.000.
Cleary, Michael T., 4,578,223, Cl. 260-419.000.
Greenwood, Arthur R., 4,578,370, Cl. 502-37.000.
House, David W.; and Scott, Ray V., Jr., 4,578,446, Cl. 528-64.000.

Upjohn Company, The: *See—*
Skulnick, Harvey I.; Smith, Herman W.; Smith, Robert J.; and Wierenga, Wendell, 4,578,466, Cl. 544-309.000.
White, David R., 4,578,485, Cl. 549-361.000.

Urano, Fumio; Okura, Zenichi; and Kawasaki, Masahiro, to Asahi Kogaku Kogyo Kabushiki Kaisha. Photographic camera having a diaphragm actuator with preliminary displacement for lens compensation. 4,577,952, Cl. 354-455.000.

Urban, Manfred; and Schmitt, Dieter, to Merck Patent Gesellschaft mit beschrankter Haftung. Cutting oil for working nonferrous metals by cutting. 4,578,202, Cl. 252-33.400.

Urdal, David L.; March, Carl J.; and Dower, Steven K., to Immunex Corporation. Interleukin 2 receptor. 4,578,335, Cl. 435-68.000.

Urien, Jacques; Bressan, Elie; Danguy, Jacques; and Narzul, Marcel, to Thomson-CSF. Process for the production of an ultra-high frequency cavity resonator and cavity resonator obtained by this process. 4,578,658, Cl. 333-227.000.

Urquhart, John; and Theeuwes, Felix, to ALZA Corporation. Delivery system housing a plurality of delivery devices. 4,578,075, Cl. 604-892.000.

Urso, Charles L. Open face rotatable spool fishing reel. 4,577,807, Cl. 242-84.20C.

Ushio Denki Kabushiki Kaisha: *See—*
Arai, Tetsuji, 4,578,143, Cl. 156-617.00R.
Hiramoto, Tatsumi, 4,578,144, Cl. 156-617.00R.

USV Pharmaceutical Corp.: *See—*
Lee, Thomas D., 4,578,386, Cl. 514-241.000.

Utah State University Foundation: *See—*
Keller, Jack; and Stringham, Glen E., 4,577,802, Cl. 239-11.000.

VALEO: *See—*
Carmillet, Roger F. L., 4,577,740, Cl. 192-70.180.
Guillemin, Jean, 4,577,836, Cl. 251-356.000.

Van Coney, Robert H.: *See—*
Dirksing, William P.; Leman, Marvin G.; and Van Coney, Robert H., 4,578,028, Cl. 425-525.000.

Vanderbilt University: *See—*
Bradley, Charles A.; Benge, Herman; Parl, Fritz F.; and Seebaugh, William R., 4,577,514, Cl. 73-863.010.

van der Lely, Ary; and Bom, Cornelis J. G., to C. Van Der Lely N.V. Mowing machine. 4,577,456, Cl. 56-13.600.

Vanderpool, James L.: *See—*
Hamisch, Paul H., Jr.; Vanderpool, James L.; and Bain, James M., 4,578,138, Cl. 156-361.000.

Vanderpool, Steven H.; and Watts, Lewis W., Jr., to Texaco Inc. Catalytic (calcined catalyst and) preparation of linear polyethylenepolyamines (therewith). 4,578,518, Cl. 564-479.000.

Vanderpool, Steven H.: *See—*
Larken, John M.; and Vanderpool, Steven H., 4,578,519, Cl. 564-479.000.

Van Der Puy, Michael: *See—*
Dimmit, Jeffrey H.; Van Der Puy, Michael; and Soriano, David S., 4,578,250, Cl. 423-22.000.

van der Schyf, Cornelis J.: *See—*
Fourie, Theunis G.; Dekker, Theodor G.; Snyckers, Friedrich O.; and van der Schyf, Cornelis J., 4,578,520, Cl. 568-315.000.

van der Wilk, Ronald: *See—*
van Rijsewijk, Lambertus J. J.; Thomas, Mario L.; Meijer, Henricus J. J. C.; and van der Wilk, Ronald, 4,578,661, Cl. 335-212.000.

van Leerdam, Hans M. L., to Medistad Holland V.V. Infusion liquid pouch. 4,578,074, Cl. 604-408.000.

Van Nguyen, Thanh: *See—*
Lare, Donald W.; and Van Nguyen, Thanh, 4,578,288, Cl. 427-365.000.

vanOmmering, Gerrit: *See—*
Koehler, Charles W.; vanOmmering, Gerrit; and Puester, Neil H., 4,578,324, Cl. 429-26.000.

van Rijckevorsel, Rainer; Kasielke, Joachim; Macho, Heinz; Schafer, Peter; and Nenninger, Klaus, to Boehringer Mannheim GmbH. Method of and apparatus for making a test strip and a test strip made by such method. 4,578,716, Cl. 360-1.000.

van Rijsewijk, Lambertus J. J.; Thomas, Mario L.; Meijer, Henricus J. J. C.; and van der Wilk, Ronald, to U.S. Philips Corporation. Method of manufacturing a cathode ray tube and device for carrying out this method. 4,578,661, Cl. 335-212.000.

Van Uden, Adrianus A.; and Claessen, Johannes A. H., to Heuge Export AG. Process for the production of tufted carpet tiles. 4,578,132, Cl. 156-72.000.

Varghese, Philip: *See—*
Derouane, Eric G.; and Varghese, Philip, 4,578,181, Cl. 208-110.000.

Varian Associates, Inc.: *See—*
James, Bertram G.; Dinapoli, Frank C.; and Hayes, Lloyd P., 4,578,620, Cl. 315-3.500.

Vasta, Joseph A., to Du Pont de Nemours, E. I., and Company. Electrically conductive coating composition of a chlorosulfonated polyethylene. 4,578,286, Cl. 427-327.000.

VEB Kombinat Polygraph "Werner Lamberz" Leipzig: *See—*
Engel, Andreas; Schumann, Frank; Stiefel, Werner; and Freistedt, Reinhold, 4,578,052, Cl. 493-11.000.

VEB Kombinat Textima: *See—*
Bachmann, Bernd; Kuss, Peter; Schuhmann, Frank; and Wollner, Jurgen, 4,577,854, Cl. 271-227.000.

Veba-Glas AG: *See—*
Hubner, Jochen; Knoth, Werner-Dieter; and Hullen, Helmut, 4,578,099, Cl. 65-26.000.

Vegt, Jan W.: *See—*
Posthuma de Boer, Abe; and Vegt, Jan W., 4,578,613, Cl. 310-800.000.

Veillette, Norman T.; and Malik, Robert J., to Nashua Corporation. Carbonless developer sheet. 4,578,690, Cl. 346-212.000.

Verburg, Gerald B.: *See—*
Lambert, Allan H.; Keating, Esmond J.; and Verburg, Gerald B., 4,577,476, Cl. 68-5.00D.

Vereinigte Edestahlwerke Aktiengesellschaft (VEW): *See—*
Cadek, Walter, 4,578,794, Cl. 373-42.000.

Vereyken, Franciscus A. Bicycle. 4,577,879, Cl. 280-256.000.

Verhoeven, Constant T.; Tobback, Hubert J.; and Dompas, John M., to Metallurgie Hoboken-Overpelt. Process and apparatus for separating a suspension bar from an electrode. 4,577,401, Cl. 29-825.000.

Verma, Shiv P.: *See—*
Charalambous, Salomi T.; Horvath, Mark P.; House, Cathy P.; Iapicco, Jeffrey A.; Lue, Paul D.; and Verma, Shiv P., 4,578,796, Cl. 375-8.000.

Verrerie Cristallerie d'Arques J. G. Durand & Cie.: *See—*
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Versuchs- und Lehranstalt fur Spiritusfabrikation und Fermentationstechnologie in Berlin: *See—*
Bruckner, Harald, 4,578,525, Cl. 568-918.000.

Vetco Offshore, Inc.: *See—*
Milberger, Lionel J.; Lochte, Glen E.; and Masciopinto, Anthony J., 4,577,686, Cl. 166-208.000.

Vicario, Cesare: *See—*
Vicario, Guido F.; Vicario, Cesare; de Luca, Ugo; and Zelioli, Giuseppe, 4,578,169, Cl. 204-299.00R.

Vicario, Guido F.; Vicario, Cesare; de Luca, Ugo; and Zelioli, Giuseppe, to Elvi S.p.A. Apparatus for total and fractional analyses of proteins. 4,578,169, Cl. 204-299.00R.

Vickers PLC: *See—*
Lawson, Leslie E.; and Ingham, Michael, 4,577,948, Cl. 354-299.000.

Vickers Public Limited Company: *See—*
Ray, Colin J.; and Smith, Geoffrey, 4,577,497, Cl. 73-126.000.

Victor Company of Japan, Limited: *See—*
Sasamura, Kouhei, 4,578,647, Cl. 330-253.000.
Takanashi, Itsuo; Nakagaki, Shintaro; Miyazaki, Kenichi; and Kuriyama, Takashi, 4,578,699, Cl. 358-44.000.

Viegener, Walter, to Franz Viegener II, Firma. Air-regulation device for the inlet nozzles of a whirlpool bath. 4,577,353, Cl. 4-544.000.

Viodet, Patrice: *See—*
Bardin, Roland; Bernard, Jean; Peyre, Henri; and Viodet, Patrice, 4,577,887, Cl. 280-628.000.

Viola, Michael S., to Polaroid Corporation. Ink jet printing substrate. 4,578,285, Cl. 427-209.000.

Viramontes-Brown, Ricardo: *See—*
Price-Falcon, Juan F.; and Viramontes-Brown, Ricardo, 4,578,110, Cl. 75-34.000.

Virginia Patent Development Corp.: *See—*
Bogese, Stephen B., II, 4,577,921, Cl. 339-176.00M.

VISA U.S.A., Inc.: *See—*
Zeidler, Howard M., 4,578,530, Cl. 178-22.090.

Vizard, David, to Shelburne Incorporated. Exhaust mufflers for internal combustion engines. 4,577,724, Cl. 181-265.000.

Vnek, John; Prince, Alfred M.; and Ikram, Hafeez, to New York Blood Center, Inc. Synthetic antigenic peptide derived from hepatitis B surface antigen. 4,578,217, Cl. 260-112.50R.

Voest-Alpine Aktiengesellschaft: *See—*
Droscher, Bernhard; and Zitz, Alfred, 4,578,627, Cl. 318-632.000.
Wrulich, Herwig; Schoffmann, Franz; and Maier, Wilfried, 4,577,892, Cl. 285-136.000.

Vogt, Robert E.: *See—*
Oshefsky, Daniel J.; Gavronski, Paul A.; Vogt, Robert E.; and Rajala, Gregory J., 4,578,133, Cl. 156-164.000.

Volker, Werner: *See—*
Kiss, Akos; Kleinschmit, Peter; Volker, Werner; and Halbritter, Gunter, 4,578,212, Cl. 252-301.40F.

Vollert, Emmeran, to Siemens Aktiengesellschaft. Ink printhead. 4,578,686, Cl. 346-140.00R.

Vollmer Werke Maschinenfabrik GmbH: *See—*
Lenard, Peter; Pokorny, Erich; and Bailer, Norbert, 4,577,533, Cl. 76-41.000.

Volz, Robert A., to Scotfoam Corporation. Conductive polyurethane foam and process of contacting a polyurethane foam with a mixture of swelling agent and chemical additive. 4,578,406, Cl. 521-52.000.

von Wedel, Rudiger: *See—*
Frauenfeld, Martin; and von Wedel, Rudiger, 4,577,678, Cl. 165-10.000.

Voss, Josef; and Thevenot, Gilles. Wire basket bird cage which can be assembled from wire grating parts. 4,577,589, Cl. 119-17.000.

W. L. Gore & Assoc., Inc.: *See—*
Inman, Charles M.; and Stone, Donald J., 4,578,063, Cl. 604-175.000.

WABCO Westinghouse Steuerungstechnik GmbH: *See—*
Gottling, Helmut, 4,577,732, Cl. 188-67.000.

Wada, Keisuke; Kobayashi, Yoshimitsu; and Kasori, Yukio, to Mitsubishi Chemical Industries Limited. Process for the production of cinnamic acid esters. 4,578,507, Cl. 560-104.000.

Waddill, Harold G.: *See—*
Sellstrom, Kathy B.; and Waddill, Harold G., 4,578,412, Cl. 524-243.000.

Wade, Peter C.: *See—*
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Wafab, Inc.: *See—*
Kring, Charles J., 4,578,137, Cl. 156-345.000.

Wagner, David L.: *See—*
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Wagner, John R., Jr.: *See—*
Clauson, Melvil B.; and Wagner, John R., Jr., 4,578,316, Cl. 428-516.000.

Wagner, Peter: *See—*
Heitmann, Jurgen; Loos, Rolf; and Wagner, Peter, 4,578,719, Cl. 360-31.000.

Waiser, Shimon. Fastening means for a removable revolver cylinder. 4,577,429, Cl. 42-59.000.

Wajda, Michael L.: *See—*
Yianilos, Peter N.; and Wajda, Michael L., 4,578,673, Cl. 340-703.000.

Wakabayashi, Senzo, to Nippon Kokan Kabushiki Kaisha; Nippon Rotary Nozzle Co., Ltd.; Kokan Kikai Kogyo Kabushiki Kaisha; and Tokyo Yogyo Kabushiki Kaisha. Hinged rotary nozzle. 4,577,785, Cl. 222-598.000.

Wakasa, Akinori: *See—*
Morita, Tetuya; Wakasa, Akinori; Ogawa, Yutaka; and Ogasawara, Takayuki, 4,577,600, Cl. 123-270.000.

Wake, Harold E. Axial compression hose coupling. 4,577,894, Cl. 285-242.000.

Wako Pure Chemical Industries Ltd.: *See—*
Imai, Kazuhiro; Ogata, Hiroshi; Tanaka, Motoaki; Nawa, Hiroyoshi; and Ishihara, Masami, 4,578,499, Cl. 560-21.000.

Walker, Adrian W., to Lever Brothers Company. Detergent bleach compositions. 4,578,206, Cl. 252-95.000.

Walker, Jerry: *See—*
McIntosh, Robert; Mathews, Harlan P.; Rickert, David W.; Romano, Paul; and Walker, Jerry, 4,578,786, Cl. 369-44.000.

Wallner, Kurt: *See—*
Grosser, Siegfried; Ludwig, Christian; Wallner, Kurt; Herzog, Karl; and Bayerl, Eugen, 4,577,944, Cl. 352-35.000.

Walse, Alan S.: *See—*
Stipanuk, John M.; Walse, Alan S.; and Regnier, Kent E., 4,577,922, Cl. 339-176.0MP.

Walterbos, Johannes W. M.: *See—*
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Walters, Harry J.: *See—*
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Wang, Chien-Yuan. Joint mechanism for folding ladders, furniture and the like. 4,577,986, Cl. 403-93.000.

Ward, Julie A.: *See—*
Harwood, Alan R.; and Ward, Julie A., 4,577,513, Cl. 73-862.040.

Warner, Donald F., to Heat Exchanger Industries, Inc. Method of manufacturing heat exchangers. 4,577,380, Cl. 29-157.30C.

Warner-Lambert Company: *See—*
Domagala, John M.; and Schroeder, Mel C., 4,578,473, Cl. 546-156.000.
Oksman, Norman H.; Talmage, Joseph M.; and Wells, Henry J., 4,578,358, Cl. 436-66.000.
Oksman, Norman H.; Talmage, Joseph M.; and Wells, Henry J., 4,578,359, Cl. 436-66.000.
Rieger, Martin M., 4,578,405, Cl. 514-679.000.
Satzinger, Gerhard; Barth, Hubert; Hartenstein, Johannes; Herrmann, Manfred; Fritschi, Edgar; and Schutt, Ilse-Dore, 4,578,380, Cl. 514-232.000.
Stampwala, Suresh S.; French, James C.; Tunac, Josefino B.; Hurley, Timothy R.; and Bunge, Richard H., 4,578,383, Cl. 514-7.000.

Warner-Lambert Technologies, Inc.: *See—*
Siegmund, Walter P., 4,578,096, Cl. 65-3.110.

Wartenpfuhl, Friedel: *See—*
Lindorfer, Walter; Jahn-Held, Wilhelm; Gerschler, Lutz J.; Jandel, Berthold; and Wartenpfuhl, Friedel, 4,577,999, Cl. 405-53.000.

Watanabe, Junji, to Tokyo Shibaura Denki Kabushiki Kaisha. Multiple source paper conveyor system. 4,577,849, Cl. 271-9.000.

Watanabe, Shunichi: *See—*
Taneda, Kozo; Chiba, Masae; Naka, Junichi; and Watanabe, Shunichi, 4,578,002, Cl. 406-28.000.

Watanabe, Toshiyuki; Yagihara, Morio; and Adachi, Keiichi, to Fuji Photo Film Co., Ltd. Silver halide color photographic light-sensitive materials. 4,578,346, Cl. 430-548.000.

Waterman, Paul S.: *See—*
Singh, Balwant; and Waterman, Paul S., 4,578,513, Cl. 564-56.000.

Waters, Mark H., to AMP Incorporated. Boot and shielded cable connector. 4,577,919, Cl. 339-59.00M.

Watkins, Joseph J.: *See—*
Jackson, Winston J., Jr.; and Watkins, Joseph J., 4,578,453, Cl. 528-302.000.

Watson Industries, Inc.: *See—*
Watson, William S., 4,578,650, Cl. 331-160.000.

Watson, William G., to Olin Corporation. Method and apparatus for casting ingot with refined grain structure. 4,577,676, Cl. 164-468.000.

Watson, William S., to Watson Industries, Inc. Resonance drive oscillator circuit. 4,578,650, Cl. 331-160.000.

Watts, Glen A. Variable width two-way gang plow. 4,577,698, Cl. 172-225.000.

Watts, Lewis W., Jr.: *See—*
Vanderpool, Steven H.; and Watts, Lewis W., Jr., 4,578,518, Cl. 564-479.000.

Wavin B.V.: *See—*
Holsappel, Albert, 4,578,329, Cl. 430-18.000.

Waxman, Menashe B.: *See—*
Berkovits, Barouh V.; Waxman, Menashe B.; and Combs, William J., 4,577,633, Cl. 128-419.0PG.
Wean United, Inc.: *See—*
Greenberger, Joseph I., 4,577,482, Cl. 72-201.000.
Weaver, Gregory A.; Price, Lester F.; Britt, Crawford R.; and Shalaby, W. Shalaby, to Ethicon, Inc. Surgical filaments from block copolyetheramides. 4,578,451, Cl. 528-292.000.
Webb, Jimmy L., to General Electric Company. Bis-imides containing heterocyclic aromatic rings. 4,578,470, Cl. 546-256.000.
Weber, Frank D.: *See—*
Silke, Gerald W.; and Weber, Frank D., 4,577,499, Cl. 73-432.00R.
Webster Spring Co. Inc.: *See—*
Hagemeister, Robert C., 4,577,841, Cl. 267-103.000.
Weghaupt, Erich; Intichar, Lutz; and Schnapper, Christoph, to Kraftwerk Union Aktiengesellschaft. Device for coupling two shafts of a rotating machine for heat transfer and sealing. 4,577,871, Cl. 277-8.000.
Weglage, David E., to McIntire, Harold K., a part interest. Snap ring tool. 4,577,382, Cl. 29-229.000.
Wehner, Wolfgang; and Grade, Reinhardt, to Ciba-Geigy Corporation. Ammonium stannates-(IV). 4,578,489, Cl. 556-100.000.
Wehr Corporation: *See—*
Klimczak, William J., 4,578,092, Cl. 55-302.000.
Wehrmacher, William H.: *See—*
Flies, William P.; and Wehrmacher, William H., 4,578,573, Cl. 235-492.000.
Weichenrieder, Erich, to Recycloplast AG. Anti-friction bearing unit of a synthetic resin processing machine. 4,577,980, Cl. 384-488.000.
Weidemann, Jorn U., to L. P. Weidemann & Sonner. Apparatus for attachment to a baler. 4,577,553, Cl. 100-4.000.
Weier, Richard M.: *See—*
Collins, Paul W.; and Weier, Richard M., 4,578,505, Cl. 560-118.000.
Weinert, Friedrich. Multiple power wheel engine. 4,577,464, Cl. 60-531.000.
Wells, Carol L. Wheelchair attached storage bag. 4,577,903, Cl. 297-188.000.
Wells, Henry J.: *See—*
Oksman, Norman H.; Talmage, Joseph M.; and Wells, Henry J., 4,578,358, Cl. 436-66.000.
Oksman, Norman H.; Talmage, Joseph M.; and Wells, Henry J., 4,578,359, Cl. 436-66.000.
Welterlin, Raymond E., to Buehler Products, Inc. Brushless DC electric motor and tachogenerator assembly. 4,578,606, Cl. 310-68.00R.
Welz, Fritz: *See—*
Heitmann, Heinrich; Tolksdorf, Wolfgang; Welz, Fritz; and Witter, Klaus, 4,578,651, Cl. 332-7.510.
Werner, Peter: *See—*
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Werntgen, Ewald: *See—*
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Werrbach, Donn R. Dynamic verification gate circuit. 4,578,648, Cl. 330-281.000.
Wesseldine, Dianne M. Incontinence and protective device for animals. 4,577,591, Cl. 119-143.000.
West Electric Co., Ltd.: *See—*
Iwata, Hiroshi; and Makino, Hiroshi, 4,578,783, Cl. 367-99.000.
West, Jeffery A.; and Fletcher, Thomas D., to Signetics Corporation. Voltage signal translator. 4,578,602, Cl. 307-475.000.
West, Leslie L., to Plessey Overseas Limited. Electro-acoustic transducers. 4,578,808, Cl. 381-88.000.
West, Paul R.: *See—*
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Westerfeld, Eric C.: *See—*
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Westermann, Wolfgang. Synthetic resin film wound capacitor. 4,578,737, Cl. 361-308.000.
Western Geophysical Company of America: *See—*
Gelfand, Valery A., 4,578,785, Cl. 367-35.000.
Savit, Carl H., 4,577,723, Cl. 181-120.000.
Westinghouse Electric Corp.: *See—*
Cadwell, Dennis J., 4,578,240, Cl. 376-441.000.
Degenford, James E.; and Boire, Daniel C., 4,578,629, Cl. 323-217.000.
Gyugyi, Laszlo; Heinrich, Theodore M.; and Cho, Gyu-Hyeong, 4,578,746, Cl. 363-161.000.
Harrison, Earnest R., Jr., 4,578,676, Cl. 343-17.10R.
Healey, Daniel J., III; and Hahn, Hyo K., 4,578,634, Cl. 324-56.000.
Hornak, Leonard P., 4,577,361, Cl. 15-21.00R.
Junker, Warren R.; Taszarek, Bruce J.; and Chizmar, David A., 4,578,643, Cl. 324-202.000.
Karol, Herman S., 4,577,729, Cl. 187-95.000.
Kemeny, George A., 4,577,545, Cl. 89-8.000.
Miller, Robert C., 4,578,639, Cl. 324-96.000.
Peterson, Steven H.; and Jackovitz, John F., 4,578,165, Cl. 204-157.750.
Sahasrabudhe, Arum P.; Dadpey, Habib; Cirillo, Fernando A.; Merlo, Antonia C.; and Zuber, Pierre A. M., 4,578,754, Cl. 364-426.000.
Shuck, David L.; and Knudsen, Irving E., 4,577,972, Cl. 366-101.000.
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Westphal, Paul: *See—*
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Wetzel, Donald C. Air line pressure tester. 4,577,511, Cl. 73-756.000.
Weyerhaeuser Company: *See—*
Lancaster, Eugene P., 4,578,072, Cl. 604-385.00A.
Wheat, Thomas E.: *See—*
Goldberg, Erwin; and Wheat, Thomas E., 4,578,219, Cl. 260-112.50R.
Wheeler, Gary. Sailboat mast ladder. 4,577,726, Cl. 182-93.000.
Wheeler, Jay A.; and Willmore, James A., to Opto Systems, Inc. Bar code reader with diode feedback in amplifier. 4,578,576, Cl. 250-214.00A.
White, David R., to Upjohn Company, The. Synthesis of spectinomycin analogs by an improved Grignard process. 4,578,485, Cl. 549-361.000.
White, James M.; May, Ronald W.; and Gulliver, Michael D., to International Business Machines (IBM). Video data signal digitization and correction system. 4,578,711, Cl. 358-282.000.
White, Lester L.: *See—*
Borg, Kevin E.; Halas, William P.; Mattes, Hans G.; McLear, Paul M.; and White, Lester L., 4,578,540, Cl. 179-2.00A.
Whitehead, Derek J., to Castex Products Limited. Pharmaceutical pellet. 4,578,263, Cl. 424-15.000.
Whitehead, Howard A.; and Braun, Ralph V., to Kimberly-Clark Corporation. Breathable baffle composite. 4,578,069, Cl. 604-370.000.
Wickmann-Werke Boblingen GmbH: *See—*
Efinger, Arnold, 4,578,550, Cl. 200-144.00B.
Widen, Bo, to GKN-Stenman AB. Cylinder lock arrangement for preventing picking. 4,577,479, Cl. 70-364.00A.
Wiechert, Rudolf: *See—*
Furst, Andor; Muller, Marcel; Kerb, Ulrich; and Wiechert, Rudolf, 4,578,475, Cl. 548-126.000.
Wierenga, Wendell: *See—*
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Wiese, Heiner; and Gramss, Rainer, to ITW Ateco GmbH. Guiding sleeve for head rests at vehicle seats. 4,577,904, Cl. 297-410.000.
Wilke, Arthur: *See—*
Schlegel, Wolfgang; Wilke, Arthur; and Stein, Roland, 4,577,844, Cl. 269-71.000.
Wilkerson, David T., to Masters Wilkerson Manufacturing Co. Ltd. Backing for a photo or picture frame. 4,577,822, Cl. 248-463.000.
Wilkes, John G.: *See—*
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Williams, Allton C. Artificial leg. 4,578,083, Cl. 623-42.000.
Williams, Clyde C.: *See—*
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Williams, James R.: *See—*
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Williams, John W., to Boeing Company, The. Hydrofoil seal. 4,577,579, Cl. 114-274.000.
Williams, Richard E., to Numa Corporation. Portable bar code scanning device and method. 4,578,571, Cl. 235-472.000.
Williams, Richard J., to Rockwell International Corporation. Brake drum. 4,577,734, Cl. 188-218.00R.
Williamson, Calvin C.: *See—*
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Willmore, James A.: *See—*
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Wilson, Bruce C., to American Hospital Supply Corporation. Construction of a monolithic reinforced catheter with flexible portions. 4,577,543, Cl. 87-11.000.
Wilson, John F.: *See—*
Marshall, Peter E. G.; Piper, Francis R.; and Wilson, John F., 4,577,489, Cl. 73-40.700.
Wilson, Joseph H.; Rapp, Jeffrey C.; Southern, Brian K.; and Elliott, Martin E., to Medical Safetec, Inc. Waste disposal system. 4,578,185, Cl. 210-85.000.
Windish, Willis E.: *See—*
Richards, David L.; and Windish, Willis E., 4,577,524, Cl. 74-411.500.
Winegeart, Mitchel E. High pressure ball valve with an interference fit closure seal. 4,577,830, Cl. 251-84.000.
Winter, Joseph; and Pryor, Michael J., to Olin Corporation. Optical fiber communication cables and method and apparatus for assembling same. 4,577,925, Cl. 350-96.230.
Wintershall AG: *See—*
Lindorfer, Walter; Jahn-Held, Wilhelm; Gerschler, Lutz J.; Jandel, Berthold; and Wartenpfuhl, Friedel, 4,577,999, Cl. 405-53.000.
Wirsching, Wayne S. Method and apparatus for generating energy. 4,577,460, Cl. 60-39.350.
Witter, Klaus: *See—*
Heitmann, Heinrich; Tolksdorf, Wolfgang; Welz, Fritz; and Witter, Klaus, 4,578,651, Cl. 332-7.510.
Wohrle, Rudolf: *See—*
Kober, Kurt; Wohrle, Rudolf; and Kohler, Robert, 4,577,882, Cl. 280-446.00R.

Wolf, Rainer: *See—*
Gembus, Hans-Dieter; and Wolf, Rainer, 4,577,659, Cl. 137-614.060.
Wollner, Jurgen: *See—*
Bachmann, Bernd; Kuss, Peter; Schuhmann, Frank; and Wollner, Jurgen, 4,577,854, Cl. 271-227.000.
Wong, Jacob Y., to Tri-Med Inc. Self-calibrating carbon dioxide analyzer. 4,578,762, Cl. 364-497.000.
Woo Kyong Industrial Co., Ltd.: *See—*
Kim, Myong H., 4,577,778, Cl. 220-404.000.
Wood, Edward T., to Completion Tool Company. Sequential inflatable packer. 4,577,695, Cl. 166-387.000.
Wood, Eric, to Insituform Intl Inc. Method of cutting apertures in lining in underground pipes. 4,577,388, Cl. 29-558.000.
Woodard, Lillie M.: *See—*
Birch, William A.; and Woodard, Lillie M., 4,578,599, Cl. 307-272.00A.
Woods, Allan O., to Hydril Company. Remote switch position indicator. 4,578,669, Cl. 340-518.000.
Wooster, George S.: *See—*
Kirtley, Stephen W.; and Wooster, George S., 4,578,283, Cl. 427-85.000.
Worbois, Robert J., to American Standard Inc. Quick release valve arrangement. 4,577,910, Cl. 303-69.000.
Word, Nancy S.: *See—*
Katkocin, Dennis M.; Word, Nancy S.; and Yang, Shiow-Shong, 4,578,352, Cl. 435-99.000.
Worth, Ernest H. Laminated material. 4,578,309, Cl. 428-315.500.
Wright, David M., to Sunbeam Plastics Corporation. Tamper indicating screw cap. 4,577,770, Cl. 215-252.000.
Wright, Hal E.: *See—*
Regan, Michael T.; and Wright, Hal E., 4,578,330, Cl. 430-37.000.
Wright, Paul R.; and Hill, Dale A., to Douglas & Lomason Company. Valve bag placing machine and method. 4,577,454, Cl. 53-492.000.
Wright, Richard F.: *See—*
Saccocio, Edward J.; Kiser, T. Kay; Wright, Richard F.; and Head, Donald L., 4,578,340, Cl. 430-138.000.
Wrulich, Herwig; Schoffmann, Franz; and Maier, Wilfried, to Voest-Alpine Aktiengesellschaft. Arrangement for supplying a pressurized liquid to a rotating machine part. 4,577,892, Cl. 285-136.000.
Wu, Frederick Y., to Perkin-Elmer Corporation, The. Continuous alignment target pattern and signal processing. 4,578,590, Cl. 250-548.000.
Wurgler, Rolf: *See—*
Frischknecht, Bruno; and Wurgler, Rolf, 4,577,672, Cl. 164-428.000.
Wyatt, Ray E.: *See—*
Mundt, Randall S.; and Wyatt, Ray E., 4,578,128, Cl. 148-191.000.
Wyse, Harold G. Scraper ring for cleaning a hydraulic cylinder rod or shaft. 4,577,363, Cl. 15-256.500.
Wyser, Johann, to Stork Brabant B.V. Device for taking a sample from a continuously advancing web. 4,577,516, Cl. 73-864.410.
Xerox Corporation: *See—*
Genovese, Frank C.; and Lannom, James W., 4,578,615, Cl. 313-497.000.
Gruber, Robert J.; Koch, Ronald J.; and Knapp, John F., 4,578,338, Cl. 430-120.000.
Yip, Kwok-leung; and Daniele, Joseph J., 4,577,933, Cl. 350-358.000.
Zambelli, Robert G., 4,577,960, Cl. 355-75.000.
Yachigo, Shinichi: *See—*
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Yoshimura, Masakatsu; Fujii, Takeo; Yachigo, Shinichi; and Ishii, Tamaki, 4,578,472, Cl. 546-188.000.
Yager, John W., administrator: *See—*
Go, Santos W., deceased; and Jabarin, Saleh A., 4,577,768, Cl. 215-1.00C.
Yagi, Junsuke: *See—*
Ashina, Yoshiro; Fujita, Takeyuki; Fukatsu, Michio; and Yagi, Junsuke, 4,578,516, Cl. 564-479.000.
Yagihara, Morio: *See—*
Ohno, Shigeru; Kishimoto, Shinzo; Ikegawa, Akihiko; and Yagihara, Morio, 4,578,345, Cl. 430-393.000.
Watanabe, Toshiyuki; Yagihara, Morio; and Adachi, Keiichi, 4,578,346, Cl. 430-548.000.
Yagishita, Kikuji: *See—*
Oota, Makoto; Nekozuka, Masamichi; and Yagishita, Kikuji, 4,578,672, Cl. 340-702.000.
Yamada, Tetsusyo; and Hirate, Shintaro, to NGK Spark Plug Co., Ltd.; and Mitsubishi Denki Kabushiki Kaisha. Air/fuel ratio detector. 4,578,171, Cl. 204-406.000.
Yamada, Tetsusyo; and Hirate, Shintaro, to NGK Spark Plug Co.; and Mitsubishi Denki K.K. Air/fuel ratio detector. 4,578,172, Cl. 204-412.000.
Yamaguchi, Hisao; Kanno, Hideo; Okamiya, Yoshiaki; and Sunakawa, Kiyotaka, to Teijin Limited. Certain aralkylaminoalkyl esters of 1,4 dihydropyridines as antihypertensive. 4,578,395, Cl. 514-356.000.
Yamaguchi, Kazuo: *See—*
Ohnishi, Haruo; Yamaguchi, Kazuo; Suzuki, Yasuo; and Mochida, Nobuo, 4,578,400, Cl. 514-460.000.
Yamaguchi, Shingo, to Ricoh Company, Ltd. Picture signal quantizing circuit. 4,578,715, Cl. 358-283.000.
Yamaha Hatsudoki Kabushiki Kaisha: *See—*
Foote, Douglas C.; and Grinde, James E., 4,577,712, Cl. 180-53.400.
Nomura, Kazuhiko; Kazuta, Hisashi; and Kimura, Hiroshi, 4,577,719, Cl. 180-219.000.
Yamakawa, Kazuo; and Dohi, Toshihide, to Minolta Camera Kabushika Kaisha. Video projector lens system. 4,577,935, Cl. 350-432.000.
Yamamiya, Hideki: *See—*
Sahashi, Masashi; Inomata, Koichiro; Sori, Naoyuki; and Yamamiya, Hideki, 4,578,125, Cl. 148-31.570.
Yamamoto, Naoki; and Sakudo, Noriyuki, to Hitachi, Ltd. Method of forming electrical contact to a semiconductor substrate via a metallic silicide or silicon alloy layer formed in the substrate. 4,577,396, Cl. 29-576.00B.
Yamamoto, Soichi. Rice-hulling apparatus. 4,577,552, Cl. 99-524.000.
Yamamoto, Sumio: *See—*
Kosemura, Kinjiro; Yamashita, Yoshimi; Nakayama, Noriaki; and Yamamoto, Sumio, 4,578,343, Cl. 430-296.000.
Yamamoto, Takemi; Kuzuya, Susumu; Kagami, Isao; and Takenaka, Yuuichi, to Brother Kogyo Kabushiki Kaisha. Paper feeding device for a printing apparatus providing alternatively different feed paths. 4,577,984, Cl. 400-625.000.
Yamamoto, Yozo: *See—*
Sugisawa, Ko; Shibuki, Masaru; Imada, Imayoshi; Katada, Jun; Yamamoto, Yozo; Nakajima, Setsuo; Kishi, Toshio; and Sugano, Shozo, 4,578,274, Cl. 426-96.000.
Yamana, Kozi, to Casio Computer Co., Ltd. Electronic musical instrument having a pan-pot function. 4,577,540, Cl. 84-1.270.
Yamanouchi Pharmaceutical Co., Ltd.: *See—*
Kawata, Hiroitsu; Ohmura, Tadayoshi; Hasumi, Shunji; Konno, Yutaka; Aruga, Masayoshi; Tashiro, Seiki; Konno, Toshimitsu; and Iwai, Ken, 4,578,391, Cl. 514-256.000.
Yamashita, Hidekazu; and Kominami, Hideyuki, to Matsushita Electric Industrial Company, Limited. Multi-unit induction heat cooking apparatus having a common noise rejection filter. 4,578,553, Cl. 219-10.770.
Yamashita, Hisao: *See—*
Mori, Toshikatsu; Takeuchi, Seizi; Matsuda, Shimpei; Kumagi, Teruo; Kato, Akira; Yamashita, Hisao; and Takeuchi, Masato, 4,578,112, Cl. 75-108.000.
Yamashita, Yoshimi: *See—*
Kosemura, Kinjiro; Yamashita, Yoshimi; Nakayama, Noriaki; and Yamamoto, Sumio, 4,578,343, Cl. 430-296.000.
Yampolsky, Jack S.; and Carosella, David P. E., Jr., to GA Technologies Inc. Heat exchanger. 4,577,682, Cl. 165-160.000.
Yanagisawa, Akira: *See—*
Noyori, Ryoji; Suzuki, Masaaki; Yanagisawa, Akira; and Kurozumi, Seizi, 4,578,482, Cl. 549-214.000.
Yanagiuchi, Yukihiro: *See—*
Sakakima, Hiroshi; Satomi, Mitsuo; Yanagiuchi, Yukihiro; and Senno, Harufumi, 4,578,728, Cl. 360-125.000.
Yang, Kei-Hsiung, to International Business Machines Corporation. Weak boundary storage liquid crystal display devices with bias voltage. 4,577,930, Cl. 350-332.000.
Yang, Shiow-Shong: *See—*
Katkocin, Dennis M.; Word, Nancy S.; and Yang, Shiow-Shong, 4,578,352, Cl. 435-99.000.
Yang, Tai-Her. Remote controlled surveillance train car. 4,578,665, Cl. 340-48.000.
Yasuda, Keiichi: *See—*
Aoyagi, Masao; Kobayashi, Kazufumi; and Yasuda, Keiichi, 4,577,934, Cl. 350-430.000.
Yasuda, Yutaka; Hirata, Yasuo; Murakami, Shuji; Nakamura, Katsuhiro; and Furuya, Yukitsuna. Synchronization circuit for a Viterbi decoder. 4,578,800, Cl. 375-106.000.
Yater, Jerry L., to Force Control Industries, Inc. Drive system with oil shear clutch-brake unit. 4,577,738, Cl. 192-18.00A.
Yazaki, Yoshio, to ORC Manufacturing Co., Ltd. Exposure apparatus. 4,577,959, Cl. 355-67.000.
Yazawa, Yoshiaki; Miyakawa, Nobuaki; Mukai, Toji; Ikeda, Takahide; and Kamei, Tatsuya, to Hitachi, Ltd. Semiconductive photodetector device. 4,578,693, Cl. 357-30.000.
Yazolino, Lauren F.: *See—*
Faggin, Federico; Klein, Jerry A.; Yazolino, Lauren F.; Korody, Robert; Ha, Eric P. L.; and Kerman, Stephan, 4,578,537, Cl. 179-2.0DP.
Yeakey, Ernest L.; Speranza, George P.; Triebel, Carol A.; and McCoy, David R., to Texaco, Inc. Use of methylene azelaic acid as a corrosion inhibitor. 4,578,205, Cl. 252-76.000.
Yeaney, Gerald L.: *See—*
Silka, John L.; and Yeaney, Gerald L., 4,577,764, Cl. 211-41.000.
Yianilos, Peter N.; and Wajda, Michael L., to Franklin Computer Corporation. Video color generator circuit for computer. 4,578,673, Cl. 340-703.000.
Yip, Kwok-leung; and Daniele, Joseph J., to Xerox Corporation. Gap modulator for high speed scanners. 4,577,933, Cl. 350-358.000.
Yoichi, Sakamoto, to Matsushita Electric Industrial Co., Ltd. Television synchronous receiver. 4,578,706, Cl. 358-195.100.
Yonge, Lawrence W., III: *See—*
Hooper, Robert L.; and Yonge, Lawrence W., III, 4,578,682, Cl. 343-916.000.
Yoshida, Eiji: *See—*
Kudo, Yoshihiko; and Yoshida, Eiji, 4,578,257, Cl. 423-243.000.
Yoshida, Katsushige: *See—*
Omae, Yoshihiro; Ishikawa, Kunio; Fukao, Takahisa; and Yoshida, Katsushige, 4,577,385, Cl. 29-402.180.
Yoshida, Mitsunari: *See—*
Teshima, Toru; Aizawa, Masanobu; Yoshida, Mitsunari; Shima, Toshiyuki; and Takeda, Masakazu, 4,578,043, Cl. 445-40.000.

Yoshihara, Satoshi: *See—*
Sawamura, Mitsuharu; Ito, Susumu; Matsushima, Masaaki; Kishi, Hiroyoshi; Sasamori, Eizo; Yoshihara, Satoshi; Iijima, Shigeharu; and Takano, Katsuhiko, 4,578,322, Cl. 428-694.000.
Yoshimoto, Teturo: *See—*
Oguro, Tadayuki; Yoshimoto, Teturo; and Niki, Hazime, 4,577,733, Cl. 188-217.000.
Yoshimura, Masakatsu; Fujii, Takeo; Yachigo, Shinichi; and Ishii, Tamaki, to Sumitomo Chemical Company, Limited. 2,2,6,6-Tetramethylpiperidine and its production. 4,578,472, Cl. 546-188.000.
Yoshioka, Yoshio: *See—*
Tokuyama, Shunji; Suzuki, Kooji; Hirasawa, Kunio; Yoshioka, Yoshio; and Arimatsu, Keiji, 4,578,730, Cl. 361-4.000.
Yoshitomi Pharmaceutical Industries, Ltd.: *See—*
Tahara, Tetsuya; and Arita, Masafumi, 4,578,397, Cl. 514-411.000.
Yoshizuka Seiki Co., Ltd.: *See—*
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Youden, Richard W.: *See—*
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Youmans, Barry J.: *See—*
Ciammaichella, Richard C.; and Youmans, Barry J., 4,578,583, Cl. 250-339.000.
Young, Gerald A.: *See—*
Kramer, Timothy A.; Young, Gerald A.; and Kock, Ronald W., 4,578,068, Cl. 604-368.000.
Yuchi, Kazuhide, to Mitsubishi Denki Kabushiki Kaisha. Air conditioning device for a vehicle. 4,577,800, Cl. 237-2.00A.
Yudate, Kozo; and Nagasawa, Ken, to Kawasaki Steel Corporation. Method for producing a precursor pitch for carbon fiber. 4,578,177, Cl. 208-45.000.
Yuen, John S., to John Manufacturing Limited. Rechargeable vacuum cleaner. 4,577,365, Cl. 15-339.000.
Yui, Yoshio, to NEC Corporation. Digital image processing by hardware using cubic convolution interpolation. 4,578,812, Cl. 382-41.000.
Yusa, Hideo: *See—*
Gotou, Tadashi; Kawamura, Fumio; Sagawa, Norihiko; and Yusa, Hideo, 4,578,325, Cl. 429-91.000.
Ouchi, Isao; and Yusa, Hideo, 4,578,294, Cl. 428-35.000.
Yutori, Toshiaki; Sudo, Masatoshi; Kato, Takehiko; and Hosogi, Yasuhiro, to Kabushiki Kaisha Kobe Seiko Sho. High strength low carbon steels, steel articles thereof and method for manufacturing the steels. 4,578,124, Cl. 148-12.00F.
Zahavi, Joseph: *See—*
Halliwell, Michael J.; and Zahavi, Joseph, 4,578,155, Cl. 204-15.000.
Halliwell, Michael J.; and Zahavi, Joseph, 4,578,157, Cl. 204-15.000.
Zambelli, Robert G., to Xerox Corporation. Document registration apparatus. 4,577,960, Cl. 355-75.000.
Zanner, Frank J.: *See—*
Fisher, Robert W.; Maroone, James P.; Tipping, Donald W.; and Zanner, Frank J., 4,578,795, Cl. 373-70.000.
Zapka, Werner: *See—*
Behringer, Uwe; Bohlen, Harald; Nehmiz, Peter; and Zapka, Werner, 4,578,587, Cl. 250-492.200.
Zeidler, Howard M., to VISA U.S.A., Inc. End-to-end encryption system and method of operation. 4,578,530, Cl. 178-22.090.
Zelioli, Giuseppe: *See—*
Vicario, Guido F.; Vicario, Cesare; de Luca, Ugo; and Zelioli, Giuseppe, 4,578,169, Cl. 204-299.00R.
Zell, John T., to Zell, John T.; and Franchino, Michael R. Arrow holder. 4,577,612, Cl. 124-41.00A.
Zembayashi, Michio: *See—*
Pratt, Sandra L.; Lucas, Gary M.; and Zembayashi, Michio, 4,578,492, Cl. 556-407.000.
Zibold, Karl: *See—*
Bohringer, Wilfried; Eheim, Franz, deceased; Fehlmann, Wolfgang; Laufer, Helmut; and Zibold, Karl, 4,577,606, Cl. 123-506.000.
Ziegenhorn, Joachim: *See—*
Siedel, Joachim; Neumann, Ulrich; Ziegenhorn, Joachim; Batz, Hans-Georg; Lenz, Helmut; Pautz, Brigitte; and Albert, Winfried, 4,578,361, Cl. 436-547.000.
Ziehn, Klaus-Dieter, to H.F. & Ph.F Reemtsma GmbH & Co. Process for improving the fillability of tobacco. 4,577,646, Cl. 131-296.000.
Zingher, Arthur R., to International Business Machines Corporation. Inspection of multilayer ceramic circuit modules by electrical inspection of unfired green sheets. 4,578,279, Cl. 427-10.000.
Zinkiewicz, Lawrence M.: *See—*
Rezek, Edward A.; and Zinkiewicz, Lawrence M., 4,578,126, Cl. 148-171.000.
Zitting, Gordon T., to Microdot Incorporated. Seal assembly. 4,577,874, Cl. 277-165.000.
Zitz, Alfred: *See—*
Droscher, Bernhard; and Zitz, Alfred, 4,578,627, Cl. 318-632.000.
Zochbauer, Michael, to Hartmann & Braun AG. Low-pressure, hollow cathode lamp. 4,578,618, Cl. 313-563.000.
Zoeller, Joseph R., to Eastman Kodak Company. Catalyst recovery process. 4,578,368, Cl. 502-28.000.
Zoltan, Leszlauer. Anode structure for electrolytic fibre capacitors and method for manufacturing the same. 4,578,738, Cl. 361-324.000.
Zsidai, Jozsef: *See—*
Csizer, Zoltan; Sikos, Karoly; Bacskai, Laszlo; Joo, Istvan; Niedermayer, Eleonora; Rethy, Lajos; and Zsidai, Jozsef, 4,578,270, Cl. 424-92.000.
Zuber, Pierre A. M.: *See—*
Sahasrabudhe, Arum P.; Dadpey, Habib; Cirillo, Fernando A.; Merlo, Antonia C.; and Zuber, Pierre A. M., 4,578,754, Cl. 364-426.000.
Zwicke, Philip E.: *See—*
Rosenbush, David M.; Zwicke, Philip E.; and Couch, Robert P., 4,578,756, Cl. 364-431.020.
Zymark Corporation: *See—*
Hutchins, Burleigh M.; Buote, William J.; and Finn, Lawrence J., 4,578,764, Cl. 364-513.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 25TH DAY OF MARCH, 1986

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Atanasoff, John V.; Clark, W. Kenneth; Henderson, David; and Wreghitt, Kenneth W., to Avco Corporation. Overflying munitions device and system. Re. 32,094, Cl. 102-384.000.
Avco Corporation: *See—*
Atanasoff, John V.; Clark, W. Kenneth; Henderson, David; and Wreghitt, Kenneth W., Re. 32,094, Cl. 102-384.000.
Chopra, Inder J., to Research and Education Institute, Inc. Radioimmunoassay for measurement of thyroxine (T_4) and triiodothyronine (T_3) in blood serum. Re. 32,098, Cl. 424-1.000.
Clark, W. Kenneth: *See—*
Atanasoff, John V.; Clark, W. Kenneth; Henderson, David; and Wreghitt, Kenneth W., Re. 32,094, Cl. 102-384.000.
Eastman Kodak Company: *See—*
Silverman, Robert A.; and Hoyen, Harry A., Re. 32,097, Cl. 430-217.000.
Graf, Gerhard: *See—*
Hill, Bernhard; Schmidt, Klaus; and Graf, Gerhard, Re. 32,099, Cl. 346-108.000.
Henderson, David: *See—*
Atanasoff, John V.; Clark, W. Kenneth; Henderson, David; and Wreghitt, Kenneth W., Re. 32,094, Cl. 102-384.000.
Hill, Bernhard; Schmidt, Klaus; and Graf, Gerhard, to U.S. Philips Corporation. Optical printer. Re. 32,099, Cl. 346-108.000.
Hoyen, Harry A.: *See—*
Silverman, Robert A.; and Hoyen, Harry A., Re. 32,097, Cl. 430-217.000.
Jeffries, Ernest H., Jr., to Resco Products, Inc. End block. Re. 32,096, Cl. 52-396.000.
Philip Morris Incorporated: *See—*
Wu, D. Louise; and Swain, James W., Re. 32,095, Cl. 131-275.000.
Resco Products, Inc.: *See—*
Jeffries, Ernest H., Jr., Re. 32,096, Cl. 52-396.000.
Research and Education Institute, Inc.: *See—*
Chopra, Inder J., Re. 32,098, Cl. 424-1.000.
Schmidt, Klaus: *See—*
Hill, Bernhard; Schmidt, Klaus; and Graf, Gerhard, Re. 32,099, Cl. 346-108.000.
Silverman, Robert A.; and Hoyen, Harry A., to Eastman Kodak Company. Blended grain direct-positive emulsions and photographic elements and processes for their use. Re. 32,097, Cl. 430-217.000.
Swain, James W.: *See—*
Wu, D. Louise; and Swain, James W., Re. 32,095, Cl. 131-275.000.
U.S. Philips Corporation: *See—*
Hill, Bernhard; Schmidt, Klaus; and Graf, Gerhard, Re. 32,099, Cl. 346-108.000.
Wreghitt, Kenneth W.: *See—*
Atanasoff, John V.; Clark, W. Kenneth; Henderson, David; and Wreghitt, Kenneth W., Re. 32,094, Cl. 102-384.000.
Wu, D. Louise; and Swain, James W., to Philip Morris Incorporated. Cooked flavors for smoking products. Re. 32,095, Cl. 131-275.000.

LIST OF DESIGN PATENTEES

Abe, Karl H.; and Gevert, Klaus V., to Bayerische Motoren Werke AG. Lower fairing for motorcycles. 283,119, 3-25-86, Cl. D12-182.000.
Ace Orthopedic Company Inc.: *See—*
Stednitz, Denis P., 283,083, Cl. D3-74.000.
American Home Products Corporation (Del.): *See—*
Godsey, James H., 283,159, Cl. D24-31.000.
Godsey, James H., 283,161, Cl. D24-31.000.
Godsey, James H., 283,162, Cl. D24-31.000.
Armatron International, Inc.: *See—*
Cunning, Joseph M., 283,152, Cl. D22-19.000.
DeYoreo, Sal, 283,153, Cl. D22-19.000.
Baker, Daniel A., to Percom Data Corporation. Microfloppy disk drive. 283,131, 3-25-86, Cl. D14-109.000.
Bannigan, Francis R. Combined drawer unit and electric powerboard. 283,084, 3-25-86, Cl. D3-74.000.
Bate, Peter, to Dominion Odor Control Ltd. Germicidal disc container for sterilizing a telephone mouthpiece. 283,128, 3-25-86, Cl. D14-59.000.
Bathker, Daniel A.: *See—*
Fourcher, Frederic; Bathker, Daniel A.; and Cole, Thomas W., 283,129, Cl. D14-90.000.
Bayerische Motoren Werke AG: *See—*
Abe, Karl H.; and Gevert, Klaus V., 283,119, Cl. D12-182.000.
Bigando, Donald E., to International Business Machines Corporation. Packaging container for computer software. 283,104, 3-25-86, Cl. D9-418.000.
Boenning, Charles B., to Claiborne Electronics, Inc. Combined door viewer and two-way intercom unit. 283,130, 3-25-86, Cl. D14-92.000.
Bott, John A. Vehicle luggage rack stanchion. 283,117, 3-25-86, Cl. D12-157.000.
Bouchard, Andre C.: *See—*
Wierzbicki, Julian J.; Hough, Harold L.; and Bouchard, Andre C., 283,169, Cl. D26-3.000.
Chaussures Mephisto S.A.: *See—*
Michaeli, Martin, 283,079, Cl. D2-320.000.
Michaeli, Martin, 283,080, Cl. D2-322.000.
Chicago Cutlery Consumer Products, Inc.: *See—*
Tolentino, John R., 283,093, Cl. D6-470.000.
Claiborne Electronics, Inc.: *See—*
Boenning, Charles B., 283,130, Cl. D14-92.000.
Cole, Thomas W.: *See—*
Fourcher, Frederic; Bathker, Daniel A.; and Cole, Thomas W., 283,129, Cl. D14-90.000.
Collister, Kenneth D., to Miles Laboratories, Inc. Reflectance photometer. 283,107, 3-25-86, Cl. D10-46.000.
Compton, Fred A. Paper towel holder. 283,095, 3-25-86, Cl. D6-521.000.
Coyne, Patrick J., to Meritus Industries, Inc. Toy mannequin. 283,148, 3-25-86, Cl. D21-154.000.
Crandall, Melvin. Racquet sports shorts. 283,077, 3-25-86, Cl. D2-42.000.
Cunning, Joseph M., to Armatron International, Inc. Housing for electronic insect killer. 283,152, 3-25-86, Cl. D22-19.000.
Cushing, John J.; and Driscoll, John S., to Driscoll, John S. Combined packaging and shipping container. 283,103, 3-25-86, Cl. D9-345.000.
Daenen, Robert H. C. M.; and DeCoster, Pieter K. J., to Dart Industries Inc. Gelatin mold or the like. 283,097, 3-25-86, Cl. D7-43.000.
Daly, Lewis J. Pool access stair for the disabled. 283,168, 3-25-86, Cl. D25-62.000.
Dart Industries Inc.: *See—*
Daenen, Robert H. C. M.; and DeCoster, Pieter K. J., 283,097, Cl. D7-43.000.
Davidson, Grant M. N., to U.S. Philips Corporation. Loudspeaker panel. 283,125, 3-25-86, Cl. D14-39.000.
DeCoster, Pieter K. J.: *See—*
Daenen, Robert H. C. M.; and DeCoster, Pieter K. J., 283,097, Cl. D7-43.000.
Deemer, Milton G. Combined endodontic X-ray mounts and postal card correspondence form. 283,139, 3-25-86, Cl. D19-2.000.
Design Institute America, Inc.: *See—*
Mulhauser, George C., 283,090, Cl. D6-372.000.
DeYoreo, Sal, to Armatron International, Inc. Housing for electronic insect killer. 283,153, 3-25-86, Cl. D22-19.000.
Dominion Odor Control Ltd.: *See—*
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Dornbusch, Arthur H.; and Haintl, Barbara A., to Procter & Gamble Company, The. Carton blank. 283,105, 3-25-86, Cl. D9-433.000.
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Franovic, Michael: *See—*
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Fukuchi, Eiji, to Mitsuboshi Belting Ltd. Bicycle tire tread. 283,114, 3-25-86, Cl. D12-136.000.
Fukuchi, Eiji, to Mitsuboshi Belting Ltd. Bicycle tire tread. 283,115, 3-25-86, Cl. D12-136.000.
Funabashi, Genichi; Teraoka, Akira; and Nakamura, Tadashi, to Kubota Ltd. Agricultural tractor. 283,135, 3-25-86, Cl. D15-23.000.
Gamm, Robert J., to Kangaroos U.S.A, Inc. Athletic shoe with pocket cover flap. 283,078, 3-25-86, Cl. D2-309.000.
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Godsey, James H., to American Home Products Corporation (Del.). Combined microbiological test tray and holder. 283,159, 3-25-86, Cl. D24-31.000.
Godsey, James H., to American Home Products Corporation (Del.). Combined microbiological test tray and holder. 283,161, 3-25-86, Cl. D24-31.000.
Godsey, James H., to American Home Products Corporation (Del.). Microbiological test tray. 283,162, 3-25-86, Cl. D24-31.000.
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Hamar, Christopher J., to Zengrange Limited. Protective case for a calculator or the like. 283,138, 3-25-86, Cl. D18-11.000.
Hansen, Bernadette G. Purse. 283,081, 3-25-86, Cl. D3-53.000.
Hansen, Bernadette G. Clutch bag. 283,082, 3-25-86, Cl. D3-53.000.
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Jackson, Frank W., to Jackson, Frank W. Endoscopic bite block. 283,158, 3-25-86, Cl. D24-29.000.
Jensen, Carlo A., to Interlego AG. Toy diver figure with hoist. 283,150, 3-25-86, Cl. D21-177.000.
Jensen, Fritz. Spaceship toy balloon. 283,144, 3-25-86, Cl. D21-84.000.
Jensen, Fritz. Simulative toy balloon. 283,145, 3-25-86, Cl. D21-84.000.
Jensen, Fritz. Butterfly toy balloon. 283,146, 3-25-86, Cl. D21-84.000.
Johnson, Robert E. Picture frame. 283,085, 3-25-86, Cl. D6-303.000.
Johnston, Joan O. Computer work station. 283,092, 3-25-86, Cl. D6-423.000.
Kangaroos U.S.A, Inc.: *See—*
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Lutz, Christina. Combined picture frame and storage box. 283,087, 3-25-86, Cl. D6-314.000.
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Maldonado, Robert; and Loughry, Clark E., to S. S. White Company, The. Device for positioning dental x-ray film. 283,157, 3-25-86, Cl. D24-2.000.
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Mandelli, Piergiorgio; and Mandelli, Franco. Electric fan. 283,156, 3-25-86, Cl. D23-158.000.
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Matsumoto, Nobuki, to Ricoh Company, Ltd. Printer for electronic computer. 283,132, 3-25-86, Cl. D14-111.000.
McArdle, Peter A., to Trimtech Limited. Seat. 283,089, 3-25-86, Cl. D6-367.000.
McFrisby, Samuel J., to Ulicne, Joseph A., a part interest. Articulated, collapsible sled. 283,112, 3-25-86, Cl. D12-10.000.
McKay, Stewart K. Lounge chair. 283,088, 3-25-86, Cl. D6-361.000.
McKinnon, Eugene T., to Gem Products, Inc. Air manifold unit. 283,154, 3-25-86, Cl. D23-40.000.
Meekins, Gilbert F., to United Way of America. Trophy. 283,111, 3-25-86, Cl. D11-161.000.
Mendel, Peter J., to International Business Machines Corporation. Display for data-processing workstation. 283,134, 3-25-86, Cl. D14-113.000.
Meritus Industries, Inc.: *See—*
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Michaeli, Martin, to Chaussures Mephisto S.A. Shoe soles. 283,079, 3-25-86, Cl. D2-320.000.
Michaeli, Martin, to Chaussures Mephisto S.A. Shoe sole. 283,080, 3-25-86, Cl. D2-322.000.
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Mulhauser, George C., to Design Institute America, Inc. Chair. 283,090, 3-25-86, Cl. D6-372.000.
Murdick, Brian K.; and Haase, William H. Taco tray. 283,098, 3-25-86, Cl. D7-76.000.
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Nielsen, Jacob, to Interlego AG. Toy walrus figure. 283,149, 3-25-86, Cl. D21-157.000.
North American Philips Corporation: *See—*
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Pandya, Mahendra K. Organizer for holding drug detection kit articles or the like. 283,164, 3-25-86, Cl. D24-31.000.
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Percom Data Corporation: *See—*
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Perry, George. Stationary refreshment stand. 283,167, 3-25-86, Cl. D25-10.000.
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Petro, Eli J.; and Pemberton, Paul E., to Kokomo Spring Company. Spring bracket. 283,102, 3-25-86, Cl. D8-349.000.
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Ronvik, John P., to Sears, Roebuck & Co. Pedestal sink. 283,155, 3-25-86, Cl. D23-61.000.
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Shabram, Lyle F., Sr.; and Shabram, Lyle F., Jr. Condiment container closure. 283,099, 3-25-86, Cl. D7-392.000.
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Stednitz, Denis P., to Ace Orthopedic Company Inc. Orthopedic tool box. 283,083, 3-25-86, Cl. D3-74.000.
Steinman, Mark E. Equipment storage tray or the like. 283,160, 3-25-86, Cl. D24-31.000.
Stollery, David J., to Fire Arrow, Inc. Body for three-wheeled motor vehicle. 283,113, 3-25-86, Cl. D12-85.000.
Strand, David R.; and Turnbull, C. Douglas, to Strand Inc. Computer desk. 283,094, 3-25-86, Cl. D6-478.000.
Strand Inc.: *See—*
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Yang, Yeong F. Sledge toy. 283,147, 3-25-86, Cl. D21-149.000.
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LIST OF PLANT PATENTEES

Gessellschaftsvertrag uber die Ergindergemeinschaft "OPTIMARA": *See—*
Holtkamp, Reinhold, 5,700, Cl. 69.000.
Holtkamp, Reinhold, 5,701, Cl. 69.000.
Holtkamp, Reinhold, to Gessellschaftsvertrag uber die Ergindergemeinschaft "OPTIMARA". African violet plant named Improved Orlando. 5,700, 3-25-86, Cl. 69.000.
Holtkamp, Reinhold, to Gessellschaftsvertrag uber die Ergindergemeinschaft "OPTIMARA". African violet plant named Maui. 5,701, 3-25-86, Cl. 69.000.
Hope, Claude, to Pan American Plant Co. Impatiens plant named Vista Impatiens No. 44. 5,698, 3-25-86, Cl. 68.000.
Hope, Claude, to Pan American Plant Co. Impatiens plant named Vista Impatiens No. 60. 5,699, 3-25-86, Cl. 68.000.
Jennings, Derek L., to National Seed Development Organisation Limited. Tummelberry. 5,697, 3-25-86, Cl. 46.000.
National Seed Development Organisation Limited: *See—*
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Pan American Plant Co.: *See—*
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CLASSIFICATION OF PATENTS

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CLASS 81

484	4,577,534

CLASS 82

2 E	4,577,535
2.7	4,577,536

CLASS 83

343	4,577,537
467 R	4,577,538
886	4,577,539

CLASS 84

1.27	4,577,540
411 R	4,577,541

CLASS 86

20 D	4,577,542

CLASS 87

11	4,577,543

CLASS 89

1.14	4,577,544
8	4,577,545
41.19	4,577,546

CLASS 91

39	4,577,547
369 A	4,577,548

CLASS 92

169	4,577,549

CLASS 99

329 RT	4,577,550
348	4,577,551
524	4,577,552

CLASS 100

4	4,577,553
26	4,577,554

CLASS 101

76	4,577,555
148	4,577,556
217	4,577,557
221	4,577,559
365	4,577,558
415.1	4,577,560

CLASS 102

215	4,577,561
384	Re.32,094

CLASS 106

18.12	4,578,116
20	4,578,117
288 B	4,578,118

CLASS 109

24.1	4,577,562
52	4,577,563

CLASS 110

110	4,577,564
237	4,577,565
343	4,577,566
347	4,577,567

CLASS 111

7	4,577,568

CLASS 112

83	4,577,569
121.12	4,577,570
121.15	4,577,571
231	4,577,572
318	4,577,573
445	4,577,574
449	4,577,575
456	4,577,576

CLASS 114

120	4,577,577
248	4,577,578
274	4,577,579
285	4,577,580
294	4,577,581
298	4,577,582
332	4,577,583

CLASS 116

10	4,577,584

CLASS 118

50	4,577,585
63	4,577,586
658	4,577,587
665	4,577,588

CLASS 119

17	4,577,589
29	4,577,590
143	4,577,591

CLASS 122

235 D	4,577,593

CLASS 123

41.08	4,577,594
41.35	4,577,595
52 MV	4,577,596
73 A	4,577,597
90.15	4,577,592
90.18	4,577,598
179 B	4,577,599
270	4,577,600
298	4,577,601
306	4,577,602
339	4,577,603
397	4,577,604
479	4,577,605
506	4,577,606
516	4,577,607
583	4,577,608
602	4,577,609
633	4,577,610
669	4,577,611

CLASS 124

41 A	4,577,612

CLASS 125

23 C	4,577,613
25	4,577,614

CLASS 126

99 A	4,577,615
110 R	4,577,616
279	4,577,617
415	4,577,618
431	4,577,619
440	4,577,620

CLASS 128

4	4,577,621
24 R	4,577,622
25 R	4,577,623
40	4,577,624
57	4,577,625
64	4,577,626
76 R	4,577,627
205.26	4,577,628
305	4,577,629
314	4,577,630
334 R	4,577,631
360	4,577,632
419 PG	4,577,633
	4,577,634
642	4,577,635
654	4,577,636
658	4,577,637
671	4,577,638
709	4,577,639
738	4,577,640
746	4,577,641
784	4,577,642
785	4,577,643

CLASS 131

94	4,577,644
196	4,577,645
275	Re.32,095
296	4,577,646

CLASS 132

39	4,577,647
73	4,577,648
93	4,577,649

CLASS 134

4	4,578,119
9	4,578,120
25.4	4,578,121
59	4,577,650
111	4,577,651

CLASS 136

251	4,578,526
256	4,578,527

CLASS 137

82	4,577,652
119	4,577,653
219	4,577,654
375	4,577,655
	4,577,656
448	4,577,657
599	4,577,658
614.06	4,577,659
625.24	4,577,660
625.33	4,577,661
630.14	4,577,662

CLASS 138

31	4,577,663
149	4,577,664

CLASS 139

431	4,577,665
450	4,577,666

CLASS 144

193 C	4,577,667

CLASS 148

6.2	4,578,122
11.5 Q	4,578,123
12 F	4,578,124
31.57	4,578,125
171	4,578,126
175	4,578,127
191	4,578,128
407	4,578,129
419	4,578,130

CLASS 152

520	4,577,668

CLASS 156

62	4,578,131
72	4,578,132
164	4,578,133
167	4,578,134
182	4,578,135
249	4,578,136
345	4,578,137
361	4,578,138
384	4,578,139
	4,578,140
439	4,578,141
612	4,578,142
616 R	4,578,145
617 R	4,578,143
	4,578,144
623 R	4,578,146

CLASS 162

26	4,578,147
	4,578,148
39	4,578,149
164.3	4,578,150

CLASS 164

45	4,577,669
155	4,577,670
401	4,577,671
428	4,577,672
448	4,577,673
	4,577,674
	4,577,675
468	4,577,676

CLASS 165

1	4,577,677

10 4,577,678
45 4,577,679
95 4,577,680
109.1 4,577,681
160 4,577,682
164 4,577,683
172 4,577,684

CLASS 166

115 4,577,685
208 4,577,686
243 4,577,687
245 4,577,688
250 4,577,689
251 4,577,690
263 4,577,691
321 4,577,692
338 4,577,693
382 4,577,694
387 4,577,695
4,577,696

CLASS 172

21 4,577,697
225 4,577,698
570 4,577,699

CLASS 174

65 G 4,578,528
117 FF 4,578,529

CLASS 175

40 4,577,700
61 4,577,701
65 4,577,702
79 4,577,703
107 4,577,704
228 4,577,705
329 4,577,706

CLASS 177

25 4,577,707
145 4,577,708
211 4,577,709
245 4,577,710

CLASS 178

22.08 4,578,531
22.09 4,578,530
22.13 4,578,532

CLASS 179

2 A 4,578,539
4,578,540
2 AM 4,578,536
2 C 4,578,534
2 DP 4,578,533
4,578,535
4,578,537
4,578,538
18 FA 4,578,541
84 L 4,578,542
170.2 4,578,543
4,578,544
178 4,578,545

CLASS 180

9.1 4,577,717
24.1 4,577,711
53.4 4,577,712
69.1 4,577,713
70.1 4,577,714
79.1 4,577,715
4,577,716
179 4,577,718
219 4,577,719
229 4,577,720
248 4,577,721
315 4,577,722

CLASS 181

120 4,577,723
265 4,577,724

CLASS 182

48 4,577,725
93 4,577,726
128 4,577,727

CLASS 184

7.4 4,577,728

CLASS 187

95 4,577,729

CLASS 188

67 4,577,730
4,577,732
73.33 4,577,731
217 4,577,733
218 R 4,577,734
268 4,577,735
371 4,577,736

CLASS 191

87 4,578,546

CLASS 192

0.032 4,577,737
18 A 4,577,738
61 4,577,739
70.18 4,577,740
85 V 4,577,741
106.2 4,577,742
4,577,743

CLASS 194

318 4,577,744

CLASS 198

420 4,577,745
462 4,577,746
500 4,577,747
621 4,577,748
805 4,577,749

CLASS 200

11 DA 4,578,547
38 F 4,578,548
76 4,578,549
144 B 4,578,550
153 SC 4,578,551

CLASS 203

1 4,578,151
4,578,152
99 4,578,153

CLASS 204

1 T 4,578,154
15 4,578,155
4,578,157
33 4,578,156
44.2 4,578,158
98 4,578,159
4,578,160
102 4,578,161
107 4,578,162
110 4,578,163
129.55 4,578,164
157.75 4,578,165
183.1 4,578,167
299 R 4,578,168
4,578,169
400 4,578,170
406 4,578,171
412 4,578,172
416 4,578,173
429 4,578,174

CLASS 206

1.5 4,577,750
77.1 4,577,751
83.5 4,577,752
232 4,577,753
349 4,577,754
370 4,577,755
444 4,577,756
461 4,577,757
496 4,577,758
505 4,577,759
508 4,577,760
604 4,577,761
612 4,577,762

CLASS 208

8 R 4,578,175
4,578,176
45 4,578,177
48 AA 4,578,178
110 4,578,179
4,578,180
4,578,181
112 4,578,182
113 4,578,183

CLASS 209

3 4,578,184
534 4,577,763

CLASS 210

85 4,578,185
90 4,578,186
93 4,578,187
170 4,578,188
253 4,578,189
321.1 4,578,190
323.2 4,578,191
486 4,578,192
656 4,578,193
673 4,578,194
679 4,578,195
765 4,578,196
772 4,578,197
780 4,578,198
788 4,578,199

CLASS 211

41 4,577,764
75 4,577,765
123 4,577,766
190 4,577,767

CLASS 215

1 C 4,577,768
211 4,577,769
252 4,577,770
256 4,577,771

CLASS 219

10.41 4,578,552
10.77 4,578,553
69 M 4,578,556
121 LC 4,578,554
121 LG 4,578,558
121 PE 4,578,559
121 PP 4,578,557
121 PR 4,578,560
124.34 4,578,561
125.1 4,578,562
273 4,578,563
301 4,578,564
314 4,578,565
521 4,578,566
695 4,578,555

CLASS 220

1.5 4,577,772
22.3 4,577,773
66 4,577,774
4,577,775
307 4,577,776
359 4,577,777
404 4,577,778

CLASS 221

1 4,577,779
125 4,577,780

CLASS 222

54 4,577,781
129.1 4,577,782
386.5 4,577,783
402.2 4,577,784
598 4,577,785

CLASS 224

32 A 4,577,786
243 4,577,787
273 4,577,788

CLASS 225

100 4,577,789

CLASS 226

118 4,577,790
142 4,577,791
162 4,577,792

CLASS 227

10 4,577,793
119 4,577,794

CLASS 228

29 4,577,795
102 4,577,796
118 4,577,797
157 4,577,798

CLASS 229

40 4,577,799

CLASS 235

380 4,578,567
436 4,578,568
454 4,578,569
463 4,578,570
472 4,578,571
4,578,572
492 4,578,573

CLASS 237

2 A 4,577,800

CLASS 238

283 4,577,801

CLASS 239

11 4,577,802
690 4,577,803

CLASS 241

16 4,577,804
101 B 4,577,805
275 4,577,806

CLASS 242

84.2 C 4,577,807
84.5 R 4,577,808
96 4,577,809
157.1 4,577,810
195 4,577,811

CLASS 244

3.21 4,577,812
3.23 4,577,813
12.5 4,577,814
39 4,577,815
148 4,577,816
4,577,817

CLASS 248

27.3 4,577,818
123.1 4,577,819
211 4,577,820
421 4,577,821
463 4,577,822
487 4,577,823
544 4,577,824
550 4,577,825
638 4,577,826
656 4,577,827
678 4,577,828

CLASS 250

202 4,578,574
203 R 4,578,575
214 A 4,578,576
235 4,578,577
252.1 4,578,578
256 4,578,579
269 4,578,580
327.2 4,578,581
4,578,582
339 4,578,583
341 4,578,584
363 S 4,578,585
382 4,578,586
432 R 4,578,588
492.2 4,578,587
4,578,589
548 4,578,590

CLASS 251

15 4,577,829
84 4,577,830
93 4,577,831
129.11 4,577,832
149.1 4,577,833
175 4,577,834
310 4,577,835
356 4,577,836

CLASS 252

8.55 C 4,578,201
8.8 4,578,200
33.4 4,578,202
49.3 4,578,203
62.2 4,578,204
76 4,578,205
95 4,578,206
134 4,578,207
135 4,578,208
143 4,578,209
299.6 4,578,210
301.17 4,578,213
301.4 F 4,578,212
301.4 H 4,578,211
376 4,578,214
514 4,578,215
542 4,578,216

CLASS 254

212 4,577,837

CLASS 260

112 B 4,578,218
112.5 R 4,578,217
4,578,219
239 R 4,578,220
397.1 4,578,221
413 4,578,222
419 4,578,223
502.5 F 4,578,224
550 4,578,225

CLASS 261

41 D 4,578,228
71 4,578,226
111 4,578,227

CLASS 264

0.5 4,578,229
2.1 4,578,230
25 4,578,231
65 4,578,232
4,578,233
4,578,234
71 4,578,235

CLASS 266

171 4,577,838
272 4,577,839

CLASS 267

64.17 4,577,840
103 4,577,841
140.1 4,577,842

CLASS 269

51 4,577,843
71 4,577,844
73 4,577,845
82 4,577,846
309 4,577,847

CLASS 270

55 4,577,848

CLASS 271

9 4,577,849
22 4,577,850
33 4,577,851
188 4,577,852
217 4,577,853
227 4,577,854
281 4,577,855

CLASS 272

25 4,577,856
67 4,577,857
4,577,858
71 4,577,859
73 4,577,860
96 4,577,861
125 4,577,862

CLASS 273

26 E 4,577,864
26 R 4,577,863
58 G 4,577,865
176 AB 4,577,867
183 A 4,577,868
269 4,577,869

CLASS 277

1 4,577,870
8 4,577,871
12 4,577,872
110 4,577,873
165 4,577,874

CLASS 279

75 4,577,875

CLASS 280

13 4,577,876
33.99 C 4,577,880
47.37 R 4,577,877
242 WC 4,577,878
256 4,577,879
412 4,577,881
446 R 4,577,882
491 D 4,577,883
507 4,577,884
508 4,577,885
602 4,577,886
628 4,577,887
808 4,577,888

CLASS 281

15 R 4,577,889
29 4,577,890

CLASS 285

62 4,577,891
136 4,577,892
158 4,577,893
242 4,577,894
334 4,577,895

CLASS 292

264 4,577,896

CLASS 294

15 4,577,897
88 4,577,898
95 4,577,899
118 4,577,900

CLASS 297

17 4,577,901
85 4,577,902
188 4,577,903
410 4,577,904
411 4,577,905
440 4,577,906
452 4,577,907

CLASS 299

2 4,577,908

CLASS 301

37 TP 4,577,909

CLASS 303

69 4,577,910

CLASS 307

10 R 4,578,591
4,578,592
113 4,578,593
241 4,578,594
252 R 4,578,595
4,578,596
265 4,578,597
271 4,578,598
272 A 4,578,599
451 4,578,600
475 4,578,601
4,578,602
493 4,578,603

CLASS 308

2 R 4,577,911
4,577,912
6 R 4,577,913

CLASS 310

30 4,578,604
67 R 4,578,605
68 R 4,578,606
112 4,578,608
156 4,578,609
4,578,610
328 4,578,607
338 4,578,611
348 4,578,612
800 4,578,613

CLASS 312

10 4,577,914
214 4,577,915
257 R 4,577,916

CLASS 313

309 4,578,614
497 4,578,615
512 4,578,617
563 4,578,618
579 4,578,616
586 4,578,619

CLASS 315

3.5 4,578,620

CLASS 318

6 4,578,621
135 4,578,622
254 4,578,623
305 4,578,624
318 4,578,625
338 4,578,626
632 4,578,627

CLASS 320

2 4,578,628

CLASS 323

217 4,578,629
271 4,578,630
282 4,578,631
315 4,578,632
4,578,633

CLASS 324

56 4,578,634
62 4,578,635
66 4,578,636
73 PC 4,578,637
77 B 4,578,638
96 4,578,639
115 4,578,640
158 D 4,578,641
160 4,578,642
202 4,578,643
212 4,578,644
338 4,578,645

CLASS 328

128 4,578,646

CLASS 330

253 4,578,647
281 4,578,648

CLASS 331

78 4,578,649
160 4,578,650

CLASS 332

7.51 4,578,651

CLASS 333

117 4,578,652
166 4,578,653
175 4,578,654
202 4,578,655
204 4,578,656
211 4,578,657
227 4,578,658

CLASS 335

131 4,578,659
133 4,578,660
212 4,578,661
262 4,578,662
306 4,578,663

CLASS 336

90 4,578,664

CLASS 339

17 M 4,577,918
59 M 4,577,919
143 R 4,577,920
150 T 4,577,917
176 M 4,577,921
176 MP 4,577,922
275 B 4,577,923

CLASS 340

48 4,578,665
146.2 4,578,666
347 DA 4,578,668
347 SH 4,578,667
518 4,578,669
550 4,578,670
636 4,578,671
702 4,578,672

703 4,578,673
710 4,578,674
855 4,578,675

CLASS 343

17.1 R 4,578,676
17.2 PC 4,578,677
357 4,578,678
427 4,578,679
703 4,578,680
786 4,578,681
916 4,578,682

CLASS 346

49 4,578,683
108 Re.32,099
135.1 4,578,684
139 R 4,578,685
140 R 4,578,686
4,578,687
157 4,578,688
160 4,578,689
212 4,578,690

CLASS 350

96.15 4,577,924
96.23 4,577,925
96.25 4,577,926
235 4,577,927
276 R 4,577,928
283 4,577,929
332 4,577,930
350 R 4,577,931
358 4,577,932
4,577,933
430 4,577,934
432 4,577,935
4,577,936
4,577,937
4,577,938
443 4,577,939
502 4,577,940
582 4,577,941

CLASS 351

159 4,577,942
205 4,577,943

CLASS 352

35 4,577,944

CLASS 353

101 4,577,945

CLASS 354

152 4,577,946
275 4,577,947
299 4,577,948
319 4,577,949
324 4,577,950
331 4,577,951
455 4,577,952

CLASS 355

3 BE 4,577,953
4 4,577,954
15 4,577,955
40 4,577,956
43 4,577,957
4,577,958
67 4,577,959
75 4,577,960
77 4,577,961

CLASS 356

5 4,577,962
28.5 4,577,963
39 4,577,964
138 4,577,965
325 4,577,966
349 4,577,967
356 4,577,968
394 4,577,969
440 4,577,970

CLASS 357

5 4,578,691
27 4,578,692
30 4,578,693
41 4,578,694
48 4,578,695
59 4,578,696
75 4,578,697

CLASS 358

22 4,578,698
44 4,578,699
78 4,578,701
84 4,578,700
86 4,578,702
117 4,578,703
135 4,578,704
148 4,578,705
195.1 4,578,706
212 4,578,707
229 4,578,708
230 4,578,709
231 4,578,710
282 4,578,711
4,578,712
283 4,578,713
4,578,714
4,578,715

CLASS 360

1 4,578,716
2 4,578,717
10.3 4,578,718
31 4,578,719
51 4,578,720
4,578,721
60 4,578,722
77 4,578,723
85 4,578,724
4,578,725
99 4,578,726
102 4,578,727
125 4,578,728
134 4,578,729

CLASS 361

4 4,578,730
42 4,578,731
45 4,578,732
120 4,578,733
152 4,578,734
283 4,578,735
306 4,578,736
308 4,578,737
324 4,578,738
395 4,578,739

CLASS 362

66 4,578,740
249 4,578,741
294 4,578,742

CLASS 363

35 4,578,743
37 4,578,744
68 4,578,745
161 4,578,746

CLASS 364

151 4,578,747
167 4,578,748
4,578,749
200 4,578,750
4,578,751
414 4,578,752
4,578,753
426 4,578,754
431.01 4,578,755
431.02 4,578,756
461 4,578,757
466 4,578,758
467 4,578,760
478 4,578,759
481 4,578,761
497 4,578,762
513 4,578,763
4,578,764
514 4,578,765
521 4,578,766
550 4,578,767
560 4,578,768
565 4,578,769
571 4,578,770
716 4,578,771
850 4,578,772
900 4,578,773
4,578,774

CLASS 365

36 4,578,775
149 4,578,776
184 4,578,777
190 4,578,778
4,578,779
4,578,780
203 4,578,781
222 4,578,782

CLASS 366

76 4,577,971
101 4,577,972
139 4,577,973
307 4,577,974
314 4,577,975

CLASS 367

35 4,578,785
99 4,578,783
143 4,578,784

CLASS 369

44 4,578,786
77.2 4,578,787
275 4,578,788

CLASS 370

50 4,578,790
58 4,578,789

CLASS 372

50 4,578,791
58 4,578,792
94 4,578,793

CLASS 373

42 4,578,794
70 4,578,795

CLASS 374

29 4,577,976
39 4,577,977
45 4,577,978
178 4,577,979

CLASS 375

8 4,578,796
25 4,578,797
45 4,578,798
87 4,578,799
106 4,578,800

CLASS 376

136 4,578,236
154 4,578,237
404 4,578,238
441 4,578,239
4,578,240
446 4,578,241

CLASS 378

19 4,578,801
41 4,578,802
62 4,578,803
84 4,578,804
119 4,578,805
162 4,578,806

CLASS 381

7 4,578,807
88 4,578,808
99 4,578,809

CLASS 382

8 4,578,810
11 4,578,811
41 4,578,812

CLASS 383

65 4,578,813
99 4,578,814

CLASS 384

488 4,577,980
495 4,577,981

CLASS 400

17 4,577,982
120 4,577,983
625 4,577,984

CLASS 402

22 4,577,985

CLASS 403

93 4,577,986
133 4,577,987
140 4,577,988
4,577,989
342 4,577,990

CLASS 404

6 4,577,991
16 4,577,992
112 4,577,993
114 4,577,994
117 4,577,995

CLASS 405

17 4,577,996
43 4,577,997
45 4,577,998
53 4,577,999
211 4,578,000

CLASS 406

10 4,578,001
28 4,578,002

CLASS 408

56 4,578,003
87 4,578,004

CLASS 409

140 4,578,005
303 4,578,006

CLASS 413

6 4,578,007

CLASS 414

24.5 4,578,008
43 4,578,009
126 4,578,010
152 4,578,011
310 4,578,012
323 4,578,013
483 4,578,014
513 4,578,015
680 4,578,016

CLASS 415

1 4,578,017
14 4,578,018

CLASS 416

1 4,578,019

CLASS 418

196 4,578,020

CLASS 420

590 4,578,242

CLASS 422

7 4,578,243
56 4,578,245
57 4,578,282
65 4,578,244
111 4,578,246
165 4,578,247
310 4,578,248

CLASS 423

10 4,578,249
22 4,578,250
55 4,578,251
76 4,578,252
87 4,578,253
88 4,578,254
130 4,578,255
210 4,578,256
243 4,578,257
325 4,578,258
329 4,578,259
446 4,578,260
478 4,578,261
522 4,578,262

CLASS 424

Re.32,098
15 4,578,263
37 4,578,264
50 4,578,265
63 4,578,266
78 4,578,267
79 4,578,268
88 4,578,269
92 4,578,270
117 4,578,271

CLASS 425

6 4,578,021
7 4,578,022
38 4,578,023
114 4,578,024
133.1 4,578,025
151 4,578,026
298 4,578,027
525 4,578,028

CLASS 426

18 4,578,272
87 4,578,273
96 4,578,274
302 4,578,275
403 4,578,313
414 4,578,315
516 4,578,316
547 4,578,317
615 4,578,318
632 4,578,319
674 4,578,320
693 4,578,321
694 4,578,322

CLASS 429

15 4,578,323
26 4,578,324
91 4,578,325
192 4,578,326
194 4,578,327

CLASS 430

18 4,578,328
4,578,329
37 4,578,330
42 4,578,331
55 4,578,332
59 4,578,334
60 4,578,333
107 4,578,337
120 4,578,338
138 4,578,339
4,578,340
155 4,578,341
159 4,578,342
217 Re.32,097
296 4,578,343
312 4,578,344
393 4,578,345
548 4,578,346
572 4,578,347
607 4,578,348

CLASS 432

14 4,578,029
18 4,578,030
138 4,578,031
230 4,578,032

CLASS 433

29 4,578,033
4,578,034
149 4,578,035

CLASS 434

95 4,578,036
258 4,578,037

CLASS 435

7 4,578,349
4,578,350
41 4,578,351
68 4,578,335
88 4,578,336
99 4,578,352
161 4,578,353
178 4,578,354
317 4,578,355

CLASS 436

31 4,578,356
39 4,578,357
66 4,578,358
4,578,359
518 4,578,360
547 4,578,361

CLASS 440

19 4,578,038
61 4,578,039
73 4,578,040

CLASS 441

30 4,578,041
117 4,578,042

CLASS 445

40 4,578,043

CLASS 446

134 4,578,044
330 4,578,045
376 4,578,046

CLASS 455

15 4,578,815
27 4,578,816
4,578,817
110 4,578,818
135 4,578,819
154 4,578,820

CLASS 464

30 4,578,047
111 4,578,048

CLASS 474

8 4,578,049
17 4,578,050

CLASS 493

8 4,578,051
11 4,578,052
45 4,578,053
126 4,578,054

CLASS 501

17 4,578,362
89 4,578,363
98 4,578,364
4,578,365

CLASS 502

6 4,578,366
24 4,578,367
28 4,578,368
36 4,578,369
37 4,578,370
71 4,578,371
74 4,578,372
113 4,578,373
115 4,578,374
230 4,578,375

CLASS 514

7 4,578,383
8 4,578,384
49 4,578,401
108 4,578,376
206 4,578,377
210 4,578,378
223 4,578,379
4,578,385
232 4,578,380
233 4,578,381
241 4,578,386
245 4,578,382
249 4,578,387
252 4,578,388
254 4,578,389
255 4,578,390
256 4,578,391
300 4,578,392
310 4,578,393
332 4,578,394
356 4,578,395
383 4,578,396
411 4,578,397
4,578,398
455 4,578,399
460 4,578,400
521 4,578,402
522 4,578,403
567 4,578,404
679 4,578,405

CLASS 521

52 4,578,406

CLASS 524

55 4,578,407
91 4,578,408
94 4,578,409
102 4,578,410
156 4,578,411
243 4,578,412
269 4,578,413
310 4,578,414
322 4,578,415
371 4,578,416
378 4,578,417
400 4,578,418
401 4,578,419
490 4,578,420
511 4,578,421
593 4,578,422

CLASS 525

68 4,578,423
109 4,578,424
4,578,425
131 4,578,426
150 4,578,427
265 4,578,428
291 4,578,429
387 4,578,430
4,578,431
417 4,578,433
432 4,578,432
4,578,434
4,578,435
443 4,578,436
444 4,578,437
481 4,578,438
509 4,578,439

CLASS 526

128 4,578,440
216 4,578,441
255 4,578,442
285 4,578,443
288 4,578,444
292.3 4,578,445

CLASS 528

64 4,578,446
73 4,578,447
139 4,578,448
212 4,578,449
254 4,578,450
292 4,578,451

CLASSIFICATION OF PATENTS

297	4,578,452	360	4,578,467	297	4,578,483	77	4,578,501		4,578,519	366	4,578,066
302	4,578,453		CLASS 546	360	4,578,484	79	4,578,502		CLASS 568	368	4,578,067
327	4,578,454	35	4,578,468	361	4,578,485	82	4,578,503				4,578,068
501	4,578,455	66	4,578,469	379	4,578,486	104	4,578,507	315	4,578,520	370	4,578,069
	CLASS 530	156	4,578,473		CLASS 556	112	4,578,504	425	4,578,522	378	4,578,070
502	4,578,456	188	4,578,472	40	4,578,487	118	4,578,505	454	4,578,523	379	4,578,071
	CLASS 534		4,578,474	56	4,578,488	148	4,578,506	771	4,578,521	385 A	4,578,072
632	4,578,457	193	4,578,471	100	4,578,489	221	4,578,508	867	4,578,524	397	4,578,073
	CLASS 536	256	4,578,470	136	4,578,490		CLASS 562	918	4,578,525	408	4,578,074
123	4,578,458		CLASS 548	137	4,578,491	462	4,578,509		CLASS 604	892	4,578,075
	CLASS 544	126	4,578,475	407	4,578,492	483	4,578,510	2	4,578,055		4,578,076
8	4,578,459	144	4,578,476	451	4,578,493	494	4,578,511	6	4,578,056		CLASS 623
49	4,578,460	165	4,578,477	452	4,578,494	586	4,578,512	9	4,578,057	3	4,578,077
76	4,578,461	193	4,578,478	468	4,578,495		CLASS 564	27	4,578,058	6	4,578,078
177	4,578,462	269	4,578,479	479	4,578,496		4,578,513	43	4,578,059	11	4,578,079
182	4,578,463	533	4,578,480		4,578,497	56	4,578,514	133	4,578,060	13	4,578,080
236	4,578,464	539	4,578,481		CLASS 560	102	4,578,515	164	4,578,061	22	4,578,081
285	4,578,465		CLASS 549	8	4,578,498	215	4,578,516	174	4,578,062	26	4,578,082
309	4,578,466	214	4,578,482	21	4,578,499	479	4,578,517	175	4,578,063	42	4,578,083
				25	4,578,500		4,578,518	191	4,578,064		
								336	4,578,065		

CLASSIFICATION OF DESIGNS

D2—		283,077		423	283,092			283,108		12	283,124		49	283,140		158	283,156
	309	283,078		470	283,093			283,109		39	283,125		88	283,141	D24—	2	283,157
	320	283,079		478	283,094		62	283,110		53	283,126	D21—	34	283,142		29	283,158
	322	283,080		521	283,095	D11—	161	283,111			283,127		82	283,143		31	283,159
	400	283,076	D7—	27	283,096	D12—	10	283,112		59	283,128		84	283,144			283,160
D3—	53	283,081		43	283,097		85	283,113		90	283,129			283,145			283,161
		283,082		76	283,098		136	283,114		92	283,130			283,146			283,162
	74	283,083		392	283,099			283,115		109	283,131		149	283,147			283,163
		283,084	D8—	71	283,100		147	283,116		111	283,132		154	283,148			283,164
D6—	303	283,085			283,101		157	283,117			283,133		157	283,149		64	283,165
	308	283,086		349	283,102			283,118		113	283,134		177	283,150	D25—	1	283,166
	314	283,087	D9—	345	283,103		182	283,119	D15—	23	283,135		194	283,151		10	283,167
	361	283,088		418	283,104		190	283,120	D16—	27	283,136	D22—	19	283,152		62	283,168
	367	283,089		433	283,105	D13—	25	283,121	D18—	2	283,137			283,153	D26—	3	283,169
	372	283,090	D10—	40	283,106	D14—	5	283,122		11	283,138	D23—	40	283,154		71	283,170
	403	283,091		46	283,107		6	283,123	D19—	2	283,139		61	283,155	D34—	21	283,171

CLASSIFICATION OF PLANTS

P.—	46	5,697	68	5,698	5,699	69	5,700	5,701			

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

01 :	4,577,825	4,577,817	4,578,636	4,578,590	17 :	4,577,354		4,577,717			
	4,577,965	4,577,824	4,578,637	4,578,653		4,577,359		4,578,051			
	4,578,533	4,577,864	4,578,652	4,578,756		4,577,373		4,578,235			
04 :	4,577,358	4,577,879	4,578,663	4,578,758		4,577,404	20 :	4,577,527			
	4,577,788	4,577,894	4,578,675	4,578,767		4,577,524		4,577,876			
	4,577,827	4,577,901	4,578,678	4,578,774		4,577,554		4,577,881			
	4,577,896	4,577,924	4,578,681	4,578,789		4,577,560		4,578,463			
	4,578,063	4,577,926	4,578,683	10 :	4,578,108		4,577,608	21 :	4,577,749		
	4,578,502	4,577,927	4,578,709		4,578,286		4,577,754		4,577,902		
	4,578,599	4,577,929	4,578,721		4,578,598		4,577,756		4,578,045		
	4,578,635	4,577,950	4,578,750	11 :	4,577,477		4,577,809		4,578,494		
	4,578,649	4,577,955	4,578,762	12 :	4,577,349		4,577,819	22 :	4,577,476		
05 :	4,577,561	4,577,957	4,578,768		4,577,351		4,577,839		4,577,488		
	4,577,761	4,577,958	4,578,773		4,577,437		4,577,856		4,577,614		
	4,577,993	4,577,975	4,578,777		4,577,463		4,577,922		4,577,697		
06 :	Re.32,098	4,578,014	4,578,791		4,577,583		4,577,990		4,577,804		
	4,577,356	4,578,019	4,578,793		4,577,620		4,578,039		4,577,830		
	4,577,357	4,578,032	4,578,803		4,577,643		4,578,065		4,577,895		
	4,577,391	4,578,059	4,578,805		4,577,735		4,578,176		4,578,182		
	4,577,392	4,578,075	08 :	4,577,444		4,577,815		4,578,198		4,578,506	
	4,577,398	4,578,079		4,577,547		4,577,831		4,578,219	23 :	4,578,419	
	4,577,411	4,578,083		4,577,592		4,577,890		4,578,223	24 :	4,577,510	
	4,577,417	4,578,086		4,577,640		4,577,903		4,578,255		4,577,586	
	4,577,418	4,578,126		4,577,774		4,577,936		4,578,272		4,577,748	
	4,577,435	4,578,137		4,577,786		4,577,937		4,578,273		4,578,064	
	4,577,447	4,578,168		4,577,811		4,577,938		4,578,349		4,578,095	
	4,577,461	4,578,175		4,577,859		4,577,939		4,578,366		4,578,384	
	4,577,474	4,578,214		4,577,972		4,577,942		4,578,370		4,578,508	
	4,577,487	4,578,225		4,578,091		4,578,056		4,578,403		4,578,629	
	4,577,499	4,578,227		4,578,128		4,578,057		4,578,440		4,578,634	
	4,577,503	4,578,252		4,578,163		4,578,413		4,578,446		4,578,676	
	4,577,520	4,578,265		4,578,702		4,578,529		4,578,505		4,578,677	
	4,577,522	4,578,283		4,578,786		4,578,542		4,578,551	25 :	4,577,400	
	4,577,542	4,578,321	09 :	4,577,407		4,578,571		4,578,574		4,577,465	
	4,577,585	4,578,324		4,577,462		4,578,612		4,578,585		4,577,633	
	4,577,625	4,578,328		4,577,593		4,578,628		4,578,621		4,577,636	
	4,577,629	4,578,350		4,577,676		4,578,673		4,578,718		4,577,650	
	4,577,639	4,578,356		4,577,769		4,578,682		4,578,736		4,577,783	
	4,577,669	4,578,375		4,577,773		4,578,732		4,578,814		4,577,807	
	4,577,682	4,578,515		4,577,911		4,578,739	18 :	4,577,530		4,577,841	
	4,577,705	4,578,527		4,577,912	13 :	4,577,457		4,577,770		4,577,964	
	4,577,726	4,578,530		4,577,925		4,577,745		4,577,835		4,578,015	
	4,577,730	4,578,536		4,578,036		4,577,799		4,577,898		4,578,022	
	4,577,758	4,578,537		4,578,096		4,577,909		4,578,185		4,578,186	
	4,577,760	4,578,566		4,578,106		4,578,054		4,578,204		4,578,267	
	4,577,779	4,578,572		4,578,237		4,578,246		4,578,249		4,578,285	
	4,577,790	4,578,576		4,578,318		4,578,253		4,578,387		4,578,458	
	4,577,792	4,578,593		4,578,320		4,578,276		4,578,464		4,578,535	
	4,577,796	4,578,594		4,578,352		4,578,379		4,578,540		4,578,640	
	4,577,797	4,578,609		4,578,354		4,578,385	19 :	4,577,454		4,578,680	
	4,577,798	4,578,620		4,578,493	15 :	4,578,648		4,577,568		4,578,764	
	4,577,812	4,578,625		4,578,513	16 :	4,577,433		4,577,631		4,578,792	
	4,577,816	4,578,631		4,578,554		4,578,088		4,577,699		4,578,810	

26 :	4,577,376	34 :	4,577,366		4,577,828		4,577,379		4,577,544		4,578,414
	4,577,438		4,577,425		4,577,853		4,577,382		4,577,545		4,578,429
	4,577,467		4,577,541		4,577,867		4,577,399		4,577,566		4,578,430
	4,577,478		4,577,550		4,577,900		4,577,406		4,577,617		4,578,439
	4,577,523		4,577,575		4,577,914		4,577,412		4,577,764		4,578,456
	4,577,534		4,577,630		4,577,930		4,577,426		4,577,805		4,578,512
	4,577,546		4,577,634		4,577,933		4,577,434		4,577,848		4,578,518
	4,577,549		4,577,661		4,577,960		4,577,453		4,577,870		4,578,519
	4,577,612		4,577,679		4,577,974		4,577,485		4,577,872		4,578,578
	4,577,645		4,577,716		4,577,983		4,577,501		4,577,910		4,578,579
	4,577,653		4,577,729		4,577,992		4,577,511		4,577,918		4,578,580
	4,577,670		4,577,880		4,578,097		4,577,622		4,577,919		4,578,601
	4,577,710		4,577,940		4,578,113		4,577,628		4,577,920		4,578,642
	4,577,713		4,577,970		4,578,114		4,577,671		4,578,007		4,578,645
	4,577,725		4,577,979		4,578,115		4,577,734		4,578,100		4,578,669
	4,577,759		4,578,027		4,578,119		4,577,738		4,578,153		4,578,674
	4,577,869		4,578,060		4,578,129		4,577,741		4,578,165		4,578,713
	4,577,905		4,578,061		4,578,217		4,577,763		4,578,196		4,578,751
	4,577,928		4,578,067		4,578,224		4,577,768		4,578,203		4,578,782
	4,578,058		4,578,070		4,578,232		4,577,842		4,578,240		4,578,784
	4,578,122		4,578,098		4,578,233		4,577,891		4,578,251		4,578,785
	4,578,139		4,578,101		4,578,234		4,577,907		4,578,355		4,578,815
	4,578,162		4,578,118		4,578,250		4,577,985		4,578,357	49 :	4,577,383
	4,578,188		4,578,127		4,578,266		4,577,996		4,578,406		4,577,394
	4,578,215		4,578,142		4,578,279		4,578,001		4,578,409		4,577,619
	4,578,242		4,578,146		4,578,297		4,578,009		4,578,444		4,577,667
	4,578,310		4,578,156		4,578,315		4,578,018		4,578,497		4,577,704
	4,578,383		4,578,170		4,578,316		4,578,020		4,578,517		4,577,755
	4,578,466		4,578,181		4,578,323		4,578,024		4,578,639		4,577,802
	4,578,473		4,578,183		4,578,330		4,578,028		4,578,643		4,577,861
	4,578,485		4,578,213		4,578,333		4,578,031		4,578,742		4,577,874
	4,578,557		4,578,244		4,578,334		4,578,062		4,578,746		4,578,055
	4,578,591		4,578,268		4,578,338		4,578,068		4,578,763		4,578,247
	4,578,604		4,578,275		4,578,344		4,578,071		4,578,766		4,578,602
	4,578,662		4,578,282		4,578,348		4,578,073	44 :	Re.32,094	50 :	4,577,820
	4,578,747		4,578,302		4,578,358		4,578,103		4,577,857	51 :	Re.32,095
	4,578,809		4,578,390		4,578,359		4,578,138	47 :	4,577,514		4,577,921
27 :	4,577,432		4,578,394		4,578,363		4,578,155		4,577,615		4,578,105
	4,577,616		4,578,398		4,578,364		4,578,157		4,577,752		4,578,131
	4,577,642		4,578,405		4,578,365		4,578,211		4,577,765		4,578,287
	4,577,712		4,578,407		4,578,386		4,578,288		4,577,947		4,578,486
	4,577,777		4,578,416		4,578,425		4,578,295		4,577,971		4,578,614
	4,577,782		4,578,418		4,578,449		4,578,339		4,578,159		4,578,804
	4,577,837		4,578,431		4,578,468		4,578,340		4,578,195		4,578,820
	4,577,862		4,578,448		4,578,470		4,578,362		4,578,368	53 :	4,577,360
	4,577,977		4,578,451		4,578,471		4,578,411		4,578,437		4,577,450
	4,578,042		4,578,474		4,578,488		4,578,415		4,578,453		4,577,579
	4,578,078		4,578,490		4,578,492		4,578,424	48 :	4,577,390		4,577,794
	4,578,291		4,578,491		4,578,534		4,578,432		4,577,410		4,577,806
	4,578,347		4,578,509		4,578,545		4,578,434		4,577,468		4,578,072
	4,578,504		4,578,521		4,578,548		4,578,435		4,577,475		4,578,130
	4,578,569		4,578,531		4,578,561		4,578,450		4,577,637		4,578,335
	4,578,573		4,578,552		4,578,610		4,578,528		4,577,654	54 :	4,578,524
	4,578,654		4,578,588		4,578,615		4,578,567		4,577,680	55 :	4,577,387
	4,578,722		4,578,619		4,578,617		4,578,583		4,577,685		4,577,405
	4,578,735		4,578,630		4,578,632		4,578,616		4,577,686		4,577,422
28 :	4,577,655		4,578,641		4,578,684	40 :	4,577,492		4,577,687		4,577,428
29 :	4,577,442		4,578,704		4,578,689		4,577,657		4,577,688		4,577,496
	4,577,780		4,578,717		4,578,727		4,577,694		4,577,689		4,577,535
	4,578,016		4,578,761		4,578,771		4,577,702		4,577,690		4,577,599
	4,578,041		4,578,796		4,578,779		4,577,766		4,577,691		4,577,602
	4,578,111	35 :	4,577,414		4,578,788		4,577,908		4,577,692		4,577,609
	4,578,190		4,577,886		4,578,799		4,578,006		4,577,695		4,577,681
	4,578,243		4,578,093		4,578,813		4,578,090		4,577,696		4,577,728
	4,578,423		4,578,795	37 :	Re.32,096		4,578,151		4,577,700		4,577,747
	4,578,477	36 :	Re.32,097		4,577,350		4,578,179		4,577,701		4,577,753
	4,578,514		4,577,380		4,577,364		4,578,180		4,577,723		4,577,757
30 :	4,577,582		4,577,415		4,577,565		4,578,201		4,577,834		4,577,762
31 :	4,577,466		4,577,429		4,577,571	41 :	4,577,423		4,577,884		4,577,889
	4,577,767		4,577,431		4,577,621		4,577,590		4,577,897		4,577,994
32 :	4,577,446		4,577,464		4,578,402		4,577,698		4,577,978		4,578,066
	4,577,460		4,577,471		4,578,510		4,577,860		4,578,035		4,578,069
	4,577,787		4,577,472		4,578,522		4,577,883		4,578,094		4,578,092
	4,578,136		4,577,543		4,578,606		4,577,991		4,578,150		4,578,133
33 :	4,577,389		4,577,551		4,578,644		4,578,666		4,578,152		4,578,293
	4,577,430		4,577,562		4,578,671		4,578,667		4,578,178		4,578,538
	4,577,873		4,577,591		4,578,711		4,578,687		4,578,205		4,578,650
	4,578,141		4,577,638	38 :	4,577,580	42 :	4,577,361		4,578,230		4,578,753
	4,578,447		4,577,647		4,578,008		4,577,384		4,578,373		4,578,755
	4,578,690		4,577,648	39 :	4,577,347		4,577,402		4,578,374		4,578,798
	4,578,692		4,577,649		4,577,363		4,577,482		4,578,412		4,578,806
	4,578,769		4,577,652								

DESIGN PATENTS

02 :	283,110		283,151		283,103	26 :	283,112		283,136		283,163
05 :	283,094		283,154		283,124		283,117		283,159		283,164
06 :	283,076		283,157		283,155	27 :	283,081		283,161	42 :	283,143
	283,083		283,166	18 :	283,102		283,082		283,162		283,158
	283,086		283,171		283,107		283,101		283,168	46 :	283,085
	283,096	08 :	283,092	21 :	283,170		283,120	37 :	283,095	48 :	283,087
	283,099		283,165	24 :	283,142		283,134		283,160		283,131
	283,113	12 :	283,104	25 :	283,140	29 :	283,078	39 :	283,098		
	283,129		283,108		283,152	34 :	283,090		283,105	51 :	283,111
	283,139		283,167		283,153	36 :	283,091		283,130	53 :	283,100
	283,141	17 :	283,077		283,169		283,121		283,148	55 :	283,093

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